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Arts Council England: Local Museums Benefit Transfer Report

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March 2022

Table of Contents

Executive Summary

Arts Council England (ACE) recognised a need for the cultural sector to have a standard approach for the economic valuation of arts and cultural institutions and activities. To address this, primary research was conducted to value a series of cultural sites: regional art galleries, theatres, and local museums in England. A first report has been published for regional art galleries and theatres using Contingent Valuation (CV) methods.[1] This second report applies these methods to value local museums. To encourage widespread use of these values in the arts and cultural sector a series of Guidance Notes[2] on how to apply the findings from the analysis is being published alongside this research.

This research provides monetary estimates of the benefits that local museums provide to visitors and the local population in England. The approach used is consistent with HM Treasury Green Book Social Cost Benefit Analysis (SCBA). It adds to the growing evidence base around the economic value of cultural institutions.

The analysis was commissioned from Simetrica-Jacobs and the Creative Industries Policy and Evidence Centre led by the innovation foundation, Nesta to enhance the wider arts and cultural sector's knowledge and use of economic techniques to measure the value of cultural activities and institutions. There is increasing recognition of the benefits of applying HM Treasury Green Book-endorsed techniques from welfare economics to value the non-market as well as the market benefits of culture.[3]

This report's main contribution is in using the findings from primary research on the value of a sample of local museums to derive sufficiently robust values that can be applied to a range of other local museums using 'Benefit Transfer'.

Benefit Transfer (BT) methods which produce willingness-to-pay (WTP) estimates can, in principle, be applied to comparable categories of cultural institutions in SCBA, thereby reducing the need for additional new and costly primary data collection.

Given the typically lower visitor numbers to local museums (compared with, say, regional museums), identification of past visitors through online sampling is more difficult, meaning that target sample sizes per institution will be lower in practice, and risk falling below the recommended minimum sample size for CV surveys as recommended by UK Government guidance.[4] In response to this challenge, we designed a sampling approach whereby data

1 Lawton et al. 2021

2 https://www.artscouncil.org.uk/publication/culture-heritage-capital

3 Crossick and Kaszynska 2016

4 Pearce and Özdemiroglu 2002

collection was focused at the local county geographical level (specifically, Cheshire, Essex, Devon, and Lincolnshire) to survey six local museums in each county. This provided a clustered sampling approach at the county-level, through which a range of local museums were valued, with a target sample of around 150 visitors and 150 non-visitors per county. Each person surveyed had an individual maximum WTP related to a given valuation scenario for the site in question, providing a range of WTP values across the sample. We compute the **average WTP value for visitors** and an **average WTP for non-visitors** across all six sites at the county level (the average WTP is not presented at the museum level due to the aforementioned small sample sizes). The clustered approach is designed to overcome potential outlier bias that would be introduced by surveying only one local museum per county. It also has the effect of averaging across size, collection type, location and other idiosyncratic characteristics of local museums that impact on their value to the public. The fact that we study museums in four different counties means that we apply Benefit Transfer tests between the counties to ascertain how much 'transfer error' would be introduced if values from this study were applied to local museums in another county, and whether this transfer error falls within the accepted range from the Benefit Transfer literature.

Many local museums in the UK do not charge for entry. This means that there is no clear monetary measure of the value of a local museum visit to the public. However, even where local museums do adopt an entry fee, extrapolating the value that the museum generates is problematic. This is because entry fees can only provide insight into a narrow definition of value, namely how much a visitor values their visit to the museum, although, with entry fees often being very low or subsidised or free for certain groups, it likely provides only a partial value in these cases. Entry fees do not, for example, tell us anything about how much visitors value the preservation of exhibits for future generations to enjoy, nor does it tell us how much non-visitors value the existence of the museum.

Local museums: WTP values

A survey was designed for a total of 24 museums, six for each county (Cheshire, Essex, Devon, and Lincolnshire). The survey collected WTP values for:

- Those who had visited the local museum in the past five years (User WTP)
- Those who had not visited that local museum in the past five years, but had visited other local museums in the county (we call this 'Impure' non-user WTP)
- Those who had not visited that or any local museum in the past five years (we call this 'Pure' non-user WTP)

Please note that all average WTP values, here and elsewhere, are inclusive of £0 values from people who indicated that they would not be prepared to pay anything, because as standard we treat zero values as genuine valuation estimates (not protest bids).

User WTP for access to one of the six museums a respondent indicated they had visited in the past five years (per visit per person)

- Average WTP an entry fee to visit a local museum turned out to be £4.44 per person per visit, with a lower bound (this being the lower bound of the 95% confidence interval) of £4.00. This average was calculated as the average of responses for each museum, averaged for the museums in a county, which was then averaged over the four counties. For comparison, this is lower than the average WTP of visitors to regional galleries elicited by surveying four regional museums (in different counties) in previous work for Arts Council England (£6.42, based on a pooled sample of four regional museums, all with comparable entry fee hypothetical payment vehicles, i.e., the payment scenario put to respondents), which would be consistent with regional museums having a greater capacity to provide visitors with larger collections than local museums. This also represents a realistic figure which is slightly conservative compared to the prices actually paid at local museums which do charge for entry, which our analysis indicates averages around £5. This may be expected given that mean WTP is always calculated with the inclusion of those who would not be willing to pay as £0.
- Our analysis is based on a sample of 607 respondents, covering 24 local museums in four English counties, with each museum having at least 10 respondent valuation estimates. Note that respondents may have visited more than one of the local museums in their county and been asked to value up to 3, meaning that the total number of visitor use WTP observations is 946.[5] Between the four counties, average WTP ranges from £3.95 in Devon to £4.76 in Lincolnshire. The relatively low level of variance between average use WTP for each of the four counties means that the level of error when transferring use WTP to local museums in other comparable counties is also low, as confirmed by the low transfer error observed in transfer tests.

Non-user WTP for the continued existence of one of the six local museums they had not visited in the past five years (per person increase in annual council tax over five years)

- Average WTP for an increase in council tax over five years for a non-visited local museum was computed at £3.68 per person per year, with a lower bound of £3.12. For comparison, this is broadly similar to the non-use WTP for the regional museums studied in the earlier Arts Council England study (£3.48). This average was calculated as the average WTP responses for non-

5 No statistically significant correlation is found between number of sites valued and average WTP, as found in t-tests of both the overall and county-level sample.

users for each of the six museums, averaged by county, and then averaged over the four counties. It suggests that non-users value local and regional museums by broadly the same amount. Note that non-use WTP is not directly comparable to use WTP as it is based on paying a per person increase in annual council taxes over a five-year period, compared to a per person per visit entry fee in the case of use WTP.

- Our analysis is based on a sample of 1,359 respondents, covering 24 local museums in four English counties, with each museum having at least 48 respondent valuation estimates. Between the four counties, non-use average WTP ranges from a lowest average of £3.49 for Devon to the highest average of £3.88 for Cheshire. As before, low levels of variance between average non-use WTP for each of the four counties means that the level of error when transferring non-use WTP to non-visited local museums in other comparable counties is also low, as confirmed by the low transfer error observed in simple unit transfer tests.
- In addition, average WTP was lower for 'pure' non-users (those who had not visited any of the listed local museums), which arguably is to be expected given that we might expect pure non-users to be less culturally engaged than impure non-users (who had visited at least one of the other local museum sites). However, this difference turned out not to be statistically significant.

Application to Social Cost Benefit Analysis

This report presents a set of average WTP values for different dimensions of economic value (use and non-use) of local museums, surveyed across multiple sites, with Benefit Transfer tests and initial guidance on how to apply these values to SCBA.

Given that the guidance on how to apply non-market values to SCBA and business cases is still under discussion within government, we provide some initial recommendations to ensure the results are applied as robustly as possible and paying heed to the uncertainties. These include aggregation of conservative estimates of WTP – based on the lower bound of 95% confidence intervals – which we report throughout this document. We believe that the lower bound WTP estimates are more appropriate to use in this context because they are more conservative: they provide a representation of the lowest average value that can reasonably be derived from the distribution of values within our sample.

To inform the debate on how to apply WTP values for culture and heritage in SCBA, Arts Council England has produced a Guidance Note to accompany this report: "How to quantify the public benefit of your Local Museum using Economic Value estimates". The Guidance Note advises local museums as to the appropriate number of beneficiaries they should assume: visitor numbers in the case of visitor WTP, and for non-users, an appropriate local catchment area, which we suggest as households within the direct Local Authority district where

residents have heard of or visited the museum in the past five years. Although this information may not be readily available to all museums, it is likely that they have an idea (and possibly data) on their catchment areas.

Robustness testing, context of work and application

We report statistical robustness tests throughout this report reflecting the inevitable imprecision of the WTP estimates. Data from local museums in the four county clusters are tested to understand how much potential error could be introduced by taking the WTP values estimated for local museums in these counties and applying them to a new business case or SCBA for a local museum in a different county. To do this, we build on best practice in European Union and UK Government studies[6] by 'transfer testing' the WTP values. This gives an estimate of the amount of 'error' that is introduced when transferring one site's value to another. A certain amount of 'error' is to be expected (not least since no two local museums or counties are the same), but we suggest that only WTP values transferred with 40% or lower levels of transfer error should be used, as consistent with what is considered acceptable in the literature. This 40% transfer error threshold may strike readers as large, but it is in fact low in relative terms given that transfer errors over 200% are common in the literature and that 0% transfer error in like-for-like transfer between institutions is not possible.[7] We show that all of the transfer tests performed on local museum use and non-use WTP values give rise to transfer errors that are considerably lower than this 40% threshold.

The findings of this report and other research on the non-market economic value of cultural institutions and heritage assets will be compiled in a **Benefit Transfer Table of Economic Values for Culture**, a resource for institutions that want to estimate the non-market value of their institution. These values could then be incorporated into a **fuller estimate of the economic value** of their contribution to society. This value would include both market values (amount paid – actually or hypothetical - in entrance fees, tickets, and ancillary shop and cafe spending) and non-market values (positive values as expressed by visitors and the public through their preferences, either stated in Stated Preference surveys[8] such as in this study, or revealed in other markets, such as willingness to travel to the institution).[9] The hope is that institutions will use the values estimated within a SCBA framework and without the need to perform costly primary data collection.

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6 Lawton et al. 2018; Fujiwara et al. 2018; Mourato et al. 2014

7 Tests to verify that the estimated WTP values have low errors when transferring the value from one institution to another (i.e. transfer tests) were performed between all four sites. All transfer errors scored below the recommended 40% threshold for simple unit transfer, and for the transfer of visitor values using adjusted and function transfer. This indicates that the WTP values can be considered representative of a comparable site with acceptable margins of error.

8 As covered in this report.

9 These methods are not covered in this report, but detailed, alongside Stated Preference and Wellbeing Valuation methods in the HM Treasury Green Book.

To our knowledge, this study is the first of its kind to estimate both use and non-use values for multiple local museums. It is also novel in testing Benefit Transfer through studying clusters of cultural institutions at a local level, where the sites valued on their own have insufficient visitor numbers to permit representative sampling. In the case of local museums studied in this report, obtaining a sufficient sample size for any single site would be difficult probably without resorting to face-to-face data collection, which would be prohibitively costly and would in any case not have been feasible given the extended Covid-19 lockdown period during which this research took place. In this way, we seek to expand the boundaries of policy-relevant primary research within limited data collection budgets.

There is some debate in the literature over how and whether non-use values can meaningfully be elicited[10], and this may vary in response to the level of hypothetical bias introduced by the payment vehicle, i.e., respondents may not treat the survey as if they would make the payment for real, and this can lead to unrealistic responses. We elicit non-use WTP as a hypothetical annual council tax increase over a fixed period (five years). This follows recommendations in the academic literature that a fixed payment period be applied, to avoid the assumption that individuals would pay out of their household budget ad infinitum for a cultural institution they have never visited, which is known to lead to inflated estimates of discounted economic value. However, we note that this could risk an underestimate of non-use value if we are unable to account for the presence of non-use value as an annual 'flow' of value from a cultural and heritage capital perspective over longer time periods. This may be the case, for example, if non-users are charged annually through their taxes to fund cultural assets over a longer period of time. Therefore, there may be an argument for non-use WTP to be elicited as an annual rolling payment (as in the previously published regional museums Benefit Transfer study)[11] as this can be interpreted as the value of the continued flow of services from a cultural institution. However, a continuous rolling payment was not chosen in subsequent survey designs as it was later recognised that a finite payment term is a more robust approach to estimating WTP. The choice of payment term therefore has implications for how non-use value should be aggregated in SCBA over the evaluation period as an annual value or one-off lifetime payment. This is an important area for future research and for the development of guidelines which balance the appropriate level of attribution with how long the flow of cultural services from the site in question is likely to exist for.

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10 Hausman 2012; Desvousges et al. 2016

11 Fujiwara, Bakhshi, Mourato, Lawton, Hotopp, Lagarde, Davies (2018). The Economic Value of Culture: A Benefit Transfer Study Report to the Department for Digital, Culture, Media & Sport: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/963226/The_Economic_Value_of_Culture_-_A_Benefit_Transfer_Study_-_Final_report_V2.pdf

The report contributes to a wider programme led by the Department for Digital, Culture, Media and Sport (DCMS) to develop a Culture and Heritage Capital approach that looks to provide estimates of values for different categories of cultural and heritage assets.[12]

12 https://www.gov.uk/government/publications/valuing-culture-and-heritage-capital-a-framework-towards-decision-making

1 Introduction

1.1 Background

Arts Council England (ACE) commissioned Simetrica-Jacobs and the Creative Industries Policy and Evidence Centre, led by innovation foundation Nesta to enhance its, and the wider arts and cultural sector's, knowledge and use of techniques to estimate the economic value of cultural activities and institutions. The results of this project will be used to advise arts and cultural organisations in rigorous application of the techniques and economic values.

There is increasing recognition of the benefits of applying HM Treasury Green Book (2020)-endorsed techniques from welfare economics to value the non-market as well as market benefits of culture.[13] Importantly, economic valuation techniques have found support within the Department for Digital, Culture, Media and Sport (DCMS) (O'Brien, 2010). This evidence is particularly important where Social Cost Benefit Analysis (SCBA) is required for cultural institutions, but where market values (e.g., entry fees) do not exist or where there is a strong case that the value of a cultural institution is greater than the price people are collectively willing to pay for individual access and/or entry fees are set lower by organisations operating on a not-for-profit basis. Economic valuation approaches can also be used to make internal resource decisions within cultural institutions (the British Library study being a commonly cited example, see Pung et al.[14]).[15]

The Mendoza Review (2017) highlighted the importance of museums having and using consistent and statistically robust methods to measure economic and social impact.[16] It also indicated that local authorities have a role in helping museums to measure their impact to deliver the evidence other organisations need. The DCMS Tailored Review (2017) concluded that ACE should be a sector leader in developing a rigorous methodology to assess the outcomes and impact of its funding portfolio (i.e., beyond just measuring inputs and outputs).[17] While progress has been made in recent years to evidence the value of larger (regional and national) museums and galleries,[18] evidence on smaller local museums is more sparse, partly due to the difficulties of collecting data for such institutions at the scale required to produce robust WTP estimates.

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13 Crossick and Kaszynska 2016

14 Pung et al. 2004

15 Empirical research eliciting economic values or benefits associated with access, preservation or restoration of cultural assets dates back to the 1980s when the first contingent valuation studies in the field were conducted (for a review, see Noonan, 2003; Pearce and Özdemiroglu, 2002). Since then, many studies in the cultural sector have been conducted worldwide investigating a variety of benefits, both tangible and intangible.

16 Mendoza, N. (2017), 'The Mendoza Review: an independent review of museums in England', DCMS.

17 DCMS (2017), 'Tailored Review of Arts Council England'.

18 Fujiwara et al. 2018; Lawton et al. 2021

Nesta and Simetrica-Jacobs have undertaken previous Benefit Transfer studies for the DCMS (2018a), the Arts and Humanities Research Council (AHRC, 2018b) and Arts Council England.[19] [20] [21] These studies produced WTP monetary estimates of use and non-use values for four large regional museums, four historic cities and their associated cathedrals in England, and four regional galleries and theatres, respectively. They are collected in the Benefit Transfer Table of Economic Values for Culture (soon to be published). The regional museums research showed that these values can be transferred between comparable museum institutions with reasonably low transfer errors (i.e., small differences between the estimated and actual value) and concluded that simple Benefit Transfer (an unadjusted transfer of the simple mean WTP values) provided sufficient robustness for transfer of WTP values collected in this project to similar museums in England. This finding was subsequently also found in the cathedrals study, and the galleries and theatres study.

1.2 Economic values for 'non-market' institutions

Thousands of people may visit a local museum annually. In this report we define a local museum as those which are based in towns of <200,000 inhabitants (smaller than the regional museums as studied in our earlier report), with collections of local rather than regional or national significance. This excludes museums in smaller towns whose collections are of national significance (e.g., the Museum of English Rural Life in Reading). People may value their visit more than any entry fee they pay; indeed, entry is often free. The local museum may also be storing collections for future generations, but which are not on display to visitors.

Local museums can also hold value for those who never have visited or directly benefited from them. Those who never actually visit the cultural institution may still value its presence in an area, whether due to a sense of local pride, awareness that others enjoy it, or the option to one day visit it. Although non-use values are acknowledged within the HM Treasury Green Book, traditional economic impact methods do not account for education and outreach work provided to the wider community, say, or research or conservation work the institution undertakes. Use values are also typically not fully accounted for in the prices people pay. If the local museum offers free entry, the value of these services is not covered at all by visitor revenues.

The benefits that many local museums provide to society are not financial in nature. These benefits are termed ***non-market goods or services*** because they are not in any sense

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19 DCMS (2018a), 'The Economic Value of Culture: A Benefit Transfer Study Executive Summary', Nesta and Simetrica: https://www.gov.uk/government/publications/the-economic-value-of-culture-a-benefit-transfer-study

20 AHRC (2018b), 'The Economic Value of Heritage: A Benefit Transfer Study', Nesta and Simetrica: https://media.nesta.org.uk/documents/Cathedrals_and_Historic_Cities_report_Nesta_and_Simetrica_021018.pdf

21 https://www.artscouncil.org.uk/sites/default/files/download-file/Arts%20Council%20England%20-%20Regional%20Galleries%20and%20Theatres%20Benefit%20Transfer%20Report.pdf

tradeable and so have no direct financial measures from purchase prices. Consequently, they often are not quantified in SCBA, meaning that they are not fully considered in comparison with more quantifiable economic costs and benefits. An evaluation that focuses only on market prices therefore underestimates the full public value of a cultural institution. There are, however, ways these non-financial (non-market) benefits can be measured, quantified, and understood within an economic framework consistent with the HM Treasury Green Book principles of SCBA.

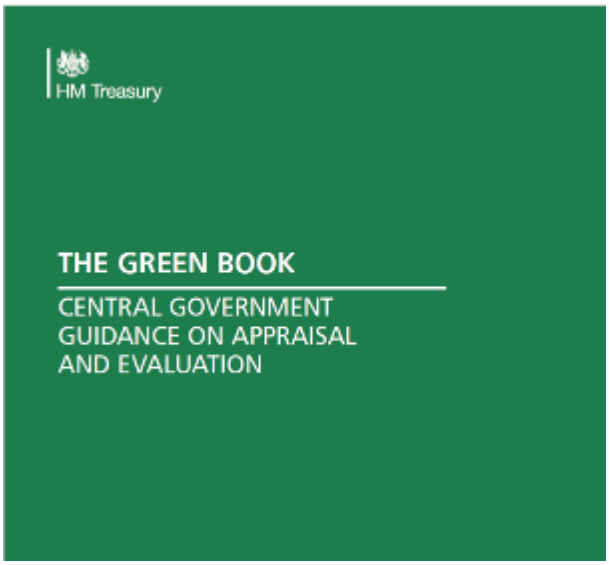

Figure 1.1 Social Cost Benefit Analysis (SCBA) for cultural institutions should follow HM Treasury Green Book Guidance for Appraisal and Evaluation

Government guidance in the UK Treasury's Green Book (2020) recommends that non-market goods like culture be valued in monetary terms, and often this requires the use of Stated Preference (SP) surveys.

1.3 Stated Preference surveys: Putting prices on non-market cultural institutions

Economic SP surveys present relevant groups (e.g., visitors, users, residents, the public) with information about an asset (e.g., a museum with free entry). A WTP value is determined from how much respondents state they would be willing to pay to continue to enjoy the asset in a hypothetical scenario where access is no longer free of charge, or if existing subsidies for maintaining the asset were taken away.[22] This method is used by several public bodies, such as the Department for Transport, in policy-making decisions around the value of travel time and impacts of construction projects on iconic heritage sites.

This SP research technique is known as Contingent Valuation (CV), which involves the design of surveys asking respondents directly to report their values. The CV methodology has over a few decades developed a range of best practice techniques to improve the robustness and welfare consistency of the values elicited.[23] These values are:

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22 The HM Treasury Green Book places market and revealed preference methods above stated preference in terms of robustness. However, note that in many cases stated preference is the only method available to capture many of the non-market benefits that cultural institutions provide, and the only method which can capture hypothetical future changes in service provision and capture both use and non-use value.

23 Arrow et al. 1993; Bakhshi et al. 2015; Bateman et al. 2002

- A **maximum willingness-to-pay (WTP)** for a positive change or to avoid a negative change. For example, what would be the maximum value that the respondent would be willing-to-pay to have extended opening hours for a museum, or how much they would be willing-to-pay to prevent the closure of a local museum.
- A **minimum willingness-to-accept (WTA)** in compensation for a negative change or to forgo a positive outcome. For example, how much money local residents would require to compensate them for the closure of their local museum. WTA was not chosen for this study because there is a known disparity between WTP and WTA for the same asset, with WTA typically producing higher values which may be an over-estimate of value due to cognitive biases (endowment effect).[24]

The advantage of the CV method is that it can estimate the values that visitors obtain from an institution (*direct and indirect use value*), as well as the values that individuals who do not use the institution may place on its continued existence and provision of its services to others (*non-use value*), or the *optional* value that they may get from being able to use it in the future (see Textbox 1 and Figure 1.2).

The disadvantage of the CV method is that the WTP/WTA values elicited are dependent on how the good or service is defined within the survey. Those using WTP values for SCBA purposes should pay close attention to how the good/service was defined in the survey, what kind of payment it relates to (e.g., tax, entry fee, or donation), and the payment term (either an annual payment for a fixed period or a one-off payment for the life of the good or service).

The values produced by this research represent a baseline value of local museums that can be used in SCBA to provide an understanding of the current value of the institution. We recommend that these values should be treated carefully depending on whether the site currently charges for entry, and should be adjusted to the specifics of each institution, using data on visitor and local populations, and that this may be augmented through survey data collection and potentially varied according to the characteristics of each institution. However, organisations should always seek the advice of a valuation professional/economist when incorporating these values into a SCBA or business case.

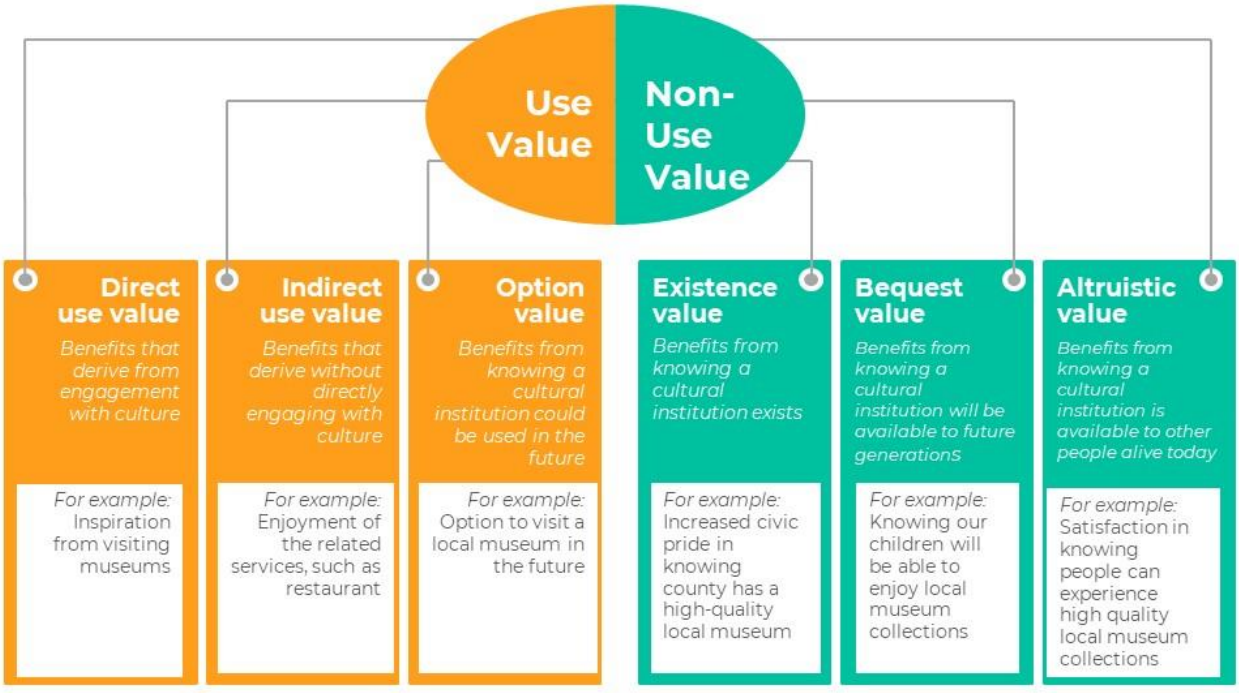
24 Tunçel and Hammitt 2014

Textbox 1 Overview of economic values

Use value refers to the WTP stated by those who have visited or otherwise engaged with the local museum within a designated time-period. While these are expected to be *primarily* use values, we acknowledge that visitors may also hold non-use values for the preservation and maintenance of collections. Use value within this study refers exclusively to the WTP values held by visitors (i.e., users) for accessing the local museum.

Non-use value refers to the WTP stated by those who have not visited or engaged with the local museum within a designated time-period. While these are expected to be *primarily* non-use values, we acknowledge that non-visitors may hold elements of use value, such as the option value to visit the local museum in the future or having used it online for research or recreational reasons.

Figure 1.2 Total Economic Value



1.4 Contributing to a Benefit Transfer Table of Economic Values for Culture

The WTP values for local museums were estimated through primary data collection using a regional clustering approach at county level. Within each of the four counties in this study, visitors to a site ('users') and people who had never visited that site ('non-users') were the sample population.[25] Each person surveyed provided an individual maximum WTP for the museum in question. This provides a range of WTP values across the sample. We take an **average WTP value for visitors** and an **average WTP for non-visitors** for each local museum.

In statistics, the law of large numbers states that as a sample size grows, the closer the average gets to the 'true' average of the whole population. An average WTP taken from 150 visitors is more representative than an average WTP from 20 visitors. Likewise, an average WTP from six local museums within a region is more representative than an average WTP from one local museum. However, an average value will always be an approximation, and some error will be introduced if we assume other sites have that same WTP value, because no two cultural sites are the same.

All values in the Benefit Transfer Table of Economic Values for Culture undergo tests for the robustness of the WTP values obtained. Data from the 24 local museums (six per county, across four counties) are tested to understand how much potential error could be introduced by taking WTP values estimated for local museums in other English counties and applying them to a new business case. To do this, we build on good practice in European Union and UK Government studies[26] by 'transfer testing' the WTP values in the Economic Values Database. This gives an estimate of the amount of 'transfer error' that is introduced when transferring one site's value to another. A certain amount of 'error' is to be expected (not least since no two local museums or counties are the same), but the Economic Values Database recommends only WTP values transferred with 40% or less levels of transfer error (recommended as acceptable in the literature).

Non-use values have also been estimated for non-visitors in the local population (county-level). The Benefit Transfer Table of Economic Values for Culture (see also Table 4-2 in this report, which includes values from Benefit Transfer values from previous studies) provides representative WTP values for visitors and non-visitors to local museums that can be transferred to other comparable sites in England using a technique called Benefit Transfer.

1.5 Benefit Transfer

Benefit Transfer is the process of taking average WTP values for a cultural category from one research study (such as this one) and transferring it to another cultural institution, with

25 Pearce and Özdemiroglu 2002

26 R. Lawton et al. 2018; Fujiwara et al. 2018; S. Mourato et al. 2014

confidence that it will be a robust estimate of the value that people would state for that institution if they were asked.

Some error will always be introduced through Benefit Transfer when comparing different cultural institutions. It is recommended to statistically test how much error is created when transferring from the 'study sites' (the local museums surveyed as part of this study) to a hypothetical 'policy site', which would be the local museum that needs to be valued for a SCBA (or other purpose) but where WTP values have not previously been estimated. To do this, a set of transfer tests are run that sequentially places one of the study sites in the role of an unknown 'policy' site and predicts the WTP for this site, based on the pooled WTP values from the other remaining 'study sites'. A novel contribution of this research is to apply these transfer tests to multiple local museum sites clustered within each of the four counties studied. This addresses the challenge of small samples when surveying smaller local museums. Thus, while sufficient sample sizes may not exist at the individual site-level, collections of local museums can be compared between counties, provided that sufficient numbers of local museums are surveyed in each county (in this case six per county), with a sufficient number of value estimates for each (39 as an average sample size for a site in this study) and that enough counties are surveyed to enable transfer testing to be run between them (in this case four English counties). Transfer tests tell us the amount of 'error' that is introduced via the transfer. WTP values should only be transferred to other sites if they are within acceptable levels of error, recommended as 40% in the literature.[27]

The procedure described above is known as 'simple' unit transfer. In addition to 'simple' Benefit Transfer, which takes a pooled WTP for all of the local museums surveyed across all four counties, there are also more sophisticated transfers which adjust the WTP values to the characteristics of that county, such as income or other demographic data. This has the potential to tailor the WTP value to the specific local characteristics of visitors and non-visitors to local museums. However, adjusted or function transfers also introduce more statistical complexity, and this can increase the risk of transfer errors. It is therefore necessary to test for the amount of error introduced using each of the three types of Benefit Transfer: simple, adjusted, and function transfer. A full description of the transfer error testing procedure is detailed in Appendix Section 5.2.

2 Literature Review

We first reviewed the current state of the literature on the valuation of local museums using CV to inform our survey design. Recently, the DCMS Rapid Evidence Assessment (REA) of Valuation in the Culture and Heritage Sector report reviewed the literature published in the

27 Ready and Navrud 2006

sector within the past twenty years.[28] This REA gathered comprehensive knowledge of valuation techniques and reliable values for a range of cultural and heritage assets. This REA method provides a balanced systematic assessment of what is known about a policy issue and what gaps may remain. The results are presented within an Evidence Bank of economic values that includes valuation details, such as estimated monetary values for assets, and a grading of the quality of each study. We build upon this literature review by presenting a brief review of the studies in the literature that value museums using CV on a local, regional, and national level. In the literature, identified by the DCMS REA report, the majority of CV studies of museum institutions have focused on national and regional institutions.[29] We present a detailed literature review in Appendix Section 5.3.

There have been a handful of studies that assess the value of museums at the local level. As part of a broader investigation on museum subsidies, Martin (1994)[30] undertook the valuation of the **Musée de la civilisation** in Québec. The study aimed to quantify use and non-use value of the museum using travel cost and CV methods. A WTP of $7.95 per capita (£8.73 present day GBP) was elicited as the amount respondents would be willing to pay in annual taxes to support all Québec museums. Based on the relative number of visitors of the Musée de la civilisation, this translates into a value of $12.6 million, which is taken to represent "most of the non-use value of the museum".

An open-ended CV methodology was employed by Jura Consultants[31] to estimate the value of **Bolton's museum, library and archive services** in Manchester, which consisted of three museums, fifteen local libraries and a central archive. Using the scenario that funding from the local council would cease, the researchers presented the payment mechanism of a donation to support the continuation of the museums, libraries, and archives through a two-stage bidding game elicitation method. The study captured use and non-use value through a sample of 325 face-to-face and telephone respondents divided into the discrete categories of museum, library and archive users and non-users. They also asked the WTA monthly compensation to give up the museum, library, archive pass, and gathered data on travel time and cost of alternatives.

Among users, the study found a mean annual WTP for museums of £33.24 (£46.40 present day), libraries of £39.96 (£55.62 present day), and archives of £21.96 (£30.56 present day). The total use value per person for Bolton's museums, libraries and archives was therefore estimated at £95.16 (£132.44 present day). For non-users, mean WTP for museums per person was calculated as £13.68 (£19.04 present day), libraries as £12.00 (£16.70 present day), and archives as £8.16 (£11.36 present day GBP), giving a total non-use value per person of £33.84

28 Lawton et al. 2020

29 Lawton et al. 2020

30 Martin 1994

31 Jura Consultants 2005

(£47.10 present day). The authors aggregated WTP to £10.4 million (£14.47 million present day), consisting of a direct value to museum users of £2.8 million (£3.90 million present day), library users of £4.4 million (£6.12 million present day), and archive users of £0.2 million (£0.28 million present day GBP) and indirect value of £3 million (£4.18 million present day).

Mgxekwa et al. (2018)[32] used CV to determine the WTP to visit the sites associated with the legacy of Nelson Mandela in South Africa. These are conceptualised as a single museum with three interrelated components, including the Nelson Mandela Youth and Heritage Centre (a community museum in Qunu), the Bhunga Building (the administration centre of the museum in Mthantha) and the open-air museum and homestead in Mvezo (the birthplace of Nelson Mandela). The study collected 123 online questionnaires and 260 hard copies, administered at strategic locations around the site. The survey instrument included 12 closed-end questions and one open-end question and asked respondents how much they were willing to pay to visit the Nelson Mandela heritage sites if they fulfilled the requirements for providing a memorable visitor experience. The authors found an average WTP of 15.56 USD (£11.16 present day GBP, although we note that these values are hard to compare with the UK as income levels are significantly lower in South Africa).

In summary, analysis of the DCMS evidence assessment shows that the majority of studies of museums to date have focused on national or regional sites. Studies valuing local museums are rare. Overall, the most common payment vehicle in CV studies of museums and related institutions is a donation to either the museum itself or a conservation fund, followed by a tax payment vehicle. We note that from the perspective of increased consequentiality, a tax payment vehicle is preferable wherever possible as this compulsory vehicle reduces hypothetical bias in CV studies.[33] Few studies have estimated a non-use value for local museums.

3 Methodology

This section details primary research undertaken in the CV of local museums in England.

3.1 Site selection

The focus of this study is on local museums, defined as distinct from regional museums (already valued in DCMS 2018a) due to their visitor numbers, audience reach and the content of their collections.

32 Mgxekwa et al. 2018

33 Atkinson et al. 2018

As local museums have a higher proportion of visits from their immediate surrounding population, it is likely that they create value in different ways to large national and regional collections. Local museums also contribute to the cultural capital and 'sense of place' of many towns and villages across England. Even if some local museums receive subsidies and/or charge an entry fee to visitors, which represents an indicator of their public value, the actual surplus that people obtain from visiting these sites, or from their mere existence, has not been identified yet.

Definition.

For the purpose of this study, local museums are defined as those:

- based in towns of <200,000 inhabitants;
- with collections of local rather than regional or national significance;
    - this includes:
        - museums of local history;
        - museums linked to a site of local interest;
        - museums of local cultural history;
        - in addition, the museums may also display – alongside other collections – art collections by local artists who do not have national or international reputations;
    - this excludes museums in smaller towns whose collections are of national significance (e.g., the Museum of English Rural Life in Reading)
- were either charging an admission fee/membership or free.

Another criterion we considered was referring to the management of the museum. However, due to the varying modes of management across the local museums we considered, as well as difficulty defining what a "locally managed" museum should mean, we decided to drop it from our definition.

Museums of their own heritage (excluded). Site selection excluded museums that were located within heritage buildings, and for which the subject of the collection was the heritage building itself. In a minority of cases, where a local museum's collections focus on the history and culture of the local area or of the building in which they are based (e.g., museum in an old mill, about the old mill), the museum will unavoidably be linked with the heritage site itself. Further to excluding these sites, to minimise the effects of possible endogeneity between the perceived value of the museum (collections) and the heritage value of the site, our survey script also asks respondents to compare the status quo with a scenario in which the museum closes but the building that currently hosts the collections is maintained.

3.2 Sampling strategy

Given that visitor numbers to local museums are much lower than those for regional museums, we expected it would be challenging to obtain a minimum sample of 200 survey responses for each institution, as achieved on the previous ACE Benefit Transfer studies of regional museums, galleries, and theatres. Instead, we employed a **geographical clustering approach**, whereby we focused on counties that are home to several local museums. This may be because they are more rural in nature, with numerous smaller towns instead of a small number of regional cities.

We aimed to collect a minimum sample of 150 responses per county, pooling the responses relating to different local museums within that county. To obtain this target sample size, we selected the geographic clustering unit for our study at the county level. This ensured that the maximum number of survey responses could be collected, while allowing for a satisfactory number of local museums per region with a good mix of differentiating museum characteristics (type, entry fee, etc.). We also collected information on whether the museum was reopened after the first Covid-19 lockdown, and the current lockdown status at the time of answering the survey (note that the majority of the survey was collected during full national lockdown, with the remainder collected just before, when tiered lockdown measures based on regions were at level 2 or above across England).

Based on a scoping analysis of the sample sizes and museum mix available across different counties, we focused the analysis on the following four counties:

- Cheshire
- Essex
- Devon
- Lincolnshire[34]

The number of counties selected (four) follows the standard setup of Benefit Transfer studies, where four individual sites are usually surveyed.[35] Where our approach differs is in broadening the focus of each "site" from a single local museum to a regional cluster of museums at the county level.

Within each county, we focus attention on a set of six local museums, selected using the same screening techniques used across the previous cultural amenity categories (regional

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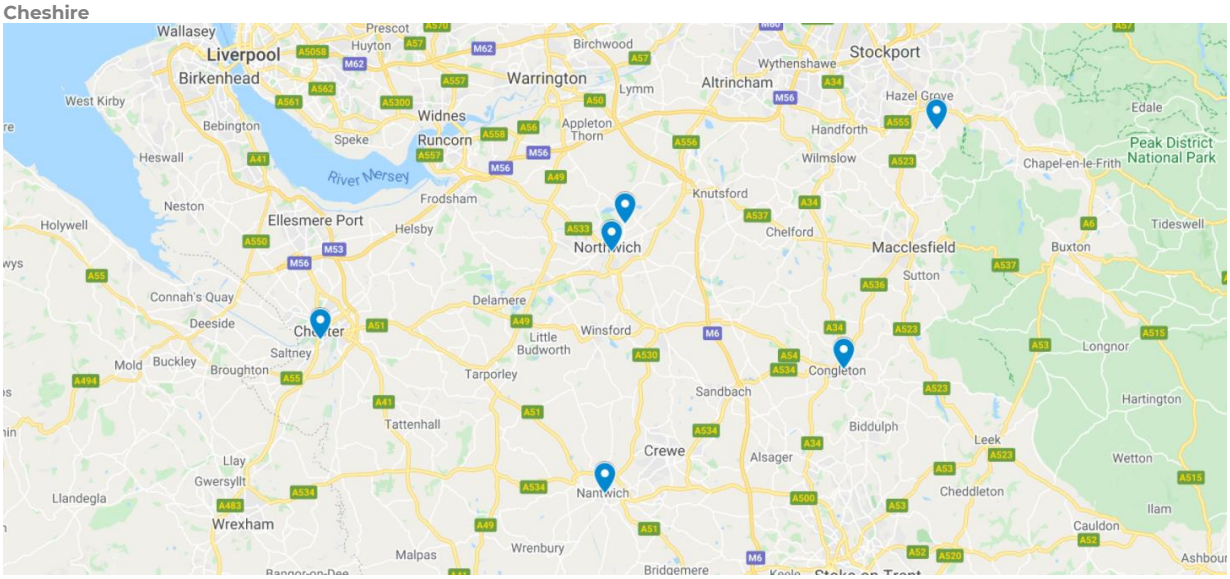
34 Note that the county of Lincolnshire spans two Government Office Regions: The majority of the country sits within the East of England, but North and North East Lincolnshire sit within Yorkshire & the Humber. Survey filters allows residents from either Government Office Region to pass onto the next question, and then answer a follow-up question to ascertain which specific country or unitary authority they live in, allowing us to construct a reliable Lincolnshire County sample.

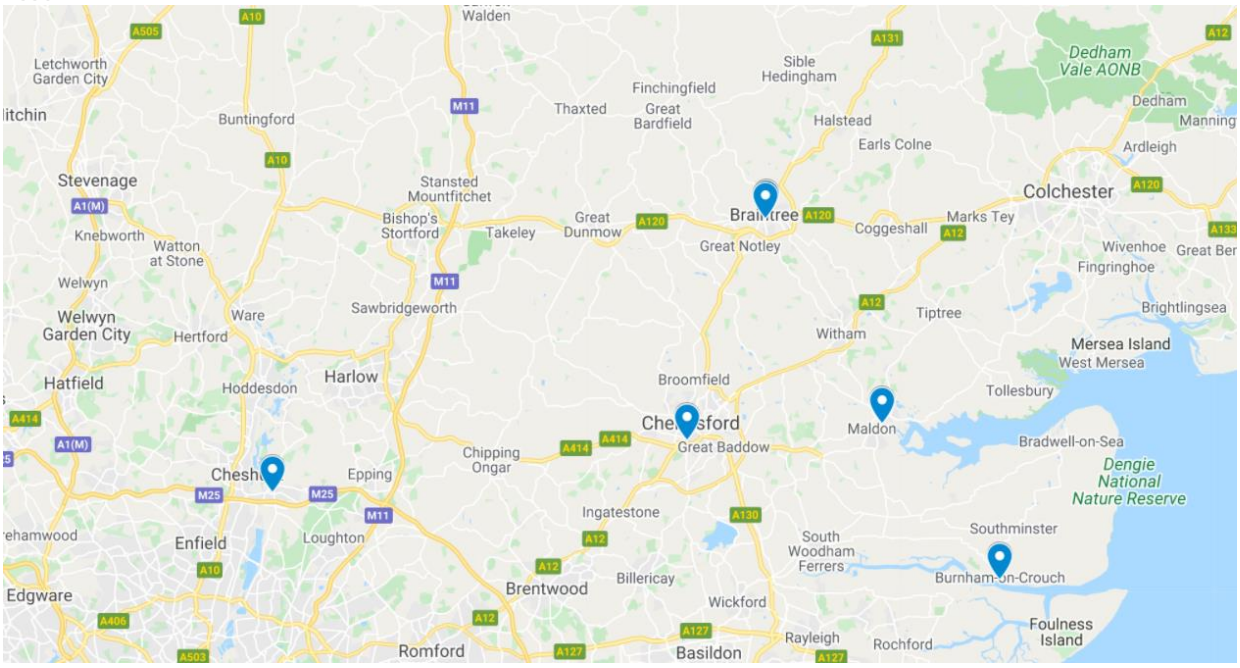
35 Fujiwara et al. 2018

museums, theatres, and art galleries). We pre-screened sites using online information including the museum websites, ACE funding tool[36], Wikipedia, and other sources.[37] Pre-screening ensures the identification of similar sites in terms of characteristics, thereby reducing transfer error in application of Benefit Transfer techniques. The geographic position of each site within their respective counties are presented in the maps below. A table summarising the main features of each of the 24 sites can be found in Appendix Section 5.1.1.

Cheshire



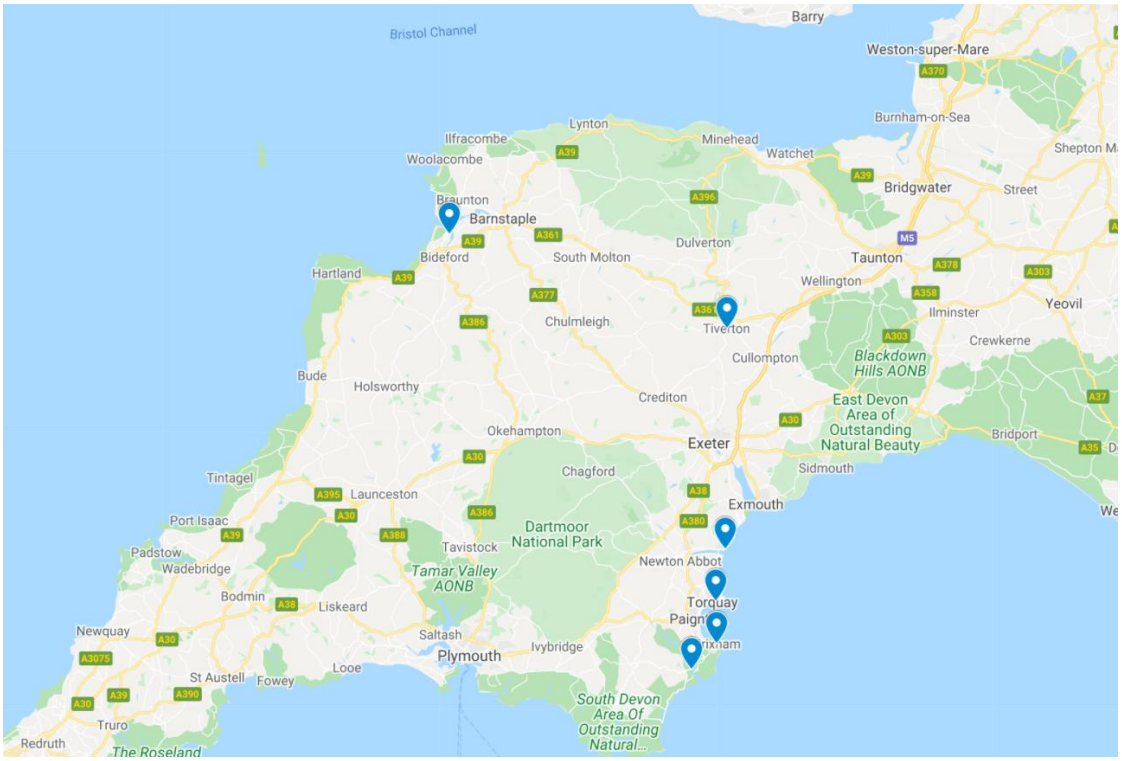
Essex



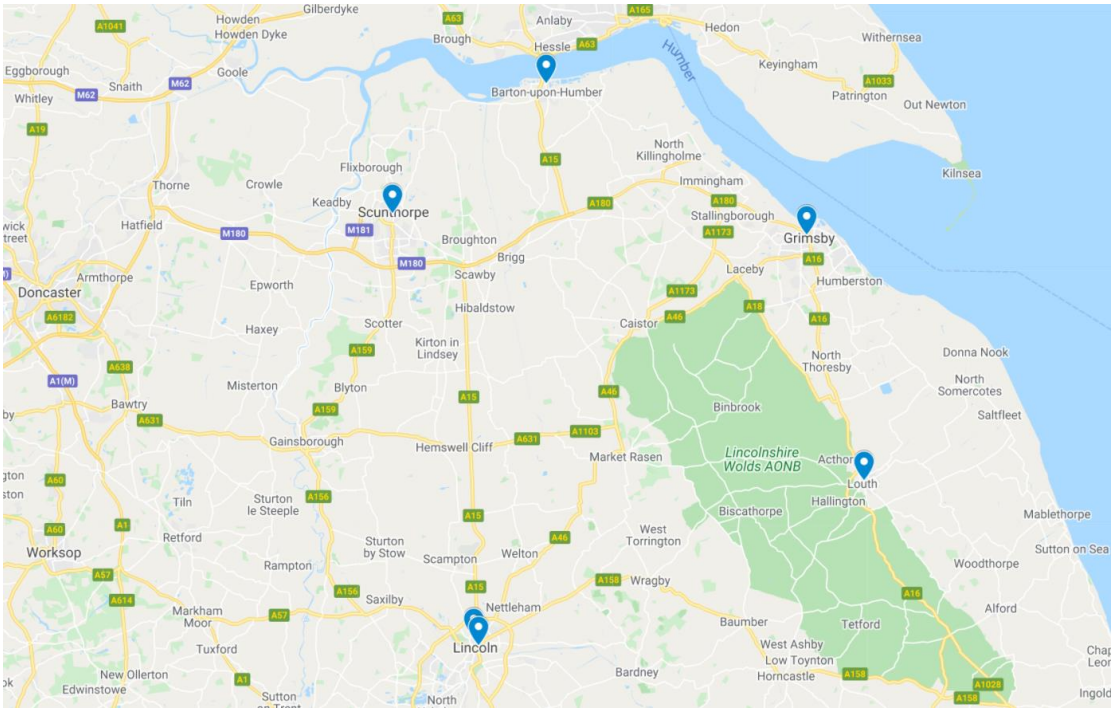
36 The Arts Council England Funding (2018-2022) Map: https://www.artscouncil.org.uk/funding-map-2018-2022

37 https://www.historic-uk.com/HistoryMagazine/DestinationsUK/Museums/

Devon



Lincolnshire



For each county:

- 4 out of 6 sites (67%) had reopened after the first Covid-19 lockdown but before the second lockdown; and

- at least 1 site was free for visitors.

In addition, two further sites were selected and presented to respondents in the list of local museums in their area. However, these sites were not to be part of the valuation study, so respondents were not asked to value them. The purpose of their inclusion was to limit focus bias and 'yea-saying' (where respondents agree with all of the options that are presented to them i.e., to prevent someone just selecting they had visited all sites when presented with a small list, even if this is inaccurate). See Appendix Section 5.1.1 for an overview of the main features of these additional sites.

In terms of representativeness, we looked to obtain county samples that reflect the characteristics of the area surveyed:

- the demographic gender split and distribution in different age groups (15-49 and 50+)

- the share living in different areas within the county (either 4 geographies, local authorities or urban vs rural)

3.3 Survey randomisation

Respondents from the relevant geographic areas (Cheshire, Essex, Devon, Lincolnshire) were presented with a list of eight local museums found in their county (the six for valuation purposes and the two to limit focus bias (an over-estimation of value due to the specific focus of the survey making that site seem especially important only during completion of the survey) and 'yea-saying' (a tendency to acquiesce and answer affirmatively to any survey question, without due consideration of whether this is true to the respondent's actual experience or preferences)).

- Respondents who had not visited any of the sites were asked to value ONE of them to provide a non-use value.
- Respondents who had visited at least one of the sites that were to be valued were asked to value NO MORE THAN THREE of the sites that they indicated they had visited (to provide one or more use values) and ONE non-visited site (to provide a non-use value).

3.4 Data cleaning

The survey included pre-screening questions at the start that filtered out respondents who were flagged by Qualtrics and confirmed by Simetrica-Jacobs as being spam (7 responses were identified as this) or under 16 years of age (there were 2 responses from this age group).

The final sample further excluded some responses, as detailed in Section 5.1.6 and below:

- Those who gave multiple open-text responses that were unrelated to their respective questions (sample size *n*=3).
- Those with unreliable responses (n=55) (see Section 5.1.7).
- Those who said they chose a WTP amount because they did not believe they would really have to pay (*n*=27) since this is an indication that the respondents did not answer the question in a realistic way.[38]
- Those who completed the survey in an unrealistically fast time (*n*=85). Removal of so-called 'speedsters' is recommended practice in CV analysis. A threshold time of five minutes was set as the minimum period in which all the information provided in the survey could realistically be read and used to make informed preference decisions.[39]

Excluding respondents such as these, left 1,377 valid responses. While the exclusions reduced the sample, it is preferable to have a more robust set of responses that provide greater confidence that the WTP values are accurate estimates. We acknowledge that the exclusion of these respondents could introduce some bias if they result in the systematic exclusion of certain types of respondents from the sample. To address this, ex post analysis (logistic regression) was performed and found no significant selection effects within the samples of exclusions.

3.5 Weighting

To ensure that the survey results were representative of the population of visitors aged 16 and over to the 24 selected sites, we applied weights to correct for selected socio-demographic characteristics. Due to a lack of site-specific or county-specific visitor data, we weighted users using data from the 2011 census. This corrected for selected socio-demographic characteristics, namely age and gender. In particular, our sample was more female than the total combined population in the four counties. As this characteristic is known as a likely driver of WTP, any imbalance in our sample could result in biased value estimates (e.g., women tend to report lower WTP in our study, so without correcting for over-representation of women in our sample, we might underestimate the true valuation for local museums). For the non-user sample, there is still debate in Government and particularly the Treasury about the appropriate level at which to aggregate non-use WTP values in SCBA. For instance, there are questions about whether

38 We note that while 27 respondents were initially identified as answering unrealistically, in Section 5.1.6, this is reduced to 21 respondents due to sequential data cleaning (i.e., 6 respondents were dropped due to other exclusion reasons).

39 Average survey completion time was approximately 17.1 minutes, with the median of around 10.1 minutes (prior to dropping excludable responses).

aggregating to the national population is appropriate, as it assumes that residents in one region would hold non-use values for every local museum in the country (which they may or may not do) and assumes that the values can be added together with no diminishing effect on the marginal value of each museum (which cannot be safely assumed, and could lead to an over-attribution of values if non-use values for all local museums were summed together). One approach to addressing this uncertainty and to err on the side of caution is for non-visitor WTP to be aggregated to a realistic local catchment area (see Section 3.9). To this effect, in this report the non-visitor sample is weighted to reflect the attributes of the regional population around each institution, using 2011 census data on age and gender.

3.6 Survey design

A survey was designed for each of the local museums to identify:

- User WTP: Residents in the local region were presented with the list of local museums and asked if they had visited any in the past five years. Those who had visited were asked their WTP for a maximum of three of those museums. The number of WTP questions asked of a single respondent balances the trade-off between maximising available sample size and the known issues introduced by inclusion of multiple WTP questions in one survey (order effects, survey fatigue).
- Non-user WTP: Made up of those who had not visited some (at least one) of the museums presented. Non-use WTP was asked of 'pure non-users' (those who had visited none of the local museums) and 'impure non-users' (who were asked first their WTP for (at least) one of the local museums presented, and then asked their WTP for one of the museums they had not visited). This is a standard sampling strategy for non-users as applied to other primary data collection surveys in this programme of research.

These valuation scenarios and choice of payment vehicle are explained in more detail in Sections 3.6.1-3.6.2. Care should be taken when applying hypothetical WTP values; we recommend using the conservative lower bound non-use value estimated in Section 3.8.4. This is discussed further in Section 3.9.

3.6.1 Valuation scenario 1: User WTP for entry to local museum (per-visit payment)

An entry fee payment vehicle was chosen as the most appropriate mechanism for a set of sites with a mixed paid/free entry model. For paid museums, this required a reminder for respondents to ignore what the museum currently charged for entry and state the maximum amount that they would be willing to pay to keep the museum open to the public. This allows us to take all use WTP elicitations as a statement of the value of the institution to the individual, in terms of the welfare they gain from it, excluding any use value they may have expressed for it previously through their ticket fees. This represents the total economic value of the museum in non-market terms, regardless of paid or free entry status currently. This strategy was considered appropriate, given that the purpose of the Benefit Transfer is to estimate a WTP for local museums that is transferable between counties, and must therefore be representative of

the pool of local museums within these four English counties. Importantly, the selection of entry fee payment vehicles increases 'incentive compatibility'[40] by presenting a scenario where people will be excluded from accessing the institution unless they are willing to pay (the 'excludability' requirement of CV surveys). This is considered a more robust valuation scenario than voluntary donation as it helps avoid free-riding responses, where respondents say they want to access the museum without having to contribute a donation, all of which makes for a more robust and accurate estimate of value.[41]

Good valued: Entry to a local museum that the respondent has visited within the past five years.

Payment vehicle: Entry fee (per visit).

Use valuation scenario: Respondents are given information about up to three of the museums they have visited. This includes information about the location of the museums, their collections, exhibits, and events and activities offered. Photographs of both the interior (including collections) and exterior of the museum(s) are presented.

Contingent scenario: Respondents are asked to imagine a hypothetical scenario where ongoing financial uncertainty and loss of funding means the museum is unable to continue operating and will permanently close to the public. They are told that the museum's building will be maintained but its collections, exhibitions and events will no longer be accessible to the public. The only way that the museum can continue to exist in its current form is to depend entirely on visitors' admission fees. They are told to ignore what the museum currently charges for entry (if applicable) and state the maximum amount that they would be willing to pay to keep the museum open to the public. They are asked to focus on how much the museum being open to visit is worth to them individually and to ignore the value they place on events, activities and programmes that the museum offers.

3.6.2 Valuation scenario 2: Non-user WTP to maintain local museum they had not visited in past five years (increase in council tax)

Separate user and non-user subsamples were determined by visitors and non-visitors (respectively) to the sites (see

Table 3-1). Respondents who had visited one or some of the sites provided a use value for up to three sites they had previously visited and a single non-use value for a site they had not

40 Bi and Whitehead 2019

41 Bateman et al. 2002; Foster and Burrows 2017

previously visited. This allowed us to determine separate use and non-use values within a single survey instrument.

Non-users were composed of both visitors to other study museums who served as a non-user sample for sites they had not visited (i.e., 'impure non-users'), and 'pure non-users', collected through respondents who had not visited any of the six sites of interest that they were presented with (although pure non-users could have visited other local museum sites that were not listed).

We note that there may be underlying differences in the characteristics of so-called '*pure non-users'* (those who had not visited one of the six museums in the past five years) and *'impure non-users'* (those who had visited at least one of the six museums in the past five years). For instance, those who had not visited any of the six museums may have had lower levels of cultural engagement in general (indeed, this would be a common indicator of cultural engagement). We would expect that those who were less engaged with culture would have had lower WTP for a museum they had not visited. We therefore recruited a balanced sample with the inclusion of some 'pure non-users'. This issue is discussed in detail in Appendix Section 5.4.4 We note that in the event mean non-use WTP values did not differ significantly between the pure and impure non-user samples (p=0.203).

As non-users had not previously visited the non-use site, it was decided that an increase in annual council tax would be a more realistic payment method rather than an entry fee. An increase in council tax was chosen because it is often thought of in household terms rather than individual payments. Hence, respondents were more likely to answer on behalf of their household. Moreover, a council tax is a compulsory payment. This was considered a preferable scenario to estimate valuations as donation scenarios can encourage free-riding/protest responses and are more difficult to aggregate on a national level.[42] All respondents were randomly assigned to one of the six museums they had not visited within the past five years.

Good valued: Maintaining the continued existence of a local museum the respondent has not visited within the past five years.

Payment vehicle: Increase in annual council tax over the following five years.

Non-use valuation scenario: The non-user valuation scenario provided respondents with the same information that was provided for the visitor valuation scenario, specific to the non-visited site.

Contingent scenario: The non-user contingent scenario follows the same process as the use contingent scenario, where ongoing financial uncertainty and loss of funding means that the

42 Champ and Bishop 2001

museum is unable to continue operating and will permanently close to the public. Respondents are asked to think about how much the museum is worth to them and their household.

In all valuation scenarios, we used:

- A payment-card approach, as employed in previous AHRC and DCMS-funded valuation research[43], to avoid the pitfalls of other types of surveys, such as starting-point bias.
- Photographs of the museums in question, as large blocks of text can be cognitively burdensome, while photographs make the hypothetical scenarios more realistic and reduce uncertainty around the good being valued.[44]
- Bias reduction script: cheap talk[45], oath script[46] and consequentiality script[47] (see Section 5.1.3).

Table 3-1 Summary of the valuation scenarios each type of respondent receives

Type of respondent	Use (entry fee)	Non-use council tax increase)
Visited all six museums ('pure users')	Randomly presented with three of the museums visited ("multi-users")	X
Visited multiple museums (but less than six)	Randomly presented with up to three of the museums visited ("multi-users")	Randomly presented with one museum they had not visited ("impure non-users)
Visited only one museum	Presented with museum visited ("single-users")	Randomly presented with one museum they had not visited ("impure non-users")
Had not visited any of the six museums ('pure non-users')	X	Randomly presented with one museum they had not visited ("pure non-users")

43 Bakhshi et al. 2015

44 Bateman et al. 2009

45 Murphy et al. 2005

46 Ricky N. Lawton et al. 2019

47 Needham and Hanley 2020

3.7 Benefit Transfer testing: Regional cluster approach

At the centre of the experimental sampling approach is the assumption that the county average WTP is based on a sufficiently large number of local museum sites to be representative of other local museums sites for Benefit Transfer. However, a drawback of this approach is that the number of individual WTP observations for any single local museum will be below the common minimum sample size of 150. This in turn is likely to have a negative effect on the quality of the transfer error estimates obtained from the traditional testing procedure by significantly increasing the amount of noise they contain. Therefore, we propose to consider a range of alternative Benefit Transfer testing procedures outlined below.

3.7.1 Standard approach

The focus of the standard Benefit Transfer approach is on a small number (at least four) of cultural institution study sites.

Assuming that the WTP for each site *i* is randomly distributed with mean μ_i (and variance σ_i^2), in general the means (and variances) may differ between sites either because of differences in site characteristics (i.e. when the four sites encompass different kinds of museums such as those sites which also include and display local art works and those that do not), or differences among the people who are valuing them (i.e. when all four sites display local art works, but the valuation of this kind of site varies according to the sample of people asked to value them).

For Benefit Transfer, we need a stronger assumption to hold (at least conditionally on certain site/population characteristics): that the distribution of WTP for any cultural site of interest has the same mean μ. This allows us to say that all of the sites are just different examples of a local museum and any further site of the same type (i.e., another local museum) can be reasonably expected to have the same value as the previous four sites. If the means were not the same, Benefit Transfer would not be recommended. Instead, we would seek to re-define the notion of the "local museum" by narrowing it down until it becomes sufficiently homogeneous for Benefit Transfer.

In a standard Benefit Transfer study, for each *i* we estimate the mean μ_i using sample average $\bar{X}_i$ and test the hypothesis: $\mu_i = \mu_{-i}$ to check whether the means are equal (where μ_{-i} are areas that are not μ_i). In order for the mean estimates to be sufficiently precise, and for the test results to be sufficiently informative, we need to ensure that the sample size for each cluster is large enough (at least 150 observations in this case due to the low visitor numbers at the smaller local museums studied): for large enough *n*, the distribution of the sample average $\bar{X}_i$ is approximately $N(\mu_i, \sigma_i^2/n)$. From a standard Benefit Transfer study, we could draw the following conclusions:

A. If the local museums were each located in a different county, and the hypothesis that the means are the same is:

- accepted, we would conclude that the values can be transferred to any local museum in any county.
- rejected, we might try to redefine the site of interest (e.g., local museums with specific types of collections/cultural offerings).

B. If the local museums were all located in the same county, and the hypothesis that the means are the same is:
   - accepted, we would conclude that the values can be transferred to any local museum in that county (by extension, we might also conclude that similar values estimated in another county could also be transferred to new sites within that county).
   - rejected, we would have to look for other characteristics which might help narrow down the definition of local museum (e.g., type of museum, local population characteristics, etc.).

3.7.2 Regional clustering approach

In case of the local museums, obtaining a sufficient sample size for any single site would likely be difficult without resorting to costly face-to-face data collection, which would not have been possible during the extended Covid-19 lockdown period over which this research took place. Assuming a sample size of *n/k* for each of *k* sites (where n is the total sample size across all sites), at any single site *i* the distribution of the sample average $\bar{X}_i$ will be approximately N(μ_i, $k\sigma_i^2/n$). *As in our case the sample size n/k is relatively small*, testing the hypothesis $\mu_i = \mu_{-i}$ to check whether the means are equal between two sites is unlikely to lead to statistically significant results.

On the other hand, it was still possible to collect a sufficiently large joint sample across a number of sites within a given county. The sample average across all kc sites in the county c $\bar{X}[\mathrm{k}c\,]$ provides an approximate distribution of $\mathrm{N}(\bar{\mu}_{\mathrm{kc}}, \bar{\sigma}^2_{\mathrm{kc}}/\mathrm{n}_{kc})$, where $\bar{\mu}_{kc} = \frac{1}{kc}\sum_{i=1}^{kc} \mu_i$ and $\bar{\sigma}^2_{kc} = \frac{1}{kc}\sum_{i=1}^{kc} \sigma_i^2$. Using the regional clustering approach, we have tested the representativeness of the WTP values for Benefit Transfer by testing pooled WTP for local museums between regions (counties).

Pooling of local museums can be performed within counties, to construct four county 'sites', enabling us to test for transfer errors between counties. By sampling four counties, we are able to compare the pooled WTP values obtained for each region. Treating each regional pool of local museums as a 'study site', we can perform the standard suite of Benefit Transfer tests by sequentially removing one of the regional pools from the study sites and setting it as the hypothetical policy site, and testing for transfer errors between sites.

Collect data across a number of regions k (for several local museums i in each region k) and test the hypothesis $\bar{\mu}_k = \bar{\mu}_{-k}$ to check if the means between regions are equal, using the pool of all sites within one region as an equivalent of a single site in the standard BT approach.

The results of this test only tell us if the means can be transferred between counties, but no conclusions could be made as to whether the average of valuations from one individual museum can be transferred to another museum, for which individual sample sizes are expected to remain low. However, this is one of the necessary limitations introduced by surveying local museums, especially during a time of Covid-19 of which we have sought to mitigate with our approach.

3.8 Results

The survey ran from 10th December 2020 to 9th March 2021. Survey sampling was designed to elicit the views of users of local museums, defined as those who had visited at least one of the six shortlisted museums in the county in the past five years. We necessarily made the strong assumption that the survey samples were representative of the visitors to the local museums, as we did not have access to visitor data for the local museums we surveyed.

3.8.1 Sociodemographic characteristics

Unweighted sociodemographic characteristics of the survey sample were broadly in line with national averages in both the user and non-user groups, with a slightly higher proportion of females and an average age around 50 years (note this excludes under 16s).[48] Average income levels were higher in Cheshire and Essex compared with Devon and Lincolnshire, which aligns with Office for National Statistics income estimates by region.[49] There was a significant difference in education and income levels between users and pure non-users (in three of the four counties, excluding Devon), with pure non-users having lower income and education levels on average, which aligns with the correlational data at the national level showing that those who are more culturally engaged tend to come from higher socioeconomic groups.[50] When split by site, we also found considerable variation in the average income levels of visitors within each county. The largest range was found in Lincolnshire, with visitors to North Lincolnshire Museum having an average household income of £56,500 compared with only £29,750 for visitors to the Louth Museum. This large difference was likely driven by low sample sizes in these museums (24 and 18, respectively), however, which makes it difficult to extrapolate the results for any single museum to their real-world visitor population. Compared to average income levels, the age of visitors was more homogenous across sites, with the largest variation again occurring in Lincolnshire (20 years).

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48 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/mid2019estimates#ageing

49 ONS 2017 data mean income: Devon: £29,800; Essex: £38,100 Lincolnshire £29,100. No data for Cheshire. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895381/NS_Table_3_13_1718.xlsx

50 Fujiwara et al. 2014

We found lower overall variation in average income levels when looking at non-users. For impure non-users, the largest range was found in Cheshire (£16,864), calculated by subtracting the average household income of impure non-users of the Congleton Museum from that of the Weaver Hall Museum and Workhouse. For pure non-users, the largest range was found in Devon (£15,857). Lower overall variation was also found when examining the age of non-users, with the largest variation across both impure and pure non-users (15 years for Lincolnshire pure non-users) being equal to the smallest variation in age among users. Notwithstanding the likelihood of noise from small sample sizes, these findings are consistent with the possibility that the types of people that visit local museums are broader than those that do not visit local museums.

Table 3-2 Local museum User socio-demographic characteristics by county – unweighted

Users	Cheshire	Essex	Devon	Lincolnshire	Total
Female: % (n/N)	51.2% (66/129)	52.5% (83/158)	59.6% (90/151)	56.2% (95/169)	55.0% (334/607)
Age: mean (se)	48 (1.46)	45 (1.28)	47 (1.41)	47 (1.36)	46 (0.69)
Household annual income (£): mean (se)	£43,161 (£2,391)	£46,207 (£2,415)	£33,964 (£1,973)	£34,984 (£1,730)	£39,403 (£1,082)
Has dependent children under 16 years: % (n/N)	35.7% (46/129)	34.2% (54/158)	35.8% (54/151)	25.4% (43/169)	32.5% (197/607)
Married/Civil Partner: % (n/N)	50.8% (65/128)	51.6% (81/157)	44.9% (66/147)	48.5% (81/167)	48.9% (293/599)
University education % (n/N)	47.3% (61/129)	43.6% (68/156)	37.7% (57/151)	41.4% (70/169)	42.3% (256/605)
In employment (full-time, part-time, self-employed): % (n/N)	69.0% (89/129)	65.0% (102/157)	63.3% (95/150)	63.9% (108/169)	65.1% (394/605)

Table 3-3 Local museum Non-user socio-demographic characteristics by county – unweighted

Impure non-users	Cheshire	Essex	Devon	Lincolnshire	Total
Female: % (n/N)	51.2% (64/125)	53.2% (83/156)	59.9% (88/147)	55.7% (93/167)	55.1% (328/595)
Age: mean (se)	48 (1.50)	45 (1.29)	47 (1.44)	47 (1.37)	47 (0.70)
Household annual income (£): mean (se)	£42,267 (£2,383)	£46,362 (£2,444)	£34,118 (£2,013)	£34,984 (£1753)	£39,301 (£1,092)
Has dependent children under 16 years: % (n/N)	33.6% (42/125)	34.6% (54/156)	34.7% (51/147)	25.1% (42/167)	31.8% (189/595)
Married/Civil Partner: % (n/N)	49.2% (61/124)	51.6% (80/155)	44.1% (63/143)	48.5% (80/165)	48.4% (284/587)
University education % (n/N)	46.4% (58/125)	44.2% (68/154)	37.4% (55/147)	41.9% (70/167)	42.3% (251/593)
In employment (full-time, part-time, self-employed): % (n/N)	68.0% (85/125)	64.5% (100/155)	62.3% (91/146)	64.1% (107/167)	64.6% (383/593)
Pure non-users					
Female: % (n/N)	56.7% (123/217)	51.3% (98/191)	58.4% (118/202)	55.8% (86/154)	55.6% (425/764)
Age: mean (se)	46 (1.19)	54 (1.18)	50 (1.24)	52 (1.46)	50 (0.64)

Household annual income (£): mean (se)	£36,073 (£1,838)	£39,779 (£2,049)	£33,042 (£2,023)	£29,692 (£1,702)	£34,965 (£980)
Has dependent children under 16 years: % (n/N)	22.1% (48/217)	17.8% (34/191)	25.4% (51/201)	20.4% (31/152)	21.6% (164/761)
Married/Civil Partner: % (n/N)	41.0% (87/212)	50.8% (96/189)	48.7% (97/199)	46.4% (71/153)	46.6% (351/753)
University education % (n/N)	35.8% (77/215)	35.6% (67/188)	30.2% (60/199)	22.2% (34/153)	31.5% (238/755)
In employment (full-time, part-time, self-employed): % (n/N)	57.2% (123/215)	51.6% (98/190)	51.0% (103/202)	46.1% (70/152)	51.9% (394/759)

In all subsequent tables in Section 3.8, we report only weighted figures.

3.8.2 Attitudes to culture and heritage

Between sites there was little difference between users and impure non-users in their attitudes to arts and culture, which likely partly reflects that most users to one site were impure non-users to another site. People who were members of a cultural, heritage, conservation or environmental organisation made up a significant portion of the sample, with 34% of users and 33% of impure non-users reporting to be members. User membership ranged from 26% in Lincolnshire to 45% in Devon, while membership for impure non-users ranged from 26% in Lincolnshire to 44% in Devon. Conversely, only 16% of non-users reported having this kind of membership. This ranged from 12% in Essex to 20% in Cheshire (see Table 3-4). For both users and impure non-users, around 19% voted arts and culture as within their top five priorities for public spending, with a low of 17% in Essex and a high of around 22% in Devon. The figure for pure non-users was slightly lower at 15%, as was the range (14% in Essex to 19% in Lincolnshire).

Table 3-4 Local museums user and non-user attitudes towards art and culture

User attitudes	Cheshire	Essex	Devon	Lincolnshire	Total
Member of a cultural, heritage, conservation, or environmental organisation (%)	39.0%	31.3%	44.5%	26.1%	33.9%
Arts or culture amongst the top 5 priorities for public spending (%)	17.4%	17.1%	22.6%	21.8%	19.1%
Non-user attitudes (impure non-users)					
Member of a cultural, heritage, conservation, or environmental organisation (%)	35.3%	31.3%	43.7%	25.7%	32.9%

Arts or culture amongst the top 5 priorities for public spending (%)	18.5%	17.1%	21.7%	21.3%	19.0%
Non-user attitudes (pure non-users)					
Member of a cultural, heritage, conservation, or environmental organisation (%)	19.6%	11.5%	15.0%	15.6%	15.5%
Arts or culture amongst the top 5 priorities for public spending (%)	13.7%	14.0%	15.3%	18.9%	14.9%

A high proportion of museum users agreed that preserving cultural heritage for future generations is important (80%-85%; refer to Figure 3.1), that future generations have the right to enjoy cultural heritage (82%-89%; refer to Figure 3.2) and that culture helps us to live with people of different backgrounds (69%-84%; refer to Figure 3.3).

Figure 3.1 User attitudes: users that agree or strongly agree that preserving cultural heritage for our children's children is important

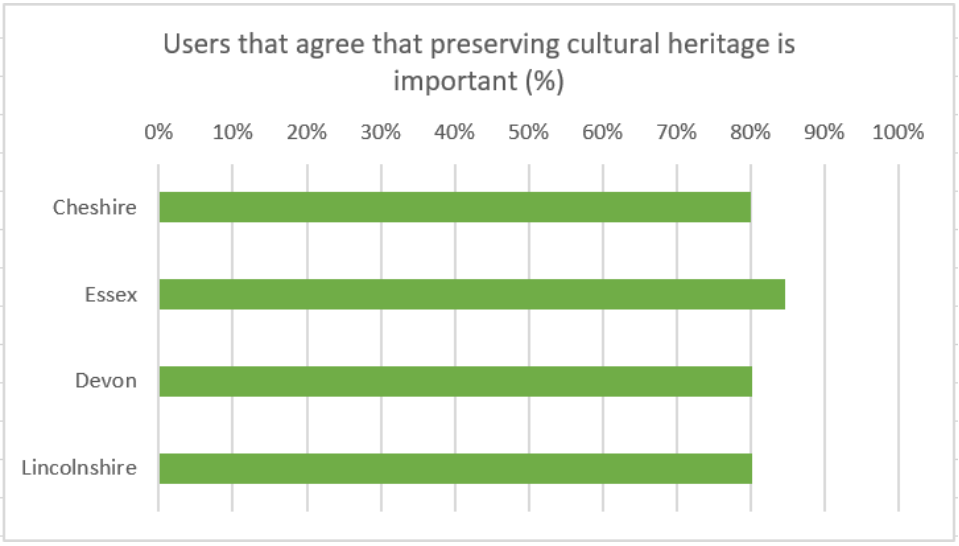


Figure 3.2 User attitudes: users that agree or strongly agree that future generations have the right to enjoy present cultural heritage

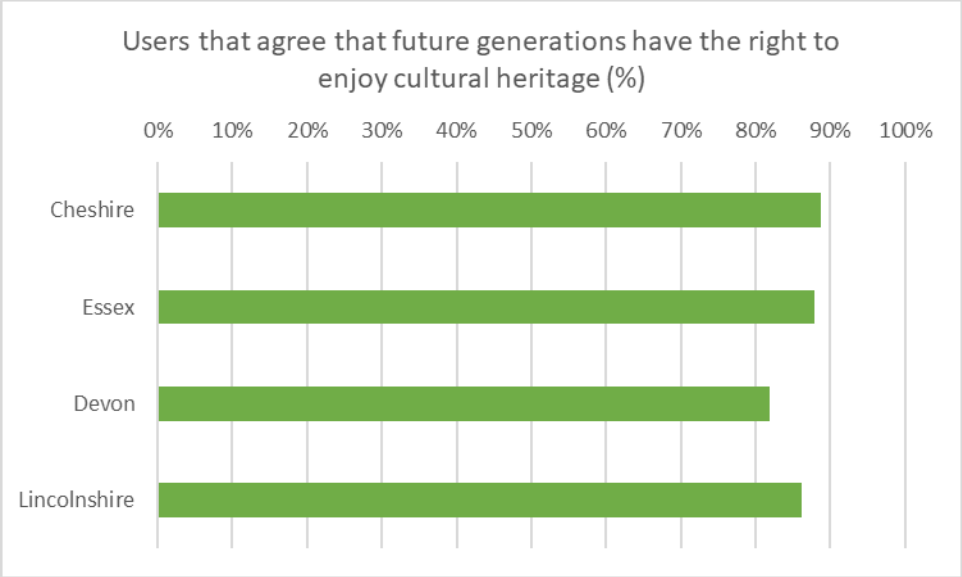
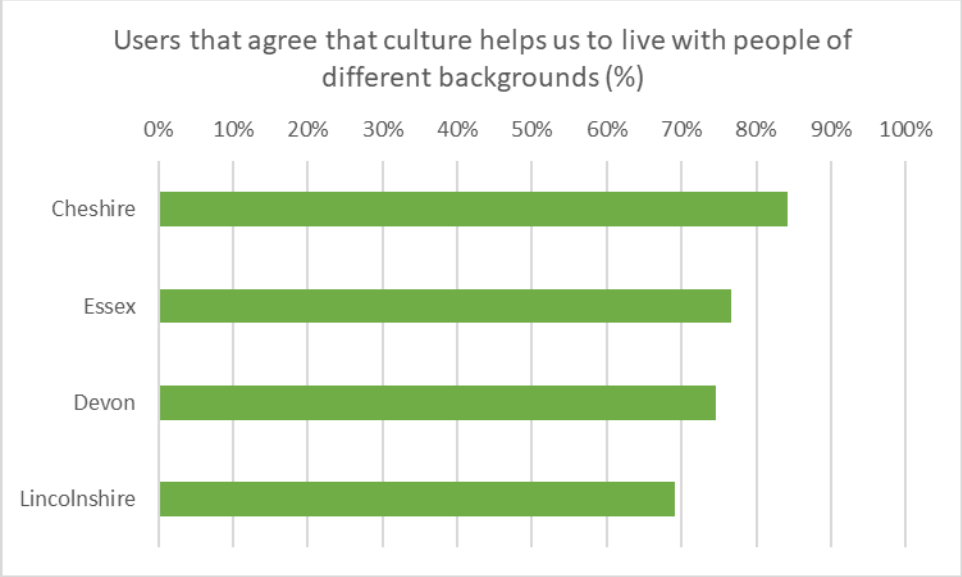


Figure 3.3 User attitudes: users that agree or strongly agree that culture help us to live with people of different backgrounds

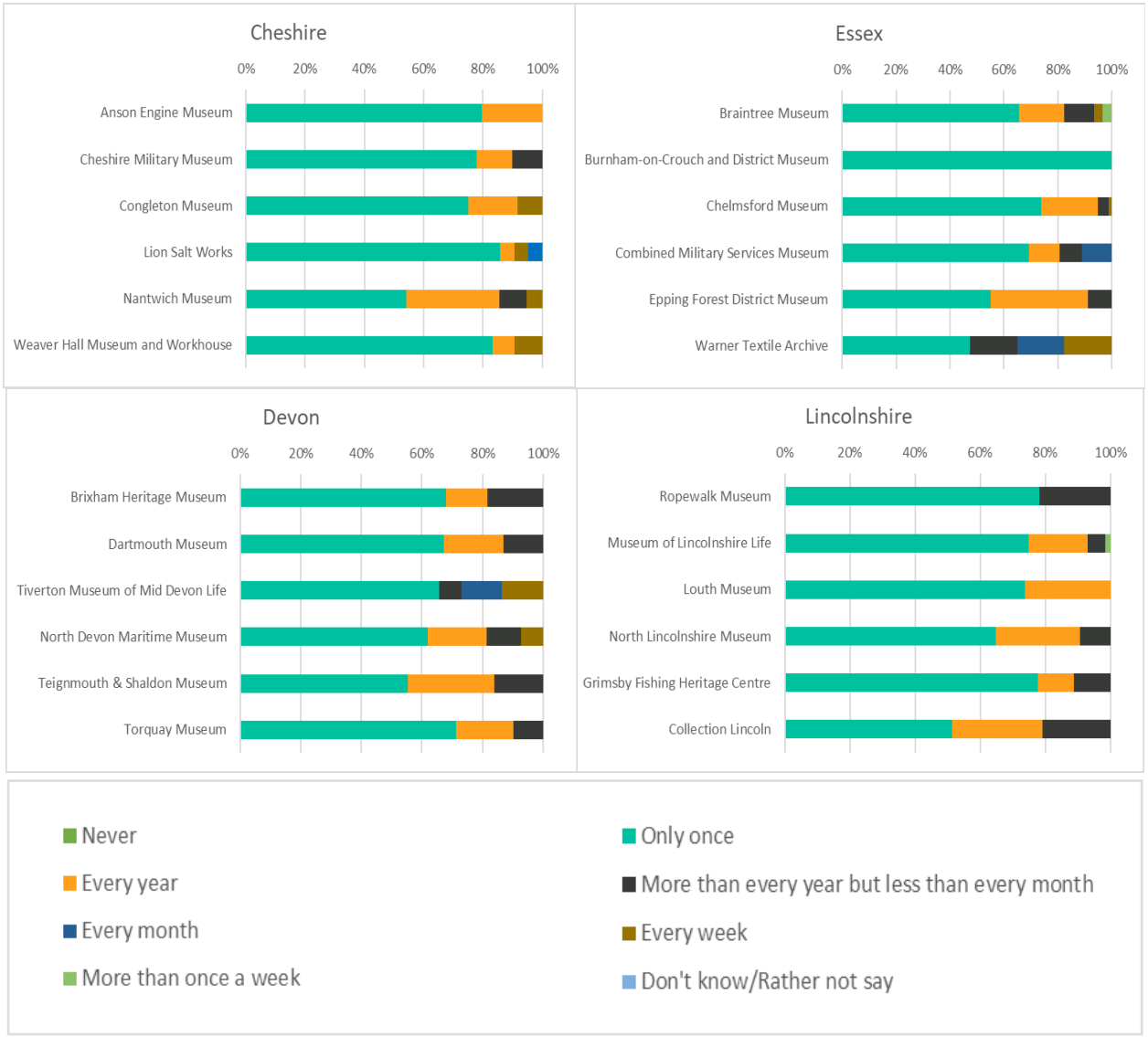


3.8.3 Museum visits

In the survey, before asking valuation questions for specific museums, we asked respondents to report how often in the past five years they had visited the museum they were asked to value. The majority of users across the 24 museums had visited only once in the past five years (see Figure 3.4). For the Cheshire region, the majority of respondents had visited the local

museum only once ranged from 86% in the case of the Lion Salt Works to 54% for the Nantwich Museum. For the Essex region, 100% of respondents who had visited the Burnham-on-Crouch and District Museum reported having done so only once with the equivalent number being 47.4%. for the Warner Textile Archive. For Devon, Torquay Museum recorded 71.3% and the Teignmouth & Shaldon Museum recorded 55.3%. In Lincolnshire, the Ropewalk Museum recorded 78.3% and the Collection Lincoln recorded 51.3%.

Figure 3.4 User visits within the past 5 years



3.8.4 WTP values

Mean WTP figures are reported for users and non-users. All WTP values were elicited through a payment-card elicitation mechanism. This means that respondents' actual WTP amount will lie somewhere between the amount they choose and the next amount on the payment card. To account for these intervals, we therefore used the mid-point between the amount chosen on the payment card and the next amount up, as is standard in the CV literature.[51] Following standard practice, all those who responded that they were not willing to pay in principle were coded as £0 bids. This ensures that the full range of values are included in the evaluation. Using the mean WTP, rather than the median WTP, is standard practice in CV studies where the objective is to aggregate values.[52] The mean WTP value is relevant if the context of the valuation exercise is cost benefit analysis because it represents an average WTP for the population which can be aggregated (by the population size) to derive the total WTP across the population.[53] A pilot survey was conducted to establish an appropriate range of WTP values.[54] Pilot survey debrief questions confirmed that the survey was functioning correctly and debrief responses provided sufficient confidence to proceed into the field.

3.8.4.1 *User entry-fee values*

To understand how much users valued local museums, the survey proposed a hypothetical scenario where the museum was unable to continue operating and would permanently close to the public. The continued existence of the museum would depend on visitors' admission fees entirely. In answering this question respondents were asked to ignore what the museum currently charged for entry. The survey asked respondents for the maximum individual entry fee they were willing to pay to visit the museum. When asked if they were prepared to pay an entry fee in principle, 77% of users said 'Yes' or 'Maybe' (refer to

Table 3-5). This is a high proportion who are WTP in principle for a cultural institution, compared to previous DCMS-funded valuation studies.[55] However, we note that 15 of the 24 museums that we valued already currently charge an entry fee for admission, meaning that visitors are likely to already be accustomed to the concept of paying for entry to these sites.

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51 Bateman et al. 2002

52 Vaughan et al. 2000

53 Pearce and Özdemiroglu 2002

54 We conducted a pilot survey on 15th December 2020 using a quota-based sample of 49 online panel respondents that resided in England. The results of the pilot survey confirmed that the survey was functioning correctly. Responses to the debrief questions provided us with sufficient confidence to proceed into the field with the main survey.

55 Fujiwara et al. 2018

Table 3-5 User local museum (entry fee): WTP in principle

Willing to pay in principle	Cheshire	Essex	Devon	Lincolnshire	Total
Yes	75.9%	73.3%	66.0%	71.8%	72.3%
Maybe	5.8%	3.4%	9.7%	1.8%	4.6%
No	18.3%	23.3%	24.2%	26.4%	23.1%

Recall that in all cases, and as standard in CV surveys, WTP values include both positive values and zero values (i.e., £0), ensuring that the values are representative of the preferences of all users. Based on the responses described in

Table 3-5, respondents were either presented with a choice of payment amounts (if they answered 'Yes' or 'Maybe' above, they indicated they were potentially willing to pay in principle) or assigned a £0 bid (if they answered 'No' above, they indicated they were not willing to pay in principle). All these responses were used to estimate average and median WTP for users of local museums within each county.

- **Across all four counties surveyed, average WTP an entry fee to visit the local museum was £4.44 per person per visit, with a lower bound (95% confidence interval) of £4.00**. This was lower than the average WTP of visitors to regional galleries elicited by surveying four regional museums in the previous Arts Council museums study (£6.42, though both regional and local museum WTP were based on pooled Benefit Transfer samples, all with comparable entry fee payment vehicles), [56] which aligns with our expectation that local museums should have a lower WTP than larger regional museums.
- **Between the four counties, WTP ranged between £3.95 for Devon, and £4.76 for Lincolnshire** (Table 3-6). The distribution of WTP across counties was not wide, which provided greater confidence in the homogeneity of the counties surveyed (and was reflected in the confidence interval in the Total column).
- Within each county, maximum WTP ranged from £60 in Essex to £20 in Cheshire and Devon.

56 Fujiwara, Bakhshi, Mourato, Lawton, Hotopp, Lagarde, Davies (2018). The Economic Value of Culture: A Benefit Transfer Study Report to the Department for Digital, Culture, Media & Sport (p54): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/963226/The_Economic_Value_of_Culture_-_A_Benefit_Transfer_Study_-_Final_report_V2.pdf

Table 3-6 User local museum WTP (entry fee per visit)

Use WTP	Cheshire	Essex	Devon	Lincolnshire	Total
Mean (std. err.)	£4.58 (£0.43)	£4.41 (£0.43)	£3.95 (£0.35)	£4.76 (£0.40)	£4.44 (£0.22)
Lower and higher bound WTP (based on 95% confidence interval)	£3.73 - £5.44	£3.57 - £5.26	£3.26 - £4.65	£3.96 - £5.55	£4.00 - £4.87
Median	£3.00	£3.50	£3.00	£3.50	£3.50
Sample size	189	224	246	287	946
N museums	6	6	6	6	24
County WTP range	£0 - £20	£0 - £60	£0 - £20	£0 - £40	£0 - £60

Notes: Detailed WTP statistics provides in Appendix Section 5.4.2. WTP statistics for each museum reported in Appendix Section 5.4.3.

When given the opportunity to explain why they were willing to pay, respondents most commonly selected "preserving museums for the appreciation of current and future generations is important to me" as their reason, closely followed by "the museum is an important cultural site that should be protected" at 20% (Appendix Table 5-26). Based on these follow-up responses, respondents who said "I don't believe I would really have to pay" were excluded from the calculation of the mean WTP since these respondents arguably likely gave a WTP valuation without properly considering the impact on their finances. **Follow-up motivation data suggests that people's WTP was motivated partly by their direct experience, partly by an altruistic desire that other people should be able to enjoy the museum, and by a general existence value for the protection of the local museum. This confirms that there are many reasons that people value cultural sites.**[57]

Of the respondents who said they were not willing to pay an entry fee to visit a museum, 23% said "I cannot afford to pay to support the museum" (Appendix Table 5-27), while 19% said "I don't mind making a donation but I don't want to pay an admission fee". This suggests that some respondents as a principle, support free entry for local museums and recognise the sites as being culturally important. It may also reflect respondents considering that they have already paid for the museum through taxation.

3.8.4.2 *Non-user local museum values (non-users only) (annual council tax)*

To elicit a non-user value for a local museum which the respondent had not visited in the past five years, the survey proposed a hypothetical scenario similar to the one used for the user site WTP where the museum was unable to continue operating and would permanently close to the public unless a trust were launched to ensure that the museum does not close down, supported by an increase in council tax. Increased council taxes would need to be collected

57 Bandara and Tisdell 2005

over five years to guarantee the museum's continued existence for this period. This would allow the museum to continue to operate as normal, with visitors able to access the permanent displays and the events and activities organised by the museum. We clarified that any entrance fees to the museum would not be affected in the hypothetical scenario.

The survey asked respondents for the maximum they would be willing to pay for their household in increased council taxes, which would need to be collected over five years to guarantee the museum's continued existence for this period. Given that WTP is expected to be sensitive to the payment duration, the assumption of a fixed-term five-year payment over the life of the asset provides a more conservative estimate when aggregated over multiple years in present value calculations.

WTP results for non-visited local museums are reported for the full non-user sample. WTP results split between impure and pure non-users are presented in Appendix Sections 5.4.4 and 5.4.5.

3.8.4.3 *Non-user WTP for local museums (including impure and pure non-users)*

When asked if they were prepared to pay in principle, 59% of non-users said 'Yes' or 'Maybe' (Table 3-7). This finding is comparable to previous valuation studies for cultural institutions.[58]

Table 3-7 Non-user local museums (annual council tax over 5-year period): WTP in principle

Willing to pay in principle	Cheshire	Essex	Devon	Lincolnshire	Total
Yes	22.2%	23.0%	24.4%	14.6%	21.5%
Maybe	36.6%	36.4%	39.8%	37.7%	37.3%
No	41.1%	40.6%	35.8%	47.7%	41.2%

- Across the four counties, average WTP an increase in council tax over five years for a non-visited local museum was £3.68 per person, with a lower bound of £3.12. For comparison, this was broadly similar to the non-use WTP for regional museums found in the previous Arts Council museums study (£3.48 per annum over a five-year period).[59] This suggests that non-users of

58 Fujiwara et al. 2018

59 Fujiwara, Bakhshi, Mourato, Lawton, Hotopp, Lagarde, Davies (2018). The Economic Value of Culture: A Benefit Transfer Study Report to the Department for Digital, Culture, Media & Sport (p54): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/963226/The_Economic_Value_of_Culture_-_A_Benefit_Transfer_Study_-_Final_report_V2.pdf

regional museums value regional museums by broadly the same amount as non-users of local museums value local museums.

- **Between the four counties, non-use average WTP ranged from a lowest value of £3.49 for Devon to a highest value of £3.88 for Cheshire** (Table 3-8). The distribution of WTP across counties was again not wide, which provides greater confidence in the homogeneity of the counties surveyed (and is reflected in the confidence interval in the Total column).
- Within each county, maximum WTP ranged from £75 in Cheshire to £30 in Devon.

Table 3-8 Non-user local museums WTP (annual council tax over 5-year period WTP values)

Non-use WTP	Cheshire	Essex	Devon	Lincolnshire	Total
Mean (std. err.)	£3.88 (£0.56)	£3.58 (£0.53)	£3.49 (£0.51)	£3.79 (£0.60)	£3.68 (£0.28)
Lower and higher bound WTP (based on 95% confidence interval)	£2.78 - £4.98	£2.54 - £4.62	£2.48 - £4.51	£2.60 - £4.98	£3.12 - £4.24
Median	£1.00	£1.00	£1.00	£1.00	£1.00
Sample size	342	347	349	321	1,359
N museums	6	6	6	6	24
County WTP range	£0 - £75	£0 - £50	£0 - £30	£0 - £50	£0 - £75

3.8.4.4 *Conclusion*

Table 3-9 summarises the main findings from the local museums valuation survey:

- User WTP an entry fee to access a local museum was £4.44 per visit on average, with a lower bound of £4.00.[60] This was derived from valuation estimates from 607 respondents, covering 24 local museums in four English counties, with each museum having at least 10 respondent valuation estimates. This is a realistic figure in line with the previous literature and slightly conservative compared with the prices paid at local museums, at around £5.
- Between the four counties, average WTP ranged from £3.95 in Devon to £4.76 in Lincolnshire.
- Non-user WTP an increase in council tax over a five-year period was £3.68 on average, with a lower bound of £3.12. This was lower than the value that visitors placed on local museums, albeit that the payments were different

60 We take a more conservative estimate of WTP based on the lower bound 95% confidence interval. This lower bound provides a representation of the lowest value that average WTP could reasonably have based on distribution of values within the sample.

(a per visit value for use WTP compared with an annual tax increase over five years for non-use WTP). This finding is perhaps to be expected since non-users have not directly experienced the site and are therefore only paying for the benefits that others receive and any option value for their potential future visits. For comparison, this is broadly similar to the non-use WTP for regional museums found in our previous regional museums Benefit Transfer study (£3.48). This suggests that non-users appear to value regional museums no more than they do local museums.

- Splitting non-users between impure non-users (respondents who had visited between one and five of the six listed sites in their county in the past five years) and pure non-users (respondents that had not visited any of the six listed sites in their county in the past five years), the former group are willing to pay almost 20% more on average than the latter group (£4.01 vs £3.35). This is to be expected insofar as the latter group - pure non-users - are likely to be less culturally engaged.
- While we are mainly interested in the pooled valuations, some interesting findings arise when they are split by county. Devon respondents repeatedly reported lower WTP values than respondents from other counties. This could be explained by the close proximity of four of the six shortlisted local museums in Devon, creating competition in the WTP values, or by the fact that due to this locational clustering, residents living in other parts of the county were more likely to be a further distance from any of the six sites. Conversely, Devon pure non-users reported the second highest pure non-use valuation.

Table 3-9 Summary local museum mean WTP value for each valuation scenario

Mean WTP for each scenario	Cheshire	Essex	Devon	Lincolnshire	Total (average across pooled museum sites with lower bound)
User WTP entry fee to access museum (per visit)	£4.58	£4.41	£3.95	£4.76	£4.44 (£4.00)
Non-user WTP to support museum (annual council tax over 5-year period) (including impure and pure non-users)	£3.88	£3.58	£3.49	£3.79	£3.68 (£3.12)
Impure non-user WTP to support museum (annual council tax over 5-year period)	£4.95	£4.08	£3.44	£3.46	£4.01 (£3.19)
Pure non-user WTP to support	£3.27	£2.89	£3.54	£4.23	£3.35 (£2.59)

museum (annual council tax over 5-year period)					

3.8.5 Validity testing

3.8.5.1 *Local museum user entry-fee WTP regression*

Pooled OLS regressions show that the WTP an entry fee for a local museum was significantly and positively associated with the price respondents had already paid the last time they visited the museum (Appendix Table 5-32). When we compare WTP among those who had paid and those who had not, we see that WTP is higher among those who did pay to enter the museum (Appendix Table 5-25). However, WTP for free museums was still positive for those who did not pay to enter (average WTP of £3.74) and higher than those who paid under £5 (average WTP £3.60). Within the WTP for paid museums group, average WTP generally increased with the amount that had been previously paid, but in a non-linear way (-£0.14 for those who had paid less than £5, +£1.18 for those who had paid between £5 and £10 and +£5.02 for those who had paid more than £10). This may suggest that if respondents were to visit again, they would be willing to pay slightly less than they had paid previously and that they might value their next visit less than the previous visit, which aligns with the economic theory of diminishing marginal utility, whereby each additional unit of a good or service is worth less of a person's household budget compared with alternative uses to which that money can be put. As it might be particularly difficult for local museums to renew their displays frequently (compared to regional museums with typically larger collections), it might be expected that each additional visit has a diminishing marginal utility. When looking at the frequency of visits, there is indeed some evidence that those who visited the museum every year were willing to pay slightly less than those who had visited only once in the past five years (-£0.19 on average). Note, however, that this represented a greater value in aggregate over their lifetime as they would go multiple times (compared with someone paying only once).

- The regression analysis also shows that those who were members of a cultural organisation seemed to also be willing to pay slightly less than those who are not. It was likely that they valued the museum in ways not fully captured in their stated WTP, given that they contributed already through other means (also consistent with diminishing marginal utility affecting their stated WTP). As expected, other indicators of cultural engagement were positively associated with WTP for local museums: Those who selected culture as one of the top 5 priorities for public spending were found to report a statistically higher WTP. This aligns with expectations that those who are more engaged with culture would value it more highly and state a higher WTP.
- Finally, while household income is generally expected to have a linear or log-linear relationship with WTP[61], we found only the highest income

61 Bateman et al. 2002

bracket to be significantly associated with a higher WTP for an entry fee. As the statistical association between income and WTP more generally was not significant (and not necessarily consistent across counties when estimating county-specific models), it would be premature to draw strong conclusions prior to further research using a larger dataset. However, perhaps one potential economic explanation for why lower income groups may value their local museums more than those with median income is that they disproportionately value local museums which are closer (and cheaper) to reach. Age, gender, and marital status were not found to be significantly associated with user WTP values.

- Overall model fit was low, although comparable to previous Benefit Transfer studies[62], with the R-squared showing that the models explain around 13% of the WTP in the pooled model, and no more than 38% for local museums in Cheshire.
- This may have implications for adjusted and function transfer, since differences in the county-level WTP may be driven by factors that cannot be observed at the sample sizes in this study.

3.8.5.2 *Non-user local museum WTP regressions*

- Looking at the pooled OLS model of non-user WTP, age and gender were not significantly associated with non-user WTP values (Appendix Table 5-33). Household income was again not a significant driver of WTP in the pooled non-use model, nor in any of the individual county samples.
- Selecting 'Arts and culture' as one of the top 5 areas where public spending should be allocated was significantly associated with non-use WTP in the pooled model and three of the county models. This result aligns with the expectation that more culturally engaged non-users value non-visited local museums more highly.
- There was no significant difference in WTP values between pure and impure non-users in the regression model nor with being a member of a heritage or cultural organisation, which may indicate the effect of higher/lower cultural engagement was captured by other observable characteristics in the sample.
- Overall model fit was again low, with the R-squared showing that the models explain only around 4% of the WTP in the pooled model, and no more than 8% for local museums in Essex. This poor goodness of fit likely reflected the low sample size and the pooled nature of the data, which

62 Lawton et al. 2021; Fujiwara et al. 2018

group together a larger number of smaller sites with low samples at each site.

3.8.6 Transfer testing

We test how simple unit Benefit Transfer can be applied to WTP values for local museums surveyed across four English counties, both the predominantly use values held by users (entry fee WTP), and non-use values held by non-users (council tax). Comparing the observed mean WTPs for each county cluster of six local museums (defined as our 'policy site') with the corresponding Benefit Transfer predictions shows how well the simple unit Benefit Transfer method would have worked if applied to that policy site. In particular, the greater the percentage difference between the Benefit Transfer prediction and the observed mean WTP at a given policy site, the greater the transfer error. While differences in mean WTP values are expected between different county clusters of local museums, we only recommend transferring values between counties that are characteristically similar to avoid higher error rates (See Section 3.9 on Application to Social Cost Benefit Analysis). Note that errors of over 200% are common in cases where sites are not sufficiently homogeneous.

Summary of local museum transfer testing

- Transfer tests between the four county local museum clusters showed that both simple and adjusted transfer perform well for both use and non-use WTP, with all transfer errors well below the 40% threshold recommend in the literature. As such, simple benefit transfer can **confidently be used to transfer the values obtained for local museums in these four English counties to comparable local museums in comparable counties**. Although adjusted (income) benefit transfer performed well in transfer testing, given the uncertainties about the relationship between income and WTP (which appears to be non-linear in the case of local museum WTP) we recommend that adjusted transfer not be attempted using the current results, and that further research with a larger sample of local museum visitors is required to provide sufficient confidence that income adjusted transfer operates successfully.
- Function transfer also performs well for all local museum WTP values, with acceptable levels of transfer error. The transfer tests indicate that function transfer can be used to tailor local museum WTP values to multiple characteristics of a museum policy site in another county. However, we note that that the function models have relatively low explanatory power with the sample size and covariates available, which limits the applicability of function transfer to study sites.
- Overall, **we recommend that simple transfer be adopted for local museum use and non-use WTP values**.

3.8.6.1 *Simple unit transfer*

Transfer errors (TE) for clusters of local museums in the four English counties study sites were low across the board and all below the threshold of 40% suggested as acceptable by the academic literature. We note that any transfer of WTP values between different institutions will incur some degree of transfer error (see Appendix Section 5.6.1 for detailed simple unit transfer testing tables).

- **Local museum user WTP simple unit transfer errors** ranged from 1% for museums in Essex to 15% for museums in Devon. The mean difference between observed and predicted WTP was not significant for any of the counties studied. This is to be expected given the low levels of variance between mean use WTP for each of the four counties and gives some further confidence in the transferability of these results to local museums in other counties.

- **Local museum non-user WTP simple unit transfer errors** ranged from 3% for the museums in Lincolnshire to 7% for the museums in Cheshire. The mean difference between observed and predicted WTP was not significant for any of the counties studied, again giving some confidence in the transferability of these results to non-visited local museums in other counties.

For users and non-users the simple unit transfer tests for user WTP fell well within what is an acceptable range in the academic literature.

3.8.6.2 *Adjusted unit transfer*

Adjusted unit transfer takes the difference in one key characteristic between the study and policy populations (average household income) and adjusts WTP values to the context of the policy site. We note in this case that regression analysis indicated that the relationship between income and WTP for local museums was non-linear, with those at the lower and higher ends of the income spectrum having higher WTP on average than those in the middle. This result was not found in any of our previous Benefit Transfer work, where income was positively and linearly associated with WTP. We might speculate that the difference was driven by the local nature of the sites being valued meaning that local museums have less substitutability among lower income groups (in other words, lower income groups may be less able to travel to other museums, and therefore might plausibly have a higher WTP to keep their local museum open). Clearly, further research on a larger sample of local museum visitors would be required to explore this hypothesis further. But in the absence of this, we advise caution in the interpretation and application of the adjusted unit transfer values. That being said, the transfer errors for local museum WTP for the adjusted transfer tests turned out to be low across the board and all below the 40% threshold recommended in the literature (see Appendix Section 5.6.2 for detailed adjusted unit transfer testing tables).

- **Local museum user WTP adjusted unit transfer errors** ranged from 3% for the museums in Cheshire to 21% for the museums in Lincolnshire. The mean difference between observed and predicted WTP was significant only for the museums in Lincolnshire.
- **Local museum non-user WTP adjusted unit transfer errors** ranged from 1% for the museums in Devon to 19% for the museums in Essex. The mean difference between observed and predicted WTP was not significant in any cases.

Overall, for both local museum user and non-user WTP values, adjusted and simple unit transfer worked well, with an acceptable range of transfer errors across the board and lower transfer errors overall in adjusted transfer tests compared to simple unit transfer. However, the non-linear relationship between income and WTP for local museums means that caution should be taken in applying adjusted transfer until further research has been

undertaken, and that analysts should therefore adopt a cautious strategy and apply simple unit transfer where possible.

3.8.6.3 *Function transfer*

Function transfer takes the difference in multiple characteristics between the study and policy populations (which may include the age, gender, and income levels of the relevant populations) and uses multivariate regression coefficients to adjust WTP values to these more detailed contextual factors at the policy site. The function transfer errors reported in Appendix Section 5.6.3 for local museum WTP were again low across the board and all below the 40% threshold recommended in the literature.

- **Local museum user WTP function transfer errors** ranged from 5% for the museums in Essex to 11% for the museums in Devon. The mean difference between observed and predicted WTP was not significant in any cases.
- **Local museum non-user WTP function transfer errors** ranged from 1% for the museums in Essex to 17% for the museums in Lincolnshire. The mean difference between observed and predicted WTP was again not significant in any cases.
- Overall, function transfer worked best for local museums in Essex with an acceptable range of transfer errors across the board. Given the variation in the performance of the function transfers, no strong conclusions could be drawn as to whether it performed better or worse than the adjusted or the simple transfers.

An important note of caution with the function transfer was that the explanatory power of the reduced WTP regressions for value transfer was low, as measured by the low adjusted R squared. In other words, the regression models were uniformly poor at predicting the individual WTP values. In addition, we note that demographic variables, as measured through the CV survey, do not show a statistically significant association with WTP, notably household income, which, as noted above, does not show a significant linear association with local museum WTP. This raises questions about the robustness of function transfer based on these results. For this reason, **we recommend that Benefit Transfer be performed using the simple transfer approach rather than adjusted and function transfer**, as this transfer approach performs well in transfer testing, and is not subject to the informational constraints and low predictive power found in the function transfer testing. However, we note that taking function transfer off the table limits the amount of variation that can be introduced in Benefit Transfer, as it means that it is not possible to introduce museum characteristics into the function transfer. Future research should seek to explore function transfer across a large number of sites (varying by attributes such as size and type of collection) and with larger sample sizes, to provide the statistical power necessary to create function transfers that vary by site characteristics. However, that is beyond the current scope of the present study, given the sampling constraints, both around the number of local museums and sample sizes within each local museum.

3.9 Application to Social Cost Benefit Analysis

3.9.1 Use value

We recommend that readers consult the Arts Council England Guidance Note on *"How to quantify the public benefit of your Museum using Economic Value estimates (local museums)"*.[63] An economist or valuation professional should be consulted before applying the WTP values to individual institutions, as it may be necessary to correct and adjust the values using in-house data, or primary data collection through visitor surveys. In such instances where the values are applied to SCBA or institutional business cases, these calculations should be informed by someone with experience in non-market valuation and Benefit Transfer.

As an overarching set of best-practice rules, before applying any WTP values to a new business case, it is important to scope the characteristics of the museum and the valuation scenario relevant to SCBA (user value, non-user value) against those of the sites used in this survey to determine the comparability between sites.

For local museums use and non-use values (user WTP use value, elicited by an entry fee per visit, and non-user WTP non-use value, elicited by an increase in council tax spread over five years), we recommend simple transfer for simplicity as it requires less statistical modelling, introduces a lower rate of transfer error, and is not subject to complications around the relationship between income and local museum WTP.

3.9.2 Aggregation

As noted above, this report is not designed to provide guidance on how to apply WTP values into a business case or SCBA. Detailed guidance for aggregating Benefit Transfer values and applying them to business case evaluations is provided in the ACE Guidance Note "*How to quantify the public benefit of your Museum using Economic Value estimates (local museums)*".

However, given that the purpose of Benefit Transfer is to transfer values from the study sites (such as those in this report) to a 'policy site', and that analysts will likely be expected to aggregate these values to the total sample of beneficiaries (both users and non-users), we provide information below that may help to inform the process of aggregating individual-level WTP values up the relevant population of users or non-users.

Table 3-10 summarises the process for aggregating local museum WTP values. For simple unit transfer, the analyst simply needs to multiply the average use WTP across the pooled sample

63 This guidance can be found in the Arts Council England Culture and Heritage Capital Portal:

https://www.artscouncil.org.uk/publication/culture-heritage-capital

of 24 local museums by total annual visits to the museum being evaluated. This value provides a representative use value estimate which is equivalent to a hypothetical individual entry-fee for accessing the museum.

For use WTP, the entry fee payment mechanism was chosen as the most appropriate mechanism for a set of sites with a mixed paid/free entry model. The exclusion scenario was considered fit for purpose in both the paid and free sites: the collections, exhibitions and events would no longer be accessible to the public unless respondents were willing to pay an entry fee. This was considered appropriate, given that the purpose of Benefit Transfer was to estimate a WTP for local museums that is transferable between counties, and must therefore be representative of the pool of local museums within these four English counties. For paid museums, this required a reminder for respondents to ignore what the museum currently charges for entry and state the maximum amount that they would be willing to pay to keep the museum open to the public. This was designed to ensure that, for the purpose of Benefit Transfer, the WTP represents the total economic value of the museum in non-market terms.

In theory, for those that already charge entry, this must be considered instead of any existing ticket revenue. For those that do not charge entry, this represents the welfare value of the museum, which previously had no market price estimate. However, the evidence from multivariate regression analysis appears to suggest that respondents who had visited paid museums were influenced in their stated WTP by the amount that they paid, even after having been asked to ignore this information. The data on paid vs unpaid museums could also be correlated with unobserved determinants of value, for instance, that bigger local museums may be more able to charge an entry fee, and that these larger museums also hold higher public values.

This is one of the inherent challenges of surveying paid and free institutions with the same survey instrument, and one forced by the challenging nature of the research, to collect large-scale evidence of the value of smaller local museums using contingent valuation methods. As a consequence, pre-existing fees may exert an anchoring effect on stated WTP. The regression results suggest that WTP for a sample of exclusively free to enter museums would have been lower on average. In principle this should not have been the case, since the WTP question was designed to elicit the welfare value of the institution, regardless of any current entry fees. However, current entry fees appear to have acted as an anchor, and have led to a higher WTP for paid institutions.

This has implications when transferring WTP to other free sites, as it may lead to an overestimate of the value of the site. We therefore recommend that the lower bound confidence interval be taken to avoid over-estimation. Conversely, the WTP for paid institutions may be an under-estimate, which can have implications when constructing business cases for paid local museums, since in principle the WTP estimate should be used as a substitute for the existing entry fee revenue stream. In part this is to be expected given that mean WTP is always calculated with the inclusion of those who would not be willing to pay as £0. For paid local

museums, we therefore recommend that business case analysts select the highest value, whether based on existing entry fees or the WTP estimate from this study, given that the WTP estimate is likely to be an underestimate in the case of paid museums, since respondents appear to have failed to discount any previous payment they may have made for those museums.

Non-use WTP was collected from respondents within the county in which the local museum is based. Aggregation should therefore be applied to households at the county level for the study museum. Non-use WTP can be added to existing revenue from ticket sales (where local museums charge for entry) in principle without risk of double counting, as respondents were reminded that any entrance fees to the museum would not be affected in the hypothetical scenario (but non-use value plus existing revenue cannot be added to use WTP). Non-use WTP was elicited via the CV survey as an annual council tax payment over a fixed period of five years. For the purposes of calculating present value over multiple years, the analyst must therefore assume this payment covers the life of the asset. However, this will produce low present value figures over, say, a thirty-year evaluation period, since it assumes there is no ongoing non-use value beyond the fifth and final year of the payment.

This demonstrates one of the limitations of CV surveys: that respondents are theoretically constrained by the way that the payment scenario is presented to them. However, they may also ignore this information, and in other studies, follow-up questions have shown that respondents are often insensitive to the payment term presented.[64] Thus, while the survey designer may assume that respondents would be willing to pay an annual increase in council tax indefinitely or within the time period defined in the survey text, in practice respondents may have an implicit budget envelope that limits such a payment to a finite number of years. The survey designer has two choices here: to collect a significant amount of follow-up information with which to inform the payment term for aggregation over multiple years; or to set a finite payment period. The choice of payment term is therefore important.

We recommend that non-use values should be aggregated in a conservative way to account for the specific uncertainties that exist around elicitation of non-use values.[65] This could include a strict interpretation that the non-use WTP is intended as a fixed-term five-year payment for the life of the asset. However, the analyst may have a justification why they believe that the non-use value of the asset would apply over a longer period of time, and if such a justification can be made then they may be able to estimate aggregate non-use present value over a longer payment period. We recommend that this should only be done with the expertise of a specialist in non-market valuation methods. Considerations around incorporation of non-use

64 Kim and Haab 2009

65 For discussion of the issues and uncertainties around non-use WTP values, see Bandara and Tisdell 2005.

values and fixed-term payments into present value calculations will be an important topic for future research within the DCMS Culture and Heritage Capital framework.[66]

Table 3-10 Aggregation of WTP values to your institution

	Use value	Non-use value
WTP value	Visitor (use) WTP value	Non-visitor (non-use) WTP value
Duration	Per visit	Over five years
(Multiplied by)	X	X
Your institution's data	Total annual visits	Local population households within county

Double-counting: There is a risk of double-counting when combining the **annual user WTP aggregated score** with the **local population non-user WTP aggregated score** to calculate the **total non-market value of a local museum**, given that they relate to different population groups. As recommended in the ACE Guidance Note "*How to quantify the public benefit of your Museum using Economic Value estimates*", local 'user' households should be removed from the non-user sample if known. In the absence of precise local survey data in estimating the number of local non-users, we suggest that it may be reasonable to deduct, say, 20% of the local county population from the local population to account for local users before aggregating non-visitor (non-use) values (noting that the 20% of the local population considered to be local users should be less than the total number of annual users for the museum in question). The analyst should also beware of incorporating other non-market valuation methods alongside WTP values. For instance, valuations based on travel cost or house price uplift studies could constitute double-counting with WTP values, as both approaches elicit equivalent prices for the welfare impacts of cultural institutions.

Aggregation of WTP values within an SCBA evaluation may also be able to incorporate welfare weighting, as recommended by HM Treasury Green Book (2020).[67] This guidance permits using distributional weights to adjust for diminishing marginal utility of income in situations where there is a difference in the socioeconomic characteristics of the population in the investment area compared to the national or regional average. This can be especially important in cases where the user or non-user group is made up of a high proportion of individuals from lower socioeconomic backgrounds, to give a higher welfare-weighted WTP value, unconstrained by the relatively smaller household budgets of these groups.

66 The Department of Digital, Culture, Media and Sport (DCMS) Culture and Heritage Capital Framework:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/955203/GOV.UK_-_Framework_Accessible_v2.pdf

67 H. M. Treasury 2020

As noted above, aggregation should always be performed with the advice of an economist with experience of non-market valuation and Benefit Transfer methods.

4 Conclusion

This research was conducted on behalf of Arts Council England as part of a wider programme of research to provide more standardisation in the use of economic valuation techniques in the arts and cultural sector. Arts and cultural organisations like local museums provide unique valuation challenges, providing as they typically do a mixture of commercial and public services. To address their mixed economy nature, contingent valuation (CV) survey designs are used in this report to value local museums across England.

WTP values for local museums were estimated through primary data collection. Given the lower visitor numbers to local museums (compared with regional museums), identification of past visitors through online sampling is more difficult, meaning that target sample sizes per institution will be lower, and potentially below the recommended minimum sample size for CV surveys as recommended by UK Government guidance. In response to this challenge, we designed a sampling approach whereby data collection was focused at the local county geographical level (specifically, Cheshire, Essex, Devon, and Lincolnshire) to survey six local museums in each county. This provided a clustered sampling approach at the county-level, through which a range of local museums were valued. We estimated an average WTP value for visitors and an average WTP for non-visitors at the county level for each county.

Recognising the need for further research, in this report, we also tentatively set out views on how to use these WTP values in SCBA. Guidance on the application of non-market values to business cases is in a developmental phase and will be explored further within DCMS's Culture and Heritage Capital framework. Before applying these values to your own business case or SCBA, we recommend consulting a professional economist.

Textbox 2 Summary points

- The WTP values collected in this study and tested for transfer error using a standard suite of transfer tests have been compiled into the Benefit Transfer Table of Economic Values for Culture.
- The values produced in this report for local museums, and in previous reports for regional galleries and theatres, historic cities, cathedrals, and regional museums, provides pooled WTP values for all cultural sites surveyed and tested for Benefit Transfer as part of an ongoing programme of DCMS-and ACE-funded research. The Benefit Transfer Table of Economic Values for Culture includes the key findings from transfer testing to help inform Benefit Transfer by practitioners and assist in situations where they need to apply the values in their value-for-money and SCBA calculations. Note that in all cases we recommend seeking the advice of economists with experience of non-market valuation and Benefit Transfer.

In terms of the new values estimated in this report:

Local museums:

- Transfer tests show that:
    - For user and non-user WTP, both simple and adjusted and function transfer perform best, in all cases with transfer errors below the 40% threshold recommend in the literature.
    - In most cases we recommend simple benefit transfer for local museum use and non-use WTP values. While adjusted and function transfer perform slightly better in transfer testing, the uncertainties about the relationship between income and WTP (which appears to be non-linear in the case of local museum WTP) means that further research on a larger sample of local museum visitors is required to provide sufficient confidence that income adjusted and function transfer operates successfully.

The above considerations, in combination with the known biases that operate on hypothetical contingent valuation surveys, means that average WTP may potentially be an over-estimate of the true value of local museums. We therefore recommend taking the more conservative lower bound WTP (the lower limit 95% confidence interval around the mean WTP) for Benefit Transfer in all cases, as presented in Table 4-1.

Table 4-1 Local Museum WTP: Key data for Benefit Transfer

Local museums Based on WTP values for 24 local museums spread across four English counties (Cheshire, Essex, Devon, and Lincolnshire)							
	1. Simple (unadjusted) transfer		2. Adjusted (income) transfer		3. Function transfer		
	WTP value (lower bound 95% confidence interval)	**Confidence in transfer (<40% transfer error)**	**Adjustment factors**	**Confidence in transfer (<40% transfer error)**	**Adjustment factors**	**Confidence in transfer (<40% transfer error)**	**Predictive power of function modelling (regression analysis and model fit)**
User WTP entry fee to access local museum (per visit)	£4.44 (lower bound: £4.00)	Yes	Household income of users (average): £39,403 Relationship between income and WTP uncertain	Yes	Previously paid for entry: 0.0983** Regression constant: 1.280***	Yes	Low predictive power
Non-user WTP for preservation of local museum (increase in council tax over five years)	£3.68 (lower bound £3.12)	Yes	Household income of non-users (average): £36,871 Relationship between income and WTP uncertain	Yes	Married: 0.169* Arts or culture amongst the top 5 priorities for public spending: -0.604*** Regression constant: 0.754***	Yes	Low predictive power

The final Economic Values Database, presented in Table 4-2, collects pooled WTP values for local museums set within the context of previous valuation estimates for cultural institutions commissioned by DCMS and Arts Council England[68] The table includes the key findings from transfer testing to enable practitioners to apply the cultural values more widely in their value-for-money and SCBA calculations, with caveats that valuation expertise should always be sought when adjusting these values to the specifics of your own institution.

Table 4-2 Benefit Transfer Table of Economic Values for Culture (with inclusion of local museums Benefit Transfer values from previous studies)

Population	Use/ Non-Use	Valuation Variable	Study site WTP (4 study sites) (lower bound 95% confidence interval)	Max Transfer Error <40%	Acceptable transfer methods
Regional Museums (Department for Digital, Media, Culture & Sport 2017)					
Visitor	Use	Entry fee for access (per visit)	£6.42 (lower bound £6.01)	Yes	Simple, Adjusted, Function
Non-Visitor	Non-Use	Annual donation for conservation, maintenance & presentation of collections (recurring)	£3.48 (lower bound £3.17)	Yes	Simple
Regional galleries (Arts Council England 2020)					
Visitor	Use	Individual entry fee for access	£5.40 (lower bound £5.01)	Yes	Simple, Adjusted, Function
Non-visitor	Non-Use	One-off donation for continued support of gallery (one-off for life of asset)	£3.72 (lower bound £3.20)	Yes	Simple, Adjusted, Function
Local museums (Arts Council England 2021)					
Visitor	Use	Individual entry fee for access	£4.44 (lower bound £4.00)	Yes	Simple
Non-visitor	Non-Use	Increase in council tax to maintain the local museums (five years)	£3.68 (lower bound £3.12)	Yes	Simple

68 Fujiwara et al. 2018

5 Technical Appendix

5.1 Valuation methods

5.1.1 Site selection

Potential sites were pre-screened by Arts Council England's funding tool, an online application that allows one to view organisations located in England that receive investment from Arts Council England.[69] This allowed sites to be selected based on criteria such as being located in a town with less than 200,000 residents, not located in a heritage building (to ensure respondents valued the museum itself and not the building that housed the museum) and contained collections that held a local significance, rather than a regional or national significance. This allowed us to ensure the identification of similar sites in terms of characteristics (e.g., visitor numbers, funding per year), thereby reducing transfer error when applying Benefit Transfer techniques. These criteria can be taken as rules of thumb when checking for the comparability between the study sites and the policy site for SCBA purposes, but they are not exclusive and other factors may be of relevance in the transfer process. An overview of the 24 chosen sites can be found in Table 5-1 below.

Table 5-1 Overview of the 24 local museums that were valued in this study

County	Site	Type of museum	Free	Open
Cheshire	Anson Engine Museum	Technology	N	N
Cheshire	Cheshire Military Museum	Military	N	Y
Cheshire	Congleton Museum	Local	Y	N
Cheshire	Lion Salt Works	Industrial	N	Y
Cheshire	Nantwich Museum	Local	Y	Y
Cheshire	Weaver Hall Museum and Workhouse	Multiple	N	Y
Devon	Brixham Heritage Museum	Local	Y	Y
Devon	Dartmouth Museum	Local	N	N

69 https://www.artscouncil.org.uk/funding-map-2018-2022

Devon	Tiverton Museum of Mid Devon Life	Multiple	N	Y
Devon	North Devon Maritime Museum Appledore	Maritime	N	N
Devon	Teignmouth & Shaldon Museum	Multiple	N	Y
Devon	Torquay Museum	Multiple	N	Y
Essex	Braintree Museum	Multiple	N	Y
Essex	Burnham-on-Crouch and District Museum	Local	N	Y
Essex	Chelmsford Museum	Multiple	Y	N
Essex	Combined Military Services Museum	Military	N	Y
Essex	Epping Forest District Museum	Local	Y	Y
Essex	Warner Textile Archive	Industrial	N	N
Lincolnshire	Ropewalk Museum	Industrial	Y	Y
Lincolnshire	Museum of Lincolnshire Life	Local	Y	Y
Lincolnshire	Louth Museum	Local	N	Y
Lincolnshire	North Lincolnshire Museum	Local	Y	N
Lincolnshire	Grimsby Fishing Heritage Centre	Maritime	N	N
Lincolnshire	Collection Lincoln	Local	Y	Y

Notes: Y = Yes, N = No

For each county, two additional sites were included in the list of sites presented to respondents. These were included to minimise focus bias (to avoid people 'yea-saying' and answering affirmative to the options that are presented). An overview of these eight additional sites can be found in Table 5-2 below.

Table 5-2 Overview of the 8 local museums that were not valued in this study

County	Site	Type	Free	Open
Cheshire	Grosvenor Museum, Chester	Multiple	Y	Y
Cheshire	Macclesfield Silk Museums	Industrial	Y	Y
Devon	Upottery Airfield Heritage Centre	Military	Y	N
Devon	Ilfracombe Museum	Multiple	N	Y
Essex	Cater Museum, Billericay	Local	Y	N
Essex	Great Dunmow Museum	Local	N	N
Lincolnshire	Grantham Museum	Local	Y	N
Lincolnshire	North Ings Farm Museum	Multiple	N	Y

Notes: Y = Yes, N = No

5.1.2 Non-users

Non-users of a site were broadly defined as not having visited that site within the past five years. Users served as a non-user sample for sites they had not visited (i.e., 'impure non-users'). This reduced the amount of booster samples that had to be collected under both surveys. 'Pure non-users' had not visited any of the six sites of interest. Impure non-users are those who, while a non-user for a given site, had visited at least one of the other five sites.

We note that there may have been underlying differences in the characteristics of the so-called '*pure non-users'* and *'impure non-users'*. For instance, those who have not visited any of the six shortlisted local museums in their county may have had lower levels of cultural engagement in general. We would expect that those who were less engaged with culture would have had a lower WTP for a museum they had not visited. The exclusion of this group could have led to a higher average WTP across the survey sample. We therefore attempted to recruit a balanced sample with the inclusion of some 'pure non-users'.

Impure non-users are likely more culturally engaged than pure non-users. A sample with an excess of impure non-users will be more culturally engaged and will likely have a higher WTP than the true non-user sample population. This would result in an overestimation of non-use value for the local museum due to the lower WTP of pure non-users compared with impure non-users. Impure non-users, being recruited from the user population, were also financially

better off than pure non-users (see income graphs such as Appendix Figure 5.1, and the social mobility tables in 5.7.2) which would also lead to the overestimation of WTP values if not allowed for.

The results of t-tests of statistical difference showed however that mean non-use WTP values did not differ significantly between the pure and impure non-visitor samples (p=0.203).

Additional scales

All surveys included follow-up multiple choice questions determining underlying preferences that drove individual WTP values (see Section 5.4). Other critical questions related to the sites included the frequency of user visits; familiarity with services; satisfaction with experience; whether respondents had previously paid for exhibitions or workshops and how much they had paid. The survey also included validated scales measuring social mobility (refer to Section 5.7.2 for more information).

5.1.3 Bias correction measures

This section provides an overview of the approaches taken to correct for various types of bias in the survey responses.

Probability weights: The composition of the survey sample may not have adequately reflected the composition of the target population due to several reasons, including:

- self-selection bias resulting from the survey distribution method among an online panel of pre-registered respondents, where certain demographic groups may be under- or over-represented compared to the general population, and
- small sample bias resulting from the 'luck of the draw' which may cause certain demographic groups to be under- or over-represented in the sample compared to the underlying population.

In particular, as the unweighted socio-demographic characteristics show (see Section 3.8.1), our sample was different in some respects to our target population. As these characteristics may have been drivers of WTP, any imbalance in our sample could have resulted in biased value estimates. For instance, women tended to report lower WTP, so without correcting for over-representation of women in our sample we could have underestimated the true valuation for preservation of arts and cultural sites. Therefore, to account for these differences in representation, throughout the analysis we applied weights based on socio-demographic characteristics taken from the 2011 Census.

Hypothetical bias occurs when the hypothetical nature of the CV survey leads to respondents overstating what they would pay in reality.[70] A range of approaches were made within the survey to address hypothetical bias. Counteractive (i.e. *ex ante*) treatments through so-called entreaties in the survey text are designed to reduce hypothetical bias and make the survey incentive compatible with standard welfare theory.[71] In the surveys, we provided respondents with cheap talk scripts[72] asking them to be realistic, reminding them of the household budgetary constraints, and the existence of other things that they may wish to spend their money on.[73] Respondents were also informed that "studies have shown that many people answering surveys such as this one say they are willing to pay more than they would actually pay in reality".[74]

The survey also included a consequentiality script in the form of a Likert scale asking respondents "How confident are you that the results of this survey will be used by policymakers?". There is a range of field studies which suggest that perceived consequentiality matters in stated preferences and that observables can help explain how this perceived consequentiality varies across people.[75]

Ex-post, we also addressed hypothetical bias by exploring follow-up responses for inconsistencies and evidence of response acquiescence:

- Those who responded that they 'did not believe they would really have to pay' were excluded as this is an indicator that the valuation scenario was not answered in a realistic way.
- Those who completed the survey in an unrealistically fast time were also excluded. Removal of so-called 'speedsters' is recommended practice in CV analysis.

5.1.4 Analysis

The surveys elicited WTP values on behalf of the individual (per visit entry fees) or the household (annual council tax over a 5-year period). Sample size and population weighting ensured that survey samples were representative of the respective regional population, which meant that the values could be aggregated to the local population. Values were aggregated to the local region proportionally, by taking the percentage of the sample who gave a positive

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70 Cummings and Taylor 1999; Landry and List 2007; Mahieu et al. 2012

71 Carlsson et al. 2013; Cummings and Taylor 1999

72 Cheap talk script is a survey technique designed to reduce hypothetical bias in WTP estimates by reminding respondents of their budget constraints and availability of alternative goods, to make WTP values incentive compatible with standard welfare theory.

73 Cummings and Taylor 1999

74 Champ and Bishop 2001, 2001; Cummings and Taylor 1999

75 Vossler and Evans find some that controlling for consequentiality increases construct validity, with income, distance from the site and being a member of an environmental group only being significant drivers of WTP for consequential respondents, so that can improve our regressions. Needham and Hanley hypothesise that people with a higher degree of familiarity with the good will perceive the survey to be more consequential as they may already be aware of the good/service being valued and as such believe that the results will be shared with policymakers as part of the planning process.

WTP value for the site in question and scaling up to the equivalent proportions of the local population.

5.1.5 Socio-demographics

As the Understanding Society survey does not explicitly collect information on local museum visits (exclusive of regional museum visits), we compared our primary data samples with 2011 Census data based on the four counties of interest.

We used the data provided by the 2011 Census for each of the counties to weight by age and gender for both our user and non-user sample.

Table 5-3 Comparison between 2011 census and Primary local museums datasets

Comparison between 2011 census data and primary data	Cheshire	Essex	Devon	Lincolnshire
UK Census 2011 data				
16-24yrs % (n/N)	11.2% (97,124/870,301)	11.7% (141,383/1,206,923)	11.6% (77,762/671,259)	11.9% (74,751/629,926)
25-34yrs % (n/N)	13.9% (121,404/870,301)	14.9% (180,111/1,206,923)	12.8% (85,692/671,259)	13.5% (84,884/629,926)
35-44yrs % (n/N)	14.5% (126,292/870,301)	15.0% (180,997/1,206,923)	12.4% (83,253/671,259)	13.0% (81,825/629,926)
45-54yrs % (n/N)	17.9% (155,822/870,301)	17.3% (209,277/1,206,923)	16.0% (107,293/671,259)	16.5% (103,820/629,926)
55-64yrs % (n/N)	16.5% (143,730/870,301)	15.5% (187,588/1,206,923)	16.8% (113,058/671,259)	16.6% (104,841/629,926)
65yrs or older % (n/N)	26.0% (225,929/870,301)	25.5% (307,567/1,206,923)	30.4% (204,201/671,259)	28.5% (179,805/629,926)
Primary data				
16-24yrs % (n/N)	12.6% (44/348)	8.9% (31/349)	11.3% (40/353)	13.5% (44/325)
25-34yrs % (n/N)	16.1% (56/348)	14.3% (50/349)	14.7% (52/353)	12.0% (39/325)
35-44yrs % (n/N)	17.8% (62/348)	16.0% (56/349)	13.3% (47/353)	14.8% (48/325)
45-54yrs % (n/N)	16.4% (57/348)	15.8% (55/349)	18.4% (65/353)	15.1% (49/325)
55-64yrs % (n/N)	21.6% (75/348)	23.2% (81/349)	18.7% (66/353)	19.7% (64/325)
65yrs or older % (n/N)	15.5% (54/348)	21.8% (76/349)	23.5% (83/353)	24.9% (81/325)

5.1.6 Attitudes to culture and heritage

Table 5-4 Cheshire Local museum User and Non-user attitudes towards art and culture by site

User attitudes	Anson Engine Museum	Cheshire Military Museum	Congleton Museum	Lion Salt Works	Nantwich Museum	Weaver Hall Museum and Workhouse
Member of a cultural, heritage, conservation, or environmental organisation (%)	72.4%	36.8%	11.4%	53.4%	37.3%	45.1%
Arts or culture amongst the top 5 priorities for public spending (%)	36.2%	16.2%	22.8%	13.5%	11.8%	22.6%
Non-user attitudes (impure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	17.0%	47.2%	39.0%	40.2%	30.5%	39.3%
Arts or culture amongst the top 5 priorities for public spending (%)	7.4%	36.8%	19.5%	28.0%	11.0%	13.7%
Non-user attitudes (pure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	10.1%	29.4%	8.9%	31.3%	29.0%	12.2%
Arts or culture amongst the top 5 priorities for public spending (%)	26.7%	14.9%	4.5%	25.1%	16.2%	0.0%

Table 5-5 Essex Local museum User and Non-user attitudes towards art and culture by site

User attitudes	Braintree Museum	Burnham-on-Crouch and District Museum	Chelmsford Museum	Combined Military Services Museum	Epping Forest District Museum	Warner Textile Archive
Member of a cultural, heritage, conservation, or environmental organisation (%)	38.9%	25.0%	26.5%	75.0%	40.6%	21.3%
Arts or culture amongst the top 5 priorities for public spending (%)	31.6%	0.0%	11.9%	25.0%	23.8%	42.5%
Non-user attitudes (impure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	27.2%	57.8%	30.5%	14.3%	46.0%	18.9%
Arts or culture amongst the top 5 priorities for public spending (%)	20.9%	14.0%	13.0%	24.3%	0.0%	18.9%
Non-user attitudes (pure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	10.4%	30.8%	16.3%	17.4%	11.9%	6.5%

Arts or culture amongst the top 5 priorities for public spending (%)	36.8%	11.0%	5.8%	21.1%	13.1%	7.2%

Table 5-6 Devon Local museum User and Non-user attitudes towards art and culture by site

User attitudes	Brixham Heritage Museum	Dartmouth Museum	Tiverton Museum of Mid Devon Life	North Devon Maritime Museum	Teignmouth & Shaldon Museum	Torquay Museum
Member of a cultural, heritage, conservation, or environmental organisation (%)	54.8%	50.0%	27.3%	71.8%	53.4%	30.7%
Arts or culture amongst the top 5 priorities for public spending (%)	33.3%	18.8%	57.6%	33.0%	15.0%	13.9%
Non-user attitudes (impure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	28.2%	60.1%	36.9%	30.8%	26.4%	100.0%
Arts or culture amongst the top 5 priorities for public spending (%)	11.7%	16.5%	11.9%	26.4%	27.7%	45.1%
Non-user attitudes (pure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	10.4%	30.8%	16.3%	17.4%	11.9%	6.5%
Arts or culture amongst the top 5 priorities for public spending (%)	36.8%	11.0%	5.8%	21.1%	13.1%	7.2%

Table 5-7 Lincolnshire Local museum User and Non-user attitudes towards art and culture by site

User attitudes	Ropewalk Museum	Museum of Lincolnshire Life	Louth museum	North Lincolnshire Museum	Grimsby Fishing Heritage Centre	Collection Lincoln
Member of a cultural, heritage, conservation, or environmental organisation (%)	0.0%	30.5%	75.0%	28.9%	20.9%	18.0%
Arts or culture amongst the top 5 priorities for public spending (%)	0.0%	29.1%	0.0%	52.6%	17.2%	12.4%
Non-user attitudes (impure non-users)						
Member of a cultural, heritage, conservation, or environmental organisation (%)	29.1%	28.5%	16.8%	35.8%	40.3%	0.0%
Arts or culture amongst the top 5 priorities for public spending (%)	10.3%	28.5%	12.6%	19.4%	42.0%	17.1%
Non-user attitudes (pure non-users)						

Member of a cultural, heritage, conservation, or environmental organisation (%)	30.1%	35.2%	0.0%	12.1%	0.0%	9.7%
Arts or culture amongst the top 5 priorities for public spending (%)	24.7%	27.6%	11.9%	12.1%	17.2%	19.4%

5.1.7 Unreliable responses

To identify respondents whose responses might be unreliable, we included a series of follow-up questions after the payment-card question of each valuation scenario. These questions were designed to ask respondents why they indicated they would or would not be willing to pay. Respondents who put unreliable or inconsistent responses were flagged to potentially exclude them from the analysis, although these were not removed from the final sample, in line with previous research of cultural sites in England based on small sample sizes such as those we have here.[76] Respondents were dropped if they had 1 or more major flags or 2 or more minor flags. This was because their answers were deemed to be unreliable, hence including them would have reduced the robustness of our data. Some examples of criteria designed to identify potentially unreliable answers include:

- Those respondents who selected 'I don't believe that I would really have to pay' as the reason behind their WTP value, as these respondents likely gave a WTP figure without properly considering the impact this would have on their finances since they did not believe they would really have to pay (n = 27);
- Those that gave contradictory answers (i.e., said that present cultural heritage should be preserved while also saying that buildings, museums and paintings do not have the right to be preserved, n = 37);
- Those that took longer than two hours to complete the survey (n = 13); and
- Those that gave nonsensical responses to open-text questions (n = 5).

5.1.8 Statistical tests

Using multivariate regression analysis, we explored how our sample WTP figures were associated with theoretically consistent drivers of value in ways that accord with prior expectations and previous findings from the literature.[77] This is an important test of the validity of the results obtained. Bateman et al. (2002) provide guidelines on common variables to be included in modern applications of CV. In line with this literature, we have included the recommended range of standard socio-demographic characteristics (gender, age, children, education, and income) and relevant attitudinal variables (e.g., familiarity with the sites and

76 Bakhshi et al. 2015; Fujiwara et al. 2018; R. Lawton et al. 2018

77 Noonan 2003

public spending on arts and culture). The following regression model was used as part of the validation process to test that factors that were theoretically expected to affect WTP (such as income) and other factors that are known from the literature to have an effect (such as positive attitudes towards arts and culture) performed in the expected direction:

$$WTP_i = \alpha + \beta X_i + \varepsilon_i \quad (1)$$

where WTP_i is the amount the individual i has stated they are willing to pay (mid-point), α is the deterministic factor and ε is the error term containing unobserved factors that determine WTP. In X_i we control for the observed determinants of WTP, and β represents the corresponding regression coefficients.[78] Regression tables are reported in Section 5.5.

5.2 Benefit Transfer methods as applied to all case studies

The key element of the Benefit Transfer test is an analysis of the transfer error. That is, the difference between the transferred value, and the value we estimate. To do this we used one of the sites in the study as a 'policy site' and the other sites as the 'study sites'. In this section, we summarise these approaches.

(i) ***Simple unit value transfer***, where a single point estimate of benefit (e.g., mean WTP) is taken from one or more study sites and applied to the new policy site under the implicit assumption that the good and the socio-economic characteristics and preferences of the population are homogeneous between the study sites and the policy site:

Equation 1

$$\widehat{\overline{WTP}_p} = \overline{WTP_s}$$

where $\widehat{\overline{WTP}_p}$ is the predicted (average) WTP at the policy site and $\overline{WTP_s}$ is the average WTP at the study site(s).

(ii) ***Adjusted unit value transfer***, where the transfer accounts and controls for differences in conditions between the policy and study sites. This method usually focuses on differences in respondents' income, which could affect WTP estimates between two sites:

Equation 2

$$\widehat{\overline{WTP}_p} = \left(\frac{\bar{Y}_p}{\bar{Y}_s}\right)^e \overline{WTP_s}$$

78 Bateman et al. 2002

where $\bar{Y}_p, \bar{Y}_s$ is the average household income at policy and study sites, respectively, and e is the elasticity of the marginal utility of income with respect to WTP. We assume, as per the Green Book, that this equals 1 (i.e. e = 1).[79]

5.2.1.1 *Value Function Transfer: Transfer adjusted WTP from pooled data*

(iii) Benefit function [80] representing the relationship between WTP and a number of explanatory variables. The researcher transfers the entire benefit function estimated at the study site(s) to the policy site, where it is adapted to fit the characteristics of the policy site (such as socio-economic characteristics and other measurable characteristics that systematically differ between the policy and study sites). The estimated benefit function is then used to predict the benefits for the policy site[81]:

Equation 3

$$\widehat{WTP_{ip}} = b_0 + b_1 Q_p + b_2 C_p + b_3 A_p + b_4 S_{ip}$$

where $\widehat{WTP_{ip}}$ is the predicted WTP of individual i for policy site p; Q_p is the change in provision of the cultural good/service at site p; C_p is the characteristics of the good at site p; A_p is the availability of substitute sites for site p; and S_{ip} are the socio-economic characteristics of individual i at site p. The coefficients $b_0, \dots, b_4$ are obtained from the WTP function estimated at the study site (Equation 3 is estimated for the study sites whereby the subscripts p become subscripts s). Under this approach, more information about the site and population can be transferred and so the transfer errors are likely to be lower than the other two methods[82]. On the other hand, this approach is more data-intensive and requires availability of a range of demographic and possibly attitudinal/behavioural variables that are part of the WTP function for each site.

Since for policy decisions, we are interested in an average WTP for a site, knowing the WTP per individual is not required. For this reason, we can average out Equation 3 across individuals:

Equation 4

$$\widehat{WTP_p} = b_0 + b_1 Q_p + b_2 C_p + b_3 A_p + b_4 \overline{S_p}$$

where now $\overline{S_p}$ is a set of the average socio-economic characteristics of individuals at site p; and the remaining notation is the same as in Equation 3. Equation 4 highlights the fact that individual-level data from the policy site are not necessary to predict average WTP. Rather,

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79 Alternatively, the elasticity of the marginal utility of income could be estimated using data from the study site – this would be more in the spirit of the function transfer approach discussed below in the text.

80 Desvouges et al. 1992a; Kaul et al. 2013; Loomis 1992

81 Rosenberger and Loomis 2003

82 Brouwer and Spaninks 1999

information on the average characteristics of the policy site is sufficient and this may be held by the policy site itself without the need for any further primary data collection.

In our study, Equation 4 was obtained iteratively for each site. Out of the four counties, we selected a subset of three sites (which become the study sites) and estimated a benefit function on pooled data from these three study sites. The omitted fourth site then became the policy site and characteristics from the omitted sites were plugged into Equation 4 to predict WTP at the policy site[83]. Each of the six sites in each county had "its turn" as a policy site and so the above process was repeated six times omitting a different site each time which then became the policy site for that iteration of the study. We therefore predicted WTP values for each of the four counties based on pooled benefit functions from the other three county sites.

5.2.2 Transfer error testing

A number of transfer tests have been proposed to test the predictive power of BT. The statistical validity of BT assumes that value estimates are statistically identical across study and policy contexts. In other words, the values estimated for the pooled study sites should not be significantly different from the policy site. This difference, known as transfer error, is measured in two ways.

First, we calculate the percentage difference between the observed and the predicted WTP value. What is an acceptable transfer error and whether the transfer is still informative depends on the intended policy use of the transferred estimates, and the corresponding accuracy required.[84] Here, we compare estimates of transfer error to established ranges within the literature.[85] Ready and Navrud[86] reviewed intra- and cross-country Benefit Transfer studies and found that the average transfer error was in the range of 20% to 40%, while individual transfers had errors as high as 100-200%, particularly when involving complex goods. For testing Benefit Transfer in this report, we applied a maximum threshold of 40% transfer error to all individual transfer errors.

Second, we test the statistical difference between observed and predicted WTP in each case using student's t-tests. The acceptable threshold of statistically significant transfer error is not clearly set in the Benefit Transfer literature. For the purposes of transfer testing in this study, we deem transfer errors to be acceptable if differences in observed policy site and pooled study sites WTP values are statistically insignificant in at least three of the four cases. Given the lack

83 Bateman et al. 2011

84 Brookshire and Neill 1992; Desvouges et al. 1992b

85 Mourato et al. 2014; Navrud and Ready 2007

86 Ready and Navrud 2006

of guidance from the literature, we place more weight on transfer tests which produce errors below the 40% transfer error threshold proposed by Ready and Navrud.[87]

For use values across sites and populations, we tested three hypotheses for the three BT methods outlined in Equation 1-Equation 3 (described in Table 5-8).

Table 5-8 Benefit Transfer tests employed

BT APPROACH UNIT TRANSFER	T-TEST HYPOTHESIS	
Simple	$H1: \overline{WTP}_p = \overline{WTP}_s$	
	Null hypothesis: equivalence of observed mean policy site WTP and mean pooled study site WTP.	
Adjusted	$H2: \frac{1}{a_p}\overline{WTP}_p = \frac{1}{a_s}\overline{WTP}_s$	where $a_i = (\bar{Y}_i)^e$ for $i = p, s$
	Null hypothesis: equivalence of observed mean policy site WTP and mean pooled study site WTP, adjusted for income difference between policy and study site.	
FUNCTION TRANSFER		
Function	$H3: \overline{WTP}_p = b \cdot \bar{X}_p$	
	Null hypothesis: equivalence of observed mean policy site WTP and mean predicted pooled study site WTP.	

Notes: $\overline{WTP}_p$, $\overline{WTP}_s$ = average WTP at policy (p) and study (s) sites; $\bar{Y}_p, \bar{Y}_s$= average household income at policy and study side respectively; $e = 1$; b = coefficients obtained from WTP function estimated at study sites; and $\bar{X}_p$ = average characteristics of the policy site. For simple and adjusted unit transfer approaches, we use the equivalent of a two-sample unpaired t-test with unequal variances for weighted data, for the function transfer approach we use a paired t-test.

Hypothesis H1 tests the equality of mean WTP values at the **policy site** and the **study site**. Alternatively, average values from multiple study sites can be used, which was our approach here.

Hypothesis H2 tests the equality of *adjusted* mean WTP values at the policy site and the study site (or pool of study sites), adjusting for differences in any relevant characteristics. Accounting

87 Ready and Navrud 2006

for differences in income is the most common adjustment and is the approach we used here for use values.

Hypothesis H3 tests the transferability of a *pooled benefit function*, which is obtained after pooling the datasets from the study sites (excluding the policy case in each case) and estimating a WTP function for the pooled dataset. Specifically, H3 tests the equality of the observed mean WTP at the policy site and the predicted mean WTP for the policy site, using the estimated parameter coefficients of the pooled WTP function and the values of predictor variables observed at the policy site.

The accuracy of transfers (either unit or function transfers) is assessed by estimating the respective transfer errors, as follows:

Equation 5

$$TE = \left(\frac{\widehat{WTP_p} - \overline{WTP_p}}{\overline{WTP_p}} \right) \times 100$$

where the $\widehat{WTP_p}$ is the predicted value for the policy site.

5.3 Literature review

Relatively few studies examine people's WTP for local museums, with most studies valuing larger, more well-known museums and art galleries. Below, we present a review of the literature on this topic, broken down into regional museums (museums that have regional significance) and national museums (museums that have national or international significance), alongside some art galleries or regional and national significance. A review of the literature pertaining to local museums can be found in Section 2 of the main text.

5.3.1 National museums

Tomho (2004) measured the non-use value to 800 local residents of keeping the **Museum of Central Finland** in existence through annual taxes, using an open-ended elicitation mechanism. Residents were familiar with the museum and aware that local funding represented the main income source for the museum. The study estimated a mean WTP of FIM103 (£19.78 present day GBP) and median WTP of FIM50 (£9.60 present day GBP). Among non-users, the average WTP was FMI56 (£29.96 present day GBP).

Jaffry and Apostolakis (2011) applied discrete choice methods on 500 visitors to the **British Museum**. The choice modelling exercise measured willingness to contribute (WTC) for three described states of improvements or deteriorations from the fourth scenario (status quo). Attributes included: opening hours, temporary exhibitions, information, and communication technology (ICT), staffing, facilities management, outreach and engagement, and voluntary contributions, reflecting the range of fees charged at museums worldwide and included as a

proxy for 'price'. Survey respondents reported that they would be willing to contribute[88] up to £2.60 (£3.46 present day GBP) for five temporary exhibitions per year. They were, in general, positive towards ICTs at the museum, reporting a £1.64 (£2.18 present day GBP) mean WTC for the provision of information after the end of their visit. For facilities management, respondents in general were prepared to contribute up to £1.50 (£1.99 present day GBP) for a bigger information desk, leading the authors to conclude that respondents' strong preferences towards more ICT provisions indicate that congestion levels may be an inhibiting factor for museum attendees.

Maddison & Foster (2003) valued congestion costs in the **British Museum** with a photomontage survey associating crowded conditions with free admission (the status quo) and less-crowded photos with an admission charge. Dichotomous choices of £3, £6, £12, and £20 were randomly presented to a sample of 400 museum visitors. The estimated congestion cost imposed by each additional visitor turned out to be £0.05 (£0.07 present day GBP). Multiplied by the daily average number of visitors this gave an implied aggregate congestion cost for each visitor of £8.05 (£12.04 present day GBP). The authors note that, unlike WTP, there is "no necessary link between the marginal congestion cost and the optimum charge", since imposing this congestion charge would lead visitor numbers to fall, in turn reducing the congestion externality (Maddison and Foster, 2003, p. 186).

Bakhshi et al. (2015), as part of the AHRC Cultural Value Project, performed a large-scale empirical comparison of contingent and subjective wellbeing valuation in the context of the UK's cultural sector, eliciting visitor and general population WTP for the use and non-use aspects of two cultural institutions: the **Natural History Museum** (NHM) in London and **Tate Liverpool** (TL) gallery through face-to-face visitor (616) and online general population (1,000) surveys. The study also applied subjective wellbeing analysis, in terms of momentary wellbeing, testing for associations between activities performed in the past hour and levels of self-reported happiness and sense of purpose. User use values were estimated as £6.65 (£7.23 present day GBP) on average for the NHM (as a hypothetical entry fee) and £10.83 (£11.77 present day GBP) for TL (as an annual donation to support the work inside the gallery). These figures are of a plausible magnitude compared to prices charged for paid exhibitions in UK museums. Average user non-use value to support the research and conservation work of the NHM was elicited as a voluntary top up donation (mean £2.78; £3.02 present day GBP), while user non-use value of the work of TL in the wider community, elicited as a donation, averaged £8.00 (£8.70 present day GBP). The online survey captured non-use and option values for the general UK population (excluding Northern Ireland) as an annual donation. In the NHM study the online survey valued the research and conservation work of the NHM, while the TL study valued the work of TL inside and outside the gallery.

88 in the form of voluntary donations.

Burton, Louviere, and Young (2009) used choice modelling to value two **Australian** museums, using an online survey of 82 respondents for the **national museum** and 89 for the **state museum**. Eight discrete choice scenarios were developed, framed in terms of logistics (travel), visit duration, and cost. No WTP values were collected. Respondents were asked to indicate whether Option A or Option B would result in more frequent visits, less frequent visits, or no change to visiting patterns. For the state museum, multinomial logit (MNL) choice models showed that significant factors were: summer opening hours; family evenings; chat with curator; after school programs; day ticket on monorail; combined entry to IMAX cinema; joint museum pass; guided walking tour; and re-entry on same pass. For the national museum, significant attributes included: extended summer opening hours; joint ticket with the Imax/Aquarium; harbour cruise; ferry tickets; joint membership and fee options; and re-entry in the same month.

Sanz et al. (2003) elicited WTP for the preservation and maintenance of the **National Museum of Sculpture** in Valladolid, Spain. Using the payment mechanism of an annual donation to a preservation fund, they captured use value, in the form of 1,108 on site surveys, and non-use values through 1,014 telephone surveys with local residents. Use of a double-bounded dichotomous choice elicitation method gave a mean direct use value WTP of between 25EU and 30EU (£34-41 present day GBP) under a conservative scenario, and between 33EU and 40EU (£45-55 present day GBP) under a more optimistic scenario. Non-use value was estimated to be approximately 27EU and 36EU for each of these scenarios (£37-49 present day GBP). The authors reported no great difference between the valuation of the direct users and non-users, and in some cases non-user values were even 2EU higher than the estimate of the value to direct users.

Bedate et al. (2009) measured WTP for the same cultural good as Sanz et al. (2003), dependent on the level of certainty expressed by individuals in their responses. Using double-bounded dichotomous choice questions and a donation as a payment vehicle, the authors found WTP was lower when certainty was higher. At a certainty level of ≥ 7 (on a scale of 0-10 where 0 is not at all certain and 10 is extremely certain), mean WTP was around 18EU (£22.32 present day GBP) for museum visitors. In contrast, when all moderately certain responses were coded as uncertain (an asymmetric uncertainty model) mean WTP was much lower, estimated at 14EU (17.36 present day GBP) for museum visitors.

In a recent contingent valuation study, Chang and Mahadevan (2018) elicited WTP for the **Singapore's History Museum** among users (patrons) and non-users. Using donations as the payment vehicle, they presented 800 residents aged 15 or older with a closure and an enhancement scenario. Through double-bounded dichotomous choice questions, the study revealed that, on average, patrons (those who visited the museum at least once in the past five years) were willing to pay US$ 26.93 annually to prevent the museum from closing, whereas non patrons were willing to pay US$ 23.23. When asked about how much they would be willing to donate to enhance the museum's features, patrons elicited a mean value of US$ 30.46 while non-patrons' mean WTP was US$ 27.68.

5.3.1 Regional museums

Nesta and Simetrica-Jacobs (2018) undertook a study for DCMS to estimate the value of regional museums in England to both individual visitors and non-visitors in the general population (sample size: 1,587). [89] They used a payment-card contingent valuation methodology to elicit the value that respondents placed on four regional museums: Great North Museum, Newcastle; World Museum, Liverpool; National Railway Museum, York; and Ashmolean Museum, Oxford. Users were asked to state their maximum WTP in the form of an entry fee, just for themselves, if the museum was no longer free, while non-users were asked to state their maximum WTP in the form of an annual donation. When pooled together using a simple unit transfer, they found an average use WTP of £6.42 (£6.75 present day GBP) and an average non-use WTP of £3.48 (£3.66 present day GBP).

Choi et al. (2010) conducted a discrete choice experiment to value the **Old Parliament House** in the state capital of Canberra. In addition to being a listed heritage building, the former house of the Australian national parliament operates as a museum of social and political history (a "museum of its own heritage"), hosts temporary exhibitions, and organises lectures and seminars. For the study, respondents were presented with five choice sets, each including four options, to elicit their WTP for the following attributes: access policy, exhibitions, programs, facilities, funding. The payment would take place through an annual tax. The analysis was based on 785 responses and estimated a total economic value of AU$ 224 million (£151.4 million present day GBP) for the Old Parliament House.

Santagata and Signorello (2000) conducted a general population survey of 468 respondents to measure the non-use value of a **network of** cultural and historic **monuments** making up the Napoli Musei Aperti in Italy. The hypothetical scenario was that public funds (local taxes) would be withdrawn and substituted by a non-profit operator. Two elicitation mechanisms – single-bounded dichotomous-choice bid and open-ended questions – were tested. The authors reported mean WTP values of 17,000 liras (£9.06 present day GBP) and 30,000 liras (£15.97 present day GBP) from the open-ended and dichotomous-choice questions, respectively. They argued that the disparity between elicitation methods was unlikely to be caused by strategic bias, since the incentive for understatement of the true WTP should have been modest in the case of donations (the payment vehicle). Instead, they attributed the difference to the cognitive difficulty and preference uncertainty of open-ended elicitation, making lower values more likely, and the effect of yea-saying responses to the dichotomous choice question.

The majority of the stated preference (SP) studies reviewed used contingent valuation (CV, as opposed to choice modelling) to elicit respondents' WTP. CV methods have the advantage of allowing to estimate the non-use value of the site studied. In terms of survey instrument, most

89 Fujiwara et al. 2018

studies include closed-end questions, with a prevalence of double-bounded dichotomous choices. Compared to open questions, dichotomous choices and payment cards identify an interval of values containing the true WTP rather than a point estimate. Finally, the studies reviewed showed a preference towards donations, with around half using this as their payment vehicle. A large minority (around 25%) of the studies used taxation as their payment vehicle. In some cases, if the site valued is excludable, admission fees are also used as payment vehicles.

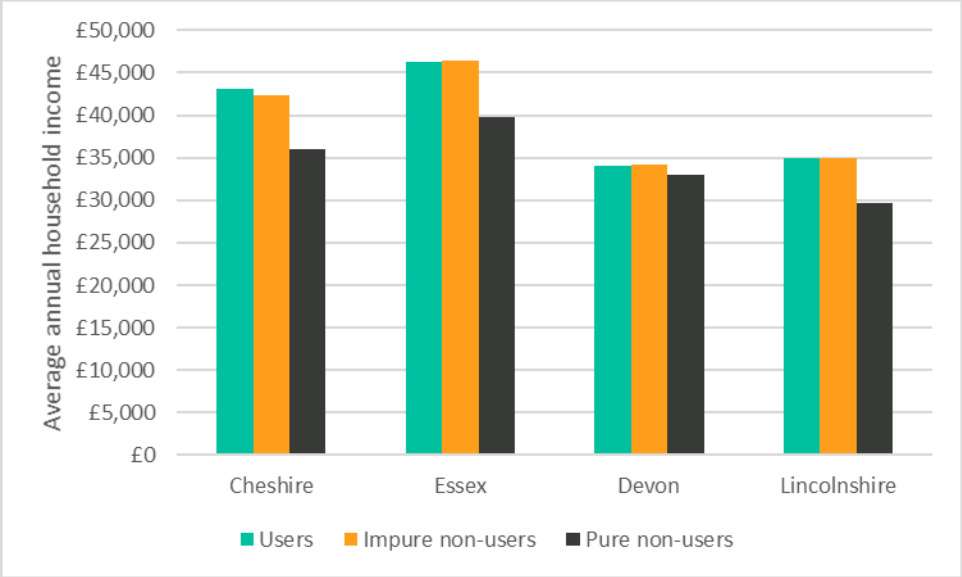
Tranter (2009) used CV to determine the public value of the **Queensland Museum** in Australia. Among the 1,174 respondents from different parts of Queensland, the questionnaire asked those favourable to increase funding for the museum whether they would rather increase taxation or divert funds from other services towards the museum. The first scenario elicited WTP for the existing products and services: respondents were informed that each year $6.50 per adult goes to the museum as state funding and then asked if they would be in favour of increasing that by either $2, $4 or $8, with the amounts randomly assigned. The resulting mean WTP for the museum was estimated at $12.65 per adult per year (£7.70 present day GBP). The second scenario presented respondents with the possibility of investing $24 million in the museum to improve its offer and asked whether they would be willing to contribute a one-off levy of either $4, $6 or $12, with the amounts randomly assigned. The estimated mean WTP for the museum developments was $16.43 (£10.00 present day GBP).

5.4 Detailed Results

5.4.1 Income distribution

As depicted in Figure 5.1, we can see that users had higher annual household incomes on average than pure non-users across all four counties, with Essex impure non-users recording the highest average (£46,362) and Lincolnshire pure non-users recording the lowest average (£29,692).

Figure 5.1 User and non-user (pure and impure) average annual household income by county



If we split this figure into three separate figures (Figure 5.2-Figure 5.4), we can see that users and impure non-users had similar patterns for household income, as they were from a similar sample (i.e. visitors provided use values for sites they had visited, then a non-use value for a site they had not yet visited as impure non-users). Pure non-users (i.e., those that had not visited any local museum within the past five years, see Figure 5.4) tended to show a less consistent trend with greater variation across annual household income groups.

The kernel density estimates below (see kernel density line) show that income within survey samples was broadly distributed as we would expect, with a long tail of higher income respondents. Employing kernel density allows us to see the density of occurrences, in this case the occurrences of household income, over the histogram which presents the average density of each household income group. The Devon user and non-user (impure) sample had a slightly higher representation of respondents at the lower end of the income scale. For pure non-users, we saw clustering towards the lower end of the income scale across the four counties.

Figure 5.2 User average annual household income by county

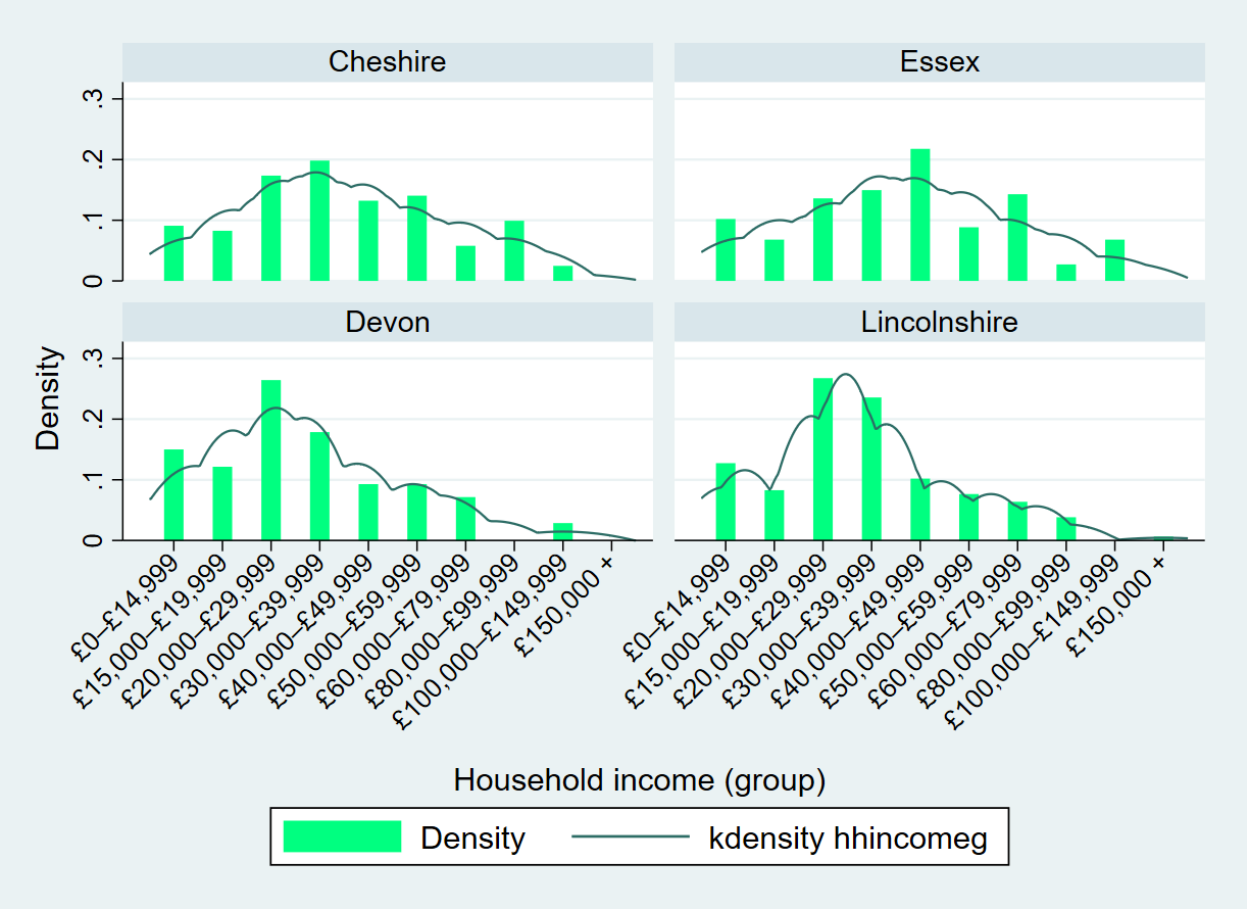


Figure 5.3 Non-user (impure) average annual household income by county

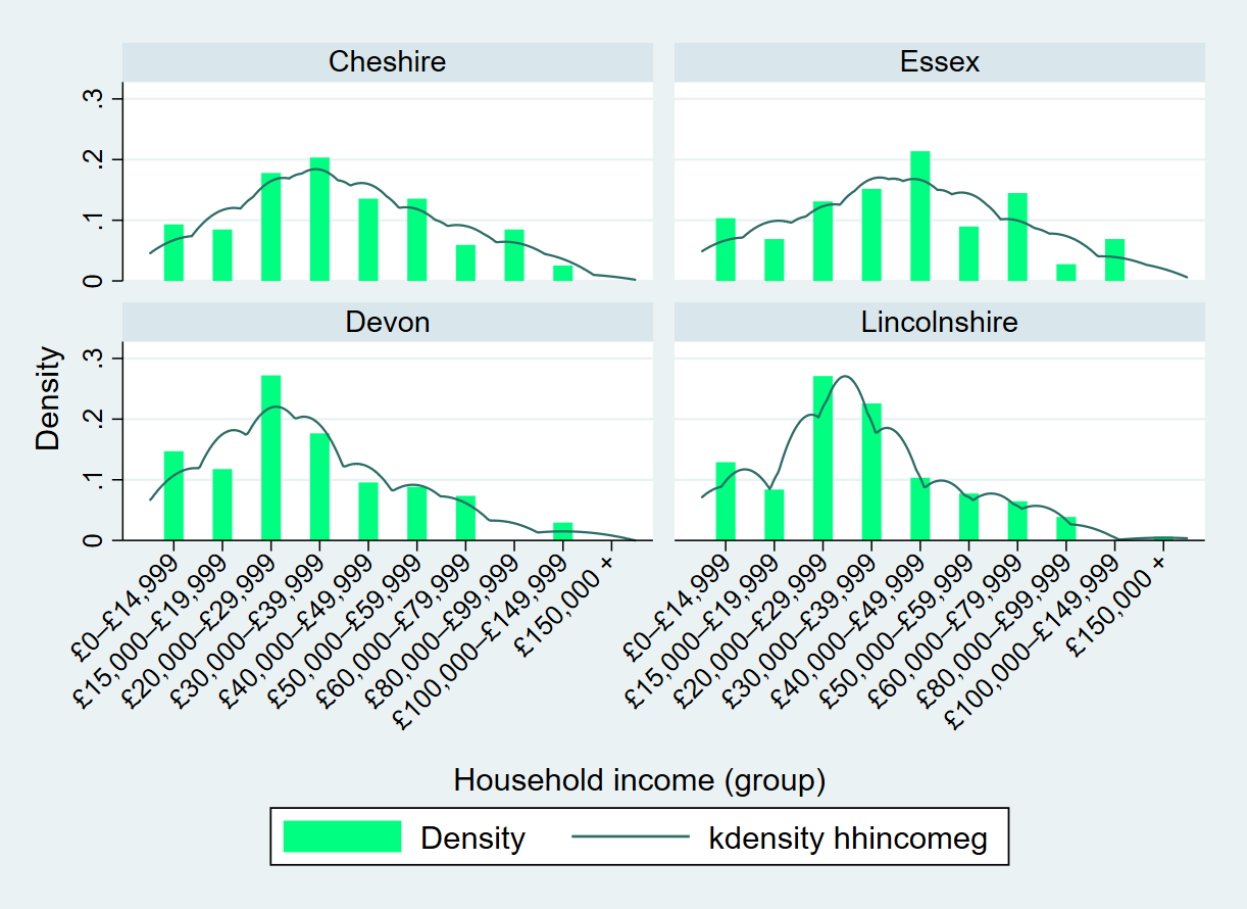
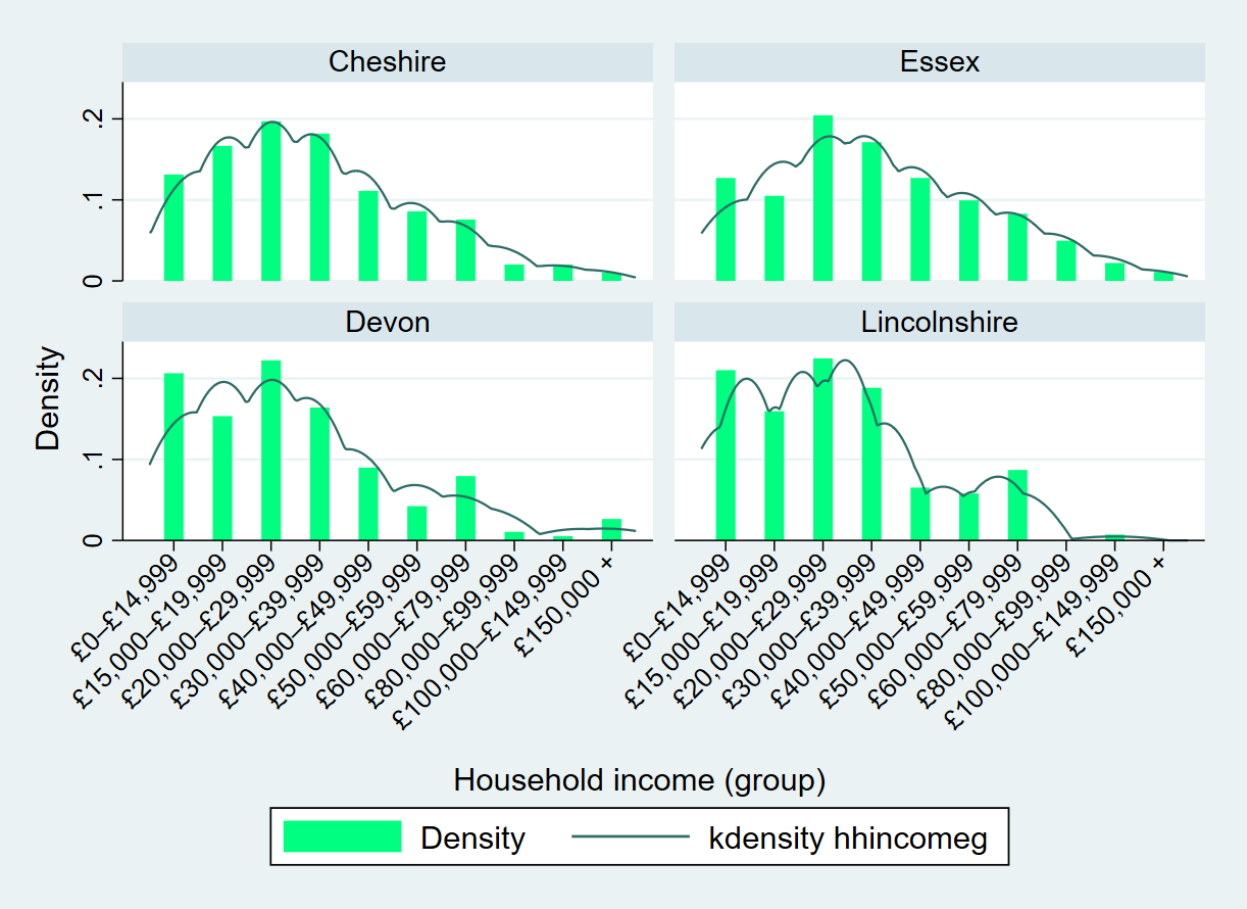


Figure 5.4 Non-user (pure) average annual household income by county



5.4.2 WTP values

Figure 5.5 Histograms and kernel density estimates: WTP an entry fee

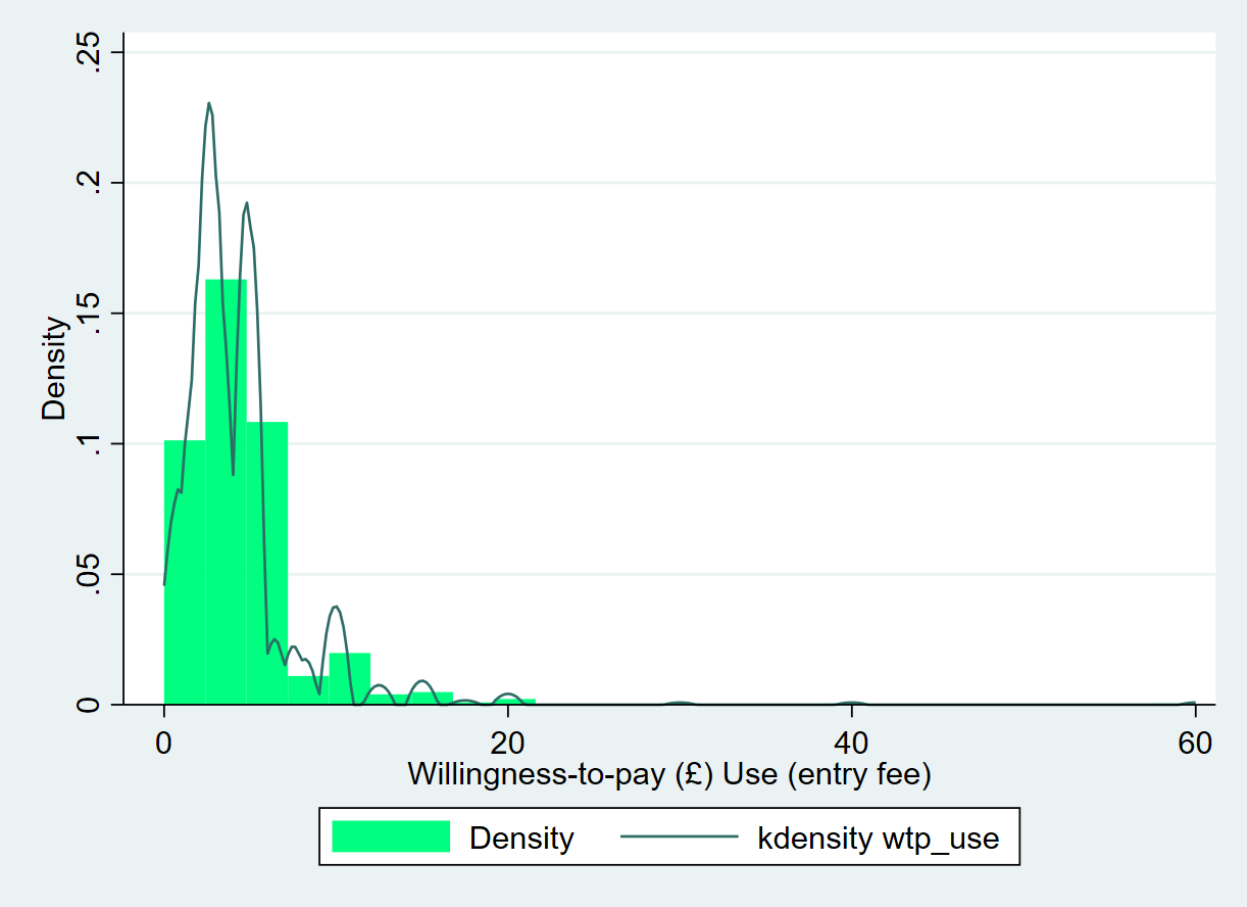


Figure 5.6 Histograms and kernel density estimates: WTP an increase in council tax to a non-use museum (impure non-user)

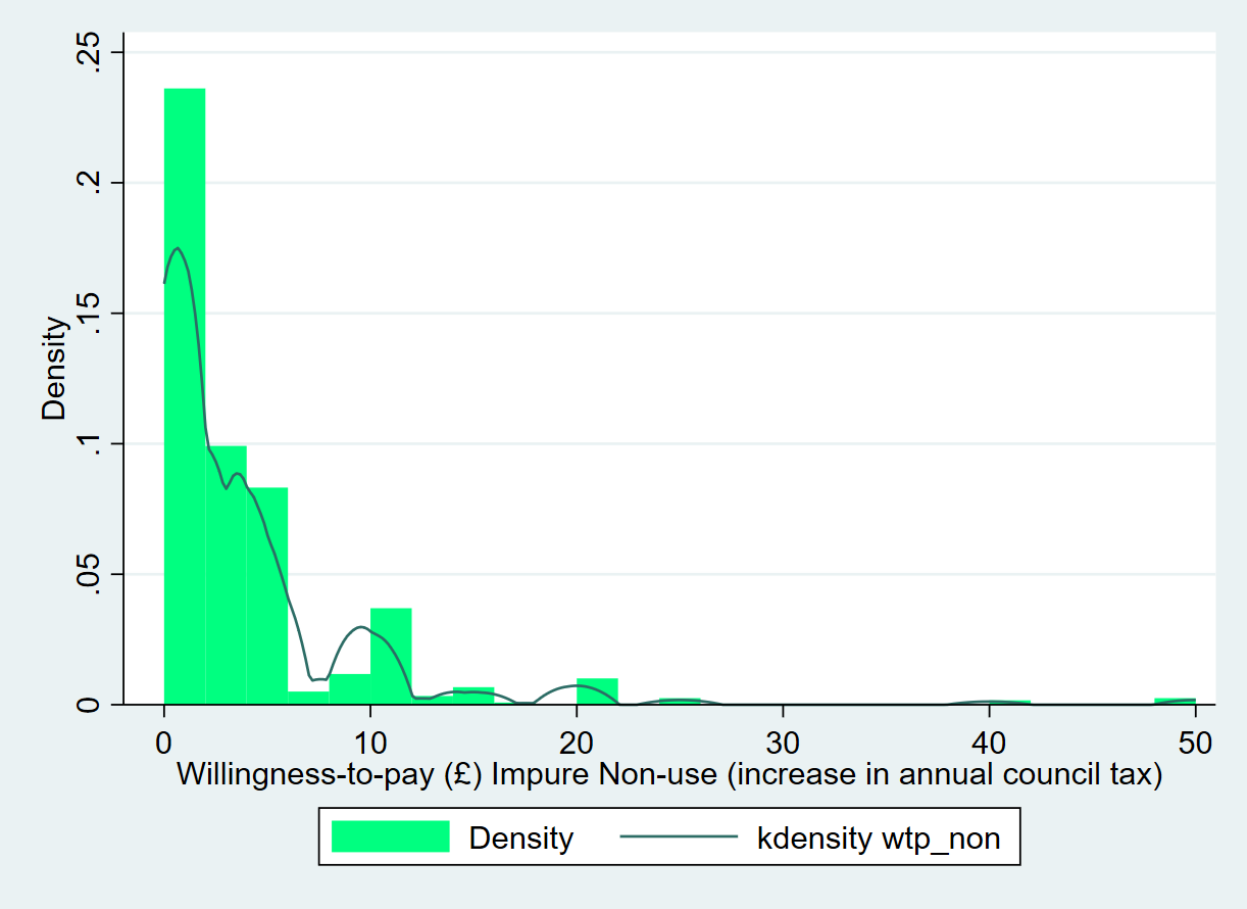
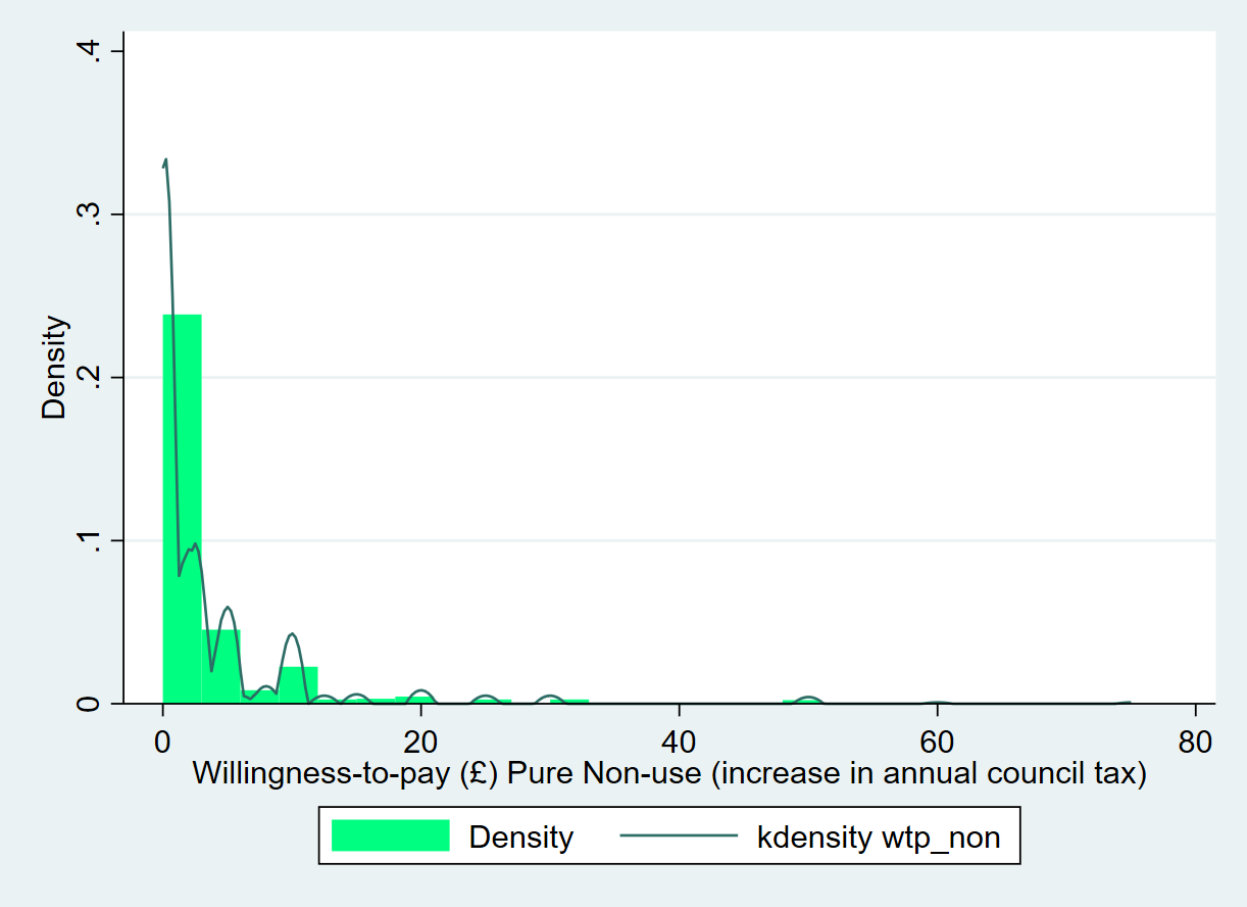


Figure 5.7 Histograms and kernel density estimates: WTP an increase in council tax to a non-use museum (pure non-user)



5.4.3 WTP by museum

Table 5-9 Use WTP values by site – Cheshire

Use WTP	Anson Engine Museum	Cheshire Military Museum	Congleton Museum	Lion Salt Works	Nantwich Museum	Weaver Hall Museum and Workhouse
Mean (std. err.)	£5.83 (£1.56)	£5.50 (£1.12)	£4.38 (£1.30)	£4.51 (£0.68)	£3.48 (£0.75)	£4.39 (£0.91)
Lower and higher bound WTP (based on 95% confidence interval)	£0.87 - £10.79	£3.21 - £7.79	£1.55 - £7.20	£3.10 - £5.93	£1.92 - £5.04	£2.38 - £6.40
Median	£5.00	£3.33	£2.00	£4.00	£2.50	£4.50
Maximum	£10.00	£20.00	£12.50	£20.00	£15.00	£10.00
Sample size	14	47	21	45	44	18

Table 5-10 Use WTP values by site – Essex

Use WTP	Braintree Museum	Burnham-on-Crouch and District Museum	Chelmsford Museum	Combined Military Services Museum	Epping Forest District Museum	Warner Textile Archive
Mean (std. err.)	£6.09 (£1.91)	£3.43 (£0.58)	£3.87 (£0.34)	£3.83 (£0.73)	£4.41 (£0.88)	£6.25 (£2.53)
Lower and higher bound WTP (based on 95% confidence interval)	£2.15 - £10.03	£2.01 - £4.85	£3.18 - £4.55	£2.19 - £5.48	£2.57 - £6.24	£-0.79 - £13.28
Median	£4.50	£3.00	£3.00	£4.00	£3.50	£5.00
Maximum	£60.00	£5.00	£15.00	£10.00	£15.00	£17.50
Sample size	42	15	110	23	24	10

Table 5-11 Use WTP values by site – Devon

Use WTP	Brixham Heritage Museum	Dartmouth Museum	Tiverton Museum of Mid Devon Life	North Devon Maritime Museum	Teignmouth & Shaldon Museum	Torquay Museum
Mean (std. err.)	£5.40 (£1.57)	£3.78 (£0.58)	£3.97 (£2.09)	£3.39 (£0.67)	£2.53* (£0.38)	£4.31 (£0.55)
Lower and higher bound WTP (based on 95% confidence interval)	£2.02 - £8.77	£2.58 - £4.98	£-0.69 - £8.63	£1.98 - £4.80	£1.72 - £3.33	£3.21 - £5.41
Median	£4.50	£3.50	£2.00	£2.50	£2.50	£3.13
Maximum	£20.00	£10.00	£17.50	£12.50	£10.00	£15.00
Sample size	31	41	28	30	37	79

Table 5-12 Use WTP values by site – Lincolnshire

Use WTP	Ropewalk Museum	Museum of Lincolnshire Life	Louth Museum	North Lincolnshire Museum	Grimsby Fishing Heritage Centre	Collection Lincoln
Mean (std. err.)	£5.54 (£2.06)	£4.94 (£0.88)	£4.99 (£1.61)	£4.98 (£1.14)	£4.05 (£0.61)	£4.54 (£0.45)
Lower and higher bound WTP (based on 95% confidence interval)	£-0.17 - £11.25	£3.18 - £6.69	£1.05 - £8.92	£2.51 - £7.44	£2.70 - £5.40	£3.63 - £5.46
Median	£5.00	£3.00	£3.50	£4.00	£4.00	£4.00
Maximum	£12.50	£40.00	£15.00	£20.00	£8.00	£15.00
Sample size	13	109	18	24	26	97

Table 5-13 Non-use WTP values by site – Cheshire

Use WTP	Anson Engine Museum	Cheshire Military Museum	Congleton Museum	Lion Salt Works	Nantwich Museum	Weaver Hall Museum and Workhouse
Mean (std. err.)	£3.71 (£0.86)	£5.44 (£2.34)	£4.78 (£1.73)	£3.97 (£1.03)	£3.01 (£0.85)	£2.73 (£0.90)

Lower and higher bound WTP (based on 95% confidence interval)	£1.96 - £5.46	£0.65 - £10.23	£1.24 - £8.32	£1.85 - £6.10	£1.26 - £4.77	£0.91 - £4.54
Median	£1.50	£2.50	£0.50	£2.50	£1.00	£0.00
Maximum	£15.00	£75.00	£50.00	£30.00	£60.00	£30.00
Sample size	61	58	53	51	57	62

Table 5-14 Non-use WTP values by site – Essex

Use WTP	Braintree Museum	Burnham-on-Crouch and District Museum	Chelmsford Museum	Combined Military Services Museum	Epping Forest District Museum	Warner Textile Archive
Mean (std. err.)	£5.42 (£1.58)	£4.78 (£1.89)	£2.98 (£1.39)	£2.57 (£0.58)	£3.18 (£0.93)	£2.33* (£1.02)
Lower and higher bound WTP (based on 95% confidence interval)	£2.20 - £8.65	£0.88 - £8.68	£0.07 - £5.90	£1.39 - £3.75	£1.26 - £5.09	£0.24 - £4.42
Median	£3.00	£2.00	£0.00	£2.00	£1.25	£0.25
Maximum	£50.00	£50.00	£30.00	£50.00	£25.00	£30.00
Sample size	61	63	48	63	55	57

Table 5-15 Non-use WTP values by site – Devon

Use WTP	Brixham Heritage Museum	Dartmouth Museum	Tiverton Museum of Mid Devon Life	North Devon Maritime Museum	Teignmouth & Shaldon Museum	Torquay Museum
Mean (std. err.)	£0.86* (£0.26)	£3.19 (£1.24)	£3.92 (£1.36)	£2.50* (£0.72)	£5.50 (£1.82)	£5.30 (£1.52)
Lower and higher bound WTP (based on 95% confidence interval)	£0.31 - £1.40	£0.63 - £5.74	£1.11 - £6.72	£1.04 - £3.96	£1.73 - £9.26	£2.19 - £8.41
Median	£0.00	£1.00	£2.00	£0.50	£3.00	£2.50
Maximum	£10.00	£25.00	£25.00	£20.00	£50.00	£25.00
Sample size	57	55	58	59	59	61

Table 5-16 Non-use WTP values by site – Lincolnshire

Use WTP	Ropewalk Museum	Museum of Lincolnshire Life	Louth Museum	North Lincolnshire Museum	Grimsby Fishing Heritage Centre	Collection Lincoln
Mean (std. err.)	£1.63* (£0.52)	£4.81 (£1.06)	£1.62* (£0.46)	£4.07 (£1.55)	£4.67 (£1.82)	£6.45 (£2.61)
Lower and higher bound WTP (based on 95% confidence interval)	£0.54 - £2.72	£2.61 - £7.00	£0.68 - £2.57	£0.89 - £7.25	£0.91 - £8.43	£0.98 - £11.91
Median	£0.50	£4.00	£0.01	£1.50	£2.50	£2.00
Maximum	£15.00	£40.00	£10.00	£50.00	£50.00	£40.00

Sample size	58	50	53	56	55	49

5.4.4 Impure non-users

When asked if they were prepared to pay in principle, 60% of impure non-users said 'Yes' or 'Maybe' (Table 5-17). This proportion of non-use respondents who were willing to pay in principle is broadly comparable to previous valuation studies for cultural institutions.[90]

Table 5-17 Impure non-user local museums (annual council tax over 5-year period): WTP in principle

Willing to pay in principle	Cheshire	Essex	Devon	Lincolnshire	Total
Yes	35.1%	27.7%	28.9%	16.7%	27.0%
Maybe	33.8%	29.8%	35.2%	35.4%	32.6%
No	31.0%	42.6%	35.9%	47.9%	40.4%

- **Across the four counties, average WTP an annual increase in council tax over five years for a non-visited local museum was £4.01 per person, with a lower bound of £3.19.** For comparison, non-use regional museum WTP in the previous Arts Council museums study was £3.48, although we note that this was based on a mixed sample of pure and impure non-users. Given that we expected pure non-users to be less culturally engaged (as indicated in their not having visited any of the local museums in their area) their inclusion was expected to bring down average WTP, which would have accounted for the fact that non-use WTP for a non-visited local museum as elicited from those who have visited other similar museums was higher on average than WTP for a larger regional museum, based on a less culturally engaged sample. We explored this comparison further when comparing pure non-user values in the next section.
- **Between the four counties, non-use average WTP ranged from a lowest value of £3.44 for Devon, and a highest value of £4.95 for Cheshire** (Table 5-18). The distribution of WTP across counties was not wide, which provided greater confidence in the homogeneity of the counties surveyed (and was reflected in the confidence intervals in the Total column).
- Within each county, maximum WTP ranged from £50 in Cheshire and Essex to £25 in Devon.

90 Fujiwara et al. 2018

Table 5-18 Impure non-user Local museums WTP (annual council tax over 5-year period WTP values)

Non-use WTP	Cheshire	Essex	Devon	Lincolnshire	Total
Mean (std. err.)	£4.95 (£0.97)	£4.08 (£0.74)	£3.44 (£0.67)	£3.46 (£0.73)	£4.01 (£0.42)
Lower and higher bound WTP (based on 95% confidence interval)	£3.01 - £6.89	£2.61 - £5.55	£2.10 - £4.77	£2.01 - £4.92	£3.19 - £4.84
Median	£2.00	£2.00	£2.00	£1.00	£2.00
Sample size	125	156	147	167	595
N museums	6	6	6	6	24
County WTP range	£0 - £50	£0 - £50	£0 - £25	£0 - £40	£0 - £50

For impure non-users who said they were not willing to pay an increase in council tax, 25% said "I don't mind making a donation but I don't want to pay an increase in council tax" (Appendix Table 5-29). Respondents who were willing to pay for a non-use site said "Preserving museums for the appreciation of current and future generations is important to me" at 31% (Appendix Table 5-28). **The answers to follow-up questions on motivation suggests that those who were willing to pay an increase in council tax were in part motivated by future 'option' use values, while those with a zero WTP indicated that they were not willing to pay because they would not visit the site in the future.**

5.4.5 Pure non-users

When asked if they were prepared to pay in principle, 58% of pure non-users said 'Yes' or 'Maybe' (Table 5-19). This proportion of pure non-use respondents who were willing to pay in principle was broadly comparable to previous valuation studies for cultural institutions.[91]

Table 5-19 Pure non-visitor local museums (annual council tax over 5-year period): WTP in principle

Willing to pay in principle	Cheshire	Essex	Devon	Lincolnshire	Total
Yes	14.7%	16.6%	20.8%	11.7%	16.1%
Maybe	38.2%	45.6%	43.4%	40.8%	42.0%
No	47.0%	37.8%	35.8%	47.5%	41.9%

- **Across the four counties, average WTP an annual increase in council tax over five years for a non-visited local museum was £3.35 per person, with a lower bound of £2.59.** For comparison, this was lower than the non-use regional museum WTP in the previous Arts Council museums study, which

91 Fujiwara et al. 2018

was £3.48. As above, we note that this was based on a mixed sample of pure and impure non-users. Given that we expected pure non-users to be less culturally engaged (as indicated in their not having visited any of the local museums in their area) their inclusion was expected to bring down average WTP, which is what we saw when surveying only pure non-users of local museums. Overall, the non-use results aligned with prior expectations about the higher and lower values held by those who were more or less culturally engaged, and provided some confidence in the external validity of the results.

- **Between the four counties, non-use average WTP ranged from a low of £2.89 for Essex, and a high of £4.23 for Lincolnshire** (Table 5-20). The distribution of WTP across museums was not wide, which provided greater confidence in the homogeneity of the counties surveyed (and was reflected in the confidence intervals in the Total column).
- Within each county, maximum WTP ranged from £75 in Cheshire to £30 in Essex and Devon.

Table 5-20 Pure non-user Local museums WTP (annual council tax over 5-year period WTP values)

Non-use WTP	Cheshire	Essex	Devon	Lincolnshire	Total
Mean (std. err.)	£3.27 (£0.68)	£2.89 (£0.72)	£3.54 (£0.75)	£4.23 (£1.03)	£3.35 (£0.38)
Lower and higher bound WTP (based on 95% confidence interval)	£1.94 - £4.61	£1.45 - £4.32	£2.04 - £5.03	£2.18 - £6.28	£2.59 - £4.11
Median	£1.00	£0.25	£0.50	£1.00	£0.50
Sample size	217	191	202	154	764
N museums	6	6	6	6	24
County WTP range	£0 - £75	£0 - £30	£0 - £30	£0 - £50	£0 - £75

For pure non-users who said they were not willing to pay an increase in council tax to support a local museum, 28% said that they "didn't plan to ever visit the site" (Appendix Table 5-31). Respondents who were willing to pay for a non-use site reasoned that "Preserving museums for the appreciation of current and future generations is important to me" at 35% (Appendix Table 5-30). **Follow-up motivation data suggests that those who were willing to donate to non-visited local museums were in part motivated by future 'option' use values, while those with a zero WTP indicated that they were not willing to pay because they would not visit the site in the future**.

5.4.6 WTP: Single and multi-site values

As well as distinguishing between non-users who had visited one of the other local museums in their counties compared with those who had not (impure and pure non-users) because of

the influence this could have on WTP (the latter taken as an indicator of lower engagement with culture and therefore lower WTP), we also wanted to consider the influence that valuing multiple museums may have had on WTP. This may have provided an indicator of higher levels of cultural engagement, but also, we might have expected WTP to decrease with each successive payment. This would have been in line with the theory of diminishing marginal utility wherein the benefits an individual gains from consumption of one cultural site as a portion of their household income lessens with each successive cultural site.

In Table 5-21 to Table 5-24 below, we separate user WTP responses between those that were asked only about that particular site and no others ('single users') and those that were asked in conjunction with at least one other site ('multi users'). Across counties, the split was roughly equal for both Cheshire and Essex (43% and 47% of responses were from single users). For Devon, around one third (34%) of responses were from single users, while Lincolnshire had the lowest proportion of single users at 27%. This suggests that users of local museums in Lincolnshire were more likely to visit multiple sites than users in Cheshire, Essex, and Devon.

Table 5-21 Use WTP split by number of valuations – Cheshire

Use	Anson Engine Museum	Cheshire Military Museum	Congleton Museum	Lion Salt Works	Nantwich Museum	Weaver Hall Museum and Workhouse	Total
Single valuation: % (n/N)	57.1% (8/14)	42.6% (20/47)	38.1% (8/21)	40.0% (18/45)	54.5% (24/44)	22.2% (4/18)	43.4% (82/189)
Multiple valuations: % (n/N)	42.9% (6/14)	57.4% (27/47)	61.9% (13/21)	60.0% (27/45)	45.5% (20/44)	77.8% (14/18)	56.6% (107/189)

Table 5-22 Use WTP split by number of valuations – Essex

Use	Braintree Museum	Burnham-on-Crouch and District Museum	Chelmsford Museum	Combined Military Services Museum	Epping Forest District Museum	Warner Textile Archive	Total
Single valuation: % (n/N)	33.3% (14/42)	40.0% (6/15)	58.2% (64/110)	39.1% (9/23)	50.0% (12/24)	10.0% (1/10)	47.3% (106/224)
Multiple valuations: % (n/N)	66.7% (28/42)	60.0% (9/15)	41.8% (46/110)	60.9% (14/23)	50.0% (12/24)	90.0% (9/10)	52.7% (118/224)

Table 5-23 Use WTP split by number of valuations – Devon

Use	Brixham Heritage Museum	Dartmouth Museum	Tiverton Museum of Mid Devon Life	North Devon Maritime Museum	Teignmouth & Shaldon Museum	Torquay Museum	Total
Single valuation: % (n/N)	12.9% (4/31)	26.8% (11/41)	50.0% (14/28)	30.0% (9/30)	35.1% (13/37)	40.5% (32/79)	33.7% (83/246)

Multiple valuations: % (n/N)	87.1% (27/31)	73.2% (30/41)	50.0% (14/28)	70.0% (21/30)	64.9% (24/37)	59.5% (47/79)	66.3% (163/246)

Table 5-24 Use WTP split by number of valuations – Lincolnshire

Use	Ropewalk Museum	Museum of Lincolnshire Life	Louth Museum	North Lincolnshire Museum	Grimsby Fishing Heritage Centre	Collection Lincoln	Total
Single valuation: % (n/N)	30.8% (4/13)	27.5% (30/109)	38.9% (7/18)	12.5% (3/24)	26.9% (7/26)	27.8% (27/97)	27.2% (78/287)
Multiple valuations: % (n/N)	69.2% (9/13)	72.5% (79/109)	61.1% (11/18)	87.5% (21/24)	73.1% (19/26)	72.2% (70/97)	72.8% (209/287)

Table 5-25 Predicted Use Local museums WTP by previous entry fee amount

Categories	I did not pay for entry	Less than £5.00	Between £5.00 and £10.00	More than £10.00	Total
Mean	£3.50	£3.94	£5.51	£7.81	-
Frequencies	409	163	103	33	708
Percent	57.77%	23.02%	14.55%	4.66%	100%

5.4.7 Reasons behind user WTP values

Table 5-26 Reasons behind local museum user WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
I like visiting/I enjoyed my visit to the [site]	14.8%	15.4%	15.7%	12.0%	14.6%
I think visitor enjoyment could be improved if the [site] had more funds	3.2%	2.6%	11.0%	6.5%	5.1%
I may want to visit the [site] in the future	7.0%	9.7%	11.4%	10.3%	9.6%
The [site] is an important cultural site that should be protected	19.0%	19.1%	18.6%	24.7%	20.3%
My willingness to pay is not just for the [site], but also an expression of my support for all culture in the area	11.9%	15.9%	17.3%	16.1%	15.4%
Preserving museums for the appreciation of current and future generations is important to me	30.0%	26.9%	15.6%	21.0%	24.1%
Having a local museum in my town contributes to the identity of the town	14.0%	9.7%	9.2%	9.4%	10.4%
Other	0.0%	0.7%	1.2%	0.0%	0.5%

Table 5-27 Reasons behind local museum user not WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
There are more important things to spend my money on than the [site]	0.0%	11.9%	12.5%	0.0%	8.8%
I cannot afford to pay to support the [site]	14.4%	44.1%	6.2%	0.0%	22.6%
I did not enjoy my visit much	0.0%	0.0%	17.5%	66.7%	10.3%
I don't plan to ever visit again	0.0%	0.0%	28.8%	33.3%	11.7%
I am already contributing enough to local museums through my taxes	0.0%	0.0%	0.0%	0.0%	0.0%
I don't mind making a donation but I don't want to pay an admission fee	66.7%	0.0%	17.5%	0.0%	19.3%
I need more information to answer this question	0.0%	0.0%	6.2%	0.0%	2.0%
I don't feel confident stating a value that I would be willing to pay in the current uncertain climate	0.0%	16.1%	0.0%	0.0%	6.4%
I don't believe that a museum can rely solely on admission fees to survive	0.0%	16.1%	0.0%	0.0%	6.4%
I prefer to visit more widely known museums of other counties rather than the ones in my local area	0.0%	11.9%	11.3%	0.0%	8.4%
Other	18.9%	0.0%	0.0%	0.0%	3.9%

5.4.8 Reasons behind Impure non-user WTP values

Table 5-28 presents the reasons behind why impure non-users were willing to pay for non-use local museums. The following table, Table 5-29, presents why impure non-users were not willing to pay for non-use local museums.

Table 5-28 Reasons behind local museum impure non-user WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
I think visitor enjoyment could be improved if the [nonsite] had more funds	7.4%	1.3%	9.0%	8.4%	5.0%
I may want to visit the [nonsite] in the future	19.5%	21.6%	24.8%	15.3%	20.6%
The [site] is an important cultural site that should be protected	14.8%	11.7%	10.9%	19.1%	13.5%
My willingness to pay is not just for the [nonsite], but also an expression of my support for all culture in the area	17.6%	20.3%	12.9%	20.7%	18.7%
I don't believe that I would really have to pay	4.1%	0.0%	4.6%	3.2%	2.1%
Preserving museums for the appreciation of current and future generations is important to me	31.2%	32.0%	26.8%	31.7%	31.0%

Having a local museum in my town contributes to the identity of the town	5.4%	11.3%	10.9%	1.6%	8.3%
Other	0.0%	1.8%	0.0%	0.0%	0.8%

Table 5-29 Reasons behind impure non-user not WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
There are more important things to spend my money on than the [nonsite]	16.6%	6.1%	11.1%	8.8%	9.7%
I cannot afford to pay to support the [nonsite]	12.7%	14.4%	5.3%	9.7%	11.3%
I don't plan to ever visit	18.9%	17.5%	13.9%	8.8%	15.1%
I am already contributing enough to local museums through my taxes	0.0%	4.2%	0.0%	6.4%	3.1%
I don't mind making a donation but I don't want to pay an increase in council tax	22.8%	23.6%	19.7%	32.8%	25.0%
I need more information to answer this question	0.0%	3.1%	0.0%	0.0%	1.2%
I don't feel confident stating a value that I would be willing to pay in the current uncertain climate	5.0%	0.0%	2.9%	2.4%	2.1%
I don't believe that the council tax would be raised to pay for a local museum	10.1%	16.6%	22.1%	10.4%	14.8%
I don't believe that my local council would contribute to the support of the [nonsite] which is in a different council area	5.0%	11.4%	19.2%	18.3%	13.2%
The taxation period of five years is too long	8.9%	0.0%	2.9%	0.0%	2.2%
I prefer to visit more widely known museums of other counties rather than the ones in my local area	0.0%	0.0%	0.0%	0.0%	0.0%
Other	0.0%	3.1%	2.9%	2.4%	2.3%

5.4.1 Reasons behind Pure non-user WTP values

Table 5-30 presents the reasons behind why pure non-users were willing to pay for non-use local museums. The following table, Table 5-31, presents why pure non-users were not willing to pay for non-use local museums.

Table 5-30 Reasons behind local museum pure non-user WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
I think visitor enjoyment could be improved if the [nonsite] had more funds	2.7%	2.4%	12.0%	0.0%	4.0%
I may want to visit the [nonsite] in the future	9.8%	13.1%	9.4%	17.6%	12.0%
The [site] is an important cultural site that should be protected	9.3%	8.2%	9.4%	11.7%	9.4%

My willingness to pay is not just for the [nonsite], but also an expression of my support for all culture in the area	29.8%	37.7%	27.9%	24.3%	30.9%
I don't believe that I would really have to pay	1.3%	0.0%	0.0%	2.2%	0.8%
Preserving museums for the appreciation of current and future generations is important to me	36.4%	36.1%	33.5%	33.2%	35.2%
Having a local museum in my town contributes to the identity of the town	10.7%	2.4%	7.8%	7.3%	7.1%
Other	0.0%	0.0%	0.0%	3.6%	0.6%

Table 5-31 Reasons behind pure non-user not WTP values

WTP Categories	Cheshire	Essex	Devon	Lincolnshire	Total
There are more important things to spend my money on than the [nonsite]	12.7%	12.1%	15.5%	13.9%	13.2%
I cannot afford to pay to support the [nonsite]	19.5%	21.4%	17.1%	24.8%	20.5%
I don't plan to ever visit	18.8%	31.9%	31.5%	32.7%	27.8%
I am already contributing enough to local museums through my taxes	1.8%	3.8%	0.0%	0.0%	1.8%
I don't mind making a donation but I don't want to pay an increase in council tax	6.1%	9.3%	16.7%	3.0%	8.8%
I need more information to answer this question	0.0%	2.8%	3.6%	0.0%	1.7%
I don't feel confident stating a value that I would be willing to pay in the current uncertain climate	8.5%	0.0%	5.6%	0.0%	3.8%
I don't believe that the council tax would be raised to pay for a local museum	12.1%	8.3%	4.0%	9.8%	8.9%
I don't believe that my local council would contribute to the support of the [nonsite] which is in a different council area	11.4%	6.5%	4.0%	15.8%	9.0%
The taxation period of five years is too long	2.4%	3.8%	0.0%	0.0%	2.0%
I prefer to visit more widely known museums of other counties rather than the ones in my local area	4.8%	0.0%	0.0%	0.0%	1.5%
Other	1.8%	0.0%	2.0%	0.0%	1.0%

5.5 WTP validity testing

5.5.1 WTP validity testing regressions

Table 5-32 Factors associated with WTP for entry to museums (user sample): Multivariate regressions

	Cheshire	Essex	Devon	Lincolnshire	Pooled museum sample
Previous entry fee (<£5.00)	0.972	0.163	0.533	0.365	0.554**
Previous entry fee (£5.00 - £10.00)	2.830***	0.546	2.576***	1.408	2.151***
Previous entry fee (>£10.00)	9.380***	5.872	-0.549	4.573	4.502**
Museum – visited every year	-1.741***	-0.715	0.243	-0.673	-0.519*
Museum – visited more than every year	-1.073	2.087	0.848	-0.715	0.352
Married	-0.0854	-0.430	0.305	-0.530	-0.183
With dependent children	-0.939	-0.747	-0.821	-0.656	-1.008**
Member of a cultural organisation	-0.746	-0.476	-0.463	-0.799	-0.526*
Public spending - Arts and culture	1.840**	2.050***	0.287	-0.149	0.759***
Aged 30-49	0.00984	-0.396	0.842	0.396	0.237
Aged 50+	0.272	-0.684	-0.127	-0.480	-0.429
Female	-0.362	-0.257	-0.318	-0.334	-0.148
Household income (<£20,000)	-0.580	-1.133	1.422**	-0.332	0.0172
Household income (£40,000 - £60,000)	-1.647**	0.497	0.232	0.445	-0.0323
Household income (≥£60,000)	-0.243	2.414	1.045	0.757	0.996*
Essex	-	-	-	-	-0.730
Devon	-	-	-	-	-0.586
Lincolnshire	-	-	-	-	-0.191
Constant	4.513***	3.320***	3.035***	4.914***	4.361***
Observations	131	152	169	208	660
Adjusted R-squared	0.381	0.185	0.175	0.115	0.126

*Notes: *** significance at <1%; ** significance at <5%; * significance at <10%. Cluster-robust standard errors.*

Table 5-33 Factors associated with WTP to support museums (non-user sample, impure and pure non-users): Multivariate regressions

	Cheshire	Essex	Devon	Lincolnshire	Pooled museum sample
Pure non-visitors	-0.143	0.308	-0.303	0.587	0.150
Married	2.334***	1.437*	0.801	-0.282	1.066***
With dependent children	-1.004	-0.386	0.485	1.572	0.162
Member of a cultural organisation	1.900	-0.486	0.694	0.459	0.747
Public spending - Arts and culture	2.151*	3.598***	0.913	2.715**	2.381***
Aged 30-49	-1.094	-2.865*	-0.826	0.558	-0.967

Aged 50+	-1.804	-2.340	-1.921*	1.197	-1.161
Female	0.849	-0.199	-1.139*	0.397	0.0182
Household income (<£20,000)	0.122	-0.808	1.058	-0.307	0.0592
Household income (£40,000 - £60,000)	1.235	0.859	-0.855	0.120	0.453
Household income (≥£60,000)	-0.811	1.256	2.215*	1.954	0.939
Essex	-	-	-	-	-0.116
Devon	-	-	-	-	-0.571
Lincolnshire	-	-	-	-	0.294
Constant	2.614**	4.161**	3.809***	1.531	3.009***
Observations	313	326	321	290	1250
Adjusted R-squared	0.0619	0.0767	0.0753	0.0439	0.0374

*Notes: *** significance at <1%; ** significance at <5%; * significance at <10%. Cluster-robust standard errors.*

5.6 Benefit Transfer testing

5.6.1 Simple unit Benefit Transfer

Table 5-34 Local museum WTP transfer testing: Simple unit transfer errors (use; non-use (pure and impure non-users combined))

Gallery	Use WTP (entry fee)				Non-use WTP (council tax increase)			
	Cheshire	Essex	Devon	Lincolnshire	Cheshire	Essex	Devon	Lincolnshire
Policy site: Observed mean WTP	£4.58	£4.41	£3.95	£4.76	£3.88	£3.58	£3.49	£3.79
BT prediction: Pooled mean WTP from study sites	£4.40	£4.45	£4.55	£4.35	£3.61	£3.74	£3.72	£3.66
Difference (absolute)	£0.18	£0.04	£0.59	£0.41	£0.27	£0.16	£0.23	£0.13
Transfer error	3.9%	0.9%	14.9%	8.6%	7.0%	4.5%	6.6%	3.4%
t-test: Difference significant at 5% level	No	No	No	No	No	No	No	No

5.6.2 *Adjusted unit Benefit Transfer*

Table 5-35 Local museum WTP transfer testing: Adjusted transfer errors (use; non-use (pure and impure non-users combined))

Income adjustment	Use WTP (Entry fee)				Non-use WTP (council tax increase)			
	Cheshire	Essex	Devon	Lincolnshire	Cheshire	Essex	Devon	Lincolnshire
Policy site: Mean income	£42,818	£46,056	£39,699	£37,661	£41,438	£45,657	£40,553	£37,774
Pooled study sites: Mean income	£42,313	£40,262	£43,073	£43,594	£42,488	£40,114	£42,582	£43,196
Income ratio (Policy income / Study income)	1.0	1.1	0.9	0.9	1.0	1.1	1.0	0.9
Benefit transfer								
Policy site: Observed mean WTP	£4.58	£4.41	£3.95	£4.76	£3.88	£3.58	£3.49	£3.79
BT prediction: Pooled mean WTP from study sites, adjusted by income ratio	£4.45	£5.09	£4.19	£3.75	£3.52	£4.26	£3.54	£3.20
Difference (absolute)	£0.13	£0.68	£0.24	£1.00	£0.36	£0.68	£0.05	£0.59
Transfer error	2.8%	15.4%	6.0%	21.1%	9.3%	18.9%	1.4%	15.6%
t-test: Difference significant at 5% level	No	No	No	Yes	No	No	No	No

5.6.3 *Function Benefit Transfer*

Table 5-36 Local museum WTP transfer testing: *Reduced WTP regressions for value transfer* (use; non-use (pure and impure non-users combined))

	Use WTP (Entry fee)				Non-use WTP (council tax increase)			
	Cheshire	Essex	Devon	Lincolnshire	Cheshire	Essex	Devon	Lincolnshire
Previous entry fee	0.0308	0.130***	0.123**	0.120**	-	-	-	-
Married	-	-	-	-	0.0673	0.215**	0.185*	0.214**
Public spending - Arts and culture	-	-	-	-	0.569***	0.521***	0.657***	0.637***
Constant	1.388***	1.244***	1.261***	1.206***	0.797***	0.779***	0.728***	0.722***
Observations	319	296	294	279	466	480	486	497
Adjusted R-squared	-0.001	0.037	0.035	0.031	0.055	0.052	0.086	0.082

*Note * indicates the statistical* significance of the regression coefficients at the 99% (***), 95% (**) and 90% (*) confidence levels respectively.

Table 5-37 Local museum WTP transfer testing: *Function transfer errors* (use; non-use (pure and impure non-users combined))

	Use WTP (Entry fee)				Non-use WTP (council tax increase)			
	Cheshire	Essex	Devon	Lincolnshire	Cheshire	Essex	Devon	Lincolnshire
Policy site: Observed mean WTP	£4.76	£4.18	£4.08	£4.50	£3.80	£3.59	£3.63	£3.76
BT prediction: Applying value transfer function coefficients from pooled study sites to mean policy site characteristics	£4.23	£4.39	£4.54	£4.04	£3.29	£3.54	£3.09	£3.12
Difference (absolute)	£0.54	£0.21	£0.47	£0.46	£0.51	£0.04	£0.55	£0.64
Transfer error	11.2%	5.1%	11.4%	10.2%	13.4%	1.3%	15.0%	17.0%
t-test: Difference significant at 5% level	No	No	No	No	No	No	No	No

Note that mean WTP for each site will differ slightly to values presented earlier due to the reduced set of control variables and resulting model sample size. Regression model significant at p<0.05

5.7 Other areas of research

Questions related to the impact of Covid-19 and the social mobility scale were presented at the end of the survey so as not to bias any WTP values.

5.7.1 Covid-19

Our survey was run during the Covid-19 pandemic (December 2020-March 2021). Since this may well have had an impact on respondents' WTP, we included a follow-up question that asked respondents whether the pandemic had affected the amount they indicated they were WTP to support local museums. Respondents who stated that their WTP had changed due to Covid-19 (either increased or reduced) were then asked how much they would have paid in absence of the pandemic. Both respondents that had stated a positive amount as WTP for local museums and respondents who stated they were not WTP anything were asked these questions.

5.7.1.1 *Users*

Table 5-38 below reports the impact of Covid-19 on the WTP of visitors to local museums, split by county. Most respondents indicated that Covid-19 had had no impact on their WTP (58%). This finding was consistent across all four counties. The proportion of respondents that reported a reduction in their WTP was roughly equal to the proportion who reported an increase in their WTP (21% each). When looking by county, we see that Essex had the largest proportion who said Covid-19 had had no impact on their WTP (67%), while Devon had the smallest (45%).

Table 5-38 Impact of Covid-19 on User WTP – weighted

Users	Cheshire	Essex	Devon	Lincolnshire	Total
Covid-19 REDUCED WP TP	23.3%	15.8%	29.0%	22.1%	20.8%
Covid-19 had NO IMPACT on WTP	49.9%	66.7%	45.1%	57.6%	57.9%
Covid-19 INCREASED WTP	26.8%	17.5%	25.9%	20.2%	21.3%

Table 5-39 compares the stated WTP values users gave and their Covid-adjusted values. The difference in WTP for users who said Covid-19 reduced their valuation was sizable at £1.64, which is equivalent to a 25% increase from their original valuation. Counterintuitively, the average WTP in the absence of Covid-19 for users who reported that Covid-19 had a positive impact on their WTP came out larger than their original valuation (£5.07 and £4.55, respectively). This finding may have been driven by measurement error in the way that these

follow-up questions were asked at the end of the survey, which might typically have been as much as 5 minutes after their initial WTP estimation. It should be noted that the confidence interval for the valuation in the absence of Covid-19 was wide; taking the lower bound of the confidence intervals yielded a £0.57 reduction in WTP, or a 15% reduction in percentage terms.

Table 5-39 Users' stated WTP versus their WTP in the absence of Covid-19[92]

Covid-19 REDUCED WTP	Stated WTP	WTP in absence of Covid
Mean (std. err.)	£4.87 (£0.78)	£6.51 (£1.41)
Lower and higher bound WTP (based on 95% confidence interval)	£3.33 - £6.41	£3.69 - £9.32
Median	£3.00	£4.00
Sample size	174	107
Covid-19 INCREASED willingness-to-pay		
Mean (std. err.)	£4.55 (£0.34)	£5.07 (£0.89)
Lower and higher bound WTP (based on 95% confidence interval)	£3.87 - £5.23	£3.30 - £6.83
Median	£4.00	£3.00
Sample size	190	116

5.7.1.2 *Non-users*

As with users above, most non-users reported Covid-19 as having no impact on their WTP (60%), with 18% reporting an increase and 23% a reduction. Looking at the four counties separately, Essex had the largest proportion who report no impact (62%), while Devon had the smallest (56%).

Table 5-40 Impact of Covid-19 on non-user WTP – weighted

	Cheshire	Essex	Devon	Lincolnshire	Total

92 Note that the sample size in the 'Stated WTP' column is larger than that in the 'WTP in absence of Covid' column in both this table and Table XX. This is because each respondent gave a maximum of three WTP values throughout the survey, whereas they were asked for their WTP in the absence of Covid-19 only once.

Non-users					
Covid-19 REDUCED WTP	24.9%	22.4%	23.6%	20.9%	23.0%
Covid-19 had NO IMPACT on WTP	57.2%	61.8%	55.9%	61.6%	59.5%
Covid-19 INCREASED WTP	17.9%	15.8%	20.5%	17.5%	17.5%

The difference in WTP for non-users who said Covid-19 had reduced their valuation was large at £5.87, which was equivalent to a 190% increase from their original valuation. As we found with users, the average WTP in the absence of Covid-19 for non-users who reported that Covid-19 had increased their WTP was *more than* their stated WTP (£6.62 vs £5.54). However, the confidence intervals were again very wide. If we took the lower bound of the confidence intervals, their average WTP in the absence of Covid-19 would have been only £0.06 higher than their stated WTP, or 1.7% in percentage terms.

Table 5-41 Non-users' stated WTP versus their WTP in the absence of Covid-19

Covid-19 REDUCED WTP	**Stated WTP**	**WTP in absence of Covid**
Mean (std. err.)	£3.09 (£0.46)	£8.96 (£1.76)
Lower and higher bound WTP (based on 95% confidence interval)	£2.18 - £4.00	£5.48 - £12.44
Median	£1.00	£5.00
Sample size	227	227
Covid-19 INCREASED WTP		
Mean (std. err.)	£5.54 (£1.03)	£6.62 (£1.55)
Lower and higher bound WTP (based on 95% confidence interval)	£3.50 - £7.58	£3.56 - £9.68
Median	£2.50	£3.00
Sample size	180	179

5.7.2 Social Class

Oman (2019) [93] designed the social mobility questionnaire to improve data practices in monitoring social class and social inequality in the arts and cultural sector.[94] The questionnaire asks respondents on their upbringing regarding their education type (e.g., state-run or state-funded, or independent school), parental qualifications and primary carer job. This social mobility questionnaire, in addition to our standard demographics (age, gender, dependents, marital status, education level, employment status, ethnicity, health status, household income) provides a more complete social background for our respondents. To investigate social mobility in arts and culture users, we only looked at the WTP for use values only (i.e., local museum entry fees).

When we compared users on their school education (refer to Table 5-42) we can see that those users who attended school outside of the UK reported significantly higher WTP for individual entry fees (£6.36). Those users who attended state-run or state funded school (selective) reported significantly lower WTP entry fees (£3.86).

Table 5-42 Users' School education

User School education	State-run or state-funded school – selective on academic, faith or other grounds	State-run or state-funded school – non-selective	Independent or fee-paying school – bursary	Independent or fee-paying school – no bursary	Attended school outside the UK	Other	Total
Mean (std. err.)	£4.17 (£0.28)	£3.86* (£0.20)	£5.87 (£0.93)	£4.06 (£1.40)	£6.36* (£0.81)	£0.00* (-)	£4.29 (£0.17)
Lower and higher bound WTP (based on 95% confidence interval)	£3.61 - £4.72	£3.47 - £4.24	£3.97 - £7.77	£1.10 - £7.02	£4.74 - £7.98	-	£3.95 - £4.62
Median	£3.00	£3.00	£4.00	£2.50	£5.00	£0.00	£3.50
WTP range	£0.00 - £20.00	£0.00 - £20.00	£0.00 - £20.00	£0.00 - £40.00	£0.00 - £30.00	-	£0.00 - £40.00
Sample size	282	496	42	29	66	1	916

When comparing museum users' parents' education (refer to Table 5-43) we see that those users whose parents had no formal qualifications had the highest WTP for an individual entry fee to a local museum (£6.03). However, it should be noted that the range of WTP values for this group was large, indicating that these results could be spurious.

93 Oman 2019

94 Oman 2019

Table 5-43 Users' Parent Education

Parent education	At least one has a degree level qualification	Qualifications below degree level	No formal qualifications	Other	Total
Mean (std. err.)	£4.18 (£0.28)	£4.38 (£0.24)	£6.03 (£1.44)	£2.47 (£1.15)	£4.48 (£0.23)
Lower and higher bound WTP (based on 95% confidence interval)	£3.64 - £4.73	£3.90 - £4.85	£3.15 - £8.91	£-1.20 - £6.15	£4.02 - £4.93
Median	£3.00	£4.00	£4.00	£3.00	£3.50
WTP range	£0.00 - £20.00	£0.00 - £40.00	£0.00 - £60.00	£0.00 - £5.00	£0.00 - £60.00
Sample size	278	409	208	5	900

When comparing museum users' parents' jobs (refer to Table 5-44) we see that those whose parents were short-term unemployed held the highest WTP for local museum entry fees. It should be noted, however, that this category was very low in sample size, which may have impacted the results. Users whose parents were middle or junior managers had the highest WTP for local museum entry fees when we only looked at categories with a sample size greater than 50 (£5.30). The lowest WTP was from users whose parents were retired (at £2.03), which was significantly lower than values stated by users whose parents held other parental occupations.

Table 5-44 Users' Parent job

Parent job	Inactive	Long term unemployed	Short term unemployed	Retired	Middle or junior managers	Routine manual and service occupations	Semi-routine manual and service occupations	Clerical and intermediate occupations	Technical and craft occupations	Traditional professional occupations	Modern professional occupations	Senior managers and administrators	Other	Total
Mean (std. err.)	£5.00 (£1.00)	£4.27 (£0.44)	£6.50 (£1.50)	£2.03* (£0.65)	£5.30 (£0.93)	£4.71 (£0.63)	£4.72 (£0.46)	£3.86 (£0.38)	£3.88 (£0.33)	£5.03 (£0.79)	£5.15 (£1.02)	£3.94 (£0.46)	£12.22 (£7.09)	£4.49 (£0.23)
Lower and higher bound WTP (based on 95% confidence interval)	£-7.71 - £17.71	£3.21 - £5.34	£-12.56 - £25.56	£-6.18 - £10.24	£3.38 - £7.22	£3.44 - £5.97	£3.79 - £5.64	£3.10 - £4.62	£3.23 - £4.54	£3.42 - £6.63	£3.11 - £7.19	£3.02 - £4.86	£-7.48 - £31.92	£4.04 - £4.94
Median	£5.00	£5.00	£6.50	£2.50	£4.50	£3.50	£4.00	£3.00	£3.00	£3.50	£3.50	£2.50	£5.00	£3.50
WTP range	£4.00 - £6.00	£2.50 - £8.00	£5.00 - £8.00	£1.00 - £5.00	£0.00 - £20.00	£0.00 - £20.00	£0.00 - £15.00	£0.00 - £17.50	£0.00 - £20.00	£0.00 - £20.00	£0.00 - £60.00	£0.00 - £40.00	£0.00 - £30.00	£0.00 - £60.00
Sample size	2	12	2	8	73	92	145	100	161	58	114	127	21	915

6 Literature cited

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