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# SOCIO-DEMOGRAPHIC INSIGHTS: A FIVE COUNTRY STUDY ON STUDENTS' DRINKING BEHAVIOUR

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This study is a pioneering endeavour, in which researchers from five different countries collaborated to provide more insights into the drinking behaviour of university students, a group of consumers characterised by frequent and often dangerous drinking behaviour. A total of 1704 students were included in this study that investigated various socio-demographic variables and drinking habits. The results showed students in certain countries (Ireland, South Africa and Bosnia and Herzegovina) engaged in hazardous drinking, while students in other countries (Croatia and Portugal), displayed safer alcohol drinking behaviour. In addition, male respondents in general consumed significantly more alcohol than female students. This study enriches the literature on international alcohol consumption behaviour among university students, and the results can be used by policy makers to address the issue of alcohol abuse that is frequently associated with this cohort of consumers.

Keywords: drinking behaviour, university students, cross-countries analysis, socio-demographic variables



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## INTRODUCTION

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Alcohol has played a major role in almost all human cultures since Neolithic times and it can be argued that most people consume this intoxicating substance (Moinuddin et al., 2016). Alcohol usage holds both positive and negative impact on users' lives, but unfortunately the negative impact of alcohol (mis)use, cannot be ignored.

The first draft of the Global alcohol action plan 2022–2030 was released in June 2021 (WHO, 2021). This report recognises that alcohol usage is embedded in societies across the world to the extent that approximately 2,300 million individuals consume alcohol. Numerous factors such as the availability of alcohol, economic status, history and culture, policy as well as socio-demographic variables determine country-specific alcohol consumption. Turning the focus to the individual level of alcohol consumption adds even more complexity, given that age, gender, socio-economic status, (e.g., income, place of residence), reference groups, health, and many other specific factors will determine alcohol consumption (WHO, 2021).

According to the World Health Organization, more than 3 million people died globally because of harmful use of alcohol in 2016 (WHO, 2019, 2021). Furthermore, the harmful use of alcohol causes more than 5% of the global disease burden with the African Region recording the highest figures (WHO, 2019, 2021). The alcohol risk factor is especially acute among people aged 15 to 49, being the leading cause of premature death globally (Lim et al., 2012). It is significant that alcohol is the third leading preventable risk factor for the global burden of disease (WHO, 2014), given that alcohol contributes to over 200 diseases and injury-related health conditions, mostly alcohol dependence, liver cirrhosis, cancers, and injuries.

Country-specific alcohol consumption behaviours vary between countries, cultures and individuals (Chaiyasong et al., 2018). The WHO report (2019, 2021) states that Europe is a leader in alcohol consumption, with the highest per capita consumption (Gonçalves & de Sousa Carvalho, 2017) and cites Africa as the continent with the highest harmful and risky alcohol consumption. The report emphasises the significant differences between countries; in some, there is a high level of alcohol abstention, and in others, a high-volume consumption with severe health and social consequences (WHO, 2021). Chaiyasong et al. (2018) and the WHO (2021) Global alcohol action plan 2022–2030 argue that an understanding of patterns of alcohol use across countries is important for alcohol policy development to address alcohol-related problems.

A group of adults that are characterised by heavier, more frequent, and even dangerous alcohol consumption patterns are university students (Kypri et al., 2005). Each year, student drinking leads to deaths, drinking and driving injuries, eating

and sleeping disorders, depression, stress and anxiety, increased substance abuse, teenage pregnancy, physical assaults, sexual assaults, and remains a cause for serious concern (De-Jong et al., 2009; Newbury-Birch et al., 2009). University students often show risky drinking patterns and have higher rates of heavy-drinking occasions than either 12th graders or non-college-attending peers (Johnston et al., 2011). At the same time, students are a heterogeneous population whose drinking behaviours are influenced by student role demands, family roles, external events, and fluctuations in academic pressures (Lee et al., 2006).

More recent studies (Alves et al., 2021; Lategan et al., 2017; Nyandu & Ross, 2020) argue that a better understanding of the drinking behaviour of university students is essential to address the drinking-related challenges. Additional insights into drinking behaviour can be gained by investigating various socio-demographic groups (WHO, 2021). Therefore, the main purpose of this paper is to gain further insight into the drinking behaviour of university students in five selected countries, namely, Bosnia and Herzegovina, Croatia, Ireland, Portugal, and South Africa.

## **THE ROLE OF SOCIO-DEMOGRAPHIC VARIABLES IN ALCOHOL CONSUMPTION**

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Research evidence points to the importance and potential of socio-demographic variables to aid our understanding of alcohol consumption behaviour. Peltzer et al. (2011), Peltzer and Pengpid (2018), Baena et al. (2019) as well as Lategan et al. (2017) and Pengpid et al. (2021) all provide findings in support of this statement.

The focus of this section is on the influence of gender, age, disposable income, source of income and living environment. These variables are known to be significant predictors of drinking behaviour (Ahlström et al., 2001; Kiepek et al., 2019; Nyandu & Ross, 2020; Obot & Jos, 2006; Peltzer & Ramlagan, 2009).

### **Gender**

The literature provides a clear indication of a relationship between gender and drinking behaviour (Ahlström et al., 2001; Engs & Hanson, 1990; Lategan et al., 2017; Moinuddin et al., 2016; Wilsnack et al., 2000). Young and de Klerk (2008) as well as Nyandu and Ross (2020), for example, report that men consume higher quantities of alcohol, more hazardously and in higher frequency than females. From these findings, male university students show significantly higher levels of hazardous, dependent and harmful drinking patterns when compared to their female counterparts. Females, on the other hand, tend to exhibit more safe alcohol consumption behaviours.

## Age

Age has a significant influence on drinking behaviour, including the quantity of alcohol consumed as well as drinking patterns (WHO, 2014; Peltzer et al., 2011; Lategan et al., 2017; Chaiyasong et al., 2018). Early adulthood is characterised by more frequent drinking, especially binge drinking with high usage volumes and thus increased health risks (Harker et al., 2020; Johnston et al., 2009). For a young adult group (aged 20 – 34-years), this was especially evident with Peltzer et al. (2011) indicating a significant increase in binge, harmful and hazardous alcohol consumption from the adolescent group (aged 15–19-year group). Within the 20 – 34-year age group, being a male, with higher education and residing in an urban residence is positively associated with hazardous, harmful or dependent alcohol usage (Pengpid et al., 2021). In older age groups, a decline in harmful drinking behaviours is evident (Peltzer & Pengpid, 2018) with the age group of 50 and older showing the biggest decrease (Peltzer et al., 2011) given their reduced tolerance of alcohol.

## Income

Alcohol consumption is driven by disposable income. Evidence from Peltzer and Pengpid (2018) clearly supports this statement with hazardous or harmful alcohol usage increasing as the level of disposable income increases. For respondents with below average household income, 2.3% displayed hazardous or harmful alcohol use, whilst this level increased significantly to 5.1% for respondents with above average incomes. In a South African student sample, similar findings are evident with Lategan et al. (2017) reporting significant differences in drinking behaviour between levels of income, with respondents from the highest income levels being most likely to engage in binge and hazardous drinking.

## Relationship status

Alcohol consumption is often related to social relationships. Relationship status (mostly marital) has been included in several studies on alcohol consumption. The majority of studies have found that divorced, separated, and non-married persons were prone to higher alcohol consumption. Other findings show trends that respondents that are married or in a relationship tend to exhibit lower levels of alcohol consumption than their single counterparts (Dinescu et al., 2016; Harker et al., 2020; Lategan et al., 2017).

In a cross-cultural study on four countries with very different socio-cultural contexts (Nigeria, Uruguay, Russia and China) significant differences between married and divorced respondents in alcohol consumption were found in Nigeria and China, and higher alcohol consumption was recorded for single respondents in China (Taylor et al., 2017). Another stu-

dy in the USA (Liew, 2016) also confirmed a heavy alcohol consumption correlation with, among other characteristics, being single. Both British (Power et al., 1999) and Australian (Liang & Chikritzhs, 2012) studies report that single, divorced and separated people were more likely to consume alcohol at high risk levels compared to married people. It can be argued that being single often involves a social circle and lifestyle that includes visiting venues that serve alcohol such as bars and nightclubs, where higher levels of alcohol consumption could be expected.

## Religion

When it comes to religion, it is generally expected that adherence to religious principles and beliefs should impact all consumption behaviour, including alcohol consumption. Several authors have reported that participation in religious groups reduces the incidence of alcohol consumption (Gonçalves & de Sousa Carvalho, 2017; Baena et al., 2019; Lategan et al., 2017), and that religiosity acts as an important protective barrier against excessive/harmful alcohol consumption (Martinez et al., 2019).

## Living environment

The living environment impacts on young adults' drinking behaviour. Compared with young adults of the same age, it is estimated that university students are more likely to drink at harmful and hazardous levels (Kypri et al., 2002), given the immediate environmental or situational context. O'Hara et al. (2015) as well as Allen et al. (2020) emphasised the importance of studying both drinking motives and drinking context, given that they are associated with heavy drinking in, for example, houses where students live, residence halls, on-campus events, off-campus residences, at parties, and in bars (Buetner et al., 2011; Marzell et al., 2015). Young adults who live away from home have higher alcohol use quantity and frequency (Evans-Polce et al., 2017). We argue that students living on their own, in university accommodation or with other students, are seemingly not protected against the dangers of excessive alcohol drinking and exhibit higher levels of dependent, hazardous and harmful drinking behaviour. Being away from their homes for the first time together with newfound freedom and high levels of interaction with an important peer group, are identified as possible drivers of increased alcohol consumption as similar alcohol consumption trends are not evident in those residing with their parents (Lategan et al., 2017; Lorant et al., 2013). Therefore, stressful life transitions (e.g., high school to university and moving from home to independent living) can have a significant impact on alcohol use (Benz et al., 2017; Hoyland & Latendresse, 2018). From the preceding literature overview, it is evident that alcohol use is deeply embedded in our lives, however, a dearth of knowledge

on the drinking behaviour of consumers (especially university students) is evident. This study replicates the paper of Lategan et al. (2017) by investigating the drinking behaviour and socio-demographic profiles of university students in five different countries. The results will shed more light on the current drinking behaviour of university students in a global context, and will highlight whether there are any significant similarities and/or differences in students' drinking behaviour in these countries.

## **METHODOLOGY**

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The research problem that this study addresses is a lack of understanding of young adults' alcohol drinking behaviour in a multi-country context. Given the convergence of the global need to address alcohol drinking behaviour and the identification of distinct country-specific behavioural trends of vulnerable groups (such as university students), the findings may inform much needed behavioural change intervention strategies.

### **Sample and data collection**

A convenience sample ( $n = 1704$ ) of young adults above the age of 18, who were current consumers of alcohol (consumed alcohol in the past 12 months), participated in this study (South Africa  $n = 474$ ; Croatia  $n = 355$ ; Bosnia and Herzegovina  $n = 352$ ; Ireland  $n = 319$  and Portugal  $n = 204$ ). Respondents in the five countries were invited to participate by means of an introductory announcement, either via email or in-person. To increase the sample size, students who consented were encouraged to identify other possible participants (snowball sampling). The anonymity of respondents was ensured by not collecting any identifiable information from the respondents.

### **Measurement instruments**

*The Alcohol Use Disorder Identification Test (AUDIT):* As was the case in the original research (Du Preez et al., 2016), the AUDIT, which is a valid and reliable measure of drinking behaviour developed by the WHO, was used. Reinert and Allen (2007) as well as Du Preez et al. (2016) report acceptable psychometric properties with a Cronbach's Alphas score ranging between 0.73 and 0.97 for the overall AUDIT scale and consumption subscale, suggesting acceptable internal consistency.

*General Questionnaire:* In addition to the AUDIT, a general questionnaire was compiled including demographic items related to age, gender, living environment, religion, source and amount of income and relationship status.

### **Data analysis**

To establish the reliability of the AUDIT instrument across the different countries, Cronbach's alpha was calculated and reported. Summary statistics were reported using means with

standard errors (of the mean), and frequencies with percentages and the drinking behaviour scores were compared between countries using one-way ANOVA. Subsequently, demographic variables were compared using 2-way ANOVA (with country as second factor) for categorical variables, and Analysis of Covariance (ANCOVA) for continuous variables. In addition, Pearson correlations were reported for continuous variables and post hoc testing was conducted using Fisher Least Significant Difference (LSD) testing. Normality assumptions were checked by investigating normal probability plots and were judged to be acceptable. Given that the relatively large sample sizes could indicate "small" effects as statistically significant, Cohen's D effect sizes were reported with the ANOVA results.

## RESEARCH RESULTS AND DISCUSSION

To check for reliability of the AUDIT instrument across the various countries, Cronbach's alpha was calculated to be 0.84 (which is acceptable when compared to the general guideline of 0.70). When comparing the drinking categories measured by AUDIT scores between countries, the results indicate that Ireland had the highest mean score (hazardous), and Portugal the lowest (safe). Superscript letters in Table 1 provide an indication of the significant differences between all countries ( $p < 0.05$ ) as evident from the post hoc analysis as well as the range of effect sizes of the cross-country comparisons.

TABLE 1  
AUDIT scores per  
countries

Country	Mean (standard error) of AUDIT and drinking category from safe to hazardous	N	Cohen's D effect sizes range for cross-country comparisons
Bosnia and Herzegovina	8.25 (0.30) <sup>c</sup> , hazardous	364	0.16 (small) – 0.63 (medium)
Croatia	7.35 (0.30) <sup>d</sup> , safe	355	0.16 (small) – 0.86 (large)
Ireland	11.99 (0.31) <sup>a</sup> , hazardous	322	0.44 (medium) – 1.19 (large)
Portugal	5.62 (0.39) <sup>e</sup> , safe	204	0.36 (small) – 1.19 (large)
South Africa	9.35 (0.26) <sup>b</sup> , hazardous	474	0.18 (small) – 0.67 (medium)

Furthermore, it is evident that three countries, namely South Africa, Ireland and Bosnia and Herzegovina AUDIT scores fall within the hazardous category, while Portugal and Croatia report scores within the safe drinking category – providing some support for previous country-specific research findings as discussed in the literature review (Chaiyasong et al., 2018; Gonçalves & de Sousa Carvalho, 2017; WHO report, 2019, 2021).

To expand the socio-demographic profile of the respondents, Table 2 provides a summary of the socio-demographic variables together with the AUDIT scores.

Characteristics	South Africa			Croatia			Bosnia-Herzegovina			Ireland			Portugal											
	Total sample N	%	Total N	Total Audit score mean	SD	Total %	Total N	Total Audit score mean	SD	Total %	Total N	Total Audit score mean	SD	Total %	Total N									
																Total Audit score mean	SD	Total %	Total N	Total Audit score mean	SD			
Total	1704	100	474	100	9.35	6.02	355	100	7.34	4.95	352	100	8.20	6.17	319	100	11.95	5.77	204	100	5.62	4.48		
Gender																								
Male	697	41	200	42.2	11.67	6.47	146	41.13	9.31	5.67	133	37.78	10.90	7.47	148	46.39	13.19	6.16	70	34.31	6.91	5.51		
Female	1007	59	274	57.8	7.67	5.05	209	58.87	5.97	3.82	219	62.22	6.55	4.50	171	53.61	10.88	5.20	134	65.69	4.94	3.68		
Age																								
< 19	270	17	61	15.4	7.66	5.33	88	24.7	7.96	5.00	52	14.7	6.63	4.88	22	6.8	11.50	5.97	47	23.0	5.02	3.59		
20	265	17	84	21.3	9.45	6.34	46	12.9	7.13	5.04	42	11.9	8.16	5.23	50	15.6	13.34	6.20	43	21.0	5.23	3.88		
21	351	22	116	29.4	9.47	6.13	35	9.8	7.34	4.20	75	21.3	7.60	4.69	89	27.8	12.13	5.97	36	17.6	5.88	4.32		
22	302	19	79	20.0	9.84	5.77	33	9.2	8.72	4.20	84	23.8	8.89	6.62	90	28.2	11.51	5.44	16	7.8	7.62	5.45		
23+	395	25	55	13.9	9.38	5.43	145	40.8	6.82	5.22	68	19.3	9.00	6.61	65	20.3	11.13	5.21	62	30.3	5.67	5.22		
Disposable income																								
< 50 (US \$)	509	30	114	24.1	7.39	5.37	167	47.30	7.18	4.64	136	38.85	6.46	5.12	24	7.52	9.08	5.59	68	35.05	5.50	5.35		
\$51 – 100	71	4	71	15.0	8.46	5.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
\$101 – 150	122	7	103	21.8	10.11	6.50	-	-	-	-	-	-	-	-	19	5.95	10.79	6.30	-	-	-	-		
\$151 – 200	472	28	104	22.0	10.60	5.73	136	38.52	7.77	5.00	178	50.85	8.98	5.77	-	-	-	-	54	27.83	5.67	4.13		
\$201 – 250	135	8	80	16.9	10.45	6.37	-	-	-	-	-	-	-	-	55	17.24	12.51	5.31	-	-	-	-		
\$251 – 300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
\$301 – 350	230	14	-	-	-	-	50	14.16	6.52	5.59	36	10.28	12.03	8.80	72	22.57	11.46	5.20	72	36.11	5.54	4.02		
> \$ 350	149	9	-	-	-	-	-	-	-	-	-	-	-	-	149	46.70	12.61	6.05	-	-	-	-		

(continues)



(continued)

Source of income	Parents	1021	60	364	80.35	9.31	219	61.69	7.49	313	86.46	8.11	23	7.23	10.87	102	50	5.85
	Part-time job	427	25	67	14.79	6.05	49	13.80	4.70	5	1.38	5.85	273	85.85	7.31	33	16.18	4.90
	Bursary	105	6	12	2.65	5.06	29	8.17	5.18	31	8.56	3.36	8	2.52	5.67	25	12.25	4.23
	Loan	114	7	-	-	1.88	58	16.34	3.98	10	2.76	6.42	-	-	3.93	44	21.57	5.21
	Other	25	1	10	2.21	13.80	-	-	5.96	-	-	5.45	12	3.77	12.42	-	-	2.78
						11.57									6.11			-
Living environment	Parents	552	32	62	13.08	7.05	98	27.84	7.30	177	48.90	7.31	201	64.21	11.49	14	6.86	4.71
	Student residence	264	15	147	31.01	9.12	17	4.83	4.46	31	8.56	5.39	63	19.81	5.56	6	2.94	3.36
	Alone	260	15	29	6.12	6.47	67	19.03	6.11	30	8.29	6.43	4	1.26	5.86	130	63.73	6.14
	House/apartment (working adults)	103	6	19	4.01	4.92	18	5.11	4.87	20	5.52	6.63	16	5.03	11.34	30	14.71	4.91
	House/apartment (students)	468	27	211	44.51	5.22	116	32.95	4.79	103	28.45	5.82	28	8.81	7.72	10	4.90	3.20
Religion	Religious	1208	73	376	89.31	6.00	265	75.65	5.15	335	93.84	6.95	115	36.05	4.79	117	57.35	4.10
	Non-religious	448	27	45	10.69	9.98	90	25.35	7.30	22	6.16	8.18	204	63.95	11.67	87	42.65	2.33
Relationship status	Single	909	54	259	54.06	6.06	180	53.73	5.05	207	57.98	6.00	186	58.31	5.64	77	37.75	5.38
	In a relationship	779	46	214	45.04	11.04	155	46.27	7.45	150	42.02	6.66	133	41.69	12.11	127	62.25	4.96
						5.99			4.66						5.85			5.94
																		3.74
																		7.09
																		5.38
																		4.73
																		3.58

TABLE 2  
Socio-demographic  
profile and total  
AUDIT scores

## RELATIONSHIPS BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND ALCOHOL DRINKING BEHAVIOUR

As previously argued, insights into socio-demographic variables can enhance our understanding of drinking behaviour of university students across various countries. These are discussed next.

### Gender

The results confirmed previous findings that males consume more alcohol and show higher AUDIT scores than females, across all observed countries. For the total sample, the mean AUDIT score for males was 10.4 (classified as "hazardous") as opposed to females with a mean score of 7.2 (classified as "safe"). The difference was statistically significant ( $p < 0.01$ ) with a medium effect size (Cohen's  $D = 0.57$ ).

TABLE 3  
Drinking behaviour comparison between males and females per country

Country	Mean (standard error), sample size, AUDIT drinking category		<i>p</i> -value	Cohen's <i>D</i> per country
	Female	Male		
Bosnia and Herzegovina	6.56 (0.36), <i>n</i> = 219, safe	10.91 (0.47), <i>n</i> = 133 hazardous	< 0.01	0.75 (large)
Croatia	5.97 (0.37), <i>n</i> = 209, safe	9.32 (0.44), <i>n</i> = 146, hazardous	< 0.01	0.71 (medium)
Ireland	10.89 (0.41), <i>n</i> = 171, hazardous	13.20 (0.44), <i>n</i> = 148, hazardous	< 0.01	0.41 (medium)
Portugal	4.95 (0.46), <i>n</i> = 134, safe	6.91 (0.64), <i>n</i> = 70, safe	< 0.01	0.45 (medium)
South Africa	7.67 (0.32), <i>n</i> = 274, safe	11.67 (0.38), <i>n</i> = 200, hazardous	< 0.01	0.70 (medium)

The interaction effect of gender on country was significant ( $p = 0.03$ ), and when looking at differences per country, one can see from Tables 2 and 3 that males have a higher score than females across all countries ( $p < 0.01$  for all countries), and effect sizes range from medium to large. In all countries, except Ireland, female students were less engaged in hazardous drinking than their male counterparts. In Ireland, however, both male and female students engaged in hazardous drinking behaviours. Conversely, safe drinking behaviours were prevalent in the Portuguese sample for genders. Portuguese male students were the exception with safe drinking behaviour.

### Age

Results of several studies show that age influences the quantity of alcohol consumption as well as drinking patterns (Chaiyasong et al., 2018; Lategan et al., 2017; Peltzer et al., 2011;

Peltzer & Pengpid, 2018; WHO, 2014). Younger university students seem to consume significantly more alcohol in comparison with their older peers (Bewick et al., 2008). In support of previous studies, these trends are also evident in the countries investigated in this study as indicated in Tables 2 and 4. The fact that the age profiles of university students differ between countries, contributes to this finding.

An analysis of covariance (ANCOVA) indicated a significant country on age interaction effect, implying that the relationship between age and drinking behaviour was dependent on the country. Table 4 indicates the correlation between age and the AUDIT score for each country.

↻ TABLE 4  
Correlations between  
age and AUDIT score  
per country

Country	Correlation	<i>p</i> -value
South Africa	0.08	0.12
Bosnia and Herzegovina	0.12	0.03*
Croatia	-0.17	< 0.01*
Portugal	-0.03	0.63
Ireland	-0.10	0.06

*Note:* The correlation itself can be viewed as an effect size. Cohen's guideline is: 0.1 small, 0.3 moderate and 0.5 large.

\**p* < 0.05

Croatia, Portugal and Ireland showed small negative relationships, which implies that drinking decreases with age. Bosnia and Herzegovina as well as South Africa showed the opposite, with a (small) positive relationship implying a slight increase in alcohol consumption as respondents become older students. These trends are also evident in Table 2. It is imperative to note that the university student sample implies a "narrow" age band that could influence the results.

## Income

The analysis of covariance (ANCOVA) indicated a significant country on disposable income interaction effect, which implies that the relationship between disposable income and drinking behaviour was dependent on country. Table 5 indicates small positive significant relationships between disposable income and the AUDIT score for South Africa, Bosnia and Herzegovina and Ireland. As disposable income of respondents in these countries rise, so does the level of alcohol consumption. No significant relationships were found for Croatia and Portugal.

Upon further investigation of the disposable income data, source of income and AUDIT scores (refer to Table 2), it is evident that, for example, almost half of the Irish respondents had a disposable income above \$350 per month. This income

source is predominantly from part-time employment (85.8%) that could fund high levels of drinking evident in the AUDIT score of 12.61 (hazardous drinking). A similar trend of higher income together with higher levels of AUDIT scores are notable for Bosnia and Herzegovina and South Africa to a lesser extent. However, the source of income is not the main driver of drinking behaviour, but rather the amount of disposable income (refer to the next section).

⇒ TABLE 5  
Correlations between  
disposable income  
and AUDIT score per  
country

Country	Correlation	p-value
South Africa	0.19	< 0.01*
Bosnia and Herzegovina	0.28	< 0.01*
Croatia	-0.01	0.79
Portugal	0.00	0.96
Ireland	0.13	0.02*

Note: The correlation itself can be viewed as an effect size. Cohen's guideline is: 0.1 small, 0.3 moderate and 0.5 large.  
 $p < 0.05$

## Source of income

Students have various forms of income, for example, bursaries, part-time employment or support from family or parents to finance their studies and living expenses. Given that the respondents of the participating countries have different means of funding their studies, the general questionnaire did not make provision for the exact same categories of source of income. Therefore, separate one-way ANOVA analyses per country were employed. Table 6 indicates a summary of the results.

⇒ TABLE 6  
One-way ANOVA  
results for source of  
income vs drinking  
behaviour

Country	F-statistic	p-value
South Africa	F (3, 449) = 2.81	0.04*
Bosnia and Herzegovina	F (3, 355) = 0.71	0.54
Croatia	F (3, 351) = 1.65	0.18
Portugal	F (3, 200) = 1.72	0.16
Ireland	F (3, 312) = 0.32	0.81

Note: The correlation itself can be viewed as an effect size. Cohen's guideline is: 0.1 small, 0.3 moderate and 0.5 large.

\* $p < 0.05$

No major differences were found in drinking behaviour based on the sources of income categories. In South Africa's case, a post hoc analysis revealed that the income sources "parents", "part-time job" and "bursary" showed similar levels of drinking (varying from just below to just above hazardous), with the "other income" group showing higher (hazardous) drinking levels ( $p < 0.05$ , effect sizes  $> 0.75$ ) (refer to Table 2).

## Living environment

TABLE 7  
AUDIT score drinking  
levels (least square  
means) per living  
environment

Living environment	Number of cases	AUDIT Score Mean, (Standard Error), AUDIT drinking category	Cohen's D effect sizes range for cross-country comparisons
Home	260	7.58 (0.37) <sup>b</sup> , safe	0.09 (negligible) – 0.32 (small)
Student residence	552	9.89 (0.60) <sup>a</sup> , hazardous	0.10 (negligible) – 0.52 (medium)
Alone	264	9.57 (0.66) <sup>a</sup> , hazardous	0.24 (small) – 0.52 (medium)
With working adults	468	8.46 (0.57) <sup>ab</sup> , hazardous	0.09 (negligible) – 0.3 (small)
With students	103	8.76 (0.45) <sup>a</sup> , hazardous	0.10 (negligible) – 0.43 (medium)

Note: Letters indicate significant difference from post hoc analysis. If one letter overlaps between a pairwise comparison ("b" vs "ab"), then the difference was not significant. For no overlapping letters ("a" vs "b"), the difference was significant at 5% ( $p < 0.05$ )

For living environment, the interaction with country was non-significant ( $p = 0.24$ ). Thus, Table 7 reports average drinking levels for the respective living environment categories across all countries.

## Religion

In this study, respondents reported their religiosity as either religious or not religious without indicating the denomination. The interaction between country and religion was not significant ( $p = 0.52$ ).

The comparison between the two groups, indicated that the non-religious group had higher drinking levels evident in the AUDIT scores (refer to Table 2). Our findings support previous studies indicating safer drinking behaviours of young religious individuals (Martinez et al., 2019).

## Relationship status

Relationship status was classified into two groups, namely single or in relationship (refer to Table 2). For all countries, students in a relationship scored lower on the AUDIT than single respondents. For the total sample, a significant difference ( $p < 0.01$ ) was evident between the single group (with a hazardous mean AUDIT score of 9.24) and those in a relationship (hazardous mean AUDIT score of 7.79). This finding is in support of previous studies. The interaction between relationship and country was not significant ( $p = 0.31$ ).

## CONCLUSIONS

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The World Health Organization Global Alcohol Action Plan (2022–2030) (WHO, 2021) calls for action to generate and disseminate research findings; to generate comparable data on alcohol consumption with the inclusion of demographic and socio-economic status and to strengthen research efforts across countries (WHO, 2021).

The findings of this international research project spanning five countries make a contribution to our understanding of socio-demographic variables and drinking behaviour of a sample ( $n = 1704$ ) of high-risk individuals, namely university students.

The results show that university students' drinking behaviour in Ireland, South Africa and Bosnia and Herzegovina is most problematic given that they engage in hazardous drinking behaviour to the detriment of their physical, emotional, and psychological health. Drinking at hazardous levels unfortunately also contributes to other social ills such as sexual abuse, assault and engagement in risky behaviours, with additional burdens placed on national resources e.g., hospitals. The Croatia and Portugal student samples displayed safe drinking behaviour deemed not to pose an increased risk of adverse health consequences.

Male drinking behaviour in all countries is significantly higher than their female counterparts. Furthermore, males in four of the surveyed countries engage in hazardous drinking behaviours with Portugal as the only exception. Females engaged in safer drinking behaviours, with the exception of Irish females drinking at hazardous levels. In Portugal, both genders exhibited safe levels of drinking, driven by socialisation, education, and even public policy that have been successfully implemented following a renewed awareness drive towards addressing drinking-related problems.

Older and more senior students exhibited slightly lower levels of drinking even though the age distribution was rather narrow. It could be postulated that the novelty value of being at university with newfound social freedom diminishes as students mature, resulting in lower alcohol consumption. Furthermore, the influence of peers on behaviour is more evident in younger students, and they could be regarded as being more prone to the influence of their peers in behavioural choices.

The disposable income of students from South Africa, Bosnia and Herzegovina as well as Ireland influenced their drinking behaviour with higher incomes resulting in more consumption. This was not the case for Croatia and Portugal. It could be implied that from a policy perspective the price points of alcohol can influence drinking behaviour. In many countries "sin" taxes are used to curb the use of all products

that place additional burdens on the society and resources, for example, alcoholic and tobacco products. Imposing these taxes, together with curbing the availability of low-priced alcoholic beverages in, for example, residences, could contribute to curbing hazardous drinking behaviours.

Students living alone, in residences or with other students are high risk, given uncontrolled access to alcoholic beverages and social events where alcohol is consumed. Here again, the important role of the family as the primary reference group cannot be underestimated in providing guidance on safe alcohol consumption. The strength of values and principles around alcohol consumption learned from parents will contribute to how much influence the secondary reference groups (e.g., residence friends) will have on decisions related to alcohol consumption.

It was also clear from the results that religious students and students in a relationship consumed less alcohol. Students that are single often frequent social settings where alcohol is served. The inhibitor effect of alcohol consumption, together with drinking motives (enhancement, social, coping, conformity) and outcome expectancies (increased sexual interest, tension reduction, cognitive enhancement, increased social confidence and negative consequences) could have contributed to this finding (Du Preez et al., 2016).

To summarise, the findings of this study could hold implications for the design, targeting and implementation of prevention and education campaigns directed at university students. University policy developers should note that socio-demographic variables must be considered together with a deeper understanding of drinking motives and outcome expectancies, to design and implement more effective safe alcohol consumption policies and campaigns. It is unfortunate that many "generic" campus abstinence campaigns have not been successful in the past. Our findings emphasise that a "one size fits all" approach across the five countries that participated in this pioneering study is not advised, given the unique context and profile of the various university cohorts. The findings of this study could support a more focused approach to address university alcohol consumption on a global scale, however, more work on this important topic remains to be done.

Future research can focus on some of the limitations of this study, namely the convenience samples, size of samples per country, equivalence of the questionnaire and the inclusion of drinking motives and outcome expectancies in a multi-country investigation. This data set was also limited as it included only socio-demographic variables and no other antecedents/variables that influence the complex phenomenon of alcohol consumption.

Notwithstanding the limitations of the study, the findings contribute to the body of knowledge on university students' drinking behaviour in five countries across the globe. As such, we address the call of the WHO to disseminate the research and inform the public and higher education policies in these five diverse countries.

## REFERENCES

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- Ahlström, S., Bloomfield, K., & Knibbe, R. (2001). Gender differences in drinking patterns in nine European countries: Descriptive findings. *Substance Abuse, 22*(1), 69–85. <https://doi.org/10.1080/08897070109511446>
- Allen, H. K., Barrall, A. L., Beck, K. H., Vincent, K. B., & Arria, A. M. (2020). Situational context and motives of alcohol use among graduate student drinkers. *Addictive Behaviors, 104*, 106267. <https://doi.org/10.1016/j.addbeh.2019.106267>
- Alves, R. F., Precioso, J., & Becoña, E. (2021). Alcohol-related knowledge and attitudes as predictors of drinking behaviours among Portuguese university students. *Alcoholism and Drug Addiction / Alkoholiizm i Narkomania, 34*(1), 33–50. <https://doi.org/10.5114/ain.2021.107709>
- Baena, B. C., Meneses, C., Caperos, J. M., Prieto, M., & Uroz, J. (2019). The role of religion and religiosity in alcohol consumption in adolescents in Spain. *Journal of Religion and Health, 58*(5), 1477–1487. <https://doi.org/10.1007/s10943-018-0694-z>
- Benz, M. B., DiBello, A. M., Balestrieri, S. G., Miller, M. B., Merrill, J. E., Lowery, A. D., Mastroleo, N. R., & Carey, K. B. (2017). Off-campus residence as a risk factor for heavy drinking among college students. *Substance Use & Misuse, 52*(9), 1236–1241. <https://doi.org/10.1080/10826084.2017.1298620>
- Bewick, B. M., Mulhern, B., Barkham, M., Trusler, K., Hill, A. J., & Stiles, W. B. (2008). Changes in undergraduate student alcohol consumption as they progress through university. *BMC Public Health, 8*(1), 1–8. <https://doi.org/10.1186/1471-2458-8-163>
- Buettner, C. K., Khurana, A., & Slesnick, N. (2011). Drinking at college parties: Examining the influence of student host-status and party-location. *Addictive Behaviors, 36*(12), 1365–1368. <https://doi.org/10.1016/j.addbeh.2011.08.002>
- Chaiyasong, S., Huckle, T., Mackintosh, A. M., Meier, P., Parry, C. D., Callinan, S., Viet Cuong, P., Kazantseva, E., Gray-Phillip, G., Parker, K., & Casswell, S. (2018). Drinking patterns vary by gender, age and country-level income: Cross-country analysis of the International Alcohol Control Study. *Drug and Alcohol Review, 37*, S53–S62. <https://doi.org/10.1111/dar.12820>
- DeJong, W., Larimer, M. E., Wood, M. D., & Hartman, R. (2009). NIAAA's rapid response to college drinking problems initiative: Reinforcing the use of evidence-based approaches in college alcohol prevention. *Journal of Studies on Alcohol and Drugs, supplement*, (16), 5–11. <https://doi.org/10.15288/jsads.2009.s16.5>
- Dinescu, D., Turkheimer, E., Beam, C. R., Horn, E. E., Duncan, G., & Emery, R. E. (2016). Is marriage a buzzkill? A twin study of marital status



and alcohol consumption. *Journal of Family Psychology*, 30(6), 698–707. <https://doi.org/10.1037/fam0000221>

Du Preez, R., Pentz, C. D., & Lategan, B. W. (2016). Why students drink: A study of South African University students' drinking behaviour. *South African Journal of Higher Education*, 30(2), 73–93. <https://doi.org/10.20853/30-2-582>

Engs, R. C., & Hanson, D. J. (1990). Gender differences in drinking patterns and problems among college students: A review of the literature. *Journal of Alcohol and Drug Education*, 35(2), 36–47.

Evans-Polce, R. J., Maggs, J. L., Staff, J., & Lanza, S. T. (2017). The age-varying association of student status with excessive alcohol use: Ages 18 to 30 years. *Alcoholism: Clinical and Experimental Research*, 41(2), 407–413. <https://doi.org/10.1111/acer.13294>

Gonçalves, I. A., & de Sousa Carvalho, A. A. (2017). Pattern of alcohol consumption by young people from North Eastern Portugal. *Open Medicine*, 12(1), 494–500. <https://doi.org/10.1515.med-2017-0068>

Harker, N., Londani, M., Morojele, N., Petersen Williams, P., & Parry, C. D. (2020). Characteristics and predictors of heavy episodic drinking (HED) among young people aged 16–25: The international alcohol control study (IAC), Tshwane, South Africa. *International Journal of Environmental Research and Public Health*, 17(10), 3537. <https://doi.org/10.3390/ijerph17103537>

Hoyland, M. A., & Latendresse, S. J. (2018). Stressful life events influence transitions among latent classes of alcohol use. *Psychology of Addictive Behaviors*, 32(7), 727–737. <https://doi.org/10.1037/adb0000412>

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2009). *Monitoring the Future national survey results on drug use, 1975–2008. Volume II: College students and adults ages 19–50*. National Institute on Drug Abuse.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2011). *Monitoring the Future national survey results on drug use, 1975–2010: Volume II, College students and adults ages 19–50*. Institute for Social Research, The University of Michigan.

Kiepek, N., Harris, J., Beagan, B., & Buchanan, M. (2019). Substance use by social workers and implications for professional regulation. *Drugs and Alcohol Today*, 19(2), 147–159. <https://doi.org/10.1108/DAT-08-2018-0040>

Kypri, K. Y. P., Cronin, M., & Wright, C. S. (2005). Do university students drink more hazardously than their non-student peers? *Addiction*, 100(5), 713–714. <https://doi.org/10.1111/j.1360-0443.2005.01116.x>

Kypri, K., Langley, J. D., McGee, R., Saunders, J. B., & Williams, S. (2002). High prevalence, persistent hazardous drinking among New Zealand tertiary students. *Alcohol and Alcoholism*, 37(5), 457–464. <https://doi.org/10.1093/alcalc/37.5.457>

Lategan, B. W., Du Preez, R., & Pentz, C. D. (2017). Socio-demographic insights into South African student drinking behaviour. *South African Journal of Higher Education*, 31(5), 90–115. <https://doi.org/10.20853/31-5-1512>

Lee, C. M., Maggs, J. L., & Rankin, L. A. (2006). Spring break trips as a risk factor for heavy alcohol use among first-year college students.

*Journal of Studies on Alcohol*, 67(6), 911–916. <https://doi.org/10.15288/jsa.2006.67.911>.

Liang, W., & Chikritzhs, T. (2012). Brief report: Marital status and alcohol consumption behaviours. *Journal of Substance Use*, 17(1), 84–90. <https://doi.org/10.3109/14659891.2010.538463>

Liew, H. (2016). Is there something unique about marriage? The relative impact of marital status on alcohol consumption among military personnel. *Journal of Divorce & Remarriage*, 57(1), 76–85. <https://doi.org/10.1080/10502556.2015.1088126>

Lim, S. S., Vos, T., Flaxman, A. D., Danaei, G., Shibuya, K., Adair-Rohani, H., Amann, M., Anderson, H. R., Andrews, K. G., Aryee, M., Atkinson, C., Bacchus, L. J., Bahalim, A. N., Balakrishnan, K., Balmes, J., Barker-Collo, S., Baxter, A., Bell, M. L., Blore, J. D., ... & Ezzati, M. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: A systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, 380(9859), 2224–2260.

Lorant, V., Nicaise, P., Soto, V. E., & d'Hoore, W. (2013). Alcohol drinking among college students: College responsibility for personal troubles. *BMC Public Health*, 13(1), 1–9. <https://doi.org/10.1186/1471-2458-13-615>

Martinez, E. Z., Silva, A. S. D., Giglio, F. M., Terada, N. A. Y., & Zucoloto, M. L. (2019). Religiosity and patterns of alcohol consumption among users of primary healthcare facilities in Brazil. *Cadernos Saúde Coletiva*, 27, 146–157. <https://doi.org/10.1590/1414-462x201900020234>

Marzell, M., Bavarian, N., Paschall, M. J., Mair, C., & Saltz, R. F. (2015). Party characteristics, drinking settings, and college students' risk of intoxication: A multi-campus study. *The Journal of Primary Prevention*, 36(4), 247–258. <https://doi.org/10.1007/s10935-015-0393-4>

Moinuddin, A., Goel, A., Saini, S., Bajpai, A., & Misra, R. (2016). Alcohol consumption and gender: A critical review. *Journal of Psychology and Psychotherapy*, 6(3), 1–4. <https://doi.org/10.4172/2161-0487.1000267>

Newbury-Birch, D., Walker, J., Avery, L., Beyer, F., Brown, N., Jackson, K., Lock, C. A., McGovern, R., & Kaner, E. (2009). *Impact of alcohol consumption on young people – A systematic review of published reviews*. Department of Children, Schools and Families.

Nyandu, A., & Ross, E. (2020). Alcohol consumption among undergraduate social work students at a South African university. *Social Work Education*, 39(4), 515–533. <https://doi.org/10.1080/02615479.2019.1661372>

Obot, I. S., & Jos, N. (2006). Alcohol use and related problems in sub-Saharan Africa. *African Journal of Drug and Alcohol Studies*, 5(1), 17–26.

O'Hara, R. E., Armeli, S., & Tennen, H. (2015). College students' drinking motives and social-contextual factors: Comparing associations across levels of analysis. *Psychology of Addictive Behaviors*, 29(2), 420–429. <https://doi.org/10.1037/adb0000046>

Peltzer, K., & Pengpid, S. (2018). Alcohol use and problem drinking in South Africa: Results from a national-population-based survey 2014–2015. *Journal of Psychology in Africa*, 28(2), 147–151. <https://doi.org/10.1080/14330237.2017.1375230>

Peltzer, K., & Ramlagan, S. (2009). Alcohol use trends in South Africa. *Journal of Social Sciences*, 18(1), 1–12. <https://doi.org/10.1080/09718923.2009.11892661>

Peltzer, K., Davids, A., & Njuho, P. (2011). Alcohol use and problem drinking in South Africa: Findings from a national population-based survey. *African Journal of Psychiatry*, 14(1), 30–37. <https://doi.org/10.4314/ajpsy.v14i1.65466>

Pengpid, S., Peltzer, K., & Ramlagan, S. (2021). Prevalence and correlates of hazardous, harmful or dependent alcohol use and drug use amongst persons 15 years and older in South Africa: Results of a national survey in 2017. *African Journal of Primary Health Care & Family Medicine*, 13(1), 1–8. <https://doi.org/10.4102/phcfm.v13i1.2847>

Power, C., Rodgers, B., & Hope, S. (1999). Heavy alcohol consumption and marital status: Disentangling the relationship in a national study of young adults. *Addiction*, 94(10), 1477–1487. <https://doi.org/10.1046/j.1360-0443.1999.941014774.x>

Reinert, D. F., & Allen, J. P. (2007). The alcohol use disorders identification test: An update of research findings. *Alcoholism: Clinical and Experimental Research*, 31(2), 185–199. <https://doi.org/10.1111/j.1530-0277.2006.00295.x>

Taylor, A. W., Bewick, B. M., Makanjuola, A. B., Qian, L., Kirzhanova, V. V., & Alterwain, P. (2017). Context and culture associated with alcohol use amongst youth in major urban cities: A cross-country population-based survey. *PloS one*, 12(11), e0187812. <https://doi.org/10.1371/journal.pone.0187812>

Wilsnack, R. W., Vogeltanz, N. D., Wilsnack, S. C., & Harris, T. R. (2000). Gender differences in alcohol consumption and adverse drinking consequences: Cross-cultural patterns. *Addiction*, 95(2), 251–265.

World Health Organization (WHO). (2014). *Global status report on alcohol and health 2014* [Internet]. Geneva, Switzerland: WHO.

World Health Organization (WHO). (2019). *Global status report on alcohol and health 2018*. World Health Organization.

World Health Organization (WHO). (2021). *Global alcohol action plan 2022–2030 to strengthen implementation of the Global Strategy to Reduce the Harmful Use of Alcohol*. World Health Organization.

Young, C., & de Klerk, V. (2008). Patterns of alcohol use on a South African university campus: The findings of two annual drinking surveys. *African Journal of Drug and Alcohol Studies*, 7(2), 101–112. <https://doi.org/10.4314/ajdas.v7i2.46367>

# Sociodemografija: istraživanje ponašanja studenata pri konzumaciji alkohola u pet zemalja

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Ovaj rad rezultat je kolaboracije istraživača iz pet zemalja, u čijem je fokusu ponašanje studenata pri konzumaciji alkohola. Studenti su skupina koju karakterizira česta i rizična konzumacija alkohola. Na uzorku od 1704 studenta analizirane su sociodemografske varijable i navike u konzumaciji alkohola. Rezultati pokazuju da u nekima od zemalja studenti uglavnom pripadaju skupini s karakteristikama opasne konzumacije alkohola (Irska, Južna Afrika i Bosna i Hercegovina), dok u nekima (Hrvatska, Portugal) pripadaju skupini sigurnije konzumacije alkohola. Utvrđeno je da u svim zemljama muškarci konzumiraju znatno više alkohola nego žene. Ovo istraživanje obogaćuje postojeća međunarodna istraživanja o konzumaciji alkohola te može pomoći kreatorima socijalne politike u rješavanju problema nepoželjne konzumacije alkohola ove skupine potrošača.

Ključne riječi: ponašanje pri konzumaciji alkohola, studenti, međunarodna analiza, sociodemografske varijable



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