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ORIGINAL RESEARCH

A qualitative study on retailer experiences with Philadelphia's sweetened beverage tax

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Abstract

The Philadelphia Beverage Tax was implemented on January 1, 2017 for some sugar- and artificially-sweetened beverages. Few qualitative studies have assessed retailers' reactions to beverage taxes. We aimed to understand food retailers' knowledge and attitudes about the Philadelphia beverage tax and how they responded to it with the goal of informing the framing and implementation of beverage taxes in other interested jurisdictions. Researchers conducted semi-structured interviews with retailers within Philadelphia before (n = 15) and after (n = 11) the Philadelphia Beverage Tax was implemented. Purposeful sampling was used to recruit participants with different store locations and customer base characteristics. A priori codes based on the interview guide were used to organize data, and analytic memos were developed and reviewed to identify themes that emerged within the data using a grounded theory approach. Five themes emerged: (a) concerns about the tax purpose, amount, and use of revenue; (b) concerns about the tax's impact on finances and business operations; (c) business strategies implemented to lessen financial burden of the tax; (d) perceptions of customer responses to the tax based on income; and (e) confusion around tax implementation. Results highlighted ways to improve implementation. Retailers in Philadelphia implemented various strategies to offset negative effects on taxed beverage sales. Cities implementing a beverage tax would benefit from investment in educational outreach and support to business owners prior to tax implementation and ensure transparency in how tax revenue will be spent.

Keywords

Qualitative research, Beverage tax, Retailers, Tax implementation

Implications

Practice: Retailers can use strategies such as passing on the tax, selling more untaxed beverages, and adding sales of food to offset the financial impact of a sweetened beverage tax.

Policy: Policymakers may increase investment in educational outreach to retailers about the tax to help address misconceptions and improve implementation.

Research: Future research should be aimed at conducting interviews with large, national beverage distributors and bottling companies to uncover additional ways to improve the implementation of a beverage tax in other jurisdictions.

Lay summary

Prior research has shown that while retailers worry about the impact a beverage tax would have on sales, many pass the tax onto consumers as a strategy to mitigate loss. This paper uncovers additional retailer concerns that can inform the framing and implementation of beverage taxes in other interested jurisdictions. Retailers especially desired transparency in governmental tax revenue spending. Increased investment in educational outreach to retailers about the tax may help address misconceptions and improve implementation.

Sugar-sweetened beverages (SSBs) are major contributors to adverse health conditions [1–3]. Numerous studies of tobacco and alcohol excise taxes have shown the positive public health impact of such taxes including reductions in tobacco use and excessive alcohol consumption [4]. Policymakers in the USA interested in ways to reduce SSB consumption have also turned to beverage taxes [4]. On January 1, 2017, Philadelphia implemented a 1.5-cents-per-ounce excise tax on beverages containing added sugars and/or artificial sweeteners [5]. The Philadelphia tax was framed as a way to generate significant revenue to fund City initiatives for pre-k education, community schools and parks, recreation centers, and libraries [6]. Studies have observed large decreases in taxed beverage sales due to Philadelphia's sweetened beverage tax [7–10], suggesting the tax could be a public health win by expanding early childhood education while curtailing SSB purchasing. Those in the food industry, however, have raised concerns that beverage taxes will negatively impact small businesses [11]. Initial and longer-term studies find no evidence that the Philadelphia tax was associated with increased unemployment [12, 13], suggesting that the beverage tax did

not reduce business profits to a point where employees were let go.

This paper focuses on independent retailers because SSBs are one of the most purchased item types in these stores [14, 15] and these stores are visited often in urban, low-income neighborhoods [15]. Thus, beverage taxes may significantly impact these businesses. In addition, small, local business owners represent an influential voice in local policy debates, underscoring the importance of understanding their perspective. Finally, independent food retailers, who may lack the resources of large chain retailers, can provide a unique perspective on how tax implementation can be made easier for them.

The goal of this paper is to better understand how food retailers viewed the tax at the time of implementation and 1 year later. We conducted qualitative interviews with beverage retailers to capture their thoughts on how the tax would affect their businesses and customers, tax implementation, and opinions and knowledge of the tax. These qualitative insights can inform implementation efforts in both Philadelphia and other jurisdictions implementing or considering beverage taxes.

METHODS

Recruitment

We conducted two data collection phases. Phase I (December 7, 2016–February 10, 2017) coincided with tax implementation on January 1, 2017. To reach a sufficient sample size, recruitment extended a month past tax implementation. Phase II (November 27, 2017–January 31, 2018) coincided with one-year post-implementation. The same person was interviewed for Phase I and II except for one instance when an interviewee from Phase I no longer worked at the store, so a different person at the same store was interviewed. To be eligible, retailers had to sell taxed beverages and food in Philadelphia.

Our target sample size was 25 retailers during Phases I and II, but we stopped recruitment at 15 retailers when we reached theme saturation. During Phase I, we conducted 15 semi-structured interviews with retailers to assess the anticipated and initial impact of the tax. There were 37 retailers invited in person to participate in the study. Nine consented and 28 declined participation. Additional requests were individually emailed (n = 8), bulk emailed using a list serve (n = 370), or phoned (n = 4), and of those, six from individual and phoned requests participated. The most commonly stated reason for not participating was lack of time. In total, interviews were conducted among people at 11 corner stores, 3 large grocery stores, and 1 grocery cooperative. All of the retailers were independent except for one from a regional chain. One interview was discarded because the interviewee was not knowledgeable about the store, its customers, or the tax. All but four corner stores completed Phase II interviews.

This purposive sample of retailers was recruited to achieve variation based on store location, accessibility by public transport, inside/outside "food scarce" areas (i.e., areas with limited food retailers) [16], and diversity of the proprietor and clientele. Four stores served primarily immigrant or refugee communities, seven were located by a Philadelphia border (<0.25 miles), seven were in food scarce areas [16], seven sold specialty products, and seven had a relatively high socioeconomic status (SES) client base. These characteristics are not mutually exclusive. Twelve of the interviewees were non-native English speakers, 11 of the stores were small (defined as having fewer than 10 aisles), and 3 were large (defined as having 10 or more store aisles).

Our interview guide development approach was consistent with the implementation science RE-AIM framework which advices assessing the following categories: reach, effectiveness, adoption, implementation, and maintenance [17]. The guide included open- and close-ended questions that enabled us to understand whether participants were aware of the tax, how their business planned to and then eventually did respond to the tax (e.g. passing it through to prices), how it impacted their business, what advice they had to improve implementation, and how these perspectives changed from pre- to post-tax.

Our initial aims for this study were to conduct interviews with both independent store owners and beverage distributors because the tax is levied on the distributors who then pass it through to the stores. However, we faced difficulty recruiting distributors and achieved an insufficient sample size (n = 9 in Phase I, n = 4 in Phase II) to reach theme saturation. Nonetheless, because there are no published interviews with distributors in Philadelphia, we have included a description of the exploratory insights gleaned from the small sample of distributors in Appendix A.

Data collection

After securing permission, all interviews were audio-recorded and transcribed verbatim. B.U. and A.H., PhD-level trained medical anthropologists with extensive experience conducting qualitative research on health and health disparities in Philadelphia, conducted the interviews. Interviews in both research phases took about 60 min and followed a pilot-tested interview guide (Appendix B). Interviewees received a $50 gift card for their participation in each phase of the research.

Interviews were conducted in the retailers' place of business during open hours. Interviews usually included a tour of the premises and an informal discussion of beverage pricing. This study was approved by the Philadelphia Department of Public Health Institutional Review Board (IRB)

and was determined exempt by the University of Pennsylvania and Harvard University IRBs.

Data analysis

Transcripts were analyzed with NVivo 11, and Phase I and II interviews were analyzed separately. A grounded theory approach was used to discover themes through an iterative process [18]. This approach enabled us to begin analysis during the data collection process after the first interview was conducted and complete it after data collection ended. A priori codes based on the interview guide were used to organize data and provide interviewee comments related to specific themes. Our analysis approach first involved becoming familiar with the data and then identifying codes through traditional hand-coding and coding using NVivo software.

The coders (B.U. and A.H.) hand-coded the first interview individually then came together to discuss the codes and reconcile discrepancies. The researchers then hand-coded the first interview a second time. A preliminary codebook was developed based on this process and compared to the a priori codes initially assigned in NVivo. An expanded codebook (Appendix C) was then developed in NVivo and the researchers coded the first interview a third time to ensure accuracy in the coding process between researchers. All subsequent interviews were double-coded once complete and no coding discrepancies were identified. The coders then produced thematic memos summarizing the findings from Phase I and Phase II.

RESULTS

We identified five overarching themes: (a) concerns about the tax purpose, amount, and use of revenue; (b) concerns about the tax's impact on finances and business operations; (c) business strategies implemented to lessen financial burden of the tax; (d) perceptions of customer response to the tax based on income; and (e) confusion around tax implementation. Quotes are presented below with additional quotes in Table 1.

Concerns about the tax purpose and amount and use of revenue

Phase I

Owners of small retail stores felt especially targeted by the tax and viewed it as "one more expense" to do business in Philadelphia. Retailers stated that part of the reason they are reluctant to support the tax is: *It is too high. It is not reasonable. It's to the point where you are going to hurt business and jobs.* Even when they supported raising funds for early childhood education, they expressed suspicion and anger about the city's stated use of tax revenue: *When you say it is going to pre-k … that is positive. But they lied about where the money was going […]it turns out it is going into the general fund also.*

When asked about the possible health implications of the tax, most retailers felt the tax, unless accompanied by an educational campaign, does not teach good health decisions: *People need to learn, not through the law. Teach them what is right and what is good and what is not*. Most retailers believed that customers will simply buy their beverages elsewhere.

Several interviewees questioned the logic of the tax's scope, wondering why zero-calorie diet drinks would be taxed, but chocolate milk was not.

Concerns about the tax's impact on finances and business operations

Phase I

The main concern was that customers would avoid the tax by traveling outside the city border to make their purchases. A grocery store owner surmised: *If somebody's going to go across the bridge to go to the ShopRite […], they're going to buy everything there. They're not going to come back to me to buy their groceries*. One retailer's son found that supermarkets in a bordering county were already advertising that their products were untaxed prior to tax implementation.

Retailers at larger stores feared the loss in revenue would lead to laying off employees, business closures, or moving businesses outside the city: *Honestly, I don't know what to do. […] It gets to the point where you start to think I don't want to live in the city anymore*. Other retailers pointed out that the potential for the tax to generate revenue in one area may simultaneously mean the loss of revenue and jobs in other sectors.

Retailers located by the border stated that the 2014 Philadelphia Cigarette Tax resulted in 25%–40% loss in sales at their respective stores, partially from companion purchases customers would make when they bought cigarettes. They feared that they would not be able to absorb any additional loss due to the beverage tax.

Several said a statewide or national tax would be more effective: *If you have a national public policy that is in place everywhere, the consequences are more like what the economist predict. You can't drive to the other side of the street and avoid the tax. The more localized you get, the more risk you have of that happening […] the cigarette tax worked the exact same way.*

Phase II

After the tax, all retailers except one reported some negative impact on their business, especially if they were located on the borders and did not sell specialty products. Some retailers reported rearranging and reducing staff or staff hours: *Before we used to have three people, now we have two*. But one specialty store owner stated that *It really has not affected us. In our community [Eastern European] people don't really drink sodas that much*.

Table 1 | Themes and quotes extracted from interviews with Philadelphia retailers about their experiences with Philadelphia's Beverage Tax

Theme	Retailers' quotes
Concerns about the tax purpose, amount, and use of revenue	*I hope the city will figure out something else to help with what they want to achieve. If they want to do the pre-k, we are for it, but not on our bread and butter, or our employees'.*
Concerns about the tax's impact on finances and business operations	*Do you think they just want a sandwich? No. They have to drink. Do you think they're going to just drink water? No. They're not going to make two stops; get a sandwich here and then go over there to buy a beverage...We're going to totally lose the business for that.* *Honestly before the cigarette tax, this was all cigarettes [pointing overhead to the vacant space above the counter]. [...] Because customers they come in, they buy one pack of cigarettes and they also buy other things... If you go to the gas station over there, one block up you see this all the cigarettes. So we lost business over here and sent it over there. It's going to be the same thing with the beverages.* *All we have changed is where they buy the beverages from. We have not changed their consumption, not to any great degree.* *If you want to generate money, bring more jobs to the city. You're just cutting people's feet from under them. The soda company tells me the same thing. They're going to have to cut jobs [...] I cannot see the greater good of this tax. So you are going to have a pre-K system and no jobs.* *Honestly, I really have not had a good night's sleep since I've been thinking about this coming closer. I mean we have over 100 employees here [...] If my business is slow, the people are going to get laid off.* *They're buying less when they're here. I don't know if they're going outside the city or what they're doing but I could just see that my soda sales are down significantly.*
Business strategies implemented to lessen financial burden of the tax	*Oh we're going to raise our prices, sure.* *I cannot sell large packages of any kind [...]We're going to discontinue much of the two liters. And of the 3000 [taxable] items we have, I think you would see about half of them disappear completely. Because we just don't sell them. We just don't.* *We expanded food service. We've experimented with numerous aggressive, creative marketing strategies to try to mitigate the volume loss and spent quite a bit of money doing it. And all those things got us to 12–13% down. Because we started the year at 15% down, besides the inflation, the little improvement we made was based on beer, wine.* *Instead of buying from beverage companies we buy more from JETRO. [...] We can just buy one or two cases.* *If you were to get it from the wholesaler, they tax the distributor first and the distributor include[s] the tax in the price, but they show you it's SBT, sugary beverage tax. So then you know and then what we do, we add it on to our tax as a total and go from there.* *We've had to reduce variety because it will expire before it sells.*
Perceptions of customer response to the tax based on income	*Why charge all of these taxes and yet the minimum wage is $7.25? Why? If you're going to raise prices and charge for taxes, you might as well raise the minimum wage.* *We are selling cans more than bottles because people don't want to spend more money.* *At the end of the month, we've always had a phenomenon that they buy what they need and can't pay for it. They put back half the stuff. That's always happened in these food desert stores. Now we're starting to see that happen the third week of the month. And we know because we have to schedule people to return all the items. We've had to put on overnight staff to return the items because it's that significant.*
Confusion around tax implementation	*I don't think that we were ready for the tax. We didn't have as much information that we needed right away to inform the customers.* *And everybody, when we charge the tax, they're just going to blame us. Because we're the ones who collect the money and hand to the city.* *The thing is a lot of people did not actually know what the beverage tax is. They did not know that almond milk would be taxed, that vanilla soy milk would be taxed, that chocolate almond milk is taxed. Orange juice - 50% orange juice – is taxed.* *I wasn't here. But maybe they tried to communicate with us. But because of the boundary of the language there is no way. There is no understanding about the soda tax.*

Some retailers stated that the beverage tax had a bigger effect on their sales than the cigarette tax: *The soda tax is worse because soda is used by everyone. From all ages. And it is a daily thing*.

Business strategies implemented to lessen financial burden of the tax

Phase I

Although a few expressed confusion about who is responsible for paying the tax to the city, most agreed that customers would end up paying for the cost of the increase because the tax is "too high to be absorbed." None said they would distribute the increase to other products because that would increase the likelihood of losing customers and would not be fair; one grocery store manager said, *No, who wants to drink it, they are supposed to pay it. Why would the store have to pay? We just sell it*. Some described a "wait and see" attitude: *I didn't decide yet. I might lose more money now because if I don't want to lose a customer. I still have no information yet, and I want to see the customer's attitude*. Three retailers anticipated absorbing the tax to maintain current prices, delay another price increase after recently implementing one, avoid complicated accounting procedures, or avoid burdening customers, many of whom were refugees. Some retailers who worried that products would expire before being sold predicted they would stock fewer taxed beverages or remove ones sold in larger containers.

Participants were also concerned about Philadelphia's existing 8% sales tax on beverages. For example, if retailers chose to pass on the full amount of the tax to customers, a 2-liter bottle of soda that once retailed for $1.99 will see a $1.01 increase. With sales tax, this comes to $3.24, an overall increase of 51%.

Phase II

All interviewees except one said they increased the cost of beverages to correspond with the tax. A grocery store owner shared: *My observation is that every beverage firm has thrown the whole tax as a separate line item on each retailer's invoice and the retailer in the city passes the whole tax onto the consumer*. Only one participant, a grocery store manager, reported distributing the tax onto other products because the price hike of beverages was affecting his sales. Two of the participants who said they would absorb the cost at baseline dropped out of the study; the remaining retailer said she ended up adding the tax to the beverages, but that she had greatly reduced her stock of taxable beverages.

Other strategies that many store owners reported using include displaying tax signage to avoid surprising customers and/or adding lottery machines or new products (i.e., prepared foods, beer/wine) to generate additional revenue. One grocery store owner said: *We tried promoting do-it-yourself beverages, like powders and mixes. Make your own beverage and avoid the tax. Not wildly successful. People have a habit and they're sticking with their habit*.

Retailers (especially small stores) reported shifting orders from distributors to cash-and-carry wholesalers, in part because distributors have a minimum order that the stores cannot meet. *We noticed that we sell a lot less. So we buy way less. [...] We used to carry about 50 cases of soda, now we have maybe five or ten*. If retailers are unable to sell products before they expire, it further affects their bottom line: *To be honest, [...] I had to throw away 10 cases or more because it expired*.

Some retailers decreased the variety of taxed beverages they sell, and others replaced them with non-beverage products or untaxed beverages. Most retailers interviewed reported removing or decreasing the stock of larger-sized products: *With the sugar tax, it's like wow, it's like $4.59 for 2 liters – that's a lot...I took that out right away*.

Perceptions of customer response to the tax based on income

Phase I

Retailers predicted that more affluent customers may be less affected by the beverage tax, while any tax pass-through would most impact their poorest customers. *People who are on welfare, who don't have vehicles, who can't leave the city–they're going to be affected. [...] They're going to get less food for their money,* said a manager whose store serves residents in an area with few fresh food options.

Other retailers predicted that residents may start buying taxed beverages from an emergent illegal market of beverage-sellers—people who bulk buy beverages across the border and sell on the street—or take the bus to a similarly distanced cross-border store.

Conversely, retailers with middle- and high-income customers anticipated that the tax would have less of an impact on them: *They are not really money worriers at the moment. [...] I think if they want to spend, they spend. If they don't, they don't. I don't know if it will affect them*.

Phase II

Retailers who sold specialty products reported that they were less vulnerable to the loss of business associated with the beverage tax: *My store is a specialty store kind of, there are healthier beverages that people want to pay for. They know that is the price in general*.

Grocers who served a poorer clientele stated that customers have less money for food at the end of the month. Retailers reported that customers have responded to the tax by buying smaller items, off-brand products, or 100% juice*: The 1-liter bottles, before the soda tax, they were hardly moving. Now it is our biggest drink. They buy a lot. It is a bigger amount, and it is the cheaper brand*.

Confusion around tax implementation

Phase I

Interviews revealed two main knowledge gaps about the tax: (a) confusion about tax implementation and (b) a lack of clarity about the tax's scope and rate. Seven retailers believed that they, not distributors, were responsible for paying the tax. Out of the 14 retailers interviewed in Phase I, 2 provided correct information about the tax, 8 expressed misinformation about the tax's scope, and 6 reported misinformation about the price change. As one participant expressed, *Well, I don't know that much about it but I know some, like 3 cents per ounce or something like that. I'm not sure how much it is.... They say it's going to be soda. But is soda the only thing? Maybe. I don't know if the juices are there in that mix*.

Although all reported learning about the tax from local news sources or their beverage distributors, they reported difficulty accessing more in-depth information. Five participants reported receiving an information packet from the city explaining the tax and their responsibilities—four of them were located on the border, and four of them demonstrated a tax-related knowledge gap despite receiving the packets.

Other efforts by the city to educate retailers on the tax included a presentation at a centrally located market, a tax website, and store decals. Native English speakers, however, complained that the website was difficult to understand due to the legal jargon: *You should not have to consult a someone with a decoder pen to tell us what it means. It should be spelled out*. Retailers feared that their misinterpretation of the law could result in fines for non-compliance. They also felt that dissemination of tax information to customers was left to them, as many thought the retailer was arbitrarily raising prices.

DISCUSSION

This qualitative study of food retailers in Philadelphia revealed important themes about beverage tax perceptions and experiences. Many common themes emerged despite differences in store location and clientele.

In general, participants were against the policy. The beverage industry spent over $14 million in an anti-tax campaign in Philadelphia, a figure surpassed only by the amount they spent in San Francisco [19], which may have contributed to the negative feelings toward the tax. Although retailers expressed enthusiasm for supporting early childhood education programs, they also expressed distrust in how the government promised to spend the tax revenue. These interviews highlight the importance of cities being transparent in how beverage tax revenue is used when it is not earmarked for a specific purpose.

Prior to the tax, many business owners worried there would be a negative economic impact on their business. During the follow-up interviews, retailers described a range of strategies to maintain profits, including adding alcohol sales, promoting untaxed beverages, and/or passing the tax through to prices. These strategies are consistent with ones used by retailers in the Bay Area, suggesting that retailers have a range of methods to protect against the potential impact of the tax on sales [20, 21]. In addition, all participants reported reducing their taxed inventory, with some shifting toward healthier, non-sugar beverages, observations that are supported by studies from Philadelphia and Berkeley [9, 20].

In our sample, one retail shop had closed by Phase II. Four retailers reported reducing their number of employees or employees' hours. It is impossible to know, though, whether these changes were due to the tax. Research on Bay Area beverage taxes shows minimal impact on profits for retailers [7, 21]. Empirical evidence from Mexico, Philadelphia, and California also did not find any indication of increased unemployment as a result of their taxes [12, 22, 23]. Because our sample over-represented border stores, they may have been particularly hard-hit by the tax given cross-border shopping. These results, however, do align with evaluations of the impact of cigarette taxes, which were mentioned by retailers in our sample as an additional financial concern. Research on the economic impact of tobacco taxes has shown that such taxes do not impact the density of convenience stores and additionally lead to healthcare savings, increased work productivity, and positive public health outcomes [24–27].

Another common theme among store owners was that the tax was likely to influence purchasing among low-income more than high-income individuals. This concern is consistent with research showing cigarette taxes are more likely to affect lower-SES smokers [28]. Furthermore, data on the Mexico and Philadelphia beverage tax showed greater reductions in SSB purchases [29] and sales [10] among lower-income households/neighborhoods.

Participants also had concerns about tax implementation, though dissatisfaction may have been reported regardless of how well or poorly it was rolled out. Although the city sent out information packets, completed thousands of in-person store visits, and media coverage was high, many participants believed they were unprepared to implement the tax. They reported lack of communication from the city, a concern echoed by both distributors and retailers in Berkeley even though the tax is on the distributors and not on the retailers in both instances [20]. They recommended more widely circulated education sessions using alternative channels more commonly used by people who speak non-English languages and translation of tax materials into more languages. While the city's website initially supported materials in five languages and eventually added three more, we do not have complete details on all of the City's dissemination strategies. We do

know, however, that the City sent street outreach teams that visited over 8,000 stores, published press releases, and sent email communications through their Revenue Department's commercial listservs and beverage-related commerce groups [30].

Retailers had a number of recommendations for how to better implement beverage taxes. Like Bay Area retailers, Philadelphia retailers believed a statewide or nationwide tax would limit cross-border shopping, though some Berkeley retailers located near the city borders reported that consumers eventually became used to the tax [20, 21]. Currently, no U.S. states have a beverage tax, and successful lobbying from the beverage industry led California to preempt the passage of new local taxes until 2031 [31].

This study has several limitations. Despite repeated and varied attempts, we were unable to obtain interviews with bottling companies or any of the "Big 3" (Coke, Pepsi, Canada Dry). In addition, our sample size was small, though theme saturation was reached. To reach a sufficient sample size for Phase I, recruitment went a bit beyond the start of the tax, so we captured both pre-tax and initial-tax views. Finally, we did not conduct interviews with other important groups like restaurants or movie theater operators.

The strengths of this study include gathering in-depth interviews with independent food retailers and a longitudinal design. Although there are other published qualitative studies about sweetened beverage taxes, the Philadelphia tax is higher than many, is the only current one to include artificially sweetened drinks, and Philadelphia is the poorest of the 10 largest cities [32], making it an important context to study tax perceptions.

CONCLUSION

Modeling studies estimate that beverage taxes are a cost-effective way to prevent hundreds of thousands of cases of childhood obesity [33], which is associated with adult obesity [34]. This study provides valuable insights that can inform the framing and implementation of beverage taxes in other interested jurisdictions. We found that food retailers were initially very worried about the tax, but all reported increasing beverage prices or implementing other strategies to partially offset the financial impacts. These interviews also highlighted business owner concerns that policymakers should consider when designing taxes. These included dedicating tax revenue to support a popular initiative like early childhood education, being transparent about revenue use, and coupling the tax with a public education campaign. The study also revealed how implementation might roll out more smoothly, including greater communication about the tax and its rules, particularly for non-English speakers. Understanding that overall, participants were not in support of the tax, insights derived from these interviews may help policymakers directly engage with these concerns in other localities that can potentially make the tax implementation process less stressful for business owners and increase support from the general community.

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Compliance with Ethical Standards

Conflicts of Interest: All authors declare that they have no conflicts of interest.

Human Rights: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was approved by the Philadelphia Department of Public Health Institutional Review Board (IRB) and was determined exempt by University of Pennsylvania and Harvard University IRBs.

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Welfare of Animals: This article does not contain any studies with animals performed by any of the authors.

Transparency Statements

Study registration: This study was not formally registered.

Analytic plan pre-registration: The analysis plan was not formally pre-registered.

Data availability: De-identified data from this study are not available in a public archive. De-identified data from this study will be made available (as allowable according to IRB standards) by emailing the corresponding author.

Analytic code availability: There is not analytic code associated with this qualitative study.

Materials availability: Materials used to conduct the study are not publicly available, but interview guides will be made available by emailing the corresponding author.

APPENDIX A: DISTRIBUTOR RECRUITMENT AND EXPLORATORY INSIGHTS

Methods for Distributor Recruitment

The Philadelphia Beverage Tax is an excise tax levied on beverage distributors. Thus, they are an important group to interview to gain an understanding of their views of the tax and how it has impacted them. Understanding the views from this group may help policymakers target key points of confusion for tax implementation.

During Phase I, we contacted 45 distributors between 1 and 3 times, and 9 consented to interviews. This convenience sample was recruited by phoning off an online list of registered

distributors, approaching local distributors' places of business, and referrals from retailers. Theme saturation among distributors was not reached due to difficulty recruiting a sufficient number of interviewees and the diversity among distributors, including: position in the supply chain, types of beverages distributed, and economic scale of distributors, among other factors. Four participated in Phase II interviews.

Interviews with distributors primarily took place over the phone, though two took place at the business or at the distributor's home.

Themes and quotes extracted from interviews with Philadelphia beverage distributors (pre-tax interviews *n* = 9; follow-up interviews *n* = 4) about their experiences with Philadelphia's Beverage Tax

Theme	Distributors' quotes
Concerns about the tax purpose, amount, and use of revenue	*For instance, we distribute Honest tea and I think there's like 30 calories in a bottle compared to a Snapple which has 120 calories a bottle but that bottle is going to be taxed the same even though it's 120 calories so.* *We are a little bit conflicted about selling soda to begin with, the fact that the tax is going to support early childhood education, we are excited that some money and attention is going there.*
Concerns about the tax's impact on finances and business operations	*People are going to leave the area to go buy soda, or to buy iced tea or buy cranberry juice and not pay the tax, either on the outskirts of the city in the state of Pennsylvania or over in Jersey.* *I have a feeling it may impact, because my drivers are paid salary plus commission, so it may impact their revenue, their paycheck, if we are selling in the city because of the tax is going to affect their bottom line and their paycheck.* *Financially, it has been a big impact on us, our business. We are losing a lot of inner-city sales is what it boils down to. Dollar-wise we are down close to $1 million.* *It is more difficult to reset everything as far as the size of the bottles and the formula because we would have to change the formula of the product.* *We're waiting to see what's going to happen. I believe the tax will be collected at the end-user level, so we will not be collecting tax at this level. [...] I do expect a reduction in the sales of soda.* *Well, we stopped the soda production in August 2017. January 1st hit, we implemented the increase – we added four dollars per case wholesale. We were eating the 32 cents per case [...] And our sales went right to the basement.*
Business strategies implemented to lessen financial burden of the tax	*My profit margin is about what the tax is, so if I were not to pass it on, I would have no profit.* *The retailers are feeling it now. The city levied the tax on the distributors and the distributors are like, well, you know what we're going to do, we're going to put it on the retailer, and the retailer's like you know 'We're going to, too,' then boom boom boom. The little people always get affected.*
Perceptions of customer response to the tax based on income	N/A
Confusion around tax implementation	*The question that we have is what happens if the dealer doesn't notify us? She said on the call that if they don't notify you, just charge them the tax. On the other hand, if they don't notify you which it specifically says in the ordinance then don't charge them the tax. It's just strange. There's a lot of misinformation out there and stuff that we need to clarify.* *For example, I could sell soda to Sysco and we are both distributors. So does that mean that I have to pay the tax on the soda and they have to pay it again?* *Figuring out how to pay the tax and make sure that we are compliant because it is putting in a whole new process that we did not have to do before.* *We have put out a lot of emails to accounting firms and only one of them has gotten back to us so far. Even though they do sales tax they didn't want to touch it. ... We are a national company and we're calling up [...] big sales tax preparers in the country.* *We made a price increase in soda across the board, so a soda in Philadelphia and one in Baltimore are the same price. [...] It was not really the intent of the law, but we don't really have a way to send one list to customers in Philadelphia and another to customers outside.*

APPENDIX B: INTERVIEW GUIDES FOR PHASE I AND PHASE II

PHASE I INTERVIEW GUIDE

Introduction

- Thanks so much for participating in this interview. As I mentioned, I am a researcher working with the University of Pennsylvania interested in learning what business owners like you think about the Philadelphia Beverage Tax. Other cities are also thinking about a tax and it's important to learn how the tax affects businesses.
- The interview will last approximately 45 minutes. I'd like to record the interview so that I don't miss anything. I'll use the recording only to type up notes and then will delete the recording. Is that okay?
- There are no right or wrong answers; we are just interested in hearing about your experiences, good or bad. I want to hear from your perspective.
- Your participation in this research is completely voluntary. You can skip any questions you don't want to answer or stop at any time.
- I will not use your name or business name or identifying information in these notes or elsewhere, so your identity will be confidential.
- Do you have any questions before we get started?

Introduction

1. How long have you worked at this store?
2. Who are your main customers? Do they walk or drive to your store?
3. What do customers most commonly purchase here? (quick snacks, meal shopping, prepared food shopping, beverages).
4. Which beverages do you sell the most?
5. As a store owner, what do you see as your role in the community? What is the role of your store in the community?

KNOWLEDGE OF TAX

6. What do you know about the beverage tax that will be implemented on January 1, 2017? (*Probe for more information* – Can you tell me more about that?)
7. How did you first learn about the tax?
8. How else have you learned about the tax?
9. Have you seen any information from the city about the tax?
   a. If so, what information have you seen? (e.g., brochure, letter, city website)
   b. Have you tried to contact the city to get information about the tax?
10. Do you feel adequately informed about how the tax will affect you?
11. Is there any part of the beverage tax that you wish you knew more about?
12. Do you know which drinks will be taxed? (Ask participant to list them.)
    a. Do you know which drinks will not be taxed? (Ask participant to list them.)
13. Do you know who is supposed to pay the beverage tax?

OPINION OF TAX

14. What do you think about the tax?
    a. Do you think there are positive things about the tax?
    b. Do you think there are negative things about the tax?
15. Is there anything you would change about the way the tax was designed?
16. What is your opinion about the cigarette tax? Has that tax impacted your business? In what ways?

INTERACTION & COMMUNICATION WITH DISTRIBUTORS

The next several questions are about beverage distributors.

17. How does your store buy the beverages it sells? [supply chain]
18. Do you normally have any communication with beverage distributors?
19. Have any distributors communicated with you about the tax?
    a. How did they communicate with you?
    b. What did they say about the tax?

PRICES OF BEVERAGES

20. Who decides the sale prices/promotions on beverages? (e.g., store manager, the vendor/distributor)?

Adding cost to beverages

21. Do you plan to raise the prices of **bottled beverages** in your store because of the tax?

(Yes, No, I don't know)

    a. If no, why not?
    b. If yes, how are you adding the tax to prices?
    c. If yes, when will you raise the prices?
    d. If yes, how much do you think the cost of bottled beverages will increase?
    e. If yes, will you raise the price of specific bottled beverages? Why or why not?
    f. If yes, will you change the price of bottled beverages differently based on size? Why or why not?

22. Do you plan to raise the prices of **fountain drinks** because of the tax?

    a. If no, why not?

b. If yes, how are you adding the tax to prices?
c. If yes, when will you raise the prices?
d. If yes, how much do you think the cost of fountain beverages will increase?
e. If yes, will you raise the price of specific fountain beverages? Why or why not?
f. If yes, will you change the price of fountain beverages differently based on size? Why or why not?

Adding cost to food items

23. Do you plan to distribute the tax to other food items in the store?

(Yes, No, I don't know)

a. If no, why not?
b. If yes, Why? To which items?
c. If yes, how much do you think the cost of these items will increase?

Changing what store stocks/sells

24. Do you plan to stop stocking certain items, or stock less of them as a result of the tax?

a. Why or why not?
b. If yes, which items?
c. What might you stock instead?

BUSINESS IMPACT

25. How do you expect the tax to affect your business?
    a. Do you think the tax will impact total sales?
26. How do you expect the tax to affect your customers?

a. How do you think customers will respond to the tax?
b. Do you think they will change their purchasing behaviors?
c. Do you think they will visit the store less often?

WORKING WITH CITY ON HEALTH LAWS AND PROGRAMS

Cities like Philadelphia sometimes want to pass laws that they think will improve the city or make people healthier. For example, they might say that businesses can't sell tobacco products near schools. We want to know how the city can do a better job of putting the laws into practice so that businesses aren't hurt too much.

27. What advice would you like to give the city about how to work with small businesses on health laws like these?
    a. Do you think that cities should use health laws to promote health? Why or why not?
28. Have you heard about the healthy beverage tax credit here in Philadelphia?

If they have not heard of it: explain that this is an ordinance that was passed that provides a tax credit to encourage certain smaller merchants (e.g., convenience food stores, other specialty food stores, miscellaneous food retailers) to provide healthy beverage alternatives in their stores.

a. What do you think about this tax credit?
b. Do you picture your store using this tax credit? Why? Why not?
c. Does this tax credit affect your opinion about the beverage tax?
d. How would you change the tax credit if you were designing it?

Cities are also interested in getting businesses involved in programs that could help people be healthier. For example, some cities are doing "healthy store" programs, where the city will work with stores try to sell healthier products. This could include providing businesses with marketing materials or recommended changes to product placement to promote healthy foods.

29. What incentives might make it easier for your store to participate in a healthy retailer program? For example, cash incentives, shelves, training/education, promotion/marketing.

a. What barriers might make it more difficult for your store to participate in a "healthy store" program?
b. What type of "healthy store" program do you think would appeal to your customers?

Wrap Up

Those are all the specific questions I have for you at this time. Is there anything else that you would like to say on these topics before we close? I want thank you for your time and your participation. Before we are done, I'll ask you to fill out this brief information form. And again, we will never quote from these forms about an individual person; we just need to compile some facts about our participants that we will report all together.

Once these forms are done, we have a $50 gift card to give you for your time.

Beverage Pricing (Store Walk Through)

Can you please give us a brief overview of the beverages you have in the store and how much they cost?

PHASE II INTERVIEW GUIDE

Introduction

- Thanks so much for participating in this interview. As I mentioned, I am a researcher working with the University of Pennsylvania interested in learning what business owners like you think about the Philadelphia

beverage tax. Other cities are also thinking about a tax and it's important to learn how the tax affects businesses.

- The interview will last approximately 45 minutes. I'd like to record the interview so that I don't miss anything. I'll use the recording only to type up notes and then will delete the recording. Is that okay?
- There are no right or wrong answers; we are just interested in hearing about your experiences, good or bad. I want to hear from your perspective.
- Your participation in this research is completely voluntary. You can skip any questions you don't want to answer or stop at any time.
- I will not use your name or business name or identifying information in these notes or elsewhere, so your identity will be confidential.
- Do you have any questions before we get started?

Introduction

Ask questions 1–3 only if this is a newly contacted interviewee

17. How long have you worked at this store?
18. Who are your main customers? Do they walk or drive to your store?
19. As a store owner, what do you see as your role in the community? What is the role of your store in the community?
20. What do you know about the beverage tax that was implemented on January 1, 2017? (*Probe for more information* – Can you tell me more about that?)
21. What do customers most commonly purchase here? (quick snacks, meal shopping, prepared food shopping, beverages).
    a. How has that changed as a result of the beverage tax?
22. Which beverages do you sell the most?

    a. How has that changed as a result of the beverage tax?

BUSINESS IMPACT

23. Last time we spoke, you expected the tax to affect your business in the following way: [*Recap how storeowner expected tax to affect business*] Did that happen?
    a. Did the tax impact beverage sales? If so, how? What happened to sales of taxed beverages? What about non-taxed beverages?
    b. Did the tax impact total sales?
24. Last time we spoke, you expected the tax to affect your customers in the following way: [*Recap how storeowner expected tax to affect customers*] Did that happen?
    b. How did your customers respond to the tax?
    b. Did they change their purchasing behaviors?
    c. Did they visit the store more or less often or was there no change?
25. Thinking about the tobacco tax and the beverage tax, which one has had a bigger impact (if any) on your overall store sales? In what way did each impact sales?

OPINION OF TAX

26. What do you think about the tax?
    a. Do you think there is anything positive that has come out of the tax?
    b. Do you think there is anything negative that has come out of the tax?
27. Is there anything you would change about the way the tax was designed?
28. Are you aware that beverage taxes have passed in several other parts of the country since Philadelphia passed its tax? What do you think about that?
29. Money from the tax is supposed to pay for the expansion of pre-k and improvements in libraries and parks and recreation throughout the City of Philadelphia. Does this influence your opinion about the tax? *Last time we talked you said that you in support of the idea of the tax money being spent on the expansion of pre-k and improvements to the library and parks and recreation in Philadelphia. But you also expressed some reservations about that. Do you still have reservations? Or What would it take for you to see to believe that the money for the beverage tax increase was being spent appropriately.*

PRICES OF BEVERAGES

30. Who decides the sale prices/promotions on beverages? (e.g., store manager, the vendor/distributor)?

Adding cost to beverages

31. Last time we spoke, you said that you [were/were not] planning to raise the prices of **bottled beverages** in your store because of the tax. Did that happen?

(Yes, No, I don't know)

    a. If no, why not?
    b. If yes, how did you add the tax to prices?
    c. If yes, when did you raise the prices (*note: important to find out if they did it before January 1, 2017, immediately after, or some weeks/months after*)*?*
    d. If yes, how much did you increase the cost of bottled beverages?
    e. If yes, did you raise the price of specific bottled beverages? Why or why not?
    f. If yes, did you change the price of bottled beverages differently based on size? Why or why not?

Adding cost to food items

32. Last time we spoke, you said that you [were/were not] planning to distribute the tax to other food items in the store. Did that happen?

(Yes, No, I don't know)

    a. If no, why not?
    b. If yes, Why? To which items?
    c. If yes, how much did you increase the cost of these items?

Changing what store stocks/sells

33. Last time we spoke, you said that you [were/were not] planning to stop stocking certain items, or stock less of them as a result of the tax. Did that happen?
    d. Why or why not?
    e. If yes, which items?
    f. Did you replace them with other items? If yes, what?
34. Have you changed any of your beverage marketing practices in response to the tax (for both taxed and non-taxed beverages)?

INTERACTION & COMMUNICATION WITH DISTRIBUTORS

The next several questions are about beverage distributors.

35. How does your store buy the beverages it sells? [supply chain]
    a. Has this changed as a result of the beverage tax?
    b. Does your store buy from a registered distributor? What happens with the tax?
    c. Do you ever buy from an unregistered distributor? How do you handle the tax in that case? *Should we ask them about how they go about paying the tax and how that process is? Should we also ask about if they ever don't pay the tax, reminding them that this information is confidential...*
36. Have any distributors recently communicated with you about the tax?
    c. How did they communicate with you?
    d. What did they say about the tax?
    e. Have you experienced any contract changes with your distributor since the tax started? *(prompt: such as incentives to sell different sizes or types of products, changes to any incentives for amounts of product sold, communication with customers, etc.)*
    f. What, if any, recommendations did they provided about changes to make to products (e.g., availability, price, sizes offered, marketing)?
    g. What, if any, recommendations have they provided about signage related to the tax? *(prompt: Such as to make your own sign informing customers of the tax, to use a sign they provided to inform customers, not to display signs to customers, etc.)*
    h. Would you be willing to provide a sample invoice from your distributor so we can see how they charge the tax? This invoice will be confidential - we will not share this invoice with anyone from outside of the research team.
37. Have distributors changed the sizes of the beverages they are selling you because of the tax?
38. If your store has made changes to the size of beverages sold, how have you made these changes? *(prompt: have you stocked more, less, or about the same volume of small beverages less than 1 liter since the tax?; have you stopped selling large volume sugary beverages (such as 2 liter bottles of soda) since the tax was implemented?)*

KNOWLEDGE OF THE BEVERAGE TAX AND EXPERIENCE COMPLYING

39. What is the latest information you heard about the tax? Where did you hear that?
40. Do you actively seek new information about the tax? If so, where do you get that information? (e.g., social media, newspaper, TV, health dept)?
41. Have you seen any information from the city about the tax?
    a. If so, what information have you seen? (e.g., brochure, letter, city website)
    b. Have you tried to contact the city to get information about the tax? Was that helpful?
42. Do you feel adequately informed about the tax?
43. Is there any part of the beverage tax that you wish you knew more about?
44. Do you know which drinks are taxed? (Ask participant to list them.) *KEEP THIS QUESTION?*
    a. Do you know which drinks are not taxed? (Ask participant to list them.)
45. What is your understanding of who is supposed to pay the beverage tax?
    a. And is that how it has actually been happening?
46. What has been your experience following the tax rules? *(Probe about whether it was easy or challenging).*
    a. Have you had check up on you to see if you're following the tax? (If so, how did that go?)
47. Is there any information you wish you would have had when the tax first started or could the city have done anything differently to make it easier for you to comply with the law?
48. How does your experience with the beverage tax compare to your experience implementing the tobacco tax? *Probe whether one was easier or more straightforward to implement.*

WORKING WITH CITY ON HEALTH LAWS AND PROGRAMS

Cities like Philadelphia sometimes want to pass laws that they think will improve the city or make people healthier. For example, they might say that businesses can't sell tobacco products near schools. We want to know how the city can do a better job of putting the laws into practice so that businesses aren't hurt too much.

49. Have you heard about the healthy beverage tax credit here in Philadelphia?

If they have not heard of it: explain that this is an ordinance that was passed that provides a tax credit to encourage certain smaller merchants (e.g., convenience food stores, other specialty food stores, miscellaneous food retailers) to provide healthy beverage alternatives in their stores.

    a. What do you think about this tax credit?
    b. Have you used this tax credit? Do you plan to? Why? Why not?

c. Does this tax credit affect your opinion about the beverage tax? If so, how?

50. Cities are also interested in getting businesses involved in programs that could help people be healthier. For example, some cities are doing "healthy store" programs, where the city will work with stores to try to sell healthier products. This could include providing businesses with marketing materials or recommended changes to product placement to promote healthy foods. What do you think of these types of programs?

Wrap Up

Those are all the specific questions I have for you at this time. Is there anything else that you would like to say on these topics before we close? I want thank you for your time and your participation. Before we are done, I'll ask you to fill out this brief information form. And again, we will never quote from these forms about an individual person; we just need to compile some facts about our participants that we will report all together.

Once these forms are done, we have a $50 gift card to give you for your time.

Beverage Pricing (Store Walk Through)

Can you please give us a brief overview of the beverages you have in the store and how much they cost and any changes you made as a result of the tax?

APPENDIX C: CODEBOOK FOR RETAILERS

a. **Store and customer characteristics** - Includes store's role in the community; demographics of store customers and neighborhood; neighborhood context (i.e., store location, proximity to city border, comparisons between neighboring stores, mode of transport to store); characterizations of consumers
Sales information - Most commonly purchased items; most commonly purchased beverages; total sales; percentage of sales that are beverages; percentage of business affected by tax
b. **Knowledge of tax** - Includes references to personal statements about confidence in knowledge of tax; stated list of taxed drinks; stated list of untaxed beverages; knowledge about who pays tax to City and who bears the cost of the tax; references to areas of tax law and responsibilities about which participants feel uniformed; confusing or conflicting directives or terminology
c. **Info sources about tax** - Includes references to sources of information about tax including communication with the city and with distributors; references to phone calls, emails, in-person conversations, petitions and protests at city hall
d. **Beverage tax – opinions about and reactions to** - Includes opinions about bev tax, its impacts on people known or unknown to interviewee, or on the city or on society in general; appropriateness of blanket regulation on all sweeteners; participation in petitions and demonstrations; excludes pricing reactions
Changes would make to tax - Includes suggestions interviewees made about how to implement, restructure or utilize the tax
e. **Supply chain** - How retailers get their beverages
f. **Business decisions in response to tax**
Plan to add costs to other food items – Will the store add distribute the cost of the tax over various items in the store?
Plan to change what store stocks – Will store decrease stock of sugary beverages, replace with healthier, eliminate stock, reduce quantity of different beverages. Or not.
Plan to raise prices of sweetened beverages. – Will store raise prices at once, over time, or wait and see, absorb costs, or unknown. Is supplier passing on full cost of increase or not.
g. **Economic impact**
Impact on business – Employee hiring/firing, black market competition, customers crossing border, loss of go-along purchases, changing accounting procedures, paying taxes on products not yet sold, fines, additional required taxes to do business
Impact on customers – Includes references to customer knowledge about the tax; changing purchasing habits or not; health of customers; socioeconomic considerations including financial limitation of consumers to access health benefits of sugary bevs (i.e., 100% vitamin C in cheap, sugary beverages); access to transportation to seek cheaper beverages
h. **Opinions about the City** - Includes positive and negative references to impact on City governance and quality of life in the city, i.e., tax drives away business leaving more financial need; potential loss of jobs; degradation of trust between city and tax payer; if tax is effective another product will be taxed; healthier population over time representing a decreased health burden; does participant feel empowered to be heard; confidence in the city to represent their best interest; confidence in fiscal responsibility and transparency
i. **Perspectives about health –** Participants' perspectives about their own health and health practices (i.e., sugar consumption); thoughts about public health and interventions; Individual vs. population health; opinion about tax as health law
j. **Cigarette tax – opinion and reaction** - Includes interviewees references to impact of cigarette tax on business, comparisons between cig tax and bex tax
k. **Tax credit and healthy retailer program** - *Includes opinions and knowledge about tax credit*
l. **Insights** - Includes references to creative alternatives, interventions and suggestions about the tax; other ways of thinking about the tax; in-progress insights from researchers
m. **Great quotes**

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