SHARE Museums East

Data Driven Museums

Norfolk Museums Service

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a network of know how

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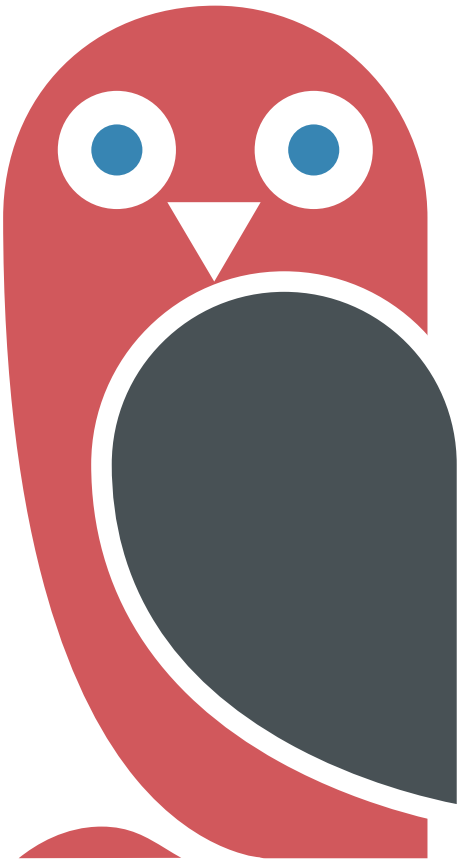

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Please note: All internet links given in this toolkit were correct at the time of publication. Some websites may change their address or be removed from the internet at any time and SHARE Museums East cannot be held responsible for these changes.

Find out more: please visit www.sharemuseumseast.org.uk

Feedback

Your opinions on the usefulness and content of the resource are very much welcomed.

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INTRODUCTION

This document was produced by SHARE Museums East as part of the Data Driven Museums project. It was commissioned to help improve how museums in the East of England use data, specifically how data is used to inform decisions and make improvements. It reflects the focus of the project on three areas.

1. Highlighting and signposting existing sources of useful data
2. Offering frameworks to help navigate and select data
3. Giving examples of how data can be used to inform decision making and planning.

While there are plenty of examples of museums making excellent use of data there is also evidence that some resist the use of data, particularly the use of statistical data, from a fear of bureaucratic bean counting. By themselves, numbers cannot demonstrate the value of museums because not everything museums do can be quantified, but it is short sighted not to take control of data. A lack of capacity to select and process museum data can be a challenge. It seems that other sectors, including the visual and performing arts, are better able to use data, especially those who run ticketed events and have customer relationship management (CRM) software. This may be true in general and a reflection of the (many) differences between and within cultural sectors.

This resource does not offer universal solutions for the entire museum sector, nor does it stipulate what data ought to be used. Museums have such different requirements this would be unhelpful. Instead, it is written for individual museums looking for practical guidance on identifying suitable data and using it effectively. It offers tables and frameworks to slice the data up in different ways to help museums select the most relevant data for their situation. It seeks to show the benefits of using data in museums. The case studies come from a range of museums in the East of England and illustrate how individual museums have used data to make the best use of their resources and deliver impactful services. The value of qualitative data is recognised but the emphasis in this resource is on using quantitative, i.e., numerical, data across museum activities because this is an area with potential for improvements. Given the range of data skills and capacity in museums not everything in this document will be relevant and the reader is asked to use their judgement to pick out the useful bits. The appendices amplify and expand on the topic of data in museums. There are also online resources created as part of the Data Driven Museums project.

Museum KPIs in 5 minutes: **https://www.youtube.com/watch?v=06_oZWCCM64**

The collection of data is not covered in any detail in this document. This is because SHARE has created other resources to support the collection of data, including the following:

SHARE's Evaluation Toolkit **https://www.sharemuseumseast.org.uk/wp-content/uploads/2020/05/SHARE_Evaluation_Toolkit_FINAL_WEB.pdf**

1. DATA AND MUSEUMS

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1.1 What Data?

Whatever definition is used, the word "data" covers a huge amount of information in a bewildering range of formats. This resource focuses on quantitative data, including qualitative data that is converted into numerical data, e.g., the percentage of museum visitors who rated their visit "excellent". A significant amount of data already exists and much of it is available online **(see Appendix B)**. This data ranges in complexity from the number of people who participated in an event, to indices designed to work out the economic impact or carbon footprint of a museum. There is data that relates to all areas of museum activities; from collections and audiences to knowledge creation and the business of running the museum. **Figure 1** below provides an indication of some types of data that are most frequently used in museums. It is not an exhaustive list.

The range of data reflects the variety of museums as well as a lack of clarity about what data museums ought to collect. There are no universal performance indicators for museums nor a single source of core data. Except for visitor numbers and, possibly, unique website visitors, there is little agreement on what data museums should focus on[1]. Even the collection of visitor data requires clarification. Should school groups be included? Should children and adults be counted separately? What about participants at museum outreach events? Universal measurements, standard performance indicators and an agreed holistic approach to capturing the value of museums remain elusive. This resource acknowledges efforts towards the standardisation of museum data[2] and encourages the use of comparable data. However, its focus is on offering practical guidance on the identification and application of suitable data for individual museums.

The expectations are very high. In the early 21st century museums operate in an era of big data, where huge data sets are used by organisations to design and deliver sophisticated products. It is attractive to imagine a world in which museums use big data to tailor visits in the same way Amazon, Netflix and Deliveroo personalise what we see on our screens. Big data could realise the vision of museum interpretation tailored for visitors' specific interests[3]. Exciting as this prospect is, for most museums, it is unrealistic. Using big data effectively requires generous budgets, teams of data scientists and specialist resources.

Museums can improve their use of data, but we need to be realistic about what is possible. A small amount of the right data can make a big difference. **The most useful skill is the ability to identify the most relevant data**. This document offers suggestions on how to do that. It concentrates on finding ways for museums to navigate their way through the sea of potentially relevant data. Individual museums cannot ignore requests from their host organisation, funders, or policy makers for data, but they might be able to separate out the really useful from the required.

[1] Comparing SHARE's Annual Museums Survey, the data requested from museums funded by the DCMS and ACE's survey of NPOs, these are the only two that appear in all three.

[2] For instance the current work of the Centre for Cultural Value at Leeds University.

[3] See the opening pages of Falk, John H. and Beverly K. Sheppard (2006) Thriving in the Knowledge Age, Altamira Press, Lanham, for an evocative description of tailored museum visits.

Figure 1 – Different categories of data with examples of how they can be used in museums

Type of data	Examples	Potential application in museums
Simple numbers	• Visitor numbers • Number of objects in the collection • Number of objects on display • Kilowatts used • Relative humidity and temperature • Followers on a social media platform	• Monitoring • Reporting • Benchmarking • Planning
Indices	• Economic benefits of the museum • Carbon footprint • Culture and heritage capital[4]	• Advocacy • Planning • Informing funding decisions
Qualitative feedback	• Visitor feedback forms • Focus group discussion data • Self-reported reflections	• Evaluation of outcomes and impact • Assessing subjective change • Testing opinions
Observed	• Visiting patterns in a gallery • How customers behave in the café	• Understanding existing audiences better • Improving future exhibitions and displays
Financial	• Budgets • Expenditure – invoices, etc. • Earnt income – ticket sales, retail, trading, etc. • Grants and donations	• Improving sustainability and resilience • Finding efficiencies / savings • Identifying the events that generate the most Income
Demographic	• Age • Gender • Ethnic background • Educational qualifications • Economic status • Health	• Understanding the workforce • Identifying non-visitors and under-represented audiences • Targeting marketing
Geographic	• Postcode data • Travel times • Number of overseas visitors	• Defining catchment areas • Targeting marketing
Time	• Visitors' dwell time • Average time needed to create new catalogue records	• Improving exhibitions • Planning resources
Digital – i.e., from website and social media	• Views • Click-through rate (CTR) • New visitor conversion rate • Bounce rate	• Understanding online engagement • Assessing if campaigns are working

[4] For more information on this see https://www.gov.uk/guidance/culture-and-heritage-capital-portal

1.2 The challenges of using data in museums

There are practical as well as conceptual barriers to improving how museums use data. Recognising these issues is a step towards dealing with them. Some of the most significant are described below.

1.2.1 Lack of clarity over what to focus on

Museums perform a range of functions. They collect and care for our material culture, research and expand our collective knowledge. They invite the public to share that knowledge by displaying objects, creating exhibitions, and holding events, and they also run venues with cafes and shops. Funders, policy makers and individual museums do not necessarily place equal importance on all these things. A lack of agreement over the priorities results in confusion over what data to use. Ideally each museums' strategic plan would set out their priorities and that would clarify what data they should pay attention to. In reality, stakeholders within and outside a museum have different ideas about what data is required. For an individual museum this may lead to an increase in the amount of data collected and, arguably, a decrease its usefulness.

1.2.2 The most important things are hard to quantify

Despite inconsistencies and omissions, it is relatively straight forward to count how many people visit a museum, but few would argue that this captures the entire value of museums. It is much more difficult, for example, to quantify the impact of museums on people's lives. There are ways of producing data around the subjective outcomes of museums, such as a sense of wellbeing, feelings of pride and of inspiration **(see Appendix D for examples)**. It is possible to produce data that quantifies these more ephemeral outputs, but it takes time, and none provide a perfect result. **See 4.8 for case study on measuring wellbeing.**

1.2.3 Data inconsistency

Inconsistencies in how data is collected across the museum sector has been highlighted as a barrier to the effective use of data in museums[5]. Museums funded by DCMS report using different data to museums that are National Portfolio organisations (NPOs) funded by Arts Council England (ACE). Local Authority, independent and university museums have different reporting requirements. This is undoubtedly an issue, but one that is most problematic for policy makers and academics who endeavour to compare data between museums. The bigger challenge for most individual museums is a lack of internal consistency which make it difficult to compare figures from one time-period with another. The use of different units, a failure to note previous assumptions and methods can make it impossible to use the data in any meaningful way. For instance, if you are tracking digital engagement were page views or unique visits counted last year?

1.2.4 Getting hold of data

There are two routes to getting hold of data, either use existing data sources or collect new data. Both require time and resources. Starting with desk research to see what exists is always a wise idea but it is not always straightforward. It takes effort to find exactly what you want from existing data sources, e.g., the Office for National Statistics (ONS) is a very rich source of reliable information but finding the data can be time consuming. Local authorities often use ONS data to produce insight reports on their geographical areas and these can be more digestible **(see Appendix B.2 for links)**. Collecting new data has its own challenges. For instance, since many museums are free and lack customer relations managment (CRM) software, the task of collecting visitor data often requires the front of house team to administer surveys. **See 4.6 for a case study that used an electronic alternative**.

1.2.5 Capacity and skills

Working with data takes time and requires numeracy and statistical skills. Few museums employ staff dedicated to the collection, management, and use of data. Few staff have any kind of formal training in statistical method. A lack of personnel, skill gaps and time pressures are real barriers which can feel like insurmountable hurdles. The case studies included in this document demonstrate that museums are using data well, but resources are stretched and capacity is limited. **See Appendix E for books and training resources to improve statistical understanding and skills**.

[5] Walmsley, B. et al. (2022). Making Data Work: A scoping survey to develop a mixed-methods evaluation framework for culture Leeds: Centre for Cultural Value

1.3 The benefits and purposes of data in museums

The right data can help a museum to achieve their aims. The six most common uses of data in museums are benchmarking, planning, forecasting, monitoring, evaluating, and advocating. Each is described below. Data is not an exclusive resource, and the same data set can be used for more than one purpose, e.g., financial data can be used to: find efficiencies, monitor the use of fossil fuels, and inform strategic planning priorities.

1.3.1 Benchmarking

Every museum is unique, but a lot can be learnt from making comparisons with others. Understanding what other organisations do can help inform how you run your museum. Museum Development Annual Museums Surveys provide data that can be used to compare, for e.g., admission charges, number of visitors, number of people attending formal learning events, etc. This comparative information can help put an individual museum's performance in context.

1.3.2 Planning

All sorts of data can be used to inform planning discussions. Strategic planning is improved by having data about the operating context, e.g., the demographic breakdown of people in the catchment area and making comparisons with the profile of those visiting the museum. Data can also improve decisions about forward planning and prioritising work, e.g., data from collection audits can be used to prioritise conservation tasks. **See 4.3, 4.4, 4.5, 4.6 and 4.9 for case studies that used data to inform future plans**.

1.3.3 Forecasting

Planning work and scoping projects involves estimating and predicting. This can be done better with relevant data, e.g., the results of a prior social media campaign will inform the next one. Data helps guard against optimism bias, which is the tendency to be too optimistic about how much will be achieved. When estimating levels of productivity always allow for time spent on other duties, holidays, and sickness.

1.3.4 Monitoring

Monitoring progress either against baseline data or towards agreed targets is a key tool in museums. Establishing baseline data enables progress to be evidenced rather than guessed at. Identifying and monitoring the right performance indicator can make a big difference to success. It enables targets to be set, which give those involved in the work something to aim for, and monitoring progress means that problems can be spotted sooner rather than later. Measuring progress using meaningful performance indicators enables moments of celebration when goals are achieved, which can be an important source of motivation. **See 4.1, 4.4 and 4.9 for case studies that used data to monitor progress**.

1.3.5 Evaluating and Learning Lessons

Data related to the outputs as well as the outcomes of projects and activities is often asked for by funders. They are keen to have evidence that shows how the project or activity they funded went. Evaluation data can be used for more than just reporting purposes. Museums can learn from evaluation data. It helps to capturing the lessons learnt and can provide a measuring stick for the next initiative. **See case studies 4.2, 4.7, 4.8, 4.9 for case studies that used data to evaluate activities**.

1.3.6 Advocating

Data can be used to demonstrate the value of museums and of specific projects. It can be difficult to do this, partly because people's ideas around the purpose of museum varies, but data helps by providing evidence and supporting arguments. **See case study 4.3 for an example of how data was used to advocate for changes**.

1.4 Data for the whole museum

The use of data in a museum is frequently uneven, with some areas coming under greater data scrutiny than others. This may be because individual staff and volunteers with good data skills tend to focus on certain areas or because stakeholders request information on particular aspects of the museum. Concentrating data use on a specific area will sometimes be required, e.g., to monitor a project or to better understand underrepresented audiences, and the case studies illustrate how the focused use of data can be very beneficial. However, it is possible to have blind spots about the use of data in museums. The **KABC matrix** below can be a helpful framework to review the balance of data use across the whole museum. This matrix takes its name from the four functions of all museums, i.e., knowledge, audiences, business, and collections.

This matrix can be an especially helpful tool to use when setting key performance indicators (KPIs). It is not essential that there are equal numbers of KPIs for each of the four functions, the priority given to each function will vary from museum to museum and over time, but a set of KPIs that omit a quadrant entirely would be lopsided. **Figures 2a and 2b** below provide examples of the nature and amount of data two different museums might collect and monitor.

Figure 2a – The KABC Matrix with examples of data that might be suitable for an independent museum with two members of staff and c.10,000 visitors per year

COLLECTIONS: Activities to expand and care for the objects / the heritage assets	AUDIENCES: The consumers and potential consumers of the museum activities
• Number of objects fully catalogued • Collection enquiries	• Numbers of onsite visitors • Participants at outreach events • Online users • Snapshot qualitative visitor feedback, e.g. an eight question survey collected twice a year
KNOWLEDGE: Activities to create and share knowledge.	**BUSINESS: The operation of the museum**
• Number of exhibitions • Publication of blogs • Online talks and outreach events	• Running costs broken down into, building, energy, staff and other • Income broken down into, earned (ticket sales and retail), grants, donations and other. • Number of volunteer hours / days

Figure 2b – The KABC Matrix with examples of data that might be suitable for a local authority museum with a staff team of 15 and c.35,000 visitors per year

COLLECTIONS: Activities to expand and care for the objects / the heritage assets	AUDIENCES: The consumers and potential consumers of the museum activities
• Number of objects • % of the collection that is fully catalogued and accessible online • Temperature / relative humidity in the stores • Collection enquiries	• Numbers of onsite visitors • Profiles of visitors e.g. home postcode, frequency, educational qualifications, gender, and ethnic background. • Qualitative visitor feedback, e.g. 300 feedback forms collected during the year or focus groups • Number of unique users to the website • Number of followers to the Facebook or Twitter account
KNOWLEDGE: Activities to create and share knowledge	**BUSINESS: The operation of the museum**
• Number of exhibitions • % of the collection on display • Publication of blogs • Onsite learning activities for schools • Outreach events	• % of the total running costs generated by the museum (e.g. events, retail, grants, etc) compared to % from the local authority. • Average income per visitor • Number of volunteer hours / days • Carbon footprint • Demographic profiles of the staff and volunteer team

2. SELECTING DATA

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2.1 In praise of small data

A little bit of the right data can be more useful than an indigestible volume of data. Big data sets are not necessarily more robust or helpful that small ones, which should encourage museums where the capacity to collect and process data is limited. The aim should be to use data that is appropriate to the task and of a good quality. This section outlines factors to consider when selecting data.

2.2 Suited to purpose

The best data is the data that is most appropriate for the purpose. Being clear about what you are asking the data to do will help identify the most appropriate data and avoid the collection of superfluous data. The table below indicates the type of questions and data best suited to different purposes.

Figure 3 - Examples of the kind of data most suited to particular purposes

Purpose of the data	Question(s) being addressed	What is the most appropriate kind of data?
Benchmarking	• How do we compare to others? • Are we performing better or worse than others?	Comparable. Data from a similar type of museum[6] collected using the same units and definitions.
Planning	• What do people need from the museum? • What are our priorities? • What should we change / do more of? • Who are the target audience? • How will we know if we have achieved our aims? • How can we improve?	Data related to existing activities and the operational context, e.g., demographic profiles of staff and visitors, catchment area, travel times, feedback from existing services, energy use, financial, collection audits, etc.
Forecasting	• How long does it take to do a specific task? • What resources do we have? • Where are the problems?	Data from previous similar activities, e.g., average time to create a new cataloguing record.
Monitoring	• Are we on track? • Are we above or below target? • What needs adjustment?	Performance indicators. Both leading and lagging indicators (see Appendix G for examples).
Evaluating and learning lessons	• Did we achieve what we set out to do? • What do our funders require? • What difference did the activity make? • Was it better than the previous one? • How can we improve?	Evidence of impact. Before and after data, i.e., baseline data and post activity data. Comparable data.
Advocacy	• What are the benefits of the museum? • Why is the museum worth the investment?	Various, e.g., financial, cost per visitor, economic impact, evaluation evidence of impact, evidence of support, return on investment, etc.

[6] This can mean similar collections and/or audiences elsewhere in region/country. It could mean similar-sized museums, most often the size of a museum is compared by the number of visitors. The Annual Museums Survey is a good source of data for museums in England.

2.3 Good quality data

If the data being used to inform decisions is of a poor quality, it is unlikely to result in the best decisions being made. Validity, i.e. how accurate and trustworthy any conclusions are, is related to having good quality data. In judging the quality of data consider the following.

ACCURACY: Inaccurate data can be the result of poor collection methods, honest mistakes and, sometimes, an overzealous desire to present the museum in the best possible light. Inflating or fabricating the figures is not acceptable and is likely to backfire when someone drills down into the figures.

UP TO DATE: Recent data provides more useful insights than data from years ago. Old data is useful for comparisons and to identify changes.

A SENSIBLE SAMPLE: There are different ways to take a sample[7]. In most cases you want to have a representative mixture. Larger samples do not automatically result in better quality data. If, for example, a museum aims to understand their visitors better, a survey with 100 responses collected on single weekend when most of the respondents were members of the same local history group will produce less robust data than a survey with 50 responses collected from a wider range of visitors over a longer period.

CONSISTENT: Make sure that the data is being collected in the same way. Make the assumptions and definitions clear so that everyone includes and excludes the same things, e.g., if you are monitoring digitisation progress is the task completed when the photo has been taken or when the image and catalgoue record have been published online? Write the criteria and assumptions up and use them to reinforce consistency.

COMPARABLE: Use standard units and time periods to enable comparisons. Internal consistency is essential, e.g., if you change how you count new accessions from year-to-year it will be impossible to tell if the rates are going up or down. It is helpful to look at how other museums collect data and to stick to the same units. This will enable comparison for benchmarking purposes.

[7] More details on sampling methods can be found in SHARE's Evaluation Tookitl p.22
https://www.sharemuseumseast.org.uk/wp-content/uploads/2020/05/SHARE_Evaluation_Toolkit_FINAL_WEB.pdf

2.4 A pragmatic approach

It is always worth getting hold of the best data possible, but, when resources are limited, it is necessary to be pragmatic. Make sure that the effort of gathering and analysing data is in proportion to the benefits. Data should support what the museum does and there will be limits to how much data a museum can cope with. Compromising on the amount or quality of data is not always a bad thing. It can result in decisions being made to prioritise the most useful data.

2.4.1 Existing vs newly collected

It is always good to start with desk research to identify existing data. Look for data held by your own museum as well as by other organisations. It is possible that there may be existing data that could be repurposed and analysed to provide the evidence required. If not, desk research may well inform how new data is collected. Using the same units and methods will allow for the data to be compared, e.g., following the way previous exhibitions were evaluated will allow you to make comparisons between them.

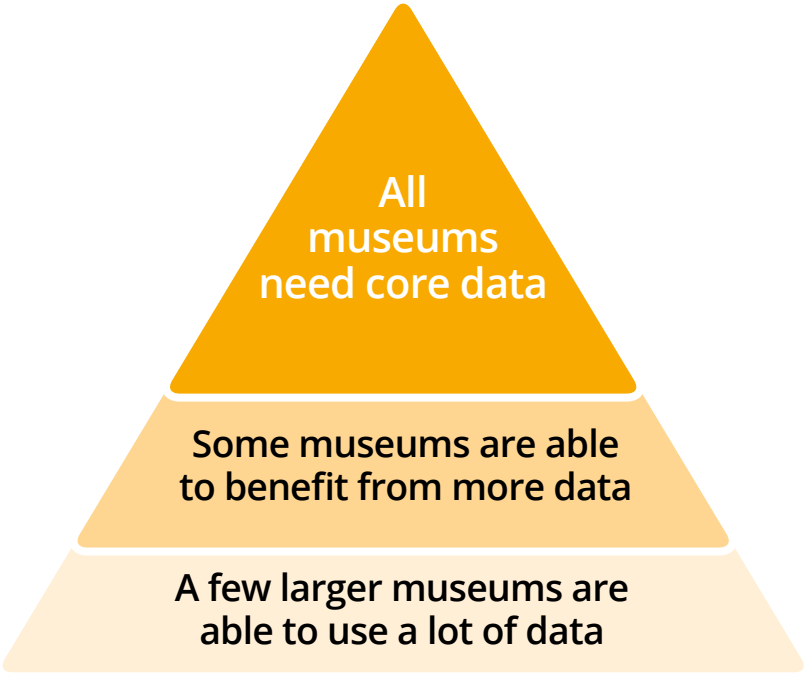
2.4.2 Using more than one data source

Using multiple data sources strengthens the validity of any findings, assuming the different sources reinforce and support each other. Using a mixture of qualitative and quantitative data is often a good approach in museums because it is difficult to quantify some aspects of museums' activities. For instance, in creating a document to encourage potential donors to support the museum it is sensible to provide figures on the number of people who benefit as well as qualitative information, such as quotes from visitors.

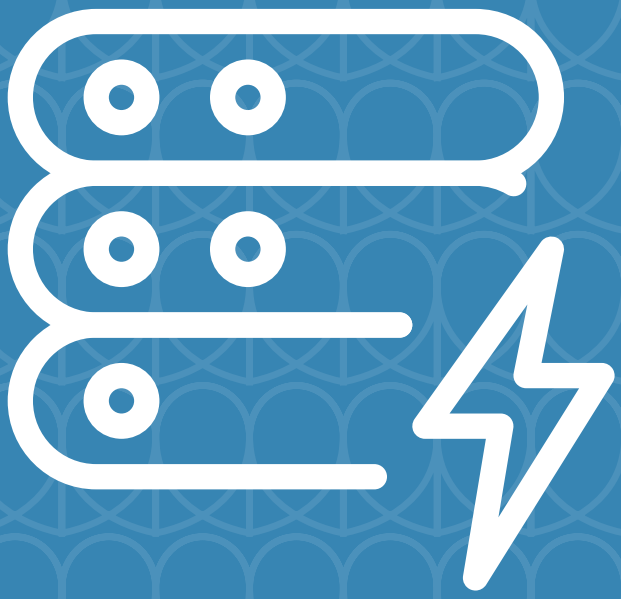
2.4.3 Realistic about capacity

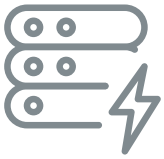
Have a plan for analysing and processing the data before it is collected. Avoid gathering or collecting more data than you can process. In some cases, it may be difficult to know which data is more useful than others until you have analysed it. It may help to consider a hierarchy of capacity and plan the use of data accordingly.

Figure 4 - A Hierarchy of Museums' ability to use data



3.
USING DATA





3. USING DATA

3.1 Making sense of the data

Having selected data the next step is to find meaning in the numbers. It is possible to use data well without having a detailed knowledge of statistical analysis and this section highlights some relatively straightforward approaches for analysing numerical data. It does not cover the full range of mathematical processes used in the discipline of statistics **(see Appendix E for more resources on statistics)**.

There are two essential steps before starting any analysis. First, be clear what is being asked of the data. A clear aim makes the sense-making process easier and this is not something that software can do. Software can process the data, but humans need to establish the question or issue being addressed. Google Analytics, for example, can be a useful tool if you know what question you want it to answer, without that clarity the data is just numbers. Second, clean up the data. Remove errors, deal with missing data, duplicates, and ensure that the data is in the correct format. Depending on where the data has come from this may be a quick and simple task or a complicated and laborious one. Cleaning up the data avoids problems further down the line.

3.1.1 Analytic tools

There are a huge variety of tools that can be used to make sense of data. The most useful tools depend on what is being investigated and, to some extent, how much time is available. The bullet points below indicate some possible approaches to interrogating, understanding, and interpreting the numbers.

- **Investigating patterns in a single data set:** Ranking data in order of size, working out averages and percentages is a good way to begin to make sense of a single data set, e.g., understanding exhibition expenditure, auditing collections or processing responses to a survey.
- **Looking at relationships between numbers:** Where there is a relationship this can be made clearer with some maths, e.g., dividing the number of visitors with the museum's budget will produce the average cost per visitor. Ratios can also be used to show how much time particular tasks take, e.g., number of digitised items produced to the hours spent digitising the items.
- **Comparing data sets:** Bringing the same sort of figures together in order to see how they compare can be useful to identify differences, e.g., comparing the demographic profile of existing visitors with the demographic profile of the catchment area. Comparisons can identify gaps as well as trends, e.g., comparing the number of digital records created one month with the previous month.
- **Indices / aggregation:** Combining several data sources to produce a single figure, e.g. calcuating the economic impact of a museum. Financial indices have the potential to work well as an advocacy tool. However, their complexity and the assumptions necessary to create a figure make them opaque so, if you use them, be prepared to explain how they were calculated.
- **Visualising the data:** Creating graphs and other visualisations can be an analytic tool as well as a presentation tool, e.g., a pie-chart of the income sources or categories of the collection makes the pattern more obvious.

3.1.2 Software Tools

Once you have established how you want to analyse the numbers, software will help you process data and produce visual representations of it. The choice for most museums is between building something using Microsoft Excel and choosing one, of the many, bespoke software packages. All software requires a certain level of skill both in defining the problem and making the formulas work. If you don't have these skills find someone who does. Excel will serve you well for most things. It is flexible allowing simple tasks to be done as well as more complex calculations. It also allows you to create pie charts and graphs. One of its big advantages is that it is part of the standard package for Microsoft users. It is not the only option. There are a growing number of software packages that help to analyse data and create data visualisations **(see Appendix D.6 for a few examples)**.

3.2 Presenting data

Present data in a way that helps people to understand it. As you get more into the data there is a temptation to provide lots of detail. In most cases this is a mistake. It is better to present a few figures accompanied by a simple graphics backed up with the offer of more details if they are required.

3.2.1 Reporting

It is likely that the same data may need to be reported in different formats. Funders often have standard reporting formats, and there may be multiple funders. Setting up systems that enable the data to be entered once and extracted in different formats will save time and avoid errors. Creating multiple tabs on spreadsheet and creating links between the sheets is a way of doing this. Once you find a format that works for a particular audience, whether it is the staff team or the board, stick to it. Set formats presenting KPIs are known as dashboards. These can be created using Excel and more specialist business intelligence (BI) software, e.g., Microsoft Power BI. **See 4.1 for a case study of a KPI dashboard**.

3.2.2 Visualising data

Creating graphs, infographics and maps using data can be great ways to communicate the findings. Data visualisations can aid understanding but there is also a risk that they mislead the viewer or are misunderstood by them. Be clear what you are trying to show and keep it simple. Always be honest about the sources be ready to explain the figures and assumptions.

3.3 Performance indicators

A common use of data in museums relates to performance indicators. This section considers ways to make the best use of performance indicator data. For information on the differences between PIs and KPs and on setting KPIs see the 'KPIs in 5 minutes' video: **https://youtu.be/06_oZWCCM64**

3.3.1 Ownership and coordination

The most effective performance indicators are those which are owned by the people delivering what is being assessed. Those closest to the work are most likely to be able to make sense of the patterns and to make changes when necessary. When the performance indicators are well understood by the team doing the work, and the targets are reasonable, they can be a source of motivation and achievement. When this is the case the figures become useful and the amount of chasing to get the data collected on a regular basis becomes less of a chore.

3.3.2 Actively monitoring

How frequently performance indicators are reviewed will vary. Someone close to the activity is likely to check the figures more often than someone with more of an oversight role, e.g., a shop manager may monitor the takings each day, while the board of trustees may only see total figures each month. Performance indicators, especially leading indicators, can provide an early warning system flagging up issues before they become major problems but only if the right people are paying attention and have the capacity to make changes.

3.4 Acting on data findings

It is one thing to use data to shed light on an issue, acting in response to the data findings is another. Collecting and analysing data should not be the end product, rather it should provide evidence that demands action. Data needs to be integrated into what the museum does and be supported with leadership, processes, and resources. When the use of data is aligned with the aims of the museum it should lead to more informed action.

The case studies in the next section provide examples of how museums have used data to shape and improve what they do.

4.
CASE STUDIES

4.1 CREATING A DASHBOARD - KPI DATA

Title of the project	**Creating a dashboard to monitor the Museum's new Five-Year Strategy**
Organisation	Museum of Cambridge
Dates the project took place	About 6 months from 2021 to 2022 to create it. Its use is ongoing
Introduction / context	As the Museum's Development Manager, I wanted all staff, trustees and volunteers to be committed to our new five-year strategy, which meant making it a part of our daily working life. I also wanted to monitor the strategy very closely – so we could celebrate success and identify challenges as they emerged (and NOT six months after). So, along with Alex Smaridge, Engagement Manager, we developed a dashboard as a one-stop shop for all the Museum's new Key Performance Indicators. The Dashboard was designed to keep our new strategy 'live' in the organisation, holding ourselves to account and acknowledging any change of direction in a very explicit way.
What was done	We knew that we could measure hundreds of things, yet still not feel any the wiser. Nor could we expect our stakeholders to pay close attention to every single metric. So we prioritised the KEY metrics for our organisation; we settled upon what we call the 'Big Five'. Behind this sits a whole host of other data – but the 'Big Five' speak to our core aims: **1.** Visitor and programming figures – how many people are we engaging with? **2.** Visitor and programming satisfaction – are people enjoying themselves? What does engaging with us feel like? Are they learning about their local area? **3.** Visitor and programming data – who is engaging with us? **4.** Commercial income – how much commercial income have we made? **5.** Philanthropic income – how much philanthropic income have we made? Then we decided how we could measure success. For some objectives it was easy, e.g. how much income are we bringing in, and from where? For others it was more challenging, e.g. how could we measure our aim to diversify our audiences – what did that look like for us? We ended up monitoring our audience diversity through their home location – where in the world have they travelled from and, if they are UK based, how deprived that area is according to the Indices of Multiple Deprivation. In a city and wider region divided along economic, class and social lines, this metric felt like a meaningful way of measuring what a diverse audience means to the Museum. We, almost exclusively, used data that was already being collected. Visitor and retail data we draw down from our Epos Now system (our till). Fundraising data we draw from our CRM, Civi CRM. Marketing data we draw down from our content management systems e.g. ContentCal and Mailchimp.

4.1 Creating a dashboard - KPI data

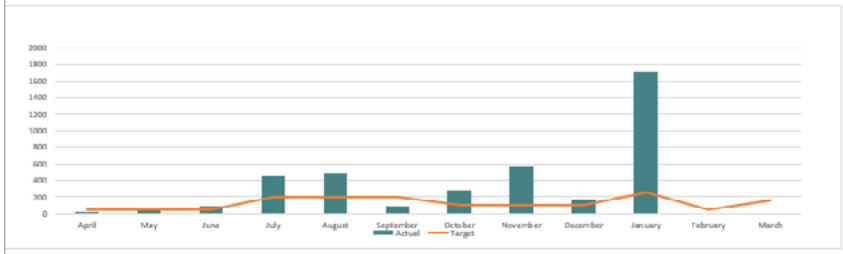
What was done	The only exception to this was visitor data – to go along with this new Dashboard we developed a quick and easy digital end-of-visit survey for visitors to complete as they left the Museum. This is completed on an iPad and collects data about their experience of their visit, and about themselves, e.g. where they live. This is automatically uploaded to the Dashboard by the magic of Microsoft Office – no 'typing up' required. Our Dashboard is populated once a month - each staff member has their areas that they are responsible for. They enter data into the Excel spreadsheet built by Alex, without her drive and skills the Dashboard wouldn't have worked. The Dashboard is circulated to staff and trustees every month. A group of staff meet every month to interrogate the data. We identify all the successes of the last month and discuss possible improvements. The data is presented to the Board every quarter. This helps the Board to monitor the strategy and intervene when required. It also confirms the organisation's commitment to the strategy, ensuring the discussions are focused and informed by the data.
The result / impact	The Dashboard has transformed how we work as an organisation, for example, • It has made us more focused by reminding us every month what our priorities are and helping us see mission drift more easily • It challenges us by showing us when we are going wrong • It stops us from acting on a hunch and ensures data drives decisions. It stops us from acting in fear or panic • It helps us celebrate what is going well • It has saved time as the core data needed for fundraising and managing is at our fingertips • It has helped us manage organisational and staff performance in a data-driven way rather than by personality or anecdote • It prompts us to respond and make changes.
Optional final thoughts	The Dashboard isn't perfect and there are aspects that we question, or that we'd like to improve, such as, • It doesn't include a measure of success in collections care. We do LOTS of collections development work but struggled to come up with a suitable metric that represented progress. • Inputting the data can be laborious. Can we automate more things? • How can we make this data more useful? Should we have daily targets? How can we demonstrate its value? • How do we monitor and compare programming satisfaction across such diverse events, e.g. early-years stay and play session vs an adult-only talk? For more information contact Annie Davis, Development Manager at the Museum of Cambridge.

Museum of Cambridge at a Glance

2023 **January**

Visitor Figures Year to Date

Programming Figures Year To Date



Days Open	January	Target	Difference	YTD Total	YTD Target	Difference2
Days Open	18	0	18	204	180	24

Commercial Income

Revenue	January	Target	Difference	YTD Total	YTD Target	YTD Difference
Shop	£ 450.00	£ -	£ 450.00	£ 7,000.00	£ 8,000.00	-£ 1,000.00
Admissions	£ 1,200.00	£ -	£ 1,200.00	£ 20,000.00	£ 18,000.00	£ 2,000.00
Venue Hire	£ 950.00	£ 550.00	£ 400.00	£ 7,000.00	£ 5,500.00	£ 1,500.00
Programming		£ -	£ -	£ -	£ -	£ -

Visitor and Programming Satisfaction

Visitor Satisfaction	Enjoyment	Understanding	Value for Money
January	93%	88%	88%
YTD	97%	92%	93%

Programming Satisfaction	Enjoyment	Understanding	Value for Money
January	No data	No data	No data
YTD	No data	No data	No data

Visitor and Programming Demographics

Where do visitors live?	Cambridge	Cambridgeshire	Rest of UK	Non-Uk
January	0%	33%	66%	0%
YTD	17%	12%	40%	31%

Where do visitors fit on the IMD scale?	IMD 1-3	IMD 4-6	IMD 7-10	Non-Uk
January	17%	17%	66%	0%
YTD	8%	22%	43%	26%

Where do programming attendees live?	Cambridge	Cambridgeshire	Rest of UK	Non-Uk
January	49%	51%	0%	0%
YTD	85%	12%	3%	0%

Where do programming attendees fit on the IMD scale?	IMD 1-3	IMD 4-6	IMD 7-10	Non-Uk
January	6%	19%	75%	0%
YTD	13%	17%	70%	0%

Philanthropic Income

Revenue	January	Target	Difference	YTD Total	YTD Target	Difference2
Individual Giving incl. Adopt an Object	£ 200	£ 250	-£ 50	£ 8,000	£ 7,000	£ 1,000
Friends	£ 250	£ 200	£ 50	£ 1,500	£ 1,800	-£ 300
Corporates		£ -	£ -	£ -	£ 2,000	-£ 2,000
Legacies		£ -	£ -	£ 15,000	£ 10,000	£ 5,000

Dashboard- The Big Five | 1.1 V+ P Numbers | 1.2 V+P Satisfaction | 1.3 Visitor Demographics | Visitor Satisfaction | 1.3 Web Engagement | 1.5 Mailing List | 1.5 Social Media | 4.1 Admission Income | ...

Screenshot of the Museum of Cambridge data dashboard. Please note, all data is fictional.

4.2 DIGITAL ACCESS AND EXHIBITION LABELS – VISITOR DATA

Title of the project	**Using digital to access community labels in museums**
Organisation	University of Cambridge Museums (UCM)
Dates the project took place	June to September 2021
Introduction / context	In the summer of 2020, while the museums were closed, we ran a project called Museum *Remix: Unheard*, where we invited our communities to create content inspired by our collections. We hosted the films, audio, and artwork they created on the website. The following summer, when the museums were again open to the public, we wanted to connect the online content to the objects in the galleries. Our aim was to find out how visitors preferred to access online content while they are in the gallery spaces: would they use the relatively new format of Near Field Communication (NFC) technology or would QR (Quick Response) codes be more popular? How long would visitors spend on the community created content? And would the new content affect their engagement with the displays?
What was done	As the museums reopened again in summer 2021, we installed 20 new labels. These were stuck on the outside of the cases and directed visitors specifically to the online information. We used Google Analytics and URL builders when making the labels so we could track whether people were accessing it using the NFC or scanning the QR code. We realised that we could use some of the evaluation data from the past as well to see what difference the new labels were making. For some of our museums and galleries, we had good baseline data on how visitors were using the spaces from previous evaluation work. We have carried out tracking and visitor observation for several years, which means we can see the impact of small gallery changes. The tracking data was held in an Excel spreadsheet that recorded what proportion of visitors had stopped at display cases during the evaluation period, and how long they had stopped for. By using this combination of new data and what we already had, we were hoping we could measure the impact of the new labels on our audiences.

4.2 Digital access and exhibition labels – visitor data

The result / impact

After a few weeks, we went to the analytics, which showed us that QR codes were by far the more popular method of accessing the content. Nine times as many page views were by QR code compared to NFC.

We then compared the new data to the information we had collected from visitor observation. We found that visitors were engaging with the content of a single Remix label for up to 15 times longer than they had previously spent at the entire case. In the tracking data we found one display that had previously been looked at by visitors for an average of 19 seconds, but the average time spent listening to one community-created label, relating to one object in that same case, was over 11 minutes.

In the past, we have also tracked visitors while they engaged with audio content that had been generated by museum curators. People usually listened to this for between 30 and 60 seconds. The Remix labels altered this trend, with visitors listening to community-generated content for over 5 minutes on average (accessed via QR code).

Based on the success of this project, we decided to have another round of Museum Remix in early 2023, with communities again generating creative audio responses to collections. The labels for these will not include NFCs, as we have proven the popularity of the QR code. We would like to expand the visitor tracking and observation to other spaces so that we have baseline data which we can use to see the impact of gallery or label changes.

Optional final thoughts

For UCM, testing out the two options was valuable. Before this project some museums had tested NFCs and others QR codes, so we wanted to see which was most popular with our audiences. In the next round of audio labels we will be interested to see whether QR codes are still used to the same level: in summer 2021 when we first ran the project visitors checked in to each museum via QR code. We want to be responsive to the technology and to our audiences.

There is more information in our UCM blog:

https://www.museums.cam.ac.uk/blog/2022/01/06/to-qr-or-nfc-that-is-the-question/

4.3 CHANGING THE BUSINESS MODEL – VARIOUS DATA

Title of the project	**Changing the business model**
Organisation	The Shuttleworth Collection & Gardens, Bedfordshire.
Dates the project took place	June 2020 to present
Introduction / context	The Shuttleworth Trust is best known for its nationally important operational collection of vintage aircraft, including the world's oldest flying plane, a 1909 Bleriot XI. It is an independent charity and receives no regular public funding. The business model depends on income from ticket sales. Both from the big event air shows, which take place around ten times a year, and from visitors on non-event days. Before the Covid pandemic tickets were only needed for part of the site. On non-event days the visitors could access the café, shop, and playground for free. Tickets were required to visit the separate attractions of the Shuttleworth Collection of vintage aircraft, cars and motorbikes, and the Swiss Garden, a Grade II* listed Regency era vista garden.
What was done	When the Covid pandemic hit in 2020, the requirements to limit numbers and to be able to trace visitors forced us to run the venue in a different way. As a result, a single point of entry was introduced, and the visitor experience changed. As part of the Covid-secure offer we opened 40 acres of the Grade II* listed Milner parkland in addition to our 20 acres of airfield paddocks and historic garden. A ticket was required to access all areas, including the café, shop, and playground. Pricing the new offer was a challenge. We modelled the average of our former ticket prices (there were a dizzying 30 different prices over the year!) and settled on one single price for all adults (no concessions) during the pandemic. At £15 per adult, it matched an average benchmark of other similar and local attractions as well as the average of the complex prior pricing structure. Offering an integrated visitor attraction on a single ticket evened out the visitor flow. This meant a less congested car park. Having everything inside the paywall allowed us to be less restrictive about the visitor route. The hangar doors were opened to promote the feeling of airiness and light. Having a single point of entry enabled us to count the real number of visitors for the first time. An advanced ticketing system, installed thanks to a grant from the Cultural Recovery fund, helped us to sell tickets in advance as well as gathering more data about our visitors. This improved the quality of visitor data dramatically.

4.3 Changing the business model – various data

What was done	To find out how the new way of operating affected our café we analysed the data, looking at the average transaction value and extrapolating the 'spending' visitors. The data showed us that the café was quieter, but users were spending more than when it was outside the paywall, and it was able to operate with fewer staff. Since the margins were higher the income generated was similar to pre-pandemic levels despite a lower turnover.
The result / impact	Covid forced us to find new ways of running the venue. Introducing a single point of paid entry was not without difficulties but it has resulted in a number of positive outcomes such as; • A simpler pricing structure for tickets • A steadier flow of visitors • Improved visitor experience for those who have paid to see the heritage, e.g. easier parking and more flexible visitor routes • Higher margins in the café • Better visitor data • More local and family visitors Post-Covid visiting patterns are still settling down, but the changes have improved our financial resilience and we are optimistic about the future.
Final thoughts	It has sometimes been challenging for some stakeholders to accept that the new operational model is a good thing. Putting the café inside the paywall goes against the traditional assumptions about the best way to generate income but, for this independent museum, the integrated visitor offer is the best way for us to deliver our objectives and generate enough income to thrive. Having good quality data provided the evidence we needed to make informed decisions about keeping the single point of entry. If anyone wants to find out more, please contact Rebecca Dalley, Executive Director, Shuttleworth Trust.

4.4 TOWARDS CARBON NET ZERO – BASELINE AND MONITORING DATA

Title of the project	**Towards Carbon Net Zero**
Organisation	The Long Shop Museum, Leiston, Suffolk
Dates the project took place	November 2021 - February 2022
Introduction / context	The Long Shop Museum sits in the heart of a small coastal Suffolk town. The museum's story centres around the development of manufacturing during the Industrial Revolution, and the town is still closely associated with energy and the climate due to its proximity to Sizewell. In 2021 the museum adopted a comprehensive new environmental policy. It was felt that the museum would be an ideal venue for a story that started with the burgeoning use of fossil fuels and ended with a carbon net zero facility. In relating the journey that the museum followed, we could inform and educate others regarding the impact of fossil fuel use in an apolitical forum.
What was done	The museum had been working to drive down its energy consumption for the past two years, and had been keeping records of electricity, gas and water consumption, and waste. The museum took data from their utility bills and put these into an Excel spreadsheet. This was the baseline data against which they could monitor if their efforts to reduce consumption were working. In November 2021, assisted by a SHARE Museums East grant, we began working with Groundwork East of England to collate, analyse and understand this carbon footprint data. Groundwork independently verified our data and calculated our net carbon footprint based upon the sources of our energy and our consumption. They prepared trend graphs to identify where we had been successful in reducing our carbon footprint, and where we still had work to do. This analysis enabled us to target resources where they would have most impact. We eliminated the last of our old gas fired appliances and replaced them with air-source heat pumps and high-efficiency ceramic electric radiators. Using performance data provided by heritage railway trials, we selected alternative fuels for our live steam engines, replacing the traditional but increasingly rare Welsh steam coal. The data helped us to understand that there was a point below which we could not economically reduce our carbon production. Knowing this figure accurately, though, allowed us to make arrangements to offset the residual footprint through tree planting schemes.

4.4 Towards carbon net zero – baseline and monitoring data

The result / impact

Using the data in the decision-making process enabled targeted actions to be selected, leading to us being awarded a Gold Standard Carbon Charter in January 2022, and enabling us to declare the museum to be carbon net zero the following month. Analysis of the data allowed us to achieve this with the minimum of waste, ensuring optimal investment of time and money. Not only are we doing our bit to protect the environment, but this award also shows stakeholders and potential funders that our environmental policy isn't just words, that we're sincere about running a sustainable venue and that we care about the future of museum and the community it serves.

The changes that were wrought mean that we are in a better position to cope with the rapidly rising cost of energy. Visualising the data made it easier to make sound low risk/high return decisions that will have a long-term impact on the sustainability of the museum. Our policy is one of continuous improvement; we continue to monitor power consumption closely and have plans to further improve the energy efficiency of our buildings in the future.

Fraser Hale, Project Manager, Long Shop Museum

4.5 CUSTOMER SERVICE INSIGHT GROUP– VARIOUS DATA

Title of the project	**Customer Service Insight Group**
Organisation	Natural History Museum, Tring, Hertfordshire
Dates the project took place	The group has been operating since 2016
Introduction / context	The Insight Group meets each quarter to consider various data sources with a view to responding, celebrating, and making improvements. It is an effective way to pool data and bring together the people who can make changes in response to the information. The group was set up following a model developed by colleagues at the Natural History Museum in London. It was introduced to the museum in Tring because it worked.
What was done	The group has a standard agenda which starts by examining three qualitative data sources, **1.** the most recent report from SHARE's Mystery Shopper scheme, which provides well-thought-out comments from peers **2.** social media feedback from the last quarter, these are gathered from Instagram, Twitter, Facebook, Google reviews, etc. and **3.** visitor comments, including comments noted by the front of house team, written feedback, complaints, and complements. Members of the Insight Group look for themes and patterns in the data. They focus on the positive high points and the negative low points. There are often very positive comments about the staff and the group nominates a member of staff for a "Outstanding Service Award" and that individual's contribution is recognised. The group discusses the critical and negative data and decides what action might be taken in response. The emphasis is on making multiple, small, low-cost changes. After the meeting an email is sent to all staff based at the organisations Museum in Tring reporting back and setting out the action being taken.

4.5 Customer service insight group– various data

The result / impact	The group has been a successful way of using data to inform improvements. The integration and sharing of data has helped to identify repeated problems, e.g. issues around parking and visitors finding the museum. If the data remained with the original recipient common themes would not be shared so easily. Focusing on small changes has made it manageable and celebrating successes has a motivational benefit. Examples of changes that the Insight Group has made include, the introduction of child seats in all the WCs, enhanced signage, introduction of low-tech play equipment, water saving push taps -changes across both infrastructure and operational practice.
Optional final thoughts	It works because the right people are in the room and the meeting happens regularly. Responding with small incremental changes makes it achievable. *"This has worked for us and if another museum wanted to try it I'd be happy to explain more"* Paul Kitching, Head of the Natural History Museum Tring.

4.6 VIEWPOINT TOUCH SCREEN – VISITOR DATA

Title of the project	**ViewPoint Touch Screen**
Organisation	North Herts Museum Service
Dates the project took place	The screen has been in use since we opened the new museum in 2019
Introduction / context	North Herts Museum purchased a ViewPoint touchscreen terminal with the help of Arts Council funding. The aim was to collect basic data on visitors to the new museum in a consistent manner, to discover how they heard about the museum, to help us plan future exhibitions, and to get an idea of visitors' ages and where they were coming from. We chose ViewPoint as we knew that the terminals had been successfully used in a number of museums in the North-West. The data is almost all quantitative rather than qualitative, and so does not have the detail found in, for e.g., the Impact and Insight Toolkit. However, the advantage of Viewpoint is that it is so easy to use, without the need for any staff or volunteer help. The ViewPoint terminal is essentially a touchscreen tablet mounted on a stand, which visitors can use anonymously to answer six questions. It is wheelchair height and situated on the ground floor where people can see it after they have been around the museum, but before they leave via the shop and café. The home screen shows five colourful smiley faces. Museum staff access the data online, and can search the responses by the year, month, week, or day, and in pie or bar chart form.
What was done	We ask six questions and there is a free space at the end for general comments. The current questions are as follows: 1. How would you rate your visit? *(5 options from a green happy face (Excellent) to a sad red face (Very Poor)* 2. Are you a returning visitor? *Either – Yes or No* 3. How did you hear about the museum? *Options are - Newspaper/Social media/Museum website/Word of mouth/Unplanned visit/Other* 4. What exhibitions would you like to see here in future? *Options are - Aimed at children/ Archaeology/Art/Natural history/Social history/Local interest* 5. How old are you? *Options are - 0-15/16-24/25-34/35-44/45-54/55-64/65-74/75+* 6. Where are you travelling from today? *Users are asked to put in a postcode or country* 7. Any other comments? *This gives users free space for comments*

4.6 ViewPoint Touch Screen – visitor data

What was done	With each passing year, our visitor numbers are growing, and so are the number of responses. Last year, 2022, over 2000 visitors (one in fourteen, just over 7%) used the terminal, so we are happy that we are picking up a good cross-section of visitor responses.
The result / impact	The screens have provided us with useful data about our visitors. What is interesting is, even allowing for the Covid years, how consistent the replies are to all our questions, most only changing by 1 or 2% a year. The main change since we opened fully in 2019 is the proportion of returning visitors, which has increased from under one half to two thirds, with a 5% increase last year in those who heard about the museum by word of mouth. We have used the data to plan our marketing activities, e.g. having post-code data meant we could plot visitors' home locations on maps and the first time we did it, we found that we had more visitors than we'd expected from Luton, Bedfordshire, and the rest of Hertfordshire and fewer than expected from Letchworth, only two miles from Hitchin, and which is well represented in our displays. Once we had this information, we paid for additional Facebook coverage of Letchworth, which did make a difference.
Optional final thoughts	We find the Viewpoint terminal a very helpful source of information about our visitors. If we had more staff resource, we could do more with the postcode data, to see where visitors come from for particular exhibitions, and, more importantly, where they don't come from. ViewPoint doesn't plot the locations on a map and it takes time to do this. Given that so much of the basic information has been so consistent over the last few years, we intend to change a few of the questions for 2023, to give us new information. The ViewPoint annual subscription is not cheap, at just over £1,000 pa, but it worth it for the amount of information it gives us. For more details please contact North Herts Museum Service.

4.7 VOLUNTEERS – FEEDBACK DATA

Title of the project	**Volunteer feedback**
Organisation	Stevenage Museum, Hertfordshire
Dates the project took place	2022
Introduction / context	Like most local museums, Stevenage Museum has a great team of volunteers. Back in 2015-17 we were awarded two rounds of Arts Council England Resilience Fund grants (in partnership with North Herts Museums Service and the British Schools Museum, Hitchin) and used the funding to look at how to maintain and diversify our volunteer base. We'd always kept data on the number of volunteer hours and a list of who volunteered so we decided to use this as the baseline for our data. We improved the information we kept on volunteers in two ways. First, we logged the volunteer hours in a more methodical way, transferring information from the signing in sheets into a lovely spreadsheet. Second, we introduced a simple "about you" form that we ask people to complete when they start volunteering with us. This is based on the Audience Finder questionnaires we use with our visitors and captures data about, age, gender, ethnicity, and disability. We store the data following GDPR guidelines, all the replies are anonymised before we enter them and we regularly check and delete data when volunteers leave.
What was done	We introduced feedback forms for volunteers to tell us how we are doing. We used a paper-based form and asked our volunteers the following questions. 1. Why did you choose to volunteer with us? What did/do you hope to gain from volunteering with us? 2. How did you hear about volunteering at the museum? 3. What do you like about volunteering at the museum? 4. What one thing could we do differently to improve your experience of volunteering? 5. Is there anything you would like to be more involved in? 6. What's one thing you think the museum could do to improve its service in general? 7. What do you think we should be doing over the next year? 8. How would you sum up what you get out of volunteering here? 9. Overall, how would you rate your experience volunteering at Stevenage Museum? (with a scale from "Excellent" to "Terrible"). 10. Do you have any further comments/questions/suggestions that you would like to add?

4.7 Volunteers – feedback data

The result / impact	The feedback confirmed much of what we probably already knew but it has provided firm evidence. Happily, it confirmed that our volunteers have a very positive experience, 100% of the replies so far rated their volunteering experience as excellent. We've also gathered some lovely quotes, e.g. "Thursdays [when I volunteer at the museum] is my favourite day of the week." The feedback has also highlighted volunteers' frustration with the IT, 50% of the feedback forms included negative comments about the Museum's laptops. This prompted us to make changes. Staff at the Museum use thin client boxes to log onto a central server which provides a more stable environment, so we gave the volunteers the thin client boxes instead of laptops. Although this isn't a solution for scanning photographs or negatives it has really helped and saved staff and volunteer time. It used to be something that took several calls to IT and help for perhaps the first 30 minutes of each volunteer session to get everyone logged in. Now we have realised how unstable the laptops are, we are keeping them as back up and for joining remote meetings. Knowing about our volunteers, why they volunteer and what they get out of it, helped us think about how to recruit. We have moved from a passive model, i.e. waiting for people to ask and then saying "yes!" to actively using GoVol and other channels to recruit for projects. Our next steps are to target groups, for example people studying English as a Second Language, to try and diversify further our volunteer offer.
Optional final thoughts	Include a deadline on the forms to encourage volunteers to send them in! For more details, please contact Jo Ward, Stevenage Museum.

4.8 A SPACE TO BE... – WELLBEING DATA

Title of the project	**A Space To Be...**
Organisation	A Hertfordshire Museums Development project delivered by seven Museums in Hertfordshire – North Hertfordshire Museums Service, St Albans Museum, Watford Museum, Mill Green Museum and Mill, Bishops Stortford Museum, Lowewood Museum and Stevenage Museum.
Dates the project took place	Jan 2020 – May 2022
Introduction / context	A Space To Be... was a social prescribing project aimed at teenagers. It was designed as an early intervention suitable for those with emerging emotional wellbeing issues including anxiety, stress, and challenges around socialisation. The evaluation aimed to demonstrate whether delivering creative activities for teenagers in museums using a social prescribing model was an effective way to improve wellbeing.
What was done	Ongoing evaluation was carried out during the delivery of the project. Quantitative and qualitative information was collected from participants, project delivery staff, referral agencies and parents. This approach allowed direct comparison from different museums delivering the project and avoided the need for participants to be contacted after the project had ended. Much of the evaluation was carried out informally during the breaks in workshops and further feedback from project staff was gathered during steering group sessions and on request. The evidence collected included: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) questionnaires. The shorter (seven question) version was used • Artists' reflective diaries • Partner museum surveys • Online survey for parents • Anecdotal evidence and informal feedback from parents, young people, museum teams and mental health support workers • Feedback from referral agencies Due to the pandemic the project, originally designed to last a year, was delivered over two and a half years. Consequently, we were able to collect a lot of feedback from delivery partners and participants without feeling we were asking them to feedback too frequently. This was valuable as with more data it was easy to spot themes and patterns. The quantitative data was analysed using the online WEMWBS tool and the results, showing and overall wellbeing score for participants at the start end of the project, were used to benchmark the qualitative analysis.

4.8 A Space to Be... – wellbeing data

The result / impact	The data gathered was used as the basis for a report about the project that included recommendations for how to deliver similar social prescribing projects. There was a high level of interest in the project and the evaluation helps us to share the lessons learnt, e.g. training requirements, the referral process, and the preferred delivery methods, as well as impact on the participants. In terms of measuring the impact of the wellbeing the teenage participants the quantitative analysis produced disappointing results. Of the young people who completed both parts of the evaluation, only a very small change was observed. This is in line with other similar projects but, on reflection, the WEMWBS questionnaire was probably not the best tool to demonstrate the impact of the project.
Optional final thoughts	The data gathering from this project was impacted by the pandemic and the high dropout rate of participants. The data collected was useful but it was less than perfect. For more information about A Space to Be ... https://aspacetobeherts.co.uk Or contact Gemma Papineau, Hertfordshire Museum Development Officer.

4.9 SEARCH FOR THE STARS – COLLECTION DATA

Title of the project	**Search for the Stars**
Organisation	Food Museum, Suffolk
Dates the project took place	January 2018 - current
Introduction / context	Search for the Stars began in 2018 with a common aim: transfer all objects records from handwritten index cards into a digital catalogue.that can be shared online. Getting our records out of filing cabinets and into the public domain means that more people can use the information and data we have to do things we cannot yet envisage – it unlocks creativity. Good data makes it much easier to manage the collection, keep it secure and consider disposal of objects – without knowing what you have, how can you make good decisions about it?
What was done	Our collections data was previously stored in multiple locations on index and record cards. It was only accessible by a few members of collections staff, it wasn't easily searchable and it wasn't possible to view the data as a whole collection in order to make collections management decisions. Search for the Stars focuses on the Food Museum's main collection of 40,000 objects, moving its record card data over to a cloud-based collections management system call eHive, which then feeds to the collections catalogue accessed via the museum's website. The project began in January 2018 with funding from the Esmée Fairbairn Collections Fund and the Headley Trust which recruited a Curator to oversee digitisation volunteers. Volunteers work from photographs of the record cards, moving the data over to eHive they check spelling, grammar, formatting and ensure the information is clear and in the correct fields. They also highlight any significant objects, or 'star objects', they encounter. The 400+ 'star objects' are then passed back to volunteers to research, with contextual information added to the object's description on eHive. They then publish the record onto the online catalogue and add thematic/geographical/period tags to objects to help users when searching the collection. During the recruitment phase, participant data such as age and nationality are collected via a Survey Monkey registration form. This data illustrates how effective this project has been at appealing to a different volunteer demographic for us: the flexibility of the project appealed to younger people, especially students, with 80% of volunteers under the age of 34 and the remote aspect enabled us to reach people from 30 countries. We also track activity by asking volunteers to feed their volunteering hours and number of records digitised directly into a Google Sheets form. The data we've collected indicates that 600 volunteers from across five continents have worked through 40,000 objects in our collection so far.

4.8 A Space to Be... – wellbeing data

The result / impact

This project has many impacts on our collections management, including:

- Increased use of objects in our displays or loans to other organisations. By having our objects on a searchable catalogue we are now able to see exactly what our collection holds, and can search for objects through key words or themes using the tags.
- We have been able to address where we have holes in our collection and the kinds of objects we should be collecting (e.g. 1980 – modern day / objects that explore other cultures or religions)
- We can highlight 'star objects' that would benefit from being researched, which may result in their use in exhibitions or as online content. These objects, chosen by volunteers from a range of places and ages, tell us what audiences are interested in.
- We can begin to work out where we have duplicates, objects in poor condition or those that are less relevant to our collections policy. This is the starting point to begin an audit to consider disposal for certain objects which would eventually free up space in our stores to better care for our current collection as well as enabling us to do contemporary collecting.

Optional final thoughts

We've spoken at conferences and given presentations about the project, as well as delivering advice to 40 museums and organisations looking to embark on a similar project. Our recommendation is to try to involve as many people in the project as possible and to track their demographics; not only is it necessary to get through the backlog, it adds new and varied voices in your collections work. Using tools like Google Sheets and asking volunteers to fill in their own activity helps cut workload down of the volunteer manager whilst enabling accurate progress records. Also, it's useful to ask volunteers to submit case studies throughout the project to understand the positive impact of the volunteering opportunity and any areas of improvement. We use all of this information to shout about the success of this project, report to stakeholders and to plan workload and future phases.

For more details contact - Kate Knowlden, Curator, Food Museum Suffolk

5. CONCLUSION

5. CONCLUSION

The aim of the Data Driven Museums project was to help museums use data better. Rather than giving prescriptive instructions on exactly what data should be collected this resource has focused on providing tools and guidance on identifying the most useful data for the individual museum. It is not blind to the fact that funders and other stakeholders require museums to provide data, in some cases a significant amount. In those cases, the data should be collected as efficiently as possible. It is worth establishing where external requirements overlap as consistency between museums is a good thing for the sector. For an individual museum it makes sense to focus on the most relevant data for their purposes, especially when capacity is limited. Being selective increases the chances of the data being monitored, analysed and applied effectively. Data can help a museum to; operate more efficiently, make more informed choices, deliver better services and reach the desired audience but, as the cases studies show, data only becomes genuinely useful when it is acted on.

To provide some baseline data for the Data Driven Museums project an online survey was conducted during November and December 2022. Of those who responded only 34% reported that their museum was using data "proficiently", which was described as actively monitoring a range of data and using it to inform decisions. Most respondents indicated that their museum's use of data was more limited. This suggests that, while some museums are using data well, there is room for improvement. The survey included questions designed to discover what museums needed to use data better. The responses suggested that the biggest barrier was capacity. A majority of 68% felt either "reasonably confident" or "confident" in their ability to find, analyse and apply data but they did not have the time to do so. One of the survey respondents summed this up;

"... we have data, we know how to collect data, we could analyse data if we had it, but quite simply there are only so many hours in the day."

It is worth noting that capacity is not the only barrier and there are significant variations between museums. Some museums struggle to find data and there appears to be a substantial gap in data skills. Expanding resources would improve the capacity of museums to use data. **Appendix F** below provides details of the survey.

In the current climate finding additional resources for data will be challenging. For most museums the most feasible improvement will be to develop the skills and knowledge of the existing team and focus on the most relevant data.

6. APPENDICES

APPENDIX A – DATA GLOSSARY

Aggregate: A combination of data to create a single measure, e.g., the cost-of-living index is an aggregate of the costs of several goods and services.

Algorithm: A step-by-step procedure for solving a problem. Nowadays it most frequently refers to formula used to analysis data using computers.

Analytics: Any analysis of data or statistics. Often used to refer to data from online interactions, e.g., Google Analytics.

Average: In everyday language average is the typical or representative. In statistics the average is (almost always) the arithmetic mean, i.e., the sum of a set of numbers divided by the number of numbers in the set, e.g., if the set is 1, 5, 9, 25 and 40 the average is 16. The set = 80 divided by 5 = 16. See also median and mode for other forms of average.

Balanced Scorecard: A performance report that covers key activities and is linked to the strategic aims. Popularised by Robert S. Kaplan and David P. Norton during the 1990s and much adapted since.

Bar graph: Data displayed using a series of rectangles of the same width but different lengths. Can be vertical or horizontal.

Baseline data: Data that shows where you started. The foundation of stone that allows more data to be collected and to show how things have changed.

BI platform: Business intelligence platform. Software to help a business (including not-for-profit museums) understand and present its data.

Bias: A systematic error that will produce incorrect findings

Big data: Data sets that are too large to analyse without a lot of computer power. The phrase is frequently used in association with algorithms designed to predict behaviour.

Causality: Actions or activities that make something else happen. Not to be confused with correlation.

Census: A survey involving the whole population, e.g., the census of the UK which takes place every ten years. The word also applies to smaller surveys that have a 100% sample.

CMS: content management system, software used to manage the creation and modification of digital content.

CRM: Customer relationship management. There are ticketing systems / software designed to keep data on customers particularly for marketing activity.

Contingent valuation: A tool economists used to put a financial value on non-market activity, like visiting a free museum. It can incorporate the value a non-visitor might put on a museum as well as those who use the museum.

Corroborate: To support, e.g., by adding relevant data.

Correlation: When there is a connection or relationship between things, but one does not cause the other.

Cost-benefit analysis (CBA): The value of the benefits from an activity minus the costs of delivering the activity. Similar to return on investment but more likely to include non-financial benefits, e.g. skill development or enjoyment.

CSV file: Some digital documents have the .csv suffix meaning that it is a plain text file that

contains a list of data. CSV files enable complex data to be extracted from one application and imported into another. CSV stands for Comma (or Character) Separated Values.

Cultural Heritage Capital framework: A new economic valuation tool created by DCMS to provide data to support investment and public spending decisions. A tool that converts the value people give to heritage into something economists understand.

Dashboard: A standard set of KPIs. Often presented in a visually attractive way to provide a progress update at a glance.

Data cleansing or data cleaning: Checking data to fix errors, removing corrupt data and adding missing values

Data lake: A storage repository for large amounts of all kinds of data (structured, semi-structured, and unstructured). A place where data is held.

Data mapping: The process of matching fields in one set of data with another and integrating them

Datum: Singular of data.

Data science: An interdisciplinary field which uses statistics, algorithms and other methods to understand phenomena using data.

Data scientist: Someone who creates insights from data, often someone who can write code to analyse data.

Data warehouse: A type of data management system which stores large volumes of disparate data.

Generic Learning Outcomes (GLOs): A set of indicators designed to show outcomes of learning activities. Created c. 2002

Generic Social Outcomes (GSOs): These sit alongside the Generic Learning Outcomes (GLOs) as part of the Inspiring Learning for All framework. They were developed by the Burns Owen Partnership (BOP) in 2005.

Geo-mapping: Tools that present data on a map, e.g. visitors' home postcodes.

Index: An aggregate or compound measure used to show change, e.g., the cost-of-living index can be used to compare the costs in previous years.

ILFA: Inspiring Learning for All. A framework to measure and define the informal learning opportunities that museums, archives and libraries provide. Generic Learning Outcomes (GLOs) and Generic Social Outcomes (GSOs) are part of this framework.

KPI: Key performance indicator. A tool to assess or measure progress towards targets.

Lagging indicator: A backwards looking indicator that shows what has happened.

Leading indicator: A forward looking indicator that helps predict what will happen.

Likert scale: A rating system used to measure people's attitudes and opinions. Frequently used as a five-point scale in questionnaires, i.e., strongly agree / agree / neither / disagree / strongly disagree.

Limitations: What the data does not or cannot show

Management data: Information used to inform management decisions.

Mean: The average of a range of data. The sum of a collection of numbers divided by the number of numbers in the collection, e.g., if the set is 1, 5, 9, 25 and 40 the average is 16. The set = 80 divided by 5 = 16.

Median: The middle value of a data set when arranged in order, e.g. if the data set is 1, 5, 6, 7, 9, 12 and 20, the median is 7 because it is the mid-point separating the lower values from the higher values. 50% of all values will be smaller than the median and 50% will be higher. In some cases the median may be a better measure of the average than the mean. For instance, if the set of data has a wide range with distant outliers the median would be an appropriate way to illustrate the typical average.

Metadata: A set of data that describes and gives information about other data, e.g., technical information about the descriptive catalogue records.

Metrics: Catch all to cover any numerical data measurements

Mode: The most frequently occurring number in a set of data. E.g., if the data set is 1, 3, 6, 6, 6, 11, 14, 14 and 18 the mode is 6 because there are three of them.

Multiple Deprivation Index (MDI): A composite measure that looks at income, health, employment etc. to measure poverty. Used across the UK and available at a local authority level.

Percentage: %: A data set expressed in hundredths.

Performance indicator: Data used to assess or measure progress towards targets. They can be quantitative or qualitative.

Pivot table: A table that brings together more than one source of data to consolidate and summarise it. The software Excel has a Pivot table function.

Population: The whole group that is being examined and from which a sample maybe taken, e.g., the population could be all visitors to the museum during the month of May.

Productivity: The Office for National Statistics defines this as the measure of how much output is produced per unit of labour input. Often quantified in financial terms (£) but it could be defined in other ways, e.g., number of catalogue records produced by number of hours.

Quantitative data: Numerical data.

Qualitative data: Non-numerical data, e.g., opinions, observations, interview, written feedback, etc.

Ratio: Numbers in relation to each other. e.g., a traditional martini uses two parts gin to one of vermouth. In other words, the ratio of gin to vermouth is 2:1.

Reliability: Reliable findings are ones that can be repeated.

Representative: Often used in relation to samples, e.g., to generate meaningful data a survey of museum visitors should represent the overall population of museum visitors in terms of demographic characteristics, time of their visit, etc.

Return on Investment (ROI): The financial gains or benefits that can be expected from an activity. Similar to a cost benefit analysis but normally more narrowly focused on financial benefits.

Sample: A selection of the population being examined. There are different ways to take a sample, e.g., random, convenience, purposive, systematic, etc. These are discussed in detail by statisticians. In most cases you want to have a representative mixture.

Statistics: The collection, analysis, interpretation or explanation, and presentation of numerical data.

Tree diagram: A graph that arranges data in blocks reflecting the volume of data. Can be created using Excel.

Trend: The direction or pattern in data over a period of time.

Triangulation: The use of more than one data source and / or research methodology to corroborate the findings and increase their credibility.

Triple bottom line: Profit / People / Planet.

Unit of analysis: The thing being counted, e.g., visitors, unique visits to a website, catalogue records, hours, etc. Good to keep this consistent to allow figures to be compared.

Validity: The extent to which the data and or findings are factually sound, accurate and trustworthy.

Variables: Features that change, e.g., in visitor research relevant variables will include the time of day, school holidays, the weather, the exhibition, etc.

Word Cloud: A data visualisation tool that shows which words appear most frequently in text. Useful for identifying key issues.

APPENDIX B – DATA SOURCES

B 1. Mixed data on individual museums

Museum's Own

Each museum is likely to have a significant amount of exiting data. Visitor numbers, feedback forms, surveys and reports are obvious sources. Also look at other sources, e.g., budgets, catalogues, mailing lists, website, social media accounts, energy bills, etc.

SHARE

The Annual Museums Survey (AMS) is a great source of benchmarking data. It is managed by South West Museum Development on behalf of all museums in England - **https://southwestmuseums.org.uk/what-we-do/annual-museum-survey/**. SHARE publishes the East of England AMS reports and data - **https://www.sharemuseumseast.org.uk/resources-2/share-resources/**. The raw data spreadsheets are published one year after the corresponding report is released; confidential data such as finances are removed from the published versions.

Arts Council England (ACE)

ACE's annual survey of National Portfolio Organisations (NPO), is divided into the following sections: workforce, finance, activity, audiences, learning & participation, touring & international, sector support & Bridges, Covid impact. **https://www.artscouncil.org.uk/research-and-data/our-data/our-npos-and-annual-data-survey#t-in-page-nav-1**

B 2. Population / Audiences / Potential Audiences

Office for National Statistics

Huge amounts of population data from across the UK. **https://www.ons.gov.uk/**. Local authorities often extract data from ONS and present it on their own website as "Insight Reports" or similar. ONS data on population, employment, qualifications, etc. is also presented by this Nomis website which is searchable for different geographical areas - **https://www.nomisweb.co.uk**

ONS data is used to create county data resources:

Bedford Local Insight **https://bedford.communityinsight.org/**

Central Bedfordshire Local Insight **https://centralbedfordshire.communityinsight.org/map/?subregion=18599**

Luton Insights Tool **https://lutoncouncil.communityinsight.org/**

Cambridgeshire Insight **https://cambridgeshireinsight.org.uk/**

Essex Open Data **https://data.essex.gov.uk/**

Herts Insight **https://www.hertfordshire.gov.uk/microsites/herts-insight/home.aspx**

Norfolk Insight **https://www.norfolkinsight.org.uk/**

Suffolk **https://www.suffolkobservatory.info/**

Government Department for Digital, Culture Media and Sport (DCMS)

DCMS's Taking Part Survey. Data on visiting patterns and demographics. This survey ran every year between 2005 and 2020. The survey was conducted door to door in England and gathered data on engagement with the arts, heritage, museums, libraries, digital and social networking.
https://www.gov.uk/guidance/taking-part-survey

DCMS's Participation Survey. This replaces the Taking Part survey. Unlike the Taking Part survey it is conducted on-line. It provides data on adult engagement in all DCMS sectors, a lot of the questions are about digital and online activities. There are some questions about museums and cultural heritage.
https://www.gov.uk/guidance/participation-survey

Association of Larger Visitor Attractions (ALVA)

A membership organisation made up of the UK's most popular, museums, galleries, palaces, castles, cathedrals, zoos, historic houses, heritage sites, gardens, and leisure attractions. ALVA publishes data on visitor numbers on their website. They collate benchmarking data gathered by its members.
https://www.alva.org.uk/index.cfm

Audience Agency

Information about visitors and users.
https://www.theaudienceagency.org/audience-finder-data-tools

Historic England

Historic England's visitor attraction data trends. A survey of historic sites collected since 2008.
https://historicengland.org.uk/content/heritage-counts/pub/2021/visitor-attractions-trends-england-2020/

Visit England

Insight data on visitor pattern, size and the value of the English tourism market -
https://www.visitbritain.org/england-research-insights .

They have also been conducting regular surveys on people's feelings about taking short breaks and holidays post-Covid -
https://www.visitbritain.org/domestic-sentiment-tracker

B 3. Finance / Fundraising / Grants / Philanthropic Giving

National Lottery Heritage Fund

Data about the grants the NLHF have awarded.
https://www.heritagefund.org.uk/about/insight/open-data

My Cake

This organisation specialises in financial benchmarking for third sector organisations.
https://mycake.org/

Arts Fundraising and Philanthropy

https://artsfundraising.org.uk/benchmarking

Three Sixty Giving

A charity that aims to provide open data for grant making in the UK to help organisations to become more informed, effective, and strategic.
https://www.threesixtygiving.org/

B 4. Heritage Assets and the Environment

Royal Society of Arts (RSA)

RSA's Heritage Index; including museums:
https://www.thersa.org/reports/heritage-index-2020.

Historic England

Historic England's spreadsheet of local authority profiles. Allows you to compare two local authorities in terms of, for example, the number of listed buildings, heritage at risk buildings, world heritage sites, etc. You need to download and enable it to make it work.
https://historicengland.org.uk/research/heritage-counts/2016-heritage-and-place-branding/indicator-data/local-authority-profiles/

Another resource is Historic England's Heritage Counts. Well-presented and packed with useful data.
https://historicengland.org.uk/research/heritage-counts/

APPENDIX C -EXISTING STANDARDS AND INDICATORS FOR MUSEUMS

DCMS's performance indicators for sponsored museums

https://www.gov.uk/government/collections/sponsored-museums-annual-performance-indicators

Historic England's Indicators

Collected each year since 2002.
Heritage Indicators 2021 (historicengland.org.uk)

British and International Standards

ISO 18461:2016 – International Museums Statistics. This is under review. A copy costs between £144 and £289.
BS ISO 18461:2016 | 31 Mar 2016 | BSI Knowledge (bsigroup.com)

BS ISO 21246:2019 – Information and Documentation – Key Indicators for Museums. It has been developed in cooperation with the International Council on Museums (ICOM) and takes advantage of, particularly, the work of the European Group on Museum Statistics (EGMUS). A copy costs between £144 and £289.
BS ISO 21246:2019 | 31 Jan 2020 | BSI Knowledge (bsigroup.com)

APPENDIX D – TOOLS AND GUIDANCE FOR GATHERING, ANALYSING AND PRESENTING DATA

D 1. Evaluation tools

SHARE's Evaluation Toolkit

This provides excellent guidance on collecting evaluation data - https://www.sharemuseumseast.org.uk/wp-content/uploads/2020/05/SHARE_Evaluation_Toolkit_FINAL_WEB.pdf

D 2. Tools to help understand audiences

Audience Agency

Offer resources on segmenting audiences.
https://www.theaudienceagency.org/resources/guide-segmentation-made-simple

Google Analytics

This is a tool that helps you collect, analyse, and report on website traffic data. There is a free version. It captures a lot of data on how users interact with the website, e.g., how usersfind the landing page, which pages get the most traffic, where in the world your users are based, etc. You need to learn how to make sense of the data. There are online presentations on how to use Google analytics.
https://analytics.google.com/analytics/academy/course/6

If you want to go beyond the built-in analytics in social media platforms (e.g., Facebook, Instagram and Twitter) there are behavioural analytics applications designed to make the data more meaningful e.g., Hotjar - There is a free version. https://www.hotjar.com/ and e.g., and Hootsuite – https://hootsuite.com/

D 3. Tools for learning and social outcomes

Generic Learning Outcomes

The Generic Learning Outcomes were developed to demonstrate the outcomes of users' learning experiences. They attempted to expand the measurement of what museums did.
https://le.ac.uk/rcmg/research-archive/generic-learning-outcomes

Generic Social Outcomes

These sit alongside the Generic Learning Outcomes (GLOs) as part of the Inspiring Learning for All framework.
https://www.artscouncil.org.uk/sites/default/files/S3D29_GSO_Indicator_Bank.pdf

D4. Tools to capture heritage and cultural value

Centre for Cultural Value at the University of Leeds

A research centre devoted to investigating cultural value. The main partners are The Audience Agency, The University of Liverpool, The University of Sheffield and Queen Margaret University, Edinburgh.
https://www.culturalvalue.org.uk/
They run events, offer toolkits, case studies, and produce research reports.

Historic England

Explanation of Cultural Heritage Capital.
https://historicengland.org.uk/research/current/social-and-economic-research/culture-and-heritage-capital/introduction/

D5. Economic impact

AIM Economic Impact Toolkit

https://www.aim-museums.co.uk/wp-content/uploads/2019/10/Economic-Impact-Toolkit-2019.pdf

D 6. Wellbeing Tools

Measuring Wellbeing

Guidance on measuring wellbeing
https://measure.whatworkswellbeing.org/

UCL - Toolkit on measuring wellbeing
https://www.ucl.ac.uk/culture/sites/culture/files/ucl_museum_wellbeing_measures_toolkit_sept2013.pdf

Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) – developed to monitor mental wellbeing by looking at key dimensions.
https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs

D 7. Environmental Sustainability Tools

Carbon Trust

Offer an energy benchmarking tool.
https://www.carbontrust.com/resources/energy-benchmark-tool

Groundwork

They have regional hubs and Groundwork East's website is -
https://www.groundwork.org.uk/hubs/east/

Julie's Bicycle

Information on environmental impact plans, advice on buying sustainable power and Creative Green Tools a carbon calculator:
https://juliesbicycle.com/

D 8. Business Intelligence and data visualisation tools

All data processing software will have some ability to convert the data into graphs and charts and new tools emerge frequently.

Microsoft Excel – This standard software from Microsoft can create a variety of charts, graphs and diagrams. Instructions on how to make them can be found online.

Microsoft Power BI – Specifically designed to capture business data and able to produce a variety of data visuals.

Google Data Studio - A reporting and data visualization tool. It can pull data from up to 12 different sources, including Google Analytics, and combines them into reports
https://datastudio.google.com/

Balanced Scorecard Designer software – Software based on the Balanced Scorecard
https://www.webbsc.com/

Canva - Online tool for creating infographics -
https://www.canva.com/create/infographics/

Piktochart – Online tool for creating infographics. Includes
https://piktochart.com/

Geo-mapping – Tools that present data on a map

APPENDIX E – BOOKS AND OTHER RESOURCES ON DATA AND STATISTICAL SKILLS

E1. Books

Hand, David J. (2008) *Statistics: A Very Short Introduction,* Oxford University Press, Oxford

Harford, Tim (2020) *How to Make the World Add Up: Ten Rules for Thinking Differently About Numbers,* Little Brown, London.

Johnson, Robert Burke and Vogt, William Paul (2015) *The SAGE Dictionary of Statistics & Methodology: A Nontechnical Guide for the Social Sciences*, 5th edition, Sage Publications.

Spiegelhalter, David (2020) *The Art of Statistics: Learning from Data*, Pelican Books

Sturge, Georgian (2022) *Bad Data: How Governments, Politicians and the Rest of Us Get Misled by Numbers*, The Bridge Street Press, London.

E 2. Online resources

FutureLearn

Data visualisation courses - **https://www.futurelearn.com/subjects/business-and-management-courses/data-visualisation**

Charity Digital

Advice on choosing a Customer (or Constituent) Relationship Management (CRM) tool for heritage organisations - **https://charitydigital.org.uk/resources/digital-guide-a-guide-to-choosing-a-crm-for-heritage-organisations** . Also, advice on data protection - **https://charitydigital.org.uk/resources/frequently-asked-questions-about-data-protection**

Digital Academy

Part of the Heritage Fund's Digital Skills for Heritage initiative. Webinars and workshops on all things digital, some include elements on metrics. - **https://charitydigital.org.uk/heritage-digital-academy**

Information is Beautiful

Ideas and online seminars. Founded by David McCandless, who has written three inspirational infographics books. **https://informationisbeautiful.net/**

APPENDIX F – EXAMPLES OF LEADING AND LAGGING PERFORMANCE INDICATORS

Leading performance indicators are those which provide insight into future performance. They offer evidence of what might follow. They may quantify the first essential step, which, if it is not achieved is likely to result in the objective being missed. Lagging, on the other hand, report on past performance. Lagging indicators record the outcome.

Table 1: Examples of Leading and Lagging Indicators

Example aim	Example of a leading performance indicator	Example of a lagging performance indicator
To delivering accessible and inclusive learning and engagement programmes, inspired by the collection	• Number of people signed up for the learning and engagement newsletter • A diverse mixture of events designed to appeal to a range of audiences • An inclusive workforce	• Number of learning events run • Number of people who attended the events • Demographic profile of those attending learning and engagement events
To increase access by improving the museum's online offer	• Website achieving a quality mark for accessibility • Feedback from disability group(s) on the accessibility of the website offer	• Number of unique users accessing the website • Number of page views
To reduce the cataloguing backlog	• Number of new catalogue records created • Number of new acquisitions (i.e. increasing the size of the backlog)	• Number of catalogue records completed • % of the collection that is fully catalogued
To proactively manage the finances to ensure a resilient and sustainable museum	• Readings of the SMART meter showing daily gas use • Number of grants applied for • Invoices matching purchase orders	• Number of kilowatts of gas used at the end of each month • Value of grants received • Value of financial reserve at the end of the year
To generate £5,000 income from the museum's retail activities by the end of the year	• Number of visitors • Average spend per visitor	• Amount of income generated

APPENDIX G – CHECKLIST FOR SELECTING AND USING DATA

Key Question	Explanation	Yes / No?
1. Is the purpose of the data clear?	Defining what the data needs to do at the start makes other choices about gathering, analysing and using more straightforward.	☐
2. Have you checked for existing data?	Starting with desk research is always a good idea. Look in the museum and online for data that might answer your purpose. If you decide to collect new data consider using the same units as existing data to allow for comparisons	☐
3. Is the data meaningful?	The more meaningful the data the less you are likely to need. Try to pinpoint the evidence that will illuminate whatever you are investigating.	☐
4. Is the quality of the data good?	Poor quality data produces poor quality findings. Consider how; accurate, up-to-date, valid, reliable, and representative the data is. It is unlikely to be perfect. Note any limitations.	☐
5. Is the data comparable and consistent?	Avoid comparing apples with oranges. Use standard units and time periods to enable comparisons with other organisations. Be consistent in how you collect and process the numbers.	☐
6. Have you written down your assumptions?	Writing down assumptions, including definitions of what is in and what is out, avoids confusion and helps with consistency. Make sure anyone else involved knows about the assumptions.	☐
7. Have you got a systematic way to collate and manage the data?	The solution may be an Excel spreadsheet, or alternative software, combined with people able to input the data. Set this up at the start.	☐
8. Have you got a way to analyse and use the data?	Avoid collecting or gathering more data than you have the capacity to analyse and monitor.	☐
9. How will your present the data?	Think about this early on but be prepared for the best solution to emerge once you get to know the data.	☐
10. Is data protection an issue?	General Data Protection Regulation (UK-GDPR) and Data Protection Act 2018 relates to the collection and processing of personal data. Depending on the type of data this may or may not be an issue.	☐

APPENDIX H – BASELINE SURVEY

To gauge the level of data confidence and use an online survey was set up by SHARE using the Smart Survey platform. Museum staff and volunteers in the East of England as well as in the South East were invited to participate. The survey was open for four weeks between 23 November and 12 December 2022. 41 responses were received. The details are set out below. The intention is to repeat this survey to see what may have changed.

N.B. Comments have been included but names of specific venues have been replaced with "XXX".

1. Overall, how confident are you in your ability to find relevant data, analyse it and apply the findings to your museum workplace?			
1	Extremely unconfident		0%
2	Unconfident		7%
3	Reasonably unconfident		22%
4	Reasonably confident		51%
5	Confident		17%
6	Extremely confident		2%

2. To what extent are you able to find publicly available data that is appropriate to your museum? For example, SHARE's benchmarking data, ACE's data, Audience Agency data, etc.			
1	Not at all able		5%
2	I know a few (1-3) sources, but I am not sure how to find more.		29%
3	I know some (4-6) sources, but I am not sure how to find more.		15%
4	I know of 1-6 sources, and I could find others if I needed to.		41%
5	I know of a lot (more than 6) sources and could find others if I needed to.		10%

3. To what extent do you know how to identify and monitor performance indicators that are appropriate for your museum workplace?			
1	I don't know how to start		2%
2	I don't know much		17%
3	I know a little		34%
4	I know how to do this		44%
5	I absolutely know how		0%
6	Other (please specify):		2%

4. To what extent do you know how to use benchmarking data for the benefit of your museum? For example, the data collected by SHARE's annual survey.			
1	I don't know how to start		5%
2	I don't know much		20%
3	I know a little		27%
4	I know how to use it		37%
5	I absolutely know how to use it		10%
6	Other (please specify):		2%

5. Thinking about the museum you are involved with, which of the following statements best describes the current use of data?

1	Non-existent. We do nothing with data.		0%
2	Basic. We count visitors, have a visitors' book and fill in SHARE's annual survey		24%
3	Moderate. We gather some data on our visitors / users, and we report on financial data. Apart from that there is limited use of data to shape the museum's activities.		32%
4	Proficient. We actively monitor a range of data, e.g., audiences, collection, financial and operational information. We use data to inform decisions.		34%
5	Advanced. We have comprehensive data on all the museum's activities. It is carefully analysed, and we apply the findings to inform decisions.		2%
6	Other (please specify):		7%
	1: I would say we're better than moderate but perhaps not completely proficient. We do use data to make decisions.		
	2: We are housed in XXX and entrance is part of the XXX entrance ticket. We collect visitor numbers and comments when the Museum is stewarded but sadly cannot access any more data		
	3: In some areas good, in others, we have work to do		

6. Which of the following best describes the ability and capacity of your museum to deal with data?

1	Non-existent. We are not able to collect or analyse any data.		0%
2	Basic. It isn't anyone's allocated role but we do our best.		29%
3	Moderate. One of the team is good with numbers and several of us contribute.		37%
4	Proficient. Several of us use data. We aren't dedicated data analysts, but training has been provided and we can use Excel.		24%
5	Advanced. There is (at least) one dedicated role responsible for data. We have suitable training, support and software.		5%
6	Other (please specify):		5%
	1: As above. We're better than moderate but could use more training.		
	2: If we could collect the data we have the ability to process it from external qualifications and experience (IT qualifications etc.)		

7. In which area would your museum most benefit from the better use of data? Tick as many as apply. (Totals exceed 100% / 41 responses due to multiple selections.)				
1	Collections management and care		34%	14
2	Cataloguing		28%	11
3	Financial management / budgeting / income generation / fundraising		34%	14
4	Environmental sustainability / energy use / carbon footprint		51%	21
5	Audience development / reaching underrepresented groups		73%	30
6	Learning and public engagement		56%	23
7	Exhibitions		7%	11
8	Marketing		68%	28
9	Workforce / staff / volunteers		31%	13
10	Other (please specify):		10%	4
	1: It's not better use of data...we do not and cannot have the data to use.			
	2: Not sure			
	3: Fundraising and Marketing			
	4: The two full time members of staff are already working at capacity and we usually have a volunteer who helps with data, but our ability to collect and manage more data will be limited by the capacity of the current staff and volunteers.			

8. If you have any other comments related to the use of data by your museum, or suggestions about what would improve your ability to use data please write them here.	
1	As ever, it is the time to analyse the data we already collect that is the issue. We're about to start using Audience Finder, so I hope that the visitor data we send to the Audience Agency will be analysed for us.
2	If XXX collected more data with greater granularity, we might well be able to hypothecate some data that might be useful to us but sadly this is not the case.
3	See above, we have data, we know how to collect data, we could analyse data if we had it, but quite simply there are only so many hours in the day. Our excellent new volunteer is currently ill and if she returns in the New Year we will feel more confident about collecting more and better data, but as long as we remain supported by a large number of volunteers are data collection and use will be limited by the number of competent staff and volunteers involved with the museum and by the quality of the software we can afford.
4	More resources would be required both financial and in person.
5	Any training and resources would be gratefully received!
6	I'm not sure how representative my answers are for the whole organisation as I really only deal with audience data and volunteering. It would be great to have something like a tool-kit that would help with looking at all the data we have, and filtering that down to make straight-forward, actionable plans. I certainly feel that we sometimes are missing the wood for the trees.
7	In an all-volunteer museum, our knowledge in this field depends crucially on individuals' own backgrounds. It would be helpful to be able to direct new volunteers at a basic training resource (not necessarily a course) to prime them to take on a role in 'using data'.
8	Need better digital tools to be able to efficiently collect and report data.