

CETRA²⁰¹⁴

3rd International Conference on Road and Rail Infrastructure
28–30 April 2014, Split, Croatia

Road and Rail Infrastructure III

Stjepan Lakušić – EDITOR

Organizer
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Faculty of Civil Engineering
Department of Transportation



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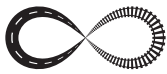
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ANALYSE OF THE ACCESSIBILITY OF PEOPLE WITH DISABILITIES OR REDUCED MOBILITY USING URBAN TRANSPORT TO HEALTH TREATMENT

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Abstract

The objective of this work is to analyse the accessibility of the people with disabilities or reduced mobility using urban transport for health treatment. The study was conducted in the city of Campinas – Brazil, considered as a center of excellence in health care with two renowned courses in medicine: one at the State University of Campinas – UNICAMP and Pontifical Catholic University of Campinas. For this purpose it was decided to analyse the stopping points of the public transport bus line 3:30 serving the Hospital of UNICAMP since this bus line has vehicles with equipment that allows access for people with mobility impairments. It was made a field survey georeferencing all bus stops and verifying for accessibility equipment, curbside cutouts, sidewalk conditions, tactile flooring, cover, bus schedule informations, etc. To perform the analysis was developed a Geographic Information System using MapInfo software (version 10.0) with the digital base provided by Campinas Municipal Development Company (EMDEC) which has as reference surface the Hayford ellipsoid, Córrego Alegre horizontal datum and Universal Transverse Mercator (UTM) coordinate system. After the final analysis it can be concluded that none of the line bus stops has all accessibility equipments focused on the field survey. It is important to mention that the relevance of this study is not only by the results but by the small number of studies that deal with this very important topic for social inclusion.

Keywords: accessibility, people with disabilities or reduced mobility, urban transport

1 Introduction

It can be argued that social inclusion is a measure leading to the drafting of laws and services aimed at meeting the special needs of persons with disabilities or reduced mobility. By creating equipment, laws and mechanisms to adapt the common social systems to these individuals difficulties, the social inclusion aims to transform society into a viable place for equal socializing among all people, regardless of their intellectual abilities, motor difficulties or potentialities. For social inclusion to be successful, you must associate them with the premises of Universal Design, which is characterized by the promotion of accessibility to all segments of the population through the creation of environments capable of harbouring the differences, unlike other space adaptation plans for people with disabilities who were characterized by unique and segregating environments [1].

Thus, this study aims to use the resources of a Geographic Information System to analyse the accessibility of persons with disabilities or reduced mobility using urban transport for health treatment.

2 Case study

The study was conducted in the city of Campinas – Brazil, considered as a center of excellence in health care with two renowned courses in medicine: one at the State University of Campinas – UNICAMP and Pontifical Catholic University of Campinas. For this purpose it was decided to analyse the stopping points of the public transport bus line 3:30 serving the Hospital of UNICAMP since this bus line has vehicles with equipment that allows access for people with mobility impairments. This route is approximately 33 km long. The course is conducted in 50 minutes approximately, and at peak times the service occurs every 8 minutes and in normal times every 15 minutes on average. It was made a field survey georeferencing all bus stops and verifying for accessibility equipment, curbside cutouts, sidewalk conditions, tactile flooring, cover, bus schedule informations etc.

Towards the Hospital of Unicamp (Figure 1) for the Central Terminal of Campinas (Figure 2) were analysed and 32 stopping points in the opposite direction, 30. Here are some photos taken at this stage (cf. Figures 3 – 8).



Figure 1 Clinics Hospital of the State University of Campinas



Figure 2 Campinas Central Bus Terminal



Figure 3 Examples of regularized sidewalks with curbside cutouts for easy access to people with reduced mobility, however, with the absence of elevated curbside to facilitate boarding of wheelchair users



Figure 4 Example of elevated curbside to facilitate boarding of wheelchair users



Figure 5 Obstruction in a walkway giving access to a stopping point located on Zeferino Vaz highway, shown in Figure 6



Figure 6 Stopping point at Zeferino Vaz highway



Figure 7 Stopping point fully prepared with regularized sidewalks



Figure 8 Ramps to facilitate access of persons with disabilities or reduced mobility

3 Development of GIS

To perform the analysis was developed a Geographic Information System [2] using MapInfo software (version 10.0) [3] with the digital base provided by Campinas Municipal Development Company (EMDEC) which has as reference surface the Hayford ellipsoid, Córrego Alegre horizontal datum and Universal Transverse Mercator (UTM) coordinate system [4]. The equipments were classified according to ISO 9050:2004 recommendations and the universal design concepts [5]. As a result was elaborated the stopping points classification thematic map shown in Figure 9.

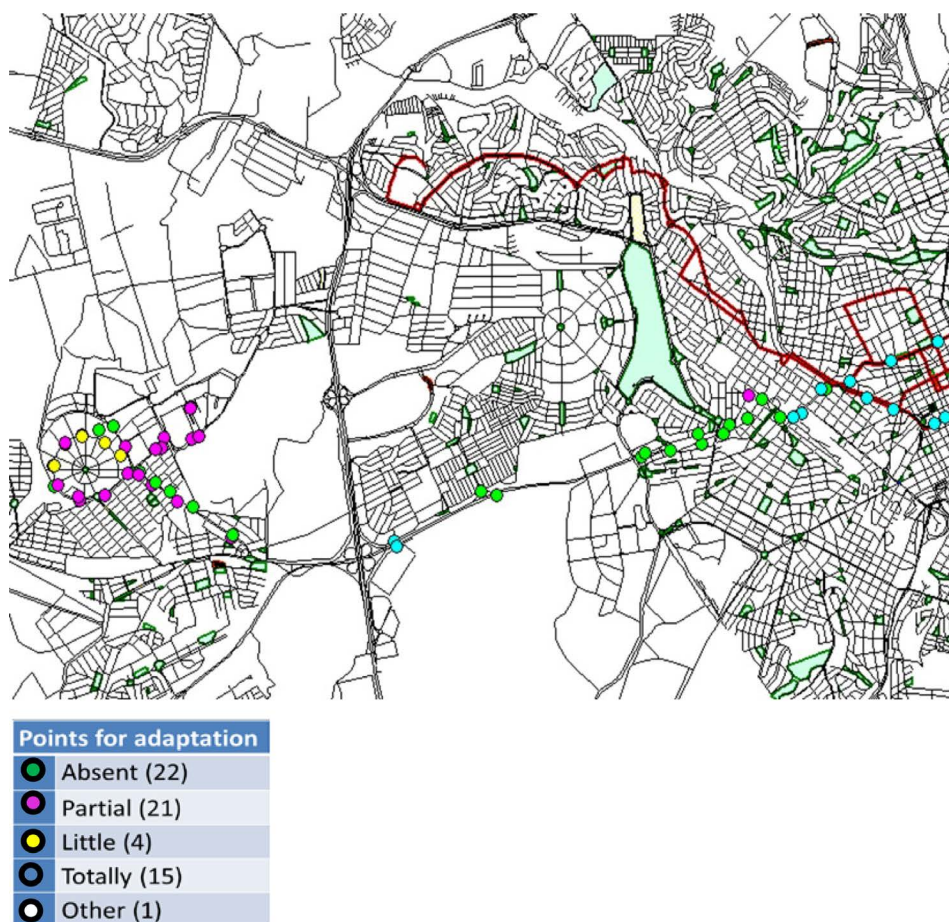


Figure 9 Stopping points classification thematic map

4 Conclusions

The study showed that are recurrent the contradictions that, historically, are presented about several ways of exclusion, manifested by prejudice, intolerance and segregation. Opposing to it, the urban transport is presented as a form to promote the social welfare because with it is possible to provide the access to health treatment.

The technical visits, taking as references NBR 9050 (ABNT 2004), pointed out that despite significant improvements enforced by specific laws that guarantee to the disabilities or people with reduced mobility the right to citizenship, the physical environment of such places still have many obstacles that impede their mobility, showing its unreadiness to receive them. It was also observed that the actions on accessibility have been marked by the adoption of palliative solutions that hinder the optimal use of space and reinforce segregation.

The GIS developed in this study represents a great advance because the data provide to the local government a tool of analyses interactive for visualization and query. Additionally, the broad coverage possible with the GIS shows the potential to generate a culture that benefits from adopting the principles of universal design to public transportation and Stopping points. After the final analysis it can be concluded that approximately 20% of the route stopping points have all equipment focused on the accessibility field survey. It is important to mention that the relevance of this study is not only the results but the small number of studies that deal with this very important topic for social inclusion.

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