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Mexican World Heritage information on the web: Institutional presence and visibility

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Abstract

This study offers a global overview of the presence and visibility of web information on UNESCO World Heritage located in Mexico, via the analysis of official websites and Web 2.0 information. Cultural heritage is a determining factor in linking people to their history, and contributes to increasing cultural tourism and economic development. The study starts from the hypothesis that the design of these has an influence on the dissemination and popularity of the aforementioned heritage. The relationships between the administrative organization of the country and Internet protocols are compared. A webometric study of the official Mexican websites was carried out. An evaluation sheet was designed to allow the assessment of aspects relating to identification, presence, accessibility and content. The multilingual nature of this information and its presence on social networks and Wikipedia was analysed. The analysis of URLs confirms that the domain .mx is used in 84% of cases. The results indicate a noticeable use of Web 2.0 dissemination of the heritage assets on YouTube (51%) and Facebook (40%), followed by 23% on Twitter. The Web Accessibility Initiative (WAI) guidelines are not yet frequently applied. Finally, the results obtained make it possible to identify variables that can contribute to improvements in the visibility and dissemination of official web information.

Keywords

UNESCO World Heritage, Web 2.0, web visibility, web accessibility, social networks, Wikipedia, Mexico

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Introduction

UNESCO created its list of World Heritage Sites in order to preserve them as a testimony to culture. They are recognised as having natural, cultural, archaeological, ethnographic or architectural value that is "universally exceptional" (UNESCO, 2016a) in nature. Each site is within the jurisdiction of a governmental organism or one that is private with public dissemination functions. These institutions are responsible for making those assets considered as World Heritage visible via websites with accessible content and information sources (Jolliffe et al., 2002).

Knowledge of heritage has undeniable effects on cultural tourism. It is an economic field on the rise, to which the dissemination of information on these assets via the World Wide Web is fundamental. However, information overload within the World Wide Web creates a problem in obtaining reliable and up-to-date information. Webpage evaluators have advised that web search engines should give more weight to those webpages considered to be official. But are the host institutions following any conventions or guidelines to ensure that they supply enough information via the World Wide Web and

establish communication with people interested in such information? The dissemination of knowledge on World Heritage assets via the Web has put an unprecedented amount and variety of information in the reach of everyone, although searches for information provide results that are unequal in their content. In parallel, the dependable and qualified information coming from official institutions is often hosted within designs that impede or slow down accessibility in technical, linguistic and visual terms. Attention should also be drawn to the development of social networks and other cooperative Web 2.0 services as dissemination channels.

Objectives of the study

The aim of this research project is to offer a general overview of the presence and visibility of web information on UNESCO World Heritage assets located in Mexico, via the analysis of official websites and Web 2.0 information.

This main objective is broken down into three specific aims:

1. We determine to what extent the URL structure provides information about the official homepage, and consequently, if this can affect the visibility and positioning of information on web search engines.
2. We characterize and evaluate the official Mexican websites to assess aspects relating to identification, presence, technical accessibility, multilingual availability and content on the Web.
3. We determine the degree to which these institutions use Web 2.0 for visibility and to disseminate their world heritage assets.

Literature review

Cultural tourism is a valuable factor in the national economy and local development of many countries. Therefore, inclusion on the World Heritage List (WHL) (UNESCO, 2016b) can be used as a marketing tool and so make these assets more attractive to tourists (Huang et al., 2012) and promote related activities on offer (Ministry of Education and Culture of Finland 2015). With this aim, web presence and information spread on the web become increasingly important (Jolliffe et al., 2002).

Web visibility (Russell, 2012) makes this dissemination easy and satisfies first users' information requests. Websites should include useful, segmented and accessible information (Devece et al., 2014). The online presence of World Heritage is not just about creating webpages (Pedersen, 2002) to spread information on the asset but also about making the webpage more attractive and accessible to tourists and other users. Webpage design should take into account any kind of new mobile device or application (Valčič and Domšič, 2012; Schieder et al., 2014). The web manager has to facilitate identification by a web search engine with a useful title and keywords in several languages (Ismail, Labropoulos, Mills and Morrison 2001). Economic, social and touristic reasons make it necessary to know the effectiveness and impact of the World Heritage web (Halpenny, et al., 2016). In Mexico there is a special interest about the country's heritage, including studies on the technical quality of websites according to established parameters (Almarza Franco and Pirela Morillo, 2012).

The evaluation of websites permits the characterisation and identification of good guidelines to follow in the domain of web accessibility and visibility. Over the last few years studies have been carried out on the quality of websites (Dragulanescu, 2002) in a wide variety of fields such as biomedicine (Bermúdez-Tamayo et al., 2006; Hidalgo et al., 2009), education (Olvera-Lobo and Aguilar-Soto, 2011; Olvera-Lobo, Aguilar-Soto and Ruiz-de-Osma, 2012) and tourism (Chung and Law, 2003; Law, Qi and Buhalis, 2010). Adapting to each type of user is crucial in the digital world and the ease of use of the website, its accessibility and functionalities are basic conditions for an improvement in marketing. In this sense, accessibility can be addressed from a generalist perspective (Harper and Chen, 2012) or focusing on specific needs, such as libraries (Providenti and Zai, 2007) or health centres (Pernett, Gutiérrez and Tamayo, 2009), amongst many other contexts.

According to the analysis put forward, the term 'web portal' here dominates an informative-documentary concept that consists of a group of hierarchically-linked pages, which constitute a differenced and independent unit, both depending on content – or documentary unit – and responsible organisation-institutional unit (Aguillo, 1998). The web portal has a homepage, which allows it to be navigated in a structured manner. The term website refers to the web server, the computer connected to the Internet with its own Internet protocol, or IP, and which provides the electronic information it has stored via the Hyper Text Transfer Protocol, or http.

Furthermore, each .html file shown on screen is referred to as a web page and, as an individual document, can be saved or printed out. In the first part of the study presented here, the type of analysis carried out makes it necessary to specify each one of these elements.

In short, good web visibility – and dissemination of content – involves a varied supply of services, adapted to the needs of each user. Consequently, this visibility translates into easy and friendly access, specific information oriented to interest sectors, multilingual access to content (Mele et al., 2015) and presence on Web 2.0 services (e.g. Wikipedia, YouTube and so on). Web 2.0 can be used as a communication mechanism (Facebook, Twitter, etc.), which can be included in the webpage by a link.

Methodology

Study sample

At the time this research was carried out in February 2016, the number of cultural and natural assets in Mexico granted World Heritage status by UNESCO stood at 33. Consequently, the natural World Heritage Site *Archipiélago de Revillagigedo*, inscribed on UNESCO´s list in July 2016, is not included in our sample. With the aim of analysing the official web information relating to these assets we proceeded to determine the URLs that would form part of the sample. In order to do this, queries were entered into the Google web search tool, including the denomination used by UNESCO for each heritage asset, and/or a variation on its name, where this was more recognisable. From the list of results we identified those that could be

considered as websites of the asset we wished to locate. Commercial web pages were excluded from the sample and we selected those originating from some type of preferably public, private or mixed entity that guaranteed its legitimacy.

Following the application of the aforementioned criteria, we obtained a list of 42 URLs for the 33 Mexican assets. The difference between the number of URLs and assets is due mainly to the division of the information corresponding to one asset into different URLs. This phenomenon occurs when the denomination of the World Heritage asset is composite, as is the case for the *Centro histórico de México y Xochimilco* (Historic Centre of Mexico City and Xochimilco). On other occasions, there was more than one official body, such as in the case of the National Commission of Natural Protected Areas (CONANP) and the National Institute of Anthropology and History (INAH), which provide information on the Ancient Mayan city and protected tropical forests of Calakmul, Campeche.

Tools and methods

Analysis of URLs

First, we studied the URLs of the web portals, sites and pages that provide official information via representative bodies. From this group of pages we identified the web domains they belong to. With these two analyses we obtained a structural and geographical identification of the sample URLs. It was thus possible to determine the level of official recognition in the use of domains, establish the structure of the URLs and the potential ease with

which they could be indexed by a web search engine, and even to know whether the URLs in question were susceptible to constituting a unit of analysis in bespoke web traffic and popularity services. We were also able to identify the presence or absence of the name of the organisation that manages the heritage asset in the URL.

Lexical analysis of URLs (Thelwall, 2006) divides them in segments. The canonical URL (Ware et al 2011) or domain name (Thelwall, 2014) refers to the entire expression that follows the abbreviation of the hypertext protocol and separation with the form *'http://'* or *'https:// '* and ends with the forward slash /, for example: *http://calakmul.conanp.gob.mx/*. From the last slash we go into the hierarchical organization of the server by means of the homepage with the default expression *'index.html'*. In this way, the webpages as a whole of an entity or institution are denominated by the web portal or institutional domain (Aguillo, 1998). It can be the canonical URL or it can start in a web server directory. . So, the complete structure of a URL could be: *'http://domain name/directory/directory/portal/index.html'*.

If we focus on domain names, we can differentiate between:

Top level domain or **TLD.** This is the part that appears after the last point of the domain name, and can correspond to the one allocated for identifying a country (e.g. *'.es'* or *'.mx'*).

Second level domain. This can present two possibilities depending on the case:

Website. This corresponds to the penultimate point of the domain name (ex. *'…amigosdesiankaan.org'*) or after the second Top-Level Domain explained below. The denomination is purchased by an entity and can integrate more than one web server, meaning more than one portal name. The limitations on the concession of the website name on top level domains that are geographical in nature, encourage the use of URLs with the *'.com'* top level domain (e.g. *'…moreliainvita.com/'*) instead. In this case, the information provided by the domain name could be reduced or spread amongst similar domain names.

Second/Top-Level Domain or STLD. This corresponds to the penultimate point of the domain name and offers additional information about the activity on the website within the top level domain. As in the case of top level domains, these are recognisable and identify sites of educational (*'.edu'*), governmental (*'.gob'*) or commercial (*'.com'*) bodies, amongst others. This phenomenon does not occur in all cases.

As has been indicated, these web portals can coincide with other domain names that normally begin with the web server prefix *'www'*, which has an IP address and a complete structure: '*http://www.site.topleveldomain'*. These have been denominated 'websites' in this study to differentiate them from the portals, which are either found in directories or as partitions within the same web server with the structure *'http://partition.server.site.topleveldomain'*.

In the study described here, the different URLs corresponding to web pages, portals and sites were compiled. The institutions that elect to disseminate web information were identified via their geographical domains,

which allowed for better and quicker identification of the origin of these resources. Those that use a Second Top Level Domain (STLD) were also identified, and the advantages and disadvantages of these and other domain name structures were considered.

Website checklist

The website checklist was designed around the following criteria: Identification, Presence and Authority, Audience, Navigation and Technical and Multilingual Accessibility. It was then applied to the evaluation of the websites included in the study sample. Our evaluation sheet was borne out of the need to give more prominence to such aspects as the use of web 2.0 tools, thus adapting and updating existing evaluation models (Ciolek, 1996; Gordon-Murnane, 1999; Bermúdez et al 2006; Jiménez Piano and Ortiz-Repiso, 2007; Macías-Chapula, et al 2007; Codina, 2008; Jiménez Pernett et al., 2009). The checklist particularly focuses on variables that strengthen visibility and multilingual dissemination and website accessibility, and the presence of this type of information on Wikipedia as an example of the Wiki community and the most common social networks.

In the process of the creation of the evaluation checklist, a group of experts comprised of content managers, web developers and art historians established comparative evaluations of the importance of each of these categories, which allowed the analysis of the relevance of each category on the evaluation sheet. The maximum possible rating for a website is 1000

points. The aspects that have been considered in each category are detailed below.

Identification

This category refers to the URL characteristics and the home page title.

Presence and authority

This focuses on the existence of information about the heritage asset on the web, on social networks and on mediums that allow user interaction, as well as the fact that the information provided is from a recognised authority. It starts from an official institution, generally governmental, which provides sufficient support to the webpage in order for the content to be trustworthy and representative of the heritage asset. The types of entities found in the sample and their involvement in the method of disseminating the World Heritage asset located in their jurisdiction and under their management were considered and analysis of their presence on social networks and other web 2.0 services was carried out, taking into account the permanent links to those profiles on the web pages that comprise the sample. Firstly, the presence on the most extensive general social networks such as Facebook and Twitter (Kaplan and Haenlein, 2010) was studied.

Equally, the evaluation considered the presence of information profiles on heritage assets on YouTube, given that since 2005 it has been the most popular service for publicly sharing videos (Cheng, Dale and Liu, 2008; Wattenhofer, Wattenhofer and Zhu, 2012). In addition, from the extraction and analysis of the information provided on the different websites in the

study, we have also identified, the existence of profiles for the dissemination of heritage on other social networks. This category also evaluates presence on Wikipedia, a collaborative project that has grown and become a source of encyclopaedic information (Hu et al., 2007).

Audience

The audience category takes into account the type of data offered according to different informative interests. In other words, the website of the cultural or natural World Heritage asset should provide, at least, interesting and complete historical-cultural or biological-natural information respectively, to attract the attention and interest of potential cultural tourists and amateurs... As well as rating this aspect, here we identify the presence of practical information to facilitate the location of and access to the asset on a possible visit, and the existence of more tourism-focused information identifying other places of interest and directories of services that provide accommodation options for national and foreign visitors in the locality.

Navigation and technical and multilingual accessibility

The navigation tools incorporated into the homepage are analysed, along with the design of the materials presented or the mechanisms offered to guarantee appropriate technical and linguistic accessibility. In other words, it analyses the facilities brought together to transmit the content via, for example, the existence of a navigation map or accessibility components that allow the access of information in audio or visual form, and which can also be certified with the WAI protocol logo. Furthermore, it considers the existence of

cartographic and/or audiovisual materials that help in the better understanding of textual information, and the possibility of accessing this in more than one language.

Analysis of the information on Wikipedia

With reference to presence on Wikipedia, and the analysis of the sample to date - February 2016 -, 38 entries were identified for the 33 cultural and natural World Heritage assets. The numerical difference is explained by the fact that, for some assets, each entry refers to one part in the denominations. Some significant examples are the Historic Centre of Mexico City and Xochimilco, Historic Centre of Oaxaca and Archaeological Site of Monte Albán, Pre-Hispanic City and National Park of Palenque, Prehistoric Caves of Yagul and Mitla in the Central Valley of Oaxaca. In addition, there is one case, the El Vizcaíno Whale Sanctuary, which shows two names for the same asset. The fact that Wikipedia is a resource created by volunteers throughout the world enriches the contents, but also generates doubts about the quality and rigour of its articles. One of the aspects analysed has focused on determining whether these entries are connected via their outlinks to the bodies responsible for these heritage assets. The evaluations carried out on these entries confirm the high degree of trustworthiness of the information provided (Hu et al., 2007).

Another aspect of undoubted interest and usefulness for strengthening the visibility and dissemination of the information on heritage refers to the possibility of accessing the information in different languages. In this way,

we have analysed the multilingual aspect of the information on these heritage assets included in Wikipedia.

Results

Analysis of URLs

The sample comprised of the 43 domain names that provide official information on the 33 Mexican assets catalogued by UNESCO as World Heritage was analysed to identify the Top Level Domains or TLD, the Second Top Level Domains or STLD, websites and portals.

The websites in the sample are, in 84% of cases, stored under the top level domain .mx (Table 1), corresponding to the geographical location of the server, that is, the country of Mexico.

[TABLE 1]

The .mx top level domain name, in turn, hosts different types of institutions. Graphic 1 shows the relationship between top level domains of the URLs analysed and the institutions that, according to those collected in the sample websites, manage the heritage assets whose homepages have been analysed. Thus, we identify institutions whose competencies are carried out at a national (governmental), state, municipal or federal district level (Figure 1). Notwithstanding, we checked how some pages of state governmental bodies are found on websites under the domain .travel (5%) and even .org or .com (in 7% and 5% of cases, respectively).Other institutions such as consortia and governmental associations that have some type of

representation from governmental bodies. In that case, they are generally hosted under .mx.

In addition, there is also the presence of non-governmental organisations (NGOs) under the denomination 'associations', which are recognised by public bodies (e.g. http://acueductotembleque.org.mx/ for the Tembleque Aqueduct Board).

[FIGURE 1]

Here, the name of the World Heritage Asset in the URL can be found as a second top level domain or website, with the form 'sitename.topleveldomain' (e.g. casaluisbarragan.org), or being dependent on a body that has a subdomain under the .mx top level domain (see Figure 2), in whose case presents the form 'sitename.secondtopleveldomain.topleveldomain' (e.g. acueductotembleque.org.mx). In both cases, the websites can be hosted on various servers, generating different portals in the form: 'server.sitename.secondtopleveldomain.topleveldomain' (e.g. http://chichenitza.inah.gob.mx).

It is increasingly common for top level domains (TLDs) to be subdivided into other second top level or sub domains. This is ratified in the sample analysis, where 69% of the URLs are identified as portals within sites for governmental bodies such as chichenitza.inah.gob.mx); whereas 22% are

directly websites under the .mx domain (e.g. www.patrimoniomundial.unam.mx).

[TABLE 2]

Furthermore, we have identified those cases that have their own website, compared with those in which their portal is within an institutional website. Fifty-eight percent of the pages analysed are inside official sites (Figure 2) whereas 42% (indicated as 'others') are sites in themselves or part of sites of other entities (e.g. UNAM). It should be remembered that 58% are sites that include more than one heritage asset, the most common at the national level being: the INAH, the National Institute of Anthropology and History, with 20.9%, and the CONANP or National Commission of Natural Protected Areas, with 12%, are the most important bodies in the dissemination of heritage in Mexico, and are both are governmental in nature. A third website, which also takes in 12% of the official URLs, represents the National Association of World Heritage Mexican Cities whose objectives revolve around three aspects: cultural dissemination, tourism promotion, and the management of resources for the improvement of infrastructure and equipment.

[FIGURE 2]

It is precisely on municipal web pages (Figure 3) where there is a greater diversity of subdomains within the top level .mx domain. Of the 66%

in this situation (Table 3), the aforementioned servers are under a governmental STLD subdomain (.gob) in 58% of cases. An example is the site of the National Council for Cultural and the Arts (CONACULTA), conaculta.gob.mx. Another is *México Desconocido* (Undiscovered Mexico), an editorial project for tourism promotion, with the form mexicodesconocido.com.mx, with 5% of the sites under the STLD .com.mx.

[TABLE 3]

Other heritage assets managed by municipal entities come under the DF or Federal District subdomain (5%) that itself appears under another subdomain, normally .gob. This is the case for Xochimilco, of the Authority for the Historic Centre of Mexico City (xochimilco.df.gob.mx), which identifies the geographical location with the top level domain, being a governmental body (.gob), and which has municipal coverage (.df).

On the other hand, 35% of the web portals do not have any subdomain or STLD, rather they are indicated directly by the website name. Furthermore, there is a small percentage of sites under .org subdomains (e.g. Acueductotembleque.org.mx), and around 4% under the commercial STLD.com (e.g. mexicodesconocido.com.mx). A possible justification for this phenomenon would be the contracting or externalisation of the responsibility for the dissemination or the promotion of the national heritage of the locality.

[FIGURE 3]

A significant detail to draw attention to is the fact that the portals found under the domain names - and, therefore, following the forward slash / - reach 63% (27 URLs). For example, http://www.conaculta.gob.mx/turismocultural/patrimonio_cultural/palenque/#ad-image-0 or www.turismochiapas.gob.mx/sectur/zonas-arqueolgicas-de-palenque-.This means it is much more difficult to make these homepages visible to web search engines and, thus, affects their indexing on the databases of these tools. In contrast, 37% of the cases are servers dedicated exclusively to hosting websites; as a result, their URLs are shorter and easy to identify by users and search engines.

In summary, we have identified the different levels in the domain structure of the sample websites with the aim of revealing the organisation of the main portals that provide information on cultural and natural World Heritage assets located in Mexico (Figure 4).

[FIGURE 4]

Evaluation of the heritage websites

To carry out the evaluation of the sample websites we applied our checklist. First, the indicators potentially present on each sample website (Figure 5) were identified. This analysis allowed us to determine which of these aspects were the most recurrent on Mexican web pages and which ones content designers and creators are paying the most attention to. The two most

prominent aspects were the existence of outlinks or external links and the prominence of Spanish as the main language of the webpage.

[FIGURE 5]

As indicated, the weightings of each category and their indicators were determined by a team of experts comprising two content managers, two web developers and two art historians. In a first step, these experts established the relative importance of each criterion with respect to the rest – identification, presence and authority, audience, navigation and technical and multilingual accessibility – and a percentage for each category was obtained. In the second step, the process was replicated to calculate the weight for each category of the criteria. Finally, we proceeded to the actual evaluation of the sample websites, assigning a rating for each indicator included in each of the categories analysed. The sum of all of the evaluations assigned to the different items gives the total rating obtained for each website. In the ratings as a whole, a binominal distribution can be observed (Figure 6) with an average of 572.56 points out of 1000.

The pages that obtain a better rating provide diverse information that responds to the needs of different types of users, enjoy institutional support, are visible on social networks and boast facilities that afford greater accessibility. The highest rating obtained was 765.05 points out of 1000 and, according to the evaluation checklist applied, corresponded to the Central Campus of the University City of the National Autonomous University of

Mexico http://www.patrimoniomundial.unam.mx. In contrast, the website with the lowest rating (247.5 points) was that corresponding to the Prehistoric Caves of Yagul and Mitla in the Central Valley of Oaxaca, administered by a private entity (http://www.mexicodesconocido.com.mx/las-cuevas-prehistoricas-de-yagul-y-mitla-oficial-patrimonio-de-la-humanidad.html).

[FIGURE 6]

The box plot at Figure 7 offers a general view of the symmetry of the data distribution. A non-symmetric distribution is observed, given that the central value of the median moves away from the centre of the rectangle. A high rating of the websites corresponding to heritage assets administered by governmental bodies is also revealed. The highest ratings in the web presence and reputation criteria reflect that the information disseminated by this type of institution is more trustworthy and rigorous. There is a majority representation of Mexican government pages of 88%. Of these, 50% of the sample shows ratings between approximately 500 and 700. It is in this band where greater variability of the data is observed. Nevertheless, the group obtains a central or median value of 645 points out of 1000, compared to the 402 points for non-governmental pages. The pages of non-government institutions include the lowest rating, but with a lower level of variability. In this case, the median or 50 percentile have a rating of at least 402, although they do not exceed 550.

[FIGURE 7]

Identification

Most of the URLs (79%) included the name of the heritage asset, whereas in the rest there is an indication of the server and a corresponding number of the internal page that identifies the web portal. As regards the title, 30% do not include a title label in which the name of the World Heritage asset is expressed. This aspect is entirely the responsibility of the webmaster or web design team, with these two points making identification on the part of web search engines difficult. In contrast, the remaining 70% include an expressive title and even keywords, as is the case for the Monarch butterfly in Mexico descriptor on the page http://mariposamonarca.semarnat.gob.mx/

Presence and authority

Web 2.0 presence

The identification and analysis of outlinks from the web page to the social network profile or channel of the most common Web 2.0 mediums generates a double possibility. On the one hand, the profile links to the heritage asset itself, rated with 1 point and, on the other, to the profile of the entity that manages the asset. The first group reflects, in a strict sense, the unequal presence on social networks of the heritage assets analysed, with 51% on YouTube, 40% on Facebook and 23% on Twitter (Figure 8).

[FIGURE 8]

The second group of links reflects a dissemination of contents focused on the institution, not specifically on the heritage asset. As a result, the indicator included in our evaluation model is rated with a value of 0.5 points. There are Mexican websites in the sample (26%) include a link to the profile on social networks solely for the institution responsible for the national heritage on Facebook and Twitter; or in 7% with a YouTube channel. Table 4 lists the websites and their domain name or the portal name of the World Heritage Asset homepage analysed. Finally, it is noteworthy that the absence of links on the web pages analysed, both of the entity and the heritage asset, is still high on these media: Twitter (51%),YouTube (42%) and Facebook (35%).

[TABLE 4]

The habitual use of YouTube particularly stands out, along with its linkage from heritage asset web pages (51%). The next most frequently-used resource in this ranking is Facebook (with 40%). This service is mainly employed for the dissemination of texts and related information, as well as new developments. The institutions that use these social media the most are national, state and municipal government – also denominated here as federal district – (Figure 9). It is worth mentioning too, despite the fact that the amount of other entities is lower, practically all of them disseminate the heritage asset with a specific Facebook account. Only national and state

government bodies and government associations have profiles which disseminate the entity itself and not the national heritage.

In contrast, a mere 23% of institutions – including here those federal district government entities – use Twitter as a tool for promoting the heritage asset. The institutions that are national in nature and government associations maintain a Twitter profile at a cross-institutional level and in the case of a low percentage, have opened a specific account for the World Heritage asset. At a state level, we find both possibilities, but in the majority the profile for the entity in general is on Twitter. An explanation for this could be that the institution wants to avoid a dispersion of Twitter profiles and lead the users from the asset to the organization, and as a consequence the entity could obtain more visibility. Another reasonable explanation is the necessity of including content curators to create and maintain new Facebook and Twitter profiles. Otherwise, we would face a complete lack of priority towards improving the visibility of the World Heritage Asset in an independent way on social networks.

[FIGURE 9]

Other widely used Web 2.0 services in 39% of Mexican institutions are Instagram (59%), Google+ (23%) and Pinterest (9%). Less used are Flickr and Tumblr (both 4.5%). Of this 39%, more than half (53%) are under government ownership (national 29%) state (24%), although, in the majority of cases, they involve general accounts for the institution as a whole.

[FIGURE 10]

Furthermore, 75% of the pages analysed are present on Wikipedia. They tend to be located in the 'External Links' section within the article corresponding to the World Heritage asset in question. Of this 75%, 68% are links to national (37%) or state (31%) owned websites, followed by 9% with federal district ownership and 6% with private entity ownership. It is noteworthy that 25% of websites not present on Wikipedia are, on the whole, websites of associations with government participation.

Some of the URLs can also be found in other Wikipedia articles. This happens when the entry is the name of the city (e.g. San Miguel de Allende), and also in articles in other languages. For example, www.moreliainvita.com is included in a Wikipedia entry entitled 'Morelia' in the Hungarian version. A lack of information about the World Heritage assets is also possible when there is more than one Wikipedia entry. For example, an entry for 'Historical Center of Juárez's Oaxaca' contains less information than another entry for 'Oaxaca' as a city, where a section on Heritage is included.

The website of the governmental association 'ciudadespatrimonio.mx' should be included as an External Link in the following Wikipedia entries: Morelia, Oaxaca, Zacatecas and Tlacotalpan. Likewise, the governmental national entity, INAH, should appear in the Wikipedia articles *Primeros monasterios del siglo XVI en las laderas del Popocatepetl* (1994) and *Villa Protectora de San Miguel el Grande y Santuario de Jesús Nazareno de*

Atotonilco (2008). In conclusion, on the one hand, the entity should monitor Wikipedia frequently and, on the other, Wikipedia article authors must be aware of official sites.

Authority of the website

Only 14% of the websites analysed were non-governmental in nature (Figure 11). The institutions not dependent on the public administration can be associations, universities or private entities of an official nature. In our research this phenomenon is limited to two cases, the websites www.mexicodesconocido.com.mx and www.moreliainvita.com. Governmental bodies are represented – sometimes as part of associations – in 70% of cases (national 37%, state 26%, city or federal district 7%). Cooperation between these bodies is possible in consortia or government associations if other entities are also attached. If we restrict this to public institutions alone, there is a prominence of government associations (16%), compared to consortia (3%), and federal district government entities (8%). As we have said before, these federal district government entities can also be integrated within the other two types.

[FIGURE 11]

Audience

There are various ways of stratifying the audience. In this study we determined if content relating to the specific asset was promoted explicitly and abundantly and if, furthermore, other types of information were provided

to strengthen tourism and sustainable development in the region. From this perspective, three types of content were identified: content specific to the asset in question, practical content, and information of a touristic interest.

Furthermore, we analysed whether the information was historical and/or artistic, whether the asset was cultural, or related to biological natural and environmental aspects in the case of natural heritage assets. This occurs in 95% of the cases. For instance, the website *Autoridad Centro Histórico Ciudad de México* (Authority for the Historic Centre of Mexico City) does not contain historical and cultural information on the home page, rather on the second level within the web portal structure. Here (Table 4), attention is drawn to the portals that gather information in these three categories.

[TABLE 5]

Under the title of practical data, we collect those that allow the visitor to access the World Heritage asset. It includes a plan or a simple map to find the place, or sections such as 'location' or 'how to get there', visitor opening hours and entrance prices, amongst others. With a wider aim, which involves the tourism sector in general and cultural tourism in particular, information can be provided relative to other points in the area that can be visited, restaurants and accommodation, transport in the area, etc.

The data reveal that 91% of the portals provided information on the heritage asset for a widespread and interesting dissemination and only the remaining 9% contained lacking data to this aim. More than half (58%)

provided practical information that corresponded to cultural rather than natural assets. Only 37% of these pages contained tourist information that would complete the visit for the potential traveller or cultural tourist.

Navigation and accessibility

In this section we focus on the technical perspective, rating the accessibility of the files, content and format of the web page for any type of user, who, despite having a disability, should be able to consult the information on the World Heritage asset. In addition, this information will be more widely disseminated if it is accessible in various languages.

Web accessibility

The public administrations in numerous countries have adopted a commitment to accessibility, considering the fulfilment of certain obligatory regulations for institutional web information. Although this does not guarantee their fulfilment, it does point to a greater awareness regarding inclusive information or inclusive websites.

In Mexico, only government institutions (12%) of the state or federal districts include some type of accessibility tool compared to associations, consortia, private institutions and universities, which do not take them into account at all. They have adopted the facilities for accessibility promoted by the '*Juntos por la Inclusión*' (Together for Inclusion) programme on their websites (Sistema para el Desarrollo Integral de la Familia Ciudad de México (2013), whose portal is called 'Portal with Access for People with Disabilities'.

The existence of tag languages that facilitate the creation of accessible web pages is growing by the day. The incorporation of new semantic and multimedia tags facilitates the possibility of creating accessible pages for users with visual, hearing or sensory problems (Díez et al., 2012). This does not imply that Web Content Accessibility Guidelines (WCAG) are being followed; only 12% of the sample analysed have provided facilities for accessibility. Due to all these websites having the same accessibility facilities, there is no need to establish a ranking among them, merely to encourage other institutions to follow this initiative. Through the use of normalised symbols, the user can select the means of communication with the web, with four options: a) keyboard, b) voice commands, c) sounds and d) screen readers. This is the consequence of the new Federal law of Telecommunications and Radio diffusion published in Mexico in July 2014. A framework was established to improve website accessibility of official institutions. This law obliged Internet portals of both telecommunications suppliers and government to have designs, facilities and applications to guarantee accessibility to the disabled. It would be relevant to carry out a new study in order to find out the current state of this accessibility standards adaptation process. As results show, we suggest promoting an information campaign aimed at any kind of entity responsible for disseminating World Heritage, focusing on the need to adapt accessibility standards. Most of these

entities have a great interest in promoting UNESCO Cultural and Natural World Heritage, with great support on the part of governmental institutions.

On the other hand, differences are also observed in the designs which, according to types of institutions, provoke variations in the ratings. An example of this phenomenon occurs with 'Prehistoric Caves of Yagul and Mitla in the Central Valley of Oaxaca', administered by a private entity, which only obtained 247.05 points out of 1000, or its governmental alternative, administrated by the INAH, with 342.39 points.

Multilingual dissemination

Totally of home pages are in Spanish. Of these, 63% are exclusively in this language, whereas the remaining 37.2% disseminate the information in another language, generally English. We have observed that the 18% are translations expressly for the purpose of promoting the content with adaptations for the language and culture in question. This cultural translation is referred to as 'web localization' and takes in everything from units of measurement to calendars (Mele, Ascanis and Cantoni, 2015). The remaining 19% use the 'Google Translate' tool. The exactitude with which the content is transmitted depends on the tool used, and does not offer the same guarantees as the creation of a web page in another language.

Multilingual analysis in Wikipedia

This part of the study centred on the existing Wikipedia entries on World Heritage assets located in Mexico and their availability in different languages. The search for the asset on Wikipedia was carried out with the

Spanish name. In all cases we included at least one Wikipedia entry for each asset, and a maximum of two. Each article was analysed with the aim of identifying the main language for the entry with more information.

As has been pointed out, on occasion there are two articles that provide information on a specific asset. In general, each of these articles refers to one of the components that comprise the official name of the asset according to UNESCO.

There are seemingly two cases in which the entry has a single alternative in another language on Wikipedia because both entries have different name. The first case refers to the natural asset of the Whale Sanctuary of El Vizcaíno (1993), which is included in Wikipedia under the name 'Santuario de ballenas de El Vizcaíno' and, at the time of the study, was only available in Spanish and German. On the other hand, it is also present under 'Reserva de la biosfera El Vizcaíno' (El Vizcaíno biosphere reserve) with alternative Wikipedia articles in 18 different languages.

The second case is related to a monument complex, the Historic Centre of Oaxaca and Archaeological Site of Monte Albán. In this case, 'Centro histórico de Oaxaca de Juárez' (Historic Centre of Oaxaca de Juárez) has an article in Spanish and a single entry in Portuguese with highly reduced content. In contrast, the entry corresponding to the second part of this asset, 'Monte Albán', has 35 entries in the equivalent number of languages.

At an idiomatic level, it is confirmed that 82% of the main entries are in Spanish, whereas 28% are divided amongst three other languages. The most common is English,-(12%),German (4%), and Portuguese (1%). In the vast majority of cases (93%), the Wikipedia entry can be accessed in at least one other language (Figure 12).

[FIGURE 12]

We have also analysed the types of entries found in other languages. Starting from the basis that the main entry provides the most information, we identified different solutions for offering the information in other languages, such as:

Translation: an entry that is practically identical to the main one.
Version: in this instance the entry is completely original and includes information considered by its author as relevant. It can be structured in a different way to the main entry and its extension can be similar or reduced.
Summary: entry with brief content,-sometimes just two lines.

As shown in Figure 13, the small number of entries identified as translations and the somewhat greater number of versions – mainly in Spanish and English – seems to indicate a preference for choosing the adaptation of content in a new version, rather than a simple translation in another language. The translations have been made in French, German and Japanese, whilst the summaries are mainly in Esperanto or minority or non-European languages.

[FIGURE 13]

We also analysed the internal links of each main Wikipedia entry. In 47% of cases, the entries do not include links to the official web page of the asset, sometimes simply because this does not exist. Another 14% of entries (5), in the external links section, present dead links or link to the previous version of the page, although the latter forwards to the current URL. Of the 39% of entries that do include external links to official pages; 3% link to one of the official pages that has the asset, and another 3% only link to those URLs in the English Wikipedia article.

Finally, it is noteworthy that, the use of multimedia aspects in Wikipedia is uncommon. Only the entry denominated 'Calakmul' has a link to Wikimapia, whereas another four (10%) have links to other resources: Wikimedia commons (3%), another type of photography server (3%), a film sales page (3%) and in one case, a link to another Wikipedia entry, from the denominated 'Santuario de ballenas de El Vizcaíno' to 'Reserva de la biosfera El Vizcaíno'.

Conclusions

This study presents a general overview of the presence and visibility of web information on heritage assets that have been declared as UNESCO World Heritage located in Mexico, through the analysis of their official websites.

The data obtained by the evaluation model applied in this study reveal variables such as technical accessibility and type of official entity charged with disseminating the heritage and the growing use of the Web 2.0 for such

a purpose. They also reflect how official institutions have a fundamental role in reinforcing the good design of the web pages and sites that allow an improvement in the dissemination of the heritage with quality, interesting content. However, despite the efforts made by some institutions, web accessibility guidelines are still being ignored. Based on our results, we suggest promoting an information campaign, aimed at any kind of entity responsible for disseminating World Heritage, about the need to adapt accessibility standards.

Mention should, however, be made of the use of other audiovisual mediums, such as YouTube, and graphic ones, such as Pinterest. Presence is also very common on social networks like Facebook, Instagram, Google+ and Twitter. On the basis of this study, it would be appropriate to undertake new research in order to discover the current state of the accessibility standards adaptation process. Besides it would be advisable to create profiles for each World Heritage Asset independently of the profile of the institution where it is found.

The design of web portals, in their majority governmental, reflects an interest in having a visible web presence, but this should be improved. As general suggestions for all of the World Heritage asset websites, we can mention the inclusion of basic identification elements in several languages, website design following the last version of WAI standards, and hire content

curators to reinforce the dissemination. These professionals can maintain counts and profiles on social networks, and also monitor Wikipedia.

In light of these results, we recommend a review of the official portals of any World Heritage asset following basic parameters to improve the web visibility.

From the analyses of the sample URLs, it is confirmed that the domain *.mx* reinforces the identification of the geographical location in the face of generic domains such as *.com* and *.travel*. Another positive aspect is the homogeneity of the Mexican websites analysed in terms of subdomains *(.org, .gob, .com*) which identify the type of body that manages them within the .mx domain. However, for better visibility and impact on the web it is advisable to migrate these subportals and even directories to complete websites that correspond to an exclusive server.

Regarding the identification and authority it has also been revealed that, on occasion, there can be more than one official body that provides information on a specific asset. As a result, the web addresses corresponding to historic centres are the most complex to identify. A clear difference arises at the URL and title level between the two types of web page. On the other hand, the presence of World Heritage on social networks is scarce. They mainly show national and state governmental institutions, and only in one case is the institution a governmental association, NGO, private entity or municipal institution (governmental federal district).

The current situation can be justified if there would be a lack of specialized staff in content curation tasks, which must be taken in account when websites are designed and maintained; and also to establish marketing strategies on social networks. Another factor that should be change is the mindset focusing on the relationship between the institution and the World Heritage asset, promoting each other by bidirectional links and supporting the visibility of both. We have to notice that users interested in knowing about the specific asset can access further information about the high institution which manages the asset; but it is very probable that this is not the initial information target. In short, there is a need for dissemination and promotion of pertinent information to the user.

In reference to Wikipedia, it is recorded that fewer than half of the entries connect via their external links to bodies that represent these assets. The variety of modalities in the types of entries in other languages, such as translations, summaries and versions, show the possibilities of spreading information in different formats: translations as a copy of the message transferred to another language, versions which include content depending on the interests of the author, and summaries, as well as the most widely used languages in each case, with Japanese standing out for summaries.

It is confirmed that the design of the web pages analysed determines their Wikipedia and Web 2.0 presence, as well as the facility of making their content accessible, and all of these factors have an influence on the

dissemination and popularity of the asset in question. This Wikipedia presence and the inclusion of links to official websites is a determining factor in dissemination and visibility. In addition to a frequent monitoring of Wikipedia entries, inserting new links from one entry to other could increase this visibility. It is important to bear in mind that the universal nature of culture brings with it the responsibility to promote it, which is more efficient if done in different languages.

In sum it is recommended that individual websites for each World Heritage Asset be created. This change would improve the recognition and indexing on the part of web search engines and would allow measuring the traffic of these web portals with website traffic analysis tools. Furthermore, a good identification at the URL and title level is entirely the responsibility of the webmaster or web design team. Consequently, a minimum of identification data is necessary with a good spelling. This is another important point to improve the position in search engines results according to the number of occurrences of the same word in URLs, titles and keywords. Cases with misspelling, like Oxaca instead Oaxaca, must be corrected (http://www.visitmexico.com/es/ciudad-patrimonio-oxaca).

Finally, the results obtained from this study show the current situation of official homepages and social network profiles analysed. It is recommended that they be monitored in order to follow up their evolution

and detect tendencies. New incorporations into the World Heritage List should also be added to the study.

Several factors affect information visibility in the Web and Web 2.0 environment that should be analysed. In this completed paper some of them have been considered. However, aspects such as the influence of the adoption of accessibility facilities and the creation of multilingual webpages to improve the popularity and impact of the World Heritage assets on the Web need to be studied in depth.

Expert team

The expert team consisted of researchers and collaborators participating in the HAR2012-38562, a Research Development and Innovation Project (Spanish Ministry of Economy and Competitiveness).

Funding

This paper was supported by the RD & I Project, HAR2012-38562 (Spanish Ministry of Economy and Competitiveness).

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[TABLE 1]

.mx	.org	.travel	.com
83.7% (36)	7% (3)	4.7% (2)	4.7% (2)

Table 1: Top level domain names in the sample analysed

[TABLE 2]

.gob	.com	.org	No domain
69.4% (25)	5.6% (2)	2.8% (1)	22.2% (8)

Table 2: Second Level Domains (STLD) within the .mx domain

[TABLE 3]

Without STLD subdomain	34.9%	
With subdomain	66.1%	
	org	2.3%
	com	4.7%
	gob	58.1%

Table 3: Subdomains for assets on municipal web pages

[TABLE 4]

Name	Type of institution	Institution Website	Example of Homepage	Facebook (25.58%)	Twitter (25.58%)	You (6.9
National Association of Mexican World Heritage Cities (Asociación Nacional de Ciudades Mexicanas del Patrimonio Mundial)	Governmental association	ciudadespatrimonio.mx		☑	☑	
National Commission of Natural Protected Areas (Comisión Nacional de Áreas Naturales Protegidas)	National governmental	conanp.gob.mx	elpinacate.conanp.gob.mx simec.conanp.gob.mx www.conanp.gob.mx	☑	☑	☑
National Institute of Anthropology and History (Secretaría de Educación Pública, Instituto Nacional de Antropología e Historia)	National governmental	inah.gob.mx	patrimonio-mexico.inah.gob.mx www.teotihuacan.inah.gob.mx		☑	
Secretary of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales)	State government	semarnat.gob.mx	mariposamonarca.semarnat.gob.mx			☑
Secretary of Tourism, State of Morelos (Secretaria de Turismo del Estado de Morelos)	State government	morelos.gob.mx	turismo.morelos.gob.mx	☑	☑	
Secretary of Tourism, State of Veracruz (Secretaria de Turismo del Estado de Veracruz)	State government	veracruz.mx		☑		

Amigos de Sian Ka'an	Association (ONG)	amigosdesiankaan.org			☑	
Journal and web portal	Private	mexicodesconocido.com.mx	www.mexicodesconocido.com.mx		☑	
City of Queretaro (Querétaro municipio)	Gubernamental Distrito Federal	municipiodequeretaro.gob.mx	www.municipiodequeretaro.gob.mx		☑	
Organisation des villes du patrimoine mondial / Organization of World Heritage Cities	Governmental association	ovpm.org	www.ovpm.org	☑		
Secretary of Tourism, State of Queretaro (Secretaría de Turismo del Gobierno del Estado de Querétaro)	State government	www.queretaro.travel	www.queretaro.travel	☑		
Secretary of Tourism, State of Chiapas (Secretaría de Turismodel Estado de Chiapas)	State government	www.turismochiapas.gob.mx		☑		
Official Website of Tourism of Mexico (Portal oficial de turismo de México)	National governmental	www.visitmexico.com		☑		
Secretary of Tourism, State of Guanajuato (Secretaría de Turismo del Estado de Guanajuato)	State government	visitsanmiguel.travel	www.visitsanmiguel.travel		☑	
Government of State of Yucatan (Gobierno del Estado de Yucatán)	State government	yucatan.gob.mx	www.yucatan.gob.mx	☑		

Table 4: Presence of the higher institution in Facebook, Twitter and YouTube

[TABLE 5]

Heritage Asset name	Web Portal	Institution
Historical Centre of Morelia (1991)	http://ciudadespatrimonio.mx/morelia/landing	Governmental association
Historic Centre of Oaxaca and Archaeological Site of Monte Albán (1987)	http://ciudadespatrimonio.mx/oaxaca/landing	Governmental association
Historic Centre of Oaxaca and Archaeological Site of Monte Albán (1987)	http://www.visitmexico.com/es/ciudad-patrimonio-oxaca	National governmental
Historical Centre of Puebla (1987)	http://ciudadespatrimonio.mx/puebla/landing	Governmental association
Historical Centre of Zacatecas (1993)	http://ciudadespatrimonio.mx/zacatecas/landing	Governmental association
Historical city of Guanajuato and adjacent mines (1988)	http://www.guanajuatocapital.mx/?mod=ciudad	Consortium
Historical fortified city of Campeche (1999)	http://www.campeche.gob.mx/index.php/campeche	State government
Pre-Hispanic city and national park of Palenque (1987)	http://www.turismochiapas.gob.mx/sectur/zonas-arqueolgicas-de-palenque-	National governmental
Franciscan missions in the Sierra Gorda of Querétaro (2003)	http://www.queretaro.travel/contenido.aspx?q=7Pj9zGxNoTYVYRKq1W0XBI2aO2lTTQNF	State government
El Pinacate and Gran Desierto de Altar Biosphere Reserve (2013)	http://elpinacate.conanp.gob.mx/	National governmental
Protective town of San Miguel el Grande and the Sanctuary of Jesús Nazareno de Atotonilco	http://www.visitsanmiguel.travel/index.php	State government
Area of historical monuments of Querétaro (1996)	http://www.municipiodequeretaro.gob.mx/turismo/contenido_atractivos.aspx?q=0Uv4/vE5RX+/+Uqft4jJQpag628cgv2X	Federal Governmental District

Table 5: Portals with the three types of information

[FIGURE 1]

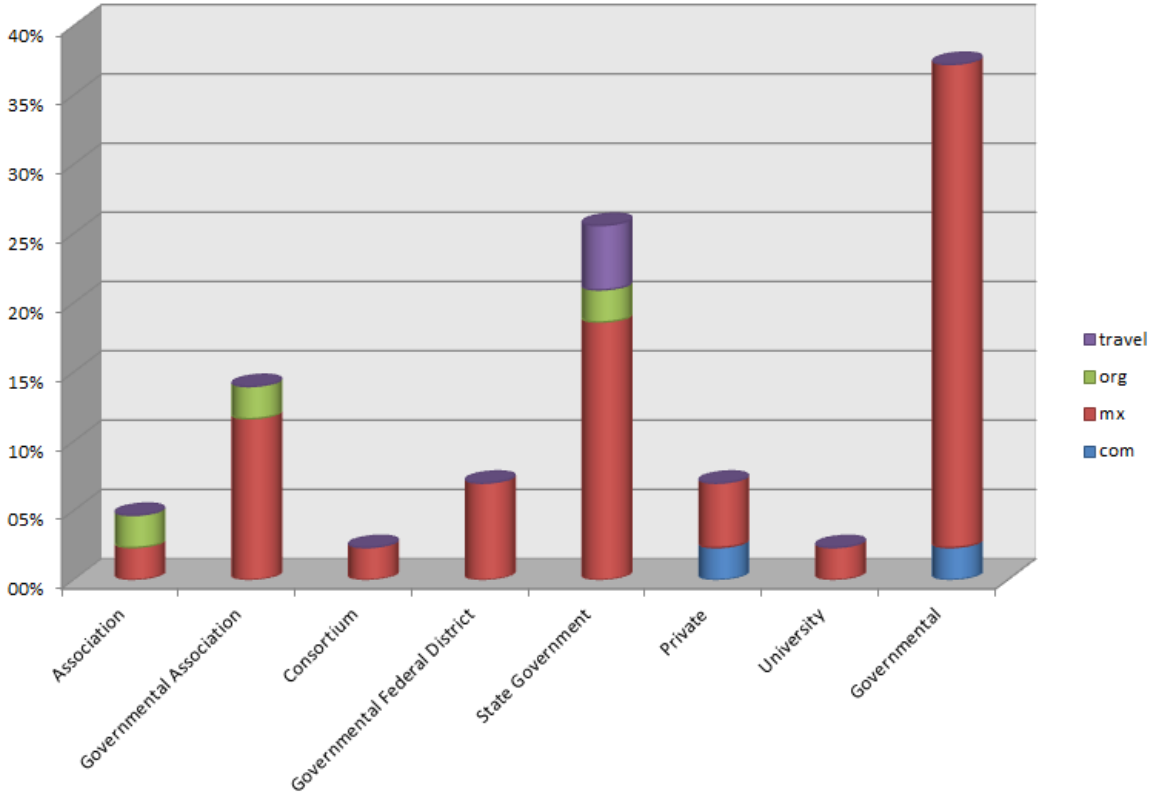


Figure 1. Type of institution.

[FIGURE 2]

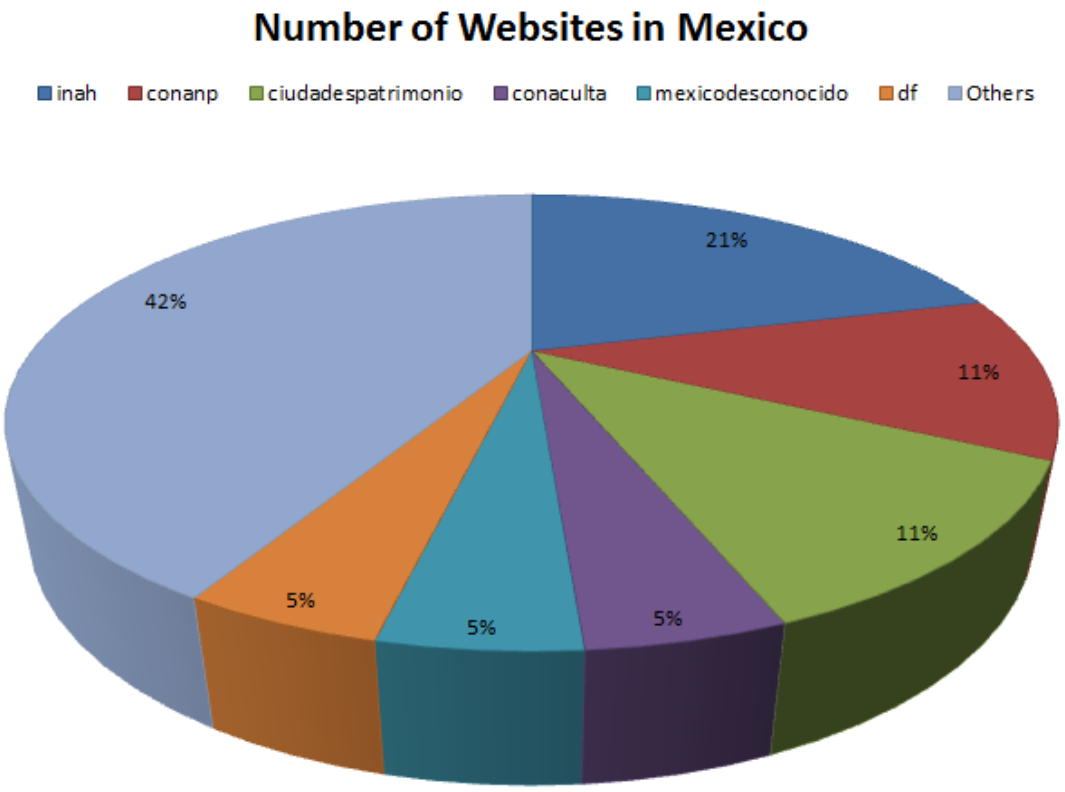


Figure 2. Number of Websites in .mx

[FIGURE 3]

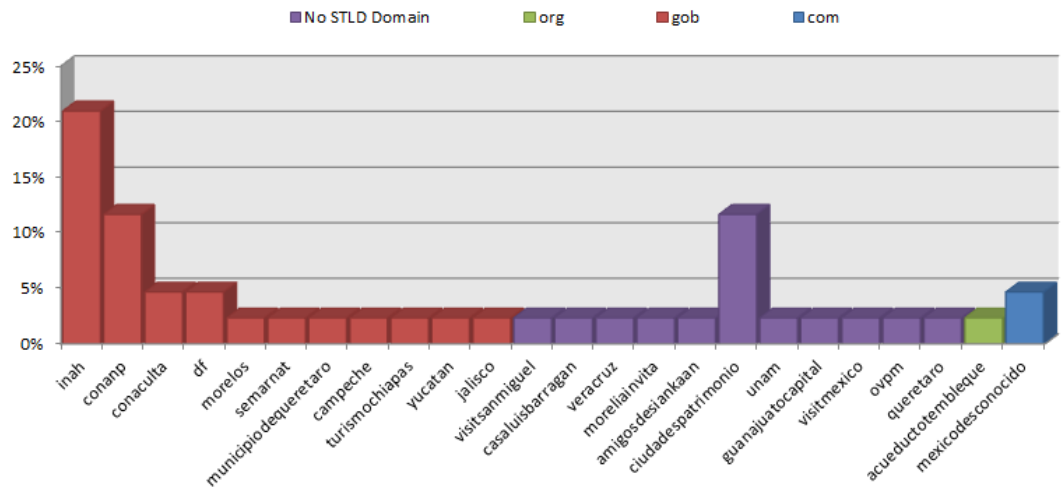


Figure 3. Websites under STLDs or without subdomains for top level domains.

[FIGURE 4]

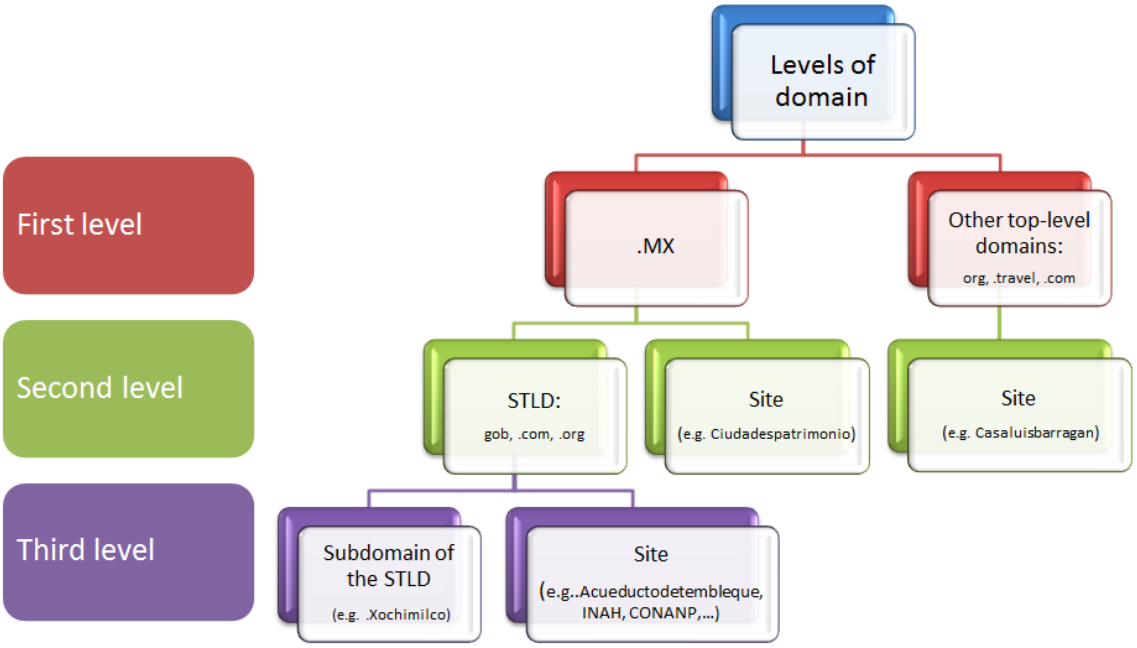


Figure 4. Levels of domain names on the Mexican web.

[FIGURE 5]

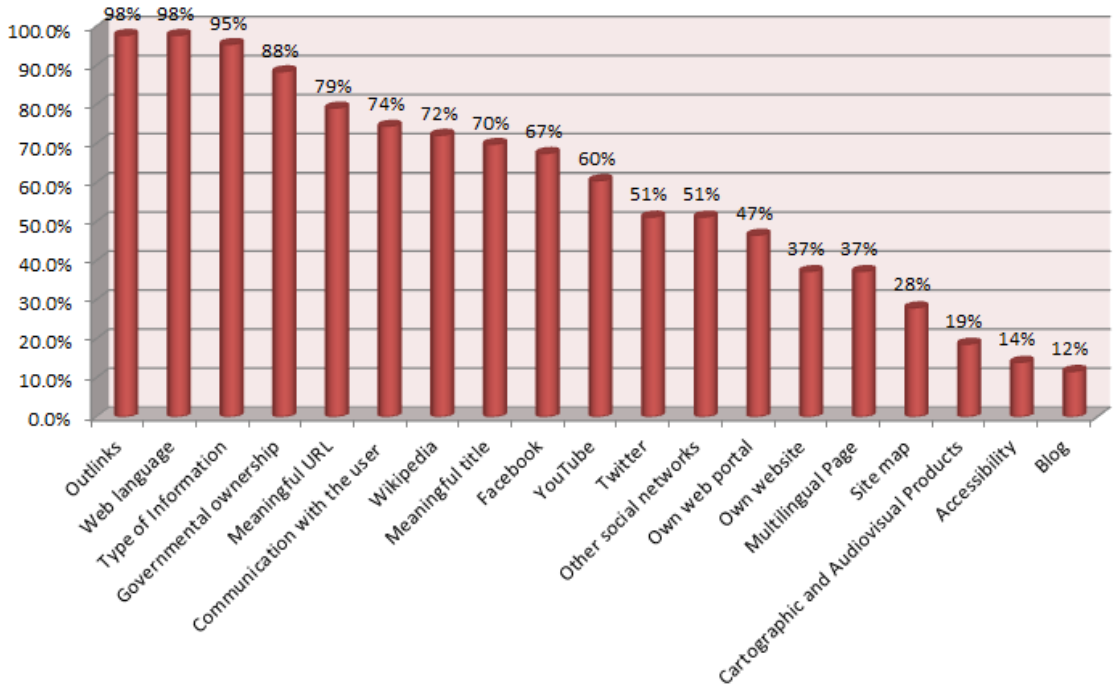


Figure 5. Presence indicator on analysed web portals.

[FIGURE 6]

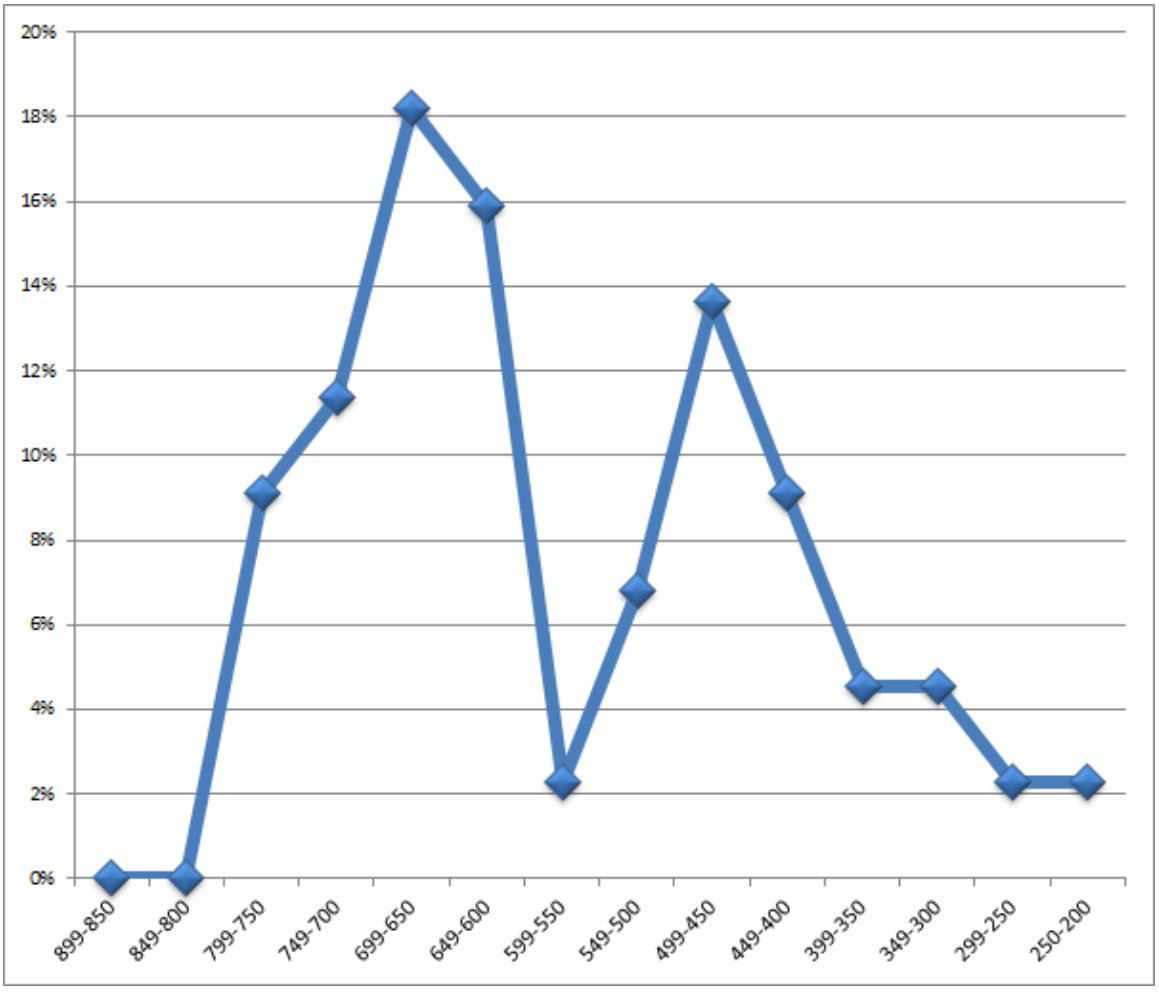


Figure 6. Distribution of ratings.

[FIGURE 7]

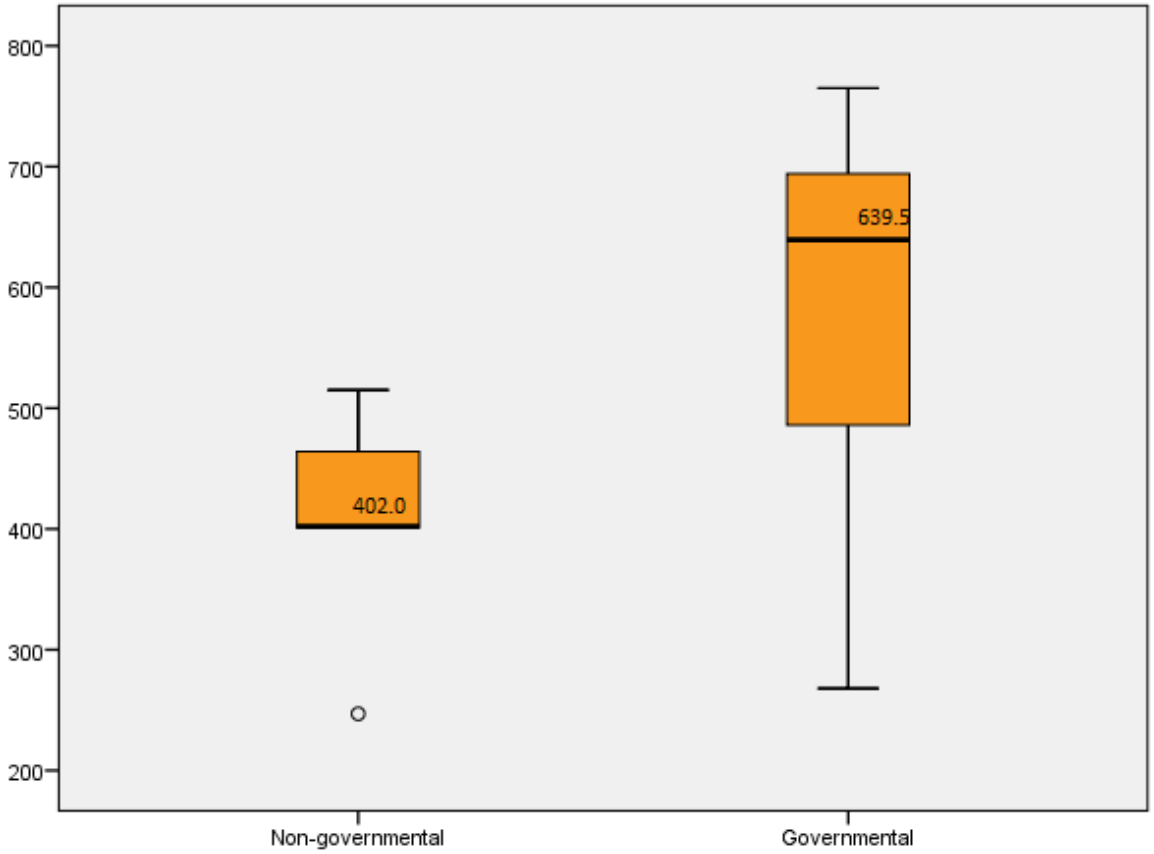
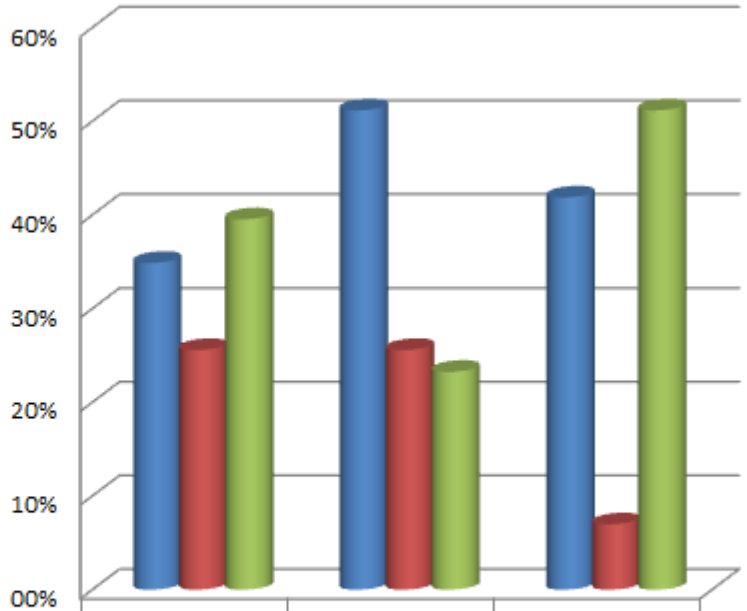


Figure 7. Distribution of ratings in non-governmental and governmental web pages.

[FIGURE 8]



	Facebook	Twitter	Youtube
No Presence	35%	51%	42%
Presence of the higher entitiy	26%	26%	07%
Presence of the Heritage asset	40%	23%	51%

Figure 8. Social network presence.

[FIGURE 9]

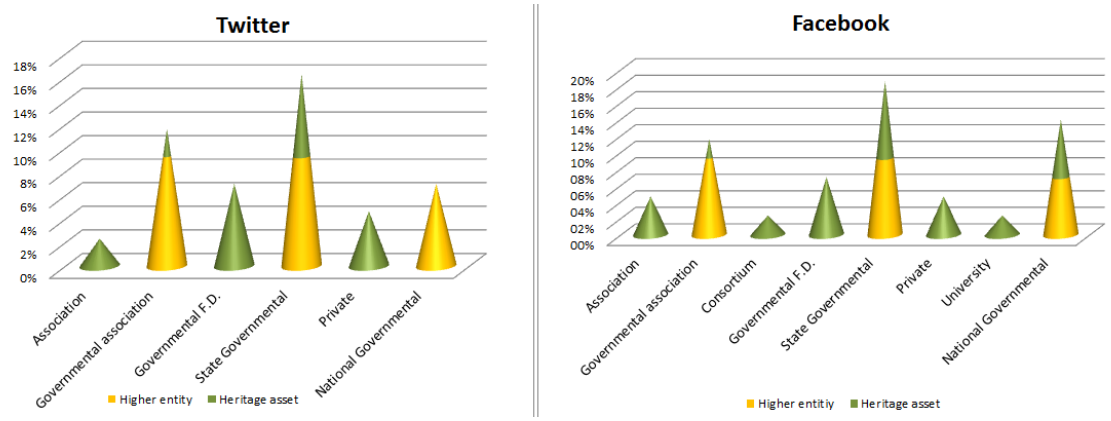


Figure 9. Presence on Twitter and Facebook.

[FIGURE 10]

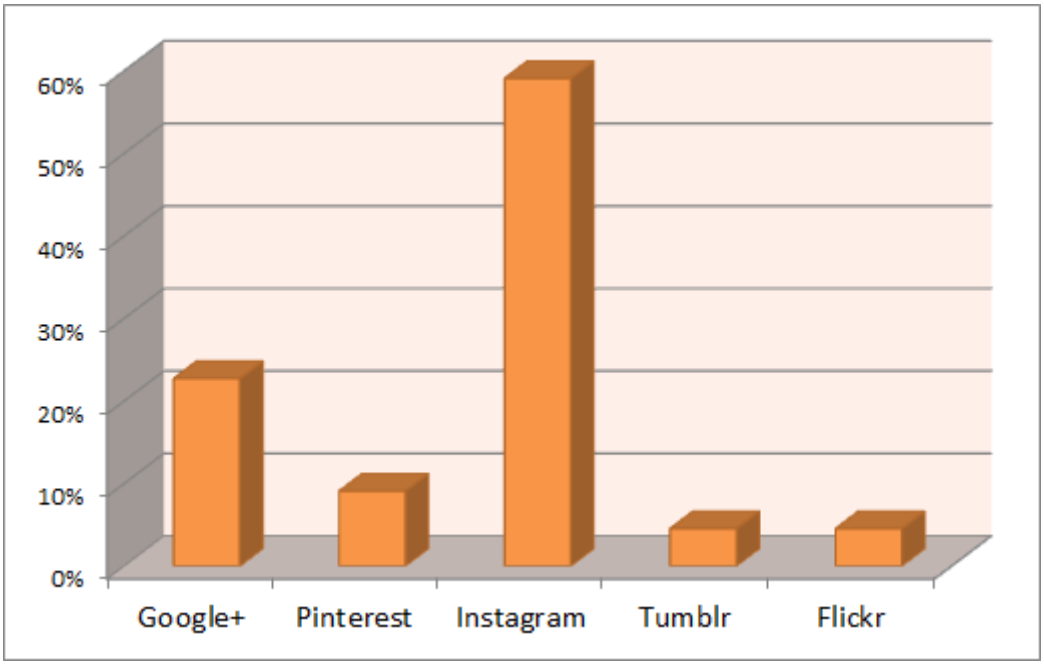


Figure 10. Presence in other social networks

[FIGURE 11]

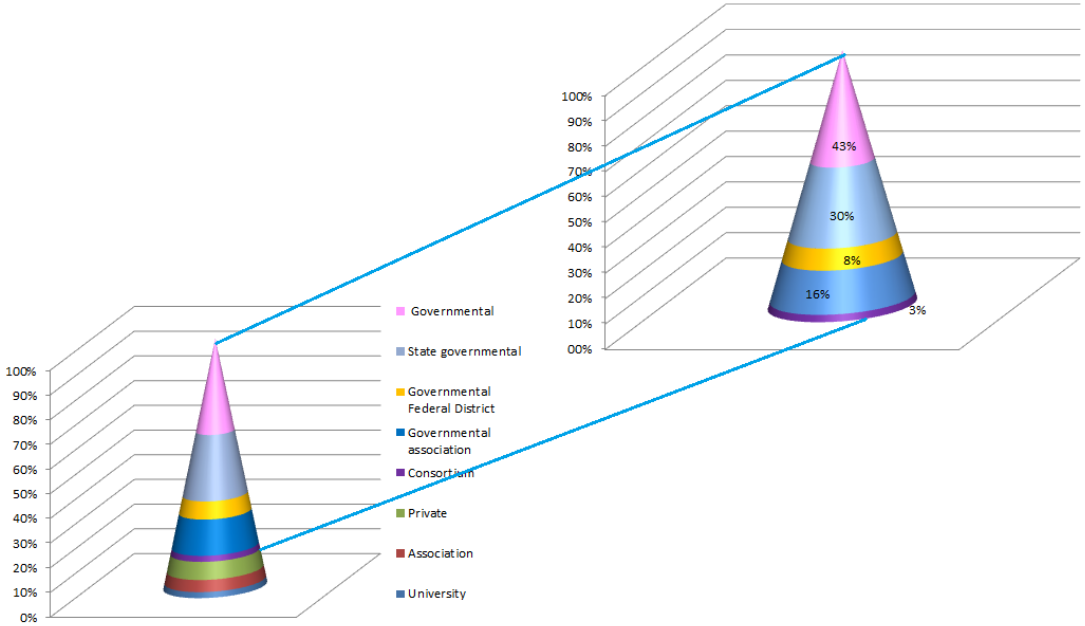


Figure 11. Types of institutions represented: zoom in governmental institutions.

[FIGURE 12]

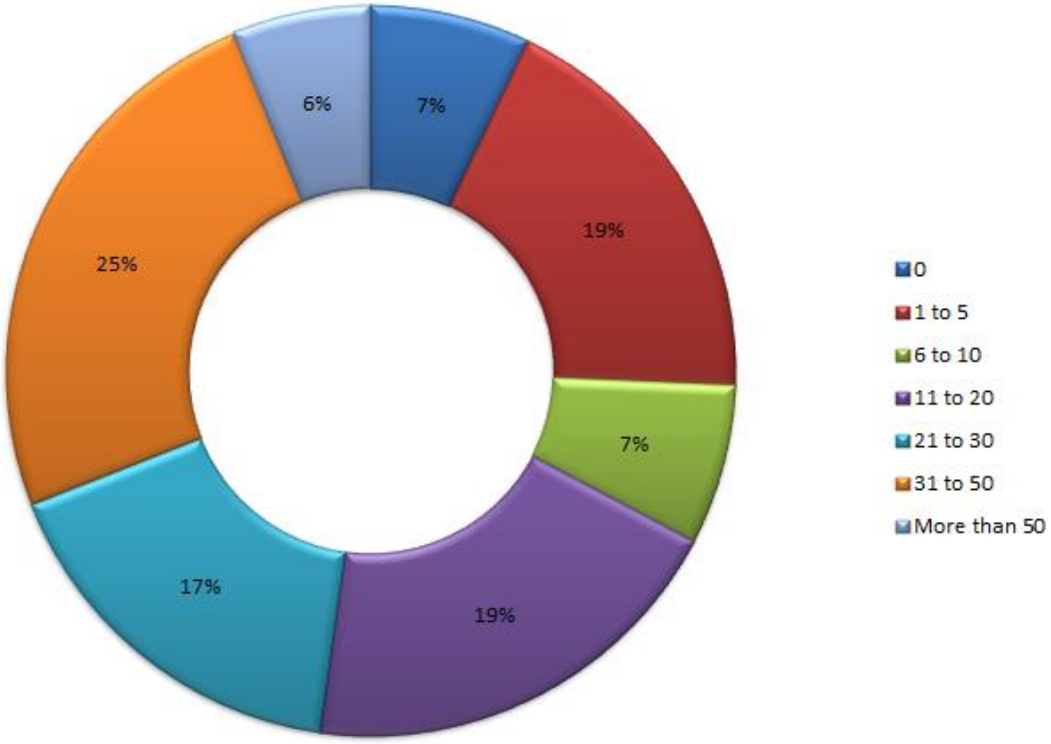


Figure 12. Wikipedia entries in other languages than Spanish

[FIGURE 13]

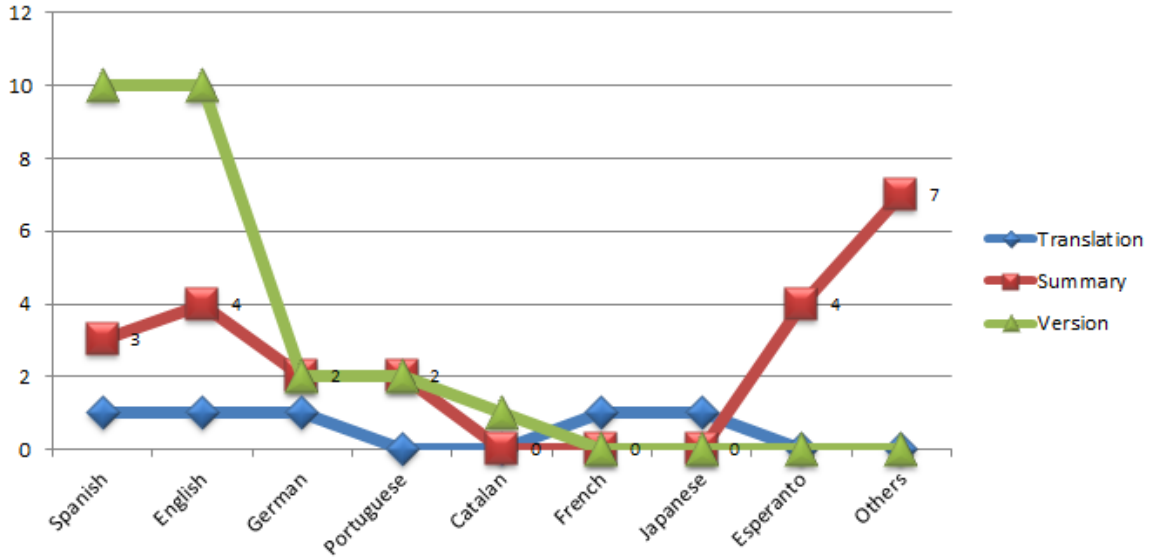


Figure 13. Types of entries in alternative languages.

BLACK AND WHITE VERSION

[FIGURE 1]

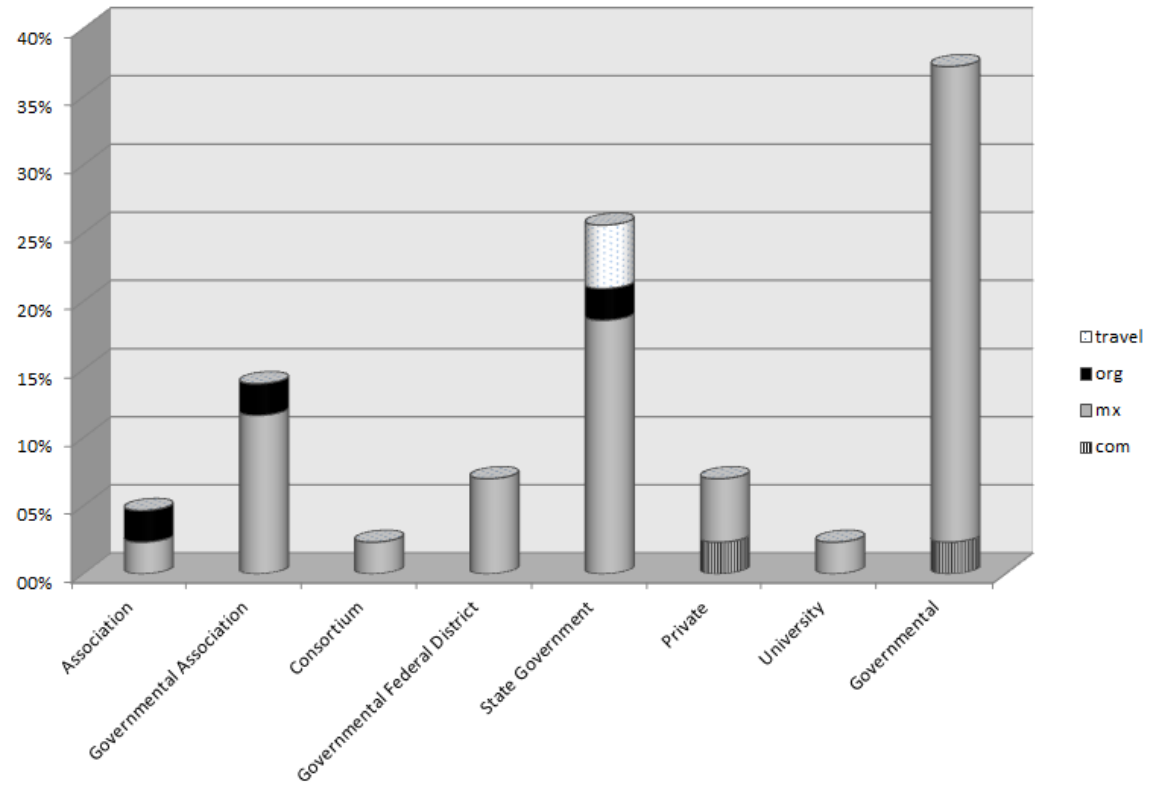
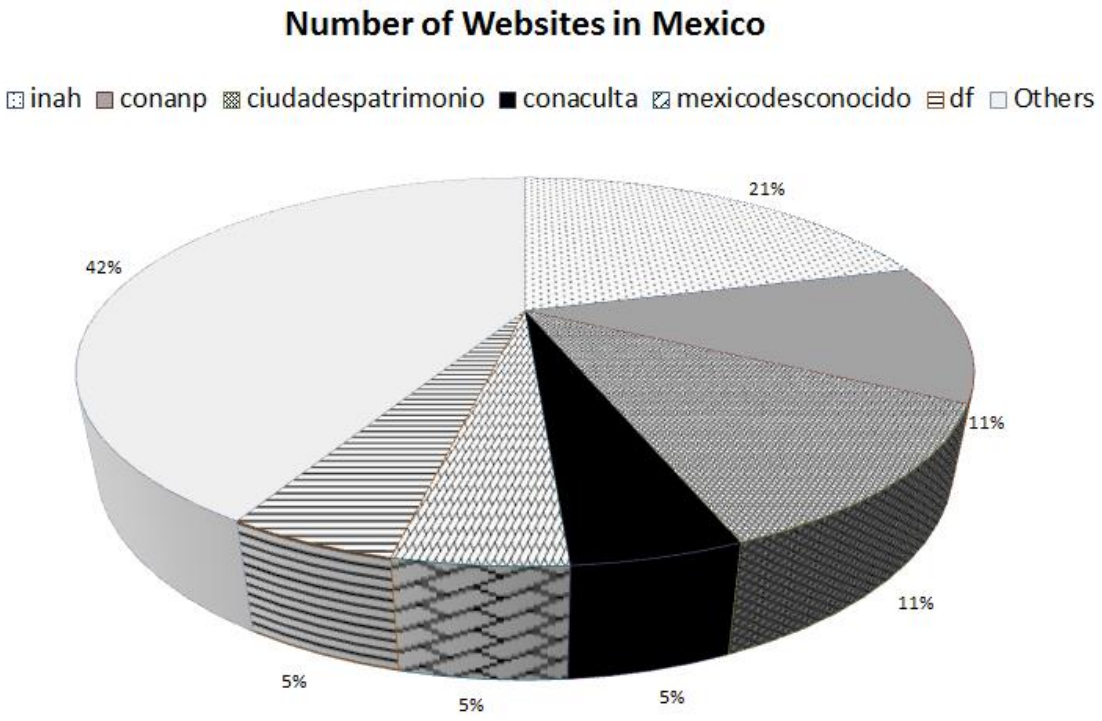


Figure 1. Type of institution.

[FIGURE 2]


Number of Websites in Mexico
inah
conanp
ciudadespatrimonio
conaculta
mexicodesconocido
df
Others
21%
11%
11%
5%
5%
5%
42%

[FIGURE 3]

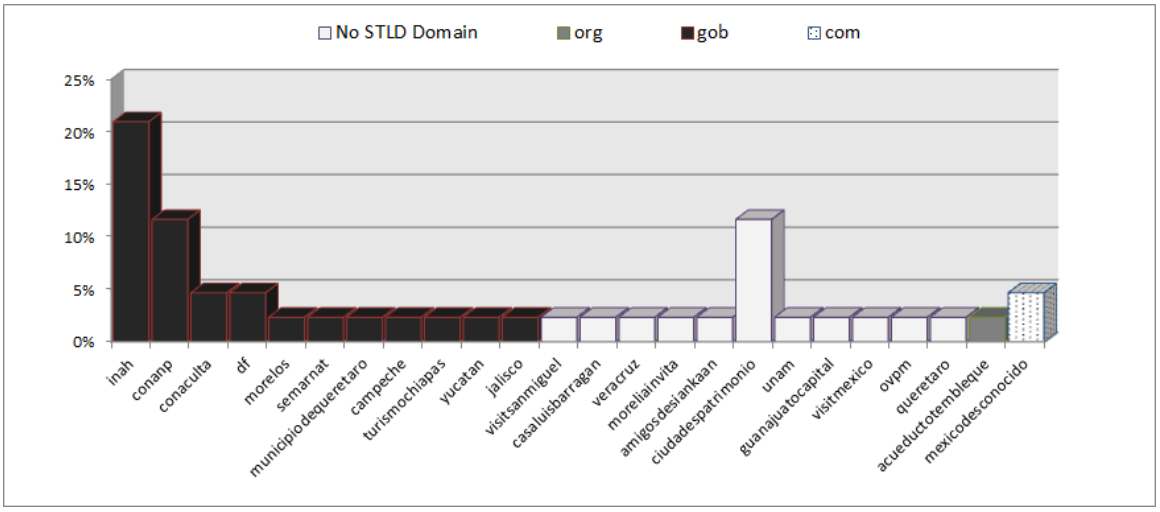


Figure 3. Websites under STLDs or without subdomains for top level domains.

[FIGURE 4]

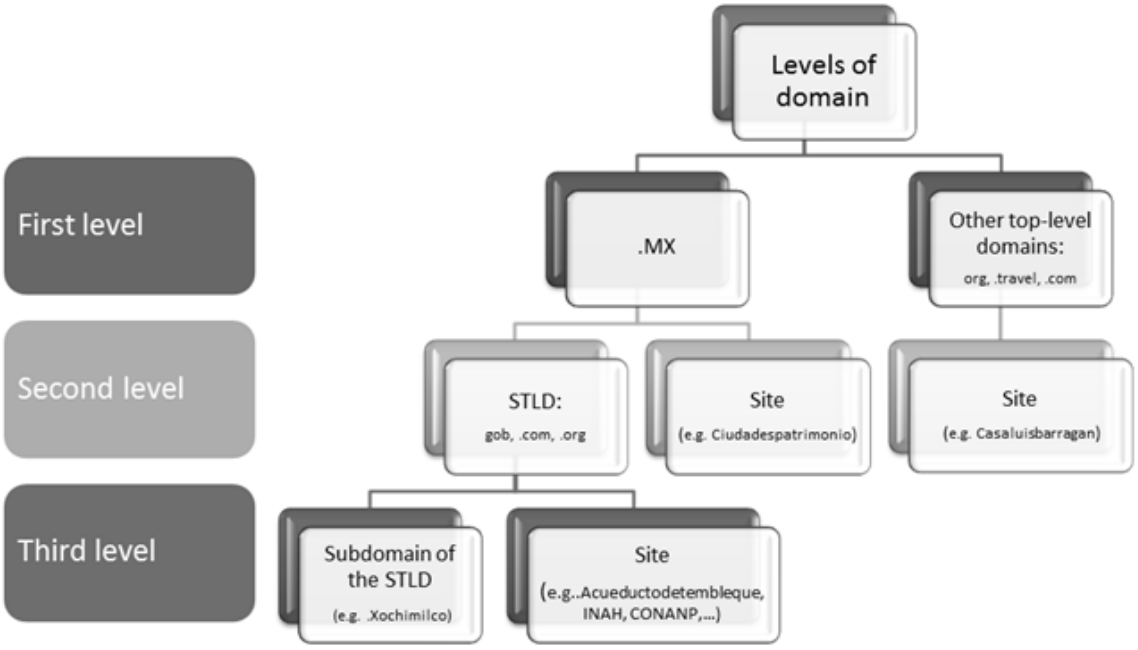


Figure 4. Levels of domain names on the Mexican web.

[FIGURE 5]

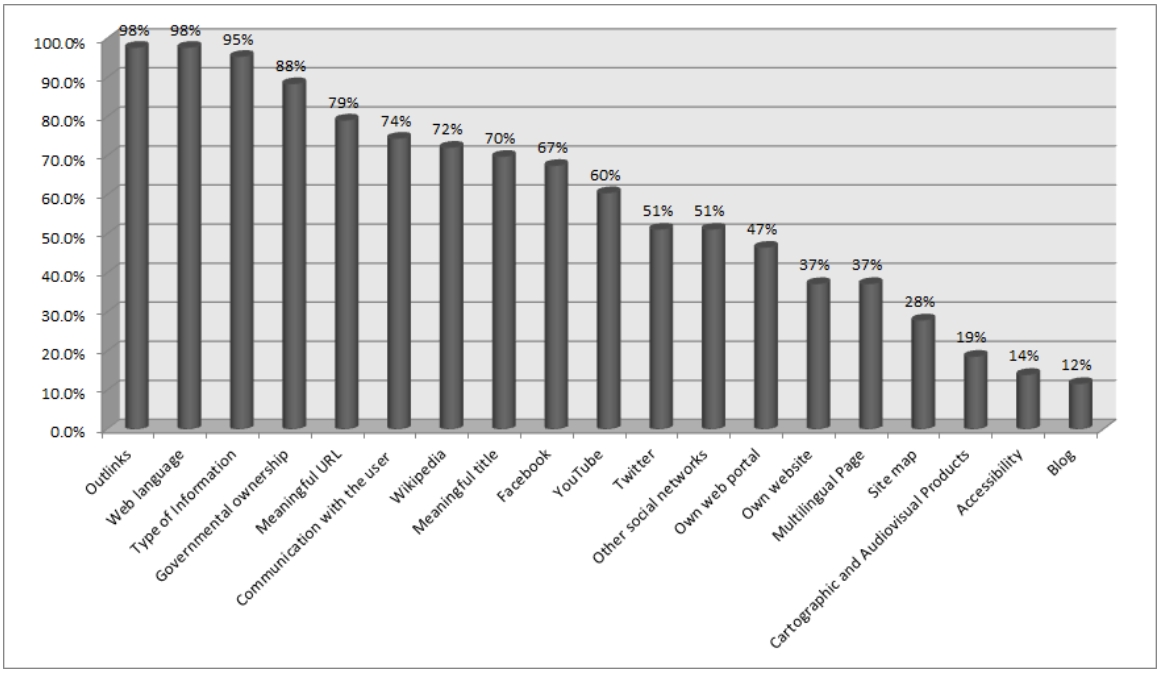


Figure 5. Presence indicator on analysed web portals.

[FIGURE 6]

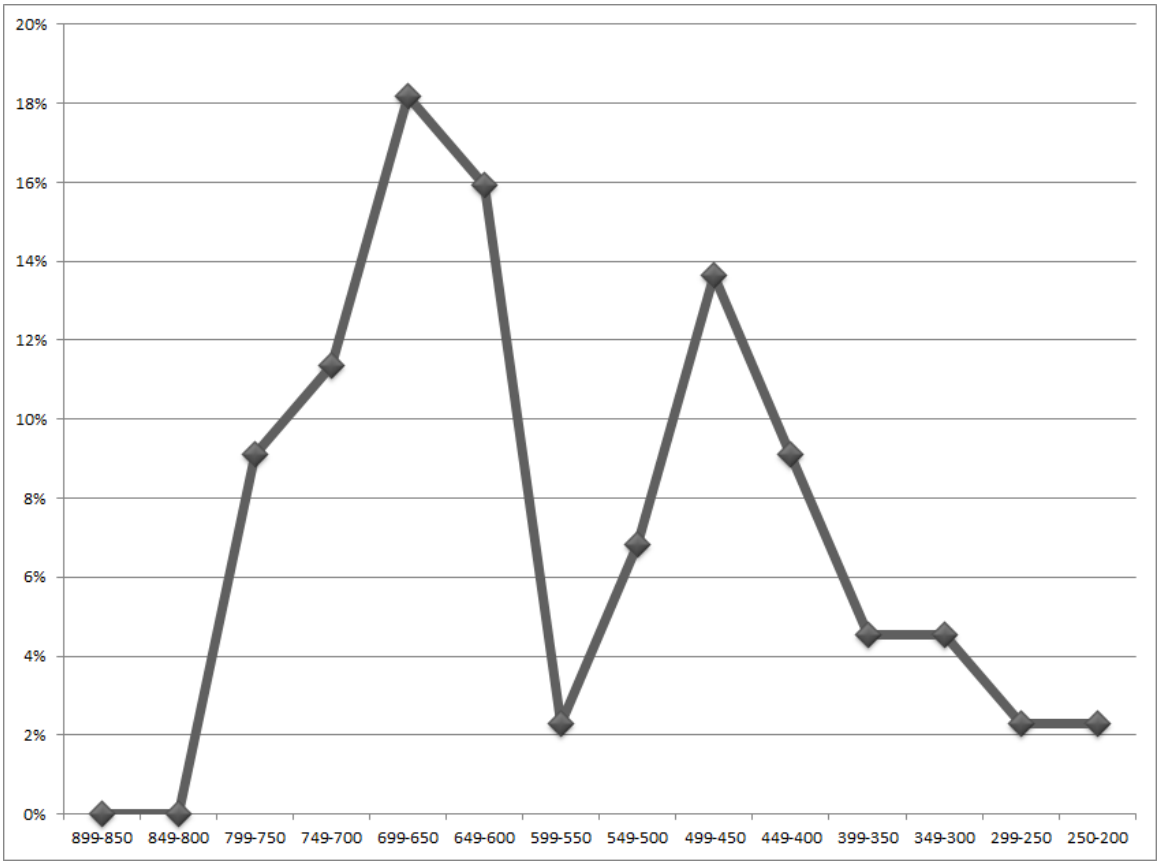


Figure 6. Distribution of ratings.

[FIGURE 7]

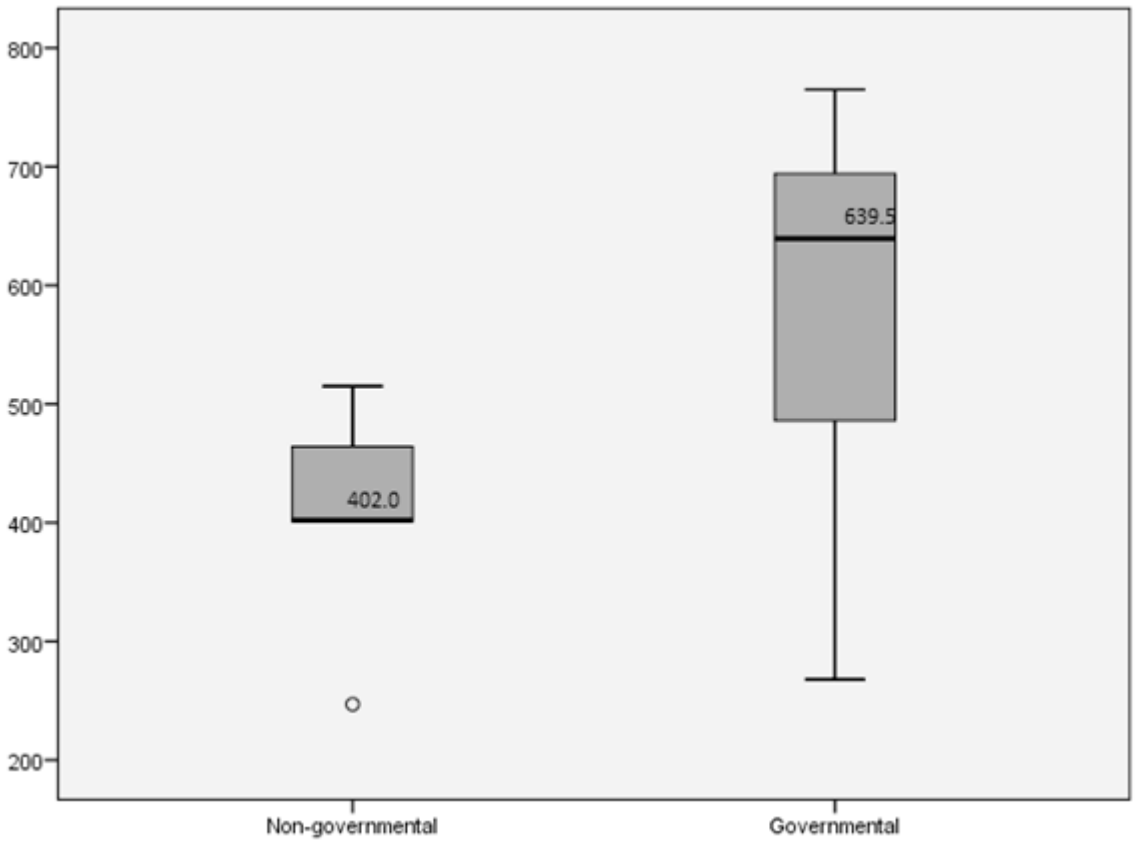


Figure 7. Distribution of ratings in non-governmental and governmental web pages.

[FIGURE 8]

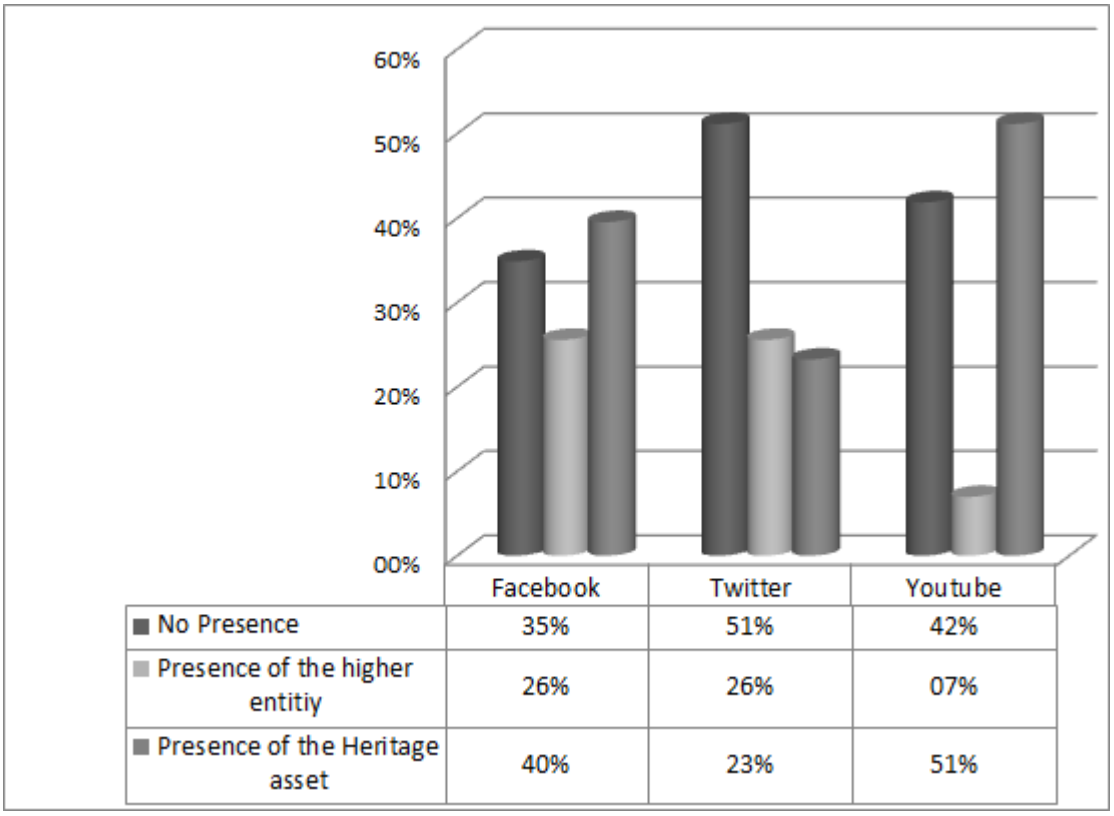
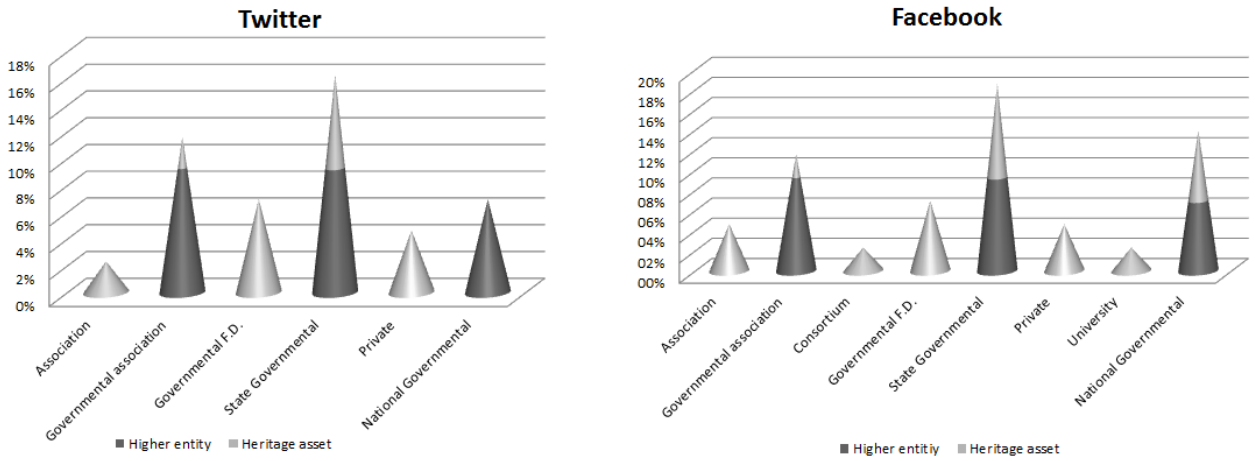


Figure 8. Social network presence.

[FIGURE 9]



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[FIGURE 10]

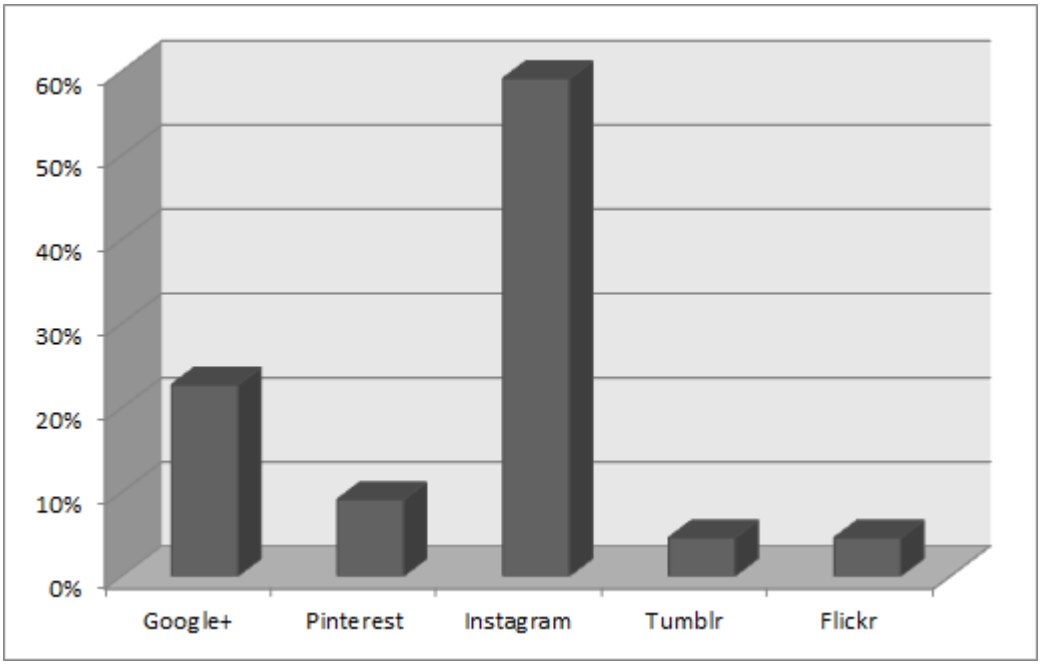

Figure 10. Presence in other social networks

[FIGURE 11]

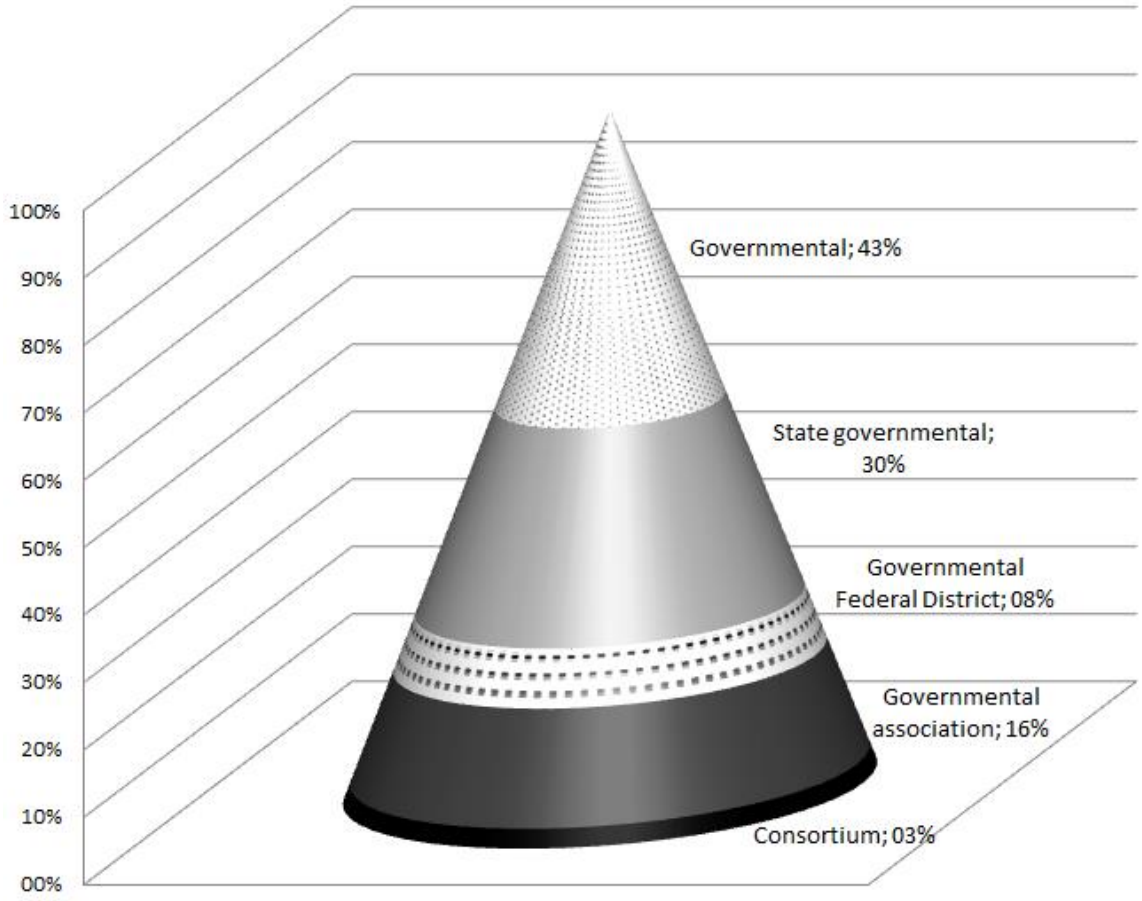

Figure 11. Types of institutions represented: zoom in governmental institutions.

[FIGURE 12]

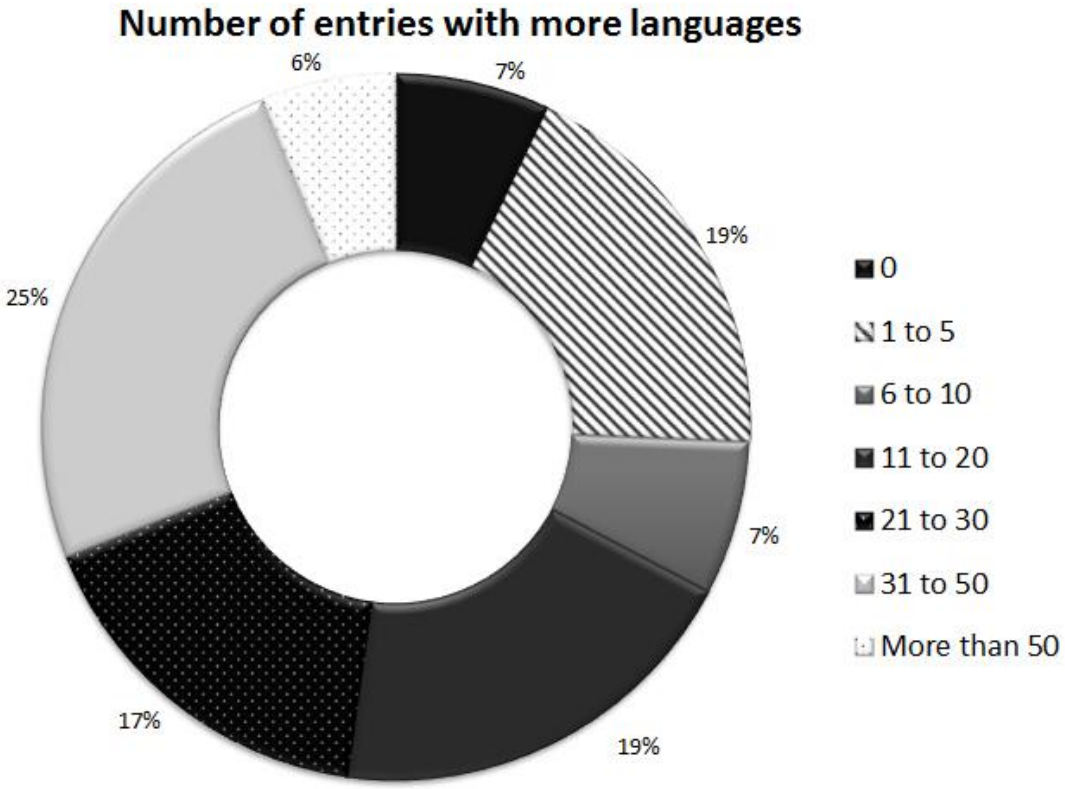

Figure 12. Wikipedia entries in other languages than Spanish

[FIGURE 13]

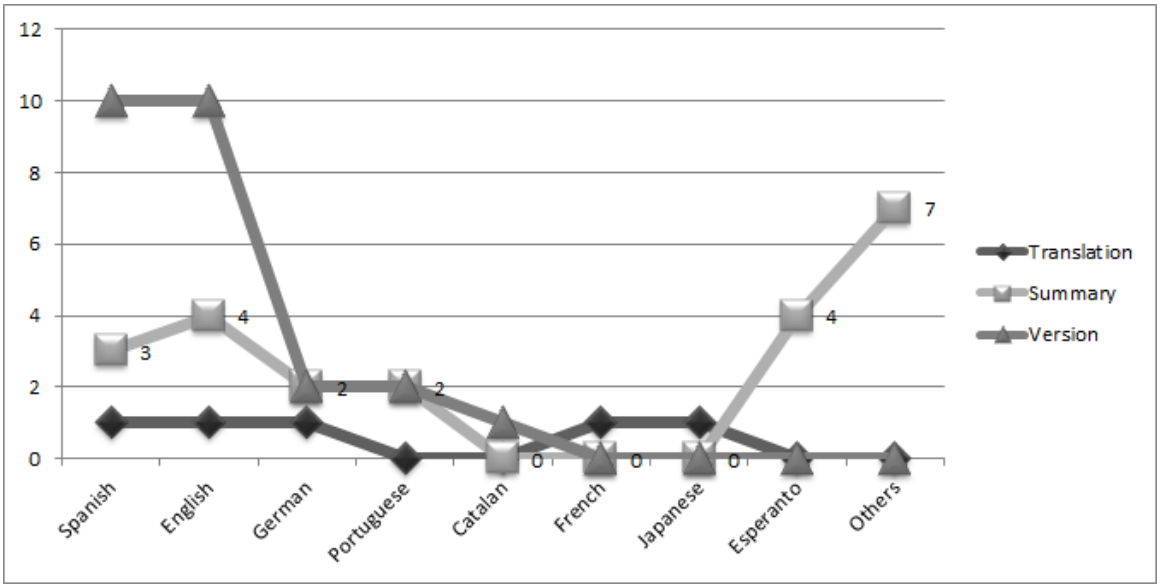

Figure 13. Types of entries in alternative languages.

END