Analysing Visits to English Museums 1850-2015: A Research Note

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ABSTRACT

Understanding why people visit museums is of interest to both cultural economics and museum studies. Most existing research relies on survey data concerned with visitors, their immediate background, and their experience of a particular museum. Very few studies (e.g. Chen & Della Change, 2016; Skinner et al., 2009) have taken a more general perspective and analysed macro-level societal factors, such as inflation, educational attainment and unemployment, and their influence on the number of visits to museums. The conventional approach being reliance on surveys of museum visitors used to understand what drives visits and general views on museums. In a departure from these conventional approaches, this article presents such an approach, using a unique dataset of visit counts for 40 English museums and visitor attractions spanning the period 1850-2015, unless otherwise specified the word "museum" shall in this article cover both types It examines the effect of socio-economic factors on visits using panel data analysis and macro-level variables. The results suggest that inflation rates, average earnings, and educational level (using the indicator of secondary school attendance) all significantly influence the number of visits made. However, the most important variable is the number of visits recorded for the previous year. These findings are discussed in relation to existing studies, and some suggestions for future research are proposed.

KEYWORDS Museums, visits, Great Britain, quantitative

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Introduction

The decision to visit a museum is an individual one, and depends on the particular circumstances in which the individual finds themselves. Many factors potentially play a role, for instance, whether or not admission is free (e.g. Bailey et al., 1997; Steiner, 1997), whether or not there is special exhibition on (e.g. Skinner, 2006), whether or not it is raining (see Cuffe, 2017), or simply where the museum is located (Brook, 2016; Cutts & Widdop, 2017; Widdop & Cutts, 2012). These, should, of course, be seen in relation to other individual factors, such as an interest in culture, willingness to spend time in a museum, and overall preparedness to pay any other costs associated with the visit such as those associated with retail and catering. However, the factors that influence any one individual's decisions are not totally independent of other peoples' at the same point in time. For instance, an economic downturn may mean that visit numbers drop (Chen & Della Chang, 2016); low unemployment could mean that people have less time to pursue non-work interests and have to trade-off one leisure activity against another. This implies that before taking individual level variables into account to explain the number of museum visits, we should first understand the influences of macro-level variables. This, then, represents this article's main contribution.

Understanding what prompts people to visit museums has obvious attractions for the research community, for museums themselves and for policy-makers. Researchers can tell us about how people make decisions about how to spend their leisure time, how they consume culture, and what role museums play in society today. For the museums themselves, there is clear value in knowing what exactly prompts people to visit, if not re-visit. Such knowledge can, theoretically, contribute to museums tailoring their offer to interested constituencies. For policy-makers, understanding what makes museums successful could be used to inform the support provided, and the extent to which they deliver on any agreements that inform their funding.

This article's focus on macro-economic factors derives from the well-established fact that these influence individuals' decision-making, such as, for example, voting. The specific issue addressed by this article is the extent to which macro-economic factors can explain the number of visits to museums. This is explored using a dataset covering 40 English museums and visitor attractions over the time period 1850-2015. There are, however, some gaps for all museums, not least the years of the First and the Second World Wars.

This article attempts to contextualise the yearly visit numbers of those museums in relation to the societal trends that each of the institutions faced at particular times. In this respect, the article is neither concerned with forecasting numbers of visitors (a popular interest of tourism research) nor with using survey data to discover more about the factors influencing the choice of cultural consumption (e.g. Cutts &Widdop, 2017; Widdop & Cutts, 2012). Rather, it is inspired by the cultural economics approach of understanding the impact of macro-economic factors on visit counts (see e.g. Blaug, 2001; Frey, 1994; Frey & Meier, 2006) and the extent to which museums also experience cyclical features in the pattern of their visit numbers (Chen & Dalla Chang, 2016). The main focus of the next section is the existing academic economic and tourism literature on museum visits, which is briefly discussed before the data and methodology used in my analysis are introduced, and the findings presented.

Studies of museum visits

It has often been argued that museums play a very significant role in tourism, as one of, if not, the most popular type of visitor attraction (McKercher, 2004). In a review article, Lim (1997) noted that increasing importance was being attached to the use of quantitative evidence - a propensity which was confirmed in a subsequent review (Song & Li, 2008). As suggested above, such studies have predominantly focused on forecasting tourism trends and understanding the types of intervention that might influence tourists' decision-making.

Quantitative studies of museum visits, from both tourism and cultural economics' perspectives, broadly fall into two categories: those examining macro-level factors such as unemployment rates and Gross Domestic Product (GDP) (e.g., Chen & Della Chang, 2016), and those employing micro-level factors, usually in the form of surveys of visitors to individual museums (e.g., Alt, 1980; Cutts &Widdop, 2012).

The international literature appears to be relatively short of empirical evidence of the extent to which tourism flow is a determinant of museum visits. Some of the existing research appears to be contradictory. Cellini & Cuccia's (2013) analysis of Italian data, for example, found that tourist arrivals and stays drove museum attendances. However, in respect to their research in New Zealand, Carey et al., (2013) suggested that museum visiting impacted tourist arrivals and stays.

Longitudinal research allows for other types of observations to be made. But again, the findings may appear incongruous. In their study of visitors to 25 American museums over a ten-year period, Skinner et al. (2009) found museum visits to be counter-cyclical - attendance increases when income falls, and falls when income increases. More recently, in the context of Taiwanese museums, Chen & Della Chang (2016) found that visiting was pro-cyclical, with the unemployment rate, among other factors, impacting number of visits . Importantly, no studies appear to have utilised the same extent of cross-sectional (museum) and cross-temporal (period) data that are addressed in this article.

Museum studies took off in both the US and UK in the early 1980s, when several key works were published (see, e.g., Hood, 1983). Alt (1980) and Griggs & Alt (1982) used their analyses of individual museum visitors to come up with profiles of might be typical visitors. Prince (1990) focused on surveys of visitors to a large number of museums. In the US, Hendon et al (1989) replicated Alt's findings to reveal that the typical museum visitor at the time had a higher education than average, and a higher income than many. These visitors also tended to be younger and more active within their communities than the average American.

Foley & McPherson (2000) and Rottenberg, (2002) argued that late 1980s and early 1990s the market for museums was very different to what it had been when it was necessary to include an educational experience to get public support; that they were now operating as settings for recreational experiences, and that visitors had changed from being passive spectators to to active "cultural shoppers" (McPherson, 2006) . These charges could be credited to changes in the UK policies on museums to a 1985 Cabinet Office report placing museums and their services within context of tourism and leisure business. It is generally acknowledged that that tourists and day-trippers are responsible a high percentage of visits to museums, the nationals and those in major cities (see, e.g., NMDC, 2014.).

Relatively few studies have utilised visit data to construct an overview of visits to UK museum. Selwood's (2001) account of attendances between 1993/94 and 1998/99 at UK museums in general is comparatively rare. It is more common for the literature on visits to British museums using quantitative data to cover a very short time period. In this respect, Creigh-Tyte & Selwood's (1998) presentation of one particular year's worth of admissions to some of the nationals is more typical. The majority of accounts draw on survey data (Alt, 1980; Cutts & Waddop, 2017; Griggs & Alt, 1982; Waddop & Cutts, 2012). The international literature reveals a lacuna in research based on historical visit data.

Data and methodology

The dataset consists of 40 English museums and visitor attractions. The full list of those included and the periods covered can be found in Table 1.[1] The data was sourced from annual reports, and other documents in the museums' archives. In some instances no data was available leaving gaps in the

time series. For some museums this problem is more acute than for others, but overall the data provides a good spread across the 165 years covered by the analysis. There are some obvious issues with data of this kind, not least in its consistency. These include differences in who was counted (for example, whether children on school visits were included or excluded) and which methods were used to count them. These, and other issues, are explored in detail by Babbidge (2018, pp. 00-00). For the purposes of this article, it is assumed that the visit counts are broadly comparable across all the museums in the sample, and across the whole of the period covered.

The longest time series are those relating to the Royal Academy, which is unbroken since 1851, and London Zoo, covering 1850-2013. The British Museum's data is only interrupted by World War 2, and the Victoria and Albert Museum is covered from the opening of the South Kensington Museum in 1857 until 2012. More recent museums, such as Merseyside Maritime Museum, which opened in 1980 are also represented, although in its case, data was only accessible from 1986, six years after its opening. In total we have 2,437 data points where both visit numbers are available and contextual variables are available.

Conventionally, a traditional regression approach might be used to model the relationship between the dependent variable (the number of visits), and the independent variables - (such as inflation, educational attainment, unemployment etc.). But, given that the visit numbers vary across time and across museums , its interpretation lends itself well to panel data analysis (see Hsiao, 2014). This is a statistical method, frequently used in social science, epidemiology, and econometrics to examine data that varies both cross-sectional, in this case between each museum, and cross-temporally, in this case the longitudinal part.

The challenge for such models is to avoid biased results due to omitted time-invariant characteristics between the units. This can be avoided by using a fixed-effects model allowing us to study the causes of change within the units (Hsiao, 2014). It should also be noted that, in the case of the data set used here, that the panel-data is heavily unbalanced due to variation in the data available across the museums, however apart from the war years where all data is missing the observations are missing at random making it less of a problem for analysis (Wawro, 2002:28) .

The independent variables used in this analysis are taken from data available from the Bank of England, the Office of National Statistics, and Mitchell (1988). They include the traditional socio-economic variables that could possibly have an impact on the number of visits made to museums. These include, GDP, the rate of Government Consumption of the GDP, the Consumer Price Index , the unemployment rate (in percentages), and the average earning in £. In order to control for the level of general education, as a potential driver for museum visits, the number of people enrolled in secondary schools is also referred to. Secondary school attendance is chosen as a proxy over higher education participation, due to the latter not having much variation until the 1970s and 1980s. Official tourism statistics have been included for those years for which it is available, and finally the yearly population has been included to control for population growth. These variables, or at least a subset of them, are normally used to analyse the impact of socio-economic factors on various outcomes and were employed in several of the studies referred to above (e.g. Chen & Della Chang, 2016; Skinner et al.,, 2009). Where this article differs is the time period covered, which is about 15 times longer than any previous periods examined, allowing us to fully explore the long-term impact of socio-economic factors on museum visit numbers.

Table 1 Museums Included in the data set used here, and the dates for which visit data were available

Museums and visitors attractions (a)	Location	Dates for which visit data were available	Museums and visitors attractions (a)	Location	Dates for which visit data were available
V&A Museum of Childhood	London	1872-1916; 1919-37; 1950-53; 1955-64; 1969-77; 1980-2014	Merseyside Maritime Museum	Liverpool	1986-2013
Blackburn Museum	Blackburn	1884-93; 1896-98; 1900-14; 1918-21; 1923-24; 1928-56; 2002-2010	Museum of Science and Industry	Manchester	1970-78; 1985-2011
British Museum	London	1850-1941; 1946-2013	Madame Tussauds	London	1928-37; 1949-56; 1966-2000
Bradford Cartwright Hall	Bradford	1958-65; 1973-2011	National Gallery	London	1850-51; 1856-1939; 1947-2012
Colchester Castle	Colchester	C1994-2012	Natural History Museum	London	1881-1939; 1942-44; 1946-2013
Hollytrees Museum	Colchester	1994-2012	National Maritime Museum	London	1928-34; 1936-37, 1949-53; 1955-64; 1969-76; 1978-91
Natural History Museum	Colchester	1994-2012	Nottingham Castle	Nottingham	1878-1929; 1947-57
Tymperleys Clock Museums	Colchester	1994-2010	National Portrait Gallery	London	1859-85; 1896-1915; 1920-39; 1942-2012
Crystal Palace	London	1864-75; 1886-88; 1903-04; 1926-36	Royal Academy	London	1851-2014
Cuming Museum	London	1906-10; 1912-36; 1965-76; 1988-97	Science Museum	London	1897-1940; 1946-2008
Derby Museums & Art Gallery	Derby	1898-1904; 1907-09; 1911-1937	South London Art Gallery	London	1922-37; 1949-53; 1955-64; 1966-77
Geffrye	London	1914-37; 1949-64; 1966-71; 1973-79	Tate (All)	London	1897-1915; 1920-37; 1947-2012
Guildhall Art Gallery	London	1900-07; 1909-37; 1949-64; 1966-77	Tower of London	London	1850-53; 1900-01; 1913-36; 1948-49; 1954-2013
Hampton Court Palace	East Molesey,	1923-37; 1966-91	Victoria and Albert Museum	London	1857-2012
Horniman Museum	London	1891-1898; 1901-19; 1921-38; 1947-88; 1990-2011	Walker Art Museum	Liverpool	1929-32; 1934-38; 1951-59; 1968-75; 1985-2012
Imperial War Museum (Total)	London	1920-40; 1950-51; 1953-81; 1983-2014	Wallace Collection	London	1900-16; 1920-39; 1945-2000; 2002-2015
Kenwood House	London	1928-37; 1950-64; 1966-85	Warrington Museum & Art Gallery	Warrington	1875-1925
Kew Gardens	Richmond	1850-1968; 1972-2012	Whitworth Museum	Manchester	1892-93; 1897-1917; 1921-28; 1930-40; 1946-56; 1959-87; 1998-2013
Leicester Museum	Leicester	1923-73; 1994-2011	World Museum	Liverpool	1986-2013
Maidstone Museum	Maidstone	1936-65; 1977-2012	London Zoo	London	1850-2013

Results

In order to analyse the available data it was been decided to run three models; two with the lagged dependent variable, as is the norm for panel-data models and givenit is the strongest predictor ,, one model without it allowing us to see the raw effect of each of the other independent variables . The third and final model also includes a indicator for tourism,, though this means that the number of observations drops to a third of that of the other two models, (i.e. the later years only where tourism data is available. Including these three models allows us to view both the longer term trends of the impact of the independent variables on the number of visits, but also to tease out which of those factors are robust and where the strongest predictor expected (the lagged dependent variable) is included. All independent variables have been lagged by one year, e.g. the GDP rate in 1960 is expected to impact numbers of visits in 1961. The results of the three models can be found in Table 2 below.

Table 2: Estimated impact on visit numbers

	Model 1	Model 2	Model 3
Lagged Visit Count	-	.96** (.01)	.89** (.02)
GDP (in £)	.70 (.62)	-.06 (.21)	-.73 (.78)
Government Consumption (as % of GDP)	-3576.61 (4056.89)	-5299.63** (1448.41)	59835.05 (66313.85)
CPI (in %)	-8529.71* (3851.62)	-3207.99* (1289.29)	-1973.78 (3267.41)
Population (in 1000)	-.02* (.01)	-.00 (.00)	-.02 (.02)
Unemployment (in %)	15597.8** (5042.40)	1073.87 (1708.80)	3520.26 (11071.57)
Average Earning (in £)	9365.96^ (4848.51)	3198.04* (1625.18)	6892.42^ (3982.34)
Secondary School Attendance (in 1000)	.17** (.06)	.04^ (.02)	.16 (.13)
Tourism (in 1000)	-	-	6.55 (9.25)
Constant	806080.4** (294193.4)	113473.1 (98619.96)	886720 (622352.7)
R2	.09	.96	.96
Number of Groups	40	40	33
N	2437	2350	810

Note: **p<.01, *p<.05, ^p<.10. All estimations are done with fixed effects.

Model 1 is the basic model without the inclusion of a lagged dependent variable. The results suggest that several factors have an impact on the visit numbers. Firstly, when the Consumer Price Index (CPI) increases by one unit, it leads to a decrease in visit numbers by an average of about 8,500 at each museum the following year. For some museums, this represents a marked decrease, whereas for larger museums, this appears to be rather less significant. At the same time, when unemployment increases by one unit, it leads to an increase of museum visits of about 15,600 the following year. Thus, these results suggest that on the one hand, when living costs increase museum visits fall, but, that on the other hand, when more people are off the labour market, it increases, although this could also be related to change in admissions fees. However, as suggested later, neither result is robust. There are also signs that when the average earnings increase, and people's disposable income increases, museum visits increase by just over 9,000 the following year. Model 1

also shows education to be a factor in museum attendance . For each 1,000 people enrolled in secondary schools' museum attendance increases by 170 visits the following year. Interestingly, there is also a slight negative coefficient for population, suggesting that in museum visits have dropped off slightly over time in relation to population increases. The remaining coefficients, GDP and Government Consumption do not have a statistically significant influence on visit numbers. Overall, there are some remarkable findings shown here, and some that might appear counterintuitive. The next step is to include a lagged dependent variable, and as Model 2 shows the results are very different when this variable is taken into consideration.

Including a lagged dependent variable as an independent variable is not strictly necessary, although given the subject of this research, it makes sense, not least because the data used has been standardised to calendar years in order to facilitate the inclusion of the independent variables. However, museum programmes are not necessarily bound by calendar years, and an exhibition starting, say, in October in year one may run through to March in year two. This means that the visits obtained in year one could be assumed to impact on the number of visits in year two, due to the increasing reputation of the exhibition. This, then provides a substantive reason to include the lagged dependent variable as a predictor, as has been done in Model 2. The impact of this decision is clear. First, the lagged dependent variable is extremely strong as a predictor, an increase in the visit number of the previous year of 100 leads to an increase of 96 in the following year. While, this is not surprising statistically, it nevertheless provides us with broader substantive results to consider in relation to the visit numbers. It implies that the visit numbers should not be interpreted simply on a year-on-year basis, but considered in a broader context since they are likely to be influenced by events and variables across more than just a single calendar year.

The findings from Model 1 that are also shown to be robust in Model 2 are that for each unit by which the the Consumer Price Index increases, museum visits, on average, decrease by 3,200, but when the government consumption increases by one unit, museum visits decrease by about 5,300 people. Average earning increases of one unit lead to an increase of just over 3,000 museum visits. The impact of secondary school attendance is less pronounced in Model 2 than in Model 1, with 1,000 more people in secondary schools leading to only 40 more visits. Before considering these results in relation to the overall context, we have included a variable measuring tourism, not least given the strong research tradition of understanding the impact of tourism on museums and vice versa. But, given that this variable only covers a relatively small period within the longer time series used, it is estimated in a separate model, Model 3, which provides us with results for the recent years (1980-2015).

Model 3 only covers 35 years. Although seven of the 40 museums and visitor attractions have no visit data recorded for this period, it is possible to view Model 3 as expressing the situation as it currently stands. Here, only two variables remain having a significant influence. One is the lagged dependent variable, where an increase of 100 visits the previous year is followed by an increase of the current visit numbers of 89. The other significant factor is average earnings, where a one unit increase leads to an increase in visit numbers of just less than 7000. None of the other independent variables are statistically significant, including the tourism variable, although this could be due to both the time period for which tourism data is available and the sample of museums included. There may be some relationship between variables for tourism and university level education, particularly after post-1992 reforms, and especially around 2001. However, in the long time frame that is covered here, there is insufficient variation across time to show anything statistically significant.

Concluding remarks

The findings presented in the analysis reveal a number of challenges that are relevant for how we understand visit numbers at museums and other visitor attractions. Firstly, while year-on-year analysis is obviously necessary for linking museums with other year-on-year observed data, museums' activities are not restricted by, or contained within, discrete calendar years. In an optimal setting, data would be available in monthly, weekly, or daily intervals allowing for the minutiae analysis of factors influencing visit numbers, including those not considered in the present analysis , such as admission pricing, transport links, strikes, or other high impact events (Chen, 2007), and the weather (Cuffe, 2017). Ideally, one would consider how such variables interact with those specific to each museum, including its location (Waddop & Cutts, 2012). However, apart from the latter, very few, if any, museums have such data available, and especially not in a historical overview that allows for long-term trends to be identified and interrogated. Thus, we are left with what is presented in this article, and while there are many more factors that do not significantly influence the visit count, there are also those that are strong predictors of attendance.

One of these predictors is that an increase in average earnings has a statistically significant influence on the visit count in the following year. Whether this is due to people's enhanced spending power and greater opportunities to visit museums, or whether it constitutes a proxy for higher education levels, which are associated with such cultural visits is beyond the scope of the present article. It is, nevertheless, a relationship that cannot be ignored and it confirms that museum visits,, across the period covered here, are more likely to be a factor for the middle and upper classes than for the lower classes.[2]

While these findings do present a clear way forward for understanding the long-term trends in museum visits, a number of caveats must be acknowledged. First, only 40 organisations were included in the data set used. While these represent a mixture of national and regional museums, and visitor attractions, it cannot be ruled out that including more museums, if not more specialist museums, might have generated different results. By the same token, the data coverage is not comprehensive and it would have been beneficial to have been able to cover the entire period. Perhaps, most importantly, given that the link between individual earnings and museum visits is established across a 165 years of data, the museum sector and policy-makers should understand that attendance at museums and cultural attractions is not independent of general socio-economic developments. The findings presented here also leave many questions unanswered, for instance the effect of tourism on museum visits, which in the present analysis is a non-significant factor. In this respect, it can only be applauded if an increased use of historical visit data allows us to gain an even greater understanding of the socio-economic factors driving peoples' decision to visit museums.

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Notes

[1] I am indebted to Sara Selwood, Vicky Wollard, and Adrian Babbidge for making the data available for me.

[2] It is also well-established that where museum visits are free, there is a much wider variation of social class in visits, for instance in Scotland (McPherson, 2006: 46).