SLG Economics Ltd

Economics, Regulation, Competition

Review of:

PLOS Medicine Research Article:

Change in household food and drink following restrictions on the advertisement of high fat, salt, and sugar products across the Transport for London network: A controlled interrupted time series analysis

and

International Journal of Behavioural Nutrition and Physical Activity Article:

The health, cost and equity impacts of restrictions on the advertisement of high fat, salt and sugar products across the transport for London network: a health economic modelling study

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www.SLG-Economics.co.uk

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1 Introduction

PLOS Medicine have published a research article titled: *Changes in household food and drink purchases following restrictions on the advertisement of high fat, salt, and sugar products across the Transport for London network: A controlled interrupted time series analysis*[1] (the 'first study') which reports that restrictions on HFSS advertising on the TfL estate led to a reduction in the average weekly household purchase of energy from HFSS products of 6.7% (1001kcal). The research article suggests that the findings provide support for policies that restrict HFSS product advertising as a way of improving population diet and preventing obesity.

In addition, the International Journal of Behavioural Nutrition and Physical Activity have published an article titled: *The health, cost and equity impacts of restrictions on the advertisement of high fat, salt and sugar products across the transport for London network: a health economic modelling study*[2](the 'second study') which reports that the reductions in household purchases reported in the TfL study would have resulted in 94,867 (4.8%) fewer individuals with obesity, produced an estimated 16,394 additional quality-adjusted life years and saved £218m in NHS and social care costs over the lifetime of the current population. The research suggests that there are considerable potential health and economic gains from restricting advertisement of high fat, salt and sugar products.

This note reviews both research articles and considers whether they provide a reasonable estimate of the impact of withdrawing HFSS adverts from the TfL estate and the associated health costs and impacts, and whether they should be relied on in support of policies that

[1] Yau A, Berger N, Law C, Cornelsen L, Greener R, Adams J, et al. (2022) Changes in household food and drink purchases following restrictions on the advertisement of high fat, salt, and sugar products across the Transport for London network: A controlled interrupted time series analysis. PLoS Med 19(2): e1003915. https://doi.org/10.1371/journal.pmed.1003915

[2] Thomas, C., Breeze, P., Cummins, S. et al. The health, cost and equity impacts of restrictions on the advertisement of high fat, salt and sugar products across the transport for London network: a health economic modelling study. Int J Behav Nutr Phys Act 19, 93 (2022). https://doi.org/10.1186/s12966-022-01331-y https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-022-01331-y

restrict HFSS adverts. It is divided into two parts, Sections 4 to 10 consider the first study, while Sections 11 to 15 consider the second study. The conclusions are set out in Section 16.

2 Executive Summary

This report examines:

- The counterfactual used in the first study,
- The coverage of HFSS categories in the first study,
- The credibility of the results of the first study in the light of:
    - Comparing the results with other advertising bans,
    - Excluding out-of-home consumption from the research,
    - Conflicting evidence of impacts on childhood obesity, and
    - Other factors including:
        - The voluntary restrictions on HFSS advertising near school boundaries
        - The availability of HFSS advertising in free newspapers which are widely read by TfL users
        - The failure of the first study to track usage of TfL services by people in the survey
- The statistical validity of the results in the first study,
- What the second study shows,
- The assumption in the second study that calories purchased directly equates with calories consumed,
- The validity and credibility of the second study results,
- Conflicting evidence of the impact on obesity,
- The costs of the TfL restrictions, and
- The impact on NHS and social care costs.

It finds that:

- The first study appears to have used an inappropriate counterfactual and the results are a consequence of the construction of the counterfactual rather than demonstrating the impact of the TfL advertising ban;
- The first study misses out over half (by calories purchased) of the HFSS product groups and as a result does not explain where 57% of the reported reduction in calories comes from;
- The first study suggests results that are 32 to 109 times higher than the expected results from a 9pm watershed ban on HFSS adverts on TV – this is not a credible result;
- The first study excludes out-of-home purchases where one might expect TfL adverts to have a much greater impact, again questioning the credibility of the results;

- There is evidence from the National Child Measurement Programme that the prevalence of overweight and obese children increased in London faster than in any of the TfL control group areas in the North of England – contradicting both study results;
- Existing voluntary restrictions on HFSS advertising would have reduced the opportunity for further gains from the TfL restrictions, again questioning the credibility of the study results;
- Food and drink advertising continues to be widely available and widely read in free newspapers on the underground further questioning the study results;
- It is a serious methodological gap in the first study not to take into account the extent to which people in the survey would have had the opportunity to see HFSS adverts on the TfL estate and how that would have changed over the period of the study;
- The first study results fail an important statistical test which reduces the statistical validity of the results and the robustness of the conclusions;
- The second study does not provide verification or validation of the first study results – it unquestioningly assumes the results of the first study and uses this as an input into its calculations;
- Because it assumes the results from the first study, the second study results are subject to all the concerns set out above about the credibility of the first study;
- The second study assumption that calories purchased is directly equated with calories consumed ignores substitution with food purchases outside the home and food consumed in restaurants and cafes;
- The second study does not properly consider the costs of the advertising ban, particularly the potential loss of TfL advertising income and the costs of operating the advertising restrictions;
- The impacts on NHS and social care costs, even at the highly inflated level assumed, would only make the most superficial impact on NHS obesity costs.

As a result, the results of both studies should not be relied upon in support of policies that restrict HFSS adverts.

3 SLG Economics

SLG Economics is an economics consultancy set up in 2011 by Stephen Gibson providing specialist micro-economic policy advice to regulated companies, regulators and government. Mr Gibson has over 25 years' experience as a professional applied economist, the last 15 of which have focussed on public policy decision making.

Mr Gibson is a Senior Fellow of the Mossavar-Rahmani Centre for Business and Government at Harvard Kennedy School, Harvard University. He is Chair of the government's Regulatory Policy Committee (RPC), which is the independent expert body responsible for scrutinising

and assessing the quality of government departments' and regulators' Impact Assessments.[3] Mr Gibson has been Interim Chief Economist at Ofwat, Chief Economist at Postcomm, Principal Economist at Ofcom and Head of Economics at Network Rail as well as a number of other senior economics positions. As part of his role at Ofcom, he directed the major 2006-7 impact assessment of options for regulating HFSS food advertising to children on television which brought in the current restrictions on advertising HFSS food on TV.

Mr Gibson has been a lecturer at City University, London on their MSc in Competition and Regulation and is a lecturer at Birkbeck University on their Masters course in Industrial Economics.

The first study (PLOS Medicine)

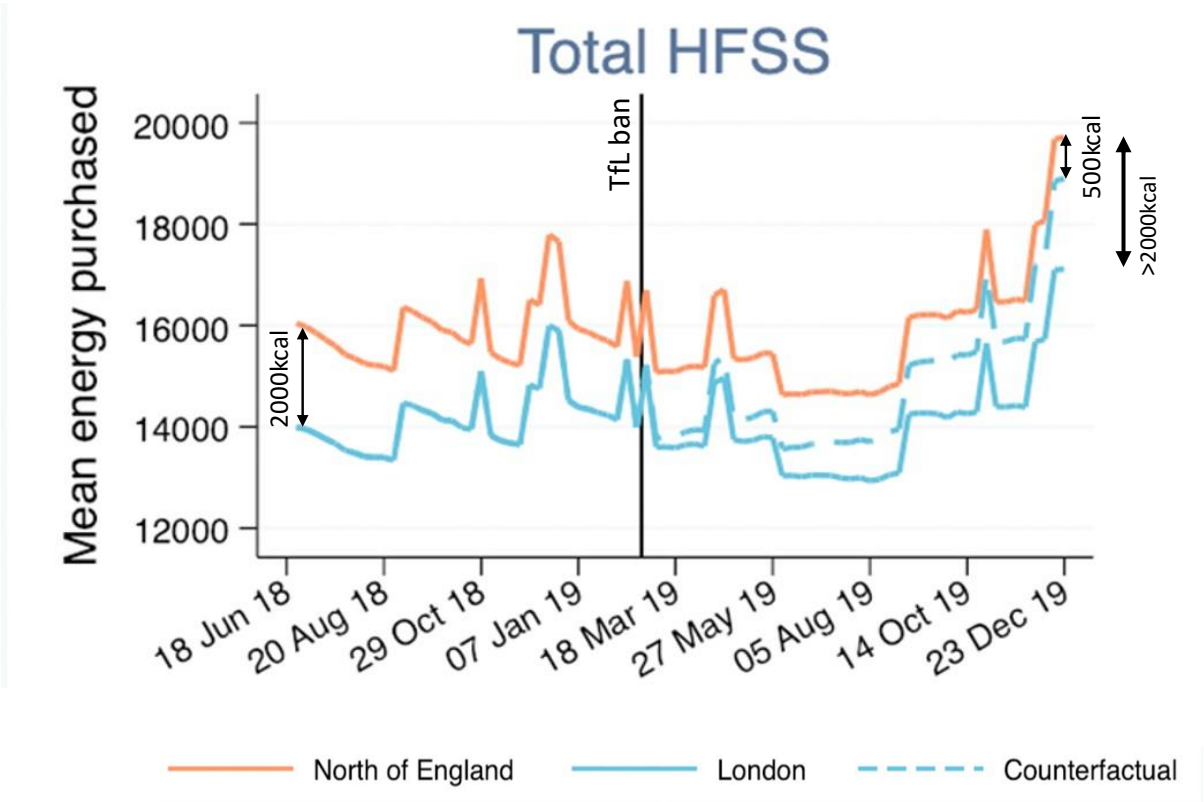
4 The counterfactual used in the research paper

All of the results quoted in the first study are reported compared to a counterfactual scenario estimated by extrapolating the pre-implementation trend and accounting for post-implementation changes seen in households in the control area where the intervention has not occurred. The counterfactual is therefore critical to the results of the research. As the first study notes, purchases of HFSS products in London and the North of England actually increased after the TfL HFSS advertising restrictions were introduced. It is only the comparison with the control area in the North of England that suggests that the ban might have had any negative impact in terms of a reduced rate of growth, rather than an absolute reduction in HFSS purchases.

However (unlike the detail on many other aspects of the study), there is very limited information in the paper on how the counterfactual was actually calculated – simply that "*we constructed the counterfactual by extrapolating the pre-intervention trend of the intervention group* [London] *… and incorporating the post-intervention changes of the control group* [the North of England]". This means that one should expect the pattern in London (in the absence of a ban) to continue to match the pattern in the North after the ban, in the same way as it does before the ban.

[3] Mr Gibson has declared his interest in all policy matters relating to the government's obesity strategy and the advertising of HFSS food and drink to the RPC in order to ensure that there is no conflict of interest. This is recorded in the RPC's Register of Interests https://www.gov.uk/government/collections/2020-rpc-register-of-interests.

Diagram 1: Mean energy purchased from HFSS products before and after TfL advertising restrictions, London vs North of England



However the counterfactual does not track the pattern of purchases in the North of England control group. As can be seen in Diagram 1, prior to the ban, mean energy purchases in London (the light blue line) were around 2000 calories less than in the North of England (the red line), whereas after the ban the gap with the counterfactual (the dashed light blue line) narrows to around 500 calories. It is therefore not surprising that purchases in the London group will appear to be lower relative to that counterfactual – this says nothing about the impact of the advertising ban on HFSS purchases, but is purely a consequence of the construction of an inappropriate counterfactual.

Were the purported increase in the counterfactual (relative to purchases in the North of England) to have continued (as implied by the study), then by the date of this report (September 2022) people in London would have been purchasing over 2000 calories more than people in the North of England (according to the logic in the study) and in 5 years' time (May 2027) they would have been buying over 6700 calories more – this is not credible and clearly demonstrates the inappropriateness of the choice of counterfactual.

Inspection by eye of Diagram 1 shows that the difference between actual purchases in London (as opposed to the counterfactual) and the North of England remained reasonably constant across the whole period with no particular change around the time of the ban (in

fact the difference between actual purchases in London and in the North of England seems greater at the end of the study period in December 2019 than at the start of the study).

5 Missing HFSS categories in the research paper

Table 1 below reconciles the five HFSS categories in the TfL study with the categories used by DHSC to classify HFSS products.

Table 1: First study and DHSC food and drink categories compared[4]

Study HFSS category	Study - included & excluded products	DHSC Products
Total HFSS	All food and drink products were included if classified as HFSS according to the NPM[1]	All food and drink products classified as HFSS according to NPM
Chocolate & confectionery	Chocolate confectionery, sugar confectionery and sweet spreads (e.g. jams and chocolate spreads)	Chocolate confectionery
		Sugar confectionery
Puddings & biscuits	Biscuits, cakes, puddings, ice cream, custard, ready-to-eat icing, jellies and toaster pastries were included if classified as HFSS according to the NPM	Cakes
		Ice cream
		Morning goods (eg pastries)
		Puddings and dairy deserts
		Sweet biscuits
Sugary drinks	Carbonated drinks, flavoured waters and milk-based drinks were included if classified as HFSS according to the NPM	Soft drinks with added sugar
		Milk drinks with added sugar
Sugary cereals	Breakfast cereals were included if classified as HFSS according to the NPM	Breakfast cereals
Savoury snacks	Crisps, popcorn, savoury crackers and biscuits, pork scratchings, poppadums and prawn crackers were included if classified as HFSS according to the NPM	Crisps and savoury snacks
	Not categorised	Yogurts
	Not categorised	Juice with added sugar
	Not categorised	Pizza
	Not categorised	Complete main meals (ready meals)
	Not categorised	Family meal centres
	Not categorised	Chips and similar potato products
	Not categorised	Breaded and battered products

[4] DHSC Impact Assessment: *Introducing a 2100-0530 watershed on TV and online restriction for paid advertising of food and drink that are High in Fat, Salt and Sugar (HFSS) products*, May 2021, Table B1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/996232/impact-assessment-hfss-advertising.pdf

It is clear from the table above that the first study does not identify a wide range of products that are categorised as HFSS according to the NPM model. However Table 2 below shows that the missing categories in the first study are not simply a small fraction of the overall purchases that are of interest in considering the results. In fact the missing HFSS products make up around 58% of all the calories in the HFSS products purchased i.e. the five identified categories make up much less than half (around 42%) of all the calories in the HFSS products purchased. This is not even mentioned in the discussion of the results. The five identified HFSS categories in the first study are not the largest relevant categories (which is what one would expect) – this is particularly the case for sugary drinks and sugary cereals which account for only around 1½% and 3% of the HFSS calories purchased respectively.

Table 2: Proportion of mean energy in HFSS categories[5]

	Percentage of HFSS energy purchased by food categories					
	Pre-intervention			Post intervention		
	Total	Intervention	Control	Total	Intervention	Control
	(%)	(%)	(%)	(%)	(%)	(%)
Total HFSS products	100.0	100.0	100.0	100.0	100.0	100.0
Chocolate & confectionery	9.6	8.9	10.2	10.1	9.4	10.8
Puddings & biscuits	20.5	19.9	20.9	20.7	20.0	21.3
Sugary drinks	1.7	1.6	1.7	1.5	1.5	1.5
Sugary cereals	3.1	3.3	3.0	2.8	2.9	2.8
Savoury snacks	7.2	7.4	7.0	7.3	7.7	7.0
Identified HFSS categories	42.0	41.1	42.9	42.4	41.4	43.3
Missing HFSS categories	**58.0**	**58.9**	**57.1**	**57.6**	**58.6**	**56.7**

Looking at the results of the first study's statistical analysis also shows that just two HFSS categories (chocolate & confectionery and puddings & biscuits) account for 516kcal out of the total 1001kcal reduction compared to the counterfactual (51.5%). Calories purchased from the other three identified categories actually increased relative to the counterfactual (by 85kcal) leaving 570kcal (57%) to be accounted for by the missing HFSS categories. It is poor statistical practice not to comment on and effectively ignore such an important result from the study – particularly since if you only consider the identified categories, the impact of the intervention is reduced by 57% to 431kcal per household per week rather than 1001kcal per household per week. It also begs the question of where the reported reduction in calories as a result of the advertising ban is coming from – if it is not coming from the identified HFSS categories. This suggests that there is some other factor responsible for a

[5] TfL study Table 2 and SLG Economics analysis

large part of the reported calories reduction that is not being picked up in the statistical analysis in the study.

6 The credibility of the results of the study – comparison with other advertising bans

The research suggests a 6.7% (1001kcal) reduction on the average weekly household purchase of energy from HFSS products (equivalent to 55kcal per person per day) as a result of the ban on advertising HFSS products on the TfL estate. The 95% confidence interval on these results is 456 to 1546kcal per household per week – equivalent to 25 to 84kcal per person per day. Table 3 below compares these to DHSC and DCMS studies that supported TV and online HFSS advertising bans.

Table 3: Comparison of first study with DHSC/DCMS online and TV advertising bans[6],[7]

Proposed advertising ban	Estimated reduction in calories	First study results compared with DHSC/DCMS forecasts (95% confidence interval)
First study HFSS advertising ban	55kcal/day	
9pm watershed ban on HFSS advertising online (including mitigation)	2.1kcal/day	26 times higher (12 to 40 times higher)
Total ban on HFSS advertising online (including mitigation)	2.8kcal/day	19 times higher (9 to 30 times higher)
9pm watershed ban on HFSS advertising on TV (after adjusting for indirect effects)	0.8kcal/day	71 times higher (32 to 109 times higher)

Therefore even the 95% CI lower bound of the first study suggests that a restriction on outdoor advertising is more than an order of magnitude more effective than a restriction or ban on TV or online advertising.

The TfL restriction did not cover all outdoor advertising (as was the case for the online advertising ban) but only adverts on the TfL estate - which makes up around 30%[8] of the

[6] Department of Health and Social Care (DHSC) and the Department for Digital, Culture, Media and Sport (DCMS) *Evidence Note on Further advertising restrictions for products high in fat, salt and sugar*, June 2021 https://www.gov.uk/government/consultations/total-restriction-of-online-advertising-for-products-high-in-fat-sugar-and-salt-hfss/evidence-note#:~:text=The%20evidence%20suggests%20that%20exposure,term%20by%20shaping%20food%20preferences.

[7] DHSC Impact Assessment: *Introducing a 2100-0530 watershed on TV and online restriction for paid advertising of food and drink that are High in Fat, Salt and Sugar (HFSS) products, May 2021* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/996232/impact-assessment-hfss-advertising.pdf

[8] Source: Outsmart

total, of this only about 13% of TfL advertising pre-ban was on food[9], of which only a proportion would have been HFSS.

Therefore the first study suggests that a ban on 30% of outdoor advertising of HFSS products in London (which are not even seen once a week by around half of the households in the survey), is 32 to 109 times as effective as a proposed 9pm watershed ban on TV advertising. An effect of this magnitude looks highly implausible. To make a credible contribution to the policy debate, this result would require significant additional supporting evidence or other confirming studies.

7 The credibility of the results of the study - excluding out-of-home consumption from the research

The first study only considered take-home grocery purchases. The study excluded out-of-home purchase data, which would cover chocolate, energy bars and other confectionery, sandwiches, lunch-time snacks and soft drinks bought while traveling or for consumption during the day, café and restaurant purchases etc. This is remarkable because these are exactly the type of purchases that one would expect people to be most influenced by, when viewing outdoor adverts while travelling. HFSS food and drink is widely available across the TfL estate, in shops, kiosks, pop-up pitches and other retail outlets and in shops and newsagents in the immediate vicinity of tube and bus stations. One would expect unplanned and immediate purchases to be more affected by adverts viewed at the same time or perhaps only a few minutes previously, than shopping decisions that are generally disconnected from viewing adverts on a previous travel journey a number of days previously. Again the magnitude of the results for take-home purchases and the idea that the TfL advertising ban's effectiveness is reported as coming from take-home rather than out-of-home purchases questions the credibility of the results.

8 The credibility of the results of the study - Conflicting evidence

The Government's National Child Measurement Programme (NCMP) for England covers children in Reception (aged 4-5 years) in mainstream state-maintained schools in England. The report contains analyses of Body Mass Index (BMI) classification rates by age, sex and ethnicity as well as geographic analyses.

[9] Source: Outsmart

Diagram 2: Increase in childhood obesity (overweight and obese combined), Reception children by region 2020/21 compared to 2019/20[10]

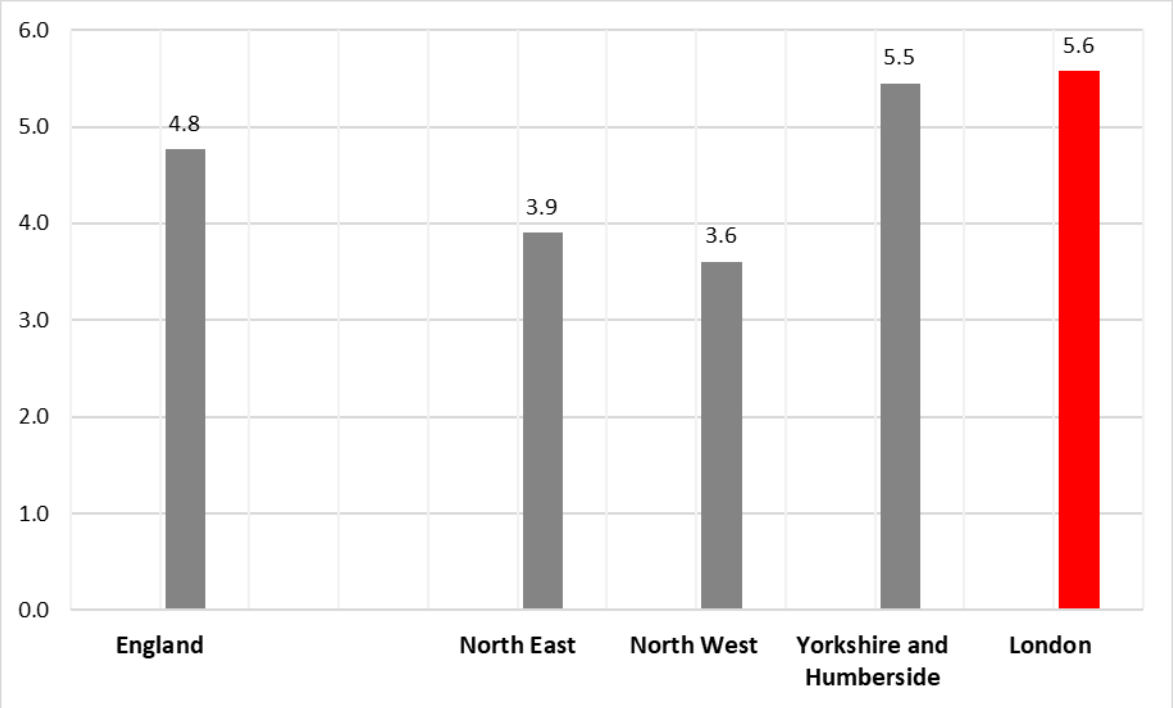


Diagram 2 above taken from the NCMP, compares the increase in overweight and obese children in London compared to the increase in the three areas that make up the TfL North of England control group (North East, North West and Yorkshire & Humberside) and the increase for England as a whole. The graph shows that the prevalence of overweight and obese children in London increased by more than in any of the areas in the TfL control group (and for England as a whole). This questions the TfL study findings that calories purchased in London increased by less than in the North of England and shows that the TfL advertising ban did not translate into a reduction in childhood obesity in this age-group.

9 The credibility of the results of the study – other factors

Other factors that question the credibility of the study include:

- The outdoor advertising industry has already (since 2017) voluntarily restricted HFSS advertising within 100m of any point along a school boundary as an additional precautionary measure (the CAP Code already applies) and to respect concerns about the impact of HFSS advertising – so the opportunity for further gains from the TfL advertising ban would be reduced.

[10] National Child Measurement Programme, England 2020/21 School Year, NHS Digital, Table 3 and SLG Economics analysis https://digital.nhs.uk/data-and-information/publications/statistical/national-child-measurement-programme/2020-21-school-year

- HFSS food and drink are advertised in the Metro and Evening Standard newspapers which are available for free at all TfL locations and widely read by TfL users mitigating the impact of the TfL advertising ban and again questioning the credibility of the results.
- The first study does not track the usage of TfL services by people in the survey – the study seems to use living in London as a proxy for use of the public transport system. The study divides households between those typically using public transport ay least once a week (51%) and those that use it less than once a week (49%), but 42% of the survey did not provide an answer to that question. The study fails to consider the very significant difference between travelling once a week compared to commuting five days a week. As a fundamental component of their thesis that seeing fewer HFSS adverts on TfL reduces HFSS purchases. It is a serious methodological gap to not take into account the extent to which people in the survey would have had the opportunity to see HFSS adverts on the TfL estate and how that would have changed over the period of the study.

10 Statistical validity of the results

The study reports that the changes detected did not pass the Bonferroni threshold without any comment on what this means or how it impacts on the validity of the results[11]. The Bonferroni threshold test recognises that in carrying out a group of tests on the same dependent variable (as is the case in the study), there is a higher chance of detecting a false-positive in one of the tests in the group even if the Null hypothesis is true (ie it is more likely that the result could have come about by chance rather than be due to the intervention). In this case, with 36 tests, the chance of discovering one or more false positive is 1 - (1-0.05)^36 or 84% - i.e. there is an 84% chance that at least one of the positive results identified is due to chance. Correcting the test so that the study error rate is 5% would require the individual comparisons to have an adjusted significance level of 0.0014 – which is not achieved in the study results.

The study argues that despite failing the Bonferroni threshold test, the sensitivity analysis "*provides support for the observed changes being associated with the TfL policy rather than other events occurring at the same time, or occurring by chance*". However relying on sensitivity analysis to support a proposition is a far weaker and less robust result than

[11] Bonferroni adjustments are based on the following reasoning. If a null hypothesis is true (for instance, two treatment groups in a randomised trial do not differ in terms of cure rates), a significant difference (P<0.05) will be observed by chance once in 20 trials. This is the type I error, or α. When 36 independent tests are performed and the null hypothesis holds for all 36 comparisons, the chance of at least one test being significant is no longer 0.05, but 0.84. The formula for the error rate across the study is 1−(1−α)^n, where n is the number of tests performed. However, the Bonferroni adjustment deflates the α applied to each, so the study-wide error rate remains at 0.05. The adjusted significance level is 1−(1−α)^(1/n) (for 36 variables this is 0.0014)

finding statistically significant evidence for it. The whole point of undertaking detailed statistical analysis is to avoid the need for argument about whether any observed differences are due to events occurring at the same time or by chance. The fact that the analysis fails the Bonferroni test significantly reduces the statistical validity of the results and the robustness of the conclusions.

The Second Study (International Journal of Behavioural Nutrition and Physical Activity)

11 What the second study shows

It is important to recognise that the second study does not provide confirmation of the impacts of the TfL advertising restrictions and is not additional validation of the impact of an advertising ban on consumer behaviour. Instead, this study unquestioningly ***assumes*** the results of the first study (i.e. a 1000 kcal/week/household reduction in calories purchased), it further ***assumes*** that all of this feeds into reduced calories consumed and then calculates the impact of such a reduction in calories consumed on body mass index and therefore obesity, diabetes and cardiovascular disease. There is no verification or validation of the TfL study results, these are taken as an input into the second study calculations.

12 Assumption that calories purchased is directly equated with calories consumed

The second study on health implications assumes that reductions in weekly calories purchased can be directly equated with reductions in weekly calories consumed (i.e. that each calorie not purchased results in an equal reduction in calorie consumption). It justifies this assumption because there did not seem to be a substitution of HFSS to non HFSS foods in the first study results and because HFSS foods are only infrequently wasted compared to other foods. However, the study failed to consider that food purchases outside the home may be a substitute for take-home food purchases. It is quite likely that some of the reductions in take-home purchases of food categories such as chocolate and confectionery, sugary drinks and juice with added sugar would have been substituted by similar products purchased and consumed out of the home; while purchases of food categories such as pizza and ready meals would have been substituted with similar foods consumed in restaurants and cafes. Therefore the assumption that there is a one-to-one direct equivalence between calories purchased and calories consumed is highly questionable. The sort of substitutions outlined above would reduce the health benefits identified – possibly quite considerably.

12 Validity and credibility of the Health Implication study results

Because it uses the first study conducted by the London School of Hygiene and Tropical Medicine as an input into its calculations, the second study suffers from all the same

concerns expressed in the sections above about the first study (that it uses an inappropriate counterfactual, that it misses out over half of the HFSS product groups, that it excludes out of home purchases, that it ignores existing voluntary restrictions, that it ignores the fact that food and drink advertising remains widely available on TfL, that it fails to take account of the extent to which people would have had the opportunity to see HFSS adverts on the TfL estate, that the results are not credible and that the results fail an important statistical validation test).

It is not surprising that the second study shows a reduction in obesity and its consequences, if it assumes the results which are 32 to 109 times higher the expected results from a 9pm TV advertising watershed (see Section 6 above), then of course the health impacts will be proportionately higher. If the second study's input assumptions are not credible, then the results will also not be credible.

13 Conflicting evidence of impact on obesity

As set out in Section 8 above, the actual evidence of childhood obesity in London compared to the control group in the North of England conflicts with the idea that the TfL restrictions translated into a reduction in childhood obesity in London compared with the control group.

14 The costs of the TfL restrictions

The second study assumes that no costs were incurred as a result of the TfL intervention as there was not a reduction in TfL advertising revenue after the ban. This assumption is misconceived - particularly in the context of a study that saw HFSS purchases in London increase after the introduction of the advertising ban, but which assumes that they would have increased by more in the absence of a ban. The question is not whether TfL advertising revenue reduced after the ban, but whether it was lower than it would have been without the ban. It is logical to assume that constraining advertising would have a negative effect on advertising revenue, and the study provides no evidence to counter that assumption. In addition the study ignores the additional day-to-day management costs of operating and policing the policy for TfL and the advertisers.

15 Impacts on NHS and social care costs

The second study estimates that the TfL restrictions will save £218m (95% CI £49m-£438m) in NHS and social care costs over the lifetime of the current population. Life expectancy at birth in England is 79.3 years for males and 83.1 years for females[12], assuming an average of

[12] National life tables – life expectancy in the UK: 2018 to 2020 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2018to2020#:~:text=estimates%20for%20Wales.-,Life%20expectancy%20at%20birth%20in%202018%20to%202020%20was%20estimated,for%20females%20in%20Northern%20Ireland.

81 years, means that the estimated annual cost saving is £2.7m per year (95% CI £0.6m-£5.4m). The cost of obesity to the NHS is over £6.1 bn[13]. Therefore the health cost savings are less than 0.05% (95% CI 0.009% - 0.088%) of the cost of obesity to the NHS – so even at a level that is highly inflated compared with other studies, it is only making the most superficial impact on NHS obesity costs.

16 Conclusions

Having reviewed both studies in detail, we have found that:

- The first study appears to have used an inappropriate counterfactual and the results are a consequence of the construction of the counterfactual rather than demonstrating the impact of the TfL advertising restriction;
- The first study misses out over half (by calories purchased) of the HFSS product groups and as a result does not explain where 57% of the reported reduction in calories comes from;
- The first study suggests results that are 32 to 109 times higher than the expected results from a 9pm watershed ban on HFSS adverts on TV – this is not a credible result;
- The first study excludes out-of-home purchases where one might expect TfL adverts to have a much greater impact, again questioning the credibility of the results;
- There is evidence from the National Child Measurement Programme that the prevalence of overweight and obese children increased in London faster than in any of the control group areas in the North of England – contradicting the results of both studies;
- Existing restrictions on HFSS advertising would have reduced the opportunity for further gains from the TfL restriction, again questioning the credibility of the study results;
- Food and drink advertising continues to be widely available and widely read in free newspapers on the underground further questioning the study results;
- It is a serious methodological gap in the first study not to take into account the extent to which people in the survey would have had the opportunity to see HFSS adverts on the TfL estate and how that would have changed over the period of the study;
- The first study results fail an important statistical test which reduces the statistical validity of the results and the robustness of the conclusions;

[13] In 2014/15 the NHS spent £6.1 billion on treating obesity-related ill health, this is forecast to rise to £9.7 billion per year by 2050, *Tackling obesity The role of the NHS in a whole-system approach,* The Kings Fund https://www.kingsfund.org.uk/sites/default/files/2021-07/Tackling%20obesity.pdf

- The second study does not provide verification or validation of the first study results – it unquestioningly assumes the results of the first study and uses this as an input into its calculations;
- Because it assumes the results from the first study, the second study results are subject to all the concerns set out above about the credibility of the first study;
- The assumption made in the second study that calories purchased is directly equated with calories consumed ignores substitution with food purchases outside the home and food consumed in restaurants and cafes;
- The second study does not properly consider the costs of the advertising ban, particularly the potential loss of TfL advertising income and the costs of operating the advertising restrictions;
- The impacts on NHS and social care costs, even at the highly inflated level assumed, would only make the most superficial impact on NHS obesity costs.

As a result, the two study results should not be relied upon in support of policies that restrict HFSS adverts.

SLG Economics
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