

Mapping Museums' Catchment Areas: A Tool for Understanding Museum Visitorship

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Introduction

In a 1995 article the MIT sociologist Mark Davidson Schuster describes the differences between audience surveys and participation surveys for art museums and concludes that the latter “*is arguably proving to be the more interesting.*” There is a lot more “*to learn from the new generation of participation surveys. ... [B]y sampling the population in a particular place rather than by sampling the audience of a particular institution ... [P]articipation figures make it considerably easier to draw the important analytical distinction between visitors and visits. Participation studies naturally focus on visitors, ... whereas audience surveys naturally focus on visits.*” And, I might add, participation studies are necessary to find and study the future visitors as well as “old” target groups that are not yet sufficiently covered (Kirchberg, 1996). Why is there a new interest in participation surveys partially even replacing the interest in in-house audience surveys? In America and in Europe the seemingly predictable reliance on public funds has been replaced by the annual threat of cuts of museum budgets. Museums have had to acknowledge that they are not “*... outside the purview of the public interest and immune to the effects of public policies.*” To secure public funding, museums have to justify their public function. One proof of this function is to “*... pay attention to the frequency and quality of the interaction between ...art [museum] ... and its citizens.*” While audience surveys are more interested in the depth of its established audience, participation surveys are more interested in the breadth of the audience and the quality of interactions between museums and the “common people”. “*To stake a claim for public support, art museums will (and should) have to clearly*

document the nature of their interaction with their public" (all quotes: Schuster, 1995).

A museum has to document the breadth of the audience in the according geographic area the museum will (or should) cover to apply for (public) funds from this area. I will focus on only one aspect that, in my opinion - is a centerpiece of a representative analysis of a museum's impact outside its walls. This aspect is the geographic size and structure of museums' catchment areas and the impact of the location on size and structure of museum visitorship.

A catchment area is the area from where most of the museum visitors come, or where they - according to the museum's or cultural department's policy - should come from. However, the size and structure of a catchment area is not only a function of distance of the potential visitors' residence to the venue but also a function of socio-demographic structures of residential areas. For instance, urban areas far away from a museum may be a part of its catchment area but rural areas closer to the museum may be not, due to different population densities and different socio-demographic compositions.

Analysis of Catchment Areas

The socio-economic and geographic analysis of catchment areas is a natural ingredient of modern marketing and market research in the United States. Companies such as National Decision Systems, Claritas or CACI provide commercial services to segment populations in homogeneous subsets (target groups) and to assign geographic areas to these groups. In academia, Weiss (1988) in the United States or Salentin (1994, 1996) in Germany discuss the advantages of geo-demographics for assessing social and physical spaces together as helpful social behavioral predictors.

The geographic analysis of a catchment area's population is a valuable tool not only for modern marketing but it can also be applied for finding a museum's target groups. Already, non-profits use geo-demographic information, e.g., for more efficient fund raising efforts (Hansler & Riggan, 1989) or for better accomplishing direct mail programs (for Baltimore's cultural institutions see Kirchberg, 1992: 253-72).

How much is geography a factor to be considered in explaining museum visits? Schuster compares art museum participation rates of several countries, e.g., the United States, Great Britain, France, Sweden and Ireland. A participation rate is the percentage of population survey

respondents who say they have visited an art museum in a specific period of time (mostly within the last 12 months). Schuster shows that along side strong socio-economic predictors like education, income and professional status "...[g]eographical location can make a large difference in participation, particularly in large metropolitan areas where major cultural institutions tend to be clustered." (Schuster, 1995: 129). This is true for every country; art museum participation rates differ from 24 percent in New England to 11 percent in the East South-central region (US survey), from 28 percent in Greater London to 17 percent in Wales (Great Britain survey), from 48 percent in Paris to 10 percent in places with less than 20,000 residents (France survey), from 24 percent in Stockholm to 7 percent in the countryside (Sweden survey), from 11 percent in urban areas to 4 percent in rural areas (Ireland survey). My own survey shows that in Germany art museum participation rates differ from 27 percent in western Germany to 24 percent in northern Germany (Kirchberg, 1996).

Empirical Analysis - the 1995 Survey

However, the latter distinction of Germany into hemispheres is a crude one. The available data of a representative German study are much more detailed. These data have been gathered in 1995 through a representative mailing survey of 16,862 Germans. This sample has been selected by a random-quota procedure from a larger sample of about 25,000 Germans. The latter is an "access panel", i.e., a number of households that a professional survey company randomly selects in Germany on a yearly basis as respondents for multiple surveys. This panel is continuously up-dated and tested for representativeness. From these 25,000 persons I randomly chose a next sample of almost 17,000 Germans. This smaller sample reflects exactly the socio-economic and demographic structure of the population (including regional differences) that the German bureau of census publishes on an annual basis.

In the following, I will describe the geo-demographical effect of places of residence on visits to different kinds of museums in Germany. I gathered data about visits and attitudes towards museums in Germany. (This survey was commissioned by the "Haus der Geschichte", the House of History of the Federal Republic of Germany, and I am very thankful for their support.) Sizes and structures of catchment areas for kinds of museums in Germany were measured by executing a ZIP-code analysis

of the respondents' places of residence. In Germany, ZIP regions are the first two digits of the German five-digit ZIP code. The geographical unit "ZIP" has been used to directly implement geographical results, e.g., direct mail plans. Thematic maps of Germany, displaying the 95 ZIP regions, have been created representing participation rates for science museums, natural history museums, art museums and history museums. These thematic maps are mosaics of the geographic impact of German museums. And they are one example of how geo-demographical analysis helps us to understand a museum's impact by displaying it on maps.

The following is not a geo-demographical analysis of different catchment areas of one specific museum (as it has been conducted for the "Haus der Geschichte"). While these data for the "Haus der Geschichte" have become important for this museum's marketing efforts, they are, nonetheless, confidential. I will, therefore, rely only on general data for different kinds of museums in Germany.

Geo-demographical analysis is always based on socio-economic, demographical and other residential data that can be then related to corresponding geographical units. Here, data of the residents are visits and non-visits to different kinds of museums in a period of approximately one year. The exact question in the survey was: "*In 1994 or 1995, did you visit a museum or an exhibition related to the following topics: science, natural history, history, art, - or no museum visit?*" The survey was conducted in Spring of 1995, with an observed potential visiting period of 16 months. The answers were then related to the ZIP region of the respondent's place of residence.

Of the almost 17,000 people surveyed 19.4 percent visited a science museum, 20.4 percent visited a natural history museum, 20.5 percent visited a history museum, 25.4 percent visited an art museum, and 46 percent visited no museum during the indicated period.

A first step in assessing the relationship between visits to museums and area of residence is a chi-square analysis. This first analysis already shows a strong relationship: The frequency of visits to museums and the place of residence in Germany are related for all kinds of museums [chi-square (9, N=16, 862) = 38, P<.000]. In other words, the place of residence has an eminent impact on the decision to visit a museum.

Table 1 lists the 10 ZIP zones (i.e., the first digit of the German ZIP code) and the percentage of people that visited at least once a special kind of museum within the observed period.

The ZIP zones 0 and 1 are located in the east, zones 2 and 3 in the north, zones 4 to 6 in the west, and zones 7 to 9 in the south of Germany. According to the chi-square values the relationship between residential area and visits to a museum is highest for visits to science museums, followed by visits to natural history museums, and lowest for visits to history museums.

The ZIP zone with the highest share of people visiting science museums is Bavaria (lowest: Northwest Germany). The ZIP zone with the highest share of people visiting natural history museums is Southwest Germany (lowest: Rhineland). The ZIP zone with the highest share of people visiting history museums is Northeast Germany (lowest: Ruhr area). The ZIP zone with the highest share of people visiting art museums is Southwest Germany (lowest: Franken/Thuringia). The ZIP zone with the highest share of museum non-visitors is the Ruhr region (lowest: Southwest Germany).

ZIP zones are not the best geographical unit for observing the relationship between place of residence and kind of museum visited. A chi-square analysis of the relationship of the more detailed 95 ZIP regions and the visit or non-visit of the four chosen kinds of museums yielded similar results, however.

Again, the relationship between visits to science museums and the location of the residential places is the strongest one. At this level of aggregation, the second highest relationship occurs between visits to art museums and the residential location. The lowest relationship exists, again, between visits to history museums and the residential location (Table 2).

The evidence of a relationship does not describe of the type of relationship. Do history museum visitors or art museum visitors live closer to their preferred kind of museum than do visitors to natural history museums or science museums? Or, is distance less important than the geographical context, e.g. whether one lives in a rural or urban setting?

In the following discussion, I display four maps (Figures 1 - 4) and some more statistical analysis (Tables 2 & 3) trying to answer these questions. The maps show the participation rates for four kinds of museums in Germany. The darker shading of a ZIP region on the map the higher is the participation rate, i.e., the more regional residents who are visitors to museums of the indicated kind.

The share of science museum visitors is highest in the southwest and south of Germany, i.e., more specific, in the ZIP regions 68/69 (Mannheim/Heidelberg) and 81/85 (Munich), with more than 40 percent

of the residents having visited a science museum within the years 1994 or 1995 (Figure 1). Both metropolitan areas have very attractive science museums on their territories, the new “Landesmuseum für Technik und Arbeit” in Mannheim and the established “Deutsches Museum” in Munich. On the opposite side of the scale, with small participation rates, are the ZIP regions 08 and 07, at the southwestern corner of Saxony close to the Czech border. Less than seven percent of the residents of these regions have visited a science museum in 1994 or 1995. There is no important science museum in this area. It seems that, with respect to this kind of museum, the demand is an immediate reaction to supply located in close proximity.

Interestingly, the share of visitors to natural history museums is highest in highly urbanized areas such as Stuttgart (ZIP region 70), Berlin (10) or Munich (80), although this kind of museum is mainly located in rural settings (Figure 2). In each of these cities, the participation rate is about or higher than 35 percent. The lowest participation rates are in the more rural regions south of the Ruhr area (57 and 52), with about ten percent. Big city populations seem to visit natural history museums on their trips to the countryside.

As with science museums, history museums attract mainly people from the region of their location (Figure 3). The highest shares of residents having visited a history museum in 1994/95 are in the regions of Bonn (ZIP region 53) and Berlin (10 and 13) with rates of more than 30 percent. Both cities, Bonn and Berlin, have new or newly renovated museums on the topic of German history, the “Haus der Geschichte” in Bonn and the “Deutsches Historisches Museum” in Berlin. Rural regions in the southwest (75, Black Forest, or 88, Lake Constance) have the lowest participation rates with about ten percent.

Visitors to art museums are definitely people who live in highly urbanized areas (Figure 4). The highest rates are found in Hamburg (ZIP region 20), Stuttgart (70) and Berlin (10). Each of these cities have a share of about 45 percent of the population having visited an art museum in 1994/95. On the opposite side, rural areas like northern Brandenburg (16) or Bremen-County (27) have participation rates of less than 15 percent. It seems that population density and visits to art museums are highly correlated, or, in other words: An attractive art museum in close proximity to the place of residence fosters the decision to visit it. However, I will show in the following section that - with respect to art museums - this is a fallacy.

Comparing Regional Demand and Supply

Having compared participation rates with museum locations, it seems that supply and demand are closely related to each other. This assumed relationship can be tested by comparing data on regional supply with data on regional demand. Fortunately, data on regional supply are available from the Berlin Institute for Museum Studies (1995). In a special data selection for this study, this institute provided statistics per ZIP region on the number of museums by kind of museum and the aggregated annual number of visits to the kinds of museums. I will not use the count of museums as an indicator for regional museum supply since this indicator is biased. Using a regional count would exaggerate the importance of very small museums for the regional supply side since a small rural museum (there are many small local life museums in Germany) would count as much as a large metropolitan museum. A better indicator for the regional museum supply side is the size of museums measured by regionally aggregated numbers of annual visits to all museums of a kind in a region.

The correlation analysis shows significant differences between the relationship of supply and demand among the kinds of German museums. The regional demand for natural history museums or for art museums is not correlated with the corresponding regional supply side. On the other hand, the regional demand for history museums (including local life museums) and science museums is strongly correlated with the regional supply (Table 3).

The lack of correlation between the supply of and the demand for natural history museums in the same region is congruent with the statement that urban residents travel into the countryside to visit this kind of museum. In Germany, many city dwellers have no natural history museums in their vicinity, and the relatively few people who live close to a natural history museum in rural areas do not demand this service.

A surprise is the lack of correlation between local supply of and demand for art museums since art museums are mostly found in big cities and urban residents are known for their interest in art museums. However, there may be an explanation for this incongruence. City dwellers that visit art museums are highly educated, affluent and very mobile. They tend not to visit the art museum in their home town every year but are interested in visiting art museums in other towns as an important part of

their culturally oriented tourist activities. Germans visiting art museums travel an average of about 450 km for this reason (college educated people even 700 km, grade school educated people only 350 km), compared to Germans visiting history museums (travel distance: 220 km on an average), and Germans visiting science museums (travel distance: 240 km on an average).

According to these data, it is clear that the demand for history museums or science museums is spatially restricted to the region of residence. There appears to be a very high correlation between demand for and supply of these kinds of museum in the same region.

Conclusion

Geographical location can, indeed, make a large difference in museum participation. However, the geographical distance from the place of residence to the museum is not an explanatory factor for every kind of museum, as Schuster (1995) suggested. For art museums I have shown that geographical settings, as a context variable, are important, not geographical distance (context, i.e., higher educated people live in big cities). Also, with respect to supply and demand, visits to natural history museums are not spatially concomitant. For history museums and science museums, distance of the museums' location from the main urban groupings of museums in Germany is an important (negative) factor. So, museum directors should consider different catchment areas strategies to attract visitors based on whether they are directors of a history or science museum (search for visitors in the near regions) or of an art or natural history museum (search for visitors in regions further away and use available socio-demographic information about these regions for marketing efforts).

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Table 1
 Museum participation rates in the 10 German ZIP zones in 1994 or 1995

ZIP zone in Germany	Kind of museum visited (%)				
	science	natural history	history	art	no museum
0 Saxony	17.2	23.1	24.9	26.0	37.9
1 Northeast Germany	22.2	25.0	25.0	28.9	38.1
2 Northwest Germany	15.4	19.5	22.5	23.5	44.8
3 North Hessa	17.2	21.9	21.9	24.0	44.4
4 Ruhr area	15.9	18.9	17.7	23.7	46.8
5 Rhineland	16.9	16.9	21.3	27.5	43.9
6 Frankfurt, Saarland	20.7	18.0	19.0	25.4	45.5
7 Southwest Germany	23.0	26.4	21.0	32.5	36.8
8 Bavaria	27.9	26.1	19.2	28.2	40.0
9 Franken, Thuringia	20.0	18.0	19.3	20.0	46.5
χ^2 (P < .000) =	146.2	106.3	38.2	83.2	64.4

Table 2
The relationship of place of residence (by ZIP region) and
museum participation rate (chi-square measurements)

Kind of museum	χ^2 of place of residence to participation rate
science museum	449.23
art museum	407.01
natural history museum	366.44
no museum visit	309.43
history museum	167.93

d.f. = 94, all χ^2 measurements are significant (P <.000)

Table 3
The strength of the relationship of demand for and supply of museums of a kind
(by ZIP regions, Pearson's correlation coefficients r)

Kind of museum	Pearson's r, level of significance
history museum	+ .36 ***
science museum	+ .25 **
natural history museum	not significant
art museum	not significant

sig.: * < .05, ** < .01, *** < .001

Figure 1
Science museum participation rates by ZIP region

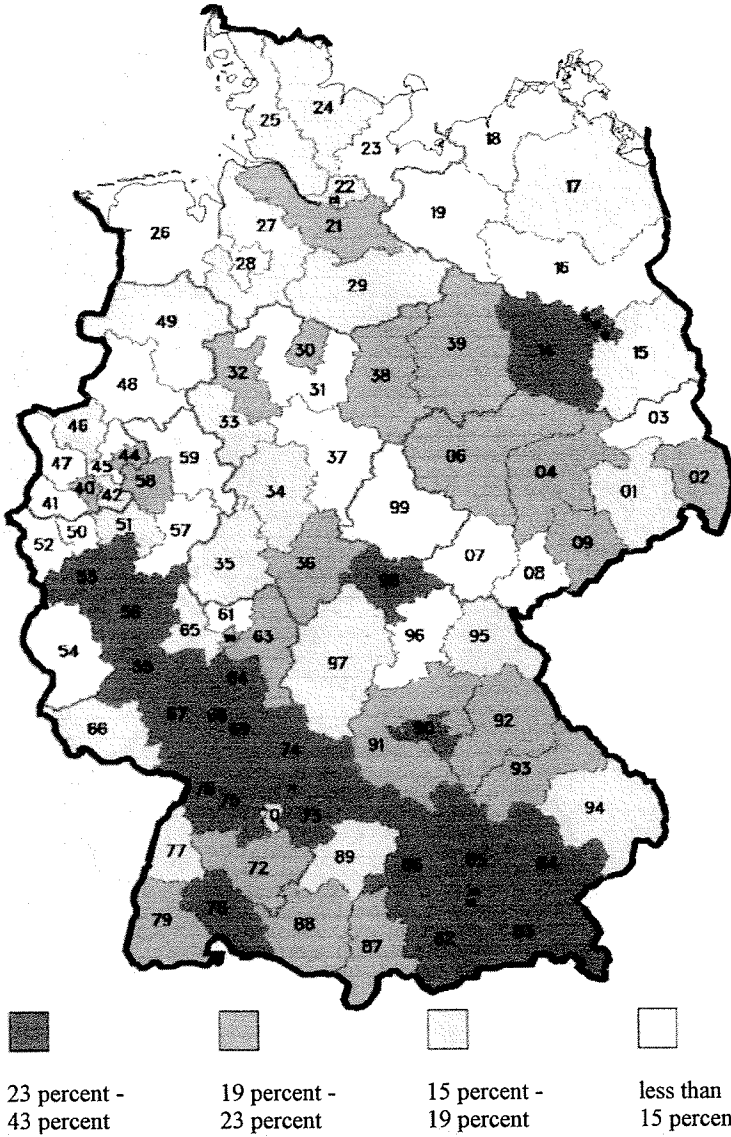


Figure 2
Natural history museum participation rates by ZIP region

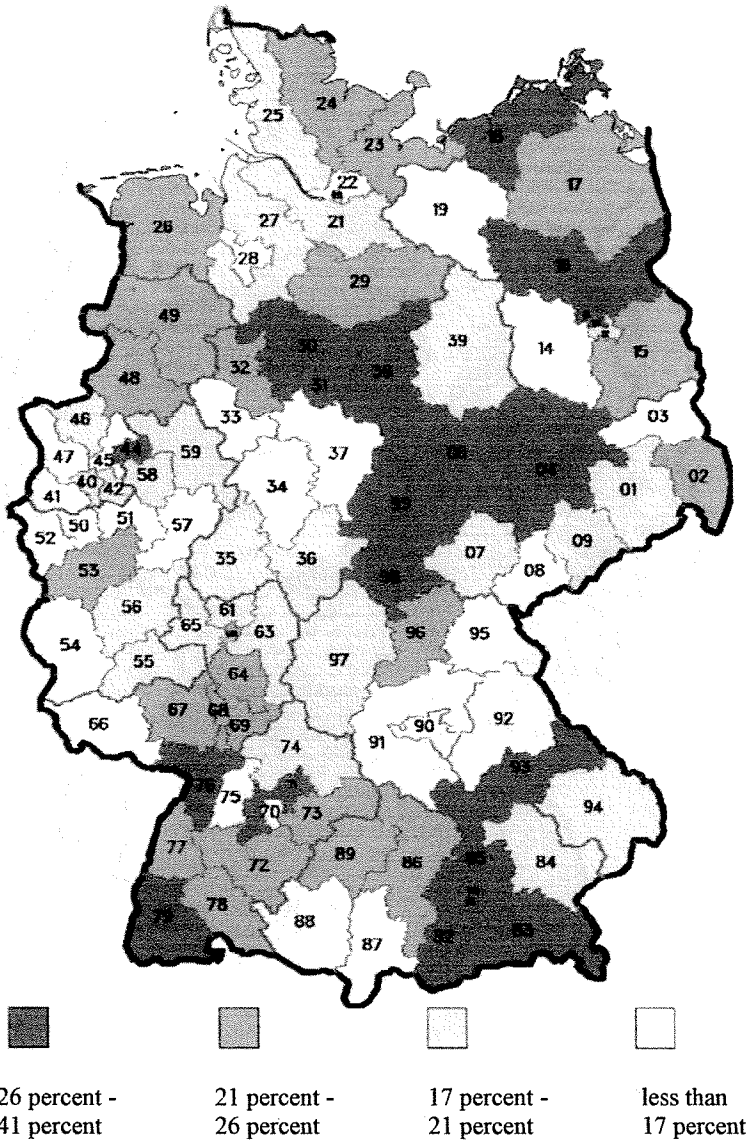


Figure 3
History museum participation rates by ZIP region

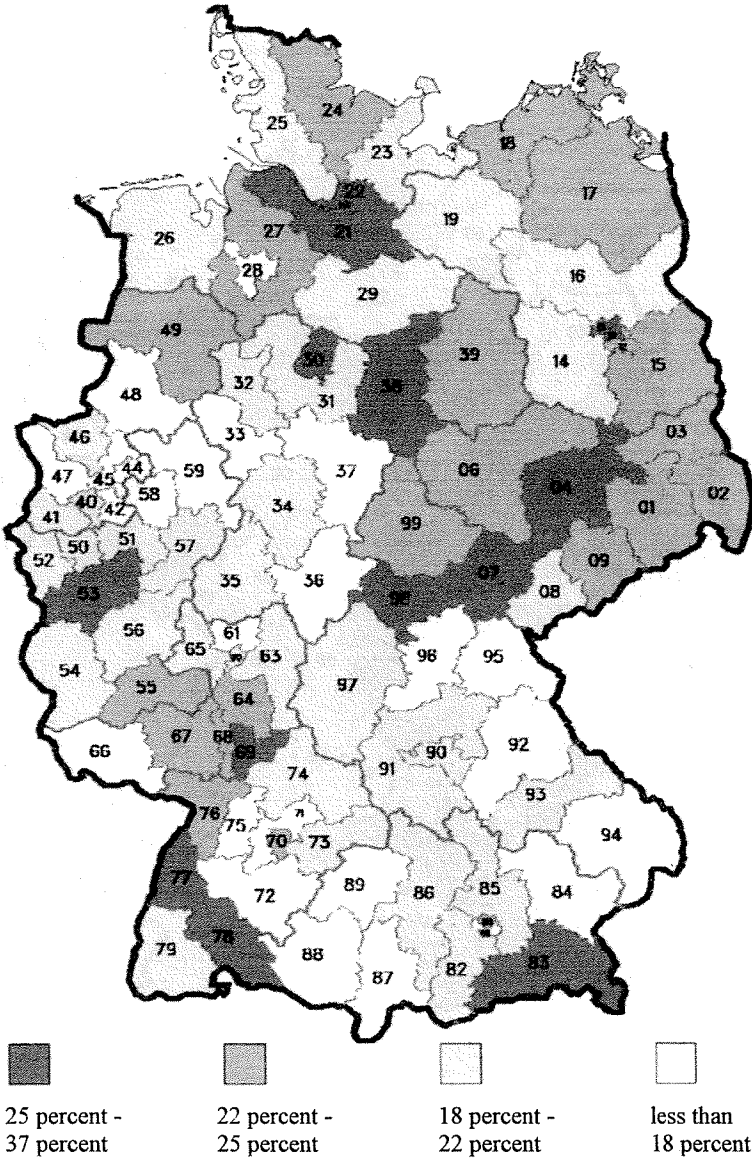


Figure 4
Art museum participation rates by ZIP region

