

EVALUATION OF THE CARRIAGE OF DISABLED PEOPLE BY MEANS OF MUNICIPAL TRANSPORT IN SZCZECIN

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Abstract

The paper presents possibilities of the carriage of disabled people and people with reduced mobility by available means of municipal transport in Szczecin. The carried out analysis was based on the comparison of the actual number of rides accomplished by bus and tram carriers, paying particular attention to the use of low-floor vehicle fleet. Design and functional solutions applied in modern urban vehicles being imposed by legal regulations in force were referred to. The possibility of approach to selected public utility buildings, placing emphasis on health care centres, therapeutic and rehabilitation institutions, out-patient clinics, hospices, veterans home, etc. was compared. Despite the fact that evaluation of the actual state of accomplishment of the issues under discussion relates to local community, the conclusions being formulated and the observations being made are of a more general nature. This is because the needs of disabled people have been understated or completely ignored for many years due to which their consideration has to take place by way of expensive and long-term changes. In that respect, pointing to an efficient elimination of the areas of dysfunction in modern transport systems becomes a necessity since similar problems are being met every day by passengers in all larger agglomerations.

Keywords: *municipal transport, low-floor fleet, disabled people, normative and legal issues*

1. Introduction

Disabled people include persons with long-term reduced physical, mental, intellectual or sensory efficiencies, which, in interaction with various barriers, may restrict their full and effective participation in every day life on equal bases with other citizens [2, 3].

Despite the rights, which they are entitled to, owing to the occurring environmental, economic and social impediments but due to their impairment, they are not able, to overcome them or they have big problems with that. In addition, the type of disability, which from the point of view of public transport is limited first of all to the reduced motor and sensory efficiencies, has an unquestionable impact of such a state of affairs. The first of them, probably the one most frequently considered in this context, refers to persons with locomotor system dysfunction (innate or acquired) or its lack. This means that they have problems with independent movement and repeatedly use wheelchairs, walking frames, walkers or crutches. On the other hand, the second one, i.e. reduction of the sensory efficiency or its lack, is a disorder or impairment of the function of sensory organs and thus being met in blind, sand-blind, deaf, partially deaf and deaf-mute persons. Adaptation of municipal transport vehicles to the needs of disabled people is thus an extremely important thing and at the same time, a difficult one since it forces the consideration of impairments of different type and degree, considering the characteristics and specific character of carriage on short and repeatedly overcrowded routes.

Constructional and architectural issues ensuring the save movement within the existing bus/tram infrastructure have to be added to this, as well as provision of the access to information and other services which a passenger is entitled to (toilets at the terminal station, ticket vending machines and ticket sales points).

2. Normative and legal issues

The operation of the existing public transport lines at request of the Road and Municipal Transport Administration (ZDiTM) in Szczecin is being handled by the following companies: Szczecin Bus Company “Dąbie” (SPAD), Szczecin Bus Company “Klonowica” (SPAK), Szczecin-Police Municipal Transport Company (SPPK), Szczecin Car Transport Company (PKS) and Szczecin Tramways Company. From among many regulations of a general character, these carriers have been obliged to observe law regulations where problems of the carriage of disabled people are included [4, 5, 8, 9, 10]:

1) Traffic Law Act of 20 June 1997 (Official Journal of Laws of 2005, No. 108, item 908, with further amendments). It is specified in item 1 of Art. 58 that a vehicle, designed constructionally to the carriage of people with disabilities, is being marked at the front and the rear with blue colour square plates containing international wheelchair symbol in white colour. They should be made of reflective material.

2) Transport Law Act of 15 November 1984 (Official Journal of Laws of 2000, No. 50, item 601, with further amendments). In conformity with items 1 and 2 of Art. 14, a carrier is obliged to provide proper safety and hygiene conditions as well as comfort and appropriate service. Furthermore, he should take up actions that facilitate the use of means of transport, check-in points, stops and platforms for disabled people.

3) Rules for the carriage of passengers and hand luggage in means of local public transport coordinated by the Commune and the City of Szczecin via the Road and Municipal Transport Administration in Szczecin (Regulation No. 4/09 of the Director of Road and Municipal Transport Administration of 9 February 2009, with further amendments). According to item 1 of Art. 7, an obligation is imposed on carriers to equip all vehicles with a set of information plates about a serviced line, including a side plate with a number being seen by disabled people. On the other hand, it is stated in Art. 14, item 2 that wheelchairs are fare-exempt. At the same time, it is emphasised in the final provisions that in any case not included in the present rules the regulations of the aforementioned act will be applied.

4) Resolution of the Municipal Council of the City of Szczecin of 5 December 2008 concerning prices and charges for transport services by local public transport coordinated by the Commune and the City of Szczecin and determination of persons being entitled to free and reduced-fare rides (No. XXIX/736/08, with further amendments). In accordance with Art. 9, the following persons, among others, are entitled to free transport, except tourist lines: disabled war and service-disabled veterans, special school and integration class pupils, children attending special pre-schools together with their guardians, repressed persons, people completely unfit for work and incapable of independent existence together with their care assistants, blind people and persons who acquired blindness and their guides or leaders, and disabled children and youth up to 16 years of age together with their guardians.

5) Transport Rules of the Szczecin Car Transport Company Ltd. (PKS) issued on the grounds of the authorisation resulting from Art. 4 of the Transport Law Act of 15 November 1984 (Official Journal of Laws of 2000, No. 50, item 601, with further amendments) and for the discharge of obligation imposed by the provision of Art. 18 b), section 1, item 5 of Road Transport Act of 6 September 2001 (Official Journal of Laws of 2004, No. 204, item 2088, with further amendments). In Art. 12, a passenger with a valid ticket or a document entitling to free service is authorised to transport a folding wheelchair free of charge if he / she is a disabled person moving in it.

3. Bus fleet

The aspect of granting the type approval certification for buses has been strictly defined in the document being in force since 13 August 2006 in all countries of the EU, which are Directive 2001/85/EC of the European Parliament and of the Council of 20 November 2001 [1]. Its

fundamental objective is to provide passenger safety as well as ensure technical conditions that enable persons with reduced mobility to access the vehicles covered by it in conformity with the common transport and social policies. On the one hand, this can be achieved owing to technical solutions applied in a vehicle, while on the other hand through connecting them with proper local infrastructure, which ensures access for wheelchair users. This Directive implemented the division of buses into classes I, II and III as well as A and B, depending on their capacity amounting respectively to more or less than 22 passengers (excluding a bus driver). It should be stressed that in both groups only the first ones are taken into consideration in the context of municipal transport. These classes include vehicles with standing areas and seats, allowing large passenger exchange. From the point of view of the carriage of disabled passengers, the most important is Annex VII where, among others, technical requirements and rules are specified that refer to: steps, priority seats and space for passengers with reduced mobility, communication devices, pictograms, floor slope, wheelchair accommodation and stability, door monitoring and controls, lighting, and boarding and unboarding aids (kneeling systems, lifts, ramps) [1].



Fig. 1. MAN NL262 bus of the Szczecin Bus Company "Dąbie" (SPAD) performing a kneeling system operation by unfolded manually-operated ramp

Considering a number of factors such as technical solutions applied in vehicles, problems and obstructions being found in public transport and the character of municipal transport, an absolute priority should be given to the provision of transport services by low-floor vehicle fleet being equipped with disabled and reduced-mobility people friendly facilities. This is because the modern buses of that type are characterised by constructional and functional features, which are extremely important for the passengers who use them [1]:

- low situated floor allows boarding and unboarding without the necessity of surmounting steps,
- use of a suspension with the kneeling system enables lowering of the vehicle bottom edge to the level of footpath or bus / tram stop's safety island,
- boarding of a person moving on a wheelchair does not require additional devices but, if necessary, there is a possibility of quick unfolding or pulling out a ramp,

- no necessity of using lifts or winches which is burdensome due to the time of wheelchair lifting or lowering operation and dependence on third parties, not solving the problems of all passengers with reduced mobility,
- wide door and flat floor inside a vehicle (approach slopes for wheelchairs can not exceed 8% and must be lined with anti-slip material) favour passenger exchange at bus / tram stops, bringing about increase of the operating speed and shortening of the travel time,
- space for wheelchairs can be optionally used by other passengers, e.g. persons with pushchairs, walkers, walking frames, or passengers with larger hand luggage, and
- visual and vocal information systems, being a great facilitation for all passengers.

The increase of modern low-floor vehicle fleet can be investigated on the example of the Szczecin Bus Company "Klonowica" Ltd. (where: year of manufacture / total number / average age) [16]:

- VOLVO B10L (1997 / 8 / 14,00),
- MAN NL223 (2002 / 5 / 9,00),
- MAN NL283 (2004 / 2 / 7,00),
- MAN NL202 (1994 / 2, 1997 / 5, 1998 / 2; total 9 / 14,44),
- VOLVO B10M (1994 / 8, 1995 / 20; total 28 / 16,29),
- MAN NG272 (1992 / 7 / 19,00),
- JELCZ 120MM/1 (1994 / 2 / 17,00),
- AUTOSAN H6 (1996 / 3, 1997 / 1; total 4 / 14,75),
- SOLARIS URBINO 12 (2009 / 9 / 2,00),
- SOLARIS URBINO 18 (2008 / 4, 2009 / 5, 2010 / 16; total 25 / 1,52),
- SOLARIS URBINO 10 (2010 / 2 / 1,00).

As a matter of fact, the vehicles of that type have been purchased almost exclusively since as early as the end of 1990s. Also the number of factory-new buses, frequently being leased, increases which changes the former trend to import used vehicles and thus remarkably rejuvenates the vehicle fleet. Owing to competitive prices and high quality manufacture, the last tender was won by a domestic manufacturer, Solaris Bus & Coach S.A. Similar situation can be observed in another Szczecin's bus carrier. In last three years, the Szczecin Bus Company "Dąbie" (SPAD) accepted delivery of sixteen Solaris Urbino 18 and four Solaris Urbino 12 buses [13]. Thus, a clear trend is visible to purchase new vehicles, with a pronounced demand for articulated buses. This is because they are operated in large urban agglomerations where considerable numbers of passengers are being transported and they are running on long cross-city routes, for instance between the right- and the left-bank parts of Szczecin.

4. Tram fleet

The problems connected with the carriage of disabled people by trams are somewhat more complex than it takes place in case of buses. The construction and maintenance of the required infrastructure is economically well founded only in case of dense and sufficiently large passenger flows. Thus, it is necessary to take into consideration the adaptation of both the vehicles and the halting stops and transport routes leading to them, preserving at the same time the character of public transport in larger cities. The most important normative act is the Regulation of the Minister of Infrastructure of 22 December 2003 concerning the technical conditions for tramways and trolleybuses as well as the scope of their essential equipment [7]. From among the requirements comprised in it, worth mentioning is, among others, the necessity of marking and adaptation of at least one doorway for the needs of disabled people, assigning a free space for wheelchairs near the aforesaid doorway, and lining steps and floor with anti-slip material, preserving at the same time the permanent marking or backlighting of their edges. Furthermore, each vehicle before entry into service has to undergo a test procedure, the scope of which is specified in the Regulation of the

Minister of Infrastructure of 30 December 2003 concerning the type approval certification for tramways and trolleybuses [6].



Fig. 2. High-floor Tatra KT4DtM tram-car at the Kościuszko Square in the centre of Szczecin

Responsibility for the operation of local public transport in the scope under discussion lies with the Szczecin Tramways Company. As a matter of fact, the carriage of disabled people and persons with reduced mobility has been understated or not taken into account until present at all. This is evidenced not only by neglected infrastructure of halting stops but first of all by over 200 tramcars completely not adapted for that purpose. This is overlapped by the condition of tram tracks, which should be subjected to a thorough repair or replacement before bringing in low-floor tramways. Since such works have been carried out on the route of tram lines 7 and 8, the low-floor vehicles purchased at Rail Vehicles PESA Bydgoszcz S.A Holding within the contract of 22 July 2010. It referred to the procurement of six modern tramways of the 120Na Swing type of which the last ones are to come to Szczecin in March 2011 [14, 18]. It should be stressed however that this is just the beginning of a long-term process of tram fleet replacement. The modernised versions of Konstal 105Na (105Ng/S and 105N2k/2000) tram-cars or used Tatra (KT4DtM and T6A2) tram-cars imported from Germany do not by any means meet modern standards and certainly are not an alternative for the carriage of disabled people. This picture can not be improved by painting tram cars according to the idea of Szczecin Floating Garden 2050 project.

5. Transport statistics of the Road and Public Transport Administration in Szczecin

It results from the analysis of data presented in Figure 3 that low-floor vehicle fleet is serviced by 16 day bus lines (regular lines). In large majority, bus rides on these routes run closely to hospitals, outpatient clinics, veteran homes, hospices, and rehabilitation or therapeutic centres. However, it is not a rule as many health care institutions are situated in the city centre or its outskirts, due to which transport is being mainly serviced by rail-vehicle fleet. An example can be the Independent Public Clinical Hospital No. 2 of the Pomeranian Medical University at 72 Powstańców Wielkopolskich Street where five tram lines (3, 4, 6, 11 and 12) and only one regular bus line (53) have their stops. The use of low-floor vehicles in it is occasional, with rides being serviced at considerably larger time intervals.

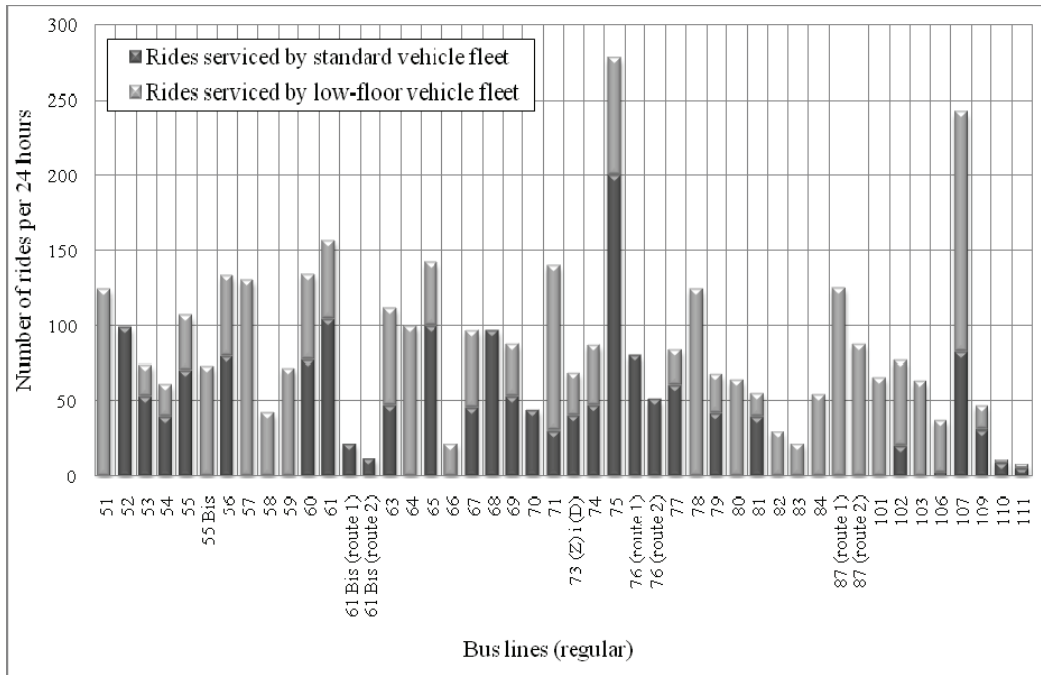


Fig. 3. A twenty-four-hour number of rides by standard and low-floor vehicle fleet for day bus lines (regular)

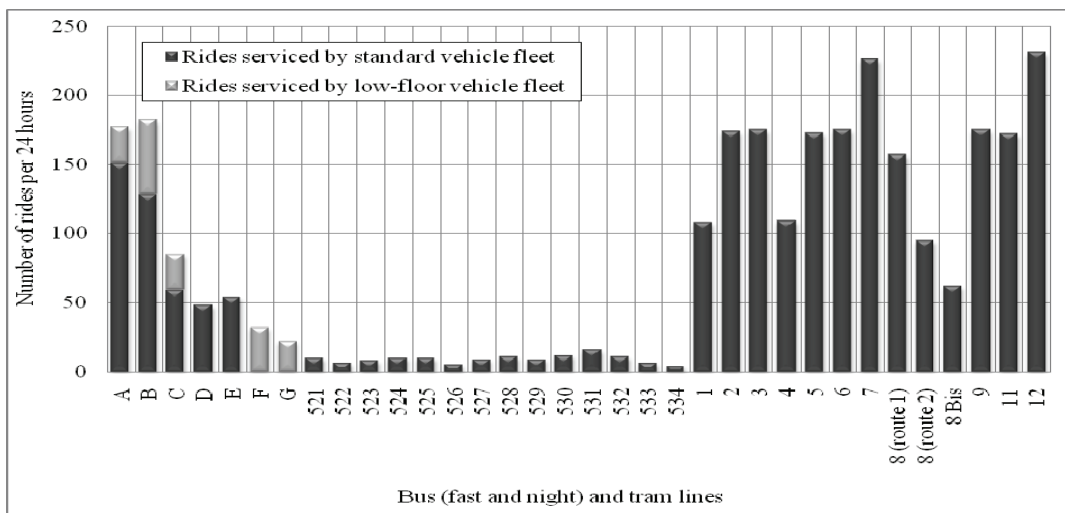


Fig. 4. A twenty-four-hour number of rides by standard and low-floor vehicle fleet for bus (fast and night) and tram lines

In turn, the centres situated on the city outskirts can be in principle reached by bus only. The bus stop near the Prof. Alfred Sokołowski Specialist Hospital in the Szczecin-Zdunowo city district is serviced by regular bus lines 73 (Z) and 73 (D) and a direct fast bus line G (Figure 4). In this situation, problems result not as much from the bus fleet in use, although fully comfortable travel seems to be that by the latter means of transport, as from the frequency of rides determined, i.e. not more than two vehicles of a given bus line per hour and assuming that a fast bus operates only at peak time. The patients of the Prof. Tadeusz Sokołowski Independent Public Clinical Hospital No. 1 of the Pomeranian Medical University at 2 Siedleck Street in Police have decidedly more favourable situation in this respect. On the one hand, there are bus stops of regular bus lines 102, 103, 106, 107, 109, 110 and 111 and fast bus line F in the direct vicinity of this institution, while on the other one they are serviced largely by low-floor vehicles. They are to be found in the bus stock of the Szczecin-Police Municipal Transport Company Ltd. (SPPK) which operates such bus models like MAN (NL-222, NL-223, NL-262, NL-313, NG-262, NG-313, and SG-313) and Jelcz (120M and M11) [17].

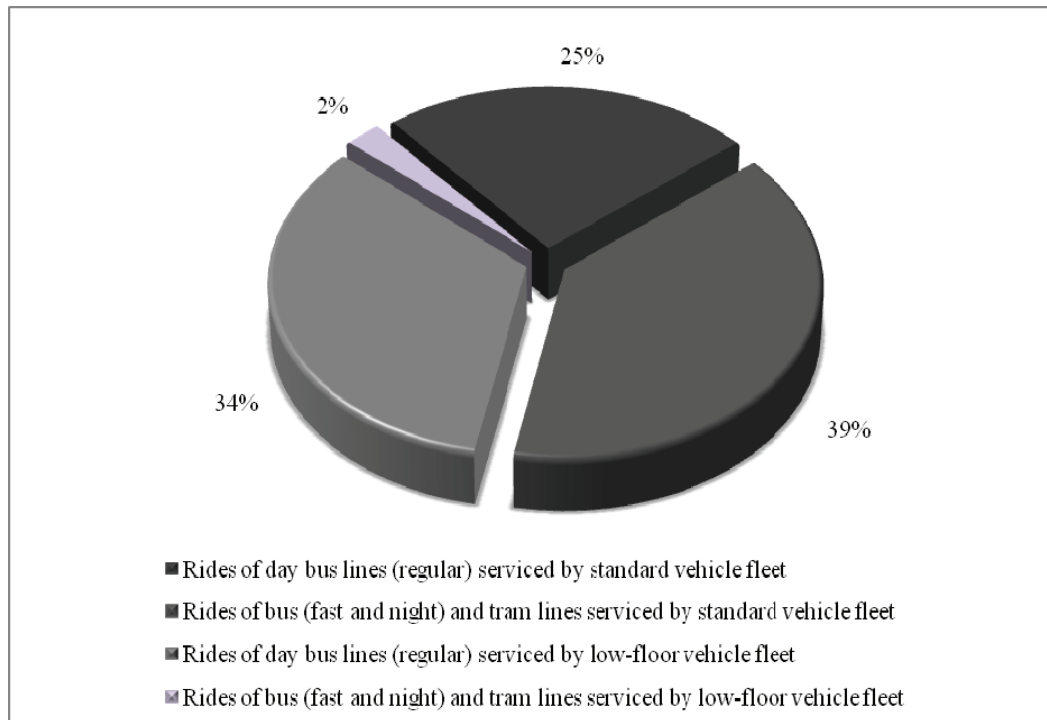


Fig. 5. The percentage of standard and low-floor vehicle fleet in the rides of all lines serviced during a twenty-four-hour period by the carriers on request of the Road and Municipal Transport Administration in Szczecin

On the other hand, there are such a large number of possible combinations on the most popular sections that only medium- and high-floor buses are being in use on some bus lines. Their role is to transport the largest possible number of passengers in as short time as possible, repeatedly only at peak time, facilitating the access of disabled people to low-floor vehicles. An example can be fast bus lines D and E, which offer rides to the right-bank part of Szczecin and relieve the crowded fast bus lines A, B, C and G. The vehicle most frequently operated on these routes are VOLVO B10MA articulated buses, being in the bus stock of the Szczecin Bus Company Ltd. “Dąbie” (SPAD). Owing to this, low-floor buses of that bus carrier (NL-223 and Solaris Urbino 18 and 12) can be used on lines where they are more needed [15]. It should be stressed at the same time that comparison includes all rides performed during a twenty-four-hour period. Departures from two terminal stations were taken into consideration, and thus also the differences that result from the course of routes and the return of vehicles to depot. The statistics was prepared based on the timetables being available on the official website of the Road and Municipal Transport Administration in Szczecin, referring to weekdays (working days) only [19].

Over the last few years, a regular increase in the use of low-floor vehicles by municipal carriers has been observed. As many as almost 36% of performed rides allow the carriage if disabled people and persons with reduced mobility (Figure 5). This percentage would be much bigger if there were no delays in the replacement of tram vehicle fleet of many years. The newest tram vehicles of the 120Na Swing type, which in fact are already in service but have not been specified in any way in valid timetables, were intentionally excluded from the analysis. It should be hopeful that these data will be supplemented as soon as possible, this will be reflected in official websites, and information plates at halting stops. In turn, the statistics in case of buses is lowered by night bus lines, the rides of which are solely performed by a vehicle fleet of the older generation. This results from both a small interest of disabled people and frequent acts of vandalism and devastation of bus interiors. This situation will certainly improve in future since more and more vehicles are being equipped with monitoring systems. Nevertheless, the final evaluation of municipal bus transport is much more favourable as over a half of rides is being serviced by modern low-floor vehicle fleet.

6. Conclusions

The analysis being taken up aimed at finding to what extent the local public transport is adapted to the carriage of disabled people and evaluation of the actual situation of that problem. It results from the data made available by the Road and Municipal Transport Administration in Szczecin that there are still many things to be done in respect of this issue. The actions being taken by respective carriers should be still focused on a regular replacement of vehicles with the low-floor ones and adaptation of the present vehicle stock to such requirements (enlargement of the number of electronic passenger information boards, obligatory implementation of voice systems, dissemination of ticket vending machines, etc.). It should be realised as well that bus transport, contrary to the tram one, is servicing not only Szczecin, which in respect of the area is the third city in the country, but also the city and commune of Police and in part the communes of Dobra and Kołbaskowo [19]. Therefore, improvement of the quality of transport services has to take place through long-term changes which ultimately include a number of other issues being simultaneously implemented, e.g. full adaptation of the infrastructure of stops, adaptation of toilets at terminal stations, and improvement of the web-based passenger information system that allows the search for connections and convenient transfers to low-floor vehicles.

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