

SUPPLEMENTARY INFORMATION

Supplementary Table 1. Tax policies reviewed for inclusion in modelling

Jurisdiction	Type of tax(es)	Implementation dates	Tax details	Inclusion	Reason for exclusion
Albany, California, USA	distribution tax on SSB	April 2017 - current	USD 0.01/oz	No	Unable to differentiate SSBs from different retailers
American Samoa	excise tax and import tariff on SSB	2001 - current	USD 0.42/L (NZD2011 0.56/L)	Yes	n/a
Barbados	<i>ad valorem</i> tax on SSB	September 2015 - current	10%	Yes	n/a
Belgium	excise tax on SSB	January 2016 - current	EUR 0.068/L for beverages with added sweeteners (including artificial sweeteners) EUR 0.41/L for liquid SSB concentrates EUR 0.68/kg for SSB powder	No	Unable to differentiate between liquids and powders
Berkeley, California, USA	excise tax on SSB	March 2015 - current	USD 0.01/oz	No	Similar to other SSB taxes modelled
Bermuda	<i>ad valorem</i> tax on SSB	October 2018 - current	50%	Yes	n/a
Boulder, Colorado, USA	excise tax on SSB	July 2017 - current	USD 0.02/oz for SSB (caloric sweetener >=5g/12oz)	No	Tax targets beverages by sugar content
Brunei	excise tax on SSB	April 2017 - current	BND 4.00/10L for SSB (sugar >=6g/100mL), soya milk drinks (sugar >7g/100mL), malted or chocolate drinks (sugar >8g/100mL), and coffee-based or -flavoured drinks (>6g/100mL)	No	Different rates for different sugar contents
Catalonia, Spain	excise tax on SSB	May 2017 - current	EUR 0.08/L for SSB (sugar 5-8g/100mL) EUR 0.12/L for SSB (sugar >8g/100mL)	No	Tiered tax targets beverages by sugar content
Chile	tax on SSB	October 2014 (date of increase) - current	18% for SSB (sugar >= 6.25g/100mL) 10% for SSB (sugar <6.25g/100mL)	No	Tiered tax targets beverages by sugar content
Cook County, Illinois, USA	sales tax on SSB	July 2017 - October 2017	USD 0.01/oz	No	Similar to other SSB taxes modelled
Denmark	(1) excise duty on saturated fat (2) excise duty on chocolate and sweets	October 2011 - January 2013 1968 - current	DKK 16.00/kg saturated fat (NZD2011 3.08/kg saturated fat) DKK 24.61/kg (NZD2011 4.9/kg)	Yes	n/a
Dominica	(1) excise tax on SSB (2) excise tax on foods with high sugar content	September 2015 - current September 2015 - current	10% 10%	Yes	n/a

Jurisdiction	Type of tax(es)	Implementation dates	Tax details	Inclusion	Reason for exclusion
Ecuador	excise tax on SSB	2016 - current	10% for SSB (sugar \geq 25g/L) and energy drinks USD 0.18/100g sugar for SSB (sugar $>$ 25g/L)	No	Tiered tax targets beverages by sugar content
Estonia	excise tax on SSB	2018 - current	EUR 0.10/L for SSB (sugar $<$ 5g/100mL) EUR 0.20/L for SSB (sugar 5-8g/100mL) EUR 0.30/L for SSB (sugar $>$ 8g/100mL)	No	Tiered tax targets beverages by sugar content
Finland	(1) excise duty on SSB	1940 - current	EUR 0.220/L (NZD2011 0.43/L) for SSB and juices EUR 0.11/L (NZD2011 0.21/L) for sweetener-based soft drinks and waters	Yes	n/a
	(2) excise duty on confectionary and ice cream	2011 ² - January 2017	EUR 0.95/kg (NZD2011 1.91/kg)		
Fiji	excise tax and import tariff on SSB	increased in June 2016 (was increased again in August 2017)	15% <i>ad valorem</i> tax on imported SSB 10% <i>ad valorem</i> tax on imported SSB concentrates FJD 0.30/L for locally produced SSB	No	Unable to differentiate between domestic and imported beverages
France	(1) excise duty on SSB and non-sugar-sweetened beverages	January 2012 - current	EUR 0.0716/L excluding <i>ad valorem</i> tax (or EUR 0.0755/L at retail level where 5.5% <i>ad valorem</i> tax is applied)	No	Similar to other SSB taxes modelled
	(2) excise duty on energy drinks	January 2014 - current	EUR 1.00/L		
French Polynesia	production and consumption tax on SSB	2002 - current	USD 0.44/L for domestically produced SSB USD 0.68/L for imported SSB	No	Unable to differentiate between domestic and imported beverages
Gulf Cooperation Council	<i>ad valorem</i> excise tax on carbonated beverages and energy drinks	2017 - current	50% for carbonated beverages 100% for energy drinks	Yes	n/a

Jurisdiction	Type of tax(es)	Implementation dates	Tax details	Inclusion	Reason for exclusion
Hungary	taxes on SSB and junk foods in Hungary	September 2012 - current	HUF 200/L for SSB syrups or concentrates (sugar >8g/100mL and fruit <25%) HUF 7/L for SSB and other juices (sugar >8mg/100mL and fruit >25%) HUF 250/L for energy drinks (methylxanthine >1mg/100mL or taurin >100mg/100mL regardless of sugar content) HUF 130/kg for pre-packed sweets with cocoa powder, including ice creams (sugar >25g/100g) HUF 130/kg for pre-packed sweets with cocoa powder (sugar >40g/100g and cocoa <40g/100g; since January 2012: if milk <50%) HUF 70/kg for sugared cocoa powder (sugar >40g/100g) HUF 250/kg for salty snacks (salt >1g/100g, with exception for certain bakery products) HUF 250/kg for condiments and instant soup (salt >5g/100g, with exception for ketchup, mustard, ready to eat soup, and infant formula) HUF 500/kg for jam (sugar >35g/100g)	No	Unable to match food groups targeted by tax to those in model
India	GST and excise tax on SSB	July 2017 - current	40% (28% GST and 12% excise tax)	No	Unable to model goods and services tax (GST)
Ireland	excise tax on SSB	2018 - current	EUR 0.20/L for SSB (sugar 5-8g/100mL) EUR 0.30/L for SSB (sugar >8g/100mL)	No	Tiered tax targets beverages by sugar content
Kiribati	excise tax and import tariff on SSB	2014 - current	40% excise tax 70% import tariff	No	Unable to differentiate between domestic and imported beverages
Latvia	excise tax on non-alcoholic beverages	May 2004 (increased 2016) - current	EUR 7.40/100L	No	Unable to match beverage categories targeted by tax to those in the model
Jurisdiction	Type of tax(es)	Implementation	Tax details	Inclusion	Reason for

		dates			exclusion
Mexico	(1) excise tax on SSB	January 2014 - current	MXN 1.00/L (10%)	Yes	n/a
	(2) <i>ad valorem</i> tax on junk food	January 2014 - current	8%		
Micronesia	import tariff on SSB	2004 - current	25%	No	Insufficient detail on tax targets
Nauru	import tariff on SSB	2007 - current	30%	No	Insufficient detail on tax targets
Norway	(1) excise tax on SSB	1981 - current	NOK 3.51/L (NZD2011 0.47/L) for prepared soda products NOK 21.35/L (NZD2011 2.85/L) for concentrates (syrups) with added sugar NOK 1.76/L (NZD2011 0.24/L) for juices and syrups based on fruits or vegetables without added sugar NOK 10.67/L (NZD2011 1.43/L) for concentrates without added sugar	Yes	n/a
	(2) excise tax on chocolate and sugar products	1922 - current	NOK 21.22/kg (NZD2011 2.84/kg)		
Oakland, California, USA	excise tax on SSB	July 2017 - current	USD 0.01/oz	No	Similar to other SSB taxes modelled
Palau	import tax on SSB	September 2003 - current	USD 0.28/L (NZD2011 0.37/L)	Yes	n/a
Peru	excise tax on SSB	2018 - current	17% for SSB (sugar <6g/100mL) 25% for SSB (sugar >6g/100mL)	No	Tiered tax targets beverages by sugar content
Philadelphia, Pennsylvania, USA	tax on SSB	January 2017 - current	USD 0.015/oz	No	Similar to other SSB taxes modelled
Philippines	tax on SSB	January 2018 - current	PHP 6.00/l for beverages sweetened with caloric or non-caloric sweeteners	No	Similar to other SSB taxes modelled
			PHP 12.00/L for beverages sweetened with high-fructose corn syrup		
Portugal	<i>ad valorem</i> tax on SSB	February 2017 - current	EUR 8.22/100L for SSB (sugar <80g/L) EUR 16.46/100L for SSB (sugar >=80g/L)	No	Tiered tax targets beverages by sugar content
Republic Marshall Islands	import tariff on SSB	2004 - current	USD 0.0167/oz	No	Insufficient detail on tax targets
Saint Helena	excise tax on SSB	May 2014 - current	GBP 0.75/L for carbonated drinks (sugar >15g/L)	No	Tax targets beverages by sugar content
Jurisdiction	Type of tax(es)	Implementation dates	Tax details	Inclusion	Reason for exclusion

Saint Vincent and the Grenadines	<i>ad valorem</i> tax on brown sugar	May 2016 - current	15%	No	Unable to distinguish brown sugar from other sugars in model
San Francisco, California, USA	excise tax on SSB	January 2018 - current	USD 0.01/oz	No	Similar to other SSB taxes modelled
Seattle, Washington, USA	excise tax on SSB	January 2018 - current	USD 0.0175/oz	No	Similar to other SSB taxes modelled
South Africa	levy on SSB	April 2018 - current	ZAR 0.021/g for SSB (sugar >4g/100mL)	No	Similar to other SSB taxes modelled
Sri Lanka	excise tax on SSB	2017 - current	LKR 0.50/g of sugar	No	Tax targets beverages by sugar content
Tokelau	import ban on SSB	2009 - current	import ban	No	Ban rather than tax
Tonga	(1) tax on SSB (2) excise taxes on unhealthy foods	July 2013 - current (increased 27 June 2017) implementation ranged from 2015 to 2017 - current	TOP 1.50/L for sweetened beverages and fruit juices (sugar >5g/100mL to <=20g/100mL) TOP 4.00/L for concentrated beverages (sugar >20g/100mL) TOP 1.50/kg for imported turkey TOP 1.50/L for imported ice cream TOP 0.25/L for locally produced ice cream TOP 1.15/kg for imported mutton flaps TOP 0.40/kg for chicken leg quarters TOP 2.00/kg for instant noodles	No	Tiered tax targets beverages by sugar content Unable to match food groups covered by the tax to those in model
United Kingdom	excise tax on SSB	2018 - current	GBP 18.00/L for SSB (sugar 5-8g/100mL) GBP 24.00/L for SSB (sugar >8g/100mL)	No	Tiered tax targets beverages by sugar content
Vanuatu	excise tax on SSB	February 2015 - current	VUV 20/L	No	Similar to other SSB taxes modelled

Supplementary Tables 2-7 show the relative risks of diet to disease associations from the Global Burden of Disease (GBD) study.[45]

Supplementary Table 2. Relative risks of BMI-related diseases (non-cancers) from GBD study [45] (RR per 5 BMI unit increase, TMREL: 21-23)

Sex	Age group	CHD	Ischaemic stroke	Haemorrhagic stroke	Type 2 diabetes	Osteoarthritis (knee & hip combined)
Male	25-29	2.274 (1.252 - 3.686)	2.472 (1.398 - 3.979)	3.066 (1.750 - 5.337)	3.546 (2.300 - 5.227)	1.570 (1.327 - 1.860)
	30-34	2.018 (1.291 - 3.107)	2.235 (1.444 - 3.333)	2.913 (1.857 - 4.398)	3.455 (2.500 - 4.692)	1.573 (1.308 - 1.890)
	35-39	1.724 (1.531 - 1.934)	1.979 (1.689 - 2.313)	2.598 (1.974 - 3.385)	3.349 (2.801 - 3.918)	1.573 (1.317 - 1.890)
	40-44	1.599 (1.417 - 1.785)	1.826 (1.599 - 2.076)	2.389 (1.869 - 3.001)	3.160 (2.689 - 3.700)	1.577 (1.313 - 1.878)
	45-49	1.567 (1.455 - 1.681)	1.733 (1.580 - 1.899)	2.199 (1.819 - 2.673)	2.864 (2.450 - 3.318)	1.575 (1.310 - 1.902)
	50-54	1.520 (1.416 - 1.631)	1.635 (1.479 - 1.797)	1.996 (1.625 - 2.420)	2.624 (2.222 - 3.038)	1.561 (1.295 - 1.888)
	55-59	1.466 (1.372 - 1.558)	1.543 (1.440 - 1.653)	1.805 (1.573 - 2.062)	2.417 (2.084 - 2.781)	1.562 (1.310 - 1.879)
	60-64	1.414 (1.324 - 1.505)	1.455 (1.345 - 1.566)	1.665 (1.437 - 1.932)	2.215 (1.866 - 2.611)	1.566 (1.306 - 1.866)
	65-69	1.364 (1.286 - 1.448)	1.380 (1.309 - 1.458)	1.523 (1.376 - 1.686)	2.046 (1.724 - 2.388)	1.566 (1.230 - 1.878)
	70-74	1.319 (1.241 - 1.400)	1.304 (1.233 - 1.377)	1.410 (1.263 - 1.571)	1.896 (1.596 - 2.229)	1.568 (1.307 - 1.899)
	75-79	1.274 (1.187 - 1.365)	1.228 (1.159 - 1.305)	1.295 (1.162 - 1.439)	1.740 (1.445 - 2.087)	1.571 (1.296 - 1.880)
80+	1.170 (1.090 - 1.252)	1.068 (1.000 - 1.143)	1.071 (1.000 - 1.220)	1.461 (1.207 - 1.762)	1.571 (1.310 - 1.897)	
Female	25-29	2.274 (1.252 - 3.686)	2.472 (1.398 - 3.979)	3.066 (1.75 - 5.337)	3.546 (2.300 - 5.227)	1.570 (1.327 - 1.860)
	30-34	2.018 (1.291 - 3.107)	2.235 (1.444 - 3.333)	2.913 (1.857 - 4.398)	3.455 (2.500 - 4.692)	1.573 (1.308 - 1.890)
	35-39	1.724 (1.531 - 1.934)	1.979 (1.689 - 2.313)	2.598 (1.974 - 3.385)	3.349 (2.801 - 3.918)	1.573 (1.317 - 1.890)
	40-44	1.599 (1.417 - 1.785)	1.826 (1.599 - 2.076)	2.389 (1.869 - 3.001)	3.160 (2.689 - 3.700)	1.577 (1.313 - 1.878)
	45-49	1.567 (1.455 - 1.681)	1.733 (1.580 - 1.899)	2.199 (1.819 - 2.673)	2.864 (2.450 - 3.318)	1.575 (1.310 - 1.902)
	50-54	1.520 (1.416 - 1.631)	1.635 (1.479 - 1.797)	1.996 (1.625 - 2.420)	2.624 (2.222 - 3.038)	1.561 (1.295 - 1.888)
	55-59	1.466 (1.372 - 1.558)	1.543 (1.440 - 1.653)	1.805 (1.573 - 2.062)	2.417 (2.084 - 2.781)	1.562 (1.310 - 1.879)
	60-64	1.414 (1.324 - 1.505)	1.455 (1.345 - 1.566)	1.665 (1.437 - 1.932)	2.215 (1.866 - 2.611)	1.566 (1.306 - 1.866)
	65-69	1.364 (1.286 - 1.448)	1.380 (1.309 - 1.458)	1.523 (1.376 - 1.686)	2.046 (1.724 - 2.388)	1.566 (1.300 - 1.878)
	70-74	1.319 (1.241 - 1.400)	1.304 (1.233 - 1.377)	1.410 (1.263 - 1.571)	1.896 (1.596 - 2.229)	1.568 (1.307 - 1.899)
	75-79	1.274 (1.187 - 1.365)	1.228 (1.159 - 1.305)	1.295 (1.162 - 1.439)	1.740 (1.445 - 2.087)	1.571 (1.300 - 1.880)
80+	1.170 (1.090 - 1.252)	1.068 (1.000 - 1.143)	1.071 (1.000 - 1.220)	1.461 (1.207 - 1.762)	1.571 (1.310 - 1.897)	

Supplementary Table 3. Relative risks of BMI-related cancers from the GBD study [45] (RR per 5 BMI unit increase, TMREL: 21-23)

Sex	Age group	Kidney cancer	Liver cancer	Oesophagus cancer	Pancreas cancer	Thyroid cancer	Colorectal cancer	Gallbladder cancer	Endometrial cancer	Breast cancer	Ovarian cancer
Male	All ages	1.240 (1.171-1.313)	1.289 (1.108-1.492)	1.391 (1.075-1.763)	1.071 (1.000-1.154)	1.221 (1.067-1.384)	1.177 (1.145-1.208)	1.155 (1.033-1.282)	N/A	N/A	N/A
Female	All ages	1.320 (1.253-1.395)	1.176 (1.03-1.335)	1.351 (1.012-1.745)	1.092 (1.037-1.144)	1.136 (1.094-1.178)	1.059 (1.031-1.083)	1.344 (1.223-1.478)	1.613 (1.542-1.682)	1.023 (1.020-1.026)	1.038 (1.000-1.078)

Supplementary Table 4. Relative risks of diseases associated with low fruit intake in the GBD study [45] (per 100 grams reduction in fruit intake, TMREL: 200-400g)

Sex	Age group	CHD	Ischaemic stroke	Haemorrhagic stroke	Head & neck cancer*	Lung cancer	Oesophagus cancer
Male	25-29	1.174 (1.075 - 1.270)	1.235 (1.123 - 1.355)	1.732 (1.309 - 2.294)	1.042 (1.000 - 1.092)	1.075 (1.028 - 1.124)	1.151 (1.031 - 1.286)
	30-34	1.164 (1.067 - 1.255)	1.223 (1.123 - 1.338)	1.683 (1.273 - 2.211)			
	35-39	1.155 (1.079 - 1.244)	1.205 (1.104 - 1.316)	1.629 (1.265 - 2.064)			
	40-44	1.143 (1.068 - 1.223)	1.194 (1.099 - 1.295)	1.577 (1.241 - 1.969)			
	45-49	1.129 (1.054 - 1.203)	1.177 (1.098 - 1.259)	1.516 (1.216 - 1.844)			
	50-54	1.117 (1.052 - 1.184)	1.161 (1.089 - 1.240)	1.471 (1.213 - 1.783)			
	55-59	1.107 (1.052 - 1.163)	1.146 (1.079 - 1.214)	1.425 (1.186 - 1.700)			
	60-64	1.098 (1.047 - 1.149)	1.132 (1.073 - 1.195)	1.375 (1.171 - 1.608)			
	65-69	1.088 (1.041 - 1.142)	1.117 (1.063 - 1.175)	1.332 (1.150 - 1.538)			
	70-74	1.077 (1.035 - 1.118)	1.103 (1.057 - 1.156)	1.286 (1.131 - 1.449)			
	75-79	1.066 (1.031 - 1.103)	1.089 (1.049 - 1.127)	1.245 (1.106 - 1.384)			
80+	1.052 (1.040 - 1.062)	1.069 (1.057 - 1.082)	1.188 (1.145 - 1.233)				
Female	25-29	1.174 (1.075 - 1.270)	1.235 (1.123 - 1.355)	1.732 (1.309 - 2.294)	1.042 (1.000 - 1.092)	1.075 (1.028 - 1.124)	1.151 (1.031 - 1.286)
	30-34	1.164 (1.067 - 1.255)	1.223 (1.123 - 1.338)	1.683 (1.273 - 2.211)			
	35-39	1.155 (1.079 - 1.244)	1.205 (1.104 - 1.316)	1.629 (1.265 - 2.064)			
	40-44	1.143 (1.068 - 1.223)	1.194 (1.099 - 1.295)	1.577 (1.241 - 1.969)			
	45-49	1.129 (1.054 - 1.203)	1.177 (1.098 - 1.259)	1.516 (1.216 - 1.844)			
	50-54	1.117 (1.052 - 1.184)	1.161 (1.089 - 1.240)	1.471 (1.213 - 1.783)			
	55-59	1.107 (1.052 - 1.163)	1.146 (1.079 - 1.214)	1.425 (1.186 - 1.700)			
	60-64	1.098 (1.047 - 1.149)	1.132 (1.073 - 1.195)	1.375 (1.171 - 1.608)			
	65-69	1.088 (1.041 - 1.142)	1.117 (1.063 - 1.175)	1.332 (1.150 - 1.538)			
	70-74	1.077 (1.035 - 1.118)	1.103 (1.057 - 1.156)	1.286 (1.131 - 1.449)			
	75-79	1.066 (1.031 - 1.103)	1.089 (1.049 - 1.127)	1.245 (1.106 - 1.384)			
80+	1.052 (1.040 - 1.062)	1.068 (1.056 - 1.081)	1.187 (1.145 - 1.231)				

*The RRs used here were an average of the RRs in the GBD for cancers of the larynx, nasopharynx, and other pharynx and mouth.

Supplementary Table 5. Relative risks of diseases associated with low vegetable intake and high SSB intake from the GBD study [45]

		Vegetables (decrease of 100g/day, TMREL: 350-450g)			SSBs (increase of 226.8 g/day, TMREL: 0-64.3g)	
Sex	Age group	CHD	Ischaemic stroke	Haemorrhagic stroke	Type 2 diabetes	Ovarian cancer
Male	25-29	1.129 (1.068 - 1.190)	1.222 (1.047 - 1.429)	1.392 (1.084 - 1.764)	1.462 (1.222 - 1.751)	N/A
	30-34	1.117 (1.062 - 1.171)	1.206 (1.048 - 1.375)	1.353 (1.080 - 1.672)	1.426 (1.182 - 1.696)	
	35-39	1.111 (1.056 - 1.162)	1.193 (1.051 - 1.341)	1.344 (1.076 - 1.675)	1.392 (1.187 - 1.624)	
	40-44	1.103 (1.052 - 1.157)	1.178 (1.038 - 1.338)	1.310 (1.076 - 1.585)	1.360 (1.169 - 1.586)	
	45-49	1.096 (1.051 - 1.141)	1.163 (1.036 - 1.302)	1.289 (1.075 - 1.542)	1.332 (1.151 - 1.537)	
	50-54	1.086 (1.046 - 1.129)	1.148 (1.031 - 1.269)	1.257 (1.071 - 1.490)	1.297 (1.137 - 1.478)	
	55-59	1.079 (1.043 - 1.117)	1.132 (1.025 - 1.249)	1.235 (1.056 - 1.444)	1.271 (1.126 - 1.424)	
	60-64	1.073 (1.040 - 1.108)	1.124 (1.030 - 1.221)	1.212 (1.046 - 1.398)	1.238 (1.117 - 1.377)	
	65-69	1.064 (1.035 - 1.093)	1.109 (1.026 - 1.194)	1.187 (1.046 - 1.356)	1.214 (1.101 - 1.332)	
	70-74	1.056 (1.030 - 1.083)	1.097 (1.024 - 1.177)	1.166 (1.047 - 1.304)	1.188 (1.085 - 1.292)	
	75-79	1.049 (1.028 - 1.073)	1.083 (1.018 - 1.150)	1.140 (1.035 - 1.254)	1.160 (1.073 - 1.251)	
80+	1.038 (1.031 - 1.045)	1.065 (1.045 - 1.085)	1.109 (1.073 - 1.144)	1.123 (1.095 - 1.151)		
Female	25-29	1.129 (1.068 - 1.190)	1.222 (1.047 - 1.429)	1.392 (1.084 - 1.764)	1.462 (1.222 - 1.751)	1.001 (1.000 - 1.002)
	30-34	1.117 (1.062 - 1.171)	1.206 (1.048 - 1.375)	1.353 (1.080 - 1.672)	1.426 (1.182 - 1.696)	1.001 (1.000 - 1.002)
	35-39	1.111 (1.056 - 1.162)	1.193 (1.051 - 1.341)	1.344 (1.076 - 1.675)	1.392 (1.187 - 1.624)	1.001 (1.000 - 1.003)
	40-44	1.103 (1.052 - 1.157)	1.178 (1.038 - 1.338)	1.310 (1.076 - 1.585)	1.360 (1.169 - 1.586)	1.001 (1.000 - 1.003)
	45-49	1.096 (1.051 - 1.141)	1.163 (1.036 - 1.302)	1.289 (1.075 - 1.542)	1.332 (1.151 - 1.537)	1.001 (1.000 - 1.003)
	50-54	1.086 (1.046 - 1.129)	1.148 (1.031 - 1.269)	1.257 (1.071 - 1.490)	1.297 (1.137 - 1.478)	1.001 (1.000 - 1.003)
	55-59	1.079 (1.043 - 1.117)	1.132 (1.025 - 1.249)	1.235 (1.056 - 1.444)	1.271 (1.126 - 1.424)	1.001 (1.000 - 1.003)
	60-64	1.073 (1.040 - 1.108)	1.124 (1.030 - 1.221)	1.212 (1.046 - 1.398)	1.238 (1.117 - 1.377)	1.001 (1.000 - 1.003)
	65-69	1.064 (1.035 - 1.093)	1.109 (1.026 - 1.194)	1.187 (1.046 - 1.356)	1.214 (1.101 - 1.332)	1.001 (1.000 - 1.003)
	70-74	1.056 (1.030 - 1.083)	1.097 (1.024 - 1.177)	1.166 (1.047 - 1.304)	1.188 (1.085 - 1.292)	1.001 (1.000 - 1.003)
	75-79	1.049 (1.028 - 1.073)	1.083 (1.018 - 1.150)	1.140 (1.035 - 1.254)	1.160 (1.073 - 1.251)	1.001 (1.000 - 1.003)
80+	1.038 (1.031 - 1.045)	1.064 (1.044 - 1.086)	1.110 (1.074 - 1.146)	1.122 (1.096 - 1.149)	1.001 (1.000 - 1.003)	

Supplementary Table 6. Relative risks of diseases associated with high sodium intake and low polyunsaturated fatty acids (PUFA) intakes from the GBD study [45]

		Sodium intake (increase of 1 gram/day, TMREL: 1-5g)				PUFA intake (decrease of 5% TE, TMREL: 10-15% TE)
Sex	Age group	CHD	Ischaemic stroke	Haemorrhagic stroke	Stomach cancer	CHD
Male	25-29	1.044 (1.009 - 1.091)	1.056 (1.014 - 1.106)	1.058 (1.016 - 1.113)	1.199 (1.000 - 1.444)	1.148 (1.059 - 1.241)
	30-34	1.054 (1.023 - 1.092)	1.074 (1.037 - 1.117)	1.079 (1.037 - 1.130)	1.205 (1.007 - 1.430)	1.140 (1.057 - 1.231)
	35-39	1.060 (1.034 - 1.093)	1.090 (1.053 - 1.126)	1.097 (1.055 - 1.147)	1.205 (1.000 - 1.462)	1.130 (1.050 - 1.214)
	40-44	1.067 (1.040 - 1.100)	1.103 (1.065 - 1.140)	1.112 (1.068 - 1.158)	1.202 (1.000 - 1.443)	1.120 (1.045 - 1.194)
	45-49	1.077 (1.047 - 1.110)	1.112 (1.075 - 1.149)	1.121 (1.077 - 1.175)	1.209 (1.000 - 1.448)	1.112 (1.044 - 1.180)
	50-54	1.084 (1.054 - 1.118)	1.118 (1.082 - 1.156)	1.127 (1.079 - 1.187)	1.198 (1.000 - 1.431)	1.101 (1.042 - 1.166)
	55-59	1.089 (1.060 - 1.124)	1.121 (1.086 - 1.157)	1.128 (1.081 - 1.184)	1.204 (1.006 - 1.430)	1.093 (1.035 - 1.155)
	60-64	1.091 (1.056 - 1.131)	1.120 (1.087 - 1.156)	1.126 (1.070 - 1.187)	1.200 (1.000 - 1.459)	1.084 (1.034 - 1.134)
	65-69	1.092 (1.059 - 1.130)	1.117 (1.083 - 1.152)	1.122 (1.072 - 1.175)	1.206 (1.003 - 1.432)	1.075 (1.030 - 1.123)
	70-74	1.083 (1.051 - 1.119)	1.100 (1.072 - 1.130)	1.103 (1.062 - 1.149)	1.210 (1.000 - 1.446)	1.066 (1.026 - 1.108)
75-79	1.073 (1.033 - 1.114)	1.081 (1.056 - 1.109)	1.083 (1.036 - 1.144)	1.203 (1.000 - 1.435)	1.057 (1.023 - 1.094)	
80+	1.057 (1.021 - 1.098)	1.040 (1.021 - 1.063)	1.043 (1.000 - 1.097)	1.205 (1.000 - 1.460)	1.045 (1.034 - 1.056)	
Female	25-29	1.040 (1.007 - 1.085)	1.051 (1.010 - 1.101)	1.053 (1.012 - 1.108)	1.199 (1.000 - 1.444)	1.148 (1.059 - 1.241)
	30-34	1.050 (1.019 - 1.090)	1.068 (1.030 - 1.112)	1.072 (1.031 - 1.124)	1.205 (1.007 - 1.430)	1.140 (1.057 - 1.231)
	35-39	1.057 (1.029 - 1.091)	1.084 (1.046 - 1.124)	1.091 (1.048 - 1.141)	1.205 (1.000 - 1.462)	1.130 (1.050 - 1.214)
	40-44	1.063 (1.036 - 1.096)	1.097 (1.058 - 1.135)	1.106 (1.060 - 1.154)	1.202 (1.000 - 1.443)	1.120 (1.045 - 1.194)
	45-49	1.073 (1.044 - 1.108)	1.107 (1.069 - 1.146)	1.116 (1.071 - 1.171)	1.209 (1.000 - 1.448)	1.112 (1.044 - 1.180)
	50-54	1.082 (1.050 - 1.118)	1.114 (1.076 - 1.154)	1.123 (1.074 - 1.185)	1.198 (1.000 - 1.431)	1.101 (1.042 - 1.166)
	55-59	1.088 (1.057 - 1.123)	1.119 (1.083 - 1.156)	1.127 (1.079 - 1.181)	1.204 (1.006 - 1.430)	1.093 (1.035 - 1.155)
	60-64	1.091 (1.056 - 1.132)	1.121 (1.085 - 1.157)	1.126 (1.068 - 1.188)	1.200 (1.000 - 1.459)	1.084 (1.034 - 1.134)
	65-69	1.093 (1.059 - 1.130)	1.118 (1.083 - 1.152)	1.123 (1.075 - 1.180)	1.206 (1.003 - 1.432)	1.075 (1.030 - 1.123)
	70-74	1.084 (1.050 - 1.120)	1.101 (1.074 - 1.130)	1.105 (1.064 - 1.153)	1.210 (1.000 - 1.446)	1.066 (1.026 - 1.108)
75-79	1.074 (1.034 - 1.117)	1.082 (1.058 - 1.110)	1.084 (1.037 - 1.145)	1.203 (1.000 - 1.435)	1.057 (1.023 - 1.094)	
80+	1.058 (1.022 - 1.098)	1.041 (1.022 - 1.064)	1.044 (1.000 - 1.097)	1.205 (1.000 - 1.460)	1.044 (1.033 - 1.055)	

Supplementary Table 7. Relative risks of the association between dental caries and SSB intake [12]

Sex	SSB dose (g)	Dental caries
Male	0	1.000 (1.000 – 1.000)
	4	1.007 (1.005 - 1.009)
	36	1.065 (1.046 - 1.084)
	71	1.124 (1.088 - 1.161)
	89	1.151 (1.108 - 1.195)
	98	1.163 (1.118 - 1.210)
	125	1.196 (1.144 - 1.250)
	128	1.199 (1.147 - 1.254)
	143	1.214 (1.160 - 1.271)
	161	1.230 (1.175 - 1.289)
	250	1.285 (1.227 - 1.347)
	277	1.298 (1.238 - 1.361)
	300	1.309 (1.247 - 1.375)
	428	1.376 (1.296 - 1.461)
	500	1.418 (1.328 - 1.513)
600	1.481 (1.381 - 1.588)	
750	1.586 (1.476 - 1.705)	
1000	1.792 (1.659 - 1.935)	
1200	1.982 (1.805 - 2.175)	
1500	2.306 (2.015 - 2.640)	
Female	0	1.000 (1.000 – 1.000)
	4	1.007 (1.005 - 1.009)
	36	1.065 (1.046 - 1.084)
	71	1.124 (1.088 - 1.161)
	89	1.151 (1.108 - 1.195)
	98	1.163 (1.118 - 1.210)
	125	1.196 (1.144 - 1.250)
	128	1.199 (1.147 - 1.254)
	143	1.214 (1.160 - 1.271)
	161	1.230 (1.175 - 1.289)
	250	1.285 (1.227 - 1.347)
	277	1.298 (1.238 - 1.361)
	300	1.309 (1.247 - 1.375)
	428	1.376 (1.296 - 1.461)
	500	1.418 (1.328 - 1.513)
600	1.481 (1.381 - 1.588)	
750	1.586 (1.476 - 1.705)	
1000	1.792 (1.659 - 1.935)	
1200	1.982 (1.805 - 2.175)	
1500	2.306 (2.015 - 2.640)	

Supplementary Table 8. Baseline input parameters used in modeling real-world junk food and SSB tax policies.

Key Parameter	Source and application to model	Uncertainty	Distribution and heterogeneity
Baseline population count	Statistics New Zealand population estimates for 2011.	Nil uncertainty	Sex; age; ethnicity
All-cause mortality rates	Statistics New Zealand mortality rates for 2011.	Nil uncertainty	Sex; age; ethnicity
Disease-specific incidence, prevalence, case fatality rates, and remission rates	Coherent sets of incidence, prevalence, case fatality rate and remission rates (zero for non-cancers) were estimated using DISMOD II for each disease, using data from NZ Burden of Disease Study (NZBDS), the Ministry of Health, and Health Tracker.	Uncertainty: rates all $\pm 5\%$ SD	Log-normal; sex; age; ethnicity
Disease trends	Trends are applied to incidence, case fatality, and remission and are switched on until 2026 and then kept constant for the remainder of the modelled population's lifetimes.	Uncertainty $\pm 0.5\%$ absolute change; diabetes: uncertainty $\pm 1.5\%$ absolute change	Normal; sex; ethnicity
Total morbidity per capita in 2011	The per capita rate of years of life lived with disability (YLD) from the NZBDS.	Uncertainty: $\pm 10\%$ SD	Log-normal; sex; age; ethnicity
Disease morbidity rate per capita	Each disease was assigned a disability rate (by sex and age) equal to YLDs for that disease (scaled down to adjust for comorbidities) from the 2006 NZBDS projected forward to 2011, divided by the disease prevalence. The disability rate was assigned to the proportion of the cohort in each disease state.	Uncertainty: $\pm 10\%$ SD	Normal; sex; age
Health system costs	Health system costs (NZ\$2011) were estimated from linked health data (hospitalizations, inpatient procedures, outpatients, pharmaceuticals, laboratories, and expected primary care usage) for each individual in New Zealand for the period 2006–2010, which had unit costs assigned to each event.	Estimated at SD $\pm 10\%$ of the point estimate	Gamma; sex; age
Time lags for intervention effect	It takes time for a change in body mass index (BMI) or other dietary risk factors ¹ to impact on disease incidence, and as there are no precise data on just how long it may take, we have used wide windows of time lags. The time lag is assumed to range between 10 and 30 years for cancers and between 0 and 5 years for CHD, stroke, diabetes, and osteoarthritis (the noncancers). Wide uncertainty is included around these estimates.	Uncertainty: $\pm 20\%$ SD	Normal
Theoretical minimum risk exposure level (TMREL) for BMI and dietary risk factors	The TMREL is the level of risk exposure that is theoretically possible and minimizes overall risk. It is derived from the Global Burden of Disease 2013 study. The TMREL allows us to estimate how much of the disease burden could be lowered by shifting the distribution of a risk factor to the level that would lead to the greatest improvement in population health.	Uncertainty: uniform distribution between 0 and 1	Uniform
Height of New Zealand adult population (for BMI calculation)	Mean and SD of height from the New Zealand Adult Nutrition Survey 2008 to 2009.	Uncertainty using reported SD	Normal; sex; ethnicity
Intervention costs	The cost of the introduction of a law (NZ\$3.5 million).[48]	95% UI: \$2.0 to \$6.2 million	Gamma

¹For additional information on baseline dietary data and dietary risk factors see the Technical Report.[47]

Supplementary Table 9 shows the results of a scenario analysis in which the model was run with total food expenditure (but not beverages) constrained using a total food expenditure elasticity (TFEe) in order to avoid potential under- or over-estimation of post-intervention food purchasing. The results of this scenario analysis are also shown in comparison with the results without a TFEe adjustment in Supplementary Figure 1. In this scenario, the change in QALYs was smaller (ie, fewer QALYs gained) for taxes that targeted foods (ie, Denmark, Dominica, Finland, Mexico, and Norway) than in the base case scenario. The results for Denmark and Mexico's tax packages changed the most, with Denmark's tax package resulting in 25568,1300 QALYs gained using a TFEe for foods, as compared to 62959,7200 QALYs without a TFEe (Table 4). Mexico's tax package resulted in 1389,2000 QALYs gained when using a TFEe for foods, as compared to 23846,8000 QALYs without a TFEe (Table 4). However, this scenario analysis still supports the overall conclusion that implementing the modelled tax policies is expected to yield substantial health gains and health system cost savings.

Supplementary Table 9. Change in dietary risk factors used for health and health system costs modelling for tax policies with a total food expenditure elasticity (TFEe) adjustment for foods (not beverages)

Tax package	Change in QALYs	Population weighted price index after tax ^{1,2}	Change in expenditure (%) ²	Δ BMI	Δ Fruit (g/day)	Δ Vegetables (g/day)	ΔSSB (g/day)	Δ Sodium (g/day)	Δ Poly-unsaturated fat intake (% total energy)	Δ Red meat (g/day)	Δ Processed meat (g/day)	Δ Nuts and seeds (g/day)
American Samoa	<u>12630,0400</u>	0.0%	0.0%	-0.14	0.0	0.0	-18.9	-0.01	0.0%	0.0	0.0	0.0
Barbados	<u>612,1900</u>	0.0%	0.0%	-0.06	0.0	0.0	-14.7	0.00	0.0%	0.0	0.0	0.0
Bermuda	<u>2899,8400</u>	0.0%	0.0%	-0.31	0.0	0.0	-56.0	-0.02	0.1%	0.0	0.0	0.0
Denmark	<u>25568,1300</u>	3.0%	2.3%	-0.33	6.6	6.7	0.4	0.03	0.0%	2.3	1.7	0.6
Dominica	<u>568,1600</u>	0.2%	0.2%	-0.05	0.4	0.4	-11.6	0.00	0.0%	0.2	0.3	0.2
Finland	<u>1148,0500</u>	0.2%	0.2%	-0.12	0.3	0.3	-18.9	0.00	0.1%	0.2	0.2	0.1
Gulf Cooperation Council ³	<u>27584,9400</u>	0.0%	0.0%	-0.29	0.0	0.0	-64.2	-0.02	0.1%	0.0	0.0	0.0
Mexico	<u>1389,2000</u>	1.0%	0.8%	-0.22	1.4	1.5	-13.9	0.00	0.0%	0.7	0.8	-0.6
Norway	<u>1518,3500</u>	0.2%	0.2%	-0.17	0.4	0.4	-12.8	0.00	0.1%	0.2	0.3	0.2
Palau	<u>535,9500</u>	0.0%	0.0%	-0.05	0.0	0.0	-13.0	0.00	0.0%	0.0	0.0	0.0

¹using Bayesian price elasticity and total food expenditure elasticity

²beverages not included, only includes changes in food Price Index and change in food expenditure

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Supplementary Figure 1. Comparison of quality-adjusted life years (QALYs) calculated with a total food expenditure elasticity (TFEe) adjustment for foods and without a TFEe for tax policies







