

Edinburgh Festivals Impact Study

Technical Report
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1. Introduction

The economic impact methodology differs from the rest of the impact study in that it has to be, as far as is possible, comparable with the methodology developed by SQW for the 2004-5 study. We say ‘as far as possible’ as there are four overall factors that prevent the 2010 study from being a parallel comparison.

- The Festivals themselves have changed – in 2004-05, the Art Festival was not included in the research. Moreover, the other Festivals have changed and, in the main, grown in the scale and scope of their activities (partly as a result of increased collaboration and investment post the ‘Thundering Hooves’ Report¹). Also, there were a number of other Festivals included that are no longer running or are not included within the Festivals Edinburgh portfolio. This means that, while the 2004-05 study included 17 Festivals, the 2010 study looks at 12.
- Differences in survey medium and methods – the SQW study was conducted as a ‘top-down’ exercise based on a single visitor questionnaire which was conducted as an assisted, on-street survey during the Festivals. In contrast, the demands for the 2010 study to develop a methodology that can be owned and replicated by the Festivals themselves in subsequent years requires a ‘bottom-up’ approach. This has meant being more flexible with how and when surveys of visitors have been conducted, to accommodate the varying demands and capacities of the individual Festivals. Across the twelve Festivals there was a mixture of on-site assisted surveys that were completed during the Festivals, self-completion surveys completed during the Festivals, and online surveys completed largely after the relevant Festivals had closed. BOP has conducted an econometric analysis to ascertain that no bias has been introduced based on the different survey methods (see Section 2). In addition to

the survey medium, the present 2010 study has a much wider and deeper coverage of the cohorts that will contribute to the economic impact of the Festival beyond the visiting public, namely the delegates, performers and production companies, and journalists. Moreover, the sample size of the 2010/11 study is significantly larger than that of the SQW study in 2004/05.

- Amended approach to transport costs – we decided to separate the initial return journey to Edinburgh from subsequent expenditure on transport within the city. This differs from the SQW study which used a single transport category that included one-off petrol expenses (if bought en-route to/from Edinburgh), in addition to daily transport expenditures such as taxis, public transport etc. This decision was taken in order to avoid the small chance of over estimating the amount of transport expenditure.
- Collation of ticket expenditure – within the SQW study, expenditure on ticket sales is estimated by asking visitors how much they spent on tickets. However, as the actual amount of expenditure accounted for by ticket purchases is known by the individual Festivals, it is more accurate to use this as the basis for this part of the calculation rather than relying on visitors’ recollection.

These differences should not, however, obscure the fact that the overall approach taken in 2010 and the economic impact questions asked across the many different surveys have been overwhelmingly those used in the SQW study. The rest of the paper collects together a number of more technical issues that should be taken into account for future impact evaluations.

The aggregate economic impact figures presented in the sections below have been calculated from visitor and organiser data from 11 Festivals. Apart from being included in the expenditure figures of journalists attending the summer Festivals, the Edinburgh Art Festival has not been included in these calculations. This is due to the particular challenges that have come to light over the course of the study about how to obtain a sufficient number of responses for this Festival this year. These particular challenges include the following:

¹ AEA Consulting (2006) *Thundering Hooves: Maintaining the Global Competitive Edge of Edinburgh’s Festivals*, report commissioned by Scottish Arts Council in partnership with Festivals Edinburgh, the City of Edinburgh Council, the Scottish Executive, EventScotland and Scottish Enterprise

- Edinburgh Art Festival is not a ticketed event, meaning that there is little opportunity to capture data through ticket sales, and other registration processes.
- As the visual arts in the UK are predominantly unticketed and free at the point of access, there is a strong culture of anonymity among visitors to visual art exhibitions and events, with little expectation to submit names and addresses, and indeed few processes or resources in place in galleries to capture this data.
- Edinburgh Art Festival was not included in the first economic impact study in 2004/05.

We have gained valuable learning through this process, and it is important to ensure that in future iterations of the study, a robust sample from the Edinburgh Art Festival audiences can be included. Addressing these challenges and finding better ways of collecting a robust sample of responses needs to be given more thought going forward.

2. Survey methods

Section 3.2 of the Final Report provides information on the survey methods used for each Festival and for each cohort at that Festival. To test for any potential bias that could have arisen due to the use of different methods, BOP conducted econometric analysis on the information provided by the audience surveys. In this section, we focus our analysis on the audience as they account for 81% of the overall visitor net expenditure in Edinburgh. Figure 1 shows the different methods used across Festivals for the audience cohort.

Figure 1 Survey methods used by Festivals (Audience survey)

Type of survey	Face to Face	Self-completion: On-line	Self-completion: Paper
Science Festival			X
Imaginate			X
Film Festival		X	
Jazz & Blues Festival		X	
Mela	X		
Military Tattoo	X	X	
Fringe Festival		X	
International	X	X	
Book Festival		X	
Storytelling Festival			X
Hogmanay		X	

Source: BOP Consulting (2011)

- Assisted surveys: There were two Festivals (Edinburgh International Festival and Royal Edinburgh Military Tattoo) that used assisted visitor surveys for the large majority of their questions (economic and environmental impact questions, while cultural and social impact questions were asked in a follow-up online survey). These assisted surveys were carried out by professional market research companies commissioned by the Festivals. In addition, the Edinburgh Mela carried out assisted surveys, using volunteers who received training on survey completion by BOP Consulting. To ensure quality control, BOP and The Audience Business (TAB) were present at the Edinburgh Mela to assist volunteers and ensure that the quality of the survey completion was appropriate.
- Self-completion surveys (on paper or online): The large majority of Festivals opted for a self-completion approach. This means that ‘check-backs’ – checks to ensure that the interviewers have asked all questions correctly – are redundant.

In order to test for any potential bias introduced by the different survey mediums, we analysed whether any statistical differences exist in the daily expenditure per person. Figure 2 shows three different specifications. We estimate three OLS regressions that use daily expenditure per person as a dependant variable. We control this variable by a dummy that assigns the value of 1 if the survey was conducted face to face and 0 otherwise. Additionally, all the regressions include visitors’ fixed effects, to control for the fact that the visitor composition can affect the average daily expenditure, e.g. Festivals with a higher proportion of staying visitors demonstrate a higher average daily expenditure (see Section 3.3 for further explanation on visitors’ expenditure profiles).

First, we narrow our analysis to the Summer Festivals (see column [1]). In practical terms this means that we are only comparing the differences between face to face and on-line surveys given that a paper survey was not used for any of these Festivals. In this case, the coefficient of the survey indicator is close to 0 and it is not statistically significant which implies that, for the Summer Festivals, there is no statistical difference between the expenditure reported through assisted and non-assisted surveys.

Second, we expand the sample to include all Festivals. This means that the self-completion surveys now include both paper and on-line formats. In this case the coefficient of the survey indicator is negative and statistically significant (see column [2]).

This result could reveal the fact that expenditure profiles differ between summer and the non-summer Festivals. When a dummy to control for summer Festivals is introduced, the coefficient is close to zero and it is statistically insignificant again (see column [3]). This means that, in terms of expenditure profiles, there is a difference between summer and non-summer Festivals. However, this difference is not related to the survey medium used.

Therefore, we can conclude that no bias has been introduced by the use of different survey methods. The three regressions have an R-squared of 33%, which implies that these simple models explain 1/3 of the variance of daily expenditure per person. Furthermore analysis confirms that the variance is mostly captured by the audience composition.

Figure 2 Econometric analysis of expenditure reports by type of survey

Dependant variable: Daily expenditure per person	Face to Face vs. On-line: Summer Festivals	Face to Face vs. Self completion: All Festivals	Face to Face vs. Self completion: All Festivals
	[1]	[2]	[3]
Survey (F2F=1)	-0.76 <i>(1.70)</i>	-4.11** <i>(1.82)</i>	-0.88 <i>(1.91)</i>
Summer Festival (=1)	no	no	yes
Visitors composition fixed effects	yes	yes	yes
N	4,377	5,933	5,933
R-squared	0.33	0.33	0.33
adj. R-squared	0.33	0.32	0.33

Standard errors in parentheses

* p-value <.10, ** p-value <.05, *** p-value <.01

Source: BOP Consulting (2011)

3. Visitor expenditure

3.1 Days vs. trips

The SQW methodology is based on establishing the amount of expenditure that the respondent's party is making on that particular trip. They were then asked a question about 'how many other trips' they intended to make to the summer Festivals. The calculation for the total expenditure for each party is therefore to multiply the expenditure for the party on the trip in question by the number of subsequent trips that the visitor states that they intend to take. This approach is a pragmatic solution to a complicated set of issues and as such, it is based on a particular set of assumptions. Most of these centre on the fact that, in the SQW survey, the actual number of days that visitors spend attending the Festivals is not actually asked for – only the number of nights (if staying) and the overall number of trips. There are four main drawbacks with this approach:

1. In calculating trip expenditure, the total number of days of attendance at the Festivals for staying visitors (which is needed to multiply the day expenditure to get to a total trip expenditure figure) must be estimated from the number of nights (as number of days is not asked for). This has some limitations. For instance, a party of visitors may come to the Festivals for a weekend and arrive early on Saturday and leave late on Sunday. While in reality this would be two days of expenditure, if this were to be based purely on the number of nights stayed, this would have to be recorded as one day of expenditure. It could be avoided if the number of days of attendance at the Festival was known.
2. Subsequent trips to the Festival have to be assumed to be of the same duration as the trip asked about on the day of the survey – this is quite a large assumption to make and one which can be avoided if the overall number of days of attendance to the Festival is asked for.

3. Party size has to be assumed to remain constant – this is quite a large assumption which is hard to avoid without asking a lot of supplementary questions related to each subsequent visit.
4. Daily expenditure has to be assumed to remain constant – this is quite a large assumption which is hard to avoid without asking a lot of supplementary questions related to each day of attendance.

We therefore took the view that the calculations should not be based simply on the number of trips that a party makes to the Festivals, but on the number of days and nights a party spends attending the Festivals, and the questionnaires were designed accordingly. It is a slightly more accurate way of calculating visit-related expenditure as it avoids having to make assumptions 1 and 2 described above – though it is not a solution to assumptions 3 and 4 (which are unavoidable as asking the amount of supplementary questions necessary to eliminate them is not feasible within a survey format).

The question regarding the number of days attended at each Festival was included for Jazz and Book Festivals audience questionnaires. However, in moving between a paper-designed signed-off questionnaire and the online form the question was regrettably omitted in the final online version.

Therefore, we used information from the Fringe, Tattoo and International Festivals to substitute the missing data. We calculated the average number of days that each different visitor type attended at these three Festivals and then inserted this information in the Jazz and Book data sets. While the substitute averages that were used were the same for Jazz and Book Festivals (see Figure 3), the final figures obviously differ between the two since the weights used to calculate the final average were based on each Festival's visitor composition. For instance, the Jazz Festival has a slightly higher proportion of locals than the Book Festival (62% vs. 58%). As locals on average tend to go to more events than non-locals (see Figure 3), the Jazz Festival's final weighted average number of days is therefore slightly higher than for the Book Festival (7.4 vs. 7.2 days).

Figure 3 Average number of days used for substitution, based on figures from Fringe, Tattoo and International Festivals

Type of visitor	Days
Locals	8.9
Day visitors (from elsewhere in Scotland)	4.6
Day visitors (from outside Scotland)	1.9
Staying visitors (from elsewhere in Scotland)	5.6
Staying visitors(from outside Scotland)	5.4

Source: BOP Consulting (2011).

3.2 Activity day vs. whole trip approach

An additional methodological challenge arises when deciding what proportion of the expenditure made in Edinburgh or elsewhere in Scotland can be attributed to the Festival.

One option is to assume that the whole length of the stay of a visitor in Edinburgh, or elsewhere in Scotland, can be attributed to the Festival. Hence, all the expenditure incurred during that time should be counted in the economic impact estimations. According to the Riddington Report (2010)² this ‘whole trip’ approach is usually used in music Festivals or sport tournaments where the stay is dominated by the event. Another option would be to argue that attending the Festivals is only part of the activities of a party during their stay and, consequently, that different activities will have been undertaken by visitors while staying in Edinburgh or elsewhere in Scotland, e.g. sightseeing, visiting historical sites. From this perspective, only the days (or nights) spent in Edinburgh and Scotland due to the events themselves should be attributed to the Festival. This ‘activity day’ approach is the norm in impact analyses of activities such as cycling, canoeing or bird watching (Riddington, 2010).

We decided to use the whole trip approach, following the methodology used by SQW. However, to test this approach, we estimated our results using both methodologies for three Festivals: Fringe, Tattoo, and International. We narrowed the analysis of different methodologies to those three Festivals given that they account for 83% of the overall net expenditure.

For Edinburgh, the difference between the total net expenditure obtained through the ‘day activity’ approach and the total net expenditure obtained through the ‘whole trip’ approach is negligible when we look at the three Festivals as a whole. This is partly because daily expenditure by locals and day visitors is grossed by the number of days that visitors attend events at the Festival, so the expenditure calculations are the same in both methodologies. In practice, the different approaches only become significant when calculating expenditure of staying visitors. However, it turns out that the number of days that visitors attended a Festival is similar to the number of nights that visitors stayed in Edinburgh. Consequently, the final net expenditure does not substantially differ when using the different methodologies.

A more relevant difference arises when we apply the different methodologies to measure net expenditure in Scotland. In this case, the whole trip approach results in a 19% higher net expenditure than the one obtained through the activity day approach. In order to validate the use of the whole trip approach we looked further into visitors’ motivation to visit Scotland.

Following the methodology applied by SQW, we asked visitors to express how important the Festival was when making the decision to visit both Edinburgh and Scotland. Figure 4 shows the answer to this question for staying visitors to Edinburgh who spent one or more nights in Scotland. The sample includes the eleven Festivals. Approximately 82% of the respondents consider that the Festivals were the sole reason, a very important or a fairly important reason to visit Scotland (33.3%, 33.2% and 15.9% respectively). This finding suggests that the Festivals are an important and, in some cases, the sole motivator to stay in Scotland. This is confirmed by the fact that, on average, staying visitors only spent 1.28 nights elsewhere in Scotland.

² Riddington Report on the Evaluation of Homecoming Scotland 2009. 2010.

This evidence strengthens the argument that the expenditure in Scotland can be fully attributed to the Festivals. Consequently, we conclude that a whole trip approach is a sensible choice when estimating the economic impact of the Edinburgh Festivals.

Figure 4 How important was the Festival in your decision to visit Scotland (Audience survey, all Festivals)

Categories	Frequency	%
My sole reason for coming	185	33.3
A very important reason	184	33.2
A fairly important reason	88	15.9
Only a small reason	63	11.4
Of no importance at all	35	6.3
N	555	100.0
<hr/>		
Total N	607	
<hr/>		
Non-response rate (%)	8.6	

Source: BOP Consulting (2011)

3.3 Visitor composition

The visitor composition has been estimated from the survey of each visitor segment (i.e. audience, delegates, and journalists). When available, we compared this composition with other sources such as the SQW report, TAB reports and other market research commissioned by the Festivals in order to validate the results obtained through our surveys.

In general, the visitor composition is consistent with prior information, with the exception of the International Festival. In this case, the audience composition obtained through the face to face survey

overestimated the presence of locals among the attendees.³ Audience composition information was therefore taken from the on-line audience survey which had a bigger, and hence more reliable, sample size (1,199 respondents versus 688 respondents to the face-to face survey). The on-line survey collected information on social and cultural indicators, and the breakdown provided information on the geography (Edinburgh, elsewhere in Scotland, and outside Scotland) but not on the nature of the visit. In order to allocate visitors across our five categories (e.g. staying visitor from elsewhere in Scotland), we used the information provided by the face to face survey.

From the International Festival online survey we know that 26% of the visitors live elsewhere in Scotland. Additionally, from the face to face survey we estimate that 88.2% of visitors that live elsewhere in Scotland are day visitors, while 11.8% of them are staying visitors. So, after combining both pieces of information we obtain that 22.9% of the visitors are day visitors from elsewhere in Scotland (=88.2%x26%), while just 3.1% of the visitors are staying visitors from elsewhere in Scotland. We followed the same procedure to estimate the proportion of day and staying visitors that live outside Scotland for the International Festival.

3.4 Visitor consumption patterns

Clear differences exist in the consumption patterns of different visitor types. Figure 5 shows the average daily expenditure per person, for each type of visitor. This figure includes expenditure on-site, expenditure in other activities outside the Festivals and on accommodation costs (the latter just relevant for staying visitors).

Unsurprisingly, day visitors and staying visitors tend to spend more than locals. The difference is greater when looking at staying visitors given that, in most cases, they incur accommodation costs.

Given these observed differences in consumption, it would be incorrect to calculate a simple average of expenditure across the five

³ The audience survey of the International Festival was carried out by a new market research agency and the results regarding visitor composition was out of line with the previous six year of visitor research.

types of visitors. For instance, if a Festival has a high percentage of staying visitors, a simple average would underestimate the average daily expenditure. By contrast, if a Festival has a low percentage of staying visitors, a simple average would overestimate the average daily expenditure. Figure 5 provides an example of how a simple average and weighted average differ when we have groups that show distinctive patterns. The figure shows the composition of visitors and daily expenditure per person for the 11 Festivals.

Figure 5 Spending profiles (excl. ticket expenditure): Audience survey, all Festivals

Type of visitor	Composition (%)	Daily expenditure per person (£)
Locals	42.5	13.8
Day visitors (from elsewhere in Scotland)	18.9	28.1
Day visitors (from outside Scotland)	1.8	38.5
Staying visitors (from elsewhere in Scotland)	5.6	80.7
Staying visitors (from outside Scotland)	31.2	104.7
<i>Simple Average</i>		53.2
<i>Weighted Average</i>		49.1

Source: BOP Consulting (2011)

When a simple average is calculated, each type of visitor receives an underlying weight of 20% (provided that we have five types of visitors). However, according to the survey information, in general, the Festivals tend to have both more locals (42.5%) and more staying visitors from outside Scotland (31.2%) than any other type of visitor. This means that, overall, a simple average overestimates daily expenditure, since it does not take account of the fact that the largest proportion of visitors (locals) only spends around £14 a day.

The visitor composition varies between the Festivals as each attracts different audiences. It is important to note that different types of visitors do not only differ in their consumption patterns but also in other areas relating to their Festival visit (their 'visit behaviour'). For instance, locals tend to attend more events than other types of visitors. Given these differences, we have used weighted averages for all our calculations (i.e. for each variable that we report on we have calculated an average for each type of visitor, and these vary each time between the Festivals).⁴

3.5 Transport expenditure

The SQW survey asks visitors to estimate their expenditure for the day of their visit on which they are being interviewed. One of the categories of expenditure is 'Transport costs' and this category explicitly includes the prompt 'petrol if bought en-route to/from Edinburgh'. In addition to capturing the spending on, say, taxis and buses within Edinburgh, there is thus a small chance for significantly over estimating the amount of transport expenditure that should be allocated to Edinburgh and Scotland.

This is because, in the SQW survey, day and staying visitors were interviewed on their day of arrival in the city when they were prompted to include expenditure related to their journey to Edinburgh within their figures for the day's expenditure. However, this expenditure will definitely have been made outside of Edinburgh and may have been made outside of Scotland. In the SQW methodology, there is no way of extracting what proportion of transport expenditure should legitimately be counted (e.g. taxi from Waverley station to the venue), and what should be discounted (e.g. expenditure on train travel from London, or plane tickets from Amsterdam). And as the expenditure per party is then multiplied by the number of trips, there is the potential to amplify this small error.

⁴ It should be noted that this is a departure from the SQW methodology that used simple averages.

In the present study, we therefore took the decision to separate the initial return journey to Edinburgh from subsequent expenditure on transport within the city. The initial journey expenditure can then be discarded depending on where visitors were coming from (e.g. the expenditure on the return journey made by a day visitor to the Festivals from the rest of Scotland would be attributable to Scotland – depending, of course, on their answer to the ‘what would you have done if the Festivals had not taken place?’ question (see section 3.7 below) – but not if the visitors were coming from overseas or the rest of the UK, as the expenditure would have been made in these territories.

3.6 Allocating expenditure across summer Festivals

The SQW study identifies a complication with estimating the expenditure of those visitors to the summer Festivals who are attending more than one Festival over the course of their trip. This is not a problem if the results are simply reported at an aggregate level across all of the Festivals. It does, however, become an issue when one has to allocate the expenditure to individual Festivals – which was a requirement for both the SQW study and the present evaluation.

SQW solved this problem by asking visitors who attended more than one Festival which of the Festivals they attended had been the ‘most influential’ in their decision to attend the Edinburgh Festivals. The answer given determined which Festival the total expenditure was allocated to. For example, if a visitor attended 3 events at the EIF, 5 at the Fringe and one at the Jazz Festival and spent £100 in total while attending all of the events and then stated that the ‘EIF’ was the most influential in their decision to visit the Festivals, all of the £100 would be allocated to the EIF.

However, if the survey sample is statistically representative of a Festival, then it should capture the information corresponding to the whole population that attended that Festival.

Additionally, we received a high non-response rate to the question ‘which Festivals influenced your trip?’ This high non-response is surprising, given that ‘none of the Festivals’ was a valid answer option

to this question. The average rate of non-response to this question was 57%, with percentages ranging from 88% no response for the Edinburgh Mela to 8% no response at the Tattoo. Since this was a filter question, it was impossible to determine the correct structure of the subsequent question ‘which, (of the Festivals), if any, influenced (your trip) the most’.

As it was therefore not possible to use the SQW method for allocating expenditure across Festivals, we have used an alternative method. We used the proportion of the number of events a party attended at a particular Festival as a proxy for the importance of the Festival visitors’ spending behaviour. For example, for the visitor survey of the Edinburgh International Festival (EIF), if a person reports that their party attended 3 EIF events and 7 events at the Fringe, then the proportion of events is 30% for the EIF. In this case, the expenditure will be multiplied by 30% (i.e. 70% of expenditure is discounted as we assume that this expenditure will be picked up through the Fringe visitor survey). There are potential advantages to applying this method, as it is much simpler and better suited to a ‘bottom up’ approach. With this methodology, the final figures can be calculated by simply summing the individual Festival totals (after accounting for additionality). This is not possible with the existing SQW methodology.

We are also able to use this method for allocating expenditure across the Festivals in this year’s study because we have larger sample sizes for each individual Festival.

Nevertheless, we conducted a statistical test in order to further investigate whether the proportion of events is also a good proxy for the visitors’ preferences in terms of the appeal of the Festivals. First, we estimated an indicator that assigns the value of 1, if and only if, the Festival is mentioned among the Festivals that influenced the trip and 0 otherwise. As mentioned above, there is a high non-response rate for that question, so we assume that an entry with no response is indicative of the fact that not any one particular Festival, clearly identified by the respondent, influenced the trip.⁵ Second, we estimated the proportion of

⁵ It could be that the respondent did not know which Festival they were attending but came for the overall ‘Edinburgh Festivals’ experience.

events attended at the Festival (following the methodology explained above).

We want to test whether there is a positive and statistically significant relationship between two variables: (i) the indicator of the importance of the Festival on the trip decision and (ii) the proportion of events attended by a visitor at a particular Festival. If the Festival influenced the trip, it is reasonable to assume that the visitor attended more events at that Festival relative to the total number of events they attended. If we do find a positive and statistically significant relationship between the two variables, we can conclude that the proportion of events is a good proxy of the importance of the Festival. We can then safely use the proportion of events to estimate the proportion of expenditure that is attributed to a particular Festival.

Figure 6 shows a difference-in-mean analysis. Column [1] and Column [2] show the average proportion of events attended by a visitor at each Festival for two types of visitors. Column [1] shows the information for those visitors who named the Festival as one of the Festivals that influenced the trip. For instance, in the case of the Jazz and Blues Festival, 58% of all the events attended by those visitors were events of the Jazz and Blues Festival. Column [2] shows the information for those visitors who DID NOT name the Festival as one of the Festivals that influenced the trip. In this case, the proportion is 39.9%. As expected, the difference in the proportion of events between the two types of visitors is positive and statistically significant in this case (see column [3]). We find similar results for the Military Tattoo, Fringe and Book Festivals. The difference is also positive for the International and Mela Festivals. However, in these cases the difference is not statistically significant.

This means that, overall, the proportion of events is a good predictor of the relative importance of the Festival. Hence, this proportion can be safely used as factor to estimate which proportion of the expenditure can be attributable to the Festival.

Figure 6 Difference-in-mean analysis of the proportion of events attended by indicator of the Festival that influenced the most

Festival	(...) Festival is among the Festivals that influenced the trip	(...) Festival is NOT among the Festivals that influenced the trip (Note 2)	Difference between groups [1] and [2]
	[1]	[2]	[3]
Jazz and Blues Festival	58.2	39.9	18.3***
Military Tattoo	91.2	75.7	15.4***
Fringe	83.4	79.6	3.8***
Mela	58.3	55.5	2.9
International Festival	59.0	58.7	0.3
Book Festival	57.1	43.0	14.1***

* p-value<.10, ** p-value <.05, *** p-value <.01

Source: BOP Consulting (2011)

3.7 Additionality

As explained in the Final Report a key stage of the economic impact calculations is to assess the proportion of expenditures made by all visitor types that would not have been made in the city in any case. This is in accordance with the SQW model – and all best practice in economic impact assessment and appraisal, such as that specified by Scottish Enterprise and HM Treasury. It entails converting the gross economic impact into the net economic impact.

What is important to note is that additionality varies by the place of origin of the visitors, in connection with the geography of the economy that is being assessed. Figure 7 shows the rationale to determine whether expenditure has been displaced from other activities (not additional) or whether it can be counted as additional.

Figure 8 shows the percentage of respondents whose expenditure qualifies as additional following the decision rule shown in the prior figure. It also shows the results for each visitor segment from the surveys. The empty cells correspond to no additionality.

As expected, a very low percentage of locals add expenditure to the final net expenditure. In the case of Edinburgh, most of the expenditure that is used to calculate the net economic impact comes from visitors that live elsewhere in Scotland or outside the country. These results are consistent across the different visitor segments (performers, delegates and journalists, in addition to audiences).

Figure 7 Treatment of additionality of visit

Question response	Locals		Visitors from elsewhere in Scotland		Visitors from outside Scotland	
	Edinburgh	Scotland	Edinburgh	Scotland	Edinburgh	Scotland
'I would have stayed at home or gone to work'	Not additional	Not additional	Additional	Not additional	Additional	Additional
'I would have done something else in Edinburgh/visited the city anyway'	Not additional	Not additional	Not additional	Not additional	Not additional	Not additional
'I would have gone elsewhere in Scotland'	Additional	Not additional	Additional	Not additional	Additional	Not additional
'I would have gone elsewhere outside Scotland'	Additional	Additional	Additional	Additional	Additional	Additional

Source: BOP Consulting (2011)

Figure 8 Percentage of visitors whose expenditure qualifies as additional (All Festivals)

Question response	Locals		Visitors from elsewhere in Scotland		Visitors from outside Scotland	
	Edinburgh	Scotland	Edinburgh	Scotland	Edinburgh	Scotland
Panel A: Audience						
'I would have stayed at home or gone to work'	-	-	73.2	-	56.7	56.6
'I would have done something else in Edinburgh/visited the city anyway'	-	-	-	-	-	-
'I would have gone elsewhere in Scotland'	1.9	-	10.3	-	7.9	-
'I would have gone elsewhere outside Scotland'	1.1	1.1	1.6	1.6	14.9	15.0
Panel B: Delegates/Performers						
'I/the company would have worked as normal at our base location'	-	-	92.5	-	87.5	87.5
'I/the company would have come to Edinburgh anyway'	-	-	-	-	-	-
'I/the company would have gone elsewhere in Scotland'	0.0	-	2.5	-	1.0	-
'I/the company would have gone elsewhere outside Scotland'	6.4	6.4	0.0	0.0	8.1	8.1
Panel C: Press						
'I would have stayed at home or gone to work'	-	-	74.2	-	74.8	74.8
'I would have done something else in Edinburgh/visited the city anyway'	-	-	-	-	-	-
'I would have visited/worked elsewhere in Scotland'	4.1	-	9.1	-	4.1	-
'I would have visited/worked elsewhere outside Scotland'	4.9	4.9	6.1	6.1	17.7	17.7

Source: BOP Consulting (2011)

3.8 Ticket expenditure

Within the SQW survey, expenditure on ticket sales is estimated by asking visitors how much they spent on tickets. However, as the actual amount of expenditure accounted for by ticket purchases is known by the individual Festivals, it is more accurate to use this as the basis for this part of the calculation rather than relying on visitors' recollection. It was therefore discussed and agreed with the Steering Group that this would be the basis for calculating ticket expenditure. In the questionnaires, visitors were asked to report their daily expenditure excluding ticket expenditure. Then, each Festival reported their tickets sales as collected from their box offices.

Figure 9 shows an example of the methodology used to add the ticket expenditure to our calculations. First, for each Festival, we calculate the average expenditure per type of visitor. Subsequently, we calculate the average *additional* expenditure per type of visitor – this calculation includes the criteria to allocate expenditure across the summer Festivals, and the additionality factor. This allows us to estimate a proportion of additional expenditure which is essentially the ratio between the average *additional* expenditure and the average expenditure.

Figure 9 Example ticket expenditure allocation across type of visitors

Type of visitor	Composition	Av. expenditure.	Av. additional exp.	% of additional exp.	Ticket exp.	Additional ticket exp.
Locals	30%	20	5	25%	Tx30%	Tx30%x25%
Day visitors (from elsewhere in Scotland)	10%	100	60	60%	Tx10%	Tx10%x60%
Day visitors (from outside Scotland)	10%	150	75	50%	Tx10%	Tx10%x50%
Staying visitors (from elsewhere in Scotland)	25%	120	90	75%	Tx25%	Tx25%x75%
Staying visitors(from outside Scotland)	25%	180	90	50%	Tx25%	Tx25%x50%
Total	100%				T=Total Ticket Exp.	Total Add. Ticket Exp.

For instance, let us assume that staying visitors from elsewhere in Scotland spend on average £120 during their whole stay. After accounting for additionally, we estimate that this type of visitor has an *additional* expenditure of £90. This means that, on average, only 75% of their expenditure can be considered as additional.

Secondly, we distribute the total ticket expenditure across visitor type using the estimated composition for each Festival (e.g. 25% of total ticket expenditure is allocated to staying visitors from elsewhere in Scotland given that they represent 25% of the total visitors). Thus, when we tally the ticket expenditure per type of visitor we find the final total ticket expenditure.

Finally, we use the proportion of additional expenditure and apply it to the ticket expenditure of each type of visitor to get the *additional* ticket expenditure.

3.9 Net expenditure

Figure 10 and Figure 11 summarise the methodological approach used to estimate net expenditure for visitors that has been explained throughout this document so far. The net expenditure is then grossed by the number of attendees to get a final figure for net expenditure.

Figure 10 Edinburgh Net Expenditure (Summer Festivals)

Locals:

$$[(Exp_F + Exp_O) \times (Days \times Prop)] \times I_{EAL} = EN_{PL},$$

$$EN_{PL} + (T \times \%EN_{PL}) = EN_{TL}$$

Day visitors (from inside and outside Scotland):

$$[(Exp_F + Exp_O) \times (Days \times Prop)] \times I_{EAD} = EN_{PD},$$

$$EN_{PD} + (T \times \%EN_{PD}) = EN_{TD}$$

Staying visitors (from inside and outside Scotland):

$$[(Exp_A \times Nights_E) + (Exp_F + Exp_O) \times (Nights_E \times Prop)] \times I_{EAS} = EN_{PS},$$

$$EN_{PS} + (T \times \%EN_{PS}) = EN_{TS}$$

$$\mathbf{Final\ Net\ Expenditure\ (Edinburgh)} = EN_{TL} + EN_{TD} + EN_{TS}$$

Where :

 Exp_F : On-site Festival expenditure Exp_O : Expenditure outside the Festival (incl. public transport) Exp_A : Accommodation expenditure $Days$: No. of days attended or planning to attend $Prop$: Proportion of expenditure attributable to a particular Festival I_{EAi} : Indicator of Edinburgh Additionality; where i=locals, day visitors, staying visitors $Nights_E$: No. of nights in Edinburgh $Nights_S$: No. of nights elsewhere in Scotland EN_{Pi} : Partial Edinburgh Net Expenditure where i=locals, day visitors, staying visitors EN_{Ti} : Total Edinburgh Net Expenditure ; where i=locals, day visitors, staying visitors T_i : Ticket expenditure , i=locals, day visitors, staying visitors $\%EN_{Pi}$: Average Net Expenditure / Average Expenditure for (i), where i=locals, day visitors, staying visitors

Source: BOP Consulting (2011)

Figure 11 Scotland Net Expenditure (Summer Festivals)

Locals:	
$\{[(Exp_F + Exp_O) \times (Days \times Pr op)] + [(Exp_O \times Nights_S \times Pr op)]\} \times I_{SAL} = SN_{PL},$	$SN_{PL} + (T_L \times \%SN_L) = SN_{TL}$
Day visitors:	
Inside Scotland: $\{[(Exp_F + Exp_O) \times (Days \times Pr op)] + [(Exp_O \times Nights_S \times Pr op) + (J \times Pr op)]\} \times I_{SADI} = SN_{PDI},$	$SN_{PDI} + (T_{DI} \times \%SN_{DI}) = SN_{TDI}$
Outside Scotland: $\{[(Exp_F + Exp_O) \times (Days \times Pr op)] + [(Exp_O \times Nights_S \times Pr op)]\} \times I_{SADO} = SN_{PDO},$	$SN_{PDO} + (T_{DO} \times \%SN_{DO}) = SN_{TDO}$
Staying visitors:	
Inside Scotland: $\{[(Exp_A \times Nights_E) + (Exp_F + Exp_O) \times (Nights_E \times Pr op)] + [(Exp_A + Exp_O) \times Nights_S \times Pr op) + (J \times Pr op)]\} \times I_{SASI} = SN_{PSI},$	$SN_{PSI} + (T_{SI} \times \%SN_{SI}) = SN_{TSI}$
Outside Scotland: $\{[(Exp_A \times Nights_E) + (Exp_F + Exp_O) \times (Nights_E \times Pr op)] + [(Exp_A + Exp_O) \times Nights_S \times Pr op)]\} \times I_{SASO} = SN_{PSO},$	$SN_{PSO} + (T_{SO} \times \%SN_{SO}) = SN_{TSO}$
Final Net Expenditure (Scotland) = $SN_{TL} + SN_{TDI} + SN_{TDO} + SN_{TSI} + SN_{TSO}$	
Where :	
J = Cost of return journey	
I_{SAij} : Indicator of Scotland Additionality, where i=locals, day visitors, staying visitors; and j=inside Scotland, outside Scotland	
SN_{Pij} : Partial Scotland Net Expenditure, where i=locals, day visitors, staying visitors; and j=inside Scotland, outside Scotland	
SN_{Tij} : Total Scotland Net Expenditure, where i=locals, day visitors, staying visitors; and j=inside Scotland, outside Scotland	
T_{ij} : Ticket expenditure, where i=locals, day visitors, staying visitors; and j=inside Scotland, outside Scotland	
$\%SN_{Pij}$: Average Net Expenditure / Average expenditure for (i) and (j); where i=locals, day visitors, staying visitors, and j=inside Scotland, outside Scotland	

Source: BOP Consulting (2011)

4. Organisational revenue

4.1 In-kind sponsorship

We followed SQW's approach with regards to the exclusion of in-kind sponsorship. This decision was taken not so much because the value of in-kind sponsorship is difficult to measure – in fact, this is relatively straightforward requiring a simple calculation of the monetary value of good provided, had it been given as a donation (e.g. value of hiring vans for performer transport if this was not provided in-kind), and a number of Festivals include monetary values in their income and expenditure accounts for these items. The main reason for excluding in-kind sponsorship is that, while additional to the individual Festival, it is highly likely to be non-additional to the local and national economy. This is because in many cases, the in-kind contribution is essentially displacing economic activity that could have taken place in its stead (e.g. a hotel in Edinburgh offering its hotel rooms for free to Festival performers displaces the expenditure of visitors who would have paid for the rooms; a deal from a car maker based outside of Edinburgh to provide free cars to transport Festival artists may displace paid-for car hire within Edinburgh, and so on). Consequently, only cash sponsorship has been included within the calculations.

4.2 Additionality

Figure 12 and Figure 13 show the criteria followed to calculate additional income and additional expenditure for Edinburgh and Scotland, respectively. In these diagrams, we assigned the value of 1 if the source of income/expenditure is considered additional, and 0 otherwise.

4.2.1 Income

The four main sources of income for the Festivals are (a) earned income, (b) external funding, (c) public funding and (e) other sources of funding. Earned income excludes income from ticketing and merchandising to avoid double counting as this information has been already assessed within the audience expenditure. This substantially reduces the amount considered under this heading.

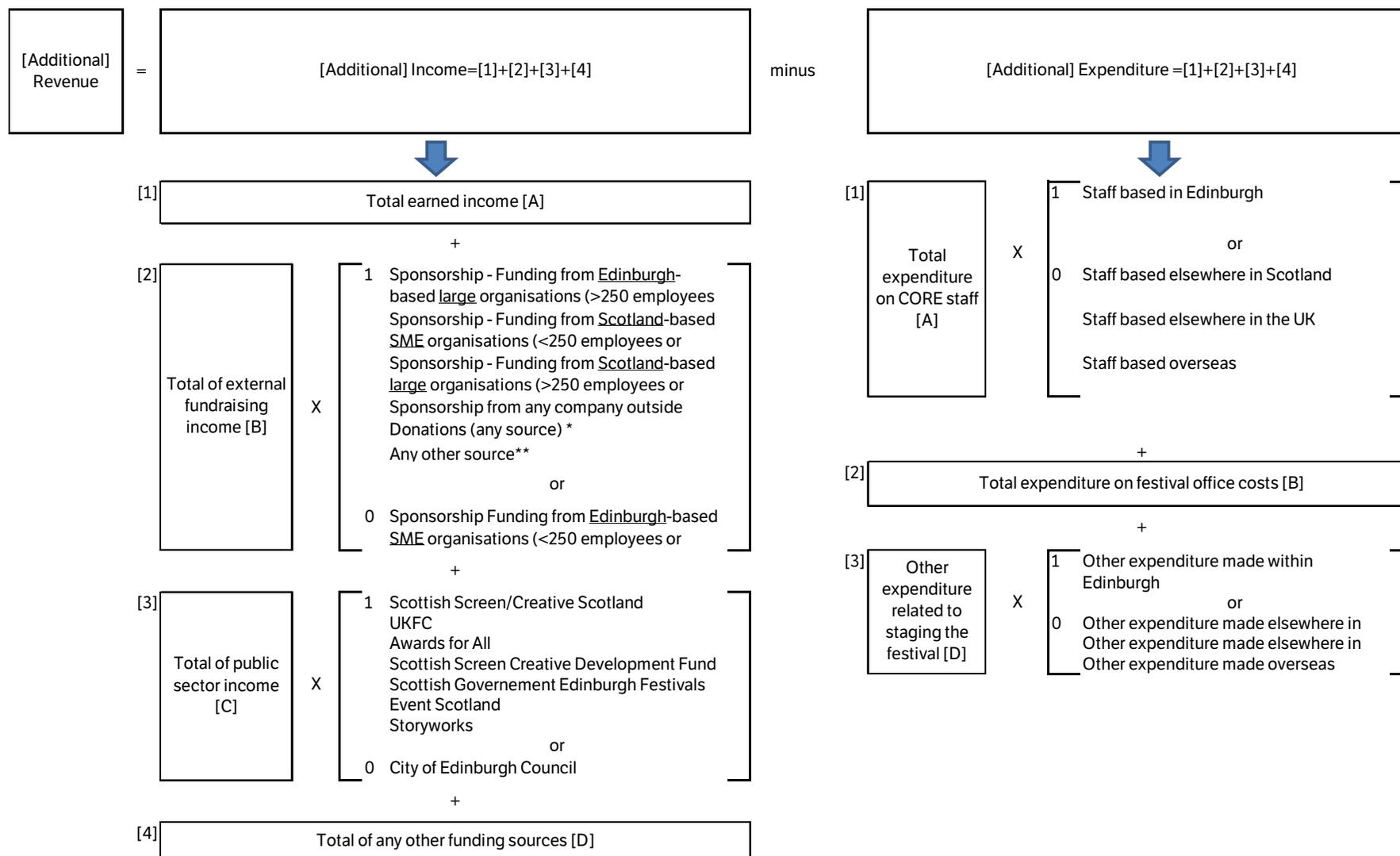
In terms of sponsorship from commercial sources, we again followed the additionality criteria used by SQW that are based on similar assumptions.

1. Funding from Edinburgh-based SME organisations⁶ – this is not additional at any level as it assumed that SME funding comes from a fixed budget that would have been spent locally at some other point in time (i.e. it is deadweight)
2. Funding from Scotland-based SME organisations – this is additional to Edinburgh but not for Scotland (as the expenditure in Edinburgh merely displaces expenditure that would have been made elsewhere in Scotland).
3. Funding from Edinburgh-based large organisations⁷ – this is deemed to be additional to both Edinburgh and Scotland as it is assumed that sponsorship from these firms is more likely to have been made on events outside Scotland (even if their HQ is Edinburgh-based)
4. Funding from Scotland-based large organisations – this is additional to both Edinburgh and Scotland, for the same reasons as for Edinburgh-based large organisations.

⁶ The definition of SME is the EU definition of an organisation with less than 50 employees or under €50m turnover.

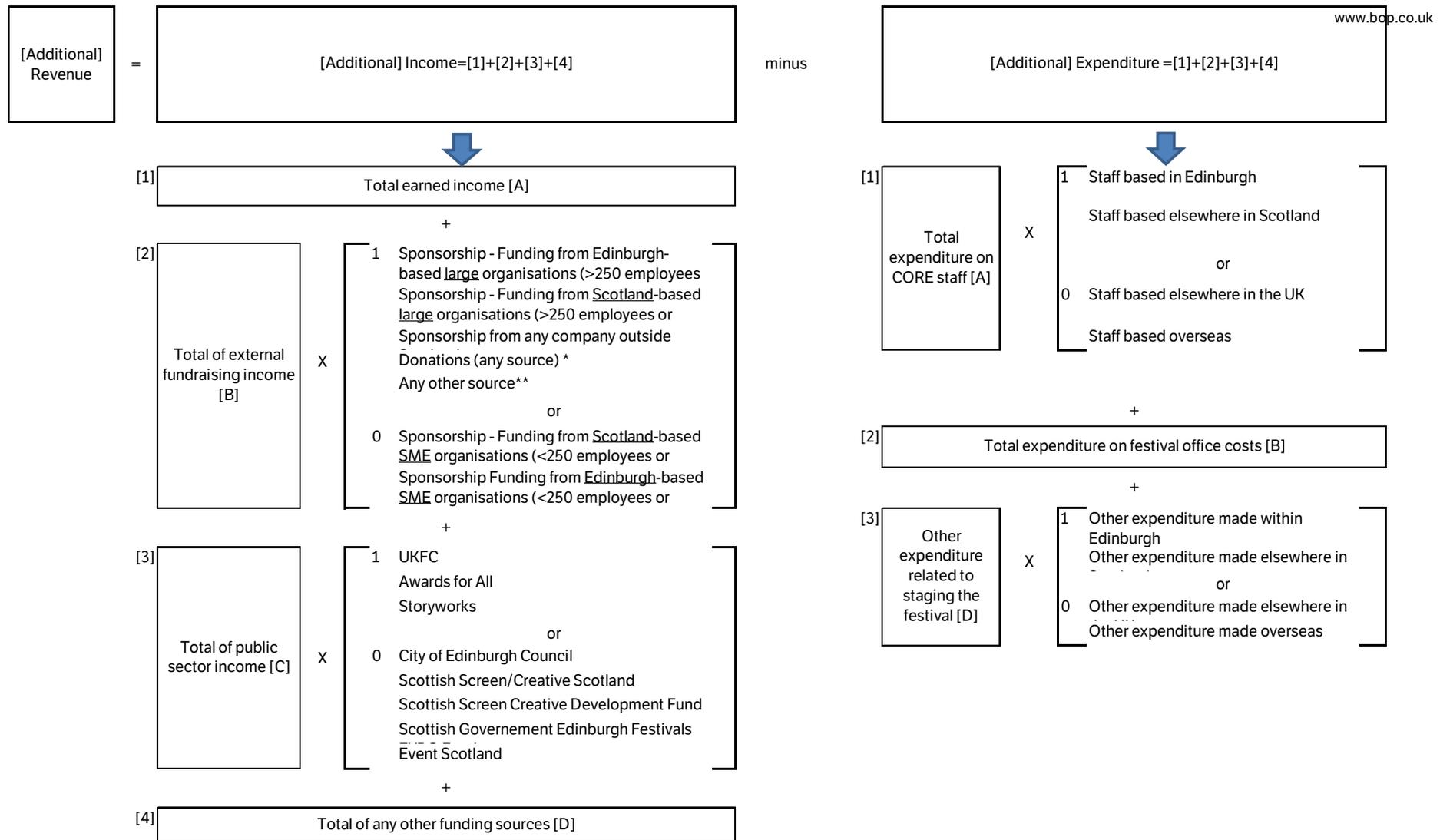
⁷ The definition of a large company is one that has more than 250 employees or more than €50m turnover.

Figure 12 Additionality treatment: Organisers income and expenditure (Edinburgh)



Source: BOP Consulting (2011)

Figure 13 Additionality treatment: Organisers income and expenditure (Scotland)



Source: BOP Consulting (2011)

Figure 14 shows the list of organisations named across Festivals in the Festival Management Information. It also shows whether the funding provided by each of them has been included or not in the calculation of additional income.

Figure 14 Additionality treatment of public funding

Organisation	Edinburgh	Scotland
City of Edinburgh Council	Not Additional	Not Additional
Arts and Business	Additional	Additional
Award for all	Additional	Additional
British Council	Additional	Additional
European Funding	Additional	Additional
EventScotland	Additional	Not Additional
Expo Fund	Additional	Not Additional
Forestry Commission Scotland	Additional	Not Additional
Homecoming	Additional	Not Additional
Scottish Art Council/Creative Scotland	Additional	Not Additional
Scottish Enterprise	Additional	Not Additional
Scotland Winter Festivals	Additional	Not Additional
Scottish Government	Additional	Not Additional
Scottish National Heritage Fund	Additional	Not Additional
Storyworks	Additional	Additional
UK Film Council	Additional	Additional
Visiting Arts	Additional	Additional

Source: BOP Consulting (2011)

Based on the SQW report, we have identified implicit principles to applying additionality to public funding. Funding from institutions

that, in all likelihood, would have been spent in Edinburgh anyway is not additional to Edinburgh. On the contrary, funding provided by an organisation that probably would have been spent elsewhere in the UK is considered additional to Edinburgh.

Similarly, funding from an institution that would almost certainly have been spent in Scotland anyway is not additional to Scotland. By contrast, funding provided by an organisation that in all probability would have been spent elsewhere in the UK or abroad is considered additional to Scotland.

Any funding made by trusts and foundations has been included as additional as it is not possible to make common assumptions about deadweight and displacement, as trusts and foundation funding follows more idiosyncratic rules.

4.2.2 Expenditure

The three main sources of expenditure by the Festivals are (a) expenditure on core staff, (b) expenditure on Festival office costs and, (c) other expenditure related to staging the Festival (see Figure 12 and Figure 13).

Expenditure on core staff that is based in Edinburgh is calculated as additional to Edinburgh. For Scotland, we also added up the expenditure on core staff based elsewhere in Scotland. In addition, expenditure on Festival office costs has been considered additional to Edinburgh and Scotland given that the Festivals offices are located in Edinburgh.

4.2.3 Additional revenue

The net revenue reflects the extent to which each Festival has:

- attracted new income (i.e. funding that would not have been assigned to Edinburgh or Scotland in the absence of the Festivals), and
- spent this income in the local economy.

The final figure is counter-intuitive since, for many Festivals, the net revenue is negative. Two factors explain the negative results. Firstly, tickets sales and merchandising represent, on average, 43% of the total

income a Festival generates (see Figure 15). This varies widely across Festivals, ranging from 10% (Imagine and Mela) to 89% (Tattoo). Once this amount is removed, income falls very close to expenditure, and in some cases, is even negative. We use the gross margin indicator to illustrate how the relative difference between income and expenditure decreases once the ticket sales figure is taken out of the income calculations. The overall gross margin across all Festivals is 48.7%. Once ticket sales and merchandising figures are excluded from the total income, we get a 'hypothetical' gross margin of 9.9%.

Second, most of the other sources of income have been raised locally – and hence they are not additional to the local economy. By contrast, most of the expenditure is spent within Edinburgh, as well as in Scotland, in the form of salaries and wages for the core staff, offices costs and additional Festival staging costs. This is clearer when looking at additional revenue in Scotland. For this geography, additional income represents 39% of the total income (excluding ticket sales and merchandising) while additional expenditure represents 90% of the total expenditure.

Given that ticket sales are excluded from the calculation of the organisers' net revenue, these figures should not lead to conclusions on either the profitability or the economic impact of each Festival. Rather these figures should be seen as a component within the overall economic impact of the Festivals.

Figure 15 Organisers: Income and expenditure

	Income	Expenditure	(Hypothetical) Gross margin
Panel A: Before additionality			
Including tickets sales and merchandising	£33,400,771	£17,128,497	48.7%
Excluding tickets sales and merchandising	£19,000,163	£17,128,497	9.9%
Panel B: After additionality			
Edinburgh : Excluding tickets sales and merchandising	£13,363,320	£13,595,919	-1.7%
Scotland: Excluding tickets sales and merchandising	£7,501,790	£15,474,882	-106%

Source: BOP Consulting (2011)

5. Attendees

5.1 Attendance

Each Festival reported total attendance via Festival management information. Where accurate estimates are available, attendance at free events is included in the total attendance figure.

In the case of paid events, attendance is derived from the number of tickets sold as recorded through the Festivals' box office. Estimating the attendance at free events is inevitably more complicated and there are a number of different approaches used across the Festivals. The large scale free events at the Edinburgh International Festival (the Fireworks Concert), the Edinburgh Jazz and Blues Festival (the Mardi Gras and Jazz Al Fresco) and Edinburgh's Hogmanay (e.g. Torchlight Procession) are all estimated using Police estimates.⁸ The attendance figures at the Edinburgh International Science Festival (outdoors exhibition on St. Andrews Square) have been estimated using a combination of footfall figures and volunteer observations. The footfall figures used recorded people passing St. Andrews Square for the three weeks overlapping most closely with the dates of the Edinburgh International Science Festival. In addition, Festival volunteers observed audiences at the exhibition and it was estimated that approximately 15% of people passing the square spent a minimum of 15 minutes interacting with the exhibition. Therefore, 15% of the total footfall figure was taken as estimated attendance at the St. Andrews Square. Finally, the Edinburgh International Book Festival records footfall at the entrance of the enclosed Charlotte Square Festival site. These figures record all people entering the Festival site in order to attend paid events, free events (e.g. at the Spiegeltent) or to use the book shop or catering facilities onsite. However, the figure does not include people who exclusively use the box office facilities before entering the site. We have

⁸ These estimates are derived from an analysis of crowd density at specified police camera control points.

therefore used the footfall figure in our calculations instead of the paid attendance figure.

Figure 16 Attendance to paid and free events

Festival	Attendance	Notes: Free Events
Science Festival	124,285	Includes free events
Imagine	9,300	
Film Festival	44,456	
Jazz & Blues Festival	37,300	Includes free events
Military Tattoo	220,000	
Fringe Festival	1,829,913	
Mela	34,590	
International	396,713	Includes free events
Book Festival	200,737	Includes free events
Storytelling Festival	17,556	
Hogmanay	137,000	Includes free events

Source: BOP Consulting (2011)

5.2 Unique attendees

To estimate the number of unique visitors or attendees, we first estimate the average number of events attended by each visitor, per type of visitor. The average number of events varies widely across both Festivals and visitor type⁹.

⁹ The information on the number of events was replaced by the information on number of days attended in the case of the Mela Festival. The number of days attended gives a more accurate estimate of the frequency of tickets bought by a single individual given that the Festival offers either daily or weekend passes.

Second, and in a similar fashion to the methodology applied for ticket expenditure, we distribute the total attendance across Festivals using the audience composition. This allows us to get an estimate of the number of tickets sold to each type of visitor. For instance, if the proportion of locals attending a Festival was 40% and the total number of attendances to the Festival was 100,000, then 40,000 are estimated to be accounted for by locals. Thus, after adding the attendances assigned to each type of visitor, we arrive again at the total number of tickets sold. Finally, we divide the tickets sold by the average number of events per type of visitor to obtain a total number of attendees. If locals attend, on average, 4 events at the Festival, this means that the number of local attendees at the Festival is 40,000 divided by 4 =10,000. This process is then repeated for the four remaining visitor types. These are then summed to produce the total number of attendees.

In this calculation we do not take into account the size of the party (i.e. the size of the visitor group), since it is irrelevant to our estimates given that we use an estimate of the events attended per visitor. For instance, if a respondent to the audience survey was part of a party of 5 and reported that he/she attended 2 events, we are assuming that each member of the party attended 2 events. Consequently, they account for the 10 tickets sold at the Festival. To reverse this, if we know that there were 10 tickets sold and each person attended 2 events, we will be able to correctly calculate that there were 5 unique visits/attendances to that Festival.

Once we calculate the unique visitors, we exclude the total number of performers and members of the press from this calculation to arrive at a final number. The rationale for excluding performers and journalists for the unique visitors is that expenditure generated by those visitor segments are calculated separately.

6. Multipliers

The last stage in calculating the net economic impact of the Edinburgh Festivals is to account for the secondary effects that the Festivals have on the economies of Edinburgh and Scotland. As the SQW study stated:

‘The increase in economic activity as a result of the Festivals will have two types of wider “multiplier” effects:

- supplier effect – an increase in sales in a business will require that business to purchase more supplies. A proportion of this ‘knock-on’ effect will benefit suppliers in the local economy.
- income effect – an increase in sales in a business will usually lead either to an increase in employment or an increase in incomes for those already employed. A proportion of these increased incomes will be re-spent in the local economy.¹⁰

It is worth quoting the SQW study as we have used the same multipliers in this study (updated for inflation). As explained in the Final Report, the multipliers in both studies are based on the Scottish Tourism Multipliers, which is currently a standard methodology, which enables comparability with other major cultural and national events and initiatives that have been evaluated using these same multipliers. It also keeps the continuity with the 2004/05 Study. There is, nevertheless, some debate about multipliers and alternative methods are being developed although they are not yet formally adopted by the Scottish Government and wider tourism industry. As is the case with this report, for future iterations the Commissioners of this report and the Festival Directors are committed to using the most widely respected and adopted methodology as they develop, in the interest of best practice.

The Scottish Tourism Multiplier Study (STMS) provides supplier and income multipliers for the tourism sector. The multipliers we have

used here are the specific sectoral output multipliers for Edinburgh and Scotland.

The employment multipliers come from two different sources. At Edinburgh level, the employment multiplier is obtained from the STMS which, as mentioned above, provides information at sector level (i.e. accommodation, food and drink etc.). At the Scottish level the employment multiplier is obtained from the Scottish Input Output Tables (2000), which do not offer information disaggregated at sector level. Finally, both employment multipliers have been updated using the variation in the HTM GDP deflator index between 2004/5 and 2008/9 (11.03%). It is worth emphasising that the income and output multipliers remain unchanged – given that they are not affected by inflation – and hence they are the same factors used by SQW in 2004/05.

Figure 17 shows the updated tourism multipliers. In order to calculate final multipliers we estimated the contribution of each of the five items shown in Figure 17 to the total daily expenditure per person for each Festival. We then proceeded to calculate the multipliers as a weighted average of the sectoral multipliers¹¹. Given that the consumption composition is very similar across the Festivals, the final multipliers per Festival are very similar as well.

The Festival organisers’ expenditure is, as in the SQW study, treated differently from the visitor expenditure as it is not likely to go to tourism related businesses, but instead to suppliers involved in the production of the events. This means that the non-tourism multiplier has been used for the Festival organisers’ expenditure. Similarly to the procedure followed for the tourism multipliers, the employment multipliers have been updated by inflation.

Once the multipliers have been applied, the final overall economic impact of the Edinburgh Festivals in 2010 can be established.

¹¹ For instance, on average, a visitor to the Festivals spent 40% of his daily expenditure on accommodation, 32% on food and drinks, 14% on entertainment, 6% on shopping and 8% on transport. Hence, in this case, the final output multiplier for Edinburgh is 1.77 (=1.89x40%+1.72x32%+1.71x14%+1.54x6%+1.69x8%).

¹⁰ SQW (2005) Edinburgh’s Year Round Festivals 2004-5 Economic Impact Study,

Figure 17 Tourism multipliers by geography

	Output	Income	Employment
Panel A: Edinburgh			
Accommodation	1.52	0.33	28,614
Food and drink	1.70	0.42	28,480
Entertainment	1.55	0.50	20,591
Shopping	1.54	0.33	45,824
Transport	1.39	0.31	57,226
Panel B: Scotland			
Accommodation	1.74	0.51	29,041
Food and drink	1.94	0.52	
Entertainment	1.78	0.67	
Shopping	1.93	0.34	
Transport	1.53	0.36	

Source: BOP Consulting (2011)

Figure 18 Non-tourism multipliers by geography

	Output	Income	Employment
Edinburgh	1.25	0.5	33,309
Scotland	1.50	0.72	26,390

Source: BOP Consulting (2011)

7. Overall economic impact

Figure 19 shows the economic impact in Edinburgh and Scotland, respectively. Panel A shows the net expenditure generated by each of the four streams examined (visitors, performers and delegates, press and Festival organisers).

Figure 19 Overall economic impact: Edinburgh (millions)

	Audience	Delegates/ Performers	Press	Organisers	Total
EDINBURGH					
Panel A					
Total Net Expenditure	£126.66	£23.29	£6.25	-£0.37	£155.84
Panel B					
Output	£198.93	£36.68	£9.84	-£0.46	£244.99
Income	£47.95	£8.80	£2.39	-£0.18	£58.95
Employment	4,275	776	202	-11	5,242
SCOTLAND					
Panel A					
Total Net Expenditure	£123.35	£23.23	£4.89	-£7.87	£143.60
Panel B					
Output	£222.03	£41.91	£8.82	-£11.81	£260.96
Income	£71.44	£13.31	£2.78	-£5.68	£81.85
Employment	4,248	800	168	-298	4,917

It is worth noting that the figures shown in Panel A differ slightly from the figures shown in Figure 34 of the Final Report given that the latter Figure does not include either the net expenditure generated by the journalists that attended the Summer Festivals or the net revenue generated by the organisers.

Panel B shows the overall economic impact of the Edinburgh Festivals. As explained in the Final Report this can be done in three different ways: by showing the net difference that the Festivals make to output, income, and employment for Edinburgh and Scotland. All three are derived by applying different multipliers for each of the variables to the same net expenditures from the eleven Festivals.

Over 2010, the Edinburgh Festivals are estimated to have generated:

- new output of £245m in Edinburgh and £261m in Scotland
- £59m in new income in Edinburgh and £82m in Scotland
- supported 5,242 new FTE jobs in Edinburgh and 4,917 in Scotland

Figure 20 shows a comparison between the figures obtained in this report and the figures obtained in 2004/05 by SQW. The latter has been updated by inflation, using the HM Treasury deflator for the period 2004/05 to 2008/09. We find that over 2010 the new output generated in Edinburgh by the 11 Edinburgh Festivals is 51% higher than the new output generated over the period 2004 /2005. Additionally, the new output is even higher than the amount calculated for the 17 Edinburgh Festivals in 2004/05. Similarly, the new output generated in Scotland by the 11 Edinburgh Festivals is 49% higher than the new output generated over the period 2004/05.

Figure 20 Comparison with SQW (SQW figures adjusted for inflation)

	Output	Income
Panel A: Edinburgh		
SQW (All Festivals) [1]	£184.46	£44.91
SQW (11 Festivals) [2]	£162.67	£39.51
BOP [3]	£244.99	£58.95
Difference [3] vs. [2]	51%	49%
Panel B: Scotland		
SQW (All Festivals)	£202.61	£51.90
SQW (11 Festivals)	£178.31	Information not provided in the SQW report
BOP	£260.96	£81.85
Difference [3] vs. [2]	46%	-

Source: SQW (2005)/ BOP Consulting (2011)

8. Environmental impact

8.1 Introduction

Unlike the outcomes and impact in the rest of the framework, the effect that hosting the Festivals has on the environment is not a question of evaluating to see whether there has been any positive change. It is instead an assessment of the negative impact that the Festivals have on climate change and resource depletion.

This is a laudable and brave undertaking. While the awareness of climate change in particular is now widespread, being able to take steps to implement change to existing business practices and business models is far harder. At the heart of the Festivals is a shared, communal experience, which is premised on bringing large numbers of people together in one place at one time, and often to see performers, artists and speakers from across the globe. Even obtaining the knowledge to know exactly what contribution businesses are making to these phenomena (and how) is still difficult.

Financial accounting has necessitated the development of an entire industry, evolved over centuries, specifically to track the flows of goods and services used in economic activity and attach agreed financial values to these flows. The measures and concepts are widely understood, shared and used by every link in the value chain. They are also enforced by a comprehensive regulatory and legislative apparatus. Every economic actor therefore has to expend considerable internal resource to be able to provide a financial account of their activities.

Similar systems to track the same flows of goods and services, but to attach environmental values to them, have only really developed over the two decades. And they are not yet widely understood, shared and used. Similarly, the regulatory and legislative apparatus that enforces these systems to-date, has also forced compliance on only the

very largest businesses (in addition to some specific measures that pertain to government and government-funded activity).

All of which makes the task of assessing the environmental impact of the Edinburgh Festivals the most ambitious and difficult element of the evaluation.

However, the impetus to undertake such an assessment has come from the Festivals themselves. Festivals Edinburgh has an Environmental Working Group that has been developing ways to mitigate the Festivals' environmental impact, underpinned by a commitment to improving the monitoring and measurement of the environmental impact of the Festivals. It works to identify and to develop common approaches to issues, and to embed awareness and build capacity within the Festivals to tackle their environmental footprint.

For this evaluation, we have worked closely with the Festivals Edinburgh Environmental Working Group to try and dovetail the work of our evaluation with their ongoing efforts. The aim has been much more about how to improve the Festivals' self assessment of their environmental impact, than demonstrating and communicating this to the outside world. This is because, until the Festivals fully develop a way of measuring their emissions and waste, the picture will only be partial and incomplete. This element of the evaluation is therefore also the most developmental of the whole evaluation.

8.2 The specific challenge of the Festivals

As noted above, the last decade in particular has seen a dramatic improvement in the development of systems for tracking and attaching environmental values to the flows of goods and services that a business uses. Perhaps the best known approach to this in the UK is the Carbon Trust's Process Mapping method.

Getting the Carbon Trust to undertake a full Process Mapping, however, is relatively costly for small organisations. It also requires the organisation to have already got past some of the first hurdles in monitoring environmental impact for it to be really worthwhile. For

instance, even measuring the amount of utilities consumed by a Festival on their year-round office is often a difficult task, as many of the Festivals sub-let space from a parent organisation. In these circumstances, monitoring electricity use requires a sub-meter to be fitted and if this is not in place, it is extremely difficult to obtain accurate information.

The second difficulty relates to the nature of the Festivals' businesses. Process Mapping was first developed with large companies in mind, as these have been the first to be covered by compulsory environmental legislation at the UK/EU. The EU Emissions Trading Scheme covers the largest emitters of carbon dioxide (e.g. power stations, cement works, and chemical plants etc.), while the mandatory Carbon Reduction Commitment (CRC) that was implemented in 2010, extends the emissions scheme to businesses and public sector organisations that use more than 6,000 MWh of electricity year (roughly equivalent to an energy bill in excess of £500,000 a year). The companies encompassed by existing legislation then are all very large businesses, and many from industrial sectors that are very different from the Festivals, such as manufacturing and utilities.

The Festivals also have a very irregular output, with the result that their environmental impact is similarly irregular. For most of the year, their output is very modest – consisting of a small core staff that is engaged in putting together the programmes and developing marketing and promotional activities, and so on. The Festivals then explode into life for a very short period, sometimes as brief as a weekend, and never for longer than five weeks. The Festivals also then have very different arrangements for staging the Festivals. A number of the Festivals stage the events in (predominately) outdoor spaces that they themselves are responsible for running (the Mela, the Book Festival, the Tattoo and Hogmanay). But the majority are staged in venues that are not run by themselves, but by the individual venue owners. At the extreme is the Festival Fringe, in which well over 2,000 shows are performed across the city in every kind of venue imaginable.

8.3 Overall approach

Fortunately, there are some existing precedents for how to apply the processes for monitoring carbon emissions and waste that were

developed within a different industrial context, to the idiosyncrasies of the Festivals. Specifically, Julie's Bicycle is an organisation that exists to help the music and cultural sectors to become more environmentally sustainable. One element of their work has focused on live music and Festivals. They have therefore developed bespoke approaches to track emissions and waste for venues and Festivals.

For this reason, the Festivals Edinburgh Environmental Working Group has been working with Julie's Bicycle to help develop approaches to monitoring and (ultimately), improving the environmental performance of the venues that host Edinburgh Festivals' events. Together, the Festivals Environment Working Group and Julie's Bicycle have developed a 'Green Venue initiative' which recognises those venues that are monitoring, measuring and reducing their environmental impact.

Julie's Bicycle have also developed a set of online tools (the 'IG Tools') that allows a range of different cultural organisations (e.g. venues, Festivals, etc.) to calculate their own carbon footprint.¹² This requires the inputting of a range of data that tracks emissions and waste streams. The online tool then applies conversion factors to the basic data to translate information on, for instance, waste, water use, or the miles travelled by audiences according to different transport methods, into carbon.

This is important as the conversion factors – provided by Defra – are numerous and are updated every year. While we have identified the most appropriate factors from the Defra data for the Festivals (see Figure 21 below), having a tool that incorporates this up-to-date information in one place, and as a matter of course, is appealing. Therefore once we had developed a data framework for the collection of environmental data from the Festivals, in conjunction with the Festivals Edinburgh Environmental Working Group, we took the decision to use the IG Tool to produce the end data for the environmental impact calculations.

¹² The Festivals and pilot venues are using these and other tools (for instance, the SMEasure tool developed by Oxford University which tracks energy performance over time) to monitor their emissions and energy use. In so doing, the participating organisations are also developing best practice and ensuring a common approach to the measurement process in this crucial first year.

Figure 21 Conversion Factors to kg CO2e: DEFRA guidelines

Emission source	Unit	Kg CO2e Per unit*	Notes
Office Utilities (Annex 3 and 9 of DEFRA guidelines)			
Electricity	kWh	0.5428	Figure for 2008 for electricity consumed
Natural Gas	kWh	0.20558	Scope 1 emissions calculated on a Gross CV basis
Water	m3	0.78	For supply and treatment
Waste (Annex 9 of DEFRA guidelines)			
Waste to landfill	Tonnes (1000kg)		See appendix 9 for waste conversion factors.
Waste to recycling	Tonnes (1000kg)		See appendix 9 for waste conversion factors.
Outdoor Festivals (Annex 1 of DEFRA guidelines)			
Diesel	litres	2.672	Scope 1 emissions
Butane	kg	9	Scope 1 emissions
Propane	kg	7	Scope 1 emissions
Transport (Annex 6 of DEFRA guidelines)			
Average petrol car	miles	0.34094	Scope 1 OR Scope 3
Average petrol motor bike	miles	0.19199	Scope 1 OR Scope 3
Taxi	pkms**	0.17692	Average of small and large taxi
Bus	pkms	0.13514	Average local bus
Rail	pkms	0.05651	National rail
Ferry	pkms	0.11608	Average of foot and car passengers
Domestic flight	pkms	0.17328	Average of all cabin classes
Short-haul flight	pkms	0.09797	Average of all cabin classes
Long-haul international	pkms	0.11431	Average of all cabin classes

* CO2e = CO2 equivalent. (Carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO2 that would have the same global warming potential)**pkms = person kms (as opposed to vehicle kms). Source: DEFRA (<http://www.defra.gov.uk/environment/business/reporting/pdf/101006-guidelines-ghg-conversion-factors.pdf>)

The IG tools are designed for a range of activities and events. In some cases, the complex context of the Festivals (e.g. the mix of indoors and outdoors, permanent and temporary sites) means that data needs to be input into more than one tool (e.g. Festival, office, touring) in order to obtain the final carbon footprint figure. These tools, however, represent a cost (and time) effective solution to the problem of measurement for the Festivals in the future, when they will have to undertake this assessment themselves.

8.4 Additionality

As explained in the Final Report we have applied some of the same principles of additionality to the calculations of emissions generated by visitors while travelling to and from Edinburgh. That is, we have only included the emissions of those visitors whose visit is genuinely additional, based on their response to the additionality question of ‘what would you have done had you not attended the Festivals?’. Figure 22 shows the additionality treatment applied to measure the environmental impact generated by the audience.

This seems to be logical and consistent in that, if visitors state that they would have gone somewhere else in Edinburgh or travelled to work in Edinburgh, then the emissions would still have been made regardless of whether the Festivals were taking place or not. This means, of course, that the pattern of environmental impact mirrors that of the economic impact: the vast majority of locals are excluded from the calculations as their visits are almost always not additional. The **net** emissions that are attributable to the Festivals are mainly generated from visitors from outside Scotland.

In the field of geography, however, we have departed from the principles of additionality used within the economic impact calculations. The environmental impacts of the Festivals cannot be meaningfully distinguished between the impact they have at the Edinburgh level, and at the Scotland level. Once emissions have been generated, they are simply in the atmosphere; we therefore only present one set of global figures.

Figure 22 Additionality treatment for carbon emissions generated through audience return journey

Additionality	Locals	Non-locals
I would have stayed at home or gone to work	Not additional	Additional
I would have done something else in Edinburgh/Scotland	Not additional	Not additional
I would have done something else outside Scotland	Additional	Additional

Source: BOP Consulting (2011)

8.5 Conversion to carbon

The data collected from the Festivals and from the audience has been entered into the online IG Tool with the help of staff at Julie’s Bicycle. This converts the different factors into CO2 equivalent (CO2e) (carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO2 that would have had the same global warming potential).

From the data that the IG Tool calculates, it is possible to identify the carbon generated by audience travel to and from the Festivals. As this data has been collected from the surveys, the data is consistent and relatively reliable across the Festivals. There are however, two exceptions to this: as the Festivals took place while the evaluation framework had not yet been completed, we do not have data on return trips to and from Edinburgh for the Science Festival and Imagineate. The IG Tool can calculate a default value for this, based on the number of tickets sold, but this is not comparable enough to be included in a like-by-like comparison, so it has been omitted in this table but included within the overall calculations. As noted above, the values shown in Figure 23 reflects the composition of the audience according to visitor type (staying, day visitor, locals) in two main ways:

- staying visitors travel further and are more likely to use carbon intensive forms of transport such as air travel

- the journeys made by staying visitors are more likely to be genuinely additional trips.

Figure 23 CO2e emissions generated by audience travel to and from, and within Edinburgh, 2010¹³

Festival	Audience Travel (tonnes CO2e)
Science Festival	107
Imagine	50
Film Festival	143
Jazz Festival	137
Tattoo	13,576
Fringe Festival	22,538
Mela	27
International Festival	3,502
Book	368
Storytelling	46
Hogmanay	1,270
Total	41,764

Source: BOP Consulting (2011)

Finally, the size of the relative contribution of the audience to carbon emissions across all the Festivals is obviously also affected simply by the size of the audience.

Once these factors are borne in mind, it is not too difficult to understand why the audience to the Festival Fringe generates the highest amount of CO2e (largest Festival, lots of staying visitors), and the Military Tattoo is the next highest (very high component of staying visitors, particularly from overseas). More positively, the smaller

Festivals that also attract a predominantly local audience, such as Imagine, the Edinburgh Mela, and the Jazz and Blues Festival, concomitantly generate much smaller amounts of carbon from audience travel.

The IG Tool also calculates one CO2e variable for all the other remaining contributory factors to the Festivals' carbon footprint, which essentially covers the Festivals' own operation (there are no fields for the supply chain). However, there is a huge variation in the level of environmental data that we have been provided with across the twelve Festivals and it is therefore not appropriate to present the figures as a comparison and the data contained within Figure 24 below shows the absolute amounts of CO2e across the twelve Edinburgh Festivals. In 2010, this was:

- 44,130 tonnes COe equivalent in absolute terms
- and 1.34 kg CO2e per ticket sold in relative terms.

The audience travel to Edinburgh and back and within Edinburgh account for 95% of all emissions. This is in part because this data has been collected with more precision across all Festivals, in comparison with the other sources of emission.

It should be noted that this figure represents a **very significant under estimate** of the actual carbon footprint of the Edinburgh Festivals. In particular, missing data on the operations of the non-directly managed venues is a major missing factor, as is, to a lesser extent, the missing data from some of the Festivals. For this reason, it is not yet worth speculating on the major determinants of the Festivals' environmental footprint. At present, this is clearly driven by audience travel to and from Edinburgh – but no firm conclusions can be drawn until more of the missing data is added in subsequent years.

¹³ The figures for the Art Festival have been excluded from this calculation given that this information was obtained from the audience survey.

Figure 24 CO2e emissions from the Edinburgh Festivals, 2010

Source of emission	Total: In tonnes	Average: per ticket in kg
Office	897	0.028
Energy	788.2	
Waster	11.2	
Water	5.2	
Business travel	92.4	
Outdoor event	144.3	0.012
Energy	138	
Waste	6.3	
Water	0	
Audiences' travel	41,764	1.2
To Edinburgh and back	21,510	
Within Edinburgh	20,254	
Artists' travel	1,325	0.1
Total	44,130	1.34

Source: Edinburgh Festivals/Julie's Bicycle/BOP Consulting (2011)

