Article citation info:
Prochowski L, Ignatowicz T, Matuszewski T. Analysis of the preparation of young drivers for participation in road traffic. The Archives of Automotive Engineering – Archiwum Motoryzacji. 2016; 71(1): 117-132, http://dx.doi.org/10.14669/AM.VOL71.ART6

DIAGNOSIS OF THE STATE OF PREPARATION OF YOUNG DRIVERS FOR PARTICIPATION IN ROAD TRAFFIC, BASED ON THE ASSESSMENT OF TEST DRIVES

LEON PROCHOWSKI[1], TOMASZ IGNATOWICZ[2], TOMASZ MATUSZEWSKI[3]
Military University of Technology, Automotive Industry Institute

Summary

Young drivers, having just passed a driving licence test and having been provided with the knowledge and skills necessary to participate in road traffic, cause the greatest numbers of road accidents. To investigate the reasons for such a situation, practical driving test results obtained by applicants for the B category driving licence were analysed. Within the analysis, the course of the practical tests under analysis was examined to identify the test task types with the highest numbers of successes and those most frequently causing the test to be failed.

The task types that most often resulted in a failure in the driving test included left turn at an intersection, driving through a traffic circle, and, in general, disobeying the instructions given by road signs and failure to give way to other traffic participants according to the right-of-way rules. As many as 11 % of the examinees twice failed to perform satisfactorily the left-turn manoeuvre at an intersection. On the average, each of the examinees incorrectly carried out 7 tasks during the test drive and 21 % of the examinees committed disqualifying faults when performing only the first five test tasks.

The diagnosis prepared has revealed severe deficiencies in the preparation of the examinees for safe participation in road traffic. Not only the test tasks have been identified where the highest numbers of faults were committed by the examinees but also the links between the tasks and the reasons for road accidents caused by young drivers have been shown.

Keywords: road traffic safety, driver testing, young drivers, driving test pass rate

[1] Military University of Technology, Faculty of Mechanical Engineering, ul. S. Kaliskiego 2, 00-908 Warszawa; Automotive Industry Institute, Vehicle Safety Laboratory, ul. Jagiellońska 55, 03-301 Warszawa; e-mail: lprochowski@wat.edu.pl

[2] Driving instructor, e-mail: tomek.ignac@wp.pl

[3] Driving examiner, e-mail: t.matuszewski@gostynin.powiat.pl

1. Introduction

Young drivers constitute about 27 % of the drivers killed in road accidents in the OECD countries, although this age group constitutes about 10 % of the total population [9].

The high number of road accidents in Poland and very high number of deaths in such accidents highlight the need to undertake intensive actions aimed at improvement in the road traffic safety. An important role in this field is played by education, especially the imparting of knowledge of road traffic rules and the forming of safe behaviours and responsibility in road traffic.

To obtain entitlement for driving a motor vehicle up to 3 500 kg maximum authorized mass (B category driving licence) in Poland, the candidate must complete a course of driving lessons and then pass an exam carried out by a driving examiner representing one of the Provincial Road Traffic Centres. Obviously, this is only the beginning of the process of acquiring knowledge of road traffic. The exam is made up of a theory test and a practical verification of the skills acquired by the candidates for drivers. During the practical part, the skills of a future driver are verified within the scope of driving a motor vehicle on roads in conformity with legal regulations, efficiently, safely, and in an energy-efficient way ("eco-driving"). The actual results of the verification like this, however, are not impressive (see Table 1 as an example).

Table 1. Statistical data on the test pass rate(percentage of examinees) for the B category driving licence, recorded at the Provincial Road Traffic Centre in Białystok [12]

Result / year	2007	2008	2009	2010	2011	2012	2013	2014
Theory test	76.30	77.80	79.00	80.00	76.80	76.60	48.90	43.87
Practical test	30.30	33.70	31.80	31.60	30.70	26.90	28.30	34.68

The low test pass rate values for the practical part of the exam (driving test) have been confirmed by the results of work [8], which highlights the important role played in this field by the examiners. The driving test pass rate in Poland is about a half of that recorded in the UK, Ireland, Sweden, or Germany [2]. Thus, the numerical data show that the obtaining of a driving licence in Poland is a particularly difficult task. In spite of this, the number of accidents caused by young drivers in Poland is much higher than that observed in other EU countries.

The surveys carried out on the effectiveness of training young candidates for drivers have revealed [11] that the accident risk radically drops after the first year of unassisted driving of a motor car. Simultaneously, the initial accident risk is the higher the younger the driver is when obtaining the driving licence. In [5, 6, 7], the effectiveness of changes introduced to the driving syllabus was analysed. The conclusions drawn from this analysis have shown that a substantial improvement can be achieved by extending the scope of driver training, in particular by introducing the teaching of night-time driving, and by imposing restrictive limitations on young drivers' rights (e.g. limitation on the speed allowed, ban on night-time driving, ban on the carrying of passengers). As regards the more restrictive limitations,

the necessity of increasing the influence of educational activities on the formation of appropriate behaviours and conducts of young drivers in road traffic has been pointed out [3, 7, 10]. Publication [1] shows important deficiencies in the education of candidates for drivers, as more than 40 % of the candidates indicate that the problems of aggressive drivers' behaviour, impact of stress and haste on the efficiency of the actions taken, and factors affecting the perception processes in road traffic are not discussed during driver training courses. There is a lack of publications that would report and assess in detail the state of preparation of candidates for drivers for practical participation in the road traffic in Poland.

This work was undertaken to diagnose the state of preparation of young drivers for safe participation in road traffic. The diagnosis has been based on findings from a detailed analysis of the results of examining a large group of candidates for drivers and to indicate, on these grounds, the practical task types that may have a significant impact on the nature of candidates' conduct when participating in road traffic in the future. The analysis covered the tasks performed by the examinees in road traffic during the test drive. Calculations were carried out to determine the values of several indicators that might facilitate the identification of the symptoms that would indicate future hazards caused by young drivers in road traffic. Not everything may be deemed OK because it has been observed for many years that young drivers, having just passed a driving licence test and having been provided with the knowledge and skills necessary to participate in road traffic, cause the greatest numbers of road accidents [4].

Therefore, it becomes important to answer the question whether the process of education of candidates for drivers and the verification of their knowledge and skills during the driving tests makes it possible to form young drivers in such a way that they would not cause an excessive hazard in road traffic.

2. The quantities and indicators to be calculated

The quantities and indicators as described below have been used in this study:

$Z_0 = 30$ – number of types of the analysed tasks carried out during a test drive;

L_Z, L_i – total number of people taking the practical test and the number of the examinees assessed for carrying out tasks of the i^{th} type during the practical test; $i \in (1, 30)$;

L_{Pi} – number of the examinees who obtained a satisfactory result of carrying out tasks of the i^{th} type during the practical test;

L_{Ni} – number of the examinees who committed a fault when carrying out a task of the i^{th} type during the practical test;

L_{N2i} – number of the examinees who twice committed a fault when carrying out a task of the same i^{th} type during the practical test;

P – number of the examinees who passed the whole test drive;

P_{Ni} – number of the examinees of subgroup P who committed a fault when carrying out a task of the i^{th} type;

P_{Nj} – number of the examinees of subgroup P who committed j faults during the whole test drive;

B_P, B_N – numbers of faults committed in subgroups P and N, respectively;

N – number of the examinees who failed the practical test as a whole;

N_i – number of the examinees of subgroup N who carried out a task of the i^{th} type during the test drive;

N_{Pi}, N_{Ni} – numbers of the examinees of subgroup N who passed the i^{th} task type or committed a fault when carrying out a task of this type, respectively;

N_{Zj} – number of examinees of subgroup N who carried out j tasks before the test was discontinued.

3. Description of the practical test and characterization of the group of examinees under analysis

The principles, conditions, and procedure of examining candidates for drivers have been defined in the Regulation of the Minister appropriate for transport issues (Regulation of 13 July 2012, Dziennik Ustaw RP (Journal of Laws of the Republic of Poland), item 995). The practical part of the exam (the driving test) consists in the carrying out of specific tasks, defined in the obligatory examination program, on a specially prepared manoeuvring yard and in normal road traffic. The result of the driving test is satisfactory if:

- the examinee correctly performed the obligatory tasks;
- some isolated tasks were incorrectly carried out by the examinee but none of them was incorrectly performed for the second time.

The candidate is considered to have failed the driving test(i.e. is given an unsatisfactory mark) if:

- he/she incorrectly performed a task of the same type two times during the test drive;
- a life or health hazard occurred to any traffic participant during a test task incorrectly carried out;
- the test was discontinued at request of the examinee.

About 1 000 examination record forms were analysed that reported the practical tests carried out in the early months of 2015 for applicants for the B and B+E category driving licences. The test drives under analysis were carried out in a city with a population of over 100 000 people, having an efficient road system with a considerable number of traffic circles and a developed bus and tram service. The traffic intensity in the area of test drives was from 500 to 4 000 motor vehicles per hour (about 3 000 vehicles per hour on the average).

Table 2. List of the analysed types of the tasks performed by examinees and of their behaviours observed during test drives

Item	Task type	Number of examinees assessed for the i^{th} task type, L_i
1	Driving into a road from a roadside area	870
2	Driving on two-way single carriageway roads	737
3	Driving on two-way dual carriageway roads	715
4	Driving on one-way roads	632
5	Driving through three-way and four-way intersections of equal-priority roads	631
6	Driving through intersections with signs defining the priority rules	600
7	Driving through intersections with traffic lights	621
8	Driving through intersections with traffic directed around an island(a traffic circle)	651
9	Driving through two-level crossings (inclusive of entering and leaving the crossing)	513
10	Driving through pedestrian crossings	613
11	Performing one of the standard parking manoeuvres	615
12	Performing the turn-in-the-road manoeuvre on a two-way single carriageway road	515
13	Driving through a reserved track tramway crossing and a railway crossing	627
15	Passing by a tram stop and a bus stop	604
16	Performing an overtaking manoeuvre	495
17	Performing a manoeuvre of passing a stationary obstacle	630
18	Performing a manoeuvre of passing an oncoming vehicle	649
19	Performing a lane-change manoeuvre	599
20A	Performing a left-turn manoeuvre	616
20B	Performing a right-turn manoeuvre	538
21	Performing a manoeuvre of U-turn at an intersection	569
22	Braking from a speed of at least 50 km/h to stop the vehicle at a place shown by the examiner	455
25	Exceeding a speed limit	568
26	Behaviour towards road marks	587

Table 2. List of the analysed types of the tasks performed by examinees and of their behaviours observed during test drives (continued)

Item	Task type	Number of examinees assessed for the i^{th} task type, L_i
27	Behaviour towards traffic signs	576
28+29	Behaviour towards traffic lights and a traffic-controlling person	547
30	Behaviour towards other traffic participants	552
31	Observing the principles of correct vehicle driving techniques	597
32	Correct gear shifting for energy-efficient driving (eco-driving)	364
33	Use of engine brake	357

Table 2 presents a list of the 30 analysed types of the tasks performed during practical driving tests. The examination record form, in its part concerning the test tasks carried out in normal road traffic, includes 33 items. It covers the task types (e.g. items 1–22 of Table 2) and the examinees' doings (behaviours) (items 25–33) subject to the analysis. Three types of the tasks were omitted in the analysis:

- driving through a tunnel (task No. 14) because there was no tunnel in the test routes chosen;
- emergency braking (task No. 23) because too few examinees performed this task;
- uncoupling the trailer from the towing vehicle (task No. 24) because this skill was checked for applicants for the B+E category driving licence on the manoeuvring yard.

In the subsequent part of this article, the types of tasks and behaviours subject to assessment, specified in Table 2, are referred to as "task types". Table 2 also shows the numbers (L_i) of examinees assessed for the performance of tasks of individual types. These numbers fall within limits $L_Z > L_i > P$, because in most cases the test drive was discontinued immediately after the examiner assessed the examinee as having failed the test as a whole. Among the applicants for the B category driving licence, young people predominate: the age group of 18–20 years constituted 56 % of all the examinees covered by the analysis.

4. Proportion of successes and failures in individual types of the test tasks

The analysis carried out in this section covers the whole group of the examinees, i.e. $L_Z = P + N$, and the results obtained for performing tasks of the *ith* type, i.e. by L_i people, have been assessed.

The graph characterizing the distribution of successes shows the general state of preparation of candidates for participation in road traffic, because individual test tasks were passed by examinees of both the P and N subgroups. At this stage of the analysis, attention was focussed on two groups of the task types:

- tasks passed in most cases;
- tasks in which faults were most frequently committed by the examinees.

The percentage of successes in the results achieved when carrying out tasks of individual types in normal road traffic has been presented in Fig. 1. The bars show percentage values of L_{Pi} / L_i, i.e. the success rates for individual test types. The average value of these rates is high, amounting to 86.17 % (represented by the horizontal heavy line).

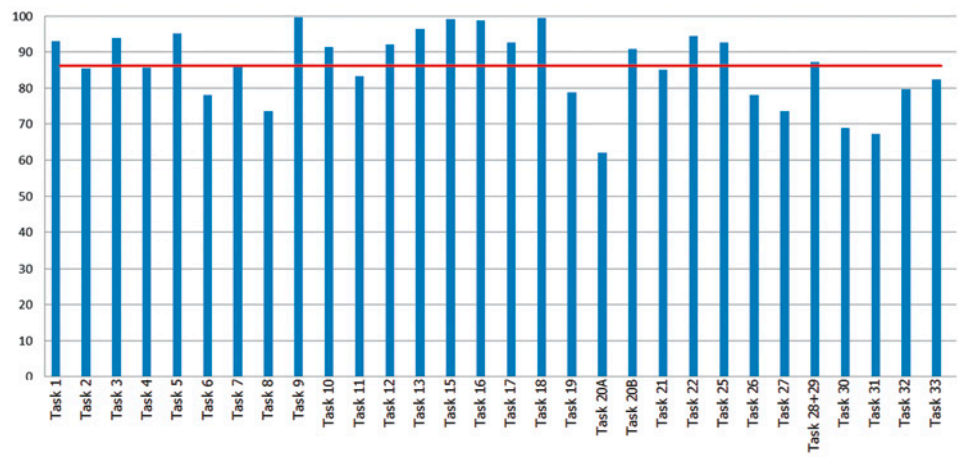

Fig. 1. Percentage of successes in tasks of individual types, i.e. the L_{Pi} / L_i ratio

The highest values of the percentage of successes were achieved in the task types listed below:

- task 9, driving through a two-level crossing 99.61 %
- task 18, performing a manoeuvre of passing an oncoming vehicle 99.54 %
- task 15, passing by a tram stop and a bus stop 99.18 %
- task 16, performing an overtaking manoeuvre 98.80 %
- task 13, driving through a reserved track tramway crossing and a railway crossing 96.45 %

The above tasks represent simple road traffic situations, often exercised during driving lessons.

The overtaking manoeuvre, which in general may be hazardous, is characterized by some special features when performed during a test drive, because in this case it is carried

out at a relatively low speed of about 50 km/h, while the vehicle being overtaken moves even slower. Moreover, this frequently takes place on a road with two lanes for the same driving direction and the examinee passes by the other vehicle without changing the lane; therefore, such conditions are hardly comparable with the typical overtaking situation.

The group of task types with the lowest percentage of successes (see Fig. 1) includes:

- task 20A, performing a left-turn manoeuvre at an intersection 62.10 %
- task 31, observing the principles of correct vehicle driving techniques 67.24 %
- task 30, behaviour towards other traffic participants and observing the right-of-way rules 68.90 %
- task 27, following the instructions given by traffic signs 73.53 %
- task 8, driving through an intersection with traffic directed around an island (a traffic circle) 73.55 %

Two of these task types (left turn at an intersection and driving through a traffic circle) are counted among the manoeuvres considered particularly difficult. The low percentage of successes in the said group of task types is caused by examinees' failures to yield the right-of-way, disobeying traffic signs, and lack of skill in correct observing and analysing of the behaviour of other traffic participants.

A fault in a specific task is not a direct cause for a failure in the driving test, unless the fault resulted in a real hazard in the road traffic. The percentage of failures among individual test types L_{Ni} / L_i as shown in Fig. 2 covers a very wide range of values, from definitely below 1 % in task types 9, 15, 16, and 18 to more than 30 % in task types 20A, 30, and 31.

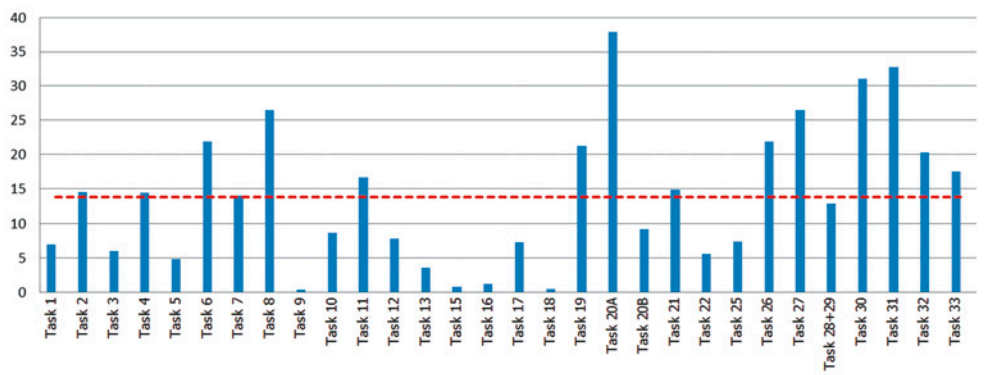

Fig. 2. Percentage of failures in tasks of individual types, i.e. the L_{Ni} / L_i ratio

The average value of the L_{Ni} / L_i ratio is 13.83 %, i.e. this is the average percentage of the examinees who committed faults in tasks of individual types; it has been represented by the dashed line in Fig. 2.

Two faults accumulated when performing tasks of the same type result in a failure in the driving test as a whole. The percentage of the examinees who failed a driving test for this reason has been shown, by individual task types, in Fig. 3. The bars in the graph show percentage values of L_{N2i} / L_i for individual test types. The average value of this indicator is 2.14 %, which is a very low figure.

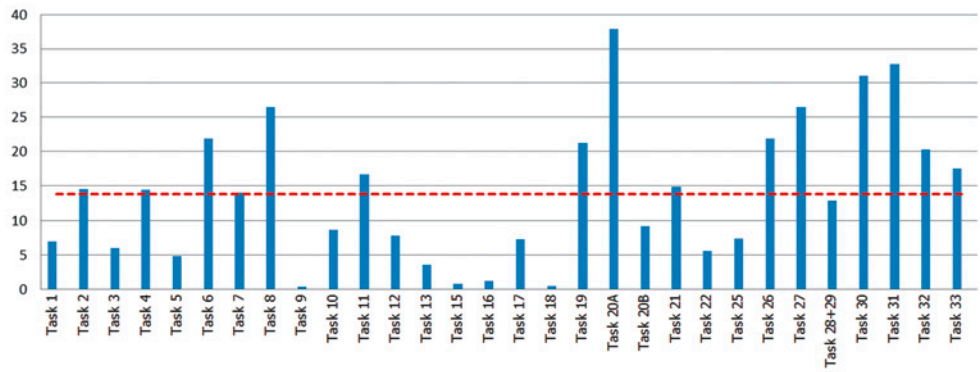

Fig. 3. Percentage distribution of the examinees who failed a driving test due to faults committed twice in tasks of the same type, i.e. L_{N2i} / L_i

The group of the task types that most frequently result in a failure in the driving test include: left turn at an intersection (task 20A), driving through a traffic circle (task 8), lack of adequate response to traffic signs and road marks (tasks 26 and 27), and faults related to motor vehicle driving techniques (task 31). Thus, these are the task types that have been previously mentioned (Figs. 1 and 2) as those characterized by the lowest numbers of successes among all the examinees under analysis. As many as 10.63 % of the examinees failed the driving test because of incorrect performing of task 20A, i.e. a left turn at an intersection (see Fig. 3).

Based on an analysis of the examination record forms, it has been found that in most cases, the faults committed in the above task types caused a hazard in the road traffic during a test drive. The main cause for such hazards was examinees' misbehaviour towards other traffic participants, who predominantly had right of way. Such symptoms, noticeable during test drives, are reflected in the causing of a significant part of hazards and accidents in the everyday road traffic.

5. Analysis of the successes in driving tests

In this section, only the driving test results obtained by successful examinees, i.e. those of subgroup P, have been analysed. This subgroup consists of P = 408 people, which makes 41.71 % of the total number of the examinees under analysis. Although the said people passed their driving tests, some of them committed faults during the test drives.

In this section, only the driving test results obtained by successful examinees, i.e. those of subgroup P, have been analysed. This subgroup consists of P = 408 people, which makes 41.71 % of the total number of the examinees under analysis. Although the said people passed their driving tests, some of them committed faults during the test drives.

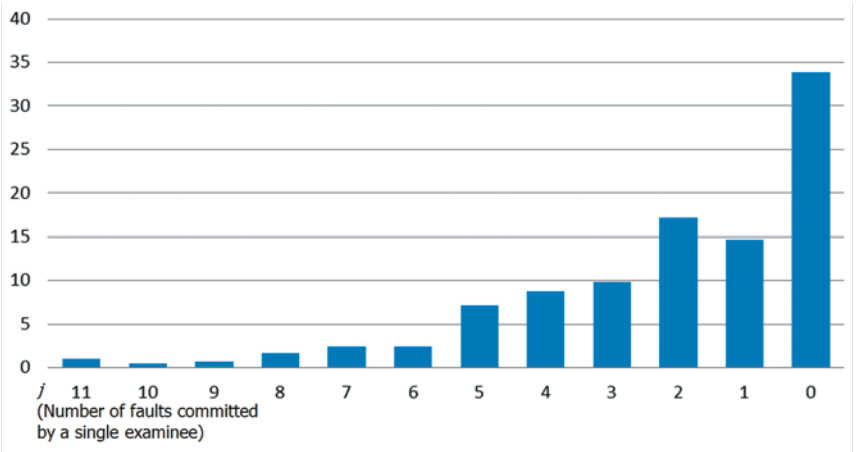

Fig. 4. Percentage of the examinees who committed j faults during the test drives, i.e. P_{Nj} / P

For the subgroup under analysis, the performance of 408 × 30 = 12 240 test tasks was assessed. In these tasks, B_P = 881 faults were committed, which averaged out at 2.16 faults per examinee and the number of faults committed by a single examinee ranged from 0 to 11 (Fig. 4). In subgroup P, there are 48.5 % examinees who committed not more than one fault per 30 task types subject to assessment during the practical test. On the other hand, the number of the examinees who committed five or more faults during the test drive is 65, which makes 15.9 % of the group of all those who passed the driving tests.

Table 3 shows 8 types of the tasks that were most frequently incorrectly performed by the examinees of subgroup P. In the subgroup of people who, from the formal point of view, were recognized as well prepared for safe participation in road traffic, every third person committed faults in the driving technique (task 31) and every fourth person committed faults when turning left at an intersection (task 20A).

Table 3. Task types with the number of faults committed

Task type	Percentage of the examinees who committed a fault in the i^{th} task type. i.e. $P_{Ni} / P \times 100\ \%$	Percentage of the faults committed in the i^{th} task type in relation to the total number of faults. i.e. $P_{Ni} / B_P \times 100\ \%$
31	31.13	14.42
20A	23.04	10.67
30	16.18	7.49
8	13.73	6.36
32	12.01	5.56
27	11.52	5.33
33	11.52	5.33
6	11.27	5.22

There are also task types with very few faults committed. This group includes tasks 1, 9, 15, 16, and 18, where as few as 7 faults were committed in the whole subgroup P.

6. Analysis of the failures in driving tests

This section shows calculation results for subgroup N, which consists of 570 people. Which task types turned out to be most difficult for the examinees of this subgroup. The degree of difficulty was analysed on two levels: the number of faults committed in tasks of the i^{th} type and the number of test failures caused by faults committed in the tasks. For this subgroup, the performance of 5 255 test tasks was assessed, in which B_N = 2 553 faults were committed.

The total number of Z_0 = 30 task types taken into account (Table 2) has been divided here into a few intervals Z_j, with 5 of them having been shown in Fig. 5. The graph presented there indicates that 35 % of the examinees committed faults resulting in a failure in the driving test as a whole as early as in the initial part of the test (when performing tasks of the first five types). The number of the examinees who, during the test drive, carried out tasks of more than 25 types of the 30 task types under analysis is quite small and makes only 7.57 % of the total. In subgroup N, tasks of 9.22 types were carried out by each examinee, on the average.

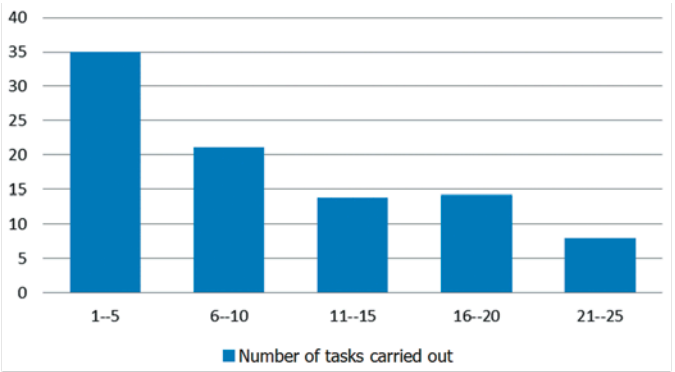

Fig. 5. Percentage of the examinees who carried out tasks of Z_i types during the test drive, i.e. until the test was assessed as failed

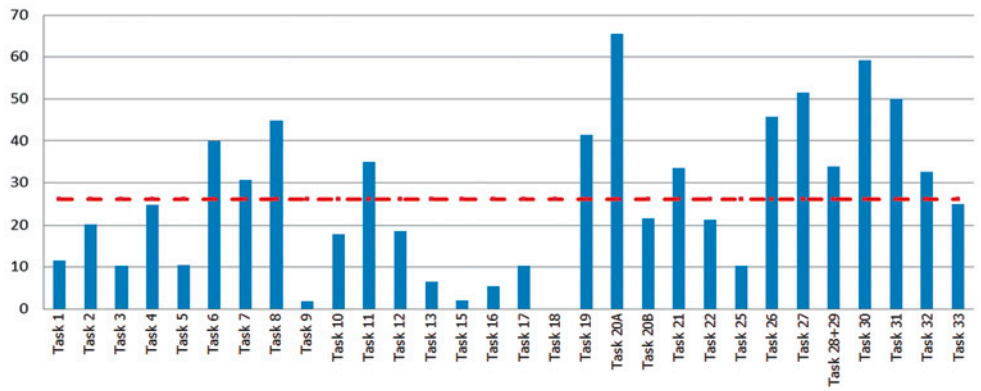

Fig. 6. Percentage of the examinees who committed faults when carrying out a task of the ith type, i.e. N_{Ni} / N_i

Fig. 6 presents the degree of difficulty of the test tasks for the examinees who were inadequately prepared for the driving test, i.e. for the examinees of subgroup N. Here, an explanation should be made for Fig. 6: if e.g. the tasks of the type defined as item 15 in Table 2 were correctly performed by 196 people and N_{Ni} = 4 examinees committed faults when attempting such tasks then it should be understood that such tasks were carried out by N_i = 200 people in total of a group consisting of 570 people (as this is the number of people counted in subgroup N). The other people of this subgroup did not carry out tasks of this type because their practical tests were discontinued even before such tasks were attempted. Hence, the bar representing task type 15 in the graph is valued at 2 %, according to the result of dividing N_{Ni} / N_i = 4/200 = 0.02.

In subgroup N, there are 4.49 faults per examinee and, on the average, 26.08 % of the examinees committed faults when performing tasks of every type (dashed line in Fig. 6).

Fig. 6 enables identification of the task types that pose the biggest problems in subgroup N during the practical test. A comparison of Figs. 2 and 6 and Table 3 shows the types of the tasks that are most often incorrectly performed. This group includes task types 8, 20A, 27, 30, and 31, which caused the greatest difficulties both for subgroup N and for all the examinees.

Figs. 2 and 6 and Table 3 show examinees' weak points. The impact of individual task types on the final assessment of a test drive, in percentage terms, has been illustrated in Fig. 7.

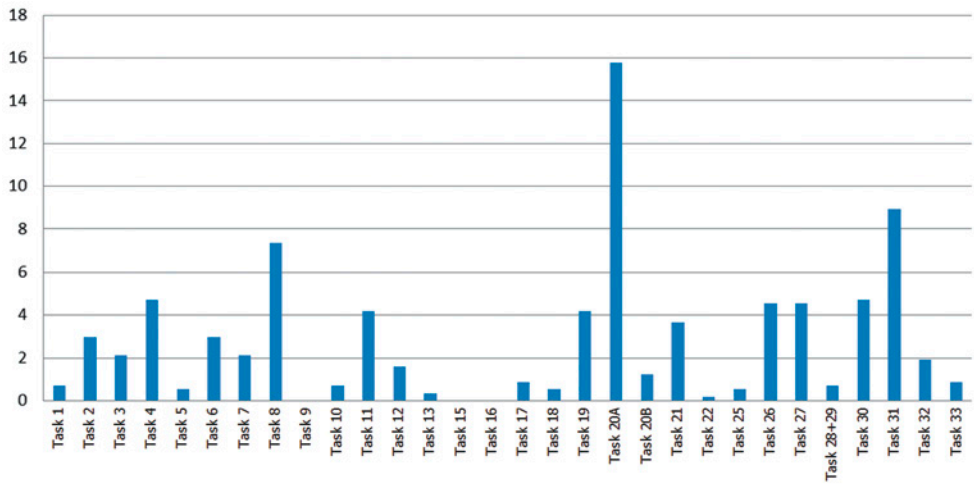

Fig. 7. Percentage of the examinees of subgroup N who failed a driving test due to faults committed twice in a task of the i^{th} type, i.e. L_{N2i} / N

Fig. 7 presents the driving test failures caused by faults committed twice in a task of the same type. The sum of heights of the graph bars is 83.7 %. This means that for 16.3 % of the examinees, the driving test was discontinued without the said "double fault" but in consequence of a hazard caused to the road traffic by a fault in the performance of one of the test tasks. In the graph, three task types (8, 20A, and 31) are conspicuous, which are jointly accountable for 32.11 % of the driving test failures under analysis.

7. Recapitulation and conclusions

Results of the process of education of candidates for drivers can be seen in drivers' behaviour in road traffic, including their behaviour observed as early as when they are taking their practical driving tests. Interesting findings were obtained when two subgroups, i.e. P and N, were separated from the whole body of examinees. The examinees of subgroup P carried out 408 × 30 = 12 240 test tasks subject to assessment and they committed B_P = 881 faults, which averaged out at 2.16 faults per examinee; each of the

examinees attempted test tasks of all the 30 task types. On the other hand, the examinees of subgroup N, which consisted of much more people, carried out 5 255 such tasks only, i.e. 9.22 tasks, on the average, were carried out by each examinee during a driving test. Simultaneously, the examinees of this subgroup committed 4.49 faults each, on the average, with performing somewhat more than 9 tasks, on the average, during a driving test. In result of the analysis carried out, two characteristic categories of the test tasks have been discerned:

- those causing serious difficulties to the examinees;
- those not causing serious difficulties during the test drive.

Based on calculations carried out, the following tasks have been assigned to the first category:

- driving through an intersection with a traffic circle (task 8);
- left turn at an intersection (task 20A);
- following the instructions given by traffic signs (task 27);
- behaviour towards other traffic participants and observing the right-of-way rules (task 30);
- observing the principles of correct vehicle driving techniques (task 31).

When carrying out these tasks, the examinees of subgroups P and N committed 390 faults and as many as 1 087 faults, respectively.

A fault in a specific task usually is not a direct cause for a failure in the driving test. However, these tasks not only cause serious difficulties resulting in faults during test drives but also give grounds to a significant number of driving test failures. Three of these task types (8, 20A, and 31) are jointly accountable for 32.11 % of the driving test failures under analysis.

In the second category, the following task types may be specified:

- driving through a two-level crossing (task 9);
- driving through a reserved track tramway crossing and a railway crossing (task 13);
- passing by a tram stop and a bus stop (task 15);
- performing an overtaking manoeuvre (task 16);
- performing a manoeuvre of passing an oncoming vehicle (task 18).

In these tasks, the examinees achieved a success rate of 98.72 %. The tasks classified in this category cover traffic situations with low degree of complication and with repeatable scenarios, easy for technical mastering during driving lessons, as they are frequently exercised during such lessons. The overtaking manoeuvre mentioned here has been described in a previous part of this article as inadequately representing the typical overtaking situations, which often may be highly hazardous.

The diagnosis, based on results of the analysis of examination record forms, has revealed a few important weak points in the preparation of candidates for drivers. The calculation results having been obtained show that the same task types are difficult for examinees of both subgroup N and subgroup P. The main reason for such a situation may be the fact that

the process of education of candidates for drivers is insufficiently effective. An analysis of the course of test drives has confirmed that the most frequently committed faults arise not only from poor driving technique but also, to a significant extent, from disobeying traffic signs and road marks and misbehaviour towards other traffic participants. As many as 11 % of the examinees twice failed to perform satisfactorily the manoeuvre of left turn at an intersection and double faults committed in this task caused in many cases a traffic hazard, which may be considered an immediate effect of examinees' misbehaviour towards other road users who had right of way. Such symptoms, noticeable as early as during test drives, indicate the actual reason for a significant, predominating in Poland, part of the hazards and accidents in the road traffic in our country (this applies to 26.8 % of the accidents caused by vehicle drivers in 2014, according to the National Police Headquarters).

The outcome of the analysis reported here is consistent with the views of road safety experts, claiming that dangerous behaviours of traffic participants, especially the disregard for the rights,in particular concerning the right of way, of other traffic participants (both vehicle drivers and pedestrians) are among the main causes for road accidents. These conclusions are confirmed by the calculation results obtained.

In subgroup N, 36.7 % of the examinees failed the driving test because of failure to yield right of way or, in other words, lack of skill in observing the road traffic right-of-way rules. If so many people do not observe the most important road traffic rules during a driving test, i.e. when driving a vehicle under examiner's supervision, then the opinion about the state of preparation of candidates for participants in road traffic must be low. Simultaneously, this confirms the failings of the driver education system.

The analysis of performance of individual tasks in the practical part of a driving licence test has revealed insufficient preparation of candidates for drivers for unassisted participation in road traffic, which includes not only the typical deficiency of driving skills but also poor recognition of hazardous situations (especially as regards yielding the right of way). These candidates' failings are confirmed by the fact that during the test drives, 35 % of candidates of subgroup N (21 % all the examinees) committed faults resulting in a failure in the driving test as a whole as early as when performing tasks of the first five types.

Answering the question formulated in the first section of this study, we should emphasize the fact that in result of the calculations carried out, not only the generally insufficient preparation of candidates for drivers for participation in road traffic has been presented in quantitative terms but also some critical areas in this preparation have been identified. The overall picture can be well seen from the quantitative characteristics of the pass rates determined for individual types of the test tasks. The critical areas in the practical driver training process have been indicated by isolating the practical task types where the most faults are committed.

The full text of the Article is available in Polish online on the website http://archiwummotoryzacji.pl.

Tekst artykułu w polskiej wersji językowej dostępny jest na stronie http://archiwummotoryzacji.pl.

References

[1] Bąk J, Bąk-Gajda D. Proces szkolenia kandydatów na kierowców – wymagania bezpieczeństwa ruchu drogowego (Process of education of candidates for drivers–road traffic safety requirements). 7th International Conference LOGITRANS; 2010; Szczyrk, Poland.

[2] Dragan, A. Porównanie systemów szkolenia i egzaminowania kierowców w Polsce i w Niemczech (Comparison between the driver training and examining systems in Poland and Germany). Chancellery of the Senate of the Republic of Poland: The Analyses and Documentation Office; 2012.

[3] Gidlewska K, Prochowski L. Bezpieczeństwo w ruchu drogowym – problem młodych kierowców (Safety in road traffic. The problem of young drivers). Warszawa: Wydawnictwo Naukowe WAT; 2007.

[4] Gidlewski M, Matuszewski T, Prochowski L, Wicher J. Program poprawy bezpieczeństwa ruchu drogowego na Mazowszu (Program to improve the road safety in the Mazovia region). GAMBIT Mazowiecki; 2009.

[5] Hedlund J, Shults R A, Compton R. What we know, what we don't know, and what we need to know about graduated driver licensing. Journal of Safety Research. 2003; 34(1): 107115 .

[6] Lin M. L, Fearn K T. The provisional license: Nighttime and passenger restrictions-a literature review. Journal of Safety Research. 2003; 34(1): 51-61.

[7] Masten S V, Hagge R A. Evaluation of California's graduated driver licensing program. Journal of Safety Research. 2004; 35(5): 523-535.

[8] Purczyński, J. Analiza zdawalności egzaminów państwowych na prawo jazdy w Wojewódzkim Ośrodku Ruchu Drogowego w Szczecinie (Analysis of pass rate of National Driving Licenceexaminations conducted in Voivodship Road Traffic Centre in Szczecin). Logistyka. 2010; 2.

[9] ECD and ECMT Report: Young Drivers: The Road to Safety. Paris; 2006 [cited 04 Jan 2016]. Available from: http://internationaltransportforum.org/Pub/pdf/06YoungDrivers.pdf.

[10] Shope, J T. Graduated driver licensing: Review of evaluation results since 2002. Journal of Safety Research. 2007; 38(2): 165-175.

[11] Twisk D A M, Colin S. Trends in young driver risk and countermeasures in European countries. Journal of Safety Research. 2007; 38(2): 245-257.

[12] Wojewódzki Ośrodek Ruchu Drogowego w Białymstoku: Statystyka zdawalności [cited 04 Jan 2016]. Available from: www.word.bialystok.pl/egzaminy_stat.