

The issues in methodology and data interpretation in studies of tourist attractions' attendance: annual passes

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ABSTRACT

The attendance belongs to the basic quantitative indicators, which are used for assessment of the offer in the tourism. It should be used for monitoring of development, geographical structure, seasonality and from interpretational view also for monitoring of achievement or failure. This paper discusses, emphasizes and evaluates the very current topic of methodological differences in the data collection of tourist attractions attendance. The work focuses especially on the subtopic of annual passes on the example of zoos, which belong to the most visited tourist attractions worldwide and where the sale of annual cards is a typical service. Nevertheless, this article proves on the example of the zoos in German-speaking countries that the rise of attendance does not only have to show the reality. The total number of visits and the positive attendance development is in some zoos connected to the methodological approach.

KEYWORDS

methodology; tourism; attendance; annual passes; zoo

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1. Introduction

Tourism and recreation belong to the activities which determine the surrounding geographical area. This determination is mainly long-term, but might be short-term as well. It is connected to the maintenance and establishment of tourist attractions and infrastructure and also with a permanent occurrence of tourist players. For evaluation of tourism as an economic sphere and also for evaluation of its impacts we need to have quality data sources. Assessment, ratings and statistics are part of all human activities, including tourism and recreation. But the other branches (e.g. health care) have more quality data compared to tourism and culture (Borská 2013).

The attendance belongs to the basic quantitative indicators, which are used for assessment of the offer in this sector (Vystoupil 2007). It can be and it even should be used for monitoring of development, geographical structure, seasonality and from interpretational and pragmatic view also for monitoring of achievement or failure, which depends on growth respectively downward trend (Lew et al. 2004). High and increasing numbers of attendance can have positive effects but after reaching tolerable limits also the negative ones (e.g. situation in Barcelona) on media image and branding (Kašková, Chromý 2015; Matlovičková 2015) which affects the economic situation. Moreover, we can recognise in which part of the life cycle e.g. a tourist attraction is. It is important for its sustainability, which is a current parameter from a long-term view. After all, sustainable development of tourism is the topic of many articles and books, which were published in last decades (e.g. Swarbrooke 1998; Pásková 2014) and, furthermore, it is the basic topic of *Journal of Sustainable Tourism*.

But the data situation is not simple because the data base is relatively limited. In tourism, we have some information about collective accommodation establishments, nevertheless, this information is becoming insufficient because of a steadily increasing impact of shorter trips and journeys without staying overnight (Franke 2012). For this reason, it is also appropriate to check the attendance of tourist attractions. We need these data for many reasons thoroughly analysed in the next section of this article. In the statistics of this topic, there can be a lot of methodological limits, differences and distortions, which could create meaningless numbers without almost any importance. Published data can be therefore incomparable to each other. Because of this situation, there is a real need of correction and presentation of risks to professional public, creating of discussion and in the ideal case of establishing a unified system of measuring the attendance data. The first aim of this paper is to identify and introduce which basic methodological problems/risks exist.

The main aim of this study is to find, document and explain mutual deviations and deviations from reality

and to highlight risks of interpretation by ignorance or lack of knowledge of data-producing methodology. This has been performed through different methods. The authors ask which influence can be caused by the diverse methods of counting the annual passes entries. Throughout tourist attractions with statistics of entries, zoos (zoological gardens and other animal-based attractions) have a very privileged position with one of the highest attendance worldwide (Dobrořka 1989; Baratay, Hardouin-Fugier 2004, Rees 2011; Fialová, Nekolný 2015). It is the first reason for using these institutions in the study. The second one is connected to zoos as appropriate institutions for explaining the methodological problems with annual passes.

2. Theoretical basis

Tourism generates significant economic benefits in many tourist destinations of different scale levels (locations, regions or countries), assuming proper management (Jakubíková 2012, Borská 2013). Some countries, typically small islands, are even dependent on the revenue from the tourism sector (UNWTO 2009; Fialová 2012). In contrast with other fields, in tourism there is a scarcity of high-quality data (Borská 2013). Not only has data knowledge crucial importance for several reasons, it also serves many purposes. For a destination of any scale level, attendance data are one of the basic performance indices (Vystoupil 2007). These data can be reflected in statistics of overnight stays in collective accommodation establishments (in Czechia, these statistics are secured by the Czech Statistical Office) and it can be said this information plays a prime role in academic literature (Vystoupil 2007). However, considering the current trends in tourism, individualisation and “authenticity” in private accommodation, which is not registered statistically (mainly due to a protection of individual data), is growing to be another significant variable in the overall rating. It is for this same reason that data responding to collective accommodation establishments are available only in municipalities with more than three pursued possibilities of accommodation (Fialová, Nekolný 2017).

Attendance can also be related to catering, cultural and sport establishments as well as to all sorts of tourist attractions (firstly Cohen in 1972; Zelenka, Pásková 2012). A correct understanding of the term “attendance” is absolutely essential for an accurate interpretation of data in tourism. According to Zelenka, Pásková (2012), attendance refers to the number of people who visit specific tourist attractions or destinations and who do so within some specific time range (typically one year). This is, nevertheless, a rather idealistic approach. It is the number of visits and not visitors that represents a more accurate perception of this concept (Smith 2013). This relates to the fact that the same visitor can return to the same

attraction or destination repeatedly during the selected time (most commonly one calendar year). For the correct assessment of any tourism segment, it has to be taken into consideration that the same person can visit more facilities of the same kind, and therefore the total number of attendances does not equal to that specific share of human population. This "one person = one visit approach" is, unfortunately, used fairly often and contributes to incorrect statistics. Holtorf (2008), for example, says that zoos in *World Association of Zoos and Aquaria* (WAZA) are annually visited by over 600 million people, i.e. roughly 10% of the world's population (or more actually Gusset, Dick [2011] with 700 million people). This value is, nonetheless, only the sum of the entries in zoos under this organization and the fact that the same people can visit one specific zoo or more institutions more than once per year is not acknowledged. Consequently, under no circumstances the total number can be contrasted with the world's population.

The number of paid visits is essential for anyone engaged in tourism. It is, therefore, necessary to realize that one subject can manage more objects (tourist attractions) in more locations (e.g. National Museum). Statistics handled these criteria are valuable for aggregate management and economic view. On the other hand, attendance data for each tourist attraction separately hold significance mainly for social and geographical indicators. Collected attendance data about all branches of the National Museum (located in seven municipalities of four districts; annual report [AR] 2013) provide no information about their distribution and different position to other tourist attractions. The data about individual objects (tourist attractions) play a key role in proper destination management and also in economic factors such as different structure of visitors, specific needs of non-paying visitors (e.g. disabled people), who often greatly contribute to the overall attendance (e.g. zoos in Bratislava, Ostrava or Hluboká mention a 15% share [AR, emails]).

Attendance is one of the rudimentary scales of success/failure of tourist institutions, subjects, locations, and destinations (Vystoupil 2007; Zedková 2012). That is why each such subject aims to reach the highest attendance, highest number of visits, and if possible, the highest number of visitors who will return again (in this scenario the term *number of visits* instead of *visitors* is more easily justified). Studies emphasize that the returning visitors usually give positive feedback and recommendation of the destination to other potential clients (Jang, Feng 2007). These recommendations save money as finances spent on attracting new customers can be up to five times more expensive than retaining the existing ones (Rust, Zahorik 1993).

The high number of visits is an indicator of tourist destination attractiveness and is reflected in their budgets. On the other hand, too high number of visits can have a negative impact in case of many tourist

attractions (in particular historical sites or natural monuments) as the carrying capacity becomes exceeded. Zedková (2012) finds this as a significant factor in the decrease of the *genius loci* and the authenticity of the specific attraction. In addition, the concept of authenticity (firstly MacCannel in 1973; Wang 1999) is an unstable variable. The perception of authenticity is traditionally not applicable in case of zoos (Wang 1999). Pásková (2014) refers to the excess of carrying limits as the tourism trap effect, during which the tourism is depreciating itself by extending its own capacity for the sake of profit.

The attendance (and its seasonality) depends on many factors. The basic ones are geographical, like area and geographical position, site or localisation (Baratay, Hardouin-Fugier 2004). These are connected to settlement (residential and demographic factors and structure [Rees 2011]) and also to traffic infrastructure and the proximity of other tourist attractions (Mizicko, Bell 2001). In this context, Frost (2011) emphasizes that aquaria, for instance, are founded in places with the benefit of the existence of long-term, attractive destinations. Cultural predispositions (e.g. intercultural relationships, attitudes and connections with the environment) are also very important in different countries and regions (Davey 2007). For instance in the US and partly in Europe, there is a very high level of using zoos as the sites of recreation and family and social grouping (e.g. Reade, Waran 1996; Turley 2001; Woods 1998). Even weather plays its role (Rees 2011). In winter, the indoor attractions have bigger success than the outdoor ones, so there are some surveys exploring the parameters of weather and attendance as a complex matter (e.g. AR of Magdeburg Zoo). According to Rees (2011) the period from Easter to the end of summer holiday has a main influence on the balance of attendance in the temperate climate. The fact that different tourist attractions offer different activities makes it necessary to differentiate between more types of tourist attractions (in the case of Baratay, Hardouin-Fugier [2004] zoos) in a specific country or destination. This differentiation also plays a role in attendance levels. Tourist attractions can be very different (Kušen 2010) and they have distinct character, cause and the circumstances of their creation (Swarbrooke 2002). They have distinct area, capacity and attractiveness (Vaníček 2012) and as a result also a distinct number of visits. Extraordinary events such as floods or disease also play an important role in the attendance levels.

High-quality statistics of the attendance have an application in the research, therefore in tourism exists the trend of decreasing average number of overnight stays (Franke 2012), shortening of journeys, and an increase in the importance of trips. The importance grows with the necessity of better knowledge about these shorter journeys without the use of accommodation. This obtained information also thanks to the attendance data throughout the visitor attractions.

These data are not compared only within a one-year period but mainly in trends. Namely, the important information about the position of any attraction on the market (and in the tourist-area life cycle) may be found based on trends (Davey 2007). Butler came with this concept (Lew et al. 2004) in 1980 and even though the reality is rather simplified by this approach and the model itself has a lot of problems (Palatková 2006), it is an appropriate model instrument for forecasting the future in any destination on any scale level.

Knowing the motivation and reasons behind visits of touristic attractions is crucial for the visitor management – therefore the visitor studies were founded (Mizicko, Bell 2001). For example, Ryan (2003) dealt with the typology of motivation. Motivation differs according to the type of attraction. Gelná and Fialová (2011) believe that experiences play bigger and more important role in leisure time. First visitor motivation studies were focused on museums. This approach could be also applied to zoos (Mizicko, Bell 2001). These particular studies also dealt with the issues of annual passes. Mizicko, Bell (2001) emphasize that visitor studies are becoming more and more useful in decision-making processes.

Aside from the aforementioned way of data usage, financial sources represent another important factor (Davey 2007). It can have a considerable impact on economic support, which goes hand in hand with high-quality marketing, promotion and a big role of media (Fialová, Nekolný 2017). If the attendance figures are high, it is much easier to find financial support from important sponsors, visitors, and public resources. The compilation of rankings (e.g. Czech-Tourism) can be perceived as a media support or a marketing tool. High rankings can put the spotlight on these attractions and ensure their brand being acknowledged (Kašková, Chromý 2015; Matlovičová 2015). On the other hand, it can be viewed as a natural process – benchmarking – comparing to competition (Zelenka, Pásková 2012) or interorganizational analysis (Holešinská 2010). The output of the comparison depends on the chosen methodology and hence cannot be realistic.

The attendance of many tourist attractions (e.g. monuments, natural attractions) can be perceived in connection with education or gaining some knowledge: especially informal, but in the last years also directly formal through tours, information leaflets etc. The attendance levels cannot be interpreted as a number of people who received some education or knowledge, since one can visit the same attraction more times. Consequently, the question of a precise interpretation is very problematic and overvalued (Smith 2013).

Accurate and complete data are necessary but, unfortunately, very difficult to obtain. The basic problem that statisticians in tourism face is the lack of data of other than paid services (Vystoupil 2007; Kruczek 2014). Except for this limitation, there are,

furthermore, many methodological differences complicating any relevant data work. Some essential topics of methodological problems were defined thanks to the detailed and long-term study of research articles (e.g. Smith 2013), mainly annual reports and statistical reviews with methodological notes, and also through correspondence with the representatives of almost 40 zoos and the Hořovice Chateau (Nekolný 2016). A simple summary is stated below:

- Data per whole organisation/specific tourist attraction
- Data per whole attraction/specific tour routes, exhibitions
- Data per paid/all visitors/visits
- Data realistic per entries/throughout the coefficients
- Data per the different/the same time

These points are valid in general and they are very well applicable to the context of zoos. The topic of zoos from the view of tourism is not elaborated strongly enough in literature, as commented by Mason (2000) and Frost (2011). However, a very interesting article with methodological warnings was published by Davey (2007) in *International Zoo Yearbook*. This begins to emerge new term – zoo tourism (e.g. Mason 2000 in *Journal of Sustainable Tourism*). Hosey et al. (2013) say that zoos are full of animals as well as people. Poley (1993) highlighted the same, saying that there are more people than animals in zoos. Zoos belong to the most visited tourist attractions (e.g. Dobroruka 1989; Baratay, Hardoui-Fugier 2004; Fialová, Nekolný 2015). With the development of society, their function has changed, especially in the most popular ones. Originally, zoos were mostly places of entertainment (Carr, Cohen 2011). Turley (1999) talks about three basic roles of modern zoos. According to Poley (1993), Hediger talked about four aims of zoos. Very similar goals were mentioned by Carr, Cohen (2011), Rees (2011) and by Dobroruka (1989) in Czech literature. Therefore, the functions of zoos can be distinguished in these four points: entertainment, recreation, education, research and conservation of natural and cultural heritage.

If we talk about the topic of attendance, literature is mostly silent. This is a very problematic topic with differences in methodology. British zoo expert Anthony Sheridan (2016) is aware of this issue, too. In the zoo area there are many differences. The first constrain is connected to the fact that not every zoo belongs to paid attractions (e.g. wildlife parks [wild-parks] in Germany) and in those cases, the statistics are very often missing. Some zoos have detached expositions and, strictly speaking, these are separate tourist attractions. As the most troubling theme the measuring of visits through the coefficients instead of real entries can be identified.

Annual (or seasonal) passes (in German *Jahreskarten*, in Czech *permanentky*) are offered only by

some tourist and leisure attractions. The annual passes are very popular in areas which are worth visiting more times per year, typically in zoos (Vaníček 2012). Prototypical visitors of zoos as well as the most typical users of annual cards are families with children (Cain, Meritt 2007). Such visitors come mainly directly from the "zoo city" because the shorter proximity, the higher probability of more frequent visits. Annual passes can be very profitable for this kind of visitors. Nevertheless, the financial profit gained from holding an annual pass can vary significantly and the same applies for methodology. The main aim of this contribution, hence, aims to detect and identify the methodologically problematical procedures.

3. Methodology

The information and data come from an own long-term study of different attendance data sources, especially from hundreds of annual reports and statistical yearbooks. In some cases this information is used only as a source of numbers (e.g. attendance, attendance per annual passes, the number of annual passes) in selected years (e.g. AR Jihlava Zoo). In other reports, there are also very useful methodological explanatory notes or even longer texts with a more detailed evaluation, explanation and interpretation (e.g. AR Magdeburg Zoo). In some zoos, it was possible to compile long time series, which had been used in this contribution and parts of them are shown graphically (e.g. fig. 3 and 6). The profitability of annual passes can be calculated through the websites of tourist attractions. These data were used for critical comparative analysis of methodological approaches. The email correspondence with the representatives of nearly forty European zoos served as a very substantial source of information (Nekolný 2016). The emails were sent to 133 zoos in 17 countries, so the data and other information provided approximately one third of the accosted. The emphasis has been put on Czechia and German-speaking countries that reflect different approaches to the methodology in Europe. The amount and the details of information depend on the situation in the institutions (in smaller zoos there is often no detailed data basement, at least in the long-term view.). The communication has been under way in Czech, German and English since 2015. Addressed people work as directors, business managers and senior officers at departments of public contact, marketing and public relations, press officers or at the secretariat.

4. Significance of annual passes

The share of the annual pass entries in zoo attendance can reach several tens of percent a year (e.g. AR Cologne Zoo; AR Münster Zoo). Although the interest

in this type of tickets is growing, it is not a new trend. Notwithstanding, Mulhouse Zoo, France reported in 1974 that about 25% of all visits were accomplished via annual cards (Baratay and Hadouin-Fugier 2004), this number can't be generalized. The importance of annual passes in different regions, countries, and even for various tourist attractions and in different time periods differs depending on many factors. The number of inhabitants around an attraction (mostly in cities) and the city's connection with the transportation network play the main role. These factors are mainly geographical. Many zoos are visited by the same people multiple times a year, such as Zlín Zoo, which is located in the suburbs of Zlín (it is not a typical city zoo). In 2009, a survey was conducted in the zoo, finding that repeated visits within the same year were reported by 14% of respondents, even though their share of the attendance, naturally, had to be noticeably higher (multiplied per number of visits). The motivation hidden in repeated visits can be found in the zoo's attractive facilities. The annual cards are usually of less importance in smaller zoos and of larger importance in bigger ones. Another important factor is the size of the city, where the zoo is situated. Furthermore, according to Floriánová (2017) from Děčín Zoo, the wide range of annual passes prevents conflict situations at ticket offices.

Moreover, the role of annual cards most likely depends on the political, historical and economic situation. Identifying the share and the importance of these long-term passes is dependent on the use of the proper methodology. Since there is no unified methodology for arriving at results, this fact becomes the fundamental problem which hinders the comparability of published data. According to recent information (e.g. Goldner 2014), we can talk about a problem that has existed for many years and has been gradually becoming more significant, especially in the last few years. Therefore, this topic deserves a professional research.

5. The same coefficient in different situations

The most important zoos in German-speaking countries are associated in an organisation called Verband der Zoologischen Gärten (VdZ). This professional association implemented a specific methodology of including the annual passes through coefficients many decades ago. The aim of this approach was to achieve high level of comparability across these zoos (Dommes 2015; Kanton Basel-Stadt 2015). According to this VdZ-coefficient (VdZ-Schlüssel in German), the annual card for one person is counted automatically as 20 entries in the attendance number. The passes for up to four people (such as families and sponsors) are counted as 80 entries (e.g. Basel Zoo 2015a). In the last years the methodology was criticised due to

the overestimation of attendance (Goldner 2014). Although the average number of twenty entries per one person is shown to be usually too high, it is difficult to estimate the right number. The particular situation is influenced by many factors (see part 2 and 4) including the profitability of the pass – by what number of it is cheaper than by buying per partes/individual entries. This essential difference was acknowledged by VdZ (VdZ 2014). For basic orientation in different approaches/attitude of zoos see table 1.

For instance, the Apenheul Primate Park in the Netherlands offers a season pass, pays for itself by the second entry (Apenheul website 2016), whereas the zoo in Kraków, Poland, sells annual cards with a financial advantage for every twelfth visit (Kraków Zoo website 2016). For the majority of cases, an annual card makes sense after between the fourth and fifth, eventually sixth entry (for German-speaking countries offers this comparison Schüling, Altefrohne [2018], in Czechia e. g. Ostrava Zoo, Pilsen Zoo, Zlín Zoo). We have to also know that the particular type of cards can become favourable at different number of entries. For example, in Nordhorn Zoo (Germany), in case of an adult card it is worth buying by the fourth entry, even though for children it is by the fifth one and for families already at the third visit (Nordhorn Zoo website 2016). This topic of different favourability in selected European zoos is analysed in detail with

more examples in table 1. Also the offers vary – there are transferable annual tickets (e.g. Liberec Zoo – see in the table 1), but the majority of the cards are passes non-transferable from person to person (linked to a specific name, often with a photo of the holder). Annual cards with unlimited number of entries are typical in Germany. In contrast, limited passes are quite common in Czechia (e.g. Jihlava Zoo, for other examples see in the table 1).

On the basis of these data we can say the share of the annual passes in the annual attendance depends on the favourability/profitability, geographical location as well as on the calculation methodology. In case of zoos in central Europe with accurate inclusion of the visitors it is possible to talk about a share of up to 10% of the total number of visits. In Western Europe the numbers are higher. It is probably a result of historical, cultural and political development along with the settlement structure. However, it could be a very useful and interesting topic of future research. In many Czech zoos the share is even lower than the aforementioned 10% – e.g. only ten passes in Hodonín Zoo in 2016 (Uhrová 2017). But it seems to be an extreme case. More often we can find the portion of about four percent (e.g. Ústí nad Labem Zoo [Balejová 2016], Brno Zoo [Vavřínová 2016], Jihlava Zoo app. 3% [Mrázková 2016]). The institutions using the VdZ-coefficient have a higher share of annual card

Tab. 1 Comparison of profitability of annual cards for adults in selected European zoos, March 2017.

Zoo	Country	Currency	Price of day-ticket	Price of annual card	Price ratio	Economical from entry no.	Note
Basel Zoo	Switzerland	CHF	21	90	4.29	5	non-transferable
Zürich Zoo	Switzerland	CHF	26	130	5.00	6	non-transferable
Berlin Zoo	Germany	EUR	14.5	49	3.38	4	non-transferable
Cologne Zoo	Germany	EUR	19.5	85	4.36	5	non-transferable
Leipzig Zoo	Germany	EUR	17	76	4.47	5	non-transferable
Magdeburg Zoo	Germany	EUR	13	55	4.23	5	non-transferable
Hellabrunn Zoo, Munich	Germany	EUR	15	49	3.27	4	non-transferable
Dvůr Králové Zoo	Czechia	CZK	195	590	3.03	4	non-transferable
				1600	8.21	9	transferable, 10 entries
Liberec Zoo	Czechia	CZK	120	850	7.08	8	transferable, 15 entries
Ostrava Zoo	Czechia	CZK	110	550	5.00	6	non-transferable
Pilsen Zoo	Czechia	CZK	150	700	4.67	5	non-transferable
Prague Zoo	Czechia	CZK	200	700	3.50	4	non-transferable, 12 entries
				1350	6.75	7	non-transferable, "No limit" – unlimited
Zlín Zoo	Czechia	CZK	130	600	4.62	5	non-transferable, additional benefits
Copenhagen Zoo	Denmark	DKK	180	440	2.44	3	non-transferable, additional benefits
Kraków Zoo	Poland	PLN	18	200	11.11	12	–
Vienna Zoo	Austria	EUR	18.5	44	2.38	3	non-transferable

Source: Own processing based on the zoo websites.

Note: This table shows annual cards without discounts (for adults). Some zoos offer two types of annual passes (e. g. Prague Zoo, Dvůr Králové Zoo).

entries, in some cases even higher by an order. E.g. Halle Zoo (ca. 30%; Bernheim 2016), Hellabrunn Zoo in Munich (2014: 43%; AR 2014), Dresden Zoo (2014: 56%; Marx 2015; 2013: 65%; AR 2013) or Basel Zoo (2014: 71%; AR 2014). The last mentioned institution reported a decrease of this share after the change of methodology to "mere" but more realistic nearly 45%.

Likewise, some smaller German zoos which are not a member of the VdZ use the coefficient – e.g. Zittau Zoo (2014: 19%; Großer 2016). The zoos offering the family annual cards (automatic coefficient: $4 \times 20 = 80$ entries) tend to achieve the highest share (e.g. Basel Zoo). Therefore it is possible, due to family cards, to err towards an even higher overestimation than due to passes for one person because the whole four-part family does not have to be complete in all visits. Consequently, we wanted to find out the average number of entries made through annual cards in surveyed zoos. Here are the basic findings:

1) The average number of entries per one annual pass does not usually exceed the value ten. This number is often only slightly lower than this value (2014: e.g. Jihlava Zoo 9.46 entries; Brno Zoo for unlimited passes 9.01 or 2015: Ústí Zoo 9.26). However, these data cannot be generalized. In Marlow Bird Park in Germany the season ticket is favourable to buy for at least three visits. Therefore there are only 3.1 entries per annual card on average (2015; Gereit 2016).

2) Some zoos are unable to say how many entries were done through the annual cards. These are not only zoos using coefficients but also other institutions – e.g. zoos in Hluboká, Liberec, Olomouc, Ostrava (Czechia) or Delitzsch (Germany). Břečková (2016), the press officer in Olomouc Zoo, says that this information is not important for this zoo. A different approach can be seen in Ústí nad Labem Zoo, where they write down lines by hand for the accurate numbers (Balejová 2016). A very unique situation is to be found in Vyškov Zoo. The deputy director Nepeřená (2017) talks about the annual cards as something outside the statistics – people with these passes are not included in the number of visits. The zoo only has internal statistics about the number of sold passes. Therefore, it can be said that virtually every zoo uses a different approach to this topic and it is an important question in which cases we can find significant or insignificant differences.

6. Recent changes in methodology

In 2013, according to the recommendation brought by the criticism of coefficients used in German-speaking countries, some zoos have changed the coefficient from 20 to 10 entries, starting from 2014 (e.g. Heidelberg Zoo; Heck 2016). Although the attendance number in 2014 was lower than in 2013, the media talked about a record number of visits (Knopik 2015). But in 2014 the attendance was actually higher, only

the change of the methodology caused the smaller number. Similar situation happened in Münster Zoo (Germany) – its director said that he was pleased more with the number 618 thousand than with the 915 thousand (VdZ 2016) – it was caused throughout the methodology. In summer 2015 VdZ decided to retire the united VdZ-coefficient, which had been used for decades. Each zoo has to decide, how to approach this change (Dommes 2015). So now we can encounter more methodologies than before. However, each zoo has to take different factors into account. E.g. Neunkirchen Zoo did not use the coefficients and therefore there was not a need for change in methodology (Andres 2015). There is a very paradoxical situation in Austria since Salzburg Zoo and Innsbruck Alpenzoo publish two different attendance numbers. The first number can be found in Austrian tourist destination rankings (AustriaTourism 2015) and the second one – which uses the coefficients – in VdZ website and tables (VdZ 2016). Thus data are dependent on their source and one who is not familiar with the situation cannot grasp the reason of these dissimilar values.

Some zoos are turning to new ways of data acquisition – often via use of turnstiles. The turnstiles are connected with the methodology of "person-entries", which means each pass through the entrance turnstiles is counted as an entrance of one person. This principle is used in Prague Zoo or Artis Royal Zoo in Amsterdam (Macháčková 2015; Sloet 2016). These data are comparable with the majority of Czech zoos and relatively recently with the German zoos which gave up using the coefficients. And this marks a positive trend in comparability with other zoos and tourist attractions. In tourism, the knowledge of the development is the most important aspect and as a result of that we also need to know the attendance calculated via the methodology used long-term (albeit it could be inappropriate). Other way of solving this problem can be found in Basel Zoo where the number for 2015 (according to the new methodology) was compared to the attendance for 2005 which was recalculated using the annual cards average of the year 2015 (AR 2015).

The figures 1 and 2 show that the coefficient causes noticeable deviations from the reality in case of selected zoos. These are located in bigger cities or in areas with the higher population density. Such zoos usually have a high level of attendance and also a considerable number of people buying the annual passes. Therefore the number of visits grows faster in such cities and mainly in Germany, Austria and Switzerland this development was multiplied by methodology – throughout the overstated coefficients.

7. The annual passes and their trends

The increasing attendance in some zoos can be assigned to inaccurate and unrealistic

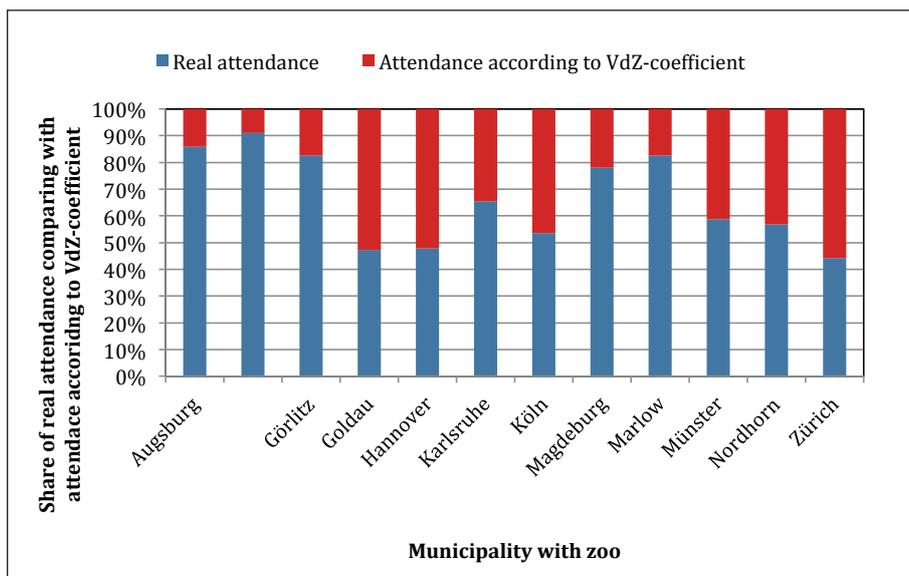


Fig. 1 Comparison of relative attendance according to different methodologies, selected member zoos of VdZ 2014. Source: Own processing based on VdZ 2016.

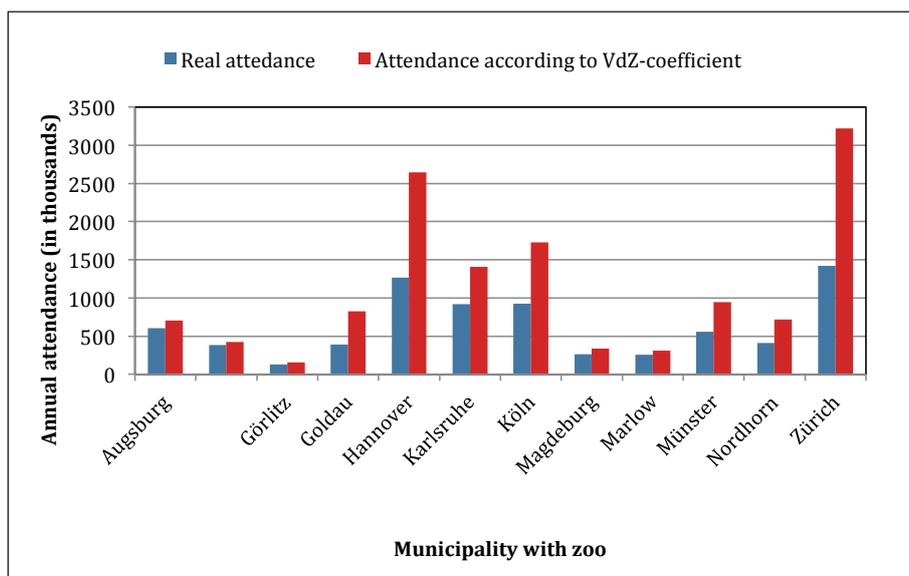


Fig. 2 Comparison of absolute attendance according to different methodologies, selected member zoos of VdZ 2014. Source: Own processing based on VdZ 2016.

methodological procedure. The interest of visitors in the annual passes is very different and it also depends on the selected region or country. In Czechia, the sales of this kind of tickets are lower compared to Germany and the Western Europe. Hence we suggest more detailed analysis aimed at finding the cause and the development of this phenomenon. In this article we can only mention a couple of important examples, especially from Switzerland. In the late '80s and '90s of 20th century some zoos saw a large increase in sales of annual cards but others did not (adhere to this trend). This was, for instance, the case of Hellabrunn Zoo in Munich (1987: 1492 pc, 1992: 1612 pc, 1997: 1521 pc).

This zoo of worldwide importance has experienced extreme surge of interest since 2009. From 2009 to 2014 the number of annual pass owners grew tenfold (from 4310 pc in 2009 to 44 697 pc in 2014; fig. 3). It is likely that the knowledge about this offer is increasing.

In other zoological gardens the increasing trend are not that noticeable, but in the majority of examples positive development can be seen (fig. 4). For example, the number of season passes sold increased 2.5 times in Zoo Magdeburg during the years 2009–2014.

Established system of coefficients has significant disadvantages also due to the reason that this system

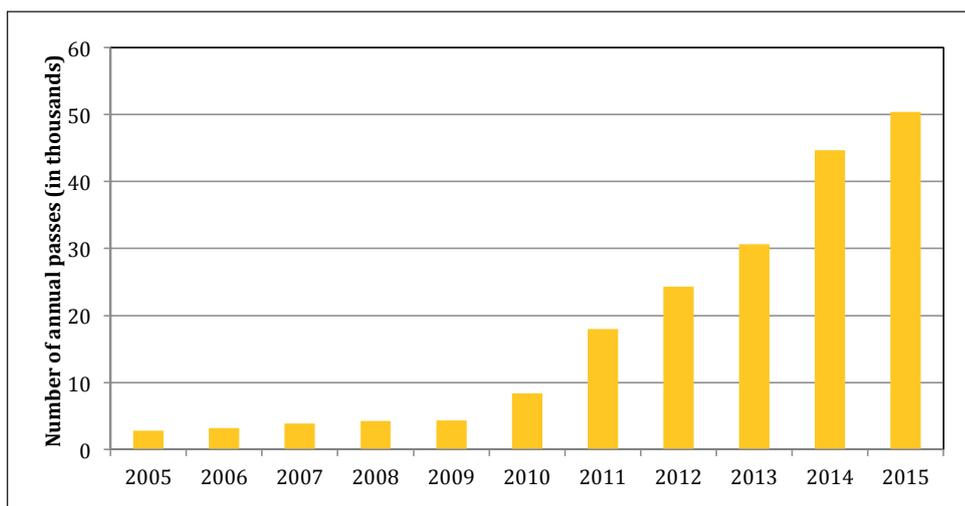


Fig. 3 The development of annual cards in Hellabrunn Zoo, Munich (D), 2005–2015.

Source: Own processing based on AR of Hellabrunn Zoo in 2005–2015.

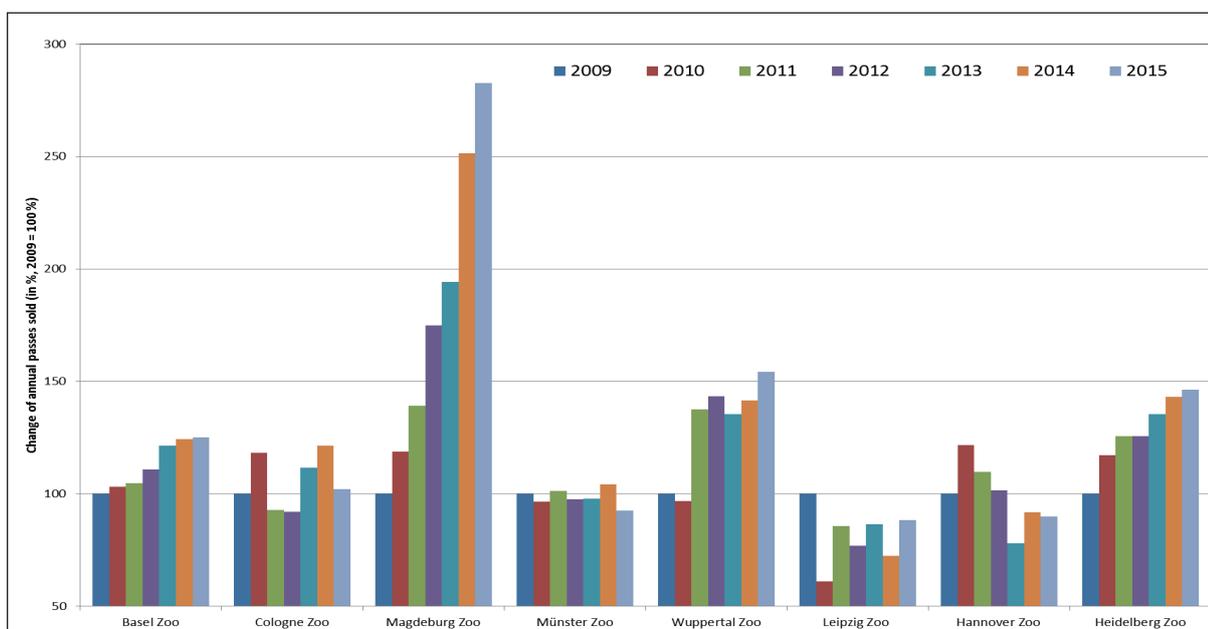


Fig. 4 The development of sales of annual cards in German and Swiss zoos with available data, 2009–2015.

Source: Own processing based on AR of zoos and email correspondence with representatives of zoos.

is not able to answer the basic questions about visitors. These questions represent the key for visitor management. Knitter (2016) from the zoological and botanical garden Wilhelma Stuttgart especially emphasizes these questions:

- How often the owners of the annual cards go to the zoo?
- How many children go to the zoo as a part of a family (per family tickets)?
- How many children under the age of six (entrance free) go to the zoo?
- How many visitors use the free tickets?
- How many students take part in the educational programs?

- How many visitors visit free special events?

So the coefficient calculation causes many difficulties, including the unawareness of the daily attendance. In this case daily data include visitors buying one day tickets – non-paying visitors are then calculated as 5% of the paying visitors. And the number of entries via annual cards is calculated only in the annual attendance.

The other methodical problem is differing lengths of validity. Most often it is one year (12 months) after the purchase of the pass (e.g. Münster Zoo). In Ostrava Zoo can be seen similar situation, but as Šoupalová (2016) emphasizes, the annual pass purchased before Christmas can be activated in June of the next year

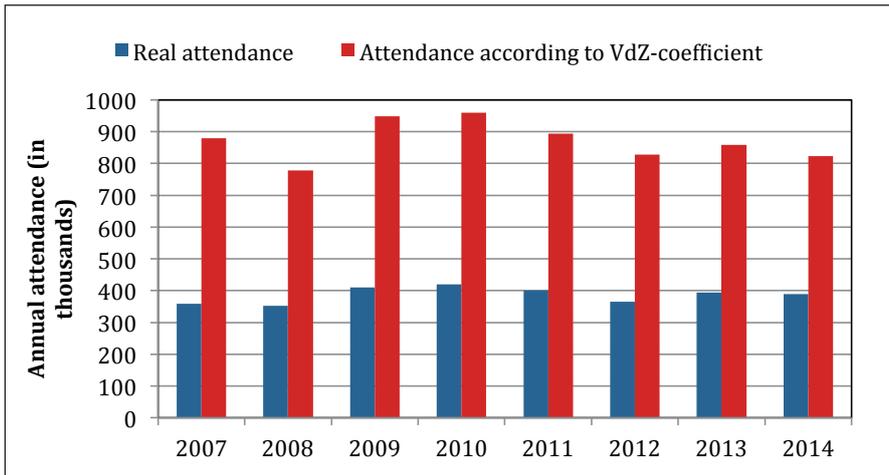


Fig. 5 Trend of attendance according to different methods, Goldau Zoo (CH), 2007–2014.

Source: Own processing based on Hürlimann (2010), AR of Goldau Zoo in 2009/10–2014/15.

Note: Methodological problem pertaining to Goldau Zoo: data from 1 April to 31 March of the next year – other zoos have data per calendar year.

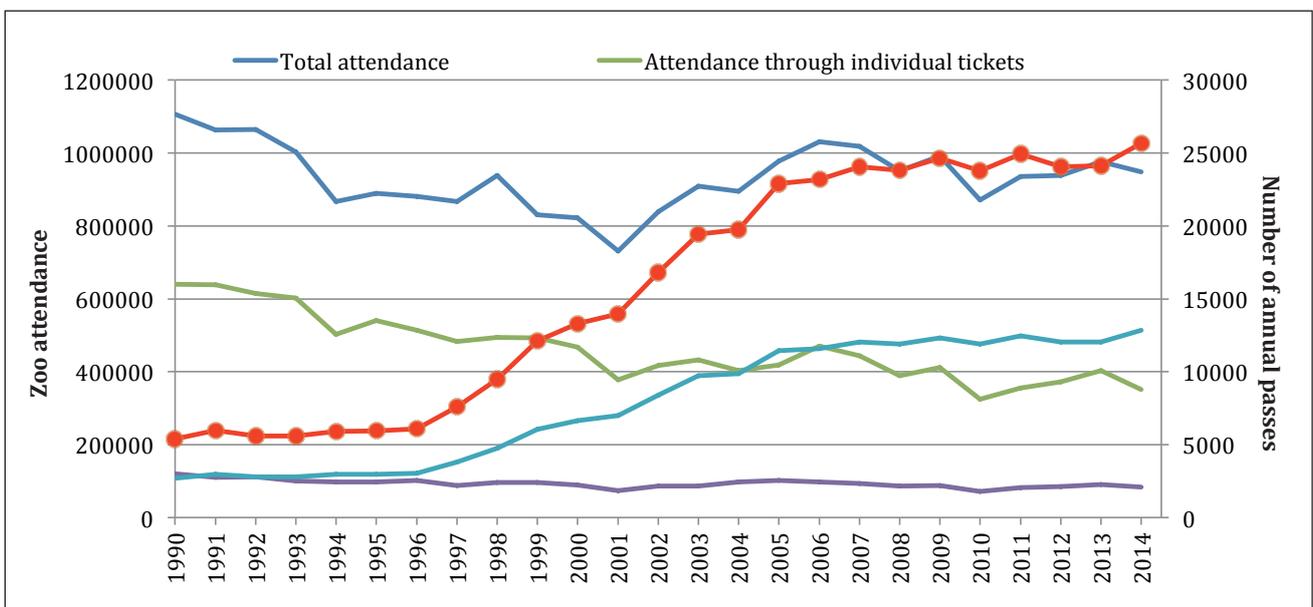


Fig. 6 Development of attendance by type of ticket, Münster Zoo (D), 1990–2014.

Source: Own processing based on data from Jahresstatistik Stadt Münster 2014.

Note: Decrease in 2001 below 800 thousand visits was caused by an outbreak of foot and mouth disease.

The zoo had to be closed for 20 days in spring

Methodological note: The number of visits with the annual passes is calculated for families as four people \times 20 = 80 entries. Thanks to this procedure we can compare all the types of annual passes (for families and individuals) among each other. Hence the number of sold annual tickets differs from the number in the fig. 6. Members of zoo society (Zoo-Verein) are also included in the annual passes chapter (Münster Zoo website 2016; AR 2000).

and it is the start of the 12 months period. If we calculate the annual cards via coefficients, a significant problem arises because both new and old ones (from the last year) are valid. In other cases the validity of the passes is constrained by calendar year or season (e.g. Apenheul Primate Park in the Netherlands, Pairi Daiza in Belgium). In Basel Zoo the long-term ticket is valid to 15 March of the next calendar year (Basel Zoo website).

The introduced problems are possible to demonstrate also in the case of famous Swiss zoos. At first,

zoo in Zürich established a new electronic system of evidence in 2013. The resulting number of visits in this year exceeded one million (precisely 1,079,919). However, using the previous method (via coefficients) yielded a number that was nearly twice the result of the usage of the electronic system – 2,003,043 entries (AR Zürich Zoo 2013; Goldner 2015). Nearly the same situation happened in Basel Zoo. The result of these radical changes has to be reflected in the interpretation of the results and comparison with other European zoos.

Goldau Zoo encountered similar problems and changes. This zoo exceeded the level of 300 thousand visits immediately after including children under six years of age in 1994 (Hürlimann 2010). The VdZ-coefficient was first used there in 2006 and after this change the published attendance surpassed the level of 800 thousands entries annually. Since financial year 2014/2015, when the former methodology was re-adopted the attendance decreased below 400 thousands entries. For the differences between the results of the methodology see fig. 5.

8. Coefficient – risk of influencing a trend

If we talk about the annual passes, we have to think about the trend of this segment as well as about the trends of the attendance of the other visitor groups in context of the total numbers of visits. The question is whether the used coefficient can affect the attendance trends? On the basis of the example of Münster Zoo (Germany) it is clear that it could be possible. Fig. 6 shows the total attendance fluctuated mostly around 900 thousand or one million entries during the 25 years 1990–2014. From the long term view the numbers are relatively stable. However, the term stability is not applicable to the cases of different visitor groups – there were plenty of changes. The number of visits made with traditional one-day tickets declined from 650 thousand to 350 thousand (Stadt Münster 2015). The sum of group tickets decreased as well, but not that dramatically. The most crucial change came in case of annual passes – their number and officially also the number of entries made with them increased during these 25 years fivefold (fig. 6). Similar development was found in other German or Swiss zoos (see previous chapters). And where is the problem hiding? In 2014 Münster Zoo changed the methodology. Using the former VdZ coefficient the attendance reached nearly 948 thousand entries, but the electronic calculation yielded only around 556 thousand of visits (VdZ 2016). Such big difference is important for the interpretation, just as in aforementioned Swiss zoos. Thus in Münster there really was a significant decrease of attendance – no stability to speak of. At the beginning of the 1990s the number of one-day tickets exceeded the number of 700 thousand entries which means approximately about 150 thousand more than was the total attendance in 2014. Therefore the analysis and evaluation of these data and the subsequent practical response should be one of the most important challenges for the destination management.

9. Conclusion

The goal of this paper is to highlight and evaluate the very current topic of methodological differences in the data collection of tourist attractions attendance. The work focuses especially on the subtopic of annual passes. This theme is exemplarily shown in detail on the example of zoos, where the sale of annual cards is a typical service. It is also a possibility how the interest in repeated visits as well as in the whole zoo can be increased and how the attendance can be enhanced. Nevertheless, this article proves on the example of the zoos in German-speaking countries that the rise of attendance does not only have to show the reality and the visitor financial profitability (in the situation of repeated visits). This positive development is in some zoos connected to the methodological “conception”. It could be true that both trends operate at the same time but it is not clear if both influences are convergent. The detailed example of the attendance development in Münster Zoo shows that use of the coefficients can modify the trend – whether it is growing or declining. Publisher data aren't comparable automatically, it is necessary to know their methodology and to assess if and how we can work with them. The possibilities of methodological purifying are sometimes limited but only with the emphasis on the data purity and reality relevant results can be reached. This methodological approach could also be used for other tourist destinations and cultural institutions, especially in the boundary areas with entry fees and people motivation for repeated visits. If the explorer does not know (at least) any part of the methodology or anything that demonstrates the knowledge of the context, he exposes himself to the risk of an inappropriate interpretation. Unfortunately, this situation is known from the media as well as from important statistical institutions and from time to time also directly from explorers.

The annual cards coefficients have been brought many years ago, in the time when there was lack of technical monitoring equipment, a specific comparability. However, these coefficients have ignored the geographical, time and other differences among destinations and attractions. This is exactly something that influences the attendance as well as the importance of the utilization of annual passes. Additionally, the coefficients are in most of the examples unsuitable – they usually overvalue the real situation. For these reasons the basic recommendation is always to collect data more accurately, to check the methodology, to use only the real(istic) data and not to use the coefficients if it is possible and not necessary.

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