
SUSTAINABILITY OF PEDESTRIAN PATHS

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ABSTRACT

Generally, when we talk about sustainability we think the main reference is the respect of the natural environment, but the concept of sustainable road infrastructure may be even wider especially if you think the pedestrian paths, where the concept of sustainability is closely linked to that of quality of the road. In this regard it is known that the quality of a road is perceived differently by different users, whose behaviours vary according to the motivations of the displacement, the length of the path to follow, the security and the comfort perceived. These differences are even more pronounced in the case of pedestrians, for whom the concept of sustainability/quality of the path takes a key role, even in just the choice of the same. When designing a pedestrian path, often it still refers to "average user", ignoring the great variability in the skills, abilities and knowledge that characterize the population that already moved or which in fact see denied the possibility of moving.

This article analyzes the pedestrian behavior with specific attention to critical detectable along the existing pedestrian routes especially for the mobility-impaired pedestrians, analyzing the difficulties of moving people with disabilities. In the first part of the article are briefly described the basic principles of Design for All and the characteristics of pedestrians in relation to age and motor skills, in order also to highlight how the concept of the average user in the design of spaces pedestrian is obsolete. The second part analyzes the perception of the quality of pedestrian paths by pedestrian themselves, paying particular attention to those with reduced mobility. The work, reported in this article, is the first part of a broader research work that sees the authors engaged with Psychologists, Botanists and Architects, about the quality of the urban road.

Keywords: barrier free design, accessibility, urban road.

INTRODUCTION

The links between transportation, social exclusion, and personal well-being are investigated in recent research. Given the spatially dispersed nature of a vast majority of activities, transportation is increasingly seen as a key factor that can facilitate if available, or hinder if not, inclusion in all the normal aspects of society. In addition to satisfying elemental maintenance needs, travel is also hypothesized to affect well-being. Recent research indicates that travel can improve well-being by increasing satisfaction with life, by generating positive affects such joy and alertness, and/or by reducing negative effects such as sadness and sleepiness. Research on well-being has come to add urgency to the objective of developing socially inclusive transportation. Not only is inclusion desirable for its role in satisfying basic needs, we now know that individual well-being may well be predicated on the ability to participate in common activities. Nowhere is the importance of enabling participation more manifest than in the case of vulnerable populations, including people with disabilities. Paez (2010)

In this regard Canada (and other Countries) has assumed the obligation to foster the fundamental right to independent living of individuals with impairments. Paez (2010)

In Italy a culture of accessibility fails to develop and the pedestrian occupies a marginal place in the scenarios of urban development and mobility, despite increasing demands for urban quality, the number of elderly, diseases arising from a sedentary lifestyle, smog and traffic accidents involving pedestrians. Murielle (2009)

In order to address the concept of accessibility, several studies have been conducted and definitions suggested. Often, the approach used is a geographical one. For this reason it is important to distinguish two concepts of accessibility, namely "access to infrastructure" and "access to destinations"; the former is concerned with the barriers that prevent people from using transportation systems, while the latter appears mainly in the land-use literature and refers to regional accessibility patterns. Schmöcker (2009).

Definitions used in environmental (especially environmental gerontology), planning and architectural discourse refer to if and how activities in society can be reached, the possibility to take part in something desirable and the geographic proximity in terms of distances and time. Iwarsson (2003). Many accessibility indicators, however, are not suitable for older people as they do not reflect the types and characteristics of journeys older people actually make and aspire to make. The missing element is the importance of mobility and independence for this group – the ability to just get out and about, the ability to meet people, to partake in social interactions. Titheridge (2007).

The individual model conceiving disabilities as the consequence of limitations to perform at “normal” levels of competency, and the social model shifting the focus to social processes that impose restrictions to people with impairments. Paez (2010)

Hence, accessibility is a relative concept, implying that it should be expressed as a person-environment (P-E) relationship. In other words, “accessibility is the encounter between the person’s or the group’s functional capacity and the design and demands of the physical environment”, and as such, it “refers to compliance with official norms and standards”. Iwarsson (2003). Quite recently, the concept of accessibility often goes together with other concepts such as “Design for all”, which then should be part and parcel of accessibility planning and implementation. References could also be made to “Usability” and “Universal design”. However, usability is not only based on compliance with official norms and standards, but also takes “into account user evaluations and subjective expressions of the degree of usability”. Wretstrand (2011).

In the urban area of Cagliari (Sardinia's city), an analysis of accident data has stressed that, in recent years, despite the high percentage of pedestrians involved in injuries, no one was impaired person. Looking carefully at the people walking on Italian streets, it is possible to observe that a very small percentage of these are impaired people. It was also noted that this trend is not in line with European standards: in other European cities the disabled population moving through the streets of the city covers a large percentage.

Then we wonder: why it is in Cagliari or in other Italian cities, disabled people moving through the streets are so few? From that question, the research project, of which this paper is a first collection of ideas, was born. For several years the research team is interested in the urban road design problems, in the last years the attention focuses on the needs of vulnerable users and so also impaired people.

The aim of the study, reported in the paper, is to understand what are the main obstacles/barriers that usually are found by individuals with disability along the streets. Besides, these barriers, often, led them to move as little as possible. To achieve this it was decided to draft a questionnaire and spread it to sports associations related, for example, to the Paralympics activities, which have daily contact with large numbers of people with disabilities. Then we drew up the first results of this investigation.

The research aims to draw up guidelines for urban design sensitive to the needs of most users, with the creation of solutions without discriminating and not with the using of solutions ad hoc only to impaired people: for example, the ramp can be travelled by all, avoiding in the public spaces the presence of stairs, only enter ramps to overcome differences in height could be one of the first steps towards creating a liveable urban space by all, without discrimination.

Another target of the research work is the creation of indicators of how well mobility is provided for people with disabilities.

BARRIER FREE DESIGN

More than 12% of the working population has some form of physical, sensory, or mental disability. Rehabilitation Research and Training Centre on Disability Demographics and Statistics (2005). A disability is a condition which limits major life activities such as walking, lifting, hearing, seeing, remembering, or concentrating. Manley (2011).

Internationally there are many guidelines or design standards that have as key objective to assurance that people with disabilities have equivalent rights to equality under the law as do able-bodied people and the promotion of the principal that people with disabilities have the same rights as able-bodied people in the community. Vintila (1996). Examples of that are the Commonwealth Disability Discrimination Act 1992 (DDA) born in order to eliminate discrimination as far as is practicable against people with disabilities in the areas of:

- work, accommodation, education, access to premises, clubs and sport;
- the provision of goods, facilities, services and land;
- existing laws; and
- the administration of Commonwealth laws and programs. Austroads (2002).

The definition of disability is:

- a. total or partial loss of the person’s bodily or mental functions; or
- b. total or partial loss of a part of the body; or

- c. the presence in the body of organisms causing disease or illness; or
- d. the presence in the body of organisms capable of causing disease or illness; or
- e. the malfunction, malformation or disfigurement of part of the person's body; or
- f. a disorder or malfunction that results in the person learning differently from a person without the
- g. disorder or malfunction; or
- h. a disorder, illness or disease that affects a person's thought processes, perception of reality,
- i. emotions or judgment or that results in disturbed behaviour;
- j. and includes a disability that:
- k. presently exists; or
- l. previously existed but no longer exists; or
- m. may exist in the future; or
- n. is imputed to a person. Manley (2011).

DATA SURVEY AND ANALYSIS OF THE RESULTS

In this article it was the only issue related to people with mobility impairments, using, for example, wheelchairs or stick to help themselves to move. The research is currently underway and interest is spreading to people with visual, auditory impairments, and so on.

We proceeded with the analysis of the quality of urban spaces perceived by the individuals with disabilities, in order to understand which will be the main obstacles that cause them not to move to the city.

Were contacted sport associations of impaired people and drafted them the questionnaire. It aims to verify on the basis of an initial investigation which are the characteristics of the urban road making it little accessible or, often, inaccessible. The questionnaire was organized in the form of open-ended question in order to allow people to answer in complete freedom about the state of urban spaces.

The questionnaires were distributed at major sports facilities for people with disabilities: 70 questionnaires were analyzed. The questionnaire was distributed in order to verify, through an initial survey, the level of quality and of accessibility of urban roads, perceived by the disabled.

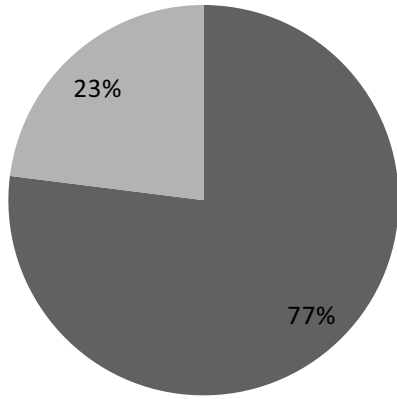
The main objective was to understand what will be the main problems of the city, in order to have suitable suggestions to make the space more responsive to real needs of citizens. In fact, the identification of obstacles that may limit for certain categories of persons the use of a service or a facility, is an essential element for those who are called upon to evaluate a given situation or to design the service from scratch.

For this purpose it was considered appropriate to establish and test a model of questionnaire that would provide a track to express the opinion about the quality of streets perceived by the people with disability who you usually would go out in total freedom. For that reason we preferred, in this first step, only contact sports clubs, where the members are more accustomed to move to the cities and usually practicing sports are more accustomed to moving and so they know several problem of urban paths.

The survey instrument used was in fact a questionnaire comprising 16 open-ended questions. It aims to analyze the experiences, challenges, obstacles and facilitation aspects that people with disabilities live and meet regularly in everyday life.

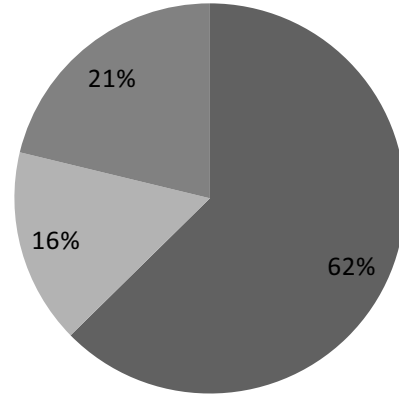
Overall, the questionnaire was administered to a number of 70 individuals, half men and half women. The average age of those who took part in the survey is on average equal to 44 years for men and 47 for women.

Below are some of the results obtained from the questionnaires.



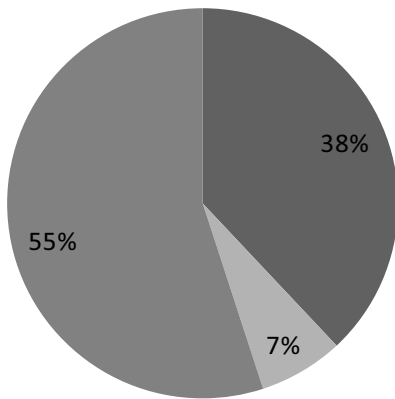
■ Residents in the city ■ Residents outside the city

Figure 1 - Where they come from



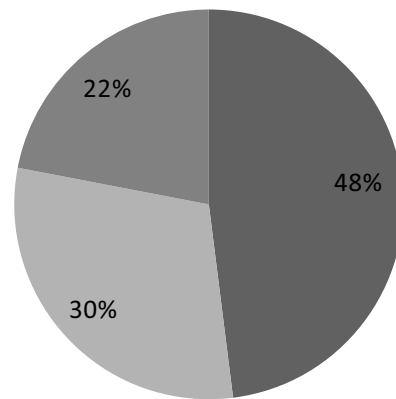
■ Wheelchair ■ Stick ■ Other

Figure 2 – Mobility tool



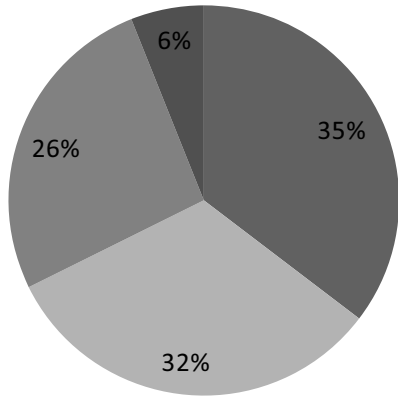
■ Job ■ Study ■ Other

Figure 3 – Reason for travelling



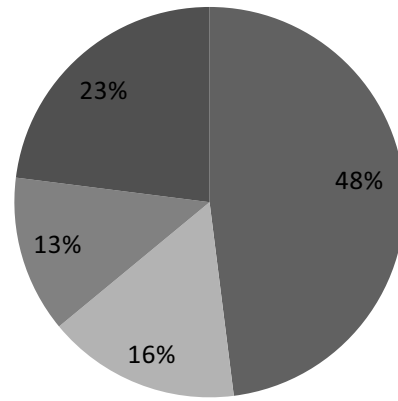
■ Pavement ■ Difference in level ■ Other obstacles

Figure 4 – Because of discomfort



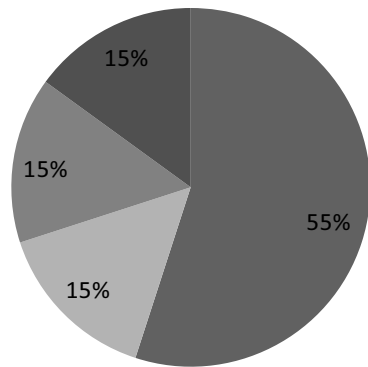
■ Offices ■ Hobby ■ Health ■ Sports

Figure 5 – Services hard to reach



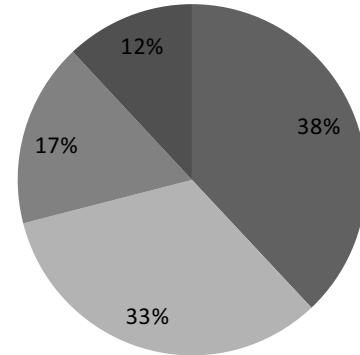
■ Safety ■ Absence of obstacles ■ Comfort ■ Other

Figure 6 – Items that make choosing a path



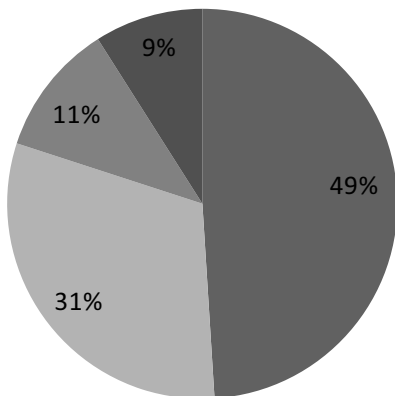
■ Treatment ■ Absence of obstacles ■ Slope ■ Other

Figure 7 – Quality path features



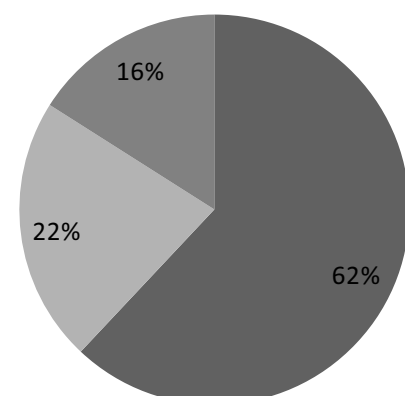
■ Safety and security ■ Mild slope ■ Shelters ■ Other

Figure 8 – Features most appreciated in a quality path



■ Regular pavement ■ Wide sidewalks
■ Urban green ■ Ramps and slides

Figure 9 – Favourite element in a quality path



■ Equipped paths ■ Removal of barriers ■ More maintenance

Figure 10 – How to improve the comfort

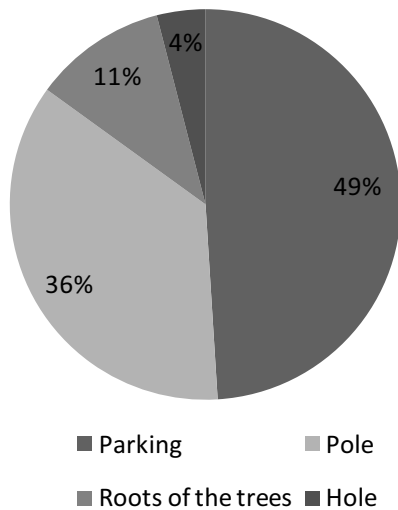


Figure 11 – Main barriers and difficulties

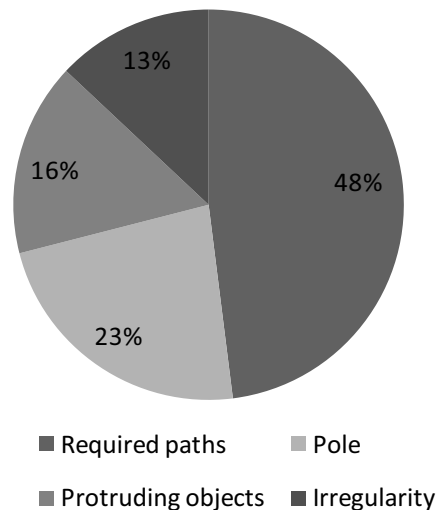


Figure 12 – Barriers/difficulties creating more discomfort

The graphics underline that the majority of respondents live within the city and they moves on wheelchair, living and attending the city for work or study reasons. The main difficulties found are related to the pavement (often full of potholes, work zones, and so on). The difference in elevation is often seen as the main architectural barrier, but the survey shows that a major cause of discomfort is the irregular pavement.

Besides for 57 people interviewed the features that don't make a quality path are the lack of:

- accessibility;
- safety;
- maintenance.

The paths are defined as more pleasant when they are without obstacles, without excessive slopes, large enough to allow a smooth transition and with restrictions on motorized traffic.

Moreover, the elements doing a preferred location to another are: the type of flooring, the absence of obstacles, the presence of ramps and slides, the presence of disabled parking and the brevity and convenience of a path over another.

From the questionnaire, the less safe paths are:

- the intersections;
- not continuous paths, paths without ramps or with obstructions that create bottlenecks.

The most frequent obstacles are ditches, interruptions not reported, the bins, the light poles or the roots of trees.

While the obstacles that create more hardships are the cars parked on sidewalks, narrow steps.

The next step of the research will be to build another questionnaire with multiple choice questions, it will be useful as a working basis for the drafting of the guidelines.

CONCLUSIONS

La Plante has identified three perspectives or approaches to disability. With regard to researchers the focus has been on limitations in “performing socially expected roles and activities.” Some disability rights advocates say actual limits to activities are not enough because a person might not feel they are disabled. To advocates, what is more important are the negative responses disabled persons receive. These can include “outright stigmatizations or avoidance, diminished earnings, and lack of adequate health insurance” with the inclusion of barriers in the built environment. The third perspective is whether people consider themselves disabled. A survey conducted in 1986 by the International Center for the Disabled discovered that many people who were limited in their activities did not consider themselves disabled. Larkins and Dunning (2011). That underlines the need to avoid structures that discriminate the disabled people.

The work presented in the study reported in the paper is an initial part of a research conducted at the University of Cagliari (DICAAR). The research objective is to draw up guidelines in order to have an instrument to reassess pedestrian mobility, starting with the removal of architectural barriers.

To improve the presence of pedestrians in the city a key role is assumed by the future mobility which must meet the requirements of sustainability, safety and accessibility of all, and deal synergy with urban policies the following issues:

- the absence of a policy covering trips that depart from the pedestrian, the actions for pedestrians remain isolated, ad hoc and limited in space;
- the lack of consideration of the relationship between pedestrian, quality of public spaces, urban dynamism and quality of life;
- the lack of consideration of the relationship between walking and physical well-being of the individual. Murielle (2009)

The relocation and resettlement policies in the middle of the pedestrian mobility significantly improve the quality and the quality of urban life. Murielle (2009)

Numerous issues were opened by reading the results, which did not pretend to give answers or provide the decisive interventions.

The participation of people with disabilities to the analysis of accessibility of urban space has provided details about their habits, their needs and expectations, in some cases highlighting design flaws. This confirms the great utility for this type of investigation and the drafting of the same design guidelines in urban attentive to people with physical disabilities.

Particularly important as a theoretical reference for the project led you configure the Article 20 of the UN Convention on the Rights of Persons with Disabilities, specifically dedicated to "personal mobility". It states that: "States Parties shall take effective measures to ensure to persons with disabilities personal mobility with the greatest possible independence, including by:

(A) facilitating the personal mobility of persons with disabilities in the manner and time of their choice and at affordable cost;

(B) facilitate access by persons with disabilities to mobility aids, devices, assistive technologies and forms of assistance from persons or animals and quality of mediation services, in particular making them available at cost accessible;

(C) encouraging entities that produce mobility aids, devices and assistive technologies to take into consideration all aspects of mobility for persons with disabilities.

In other words, we must conceive, plan and create an "environment" friendly and suitable for most users. The city, as human settlement, even before the set of clusters and built structures, must be understood as a living space that grows with its citizens. We have to rethink the city according to a new approach, even before the cultural and structural, taking into account not only aspects of the architectural style, but also non-material elements. Essential condition for this to happen is that the decision-making mechanisms will also be "inclusive".

The survey was not focused on data from official sources but from direct experience and from the point of view of 70 "direct evidence", since a person's disability is not only important from a medical point of view but also social.

The respondents represent a small sample of people expression of different contexts and geographical areas in scope, objective conditions, culture.

The sample has no representative character, nor was a collection of cases with claims of completeness or comprehensiveness, however, is of considerable importance to stress that the results and insights arising from analysis of the results, may allow better frame some questions, starting arguments and assessments of difficult situations encountered and possible interventions to be implemented to overcome them.

The answers given during interviews enabled us to acquire information that appears essential to assess the real problems and discriminatory aspects of the situation.

In this article it was the only issue related to people with mobility impairments, using, for example, wheelchairs or stick to help themselves to move. The research is currently underway and interest is spreading to people with visual, auditory impairments, and so on.

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