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Zoo Tourism in the Visegrad Four Countries: Importance and Trends

Abstract

Attendance is one of the indicators of tourist attractions' success. Zoological gardens are among the most visited tourist attractions. However, there is practically no research on this topic, less so in post-socialist countries. Therefore, this article aims to identify, using the example of the Visegrad Four countries (Czechia, Hungary, Poland, and Slovakia), how zoo attendance generally develops and to discuss why it is so. For this purpose, a database of EAZA member zoos in these countries was created. Attendance data was obtained from multiple sources, e.g. from annual reports, the International Zoo Yearbook (IZY), and email communication. It was found that the total attendance has been on the rise since it plummeted at the beginning of the 1990s; Czech zoos went up first and now they are the absolute most visited, even per capita. The current attendance (2019) to Czech zoos has more than doubled compared to the mid-1960s; in Slovakia and Poland, it does not reach even 150%. There was an increase of almost 43 % from 2010 to 2019; the highest one was in Poland. The most visited zoo since 2015 has been the Wrocław Zoo (PL), where an iconic Afrykarium was opened.

Keywords: wildlife tourism, zoo, attendance, Visegrád Four, Central Europe

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1. Introduction

Current society's attention, mainly to the so-called free-time society, turns, besides (adrenalin) experience, ever more to nature to understand it but also to relax. That matches a kind of tourism that is, based on its focus and purpose of travel, designated as *wildlife tourism*. We can further distinguish *wildlife-watching tourism, hunting tourism, fishing tourism*, and *captive-wildlife tourism*, the main part of which is *zoo tourism* (Higginbottom, 2004).

Zoos are facilities where live animals are kept and put on display (Milstein, 2009; Habel & Mroczkowski, 2015). They should be seen as places for animals as well as for people – mainly visitors. People are the principal source of capital for zoos and their conservation activities (Gusset & Dick, 2011). At the same time, they are a place for educational activities. That is why these institutions aim to maximize their attractiveness (Hosey, et al., 2013). This way, zoos form a significant part of current tourism and free time (Turley, 1999) and are one of the most visited (paid) attractions (e.g. Dobroruka, 1989; Woods, 2002; Baratay & Hardouin-Fugier, 2004; Steinecke, 2009; Rees, 2011; Hosey et al., 2013). Gusset and Dick (2011) state that zoos and aquaria register globally over 700m visits a year.

Mason (2000) published an article in the early 2000s with an apt title *Zoo Tourism: The Need for More Research*. Several important publications appeared then that can be considered, (not only) from the tourism point of view, but crucial for zoo research even today (e.g., Shackley, 1996; Hancocks, 2001; Kisling, 2001; Mizicko & Bell, 2001; Higginbottom, 2004). One of the more recent publications is *Zoo Tourism* (Frost, 2011) where

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it is still mentioned that zoo research concerning visitors is relatively little developed and mainly focused on visitors' effect on animals (Leask, 2016).

Davey (2007) claims that average European zoo attendance from the 1960s to 1990's inclusive had fallen. This research is one of the rare pieces which describes the development of European zoos' popularity. However, it does not include the past 20 years and the interpretation is limited because the average attendance is influenced by the number of zoos included. With a growing number of zoos in Europe (and the number included in the IZY also increasing during its history) the average attendance could logically be decreasing, the total number distributed amongst a higher number of facilities.

Research on attendance lacks an international perspective (Davey, 2007). Research, moreover, usually focuses on the Western world but the development and situation in post-socialist areas are very seldom taken into account. Connell et al. (2015) see research on touristic attractions in general as similarly insufficient. Although the situation has improved over the past two decades, this statement is still true, more so in Central Europe – this article aims to make up for it at least a little. Zoo attendance development in Czechia, Slovakia, and Germany in the 1990s, that is, in a time of social and economic changes, is discussed in an article published only in Czech by Nekolný (2018).

This study aims to follow up on the above-mentioned text, elaborate on it and carry out a more detailed comparison of the importance and trends for the post-socialist countries of the so-called Visegrad Four Group. How has zoo attendance developed in these countries? What trend can be identified during the last decade (2010–2019)? In which country did the number of visits to zoos grow the most and how did the opening of the iconic Afrykarium building at the Wrocław Zoo affect this? And in which country does zoo tourism play the biggest role? The documentary evidence discussed provides important insights.

2. Literature

A tourist attraction is a reason for visitors to visit a tourist destination (Kušen, 2010). For any entity managing a tourist attraction, attendance is one of the essential measures of success/failure (Davey, 2007). Knowing about it is fundamental for the management as it reflects on which part of the tourism area life cycle (TALC; Butler, 1980) the attraction is. Zoos can positively influence a locality's economic development (Hosey et al., 2013). The concept of the term *attendance* itself is pivotal for working with data. According to Smith (2013), it is often inadequately interpreted, even in specialized literature (e. g. Rees, 2011), because what matters is not the *number of visitors* but the *number of visits*. Each visitor can visit one facility during an observed period (most often a yearly attendance is observed). Moreover, for zoos, unlike castles, this is very typical — most zoos, therefore, offer annual passes (Nekolný & Fialová, 2018a).

Attendance is affected by many factors on different levels: country, regional and local levels (Davey, 2007). Zoos reflect economic, political, and cultural changes (Frost, 2011), and so attendance reflects cultural predispositions, approaches to the keeping of animals by humans, or of the gross national income, that is, of a socio-economic situation. The size of the population (Davey, 2007) and its demographic characteristics play a role, too. Zoos' customer base is formed by families with children (Woods, 1998; Turley, 2001; Ryan & Saward, 2004; Frost, 2011; Therkelsen & Lottrup, 2015). Zoos are visited more by parents that used to go to zoos when they were little (Holzer et al., 1998). A population boom after WWII led in the 1950s to an attendance peak at the most developed zoos. Many people felt the urge to escape the city and relax in nature. Later, the birth rate declined, interests and possibilities changed, and the number of competing attractions increased. More people also owned cars and, therefore, it was easier to travel beyond city limits. Environmental movements (realizing that resources are not endless — oil crisis) and animal rights movements criticizing zoos started to be active. For this reason, zoo attendance in the "Western world's" big cities started to decline in

the 1960s (Frost, 2011; Hosey et al., 2013; Meuser, 2019). In the case of the London Zoo, it declined from three million in 1950 to 1.3 million in 1990 (Baratay & Hardouin-Fugier, 2004).

The ability to stand out has a positive influence on attendance. This is connected to the composition of the animal collection (Mooney et al., 2020). Visitors prefer animals with characteristics that are considered interesting and attractive – easily visible, intelligent, able to hold things, rare (Whitworth, 2012), or colored (Rádlová et al., 2018). The most attractive group of animals, in general, is mammals (Moss & Esson, 2010; Carr, 2016), especially the so-called charismatic megafauna (Skibins et al., 2017; Rádlová et al., 2018). Besides elephants and big cats, they can be, for example, apes, rhinoceros, or giant pandas (Leader-Williams & Dublin, 2000). These flagship animals can bring in more capital from visitors, which is destined for nature conservation, and they can help, in this way, to fulfill one of the goals of modern zoos.

Climate is also important as it creates a basic structure of high seasons and off seasons (importance of geographical location). Year-on-year fluctuations (as well as day-on-day and month-on-month ones) are affected mainly by the weather (Aylen et al., 2014; Hewer & Gough, 2016; Opačić & Dolenc, 2016; Perkins, 2018). Also, special events, attractive baby animals, new species (the so-called animal star effect), and new exhibits can be of importance (Steinecke, 2009; Su & Lin, 2019). Some animal houses may even experience a more long-term change (Nekolný, 2018). The methodology of data collection and their interpretation is also important (Smith, 2013; Nekolný & Fialová, 2018a).

Some factors influence attendance primarily in a negative way on different levels – from a long-term perspective, they are poor accessibility, high admission fee, and lack of time (Nowacki, 2015); from a short-term perspective, they are, e.g., terrorist attacks (Richardson et al., 2005), devastating weather conditions (Zeng et al., 2005) or epidemics (Su & Lin, 2019; Schmude et al., 2021). In the Taipei Zoo, the outbreak of SARS led to a sudden drop in attendance (Su & Lin, 2019). Such cases are known above all in Asia, although some zoos also had to be closed temporarily in Europe because of animal diseases, mainly bird flu, and foot-and-mouth disease — e.g. Chester Zoo in 2001 (Aylen et al., 2014). Currently, 2020 and 2021 were impacted globally by the COVID-19 outbreak, which this article does not deal with in detail.

3. Data and methodology

3.1. Study area

This study focuses on zoological gardens in four Central-European countries with a similar history after WWII – Czechia, Hungary, Poland, and Slovakia – that form the so-called Visegrád Four (V4). These countries differ in their area as well as population size. Only Czechia and Hungary are comparable in these aspects. These countries also differ in their number of zoos (exhibit facilities with animals) and zoological gardens (of an outdoor kind, zoos with exotic species in the form of a park without specializing on a narrow group of animals; Nekolný & Fialová, 2018b). Comparing facilities joined in national associations can be problematic because it includes different types of zoos with different attendance rates. Therefore, the European Association of Zoos and Aquaria (EAZA) membership offers a more relevant way of comparison. Although EAZA includes zoological gardens as well as aquaria or other kinds of zoos, in the V4 countries only zoological gardens are members — therefore, results may be more meaningful. Only institutions that are EAZA members were analysed — 36 zoological gardens in total – 14 in Czechia, 8 in Hungary, 11 in Poland, and 3 in Slovakia.

3.2. Data sources and their limitations

To achieve the aim of this article (attendance development assessment), seven types of documents (secondary data) were included in the analysis, which was supplemented by data obtained from the survey among zoos (email communication). The major challenges in collecting data are associated with (I) the availability of necessary data, (II) the level of data accuracy, and (III) sufficient data comparability.

Regional zoo professional associations' yearbooks/annual reports (1) were a fundamental source of long-term information (Czechia and Slovakia – *The Union of Czech and Slovak zoological gardens UCSZOO /data 1997-2019/*; Poland – *Rada dyrektorów polskich ogrodów zoologicznych i akwariów RDPOZiA, resp. The Polish Zoological Gardens Directory of the Zoological Gardens /data 1969–1989, 1991–2019/)*. In the case of Hungary, the website of the local union Magyar Állatkertek Szövetsége MÁS /data 2008-2019/ was used as a source. Annual reports[1] of particular zoos (2) were used as another valuable source of attendance data. Nevertheless, not all zoos publish such yearly evaluations; moreover, the level of detail varies.

However, older data are pivotal to assessing development in connection to the period of the Iron Curtain and after that. The essential source of long-term (attendance) data on the most important world zoos has been, since the late 1950s, the *International Zoo Yearbook* (IZY), published by the Zoological Society of London (1960–2019), in the chapter Zoos and Aquariums of the World (3). This data set is the best on worldwide zoo attendance since the 2nd half of the 20th century (Davey, 2007). Since issue 40 with data from 2004, this chapter has been included in every edition reflecting on every year; before, it was usually included in every other edition, for which the data are not complete. It is the only long-term international source of data and, therefore, e.g. Davey (2007) used it for his research on attendance which inspired the present study. Similarly, data from this chapter of IZY was used by Brereton and Brereton (2020, 2021). Davey (2007) himself, however, points out several difficulties. Among other things, it matters what kind of information zoos provide. Not all data are up to date and in addition, the methodology used may differ, e.g., counting free admissions (Davey, 2007) or annual tickets (Nekolný & Fialová, 2018a). It is not possible to evaluate attendance development precisely based only on such data, for which other sources must be used too. IZY data, however, are pivotal mainly for the time before the use of regional yearbooks is available. Unfortunately, not all current EAZA members in V4 countries are included.

Furthermore, (anniversary) books on particular zoos' history (4) were used. However, they take on different forms, so sometimes, they are mainly picture books, and other times they are specialized texts complemented with graphics. It depends, of course, on how long the facility has existed, its size, and the number of materials available. This is why attendance is shown in different ways: tables or figures with hard data (Chybová, 1978; Stehlík, 2001; Šrank & Kmeť, 2005; Solski & Strehlow, 2015; Kořínek, 2016), or sentences/comments imbedded in longer narratives of the zoos' stories (Naiwirt, 1979; Vobruba, 2011; Vobruba, 2014; Vobruba, 2016; Vobruba & Vogeltanz, 2006).

The content of Zoos' websites (5) was checked to provide another source of attendance data or information about trends. Further, specialized internet zoo databases (6) as a valuable secondary source of information were used – Worldwide Zoo Database (WZD) (includes the whole world; the most details on Czechia, Slovakia, and Hungary), and Les Zoos dans le Monde (includes the whole world).

In Czechia, data on zoo attendance in particular zoos are available also from the Statistical Yearbook of Culture (7) for the years 1969 and 1971–1990. However, thanks to these yearbooks we know there is a problem because of including zoo events outside of the zoo area. Nowadays, we are not able to say, which events were inside, and which ones were outside the zoo. In some years we know the number of events outside the zoo, but not the number of their visitors. In most zoos, there were low (not significant) numbers of such outside zoo events, but e.g., for Ostrava Zoo, it was very typical for some years. E. g. in 1982, outside zoo events, represent ca. 5 % of all zoo's attendance but in the case of Ostrava Zoo, it was probably about 15 %. For some years these attendance data are the same as in zoo books, as in data sent by email or as in IZY, but for other ones, these data are different, mainly higher. Some zoo lists of their attendance refer to data with events (Olomouc, Ostrava), and the other ones without these events (Ústí).

[1] Annual reports of following zoos (in alphabetical order): Bojnice, Bratislava, Brno, Děčín, Dvůr Králové, Hluboká, Hodonín, Chomutov, Jihlava, Košice, Liberec, Olomouc, Ostrava, Plzeň, Praha, Ústí, Zlín.

In the second step, given institutions were asked to provide (unpublished) data by email communication. Whereas some zoos have "a table that they can provide", in other data on attendance is not recorded as it is very time consuming for the staff. This lowers the chances of a reply considerably. However, the extent of data zoos can provide varies too. Some facilities can provide data for their whole history, others for only the past few years (e.g. Chomutov, CZ, to 1990s opened without any evidence). In certain cases, information not only on final figures but also on methodology is available. In others, though, changes in methodology are known but cannot be retrieved. Another problem is that some zoos may not be willing to provide or publish, data. At the end of this research step, new data from 9 zoos were added.

Data on countries' and cities' sizes and populations were obtained from national statistical offices (Czech Statistical Office, 2020; Hungarian Central Statistical Office, 2020; Statistical Office of the Slovak Republic, 2020; Statistics Poland, 2020).

3.3. Database and analysis

Based on the data obtained, a database on the V4 zoological gardens[2] attendance was created in MS Excel (MS Office, version 2010). So far, no other similar research database on zoos has combined data from these sources in this way. As was mentioned above, for some years, more different data were found. In these cases, the data provided directly by zoos (by email, in their annual reports, or anniversary books) were included in the research. Furthermore, data accurate to units was preferred to data reported only to the nearest thousand. The analysis was performed for four time periods (a-d) and the most visited zoos were identified.

(a) Given the available data from all the EAZA zoos in the four countries, a direct comparison only for the period of 2008/2010 to 2019 was relevant. A complete attendance development to zoological gardens, that were members of EAZA at the beginning of 2020 (EAZA, 2020), was put together. Individual countries were compared. A change in attendance from 2010 to 2019 was calculated and zoos with a decline vs. zoos with an increase were identified. The proportion of attendance to the number of inhabitants of the city in which a zoo is located (for 2019) was also calculated. In two cases (Hluboká /CZ/ and Bojnice /SK/), zoological gardens are cadastral located in smaller towns neighbouring big cities (České Budějovice /CZ/ and Prievidza /SK/). In these cases, figures for both the town and the city were included in the number of inhabitants.

For the time before 2008, it was possible to obtain data for only some years. Data from only three countries could be used for direct comparison and a compilation of concrete data and graphic outputs: Czechia, Poland, and Slovakia. The data available from Hungary were insufficient.

(b) The intensity of development for the past 25 years (1995–2019) was analysed using an index basis to assess trends in individual years (N = 26; CZ – 13, PL – 10, SK – 3).

(c) For the evaluation period from the end of the Iron Curtain era (1989–2019), five-year data was available for twelve zoological gardens in Czechia, eight in Poland, and three in Slovakia (N = 23). Total attendance data in relative values and proportion to the number of the country's inhabitants in those years was calculated.

(d) The long-term view for the period of 1966 to 2019 was analysed, with the limitation of data that were not accessible for all years for the period before 1993. The relative values (1966 = 100 %) were calculated for all zoos with the available data and their existence during the whole period. These criteria, necessary for comparability, meant reducing the sample to 21 zoos (CZ – 11, PL – 8, SK – 2).

[2] Brno, Děčín, Dvůr Králové, Hluboká, Hodonín, Chomutov, Jihlava, Liberec, Olomouc, Ostrava, Plzeň, Praha, Ústí, Zlín, Budapest, Debrecen, Györ, Jaszbereny, Pécs, Sóstó, Szeged, Veszprem, Gdańsk, Chorzów, Kraków, Łódź, Opole, Płock, Poznań, Toruń, Warszawa, Wrocław, Zamość, Bojnice, Bratislava, Košice.

4. Zoos in the V4 countries

Only three zoological gardens were founded in these four countries as early as the 19th century. In all these post-socialist countries, the biggest boom in the founding of zoological gardens took place after WWII, especially in the 1950s together with the years immediately before and after this period. Similarly, East Germany (Central-European territory in the post-socialist area outside V4) is an example of the massive founding of zoos during the post-war socialist establishment. It is also worth mentioning that only one zoo located east of the former Iron Curtain, and established after the socialist block broke up, entered the EAZA – the bird park in Marlow (D).

Among the V4 countries, Czechia is the most densely populated (Table 1) and has one of the highest densities of zoos in the world. The first zoological garden was established in 1904 in Liberec (then mostly German speaking). We can talk about a real development only after WWII when most of today's zoological gardens in regional capitals were founded and opened. The number of zoos has risen in the past 30 years.

Table 1
V4 countries basic data, 31st December 2019

	Czechia	Hungary	Poland	Slovakia
Area (km2)	78,870	93,023	312,679	49,036
Population	10,693,939	9,769,526	38,382,576	5,457,873
Population density (pop./km2)	136	105	123	111
Capital city	Prague	Budapest	Warsaw	Bratislava
Population in capital city	1,324,277	1,750,216	1,790,658	437,725
Share of population in capital city (%)	12.4	17.9	4.7	8.0
Number of zoos in national associations	16	13	15	4
Number of EAZA member zoos	14	8	11	3
Ratio of EAZA zoos in national associations	87.5 %	61.5 %	73.3 %	75.0 %

Source: Own research based on national statistic offices.

Hungary, compared to Czechia, is slightly larger but currently has fewer inhabitants – it has the lowest population density among the V4 countries. The biggest city's population, concerning the total country's population, is the largest – almost a fifth of Hungary's population lives in Budapest. Another seven cities are home to more than a hundred thousand people. There are zoological gardens in all of them. For a long time, however, the only Hungarian zoological garden was the one in Budapest, established in 1866. The first zoological garden outside Budapest opened only in 1958. Since the beginning of the 1960s, there were five zoological gardens in Hungary, four of them newly established. Other zoos had opened until the end of the 1980s. After 2000, completely new types of zoos started to emerge (e.g., large aquaria with an attendance of hundreds of thousands).

Among the V4 countries, Poland is the largest and the most populated. Its population density is only slightly lower than in Czechia. The capital is Warsaw, the V4 city with the most inhabitants. It has a similar number of inhabitants to Budapest, but within a significantly more populated Poland, its share of the population is lower. Cities such as Kraków, Lodź, Wrocław, and Poznań have more than 500,000 inhabitants; there are zoological gardens in all of them. During WWII, the then-existing zoological gardens were heavily damaged, and they had to be gradually refurbished. Since the 1950s, most of the other zoological gardens started to be built. In the 1970s, smaller specialized zoos (aquaria, wild parks) were opened. New zoos of various types (zoological gardens, safari parks, wild parks) continued to be established after the social and political situation changed.

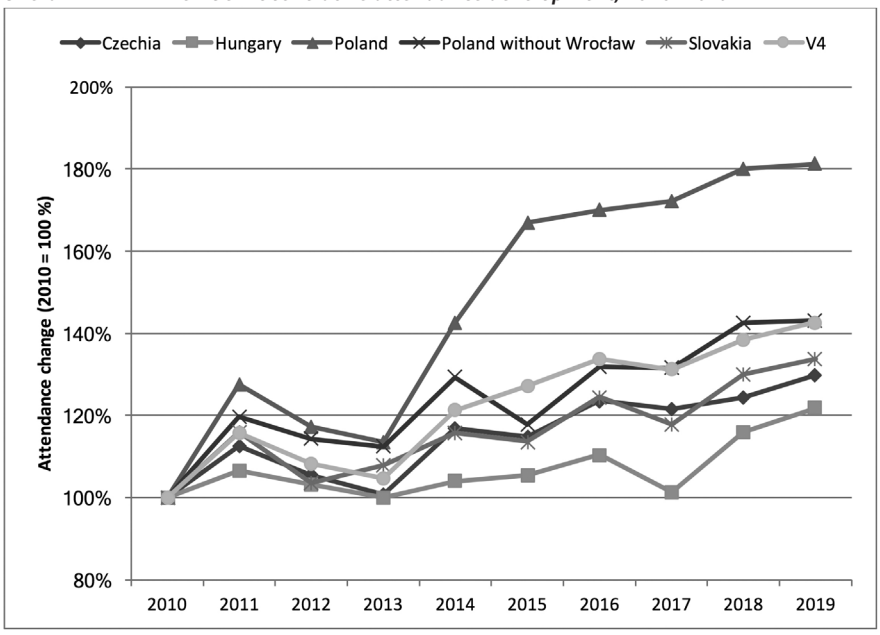
Slovakia is, in terms of size, population, and population of capital city, the smallest. Only four official zoological gardens also present the smallest numbers. The first zoological garden opened only in 1955. The second zoological garden – located in the capital of Bratislava – opened five years later. Two other zoos were established only in the 1980s, including the Košice Zoo, in the second largest city.

5. V4 countries zoo attendance compared

In the years 2008–2010, the data show stagnation or a decrease in the number of visits. From 2010 to 2019 the EAZA member zoos attendance in all the V4 countries went up. In total, the increase was from 10.7 million visits to almost 15.3 million visits, which is almost 43 % in only nine years. There was an increase in all four countries, although of different intensities (see Figure 1). The highest increase was in Poland (by 81 %) where, among other things, the sharpest growth is seen. Even if we put aside the Wrocław Zoo, where the iconic Afrykarium was opened in September 2014, Polish zoo tourism still saw the most growth – although not so much – by 43 %. Attendance increased the least in Hungary (by 22 %), moreover, mainly in the last two years. The highest overall numbers are recorded by Czech zoological gardens, in absolute numbers as well as per capita.

Attendance from 2010 to 2019 fell only in three out of 36 researched zoos. This was at one zoo each in Czechia, Poland, and Hungary. The biggest growth was in the Wrocław Zoo (4.57x), which is currently the most visited zoo. Czechia is the only researched country where the capital city zoo attendance is bigger than the city's population. In Czechia, moreover, 13 out of 14 EAZA zoos have a bigger attendance than the city's population; that is 93 %. In Hungary, it is 75 %, in Slovakia 67 %, and in Poland 55 %. In Poland, Wrocław is the only city that has over 200,000 inhabitants and a bigger attendance than the number of inhabitants living in the city (since 2014; in 2019 the Gdańsk Zoo reached at least a comparable attendance).

Figure 1
Overall V4 EAZA member zoos relative attendance development, 2010–2019

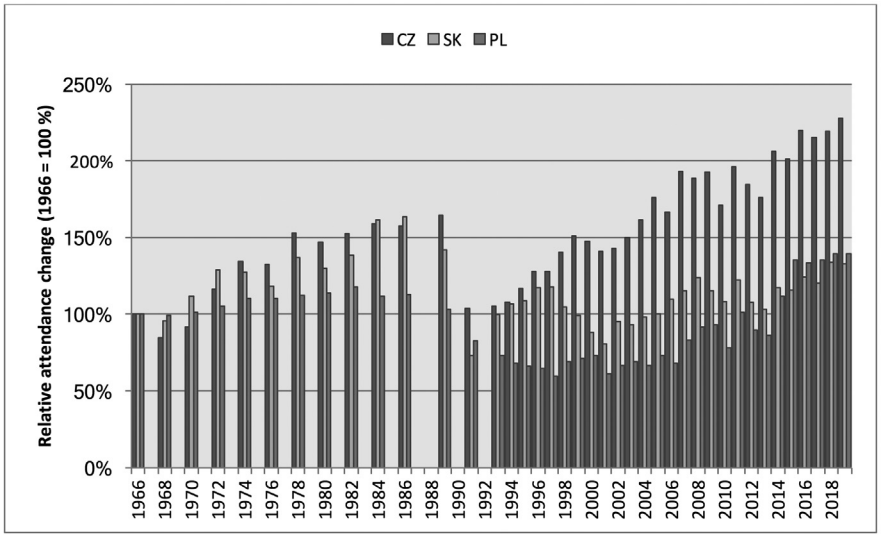


Note: N = 36 (CZ – 14, H – 8, PL – 11, SK – 3).
Source: Own research.

Long-term data from 1966–2019 (Figure 2) indicate some key trends: 1) attendance in Polish zoos increased only slightly in the period from 1966 to 1989 (rather stagnated), and decreased in the 1980s, while the attendance of Czech and Slovak zoos at the end of the period reached around 150% of 1966. The increase in attendance in Czech zoos was mainly in the 1970s; since the end of the 1970s, attendance has stagnated at high values. 2) attendance in traditional Czech zoos in the early 1990s was comparable to attendance in the mid-1960s. In Slovakia and Poland, they were only around 3/4 of this value. 3) The current number of visits to Czech zoos more than doubled compared to the situation in 1966 (and in the early 1990s); in Slovakia and Poland, it does not reach even 150% of the values in 1966. 4) Trends in Czechia and Slovakia are similar

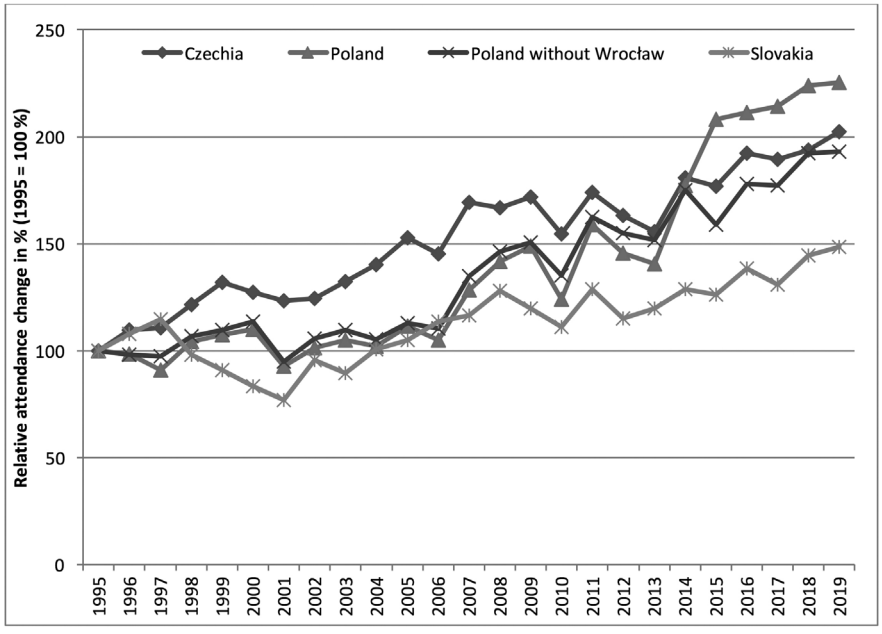
in terms of periods of decline and increase in attendance. After the year 2000, Poland is also closer in trend. Renewed growth was evident in 2011. In the past 25 years (since 1995), attendance rose first in Czechia. In Poland, it stagnated until 2006. The following growth was, however, more dynamic and with less fluctuation than in Czechia. In Slovakia, attendance started to rise at approximately the same time as in Poland, but its pace was slower and more like the development in Czechia, though with lower numbers (Figure 3).

Figure 2
Relative change in zoo attendance, Czechia, Poland, Slovakia, 1966–2019



Note: N = 21 (CZ – 11, PL – 8, SK – 2).
Source: Own research.

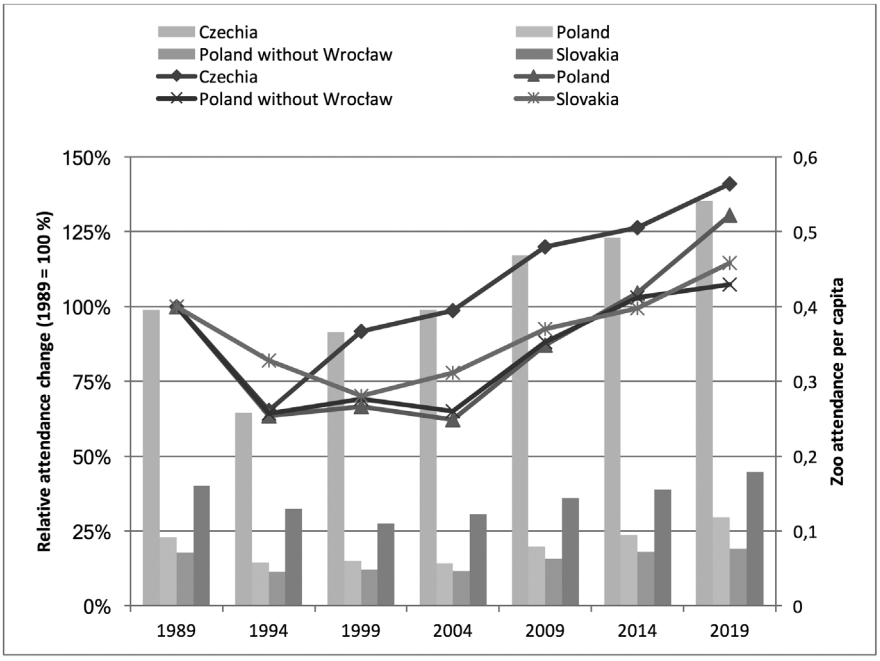
Figure 3
Relative change in zoo attendance, Czechia, Poland, Slovakia, 1995–2019



Note: N = 26 (CZ – 13, PL – 10, SK – 3).
Source: Own research.

The total Czech, Polish and Slovak zoo attendance in 2019 was higher than in 1989 (Figure 3). Attendance rose the most in Czechia, by 41 %. In Poland, it was by 31 % and in Slovakia by 15 % and mainly during the last decade after 2010. However, in Slovakia, this growth only occurs by including the Košice Zoo, which opened shortly before the start of the period. If we consider changes in the number of inhabitants in individual countries, we get slightly lower figures: Czechia 37 %, Poland 29 %, and Slovakia 11 %. Calculating attendance per capita, Czechia is by far a leader – in 2019 it reached the value of 0.54, while in Slovakia it was 0.18, and in Poland was only 0.12 (Figure 4). The title of the most visited zoo has slowly shifted from Budapest (H) to Prague (CZ; 2005–2014) and since 2015 to Wrocław (PL), where the iconic animal house, Afrykarium, was opened.

Figure 4
Relative change in zoo attendance and zoo attendance per capita, Czechia, Poland, Slovakia, 1989–2019



Note: N = 23 (CZ – 12, PL – 8, SK – 3).
Source: Own research.

6. Discussion

This paper focuses on zoo tourism in the context of attendance development and post-socialist Central Europe. Such a conception, in terms of content as well as geography, was until now nearly absent from the literature. The newly undertaken research proved that zoological gardens attendance in all four countries of the Visegrad Four countries dropped abruptly after 1989, starting to rise gradually again after that – the rejuvenation stage of TALC (Butler, 1980). Currently, zoos are among the most visited tourist attractions in some countries. Although since the 1990s, competition in the form of new leisure time facilities has been more vigorous (Swarbrooke, 2001), in Central Europe a tradition of amusement and thematic parks is nearly missing (partly only in Hungary). On the other hand, the tradition of zoological gardens after WWII is quite strong, although it differs from one country to another. Therefore, cultural predispositions (Frost, 2011) can play an important role in different attendance rates in some countries. Similarly, there is a higher intensity of zoo attendance in the states of former "East Germany" than in the states of "West Germany" (Steinecke, 2009). Davey (2007) also links attendance trends to income levels, and this research indicates e. g. the economic crisis from 2008 to 2010 had a negative effect. Therefore, the increase after 2010 could be more noticeable.

A generally rising attendance can be related to an intensive transformation of zoological gardens from cages into naturistic exhibits – e.g., earlier opponents also began to visit zoos (Hancocks, 2001). Rising interest and popularity make it possible for investments in development and further increase attractivity and competitiveness. Facilities that were no longer sustainable and on the verge of closing could become new tourist attractions thanks to investment. From 2010 to 2019 attendance rose the most in Poland. More than 20 years ago, Solski (in Kisling, 2001) stated that attendance in Polish zoos was low in comparison with other post-socialist countries and one of the reasons was a complete lack of visitor infrastructure. As in Western Europe, the significance of thematization and Disneyisation is rising – zoos often become attractive theme places. Visitor infrastructure has been significantly strengthened – restaurants, shops, playgrounds, petting zoos, and public events. Many development changes are, therefore, on the whole, visitor-oriented (Kůsová & Nekolný, 2018). Different beginnings of attendance growth depend on when transformation started to take place (TALC). At the same time, low attendance makes it possible for higher relative growth.

Attendance growth in all the countries especially after 2015 could be linked to the migration crisis and increase in national tourism. In 2018 and 2019 most zoos in the V4 countries beat attendance records. On the other hand, the highest ever values were also recorded, e.g., in the currently most visited zoos in Belgium, Denmark, France, or the UK (Nekolný, 2020). Also, the country's size can affect results, or rather a location by state borders, and therefore the importance for cross-border tourism. A great interest in Czech zoos in border regions of neighbouring countries is proof of this (Nekolný & Fialová, 2021). According to a 2009 research Slovaks made up a fifth of the Zlín Zoo's attendance; at holidays the share would rise to 30 % (Zoo Zlín Annual report, 2010). The share of visits from abroad is not low in Slovakia either, where zoos are also located close to state borders or in Bojnice, a spa town with a large share of foreign tourists (Kasagranda & Gurňák, 2017). Capital cities, such as Prague or Budapest, are important centres of international tourism, which can affect attendance at local zoos. The importance of foreign visitors can vary enormously in individual countries and in smaller countries with attractive zoos it can be naturally higher. Although Poland has the lowest attendance per capita, Poles make up an important group of visitors in Czech and German zoos; e.g. in the Ostrava Zoo, they represent up to 40 % of attendance (zoo's website, 2020). Attendance is rising in all the V4 countries but how do shares of visits from abroad develop? Unfortunately, there is no hard data.

The role of floods proved to be key since they ravaged facilities, but in the case of Prague (CZ) and Opole (PL), they subsequently allowed for a quick transformation into facilities more attractive for visitors. The decrease in attendance of particular zoos in 2019/2010 was very rare and often in connection with some specific situation. In the case of the Olomouc Zoo, the drop was only by 6 %, moreover, it can relate to a windstorm that damaged the facility and for which the zoo had been closed for several days that year. The biggest fall – by 27 % – was in the case of the Lodź Zoo but this zoo was significantly limited in 2019 by the construction of a new high-volume exhibit – the Orientarium – that is supposed to be as successful as the Afrykarium in Wrocław. Therefore, this zoo had not been in full operation as it was at the beginning of the observed period.

This research indicates that the opening of iconic animal houses is pivotal. Especially the opening of the Afrykarium (September 2014) in the Wrocław Zoo was key for this zoo and zoo tourism in the whole of Poland. Similarly, a big increase in attendance was identified after the Indonesian jungle house opened in Prague (CZ) in late November 2004, after which the highest December attendance in the history of Czech zoos was reached. In Hungary, the turning point was the opening of the Green Pyramid in the Sóstó Zoo (2010) – year-on-year attendance almost doubled. This is not specific to the V4 countries, though, being confirmed by the claim that "the majority of iconic buildings are amongst the most effective marketing tools" (Meuser, 2019, p. 111).

It can be expected that iconic buildings currently under construction will have an essential role in the future. The Orientarium in the Lodź Zoo (PL) or the Pannon Park in the Budapest Zoo (H) are supposed to offer tropical halls with exhibits of iconic elephants and tanks with sharks. Furthermore, Bojnice Zoo (SK) and Györ

Zoo (H) opened new elephant houses in 2021, while Zlín Zoo (CZ) plans on finishing a new elephant house, too. In 1965 the first elephant arrived at the Dvůr Králové Zoo and the facility recorded over 200,000 entrances for the first time (Matschei, 2019). The arrival of giraffes in, e.g., Jihlava (CZ), Gdańsk (PL), and Szeged (H) increased that year's attendance by 10%. This confirms, therefore, the significance of exhibiting new and attractive species — especially charismatic megafauna (Skibins et al., 2017). Innovations sustain, or rather increase, interest in any tourist attraction. However, the question is whether giant constructions are the ideal way forwards conceptually and for energy sustainable development of zoological gardens, that is, of outdoor nature parks.

7. Conclusion

The number of visits to zoological gardens in all four countries of the Visegrad Four countries dropped abruptly at the beginning of the 1990s as a part of changes after the end of the Iron Curtain period. Czechia was the first to record important growth and to exceed the overall 1980's figures (Figures 2 and 4). During past years, many zoos recorded the highest attendance in their histories. From 2010 to 2019 the EAZA member zoos attendance in all the V4 countries went up by almost 43 % in only nine years, with the highest increase in Poland. However, Czech zoos are the leading ones. The current number of visits to Czech zoos more than doubled compared to the situation in the middle of the 1960s; meanwhile, in Slovakia and Poland, it does not reach even 150% of the values in 1966. Moreover, the ratio of zoo attendance to city population shows the extraordinary position of zoo tourism in Czechia. On the other hand, we need to know more about visitors, e.g., research focused on the importance of foreign visitors which represents the potential for future studies. The most visited zoo since 2015 has been the Wrocław Zoo (PL), where an iconic Afrykarium was opened. Opening of key exhibits and the arrival of attractive animal species coincide with years of the highest year-on-year increase in attendance and could, therefore, be pivotal and should be a part of new research.

As previously stressed, the critical compilation of data made it possible to create a robust database of zoo attendance. The problem is that information about the whole history of a zoo cannot always be obtained and possible changes in methodology, which affect resulting values, cannot always be retrieved. A certain limitation of the current research is that it includes only zoological gardens that are EAZA members, which is only a part (though fundamental) of the total zoo tourism offer. For this reason, zoos established in the past 30 years are excluded, although they can be in the development stage of TALC. In Hungary, there are currently particular zoos, such as Medveotthon (Bear Home) or Tisza-tavi Ökocentrum, that are more visited than some zoological gardens. They promote competition and can be one of the reasons why attendance at EAZA zoos in this country did not increase that much. Therefore, it is desirable to focus on them in the future as well to understand current zoo tourism in even more depth. The influence of COVID-19 on attendance including seasonality should also be discussed.

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