

Heart and Lung Convenience Store: Evaluation Report

March 2016
Amy Seakins



Contents

Executive summary	2
Introduction	3
Event aims and objectives	4
Evaluation methods	4
Findings	7
Overview	7
To what extent did the pop-up shop engage the local community?	8
To what extent were visitors those not typically attending science public engagement activities?	11
Was a pop-up shop an effective format for public engagement with science?	13
What were the impacts on the scientists and collaborators involved?	19
Conclusions	26
Appendix	28

Executive summary

- A total of 3088 visitors attended the Heart and Lung Convenience Store.
- The pop-up shop was successful in engaging the local community. Over half (56%) of visitors to the shop lived in the same or adjacent post code area (W6) as the shop. The most popular way of travelling to the shop was on foot, and over half of those visiting the shop had journeys of less than 15 minutes.
- The pop-up shop exceeded expectations in terms of visitor numbers (n = 3088) and online contacts through Fun Kids digital radio (n = 254,000).
- Visitors were extremely positive about their experiences in the shop. Customer review ratings (out of five) were as follows: Customer service: 4.9; Shop design: 4.5; Overall experience: 4.8. Many visitors felt that they had learned something as a result of visiting the pop-up shop.
- Visitors were varied in terms of their existing engagement with science. Of the other science events or activities visitors had attended within the past 12 months, science museums were the most frequently mentioned (28% of those filling review cards mentioned having visited a science museum in the past year).
- The pop-up shop was a unique and new experience for the majority of visitors. The majority of visitors (52 out of 69) said that they had not experienced anything like the pop-up shop before.
- Conversations in the shop were two-way and visitors valued being able to ask scientists many questions. Questions ranged in topic and many collaborators spoke about the in-depth conversations they had with visitors.
- The heart and lung lottery activity was useful in drawing people into the shop, after which most visitors spoke to a scientist or shop assistant and browsed the other installations.
- Some collaborators had not been involved in public engagement before (14/36). Before the event collaborators were reasonably confident about delivering public engagement and their skills in the area, but felt that there was room for improvement.
- Over half of collaborators had not been involved in collaborations between artists, scientists and engagement professionals before.
- Collaborators were very positive about their experience in the pop-up shop. Almost all collaborators (48 out of 52) rated their experience as 'very positive' or 'positive'. Compared to the National Heart and Lung Institute's first pop up shop project in 2014, a higher number of collaborators rated their experience as 'very positive' (28 out of 52 compared to 17 out of 48 for the 2014 shop).
- Collaborators reported that the event had led them to think more positively about public engagement, more motivated to do more, and more appreciative of its importance and impact. Almost all collaborators (36 out of 38) would be involved in another pop-up shop in future.

Introduction

This report summarises the evaluation conducted on the Heart and Lung Convenience Store, the pop-up science shop in Hammersmith open from 19 October – 1 November 2015. The pop-up shop was open to the general public from 12:00 – 18:00 each day and was located within a shopping mall in Hammersmith. Visitors to the shop could take part in a number of drop-in activities, watch shop demos presented by scientists, speak with scientists or explore the other installations, objects and displays by themselves.

The pop-up shop project was produced by the Curious Act at the National Heart and Lung Institute (NHLI), Imperial College, and was funded by the Wellcome Trust. Full documentation of the project can be found at www.imperial.ac.uk/convenience-store.

Three guiding themes were the basis for the project and directed the content for the shop:

- Primary umbrella theme for the content of whole project - Current biomedical research is bringing together advances in cardiovascular and respiratory medicine, novel diagnostic tests, targeted treatments, big data and new technologies to develop accessible, fast, personalized and convenient heart and lung healthcare for the future.
- Secondary umbrella theme is found throughout the project through the direct involvement of, NHLI scientists - Scientists and clinicians at the National Heart & Lung Institute (based in the London boroughs of Hammersmith & Fulham, Kensington and Chelsea, Westminster & Hillingdon) are investigating many areas of cardiovascular and respiratory research that may lead to applications for future heart and lung healthcare.
- Tertiary umbrella theme is found throughout the project - The research, development and implementation of future heart and lung healthcare will involve the complex interplay of many different factors within the body (in cells, organs, and bodily systems), within individuals (making lifestyle choices, decisions about treatments and taking up new technologies to monitor health and engage with healthcare systems) and within society (in policies, practices and ethical frameworks).



Visitors interacting with the Microbe Mix activity within the pop-up shop

Event aims and objectives

(Points which are a particular focus for evaluation are indicated in bold)

Audience

- The project will directly engage approximately 2520 people, an average of 180 per day (or 30 per opening hour) over two weeks. Plus approximately 200 people for special events outside of general opening hours.
- **The majority of the audience will be people who live or work in the local area, passing through the shopping centre.** The daily programme of Shop Demos will be designed to encourage people to drop-in over lunchtime or directly after work.
- In total, online content and the audio features on Fun Kids radio will reach a secondary audience of at least 100,000 over the duration of the project.

Outputs and Outcomes

- A pop-up shop in Kings Mall, Hammersmith themed around future heart and lung healthcare, open for two weeks in October 2015
- A suite of re-usable interactive activities and installations, exploring cardiovascular and respiratory science
- A programme of events, about future heart and lung healthcare, targeting different audience groups
- Online content promoting, complementing, documenting and evaluating the project including films, audio, photographs, social media and web pages
- Approximately 2720 audience members reached through live activities and events
- Approximately 100,000 audience members reached through radio, online content and social media
- A 'Pop-Up Science' manual to disseminate our learning about using pop-up shops as a format for public engagement with science
- Local, national and online press coverage of the project
- **Increased capacity for interdisciplinary working in all participants, potentially leading to future collaborations and partnerships**
- **Increased public engagement experience and expertise for NHLI academics and researchers involved in the project, including the development of transferable skills (communication, collaboration, workshop/activity design etc)**
- **Increased audience awareness of, and interest and enthusiasm for, cardiovascular and respiratory research**
- **Increased audience awareness of the social, cultural and ethical issues of future heart and lung healthcare**
- **Increased two-way engagement between NHLI scientists and multiple and diverse audiences, publics and communities**

Evaluation methods

Four key areas were identified as questions of importance for the evaluation to focus on, based on the event aims and objectives above:

- **Is the event reaching the local community?** Gaining an understanding of the audience and whether they were visiting from the local area.
- **Is the event reaching an audience not already engaged with science?** Is the shop reaching those visitors who would not normally go to other more traditional science public engagement events?
- **Is a pop-up shop an effective format for public engagement with science?** In particular, does the shop facilitate two-way public engagement.
- **What are the impacts on the collaborators involved?** Evaluate the impact of the event on the collaborators and NHLI scientists involved.

In order to investigate the research questions and provide data relating to the event aims, the following evaluation methods were used:

1. Pre and post surveys with collaborators

Surveys were sent to collaborators to assess the impact of participating in the pop-up shop on the scientists, designers and other collaborators involved. Questions were designed to explore individuals' motivations and concerns before participating, and collate their reflections and suggestions for improvement after the event. The surveys were constructed using an online platform (survey monkey) and links were sent to all collaborators two weeks before the shop opened (pre), and the week following its closure (post) via the project coordinator.

A total of 38 sets of responses were received for the pre-event survey and 52 sets of responses for the post-event survey. For the pre-event survey, 32 respondents were NHLI scientists, four were designers (two specified that they were games producers/designers), one was a shop assistant and one was an actor. For the post-event survey 44 respondents were NHLI scientists, 4 were MSc science communication students, 2 were designers/artists/engagement experts and two were scientists from other organisations.

2. Customer review card

Review cards were available in the shop and visitors were encouraged to leave their feedback by shop assistant staff. The aims of the review cards were to collate information about visitors, to see the extent to which the event reaches the local community who do not usually visit science events and to gain reflections on the event itself and the pop-up shop format.

A total of 172 customer review cards were completed by drop-in visitors to the shop, a further 19 were completed by students attending a workshop. This made a total of 191 completed cards.



Customer review cards used as part of evaluation methods

3. Observations

Observations were conducted to explore the effectiveness of the pop-up shop as a format for engagement and to document the types of behaviours taking place within the shop. In particular, it was noted which aspects seemed more or less popular or successful with visitors. Observations were carried out by shop assistants at intervals throughout the day, using observation prompts. A focus visitor (or in some cases two visitors) were chosen for each period for more detailed observation to collate data on typical visits, as well as more general notes on the shop as a whole. In addition, counts of visitors entering the shop were recorded to get an idea of how many people entered, and the peak times in the shop.

A total of 23 observations were carried out, totalling 5 hours and 35 minutes of observations. A total of 25 focus visitors were observed during these observations.

4. Snapshot interviews – for audience information

Short interviews were conducted to explore visitors' usual or previous engagement with science activities and determine how local they are to the shop. These were designed to gain a better understanding of the true audience profile of the event, in a more balanced way than through other methods such as self-selecting feedback cards. Everyone in the shop at one particular time was interviewed until a total of 20 had been reached. Times at which the interviews are carried out were varied from day to day so as to get a range of timings (and hence perhaps audiences) throughout the two weeks.

Snapshot interviews (audience information) were conducted with 69 visitors.

5. Snapshot interviews – for highlights film

Short interviews were also conducted with visitors to the shop in order to collate their reflections on the shop as a format for engagement with science. Similar interviews were conducted with collaborating scientists to collate their reflections on their involvement in the event. Film crew members filmed short snapshot interviews with visitors from a range of ages, and scientists, using prompt sheets with questions. Visitors' films were introduced as 'review the Heart and Lung Convenience Store' and scientists were asked to 'tell us about your experience in the Heart and Lung Convenience Store'. Consent forms were signed by visitors appearing on film.

Snapshot interviews (highlights film) were conducted with 11 collaborating scientists and 20 visitors.

6. Postcode and demographic data from lottery game

As part of the heart and lung lottery game in the shop, visitors were asked to provide their postcode, along with age, and gender. The postcode data have been analysed to provide an indication of audience make up, where the audience was visiting from, whether they were living local to the shop or travelling from further afield.

Postcode and demographic data were collected from 472 visitors through the lottery game.

7. Visitor numbers

Visitor numbers were collected for each day of the shop opening, as well as for special events outside of normal opening hours. The numbers of visitors participating in different activities was also recorded, such as the Quality of Life factors activity. These numbers were analysed to give a picture of flow and audience participation in the shop.

A total number of 3088 individual visits to the shop were counted.

Findings

Overview

The pop-up shop was open from Monday 19 October – Sunday 1 November 2015. It received a total of 3088 visitors including those attending in the general opening hours during the day, and two special events (one school workshop and one evening reception). A further group of approximately 60 people attended two heart and lung themed pub quiz events held in the pub opposite the Kings Mall shopping Centre from 8pm – 10pm on each Tuesday of the shop opening. A mean of 217 visitors entered the shop each day during opening hours (a total of 3041), which was an increase on the 2014 pop up shop where the mean number of visitors entering per day was 188. The quietest day was Thursday 22 October (157 visitors) and busiest day was Saturday 24 October (319 visitors). The total number of visitors exceeds the target outcomes set at the start of the project of 2520 visitors to the shop.

Visitors completing the lottery game provided their age and gender and this data can illustrate the nature of the audience attending the shop. Visitors (n = 465 providing their age data) were a mean of 21 years old, with the youngest visitor aged 2 and the oldest 80. The mode age was 12 (32 visitors were this age). A focus visitor was selected for observations and ages noted – providing another source of data on the age of those visiting the shop. The average age of observed visitors (n = 25) was 33, with the youngest being 5 and the oldest being 80. The audience visiting the shop was clearly extremely diverse in terms of age.



Young visitors to the pop-up shop

Of those visitors participating in the lottery game and providing data on their gender, 274 were female and 198 were male. This suggests a slight female bias in the audience to the shop, or perhaps a bias in participation for the lottery activity. For the observation focus visitors, ten were female and fifteen were male, suggesting an opposite trend. Again, the data suggest a mixed audience to the shop.

Within the 23 observations conducted, 13 visitors were in the shop with their families – including children, parents and siblings. Eight visitors were visiting alone, and two with friends.

The pop-up shop received media write-ups on a number of online sites – for a summary see the Appendix. The pop-up shop project also involved a collaboration with Fun Kids digital children’s radio company, to make short radio features presented by NHLI researchers around the subject of heart and lung health. These were aired on Fun Kids radio station and made available as online content on www.funkidslive.com over the shop opening period. Evaluation from Fun Kids indicated that 254,000 children and adults will have heard the features during the four week broadcast period, and that during this time the web content had 1,183 page views with an average view time of 5.23 average minutes per page. These data hugely exceed the target outcomes set at the start of the project, of 100,000 contacts with the online content through Fun Kids.

To what extent did the pop-up shop engage the local community?

A new evaluation method added to this year’s strategy compared to last year, was a snapshot interview with audience members (n = 69) to gain more information about visitors attending. One line of questions in this interview was around how locally visitors lived to the shop and how they had travelled there, see Figure 1 for findings. The most popular way of travelling to the shop was walking, followed by bus, indicating that visitors lived close by to the pop-up shop.

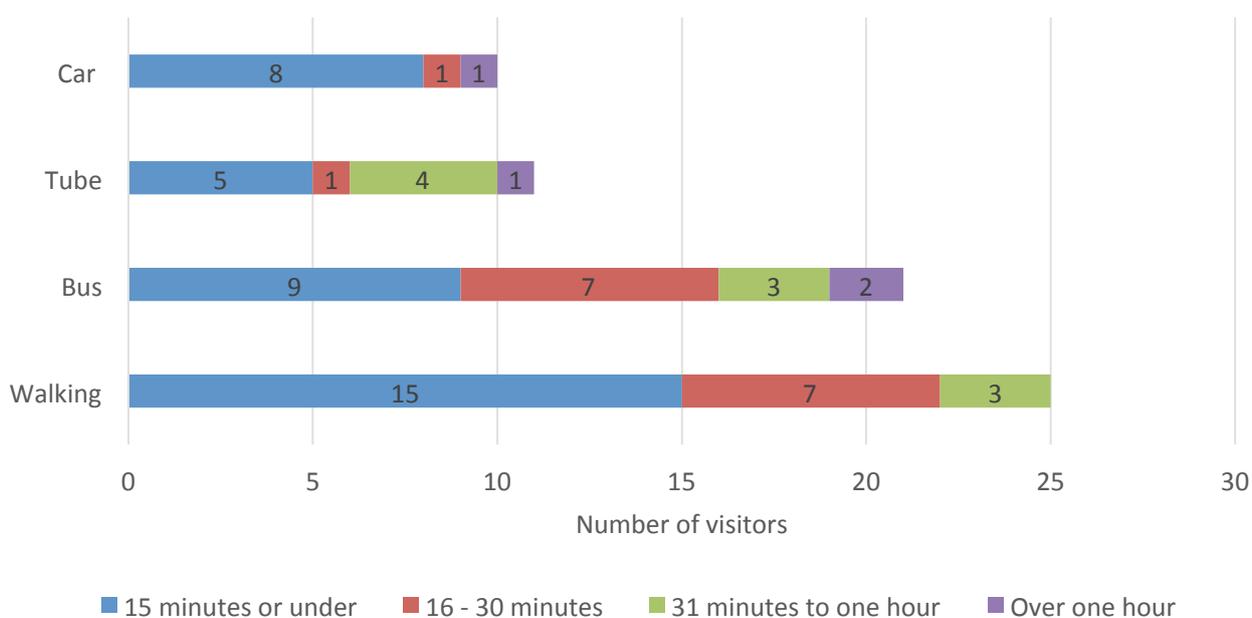


Figure 1. Ways in which visitors travelled to the pop-up shop, and length of journey (n = 69)

Visitors were also asked how long their journey had taken, as well as how they travelled, see Figure 1. For the majority of visitors their journey to the shop was 15 minutes or less (37 out of 69 visitors), indicating again that they were local to the shop itself. Where this was most pronounced is for those travelling by car or foot. Those visiting by bus and tube tended to have slightly longer journeys.

The **post code data** collected as part of the heart and lung lottery activity confirmed that the audience were visiting the pop-up shop from the close surrounding areas. A total of 407 visitors participating in the lottery game provided their postcode, of which 334 were from central London. The other visitors came from areas classed as Greater London for example Barking, Harrow and Croydon, or elsewhere in England including York, Oxford, Reading, Leeds and Bristol. Figure 2 shows the number of total visitors taking part in the

lottery game from each postcode area and clearly shows the majority of visitors were from the W postcodes, nearest to the Heart and Lung Convenience Store.

More specifically, the Heart and Lung Convenience Store was held in a W6 postcode. A total of 83 visitors came from the same postcode area as the Heart and Lung Convenience Store, and a further 142 came from adjacent postcodes. This equates to just over half (56%) those providing their postcode in the lottery game living within the immediate area around the shop.

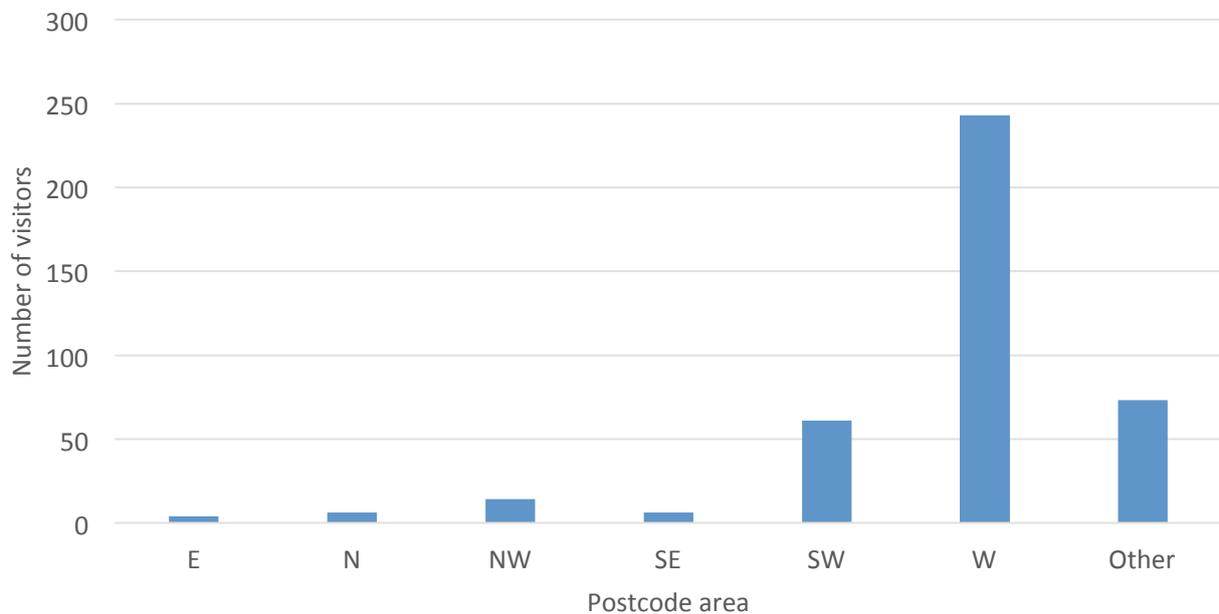


Figure 2. Number of visitors to the shop from each postcode area (n = 407).

When asked how they had found out about the pop-up shop, visitors again had mostly been walking past whilst shopping or going to work, indicating once more that most were from the local area. Figure 3 shows data on how visitors found out about the pop-up shop from the shop review cards (n = 166) and audience information snapshot interviews (n = 69).

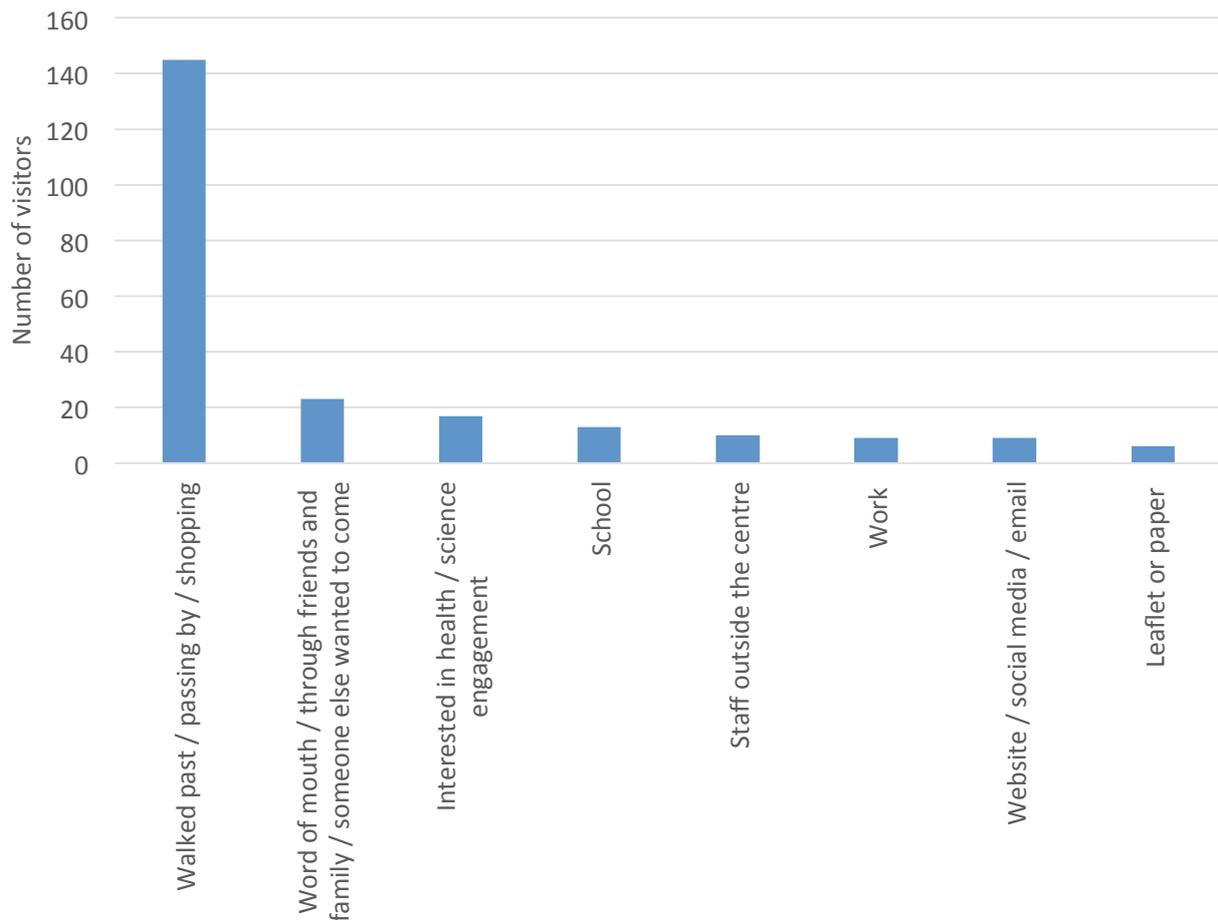


Figure 3. How visitors said they found out about the pop-up shop (n = 235).

The vast majority of visitors to the shop found out about it as they walked past. They were shopping in the mall, walking through the local area, or were at the food court and saw the shop. The next most frequently mentioned way of finding out about the shop was through word of mouth, visitors had been told about it by family or friends. These two main routes of finding out about the shop were also the same two most popular in last year’s evaluation. These findings again suggest that the shop had successfully engaged the local community, those using the space immediately around the shop, and had become a talking point amongst local family and friends. These data also suggest that the shop front was successful in attracting people to the shop who were walking past.

Reflecting the data from Figure 3, four visitors participating in the snapshot interviews for the highlights film also mentioned that they had been passing by¹, for example: *I was just passing by actually and it caught my attention.*

Other ways in which people found out the event were mentioned much less frequently than walking past or through word of mouth in the review cards and snapshot interviews summarised in Figure 3. Students who came to a workshop found out about the shop as part of the trip through their teacher. Other visitors mentioned having seen the ‘robot’ or ‘spaceman’ outside the shop. More traditional marketing methods such as leaflets and online communications do not seem to have been as successful as more ad hoc routes such as word of mouth. In fact, three visitors taking part in snapshot interviews mentioned that one improvement to the shop might be more advertising and publicity to encourage more people to visit.

¹ Even though this was not a specific line of questioning in the highlights snapshot interviews

To what extent were visitors those not typically attending science public engagement activities?

In engaging the local community, the pop-up shop also aimed to engage those who may not traditionally visit science events, festivals or museums. Review cards asked whether visitors had attended any science related events in the past 12 months.

Of the 191 visitors completing review cards, 14% said that they had not been to any science-related events in the past 12 months, 32% had been to at least one, and 54% left this question unanswered. These data suggest that the pop-up shop was partially successful in engaging those who do not usually attend science related activities.

The figure of 14% of visitors not attending any science related events in the past 12 months might be thought of as a bottom-end figure, the true figure for the whole audience is likely to have been higher than this due to potential bias in those filling out the review cards. Not all visitors to the shop filled out review cards and that there is the possibility of a bias in those that did. For example, it may be that visitors who had previous experience of public engagement events and science activities, who were perhaps more comfortable in the space and used to providing feedback, were more encouraged and motivated to fill out the review cards. Those who had little or no experience with similar events may not have been as likely to fill out the cards and were therefore underrepresented. In addition, it is not possible to determine how many of those 54% leaving the question unanswered also had not visited any of the options.

Of the events visitors reported having attending in the past 12 months (n = 61), science museums were the most popular, see Figure 4 below².

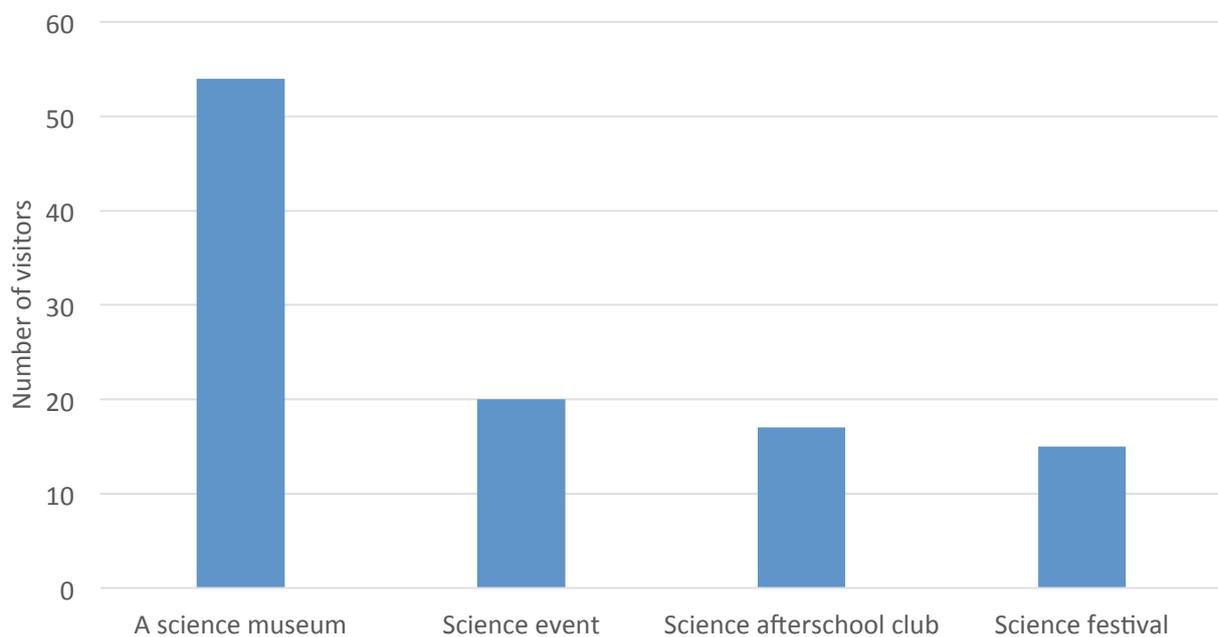


Figure 4. Science related activities attended by pop-up shop visitors (n = 61) in the past 12 months.

Similarly, in the audience information snapshot interviews, visitors were asked whether they had ever attended a science event or space before. Of the 69 visitors interviewed, 61 had visited a science museum³, 13 a science afterschool club, 13 had attended a science event, five had been to a science festival and five visitors said no they had not been to a science event before.

² Some visitors had visited more than one science activity in the past 12 months.

³ The location of the shop in Hammersmith is only four tube stops away from the Science Museum London.

The visitors in the audience information snapshot interviews were asked about their experience in total, rather than only in the past year such as the visitors filling out the review cards. This meant that many interviewed also spoke about how long ago they went to these science events. Eighteen visitors, all of whom attended science museums, talked about when that last was. For eight visitors they last visited a science museum over a year ago, with some saying 'many years ago' or 'three years ago'. Eight visitors had attended a museum within the past year, and a further two had visited within the past month. So although many visitors had visited a museum before, the actual frequency with which the audience took part in these events was very mixed.

Visitors were asked on shop review cards how they felt the pop-up shop compared to other science events they had experienced. The most frequently mentioned themes were: the pop-up shop was more fun and interactive (10) and the pop-up shop was as good as other activities (general) (8). Five visitors felt that you could not compare the pop-up shop to other science events as it was a unique experience. Five people said that it was good that there were people to interact with in the pop-up shop. Other comments included that the pop-up shop was informative (4), accessible (3), smaller and more intimate (3), that there were fewer children and it was less busy (3).

Audiences were also asked in audience information snapshot interviews whether they had attended anything similar to the pop up shop before. The vast majority of visitors said no, they had not, see Figure 5, again suggesting that the pop-up shop was reaching a new type of audience.

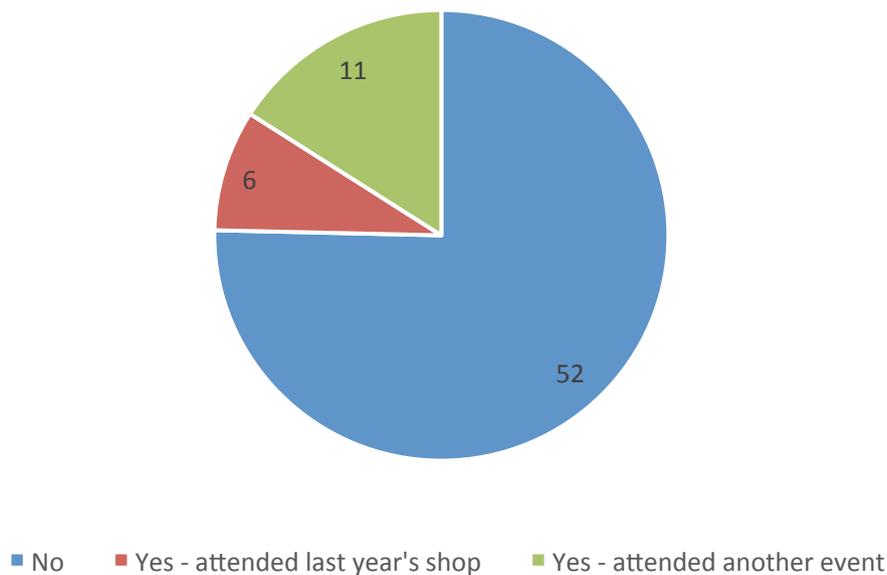


Figure 5. Have visitors attended anything similar to the pop-up shop before? (n = 69)

Five people who said that they hadn't visited anything similar before, did say that they had seen the pop up shop last year though, but had not visited until this year. Other events attended included science festivals, events at the Dana Centre, science demos and activities run and organised by their schools.

Visitors were asked in audience information snapshot interviews, on a scale of 1-10, outside of work or school how much do you engage with science in your free time? (where 1 is not at all, and 10 is engaging all the time (e.g. visit museums, watch science TV programmes, read about science in the news)). Of the 67 visitors responding, the average rating was 6 out of 10. This suggests that visitors were moderately positively engaged in science already.

Reflections from the collaborators echo some of these findings from the audiences. When asked to comment how the audiences responded to the location of the pop-up shop within the shopping centre, collaborators felt that the location was crucial in attracting an audience who were not already engaged with science (16 respondents): *[The shop] attracts a very different audience. Everyone I spoke to was a passer-by and I suspect wouldn't attend a science festival.* Interestingly, one collaborator wondered whether the fact people were passing by, shopping or doing other errands, meant that they were less keen on spending more time in the shop and engaging with the activities. Eleven collaborators also spoke about the visitors' general positive reactions to the location of the shop, and five said that visitors had been surprised to see the pop-up shop within the shopping centre.

Was a pop-up shop an effective format for public engagement with science?

Customer reviews

Reviews of the pop-up shop were collated from visitors using customer review cards (n = 191). Feedback about the shop was extremely positive from visitors. The average rating of three aspects of the event, out of a total of five stars, was as follows (with scores from last year, 2014, in brackets for comparison):

- Customer service: 4.9 (4.8)
- Shop design: 4.5 (4.5)
- Overall experience: 4.8 (4.7)

Open responses written by visitors on the review cards revealed the reasons behind such positive ratings. Comments have been categorised into similar themes, and the frequencies of mentions presented below in Figure 6⁴.

⁴ Some visitors commented in more than one area and some did not comment at all.

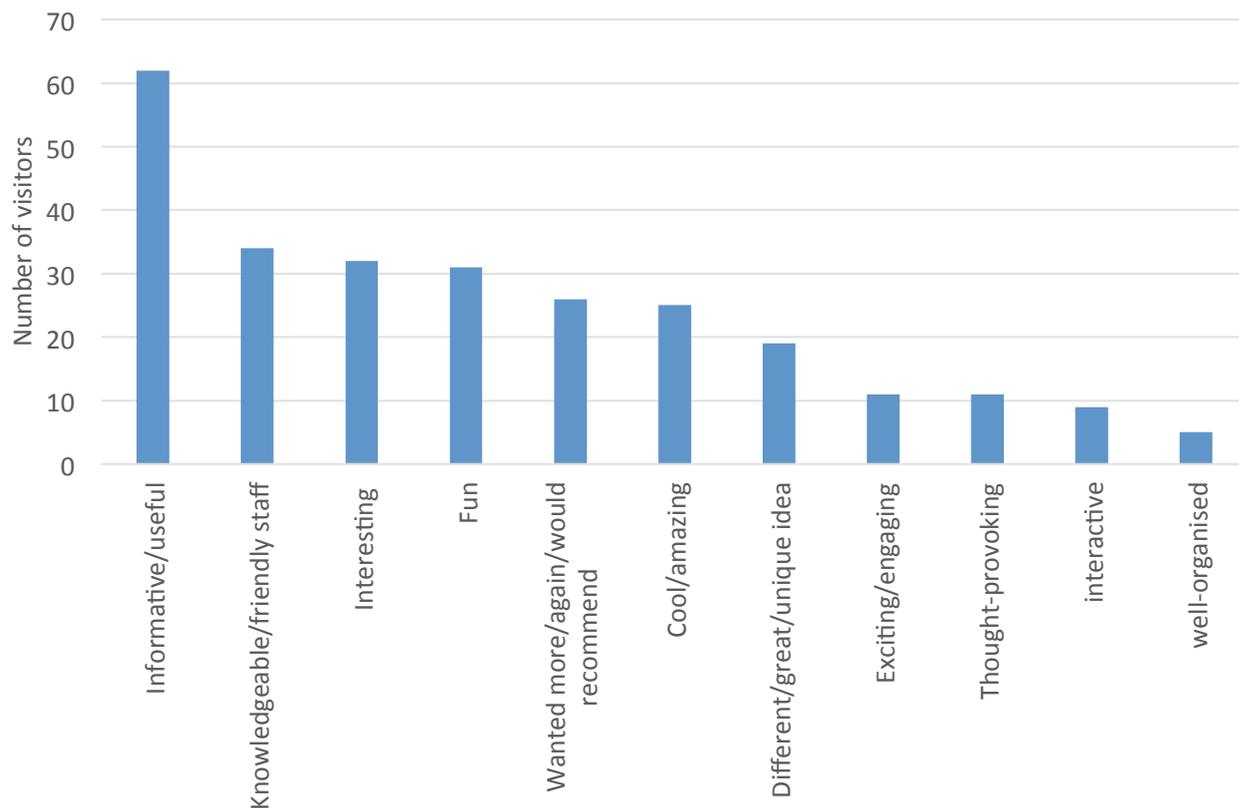


Figure 6. Comments made about the shop in the open section of visitor review cards (n = 265).

Example visitor comments for a sample of the categories in Figure 6 are provided below:

The shop was informative/useful:

Fantastic experience. Learnt that I was allergic to grass & dust mites & how to deal with this knowledge allows you to have some control and choice over your condition. Many more events like this PLEASE

The shop included knowledgeable/friendly staff:

Expert advice from really enthusiastic professionals. The insight they provide is brilliantly conveyed! You should have more memorabilia the public and youth can take home!

The experience was thought-provoking:

Absolutely brilliant!!! great to show 3D printer and making you think instead of just high st shopping is just what we need

Visitors wanted more experiences like this:

Our experience was brilliant! Wish we had this all year long with various science disciplines. Thank you!

Many visitors mentioned in the review cards that the shop had been informative. Similarly, in the snapshot interviews, 12 visitors said that they had learnt something as part of their experience in the pop-up shop. For example, one younger visitor said:

Well you learn quite a lot about bacterias and what lives inside you...It's a fun way to learn about science so it's not boring where you have to sit down, it's kind of like you do it yourself.

Visitors in the snapshot interviews also spoke about how much they valued the interactive nature of the pop-up shop (5 visitors):

I thought it was really interactive and the best way to get people engaged, but yes quite a lot to do, quite varied, it's quite big and quite a lot of different things going on rather than just one thing.



Visitor and scientist talking in the pop-up shop

Engagement behaviours within the shop

As part of the review cards visitors were asked to indicate what activities they had taken part in during their visit to the shop. From a total of 191 respondents, 76 said that they had spoken to a scientist, 72 had asked a question, 59 had participated in a workshop or watched a shop demo and 55 played the heart and lung lottery. These figures give an indication as to what were the most popular activities within the shop and the proportions of total visitors that are engaging with different activities.

Observations were also carried out, which reveals how visitors engaged with the shop and its content. Visits were on average 13 minutes in length, ranging from 3 to 40 minutes (n = 21).

For most observations, the total number of visitors entering the shop during the observation period was noted, in order to provide context about how busy the shop was over a number of times and days. On average during each observation period, 11 visitors entered the shop (n = 17 observations). These data indicated an average of one visitor entering the shop every 1 minute 30 seconds. This exceeds the target outcome set before the project began of 30 visitors entering per hour.

Over the total observation period, of those visitors within the shop, the following activities were observed (in order of most popular, with visitors observed in brackets):

- **Looking at the installations or browsing the shop** (n = 87): Includes looking at 3D printer or products and asking scientists nearby about them, completing the voting installations (the heart and lung healthcare vision of the future vote, the quality of life installation and the 'what do you

think?’ voting continuum) and discussing amongst group. The 3D printer, voting installations and medicine cabinet were the most popular aspects of the shop, whereas the products were less popular.

- **Playing the heart and lung lottery** (n = 76): observed behaviours included smiling and laughing whilst interacting, talking to scientist/shop assistant about it. People were particularly interested in the air quality in Hammersmith, and the score board, although sometimes the game aspect dominated over engagement with the science content, especially for children.
- **Watching a demo or talk** (n = 66): visitors asked questions and answered those from the scientist, were interested in the demo props such as heart specimens, smiling and asking when the next talk might be. Visual aspects of the talks were popular, such as the heart specimens or models, as well as when scientists stood in front of the bench and moved around.
- **Talking to a scientist or shop assistant** (n = 61): two-way dialogue was observed in these interactions with visitors and scientists asking questions, topics of conversation included how to improve lung function, research funding, future treatments and about technologies used.
- **Other behaviours** (n = 10): included a skype conversation with a scientist, and completing evaluation.



Visitor browsing the products within the pop-up shop

A focus visitor was selected for each observation, and behaviours, reactions and actions were noted for this visitor in detail. Figure 7 shows the breakdown of different behaviours for each observed visitor. Visitors were selected at random as they entered the shop, and observed for the duration of their visit. Focus visitors were involved in a range of activities when they were being observed, so the relating data shows overall patterns of behaviours over a whole visit. This provides an overview of the types of behaviours and engagement within the shop, and an indication of frequency.

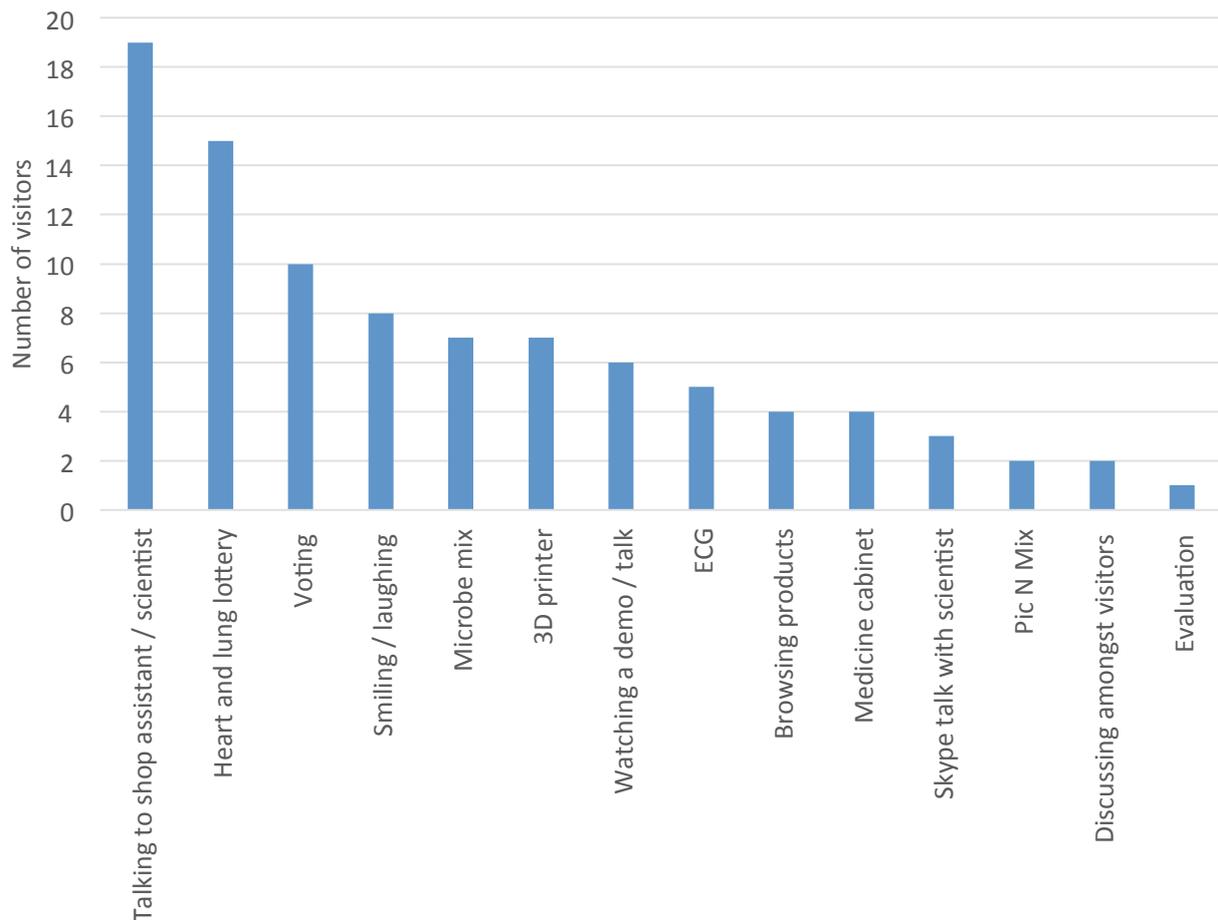


Figure 7. Behaviours observed for focus visitors (n = 25) throughout their experience in the shop.

In general, and as is indicated by Figure 7, visitors tended to speak to shop assistants or scientists early on in their visit to the shop, to learn a bit more about the shop and what to do there. They often started on the voting activities before moving onto others such as the 3D printer or watching a demo. Visitors returning to the shop tended to go straight to the heart and lung lottery, sometimes bringing back friends or family members to show them this.

Engagement with the various activities within the shop was high, with many opportunities for visitors to get involved and contribute their own thoughts or comments. For example, 540 people voted on the heart and lung healthcare vision of the future installation and 78 responses were collated under the ‘tell us why’ activity asking people to explain why they thought the vision of the future they voted for was the most important. 84 responses were contributed for the ‘Quality of Life’ activity, with 2111 gold star and black spot stickers added to these (visitors were given three stars and three spots each).

Reflecting the data from observations, the visitors participating in the snapshot interviews also talked about playing the heart and lung lottery (10 visitors) and talking with scientists within the shop (9 visitors). For example:

- *[What would you highlight to others?] The really fun ball game where you had to catch white balls which represent good air and grey balls represent pollution in the world.*
- *Mainly just talking to people, that’s all I’ve been doing is just talking to different people and asking questions and learning a bit more... That’s what I think’s the main thing, once you get in here...I think having people who are scientists themselves to talk to, it’s quite interesting to talk, just generally talking to them you just find out all sorts of bits and pieces.*

Within the conversations they were having in the shop and questions they asked, some visitors were particularly motivated and most interested in their own health issues or those of their family (4 visitors mentioned in snapshot interviews), for example:

I was asking a lot about asthma, my four sons have mild asthma and it was quite interesting to learn a bit more about that and more about what the future holds as well.

Three visitors mentioned that they would like to have something to take away from the shop with more information.

One collaborator participating in the snapshot interviews described the in-depth conversations she was having in the shop with visitors:

I've had a variety of conversations, I've had a fantastic conversation with a young daughter, a young lady and her father and she's very keen to go on to be a scientist and she was asking really very interesting and insightful questions about the science we were doing, how did we grow the cells that we brushed from the airway of the lung and then I've gone to the other extreme of having someone just wanting to talk a little bit about their disease, they were being treated at the Royal Brompton Hospital which is next door to one of the campuses of the national heart and lung institute, what our research meant for them.

Reflections from collaborators on audience engagement

Scientists and other collaborators were asked in post-event surveys for their reflections as to how the audience responded to different aspects of the event.

The majority of collaborators felt that the interactions they had with visitors in the shop had been **two-way and dialogic in nature** (29 respondents). Where collaborators did not feel that the conversations were truly two-way this was due to the discussions being driven by the experiences and questions of the visitor, and the scientists or staff themselves not asking questions (4 respondents). One respondent mentioned that the heart and lung lottery, whilst good at attracting attention and interest, did not facilitate two-way discussion as many visitors were focused on playing the game rather than engaging with the content behind it.

The following collaborator talks about the dialogue they shared with visitors:

Mainly visitors were asking me questions about the exhibits, and then wider topics. I certainly got into interesting conversations where people shared their experiences or things they had read and I shared my thoughts based on knowledge of research

And this collaborator spoke about the range of questions they were asked by visitors:

Most interactions (other than directly engaging people by handing out voting tokens / manning the ball machine / or in a shop demo) were prompted by visitors. They ranged from 'Are these real?' for the shop products, to 'Why are you here?', 'What's this all about?', 'Who are you?', 'Who funds you?', 'Are you only here for two weeks?' (and 'Are you recruiting?' from a smartly dressed group with CVs in hand!)

In relation to the **health content of the shop**, collaborators felt that the audience had been positive towards this (18 respondents mentioned the general positive reaction). Twelve respondents said that the visitors had been very interested in the content, and eight echoed the challenges mentioned in that the visitors had wanted medical advice or information about their own conditions. Collaborators felt on the whole that the health content was very easy for visitors to relate to, and visitors could draw from their own experiences in conversations.

In relation to the **science research on show**, collaborators felt that visitors responded generally in a very positive way (21 respondents), using words such as 'inquisitive', 'curious' and 'interested'. However, two collaborators did mention that visitors were not as interested in this area of content as they had been

expecting. Collaborators commented that the key areas attracting visitors' interest was where future medicine or direct health applications of research were discussed (4 respondents) or where there was a direct relevance or connection to the visitor, for example in the allergy or peak flow workshops (3 respondents). Other collaborators noted the difference between engagement of children and adults, with adults being more interested in the science research (2 respondents) and commented that many visitors were asking questions about the research (2 respondents). One collaborator describes a particular incident where a visitor ended up being extremely engaged with the science research content:

A retired lady, who came in because she is part of the campaign to save Charing Cross Hospital A&E and wanted to talk about that, became captivated by the science. She started out asking about NHS, my links with it, funding etc. and ended up staying over an hour, during which time apart from viewing every installation she got me to take her through every microorganism mentioned in the microbe pick and mix, what we knew about them, what they could do, what we didn't know about them.

When asked about how visitors responded to the **layout and design** of the pop-up shop, and the theme of the convenience store, collaborators had mixed opinions. Whilst many felt that the visitors responded positively to the shop design and layout (18 respondents), some also felt that visitors were confused by the convenience store theme and in particular the products (10 respondents), for example: *Some confusion that there was nothing to actually 'buy' and the items in the shop were props.* There were also mixed feelings about the layout of the shop: whereas some collaborators felt that the visitors found the space too large and empty and needed more tables and seating (3 respondents), others thought that the space aided visitors to browse the shop and have more conversations (3 respondents), for example:

Many liked the clear design and layout of the store. One individual, who had visited the Repair Shop in the previous year, had stated he preferred this year's layout as things were more spaced out. He found it difficult to 'browse' the shop last year as everything was close together, e.g. the noise from talks/demos overwhelmed the entire shop. He was much happier that this did not happen this year.

Collaborators were also asked how they thought the audience responded to **the 'pop-up' and temporary nature of the shop**. Whilst 12 collaborators felt that the audience responded positively to this, with three collaborators even feeling that it worked better than being longer-term because it encouraged people to visit then and there, 12 collaborators said that the visitors they had spoken to had wanted the shop to be open for longer or to be touring to new locations. For example:

A couple of people told me that they thought it was a really good use of an empty shop, towards the end some visited briefly intending to come back the following week, but were disappointed that it was only there for two weeks.

What were the impacts on the scientists and collaborators involved?

Previous experience with public engagement

The Heart and Lung Convenience Store was the first public engagement event some of the collaborators had taken part in (pre-event survey – 14/36 said they had not participated in public engagement before). Previous experience of public engagement, mentioned in the pre-event survey, came predominantly from the Imperial festival (11 collaborators) but also from events held at museums (7 collaborators), other events at festivals and open days (10 collaborators), work with schools (4), the first pop-up shop (4) and Einstein's Garden at Green Man festival (2).

Before the event, collaborators were asked to what extent they agreed with the statement 'I feel confident in delivering public engagement with science events' (on a scale of 1-5 where 1 is absolutely disagree, and 5 is absolutely agree). The average rating was 3.9 (n = 36). Collaborators were also asked to what extent they agreed with 'I feel that I have the skills I need to create successful public engagement with science events', with the same rating scale. The average score was 3.75 (n = 36). Two quotes from collaborators are shown to provide some illustration around how collaborators were explaining and elaborating on their ratings:

- *I've run events before, but only scientific conferences. The skills to communicate a message with clarity are taught only within a very limited range of media (conference talk, poster, possibly teaching) and are only marginally useful for creating a public engagement event.*
- *I think it's one thing to show our research but this is entirely different in getting the public to think about science*

In the post event survey, collaborators were asked about their **self-perception around public engagement**. This data provides an insight as to how experienced and confident the collaborators felt about public engagement activities following the pop-up shop, see Figure 8. The involvement in the pop-up shop may have contributed to these feelings as well as prior experience.

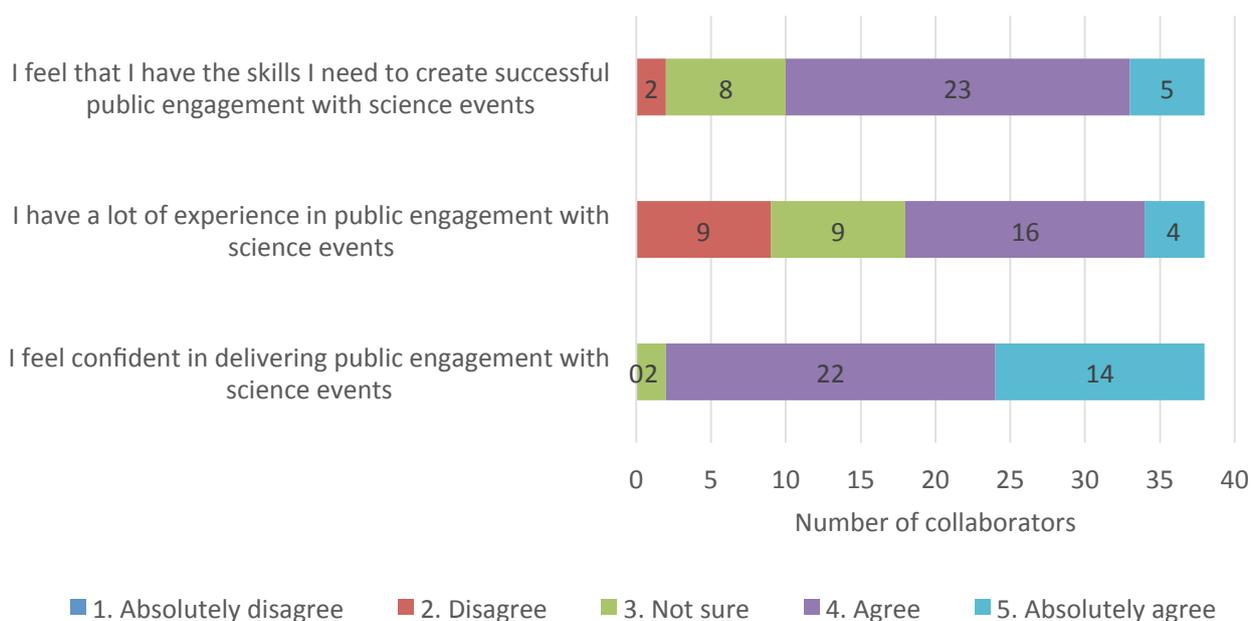


Figure 8. Collaborators' self-perceptions around public engagement with science following the pop-up shop (n = 38)

The findings from the post-event survey suggest that collaborators finished the event feeling confident in public engagement and with some happy that they have the skills necessary to get involved in projects. As the pre-survey results suggested as well, collaborators felt that they could have more experience with public engagement with science events, and this was true even after the pop-up shop.

One collaborator commented on their increased confidence:

While I am more confident having participated. I think there is a lot more to learn and a lot of improvement that could be made if a training system could be devised.

Collaborators were also asked in the pre-event survey whether they had been involved in similar collaborations between scientists, artists and engagement professionals before: 17 had, and 19 said that they had not. One comment from a scientist exemplifies how the scientists involved felt that collaboration with arts and engagement professionals helped make their work more accessible and interactive:

I worked with an artist and a science communicator to develop an installation. Great fun, particularly as we attracted under 5s and their parents who had brilliant comments.

In a similar way, the artists involved felt that collaboration with scientists provided an interesting and exclusive basis for their work, and they felt that their challenge was to make the messages as accessible and engaging as possible:

This has become a favourite area of work for me in recent years. It is fascinating to meet with scientists and researchers and discuss their interests and daily work. This is a closed door to most people and having a glimpse inside is always enlightening. Members of the public are genuinely interested in science, unfortunately technical jargon is often a barrier to understanding and the mainstream media often does not take the time to explain concepts clearly.

Collaborators' expectations before the event

Collaborators were asked about **what motivated them to become involved** in the Heart and Lung Convenience Store in the pre-event survey. The most popular response was around feeling that it was important to inform and engage the public in these issues (11 respondents), for example:

This particular action is undertaken to benefit others and play a critical role in promoting education. Thus I think it will be a great opportunity to be part of such an interesting event and share my knowledge with people who are willing to find out a little bit more about science.

Other areas which had motivated collaborators to become involved included that it was fun and enjoyable (8 respondents), that it would help their work including getting more experience of these kinds of events (8), that the format sounded unique or different (6) and that they had been involved in or encouraged by the success of the shop last year (4). Two researchers noted that public engagement is useful to mention on grant funding applications, one said that they had relevant previous experience, one mentioned collaborations with scientists had interested them, and another mentioned that it had been Ellen who encouraged them to be involved.

Before the event, most of the collaborators were **looking forward to** talking to the public visiting the shop (18 respondents), hearing their questions (4 respondents) and seeing their reactions of engagement and interest (8 respondents). Four collaborators were looking forward to seeing how the shop works in practice, three were looking forward to their workshops and three were looking forward to seeing the diversity of visitors to the shop.

Before the event, collaborators were also asked about their **concerns before getting involved in the project**. Ten said that they had no concerns. Seventeen collaborators were concerned about the amount of time participation would require, and in particular alongside other elements of their workload: *Shortage of time, need to write grants and papers*. Three collaborators were concerned about not knowing very much about the audience, three were worried about how the shop would work in practice, two were concerned about communicating scientific concepts clearly and a further two felt nervous.

There were no main concerns relating to delivering the pop-up shop arising repeatedly amongst collaborators before the start of the event, but some collaborators did mention things they were worried or nervous about beforehand. Of the most frequently mentioned concerns: six collaborators were concerned that there would not be enough visitors to the shop, four were concerned about the questions the audience might have, three were concerned about reactions to the shop and a further three collaborators were nervous that they would not be able to communicate to the appropriate level for the audience. One of the scientists taking part in the snapshot interviews also spoke about how she was nervous about the visitors' questions:

I admit to being quite nervous about it before we came, I do some teaching at my children's school and the general public can ask quite random questions, but I have to say I've really enjoyed today, it's something I'd do again.



Visitors and scientists taking part in a shop demo

How collaborators rated their experiences

Feedback was also collated from collaborators following the event to explore their perceptions of the pop-up shop. Overall collaborators were positive about their experiences, see Figure 9.

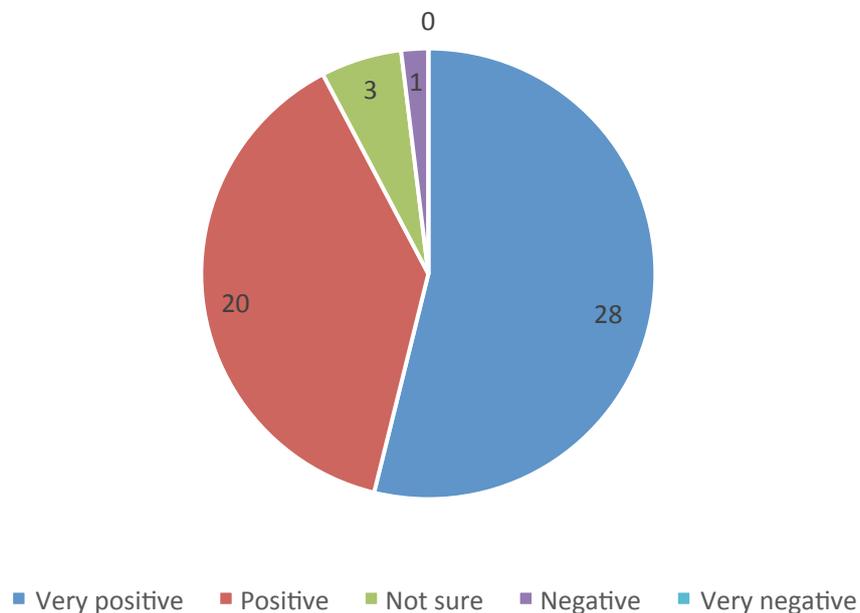


Figure 9. How collaborators rated their overall experience of being involved in the pop-up shop (n = 52)

The overwhelming majority of the collaborators were extremely positive about their experiences. The one 'negative' response related to technical problems during the activity:

Unfortunately, the wifi signal was so poor that any useful discussions in the skype the professor sessions were severely hindered. This was despite massive efforts on Ellen's part and sustained good humour throughout- she couldn't have tried harder.

Compared to last year, a higher number of collaborators rated their experience as ‘very positive’ (28/52 compared to 17/48 last year).

Collaborators participating in the post-event survey rated the **most rewarding aspect** of their experience as to do with the interactions with the audience members – all 41 respondents to this question mentioned this element. For 12 respondents the general interaction was most rewarding, whereas 11 mentioned the interest and enthusiasm of the audience they spoke to. Six found the diversity and range of audience most rewarding, particularly interacting with those who would not normally engage with science. Four respondents described how ‘seeing the penny drop’ and aiding the development of understanding had been their highlight, and four said that interactions with children had been most enjoyable.

All 11 scientists involved in the snapshot interviews also mentioned the interactions with visitors as something they had enjoyed – nine in particular spoke about the dialogue they had with the audience and the questions they were receiving. For example:

I’ve really enjoyed it as well, it’s nice to speak to people who otherwise maybe don’t spend too much time thinking about science to be honest but then to ask us questions about what we do and what we think and why it’s important so it’s been quite enjoyable.

Five scientists also spoke about how the visitors were keen to speak about their own health issues as a key to the interactions.



Shop staff member and visitor talking within the pop-up shop

Collaborators found the **most challenging aspect** of the experience the confusion with audiences around whether they could receive medical advice or treatment at the shop (8 respondents). Many visitors had thought that the shop and the scientists working there would be able to provide medical diagnoses or treatment, or that you could buy products at the shop. One visitor participating in the snapshot interviews also mentioned this confusion:

I thought it was really interesting, it wasn't what I expected when I came past before it opened, I thought it was going to be more like a shop selling, I thought it was connected with the science museum shop and it was going to be like little products but it was slightly different from what I anticipated.

Other popular challenges cited included discussions around difficult topics or issues (6 respondents), pitching information at the right level for the audience (6 respondents), and attracting audiences to the shop (5 respondents).

Self-reported impacts on scientists

Collaborators were asked about how their experience with the pop-up shop had impacted on their ideas about public engagement. Whilst the majority of collaborators responding to this question said that it had a positive impact on their ideas, two said that their ideas were unchanged and that they remained supportive and positive about public engagement.

Nine collaborators felt that the experience had a general positive impact on their **ideas about public engagement**, and ten felt that their experience with the pop-up shop had led them to want to do more public engagement. Six respondents felt that the pop-up shop had raised new challenges about public engagement which they had not previously considered, although many were positive about the challenges posed and how they had been prompted into thinking about new ideas. Six respondents mentioned that the pop-up shop had broadened their ideas about the diversity of engagement approaches that could be used, for example:

It's been very positive and made me think about the difference between 'engagement' and 'explanation' and the fact that they are different / we probably need different approaches for each.

Six said that the pop-up shop had made them see how important public engagement is, for example:

I have previously been involved in public engagement events before and it has reaffirmed my belief that getting out into the community and explaining one's science in a manner that those without detailed knowledge is increasingly important.

And finally, four respondents said that their experiences had led them to be more enthusiastic about public engagement, three mentioned how rewarding it was, and two said that the experience had led them to have a better understanding of their audiences.

Similarly, in the snapshot interviews, scientists also spoke about how their ideas had changed and the pop-up shop had led them to be more enthusiastic about public engagement, for example:

Really good, if I'm honest I was hesitant at the start because one, is it going to be too much work on my part and two is it going to be too much time out of my research but actually it hasn't been at all, it's been fantastic and I've thoroughly, thoroughly enjoyed it, this is my second session and it's been great so I'll definitely do it again, it has changed my mind on public engagement

When asked about impacts on their **views around collaboration between artists, researchers and engagement professionals**, again most collaborators reported a positive change in the post-event survey. Most said that the experience had been positive and rewarding, and had worked well (16 respondents). Five said that collaborations such as this were very important for communication and enabling new ways of thinking about making science accessible, and four said the experience had led them to see more clearly the benefits of such collaborations, for example:

Thinking about and implementing appropriate metaphors for research really means you have to consider what you're doing deeply. I find that invaluable for research ideas, hypothesis generation, explaining research to other groups of people, whether that's the public or grant reviewers. The different experiences and knowledge of artists is invaluable in stimulating this.

Five respondents said that the experience had reiterated and reaffirmed what they already thought about the importance of such collaborations, two respondents said that they had not changed their views, and one person said that the collaboration had turned out better than they had been expecting.

Collaborators were asked whether their experiences as part of the pop-up shop had impacted on how they **thought about their everyday research and work** or provided them new ideas. Many collaborators, although positive about the experience in terms of their attitudes to public engagement, felt that it had not impacted on their everyday work or research yet (16 respondents). However, six felt that it had provided them with new ideas for engagement, and five said that it had encouraged them to do more public engagement. Four respondents talked about how the interactions as part of the shop had led them to consider new research directions or ideas, for example:

I found meeting patients incredibly useful. Despite working in translational research I have no patient contact at all other than via a sample in a pot. I met a number of people who have asthma, was aware of disease heterogeneity, but didn't actually appreciate it until all these different people told me of their experiences. I hope to incorporate aspects of the heterogeneity into studies, rather than ignoring or looking only at the most severe patients who may not be very representative of many people with asthma.

And three respondents said how they had a renewed appreciation of how important public engagement was, as a result of participating in the shop:

Yes, it made me realise how important it is to engage with public because at the end of the day these are the ones we are conducting our research for

One respondent mentioned how the experience had provided them a renewed appreciation of the importance of their own work and research.

Finally, collaborators were asked whether they would like to be involved in another pop-up shop in future. The results are shown in Figure 10.

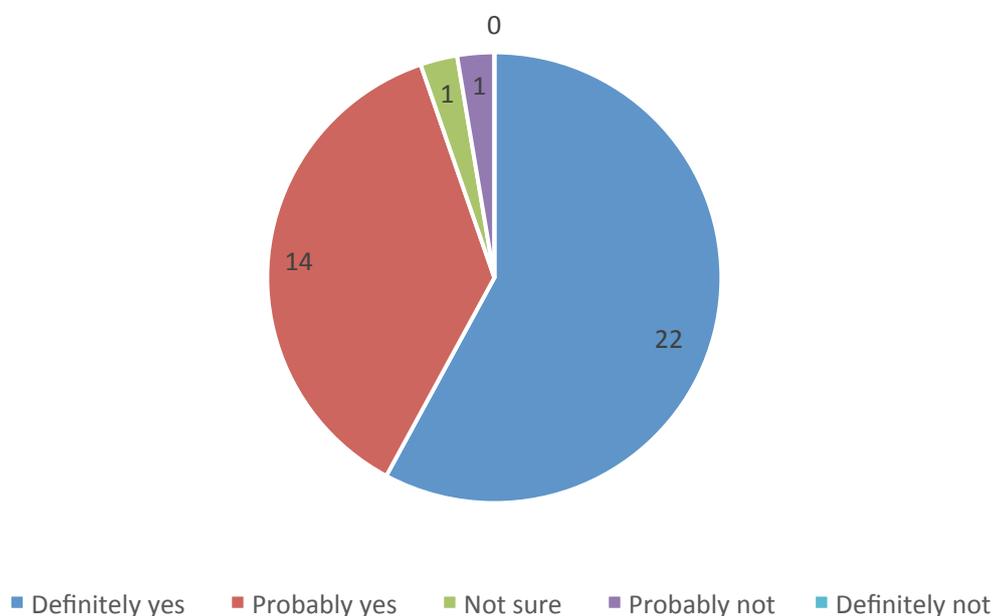


Figure 10. Frequency of collaborators indicating whether they would get involved in a future pop-up shop (n = 38)⁵.

Again, collaborators were slightly more positive this year compared to last year – 22 out of 38 collaborators responding to the post event survey said they would definitely be involved in another pop-up shop,

⁵ The collaborator selecting 'probably not' did not leave a comment to explain why.

compared to 16 out of 35 in 2014. For this year's respondents indicating that they would be keen to be involved again, their reasons included because they had fun, found the experience rewarding, and felt that public engagement was important.

Some of the evaluation comments provided ideas for future pop-up shops. One comment from collaborators suggested a need to engage different individuals from their organisations with the project – namely those in more senior positions to increase buy in. Other recommendations for future shops was having someone outside in the shopping mall to encourage people into the shop in quieter times, more advertising and better internet connection for the skype activities, although these comments were made by a handful of collaborators only.

Conclusions

This report has summarised the evaluation for the Heart and Lung Convenience Store pop-up shop 2015. To conclude, the evaluation focus areas are discussed below including key findings and recommendations for future activities.

- **Is the event reaching the local community?**

The pop-up shop was successful in reaching the local community. The majority of visitors lived in a local postcode, with over half from the same or adjacent areas. Over half had just a 15 minute or shorter journey to the shop. The most popular way of finding out about the shop was through passing by, and this was mentioned by both visitors and collaborators. Collaborators and visitors spoke about how the audience had valued having the pop-up shop in the local shopping centre and had been surprised to see it there, with many hoping that more events like the pop-up shop would take place.

It seems that advertising was not as effective as word of mouth and seeing the pop-up shop in its location, so future marketing efforts might target the shopping mall once more – perhaps posters over a longer lead time before the shop opening or staff outside the shop to draw visitors in once it was open.

- **Is the event reaching an audience not already engaged with science?**

Through reaching those passing by, the collaborators felt that the pop-up shop was more likely to engage those not normally interested in science activities or events. Whilst in fact many audience members had visited a science museum before, for some of these it had not been in the past year. Visitors rated themselves as moderately positively engaged with science in their everyday lives (6 out of 10). However, the majority of visitors had not experienced anything like the pop-up shop before, indicating that this was a new and unique experience for them, and that the pop-up shop was reaching a new audience in this sense.

The pop-up shop is in a suitable location to be reaching those who do not typically engage with science, and it may be the case that more active interactions by staff outside the pop-up shop, in the shopping centre itself, to encourage people into the shop would reach a more diverse audience in terms of science engagement.

- **Is a pop-up shop an effective format for public engagement with science?**

The pop-up shop format and activities included within it were effective in facilitating positive public engagement with science from the perspective of both the audience and the collaborators. Visitors were very positive about their experience in the pop-up shop, and particularly valued that they had learned through taking part, had conversations with scientists, felt that the shop was interesting, fun and thought-provoking. Visitors wanted the shop to be open for longer, to be repeated in other locations or for other events like it to return to Hammersmith.

Collaborators and visitors spoke in detail about the conversations they had with one another, and the pop-up shop seems to have been a promising platform to stimulate two-way dialogue. The questions of the audience drove many discussions and collaborators spoke of a number of in-depth conversations they had with visitors who became more engaged with the research through their visit.

Whilst there was still some confusion from visitors around the theme of the shop (e.g. whether you could buy products, whether you could receive medical attention or advice there), this was an area of much improvement from last year. It seems that the theme this year helped to attract and spark curiosity amongst visitors, whereas last year some were confused by the theme and had more negative reactions.

The involvement of the scientists was crucial to the success of the shop – visitors spoke about their interactions with the research staff enthusiastically, and these conversations enabled them to speak about their own experiences or issues, as well as to ask many questions. Improvements to the technology for the skype sessions is one minor area of improvement which could be incorporated in future.

- **What are the impacts on the collaborators involved?**

The collaborators were very positive about their experiences in the pop-up shop project – even more so than they were in 2014. Whilst many had been involved in public engagement before, and were reasonably confident about their skills and experience, over half had not been involved in similar collaborations with artists, scientists and engagement professionals.

Collaborators reported after the event that the pop-up shop had led them to be more positive about public engagement, appreciate the importance of it, and more motivated to do more. Collaborators also said that the project had enabled them to gain more ideas about broader approaches to public engagement. They also felt that their attitudes towards collaborations between artists, scientists and engagement professionals had become more positive and they saw the benefits of these more clearly. Whilst there were fewer impacts on scientists' everyday work and research, some did say that the interactions in the pop-up shop had given them a new perspective on their work and new ideas for research directions or priorities.

Collaborators were very keen to be involved in future pop-up shops and more public engagement, so building on this motivation and momentum in the coming months will be important to maximise involvement in other projects. Whilst some of their initial concerns were around audiences' questions and interactions with visitors, these were some of the aspects that collaborators most valued in their experiences in the shop. So encouraging the scientists to share their experiences with other colleagues to alleviate such concerns in future may be one way to promote more scientists becoming involved in public engagement.

Appendix

Media coverage summary

THE HEART AND LUNG CONVENIENCE STORE

Local media / London media

<http://www.timeout.com/london/blog/the-13-best-pop-ups-happening-in-london-this-october-100115>
<http://www.hammersmithtoday.co.uk/shared/kingsmall007a.htm>
<http://w14london.ning.com/>
<http://www.chiswickw4.com/shared/kingsmall007.htm>
<http://local.mumsnet.com/hammersmith-fulham/half-term/488009-heart-and-lung-convenience-store>
<http://www.allinlondon.co.uk/whats-on.php?event=166028>

General events/pop up previews

<http://www.eventmagazine.co.uk/nhli-open-interactive-heart-lung-pop-up/brands/article/1367096>
<http://www.thesourcedirectory.co.uk/news/pop-ups-in-london-this-october/>
<http://pop-upshop.com/blog/heart-lung-convenience-store-popping-hammersmith-october/>
<http://pop-upshop.com/blog/>
<http://virallery.com/heart-and-lung-convenience-store-pops-up-at-kings-mall/>

Community newsletters etc.

<https://sobus.org.uk/2015/09/the-heart-and-lung-convenience-store-kings-mall/>
<http://hammersmithlondon.co.uk/2015/10/07/heart/>
<http://www.funkidslive.com/events/the-heart-and-lung-convenience-store-hammersmiths-kings-mall/>
<http://www.funkidslive.com/learn/the-heart-and-lung-hotline/>

Specialist Science

www.thelancet.com/pb/assets/raw/Lancet/pdfs/S2213260015004579.pdf
<http://blog.wellcome.ac.uk/2015/10/01/public-engagement-events-listing-october-2015/>

Imperial Internal Communications

http://www3.imperial.ac.uk/newsandeventspggrp/imperialcollege/medicine/heartandlunginstitute/newssummary/news_7-10-2015-12-38-46
<http://www.imperial.ac.uk/be-inspired/social-and-multimedia/podcasts/>
<http://www.isciencemag.co.uk/event/the-heart-and-lunch-convenience-store/>