

## Accessible infrastructure's diagnosis with mobility emphasis, about educational and guberment institutions. Ciudad Valles, S. L. P. Mx.

### Diagnóstico de la infraestructura accesible con énfasis en movilidad, de las instituciones educativas y de gobierno. Ciudad Valles, S. L. P. Mx.

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#### Abstract

This document is to promote the citizens interest through parent associations, urban sector improvement committees; educational and governm institutions heads; to participate in the first Ranking about accessible infrastructure of the schools and government buildings. The construction elements are analyzed at the time that may lead establishment of indicators to identify opportunity areas to Institutions; with a technical justification aligned at current standards; can support urban-architectural intervention, remodeling and expansion projects, which they can participate for obtain financial support from government programs or private initiatives.

#### Resumen

Uno de los alcances que pretende el presente documento es propiciar el interés de la ciudadanía a través de comités de mejora de sectores urbanos; a las representaciones o titulares de instituciones educativas e incluso, a decisores públicos; a involucrarse de forma directa en la primera categorización del nivel de infraestructura accesible de las Instituciones educativas y de Gobierno, en donde se analizan las condiciones existentes de los inmuebles al momento que pueda derivar en la definición y establecimiento de criterios e indicadores suficientemente pertinentes para identificar las áreas de oportunidad en donde las Instituciones; con una justificación técnica alineada a las normas vigentes; puedan respaldar los proyectos urbano-arquitectónicos de intervención, remodelación y ampliación, con los que pueden participar y obtener apoyo económico de los programas gubernamentales o de la iniciativa privada.

Objective	Methodology	Contribution
Infrastructure diagnosis.	Architectural physical survey.	Technical justification.
Classify universal accessibility.	Measurements	Authorize investment projects.
Educational and government institutions.	Comparison tool application.	Remodel. Adapt.
	Verify compliance with current regulations.	Improve accessibility

Objetivos	Metodología	Contribución
Diagnosticar infraestructura.	Levantamiento físico arquitectónico.	Justificación técnica.
Clasificar la accesibilidad universal.	Mediciones.	Autorizar proyectos de inversión.
Instituciones educativas y de gobierno.	Aplicación de herramienta de cotejo.	Remodelar. Adecuar.
	Verificar el cumplimiento de la Normativa vigente.	Mejorar la accesibilidad.

#### Infraestructure, Indicators, Urban

#### Infraestructura, Indicadores, Urbanismo

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## Introduction

The study of the legal framework in force in the field of accessibility and mobility is considered essential, so the starting point is the consultation and interpretation of the General Law for the Inclusion of Persons with Disabilities, a law published in the Official Gazette of the Federation (DOF) on 30 May 2011, whose last amendment dates from 14 June of this year: 2024 (Mexico, G. F., 2024) and its regulation, which was published in the DOF on 30 November 2012 and which, curiously, has not been reformed, let alone updated at the date of the presentation of this dossier (México, G. F., 2012), which indicates a lack of concern on the part of the legislator with federal competence in this regard. The Ley de obras públicas y servicios relacionados con las mismas, published in the DOF on 4 January 200 and last amended in the DOF on 20 May 2021 (México, G. F., 2021), is studied. In this sense, the Federal District Building Regulations (Mexico City, G. F., 2024) which, prior to the constitutional reform published on 29 January 2016, where various provisions of the Political Constitution of the United Mexican States were declared reformed and repealed with regard to the political reform of Mexico City, thus creating the federal entity Mexico City (CDMX), was applicable at the federal level and established precepts to be consulted and followed by the different federal entities. At the state level, the State of San Luis Potosí, the Law and its Regulation of public works and related services of the State of San Luis Potosí (Gobierno del Estado de San Luis Potosí., 2021 and G. E. de San Luis Potosí., 2015) empowers municipalities to regulate in this matter.

In this tenor, the provisions of operating manuals developed, implemented, and of course, legitimised by decree of the Federal Executive, by government institutions such as the manual of technical standards of accessibility of Mexico City (Gobierno de la Ciudad de México, 2016) which is based on anthropometric measurements and technical aids that make possible the adequate movement and activities of persons with disabilities and is the result of a collective and long-term task that leads to an evolutionary process of regulation and development of design and construction standards, which seeks to create an accessible and inclusive environment for the benefit of all sectors of the population.

When analysing the basic bibliography; specifically technical manuals concerning Universal Accessibility and mobility infrastructure, it is identified that the construction specifications are similar (SECTUR,2018; SEDUVI,2016; INIFED,2022; IMSS, 2016; IMSS,2000; CONAVI, 2017; G.F. de México, 2011 Secretaria de Economía, 2015 and 2016). From the analysis of the regulations and manuals, it can be seen that some of them, more than others, handle particular construction specifications, all aligned with the Manual of Technical Standards for Universal Accessibility of Mexico City; consequently MNTAUDF; base manual of the design that was carried out in 2018 (Zapata, 2018) for the first proposal of the assessment tool for accessible spaces with an emphasis on mobility.

## Objective

To evaluate, in accordance with current regulations, the architectural infrastructure of educational and Government Institutions, which are within the urban area of Ciudad Valles, S.L.P. to assess the degree of integration and relevance to the needs of mobility and humanisation, with the intention of generating a diagnosis in technical report format, which allows to assess the areas of opportunity, as a basis to support the development of adaptation, restructuring and remodelling projects, so as to eliminate physical barriers and improve movement within the facilities. This is in accordance with article 9 of the Convention on the Rights of Persons with Disabilities, which states that States Parties shall identify and remove obstacles and access barriers, which shall apply, inter alia, to buildings, public roads, transportation and other indoor and outdoor facilities such as schools, housing, medical facilities and workplaces (CNDH, 2010).

## Objectives

The specific objectives of the research; those goals that when achieved will lead to the overall objective are as follows:

1. To design an evaluation tool aligned to the current standards on universal accessibility.

2. To carry out a field visit to each educational institution in order to elaborate a comparative analysis based on the evaluation rubric vs. the measurements of the existing architectural elements.
3. Generate demonstrative graphs to present the results of the analysis.
4. Produce technical reports for each educational institution.

### Hypothesis

Educational and government facilities need to improve architectural conditions to facilitate pedestrian mobility through the adaptation of horizontal and vertical circulations. When the architectural infrastructure is improved to meet the parameters of universal accessibility, the flow of people increases and improves, as well as increasing the scope of the service offered by the institution to attract human capital and users.

### Problem

It has been detected that the architectural space of some educational and government institutions represents problems in terms of mobility and safety, especially for people with motor disabilities, children and the elderly, as well as for blind people. This is particularly evident at the entrances, which are made up of small squares and steps.

It is also observed that the circulation corridors lack properly designed ramps, stairs and elevated areas in most cases do not have handrails or curbs to safeguard people's safety. These aspects represent horizontal and vertical circulation problems for people, together with the need for ethical signs for a correct orientation and flow of people.

### Justification

The benefit of the research is to generate a diagnosis in the form of a technical report for each participating institution, with the intention of collaborating in the technical justification for the approval of investment projects for the improvement of state and federal schools, with which it is possible to improve the image.

Remodel and recondition the urban-architectural infrastructure of the institution, improving mobility conditions, especially for people with motor, auditory and visual disabilities, as well as for the elderly. (De Miguel, 2015). Another benefit of the research is to contribute in a positive way, to eradicate the perception of the population about discrimination and the limited opportunities of access to education and job opportunities that people with disabilities have according to the results of the National Survey on Discrimination in Mexico (INEGI, 2022 and INEGI, 2014) are important points that should be addressed according to the National Program for the Development and Inclusion of Persons with Disabilities 2014-2018 (G.F. of Mexico, 2014).

### Approach

This research uses a descriptive qualitative approach, based on the observation of a social phenomenon such as the difficulty of moving safely, easily and freely within educational and government institutions, in addition to the limited presence of users with motor disabilities within the architectural space; once the problem has been identified, the cause that originates it and the way to mitigate it is exposed under the criteria of the researcher. Observation, delimitation of the focal group, field visits, interviews, documentary and comparative analysis, creation of graphs to facilitate interpretation, presentation of results and the corresponding analysis are implemented.

### Theoretical framework and methodology

#### *Section A Tool design*

Since 2018, the design of the evaluation rubric begins; a tool that has served to diagnose universal accessibility in urban architectural spaces, specifically for buildings and circulations; The purpose of this is to assess and expose the level of adaptability provided by educational and governmental spaces to the general public, with the understanding that Universal Accessibility goes beyond focusing its efforts on a vulnerable sector of the population with motor, hearing or visual disabilities, but rather, it focuses on expanding its scope, providing access to services, spaces, information and movement to the majority of the population. (SEDUVI, 2016)

Part of the purpose of creating the evaluation rubric is to have an objective, simple, accessible and clear way to know and interact with the technical construction specifications that most of the manuals describe, and that, according to the surveys applied, a large part of the managers, municipal authorities and those responsible for the institutions are unaware of, which is why to date, both in Mexico and in other countries manuals continue to be developed to improve the interpretation of the current regulations on universal accessibility (Boudegue, 2010; ONCE, 2011).

The rubric is made up of eight headings broken down into 244 indicators or items as proposed in other research (Del Moral, 2004); all of these derived from the basic bibliography in addition to the analysis of the tools designed by other authors whose results have been satisfactory (Torres, 2011) and a summary table is presented below with the number of indicators considered for each heading.

### Box 1

**Table 1**

Groups and indicators number

no.	Group	Indicator
1	Parking and Accessible route.	22
2	Pedestrian ramps and bridges.	37
3	Podotactile pavement and access.	38
4	Information module and stairs.	40
5	Stairlifts, platforms and elevators.	16
6	Drinking fountains and sinks.	27
7	Bathroom and urinals.	38
8	Signage.	26
	Indicators sum.	244

Source: Own elaboration.

Another of the characteristics added for interpretation are the five intervals on a scale of one to five, as opposed to the six intervals proposed by Ríos, 2018, to establish a diagnosis of accessibility, in which the following legends are adopted: High accessibility if it meets 80% or more of the indicators; Good from 60% to 80%; Medium from 40% to 60%; Low from 20% to 40%; and Not accessible below 20% of the indicators. From table 1, it is important to note that some indicators will not apply to certain Institutions or buildings, because the particularities are different; for example, for an Institution whose buildings have only one level; ground floor; the item Stair lifts, platforms and elevators does not apply.

The digital design of the evaluation rubric is presented in Annex A; links per item in Microsoft Forms questionnaire format, which also includes a general information form, a survey for the registration of participation, and a section for the request of the technical report.

### Section B Managing participation

The management of access to government and educational facilities was always under the supervision and authorisation of the management staff or those responsible for the administration of the institutions:

1. personally by visiting the institutions and explaining the reasons and objectives of the research to the managers and those responsible. In this first option, given the fear of the managers about the results, it was always important to clarify that, to date, in most of the municipalities, the Manual of Technical Standards for Universal Accessibility of the Federal District is not mandatory, so that non-compliance does not represent any reprimand from the authorities of the Public Administration towards the institution. This also identifies a lack of knowledge about the application and scope of the MNTAUDF.
2. In a formal way, with a letter of invitation addressed to the administrative heads where the interest in their Institution to participate in the First Ranking of Universal Accessibility is expressed, in order to demonstrate and compare the level of their facilities with other Institutions. Participation can also provide them with some of the benefits described above.

### Section C Fieldwork

Once access to the institutions is provided, the observation and data recording activity is carried out over a period ranging from two hours to approximately two days, the first day to carry out the observation, measurement and filling in of the rubric, and the second to verify and confirm the veracity of the information.



The time is conditioned by the size of the Institution and the number of people who carry out the field activity. It is suggested to work with at least three people in order to carry out the activities properly.

The tools used are the following:

1. Checklists (Evaluation rubric in printed format to write down) 2.
2. Flexometer to measure short distances.
3. 30-metre tape for medium distances.
4. Distance meter for long distances.
5. Vernier for measuring diameters.
6. Bubble level to verify inclinations by means of squares to verify slopes.
7. Photographic camera to integrate evidence.
8. Computer equipment.
9. Creation of forms in the Microsoft Forms application.
10. Excel for data processing.
11. Word to integrate reports.

#### *Section D Integration of technical reports*

The collation tables were transcribed to the Microsoft platform, specifically forms were created in the Forms application with the intention of creating a digital backup of the information, in addition to facilitating the processing and analysis of the information through real-time graphs and later in Excel.

Finally, the last stage of the research, which is in the process of development, is to present the results in Ranking format, and to integrate them in the elaboration of the technical reports that will be sent to each of the participating institutions, hoping that they will be of help for future projects.

## **Results**

The results of the research are presented in the order of the items, the participating institutions to date are three universities in which each of the buildings were studied independently, which is why the numbering is added to one decimal place; four middle schools, five elementary schools where one is secondary; four primary schools and finally, two government institutions; a total of 14 participating institutions and a grand total of more than 20 buildings evaluated.

The graphs of the results and the corresponding analysis are presented below; it is important to anticipate to the reader that the buildings of some Institutions that appear without information are because they do not require the facilities because they share them with other adjacent buildings; such as for example the sanitary services or the car park.

Figure 1 identifies the result corresponding to the item Parking and accessible route, where the Diagnosis is that six Institutions-Buildings have low Accessibility, four with A. medium, seven with A. good and five with A. high; this item is where the general results were the ones with the highest percentage of accessibility.

This is due to the fact that building regulations are mandatory and specify the number of vehicle parking spaces required for a building based on its function and size in square metres of construction, as well as the general characteristics of car parks; such as transverse and longitudinal slopes of vehicular lanes and parking spaces, minimum signage, configuration of curbs, widths of vehicular accesses, minimum widths of pavements and their height, as well as the percentage of transverse slope required for access ramps, and their transitions, if required.

## Box 2

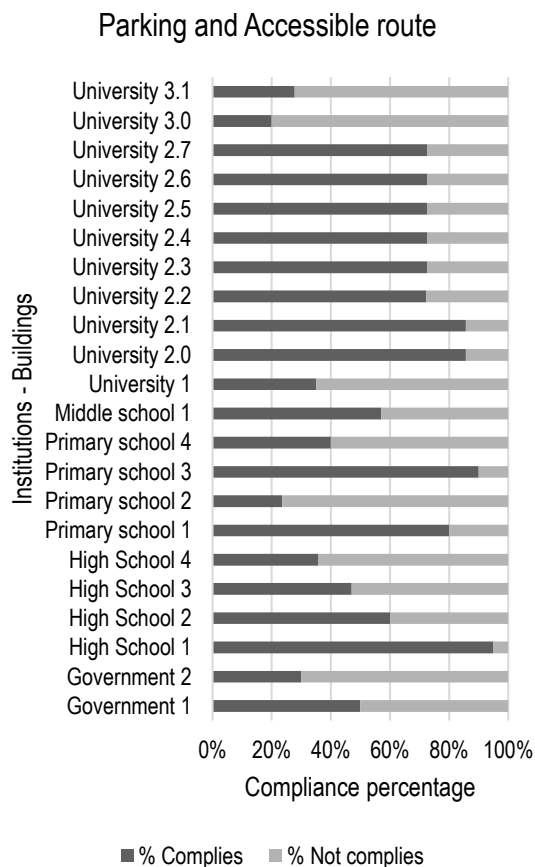


Figure 1

Parking and accessible route compliance results

Source: Own elaboration

Figure 2 shows the results of the item Ramps and overpasses, where the diagnosis is that only two Institutions-Buildings have High A., eight have Medium A., four have Low A., eight are not accessible; none has Good A.

In general, during the field visits, ramps were identified in more than 90% of the institutions, however, it is common that their characteristics do not comply with the recommended construction specifications.

From the above, it is observed that the topographical conditions where the buildings are located cause large vertical differences between the levels of the construction elements such as pavements, pavements, slabs and pavements, so that slopes of 6% to 10% generate very long developments to connect them, which implies steeper ramps or the replacement of ramps by stairs. For example; to climb a 15cm pavement with a 6% slope ramp, a considerable development with a length of 250cm is required.

The diagnosis of the Pavement, visual touch and accessibility item is shown in Figure 3; where the results show that 16 of the Institutions-Buildings are not accessible, only five were rated with A. Medium and one with A. Low.

Access being a key element for the buildings, the problem detected is that the architecture of most of them is composed of one or several slopes; this starting from the car park or pavement, therefore reaching the finished floor level implies a correct architectural urban design relationship between the car park, the accessible route, the approach area and the connections between the changes in level; the ramps or stairs; and the topography in many cases plays against us.

## Box 3

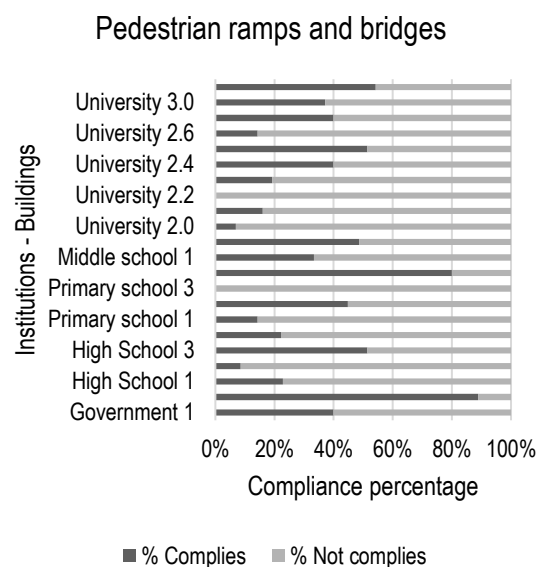


Figure 2

Pedestrian ramps and bridges compliance results

Source: Own elaboration

The accessible route, stairs, ramps and accesses should also consider tactile or visual touch paving; to broaden the public that the building can serve, however, only one of the 22 elements studied had it; in the opinion of the respondents, it is an element that those responsible for the architectural design of the building do not consider important.

Regarding figure 4, of the Information Module and stairways item, eight elements are observed with A. medium, five with A. low, four with A. good, four with A. good, four Not accessible and only one with A. high.

## Box 4

## Podotactile pavement and access

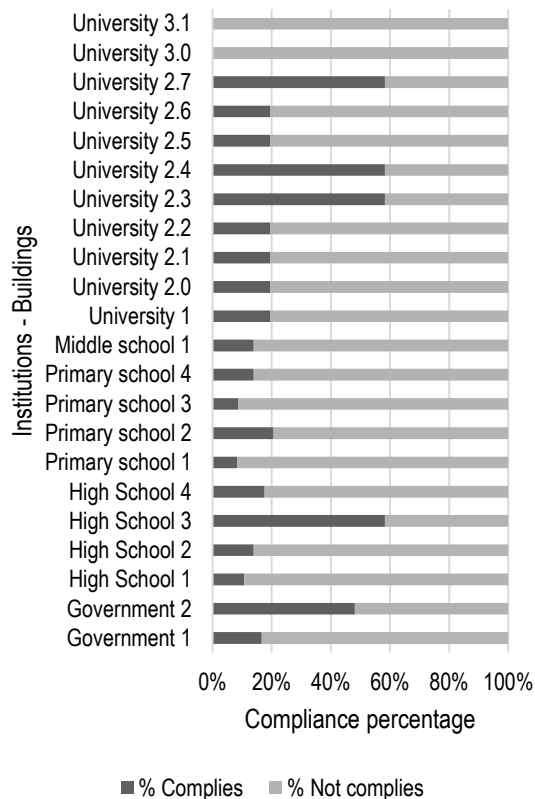


Figure 3

Podotactile pavement and access compliance results

Source: Own elaboration

From the previous paragraph, on figure 4, it is observed in most cases that there is some type of stairs, despite the fact that some of the buildings evaluated only consist of one level, ground floor, which reinforces what has been described about the architectural design of the accesses and the complicated connections between the different levels of the construction elements, due to the complexity of the topography of the site.

Stairs, specifically the relationship between the depth of the tread and the height of the rise or riser, is very important for the architect or engineer, and is considered in the building regulations, however, some construction details are not, such as the diameter of the handrail, a specification that is found in some standards. With this it is possible to detect that part of the problem is the variety of guidelines that exist, which leads to investing more time in finding the necessary specifications for a better development of urban-architectural projects.

## Box 5

## Information module and stairs

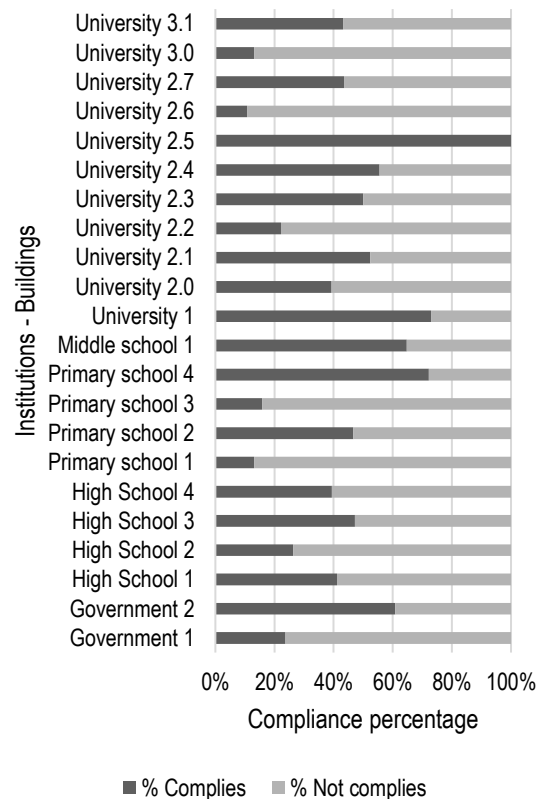


Figure 4

Information module and stairs compliance results

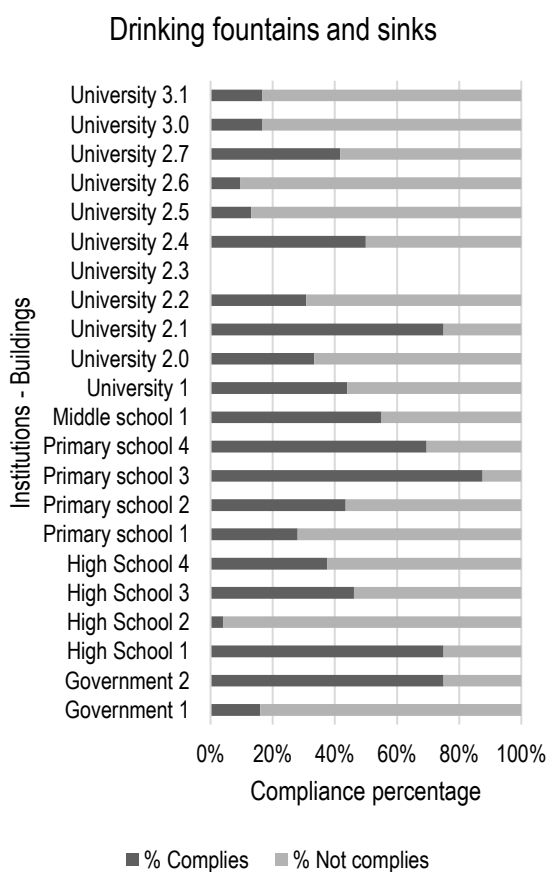
Source: Own elaboration

The result of the item of stair lifts, platforms and elevators is not shown, because none of the Institution-Buildings implements them. The strategy to avoid this is to eliminate the difficulty of climbing stairs, providing the service for people with disabilities on the lower floors of the buildings. As far as elevators are concerned and according to the building regulations, it is not necessary to implement them in buildings with less than four levels, so it does not apply to all the buildings that were observed and integrated in this research, where the tallest building that was evaluated is made up of the ground floor, level one and level two.

In Figure 5, on the Toilets and washbasins, the diagnosis is; one with high A., four with good A., six with medium A., four with low A. and six that are not accessible.

For this item it is observed that, on average, the percentage of universal accessibility increases because the furniture itself is characterised by being designed with the principles of anthropometry and ergonomics, so the most common problem is the height of the installation, the omission of the inclination of the mirror and the particularities of the accessories; and in the case of washbasins composed of bars, the most common problem in addition to the above is the depth of the furniture.

### Box 6



**Figure 5**

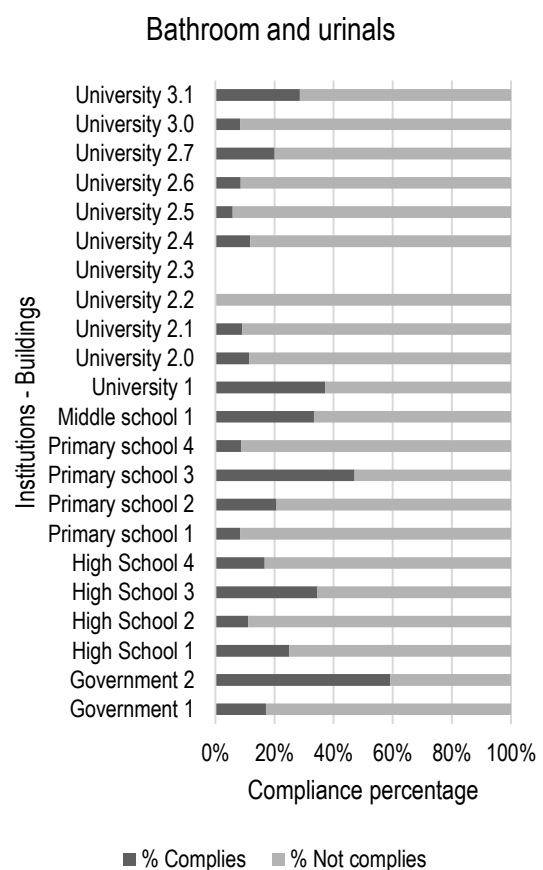
Drinking fountains and sinks compliance results

Source: Own elaboration.

In the case of the Bathrooms and urinals item, Figure 7 shows that the diagnosis is as follows: none with high A., none with good A., only two with medium A., seven with low A., and 12 are not accessible.

The cause that generates it, in the words of the researcher and based on some opinions of people, managers, administrators and specialists in the construction industry surveyed; is that the large number of details or specifications that are considered in the MNTAUDF; as point number one; go unnoticed by the specialists of architectural design; and as point number two, the greatest economic investment for the construction or remodelling of buildings is applied to the most important constructive or technological elements that form part of the public areas of the facilities, such as the façades, green areas and patios, computer rooms or laboratories; in this way, the private spaces destined for bathrooms and urinals are neglected.

### Box 7



**Figure 6**

Bathroom and urinals compliance results

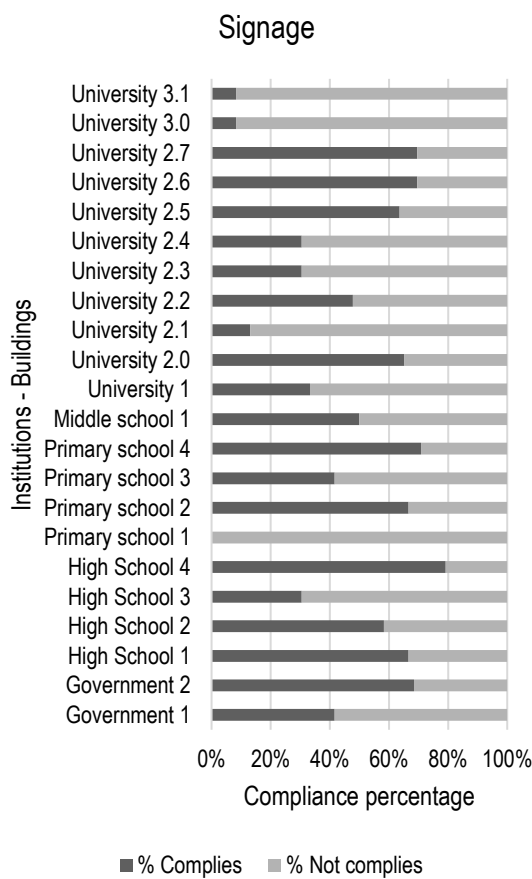
Source: Own elaboration

In the last item to be analysed, which corresponds to signage, the results can be seen in figure 8, where the diagnosis is encouraging, nine with A. good, five with A. medium, four with A. low, and four not accessible, none with A. high.



For the last item, which corresponds to signage, it is considered that as it is a regulated item and exposed to supervision by other bodies such as Civil Protection, it retains an added value given the importance of safeguarding the safety of workers, students, teaching staff, management, administrative and maintenance staff, as well as the general public; therefore, educational and government institutions try to comply as far as possible with the specifications imposed. And with the intention of meeting the requirements, in some cases, it is observed that the signage is designed and manufactured by the staff of the same institutions.

**Box 8**



**Figure 7**

Signage compliances results

Source: Own elaboration

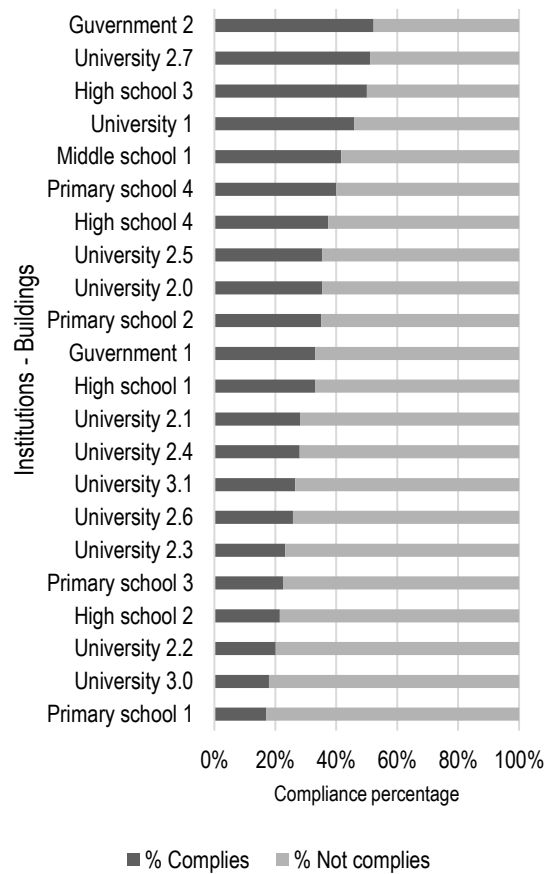
**Conclusions**

A relevant tool was designed and applied to diagnose the infrastructure in terms of universal accessibility with emphasis on pedestrian mobility, focused on the majority of the population.

The institution with the best results is evidently a decentralised public body and its main function is to attend to the public and families in vulnerable situations, street people, elderly people, people with disabilities, among others. Unique in having visual touch pavement.

**Box 9**

Universal accessibility Ranking 2024



**Figure 8**

Universal accessibility ranking of educational and government institutions 2024

Source: Own elaboration

Figure 8 shows the Universal Accessibility Ranking of the participating Educational and Government Institutions, in which it can be seen that the average rating is 35% of the indicators; the maximum rating is 52%, the minimum 17%; so the average Universal Accessibility diagnosis is Low. The particular diagnosis can also be seen in table 2, where six Institutions-Buildings with medium accessibility, two not accessible and 14 with low accessibility are observed.

**Box 10****Table 2**

Diagnosis of the accessible infrastructure of Educational Institutions and Government 2024

Ranking	Institutions - Buildings	Diagnosis
1	Guvernment 2	Average
2	University 2.7	Average
3	High school 3	Average
4	University 1	Average
5	Middle school 1	Average
6	Primary school 4	Average
7	High school 4	Low
8	University 2.5	Low
9	University 2.0	Low
10	Primary school 2	Low
11	Guvernment 1	Low
12	High school 1	Low
13	University 2.1	Low
14	University 2.4	Low
15	University 3.1	Low
16	University 2.6	Low
17	University 2.3	Low
18	Primary school 3	Low
19	High school 2	Low
20	University 2.2	Low
21	University 3.0	Not accessible
22	Primary school 1	Not accessible

Source: Own elaboration.

In the consultations carried out in the application of the surveys, it was identified that a large number of construction specifications described in the regulations and manuals are unknown to most of the directors and administrators of the participating institutions; they know of the existence of manuals, but not of their scope and particularities. In several educational institutions, the technical report resulting from the analysis will be very useful to highlight the problems and justify the need to improve the architectural urban space, also to support the change in the image of the facilities and to encourage the increase of the target public to which they provide services. According to some surveys, it is also detected that people with motor disabilities consider that the items of accessible route, ramps and parking are more important, while a proportional part thinks that the items of ethical signs and stairs are also an important part of the characteristics of an accessible building. In the opinion of the researchers, it is necessary to align and centralise the construction specifications of regulations, standards and manuals so that there is a clear bibliography for design and construction specialists to apply in projects.

Although the topographical conditions of cities and urban-architectural spaces make the application of certain elements difficult, it is feasible to establish, under certain circumstances, the obligatory application of the MNTAUDF in order to reduce physical barriers and improve social inclusion.

**Annexes**

Annex A. Links per item in Microsoft Forms questionnaire format:

1. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUOURHQzJVOExGQUM0QjFCRVBRQkM4R1hFSi4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUOURHQzJVOExGQUM0QjFCRVBRQkM4R1hFSi4u)
2. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUQ0E5WUpFSjVFMzU2TlpOWDJMNkVPUjVOSS4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUQ0E5WUpFSjVFMzU2TlpOWDJMNkVPUjVOSS4u)
3. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUMDdSMU45SDNRMUpaOVE2QzFVNko5N1JFOC4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUMDdSMU45SDNRMUpaOVE2QzFVNko5N1JFOC4u)
4. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUQzdaQkIJMUNCMU8xRVE2T1laSFQ4S1NaVS4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUQzdaQkIJMUNCMU8xRVE2T1laSFQ4S1NaVS4u)
5. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUM1pETUhLU0JZTVRBUtdRWU41UUpYRTRPRy4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUM1pETUhLU0JZTVRBUtdRWU41UUpYRTRPRy4u)
6. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUMDZOSjFKREZPMzFETIZOODU4QzIXRzVORi4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUMDZOSjFKREZPMzFETIZOODU4QzIXRzVORi4u)
7. [https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUQ1JKV0pLVVIDWUY1NzRMRUdPR01KVDdaUC4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkqq8W_V8tujP12t3iOilvdDipIyvBxBjOxUQ1JKV0pLVVIDWUY1NzRMRUdPR01KVDdaUC4u)

8.

[https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxURDIQNFo2MUM3UFM5MzVKT0s4OVIyUFU5WS4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W_V8tujP12t3iOilvdDipIyvBxBjOxURDIQNFo2MUM3UFM5MzVKT0s4OVIyUFU5WS4u)

9.

[https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUOURPR0ZZV041UDNQTIBSV1dRR1A2SkJVQS4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W_V8tujP12t3iOilvdDipIyvBxBjOxUOURPR0ZZV041UDNQTIBSV1dRR1A2SkJVQS4u)

10.

[https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W\\_V8tujP12t3iOilvdDipIyvBxBjOxUNkZOE85N0dQUTk0U05TWFpDNjg2TUhRTy4u](https://forms.office.com/Pages/ResponsePage.aspx?id=WBZoYC0PTkq8W_V8tujP12t3iOilvdDipIyvBxBjOxUNkZOE85N0dQUTk0U05TWFpDNjg2TUhRTy4u)

## Declarations

### Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

### Authors' contribution

*Zapata Padilla, Néstor Juan*; Contribution with the idea, methodological process, creation of the indicator proposal according to the constructive specifications of the normative framework, data processing and interpretation, and integration of the information in the article.

*Turrubiates Flores, Héctor Omar*; Review of bibliography and analysis of the background of the current legal framework, for the drafting of the summary and introduction. Analysis of results.

### Availability of data and materials

As stated in Annex A, the indicator rubric is available on the web and is open access. The editable file of the evaluation rubric in Excel format can be requested via email to the authors' email address. To assist in the interpretation and analysis of the results of this research, the information can be requested directly from the authors of this article and will be provided in editable Excel format.

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## Abbreviations

A. Alta	Accessibility High.
A. baja	Low accessibility.
A. buena	Good accessibility.
A. media	Medium accessibility.
CONAVI	National Housing Commission.
CNDH	National Human Rights Commission.
DF	Federal District.
DOF	Official Journal of the Federation.
G. E.	State Government.
G. F.	Federal Government.
IMSS	Mexican Institute of Social Security.
INEGI	National Institute of Statistics, Geography and Information.
INIFED	National Institute of Educational Physical Infrastructure.
IMSS	Mexican Institute of Social Security.
MNTAUDF	Manual de Norma Técnica de Norma Técnica de Accesibilidad Universal del Distrito Federal.
NTCPA	Complementary Technical Standard of the Architectural Project.
S.L.P.	San Luis Potosí.
SECTUR	Ministry of Tourism.
SEDUVI	Ministry of Urban Development and Housing of the CDMX.

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