# USEFULNESS OF THE AUDIT TOOL IN ASSESSING ALCOHOL CONSUMPTION PATTERNS OF DRIVERS WHO HAVE LOST THEIR DRIVING LICENSE

**Grzegorz Załęski**
**Krzysztof Horoszkiewicz**

## Abstract

Alcohol consumption by drivers has a negative impact on the driving behaviour and the risk of an accident. The objective of the work the usefulness of the AUDIT tool in relation to alcohol consumption patterns of people who lost their driving license for drunk driving. The study used a 10-item AUDIT questionnaire, which included 196 people aged 19 to 71 years. The experimental group (Group 1) consisted of people who lost their driving license "after drinking", and the control group (Group 2) consisted of people who drive motor vehicles at work. It has been shown that the majority of people who had their authorization to drive a car revoked, faced difficulties in controlling their alcohol consumption. There were no statistically significant differences in the results of the AUDIT questionnaire, taking into account the group and gender criteria. The surveyed drivers most often revealed a low and moderate pattern of alcohol consumption. People who drink, in the problem model (risky) significantly more often lost their driving license than people in the control group.

## Keywords

alcohol, drunk driver, risky behaviour, AUDIT.

## The cite this article

Załęski G., Horoszkiewicz K Usefulness of the AUDIT tool in assessing alcohol consumption patterns of drivers who have lost their driving license Motor Transport, 64(2), 9 - 16
DOI: 10.5604/01.3001.0015.5036

## Introduction

Driving a motor vehicle under the influence of alcohol carries a high risk of road accidents, loss of health or life and legal consequences related to e.g. with the withdrawal of permits, a ban on driving and even the possibility of imprisonment. The probability of serious injuries and death in this group of drivers increases from 19 to 23% [24]. For some drivers, however, this does not stop them from making the decision to drive a car "under the influence". According to the police statistics [28], in Poland, in 2019 alone, there were 2717 road accidents involving people under the influence of alcohol. It should be noted that this data includes 9% of all accidents in Poland (30,288), more than 11% of the total number of fatalities (326 people) and almost 9% of the injured (3,081 people) in all road accidents.

Questions arise whether this type of behaviour of drivers is related to specific patterns of alcohol consumption, lack of appropriate knowledge [8], the level of sensation-seeking [23], overestimating one's own abilities or maybe other conditions?

Previous studies indicate that alcohol consumption has a negative impact on the way of driving [24], [6], [10]. Even small doses of alcohol disturb the functioning of the senses, especially eyesight [4]. Blood alcohol content in the range of 0.2-0.6 per mille may cause eye vibrations, which may result in disturbances of visual acuity, disturbances in depth vision or visual field, which directly affect the level of driving safety.

Drinking alcohol manifests itself with varying degrees of intensity and frequency, causing specific bio psychosocial consequences. Therefore, we can distinguish:

- **risky alcohol consumption** - drinking excessive amounts of alcohol frequently, without lasting consequences for psychosocial functioning and health condition;
- **harmful drinking of alcohol** - drinking alcohol that causes measurable biological damage and psychosocial problems, but without the occurrence of full-blown alcohol dependence;
- **alcohol dependence** - as a consequence of harmful alcohol consumption, drinking becomes a behaviour that has priority over behaviours that were previously more important for the drinker. A person in this model of consumption experiences a strong irresistible urge to get intoxicated [25].

In their publication, the authors - Butler and Krystek [8] emphasized that there were few scientific papers on the patterns of alcohol consumption by drivers. Moreover, no reliable evaluation of the prevalence of alcohol in road traffic has ever been undertaken in Poland [8]. This means that we learn about a specific "model" of alcohol consumption by drivers mainly from the police statistics.
The inspiration to take up this issue was the desire to generalize the experience related to conducting re-education courses in the field of alcohol prevention for drivers who had their driving licenses withdrawn. At the same time, our intention was to obtain information on the alcohol drinking patterns they manifested (declared) listed in the AUDIT (Alcohol Use Disorders Identification Test). The method used is widely known and seems to be useful in screening tests in the context of identifying alcohol problems. The conclusions formulated by the authors, drawn based on the content analysis of the psychological diagnoses of drivers, had a significant impact on the determination of the hypotheses presented below. The authors hope that the results of these studies will allow the use of this knowledge in preventive and psycho educational activities of people driving vehicles.
The aim of the study was to assess the usefulness of the AUDIT tool in relation to the patterns of alcohol consumption by people who lost their driving license for driving under the influence of alcohol. The research was based on the results of the AUDIT (Alcohol Use Disorders Identification Test) questionnaire and authors' own observations enriched with data from the literature.

## Research hypotheses:

H1: The results of the AUDIT test in drivers whose driving license was revoked "after drinking" are significantly higher than the results obtained by drivers from the control group;

H2: The results of the AUDIT test in men are significantly higher than the results of women;

H3: There is a significant variation in the scores on alcohol consumption patterns (as defined in the AUDIT questionnaire) for the drivers who lost their driving licenses and those who have not had their licenses revoked;

H4: Most of the respondents who have their driving license withdrawn "after drinking" have problems with controlling their alcohol consumption.

## Material and methods

### Persons tested

There were 196 people aged 19-71 years (M = 43.4; SD = 14.1) who were subjected to the study. Participants were qualified into 2 research groups:

- Group 1 - people directed for the, so-called, re-education course in connection with driving a car under the influence of alcohol (these were people who drove a car after drinking or under the influence of alcohol. Most of them were people driving a category B vehicle, also for business purposes. Some of them were professional drivers, cat. C, D, E);

- Group 2 - persons declaring that they have never driven a vehicle under the influence of alcohol, holding a driving license for a period of at least 1 year (the so-called control group), (these were persons driving a category B vehicle as part of their official duties. The control group included several professional drivers (category C, D, E).

Over 78% of respondents from group 1 (84 people) had driving licenses of various categories withheld in connection with driving a motor vehicle while drunk, that is in the range from 0.2 to 0.5 per mille. The remaining persons drove the vehicle in road traffic under the influence of alcohol (at least 0.5 per mille). In the group of respondents there were 11 people (10.2%) who had their driving license withdrawn again for the same reason.

The characteristics of the subjects are presented in Table 1. Both groups were homogeneous in terms of age, sex and education level.

The research was conducted in the period from July 2019 till February 2020. The survey of the respondents from group 1 took place in the Małopolska Road Traffic Centre in Tarnów as part of the participation of these people in a re-education course on alcohol issues; the survey of people from group 2 took place in the Private Healthcare Centre - „Marmed" in Gorlice. The participants of the survey were guaranteed an appropriate place and working conditions allowing them to maintain anonymity and confidentiality of the data.

## Methods

The AUDIT questionnaire, developed by the World Health Organization (WHO) in 1989 [3], [18] was used to assess alcohol consumption patterns by motor vehicle drivers. This tool consists of 10 questions related to the suspicion of:
– alcohol addiction (4 questions),
– risky activities after drinking alcohol (question 1),
– the harm caused by alcohol (2 questions),
– the amount of alcohol consumed (3 questions).
Each question is scored from 0 to 4, giving a maximum total score of 40. The task of the person tested is to respond to specific forms of alcohol consumption by marking one of the five listed answers. After adding up the number of points, the result obtained is subjected to an appropriate classification and interpretation [3], which is presented in Table 2.

Controlled drinkers (low-risk drinking) were defined as those who scored less than 8 points in this test. People characterised by the so-called risky drinking received from 8 to 15 points. It should be noted that elevated figures for questions 4 to 6 indicate the risk of alcohol dependence (when the total number of points in this test is ≥ 20). The high numerical value recorded in the remaining responses to the AUDIT questionnaire suggests the presence of harmful alcohol use in the examined person (the overall score, however, ranged from 16 to 19 points).

The examination with the AUDIT test was carried out individually with each examined person during a meeting with a psychologist, which allowed to verify the correct understanding of the content of individual questions and the correctness of the answers to them. The same was done in the context of discussing the results obtained. The history of the driver's experiences related to the loss of the driving license was also analysed, especially with regard to driving under the influence of alcohol.

**Table 1. Characteristics of the drivers tested**

| Parameter | | Drivers tested | | | |
|---|---|---|---|---|---|
| | | Total (n=196) | Group 1 "after alcohol" (n=107) | Group 2 "control" (n=89) | p |
| Age | M | 43,4 | 45 | 41,5 | 0,083 |
| | SD | 14,1 | 14,5 | 13,4 | |
| | Min | 19 | 19 | 19 | |
| | Max | 71 | 71 | 64 | |
| Gender | Female | 21(10,7) | 8(7,5) | 13 (14,6) | 0,108 |
| | Male | 175(89,3) | 99(92,5) | 76(85,4) | |
| Education | Primary | 14(7,1) | 7(6,5) | 7(7,9) | 0,915 |
| | Vocational | 51(26) | 29(27,1) | 22(24,7) | |
| | Medium | 71(36,2) | 40(37,4) | 31(34,8) | |
| | Higher | 60(30,6) | 31(29) | 29(32,6) | |

M - average; SD - standard deviation; Min - minimum value; Max - maximum value;

In terms of variables: gender and education are listed first in numbers (n), and the percentage (%) in brackets

**Table 2. Interpretation of the results in the AUDIT test according to Babor at al.[3]**

| Patterns of alcohol consumption | Number of points in the AUDIT test | Distribution of answers in the AUDIT test (elevated number of points in the questions) |
|---|---|---|
| Low-risk drinking | Up to 7 | questions 1-3 |
| Risky drinking | 8 - 15 | questions 1-3 |
| Harmful drinking | 16 - 19 | questions 1-3 and 7-10 |
| Suspected addiction | 20 and more | questions 1-3, 7-10 and 4-6 |

## Statistical calculations

Statistical analyses were carried out using the IBM SPSS Statistics 25 package. The basic descriptive statistics were analysed together with the Kolmogorov-Smirnow tests, the Cronbach's coefficient was calculated and the Chi-square test of independence, t tests for independent samples and non-parametric U Mann-Whitney tests have been conducted. All tests were calculated at the statistical significance level of $p \leq 0.05$.

## Results

First, it was decided to verify the internal compliance of the items included in the AUDIT questionnaire. The Cronbach's coefficient for the entire sample was satisfactory and amounted to 0.843. Equally satisfactory reliability was achieved in the group of people referred to psychological tests for driving a motor vehicle „after drinking" (Group 1), in which the Cronbach's alpha value was = 0.828, and in people qualified for the control group (Group 2): = 0.862.

Next, it was decided to check whether the results of the AUDIT test differentiate drivers who had their driving licenses withdrawn (for driving under the influence of alcohol) from those who had no such experience. For this purpose, the Student's t-test was performed for independent samples. People from Group 1 had a slightly higher number of points (M = 6.98, SD = 5.22) in this test than people from Group 2 (M = 5.83, SD = 5.45), but no statistical significance of the differences were noted: t (194) = 1.504, p = 0.134. The AUDIT test results turned out to be comparable in both groups. For this reason, the first hypothesis (H1) was rejected.

Another statistical analysis was performed to check if the AUDIT test results in men were significantly higher than the results of women. Due to the extreme inequality of the compared groups, the Mann-Whitney U test was used. The mean number of points in this test and the median value for men (M = 6.34, SD = 5.23, ME = 5.00) turned out to be lower than for women (M = 7.48, SD = 6.31, ME = 6.00). The differences obtained between the groups turned out to be statistically insignificant (U = 1671.00, p = 0.496). This means that the results of this test were comparable in both groups. Therefore, it was decided to reject the second hypothesis (H2).

Then, the distribution of scores on alcohol drinking patterns, as measured by the AUDIT test, was examined. The distribution of the results of individual variables significantly differed from the Gaussian curve ($p < 0.001$). Skewness values within the conventional range from -2 to +2 allowed to assume that the distribution of these results was similar to the symmetric distribution [12]. Basic statistics taking into account the breakdown of the results according to a specific research group are presented in Table 3. Most of the respondents (67.3%) obtained a test result of ≤ 7 points, which means that a total of 132 people from the entire sample declared their drinking pattern equated to with low risk. It was noted that 41 people (21%) had a score ranging from 8 to 15 points, which is a result indicating a risky drinking pattern. It should be noted that 17 people (8.7%) confessed to, so-called, harmful drinking, and the result indicating suspicion of alcohol dependence was observed in 6 people (3%).

**Table 3. Driver' drinking patterns**

| *Group* | | *N* | *M* | *SD* | *Sk.* | *Min.* | *Max.* |
|---|---|---|---|---|---|---|---|
| Total | AUDIT overall result | 196 | 6,46 | 5,35 | 1,12 | 0 | 23 |
| | Low-risk drinking | 132 | 3,38 | 2,11 | -0,09 | 0 | 7 |
| | Risky drinking | 41 | 9,95 | 1,43 | 1,17 | 8 | 15 |
| | Harmful drinking | 17 | 16,53 | 0,72 | 1,04 | 16 | 18 |
| | Suspicion of addiction | 6 | 21,83 | 0,98 | 0,46 | 21 | 23 |
| "After alcohol" group | AUDIT overall result | 107 | 6,98 | 5,22 | 1,05 | 0 | 23 |
| | Low-risk drinking | 66 | 3,58 | 1,81 | 0,20 | 0 | 7 |
| | Risky drinking | 28 | 10,00 | 1,66 | 1,11 | 8 | 15 |
| | Harmful drinking | 10 | 16,60 | 0,84 | 1,00 | 16 | 18 |
| | Suspicion of addiction | 3 | 21,67 | 1,15 | 1,73 | 21 | 23 |
| "Control" group | AUDIT overall result | 89 | 5,83 | 5,45 | 1,28 | 0 | 23 |
| | Low-risk drinking | 66 | 3,18 | 2,37 | -0,11 | 0 | 7 |
| | Risky drinking | 13 | 9,85 | 0,80 | -0,85 | 8 | 11 |
| | Harmful drinking | 7 | 16,43 | 0,53 | 0,37 | 16 | 17 |
| | Suspicion of addiction | 3 | 22,00 | 1,00 | 0,00 | 21 | 23 |

N – number of respondents; M – average; SD – standard deviation, Sk. – Skewness;
Min. – minimum value; Ma. – maximum value

Below, in graphical form, there is a percentage of people presented, assigned to particular drinking patterns according to the points values declared by them in the AUDIT test. (Fig. 1). Most of the respondents from both groups of drivers declared their first and second drinking patterns. The percentage of the respondents who were noxiously drinking (third pattern) did not exceed 9% in both groups. The lowest percentage of respondents (3% in group 1 and 2% in group 2) was noted for the fourth drinking pattern associated with suspected alcohol dependence.

In order to verify the third hypothesis (H3), assuming the existence of significant differences in the results in terms of individual alcohol consumption patterns in both groups of drivers, further statistical analyses were performed.

The analysis with the Student's t-test did not show any statistically significant differences between the groups in terms of the so-called low-risk drinking, harmful drinking, and suspected alcohol dependence (Table 4). This means that the results were comparable in both groups of drivers. It should be remembered that a group of three or seven people is an extremely small sample and it is worth verifying the obtained results on a larger sample.

Due to the high inequality in the risky drinking pattern groups the Mann-Whitney U test was performed. In both groups the median values were identical (ME = 10.00); and the mean values were similar (Tab. 3). There were no statistically significant differences observed between the groups according to the analysed drinking pattern: U = 177.50; p = 0.896. For this reason, it was decided to reject another hypothesis.

The fourth hypothesis (H4) assumed that the majority of respondents who had their driving license withdrawn have problems with controlling their alcohol consumption. To verify this hypothesis, it was decided to combine the results of low-risk drinkers and high-risk drinkers (score values from 0 to 15) into one common drinking „model". It seems typical of problem drinkers who declare that they control the amount of alcohol they consume. Similarly, a second drinking „model" (score from 16 to 23) was developed to include those who had completely lost control over the amount of alcohol consumed. These were people with higher AUDIT scores, characteristic of the last two patterns of alcohol consumption: harmful drinking and suspected addiction.

Analysis with the Student's t-test for independent trials (Tab. 5) showed that people who had their driving licenses revoked for "drink-driving" (Group 1) received significantly higher results (M = 5.49; SD = 3, 44) than people in the control group (M = 4.28; SD = 3.31) in terms of point values occurring in the first model of alcohol consumption. The magnitude of this effect was moderate. This means that the majority of respondents who have had their driving license withdrawn have greater problems with controlling their alcohol consumption than those in the control group. For this reason, the last hypothesis was successfully verified. It is worth adding that there were no statistically significant differences between the groups in the second drinking model (p> 0.05).

**Fig. 1. Percentage of drunk drivers and control group drivers assigned to a specific drinking pattern by score on the AUDIT test.**

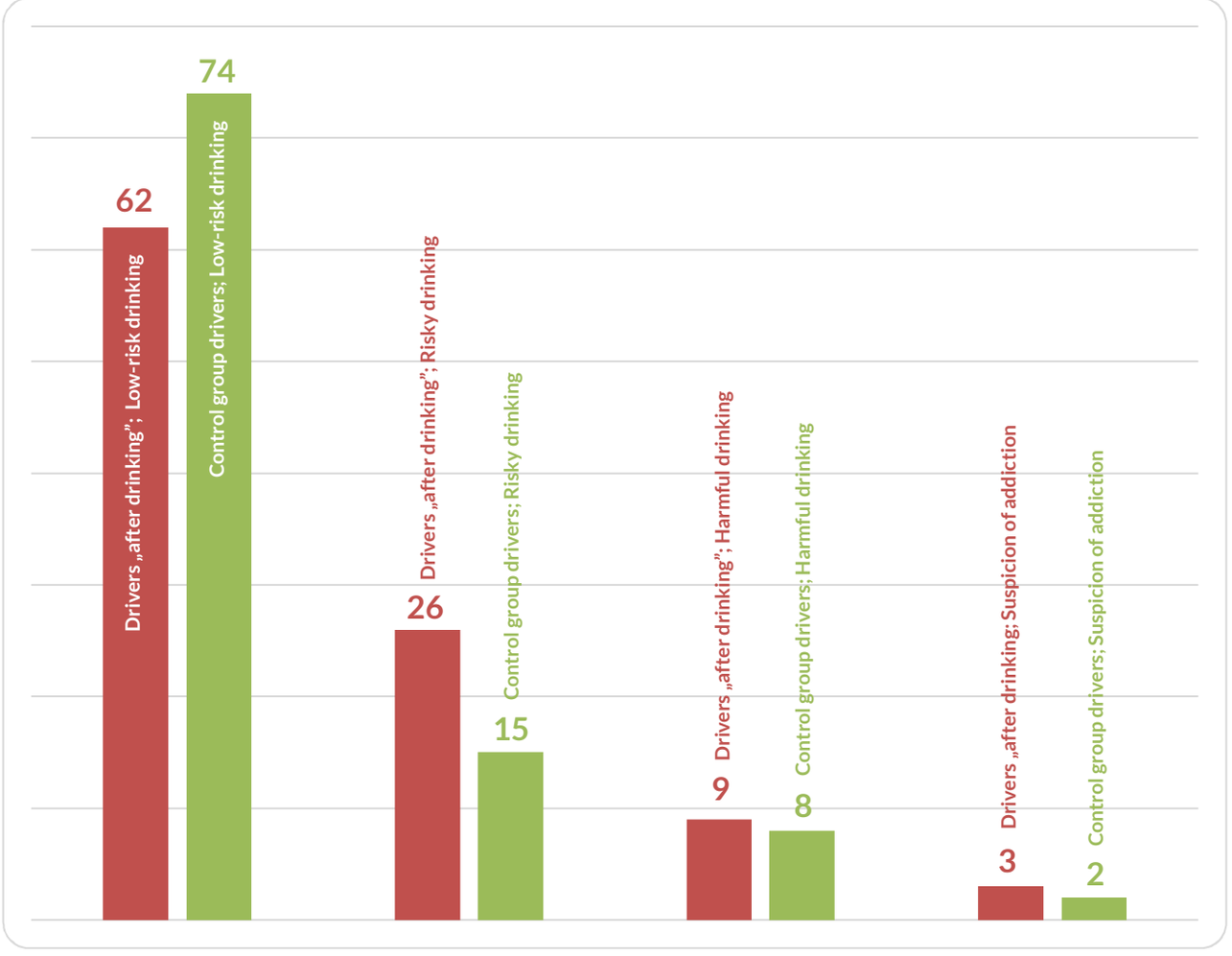

**Table 4. The results of the Student's t-test for independent samples of alcohol consumption patterns by low-risk drivers, harmful drinking drivers and the drivers suspected for the alcohol dependence**

| | Group 1 („after alcohol") | | Group 2 („control") | | | | 95% *CI* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *LL* | *UL* | *d* Cohen |
| Low-risk drinking | 3,58 | 1,81 | 3,18 | 2,37 | 1,07 | 0,285 | -0,33 | 1,12 | 0,19 |
| Harmful drinking | 16,60 | 0,84 | 16,43 | 0,53 | 0,47 | 0,643 | -0,60 | 0,94 | 0,23 |
| Suspicion of addiction | 21,67 | 1,15 | 22,00 | 1,00 | -0,38 | 0,725 | -2,78 | 2,11 | 0,31 |

M - average; SD – standard deviation; t - the results of the Student's t-test; p – statistical significance; CI – confidence interval; LL – lower limit; UL – upper limit

Below, in graphical form, there is a percentage of people presented, assigned to particular drinking patterns according to the points values declared by them in the AUDIT test. (Fig. 1). Most of the respondents from both groups of drivers declared their first and second drinking patterns. The percentage of the respondents who were noxiously drinking (third pattern) did not exceed 9% in both groups. The lowest percentage of respondents (3% in group 1 and 2% in group 2) was noted for the fourth drinking pattern associated with suspected alcohol dependence.

In order to verify the third hypothesis (H3), assuming the existence of significant differences in the results in terms of individual alcohol consumption patterns in both groups of drivers, further statistical analyses were performed.

The analysis with the Student's t-test did not show any statistically significant differences between the groups in terms of the so-called low-risk drinking, harmful drinking, and suspected alcohol dependence (Table 4). This means that the results were comparable in both groups of drivers. It should be remembered that a group of three or seven people is an extremely small sample and it is worth verifying the obtained results on a larger sample.

Due to the high inequality in the risky drinking pattern groups the Mann-Whitney U test was performed. In both groups the median values were identical (ME = 10.00); and the mean values were similar (Tab. 3). There were no statistically significant differences observed between the groups according to the analysed drinking pattern: U = 177.50; p = 0.896. For this reason, it was decided to reject another hypothesis.

The fourth hypothesis (H4) assumed that the majority of respondents who had their driving license withdrawn have problems with controlling their alcohol consumption. To verify this hypothesis, it was decided to combine the results of low-risk drinkers and high-risk drinkers (score values from 0 to 15) into one common drinking „model". It seems typical of problem drinkers who declare that they control the amount of alcohol they consume. Similarly, a second drinking „model" (score from 16 to 23) was developed to include those who had completely lost control over the amount of alcohol consumed. These were people with higher AUDIT scores, characteristic of the last two patterns of alcohol consumption: harmful drinking and suspected addiction.

Analysis with the Student's t-test for independent trials (Tab. 5) showed that people who had their driving licenses revoked for "drink-driving" (Group 1) received significantly higher results (M = 5.49; SD = 3, 44) than people in the control group (M = 4.28; SD = 3.31) in terms of point values occurring in the first model of alcohol consumption. The magnitude of this effect was moderate. This means that the majority of respondents who have had their driving license withdrawn have greater problems with controlling their alcohol consumption than those in the control group. For this reason, the last hypothesis was successfully verified. It is worth adding that there were no statistically significant differences between the groups in the second drinking model (p> 0.05).

**Table 5. Student's t-test results for independent samples for the first and second alcohol drinking model in the analysed groups of drivers**

| | Group 1 („after alcohol") | | Group 2 („control") | | | | 95% *CI* | | |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *LL* | *UL* | *d* Cohen |
| Model 1 | 5,49 | 3,44 | 4,28 | 3,31 | 2,35 | 0,02 | 0,19 | 2,23 | 0,36 |
| Model 2 | 17,77 | 2,39 | 18,10 | 2,77 | -5,74 | 0,76 | -2,57 | 1,91 | 0,13 |

M - average; SD – standard deviation; t - the results of the Student's t-test; p – statistical significance; CI – confidence interval; LL – lower limit; UL – upper limit

## Discussion

The hypothesis assuming significantly higher results in the AUDIT test in people driving motor vehicles whose driving license was stopped „after drinking" in comparison with the results of the control group, was not confirmed. The observed higher values of the mean results were in line with our expectations, however, they did not reach the level of statistical significance. Therefore, it should be considered that they were comparable in both groups.

A similar study was conducted in China on a sample of 406 drivers from the control group and 101 drivers detained for drink-driving [14]. The average result in the AUDIT test for people driving a car „after drinking" was significantly higher (M = 11.1, SD = 5.9) compared to the control group (M = 7.4, SD = 5.4, p <0.001 ). Compared to the results of our own research, it was observed that the mean difference in points values in this test in drivers „after drinking" was as much as 4.1 points, and in the control group - 1.6 points.

Similarly, in the studies of El-Gabri et al. [11], the results of the AUDIT test turned out to be significantly higher in people who committed an offense or a crime in connection with driving a motor vehicle under the influence of this psychoactive substance.

It should be noted that in the Polish legal system, persons driving a mechanical vehicle under the influence of alcohol (at least 0.2 per mille), detained by the road control authority, are obliged to undergo specialist medical and psychological examinations and participate in a re-education course in the field of alcohol prevention. It can be assumed that for many respondents the willingness to present themselves in a better light in the context of the answers they revealed in the AUDIT test seems to be a safer alternative than admitting the problem. On the one hand, this could result in greater difficulties in applying for the recovery of the driving entitlements, and on the other hand, in the necessity to undertake treatment. We do not negate the values obtained in this test by our respondents, however, we recommend caution when interpreting and generalizing the results using this tool. The satisfactory psychometric values of this method [23], [26] cannot release a psychologist, addiction therapist or psychiatrist from the obligation to precisely assess alcohol-related problems and the overall functioning of the examined person. We can risk a thesis that the accuracy of this tool may raise doubts in the research of people who want to present themselves in a better light.
In the course of further analyses, we decided to reject the hypothesis assuming higher AUDIT scores in men. It turned out that the results of women were comparable to those of men, and the point values were even slightly higher, but statistically insignificant. It is worth recalling that in the entire sample, women constituted 10.7% of the total number of respondents (n = 21), and in the group of drivers who were drink-driving, their number decreased to eight.

Comparing the data from the scientific literature, which often indicates significantly lower results of women in the AUDIT test compared to men [12], [16], [21], their significantly lower share in this area of exploratory research [23], [17] - [ 19], during re-education courses or in police road statistics [28], it is hard not to get the impression that various psychological mechanisms played a key role in men's responses. One of them, it seems that the dominant one, could be the need to show oneself in a more favourable, positive light. It seems that the mechanisms of rationalisation and denial, which obviously distort the reality of those who use them, could also play an important role. To some extent, this seems to confirm the discourse of the instructors, with some participants of the re-education course, around the AUDIT test. Some people tended to question how the points were encoded, especially in the context of the first three questions about how often and how much alcohol they drink. The most frequent suggestions were the need to differentiate the results and interpret them in terms of age and gender. Some opinions seemed to us to be extremely important in terms of diagnostics, as they required focusing on increasing their awareness of the risk of alcohol consumption and active participation in the road traffic. Minimizing the problem of alcohol use and driving may be linked to their likelihood of drinking more alcohol and of being immature. Navas et al. [21] also link this type of behaviour with various aspects of impulsiveness. In the studies of drivers on the perception of hazards in certain road situations, it was shown that men were characterised by a greater need to create their own image as a safe and responsible driver [13].

In the literature on the subject, a greater proportion of men driving a car under the influence of alcohol is most often noted than women [10], [27], although it causes concern that these „shameful" statistics show a steady increase in the „fair sex", especially at the turn of the last three decades [21 ], [1], [29].

In the scientific literature, the relationship between alcohol consumption by drivers and age, is more often observed, especially in younger age groups, [27], [5] - [9], also the gender, mainly men [14], [23], [2] , [15] or education [17]. Research led by Lendoiro et al. [17] showed only such a relationship with regard to the level of education: people driving vehicles with primary education had a statistically significantly lower result in the AUDIT questionnaire compared to drivers with secondary and higher education (respectively: 7.0, 11.8 and 11 .0, $p \leq 0.02$). Moreover, the AUDIT result was higher in the respondents who declared consumption of various psychoactive substances ≥ 4 times a month in the last 3 months than in those who admitted consumption <3 times for all the tested substances: alcohol (14.5 vs 5.7 , p <0.001), cocaine (20.3 vs 8.9, p = 0.009) or benzodiazepines (21.7 vs 8.7, p = 0.004).

Interesting, though disturbing, data is also provided by the conclusions from the research et al. [5] suggesting the widespread consumption of alcohol among young drivers who have just obtained driving license. According to the researchers [5], alcohol was the main factor in over 40% of fatal accidents involving drivers aged 15–24.

The assumption that the patterns of alcohol consumption by the drivers who have lost their driving license are significantly different from the patterns of alcohol consumption by people in the control group was not confirmed in our research. Most of the respondents declared their consumption of alcohol in the so-called low level of risk. The percentage of respondents turned out to be comparable in both groups and amounted to 61.7% in the driving group "after drinking" (group 1) and 74.2% in the control group (group 2), respectively. With regard to the second pattern of alcohol consumption, i.e. risky drinking, there was a slightly higher proportion of respondents from group 1 (25.7%) compared to group 2 (14.6%). However, it should be recalled that the differences in point values in the questionnaire we used were not statistically significant. It is worth adding that in the group of drivers „after drinking", there was a percentage of 9% of respondents declaring the so-called harmful drinking (pattern 3) and 2.8% of people suspected of being addicted to alcohol (pattern 4). The percentages of respondents from both groups were also similar in the last two drinking patterns, 7.8% and 3.4%, respectively (p> 0.05).

A low-risk alcohol consumption pattern was also observed among Polish students of medicine, dentistry, dietetics and resident physicians, where the percentage of drinkers in this group ranged from 78 to 91% [7]. In previous studies of students under the supervision of Wójtowicz-Chomicz et al. [30], the characteristics of harmful drinking and alcohol addiction, were also not observed. However, according to the authors [30], heavy drinking, that is, risky drinking, shortens the time needed to develop addiction.

The research led by Jia et al. [16] showed that drivers of motor vehicles most often displayed a low and medium level of risk related to alcohol consumption. Similarly to the results we obtained, the number of people suspected of being addicted to alcohol was very small. However, efforts should be made to promote sobriety among drivers, which will prevent many dangerous and risky road incidents, including potential negative legal, health, moral, social and economic consequences. Even in the case of drivers of vehicles who report a low severity of alcohol consumption problems, it is necessary to take measures aimed at reducing drinking.

The last hypothesis assuming that the majority of respondents who have had their driving license withdrawn „after drinking" have problems with controlling their alcohol consumption, was accepted. We would like to emphasize, however, that we are not talking here about a complete impairment of the control of alcohol use in a clinical context. We only point out that drivers detained for drink-driving probably drank more often, more and more intensely and were not able to properly control it.

The data obtained shows that alcohol consumption is very common in both groups analysed by us. Over 86% of drivers detained for driving a car „after drinking" and almost 89% of respondents from the control group drink, in the so-called, risky model, that is, one that includes the first and second

drinking patterns. People in group 1, however, drink significantly more often and more than in the control group ($p < 0.05$).

Speaking of drivers, we mean people who have the license to drive motor vehicles and those who lost them for drink-driving. Our sample included people with different levels of education and social status. It should be assumed that in both analysed groups, people do drink alcohol; respondents from the control group, however, are characterised by greater caution and prudence, which saved them from negative consequences related to, among the others, the loss of entitlements.

In the evaluation of anti-health behaviours among students of the Medical Academy, 88.3% of women and 75.7% of men did not show alcohol addiction, and 9.9% of women and 24.9% of men required in-depth diagnostics due to obtaining 8 and more points on the AUDIT [30] questionnaire.

In a Spanish scientists' study [17], the scores in the AUDIT questionnaire ≥ 8 included 52.4% of the drivers participating in the study. Other authors [18] indicate that driving under the influence of alcohol may be related not only to age, marital status, race or ethical status, but also to specific personality traits, such as sensation seeking, hostility, depression or psychopathic deviations.

By combining individual drinking patterns into two main models of alcohol consumption according to a specific AUDIT score value, we can see that moderate alcohol use (≤ 15 points) is widespread not only in various social groups, with different levels of education and social status, but it concerns both men and women. Similar conclusions emerge from many cited studies [18], [16], [17], [7], [30] and are generally consistent with the results presented by us.

Most of the available studies on the problem of alcohol among drivers [5], [15] show a positive correlation between driving a vehicle „after drinking" and the risk of hazardous behaviour on the roads. Some researchers [20] claim that drunk drivers are 17.8 times (12.1–26.1) more responsible for a fatal accident, and moreover, the proportion of preventable fatal accidents, if only none of the drivers exceeded the statutory alcohol limit, is estimated at 27.7% (26.0% -29.4%).

Finally, it is worth quoting the results of the research led by Begg et al. [5], in which it turned out that many young drivers believed that driving a vehicle was safe for them, even if they exceeded the permissible blood alcohol level (!). This shows how important element of educating future drivers should be appropriate psycho-education on the effects of alcohol on the driver's body. On the one hand, there is clearly a need to increase risk awareness, i.e. the perception of real dangers in road traffic, on the other hand, the environment should be sensitized to shaping safe and responsible attitudes on roads, especially among younger road users.

## Restrictions

The results obtained by us include only samples of drivers from the region of the Małopolski Voivodeship. Moreover, the study was cross-sectional with a clear overrepresentation of men. Their greater share in the study was dictated by the more frequent percentage of men participating in re-education courses for people who had their driving license detained for drink-driving. It can be assumed that such a trend occurs in all regions of Poland. However, this requires further exploration.

## Conclusions

1. The results of the AUDIT test show that the surveyed drivers most often reveal the first and second drinking patterns associated with, the so-called, low-risk drinking and high-risk drinking.
2. Drinkers in the problem model, allegedly controlling the amount of alcohol consumed, significantly more often lost their driving license than people in the control group. This means that many of them may have a more serious alcohol problem with a classic denial mechanism.
3. The social approval variable may distort the true picture of the results in questionnaire surveys on the amount and frequency of alcohol consumption. Issuing a ruling that there are no psychological contraindications to drivers whose driving license has been revoked for drink-driving cannot be limited to the results of the AUDIT test.
4. The AUDIT questionnaire may only be a proposed scenario of questions for an in-depth interview with a person applying for recovery of a driving license for drink-driving. In a specific research situation, in which the respondent is more interested in receiving a specific document than admitting the problem, the accuracy of this tool may be very poor.
5. Appropriate psychoeducation on the impact of alcohol on the driver's body and the probability of dangerous behaviour in the road environment should go beyond the scope of a re-education course or psychological examination. It would be a good idea to introduce this topic into the driving license courses for candidates drivers.

## Bibliography:


1. Agabio, R., Pisanu, C., Gessa, G. L., Franconi, F. (2016). Sex Differences in Alcohol Use Disorder. Current Medicinal Chemistry, 24(24), 1–10. https://doi.org/10.2174/0929867323666161202092908
2. Ahlström, S. K., Österberg, E. L. (2005). International perspectives on adolescent and young adult drinking. Alcohol Research and Health.
3. Babor, T., Higgins-Biddle, J. C., Saunders, J. B., Monteiro, M. G. (2001). The Alcohol Use Disorders Identification Test: Guidelines for use in primary care. Geneva: World Health Organization.
4. Bąk, J., Bąk-Gajda, D. (2013). Wybrane czynniki psychologiczne wpływające na czas reakcji kierowcy. Zeszyty Naukowe Instytutu Pojazdów, 5(96), 21–30.
5. Begg, D., Brookland, R., Connor, J. (2017). Associations of repeated high alcohol use with unsafe driving behaviors, traffic offenses, and traffic crashes among young drivers: Findings from the New Zealand Drivers Study. Traffic Injury Prevention, 18(2), 111–117. https://doi.org/10.1080/15389588.2016.1224345
6. Bingham, C. R., Elliott, M. R., Shope, J. T. (2007). Social and behavioral characteristics of young adult drink/drivers adjusted for level of alcohol use. Alcoholism: Clinical and Experimental Research. https://doi.org/10.1111/j.1530-0277.2007.00350.x
7. Bryl, N. (2020). Picie alkoholu jako sposób radzenia sobie ze stresem u studentów kierunków medycznych Drinking alcohol as a way of coping with stress in students. Psychiatr. Pol., 54(2), 265–277.
8. Butler, I., Krystek, R. (2014). V Forum bezpieczeństwa transportu - „Alkohol w ruchu drogowym - polski problem?". Drogi: Budownictwo Infrastrukturalne, 3(25), 22–29.
9. Cooper, B., Gehrsitz, M., McIntyre, S. G. (2020). Drink, death, and driving: Do blood alcohol content limit reductions improve road safety? Health Economics (United Kingdom), 29(7), 841–847. https://doi.org/10.1002/hec.4016
10. Delker, E., Brown, Q., Hasin, D. S. (2016). Alcohol consumption in demographic subpopulations: An epidemiologic overview. In Alcohol Research: Current Reviews.
11. El-Gabri, D., Nickenig Vissoci, J. R., Meier, B. J., Mvungi, M., Haglund, M., Swahn, M., Mmbaga, B. T., Gerardo, C. J., Staton, C. A. (2020). Alcohol stigma as it relates to drinking behaviors and perceptions of drink drivers: A mixed method study in Moshi, Tanzania. Alcohol, 88, 73–81. https://doi.org/10.1016/j.alcohol.2020.04.005
12. George, D., Mallery, P. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference Fourth Edition. Boston: Pearson Education, Inc.
13. Horoszkiewicz, K. (2020). Ocena zagrożeń i tendencje do niebezpiecznych zachowań w ruchu drogowym u kierowców w zależności od płci. AUTOBUSY – Technika, Eksploatacja, Systemy Transportowe, 12/2019, 30–36. https://doi.org/10.24136/atest.2019.220.Data
14. Jia, K, King, M., Sheehan, M., Fleiter, J. J., Ma, Zhang, J. (2013). Baseline study of alcohol dependence among general drivers and drunk driving offenders in Guangzhou, China. Road Safety Research, Policing and Education Conference 2013, Brisbane Convention & Exhibition Centre, Queensland, Australia.
15. Jia, Keqin, King, M., Fleiter, J. J., Sheehan, M., Ma, W., Lei, J., Zhang, J. (2016). Drunk driving offenders' knowledge and behaviour in relation to alcohol-involved driving in Yinchuan and a comparison with Guangzhou, China. Transportation Research Part F: Traffic Psychology and Behaviour, 38, 182–193. https://doi.org/10.1016/j.trf.2015.12.011
16. Jia, Keqin, King, M., Fleiter, J., Sheehan, M., Ma, W., Lei, J., Zhang, J. (2015). General Motor Vehicle Drivers' Knowledge and Practices Regarding Drink Driving in Yinchuan and Guangzhou, China. Traffic Injury Prevention, 16(7), 652–657. https://doi.org/10.1080/15389588.2014.1001509

17. Lendoiro, E., de Castro, A., Jiménez-Morigosa, C., Gomez-Fraguela, X. A., López-Rivadulla, M., Cruz, A. (2018). Usefulness of hair analysis and psychological tests for identification of alcohol and drugs of abuse consumption in driving license regranting. Forensic Science International. https://doi.org/10.1016/j.forsciint.2018.03.023
18. Lin, J.-C., Lee, C.-H., Liu, Y.-H. (2019). A study of well-being in drunken driving recidivists. Taiwanese Journal of Psychiatry, 33(1), 20. https://doi.org/10.4103/tpsy.tpsy_4_19
19. Martí-Belda, A., Pastor, J. C., Montoro, L., Bosó, P., Roca, J. (2019). Persistent traffic offenders: Alcohol consumption and personality as predictors of driving disqualification. European Journal of Psychology Applied to Legal Context, 11(2), 81–92. https://doi.org/10.5093/EJPALC2019A3
20. Martin, J. L., Gadegbeku, B., Wu, D., Viallon, V., Laumon, B. (2017). Cannabis, alcohol and fatal road accidents. PLoS ONE. https://doi.org/10.1371/journal.pone.0187320
21. Navas, J. F., Martín-Pérez, C., Petrova, D., Verdejo-García, A., Cano, M., Sagripanti-Mazuquín, O., Perandrés-Gómez, A., López-Martín, Á., Cordovilla-Guardia, S., Megías, A., Perales, J. C., Vilar-López, R. (2019). Sex differences in the association between impulsivity and driving under the influence of alcohol in young adults: The specific role of sensation seeking. Accident Analysis and Prevention, 124(January), 174–179. https://doi.org/10.1016/j.aap.2018.12.024
22. Oddachowska, E., Gasiorek, K., (2016). Psychologiczne determinanty agresji drogowej i możliwości prewencyjne. Transport Samochodowy, 3/2016, 26.
23. Padilla, J. L., Doncel, P., Gugliotta, A., Castro, C. (2018). Which drivers are at risk? Factors that determine the profile of the reoffender driver. Accident Analysis and Prevention, 119(February), 237–247. https://doi.org/10.1016/j.aap.2018.07.021
24. Prato, C. G., Rasmussen, T. K., Kaplan, S. (2014). Risk Factors Associated with Crash Severity on Low-Volume Rural Roads in Denmark. Journal of Transportation Safety and Security. https://doi.org/10.1080/19439962.2013.796027
25. Pużyński, S., Wciórka, J. (2007). Klasyfikacja zaburzeń psychicznych i zaburzeń zachowania w ICD-10: badawcze kryteria diagnostyczne. Uniwersyteckie Wydawnictwo Medyczne" Vesalius".
26. Rumpf, H. J., Wohlert, T., Freyer-Adam, J., Grothues, J., Bischof, G. (2013). Screening questionnaires for problem drinking in adolescents: Performance of AUDIT, AUDIT-C, CRAFFT and POSIT. European Addiction Research, 19(3), 121–127. https://doi.org/10.1159/000342331
27. Stephens, A. N., Bishop, C. A., Liu, S., Fitzharris, M. (2017). Alcohol consumption patterns and attitudes toward drink-drive behaviours and road safety enforcement strategies. Accident Analysis and Prevention, 98, 241–251. https://doi.org/10.1016/j.aap.2016.10.011
28. Symon, E. (2020). Wypadki drogowe w Polsce w 2019 roku. Pobrano z: https://statystyka.policja.pl/st/ruch-drogowy/76562,Wypadki-drogowe-raporty-roczne.html [dostęp: 24.11.2020]
29. Wilsnack, R. W., Wilsnack, S. C., Gmel, G., Kantor, L. W. (2018). Gender Differences in Binge Drinking. Alcohol Research : Current Reviews, 39(1), 57–76.
30. Wójtowicz-Chomicz, K., Kowal, M., Wójtowicz, M., Borzęcki, A. (2007). Próba oceny zachowañ anty-zdrowotnych studentów Akademii Medycznej w Lublinie. Probl Hig Epidemiol, 88(1), 108–111.

**Grzegorz Załęski**
*psychologgorlice@onet.pl*
Tarnów School of Higher Education in Tarnów

**Krzysztof Horoszkiewicz**
*khoroszkiewicz@swps.edu.pl*
SWPS University Katowice