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The impact of unemployment on alcohol consumption: A panel data analysis

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Abstract

Several books and articles published in the last few decades have looked at how alcohol use has affected the job market globally. This study attempted to determine how specific labour market shocks (such as losing a job) influence alcohol intake on an individual level to clarify the existing research. We went deeper into the subject of whether or not losing one's job increases the likelihood of alcohol abuse. We estimated models with fixed effects using panel data at the individual level from the National Income Dynamic Survey's Waves 1 and 5. (NIDS) to account for possible omitted variable bias. We calculated the gender-specific impacts of alterations in work status on the total intake of alcohol, occurrences of binge drinking and the diagnosis of alcohol addiction and dependency. The results consistently demonstrate a favorable and substantial impact of unemployment on drinking habits and these findings remain strong even when subjected to various robustness tests. The study concludes that being unemployed for more than a year causes people to consume less alcohol, perhaps as a result of financial stress. It is impossible to determine a precise cause-and-effect link but high unemployment rates may contribute to mental health problems including stress and depression which might be detrimental to public health. It is advisable to take into account the individual expenses and consequences related to alcohol consumption when making fiscal policy decisions aimed at boosting the economy particularly during economic recessions.

Keywords: Alcohol, Depression, Economic recession, Financial stress, Fixed effects, Mental health issue, Unemployment.

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1. Introduction

Alcohol, as a psychoactive stimulant is both hazardous and extremely addictive. Its use increases the likelihood of infectious illnesses [1, 2] non-communicable diseases [3-6] and injuries [7, 8]. Alcohol directly damages various body organs, including the brain. According to Nkomo et al. [9] this psychoactive chemical's effects can lead to addiction and

last for several hours after administration. Several books and articles published in the last few decades have looked at how alcohol use has affected the job market on a worldwide scale.

Drinks containing ethyl alcohol such as wine, beer and spirits are referred to as alcohol consumption [10, 11]. There are various ways to assess this with a standard drink being one of the most prevalent in survey data. The definition of a standard drink changes in every nation [12]. Although it is difficult to define for each country, these studies generally define alcohol consumption as the intake of a standard drink. According to research Kalinowski and Humphreys [12] a regular drink in South Africa includes approximately 11 to 12 grams of alcohol . Since the frequency of intake of a standard drink is used to measure alcohol, this is relevant to the current study of alcohol consumption and employment.

Aside from being one of the major causes of death globally, hazardous alcohol intake is responsible for 3.0 million fatalities per year and 5.1% of all illnesses [13, 14]. Although the global number of drinkers has declined by about 5% since 2000 from 47.6% to 43.0% [6] more than half of the population in three WHO (World Health Organisation) areas including the European Region consumes alcohol. A variety of studies have improved our understanding of the links between alcohol and the workplace. They stressed the growth in absenteeism, injury and unemployment as among the numerous detrimental impacts of alcohol on the workplace. It can negatively influence productivity and work performance [4, 8]. This might mean losing a job especially in a tight labour market.

According to previous studies, stress, concern and family friction caused by joblessness might cause people to drink more [9, 15, 16]. Alcohol use as a coping method is frequent among both working and unemployed people [12]. If alcohol is considered a normal good, unemployment-related income reductions will decrease in alcohol consumption, considering only economic factors. Conversely, unemployment leads to more free time, perhaps fostering the habit of consuming alcohol in social settings [17]. Previous research has investigated the impact of a deteriorating economy as shown by the state unemployment rate on the drinking habits of individuals [18, 19]. These studies investigated the concept that an economy experiencing contraction poses a risk for alcohol misuse. The findings in this study are inconclusive as some researchers have observed that alcohol misuse exhibits a procyclical pattern [20, 21]. Conversely, several studies argue that these studies did not look at how the impacts could vary depending on the kind of unemployment (e.g., voluntary separation, being laid off or being fired) or between those presently jobless and those in danger of becoming unemployed [22].

In contrast, several studies have found a relationship between alcohol consumption and unemployment. However, some have only found this impact on the long-term unemployed [20, 23]. Most previous research has relied on drinking measurements taken during the month while we based our alcohol use measure on intake within the last twelve months. Furthermore, average daily ethanol consumption our primary alcohol use variable is an all-encompassing metric that takes into account drinking rate, beverage type or brand and ethanol concentration. To clarify the existing research, we attempt to determine how specific labour market shocks (such as losing a job) influence alcohol intake on an individual level. We go deeper into the subject of whether or not losing one's work increases the likelihood of alcohol abuse. We estimate models with fixed effects using panel data at the individual level from the National Income Dynamic Survey's Waves 1 and 5. (NIDS) to account for possible omitted variable bias. These factors are important unobserved variables that affect drinking habits and work status. If time-invariant, unobserved individual heterogeneity was to cause skewed coefficient estimates, fixed-effect models would remove it. The main question to be answered is: How unemployment impacted drinking habits? The paper is structured as follows: introduction, literature review, methodology, results, discussion and conclusion.

2. Literature Review

A large body of evidence suggests that a decrease in economic conditions is associated with an increase in suicide rates [24, 25]. The research conducted by Witteveen and Velthorst [26] shows that losing a job involuntarily without warning increases the likelihood of experiencing depressive or anxious symptoms. Babiak [27] found that employed people are less likely to engage in violent behavior, possibly because they are afraid of losing their jobs. According to Alam and Bose [28] and Bhat and Joshi [29] adults are more likely to die young due to the stress of losing their jobs. Several studies have looked at how alcohol affects one's ability to work but their results have been contradictory [30]. Several studies have shown a relationship between alcoholism and unemployment [31, 32] but other studies have found the opposite or inconclusive relationship [31, 33].

Several studies admit that reverse causality (i.e., alcohol use influencing unemployment) is possible. The majority of the earliest research on this subject indicated that people drink less when they are unemployed [34, 35]. This indicates that personal income boosts alcohol use per capita over the long run. Another study conducted by Mari [36] concludes that per capita alcohol consumption is pro-cyclical and the income impact cancels out any negative effects of financial stress on one's drinking habits. A pro-cyclical association with the macro-economy has been demonstrated in all the research that employs aggregate data on alcohol use. While moderate and light drinkers may cut back during a recession, strong drinkers may up their intake to compensate. This might lead to a net decline in alcohol usage. Recent data indicates that heavy drinkers concentrate on the more severe repercussions of alcohol consumption, making these group-specific changes in drinking behavior relevant. In addition, there are several advantages to moderate alcohol use, including less stress and a decreased risk of cardiovascular disease as reported in the medical, economic and epidemiological literature [37, 38].

There is an increasing amount of research examines alcohol intake and labor market status using data collected at the individual level. Some researchers examined individual people's alcohol usage and unemployment rates using longitudinal data [39] which shows that unemployment does not affect alcohol usage while Berg et al. [31] discovered a positive relationship between unemployment and drinking. Panel data was used by Bamberger et al. [40] to demonstrate that unemployment is linked to alcoholism. De Goeij et al. [19] discover that being unemployed lowers both alcohol intake and

dependency. The consequences of unemployment themselves are contradictory although losing a job generally increases alcohol usage and decreases dependent symptoms for certain individuals. Some research has found that there is a positive correlation between job loss and alcohol usage using data from the National Longitudinal Survey of Youth [31]. Among people who were abstainers before losing their jobs, Caluzzi et al. [41] found that people drank more afterward. When looking at both cross-sectional and longitudinal data, Mangot-Sala et al. [33] discovered that people drink less when they are unemployed for a short time but drink more when they are unemployed for a long time. According to Cerdá et al. [42] excessive drinking is more likely among people who had longer periods of unemployment during the past 13 years.

Research conducted using dynamic panel-data analysis of US households supports previous results that overall drinking declines during economic downturns De Goeij et al. [19]. Bamberger and Cohen [43] discover that a diminished economy is associated with elevated teen drinking which contradicts prior research on adults to investigate how economic factors affect teenage drug use. The majority of research indicates that alcohol intake generally promotes a cyclical lifestyle. When looking at more dangerous drinking practices different writers come to conflicting conclusions [41, 44]. However, these impacts do not differentiate between a working person and a jobless person or the nature of their unemployment (voluntary or involuntary). Some people may drink more when they lose their jobs due to poor performance even if general drinking decreases during economic downturns.

It appears that one's level of employment affects their alcohol consumption. There is evidence from other researchers that shows that having a job affects how much alcohol people drink. Kuntsche and Kuntsche [45] found that having a job increases the likelihood of drinking and even alcohol dependence, since employees turn to alcohol as a means of coping with workplace stress and unwinding after a hard day based on data collected from an Australian police survey. Workplace stress is a known contributor to alcohol abuse as highlighted in a relevant Israeli study by Bamberger and Cohen [43]. Occupational stressors include working in an unsafe climate having to deal with competing priorities at work and feeling pressured to meet strict deadlines, all of which can cause people to drink excessively. A different study by Brunner and Siegrist [46] examined the relationship between lifestyle characteristics and wine consumption in the German-speaking region of Switzerland. One of the major determinants of alcohol use was leisure time. It was thought that workers would unwind with a glass of wine after a long day on the job [46].

The relationship between alcohol use and the job market in South Africa is yet to be widely recognised. This study adds to the existing literature using household survey data from the National Income Dynamic Study (NIDS) from 2008 to 2012. This study examines the effects of employment using a multinomial logistic regression model with extra explanatory factors (demographics, household characteristics, individual characteristics and employment status). The study follows a methodology similar to that of Amoateng et al. [47].

South Africans are diverse, their lifestyles and behaviors vary from one generation to the next and religious beliefs impact alcohol intake. Amoateng et al. [47] used multidimensional measures and a multinomial logistic model based on a sample of undergraduates from South Africa's North-West University to evaluate the impact of religion on alcohol consumption. The study also examined the effects of religion on tobacco use. Amoateng et al. [47] found that religious affiliation buffers the effects of alcohol on young people's drinking habits. The literature is pertinent and the study will involve religion. This paper aims to further investigate how unemployment affects alcohol intake in South Africa. In contrast to most prior work, our study focuses on individuals to see whether there is a relationship between changes in job position and drinking habits.

3. Methodology

The National Income Dynamic Surveys (NIDS) panel setting provided data for this study. The NIDS was conducted in 2008, 2010, 2012, 2014, 2016 and 2017. This study includes alcohol status such as regular or non-alcoholic, employment status, education, race, residence, age, marital status, household income and nine different provinces in South Africa. Home survey data is self-reported which might lead to incorrect results [17]. For instance, people who are ashamed of their weight, smoking or drinking may lie. However, the NIDS dataset is valid for studying socioeconomic characteristics and tobacco use and the sample size is large enough to represent South African households.

The study's analytical sample excluded wave five due to the unavailability of alcohol data in that wave. We further excluded non-alcoholics and those who have stopped smoking in all four waves. The age limits were established at these specific dates to eliminate those under the legal age to drink in South Africa as well as those who were approaching the usual age for retirement. The analysis sample further omitted observations with incomplete data for the crucial variables included in the analysis in all the waves. Ultimately, we excluded those who identified as retired full-time or part-time students. We deliberately omitted these specific groups of respondents to create a more uniform comparison group. This enabled us to directly compare the alcohol consumption patterns of those who were jobless and those who were working during the same timeframe.

3.1. Variables

Dependent variable (alcohol use): We chose to use alcohol usage within the previous year as the dependent variable to understand the connections between alcohol consumption and unemployment.

Independent variable (unemployment): The primary independent variable is a binary variable that takes a value of one if the participant indicated being unemployed and actively seeking employment for a duration exceeding one month during the previous year and zero otherwise. These respondents are those who lost their job at any time during the preceding year regardless of their employment status at the time of the interview.

Control variables. Age, race, ethnicity (African, coloured, Indian or white), marital status (an indicator for the combined group of divorced, separated, or widowed and a separate indicator for never married with married as the comparison group), educational status, total monthly household income, residence and province and the number of household members were among the covariates included in the models with pooled panel data.

3.2. Econometric Approach

The majority of analysts use cross-sectional data to estimate single-equation models (like ordinary least squares [OLS]) or some extension (like instrumental variable [IV] estimation) because nationally representative longitudinal or panel data with good measures for substance use and related consequences are rare. We use pooled data to estimate OLS first followed by logit models depending on the kind of outcome variable (continuous, count, or dichotomous) to create a standard for the fixed-effects models. The following is the basic linear specification using pooled panel data from the four waves:

$$A_{it}^{*} = \beta_0 + B_1 U_{it} + \beta_2 X_{it} + B_3 P_{it} + u_i + e_{it} \quad (1)$$

Where A_{it}^{*} is a latent measure of alcohol use for individuals i in wave t, U_{it} is a dichotomous measure of unemployment, X_{it} is a vector of control variables, P_{it} is a vector of province dummies, u_i represents unobserved individual factors that do not vary over time, e_{it} is a random time-varying error, and b's are coefficients to be estimated.

When A_{it}^{*} is not observable, we can define a dichotomous variable (A_{it} = 1 if $A_{it}^{*} > 0$ and A_{it} = 0 otherwise) and estimate the above relationship using the logit model. If $A_{it}^{*}$is observable and continuous ($A_{it} = A_{it}^{*}$), Equation 1 can be calculated using OLS. Estimation of single-equation models such as Equation 1 generates consistent coefficient estimates if there are no unmeasured or unobservable characteristics that are significantly correlated with our alcohol use measures and the indicator variable for unemployment [48]. On the other hand, there are theoretical grounds for thinking that this is incorrect. Preexisting personality traits or time preferences (high discount rates) that promote risky behaviour and discourage health investment are examples of such variables. Estimates of the b's will be skewed if u (i) and the unemployment variable are correlated and the findings may suggest unsuitable policies.

The fixed-effects model is unable to consider individual unobservable elements that change over time nor can it address the possibility of a reverse causation from alcohol consumption to unemployment [42, 49]. Therefore, it should not be concluded that unemployment directly causes increased alcohol consumption based solely on the identification of significant correlations because there is a possibility that alcohol abuse may actually contribute to job loss as suggested by De Goeij et al. [19] and Kasundu et al. [50]. Estimating longitudinal models or using IV techniques are the two most frequent approaches to account for the possibility of endogeneity in the job status variable [51]. We proceeded with the former and used a fixed-effects model as our basic method as the NIDS is a panel dataset. The fixed-effects method effectively removes time-invariant, unobserved variables (such as individual characteristics) from the estimating equation, making it a useful tool for controlling for these types of problems. The advantage of the fixed effects model is that it enables us to control for all variables that vary over the cross-sectional units but are constant over time [42].

4. Results

The statistical analysis summarizes and describes the main characteristics of a dataset. Table 1 displays the summary data for the variables included in the study.

Table 1.
Descriptive statistics.

Variables	Mean	Std. dev.	Min.	Max.
Alcohol	0.234	0.423	0	1
Unemployed	0.448	0.497	0	1
Sleepless	0.132	0.338	0	1
Urban	0.504	0.500	0	1
Female	0.549	0.498	0	1
Married	0.220	0.415	0	1
Age	22.406	18.296	0	105
Primary	0.366	0.482	0	1
Secondary	0.274	0.446	0	1
Matric	0.096	0.294	0	1
Tertiary	0.081	0.273	0	1
African	0.812	0.390	0	1
Coloured	0.138	0.345	0	1
Indian	0.014	0.116	0	1
White	0.036	0.186	0	1
Household income	8.187	0.974	0.678	13.831
Eastern Cape	0.132	0.338	0	1
Northern Cape	0.068	0.251	0	1
Free State	0.059	0.235	0	1
KwaZulu-Natal	0.285	0.452	0	1

Variables	Mean	Std. dev.	Min.	Max.
North West	0.071	0.257	0	1
Gauteng	0.111	0.314	0	1
Mpumalanga	0.072	0.258	0	1
Limpopo	0.084	0.278	0	1

On average, 23% of our sample drank alcohol approximately 44.7% of the dataset's respondents experienced unemployment and actively sought employment for a duration exceeding one month throughout the previous year. About one-fifth of the participants reported having trouble sleeping at night. About half of the people surveyed resided in cities (50.3%), women made up 54.8% of the population and just 22.0% of the respondents reported being married.

Table 2 reports selected estimation results for the effect of unemployment on alcohol use. We present baseline values for the dependent variables as a point of reference for evaluating the practical significance of the coefficient estimates. We also report coefficient estimates using pooled panel data to establish a point of comparison with previous studies. The odds ratios from logit specifications and OLS specifications show negative coefficient estimates indicating a negative relationship between alcohol consumption and unemployment in South Africa. The result corroborates Mangot-Sala et al. [33], Popovici and French [39] and Cerdá et al.'s [42] findings that a negative relationship exists between consumption and unemployment.

At the 1% level or above, most of the pooled panel estimates exhibit statistical significance. Most of these variables are main dependent variables which are unemployed (-0.252), sleepless (0.198), urban (0.488), female (-2.148), matric (0.438), tertiary (0.510), household income (0.148), Eastern cape (-0.179), free state (0.557), KwaZulu-Natal (-0.884), North West (0.233) and Mpumalanga (-0.210) all of which are significant.

However, the estimated coefficients continue to be statistically significant at conventional levels indicating a negative relationship between alcohol consumption and unemployment. The logit results are also consistent with the direction of the pooled panel regressions. At the 1% percent level or above, most of the pooled panel estimates exhibit statistical significance. The majority of the coefficient estimates decrease in magnitude when we apply the fixed-effects techniques. This is consistent with our theory that significant individual factors that were left out may have influenced the outcomes of some previous research. All but one of the estimated coefficients remain statistically significant at conventional level 2 and the results are consistent with the direction of the pooled panel regressions. We concentrate on the fixed-effects estimation results quantitatively. The results indicate that there is a 0.252 percent drop in alcohol consumption for every year that an individual is unemployed. The result verifies [34] who also found that alcohol consumption decreases when the number of employed people drops. When there is no within-group variation in the dependent variable, the observations are not used in the logit models.

Table 2.
Estimation results.

Variables	Pooled	Logit	Conditional fixed-effects negative binomial model
Unemployed	-0.024*** (0.003)	-0.252*** (0.038)	-0.208*** (0.050)
Sleepless	0.0117** (0.005)	0.127** (0.049)	0.099 (0.063)
Depressed	0.0136*** (0.003)	0.132*** (0.035)	0.057 (0.045)
Stress	0.014*** (0.004)	0.138*** (0.038)	0.097** (0.048)
Urban	0.043*** (0.005)	0.482*** (0.051)	0.184 (0.126)
Female	-0.236*** (0.004)	-2.154*** (0.048)	…
Married	-0.064*** (0.005)	-0.675*** (0.055)	-0.258** (0.118)
Age	0.002*** (0.000)	0.016*** (0.001)	0.134*** (0.008)
Primary	-0.013 (0.012)	-0.201 (0.125)	0.198 (0.370)
Secondary	-0.001 (0.012)	-0.103 (0.126)	0.851** (0.394)
Matric	0.057*** (0.013)	0.435*** (0.132)	1.655*** (0.409)
Tertiary	0.068*** (0.013)	0.503*** (0.133)	1.664*** (0.412)

Variables	Pooled	Logit	Conditional fixed-effects negative binomial model
African	-0.263*** (0.013)	-1.906*** (0.116)	…
Coloured	-0.153*** (0.0143)	-0.999*** (0.122)	…
Indian	-0.208*** (0.023)	-1.295*** (0.211)	…
Household income	0.0151*** (0.002)	0.151*** (0.021)	0.151*** (0.031)
Eastern Cape	-0.018* (0.010)	-0.176* (0.094)	-0.324 (0.407)
Northern Cape	0.018* (0.011)	0.163* (0.092)	0.202 (0.502)
Free State	0.063*** (0.012)	0.557*** (0.109)	0.681 (0.542)
KwaZulu-Natal	-0.079*** (0.010)	-0.879*** (0.093)	-0.229 (0.493)
North West	0.016 (0.012)	0.231** (0.110)	0.268 (0.540)
Gauteng	0.013 (0.010)	0.120 (0.092)	0.613 (0.455)
Mpumalanga	-0.022* (0.012)	-0.190* (0.109)	-0.117 (0.530)
Limpopo	-0.0474*** (0.0120)	-0.438*** (0.113)	-0.415 (0.528)
Constant	0.424*** (0.0289)	-0.867*** (0.274)	…

Note: The figures displayed are from the pooled, logit and conditional binomial fixed-effect regression models of unemployment on alcohol and other covariates. Note that values for race and gender were omitted from model 3 because they do not vary over time. Models 1, 2, and 3 use alcohol as the output variable, respectively. ***, **, * denote statistical significance at a 1%, 5% and 10% level of significance respectively. Standard errors are reported in parentheses.

Table 2 presents the full estimation results for alcohol consumption over the previous year. Unemployment is associated with a decrease in drinking alcohol on average which is in line with the empirical literature and intuition. For unemployed individuals, all the models are associated with a decrease (-0.0249) for the pooled model (0.252) for the logit and (0.208) for the conditional fixed-effects negative binomial model in alcohol. Women who did not have a job for the previous year consumed an estimated 0.236 times less alcohol than men who did not have a job. The odds ratio indicates 0.252 less consumption of alcohol by women who are unemployed as compared to unemployed men. The age of the individual living in a city and having a mental health condition such as sleeplessness, depression or stress is associated with more drinking (Nkomo et al., 2022). As compared to the whites' racial group in South Africa, the African (-0.263), coloured (-0.153) and Indian (-0.208) groups are associated with a decrease in alcohol in all the models. Provinces such as the Eastern Cape (-0.0189), KwaZulu-Natal (-0.0793), Mpumalanga (-0.0222) and Limpopo (-0.0474) all indicated a decrease in alcohol consumption most probably because they are mostly rural areas and residents are mostly financially challenged as compared to the Western Cape.

We included mental health variables to test robustness from another angle. As we previously argued, emotional distress is one of the mechanisms by which people could use more alcohol. The impact of unemployment on drinking may be mediated by factors other than household income and mental health status [52] which are taken into consideration in our core model. Thus, we re-estimated all specifications and eliminated these control variables. Once more, the estimated unemployment variable coefficients have similarities to those of the core model.

5. Discussion

This study examines the links between these two variables assuming a causal relationship between unemployment and consumption of alcohol. Fixed-effects models were employed to account for unobserved individual heterogeneity. This enables us to account for any individual traits that are neither observable nor time-dependent yet might be associated with alcohol consumption and unemployment. In South Africa, our data shows that people drink less when they are unemployed. The study demonstrates a statistically significant negative relationship between alcohol consumption and recent job losses.

There may be an endogeneity bias in the pooled data estimates because the fixed-effects estimates are not as large as the benchmark pooled data estimates. It is crucial to remember that if specific unobservable factors that change over time have an impact on alcohol consumption and employment status, the results of the fixed-effects models may still contain residual bias. When mental health variables like stress and depression are included, the core models' results are highly robust. They also maintain their direction and significance across a variety of empirical specifications. As a third point, our

estimates indicate that unemployment has an impact on alcohol consumption. They cannot differentiate the potential brand switching caused by a change in income. Since the NIDS does not include actual alcohol expenses, a more appropriate measure would be the amount of ethanol consumed. Nevertheless, some people may purchase lower-quality alcohol such as cheap wine or malt liquor beer due to a decline in income.

6. Conclusion

We conclude that being unemployed for more than a year causes people to consume less alcohol perhaps as a result of financial stress. The reduction in alcohol use as a result of lower income brought on by unemployment seems to be overshadowed by these psychological and emotional impacts. There is no way to know for sure what the cause-and-effect relationship is but high unemployment rates might lead to a public health disaster in the form of an uptick in cases of mental health issues like depression and stress.

There are certain restrictions and oversimplified assumptions in this study. First, any kind of job loss (such as voluntary, laid off or fired) and all respondents who were unemployed for at least one month in the previous year are included in our primary regressor, unemployment. Meanwhile, some people experienced longer unemployment than others for various reasons. Alcohol consumption may rise in response to any kind of job loss but the duration of unemployment is likely a significant contributing factor. The type and length of unemployment are unfortunately not included in the NIDS dataset. Analyzing this link about the length and nature of unemployment might lead to substantial contributions in this field for future study. Secondly, this research examines how unemployment influences alcohol consumption; it would be intriguing to add a more descriptive labour market variable such as weekly or annual hours worked.

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