EVALUATION OF EQUIPMENT OF STOPS OF URBAN BUS TRANSPORT IN NITRA

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Summary: The paper deals with the evaluation of equipment of the bus stops that are served by lines of public passenger transport in Nitra. According to the number of lines were the bus stops divided into five categories. The equipment was evaluated based on the selected variables; what should prove a hypothesis that equipment of the stops proportionally increases in accordance with the number of served lines.

Key words: equipment, bus stops, urban bus transport, the city of Nitra

INTRODUCTION

A public passenger transport means an important social and economic element of the environment, where it runs (5) and includes various services that provide mobility to the general public (2). In the city of Nitra is the public passenger transport represented by an urban bus transport (UBT). It is an intermediary of transport relations within the area of the city and it participates on the formation or development of residential or urban structures (6). The role of urban passenger transport is to ensure transportation requests in the area of city, eventually agglomeration, on required quality level (4). Besides the UBT general operation, it is very important to take heed to its partial characteristics and features, such as the equipment of stops that are served by bus lines.

In the city of Nitra is the mentioned service provided by a carrier called Arriva Nitra a.s., which operates 26 yearlong bus lines that serve together 359 bus stops. Their equipment is an indispensable feature, which influences the overall quality of the service. The quality of travel is closely related to the quality of the stops (3). In order to form UBT to the reliable and comfortable instrument, it should be necessary to pay attention to the equipment of bus stops that represent the city, carrier and inhabitants, who use this service and pay for it.

The aim of the paper is to evaluate the equipment of bus stops that are served by the lines of UBT in the city of Nitra and to explore a relation between the level of equipment of the stops and a number of lines that serve them.

1. METHODOLOGY

The evaluation of equipment of the bus stops was realized by a field survey in August 2013. During this month did not occur any change in flowcharts or line tracing and no stop

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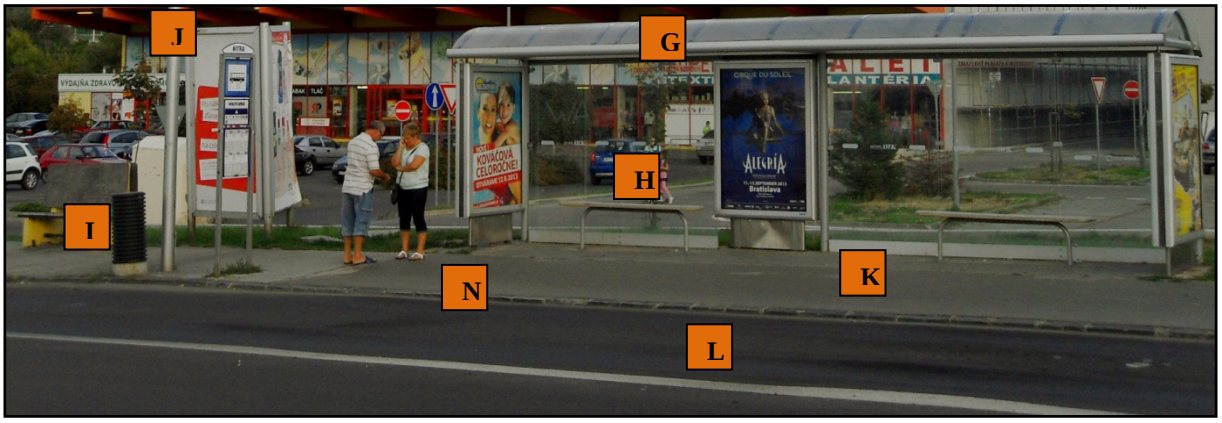
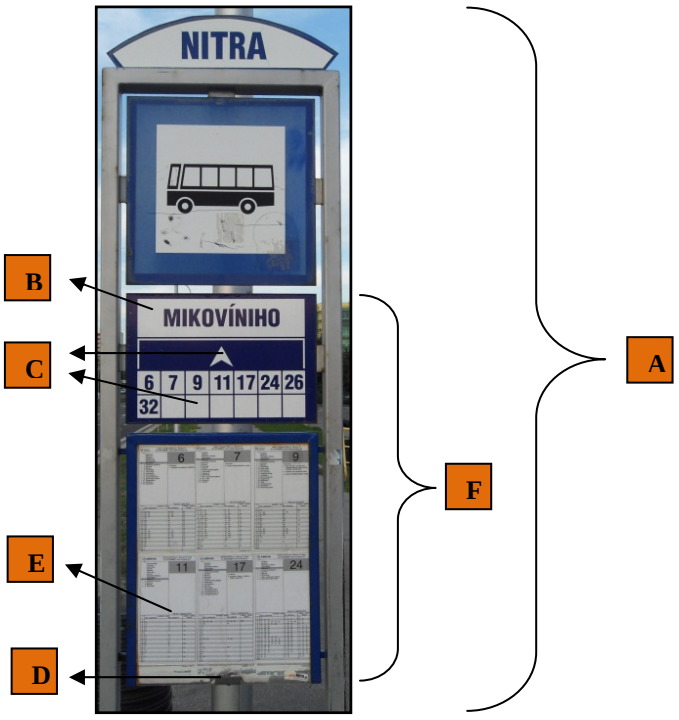
was created or cancelled, what made a basis for acquisition of relevant information. In this process were not assessed the stops that were served only by seasonal lines 35 and C35. The selection of the particular parameters was inspired by the Bus Stop Design Guide (1) and research by Jurkovičová (3), who evaluated the equipment of suburban bus stops in the Region of Žilina. In order to the complexity of research were chosen 16 criteria (Fig. 1, Fig. 2), 14 of them, named as primary, were assessed and counted into evaluation and other 2 parameters labelled as secondary were only assessed, but not counted into the final evaluation. According to the level of equipment was assigned the number of points to every bus stop.



Source: Authors

Fig. 1 – Selected primary parameters of equipment of the bus stops



Source: Authors

Fig. 2 – Parameters of marker

Primary parameters:

- marker (A) – 1 Pt. if it is located at the stop; 0 Pts. if it is missing at the stop,
- name of the stop (B) – 1 Pt. if the name is valid; 0 Pts. in case of invalid or missing name,
- valid numbers and directions of lines (C) – 1 Pt. if there are valid numbers and directions of all yearlong lines; 0 Pts. if these information are invalid or missing,
- protection of board for flowcharts (D) – 1 Pt. if a board is protected by a Plexiglas; 0.5 Pts. if a board is not protected by Plexiglas; 0 Pts. if a board for flowcharts is missing,
- validity of flowcharts (E) – 1 Pt. if there are valid flowcharts of all yearlong lines that serve the stop; 0 Pts. in case of invalid or missing flowcharts,
- readability (F) – 1 Pt. if all information at the marker are readable, 0 Pts. if (some) information are unreadable,
- shelter (G) – 0.5 Pts. for one wall of shelter,
    - if a wall is represented by another object (e.g. wall of neighbouring building), it is considered as a wall of shelter, because it has the same functionality,
- bench (H) – 1 Pt. if there is a bench at the stop; 0 Pts. if it is missing at the stop,
    - in case of more than one bench, only 1 Pt. is counted,
- basket (I) – 1 Pt. if the stop is equipped with a basket; 0 Pts. if the stop is unequipped with this item,
    - basket has to belong to the stop. In case of that a basket belongs to other objects (family houses, firms, etc.), it was not evaluated,
- lighting (J) – 1 Pt. if the stop is lighted; 0 Pts. if the stop is not lighted,
    - sources of light can be represented not only by street lights, but by luminary advertising panel that is a part of wall of the stop,
- sidewalk (K) – 1 Pt. if a sidewalk leads to the stop, 0 Pts. if a sidewalk does not lead to the stop,
- bus bay (L) – 1 Pt. if the stop is equipped with a bus bay, 0 Pts. if the stop is not equipped with a bus bay,
    - there were considered for a bus bay not only classic bays, but also areas stipulated for stopping the bus and it does not slow down the traffic during its stay at this place,
- pedestrian crossing (M) – 1 Pt. if a pedestrian crossing is located nearby the stop; 0 Pts. if a pedestrian crossing was not located nearby the stop,
    - there was not defined any proximity of a pedestrian crossing. This parameter was evaluated according to the practical aspect and features of transport infrastructure nearby the stop,
- street curb (N) – 1 Pt. if a street curb is the component of a sidewalk leading to the stop, 0 Pts. if the sidewalk leading to the stop does not contain a street curb.

Secondary parameters:

- easy access kerbing (O) – 1 Pt. if it is a part of the street curb; 0 Pts. if it is not a component of the street curb,

- grocery (P) – 1 Pt. if there is a grocery on the side of the stop, 0 Pts. if this kind of shop is missing,
    - there was not defined any proximity of a grocery. This parameter was evaluated according to the practical aspect and features of infrastructure nearby the stop.

All (359) bus stops were divided into five categories in accordance with the number of lines they are served.

- stops served by 1 line – 164 (45.68%),
- stops served by 2 lines – 40 (11.14%),
- stops served by 3 lines – 65 (18.11%),
- stops served by 4 lines – 39 (10.86%),
- stops served by 5 or more lines – 51 (14.21%).

2. RESULTS

The results of the research can be evaluated from various points of view. Firstly, we concern in the categorisation of stops based on the above mentioned groups and their partial evaluation. Subsequently, all stops can be assessed from the summary aspect. Another viewpoint at the parameters is presented by assigning the particular point values and then an assessment of average point values for the one stop. Finally, we can compare levels of equipment within the categories and formulate the status of equipment of the bus stops served by lines of UBT in Nitra.

2.1 Equipment of stops served by 1 line

Within the scope of **main parameters** was a *marker* found at 138 from overall number of 164 stops, what represents 84.15% (Tab. 1). A *name of the stop* was not registered almost at three-quarters (74.39%) of stops, which reflects a significant demerit in basic feature of equipment. This negative trend was confirmed by the presence of *valid numbers and directions of lines*, which were noted only in 39 (23.78%) cases. A *protection of board for flowcharts* was mostly realized by Plexiglas (68.29%), boards without any protection were found at 31 (18.90%) stops and in the remaining cases stops were not equipped with the stated board. *Valid flowcharts* were noticed at 128 stops, what symbolizes 78.05% of the overall number of stops in this category. A *readability* of presented information was registered at 124 stops; in case of 40 remaining places were data damaged, what disabled passengers to get to know required information. In terms of a *shelter* were acquired various levels of equipment. More than a half (60.37%) of the stops were not equipped with a shelter and on the other hand, a shelter with four walls was registered at 55 (33.54%) stops. Three stops disposed of a shelter made of one wall, in six cases were registered two walls and only one bus stop was equipped with a shelter that contained three walls. A *bench* was not a routine at the stops within this group, whereas in 104 (63.41%) cases this item absented. Very similar findings were noticed in the presence of a *basket*, whilst 103 stops were not equipped with the mentioned item. The majority of the stops (119) were *lighted*, what represents 72.56% of all bus stops that were served only by one line. A *sidewalk* led to 112 stops, which means that it

was not a part of less than one third (31.71%) of stops. Another parameter, a *bus bay* was registered only at 78 (47.56%) stops. A significant demerit is that a *pedestrian crossing* was

Tab. 1 – Equipment of bus stops according to the number of served lines

Par.		Pts.	Number of lines											
			1		2		3		4		5+		Total	
			n	%	n	%	n	%	n	%	n	%	n	%
Primary parameters	A	1	138	84.15	33	82.50	64	98.46	38	97.44	51	100.00	324	90.25
		0	26	15.85	7	17.50	1	1.54	1	2.56	0	0.00	35	9.75
	B	1	42	25.61	25	62.50	50	76.92	33	84.62	50	98.04	200	55.71
		0	122	74.39	15	37.50	15	23.08	6	15.38	1	1.96	159	44.29
	C	1	39	23.78	20	50.00	40	61.54	29	74.36	31	60.78	159	44.29
		0	125	76.22	20	50.00	25	38.46	10	25.64	20	39.22	200	55.71
	D	1	112	68.29	30	75.00	63	96.92	38	97.44	51	100.00	294	81.89
		0.5	31	18.90	4	10.00	1	1.54	0	0.00	0	0.00	36	10.03
		0	21	12.80	6	15.00	1	1.54	1	2.56	0	0.00	29	8.08
	E	1	128	78.05	26	65.00	61	93.85	36	92.31	47	92.16	298	83.01
		0	36	21.95	14	35.00	4	6.15	3	7.69	4	7.84	61	16.99
	F	1	124	75.61	31	77.50	59	90.77	34	87.18	43	84.31	291	81.06
		0	40	24.39	9	22.50	6	9.23	5	12.82	8	15.69	68	18.94
	G	2	55	33.54	14	35.00	27	41.54	17	43.59	30	58.82	143	39.83
		1.5	1	0.61	1	2.50	1	1.54	1	2.56	1	1.96	5	1.39
		1	6	3.66	0	0.00	5	7.69	4	10.26	3	5.88	18	5.01
		0.5	3	1.83	1	2.50	1	1.54	0	0.00	3	5.88	8	2.23
		0	99	60.37	24	60.00	31	47.69	17	43.59	14	27.45	185	51.53
	H	1	60	36.59	13	32.50	32	49.23	18	46.15	43	84.31	166	46.24
		0	104	63.41	27	67.50	33	50.77	21	53.85	8	15.69	193	53.76
	I	1	61	37.20	15	37.50	39	60.00	19	48.72	43	84.31	177	49.30
		0	103	62.80	25	62.50	26	40.00	20	51.28	8	15.69	182	50.70
	J	1	119	72.56	28	70.00	58	89.23	35	89.74	50	98.04	290	80.78
		0	45	27.44	12	30.00	7	10.77	4	10.26	1	1.96	69	19.22
	K	1	112	68.29	25	62.50	61	93.85	34	87.18	51	100.00	283	78.83
		0	52	31.71	15	37.50	4	6.15	5	12.82	0	0.00	76	21.17
	L	1	78	47.56	24	60.00	52	80.00	34	87.18	51	100.00	239	66.57
		0	86	52.44	16	40.00	13	20.00	5	12.82	0	0.00	120	33.43
	M	1	37	22.56	9	22.50	36	55.38	20	51.28	44	86.27	146	40.67
		0	127	77.44	31	77.50	29	44.62	19	48.72	7	13.73	213	59.33
	N	1	111	67.68	24	60.00	60	92.31	34	87.18	51	100.00	280	77.99
		0	53	32.32	16	40.00	5	7.69	5	12.82	0	0.00	79	22.01
SP	O	1	6	3.66	3	7.50	10	15.38	3	7.69	16	31.37	38	10.58
		0	158	96.34	37	92.50	55	84.62	36	92.31	35	68.63	321	89.42
	P	1	0	0.00	1	2.50	0	0.00	2	5.13	0	0.00	3	0.84
		0	164	100.00	39	97.50	65	100.00	37	94.87	51	100.00	356	99.16

Par. – Parameters Pts. – Points SP – Secondary parameters

Source: Authors

not nearby 127 stops, what reflects that passengers could find this parameter only nearby one of the four stops. On the other side, a *street curb* was registered at 111 (67.68%) stops, what is a positive fact, because it is useful for passengers, when they enter or exit the bus.

In the terms of **secondary parameters** we found out that an *easy access kerbing* that is very useful feature helping blind passengers was not registered at any stop. The second characteristic, a *grocery*, was located in the proximity of six stops, what represents only 3.66% of all stops in this group.

2.2 Equipment of stops served by 2 lines

The first **primary parameter**, a *marker*, was registered at 33 (82.50%) of overall 40 stops that belonged to this category (Tab. 1). In comparison with the previous group arose a share of stops that were equipped with a *name of the stop*. This item was noticed at 25 (62.50%) stops. *Valid numbers and directions of lines* were recorded only at 20 stops, what reflects just the one half. In terms of *protection of board for flowcharts* were found various results. A Plexiglas protected boards at three-quarters of stops, flowcharts without it were displayed at four (10.00%) stops and a board for timetables absented at six (15.00%) stops. A *validity of flowcharts* was registered only at 65.00% stops that are served by two lines. Another parameter, a *readability* of obtainable information was noticed in 31 cases, what represents more than three-thirds (77.50%) of stops. Bus stops in this category were not equipped with *shelter* usually. The most of them (60.00%) were not equipped with the mentioned item, but on the other side, the best level of equipment (four walls) was registered only at 14 (35.00%) stops. Only in one case was a stop equipped with a shelter containing of one wall, and also one stop was equipped with a shelter made of three walls. A presence of a *bench* was registered only in 13 cases, what means that this component was missing at 27 (67.50%) stops. An equipment of bus stops with a *basket* was noticed also at minor part of stops, what represents only 15 (37.50%) places. Within the scope of *lighting* was found out that only seven of ten stops were lighted. Another parameter was a *sidewalk*, which led to 25 of 40 stops, what expresses the share at 62.50%. A *bus bay* was a part of equipment only at 24 stops (60.00%). Unsatisfactory results were acquired within the scope of presence of *pedestrian crossing*. The mentioned item was located nearby nine stops, what shows that 77.50% of stops were not equipped with it. Just 24 stops were equipped with a *street curb* and this parameter reached the same share as the presence of a bus bay.

Within the scope of **secondary parameters** was registered an equipment with an *easy access kerbing* only in one case, what represents 2.50% of all stops served by two lines. A *grocery* was located in the proximity of three stops, what expresses the share at 7.50%.

2.3 Equipment of stops served by 3 lines

The equipment of stops in this category shows improvements within the many parameters in comparison with the stops served by one or two lines (Tab. 1). In terms of **primary parameters** were 64 of 65 (98.46%) stops equipped with a *marker*. A *name of the stop* was registered at 50 stops, what reflects 76.92% of all stops in this group. *Valid numbers and directions of lines* were noticed at 40 (61.54%) of the surveyed places. Really positive findings were recorded within the light of *protection of board for flowcharts*, whilst a

Plexiglas was a part of 63 (96.92%) stops. Only one stop contained a board without a Plexiglas and there was also a one stop without a board for flowcharts. Another surveyed feature, a *validity of flowcharts* was recorded in 61 cases, what expresses the share at 93.85%. A *readability* of information addressed to passengers was recorded at 59 of 65 stops served by three lines. Almost the half (47.69%) of the stops were not equipped with a *shelter*. The highest quality (four walls) within this item was noticed at 27 (41.54%) places and only in one case was a stop equipped by shelter made of one wall. Other five stops were characterized by shelter containing of two walls and one more wall of shelter was found at one stop. A *bench* was a component in the minority (49.23%) of cases, whereas this item was missing at 33 stops. Contrariwise, a *basket* was found at the majority (39) of stops, what symbolizes that it was a part of six of ten stops within this category. A positive fact is that up to 58 (89.23%) were *lighted*, what is useful in early mornings and late evenings, too. A significant part of equipment is a *sidewalk*. The mentioned parameter lead to 61 stops, what expresses the share at 93.85%. A *bus bay* was found at eight of ten stops in this category. The majority (55.38%) of surveyed places were equipped with a *pedestrian crossing* and the final primary parameter, a *street curb*, was recorded in 60 cases, what represents 92.31% of all stops that are served by three lines.

From the perspective of **secondary parameters** was an *easy access kerbing* located at any stop that makes a bad reputation. The second characteristic, a presence of *grocery*, was registered nearby 10 stops, what symbolizes the share at 15.38%.

2.4 Equipment of stops served by 4 lines

Within the scope of **primary parameters** we found out that, a *marker* – basic element of equipment – was registered at 38 (97.44%) of overall 39 stops in this category (Tab. 1). A correct *name of the stop* was recorded at the majority (84.62%) of stops that are served by four lines. The third primary parameter, *valid numbers and directions of lines*, was noticed at 29 stops, what represents almost three-quarters (74.36%) of the stops. *Boards for flowcharts* were usually protected by a Plexiglas, because this item was a component of 38 (97.44%) stops. Only a one stop was not equipped with this board and there was not any stop equipped with a board without protection of Plexiglas. Another positive finding is that up to 36 stops were equipped with *valid flowcharts* that are essential for passengers. A *readability* of information presented at the marker was not registered only at 5 (12.82%) stops. The same number of stops reached the lowest and the highest level of equipment with a *shelter*. On the one hand, 17 stops were not equipped by this item and also at 17 places was noticed a shelter that was made of four walls. Each of these subcategories expresses the share at 43.59%. Four stops were equipped with a shelter containing two walls, one stop was characterized by three-wall shelter and there was no stop equipped with a shelter made of one wall. A presence of *bench* did not approve above mentioned positive results. This parameter was recorded only at 18 stops, what represents only the minority (46.15%) of stops within the termed group. A *basket* was not a usual component of stops, because it was missing at 20 of 39 stops. *Lighting* was noticed in 35 cases that expresses the share at 89.74%. A *sidewalk* led to 34 stops and the same number of places was equipped with a *bus bay*. Another parameter, a *pedestrian*

crossing, was located nearby more than a half (20) of surveyed stops. A *street curb* was a component of 34 of 39 stops, what reflects the share at 87.18%.

In terms of **secondary parameters** were not find out very gratifying results. An *easy access kerbing* was recorded only at 2 (5.13%) stops. The second item, a *grocery*, was located in the proximity of 3 stops, what represents the unpropitious share at 7.69%.

2.5 Equipment of stops served by 5 or more lines

The group of the bus stops that are served by five or more lines means the last partial category. From the viewpoint of **primary parameters** are seen the highest standards (Tab. 1). With a *marker* was equipped each stop belonging to this category, what reflects the gladsome share at 100.00%. Really extraordinary results were acquired within the *name of the stop*, whereas this item was a component at 50 (98.04%) of 51 stops. *Valid numbers and directions of lines* were recorded in 31 cases, what reflects the lower share (60.78%) than in previous parameters. A *protection of board for flowcharts* was really excellent, because all of the stops were protected by a Plexiglas. Another parameter, a *validity of flowcharts*, was registered at 47 of 51 stops that are served by five or more lines. Displayed information was *readable* in 43 cases, what represents the share at the level of 84.31%. In terms of the quality of *shelter* were recorded very satisfactory findings, because the majority (30) of 51 stops was equipped with a shelter made of four walls. Only 14 stops were unequipped, other three places were characterized by a shelter that contained just one wall, the same number of stops was equipped with two-wall shelter and a shelter made of three walls was found at the only stop. Within the scope of equipment with *bench* and *basket* were acquired the identical results, whereas the mentioned parameters were components of 43 (84.31%) stops. In this category was usual that the stops were *lighted*, because this parameter was registered up to 50 (98.04%) of surveyed places. Equipment with a *sidewalk* and a *bus bay* reached the highest level, what represents their presence at all of 51 stops. A *pedestrian crossing* was found nearby 44 places, what expresses the share at 86.27%. The last one primary parameter, a *street curb*, was a component of every stop served by five or more lines.

Within the light of **secondary parameters** was ascertained one positive and negative result, too. No stop was equipped with an *easy access kerbing*, what reflects a great demerit. A *grocery* was located close to 16 of 51 stops, what means that this item was found almost at the one third (31.37%) of stops.

2.6 Equipment of stops in general

A summary view of equipment of bus stops that are served by all lines gives us a real image about equipment of stops that are served by lines of UBT in Nitra (Tab. 1). From the perspective of **primary parameters** was reached equipment with a *marker* at the level of 90.25%, what shows that this item was located at 324 of 359 stops. A *name of the stop* was a component of 200 stops, what is a majority (55.71%) of total number of the stops. An unfavourable finding is that *valid numbers and directions of lines* were recorded only at 159 (44.29%) of stops. Within the *protection of board for flowcharts* can be stated that the majority (81.89%) of timetables was protected by a Plexiglas. In 36 cases was not a board for flowcharts protected and 29 stops were not equipped with the mentioned board, where

timetables should be displayed. A *validity of flowcharts* was registered at 298 of surveyed places, what expresses the share at 83.01%, whereas it is not a very favourable result, because this parameter is one of the most important for passengers. A *readability* of presented information was noticed at 291 (81.06%) stops. A quality of *shelter* was very different. The majority (51.53%) of stops were not equipped with this item, what is really a negative result. The highest level of equipment (four walls) was recorded at 143 (39.83%) stops and other subcategories reached the lower shares. A shelter made of one wall was located at 8 (2.23%) stops, two-wall shelter was found at 18 (5.01%) places and 5 stops were equipped with a shelter that contained three walls. A *bench* was a component only at less than half stops, whereas it was noticed only in 166 (46.24%) cases. As in the previous parameter, the equipment with *basket* was typical only for the minority (49.30%) of all stops. *Lighting* was registered at 290 places, what means in practice that eight of ten stops were lighted. A *sidewalk* led to 283 stops, what expresses the share of this item at the level of 78.83%. Another surveyed parameter, a *bus bay*, was a component of approximately two-thirds (66.57%) of the stops. A *pedestrian crossing* was not a usual part of the stops. This item was located only at 146 stops and was missing at the majority (59.33%) of places. Equipment with a *street curb* has reached the better results, because it was found at 280 (77.99%) stops.

From the perspective of **secondary parameters** were not acquired positive results. Only 3 of overall 359 stops were equipped with an *easy access kerbing*, what express the share less than 1%. A *grocery* was located only nearby 38 (10.58%) of stops.

2.7 Comparison of equipment of stops

Converting the acquired findings to points were calculated average values that fall on the one bus stop within the each category (Tab. 2). Through the comparison of these indicators can be seen the differences among the groups.

In terms of **primary parameters** are visible contrasts among the indicators. The best level of equipment with a *marker* was registered at the stops served by 5 or more lines. On the other hand, the lowest level (0.83 Pts.) was typical for stops, where stopped 2 lines. A *name of the stop* was the most often a component of stops that were served by the highest number of

Tab. 2 – Average number of Pts. of particular parameters falling on 1 stop according to the number of served lines

n	Parameters															
	Primary parameters														SP	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	0.84	0.26	0.24	0.78	0.78	0.76	0.73	0.37	0.37	0.73	0.68	0.48	0.23	0.68	0.00	0.04
2	0.83	0.63	0.50	0.80	0.65	0.78	0.75	0.33	0.38	0.70	0.63	0.60	0.23	0.60	0.03	0.08
3	0.98	0.77	0.62	0.98	0.94	0.91	0.94	0.49	0.60	0.89	0.94	0.80	0.55	0.92	0.00	0.15
4	0.97	0.85	0.74	0.97	0.92	0.87	1.01	0.46	0.49	0.90	0.87	0.87	0.51	0.87	0.05	0.08
5+	1.00	0.98	0.61	1.00	0.92	0.84	1.29	0.84	0.84	0.98	1.00	1.00	0.86	1.00	0.00	0.31
T	0.90	0.56	0.44	0.87	0.83	0.81	0.88	0.46	0.49	0.81	0.79	0.67	0.41	0.78	0.01	0.11

T – Total SP – secondary parameters maximum minimum

Source: Authors

lines and contrary to it, the worst equipment (0.26 Pts.) was noticed in case of stops for only one line. A category of stops for 4 lines reached the highest average value (0.74 Pts.) in the parameter of *valid numbers and directions of lines* and the lowest number (0.24 Pts.) was typical for stops served by one line. The best (1.00 Pt.) *protection of board for flowcharts* was recorded at places, where at least five lines stopped. On the other hand, the worst level of equipment was again typical for stops served by the only line. A parameter of *validity of flowcharts* reached the highest value (0.94 Pts.) in category of stops for three lines and the stops served by one less line were characterized by the lowest average number (0.65 Pts.). Passengers found *readable* information mostly at the stops served by three lines (0.91 Pts.) and the lowest level (0.76 Pts.) was registered at stops, where stopped just one line. Equipment of stops with a *shelter* shows great differences according to the number of served lines. The quality of shelter rose proportionally with the number of lines, what confirms that, the worst level of equipment (0.73 Pts.) was noticed at the stops served by one line and the best equipment (1.29 Pts.) was typical for category of stops served by five or more lines. The lowest level of equipment (0.33 Pts.) with a *bench* was registered at the stops served by two lines. As in the previous case, the best average value (0.84 Pts.) was acquired within the category of stops served by five or more lines. The findings within the equipment with a *basket* confirmed the highest standard (0.84 Pts.) of the last mentioned group of stops and the lowest level (0.37 Pts.) typical for stops served by one line. The worst level of equipment (0.70 Pts.) with *lighting* was recorded at the places, where two lines stopped. Another parameter, a *sidewalk* was recorded at each of stops that serve the highest number of lines (1.00 Pt.), but this item acquired the lowest level (0.63 Pts.) within the category of two stops. A presence of *bus bay* was completely the best at the stops served by five or more lines, but at the stops for one line was this item found only at less than half (0.48 Pts.) of places. Within the parameter of *pedestrian crossing* can be summarized that it was mostly missing nearby stops served by one and two lines (0.23 Pts.). Equipment with a *street curb* confirms the best position of the stops served by the highest number of lines (1.00 Pt.). The lowest level of equipment (0.60 Pts.) was registered at the places, where two lines stopped.

Within the scope of **secondary parameters** were not acquired were laudable results. An *easy access kerbing* was not found at the stops within three categories, so the best level of equipment (0.05 Pts.) was noticed within the group of stops served by four lines. With regard to the low presence of this item can be differences among the categories considered as negligible. A *grocery* was mostly located in the proximity of stops served by five or more lines (0.31 Pts.) and it was usually missing nearby stops served by the only line.

From the **summary viewpoint** are really visible gaps in achievement the lowest or highest average values (Tab. 2). In twelve cases were recorded the best levels of equipment in the category of stops served by five or more lines. The stops served by four lines and three lines reached the best numbers two times. Other way round, the lowest values were noticed ten times within the category of stops served by one line. In seven cases acquired the worst results a group of stops that were served by two lines. And one time it happened within the category of stops for three lines and five or more lines, too.

A detailed view of equipment of **particular stops** can show bright differences. Every stop could reach the highest number of 15 points symbolizing a fully equipment. This level reached 29 of overall 359 surveyed stops, what reflects the share at 8.08%. On the contrary, the worst level of equipment represented by 0 points was noticed at 7 (1.95%) stops that are served by lines of UBT in Nitra.

Each of the bus stop categories reached the final average number of points. Through this variable can be evaluated the **final** level of **equipment** (Tab. 3). Based on the presented results can be summarized that the lowest standard of equipment (7.90 Pts.) was at the stops served by one line. Not much higher value (8.38 Pts.) was evaluated within the category of stops, where stopped two lines. The better results are visible in the next two groups. Categories of stops served by three and four lines got very similar final average numbers of points. The highest level of equipment (13.18 Pts.) was registered at the stops that were served by five or more lines. The mentioned group of lines reached 87.87% of overall number of points. A concluding look at the level of equipment within all 359 bus stops served by lines of UBT in Nitra shows that stops are equipped at the two-thirds level (9.69 Pts.) and there is evidently a space for improvement.

Tab. 3 – Final equipment of stops according to the number of served lines

Category	Final average number of Pts.
Stops served by 1 line	7.90
Stops served by 2 lines	8.38
Stops served by 3 lines	11.33
Stops served by 4 lines	11.32
Stops served by 5 or more lines	13.18
All stops	9.69

Source: Authors

CONCLUSION

Bus stops are important components of urban bus transport. Their equipment is one of the quantitative indicators of public passenger transport and it affects passengers' comfort. Within the one network of UBT cannot be expected a homogeneity in the equipment of stops. A survey realized in terms of UBT in Nitra confirmed that significant differences in equipment are visible in accordance with the number of lines that serve the stops. The hypothesis that a level of equipment proportionally rises with the number of served lines was proved and affirmed. The stops served by one and two lines reached similar variables within the equipment of stops. Likewise, the stops served by three and four lines acquired almost the same numbers. This gives us knowledge that there are not five, but – in point of fact – three levels of equipment within the stops of UBT in Nitra. Besides the positive results were picked up also the demerits, which should be amended. Four primary parameters (valid numbers and directions of lines, shelter, basket and pedestrian crossing) were registered only at less than half number of stops and each of them is important for passengers. Through an effective and interactive cooperation among the city as a subscriber of service; the carrier as an executor of

service; the passengers as users of service; can be ensured a useful communication that may help in many ways. We believe that this research is not final and can be a basis or inspiration for future consequent researches.

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