

POLICY

Price Discounts on Alcohol in a City in Northern England

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Abstract — **Aims:** To describe the extent and nature of price discounts on alcohol in Newcastle upon Tyne, England. **Methods:** An observational survey in stores licensed for off-sales in December 2010 to January 2011. **Results:** A total of 2018 price discounts in 29 stores led to a median saving of 25% and required a median purchase of 20 standard UK alcohol units. Median price per standard unit was £0.92 (US\$1.49; €1.05) before discount and £0.68 (US\$1.10; €0.78) after discount. **Conclusions:** Restriction of price discounting should be considered as a public health policy.

INTRODUCTION

Alcohol consumption is the third leading contributor to the burden of disease in developed countries (Ezzati *et al.*, 2002). A wide range of social, economic, psychological and biological factors influence alcohol consumption.

Recently, marketing factors, such as price and promotion, have received increasing attention in both the academic (e.g. Anderson *et al.*, 2009) and lay (e.g. Triggler, 2009) literature as important determinants of, and targets for, interventions to reduce harmful alcohol consumption. The effect of price on alcohol consumption has been documented clearly: when the price of alcohol increases, consumption decreases, whereas when price decreases, consumption increases (Chaloupka *et al.*, 2002). The effect of price increases in the UK (e.g. the ‘price elasticity’) has been estimated to be in the region of -0.5 ; thus, for example, a 10% increase in price is associated with 5% decrease in consumption (Gallet, 2007; Wagenaar *et al.*, 2009; Purshouse *et al.*, 2010).

In response to these findings on the relationship between alcohol cost and consumption, the then Chief Medical Officer (CMO) for England called for the introduction of a minimum price for alcohol in 2009 (Donaldson, 2009). While the CMO suggested a minimum of price £0.50 (US \$0.81; €0.57) per standard UK unit (10 ml of pure ethanol), recent UK-based modelling found that, of a range of price-based policies, the greatest benefits, in terms of quality-adjusted life years (QALYs) gained, overall reduction in consumption and deaths avoided, were likely to be accrued from a minimum price of £0.70 (US\$1.13; €0.80) per unit (Purshouse *et al.*, 2010). Recent sales data suggest that between 59 and 83% of alcohol off-sales bought in England and Wales (i.e. alcohol bought for consumption off the premises) costs less than £0.50 (US\$0.81; €0.57) per unit, whereas between 83 and 97% costs less than £0.70 (US \$1.13; €0.80) per unit (Brennan *et al.*, 2008).

In contrast to the CMOs suggestion, the current government policy proposal for England is to introduce a ban on selling alcohol below ‘cost’ price—defined as duty plus valued added tax (VAT; a UK consumption tax, 17.5% at the time of data collection). As the method of calculating alcohol duty varies across different products in the UK, ‘cost’ price also varies in the range of around £0.21–0.28 (US\$0.34–45; €0.24–32) per UK unit. Between 12 and 27%

of alcohol off-sales bought in England and Wales costs less than £0.30 (US\$0.49; €0.34) (Brennan *et al.*, 2008).

Banning alcohol sales below ‘cost’ price has been criticized on a number of fronts, including by an internal government review (House of Lords Science & Technology Select Committee, 2011) which indicated that the Government’s policy on alcohol pricing did not reflect the best available evidence.

The marketing term ‘promotion’ describes the full spectrum of methods that manufacturers use to communicate with consumers, including advertising, and direct communications. Greater exposure to alcohol advertising (one aspect of promotion) has been associated with both earlier age of uptake of drinking and greater volume consumed in a systematic review of longitudinal studies of adolescents (Anderson *et al.*, 2009).

A further contributor to the ‘marketing mix’ is price. Price discounts include single-item price reductions (where the price of a single item is reduced, e.g. 20% off) and multiple-item volume promotions (where a price reduction is contingent on buying more than one unit of the product, e.g. buy one, get one free). UK-based modelling suggests that a prohibition of all off-sale price discounts would lead to a 3% reduction in total alcohol consumption, avoidance of 1140 deaths per year, and an annual gain of 8200 QALYs (Purshouse *et al.*, 2010). These effects are in the region of 15–16% of those that could be achieved with a minimum price of £0.70 per unit, but are not insubstantial and indicate the contribution of alcohol price discounts to overall consumption and alcohol-related harm.

Little has appeared in the scientific literature about the prevalence and nature of price discounts on alcohol. An Australian study explored the frequency of volume promotions for beer and ready-to-drink spirit-based drinks (RTDs) in seven outlets in one city (Jones and Lynch, 2007), but did not include all price discounts. It is likely that the frequency and nature of alcohol price discounts vary within and between countries.

In order to provide further evidence on the extent and nature of price discounts on alcohol in the UK, we carried out a survey in one city in Northern England—Newcastle upon Tyne. Newcastle upon Tyne is the principle population centre in the North East region of England and has a resident population of 277,800 (2008 mid-year estimate). Newcastle

upon Tyne has a substantially higher burden of alcohol-related harm than England as a whole. For instance, in 2009/10, the directly standardized hospital admission rates for alcohol-attributable conditions was 2406.5 per 100,000 in Newcastle, compared with 1742.8 per 100,000 in England as a whole (North West Public Health Observatory, 2011).

MATERIALS AND METHODS

We collected information on all price discounts on alcoholic beverages within a 1500 m radius of a city centre, campus-based university in Newcastle upon Tyne. We focused on the area around the university as this encompasses much of the city centre as well as many areas where students live—with young people aged between 16 and 24 years in the UK consuming more alcohol than any other age group (Lader and Steel, 2010).

Study stores

A ‘catchment area’ for stores to be included in the study was defined as a circle with radius 1500 m centred on the building housing Newcastle University’s branch of the National Union of Students. Stores selling alcohol within the catchment area were identified using www.yell.com and the city councils list of licensed premises. Stores selling alcohol were defined as all retail outlets licensed to sell alcohol for consumption off the premises. Thus, bars, restaurants, pubs and clubs were excluded.

Data collection

One of the two researchers visited all identified stores in the catchment area on one occasion during December 2010 to January 2011. After introducing themselves and asking permission to carry out data collection, researchers identified all alcoholic beverages that were subject to a price discount in each store. Stores were not pre-warned of the researchers’ visits. All single-item price reductions and multiple-item price promotions were included. Researchers did not ask store staff what products were subject to price discounts; so only those discounts that were readily identifiable by researchers (and thus, we assumed, consumers) were included.

For each product subject to a price discount, the following information was collected for the volume of product that had to be purchased to achieve the discount: product name, volume, alcohol strength [measured as alcohol by volume (ABV)], original full price and reduced price.

Data manipulation and analysis

All products subject to price discounts were classified into one of five categories based on current UK alcohol duty rules. These were: spirits, spirit-based RTD, liqueurs and strong wine (with ABV of >22%); fortified wine (with ABV of 15–22%); sparkling and table wine (with ABV of not >15%); beer and lager (of any strength) and Perry and Cider (of any strength).

A number of derived variables were calculated from collected data. Percentage saved was calculated as the percentage of the full price that was saved when the reduced

price applied. The number of units of alcohol on promotion was calculated as the number of standard UK units of alcohol in the total volume of alcoholic beverage that had to be bought to achieve the promotion. Price per unit of alcohol at full price and reduced price were also calculated. Price per unit of alcohol at reduced price was used to determine if a product was being sold at less than £0.50 per unit (the minimum price of alcohol proposed by the CMO for England in 2009) (Donaldson, 2009).

In order to determine if alcoholic beverages were being sold at less than ‘cost’ price (i.e. duty plus VAT; the current government proposal in England), the duty payable on each product on promotion was calculated from volume and ABV. Duty rates in force at the time of data collection were applied. This was then inflated by 1.175 to take account of VAT payable at the rate in force at the time of data collection.

As the distribution of all continuous variables was significantly different from normal, medians and inter-quartile ranges (IQR) were used to describe the central tendency and spread. Differences in the distribution of variables of interest between single-item and multiple-item price discounts were compared using the χ^2 and Wilcoxon’s rank sum tests as appropriate. All analyses were conducted in Stata v11.0.

RESULTS

A total of 43 stores were initially identified as within the catchment area and licensed to sell alcohol for consumption off the premises. Seven (16.3%) of these stores were found to be no longer trading when visited by a researcher. Of the remaining 36 stores, all agreed to take part in the research, seven (19.4%) did not sell any alcoholic beverages at the time of the researcher’s visit (e.g. were primarily clothing stores that sometimes sold alcohol-based gifts but did not at the time of the researcher’s visit), and four (8.3%) sold alcohol but did not have any price discounts on alcoholic beverages at the time of the researcher’s visit. The 29 stores included in the analysis that sold any alcohol at the time of the researcher’s visit represented a number of different store types (Table 1).

A total of 2045 price discounts were identified, and full data for inclusion in the analyses were available for 2018 (98.7%) of these. This equates to a median of 21 (IQR 1.5–62.5) discounts per store that sold any alcoholic beverages at the time of the researchers’ visit ($n=29$) (Table 1). However, the median number of discounts per store varied across different types of store—from 5 (IQR 0–12) in

Table 1. Stores selling discounted alcohol within a 1500 m radius of the Newcastle University’s branch of the National Union of Students

Store type	Stores, n	All promotions, n	Median (IQR) promotions per store
Department store	3	291	64 (40–187)
Convenience store	15	149	5 (0–12)
Supermarket	8	905	77 (54–182)
Specialist alcohol store	2	666	333 (1–665)
Delicatessen	1	7	7 (7–7)
All stores	29	2018	21 (2–63)

convenience stores to 333 (IQR 1–665) in specialist alcohol retailers.

Of these 2018 discounts, 860 (42.6%) were single-item price reductions and 1158 (57.4%) multiple-item price promotions (see Table 2). Almost two-thirds ($n = 1251$, 62.0%) of price discounts were on sparkling or table wine. This was due to a store-wide volume promotion for 20% off six bottles of the same table wine in one large store. This promotion applied separately to 648 different wines.

More than a quarter ($n = 528$, 26.2%) of price discounts led to alcohol being sold at less than £0.50 per unit. However, hardly any discounts led to alcohol being sold at below 'cost' price ($n = 29$, 1.4%).

The distribution of beverage types was significantly different between single-item price reductions and multiple-item price promotions. Multiple-item price promotions were more likely to apply to beer or wine, while single-item price reductions were more likely to apply to spirits, RTDs and strong wine. Volume that had to be bought to achieve the discount, units discounted, percentage saving and price per unit before and after discount were all significantly higher in multiple-item price promotions vs single-item price reductions. A significantly greater proportion of multiple-item price promotions than single-item price reductions led to alcohol being sold at below 'cost' price.

DISCUSSION

Summary of findings

Price discounts on alcohol were common in stores licensed to sell alcohol in this sample. Overall, price discounts led to a median saving of 25% but required a median purchase of more than 20 units. More than a quarter of price discounts led to alcohol being sold at less than £0.50 per unit—the minimum price recommended by the CMO for England in 2009, but <2% led to alcohol being sold at below 'cost' price—the current government proposal in England. Multiple-item promotions were associated with a significantly higher proportion of the original price saved than single-item reductions, but also required much higher volumes and number of units to be purchased.

Strengths and weaknesses of methods

To our knowledge, this is the first survey of price discounts on alcohol in the UK. Although some aspects of price discounts have been explored before in Australia (Jones and Lynch, 2007), we are not aware of any previous work that has surveyed the full range of price discounts on alcohol available in off-sales outlets either in the UK or elsewhere.

We aimed to conduct a complete census of all price discounts currently offered in stores in the catchment area. Although it is possible that some discounts were missed by researchers, these are likely to be the least visible to customers too and so may have the least effect on purchasing and consumption. We did not conduct any repeat observations to determine how reliable our method of data collection was.

In addition, although all stores approached agreed to take part in the research, we cannot be sure how representative stores in our sample were of the wider city, region or country.

Our data were collected in December 2010 and January 2011. They are, therefore, likely to include a number of price discounts specifically targeted to the holiday market. However, we have no data on how price discounts may vary over the year.

We did not collect any information on alcoholic drinks being sold that were not subject to price discounts. Without this, we cannot say what proportion of products on sale were subject to discounts. Nor do we have access to relevant sales data in order to calculate the proportion of purchased products that were subject to discounts.

Around one-third of discounts in our survey were related to a store-wide multiple-item price promotion on wine in one store. Excluding all discounts from this store ($n = 665$) from the analysis changed many of the results (see Supplementary Data, Table S1). Although our results may be substantially influenced by this one store-wide discount, such promotions are not unusual and we do not believe that it would be appropriate to exclude all products subject to this discount from the analysis, as there was no specific, *a priori* reason to do so.

Finally, our data are not able to shed any light on the effect of price discounts on consumption and associated health-related, and other, harms.

Table 2. Price discount of alcohol within a 1500 m radius of Newcastle University's branch of the National Union of Students

	All promotions	Single-item price reductions	Multiple-item price promotions	Single-item vs multiple-item
n (%) promotions	2018 (100)	860 (42.6)	1158 (57.4)	—
n (%) spirits, RTD, strong wine (ABV >22%)	380 (18.8)	318 (37.0)	62 (5.4)	$\chi^2(4) = 398.5; P < 0.001$
n (%) fortified wine (ABV 15–22%)	72 (3.6)	40 (4.7)	32 (2.8)	
n (%) sparkling and table wine (ABV ≤15%)	1251 (62.0)	461 (53.6)	790 (68.2)	
n (%) beer	256 (12.7)	29 (3.4)	227 (19.6)	
n (%) Perry and Cider	59 (2.9)	12 (1.4)	47 (4.1)	
Volume of product purchased to achieve discount (ml), median (IQR)	1500 (750–4500)	750 (700–750)	4500 (2000–4500)	$z = 35.9, P < 0.001$
Units of alcohol purchased to achieve discount, median (IQR)	20.3 (9.8–56.3)	10.1 (9.0–26.3)	54.0 (15.0–60.8)	$z = 21.46, P < 0.001$
% saving, median (IQR)	25.0 (19.4–25.0)	20.2 (16.7–28.6)	25.0 (20.1–25.0)	$z = 4.2, P < 0.001$
Full price/unit (£), median (IQR)	0.92 (0.67–1.35)	0.89 (0.68–1.13)	0.98 (0.65–1.49)	$z = 2.5, P = 0.013$
Reduced price/unit (£), median (IQR)	0.68 (0.50–1.00)	0.64 (0.49–0.88)	0.73 (0.50–1.12)	$z = 3.24, P = 0.001$
n (%) reduced price/unit <£0.50	528 (26.2)	231 (26.9)	297 (25.6)	$\chi^2(1) = 0.4; P = 0.540$
n (%) reduced price <'cost' price	29 (1.4)	2 (0.2)	27 (2.3)	$\chi^2(1) = 15.4; P < 0.001$

RTD, Ready-to-drink; ABV, alcohol by volume; ml, millilitres; IQR, inter-quartile range.

Interpretation of results

Overall, we found that price discounts on alcohol resulted in a median saving of 25% of the original price, but required a median purchase of 20.3 UK units. Using the price elasticity of -0.5 reported by Wagenaar *et al.* (2009), a 25% saving would be expected to lead to a 12.5% increase in purchasing.

The volume of alcohol required to achieve savings (equivalent to a median of 20.3 units) is substantially more than the recommended maximum weekly alcohol consumption for a woman in the UK (14 units) and almost the recommended maximum weekly alcohol consumption for a man (21 units). There is some evidence that the availability of low cost alcohol encourages consumers to buy more than they would normally (Foster *et al.*, 2010). This is likely to lead to a combination of immediate increases in consumption, or 'stock-piling', with resultant effects on ongoing availability of alcohol in the home, and hence consumption—particularly among younger people (Komro *et al.*, 2007).

Implications of results for policy, practice and research

Our results indicate that the current government proposal to ban sales of alcohol at below 'cost' price is likely to affect very few products and so would be unlikely to have a substantial effect on purchasing and consumption. In contrast, a minimum price of £0.50 per unit would impact on more than one quarter of the price discounts we identified.

Substantial research has explored the link between cost and consumption of alcohol. Although local data from northern England suggests that >80% of adults believe that price discounts increase the amount they drink (Cook *et al.*, 2011), further research is required to determine the specific impacts of price discounts on purchasing and consumption. It is possible that price discounts are viewed by consumers as representing something different from normal low-cost products and so have different impacts on their behaviour.

CONCLUSIONS

Price discounts on alcoholic beverages were common in this sample and resulted in significant savings, but required large volumes of alcohol to be purchased. Many discounts led to alcohol being sold at less than £0.50 per standard unit, but very few led to alcohol being sold at below 'cost' price. A ban on alcohol being sold at below 'cost' price would, therefore, be unlikely to have a substantial impact on the overall cost of alcohol, or on purchasing or consumption behaviour. Restrictions on price discounts should be considered alongside other strategies to reduce the impact and extent of alcohol marketing.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Alcohol and Alcoholism* online.

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Conflict of interest statement. None declared.

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