

Reducing population exposure to unhealthy commodity advertising: evaluation of the Bristol Advertising and Sponsorship Policy (pre-intervention Data Collection)

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Plain English Summary

Aims of the Research: This project aimed to collect information on how much people in the city of Bristol and in South Gloucestershire (SG) see advertisements for unhealthy products such as junk foods, alcohol, payday loans, and gambling, and whether they had recently consumed bought these. This is important for a future evaluation of a new advertising policy in Bristol City Council started in 2021.

Background of the Research: Evaluation of a new policy in London to restrict unhealthy foods and drinks advertisement showed positive effects on people buying less of the unhealthy products. Bristol City Council was the first city outside of London to start a similar advertisement policy.

Design and methods used: A survey was sent to people in Bristol and SG. We also collected photos and Google Street View images from advertising spaces. Lastly, we interviewed people who designed and planned the policy.

Results: We received 2,813 completed questionnaires. 58% of respondents reported noticing advertisements for unhealthy products. In Bristol, respondents from lower income areas were more likely to see such advertising.

Advertisement data were collected from 283 sites in Bristol and 65 in SG. In Bristol, 21% of adverts were on foods, 4% on non-alcoholic drinks, 0.1% on gambling. In SG, 17% of adverts were on foods and 7% on non-alcoholic drinks.

We collected information on the policy, including on implementation challenges and resources used through interviews with seven people.

Patient and public involvement: The research proposal was designed with input from the PPI Lead of NIHR Applied Research Collaboration West (ARC West) and with a PPI co-applicant.

Conclusions and future plans: The result of this project will feed into a future full evaluation of the policy. They will also be published in the peer-reviewed literature.

Keywords: advertisement, alcohol, gambling, HFSS, junkfood, mixed methods, outdoor advertising, policy,

BACKGROUND

Commercial determinants of health are described as “strategies and approaches used by the private sector to promote products and choices that are detrimental to health” (1), and in addition to tobacco, alcohol and unhealthy foods, have come to include other health-harming industries such as gambling (2) and payday loans. The exposure of people, and in particular children and adolescents, to unhealthy commodity advertisements is recognised as a risk factor for the development of non-communicable diseases, and is therefore a priority for policy action (3). Outdoor advertising is thought to reach 98% of the UK population at least once a week (4) with 85% reporting exposure to High Fat, Salt or Sugar (HFSS) advertising specifically in the past 7 days with middle and lower socio-economic group reporting higher exposure compared to the high socio-economic group (5). Gradients of exposure to these advertisements in the public space with deprivation and ethnicity are reported in the UK and internationally (6–12); thereby exacerbating existing health inequalities.

Evidence suggests that unhealthy commodity advertising has cumulative effects, especially on children and adolescents, in that attitudes as well as consumption behaviours correlate with the frequency of exposure to marketing messages (13–15), and, for example, exposure to advertisement in recreational environments in the UK was associated with 46% higher odds of obesity (5). Evidence from modelling studies suggests that unhealthy commodities advertising bans can have beneficial reductions in purchase and consumption of such products in the population; For example, a 15% reduction in the quantity of crisps sold (16) and a 5-8% reduction in alcohol consumption (17) if bans were introduced might be possible. A recent evaluation of the banning of HFSS advertising on Transport for London (TfL) owned space (18) reported a 5% reduction in average weekly household purchases of HFSS products (0.7 packs, [95%CI 0.2-1.2]) after 10 months, which was accompanied by a decrease in average weekly household purchases of energy (1015.4 kcal [473.6-1557.2]). The observed changes were larger in more deprived households, households with children and households where the main food shopper was living with overweight or obesity, which indicates such policies may well be targeted to high-risk groups and may have the potential to reduce health inequalities.

Bristol City Council has a long-term, “One City Plan”, which engages public and private sector organisations, large charities, voluntary groups, and grassroots communities to deliver a fairer, healthier and safer city. A key part of this plan is an Advertising and Sponsorship Policy (19) which has been developed to provide a framework for regulating advertising and sponsorship in public places and aims to curb the exposure to advertisements for unhealthy commodities (HFSS products, alcohol and gambling). The advertisement of foods and beverages has been shown to affect nutrition knowledge preferences, purchasing, and consumption in children, but less so in adults (20), with television advertising shown mainly to promote less healthy products (15). Regulating the advertisement of HFSS foods and beverages has been promoted as a policy lever, especially for the prevention of childhood obesity, by the World Health Organization (21). The Bristol Policy specifically includes the prohibition in public spaces or Bristol Council owned buildings or services of:

- *Promotion or availability of foods and drinks that are high in fat, salt and/or sugar (HFSS) as defined by the Department of Health and Social Care’s nutrient profiling model, without exceptions*

- *Promotion or availability of alcoholic drinks. This includes advertisements where there is a range of drinks featured, some of which are alcoholic.*
- *Promotion of a food or drink brand (including food and drink service companies or ordering services) where no food or drink product is featured directly. These brands and services will only be able to place advertisements if the advertisement promotes healthier options (i.e. non-HFSS products) as the basis of the copy.*

The Bristol HFSS advertisement policy includes any HFSS products shown in any meal setting, including those for restaurants, websites that display information from other online sources for purchasing of goods or services (aggregator platforms such as Amazon; for online advertisements) and delivery services. It is based on the UK Nutrient Profiles Model (NPM) (22).

The Bristol policy also includes:

- *Promotion or availability of tobacco products or substitute tobacco products, weapons, gambling, or illegal drugs*
- *Advertising of loan advancers which meet the Financial Standards Authority's definition of 'High Cost Short Term (HCST)'*

Similar to advertisement for HFSS (and alcohol and tobacco products), associations between gambling advertisement and adverse impact, especially on young people, have been described (23,24), including on self-perceived at-risk or problematic gambling (25); mainly through triggering impulses to gamble (26).

This new Advertisement Policy came into force at the end of 2021, but practically came into effect in April 2022 when the first existing advertising contracts came to an end.

AIMS AND OBJECTIVES

This research aimed to prospectively collect baseline data prior to the implementation of the new advertisement policy in the exposed area of Bristol and a comparable control residents populations in an adjacent local authority (South Gloucestershire) for a future comparison with post-intervention follow-up data in a comprehensive evaluation of the Policy.

This baseline data collection was designed to collect data on:

- 1 Self-reported recent exposure to advertisement of HFSS foods, alcohol, and gambling.
- 2 Self-reported recent purchase and consumption of HFSS products, alcohol, or gambling
- 3 Measured exposure of advertisements displayed at council-owned sites throughout the city of Bristol and the control area of South Gloucestershire

And:

- 4 Gather stakeholder information on the rationale the policy, implementation challenges, its intended impacts, and resources used.
- 5 Identify data requirements, sources, and availability to conduct the economic evaluation of the policy

METHODS

Study design and setting

Cross-sectional data was collected across the intervention area of Bristol, and the comparator area of South Gloucestershire. Data were collected in both areas between January and March 2022, prior to the practical implementation of the advertising policy, and constitute 'baseline' data.

Population survey (Objectives 1 and 2)

In Bristol, a digital survey was sent to the ~1,000 participants of the Bristol Citizens' Panel, which was supplemented by subscribers to the survey newsletter (~3,000 people) and stakeholder contacts (~200 equality organisations and partner organisations). In addition, paper copies were sent to the most deprived 20% of communities and provided at libraries and on request to digitally excluded citizens and others who requested it. Alternative formats were provided to people with specific accessibility needs. Together these formed the basis of the survey methodology routinely used by the Council to get information from an approximately representative sample of the Bristol population. In the control area of South Gloucestershire, the survey was distributed using similar methods, which included sending to all participants in the comparable South Gloucestershire Viewpoint Panel, which currently has about 2,300 participants, as well as the distribution of paper copies.

Data were collected on demographics including age, sex, ethnicity, disability, household set up, occupation, bus use, postcode, and whether respondents had been in their local area during the week prior to completing the survey. The main survey included questions regarding observations of advertising for HFSS products, alcohol and gambling, as well as consumption of such products. All questions concerned the week prior to questionnaire completion. Data were collated by the councils in the two areas; postcodes were translated to lower super output area (LSOA) and all identifying information was removed before transfer to the University of Bristol for analysis.

Exposure Assessment (Objective 3)

Advertising locations

A list of all council owned advertising sites, 283 in Bristol and 65 in South Gloucestershire, was provided by both councils, alongside latitude and longitude co-ordinates to locate sites. Adverts on display were captured using both Google Street View (GSV) and in-person auditing, to improve data collection accuracy due to geocoding errors, obstructed sites and safety concerns (27). Once advertising locations were identified, individual pictures were taken for each panel on display.

For the GSV method, three fieldworkers undertook training on how to navigate GSV and take screenshots from different angles, prior to data collection. For the in-person auditing, fieldworkers travelled to each advertising site and used their phone to capture advertisements on display. Information on bus stop address, date picture was taken (in-person or in GSV) and number of advertising panels on each site were captured and used for coding purposes.

Coding of advertisements

Adverts were coded by ZT according to three dimensions: 1) being subject to the policy (yes/no), specifically aimed at children and adolescents (yes/no) if they displayed products specifically for children, e.g., kids yoghurt, and product type (food, non-alcoholic drink, alcoholic drink, gambling, pay day loan, other). Information on brand advertised was additionally captured to compare with brands advertised post-implementation of the policy. Adverts that displayed foods and non-alcoholic drinks were classified as HFSS, and therefore subject to the policy, based on the UK Nutrient Profile Model (NPM). For each product on display, information on energy (kJ), saturated fat (g), sugar (g), sodium (mg), fibre (g), protein (g) and percentage of fruit, vegetables and nuts (%) per 100g of product was identified based on product websites or the McCance and Widdowson's Composition of Food Integrated Dataset (CoFID) (28).

Advertisements that displayed any form of alcohol, gambling and pay day loans were classified as subject to the policy. For some adverts, it was not possible to calculate the nutrient profile score (7% in Bristol and 11% in South Gloucestershire) due to lack of portion size information or compositional data from product websites and/or CoFID, or products being out of the market, e.g. seasonal burgers. Coding images that were captured via GSV was challenging as many images were blurry or an image could not be taken from the right angle in order to be able to identify the product on display (Figure 1).

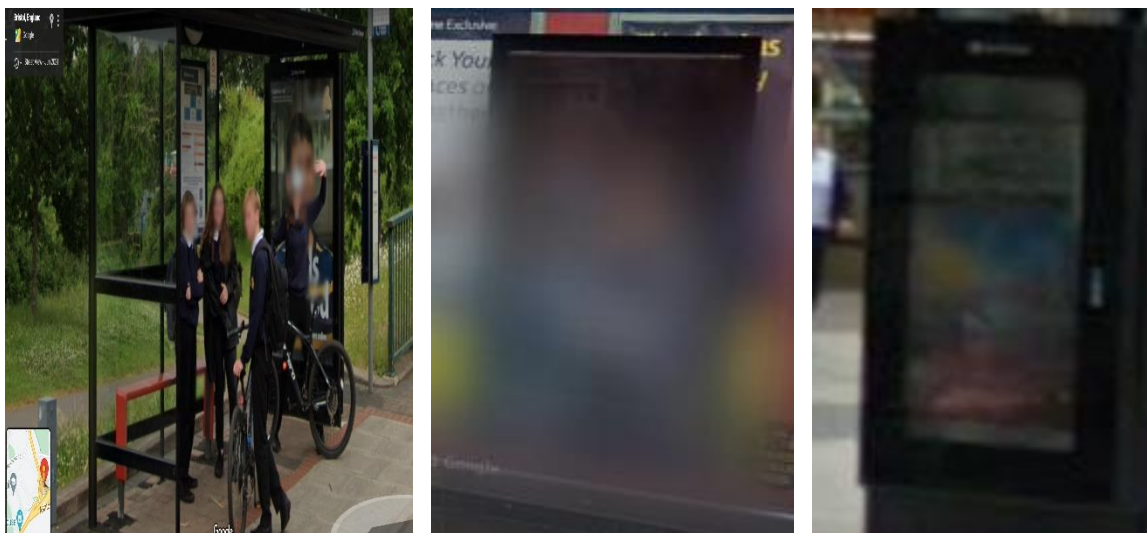


Figure 1: Three exemplar Google Street View images of advertisement spaces.

Interviews (Objective 4 and 5)

Semi-structured interviews were conducted with seven stakeholders involved in the design and initial implementation of the Advertising Policy. Stakeholders worked either in the council (n=4), in a voluntary sector organisation (n=2), or were a local elected councillor (n=1). Interviewees were purposefully sampled based on the relationships held by the research team with Bristol City Council. In addition, snowball sampling was used within the interviews to identify others who had been involved in the policy. An interview guide was developed,

informed by the aims of the research, to help standardise the lines of inquiry between interviewees. Interviews lasted between 30 and 90 minutes. Interview recordings were transcribed verbatim.

Framework analysis (29) was used to code and organise the data, on an interviewee-by-interviewee basis, so that comparisons could be drawn between responses.

KEY RESULTS

Population survey

We received 2,813 completed questionnaires. After removing 39 who resided outside of our two areas, 104 with missing address information, 77 who were out of the area all week, and 33 who were missing this information, we included 1,123 responses from Bristol and 1,437 from South Gloucestershire. Population demographics are shown in Table A1 in the Appendix. Responses were received from most lower super output areas in Bristol and South Gloucestershire, although this was not equally distributed with most responses from more deprived areas (Figure Appendix (A) 1).

In the week prior to questionnaire completion, 58% of respondents reported noticing advertisements for HFSS products, alcohol and/or gambling (Table 1). This was higher in Bristol, where most advertisements were seen on bus stops and billboards, compared to South Gloucestershire (Figure A2). Most advertisements were for HFSS products (41%), and the most observed advertising for HFSS products was for fast food (34%) (Table 1; Figure A3). Advertisements aimed at children were observed for 16% of advertisements, which was again mostly fast food and was higher in Bristol than in South Gloucestershire (Table 1; Figure A4).

Table 1. An summary overview of the observations of advertising in Bristol, South Gloucestershire, and combined

	Bristol (n=1,123)		South Gloucestershire (n=1,437)		Overall (n=2,560)	
	n	%	n	%	n	%
Any HFSS food & drink	590	52.5%	447	31.1%	1037	40.5%
Any HFSS food & drink for children	259	23.1%	158	11.0%	417	16.3%
Any alcoholic drinks	237	21.1%	188	13.1%	425	16.6%
Any establishments serving alcohol	199	17.7%	342	23.8%	541	21.1%
Any gambling companies	376	33.5%	356	24.8%	732	28.6%

HFSS=Food and drink high in fat, salt and/or sugar

17% of respondents reported seeing advertisements for alcohol drinks in the week prior to completing the survey; mostly for beers and spirits (Table 1; Figure A5), and 29% reported seeing gambling advertisements; mostly for a variety of gambling operators (Figure A6).

Younger respondents were more likely to observe advertising than older respondents. This was particularly true for HFSS products (73% in 11-34 year olds vs. 42% in 65+ year olds in Bristol;

45% in 11-34 year olds vs. 27% in 65+ year olds in South Gloucestershire) (Figure A7). There was no strong relationship with age for any other types of advertising. In Bristol, respondents of higher IMD (less deprived) were less likely to see advertising for HFSS products, HFSS products directed at children, and gambling, than those of lower IMD (more deprived); this pattern was less clear in South Gloucestershire (Figure A8).

Self-reported advertisement exposure to HFSS products, alcohol or gambling were not correlated with respondents' sex (Figure A9) or ethnicity (Figure A10).

Exposure Assessment

Data were collected from 348 Council-owned advertising sites in Bristol (N=283) and South Gloucestershire (N=65). Overall, images captured were 974 across both areas, 95% of which displayed adverts at the time (N=928). In Bristol, 836 images with adverts were captured between February and March 2022 and in South Gloucestershire 92 images with adverts were captured between March and April 2022. Google Street View (GSV) images were captured between July 2019 and December 2021. A description of captured images is presented in Table 2.

Table 2: Summary overview of the in-person audit captured advertisements

	Overall adverts				Adverts subject to the policy ¹			
	Bristol		South Gloucestershire		Bristol		South Gloucestershire	
	N	%	N	%	N	%	N	%
Total number	836	100	92	100	97	13	1	1
Aimed at children & adolescents	9	1	3	3	3	3	0	0
Type of advertised product								
Food	178	21	116	17	94	97	1	100
Drink	32	4	6	7	2	2	0	0
Gambling	1	0.1	0	0	1	1	0	0
Other	625	75	70	76	0	0	0	0

¹For 7% of Bristol adverts and 11% of South Gloucestershire adverts, their nutrient profile score was not calculated due to missing information on portion size or compositional data.

In Bristol, 21% of the overall adverts on display were on foods, 4% on non-alcoholic drinks, 0.1% on gambling and the rest were on other, unrelated, products such as charities, mobile networks and recruitment websites (75%). There were no adverts on alcohol or pay day loans. Only 1% of adverts were specifically aimed at children and adolescents and 13% would be subject to the Advertisement Policy.

In South Gloucestershire, 17% of the overall adverts on display were on foods, 7% on non-alcoholic drinks and the rest were on unrelated products (76%). Only 3% of adverts were specifically aimed at children and adolescents and 1% was subject to the policy. There were also no adverts on alcohol or pay day loans.

Examples of adverts that would be subject to the Advertisement Policy are presented in Figure 2 and for reference example adverts not subject to the policy in Figure 3.



Figure 2: Examples of adverts subject to the policy (McDonalds milkshake, LU biscuits and Cadbury chocolate)

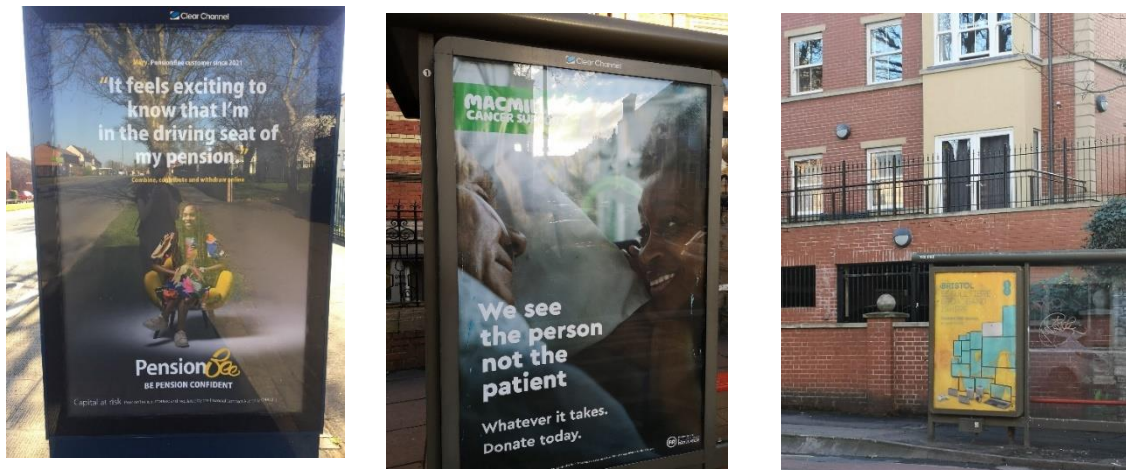


Figure 3: Examples of adverts not subject to the policy (Pensionbee, Macmillan, EE)

Interviews

The results of the interviews are organised around five main themes: 1) the history of the policy, 2) the processes for planning the policy, 3) the anticipated impacts on the system, 4) the initial barriers and facilitators, and 5) the future plans for the policy.

History of the Policy

Interviewees noted that there was not an extensive advertising policy in place before the development of the Bristol Advertising and Sponsorship Policy. There was a commitment being

made by the council to embed health into all policies, with a core focus on reducing health inequalities across the city. This was supported by the city Mayor. The council had also recently signed up to a national healthy weight initiative which required the support of local leaders (from the council and the NHS). Interviewees, therefore, stated that the climate in Bristol was already, in principle, supportive of such a policy.

Outside of the council, a third sector organisation had been campaigning within Bristol about the harms associated with advertising. Their intention was to make senior leaders, and the public, more aware of these harms. This campaigning included writing to all councillors within Bristol.

Lastly, there was the precedent of the Transport for London (TfL) “junk food” advertising policy which contributed to the ambition of Bristol City Council to design and implement their own policy (See Barriers and Facilitators theme).

Processes for Planning of the Policy

The policy took approximately 18 months to develop, with the first 12 months drafting the policy (in between other commitments), and the last six months a concerted effort to engage wider stakeholders and move the policy through the decision-making processes. Collectively, and with the input of Public Health colleagues, an evidence- and business-case for the policy was created. Interviewees stated that it was easier to build the case for the policy because of the “groundwork” having already been done by the TfL team.

Following a council approvals processes, the policy was then passed for implementation. An internal communications plan was created to help colleagues across the council to operationalise the policy. It also clarified who was accountable for the day-to-day administration related to the policy. Much of this rests with the internal communications team and the organisation that manage the council-owned advertising spaces.

*“I would say actually in terms of policy development it was probably relatively light touch actually!”
– Participant 2, Bristol City Council*

Anticipated Impacts on the System

A reduction in the purchase of HFSS products was one of the main impacts anticipated by interviewees. They believed that this would occur due to the banning of such advertisements, especially in inner-city areas which tend to contain more deprived neighbourhoods. As such, some interviewees thought that the policy would contribute to a reduction in health inequalities. Longer-term, several interviewees suggested that this would contribute to lower levels of obesity, improved population health, and a reduced demand for health and social care.

However, other interviewees questioned how likely these impacts would be. Firstly, some thought that companies would adapt their advertising and either increase the non-HFSS products in their portfolio (i.e. healthier substitutes) or move more of their advertising online. Secondly, others thought the policy would have a limited impact due to the volume of

advertising space held by the council. It was estimated that only about 30% of all advertising space was council-owned.

There were inconsistent views on the impact that the policy may have on revenue generated through advertising.

Initial Barriers and Facilitators

Multiple interviewees highlighted that the culture within Bristol – across the council and the public – is supportive of these progressive policies, referring to Bristol as having a “counter-culture”. This made it possibly easier for the policy to pass through the respective hoops in the council. Additionally, the council had a joined-up vision for how they sought to address health inequalities across the city, and the advertising policy would contribute well to this, rather than push against it.

“Bristol's a very radical place. The population are consistently ahead of the politicians in terms of the policies they want to see” – Participant 7, Bristol City Council

The early work in developing the policy was made easier because of the TfL blueprint. This included guidance on how to operationalise more complicated aspects of the policy, such as the Nutrient Profile Model. There was also a belief by some interviewees that the policy was straight-forward for companies to adapt their advertising to – the idea that “no brand is banned” meant that products, rather than, companies were directly impacted.

There were several barriers mentioned that challenged the initial design, implementation, and efficacy of the advertising policy. The first was that because the council only owned a small proportion of the advertising space in Bristol, the efficacy of the policy was questioned. The majority of the advertising space was privately owned. Second, from a practical perspective, there was not a dedicated project officer to help implement and monitor the policy. This meant that there was not a person, or team, in place to frequently monitor whether companies were complying with the policy. There were similar concerns about other aspects of the policy, in particular, how the restrictions around alcohol advertising may be detrimental to the efforts of other departments in the council (e.g. those concerned with the night-time economy). Additionally, it was noted that there was some conflict with commercial activities which bring in money to the city. Finally, some of the negative impacts represented barriers to several interviewees, including: a) negative impact on revenue, b) pushback from industry, and c) industry adapting to ensure that consumption of products is not reduced (e.g. via online advertising or advertising alternative “healthier” items).

Future Plans for the Policy

The Advertising and Sponsorship policy was referred to as a “first iteration”, and as such, interviewees thought that this policy would be built upon in the future. For example, there was a desire from many, during the consultation process, to include the advertising of high-carbon and unsustainable products within the policy. This was not included due to difficulties around how to operationalise “high-carbon” from an advertising perspective. Other interviewees hoped that they would find ways to extend the policy to non-council owned advertising spaces and to local sponsorship deals (e.g. sports teams).

Feasibility Economic Evaluation

Information on available data for a future economic evaluation was collected during the interviews. We conclude that an economic evaluation for this policy will be suitable. We further conclude that in a future evaluation modelling exercises will be required necessary; specifically, we aim to use Markov models to account for cost and health outcomes. Assumptions that will inform such models in a future evaluation have been obtained during the semi-structured interviews. Additionally, the team has also now insights into how to identify, measure and evaluate the resources used for this policy.

CONCLUSIONS AND FURTHER WORK

This research aimed to prospectively collect baseline data prior to the implementation of the new Advertisement Policy in the exposed (Bristol) and a comparable control residents' populations (South Gloucestershire). This will allow a future comparison with post-intervention follow-up data in a comprehensive evaluation of the Policy. The research had five specific Objectives, all of which we were able to meet.

Together with Bristol and South Gloucestershire Councils we obtained just under 3,000 responses from residents about their perceived exposure to HFSS foods, alcohol, and gambling (Objective 1) and their recent purchase and consumption of these products (Objective 2). We are preparing a paper for submission to a peer reviewed journal describing these data. These data will further inform a future evaluation of the impact of the Advertisement Policy.

We conducted an extensive exposure measurement survey in which we collect exposure of advertisements displayed at 348 council-owned sites throughout the city of Bristol and the control area of South Gloucestershire using two independent exposure assessment methods: *in situ* photos collected at each site and the use of Google Street View (Objective 3). These data provide an insight in the exposure and its temporal variability, as well as an assessment of the validity of self-reported exposure collected in the surveys. Moreover, through coding advertisements as subject to the policy or not, they provide an objective exposure metric for a future evaluation of the Advertisement Policy.

We collected stakeholder information on the rationale the rationale for the policy, implementation challenges, its intended impacts, and resources used through interviews with seven stakeholders involved in the design and initial implementation of the Advertising Policy (Objective 4). These data capture the experience and learning from the planning and initial implementation of the advertising policy in Bristol to provide context to a future evaluation of the Policy. The main findings from this work will be incorporated in the baseline data paper currently being developed for submission to a peer-reviewed journal. Through these interviews we further obtained the required information on data requirements, sources and availability to conduct the economic evaluation of the policy if a full evaluation will be funded (Objective 5).

Future work

The work described in this report will form the basis for an academic article which will be submitted to a peer-reviewed journal. However, the main use for the data gathered in this project will be to provide the baseline data for a future comparison with similar data collected post-implementation of the policy in a full evaluation, and provide the context for the development and implementation of the Policy. A Stage 1 research grant application for the full evaluation has been submitted to the NIHR Public Health Research Funding Board and will be evaluated in its June 2022 meeting.

PATIENT AND PUBLIC INVOLVEMENT

Aim: PPI was involved from conception of the study throughout with the aim of ensuring the right population groups were included in the data collection, that any materials (such as the resident survey) asked the right questions and would be easy to understand by the target populations, and that any dissemination materials including the plain English abstracts would be easy to understand.

Methods: The current work was developed and conducted together with a PPI representative (SB) as co-investigator. It further included input from the NIHR ARC West PPI Lead during the study design phase. SB provided input in the design of the study and interpretation of the results, and, together with the NIHR ARC West 'plain writing team' revised survey texts and plain English abstract. SB has similarly provided input into this report, the research proposal for the full evaluation and is a co-investigator as well.

Conclusion: If funded, PPI&E representation for the full evaluation will be expanded by two additional members from the resident Bristol population. Interested residents flagged this when completing the survey and we will contact them (through the Councils who hold these details) for involvement in due course.

Reflective/critical perspective: SB was closely involved in all aspects of the study, including development of materials and interpretations of results, and attended several of the meetings. This worked very well, and SB is part of the investigator team for a future full evaluation. However, she was only one person, and in future work we will expand PPI to include at least two more people from different segments of the population.

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APPENDIX

Table A1 Respondent characteristics

	Bristol (n=1,123)		South Gloucestershire (n=1,437)		Overall (n=2,560)	
	n	%	n	%	n	%
Sex						
Female	628	55.9%	880	61.2%	1508	58.9%
Male	461	41.1%	542	37.7%	1003	39.2%
Other	5	0.4%	1	0.1%	6	0.2%
Missing	29	2.6%	14	1.0%	43	1.7%
Age						
11-34 years	183	16.3%	82	5.7%	265	10.4%
35-44 years	159	14.2%	104	7.2%	263	10.3%
45-64 years	427	38.0%	476	33.1%	903	35.3%
65+ years	342	30.5%	760	52.9%	1102	43.0%
Missing	12	1.1%	15	1.0%	27	1.1%
Ethnicity						
White	994	88.5%	1295	90.1%	2289	89.4%
Non-white	96	8.5%	87	6.1%	183	7.1%
Missing	33	2.9%	55	3.8%	88	3.4%
Household						
Lives alone	370	32.9%	370	25.7%	740	28.9%
Couple	343	30.5%	667	46.4%	1010	39.5%
Family	348	31.0%	376	26.2%	724	28.3%
Sharers	52	4.6%	10	0.7%	62	2.4%
Other	5	0.4%	3	0.2%	8	0.3%
Missing	5	0.4%	11	0.8%	16	0.6%
Deprivation (IMD decile)						
1	600	53.4%	0	0.0%	600	23.4%
2	60	5.3%	8	0.6%	68	2.7%
3	61	5.4%	60	4.2%	121	4.7%
4	80	7.1%	125	8.7%	205	8.0%
5	75	6.7%	106	7.4%	181	7.1%
6	35	3.1%	120	8.4%	155	6.1%
7	75	6.7%	209	14.5%	284	11.1%
8	51	4.5%	179	12.5%	230	9.0%
9	49	4.4%	168	11.7%	217	8.5%
10	37	3.3%	462	32.2%	499	19.5%
Missing	0	0.0%	0	0.0%	0	0.0%

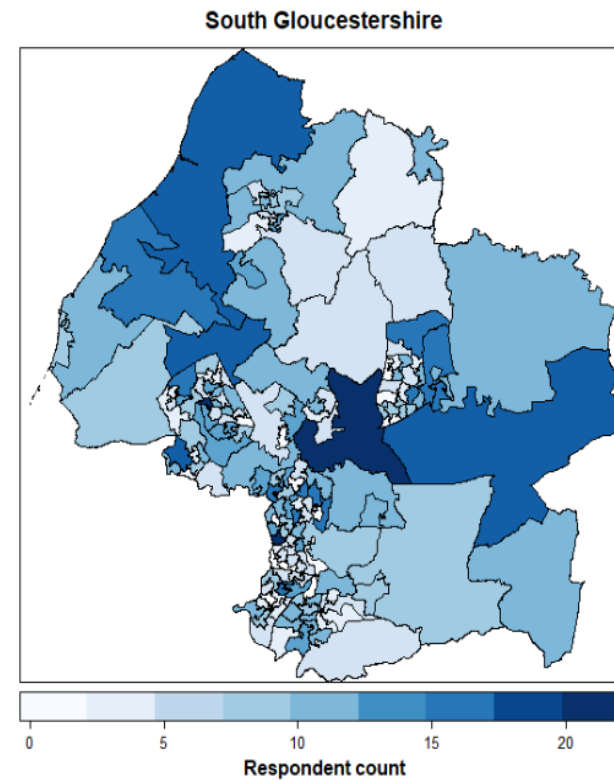
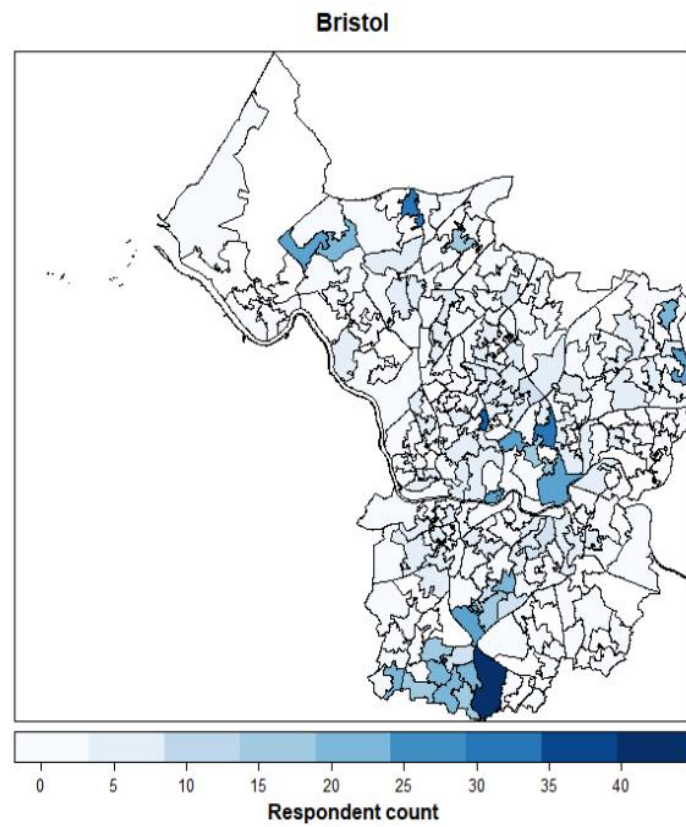


Figure A1. Graphical overview of response rates at Lower Super Output Area geographical aggregation for Bristol and South Gloucestershire

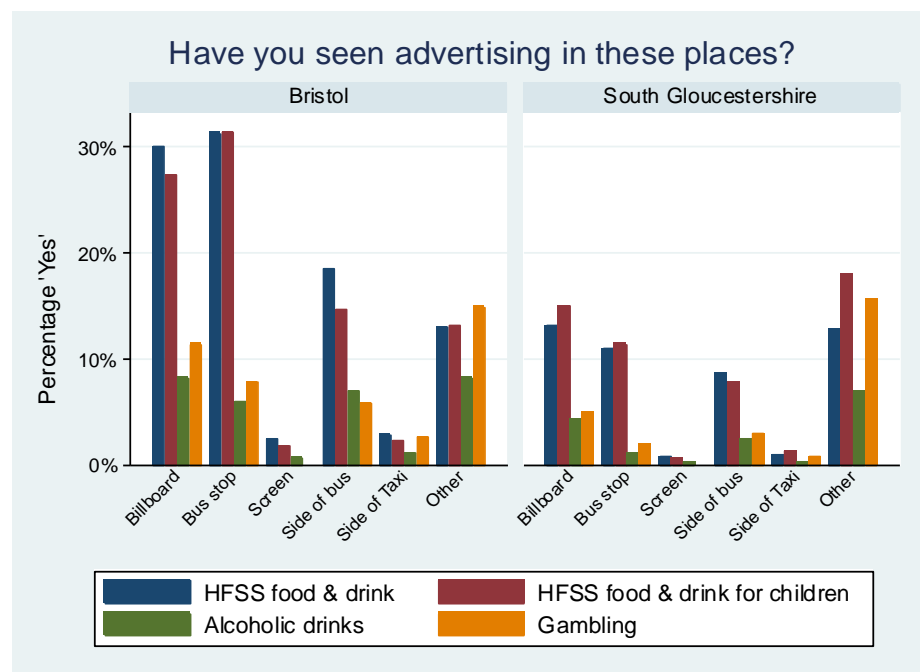


Figure A2. Reported advertisement locations for unhealthy commodities in Bristol and South Gloucestershire.

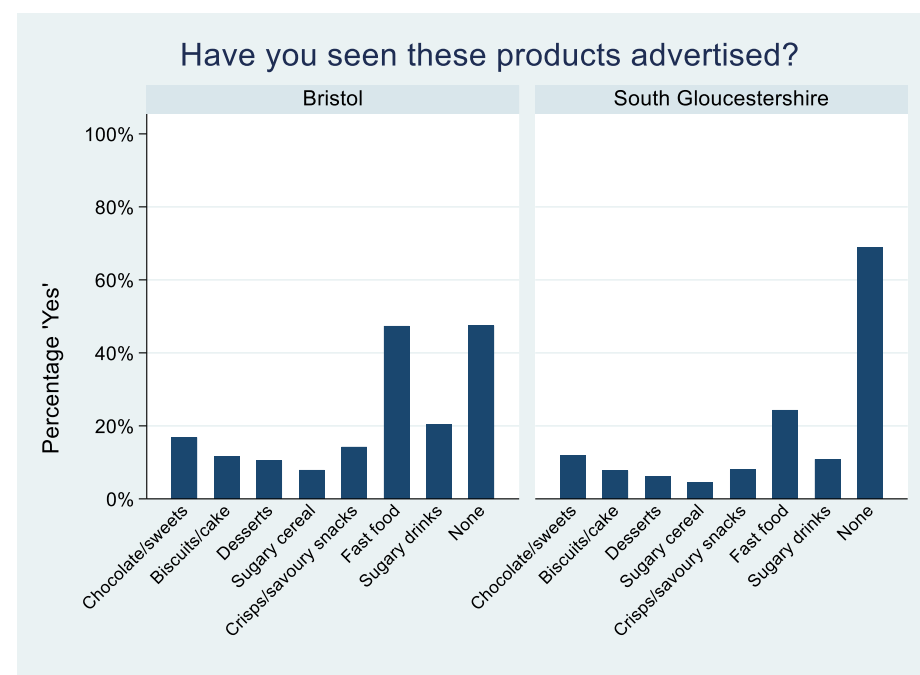


Figure A3. Specific types of HFSS advertisements in Bristol and South Gloucestershire

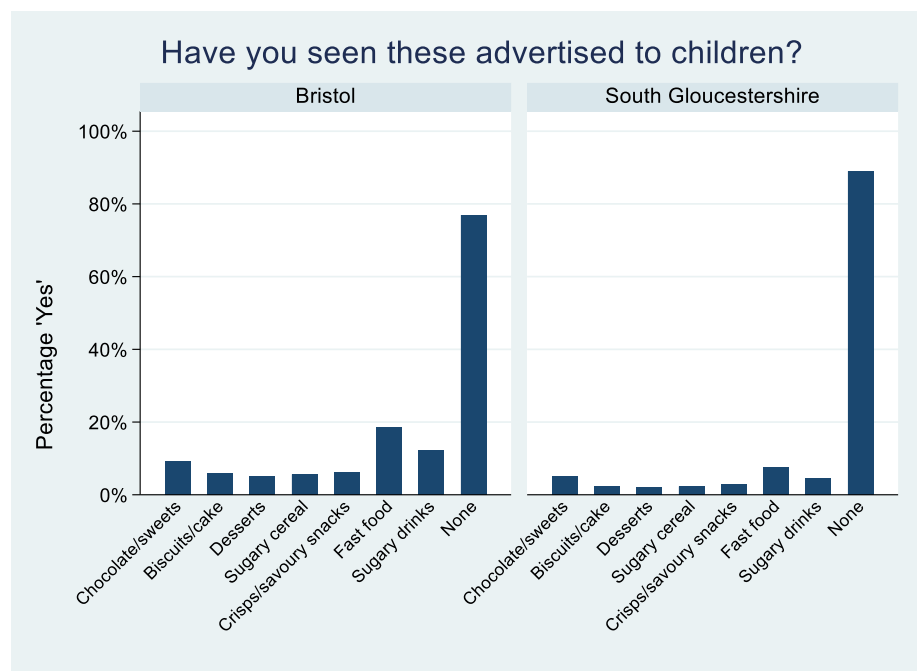


Figure A4. Types of HFSS advertisements observed that were aimed at children.

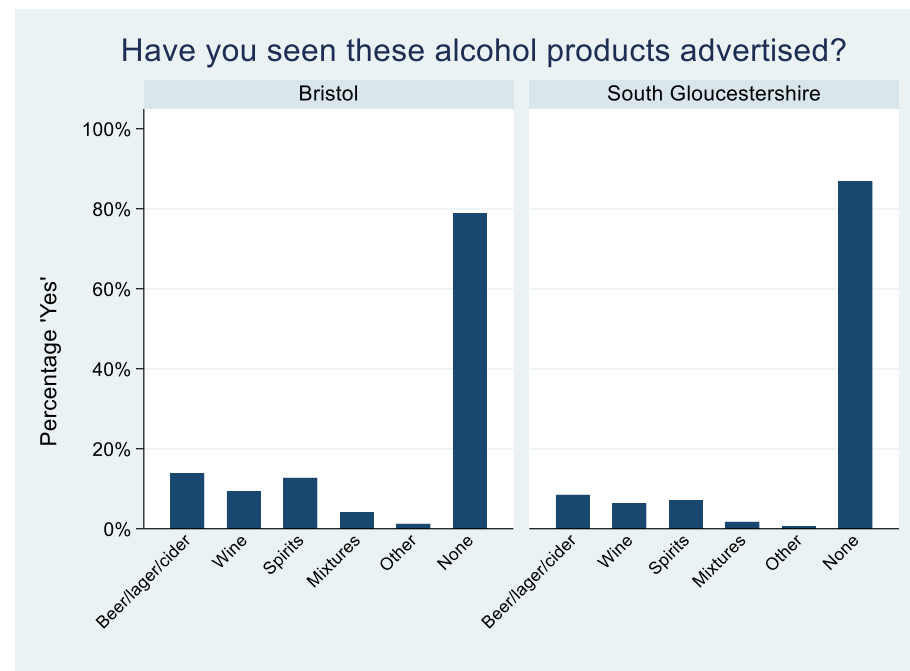


Figure A5. Types of alcohol advertisement observed

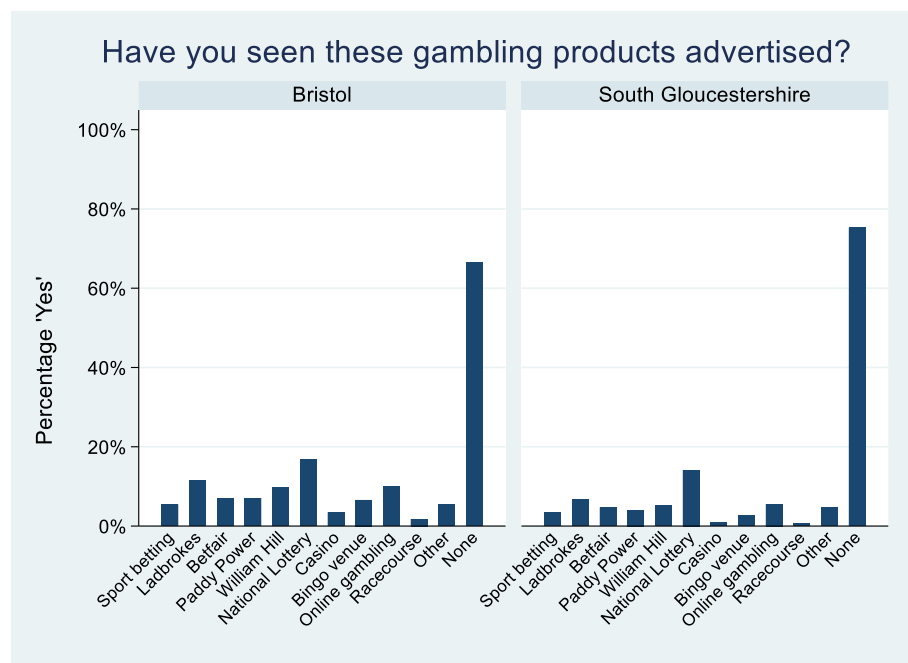


Figure A6. Types of gambling advertisements observed.

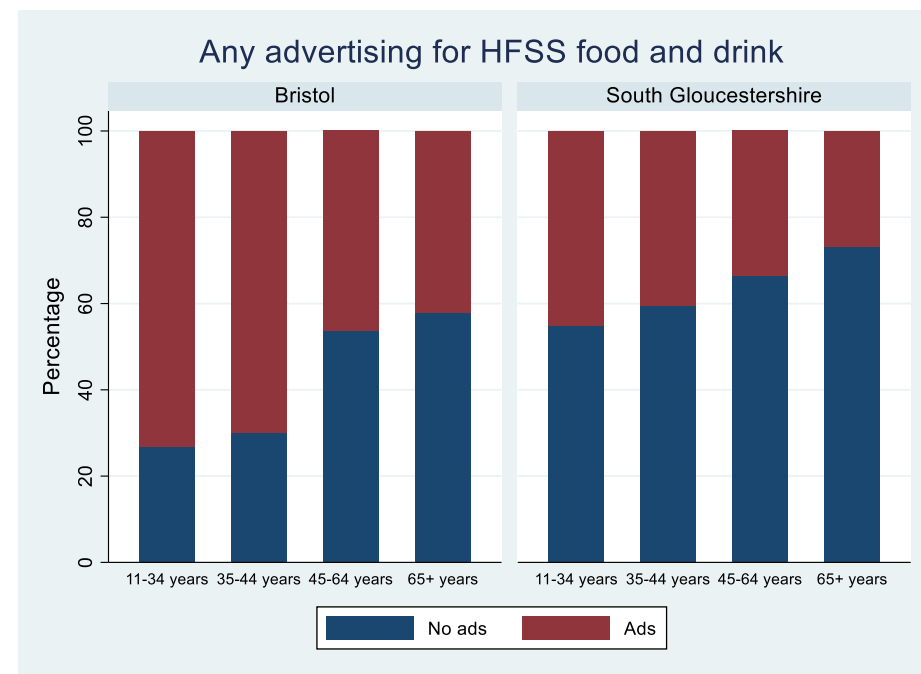


Figure A7. Advertisement of HFSS products by age category

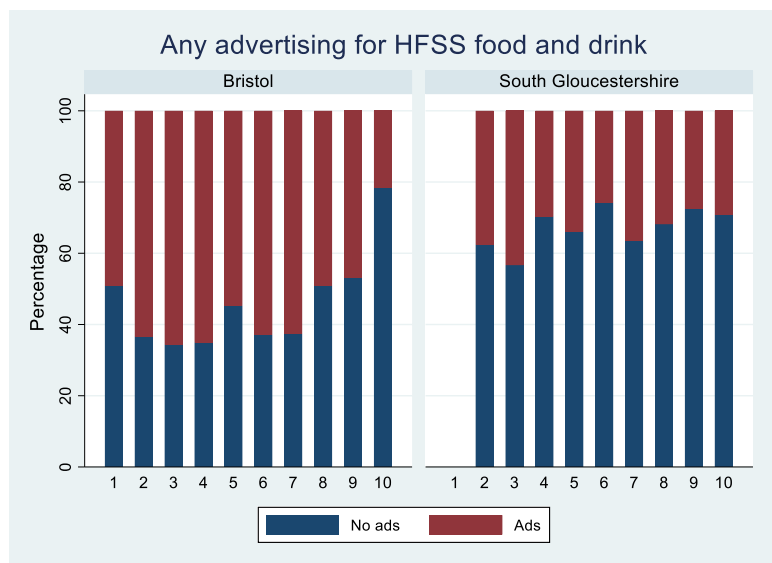


Figure A8. Advertisement of HFSS products by LSOA deprivation (IMD decile)

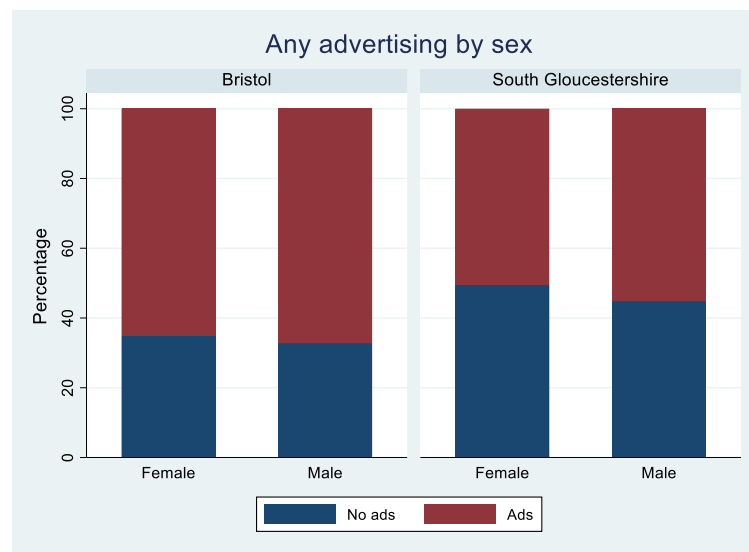


Figure A9. Advertisement of HFSS products, alcohol or gambling by sex

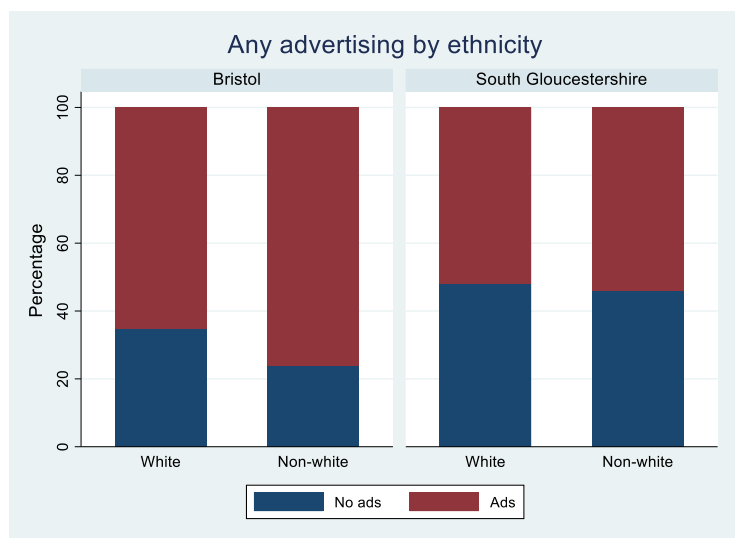


Figure A10. Advertisement of HFSS products, alcohol or gambling by ethnicity