

Urban Accessibility in World Heritage Cities. Accessibility Considerations in Pedestrian Routes in Historic City Centres

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Abstract. In Spain, fifteen cities have been declared World Heritage Cities by UNESCO. This implies a responsibility to conserve all the heritage wealth of these places. However, what is the point of heritage if it cannot be known and visited? In order to be able to do this for all people, in equal and inclusive conditions, it is essential to consider Accessibility and Universal Design principles. This is a challenge that requires a personalised study in places that were precisely built with the idea of being inaccessible. In particular, the study of the urban fabric and pedestrian itineraries are the determining spaces that this article develops.

The aim of this study is to determine the keys and possible guidelines for the definition of urban accessibility indicators in the routes of historic city centres. For this purpose, significant routes have been sought in historic centres from the accessibility point of view: areas of high pedestrian traffic (in many cases for tourist reasons). Thus, six of the fifteen historic quarters of the World Heritage Cities in Spain have been selected for the study, with examples of good accessibility practices and difficulties that can be identified in their itineraries. For this analysis, an initial study of the existing documentation on the subject (secondary information sources) is carried out, in addition to a direct analysis (primary information source) of the graphic documentation compiled in each of these places. Subsequently, a complementary analysis will be made of some examples of good practice in pedestrian routes in historic city centres in cities in other countries.

On the basis of this preliminary analysis, a comparison will be made to establish common points and singularities among the different case studies first, and then with other cities. This diagnosis provides results that are identified as "keys to consider in the intervention on pedestrian routes in historic centres". These keys not only address issues of mobility, but also location, orientation, understanding, etc., thus addressing a holistic consideration of accessibility as a fundamental principle for all people, and in particular for the elderly sector, which is one of the groups that is clearly growing and which, without necessarily having to have a severe or recognised disability, needs an accessible environment that is easy to use.

As a main conclusion, it can be said that the results of this study do not only have an internal application for these cities but can be perfectly extrapolated as a basis for the elaboration of specific indicators for any historic city centre in any city in the world, considering the necessary adaptation to the specific characteristics of each city.

Keywords. Urban Accessibility; Accessible Heritage.

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1. Heritage and Urban Accessibility; Introduction

Heritage is our legacy from the past, what we live with today, and what we pass on to future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration [1]. But in order to experience this heritage it is essential to be able to access, understand and enjoy it independently. And for this, Accessibility plays a decisive role.

Among the different heritage elements, Historic City Centres (HCC) are a specific typology to be considered. In addition to the difficulty of coexisting with this historical legacy, "among the complex problems of the roads in historic centres, we can highlight the difficulty of coexistence between vehicles and pedestrians" [2]. And another relevant factor is the tourist character associated with the condition of Heritage, which entails the visit of this space by a large number of people, who are also unfamiliar with it: how it is understood, how it is used. So, HCC have specific accessibility characteristics that differentiate them from other urban spaces. The historical heritage with which they coexist, as well as tourist activity, plus the urban activity itself (cars, commercial areas, administrative facilities...) are determining elements in their study.

In Spain there are 15 cities declared World Heritage Cities[3], and in all of them these characteristics are evident. An in-depth study of the accessibility of these spaces must therefore take these singularities into account. The definition of these singularities is the objective of this study.

2. Singularities in historic city centres; Goals and Methodology

For the analysis, the tourist has been considered as a study user, as this is a real scenario for all HCCs and, unlike residents, tourists do not know the place and are more sensitive and vulnerable to accessibility conditions (a resident already knows the existing difficulties and can avoid complicated situations and anticipate alternatives).

Among the existing Heritage Cities in Spain, the following have been selected for this study as being the most significant in terms of the results: Avila, Cáceres, Córdoba, Salamanca, Santiago de Compostela and Toledo. Subsequently, a non-exhaustive, complementary comparison is made in order to highlight the relationship of similarity or differentiation with other cases (national or from other countries).

In the study of the accessibility of the urbanised public space, a multitude of elements are analysed [4][5], which are translated into a large number of indicators, corresponding to pedestrian routes (for walking, crossing, or staying) and urban elements (pavements, urban furniture, urban pedestrian signage...). From among all these urban accessibility indicators [6], we select in this article those in which historic centres coincide, and which in turn differentiate them from other urban spaces.

These urban accessibility indicators which characterise HCCs can be structured according to their scale of consideration. This classification highlights the need to consider urban accessibility from different perspectives:

1. *Approaching*: The first objective is the possibility of accessing to HCCs. To know its characteristics, including its location in relation to the rest of the city and the possibilities of choice if users have any specific difficulty.
2. *Touring*: Once inside, the next basic action is to walk through the HCC. The analysis of the different interior routes.

3. *Arriving*: The third basic action to be considered is the relationship with the short-distance environment and with the arrival at the destination.

2.1. *Approaching*

- **Possibilities of Access:** This first indicator assesses the possibility of access to the HCC. Whether it can be reached from a single location or from several options, and whether their characteristics allow it to be considered as accessible pedestrian routes within the urban fabric.
- **Connections:** This indicator refers to the difficulty or ease of connection (distance, location...) with relevant elements in the city for visitors: transport infrastructures (stations...) [7] hotel areas,...
- **Existence of alternatives:** This indicator considers whether there are alternatives for people with some difficulty to the main accesses considered, both in terms of public transport (bus, taxi) and alternative accessible routes (e.g., taking a detour, using an urban lift...).

2.2. *Touring*

- **Orientation:** Existence of landmarks in complex urban patterns (sometimes mazes) as well as directional signage designed for pedestrians (or wayfinding).
- **Distances and slopes:** These are the two most decisive characteristics of accessible pedestrian routes at an intermediate scale, and which can determine the choice of one route or another. [8]
- **Coexistence with vehicles:** [9] Some conflicts can be found in both crossing points, as particularly sensitive places (perpendicular traffic), and shared streets (parallel or interlaced traffic). Bicycles and personal mobility devices should also be considered here.

2.3. *Arriving*

- **Pavements:** Although they are generally very relevant in any urban space, the heritage character of HCCs often translates into historic or representative uneven pavements or excessive separation between pieces (e.g., cobblestones), along with difficulties of intervention (e.g. TWSI layout).
- **Resting points:** In areas of tourist interest where long distances are covered and where not everyone has the same stamina or capacity for effort, the existence of resting points is necessary, which must be different from restaurants terraces (private areas where it is necessary to consume in order to be able to rest). Their provision and characteristics need to be considered (bench height, backrest, armrests...).
- **Identification of resources:** Once we have arrived, we must be aware of our arrival and understand exactly where we are. Signposting together with clear and easily understandable information about the place are also determining factors in this study.

3. Urban Accessibility at different scales; results

At this point, the results lead us to identify these different basic actions of the indicators (Approaching, Touring and Arriving) with a triple analysis of the accessibility of HCCs from three different scales of study[10].

1. *Global scale*: where accessibility is considered at a city level. Relating to the Approaching indicators: Access possibilities, Connections and Existence of alternatives.
2. *Intermediate scale*: where the element of analysis is the street or square and its relationship with the rest of the urban whole. Corresponding to the Touring indicators: orientation, Distances and slopes and Coexistence with vehicles.
3. *Detail scale*: where the specific characteristics of the different urban elements are considered: pavements, street furniture, signposting, etc. As a result of the Arriving indicators: Pavements, Resting points and Identification of resources

3.1. Global scale

From the analysis of accessibility on a global scale, it is worth highlighting the great similarity of the situations in terms of the existence of structural problems, which cannot be solved, but where the solutions are aimed at reducing their incidence or improving the situation for better coexistence. Among the problems detected, the following stand out:

Regarding the possibilities of access, the case of Ávila is noteworthy, where the wall limits the points of entry to the HCC. It is important on an urban scale to locate these strategic access points. Generally speaking, in the six cases analysed, a river runs close to the HCC, creating a barrier with the new city where the points of passage are limited to bridges[11], and in many occasions making it necessary to make detours. The case of the river Guadalquivir as it passes through the city of Córdoba and the entrance via the Roman bridge (now only for pedestrians) is perhaps the most relevant case (Figure 1).



Figure 1: Access Barriers: the medieval wall of Ávila and the Guadalquivir River in Córdoba [source: GoogleMaps]

With regard to connections with significant elements of the city, it should be noted that in most cases transport infrastructures (e.g., train station) are far away. From the

analysed cases, the most disadvantageous situation would be Segovia, with the station six kilometres from the HCC, and the most favourable in the case of Cordoba, with the station 1.5 km from the HCC. The hotel and commercial areas, however, tend to be close to or even overlap with the HCCs themselves.

Regarding the existence of access alternatives, it should be pointed out that in all cases there is the possibility of entering the HCC with an accessible taxi and in almost all cases there is a city bus service (with accessible buses) with stops inside the HCC. Topography is a handicap in several of the cases, which is especially relevant in the case of Toledo where the installation of escalators, although they are not elements that solve accessibility barriers, do represent an improvement for many tourists (e.g., elderly people who do not have to make a great effort to go up to the HCC) (Figure 2).

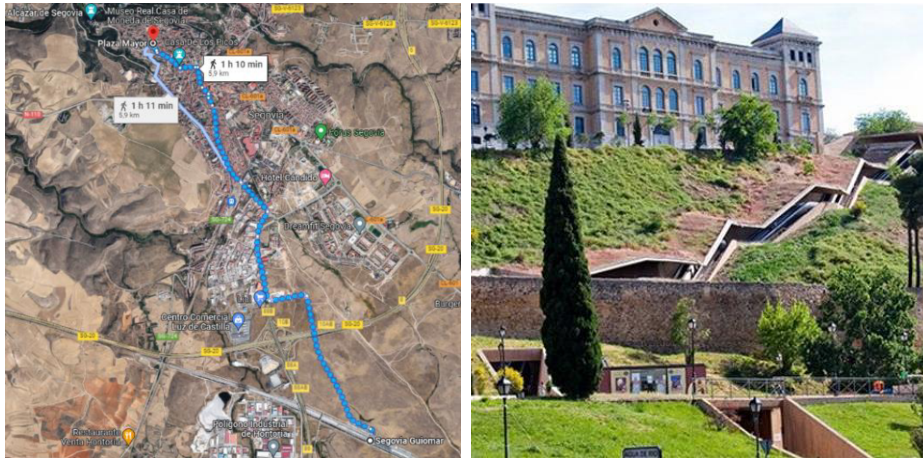


Figure 2: Barriers to connection: the problem of the distance to the train station in Segovia, and the help of escalators in the face of the topography of Toledo.

3.2. Intermediate scale

On an intermediate scale, the most determining factor in terms of accessibility is the possibility of being able to walk and find one's way around the streets of the HCC. In this case, the most significant findings have been:

The difficulties of orientation in these complex urban areas, especially those with an Arab layout (Cordoba and Toledo) where there are no clear urban references to facilitate orientation and there is a great dependence on signposting (in many cases insufficient or inadequate) or other aids (maps and orientation apps). Many tourists are forced to suffer situations of feeling lost in the middle of an urban maze.

With regard to the slopes of the streets and the detours to be made, the few difficulties in Salamanca (direct routes without steep slopes) should be highlighted, as opposed to the need to tackle steep slopes, negotiate steps or make long detours in the city of Toledo. The Cordoba initiative is very interesting, with the creation of an accessibility map of the HCC in Cordoba, with details of the slopes of the streets in order to be able to organise the interior routes according to the abilities of each person (Figure 3).

In terms of coexistence with vehicles, it is worth noting that in some cases the HCC is practically pedestrianised, as is the case in Santiago de Compostela, where vehicles remain on the perimeter and therefore do not generate major problems (Figure 4). In

contrast, the cases of Salamanca, Ávila and Toledo present difficulties in terms of coexistence with vehicles: narrow pavements, dangerous crossing points or poorly designed shared streets.



Figure 3: Labyrinthine crossroads in Cáceres. Steeply sloping street in Toledo.

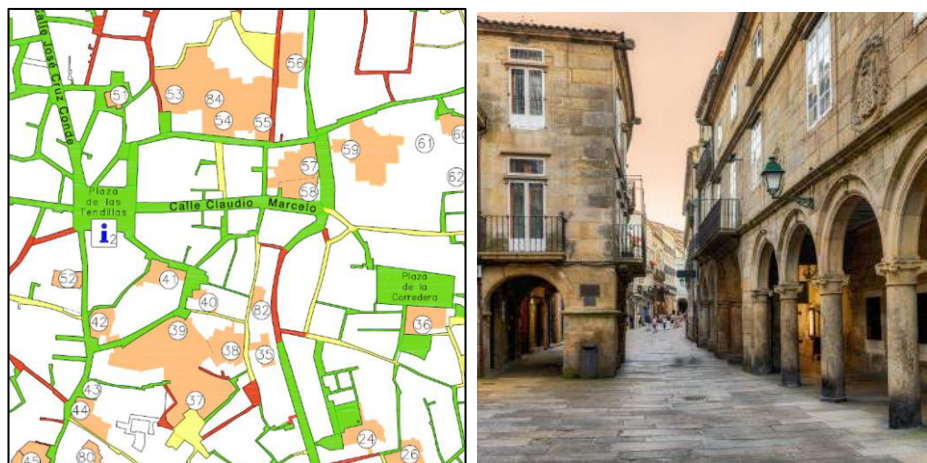


Figure 4: Slope plan at the HCC in Cordoba. Pedestrian street at HCC Santiago Compostela.

3.3. Detail scale

The close relationship with the elements and materials that make up the urban space is evident at close range. In the cases studied, the most relevant results in these indicators are:

On the pavements, the existence of cobblestones or stone slabs with large joints between pieces that generate discontinuities and balance difficulties is widespread. This is also a problem for wheelchairs and pushchairs [12]. In view of this situation, it is worth highlighting the provision of strips with suitable smooth paving in Cáceres or Santiago de Compostela (Figure 5). Regarding the installation of TWSI strips, there are significant difficulties with the issue of colour contrast, which sometimes conflicts with the heritage

character of the space (in Avila, the use of red on HCC pavements was prohibited) and the lack of continuity in the tactile routing strips (something common not only in HCCs).



Figure 5: Accessible paving strips in areas of historic paving in Santiago de Compostela and Cáceres.

Regarding the resting points, their major weaknesses lay in the lack of provision of benches (or inadequate ones without a backrest or armrest) or the inexistence of accessible public toilet cabins. This situation often forces some users with less resistance capacity to use the facilities of private businesses (bars, restaurants), forcing them to pay to be able to rest (sit down or go to the toilet).

Concerning the identification of places, although in general it does not seem to be a relevant difficulty, there are many users who need better signage or additional information (pictograms, QR information, etc.) to better understand what they have in front of them. Most of the analysed cases have pedestrian signage, but it is insufficient.

In both indicators (rest points and identification of locations), all analysed HCCs are deficient, which is significant compared to other urban spaces in the city where there are not so many pedestrians and where pedestrian signage is complemented by signage for drivers.

4. Conclusions

All the urban accessibility indicators considered characterise HCCs. However, while in some of them several cities have already promoted solutions, even if only partial, in other cases the evidence of the problem reflected by the indicator is widespread. Making a final comparison after the study with other external cases, it is worth highlighting some examples of good practices in relation to the analysis that has been carried out:

Globally, urban accessibility in historic areas is a need that has been worked on for many decades. A good example is the Santa Justa lift in Lisbon, created to connect two consolidated neighbourhoods, and which has now become one of the city's tourist attractions. Another interesting example is the cable car in Dubrovnik (Croatia) to access the HCC.

On an intermediate scale, several cities have undertaken interesting initiatives on accessibility, as is the case of Venice (Italy) and accessibility through its bridges (with

their difficulties and facilities), or the urban support elements in Vitoria (Spain) that provided travelators and lifts to reduce the effort on certain HCC routes.

On a smaller scale, interesting intervention initiatives are the grouting of the access pavement in Versailles (France) or the accessible pavement strips in the streets of the HCC in Tallinn (Estonia).

This confirms the need for special consideration of HCCs in terms of accessibility, compared to urban accessibility in general in other places (e.g. new growth), and identifies some of the most relevant indicators to be considered in their study.

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