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Socio-demographic differences in public opinion about obesity prevention regulations and underlying reasons for support or opposition: results from a South Australian population survey

Lucy Farrell, Vivienne Moore, Megan Warin, Jackie Street

ABSTRACT

Objective: Australian policymakers, as elsewhere, have acknowledged that the passage of regulatory reform for obesity prevention is likely to be facilitated or hindered by public opinion. Accordingly, we investigated current public views about regulations that target population nutrition.

Methods: Multi-stage random sample of households, with the target individual completing a personal interview. In total, 2,732 persons (54.5% response rate) aged 15 years and over in South Australia were surveyed about four distinct regulations intending to address obesity. Levels of support for each intervention and reasons for support/opposition were ascertained.

Results: Public support for the regulations was mixed: support was highest for mandatory front-of-pack nutrition labelling and lowest for taxes on unhealthy high-fat foods and sugar-sweetened drinks. High levels of support for nutrition labels were underpinned by a belief that this measure would educate other people about nutrition. Lower levels of support for exclusion zones for fast food outlets near schools or taxes on food or soft drink were associated with concerns about government overreach and the questionable effectiveness of these measures in driving changes to dietary behaviours. Levels of support for each regulation, and reasons for support or opposition, differed by gender, age and socio-economic status.

Conclusions: Socio-demographic differences in support reflect gendered responsibilities for food provision and concerns about the material constraints of socio-economic deprivation that are instructive for policy actors. More targeted and reciprocal engagement with key target populations may offer insights to optimise the acceptability of preventive obesity regulations and minimise unintended consequences.

Key words: Obesity, inequality, nutrition policy, health policy, public opinion, survey

1 INTRODUCTION

The adverse social, health and economic impacts of high obesity prevalence in many countries has increasingly focused policymakers' attention on the need to find ways to address this issue. In Australia, preventive strategies employed to date have predominantly been directed towards information provision, through dietary and physical activity guidelines, social marketing campaigns, and school-based programs (Department of Health, 2014; National Preventative Health Taskforce, 2009a). These approaches have failed to bring about substantive reductions in the prevalence of obesity and have been criticised for their emphasis on individual behaviour change while discounting the socially contingent nature of obesity and its complex determinants (Baum and Fisher, 2014; Warin *et al.*, 2015).

The potential for regulatory policies to reduce obesity prevalence is widely recognised (National Preventative Health Taskforce, 2009a; Swinburn, 2008). By addressing the social and environmental drivers of diet, regulations may reduce the ubiquity and desirability of unhealthy foods (Sacks *et al.*, 2008; Story *et al.*, 2008). A range of regulatory approaches to obesity prevention has been identified (Gostin, 2007; Magnusson, 2008; Sacks *et al.*, 2008) and implemented in some jurisdictions globally (Capacci *et al.*, 2012; Lankford *et al.*, 2013; Sisnowski *et al.*, 2015). However, implementation of regulatory measures is often complicated by political and ideological issues (Baker et al., 2017; Baum and Fisher, 2014).

Uptake of preventive obesity regulations in Australia has been limited (Swinburn and Wood, 2013). Even where there is political will to introduce such measures, policymakers have acknowledged that regulatory reform for obesity prevention is likely to be dependent on public support (Chung *et al.*, 2012; Crammond *et al.*, 2013). Generating evidence of public support for obesity prevention regulations is therefore essential for the implementation of proposed measures.

Previous Australian surveys of public opinion about obesity regulations have found that support for regulations is high (Morley *et al.*, 2012; Pollard *et al.*, 2013). However, sampling has not been

designed to be representative, or telephone interviewing has been used, so generalisability is therefore questionable.[1]

Underlying rationales for public preferences for, or objections to, obesity prevention policies have not yet been examined. Existing studies have inferred that high levels of public support for obesity policies are indicative of public agreement with health promotion practitioners' conceptual explanations for health behaviours. For example, in their survey of Australian grocery buyers, Morley and colleagues found that 84% of participants supported kilojoule disclosure on menu boards of chain restaurants, despite few participants using kilojoule disclosures on food packaging.[2] The researchers surmised that this incongruity may be 'due to consumers experiencing difficulties interpreting nutrition information panels' (2012:90). Qualitative work on obesity discourse has highlighted that the reason for such discrepant findings may instead relate to an underlying moralism about obesity, including beliefs about failures of individual responsibility and the ignorance and laziness of obese individuals (Farrell *et al.*, 2015). From this perspective, strong support for kilojoule disclosures on menus amongst those who do not use similar information on food packaging may reflect an 'othering' of the obesity problem, wherein other people are believed to need this information in order to overcome ignorance about nutrition, but the respondents believe themselves to be knowledgeable on the topic (Farrell *et al.*, 2016).

As Diepeveen *et al.* (2013) argue, governments need to consider public attitudes about possible public health interventions as part of their democratic accountability. However, levels of public support for obesity prevention regulations and associated reasoning may differ between population groups and according to the type of intervention. This has received little attention as an area of academic study, despite the clear relevance of these considerations to policy development. Such understandings are required in order to facilitate publically acceptable policymaking. As well, these understandings may

[1] While Pollard *et al.* assert that post-estimation weighting addresses biases arising through their telephone sampling methodology, there is potential for attitudinal data in particular to be confounded by collection methodology. Telephone respondents have been found to be more likely than face-to-face respondents to provide satisficing and socially desirable responses to these questions (Holbrook *et al.*, 2003). Additionally, Pollard *et al.*'s study was limited to those aged 18 to 64 years.

[2] A Nutrition Information Panel providing information on the average amount of energy and other nutrition information is required on most packaged foods sold in Australia. This is regulated by Food Standards Australia New Zealand

inform the current public debate, often dominated by highly moralised views (Farrell *et al.*, 2015), and may form a foundation for more targeted public engagement in order to identify more acceptable policy approaches.

To this end, our research sought to answer the following questions:

1. What is the overall level of support for or opposition to specific obesity regulations?
2. Does support for, or opposition to, specific obesity regulations vary according to gender, age, and socio-economic status?
3. What are the main reasons underlying support for, or opposition to, specific obesity regulations? How do these vary according to socio-demographic characteristics?

2 METHODS

2.1 Sample selection and interview procedure

Data were collected as part of the 2014 South Australian Health Omnibus Survey (HOS), an annual health survey designed to be representative of people aged 15 years and over. Face-to-face interviews were conducted by Harrison Health Research, using a computer-assisted personal interview questionnaire. The sample size was 2,732 (54.5% response rate).

The survey procedure entailed multiple stages of cluster sampling. First, a random sample of small areas (Australian Bureau of Statistics Statistical Area Level One) was selected with a sampling procedure that meant the probability of selection was proportional to size. Then, within each area, a random sample of 10 households was selected for interview. One interview was conducted per household. Where more than one resident was aged 15 years or over, the person whose birthday was most recent was selected. Up to six separate visits were made to interview the person selected to participate.

All participants in the study gave informed consent to participate. Ethics approval was obtained from the University of Adelaide Human Research Ethics Committee.

2.2 Measures

This study is part of a larger sequential mixed methods research program, so development of questions for the survey was informed by findings from a previous qualitative study of public attitudes towards obesity prevention regulations (Farrell *et al.*, 2015). Findings included that, in many instances, the reasons underpinning public support coalesced around the role of regulations in promoting personal responsibility for preventing obesity and in ascribing blame to obese individuals. These reasons align with prominent neoliberal values which emphasise individual choice as the basis for all behaviour and the extension of free market principles to all realms of society (Harvey, 2005). In the context of obesity, neoliberalism suggests that individuals are both capable of, and responsible for, averting obesity, and thus the role of governments in addressing the 'obesity problem' is to persuade individuals to voluntarily change their behaviour (Wright and Harwood, 2009).

Survey questions investigated views about a set of four regulations which represent different regulatory approaches to obesity prevention. In the preceding qualitative study these regulations were found to be contentious or have unexpected reasons for support or rejection. They were: mandating the provision of nutrition information on front-of-packet labels for packaged foods; zoning restrictions to prohibit new fast food outlets being built near schools; taxes on unhealthy high fat foods; and taxes on sugar-sweetened beverages. For each regulation, one question gauged the level of support (on a five-point Likert scale: strongly against – strongly in favour) and a further question asked about the main reason for support for, or opposition to, the regulation. Responses to these questions were assigned by the interviewer to a set of predetermined codes, with an 'other (specify)' option available. Reasons for support or opposition were collected together for the two taxation measures, as pre-testing showed that the reasons for views about taxes on sugar-sweetened beverages and unhealthy high fat foods did not meaningfully differ.

Development of the wording of questions and coding involved 24 in-depth 'cognitive interviews' (Willis, 2004) in which participants reasoned responses aloud. Testing was conducted with a convenience sample of patrons of a public library in a low socio-economic status area and with parents at a kindergarten that had a high proportion of children from non-English speaking

backgrounds (mid/high socio-economic status area). This testing methodology aimed to improve question comprehension by participants from diverse cultural and socio-economic backgrounds. Questions were refined following each interview as required. Fifty further pilot test interviews were conducted by Harrison Health Research.

2.3 Analysis

Data were weighted by Harrison Health Research by the probability of selection, stratified by geographical area, and adjusted to June 2013 Estimated Resident Population age and sex benchmarks (Australian Bureau of Statistics, 2013). This intends to adjust the survey data to infer results for the whole South Australian population aged 15 years and over, by accounting for over- and under-representation amongst some demographic groups. Levels of support for the selected regulations, the reasons for support or opposition, and variations by age, sex, and socio-economic status were analysed using frequency distributions of proportions. Where relevant, confidence intervals for proportions were calculated to indicate the precision for the corresponding population proportion. Analyses were performed using SPSS version 22.

3 RESULTS

Characteristics of the sample are detailed in Table 1. Weighted estimates align to population characteristics (Australian Bureau of Statistics, 2011).

Table 1: Characteristics of the general public sample (n=2,732)

Variable	Categories	Unweighted (n)	Unweighted (%)	Weighted (n)	Weighted (%)
Gender	Male	1,170	42.8	1,344	49.2
	Female	1,562	57.2	1,388	50.8
Age	15-24	245	9.0	436	16.0
	25-44	812	29.7	878	32.1
	45-64	905	33.1	863	31.6
	65+	770	28.2	555	20.3
Employment status[(a)]	Employed	1,420	52.0	1,541	56.4
	Unemployed	70	2.6	89	3.3
	Student	139	5.1	249	9.1
	Not in the labour force[(b)]	1,063	38.9	811	29.7
Socio-economic status[(c)]	1 (Lowest)	681	24.9	635	23.2
	2	452	16.5	442	16.2
	3	532	19.5	550	20.1
	4	563	20.6	577	21.1

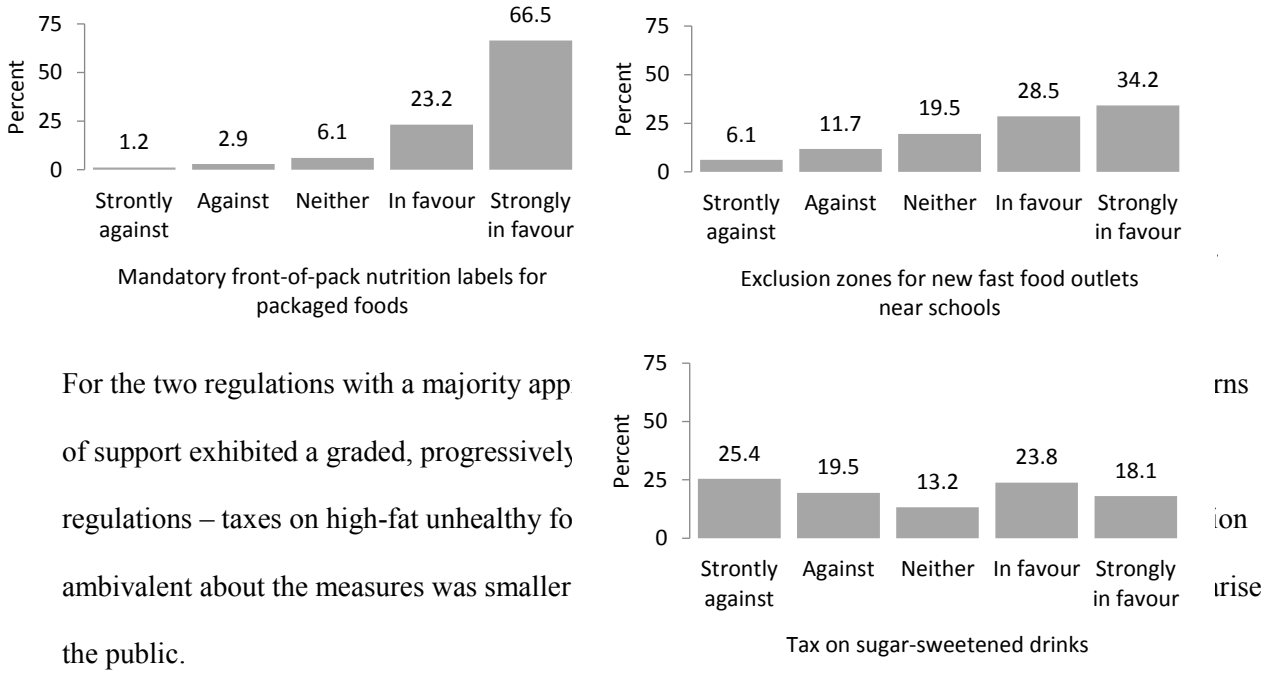
	5 (Highest)	504	18.4	528	19.3
Geographical area	Adelaide metropolitan	1,984	72.6	2,046	74.9
	Country South Australia	748	27.4	686	25.1
Country/region of birth[(a)]	Australia	1,975	72.3	1,940	71.0
	New Zealand	30	1.1	33	1.2
	UK and Ireland	296	10.8	254	9.3
	Europe	166	6.1	140	5.1
	Asia Pacific	196	7.2	282	10.3
	South America	6	0.2	6	0.2
	North America	19	0.7	17	0.6
	Africa	42	1.5	57	2.1
Indigenous status	Aboriginal/Torres Strait Islander	43	1.6	54	2.0

(a) Excludes Other, Not known, and Not stated
(b) Includes Home duties, Retired, and Not working because of work-related injury or disability
(c) Socio-Economic Indexes for Areas Index of Relative Socio-Economic Disadvantage quintile (South Australia)

3.1 Support for the regulations

Figure 1 depicts levels of support for the selected regulations. Support was strongest for mandatory front-of-pack nutrition labelling for packaged foods, with most respondents reporting they were either in favour or strongly in favour of the measure. Opposition was strongest for taxes on unhealthy high fat foods and sugar-sweetened drinks, with close to half of respondents opposing these measures.

Figure 1: Public support for the selected obesity prevention regulations (%)



For the two regulations with a majority app rns of support exhibited a graded, progressively regulations – taxes on high-fat unhealthy fo ion ambivalent about the measures was smaller rise the public.

3.2 Reasons for supporting or opposing the regulations

Table 2 summarises the main reasons for supporting or opposing the selected regulations. More than half of those supporting mandatory nutrition labels did so because they believed that this measure would educate other people about nutrition. Fewer reported being likely to use this information themselves, with less than one-third providing this reason.

Among those who supported exclusion zones, the predominant reason for support was that this would effectively discourage unhealthy diets. Opposition to the measure was most commonly because education was considered more appropriate, along with doubt about the effectiveness in changing dietary behaviours.

Endorsement of taxes was most commonly on the grounds that the measure would effectively discourage consumption of unhealthy products, with close to three-quarters of those who supported taxes providing this reason. Reasons given for opposing taxes were varied: almost one-third of those opposed to this approach believed they already paid enough taxes. Opposition on the grounds that education would be a more appropriate approach, scepticism about effectiveness, and concern that the measure would be a government 'money grab' were also common. Of those who were not strongly supportive of taxes, two thirds reported that they would be more supportive if the revenue collected was directed towards making healthy food cheaper.

Table 2: Main reason for supporting or opposing the selected obesity prevention regulations (%)

	Overall	Men	Women
Mandatory front-of-pack nutrition labelling for packaged foods[a]			
Main reason for support (net in favour 89.7%)			
Will educate others about nutrition	55.9	56.1	55.7
Will use this information myself	31.8	29.3	34.1*
Will stop food industry being misleading	6.5	9.3	3.8*
Other reason	5.9	5.3	6.3
Exclusion zones for new fast food outlets near schools			
Main reason for support (net in favour 62.7%)			
Will discourage people from buying unhealthy products	74.0	70.9	76.7*
Will help to improve population health and reduce obesity	14.6	16.3	13.1
Other reason	11.1	12.5	9.8
Main reason for opposition (net opposed 17.9%)			
Should focus on education rather than regulation	39.5	42.3	36.2
Will make no difference to children's diets	29.4	26.5	32.9
Fast food outlets should be able to build where they like	5.1	5.1	5.0
Positive aspects of fast food (like it, place to socialise, jobs)	5.6	8.7	1.8*
Other reason	20.4	17.3	24.1
Taxes on unhealthy high fat foods or sugar-sweetened drinks			
Main reason for support (net in favour 45.7%[b])			
Will discourage people from buying unhealthy products	72.2	67.2	76.8*
Contributes to burden of obesity on the economy	8.9	11.1	7.0*
Will help to drive reformulation of unhealthy products	1.4	2.5	0.3*
Other reason	17.5	19.2	15.9
Main reason for opposition (net opposed 48.9%[c])			
Already pay enough taxes	29.1	27.5	30.8
Should focus on education rather than regulation	21.8	21.8	21.8
Will make no difference to people's diets	18.4	18.1	18.8
This is a 'money grab' by governments	18.0	19.5	16.4
Would unfairly impact on disadvantaged people	2.6	2.1	3.1
Other reason	10.1	11.0	9.1

(a) Main reason for opposition not shown as net opposition <10%
(b) Includes those who are in favour of at least one taxation measure
(c) Includes those who oppose at least one taxation measure
* Significant difference from men at p<0.05

3.3 Gender differences in support for the regulations

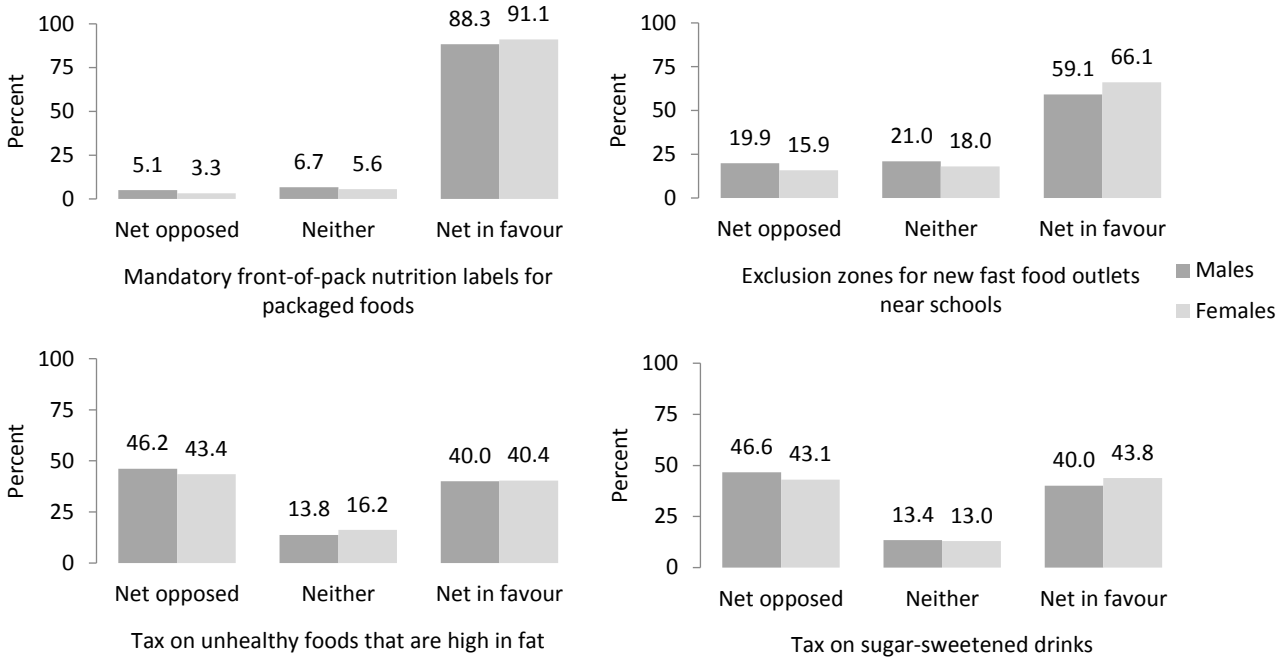
As shown in Figure 2, the proportion of women who supported nutrition labels and a tax on sugar-sweetened drinks was marginally greater than the corresponding proportion of men. There was greater discrepancy between men and women in support for exclusion zones. Support for a tax on unhealthy high-fat foods did not differ significantly by gender.

While, on the whole, levels of support for regulations were similar for men and women, in many instances men and women gave different reasons for their views. As Table 2 shows, women were most likely to support the regulations because they believed them likely to be effective in encouraging

healthy eating and reducing population obesity. Men were most likely to support the regulations because of concerns about food industry conduct and the economic burden of obesity.

Of those who were not strongly supportive of taxes, women (69.2%, 95% CI 66.6–71.8) were more likely than men (62.2%, 95% CI 59.4–64.9) to be more supportive of taxes if the revenue collected was directed towards making healthy food cheaper.

Figure 2: Support for the selected obesity prevention regulations by gender



3.4 Age differences in support for the regulations

In many instances, views held by those aged 15 to 24 years differed from those held by respondents in all older age groups (data not shown). In the youngest age group, relatively low support was observed for exclusion zones (57.8%), taxes on unhealthy high-fat foods (33.8%), and sugar-sweetened drinks (33.9%). This was underpinned by lower levels of strong support for the regulations. Strong opposition to the regulations was also low amongst those in the youngest age bracket, indicating that this group were, overall, more ambivalent about the use of regulations to address obesity.

Younger respondents were somewhat more likely than those in all older age groups to support mandatory nutrition labelling because they would personally use the information provided. Younger respondents were less likely than those in older age brackets to oppose exclusion zones on the

grounds that obesity prevention should be a matter of education rather than regulation. Instead, younger respondents were considerably more likely to oppose the measure on the grounds that fast food outlets provide benefits, such as somewhere to socialise, jobs for young people, or because they enjoy eating fast food.

The youngest age group were more likely than older respondents to oppose taxes on the grounds that education is a more appropriate approach to obesity prevention. In contrast, those in older age groups expressed greater concern about the economic and financial implications of taxation: they were more likely than those in the youngest age group to support taxes on the grounds that the revenue raised would offset the economic burden of obesity, and were more likely to oppose taxes because they believe they already pay enough taxes.

3.5 Socio-economic differences in support for the regulations

Figure 3 shows support for the regulations by socio-economic quintile. Patterns of support for mandatory nutrition labelling and exclusion zones for new fast food outlets near schools were similar across all socio-economic groups. Opposition to the two taxation measures followed a socio-economic gradient: more than half of those in the most disadvantaged group opposed a tax on unhealthy high-fat foods and sugar-sweetened drinks, compared with around one-third of those in the least disadvantaged group. The most disadvantaged group expressed considerably stronger opposition to taxes than any other group, and were least likely to increase their support if the revenue generated was used to subsidise healthy foods (60.5%, 95% CI 56.4 to 64.5, compared with 73.0%, 95% CI 68.8 to 76.9 of those in the fourth quintile, those most likely to increase their support for taxes if healthier food was subsidised as a result).

As shown in Table 3, reasons given by those in the most disadvantaged socio-economic quintile to explain their views about the regulations were in many instances distinct from the other socio-economic groups. The most disadvantaged group were only slightly more likely to support mandatory nutrition labelling for the benefit of others rather than for personal use, in marked contrast to more advantaged groups, and they were more likely than any other group to report wanting to use the

information themselves. Among those opposing exclusion zones, those in the most disadvantaged group were least concerned that the measure represented over-regulation. Instead, this group explained their opposition in terms of concerns that the intervention would have little impact on children's diets.

Across all socio-economic groups, the predominant reason for supporting taxes was a belief that the measures would discourage people from buying unhealthy products. Turning to opposition, respondents in the most disadvantaged group were much more likely to express concerns about the financial impact of taxes, and were less likely than those in other socio-economic quintiles to reason that obesity prevention should be about education rather than regulation. While opposition to taxes on the grounds that the measure would unfairly impact disadvantaged groups was low overall, opposition for this reason was lowest among those in the two most disadvantaged groups.

Figure 3: Support for the selected obesity prevention regulations by socio-economic quintile (%)

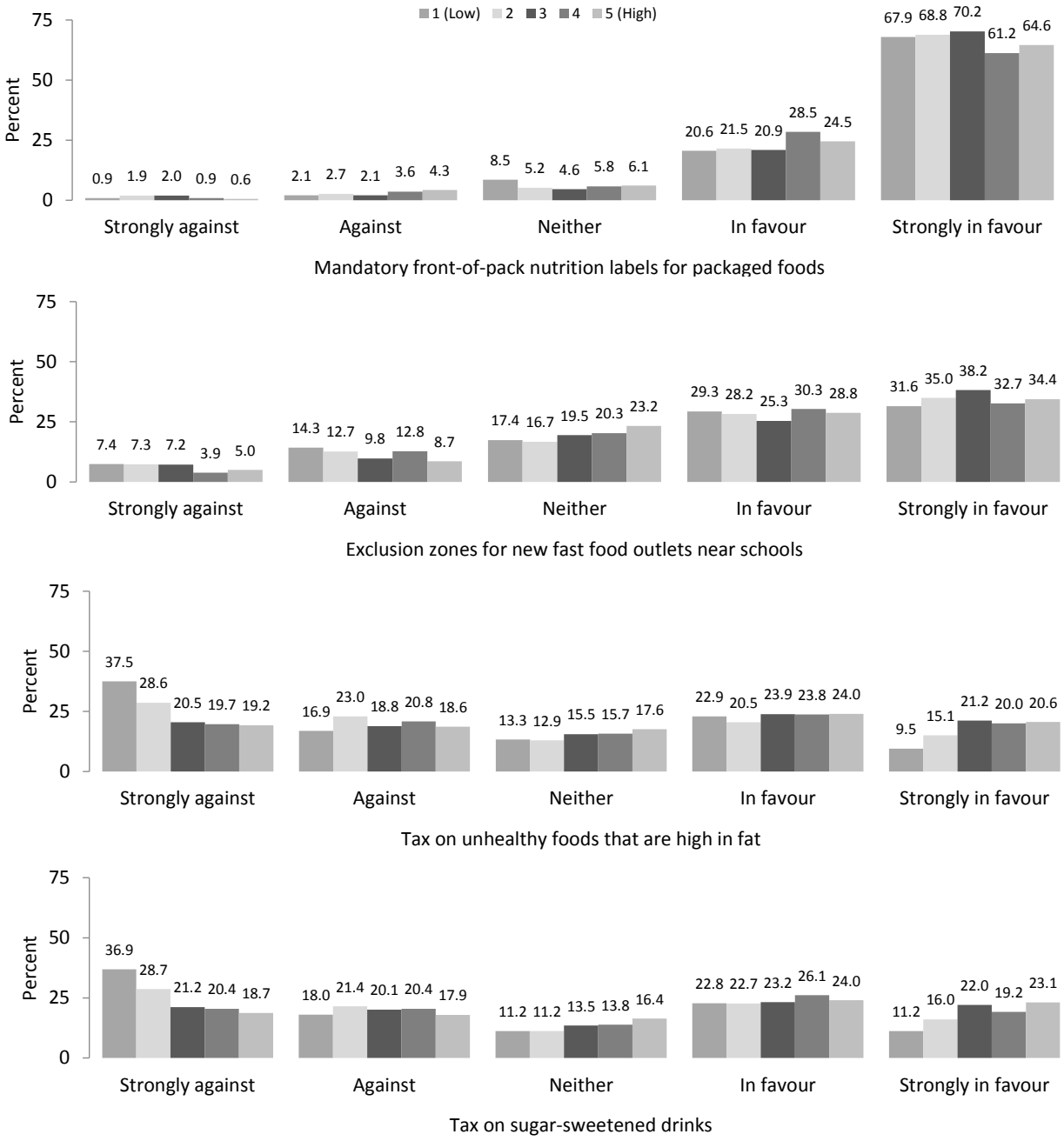


Table 3: Main reason for supporting or opposing the selected obesity prevention regulations by socio-economic quintile (%)

	1 (Low)	2	3	4	5 (High)
Mandatory front-of-pack nutrition labelling for packaged foods[a]					
Main reason for support (net in favour 89.7%)					
Will educate others about nutrition	43.7	56.9*	60.5*	60.9*	59.3*
Will use this information myself	39.6	31.3*	30.2*	25.9*	31.0*
Will stop food industry being misleading	9.1	8.0	5.3*	6.7*	3.0*
Other reason	7.6	3.8*	4.0*	6.5	6.7
Exclusion zones for new fast food outlets near schools					
Main reason for support (net in favour 62.7%)					
Will discourage people from buying unhealthy products	67.3	69.9	75.7*	77.3*	79.7*
Will help to improve population health and reduce obesity	11.7	14.6	18.4*	14.6	13.8
Other reason	21.0	15.5*	5.9*	8.1*	6.4*
Main reason for opposition (net opposed 17.9%)					
Should focus on education rather than regulation	28.2	46.3*	38.8*	37.3*	56.9*
Will make no difference to children's diets	39.3	31.2	17.0*	34.0	18.1*
Fast food outlets should be able to build where they like	5.2	1.9	5.7	7.5	4.6
Positive aspects of fast food (like it, place to socialise, jobs)	2.2	5.8*	11.2*	3.8	6.9*
Other reason	25.1	14.8*	27.3	17.4*	13.5*
Taxes on unhealthy high fat foods or sugar-sweetened drinks					
Main reason for support (net in favour 45.7%[b])					
Will discourage people from buying unhealthy products	73.9	74.4	73.2	72.5	67.9*
Contributes to burden of obesity on the economy	5.6	8.8*	6.7	11.2*	11.8*
Will help to drive reformulation of unhealthy products	1.2	2.8*	0.8	0.7	1.9
Other reason	19.3	14.0*	19.3	15.6	18.4
Main reason for opposition (net opposed 48.9%[c])					
Already pay enough taxes	34.9	41.3*	20.0*	26.0*	20.3*
Should focus on education rather than regulation	10.5	19.4*	26.9*	27.2*	30.8*
Will make no difference to people's diets	17.2	11.4*	25.2*	18.2	20.6
This is a 'money grab' by governments	27.2	18.5*	13.1*	12.7*	14.0*
Would unfairly impact on disadvantaged people	0.8	1.7	5.5*	3.0*	2.9*
Other reason	9.4	7.7	9.3	12.9*	11.4

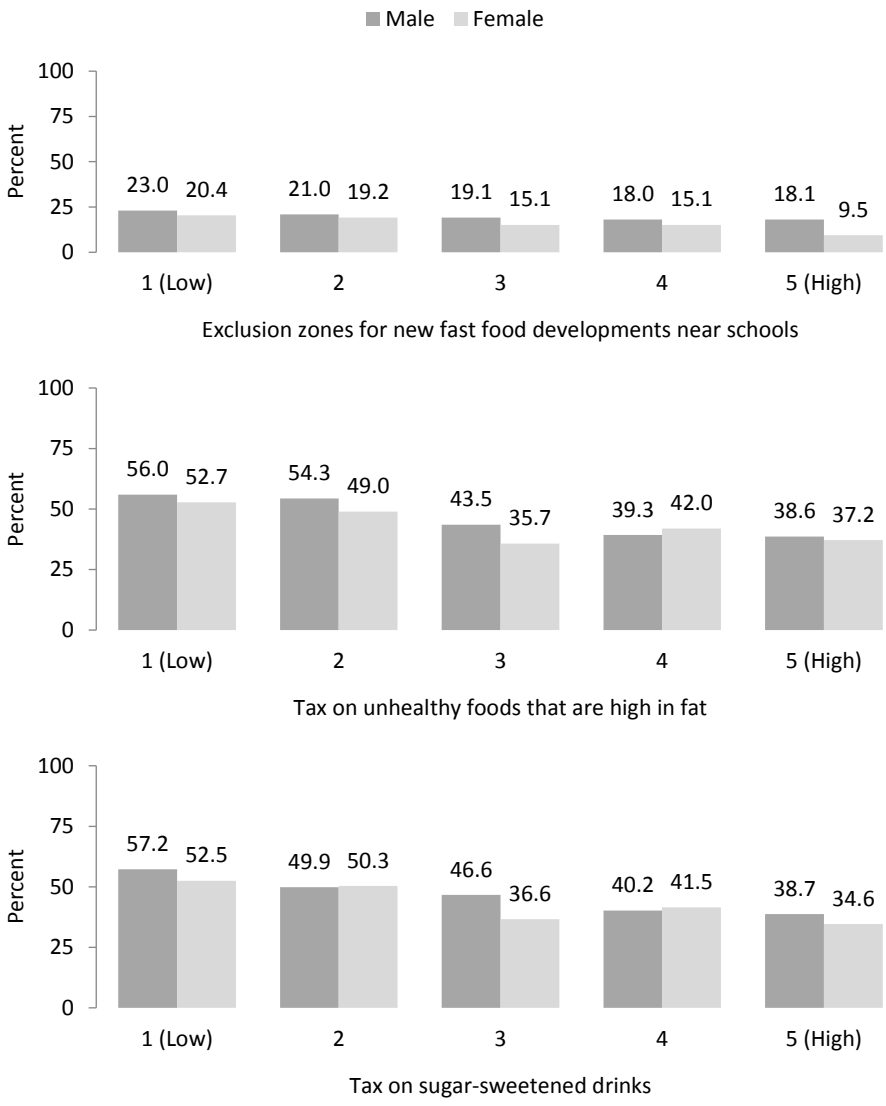
(a) Main reason for opposition not shown as net opposition <10%
(b) Includes those who are in favour of at least one taxation measure
(c) Includes those who oppose at least one taxation measure
* Significant difference from lowest quintile at p<0.05

3.6 Patterns of opposition by gender and socio-economic status

As shown in Figure 4, opposition to the regulations across the socio-economic groups in some instances differed by gender. For women, opposition to exclusion zones followed a socio-economic gradient, while for men the level of opposition was similar across the groups. The difference between men and women's views was therefore modest in the most disadvantaged group, while amongst the most advantaged group there was considerable divergence apparent between the views of men and women.

Opposition to taxes was graded by socio-economic status for men. For women, those in the two most disadvantaged groups were most opposed to taxes, with the level of opposition plateauing in the more advantaged groups. There was therefore greatest variation between the views of men and women amongst those in the median quintile.

Figure 4: Net opposition to the selected obesity prevention regulations by socio-economic status and gender (%)[(a)]



(a) Mandatory front-of-pack nutrition labelling for packaged foods not shown as net opposition <10%

Table 4 shows the reasons for opposing the selected regulations by gender and socio-economic quintile. While the level of opposition to exclusion zones was similar across all socio-economic groups for men, the reasons for opposition differed considerably. The most common reason for opposition given by men in the most disadvantaged group for opposing the measure was that

exclusion zones would not be effective in changing children's diets; given by this group three times as often as those in the most advantaged group. In contrast, men in the most advantaged group were most likely to oppose exclusion zones because they believed that obesity prevention should be a matter of education rather than regulation. This reason was given by more than two-thirds of men in this group; twice as often as men in the most disadvantaged group.

Amongst women, there was less variation apparent in the reasons for opposing exclusion zones. However, women in the most disadvantaged group were more likely than any other group to oppose this measure because they did not believe it would be effective in changing children's diets: almost half provided this reason, compared with a quarter of women (and one in ten men) in the most advantaged group.

Opposition to taxes on the grounds that obesity prevention should be about education rather than regulation was more strongly influenced by socio-economic status for women than for men; this reason was given by women in the most advantaged group more than three times as often as those in the disadvantaged group. Women in the most disadvantaged group were more concerned that they already pay enough taxes.

Men in the most disadvantaged and advantaged groups were most likely to oppose taxes because they believed the measure would be a 'money grab' by governments, while men in the median socio-economic quintiles were less opposed to taxes for this reason. Amongst women, opposition to taxes because they are a 'money grab' followed a socio-economic gradient, with this reason given almost four times as often by the most disadvantaged group than the advantaged group.

Table 4: Main reason for opposing the selected obesity prevention regulations by socio-economic quintile, gender and age (%)

	1 (Low)	2	3	4	5 (High)
Men					
Exclusion zones for new fast food outlets near schools (net opposed 19.9%)					
Should focus on education rather than regulation	30.7	50.2+	33.8	37.5	67.9+
Will make no difference to children's diets	35.7	32.3	13.7+	32.5	13.0+
Other reason[(a)]	33.7	17.6+	52.5+	30.0	19.1+
Taxes on unhealthy high fat foods or sugar-sweetened drinks (net opposed 50.7%)[(c)]					
Already pay enough taxes	30.6	41.0+	17.5+	28.7	18.1+
Should focus on education rather than regulation	11.9	20.9+	29.8+	21.9+	30.4+
Will make no difference to people's diets	16.8	10.6+	26.4+	17.3	19.4
This is a 'money grab' by governments	30.9	17.9+	10.2+	12.3+	21.9+
Other reason	9.8	9.7	16.2+	19.8+	10.3
Women					
Exclusion zones for new fast food outlets near schools (net opposed 15.9%)					
Should focus on education rather than regulation	25.5	42.4+	44.3*+	36.9+	37.7*+
Will make no difference to children's diets	43.4	30.1+	20.7*+	36.0	27.1*+
Other reason[(a)]	31.1	27.6*	34.9*	27.1	35.3*
Taxes on unhealthy high fat foods or sugar-sweetened drinks (net opposed 49.3%)[(c)]					
Already pay enough taxes	39.5*	41.6	22.7*+	22.9*+	22.5*+
Should focus on education rather than regulation	9.1	18.0+	23.9*+	33.3*+	31.3+
Will make no difference to people's diets	17.7	12.1+	24.0+	19.2	21.8
This is a 'money grab' by governments	23.2*	19.0	16.4*+	13.2+	6.3*+
Other reason	10.4	9.3	13.2	11.4*	18.1*+

(a) Categories with low cell counts collapsed
(b) Main reason for opposition not shown as net opposition <10%
(c) Includes those who oppose at least one taxation measure
* Significant difference from men in same socio-economic quintile at p<0.05
\+ Significant difference from lowest quintile at p<0.05

4 DISCUSSION

Survey findings demonstrate moderate to high levels of public support for the use of selected regulations for obesity prevention. Support was highest for mandatory front-of-pack nutrition labelling for packaged foods. This corresponds with previous research in Australia (Morley *et al.*, 2012; Pollard *et al.*, 2013; Street *et al.*, forthcoming; VicHealth, 2015), New Zealand (Gendall et al., 2015), the United Kingdom (Beeken and Wardle, 2013; Chambers and Traill, 2011), the United States (Barry *et al.*, 2009; Barry *et al.*, 2013a; Niederdeppe *et al.*, 2011; Niederdeppe *et al.*, 2014), and Europe (Hilbert *et al.*, 2007; Sikorski *et al.*, 2012) which shows that information provision is more publically acceptable than any other policy approaches to obesity. Findings demonstrate the enduring dominance of the discourse of personal responsibility and the concomitant public appeal of

behavioural health promotion interventions. This reflects the ethos of individualism and choice which underpin the dominant neoliberal political ideology (Baum and Fisher, 2014).

Interestingly, the most common reason for supporting nutrition labels in all socio-demographic groups was to educate *other* people about nutrition. This indicates that a majority of the population may not perceive nutrition education as personally relevant, and aligns with findings from our associated qualitative study that preventive obesity regulations are commonly viewed as a way to redress public ignorance (Farrell *et al.*, 2016). Those in the most disadvantaged socio-economic group – a key target population for obesity prevention policies and programs (National Preventative Health Taskforce, 2009a) – were more likely than those in any other group to report wanting to use nutrition labels themselves. This may reflect awareness amongst this group that they *do* lack nutrition knowledge, or alternatively that these individuals have internalised dominant narratives that deprived groups are ignorant about the causes of obesity (Farrell *et al.*, 2016).

Reasons for opposition to the use of regulations fell into three categories: beliefs about what is appropriate, beliefs about what is effective, and reasons based on a general distrust in government intervention to support population health. Opposition to exclusion zones and taxes was most commonly based on respondents' beliefs that education would be a more appropriate means of improving population nutrition; opposition to labelling was low overall. These findings reflect a popular belief that information provision is an effective mechanism for motivating healthy behaviours. Such perceptions are discordant with evidence that shows education to be largely ineffective in changing population dietary patterns, and that more restrictive interventions addressing socio-environmental influences offer the greatest likelihood of impact (Hillier-Brown *et al.*, 2017; Swinburn, 2008). In particular, front-of-pack nutrition labelling has been found to have no discernible impact on the healthiness of food purchases (Hillier-Brown *et al.*, 2017; Sacks *et al.*, 2009; Sacks *et al.*, 2011). Our findings broadly correspond with a New Zealand survey (Gendall et al., 2015) which found that respondents considered food labelling more effective than a tax on foods high in fat or sugar, and restricting fast food outlets near schools. Importantly, Gendall et al. (2015) identified that public support for obesity interventions was not directly correlated to beliefs about effectiveness of

those measures; while participants in their survey considered a tax on foods high in sugar or fat likely to be moderately effective, this measure received the lowest endorsement amongst their sample.

Findings from our survey may be useful for policymakers and public health advocates seeking publically acceptable solutions for obesity prevention. Some researchers have sought to identify the most persuasive means to communicate the evidence base for regulations, in order to improve support for regulations (Barry *et al.*, 2009; Barry *et al.*, 2013a; Barry *et al.*, 2013b; Hilbert *et al.*, 2007; Lange and Faulkner, 2012; Niederdeppe *et al.*, 2011; Niederdeppe *et al.*, 2014). This approach tends to aligns with a 'deficit model' of public attitudes, whereby acceptance of regulations would increase if the knowledge base were better communicated. For instance, Walls *et al.* (2012:99) argue that:

> Pressure on government to respond to obesity and chronic disease will surely grow as scientific evidence links obesity and poor nutrition to disease. Despite recent media attention the public remains poorly informed, often considering obesity to be an individual problem, requiring only diet restrictions and self-control.

However, the survey findings reported here suggest that public views about obesity policy are more strongly influenced by ideological and moralising discourses than a lack of knowledge. In this scenario, the extent to which opposition can be reduced through improved communication about the ecological causes of obesity is uncertain (*cf.* Taber and Lodge, 2006). Attending to the ideological and moralising foundations of public views about preventive obesity regulations demonstrated in the survey and in previous research (Farrell *et al.*, 2015) may be more fruitful for improving alignment between preventive obesity policies and public views.

In addition, socio-demographic differences in views about regulations are illuminating for public health policy actors. As is well-documented, there are differences between socio-economic status and health outcomes. This relationship is often characterised as linear and unidirectional (Øversveen et al., 2017), rather than emerging differently according to 'patterned networks of social interaction' (Øversveen et al., 2017:209). Taking this into account, we suggest that differences we found in relation to gender *across and within* socio-economic gradients, should be anticipated and further explored. To demonstrate the complexity and multiple reasons for support or opposition for obesity

prevention regulations, we use a sociological and gender lens in this last section to suggest why these differences may occur.

Opposition to the regulations among disadvantaged groups is an important finding, given that addressing health inequalities is an objective of preventive obesity regulations (National Preventative Health Taskforce, 2009a). Concerns raised by those in disadvantaged socio-economic groups about the financial impact of food and drink taxes and the anticipated ineffectiveness of exclusion zones indicate that those experiencing deprivation do not share the enthusiasm of public health advocates about the potential health benefits of some preventive obesity regulations for disadvantaged groups. These concerns warrant attention. In particular, arguments that the regressive impact will be minimal and justifiable in light of the health benefits, as made recently in regards to the introduction of a tax on sugar-sweetened beverages in Australia (Duckett *et al.*, 2016), should be examined in the light of this opposition.

Most notably, participants in the most disadvantaged group conveyed strong concerns about the anticipated financial impact of taxation. Food affordability has been identified as a significant issue in disadvantaged areas of Adelaide, with a week's supply of healthy food costing around 30 per cent of household income (Ward *et al.*, 2013). Taxes may therefore increase financial stress for those already in poverty, without addressing other influences on food choices. Redirection of revenue raised from a tax to subsidise healthier foods was least likely to persuade those in the most disadvantaged group to increase their support for taxes. This suggests that products targeted by taxes are consumed for reasons beyond low cost, and may maintain their appeal even when price is adjusted relative to healthier options. This finding may also reflect a lack of trust in governments to deliver on distributive promises: distrust of governments and cynicism about government objectives is apparent in the survey and have been identified in our previous research as important barriers to popular support for obesity prevention regulations (Farrell *et al.*, 2015). Our findings point to a need to investigate more thoroughly the impact of regulations on those who experience socio-economic disadvantage, in order to identify barriers to healthy diets which need to be addressed concurrently in order to optimise the effectiveness of regulatory obesity interventions.

Men expressed stronger opposition to the use of regulations, showed greater concern with the economic burden of obesity and the impact of regulations on economic prosperity, and were more attentive to the conduct of the food industry than women. This may indicate that men may align more closely with particular economic aspects of neoliberal discourse than women; reflecting the strong 'male breadwinner' culture in Australia, in which masculine identities, forged in economic terms through employment, often take priority over caring roles (Connell, 2005; Shirani *et al.*, 2012). Men's preferencing of economic rather than health considerations supports the contention that men's views about the use of obesity regulations are characterised by the perceived invisibility of their own bodies in relation to fat discourses (Bell and McNaughton, 2007).

In contrast, women's greater concern with the health impacts of regulations suggests that they tended to orient to the use of regulations through a lens of intense cultural scrutiny around their weight (particularly for higher SES women; Warin et al., 2008), their material and social responsibilities for children's weight, and their greater risk of health (including reproductive) impacts associated with obesity (Boero, 2007; Maher *et al.*, 2010b). As well, women's greater attention to the ability of the regulations to effect dietary changes may reflect their intimate knowledge of the complexities of family food provision. The responsibility for feeding families usually still rests with mothers, despite changing patterns of women's paid work (Allen and Sachs, 2012; Beagan *et al.*, 2008; Maher *et al.*, 2010a; Maher *et al.*, 2010b).

Managing nutrition is a central tenet of mothers' 'foodwork', however it is not the only factor: other pressures including family food preferences, demonstrations of care, time shortages and budget constraints are also part of the problem of 'what's for dinner' (Banwell *et al.*, 2007; Cook, 2009; DeVault, 1994). In particular, concerns expressed by disadvantaged women about the financial impact of regulations and their likely ineffectiveness in driving dietary changes reflect how maternal food choices are negotiated within social and economic constraints. As ethnographic work in low income areas has shown, mothers' food practices can be a painstaking process of minimising food budgets (by choosing foods that are filling and unlikely to spoil), providing foods acceptable to husbands and children (for whom popular 'junk' foods can provide social acceptance and gratification to

compensate for poverty), and reducing the time and energy devoted to preparing food (by choosing convenience meals; Dobson *et al.*, 1994). As well, snack foods can provide momentary pleasures and reduce stress arising from conflicts with children, and are an instrument used to cope with the stress of financial precarity (Maher *et al.*, 2010a; Warin *et al.*, 2015; Zivkovic *et al.*, 2015). There are therefore a complex set of motivations stemming from mothers' balancing of caring responsibilities (more so in single parent households) with scarce time and financial resources that converge to outweigh health concerns in the provision of food in families from low socio-economic conditions. Failure to adequately engage with these factors may ultimately limit the effectiveness of the measures and produce deleterious consequences for women living in disadvantaged areas (Kirkland, 2011).

There was a clear distinction in the reasons by given by advantaged and disadvantaged women to explain opposition to the regulations. This contrasts to a socio-economic gradient in men's views; showing that socio-economic disadvantage has a particular influence on women's views about the use of preventive obesity regulations. The concerns of disadvantaged women were not discernible in analyses by socio-economic position alone. The views of women from lower socio-economic conditions may therefore be obscured in analyses of public views that do not engage with the intersection of gender and socio-economic position. As Broom and Warin (2011) argue, public health research and practice have inadequately considered the interplay of gender and social position, to the detriment of complete understandings of the broader social, economic and political determinants of obesity. This limits the utility of obesity policy to improve the health circumstances of marginalised and vulnerable groups. Our findings point to the importance of specific engagement with women from lower socio-economic conditions regarding the implementation of preventive obesity regulations, particularly considering that an explicit goal of those advocating the implementation of such measures is to redress health inequities disproportionately impacting on this group (National Preventative Health Taskforce, 2009b).

Some limitations must be taken into account in interpreting survey results. While the sample was designed to be representative of the South Australian population and data have been weighted to population benchmarks, the response rate (54.5%) may still affect the generalisability to a degree.

Further, the survey only examined the main reason for support or opposition to each regulation, so other lesser reasons for public views remain unexplored. Also, the analysis only assessed a selected number of personal characteristics. Other dimensions that may influence attitudes towards the selected regulations (e.g. parent status, occupation, ethnicity) were not explored. Investigating the impact of social roles on opinions about preventive obesity regulations could be the focus of future research in this area.

5 CONCLUSION

Concerns about the regressive impact of obesity prevention measures have received only cursory acknowledgement or have been dismissed as inevitable by some policy advocates (Duckett et al., 2016). We argue that stronger engagement with these concerns is required, as these may pose a substantial impediment to regulatory reform. For instance, as Sisnowski *et al.* (2016) found in their analysis of barriers to the implementation of preventive obesity policy in New York City, policymakers underestimated the strength and mobilisation of opposition from minority and civil rights groups concerned with the regressive impact of regulations. This was ultimately identified to be responsible for the failure of the policy proposal. As one policymaker observed:

> The group that surprised and disappointed us the most were the minority groups. On the food stamp proposal in particular, the hunger advocates came out very vocally against that. We were presented as somehow we were being mean to poor people.

Findings also point to a need for more sustained and reciprocal engagement with women from lower socio-economic conditions in particular. As the surprise evident in the above passage demonstrates, inadequate engagement with key target populations may yield unexpected resistance to measures intending to alleviate health inequities. In particular, Kirkland (2011) argues that well-meaning efforts to improve the health of disadvantaged women can be perceived to be intrusive, moralizing, and punitive when guided by middle class norms that neglect to account for the lived complexities of material disadvantage.

Overall, these survey findings indicate that there is generally moderate to strong public support for the selected preventive obesity regulations. However, public views reflect beliefs about efficacy that align

with neoliberal individual responsibility explanations for obesity and are largely inconsistent with current evidence. Differences in levels of support, and reasons for support or opposition, between socio-demographic groups point to the potential for key target populations' views to offer insights to optimise the acceptability of preventive obesity regulations and minimise deleterious unintended consequences.

6 REFERENCES

Allen, P., Sachs, C., 2012. Women and food chains: The gendered politics of food. In P. Williams-Forson, C. Counihan (eds), *Taking food public: Redefining foodways in a changing world*, Routledge, New York, 23-40.

Australian Bureau of Statistics, 2011. *Census Community Profiles, South Australia*, viewed 12 January 2017 <http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/4?opendocument&navpos=220>

Australian Bureau of Statistics, 2013. *Australian Demographic Statistics*, Jun 2013, cat. no. 3101.0, Canberra.

Baker, P., Gill, T., Friel, S., Carey, G., Kay, A., 2017. Generating political priority for regulatory interventions targeting obesity prevention: an Australian case study. *Social Science & Medicine* 177, 141-149.

Banwell, C., Shipley, M., Strazdins, L., 2007. The pressured parenting environment: parents as piggy in the middle. J. Dixon, D. Broom (eds) *The seven deadly sins of obesity: How the modern world is making us fat*, UNSW Press, Sydney, 46-63.

Barry, C., Brescoll, V., Brownell, K., Schlesinger, M., 2009. Obesity metaphors: how beliefs about the causes of obesity affect support for public policy. *Milbank Quarterly* 87, 7-47.

Barry, C., Brescoll, V., Gollust, S.E., 2013a. Framing childhood obesity: how individualizing the problem affects public support for prevention. *Political Psychology* 34, 327-349.

Barry, C., Niederdeppe, J., Gollust, S., 2013b. Taxes on sugar-sweetened beverages: results from a 2011 national public opinion survey. *American Journal of Preventive Medicine* 44, 158-163.

Baum, F., Fisher, M., 2014. Why behavioural health promotion endures despite its failure to reduce health inequities. *Sociology of Health & Illness* 36, 213-225.

Beagan, B., Chapman, G.E., D'Sylva, A., Bassett, B.R., 2008. It's just easier for me to do it': Rationalizing the family division of foodwork. *Sociology* 42, 653-671.

Beeken, R.J., Wardle, J., 2013. Public beliefs about the causes of obesity and attitudes towards policy initiatives in Great Britain. *Public Health Nutrition* 16, 2132-2137.

Bell, K., McNaughton, D., 2007. Feminism and the invisible fat man. *Body & Society* 13, 107-131.

Boero, N., 2007. All the news that's fat to print: The American "obesity epidemic" and the media. *Qualitative Sociology* 30, 41-60.

Broom, D.H., Warin, M., 2011. Gendered and class relations of obesity: confusing findings, deficient explanations. *Australian Feminist Studies* 26, 453-467.

Capacci, S., Mazzocchi, M., Shankar, B., Macias, J.B., Verbeke, W., Pérez-Cueto, F.J., Kozioł-Kozakowska, A., Piórecka, B., Niedzwiedzka, B., D'Addesa, D., 2012. Policies to promote healthy eating in Europe: a structured review of policies and their effectiveness. *Nutrition Reviews* 70, 188-200.

Chambers, S., Traill, B., 2011. What the UK public believes causes obesity, and what they want to do about it: a cross-sectional study. *Journal of Public Health Policy* 32, 430-444.

Chung, A., Shill, J., Swinburn, B., Mavoa, H., et al, 2012. An analysis of potential barriers and enablers to regulating the television marketing of unhealthy foods to children at the state government level in Australia. *BMC Public Health* 12, 1123-1128.

Connell, R., 2005. A really good husband: Work/life balance, gender equity and social change. *Australian Journal of Social Issues* 40, 369.

Cook, D.T., 2009. Semantic provisioning of children’s food: commerce, care and maternal practice. *Childhood* 16, 317-334.

Crammond, B., Van, C., Allender, S., Peeters, A., et al, 2013. The possibility of regulating obesity prevention – understanding regulation in the Commonwealth Government. *Obesity Reviews* 12, 213-221.

Department of Health, 2014. *A healthy and active Australia*, viewed 7 February 2016, <http://www.healthyactive.gov.au/>

DeVault, M.L., 1994. *Feeding the family: The social organization of caring as gendered work*. University of Chicago Press, Chicago.

Diepeveen, S., Ling, T., Suhrcke, M., Roland, M., Marteau, T.M., 2013. Public acceptability of government intervention to change health-related behaviours: a systematic review and narrative synthesis. *BMC Public Health* 13, 756.

Dobson, B., Beardsworth, A., Keil, T., Walker, R., 1994. *Diet, choice, and poverty: social, cultural, and nutritional aspects of food consumption among low-income families.* Family Policy Studies Centre London.

Duckett, S., Swerissen, H., Wiltshire, T., 2016. *A sugary drinks tax: recovering the community costs of obesity.* Grattan Institute, Carlton, Australia, viewed 16 December 2016 <https://grattan.edu.au/wp-content/uploads/2016/11/880-A-sugary-drinks-tax.pdf>

Farrell, L.C., Warin, M.J., Moore, V.M., Street, J.M., 2015. Emotion in obesity discourse: understanding public attitudes towards regulations for obesity prevention. *Sociology of Health & Illness* 38, 543-558.

Farrell, L.C., Warin, M.J., Moore, V.M., Street, J.M., 2016. Socio-economic divergence in public opinions about preventive obesity regulations: is the purpose to 'make some things cheaper, more affordable'or to 'help them get over their own ignorance'? *Social Science & Medicine* 154, 1-8.

Gendall, P., Hoek, J., Taylor, R., Mann, J., Krebs, J., Parry-Strong, A., 2015. Should support for obesity interventions or perceptions of their perceived effectiveness shape policy? *Australian and New Zealand Journal of Public Health* 39, 172-176.

Gostin, L.O., 2007. Law as a tool to facilitate healthier lifestyles and prevent obesity. *JAMA* 297, 87-90.

Harvey, D., 2005. *A brief history of neoliberalism*. Oxford University Press, Oxford.

Hilbert, A., Rief, W., Braehler, E., 2007. What determines public support of obesity prevention? *Journal of Epidemiology & Community Health* 61, 585-590.

Hillier-Brown, F.C., Summerbell, C.D., Moore, H.J., Routen, A. *et al*, 2017. The impact of interventions to promote healthier ready-to-eat meals (to eat in, to take away or to be delivered) sold by specific food outlets open to the general public: a systematic review. *Obesity Reviews* 18, 227–246.

Holbrook, A.L., Green, M.C., Krosnick, J.A., 2003. Telephone versus face-to-face interviewing of national probability samples with long questionnaires: comparisons of respondent satisficing and social desirability response bias. *Public Opinion Quarterly* 67, 79-125.

Kirkland, A., 2011. The environmental account of obesity: a case for feminist skepticism. *Signs* 36, 463-485.

Lange, R., Faulkner, G., 2012. Support for obesity policy: the effect of perceptions of causes for obesity and national identity in Canada. *Open Journal of Preventive Medicine* 2, 478.

Lankford, T., Hardman, D., Dankmeyer, C., Schmid, T., 2013. Analysis of state obesity legislation from 2001 to 2010. *Journal of Public Health Management and Practice* 19, S114-S118.

Magnusson, R., 2008. What's law got to do with it part 2: legal strategies for healthier nutrition and obesity prevention. *Australia and New Zealand Health Policy* 5.

Maher, J., Fraser, S., Lindsay, J., 2010a. Between provisioning and consuming?: children, mothers and 'childhood obesity'. *Health Sociology Review* 19, 304-316.

Maher, J., Fraser, S., Wright, J., 2010b. Framing the mother: childhood obesity, maternal responsibility and care. *Journal of Gender Studies* 19, 233-247.

Morley, B., Martin, J., Niven, P., Wakefield, M., 2012. Public opinion on food-related obesity prevention policy initiatives. *Health Promotion Journal of Australia* 23, 86-91.

National Preventative Health Taskforce, 2009a. *Australia: the healthiest country by 2020–National Preventative Health Strategy*, Canberra.

National Preventative Health Taskforce, 2009b. *Australia: the healthiest country by 2020. Technical report 1. Obesity in Australia: a need for urgent action*, Canberra.

Niederdeppe, J., Robert, S.A., Kindig, D.A., 2011. Qualitative research about attributions, narratives, and support for obesity policy, 2008. *Preventing Chronic Disease* 8.

Niederdeppe, J., Shapiro, M.A., Kim, H.K., Bartolo, D., Porticella, N., 2014. Narrative persuasion, causality, complex integration, and support for obesity policy. *Health Communication* 29, 431-444.

Øversveen, E., Rydland, H.T., Bambra, C., Eikemo, T.A., 2017. Rethinking the relationship between socio-economic status and health: Making the case for sociological theory in health inequality research. *Scandinavian Journal of Public Health*, 45, 103-112.

Pollard, C.M., Daly, A., Moore, M., Binns, C.W., 2013. Public say food regulatory policies to improve health in Western Australia are important: population survey results. *Australian and New Zealand Journal of Public Health* 37, 475-482.

Sacks, G., Rayner, M., Swinburn, B., 2009. Impact of front-of-pack 'traffic-light'nutrition labelling on consumer food purchases in the UK. *Health Promotion International* 24, 344-352.

Sacks, G., Swinburn, B., Lawrence, M., 2008. A systematic policy approach to changing the food system and physical activity environments to prevent obesity. *Australia and New Zealand Health Policy* 5, 1-7.

Sacks, G., Tikellis, K., Millar, L., Swinburn, B., 2011. Impact of 'traffic-light'nutrition information on online food purchases in Australia. *Australian and New Zealand Journal of Public Health* 35, 122-126.

Shirani, F., Henwood, K., Coltart, C., 2012. "Why aren't you at work?": negotiating economic models of fathering identity. *Fathering* 10, 274.

Sikorski, C., Luppa, M., Schomerus, G., Werner, P., König, H.-H., Riedel-Heller, S.G., 2012. Public attitudes towards prevention of obesity. *PloS One* 7.

Sisnowski, J., Handsley, E., Street, J.M., 2015. Regulatory approaches to obesity prevention: A systematic overview of current laws addressing diet-related risk factors in the European Union and the United States. *Health Policy* 119, 720-731.

Sisnowski, J., Street, J.M., Braunack-Mayer, A., 2016. Targeting population nutrition through municipal health and food policy: implications of New York City's experiences in regulatory obesity prevention. *Food Policy* 58, 24-34.

Story, M., Kaphingst, K., Robinson-O'Brien, Glanz, K., 2008. Creating healthy food and eating environments: policy and environmental approaches. *Annual Review of Public Health* 29, 253-272.

Street, J., Sisnowski, J., Tooher, R., Farrell, L., Braunack-Mayer, A., 2017. Community perspectives on the use of regulation and law for obesity prevention in children: a citizens' jury. *Health Policy* DOI: http://dx.doi.org/10.1016/j.healthpol.2017.03.001

Swinburn, B., 2008. Obesity prevention: the role of policies, laws and regulations. *Australia and New Zealand Health Policy* 5, 1-7.

Swinburn, B., Wood, A., 2013. Progress on obesity prevention over 20 years in Australia and New Zealand. *Obesity Reviews* 14, 60-68.

Taber, C.S., Lodge, M., 2006. Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science* 50, 755-769.

VicHealth, 2015. *Citizens' Jury offers 20 suggestions to tackle obesity*. Victorian Government, Melbourne, viewed 12 March 2017 <https://www.vichealth.vic.gov.au/media-and-resources/media-releases/citizens-jury-offers-21-suggestions-to-tackle-obesity>

Walls, H.L., Walls, K.L., Loff, B., 2012. The regulatory gap in chronic disease prevention: a historical perspective. *Journal of Public Health Policy* 33, 89-104.

Ward, P.R., Verity, F., Carter, P., Tsourtos, G., Coveney, J., Wong, K.C., 2013. Food stress in Adelaide: the relationship between low income and the affordability of healthy food. *Journal of Environmental and Public Health* 2013, 10.

Warin, M., Turner, K., Moore, V., Davies, M., 2008. Bodies, mothers and identities: rethinking obesity and the BMI. *Sociology of Health & Illness* 30, 97-111.

Warin, M., Zivkovic, T., Moore, V., Ward, P.R., Jones, M., 2015. Short horizons and obesity futures: disjunctures between public health interventions and everyday temporalities. *Social Science & Medicine* 128, 309-315.

Willis, G.B., 2004. *Cognitive interviewing: A tool for improving questionnaire design.* Sage Publications.

Wright, J., Harwood, V., 2009. *Biopolitics and the 'obesity epidemic': governing bodies.* Routledge.

Zivkovic, T., Warin, M., Moore, V., Ward, P., Jones, M., 2015. The sweetness of care: biographies, bodies and place. In E.J. Abbots, A. Lavis, L. Attala (eds.), *Careful Eating: Bodies, Food and Care*. Ashgate Publishing, Ashgate, Surrey, 109-126.