

**Understanding Policy Change for Obesity Prevention:  
Learning from Sugar-Sweetened Beverages Taxes in Mexico  
and Chile**

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**Understanding Policy Change for Obesity Prevention: Learning from Sugar-Sweetened Beverages Taxes in Mexico and Chile**

**Abstract**

This article examines the policy change process that resulted in the current sugar-sweetened beverages (SSB) taxes in Mexico and Chile, using the Kaleidoscope Model for Policy Change, a framework developed for nutrition and food policy change analysis. We used a qualitative study design, including 24 key informant interviews (16 researchers, 5 civil society representatives, and 3 food/beverage industry representatives), encompassing global and in-country perspectives. The analysis shows concurrence with the Kaleidoscope Model, highlighting commonalities in the policy change process. These included the importance of focusing events and coalitions for agenda-setting. Both top-down executive leadership and bottom-up pressure from civil society coalitions were important for the policy adoption as were flexible framing of the tax, and taking advantage of windows of opportunity. In both countries, the tax resulted from national, revenue-seeking fiscal reforms, and in sub-optimal tax rates, as a result of the industry influence. Key informants also discussed emerging evaluation results, highlighting differences in interpretation concerning the magnitude of change from the tax, and shared potential modifications to the current policies. This analysis contributes to a greater understanding of the policy change process focused on obesity prevention, using an innovative theoretical framework developed specifically for food and nutrition policy.

Keywords: Obesity prevention, Tax, Sugar-sweetened beverages, Policy process, Mexico, Chile, Qualitative research

## Introduction

Policymakers and health advocates recognize the need to regulate food environments to positively influence eating behaviors in response to the rapid global rise in diet-related chronic diseases. A rising number of countries and jurisdictions have adopted policies regulating the consumption of sugar-sweetened beverages (SSBs) through taxes (Leonhardt 2018). Nutrition policymaking in general, and SSB tax policy in particular, are highly contentious (Baker, Hawkes et al. 2018, Sassi, Belloni et al. 2018). Food evokes emotional, behavioral, and physiological responses among consumers, making policies aimed at restricting access to certain foods particularly contentious – as in the case of regulating sugary beverages. These policies inevitably trigger debates about the proper role of government in regulating harmful behavior (Sassi, Belloni et al. 2018), the role of the food and beverage industry, and conflict of interest in the food and nutrition policymaking process (Timotijevic, Barnett et al. 2011, Nestle 2013, Cuadrado, Valenzuela et al. 2018).

The complex and contentious nature of regulatory and fiscal food and nutrition policies necessitates a better understanding of the policymaking process. Yet, research is limited in relation to obesity prevention policy change processes. Most studies have taken place in the United States and the United Kingdom, focusing on the agenda-setting stage of the policy process (Clarke, Swinburn et al. 2016). Hence, the present study sought to address the existing research sparsity. We used SSB taxes in two Latin American countries (Mexico and Chile) as objects of comparative study to examine what explains successful SSB tax reform, using the Kaleidoscope Model for Policy Change framework developed specifically for food and nutrition policies.

Mexico and Chile were selected as they were as early adopters of SSB tax policy for public health purposes, at the national level, in Latin America. Mexico and Chile have similar political systems, as electoral democracies that have presidential systems with bicameral legislators. They also have similar economic systems, as market-oriented economies (CIA 2019, CIA 2019). Both have employed fiscal policies to address public health concerns over obesity and non-communicable chronic diseases. Chile has been taxing nonalcoholic drinks as a luxury good since the 1930s to address the country’s fiscal deficit (Ferrando 2014). The tax was applied to all soft drinks with added color, flavor or sweeteners, regardless of the amount of sugar. In October 2014, the tax was modified into a two-tiered tax, based on sugar content. It was increased from 13% to 18% on drinks containing more than 6.25g of sugar/100 ml, and decreased to 10% for sugary drinks with less than 6.25g of sugar/100mL. Mexico implemented a new SSB tax in 2014, consisting of a 1-peso-per-liter excise tax on any non-alcoholic beverage with added sugar (approximately a 10% price increase), with the exception of dairy products. The rate was adjusted for inflation in 2018, increasing to 1.17 peso-per-liter (Colchero, Barrientos Gutiérrez et al. 2018). The SSB tax was accompanied by an 8% tax to foods with high caloric density ( $\geq 275$  calories/100g), and an earlier tax on energy drinks of 25% implemented in 2011. The two cases have been examined individually, using mostly quantitative, impact evaluation studies (Colchero, Popkin et al. 2016, Sanchez-Romero, Penko et al. 2016, Caro, Corvalan et al. 2018, Nakamura, Mirelman et al. 2018), with a notable exception (James, Lajous et al. 2019). This qualitative examination provides a new, comparative approach.

## Methods

### Data Sources

The study was conducted between March and August 2018, using key informant (KI) interviews (n=24), and a comparative, retrospective approach (Charmaz 2006) to examine the policy change process resulting in the current SSB taxes in Mexico and Chile. We focused on non-government stakeholder perspectives, including global experts. Specifically, we interviewed 16 researchers (5 from Mexico, 5 from Chile, and 6 Global), three food and beverage industry representatives (1 from Mexico, 2 Global), and five civil society representatives (3 from Mexico, 2 from Chile).

Respondents were purposively sampled based on their participation in the policymaking process and expertise on the field. We developed separate semi-structured interview guides for the different respondent types (researcher, civil society, and industry), based on relevant literature and feedback from Chilean and Mexican researchers. Questions asked about the respondents' and/or their organization's role in SSB tax reforms; their collaboration with other organizations and the government; their opinion on the state of the evidence regarding sugar consumption, taxes and health outcomes; and their opinions on the future of SSB tax policy.

The study was deemed as exempt by the [blind] Institutional Review Board. Interviews were conducted over phone or videoconference, in Spanish or English based on the preference of the respondent, ranging from 30 minutes to an hour. Interviewers completed a debriefing form at the end of each interview to record emerging findings, which were used to assess the data saturation point when interviews failed to elicit new information concerning the policy change process (Charmaz 2006). All interviews were audio-recorded with oral consent. The interviews were transcribed verbatim, translated, and checked for accuracy.

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**Data Analysis and Framework**

The research team reviewed the interviewers’ debriefing forms on an ongoing basis, discussing emerging themes, used to develop an initial list of codes. Upon reaching the saturation point, the team used Dedoose (v. 8.2.14) to refine and test the coding scheme, through multiple rounds of discussions. Once the team reached inter-rater reliability of 80%, each transcript was analyzed by two independent coders. We then extracted key themes and quotes, organized using the Kaleidoscope Model for Policy Change as a framework. The Kaleidoscope Model is a relatively new framework developed by the International Food Policy Research Institute (IFPRI) that synthesizes theories and constructs from the fields of political economy, public administration, and policy processes, to explain policy change in food and nutrition policy (Resnick, Babu et al. 2015, Hendricks, Babu et al. 2017), going beyond political science approaches (as the case of the more widely used model, the Multiple Streams Theory), to include a wider range of scholarships, appropriate to engage the complexity in obesity prevention policy. The model focuses on five key elements in the policy cycle: agenda-setting, design, adoption, implementation, and evaluation and reform, identifying key variables that explain policy change (further detailed in Table 1). The model has been tested in mostly developing country settings, examining agriculture and micronutrient supplementation policies (Resnick, Babu et al. 2015, Hendriks, Mkwandawire et al. 2016, Hendricks, Babu et al. 2017, Resnick, Haggblade et al. 2018). The model was selected due to its explicit focus on food policy, capturing the multisectoral complexity affecting nutrition policymaking, where the policies often benefit poor, disenfranchised sectors in the country, with benefits often perceivable in the medium and long term (Resnick, Babu et al. 2015).

The interview data were complemented with relevant literature and reports concerning the SSB taxes in both countries. As a final step in the process, we invited Mexican and Chilean experts to validate and contribute to the interpretation of the findings.

## Findings

The Mexican and Chilean SSB tax policy processes were similar and largely in concordance with the Kaleidoscope Model (Table 1), except for the evaluation and reform stage. Next, we examine the processes in parallel, organized according to policy change stages.

[insert- Table 1. Chile and Mexico SSB tax policy change overview organized through the Kaleidoscope Model Stages and Determinants]

## Agenda-Setting

The Kaleidoscope Model underscores three main variables affecting the agenda-setting stage: the existence of a “focusing event” (events that create windows of opportunity), the influence of an advocacy coalition, and whether the problem is perceived as relevant. These are found in the Mexican and Chilean SSB tax policy processes. In both countries, propitious windows of opportunity, brought on by newly elected governments, gave way to SSB taxes as part of large, fiscal reforms. In Mexico, 2012 elected Peña Nieto administration implemented a major fiscal reform, the “Pact for Mexico”, to generate needed revenue in light of declining oil prices (James, Lajous et al. 2019). In Chile, the policy change was part of the largest fiscal reform in thirty years, which aimed to generate revenue for comprehensive educational reform (Cuadrado, Valenzuela et al. 2018), proposed by the Treasury and the Ministry of Finance. As such, these taxes had powerful advocates from the start.

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3 Researchers in Mexico and Chile heightened the problem relevance by documenting the rise of  
4 obesity and chronic diseases, for several years prior to reform, recording the rise in obesity, diet-  
5 related conditions, and SSB consumption. This is important, as nutrition issues, such as  
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8 malnutrition and increasingly issues of over-nutrition, tend to affect marginalized segments of  
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11 society (Pena and Bacallao 2000). These problems may remain invisible or ignored. Efforts were  
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14 aided by civil society organizations, who served as intermediaries between researchers and  
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17 policymakers, working as “knowledge brokers” for evidence backing SSB taxes and raising the  
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20 problem relevance in the public sphere. These organizations made strategic use of the media to  
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23 control the debate over the taxes and to counter opponents’ arguments. Examples of these  
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26 campaigns included a “Twitterazo” (tweeter storm) organized by *Frente por un Chile Saludable*  
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29 resulting in 6,900 tweets and 13 million impressions advocating for the tax reform (NCDAlliance  
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32 2015). In Mexico, *El Poder del Consumidor* organized public demonstrations, such one during  
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35 the Day of the Dead dedicated to Mexicans who had died from Diabetes in front of the Ministry  
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38 of Health (Donaldson nd).

36 Civil society organizations used the focusing event to argue for a 20% tax rate increase, as  
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38 recommended by the World Health Organization (WHO 2016). These coalitions were composed  
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41 of similar players in both cases: civil society organizations (e.g., *El Poder del Consumidor* in  
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44 Mexico and *Frente por un Chile Saludable*), public health researchers, and government officials  
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47 and global health institutions (e.g., World Health Organization/PAHO). *El Poder del*  
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50 *Consumidor* pre-dated the SSB tax efforts, while *Frente por un Chile Saludable* was created  
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53 during the tax reform, from existing networks with previous advocacy experience.

53 Local advocacy coalitions interacted with US-based researchers who were well-known experts in  
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56 the field and junior researchers, who contributed to the evidence-building and evaluation efforts.



In Mexico, the advocacy coalition building was facilitated through funding from the Bloomberg Philanthropies, supporting the collaboration between researchers, civil society, and lobbyists.

While advocates shared the goal of addressing obesity, this international actor motivated the interactions between key players in the coalition, by liaising initial connections, and funding liaison positions, including a public-interest lobbying firm key in persuading legislators.

Bloomberg Philanthropies were not mentioned as a funder in regards to the SSB tax in Chile.

When discussing the policy arena in Chile, respondents noted the networks are relatively small, as researchers and policymakers were already connected.

### Policy Design

In Mexico, the tax is approximately 10%, while in Chile, the policy change resulted in a two-tiered tax, where the rate for SSBs with high sugar content ( $>6.25$  grams per 100 ml) increased by only 5 percentage points (from 13% to 18%) while the tax for SSBs with lower sugar content ( $<6.25$  grams per 100 ml) was decreased to 10%. Although the 18% rate in Chile is close to the WHO recommended 20% rate, advocates in Chile had wanted a 20 point increase, or a 33% tax rate, as they believed that this increase was necessary for the population to change consumption (Chilikova 2016). The resulting SSB tax policy design can be explained by the Kaleidoscope Model, as influenced by three main variables: the type of problem (pressing vs. chosen), ideational considerations, and a cost-benefit analysis.

The type of problem influences policy design as it dictates the time policymakers can take to address it. SSB taxes are designed and implemented to address the problem of high SSB consumption, and related health consequences. This is a chosen problem, as opposed to crises or pressing problems (i.e. natural disasters, famines). Chosen problems are not urgent.

Policymakers can take more time to design solutions, compared to crises. There is a greater

opportunity for outsider input and influence, opening the door for consultations with researchers, civil society and other stakeholders, such as the food and beverage industry, a powerful player in the policy arena in Latin America.

[The] industry continues to be part of circles of power and decision-making, which sometimes limits power [of the government], not only designing and promoting public policy that affects their interests but also monitoring and the evaluation of it. (Civil Society/Mexico)

Industry pressure is very strong and has been enduring, even though Chile has adhered to this healthy trend in all the policies. (Civil Society/Chile)

This influence arguably resulted in the policy not meeting the recommended 20% increase.

Ideational considerations refer to how the policy problem is understood and conceptualized. This includes beliefs and biases about the issue and the proposed solution, and about the role of the state to address the problem at hand. In the case countries, SSB consumption was understood in a similar way as vice-inducing products (i.e. tobacco and alcohol), and the SSB tax was part of what are called “sin taxes”, or economic measures to fix the negative externalities of the consumption from a given product, such as the public health cost. An ideational consideration behind SSB taxes was the belief that a monetary disincentive to the consumption of SSBs was a reasonable option. Whether this was the case was contested among key informants. Those against the tax did so arguing the multi-causal nature of obesity and diet-related conditions, going beyond a single product. Even those who favored the tax understood the policy as only one tool in a comprehensive public health approach, that included other policies, such as regulations

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3 in food marketing, food labeling, and taxes on other products, such as the 8% tax on junk food  
4 implemented in Mexico (Chilikova 2016, Donaldson nd).  
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8 Ideas and beliefs are influenced through diffusion mechanisms, including how much  
9 policymakers are exposed to international actors, and how much governments seek to emulate  
10 policies from highly regarded countries. Influence may stem from international organizations and  
11 donors, who might seek to promote certain policies or facilitate diffusion of lessons learned from  
12 other countries' experiences (Resnick, Babu et al. 2015). We would expect the United States to  
13 be a major external influence on the diffusion of policies in our case countries. Mexico and Chile  
14 have significant historic economic links to the United States, and the United States has had a  
15 major influence on both countries' economic development policies. We find some US influence  
16 in the SSB tax policy in key informants' mentions of collaborations with US-based researchers  
17 (particularly, Dr. Barry Popkin from the University of North Carolina), and the role of the US-  
18 based Bloomberg Philanthropies in Mexico, as addressed above. None of the actors mentioned  
19 US foreign policy as an important factor in deliberations, nor were international trade institutions  
20 such as the WTO perceived as relevant actors in the national tax discussion.  
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39 In regards to cost-benefit analysis, research shows that SSB taxes provide substantial healthcare  
40 savings while providing additional revenue for governments, making this policy an attractive one  
41 based on the cost-benefit analysis (Brownell, Farley et al. 2009, Sanchez-Romero, Penko et al.  
42 2016, Wilde, Huang et al. 2019). Moreover, the cost-to-benefit ratios tend to be more favorable  
43 for low-income populations because they suffer from greater adverse effects from consumption  
44 and their consumption is more elastic to price changes (Lal, Mantilla-Herrera et al. 2017). Yet,  
45 there are potential nonmonetary costs associated with the policy that may influence its design,  
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for example losing electoral votes. How the public perceives the tax may later influence political outcomes for the party proposing the tax. As noted by one key informant,

Taxes are always unpopular. When a government announces that they will raise a tax, it is a weapon that will be used against said government when the next elections come.

(Researcher/Mexico)

Another “cost” considered in the design stage was the industry backlash, including the veto from politicians associated with the industry, if no concessions were made for these actors. As noted above, the industry has a strong policy influence in both countries. The two-tier tax system in Chile can be seen as the result of the industry’s influence and the policymaker cost-benefit calculation. With this design, the industry suffered an increase in the tax burden for high sugar products but received also an effective subsidy due to a tax cut for low sugary products (reduced from a 13% to a 10% tax rate). In a market where producers sell low and high sugary products, this allows the industry to compensate for the potential loss of revenues from an increased tax burden on certain products while receiving a tax reduction in others.

**Adoption**

Following the Kaleidoscope Model, the adoption of SSB taxes in Mexico and Chile was influenced by veto players, power dynamics and timing. In both settings, the SSB tax policy was introduced propitiously, as part of large fiscal reforms. In Mexico, efforts for the tax had been brewing since the late 2000s, when civil society organizations first introduced the measure into the 2006-2009 legislature, but the measure did not advance (Donaldson nd). The 2014 SSB tax in Mexico most likely was helped by this past failure experience, but also by the propitious introduction in the tax reform, and President’s Peña Nieto’s National Development Plan, which

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3 included obesity as a national public health problem and made a National Strategy against  
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5 Overweight, Obesity and Diabetes justifying several measures including fiscal reforms.  
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8 Power dynamics and veto players were also influential. Power dynamics can enable or create  
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10 resistance to policy change. This variable was particularly salient concerning the contentious role  
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12 of the food and beverage industry. While public health advocates point to the profit orientation  
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14 of the food and beverage industry as a reason why they should not be involved in the  
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16 policymaking process of a regulatory policy that could affect their stakeholder interests,  
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18 industry-affiliated key informants argued that the industry had a role to play. In both settings, the  
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20 industry carried out a failed legal challenge to tax constitutionality, while also appealing to  
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22 public, by placing themselves as defenders of customer freedom – both well-documented  
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24 industry tactics (Nestle 2015, Cuadrado, Valenzuela et al. 2018).  
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30 Veto players are the individuals that have to agree for the policy change to happen. In our cases  
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32 these included the major ministries (e.g., Ministry of Finance), the parliament, and the president.  
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34 The Mexican and Chilean policy changes were supported by the executive branch. Differences  
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36 emerged concerning the role of the Ministry of Health. In Chile, the tax was seen as a relatively  
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38 small change (5 percentage point increase), within a large policy reform that included a  
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40 multitude of other initiatives. The Chilean Ministry of Health served mostly a technical advisor  
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42 supporting the tax, as advocacy efforts of the ministry were being focused on the passing of food  
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44 labeling and package regulation, being discussed in the same period (Chilikova 2016). In  
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46 Mexico, the Ministry of Health was not supportive of the tax, a factor related to former industry  
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48 ties. In Chile, the Ministry of Economics sided with industry, persuaded by concerns over  
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50 potential deleterious effects over the employment and the economy. However, the measure was  
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52 supported by the Ministry of Finance, a more influential part of the government, given the  
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revenue potential of the tax. Hence, the tax was promoted not so much for the potential health outcome, but for the fiscal revenue potential (Cuadrado, Valenzuela et al. 2018).

**Implementation**

Policy implementation is the most visible evidence of actual policy change. The Kaleidoscope Model examines this stage through three variables: institutional capacity (technical and administrative), requisite budgetary allocations and the policy champion commitment.

Institutional capacity refers to both technical and administrative factors to implement the policy. Mexico and Chile have previous experiences with tax policies, demonstrating the existence of these capacities, and continuity, even after governmental turnover. Mexico’s volume-based design for the tax is easier to implement and monitor, compared to the Chilean tax design. The successful implementation of Chile’s new two-tiered system is dependent on the capacity to monitor how the industry reports sugar level volumes in their products – this could become highly complex even for well-established tax revenue agencies (Cuadrado, Valenzuela et al. 2018).

Budget allocations were not addressed by our key informants. Available evidence shows that the implementation costs of taxes are marginal. The administrative cost of the Chilean tax system is equivalent to 0.7% of the collected revenue and 0.79% in Mexico (2005-2013) (OECD 2015). Moreover, several economic evaluations conclude that SSB taxes are a cost-saving intervention (Cecchini, Sassi et al. 2010, Gortmaker, Long et al. 2015, Lal, Mantilla-Herrera et al. 2017).

Having policy champions during implementation is important to help ensure that capacity and resources are available for the policy to be implemented as intended. The commitment of Mexico’s and Chile’s executive branches allowed the policy to be adopted and implemented,

despite the strong pushback from the food and beverage industry, particularly in Mexico. This commitment can be explained by the inclusion of the SSB taxes as part of larger fiscal reforms, which were high priorities on the governing agendas.

In Mexico, the SSB tax was adopted with the idea that the revenue would be used to fund nutrition programs and improve access to drinking water. However, as mentioned by key informants, this has not been the case.

Mexico made promises that it's not meeting. In passing the soda taxes, it said that the revenues would go to clean water in schools, and would go to infrastructure for clean water in cities, and it's not done that. (Global/Researcher)

While policymakers were committed to implementing the SSB tax, there was no commitment for using the revenue to support the public health goal of the policy, such as improving access to drinking water, as the preferred substitute for SSBs. Similarly, in the case of Chile, while policymakers pushed for an SSB tax to increase revenue, it is not that clear that they were backing a tax to improve health, as signaled by them giving the industry an effective tax reduction to SSBs below the sugar threshold.

## Evaluation and Reform

The Kaleidoscope Model argues that the level of reform depends on changing beliefs of veto players and champions, potentially brought up by evaluation results or new technology (Resnick, Babu et al. 2015). The SSB tax policy in Mexico and Chile is still fairly recent but impact evaluation studies are demonstrating changes in SSB sales and consumption, as well as impacts on health outcomes, particularly obesity rate (Sanchez-Romero, Penko et al. 2016, Bascuñán and Cuadrado 2017, Colchero, Rivera-Dommarco et al. 2017, Caro, Corvalan et al. 2018, Nakamura,

Mirelman et al. 2018). The National Institute of Public Health of Mexico (INSP) convened a group with international experts, the Evaluation Advisory Committee, funded by Bloomberg Philanthropies, to help evaluate the policies, housed within the Global Food Research Program at the University of North Carolina at Chapel Hill. Key informants discussed emerging results from evaluations, mostly addressing the SSB tax potential effects on prices and consumption. When discussing the changes brought by the policy, they mostly agreed that the tax increased the price, as intended. This supports and reinforces the idea that policy implementation produced the expected price effects. However, while the tax has resulted in diminished SSB consumption, the decrease has been lower than expected. One reason for the small decrease might be that the industry responded with more marketing and big campaigns like the highly successful “Share a Coke” campaign. Some key informants saw the small effect magnitude as a sign that the tax needed modifications – particularly a higher rate increase. Other potential modifications included taxing other harmful foods and beverages to make the tax more comprehensive. Mexico already has a tax on “junk foods”, and one Chilean respondent mentioned this as a possibility for Chile, as suggested by an expert committee (Agostini, Corvalán et al. 2018). The respondent also suggested going beyond specific food-focused taxes, to potentially basing taxes on the level of food processing, for example. Another modification, particularly discussed in Mexico, was the need to follow the promised earmarking of the tax to improve water access, as the use of the tax revenue could play a very important role in determining whether the tax improves health outcomes.

Informants also addressed potential substitution effects, of consumers potentially choosing less expensive brands of SSBs, or choosing beverages with artificial sweeteners, in response to the tax.



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3 It's not really clear that if you substitute a normal Coke for a diet Coke that it's something  
4 good for you, [but] your ideal substitution will be Coke to water, and that's something  
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6 that is not clearly happening because the policy is not aiming to do that.  
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10 (Researcher/Chile)  
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13 In Chile, there was a fear that the two-tiered tax structure would lead to consumers opting for the  
14 lower sugar (not sugar-free, as the case of plain water) alternative, as the tax rate is lower. This  
15 points to a potential modification, where taxes can affect all sweetened beverages, as the recent  
16 tax in the Philippines, which includes beverages with artificial/noncaloric sweeteners (Onagan,  
17 Lorraine et al. 2019).  
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25 Key informants associated with the industry noted the adverse economic consequences stemming  
26 from the reduction in SSB sales. However, this change was not attributed to the tax, and, instead  
27 was linked to the negative media discourse surrounding SSBs. These respondents noted the  
28 ripple effects of the slow-down in sales, particularly the closing of small businesses and the  
29 decrease in employment in related sectors. However, arguments concerning the adverse  
30 economic consequences of the tax have been commonly used by the industry, as part of the anti-  
31 regulation playbook (Nestle 2015). In Mexico and Chile, researchers have evaluated the potential  
32 adverse effect on unemployment, finding no effect from the tax (Guerrero-López, Molina et al.  
33 2017).  
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46 Key informants also addressed the regressive nature of the SSB tax, as a tax that  
47 disproportionately affects the poor. One industry informant noted that as consumers continue to  
48 buy SSBs, despite the higher price, the consumption of other household necessities is affected. In  
49 these remarks, SSBs were discussed as part of a basket of basic goods, as “the most basic  
50 products a Mexican consumer needs to survive.” (Industry/Mexico). On the other hand, while the  
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tax may disproportionately affect the poor, so do the health consequences of high SSB consumption, as explained by a researcher discussing the Mexican context:

The decrease in sales and purchases of sugar-sweetened beverages was greater among the poverty-stricken people, which is good and expectable because they have fewer resources. [...] If there's some effect on health, this could benefit them because, since there's no universal [health] coverage in Mexico, the poorest people could reduce their personal expenses. (Researcher/Mexico)

When asked about the future of the SSB policy, all of the informants conveyed the idea that the tax was here to stay, as an acceptable policy that provides government revenue.

**Discussion**

Our results point to the importance of top-down and bottom-up pressures for the adoption of the reform. In both countries, SSB taxes were the result of fiscal reforms promoted at the executive levels. The SSB taxes were facilitated by the following: high institutional feasibility, the leadership of key, high-level, individuals (i.e., the executive office in both countries), and coalitions/networks as drivers of policy adoption. Other key factors driving change were the narratives and framing used (as part of ideational considerations), and timing (seizing windows of opportunities). Concordant with other policy process analyses in nutrition, commitment for the SSB taxes in Chile and Mexico was also influenced by civil society mobilization (Baker, Hawkes et al. 2018). In Mexico, this was facilitated by donor involvement, not found in Chile. Chile is a smaller country, with existing connections between academic actors, civil society, and policymakers.

While SSB taxes are often touted as nutrition policy win, in Chile and Mexico, tax design was driven by revenue seeking goals, and not necessarily public health benefits. The need for revenue opened a window of opportunity, aligning interest from different institutions and actors (Thow, Quested et al. 2011). This revenue-generation framing may have also the ability of advocates to push back industry pressure to reduce and modify taxes, resulting, in both countries, in tax rates that were below the optimal rates for meeting public health goals.

We used the Kaleidoscope Model for Policy Change as our study framework. This relatively new framework is worthy of consideration, given its special emphasis on food and nutrition policies. However, before this study, the Kaleidoscope Model has only been previously applied in low-income settings (Resnick, Babu et al. 2015, Hendricks, Babu et al. 2017). When we applied it to SSB tax policy in high and upper-middle-income countries, we found that the model variables concurred with most factors that our key informants describe. Divergences from the model can be explained by the study time frame and the nature of SSB tax policy. We were not able to examine the variables in the Evaluation and Reform stage, due to the short timeframe of SSB tax adoption in our case study countries. We also found that the Kaleidoscope Model implementation cost variables may not be relevant for SSB tax policy reform given the relatively small cost of implementation and cost-saving nature of these taxes (Cecchini, Sassi et al. 2010, Gortmaker, Long et al. 2015, Lal, Mantilla-Herrera et al. 2017). Our study underscores differences between two key influential players: donors and the private sector. Donors are important in the Kaleidoscope Model. In Mexico, we found that the Bloomberg Philanthropies had a role in funding and creating networks that contributed to the success of the tax. However, the idea of the tax was in place prior to this funding. Bilateral and multilateral donors in other, more resource-limited settings may play a stronger advocacy role for food policy reform, but our

cases show that reform can occur in a high or upper-middle income setting without significant influence from these outside organizations. On the other hand, our analysis showed the influence of the food and beverage industry in shaping in the parameters of policy change, an influence not fully captured in the model, but shown to be crucial players both in our cases and in other cases of obesity-prevention policy-making (Baker, Hawkes et al. 2018). Future refinements of Kaleidoscope Model framework would need to further include the private sector as central players in food and nutrition policymaking.

Our study collected the perspectives from civil society, academic, and industry respondents, as stakeholders influential in the policymaking process, and the inclusion of internal and global respondents. While we did not directly engage policymakers in our study, their perspectives have been documented in past research which we reviewed as part of this study (Chilikova 2016, Cuadrado, Valenzuela et al. 2018, Donaldson nd). Our approach was further strengthened by the inclusion of Mexican and Chilean collaborators, who provided input throughout the process and allowed us to validate our findings. We were only able to include a small number of respondents representing the food and beverage industry in the study, as a hard-to-reach population in public health research.

**Conclusion**

Our study compared the policy change process in two Latin American countries who were early adopters of SSB taxes with a public health goal, at the national level. SSB taxes are increasingly been used to address global concerns over diet-related chronic diseases, as part of larger nutrition and food policy toolbox to address diet-related diseases, a complex, multi-causal public health problem. These policies are complex and politically charged, given competing interests. This study was the first to address these policies using the Kaleidoscope Model, a new framework

designed specifically to address the complexity in nutrition and food policies. More research is needed to refine and adapt the Kaleidoscope Model, examining food policies to combat and prevent diet-related chronic diseases. Future studies can address other contested regulatory policies, such as front-of-package labeling and food marketing regulations.

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For Peer Review

**Understanding Policy Change for Obesity Prevention: Learning from Sugar-Sweetened Beverages Taxes in Mexico and Chile**

**Abstract**

This article examines the policy change process that resulted in the current sugar-sweetened beverages (SSB) taxes in Mexico and Chile, using the Kaleidoscope Model for Policy Change, a framework developed for nutrition and food policy change analysis. We used a qualitative study design, including 24 key informant interviews (16 researchers, 5 civil society representatives, and 3 food/beverage industry representatives), encompassing global and in-country perspectives. The analysis shows concurrence with the Kaleidoscope Model, highlighting commonalities in the policy change process. These included the importance of focusing events and coalitions for agenda-setting. Both top-down executive leadership and bottom-up pressure from civil society coalitions were important for the policy adoption as were flexible framing of the tax, and taking advantage of windows of opportunity. In both countries, the tax resulted from national, revenue-seeking fiscal reforms, and in sub-optimal tax rates, as a result of the industry influence. Key informants also discussed emerging evaluation results, highlighting differences in interpretation concerning the magnitude of change from the tax, and shared potential modifications to the current policies. This analysis contributes to a greater understanding of the policy change process focused on obesity prevention, using an innovative theoretical framework developed specifically for food and nutrition policy.

Keywords: Obesity prevention, Tax, Sugar-sweetened beverages, Policy process, Mexico, Chile, Qualitative research

## Introduction

Policymakers and health advocates recognize the need to regulate food environments to positively influence eating behaviors in response to the rapid global rise in diet-related chronic diseases. A rising number of countries and jurisdictions have adopted policies regulating the consumption of sugar-sweetened beverages (SSBs) through taxes (Leonhardt 2018). Nutrition policymaking in general, and SSB tax policy in particular, are highly contentious (Baker, Hawkes et al. 2018, Sassi, Belloni et al. 2018). Food evokes emotional, behavioral, and physiological responses among consumers, making policies aimed at restricting access to certain foods particularly contentious – as in the case of regulating sugary beverages. These policies inevitably trigger debates about the proper role of government in regulating harmful behavior (Sassi, Belloni et al. 2018), the role of the food and beverage industry, and conflict of interest in the food and nutrition policymaking process (Timotijevic, Barnett et al. 2011, Nestle 2013, Cuadrado, Valenzuela et al. 2018).

The complex and contentious nature of regulatory and fiscal food and nutrition policies necessitates a better understanding of the policymaking process. Yet, research is limited in relation to obesity prevention policy change processes. Most studies have taken place in the United States and the United Kingdom, focusing on the agenda-setting stage of the policy process (Clarke, Swinburn et al. 2016). Hence, the present study sought to address the existing research sparsity. We used SSB taxes in two Latin American countries (Mexico and Chile) as objects of comparative study to examine what explains successful SSB tax reform, using the Kaleidoscope Model for Policy Change framework developed specifically for food and nutrition policies.

Mexico and Chile were selected as they were as early adopters of SSB tax policy for public health purposes, at the national level, in Latin America. Mexico and Chile have similar political systems, as electoral democracies that have presidential systems with bicameral legislators. They also have similar economic systems, as market-oriented economies (CIA 2019, CIA 2019). Both have employed fiscal policies to address public health concerns over obesity and non-communicable chronic diseases. Chile has been taxing nonalcoholic drinks as a luxury good since the 1930s to address the country's fiscal deficit (Ferrando 2014). The tax was applied to all soft drinks with added color, flavor or sweeteners, regardless of the amount of sugar. In October 2014, the tax was modified into a two-tiered tax, based on sugar content. It was increased from 13% to 18% on drinks containing more than 6.25g of sugar/100 ml, and decreased to 10% for sugary drinks with less than 6.25g of sugar/100mL. Mexico implemented a new SSB tax in 2014, consisting of a 1-peso-per-liter excise tax on any non-alcoholic beverage with added sugar (approximately a 10% price increase), with the exception of dairy products. The rate was adjusted for inflation in 2018, increasing to 1.17 peso-per-liter (Colchero, Barrientos Gutiérrez et al. 2018). The SSB tax was accompanied by an 8% tax to foods with high caloric density ( $\geq 275$  calories/100g), and an earlier tax on energy drinks of 25% implemented in 2011. The two cases have been examined individually, using mostly quantitative, impact evaluation studies (Colchero, Popkin et al. 2016, Sanchez-Romero, Penko et al. 2016, Caro, Corvalan et al. 2018, Nakamura, Mirelman et al. 2018), with a notable exception (James, Lajous et al. 2019). This qualitative examination provides a new, comparative approach.

## Methods

### Data Sources

The study was conducted between March and August 2018, using key informant (KI) interviews (n=24), and a comparative, retrospective approach (Charmaz 2006) to examine the policy change process resulting in the current SSB taxes in Mexico and Chile. We focused on non-government stakeholder perspectives, including global experts. Specifically, we interviewed 16 researchers (5 from Mexico, 5 from Chile, and 6 Global), three food and beverage industry representatives (1 from Mexico, 2 Global), and five civil society representatives (3 from Mexico, 2 from Chile). Respondents were purposively sampled based on their participation in the policymaking process and expertise on the field. We developed separate semi-structured interview guides for the different respondent types (researcher, civil society, and industry), based on relevant literature and feedback from Chilean and Mexican researchers. Questions asked about the respondents' and/or their organization's role in SSB tax reforms; their collaboration with other organizations and the government; their opinion on the state of the evidence regarding sugar consumption, taxes and health outcomes; and their opinions on the future of SSB tax policy.

The study was deemed as exempt by the [blind] Institutional Review Board. Interviews were conducted over phone or videoconference, in Spanish or English based on the preference of the respondent, ranging from 30 minutes to an hour. Interviewers completed a debriefing form at the end of each interview to record emerging findings, which were used to assess the data saturation point when interviews failed to elicit new information concerning the policy change process (Charmaz 2006). All interviews were audio-recorded with oral consent. The interviews were transcribed verbatim, translated, and checked for accuracy.

**Data Analysis and Framework**

The research team reviewed the interviewers’ debriefing forms on an ongoing basis, discussing emerging themes, used to develop an initial list of codes. Upon reaching the saturation point, the team used Dedoose (v. 8.2.14) to refine and test the coding scheme, through multiple rounds of discussions. Once the team reached inter-rater reliability of 80%, each transcript was analyzed by two independent coders. We then extracted key themes and quotes, organized using the Kaleidoscope Model for Policy Change as a framework. The Kaleidoscope Model is a relatively new framework developed by the International Food Policy Research Institute (IFPRI) that synthesizes theories and constructs from the fields of political economy, public administration, and policy processes, to explain policy change in food and nutrition policy (Resnick, Babu et al. 2015, Hendricks, Babu et al. 2017), going beyond political science approaches (as the case of the more widely used model, the Multiple Streams Theory), to include a wider range of scholarships, appropriate to engage the complexity in obesity prevention policy. The model focuses on five key elements in the policy cycle: agenda-setting, design, adoption, implementation, and evaluation and reform, identifying key variables that explain policy change (further detailed in Table 1). The model has been tested in mostly developing country settings, examining agriculture and micronutrient supplementation policies (Resnick, Babu et al. 2015, Hendricks, Mkwandawire et al. 2016, Hendricks, Babu et al. 2017, Resnick, Haggblade et al. 2018). The model was selected due to its explicit focus on food policy, capturing the multisectoral complexity affecting nutrition policymaking, where the policies often benefit poor, disenfranchised sectors in the country, with benefits often perceivable in the medium and long term (Resnick, Babu et al. 2015).

The interview data were complemented with relevant literature and reports concerning the SSB taxes in both countries. As a final step in the process, we invited Mexican and Chilean experts to validate and contribute to the interpretation of the findings.

## Findings

The Mexican and Chilean SSB tax policy processes were similar and largely in concordance with the Kaleidoscope Model (Table 1), except for the evaluation and reform stage. Next, we examine the processes in parallel, organized according to policy change stages.

[insert- Table 1. Chile and Mexico SSB tax policy change overview organized through the Kaleidoscope Model Stages and Determinants]

## Agenda-Setting

The Kaleidoscope Model underscores three main variables affecting the agenda-setting stage: the existence of a “focusing event” (events that create windows of opportunity), the influence of an advocacy coalition, and whether the problem is perceived as relevant. These are found in the Mexican and Chilean SSB tax policy processes. In both countries, propitious windows of opportunity, brought on by newly elected governments, gave way to SSB taxes as part of large, fiscal reforms. In Mexico, 2012 elected Peña Nieto administration implemented a major fiscal reform, the “Pact for Mexico”, to generate needed revenue in light of declining oil prices (James, Lajous et al. 2019). In Chile, the policy change was part of the largest fiscal reform in thirty years, which aimed to generate revenue for comprehensive educational reform (Cuadrado, Valenzuela et al. 2018), proposed by the Treasury and the Ministry of Finance. As such, these taxes had powerful advocates from the start.

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3 Researchers in Mexico and Chile heightened the problem relevance by documenting the rise of  
4 obesity and chronic diseases, for several years prior to reform, recording the rise in obesity, diet-  
5 related conditions, and SSB consumption. This is important, as nutrition issues, such as  
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7 malnutrition and increasingly issues of over-nutrition, tend to affect marginalized segments of  
8 society (Pena and Bacallao 2000). These problems may remain invisible or ignored. Efforts were  
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10 aided by civil society organizations, who served as intermediaries between researchers and  
11 policymakers, working as “knowledge brokers” for evidence backing SSB taxes and raising the  
12 problem relevance in the public sphere. These organizations made strategic use of the media to  
13 control the debate over the taxes and to counter opponents’ arguments. Examples of these  
14 campaigns included a “Twitterazo” (tweeter storm) organized by *Frente por un Chile Saludable*  
15 resulting in 6,900 tweets and 13 million impressions advocating for the tax reform (NCDAlliance  
16 2015). In Mexico, *El Poder del Consumidor* organized public demonstrations, such one during  
17 the Day of the Dead dedicated to Mexicans who had died from Diabetes in front of the Ministry  
18 of Health (Donaldson nd).  
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36 Civil society organizations used the focusing event to argue for a 20% tax rate increase, as  
37 recommended by the World Health Organization (WHO 2016). These coalitions were composed  
38 of similar players in both cases: civil society organizations (e.g., *El Poder del Consumidor* in  
39 Mexico and *Frente por un Chile Saludable*), public health researchers, and government officials  
40 and global health institutions (e.g., World Health Organization/PAHO). *El Poder del*  
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Local advocacy coalitions interacted with US-based researchers who were well-known experts in the field and junior researchers, who contributed to the evidence-building and evaluation efforts.



In Mexico, the advocacy coalition building was facilitated through funding from the Bloomberg Philanthropies, supporting the collaboration between researchers, civil society, and lobbyists. While advocates shared the goal of addressing obesity, this international actor motivated the interactions between key players in the coalition, by liaising initial connections, and funding liaison positions, including a public-interest lobbying firm key in persuading legislators. Bloomberg Philanthropies were not mentioned as a funder in regards to the SSB tax in Chile. When discussing the policy arena in Chile, respondents noted the networks are relatively small, as researchers and policymakers were already connected.

### **Policy Design**

In Mexico, the tax is approximately 10%, while in Chile, the policy change resulted in a two-tiered tax, where the rate for SSBs with high sugar content ( $>6.25$  grams per 100 ml) increased by only 5 percentage points (from 13% to 18%) while the tax for SSBs with lower sugar content ( $<6.25$  grams per 100 ml) was decreased to 10%. Although the 18% rate in Chile is close to the WHO recommended 20% rate, advocates in Chile had wanted a 20 point increase, or a 33% tax rate, as they believed that this increase was necessary for the population to change consumption (Chilikova 2016). The resulting SSB tax policy design can be explained by the Kaleidoscope Model, as influenced by three main variables: the type of problem (pressing vs. chosen), ideational considerations, and a cost-benefit analysis.

The type of problem influences policy design as it dictates the time policymakers can take to address it. SSB taxes are designed and implemented to address the problem of high SSB consumption, and related health consequences. This is a chosen problem, as opposed to crises or pressing problems (i.e. natural disasters, famines). Chosen problems are not urgent.

Policymakers can take more time to design solutions, compared to crises. There is a greater

opportunity for outsider input and influence, opening the door for consultations with researchers, civil society and other stakeholders, such as the food and beverage industry, a powerful player in the policy arena in Latin America.

[The] industry continues to be part of circles of power and decision-making, which sometimes limits power [of the government], not only designing and promoting public policy that affects their interests but also monitoring and the evaluation of it. (Civil Society/Mexico)

Industry pressure is very strong and has been enduring, even though Chile has adhered to this healthy trend in all the policies. (Civil Society/Chile)

This influence arguably resulted in the policy not meeting the recommended 20% increase.

Ideational considerations refer to how the policy problem is understood and conceptualized. This includes beliefs and biases about the issue and the proposed solution, and about the role of the state to address the problem at hand. In the case countries, SSB consumption was understood in a similar way as vice-inducing products (i.e. tobacco and alcohol), and the SSB tax was part of what are called “sin taxes”, or economic measures to fix the negative externalities of the consumption from a given product, such as the public health cost. An ideational consideration behind SSB taxes was the belief that a monetary disincentive to the consumption of SSBs was a reasonable option. Whether this was the case was contested among key informants. Those against the tax did so arguing the multi-causal nature of obesity and diet-related conditions, going beyond a single product. Even those who favored the tax understood the policy as only one tool in a comprehensive public health approach, that included other policies, such as regulations

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3 in food marketing, food labeling, and taxes on other products, such as the 8% tax on junk food  
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5 implemented in Mexico (Chilikova 2016, Donaldson nd).  
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8 Ideas and beliefs are influenced through diffusion mechanisms, including how much  
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10 policymakers are exposed to international actors, and how much governments seek to emulate  
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12 policies from highly regarded countries. Influence may stem from international organizations and  
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14 donors, who might seek to promote certain policies or facilitate diffusion of lessons learned from  
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16 other countries' experiences (Resnick, Babu et al. 2015). We would expect the United States to  
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18 be a major external influence on the diffusion of policies in our case countries. Mexico and Chile  
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20 have significant historic economic links to the United States, and the United States has had a  
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22 major influence on both countries' economic development policies. We find some US influence  
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24 in the SSB tax policy in key informants' mentions of collaborations with US-based researchers  
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26 (particularly, Dr. Barry Popkin from the University of North Carolina), and the role of the US-  
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28 based Bloomberg Philanthropies in Mexico, as addressed above. None of the actors mentioned  
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30 US foreign policy as an important factor in deliberations, nor were international trade institutions  
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32 such as the WTO perceived as relevant actors in the national tax discussion.  
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39 In regards to cost-benefit analysis, research shows that SSB taxes provide substantial healthcare  
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41 savings while providing additional revenue for governments, making this policy an attractive one  
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43 based on the cost-benefit analysis (Brownell, Farley et al. 2009, Sanchez-Romero, Penko et al.  
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45 2016, Wilde, Huang et al. 2019). Moreover, the cost-to-benefit ratios tend to be more favorable  
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47 for low-income populations because they suffer from greater adverse effects from consumption  
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49 and their consumption is more elastic to price changes (Lal, Mantilla-Herrera et al. 2017). Yet,  
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51 there are potential nonmonetary costs associated with the policy that may influence its design,  
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for example losing electoral votes. How the public perceives the tax may later influence political outcomes for the party proposing the tax. As noted by one key informant,

Taxes are always unpopular. When a government announces that they will raise a tax, it is a weapon that will be used against said government when the next elections come.

(Researcher/Mexico)

Another “cost” considered in the design stage was the industry backlash, including the veto from politicians associated with the industry, if no concessions were made for these actors. As noted above, the industry has a strong policy influence in both countries. The two-tier tax system in Chile can be seen as the result of the industry’s influence and the policymaker cost-benefit calculation. With this design, the industry suffered an increase in the tax burden for high sugar products but received also an effective subsidy due to a tax cut for low sugary products (reduced from a 13% to a 10% tax rate). In a market where producers sell low and high sugary products, this allows the industry to compensate for the potential loss of revenues from an increased tax burden on certain products while receiving a tax reduction in others.

**Adoption**

Following the Kaleidoscope Model, the adoption of SSB taxes in Mexico and Chile was influenced by veto players, power dynamics and timing. In both settings, the SSB tax policy was introduced propitiously, as part of large fiscal reforms. In Mexico, efforts for the tax had been brewing since the late 2000s, when civil society organizations first introduced the measure into the 2006-2009 legislature, but the measure did not advance (Donaldson nd). The 2014 SSB tax in Mexico most likely was helped by this past failure experience, but also by the propitious introduction in the tax reform, and President’s Peña Nieto’s National Development Plan, which

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3 included obesity as a national public health problem and made a National Strategy against  
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5 Overweight, Obesity and Diabetes justifying several measures including fiscal reforms.  
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8 Power dynamics and veto players were also influential. Power dynamics can enable or create  
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10 resistance to policy change. This variable was particularly salient concerning the contentious role  
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12 of the food and beverage industry. While public health advocates point to the profit orientation  
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14 of the food and beverage industry as a reason why they should not be involved in the  
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16 policymaking process of a regulatory policy that could affect their stakeholder interests,  
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18 industry-affiliated key informants argued that the industry had a role to play. In both settings, the  
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20 industry carried out a failed legal challenge to tax constitutionality, while also appealing to  
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22 public, by placing themselves as defenders of customer freedom – both well-documented  
23  
24 industry tactics (Nestle 2015, Cuadrado, Valenzuela et al. 2018).  
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30 Veto players are the individuals that have to agree for the policy change to happen. In our cases  
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32 these included the major ministries (e.g., Ministry of Finance), the parliament, and the president.  
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34 The Mexican and Chilean policy changes were supported by the executive branch. Differences  
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36 emerged concerning the role of the Ministry of Health. In Chile, the tax was seen as a relatively  
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38 small change (5 percentage point increase), within a large policy reform that included a  
39  
40 multitude of other initiatives. The Chilean Ministry of Health served mostly a technical advisor  
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42 supporting the tax, as advocacy efforts of the ministry were being focused on the passing of food  
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44 labeling and package regulation, being discussed in the same period (Chilikova 2016). In  
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46 Mexico, the Ministry of Health was not supportive of the tax, a factor related to former industry  
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48 ties. In Chile, the Ministry of Economics sided with industry, persuaded by concerns over  
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50 potential deleterious effects over the employment and the economy. However, the measure was  
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52 supported by the Ministry of Finance, a more influential part of the government, given the  
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revenue potential of the tax. Hence, the tax was promoted not so much for the potential health outcome, but for the fiscal revenue potential (Cuadrado, Valenzuela et al. 2018).

**Implementation**

Policy implementation is the most visible evidence of actual policy change. The Kaleidoscope Model examines this stage through three variables: institutional capacity (technical and administrative), requisite budgetary allocations and the policy champion commitment.

Institutional capacity refers to both technical and administrative factors to implement the policy. Mexico and Chile have previous experiences with tax policies, demonstrating the existence of these capacities, and continuity, even after governmental turnover. Mexico’s volume-based design for the tax is easier to implement and monitor, compared to the Chilean tax design. The successful implementation of Chile’s new two-tiered system is dependent on the capacity to monitor how the industry reports sugar level volumes in their products – this could become highly complex even for well-established tax revenue agencies (Cuadrado, Valenzuela et al. 2018).

Budget allocations were not addressed by our key informants. Available evidence shows that the implementation costs of taxes are marginal. The administrative cost of the Chilean tax system is equivalent to 0.7% of the collected revenue and 0.79% in Mexico (2005-2013) (OECD 2015). Moreover, several economic evaluations conclude that SSB taxes are a cost-saving intervention (Cecchini, Sassi et al. 2010, Gortmaker, Long et al. 2015, Lal, Mantilla-Herrera et al. 2017).

Having policy champions during implementation is important to help ensure that capacity and resources are available for the policy to be implemented as intended. The commitment of Mexico’s and Chile’s executive branches allowed the policy to be adopted and implemented,

despite the strong pushback from the food and beverage industry, particularly in Mexico. This commitment can be explained by the inclusion of the SSB taxes as part of larger fiscal reforms, which were high priorities on the governing agendas.

In Mexico, the SSB tax was adopted with the idea that the revenue would be used to fund nutrition programs and improve access to drinking water. However, as mentioned by key informants, this has not been the case.

Mexico made promises that it's not meeting. In passing the soda taxes, it said that the revenues would go to clean water in schools, and would go to infrastructure for clean water in cities, and it's not done that. (Global/Researcher)

While policymakers were committed to implementing the SSB tax, there was no commitment for using the revenue to support the public health goal of the policy, such as improving access to drinking water, as the preferred substitute for SSBs. Similarly, in the case of Chile, while policymakers pushed for an SSB tax to increase revenue, it is not that clear that they were backing a tax to improve health, as signaled by them giving the industry an effective tax reduction to SSBs below the sugar threshold.

## **Evaluation and Reform**

The Kaleidoscope Model argues that the level of reform depends on changing beliefs of veto players and champions, potentially brought up by evaluation results or new technology (Resnick, Babu et al. 2015). The SSB tax policy in Mexico and Chile is still fairly recent but impact evaluation studies are demonstrating changes in SSB sales and consumption, as well as impacts on health outcomes, particularly obesity rate (Sanchez-Romero, Penko et al. 2016, Bascuñán and Cuadrado 2017, Colchero, Rivera-Dommarco et al. 2017, Caro, Corvalan et al. 2018, Nakamura,

Mirelman et al. 2018). The National Institute of Public Health of Mexico (INSP) convened a group with international experts, the Evaluation Advisory Committee, funded by Bloomberg Philanthropies, to help evaluate the policies, housed within the Global Food Research Program at the University of North Carolina at Chapel Hill. Key informants discussed emerging results from evaluations, mostly addressing the SSB tax potential effects on prices and consumption. When discussing the changes brought by the policy, they mostly agreed that the tax increased the price, as intended. This supports and reinforces the idea that policy implementation produced the expected price effects. However, while the tax has resulted in diminished SSB consumption, the decrease has been lower than expected. One reason for the small decrease might be that the industry responded with more marketing and big campaigns like the highly successful “Share a Coke” campaign. Some key informants saw the small effect magnitude as a sign that the tax needed modifications – particularly a higher rate increase. Other potential modifications included taxing other harmful foods and beverages to make the tax more comprehensive. Mexico already has a tax on “junk foods”, and one Chilean respondent mentioned this as a possibility for Chile, as suggested by an expert committee (Agostini, Corvalán et al. 2018). The respondent also suggested going beyond specific food-focused taxes, to potentially basing taxes on the level of food processing, for example. Another modification, particularly discussed in Mexico, was the need to follow the promised earmarking of the tax to improve water access, as the use of the tax revenue could play a very important role in determining whether the tax improves health outcomes.

Informants also addressed potential substitution effects, of consumers potentially choosing less expensive brands of SSBs, or choosing beverages with artificial sweeteners, in response to the tax.



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3 It's not really clear that if you substitute a normal Coke for a diet Coke that it's something  
4 good for you, [but] your ideal substitution will be Coke to water, and that's something  
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6 that is not clearly happening because the policy is not aiming to do that.  
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10 (Researcher/Chile)  
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13 In Chile, there was a fear that the two-tiered tax structure would lead to consumers opting for the  
14 lower sugar (not sugar-free, as the case of plain water) alternative, as the tax rate is lower. This  
15 points to a potential modification, where taxes can affect all sweetened beverages, as the recent  
16 tax in the Philippines, which includes beverages with artificial/noncaloric sweeteners (Onagan,  
17 Lorraine et al. 2019).  
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25 Key informants associated with the industry noted the adverse economic consequences stemming  
26 from the reduction in SSB sales. However, this change was not attributed to the tax, and, instead  
27 was linked to the negative media discourse surrounding SSBs. These respondents noted the  
28 ripple effects of the slow-down in sales, particularly the closing of small businesses and the  
29 decrease in employment in related sectors. However, arguments concerning the adverse  
30 economic consequences of the tax have been commonly used by the industry, as part of the anti-  
31 regulation playbook (Nestle 2015). In Mexico and Chile, researchers have evaluated the potential  
32 adverse effect on unemployment, finding no effect from the tax (Guerrero-López, Molina et al.  
33 2017).  
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46 Key informants also addressed the regressive nature of the SSB tax, as a tax that  
47 disproportionately affects the poor. One industry informant noted that as consumers continue to  
48 buy SSBs, despite the higher price, the consumption of other household necessities is affected. In  
49 these remarks, SSBs were discussed as part of a basket of basic goods, as “the most basic  
50 products a Mexican consumer needs to survive.” (Industry/Mexico). On the other hand, while the  
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tax may disproportionately affect the poor, so do the health consequences of high SSB consumption, as explained by a researcher discussing the Mexican context:

The decrease in sales and purchases of sugar-sweetened beverages was greater among the poverty-stricken people, which is good and expectable because they have fewer resources. [...] If there's some effect on health, this could benefit them because, since there's no universal [health] coverage in Mexico, the poorest people could reduce their personal expenses. (Researcher/Mexico)

When asked about the future of the SSB policy, all of the informants conveyed the idea that the tax was here to stay, as an acceptable policy that provides government revenue.

**Discussion**

Our results point to the importance of top-down and bottom-up pressures for the adoption of the reform. In both countries, SSB taxes were the result of fiscal reforms promoted at the executive levels. The SSB taxes were facilitated by the following: high institutional feasibility, the leadership of key, high-level, individuals (i.e., the executive office in both countries), and coalitions/networks as drivers of policy adoption. Other key factors driving change were the narratives and framing used (as part of ideational considerations), and timing (seizing windows of opportunities). Concordant with other policy process analyses in nutrition, commitment for the SSB taxes in Chile and Mexico was also influenced by civil society mobilization (Baker, Hawkes et al. 2018). In Mexico, this was facilitated by donor involvement, not found in Chile. Chile is a smaller country, with existing connections between academic actors, civil society, and policymakers.

While SSB taxes are often touted as nutrition policy win, in Chile and Mexico, tax design was driven by revenue seeking goals, and not necessarily public health benefits. The need for revenue opened a window of opportunity, aligning interest from different institutions and actors (Thow, Quested et al. 2011). This revenue-generation framing may have also the ability of advocates to push back industry pressure to reduce and modify taxes, resulting, in both countries, in tax rates that were below the optimal rates for meeting public health goals.

We used the Kaleidoscope Model for Policy Change as our study framework. This relatively new framework is worthy of consideration, given its special emphasis on food and nutrition policies. However, before this study, the Kaleidoscope Model has only been previously applied in low-income settings (Resnick, Babu et al. 2015, Hendricks, Babu et al. 2017). When we applied it to SSB tax policy in high and upper-middle-income countries, we found that the model variables concurred with most factors that our key informants describe. Divergences from the model can be explained by the study time frame and the nature of SSB tax policy. We were not able to examine the variables in the Evaluation and Reform stage, due to the short timeframe of SSB tax adoption in our case study countries. We also found that the Kaleidoscope Model implementation cost variables may not be relevant for SSB tax policy reform given the relatively small cost of implementation and cost-saving nature of these taxes (Cecchini, Sassi et al. 2010, Gortmaker, Long et al. 2015, Lal, Mantilla-Herrera et al. 2017). Our study underscores differences between two key influential players: donors and the private sector. Donors are important in the Kaleidoscope Model. In Mexico, we found that the Bloomberg Philanthropies had a role in funding and creating networks that contributed to the success of the tax. However, the idea of the tax was in place prior to this funding. Bilateral and multilateral donors in other, more resource-limited settings may play a stronger advocacy role for food policy reform, but our

cases show that reform can occur in a high or upper-middle income setting without significant influence from these outside organizations. On the other hand, our analysis showed the influence of the food and beverage industry in shaping in the parameters of policy change, an influence not fully captured in the model, but shown to be crucial players both in our cases and in other cases of obesity-prevention policy-making (Baker, Hawkes et al. 2018). Future refinements of Kaleidoscope Model framework would need to further include the private sector as central players in food and nutrition policymaking.

Our study collected the perspectives from civil society, academic, and industry respondents, as stakeholders influential in the policymaking process, and the inclusion of internal and global respondents. While we did not directly engage policymakers in our study, their perspectives have been documented in past research which we reviewed as part of this study (Chilikova 2016, Cuadrado, Valenzuela et al. 2018, Donaldson nd). Our approach was further strengthened by the inclusion of Mexican and Chilean collaborators, who provided input throughout the process and allowed us to validate our findings. We were only able to include a small number of respondents representing the food and beverage industry in the study, as a hard-to-reach population in public health research.

**Conclusion**

Our study compared the policy change process in two Latin American countries who were early adopters of SSB taxes with a public health goal, at the national level. SSB taxes are increasingly been used to address global concerns over diet-related chronic diseases, as part of larger nutrition and food policy toolbox to address diet-related diseases, a complex, multi-causal public health problem. These policies are complex and politically charged, given competing interests. This study was the first to address these policies using the Kaleidoscope Model, a new framework

designed specifically to address the complexity in nutrition and food policies. More research is needed to refine and adapt the Kaleidoscope Model, examining food policies to combat and prevent diet-related chronic diseases. Future studies can address other contested regulatory policies, such as front-of-package labeling and food marketing regulations.

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For Peer Review

Table 1. Chile and Mexico SSB tax policy change overview organized through the Kaleidoscope Model Stages and Determinants

Policy Change		Country comparison
Stage	Determinant	
Agenda Setting	Focusing event	In both settings, fiscal reform created a window of opportunity
	Powerful advocates	In both settings, the policy was supported by strong civil society coalitions and the executive branch. In Mexico, this was facilitated by international donors (Bloomberg Foundation).
	Recognized, relevant problems	In both settings, diet-related, chronic conditions and high SSB consumption recognized as relevant problems
Design	Type of problem	SSB consumption is a “chosen problem”, which, compared with pressing problems (i.e. emergencies), allow for a longer period of deliberation on the design stage
	Ideational considerations	SSB consumption is conceptualized in a similar way as tobacco or alcohol, where the solution is a “sin tax”
	Cost benefits / risk calculations	SSB taxes may have a political cost. Monetary costs are outweighed by the revenue and social benefit.
Adoption	Powerful proponents	In both settings, there were powerful (albeit different) proponents. While the presidents and Ministries of Finance backed the policy, the main difference was in the Ministry of Health, which backed the policy in Chile, but not in Mexico.
	Government veto players	Different veto players at the executive level. In Mexico, the Ministry of Health was against the

		policy, while the Ministry of Economics was against the policy in Chile.
	Propitious timing	In both, the propitious timing was provided by the window of opportunity (the fiscal reform)
<b>Implementation</b>	Requisite budget	There were insufficient data to assess the budgetary implications of the policy, but the cost of implanting taxes is expectedly low or null, given the increase over government revenue
	Institutional capacity	Both settings have the institutional capacity to implement taxes, but different limitations were present for aspects of the policy.
	Commitment of policy champions	In both settings, the SSB taxes have the continued support of powerful advocates, but there are differences present in aspects of the policy, such as revenue use in Mexico.
<b>Evaluation and Reform</b>	Changing information and beliefs	Not found in data, given the recent timeframe of the policies. Potential modifications discussed in both settings.
	Changing material conditions (financial resources)	Not applicable. Given the timing of interviews, changes stemming from presidential elections were not examinable.