

## NOURISHING framework



### Use economic tools to address food affordability and purchase incentives

This table provides examples of the types of policy action that can be taken within this policy area, examples of where these policy actions have been implemented, and a brief description of what the action involves. It provides a global snapshot, largely of policies already implemented; it is not necessarily comprehensive. The examples were collated through a review of international reports of policy actions around the world, academic articles reporting on policy actions, and online government resources.

We welcome feedback. Please contact us at [policy@wcrf.org](mailto:policy@wcrf.org) if you would like to add any further examples of implemented policies, see the policy documents that we reference, or have any further questions or comments. Please note all references to \$ represents USD.

EXAMPLES OF POLICY ACTIONS	EXAMPLES OF WHERE IMPLEMENTED	WHAT THE ACTION INVOLVES
<b>Health-related food taxes</b>	<b>Bahrain</b>	The Kingdom of Bahrain has introduced an excise tax which went into effect on 30 December 2017 after the Implementation Regulations of Excise Tax were issued with the Resolution of the Minister of Finance (Resolution No. 17, 2017) and published in the Official Gazette on 28 December 2017. The excise tax rate imposed by the law is a 100% tax rate on energy drinks and a 50% tax rate on soft drinks. Soft drinks are defined as any aerated beverage except unflavoured aerated water and include any concentrates, powder, gel, or extracts intended to be made into an aerated beverage. Any person intending to import or produce the excisable goods are required to register for the tax.

	<p><b>Barbados</b></p>	<p>In June 2015, the government of Barbados passed a 10% excise tax on locally produced and imported sugary drinks, including carbonated soft drinks, juice drinks, sports drinks and others. Drinks exempt from the tax include 100% natural fruit juice, coconut water, plain milk and evaporated milk. The tax came into effect on 1 August 2015.</p> <p><b>Evaluation</b>  Alvarado M et al. (2017) Trends in beverage prices following the introduction of a tax on sugar-sweetened beverages in Barbados. Preventive Medicine. Available online 15 July 2017 <a href="http://dx.doi.org/10.1016/j.ypmed.2017.07.013">http://dx.doi.org/10.1016/j.ypmed.2017.07.013</a><sup>i</sup></p> <p><b>Added May 2019:</b> Alvarado M et al. (2019). Assessing the impact of the Barbados sugar-sweetened beverage tax on beverage sales: an observational study. International Journal of Behavioural Nutrition and Physical Activity 16(1), 1-13<sup>xxxi</sup></p>
	<p><b>Belgium</b></p>	<p>In December 2015, the Belgian government increased the excise duty on soft drinks by 0.03 Euro per litre as part of a general “health tax” (Law on measures to strengthen job creation and purchasing power–26 December 2015). The now 0.068 Euro (around \$0.07) per litre excise duty came into effect on 1 January 2016 and is applied to all soft drinks, including non-alcoholic drinks and water containing added sugar or other sweeteners or flavours. An excise duty is also applied to any substance intended for the use of manufacturing soft drinks (liquid: 0.41 Euro per litre, around \$0.45; powder: 0.68 Euro per kg, around \$0.70).</p>
	<p><b>Bermuda</b></p>	<p>On 1 October 2018, the Customs Tariffs Amendment (No 2) Act 2018 introduced an ad valorem tax of 50% of the value of waters, including mineral waters and aerated waters, containing added sugar or other sweetening matter or flavouring, and other non-alcoholic beverages entered into force. Syrups containing sugar or other sweetening matter are also taxed at 50%, while fruit and vegetable juices are exempt. Tariff Code 1704.909 also introduced a 50% tax on sugar confectionery not containing cocoa.</p> <p><b>Updated May 2019:</b>  On 1 April 2019, the Customs Tariffs Amendment Act 2019 increased the ad valorem tax on 1) sugar confectionery (including white chocolate), not containing cocoa, 2) chocolate and other food preparations containing cocoa and added sugar, 3) preparations for making beverages, containing added sugar and 4) waters, including mineral waters and aerated waters, containing added sugar to 75%.</p>

	<p><b>Brunei</b></p>	<p>In effect since 1 April 2017, Brunei applies an excise duty at a rate of 0.40 Brunei dollars (around \$0.28) per litre for sugar-sweetened beverages with more than 6g of total sugar per 100mL, soya milk drinks with more than 7g of total sugar per 100mL, malted or chocolate drinks with more than 8g of total sugar per 100mL and coffee based drinks or coffee flavored drinks with 6g of total sugar per 100mL. Milk-based beverages and fruit juices are exempt from the tax.</p>
	<p><b>Chile</b></p>	<p>Since 1 January 2015, Chile applies an 18% ad valorem tax to sugary drinks that contain more than 6.25g of sugar per 100mL, raised from a 13% ad valorem tax on sugary drinks introduced on 1 October 2014. Sugary drinks include all non-alcoholic drinks with added sweeteners including energy drinks and waters. Sugary drinks with less than 6.25g of sugar per 100mL are taxed at 10%.</p> <p><b>Evaluation</b> Caro JC et al. (2018) Chile’s 2014 sugar-sweetened beverage tax and changes in prices and purchases of sugar-sweetened beverages: An observational study in an urban environment. <i>PLOS Medicine</i> 15(7): e1002597.<sup>ii</sup></p> <p><b>Added May 2019:</b> Nakamura R et al (2018). Evaluating the 2014 sugar-sweetened beverage tax in Chile: An observational study in urban areas. <i>PLoS Medicine</i> 15(7), e1002596<sup>xxx</sup></p>
	<p><b>Denmark</b></p>	<p>In October 2011, Denmark introduced a tax of 16 Danish Kroner (around \$2.70) per kg of saturated fat for products exceeding 2.3g saturated fat per 100g fat. Taxed products included meat, animal fat, dairy products, margarine and spreads, edible vegetable oils and fats as well as items containing these products. The tax was abolished as of 1 January 2013.</p> <p><b>Expired policy</b></p> <p><b>Evaluations</b> Smed S et al. (2016) The effects of the Danish saturated fat tax on food and nutrient intake and modelled health outcomes: an econometric and comparative risk assessment evaluation. <i>European Journal of Clinical Nutrition</i> 70, 681-686<sup>iii</sup></p> <p>Bødker M et al. (2015) The Danish fat tax—Effects on consumption patterns and risk of ischaemic heart disease. <i>Preventive Medicine</i> 77, 200-203<sup>iv</sup></p>
	<p><b>Dominica</b></p>	<p>In effect since 1 September 2015, Dominica applies a 10% excise tax to food and drinks with high sugar content. This includes sweets, candy, chocolate bars, soft drinks and other sweetened drinks (including energy drinks). Revenues from the tax will contribute to a national</p>

		Get Healthy campaign.
	<b>Ecuador</b>	In April 2016, the government of Ecuador passed the Organic Law to Balance Public Finances (Official Record 744 Ley Organica para el equilibrio de las finanzas publicas). In effect since May 2016, a 10% ad valorem tax is applied to soft drinks with less than 25g of sugar per litre and to all energy drinks. Drinks with more than 25g of sugar per litre are taxed at a special rate of \$0.0018 per gram of sugar. Drinks exempt from the tax include dairy products and their derivatives, mineral water and juices that have 50% of natural content.
	<b>Fiji</b>	In the mid-year budget of 23 June 2016, Fiji raised the excise duty on locally produced sweetened beverages from 10 Fijian cents per litre (around \$0.05 per litre) to 30 cents per litre (around \$0.15 per litre). In August 2017, the excise duty was further raised to 35 cents per litre (around \$0.17 per litre). Imported sweetened beverages are subject to an ad valorem excise duty of 15% (raised from 10% in 2011), and imported powders and preparations to make beverages (other than milk-based drinks) as well as flavoured and coloured sugar syrups are taxed at 10% since 2007. Taxed beverages include carbonated and non-carbonated drinks sweetened with sugar or artificial sweeteners. The tax increase aims to protect children from obesity and lifelong poor health. Tax revenue goes to the general fund.
	<b>Finland</b>	Finland imposed excise taxes on non-alcoholic beverages and confectionery for most of the 20th century for revenue-raising purposes. The excise duty on confectionery was removed in 2000, re-introduced in 2011 and removed again in January 2017. In 2014, the tax rate was 0.95 Euro per kg by weight for confectionery and ice cream, 0.220 Euro per litre for beverages with more than 0.5% sugar and 0.11 Euro per litre for other non-alcoholic beverages. The tax on candy and ice cream was removed on 1 January 2017. Currently an excise tax is levied on non-alcoholic beverages. Producers with an annual production volume of less than 50,000 litres are exempted from the tax.
	<b>France</b>	Since 1 January 2012, France has applied an excise duty to drinks with added sugar and artificial sweeteners, including sodas, fruit drinks, flavoured waters and “light” drinks (Law no 2011-1977). Since 1 July 2018, France has applied an excise tax proportional to the sugar content of sugar sweetened drinks. Official Customs Bulletin No 7212 outlines a table with the tax rates per kilogram of added sugar per hectoliter up to 15kg. For example, a drink with 5g of added sugar per litre is taxed at 0.055 Euro per litre and a drink with 10g of added sugar per litre is taxed at 0.135 Euro per litre. An excise tax is also applied to non-calorically sweetened drinks at a rate of 3 Euro per hectoliter.
		<b>Evaluation</b>

		<p>Berardi N et al. (2012) The impact of a 'soda tax' on prices: Evidence from French micro data. Working Paper No. 415, Banque de France<sup>v</sup></p> <p>Etilé F, Lecocq S, Boizot-Szantai, C. The Incidence of Soft-Drink Taxes on Consumer Prices and Welfare: Evidence from the French "Soda Tax". PSE Working Papers n°2018- 24. 2018.<sup>vi</sup></p>
	<p><b>French Polynesia</b></p>	<p>Various food and beverage taxes have been in place in French Polynesia since 2002 to discourage consumption and raise revenue: domestic excise duty on sweetened drinks and beer; import tax on sweetened drinks, beer and confectionery; tax on ice cream. Between 2002 and 2006, tax revenue went to a preventive health fund; from 2006, 80% has been allocated to the general budget and earmarked for health. The tax is 40 CFP franc (around \$0.44) per litre on domestically produced sweet drinks, and 60 CFP franc (around \$0.68) per litre on imported sweet drinks.</p> <p><b>Evaluation</b></p> <p>Thow AM et al. (2010) Taxing soft drinks in the Pacific: implementation lessons for improving health. <i>Health Promotion International</i> 26(1), 55-64<sup>vii</sup></p>
	<p><b>Hungary</b></p>	<p>In July 2011, Hungary passed Act CIII on the Public Health Product Tax. Effective since September 2011, the "public health tax" is applied on the salt, sugar and caffeine content of various categories of ready-to-eat food, including soft drinks (both sugar- and artificially-sweetened), energy drinks and pre-packaged sugar-sweetened products. The tax is applied at varying rates. Soft drinks, for example, are taxed 7 forints (around \$0.024) per litre, concentrated syrups used to sweeten drinks are taxed 200 forints (around \$0.70) per litre and pre-packaged sugar-sweetened products are taxed 130 forints (around \$0.45) per kg. The tax also applies to products high in salt, including salty snacks with more than 1g salt per 100g, condiments with more than 5g salt per 100g and flavourings more than 15g salt per 100g.</p> <p><b>Evaluations</b></p> <p>Bíró A (2015) Did the junk food tax make the Hungarians eat healthier? <i>Food Policy</i> 54, 107-115<sup>viii</sup></p> <p>National Institute for Food and Nutrition Science Directorate General. Assessment of the impact of a public health product tax, Final report. World Health Organization, Regional Office for Europe, November 2015<sup>ix</sup></p>

	<b>India</b>	On 1 July 2017, The Constitution (One Hundred and First Amendment) Act 2017 came into force across India which introduced a Goods and Services Tax of 28% on all goods [including aerated waters], containing added sugar or other sweetening matter or flavour with a further 12% cess added on top of the tax. This Act replaces all other GST laws at State level and is applied across India. It is the highest GST rate for goods in India.
	<b>Ireland</b>	On 1 May 2018, the Republic of Ireland's Sugar Sweetened Drinks Tax came into force under the Finance Act 2017 (No. 41 of 2017). The tax applies to non-alcoholic, water-based and juice-based drinks which have added sugar content of 5g per 100mL and above. Drinks with over 8g of sugar per 100mL are taxed at 30 cents per litre, and drinks with between 5g and 8g of sugar per 100mL are taxed at 20 cents per litre. Fruit juices and dairy products are excluded from the tax.
	<b>Kiribati</b>	In 2014, Kiribati imposed an excise duty of 40% on non-alcoholic beverages (including mineral and aerated waters) that contain added sugar, other sweeteners or flavourings; fruit and vegetable juices as well as fruit concentrates are exempt from the tax.
	<b>Latvia</b>	In effect since 1 May 2004, Latvia applies an excise tax on non-alcoholic beverages under the Law on Excise Duties (adopted 30 October 2003). Non-alcoholic beverages are defined as water and mineral water with added sugar, other sweetener or flavouring, and other non-alcoholic beverages, except fruit and vegetable juice and nectar, beverages which contain more than 90% juice (except fruit juices made of concentrate), less than 10% of added sugar and which do not contain food additives and flavourings, natural water and mineral water, water enriched with minerals and vitamins, and without added sugar, other sweetener or flavouring. Since 2016, the tax rate is 7.40 Euro per 100L (up from 2.85 Euro per 100L in 2004).
	<b>Mauritius</b>	As of October 2016, Mauritius applies an excise tax to all sugar-sweetened beverages, whether imported or locally manufactured. Sugar-sweetened beverages include juices, milk-based beverages and soft drinks. Previously, the tax was only applied to the sugar content of soft drinks (since 1 January 2013). In 2016, sugar-sweetened beverages were taxed at 0.03 rupees (around \$0.0008) per gram of sugar.
	<b>Mexico</b>	In December 2013, the Mexican legislature passed two new taxes as part of the National Strategy for the Prevention and Control of Overweight, Obesity and Diabetes (Estrategia Nacional Para Un Mexico Sin Obesidad). They entered into force on 1 January 2014. An excise duty of 1 peso (around \$0.05) per litre applies to sugary drinks. Sugary drinks are defined under the law as all drinks with added sugar, excluding milks or yoghurts. Preliminary price monitoring indicates that the price of sugary drinks has increased by around 10%. The revenue from the

sugary drink tax should be allocated to fund programmes addressing malnutrition, obesity and obesity-related chronic diseases, as well as access to drinking water (6th transitory article, Federal Law on Income for the Fiscal Year 2017); however, the revenue is currently being allocated to the general budget. An ad valorem excise duty of 8% applies to food with high caloric density, defined as equal to or more than 275 calories per 100g. The food product categories that are affected by the tax include chips and snacks, confectionery, chocolate and cacao based products, puddings, peanut and hazelnut butters.

In effect since 1 January 2011, a 25% tax is applied to energy drinks. Energy drinks were added to the Special Tax on Production and Services Law (Ley del Impuesto Especial sobre Producción y Servicios) by Decree on 19 November 2010. The Law defines energy drinks as non-alcoholic beverages with more than 20mg per 100mL of caffeine and mixed with stimulants (eg taurine). The Law also applies to concentrates, powders and syrups used to prepare energy drinks.

#### Evaluations

Hernández-F M et al. (2018) Reduction in purchases of energy-dense nutrient-poor foods in Mexico associated with the introduction of a tax in 2014. *Preventive Medicine* 118: 16-22.<sup>x</sup>

Colchero MA et al. (2017) In Mexico, Evidence Of Sustained Consumer Response Two Years After Implementing A Sugar-Sweetened Beverage Tax. *Health Affairs* 36(3):564-571.<sup>xi</sup>

Taillie LS et al. (2017). Do high vs. low purchasers respond differently to a nonessential energy-dense food tax? Two-year evaluation of Mexico's 8% nonessential food tax. *Preventive medicine*, 105, S37-S42.<sup>xii</sup>

Batis C et al. (2016) First-Year Evaluation of Mexico's Tax on Nonessential Energy-Dense Foods: An Observational Study. *PloS Medicine* 13(7): e1002057<sup>xiii</sup>

Colchero M et al.(2016). Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. *British Medical Journal*, 352, h6704.<sup>xiv</sup>

**Added May 2019:** Alvarez-Sanchez C et al (2018). Does the Mexican sugar-sweetened beverage tax have a signalling effect? ENSANUT 2016. *PLoS ONE* 13(8), e0199337<sup>xxix</sup>

**Added May 2019:** Ng SW et al. (2018). Did high sugar-sweetened beverage purchasers respond differently to the excise tax on sugar-sweetened beverages in Mexico? *Public Health Nutrition* 22(4):1-7.<sup>xv</sup>

	<p><b>Morocco</b></p>	<p><b>Added May 2019:</b> On 1 January 2019, Article 5 of the Finance Act 2019 came into effect increasing Morocco's value-added tax on manufactured or imported soft and non-carbonated drinks with added sugars by 50%. Carbonated or non-carbonated water, mineral water, table water or others containing &lt;10% of edible fruit juice or juice concentrates are taxed Moroccan Dirham (MAD) 0.45 (about \$0.04) per litre; or those with &gt;10% fruit juice or juice concentrates taxed at MAD 0.15 (about \$0.016) per litre. Lemonades containing sugar with &lt;6% lemon juice or concentrate equivalent were taxed MAD 0.45 per litre; or those containing &gt;6% lemon juice or concentrate equivalent taxed at MAD 0.15 per litre. Unfermented carbonated or non-carbonated beverages containing malt extracts and natural fruit flavourings, and sweetened with sucrose, dextrose, glucose, fructose, maltose or a mixture were taxed MAD 1.24 (about \$0.13) per litre. Energy drinks containing at least two stimulant ingredients such as caffeine, taurine and glucuronolactone were taxed MAD 6.00 (about \$0.62) per litre.</p>
	<p><b>Norway</b></p>	<p>Implemented in 1981, Norway taxes non-alcoholic beverages containing added sugar or sweeteners, chocolate, sugar and sugar products. In 2017, beverages are taxed at 3.34 Norwegian Kroner (NOK) per litre (around \$0.40), concentrated syrups at 20.32 NOK per litre (around \$2.44), chocolate and sugar products at 20.19 NOK per kg (\$2.43), and sugar at 7.81 NOK per kg (\$0.94).</p>
	<p><b>Palau</b></p>	<p>In September 2003, the Palau government introduced "Title 40 Chapter 13 § 1301 Imposition of import tax" of the Palau National Code. The Code introduced a \$0.28175 per litre import tax on carbonated soft drinks.</p>
	<p><b>Peru</b></p>	<p>On 10 May 2018, the Peruvian Government implemented Supreme Decree No. 091-2018-EF which imposes a 25% tax on beverages with a sugar content of 6g or more per 100mL. This is an 8% increase from the 17% tax which was already in place. Taxed beverages include non-alcoholic beverages, sweetened waters and 0% alcohol beer. Beverages with less than 6g of sugar per 100mL are not taxed.</p>
	<p><b>Philippines</b></p>	<p>On 1 January 2018, the Philippines Government implemented a sweetened beverage excise tax of six pesos per litre (around \$0.12) on products using purely caloric and purely non-caloric sweeteners or a mix of both as part of the Tax Reform for Acceleration and Inclusion (TRAIN) tax reform programme under Republic Act 10963. It also implemented a twelve pesos per litre (around \$0.24) excise tax on drinks using purely high-fructose corn syrup or in combination with any caloric or non-caloric sweetener. The products taxed include non-alcoholic beverages that contain caloric sweetener (defined as a substance that is sweet and includes sucrose, fructose glucose) or noncaloric sweetener (defined as a substance that are artificially or chemically processed that produces a certain sweetness, and includes aspartame, sucralose, saccharin,</p>

acesulfame potassium, neotame, cyclamates and other non-nutritive sweeteners). Taxed sweetened beverages include the following: sweetened juice drinks; sweetened tea; all carbonated beverages; flavoured water; energy and sports drink; other powdered drinks not classified as milk, juice, tea, and coffee; cereal and grain beverages; and other non-alcoholic beverages that contain added sugar. 100% natural fruit and vegetable juices, milk products, and meal replacement and medically indicated beverages are exempt from the tax.

**Portugal**

The State Budget for 2017 (1 January 2017) introduced a new tax on sugar sweetened drinks which came into effect on 1 February 2017. Under the Special Taxes on Consumption (Decreto-Lei No. 73/2010, de 21/06), nonalcoholic beverages with a sugar content of less than 80g per litre will be charged at €0.08 per litre (around \$0.10); or €0.16 per litre (around \$0.20) when the sugar content exceeds 80g per litre. The tax covers mineral, flavoured and aerated waters that contain added sugar or other sweeteners.

**Evaluation**

**Added May 2019:** Goiana-da-Silva et al (2018). The future of the sweetened beverages tax in Portugal. *The Lancet Public Health* 3(12), PE562<sup>xxviii</sup>

**Qatar**

**Added May 2019:** In 2018, the Government of Qatar introduced Law No. (25) the ‘Qatar Excise Tax Law’ that came into effect on 1 January 2019. The Qatar Excise Tax Law introduced a 50% ad valorem tax on carbonated waters with added sugar, sweeteners or flavours, as well as concentrates, powders, gels or extracts intended to be made into a carbonated beverage. A tax rate of 100% is applied to beverages sold as energy drinks that contain stimulant substances (e.g. caffeine, taurine, ginseng, guarana). Carbonated non-flavoured waters, coffee and tea are excluded from the excise tax. The excise tax applies to all imported, produced or stockpiled aerated beverages (except unflavoured aerated water) and energy drinks.

**Samoa**

Soft drinks, both imported and locally produced, have been taxed in Samoa since 1984. From 1984 until 2008, the excise tax amounted to 0.3 Samoan Tala per litre (around \$0.12); in 2008 the rate changed to 0.4 Samoan Tala per litre (around \$0.17).

In 2007, Samoa imposed a ban on high fat turkey tails. In 2012 the ban was lifted when Samoa joined the World Trade Organization and a 300% import duty was set for two years followed by a 100% import duty.

**Evaluation**

Thow AM et al. (2010) Taxing soft drinks in the Pacific: implementation lessons for improving health. *Health Promotion International* 26(1), 55-64<sup>xi</sup>

	<p><b>Saudi Arabia</b></p>	<p>The Kingdom of Saudi Arabia's Government approved the Excise Tax Law which went into effect on 9 June 2017, and all businesses that import or produce stock of excisable goods are expected to register with the General Authority of Zakat and Tax (GAZT). The excise tax rates imposed by the law are a 100% tax rate on energy drinks and a 50% tax rate on carbonated drinks (including soft drinks, carbonated water, and juice). The rates may differ depending on the nature of the product. For example, carbonated drinks may have different tax rates if they are dispensed as fountain drinks or as cans. GAZT has published a user manual for those required to register for excise tax.</p>
	<p><b>South Africa</b></p>	<p>In December 2017, the South African government passed the Rates and Monetary Amounts and Amendment of Revenue Laws Act 2017 - Act No. 14 which introduced a Sugary Beverages Levy. The Levy is fixed at 2.1 cents (\$0.17) per gram of sugar content in a sugary beverage that exceeds 4g per 100mL. The first 4g of sugar content in sugary beverages are not subject to the Levy. Sugary beverages include mineral waters and aerated waters, containing added sugar or other sweeteners or flavours, and other non-alcoholic beverages (excluding fruit or vegetable juices).</p>
	<p><b>Spain</b></p>	<p>In effect since 1 May 2017, the region of Catalonia, Spain, applies a tax on packaged sugary drinks (under Law 5/2017). Sugary drinks include soft drinks, flavoured water, chocolate drinks, sports drinks, cold tea and coffee drinks, energy drinks, fruit nectar drinks, vegetable drinks, and sweetened milk, alternative milk drinks, milkshakes and milk drinks with fruit juice. The Catalan regional government's levy increases the price of drinks with 5-8g of sugar for every 100mL by €0.08 per litre and the price of drinks with more than 8g of sugar for every 100mL by 0.12 Euro. Natural fruit juices, alcoholic beverages, sugar-free soft drinks and alternatives to milk with no added caloric sweeteners are not taxed.</p>
	<p><b>St Helena</b></p>	<p>In effect since 27 May 2014, a £0.75 (around \$0.95) per litre excise duty is applied to high-sugar carbonated drinks in St Helena (Customs and Excise Ordinance Chapter 145, Section 5). High sugar carbonated drinks are defined as drinks containing 15g or more of sugar per litre.</p>
	<p><b>St Vincent and the Grenadines</b></p>	<p>In effect since 1 May 2016, St Vincent and the Grenadines applies a value added tax of 15% to brown sugar. The measure was put in place to help encourage a reduction in sugar consumption. Revenue from the tax goes to a consolidated fund to help finance initiatives to treat diabetes.</p>
	<p><b>Thailand</b></p>	<p>On 16 September 2017, the Excise Tax B.E. 2560 (2017) went into effect in Thailand introducing an excise sugar tax on certain beverages. An ad valorem rate is applied to the following beverages: artificial mineral water, soda water, and carbonated soft drinks without sugar or other sweeteners and without flavour; mineral water and carbonated soft drinks with added</p>

		<p>sugar or other sweeteners of flavours (14%); fruit and vegetable juices (10%). An additional specific tax on sugar is added to the ad valorem tax starting at 0.10 baht (around \$0.0031) per litre for drinks containing over 6g to 8g; 0.30 baht (around \$0.0095) per litre for drinks containing 8g to 10g; 0.50 baht (around \$0.015) per litre for drinks containing 10g of sugar to 14g and 1 baht (around \$0.031) per litre for drinks containing over 14g per 100mL of sugar. The sugar tax increases every two years and by the year 2023 onwards the tax will be 1 baht (around \$0.031) per litre for drinks containing 6 to 8g; 3 baht (around \$0.095) for drinks from 8g to 10g; 5 baht (around \$0.15) per litre for drinks over 10g.</p>
	<b>Tonga</b>	<p>As of 2013, Tonga taxes soft drinks containing sugar or sweeteners at 1 Pa'anga per litre (around \$0.50). The 2013 taxes on animal fat products (eg lard and drippings) were increased in 2016 from 1 Pa'anga to 2 Pa'anga per kilogram (around \$0.90), and on turkey tails from 1 Pa'anga to 1.5 Pa'anga (around \$0.70).</p>
	<b>UAE</b>	<p>On 17 August 2017, the Federal Decree-Law No.(7) of 2017 on Excise Tax (“UAE Excise Tax Law”) was introduced. The UAE Excise Tax Law came into effect on 1 October 2017. The excise tax applies to the import, manufacture, stockpiling or release of excisable goods. While the law does not list the goods that will be subject to the excise tax, the Federal Tax Authority has outlined that a 50% tax will be applied to all carbonated drinks and a 100% tax will be applied to energy drinks. Carbonated drinks include any aerated beverage except for unflavoured aerated water. This includes concentrations, powders, gel or extracts intended to be made into an aerated beverage. Energy drinks include beverages which are marked, or sold as an energy drink, and contain stimulant substances that provide mental and physical stimulation.</p>
	<b>UK</b>	<p>In April 2018 the UK government’s Soft Drinks Industry Levy came into force (as outlined in the Finance Act 2017). The Soft Drink Industry Levy applies to any pre-packaged soft drink with added sugar, containing at least 5g of total sugars per 100mL of prepared drink. Soft drinks that have a total sugar content of more than 5g and less than 8g per 100mL are taxed 0.18 British pounds (\$0.25) per litre and drinks that have a total sugar content of 8g or more per 100mL are taxed 0.24 British pounds (\$0.34) per litre. Milk-based drinks, milk substitute drinks, pure fruit juices, or any other drinks with no added sugar, alcohol substitute drinks, and soft drinks of a specified description which are for use for medicinal or other specified purposes are exempt from the levy. The levy applies to soft drinks produced and packaged in the UK and soft drinks imported into the UK.</p>
	<b>US</b>	<p>In November 2014, the city of Berkeley, California, passed a law (Ordinance 7388-NS) taxing sugary drinks. An excise duty of one cent per ounce of a sugar-sweetened beverage applies to soda, energy drinks and heavily pre-sweetened tea, as well as to the added caloric sweeteners used to produce them (note: tax on an ounce of added caloric sweeteners would be significantly more than \$0.01). Infant formula, milk products, and natural fruit and vegetable juices are</p>

exempt. The Ordinance has a duration of 12 years and was implemented in March 2015 (initial effective date had been planned to be 1 January 2015). The revenue goes into the City's general fund which funds community health and nutrition programmes.

In November 2014, the Navajo Nation adopted the Healthy Diné Nation Act (Legislation No CN-54-14) into law. It includes a 2% tax on "minimal-to-no-nutritional value food items", including sugar-sweetened beverages, pre-packaged and non-prepackaged snacks stripped of essential nutrients and high in salt, saturated fat and sugar including sweets, chips and crisps. The tax was implemented 1 April 2015. Revenue from the tax is earmarked for the Community Wellness Development Projects Fund and used for projects such as farming, vegetable gardens, greenhouses, farmers' markets, healthy convenience stores, clean water, exercise equipment and health classes. The tax is collected through self-reporting.

In November 2016, the City of Albany passed Ordinance 2016-02 which introduced a one cent per ounce general tax, with no expiration date. The policy came into effect on 1 April 2017. The ordinance imposes a general tax on the distribution of sugar-sweetened beverages including soda, energy drinks, and heavily sweetened tea, as well as added caloric sweeteners used to produce these sugar-sweetened beverages (for example the premade syrup used to make fountain drinks). "Added caloric sweetener" is defined as any substance or combination of substances that is suitable for human consumption, adds calories to the diet if consumed, is perceived as sweet when consumed and is used for making, mixing, or compounding sugar-sweetened beverages by combining the substance or substances with one or more ingredients including, without limitation, water, ice, powder, coffee, tea, fruit juice, vegetable juice, or carbonation or other gas. Added caloric sweeteners include sucrose, fructose, glucose, other sugars, and high fructose corn syrup. The tax does not apply to infant formula, milk products, natural fruit and vegetable juice.

In effect since 1 January 2017, a one and half cent per ounce tax is applied to sugary and diet beverages distributed or supplied in Philadelphia, Pennsylvania (Bill 160176). The tax is applied to any non-alcoholic beverage with caloric sugar-based sweetener or artificial sugar substitute listed as an ingredient, including soda, non-100% fruit drinks, sports drinks, flavoured water, energy drinks, pre-sweetened coffee or tea, and non-alcoholic beverages intended to be mixed into an alcoholic drink. The tax also applies to any non-alcoholic syrups or other concentrate used in beverages (both caloric sugar-based sweetener and artificial sugar substitute) at a rate of 1.5 cent-per-ounce on the resulting beverage. Revenue from the tax is planned to help fund community initiatives including pre-kindergarten schooling, community schools, parks, recreations centres and libraries. In June 2017 the Philadelphia Court of Common Pleas ruled that the tax is lawful, following an appeal by the American Beverage Association, local restaurants and merchant associations. The case is now on the way to the Supreme Court of Pennsylvania.

In effect since 1 July 2017, a two cents per ounce excise tax is applied on the distribution of sugar-sweetened beverages in Boulder, Colorado (Ordinance No. 8130). A sugar-sweetened beverage is defined as any non-alcoholic beverage which contains at least 5g of caloric sweetener per 12 fluid ounces. Products exempt from the tax include any milk product, infant formula, any alcoholic beverage, any beverage for medical use and any distribution of syrups and powders sold directly to a consumer intended for personal use. The Sugar Sweetened Beverage Product Distribution Tax is a voter-initiated tax that was adopted by Boulder voters in the November 2016 election. The revenue will be spent on health promotion, general wellness programmes and chronic disease prevention that improve health equity such as access to safe and clean drinking water, healthy foods, nutrition and food education, physical activity, and other health programmes especially for residents with low income and those most affected by chronic disease linked to sugary drink consumption. Those who fail to file their returns and remit tax payments will be subject to enforcement action.

In effect since 1 July, 2017, a one cent per ounce excise tax is applied on the distribution of sugar-sweetened beverages in Oakland, California (Ordinance No. 86161). Sugar-sweetened beverages are defined as any beverage to which one or more caloric sweeteners have been added and that contain  $\geq 25$  calories per 12 fluid ounces of beverage. Taxed beverages include sodas, sports drinks, sweetened teas and energy drinks. Exemptions include milk products, 100% juice, infant or baby formula, diet drinks or drinks taken for medical reasons. The Sugar-Sweetened Beverage Distribution Tax was approved by voters in the November 2016 election. "Distribution" includes the sale of beverages or sweeteners by one business to another (such as a sale from a wholesale business to a retail business) or the transfer of beverages or sweeteners from a wholesale unit of a business to one of its retail units. "Distribution" does not include retail sales to customers. The distribution of sugar-sweetened beverages will not be taxed more than once in the chain of commerce. Revenue from the tax will be deposited into the City's general fund, and the City could use the revenue for any lawful governmental purpose. The tax will not apply to any distributor that is a small business. "Small Business" is defined as a business with less than \$100,000 in yearly gross sales, if the business distributes sugar-sweetened beverages directly to consumers.

On 1 January 2018, a law taxing sugary drinks (Council Bill 118965 6/5/2017) came into effect in Seattle, Washington. An excise duty of 1.75 cents per fluid ounce of sugar-sweetened beverages and one cent per ounce for manufacturers (with a worldwide gross income of more than \$2,000,000 but less than \$5,000,000) applies to beverages with caloric sweeteners and the syrups and powders that are used to prepare them, including sodas, energy drinks, fruit drinks, sweetened teas and ready-to-drink coffee drinks. Beverages that contain fewer than 40 calories per 12-ounce serving: beverages with milk as the principle ingredient, 100% natural fruit and vegetable juice, meal replacement beverages, infant formula, and concentrates used

in combination with other ingredients to create a beverage are excluded from the tax. The Sweetened Beverage Tax Community Advisory Board will review and make recommendations on the plans to implement and review programmes funded with the revenue. For the first five years, 20 percent of the funds raised from the tax will be set aside for one-time expenditures, then this allotment will cease. The remainder of the funds will support public health, nutrition education, food security, and healthy affordable food access; evidence-based programmes that address disparities, administration of the tax and Advisory Board, and programme evaluation.

On 1 January 2018, a law taxing sugary drinks (Proposition V 11/8/2016) came into effect in San Francisco, California. An excise duty of one cent per ounce applies to sugar-sweetened beverages containing added sugar and more than 25 calories per 12 ounces. The tax also applies to syrups and powders that can be made into sugar-sweetened beverages. Beverages containing solely 100% juice, artificially-sweetened beverages, infant formula, and milk products are exempt from the tax. Revenue from the tax goes into the City's General Fund. An advisory committee will submit an annual report evaluating the impact of the tax on beverage prices, consumer purchasing behavior and public health and make recommendations on the potential establishment and/or funding of programmes to reduce the consumption of sugar-sweetened beverages.

#### Evaluations

Zhong Y et al. (2018) The short-term impacts of the Philadelphia beverage tax on beverage consumption. *American Journal of Preventive Medicine* 55(1): 26-34.<sup>xvii</sup>

Silver, LD et al. (2017) Changes in prices, sales, consumer spending, and beverage consumption one year after a tax on sugar-sweetened beverages in Berkeley, California, US: A before-and-after study. *PLoS Medicine* 14(4): e1002283.<sup>xviii</sup>

Falbe J et al. (2016) Impact of the Berkeley Excise Tax on Sugar-Sweetened Beverage Consumption. *AJPH* 106(10), 1865-1871<sup>xix</sup>

**Added May 2019:** Lee MM et al (2019). Sugar-sweetened beverage consumption 3 years after the Berkeley, California, sugar-sweetened beverage tax. *American Journal of Public Health* 109(4), 637-639<sup>xxxii</sup>

#### Vanuatu

In effect since 9 February 2015, a 50 vatu (around \$0.47) per litre excise duty is applied to carbonated beverages containing added sugar or other sweetening matter in Vanuatu (Excise (Amendment) Act No.32) Beverage is defined as "waters, including mineral waters and aerated waters, containing added sugar or other sweetening matter or flavoured."

<b>Voluntary health-related food taxes</b>	<b>UK</b>	<p>As part of the #SugarSmartCity campaign (see “1 – Inform people about food &amp; nutrition through public awareness” for details), Brighton &amp; Hove City Council is promoting a voluntary sugar tax. The City Council actively encourages food outlets to adopt a voluntary £0.10 levy (around \$0.15) on all non-alcoholic sugar-sweetened drinks sold. Money raised from the voluntary levy goes to the Children’s Health Fund, set up by Sustain: the Alliance for Food and Farming in partnership with Jamie Oliver in August 2015, to support food education and health initiatives for children.</p>
<b>Increasing import tariffs on specified "unhealthy" food</b>	<b>Cook Islands Fiji French Polynesia Micronesia Nauru Samoa</b>	<p>These countries have all introduced import duties on either soft drinks or sugar; Nauru also taxes high-sugar food. These are either charged ad valorem (Cook Islands – 15% with a subsequent 2% rise per year, since 2013; Fiji – 32%, since 2011; Micronesia – 25%, since 2004; Nauru – 30%, since 2007) or on a certain volume or weight of goods (French Polynesia – around \$0.68 per litre for imported drinks, since 2002; Samoa – around \$0.17 per litre, since 2008).</p> <p><b>Evaluation</b> Thow AM et al. (2010) Taxing soft drinks in the Pacific: implementation lessons for improving health. <i>Health Promotion International</i> 26(1), 55-64<sup>xx</sup></p>
	<b>Fiji</b>	<p>In 2012, Fiji implemented an import duty on palm oil and monosodium glutamate of 32%.</p>
	<b>Tonga</b>	<p>In 2016, Tonga implemented an import duty of 15% on turkey tails, lamb flaps and lamb breasts.</p>
<b>Lowering import tariffs on specified "healthy" food</b>	<b>Fiji</b>	<p>To promote vegetable and fruit consumption, Fiji has removed the excise duty on imported fruits, vegetables and legumes. It has also decreased the import tax for most varieties from the original 32% to 5% (exceptions: 32% import tax remains on tomatoes, cucumbers, potatoes, squash/pumpkin; and 15% on coconuts, pineapples, guavas, mangosteens) and removed it for garlic and onions.</p>
	<b>Tonga</b>	<p>In 2013, as part of a broader package of fiscal measures, Tonga lowered import duties from 20% to 5% for imported fresh, tinned or frozen fish in order to increase affordability and promote healthier diets.</p>
<b>Targeted subsidies for healthy food<sup>xxi</sup></b>	<b>Canada</b>	<p>Launched on April 1, 2011, Nutrition North Canada (NNC) is a Government of Canada subsidy program that helps provide Northerners in isolated communities with improved access to perishable, nutritious food. NNC provides a retail based subsidy that enables local retailers and registered suppliers to access and lower the cost of perishable healthy foods like meat, fish, eggs, milk and bread, as well as fruit and vegetables, all of which must be transported by air to</p>

these isolated communities. NNC also subsidizes commercially processed country or traditional foods such as Arctic char, muskox, and caribou. NNC has two subsidy levels: Level 1, which is the higher subsidy, is granted to foods that are deemed the most perishable and most nutritious; while level 2, the lower subsidy, is applied to other staple food items.

Eligibility is based on isolation factors and focuses on communities that lack year-round surface access (no permanent road, rail, or marine access) requiring goods to be flown in. Effective October 1, 2016, 121 northern communities had full access to the NNC subsidy. Four criteria inform subsidy rates, which vary across communities: 1) geographical distance from the supply centre to the isolated community, 2) distance flown, 3) population according to the Census, and 4) minimum wage.

Residents in eligible communities can purchase subsidized food from registered northern retailers. Individuals, local restaurants, and social institutions can also access the subsidy by ordering eligible items directly from registered suppliers. Retailers and suppliers are responsible for passing on the full subsidy to consumers and participate in regular compliance reviews as part of their agreement with the Department of Indigenous and Northern Affairs Canada. In order to increase program transparency, on April 1, 2016, NNC implemented a mandatory point-of-sale system allowing customers to clearly see the application of the NNC subsidy on their grocery receipts.

#### **Evaluations**

Galloway T. (2017) Canada' northern food subsidy *Nutrition North Canada: a comprehensive program evaluation. International Journal of Circumpolar Health* 76(1), 1279451<sup>xxii</sup>

Galloway T. (2014) Is the Nutrition North Canada retail subsidy program meeting the goal of making nutritious and perishable food more accessible and affordable in the North? *Can J Public Health* 105(5): e395-397.<sup>xxiii</sup>

#### **UK**

The British Healthy Start programme provides pregnant women and/or families with children under the age of four with weekly vouchers to spend on food including milk, plain yoghurt, and fresh and frozen fruit and vegetables. Participants or their family must be receiving income support/jobseekers allowance or child tax credits. Pregnant women under the age of 18 can also apply. Full national implementation of the programme began in 2006.

#### **Evaluation**

McFadden A et al. (2014) Can food vouchers improve nutrition and reduce health inequalities in low-income mothers and young children: a multi-method evaluation of the experiences of beneficiaries and practitioners of the Healthy Start programme in England. *BMC Public Health* 14:148<sup>xxiv</sup>

## US

In 2009, the US Department of Agriculture (USDA) implemented revisions to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) to improve the composition and quantities of WIC-provided food from a health perspective. The New York City Health Department District Public Health Offices distribute Health Bucks to farmers' markets (launched in 2006). When customers use income support (eg Food Stamps) to purchase food at farmers' markets, they receive one Health Buck worth \$2 for each \$5 spent, which can then be used to purchase fresh fruit and vegetables at a farmers' market.

In 2010, the Philadelphia Department of Public Health partnered with The Food Trust to launch Philly Food Bucks as part of Get Healthy Philly, a public health initiative that promotes healthy eating, active living and smoking cessation. The Philly Food Bucks programme incentivises recipients of income assistance under the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, to purchase fresh produce. For every \$5 spent using SNAP at a participating farmers' market, shoppers receive \$2 in Philly Food Bucks, which are redeemable for fresh produce. The Philly Food Bucks programme increases the purchasing power of low-income shoppers by 40% and increases access to fruit and vegetables. Between 2010 and 2016, over \$350,000 worth of fresh fruit and vegetables have been purchased with Philly Food Bucks, and SNAP sales at participating farmers' markets have increased by more than 300%. In 2015, with the support of the Philadelphia Department of Public Health, local foundations and funding provided by the United States Department of Agriculture (USDA) through its Food Insecurity Nutrition Incentive (FINI) grant programme, The Food Trust expanded the Philly Food Bucks initiative to other retail settings in the State of Pennsylvania, including supermarkets, corner stores, mobile markets, and additional farmers' markets. Results from a supermarket pilot showed a 49% increase in produce purchasing among SNAP shoppers who participated in the Food Bucks Program. Funding for the programme's expansion is currently secured until March 2018.

### Evaluations

Lu W et al. (2016) Evaluating the Influence of the Revised Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Food Allocation Package on Healthy Food Availability, Accessibility, and Affordability in Texas. *Journal of the Academy of Nutrition and Dietetics*, 116(2), 292-301<sup>xxv</sup>

Baronberg S et al. (2013) The Impact of New York City's Health Bucks Program on Electronic Benefit Transfer Spending at Farmers Markets, 2006-2009. *Preventing Chronic Disease* 10:130113<sup>xxvi</sup>

Young CR et al. (2013) Improving Fruit and Vegetable Consumption Among Low-Income Customers at Farmers Markets: Philly Food Bucks, Philadelphia, Pennsylvania, 2011. *Preventing Chronic Disease* 10:120356<sup>xxvii</sup>

A number of other organisations provide access to policy databases. Some are listed below:

### **International**

[WHO Global Database on the Implementation of Nutrition Action](#)

[WHO Noncommunicable Disease Document Repository](#)

### **Europe**

[WHO Europe Database on Nutrition, Obesity and Physical Activity](#)

### **United States**

[The Rudd Center for Food Policy and Obesity – Legislation Database](#)

[National Association of State Boards of Education – State School Health Policy Database](#)

[National Cancer Institute – Classification of Laws Associated with School Students](#)

[Centers for Disease Control – Chronic Disease State Policy Tracking System](#)

### **Canada**

[Prevention Policies Directory](#)

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<sup>i</sup> <http://www.sciencedirect.com/science/article/pii/S0091743517302608>

<sup>ii</sup> <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002597> (accessed on 05/07/2018)

<sup>iii</sup> <http://www.nature.com/ejcn/journal/v70/n6/full/ejcn20166a.html> (accessed on 20/10/2016)

<sup>iv</sup> <http://www.sciencedirect.com/science/article/pii/S0091743515001589> (accessed on 20/10/2016)

<sup>v</sup> [https://publications.banque-france.fr/sites/default/files/medias/documents/working-paper\\_415\\_2012.pdf](https://publications.banque-france.fr/sites/default/files/medias/documents/working-paper_415_2012.pdf) (accessed on 05/01/2017)

<sup>vi</sup> <https://halshs.archives-ouvertes.fr/halshs-01808198/document> (accessed 28/09/2018)

<sup>vii</sup> <http://heapro.oxfordjournals.org/content/26/1/55.full.pdf+html> (accessed on 20/10/2016)

<sup>viii</sup> <http://www.sciencedirect.com/science/article/pii/S0306919215000561> (accessed on 20/10/2016)

<sup>ix</sup> [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0008/332882/assessment-impact-PH-tax-report.pdf?ua=1](http://www.euro.who.int/__data/assets/pdf_file/0008/332882/assessment-impact-PH-tax-report.pdf?ua=1) (accessed on 24/02/2017)

<sup>x</sup> <https://reader.elsevier.com/reader/sd/pii/S0091743518302974?token=DC06A5559686FA1366F5FEF800E22DA281EBB254FBF3EBD2C81A4D73135E8B16B9D3A6376F32967C95FC6CD79898C702> (accessed on 28/11/2018)

<sup>xi</sup> <http://m.content.healthaffairs.org/content/early/2017/02/16/hlthaff.2016.1231.full.pdf> (accessed on 24/02/2017)

<sup>xii</sup> <https://www.sciencedirect.com/science/article/pii/S0091743517302566?via%3Dihub>

<sup>xiii</sup> <http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002057> (accessed on 20/10/2016)

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xiv <http://www.bmj.com/content/352/bmj.h6704>

xv <https://www.cambridge.org/core/journals/public-health-nutrition/article/did-high-sugarsweetened-beverage-purchasers-respond-differently-to-the-excise-tax-on-sugarsweetened-beverages-in-mexico/37DBC66A6F1E19F74942888814EB1EA3>

xvi <http://heapro.oxfordjournals.org/content/26/1/55.full.pdf+html> (accessed on 20/10/2016)

xvii [https://www.ajpmonline.org/article/S0749-3797\(18\)31600-3/fulltext](https://www.ajpmonline.org/article/S0749-3797(18)31600-3/fulltext) (accessed on 20/06/2018)

xviii <https://doi.org/10.1371/journal.pmed.1002283> (accessed on 18/05/2017)

xix <http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2016.303362> (accessed on 20/10/2016)

xx <http://heapro.oxfordjournals.org/content/26/1/55.full.pdf+html> (accessed on 20/10/2016)

xxi Private insurance providers also offer private subsidy schemes. For example, South Africa's largest private health insurer, Discovery Health, runs the cash back rebate programme "Vitality", in which healthier items purchased in food shops receive a 10% discount.

xxii <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5328347/pdf/zich-76-1279451.pdf> (accessed on 05/07/2017)

xxiii <https://www.ncbi.nlm.nih.gov/pubmed/25365276> (accessed on 05/07/2017)

xxiv <http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-14-148> (accessed on 21/12/2016)

xxv <http://www.sciencedirect.com/science/article/pii/S2212267215016263> (accessed on 09/01/2017)

xxvi [https://www.cdc.gov/pcd/issues/2013/13\\_0113.htm](https://www.cdc.gov/pcd/issues/2013/13_0113.htm) (accessed on 20/10/2016)

xxvii [https://www.cdc.gov/pcd/issues/2013/12\\_0356.htm](https://www.cdc.gov/pcd/issues/2013/12_0356.htm) (accessed on 31/01/2017)

xxviii [http://www.calwic.org/storage/FourStateWICFoodPackageEvaluation-Full\\_Report-20May11.pdf](http://www.calwic.org/storage/FourStateWICFoodPackageEvaluation-Full_Report-20May11.pdf) (accessed on 10/01/2017)

xxviii [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(18\)30240-8/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(18)30240-8/fulltext) (accessed on 05/04/2019)

xxix <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199337> (accessed 05/04/2019)

xxx <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002596> (accessed 05/04/2019)

xxxi <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-019-0776-7> (accessed 05/04/2019)

xxxii <https://ajph.aphapublications.org/doi/10.2105/AJPH.2019.304971> (accessed 05/04/2019)