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Exploring the sugar-sweetened beverage tax (SSBT) pass-through rate in the Irish hospitality sector

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Abstract

Background The World Health Organization (WHO) supports the use of Sugar-Sweetened Beverage Taxes (SSBTs) as a fiscal lever to help reduce sugar consumption and tackle obesity. Obesity is associated with a range of adverse health outcomes. In response to increasing levels of obesity in Ireland, an SSBT was introduced in 2018. Previous research in Ireland has noted that the pass-through rate of the SSBT in retail (off-site consumption) settings was poor. However, to date, no research has examined the SSBT pass-through rate in hospitality (on-site consumption) venues in Ireland.

Methods This research examines the SSBT pass-through rate on Coca-Cola versus diet versions of Coca-Cola in a convenience sample of 100 hospitality venues in two provincial Irish cities.

Results Wilcoxon signed rank test analysis revealed that regular Coca-Cola was significantly more expensive compared to the price charged for diet versions of Coca-Cola. However, in 85.6% of cases the same price was charged for both full-sugar and sugar-free drinks. The mean pass-through rate of the SSBT was 33.8%.

Conclusion The effective functioning of the SSBT is premised on persistent price differences between soft drink prices based on sugar content. However, this is barely evident in the hospitality sector in Ireland. A number of recommendations are suggested, including both increasing the SSBT, and increasing it annually in line with inflation.

Keywords SSBT, Sugar-sweetened beverage tax, Sugar tax, Ireland, Pass-through rate

Similar to many other areas of the world Ireland is facing unprecedented levels of obesity [1, 2]. Recent examinations indicate that between 21 and 23% of the Irish population is living with obesity, with another 35–37% being overweight [3, 4]. Obesity is linked to a wide range of non-communicable diseases (NCDs) including cancer and osteoarthritis, as well as diabetes and cardiovascular disease [5]. Sugar intake is linked to obesity [6–8], as well as dental health [9, 10]. In response to this growing epidemic of obesity, the Irish Government announced the forthcoming introduction of a sugar levy in its 2016 Obesity Policy And Action Plan [11].

A Sugar-Sweetened Beverage Tax (SSBT), or Sugar Tax, as it is more commonly termed is a classic example of what is often termed a 'sin tax'. Such taxes are often charged on commodities deemed harmful to society, such as tobacco, alcohol, gambling, and pornography [12]. Ireland introduced its SSBT in May 2018 [13]. This date was delayed somewhat to coincide with a similar tax

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being introduced in the UK [14]. This was done to ameliorate the concerns of retailers in the border region of Ireland who felt this tax might help drive away potential customers north of the border and into Northern Ireland [15]. The scope of the Irish SSBT was subsequently expanded on 1 January 2019 via the Finance Act 2018 to include certain plant protein drinks and drinks containing milk fats [16].

The SSBT in Ireland is a tiered excise duty comprised of three rates based on sugar content [17]. Soft drinks under 5 g of sugar per 100 ml incur no tax, while those with 5 g to under 8 g of sugar per 100 ml incur a tax which equates to 5 cents on a standard 330 ml can. The higher rate of SSBT is for those soft drinks over 8 g of sugar or more per 100 ml and incurs an SSBT of 8 cents per 330 ml can [16].

The WHO recently noted that some form of SSBT has been introduced in 108 countries to date [18]. The WHO, and allied groups, are strongly supportive of SSBTs as a cost-effective fiscal lever in efforts to control rising levels of obesity globally [19, 20]. The WHO state that SSBTs '*represent a win-win-win strategy: a win for public health (and averted healthcare costs), a win for government revenue, and a win for health equity*' [18].

From a demand perspective, an SSBT may work through three mechanisms. In the first instance an SSBT should make sugar-sweetened drinks more expensive, and therefore less appealing and accessible. The second mechanism through which an SSBT may act as a disincentive is informed by rational choice theory which suggests that causing the sugar-sweetened drink to be more expensive than its no or low-sugar alternative will cause people to opt for the cheaper alternative. Additionally, the higher price may act as a signal to a potential purchaser and remind them of the negatives associated with such a purchase.

All three of these mechanisms are reliant on two key factors. In the first instance, most or all of the SSBT must be passed on to the customer to pay, rather than this cost being absorbed by the manufacturer or retailer [21, 22]. Secondly, zero or low-sugar options must remain cheaper than higher-sugar drinks that are subject to the SSBT. If for example a retailer opts to increase the price of a 330 ml can of Full sugar Coke by 8 cents, as per the SSBT, while at the same time also increasing the price of an equivalent can of Diet Coke by the same amount, then two of these potential dissuasive mechanisms cannot function.

Industry is routinely fiercely resistant to the introduction of health oriented taxes, such as SSBTs [23–25], and Ireland is no exception [26–28]. However, a clear understanding of standard industry tactics to delay, deny, and deflect the need for regulation and associated evidence can help overcome such opposition [23, 29]. The SSBT in Ireland has been criticised for a lack of hypothecation, that is a lack of ring-fencing of monies raised to support and improve services, in this case, such as dental, diabetes, cardiovascular or obesity-related health care [30, 31]. The Irish SSBT may also be critiqued for having a tariff of just 5 or 8 cents per 330 ml can, and a lack of annual adjustment for inflation [18, 19]. Although the Irish SSBT is typical internationally, the sum charged remains minimal. Branded soft drinks sold individually routinely retail for between €1.50 and €2.75 for 330 ml – 500 ml cans and bottles in supermarkets, garages and corner shops. Prices in hospitality venues may be up to 50% or more dearer. As such an SSBT component in the price structure of five to eight cents per 330 ml can is minimal. Finally, the Irish SSBT has been critiqued for the reality that despite the accolades the Irish Government received for this pro-Public Health measure, it was only introduced in Ireland after European Union restructuring effectively closed down the Irish sugar beet industry, thus eradicating potential opposition from Ireland's powerful farming lobby [32].

There is substantial evidence to suggest that one of the major outcomes of the introduction of an SSBT rather than its direct impact on consumers may instead be seen among manufacturers. Reformulation of the ingredients of many soft drinks by industry to avoid SSBT thresholds is clearly evident in Ireland and elsewhere [33–45]. Many countries, such as Ireland have introduced policies and targets to promote healthier reformulation of food and drink products [33, 34].

Globally research has noted considerable variation in the price pass-through rate of SSBTs. Evidence suggests the rates can vary from 40% to well over 100% [46–58]. A recent examination of the SSBT pass-through rate in retail (off-site) premises in Ireland noted that the tax was routinely not passed on to the consumer [31]. In this examination of 14 chain supermarkets, it was noted that in instances where the same leading brand and size of container was available in both sugar-free and full sugar versions, in approximately 60% of cases the retail price was the same. Even when a price differential was applied it often fell short of the SSBT addition [31]. However, one limitation of this research was its sole focus on the retail, or off-trade, sector to the exclusion of the hospitality sector. This research aimed to remedy this lacuna by examining SSBT pass-through rates in the hospitality (on-site) sector.

Method

A convenience sample of 100 hospitality venues was surveyed in central locations of two Irish provincial cities (Galway and Limerick). The population of Galway is approximately 80,000, while Limerick has just over 100,000 residents. The sample size was based on a 90%

Table 1 Availability of the target soft drinks in hospitality venues sampled

Venue Type	Participating Venues	Sell Coca-Cola	Sell a Sugar-Free Version of Coca-Cola	Sell Club Orange	Sell a Sugar-Free Version of Club Orange
Fast Food	23.2% (23)	91.3% (21)	91.3% (21)	4.3% (1)	4.3% (1)
Café	30.3% (30)	76.7% (23)	76.7% (23)	6.7% (2)	0% (0)
Restaurant	21.2% (21)	100% (21)	100% (21)	19.0% (4)	0% (0)
Pub/Bar	23.2% (23)	100% (23)	100% (23)	21.7 (5)	4.3% (1)
Other	2.0% (2)	100% (1)	100% (1)	0% (0)	0% (0)
Total	100% (99)	90.9% (90)	90.9% (90)	12.1% (12)	2.0% (2)

Table 2 Prices of the target soft drinks in hospitality venues sampled

Venue Type	Coca-Cola & Sugar-Free Versions the Same Price	Coca-Cola More Expensive Than Sugar-Free Versions
Fast Food	71.4% (15)	28.6% (6)
Café	91.3% (21)	8.7% (2)
Restaurant	76.2% (16)	23.8% (5)
Pub/Bar	100% (23)	0% (0)
Other	100% (2)	0% (0)
Total	85.6% (77)	14.4% (13)

confidence level, a 5% margin of error, an estimated population proportion of 15%, and an estimated combined figure of 350 hospitality venues in the two cities. The NielsenIQ report for 2022 identified the top leading carbonated soft drink in Ireland as Coca-Cola followed by 7UP, Pepsi, Club, and Fanta [59]. Of these top five leading brands, only Coca-Cola remains above the SSBT threshold of 5 g of sugar per 100 ml. Coca-Cola contains 10.6 g per 100 ml. This survey examined the costs of Coca-Cola versus diet versions by the same manufacturer (i.e. Diet Coke or Coke Zero). When originally conceived Club soft drinks were also above the SSBT threshold. However, even though Club drinks had been reformulated to below the SSBT threshold by the time data collection started they were still included to explore the issue of availability. It is important to remember that although reformulation of a drink such as Club Orange is important, every 330 ml can of the new recipe still contains over 3 teaspoons of sugar (Club now contains 4.5 g of sugar per 100 ml). Information was collected in person from the hospitality venues either from menus and noticeboards or by asking members of staff. Data was collected in 2023, approximately 5 years after the introduction of the SSBT. The pass-through rate of the SSBT in this analysis is taken as the differential in pricing between regular Coca-Cola and diet versions of that brand.

This study was approved by the Institutional Research Ethics Committee at the Technological University of the Shannon-Midwest. Data was collated in MS Excel and SPSS utilised to produce descriptive statistics and conduct t-tests. The focus on just two provincial cities must be acknowledged as a limitation of this research.

Results

Data was collected from 99 establishments, with one Café declining to participate. 90.9% (90) of venues sold both full-sugar Coca-Cola and diet equivalents (see Table 1).

In contrast, just 12.1% (12) establishments sold Club Orange, with just 2.0% (2) selling the no-sugar equivalent (Club Orange Zero) (See Table 1).

Table 2 details the relative prices of Coca-Cola and its sugar-free versions in hospitality venues. Wilcoxon signed rank test revealed that regular Coca-Cola was significantly more expensive (Md=2.73, n=87) compared to the price charged for diet versions of Coca-Cola (Md=2.73, n=87), z= -3.18, p=.001, with a small effect size r=.24. However, in 85.6% of cases, regular versus sugar-free versions of Coca-Cola were for sale at the same price. No venues charged more for the diet version of Coca-Cola. Of the 13 premises which did charge more for regular Coca Cola the rate charged was less than the tax rate in one venue, and higher in the other 12. Among the 13 venues which did charge a higher price the average higher price was 21.1 cents per 330 ml (SD=0.15), ranging from 7 cents to 53 cents. A pass-through rate of 100% would indicate that a venue charged, for example, an extra 8 cents for a 330 ml can of regular Coca-Cola over a diet version of that brand. The mean pass-through rate of the SSBT in this examination was 38.3%. Further analysis by hospitality venue type was not possible given the numbers involved.

Discussion

The results indicate that a statistically significant difference was noted in price between diet and regular versions of Coca-Cola. However, the results also demonstrate that in almost nine out of ten (85.6%) venues the regular and sugar-free versions of Ireland's leading soft drink, Coca-Cola, were for sale at the same price in the two cities examined. Such equal pricing removes both the rational choice mechanism through which a potential buyer might opt for the cheaper sugar-free instead of the

more expensive regular version, as well as the warning signalling impact of the differential pricing.

It is important to acknowledge the complexity of the obesity issue and the diverse range of approaches that are required to respond to this issue. However, obesity remains a major threat to the health and well-being of Ireland's population via a range of non-communicable diseases (NCDs) and the SSBT remains a proven fiscal level to address this threat [2, 5, 11]. Sugar-sweetened drinks are a threat to population health, with little to recommend them given their 'empty calories' [60]. Given the lack of price differentiation evident based on this on-site (hospitality venue) study of two cities and the prior off-site (retail) study [31], it is strongly recommended that the current SSBT is increased significantly. The mark-up on soft drinks in the Irish hospitality sector has long been acknowledged as excessive and effectively negates the SSBT [61]. Increasing SSBT significantly should reduce the ability of retailers or manufacturers to absorb this cost, as well as further incentivise manufacturers to reformulate. Increasing the SSBT may allow it to function as intended, and facilitate improved health as observed elsewhere [62, 63].

In their response to the initial consultation process on the SSBT in Ireland, the Royal College of Physicians of Ireland [64] specifically noted that only taxes achieving a 10–20% price increase would reduce consumption of sugar-sweetened drinks [65, 66]. The WHO have recently stated that '*While no empirical best practice for effective SSB tax levels have been set, excise taxes need to be sufficiently high to impact affordability*' [18]. Given the minimal SSBT introduced in Ireland initially, and both high levels of inflation since it was introduced [67] and the lack of annual index-linked increases in the tax, as well as clear evidence of minimal SSBT pass-through or price differentiation in either retail [31] or hospitality settings, an increase of the SSBT to 50 cents per 330 ml can is suggested for the higher tier (8 g or more sugar 100 ml). The rate for the lower SSBT tier of 5–7.99 g of sugar per 100 ml should be 30 cents per standard 330 ml can. This SSBT should be inflation-linked and adjusted annually. Recent research has noted that demand for sugar-sweetened beverages is sensitive to tax-related price increases [68, 69].

Evidence also suggests that adding the phrase 'includes sugary drink tax' onto price tags can act as a disincentive to purchasing [70]. It is suggested that additional legislation be introduced in Ireland to require cans, bottles, menus, and price lists to include a phrase specifically mentioning that the price includes the SSBT. This will both act as a signal to consumers, similar to traffic light-style warnings on food [71], and help prevent retailers from simply increasing the prices of both sugar-sweetened and no/low-sugar drinks, as the purchasing public will be constantly reminded of the SSBT factor in the pricing structure. Other countries have increased SSBTs dramatically over short time periods and have seen positive results [72].

Having examined demand-led factors, supply-side considerations should also be taken into account [73]. In terms of the availability of sugar-free options, it is important to note that although every establishment surveyed that sold regular Coca-Cola also sold diet versions, this was not the same for Club Orange. Although the reformulated lower sugar version was sold in just 12.1% of establishments, only 2% sold the sugar-free version. This under-availability of the sugar-free versions of popular brands appears to be an under-researched topic in the literature. Potential customers with a favourite low or zero-sugar soft drink that is not available in their chosen brand may opt for the sugared version of that product, rather than an alternative sugar-free brand. Further research is required on the availability of sugar-free versions of popular soft drinks.

Reformulation has clearly been an important factor in reducing the impact of sugar Irish consumers may typically encounter from soft drinks. In recent years Pepsi re-formulated its ingredients to fall below the SSBT threshold of 5 g of sugar per 100ml [40]. Many manufacturers have worked to avoid SSBTs by developing recipes below the threshold level. For example, the sugar version of Pepsi now contains 4.55 g of sugar per 100 ml, while equivalent Fanta, 7Up, and Sprite brands each contain 4.5 g, 4.7 g, and 4.4 g respectively. Given the SSBT was only announced by Government in 2016 and introduced in 2018, manufacturers have achieved this transition in a relatively short time frame [11]. This begs the question of whether a revised lower SSBT sugar threshold rate is appropriate? The 5 g of sugar per 100 ml SSBT threshold is by no means universal [2]. It is important to note that differing health targets internationally may have important implications for health [74]. For example, South Africa and Mauritius both have SSBT thresholds of 4 g of sugar per 100ml [20, 75]. It is suggested that a revised SSBT threshold of 4 g of sugar per 100 ml be introduced in 2030, with the threshold reducing to 3 g in 2035. The standard 330 ml can appears to be increasingly replaced in retail premises by larger 500 ml cans and bottles. The impact of reformulation may be minimised if those opting to drink sugared soft drinks are consuming cans and bottles that contain approximately 50% more volume.

In order to maintain public support for this measure the Irish Government also needs to hypothecate SSBT raised to support relevant health and dental services. Although the Irish Government has explicitly argued against this approach [76], it is a crucial to order to build and maintain public confidence [30].

Although the SSBT is important it only targets soft drinks. It is strongly suggested that a similar tax is introduced for confectionary and food products [77, 78]. A broadening of the sugar tax should also target alcohol. Although in most cases sugar is used up in the

fermentation process, in certain drinks, such as coffee liqueurs, a substantial volume of sugar is added back into the product after the yeast has died. Finally, given a history of poor quality evidence in this field, it is essential that any changes to the SSBT and associated taxes is accompanied by clear baseline evaluations and a structured and funded review process [79].

One limitation of this study is its focus on just two provincial Irish cities. An additional limitation of the study is its focus on just one brand, albeit because of the five most popular soft drinks in Ireland only one remains above the SSBT threshold. Future research should include a more diverse selection of area types and beverages.

Conclusion

Although there was a statistically significant difference noted in the price of regular and diet versions of Coca-Cola, in almost 85.6% of cases, the same price was charged for both. The mean pass-through rate of the SSBT was 33.8%. The full impact of the SSBT therefore is not being passed on to customers in the Irish hospitality sector. This research echoes earlier Irish research in the retail (off-site consumption) sector [31]. It must be remembered that Ireland's SSBT is only 8 cents per 330 ml can at the higher tax rate, and just 5 cents at the lower SSBT tax rate. The effective functioning of the SSBT, through rational choice theory and signalling, is premised on persistent price differences between soft drink prices based on sugar content. However, this is barely evident in the hospitality sector in Ireland. The SSBT should be increased to promote health and prevent its absorption by retailers or manufacturers. The SSBT should also be increased annually in line with inflation.

Abbreviations

SSBT Sugar-Sweetened Beverage Tax

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Author contributions

FH & JMS conceived the study. FH & MD designed the data collection tool. MD & DH collected and input the data. FH & JA conducted the analysis. FH wrote the initial draft. All authors were involved in reviewing, revising and approving the final draft & revisions.

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Data availability

The datasets generated by the survey research during and/ or analyzed during the current study are available in the Dataverse repository, https://doi.org/10.7910/DVN/P7SWY7.

Declarations

Ethics approval and consent to participate

This study was approved by the Research Ethics Committee of the Technological University of the Shannon: Mid-West.

Consent for publication

Not applicable.

Competing interests

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