



Short communication

## How sugar-sweetened beverage tax revenues are being used in the United States

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### ABSTRACT

We sought to describe how revenues from sugar-sweetened beverage (SSB) excise taxes in 7 U.S. cities are being allocated, who is benefiting from these investments, and whether allocations are consistent with the original intent of tax legislation. We collected information from public documents and key informants about allocations in the most recent fiscal year available (ranging from 2018 to 2021). Across the 7 U.S. cities with taxes, the average annual revenue from SSB taxes totaled \$133.9 M. In the fiscal year studied, cities allocated a total of \$133.2 M in SSB tax revenues. Human and community capital investments totaled \$89.6 M (67% of all allocations) funding early childhood development, community infrastructure improvements, and youth and workforce development. Health-related investments totaled \$36.9 M (28% of total allocations), funding access to healthy foods and beverages; support for physical activity opportunities; promotion of overall physical, mental or social health and wellbeing; health and nutrition education; chronic-disease prevention and management; and reducing SSB consumption. In the 3 cities that specified how tax revenues would be spent, allocations were consistent with promised uses of revenues. In addition, 85% of aggregated revenues (\$112.9 M) were targeted to support work and programs in impacted communities (communities that experience health inequities, discrimination and exclusion). SSB tax revenues are supporting initiatives to improve community health, develop human and community capital, and advance equity. These investments may yield additional health benefits beyond those resulting from lower SSB consumption. Consistent tracking and public reporting on revenue allocations would increase transparency and accountability.

### 1. Introduction

Seven cities in the United States have implemented sugar-sweetened beverage (SSB) excise taxes to reduce SSB sales and generate revenue to address important community needs (Madsen et al., 2019). Studies have demonstrated that taxes reduce SSB sales (Madsen et al., 2019; Powell and Leider, 2020; Powell et al., 2020) and suggested that taxes are cost-effective in reducing the burden of SSB-related disease and health care costs (Olm et al., 2020).

Activities funded by tax revenues have the potential to further improve health, health equity, and community wellbeing. However, the ease of accessing information about revenue allocations varies by city and a complete picture of SSB-tax revenue investments across cities is not yet available.

A clear understanding of the activities funded by tax revenues and who benefits from these activities could improve tax policy design, increase public support for taxes, and make cities more publicly accountable for how they use revenues. We therefore sought to describe allocations of SSB tax revenues in the 7 U.S. cities with SSB taxes.

### 2. Methods

We collected data on tax revenue allocations (exclusive of \$3.36 M in San Francisco, 22% of total tax revenues that must support preexisting voter-mandated budget obligations) for the most recent fiscal year for which data were available for the 7 SSB taxes currently implemented in the U.S. We obtained data from publicly available contracts, city budgets and reports, reports from recipients of tax revenue allocations, and city

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and recipient websites. We created a codebook to categorize all revenue allocations according to the type of organization receiving funds, the stated goal(s), and populations served. The two senior researchers (JK and KM) reviewed coding of all allocations to ensure consistency. We identified 12 overarching goals, aggregated into 3 broad categories: human and community capital, health, and tax administration. If an allocation supported multiple goals, the total was evenly divided among each of the goals. We flagged goals that served impacted communities (communities that experience health inequities, social, political and/or economic discrimination and exclusion because of unequal power relationships, such as Black, Latinx, Hawaiian/Pacific Islander, or Native-American populations, and low-income populations), and youth ages 0–18 years.

### 3. Results

Annually, local excise taxes on sweetened beverages in the U.S. generated \$133.9 million in revenue (Table 1) and appeared stable over time (eTable 1, Supplemental Materials). Annual revenues ranged from \$0.3 million in Albany, CA to \$77.7 million in Philadelphia, reflecting differences in tax rates, sales volumes, and population.

Across all cities in the year studied, \$133.2 million in tax revenues was distributed through 189 allocations (median \$150 K, range \$7,950 to \$50.9 M). Most of the allocations (\$96.9 million) were administered through city departments (including \$27.0 M to parks and recreation and \$65.8 M to health and human services), \$19.6 M went directly to community organizations, \$14.9 M went to schools, and \$1.8 million to clinics. In most cities, the majority of revenue allocations supported health-related goals (100% of allocations in Albany, 92% in Berkeley, 87% in Boulder, and 79% in San Francisco). Oakland and Seattle divided allocations between health (51% in Oakland and 41% in Seattle) and building human and community capital (45% in Oakland and 47% in Seattle; city-level details in eTable 2). In contrast, Philadelphia dedicated 91% of its funding to human and community capital (Fig. 1).

Across all cities, investments in human and community capital accounted for 67% (\$89.6 M) of total allocations, with \$57.6 M

supporting early childhood development (\$50.9 M in Philadelphia alone), largely through pre-K subsidies, support services for children age 0–3, and expansion of health education, physical activity and healthy meal provision at childcare sites. The second largest share went to improving community infrastructure (\$21.2 M), including improvements to parks, recreation centers, libraries and senior centers, followed by \$6.9 M invested in programs promoting economic and human development, including workforce development activities (job training, GED classes, and paid apprenticeships and internships), and non-health services (e.g., San Francisco’s “Peace Parks” program, which creates safe spaces for job readiness training while building relationships between residents and police). An additional \$3.8 M was invested in youth development, providing financial support for college, summer learning opportunities, mentoring programs, summer support for college enrollment and other school services.

Health-related goals represented 28% of aggregated allocations (\$36.9 M). All cities allocated money towards increasing access to healthy foods and beverages (total \$17.2 million), mostly via direct provision (\$9.1 M; e.g., Meals on Wheels for seniors, healthy school food, and food banks) or through food subsidies (\$4.6 M; e.g., fruit and vegetable vouchers and prescriptions for free fruits and vegetables through clinics). A total of \$6.1 M was allocated towards physical activity opportunities (e.g., supporting YMCA classes and youth sports programming, subsidizing participation in sports, and providing bicycles and gear to low-income community members), and related workforce development (e.g., equity training for fitness instructors). Cities invested an additional \$5.5 M in overall physical, mental or social health and wellbeing (e.g., community wellness programs, community schools, support for formerly incarcerated community members, a crossing guard program, and health education). Additionally, cities invested in increasing health and nutrition knowledge (\$3.3 M, e.g., experiential learning, such as cooking and gardening classes) and in chronic-disease prevention and management (\$3.0 M, e.g., diabetes prevention programs, dental and health screenings, community doula programs, and culturally-tailored health curriculum development). A total of \$1.7 M was allocated specifically towards reducing SSB

**Table 1**  
Description of U.S. sweetened beverage excise taxes implemented as of 2020, tax revenue allocations, and allocations supporting impacted communities, by city.

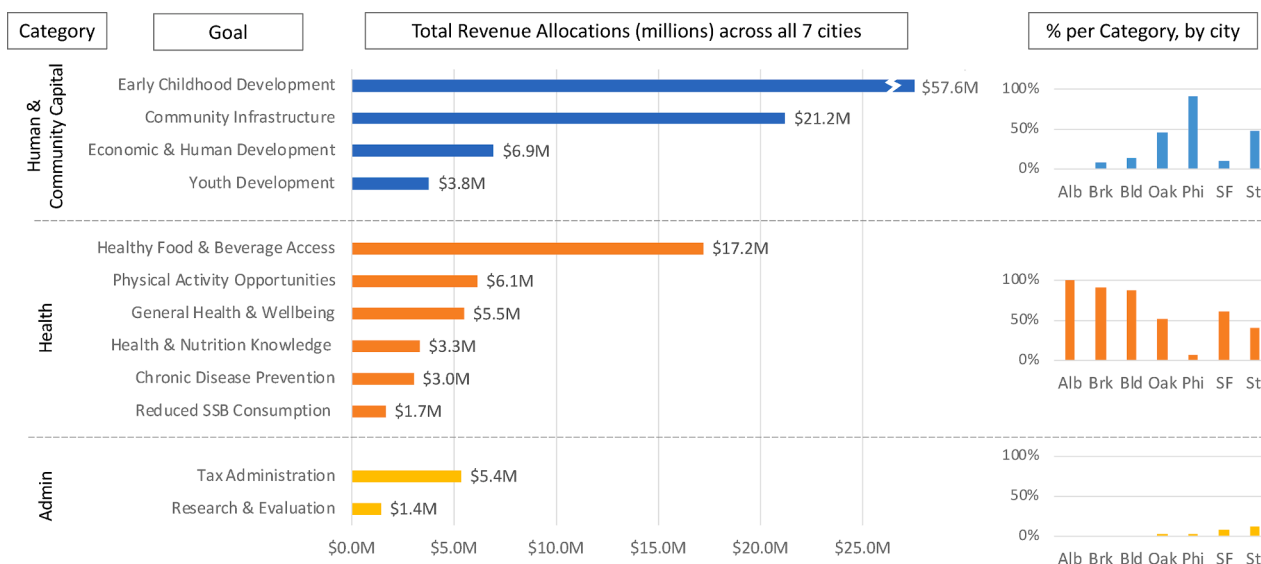
	Albany	Berkeley	Boulder	Oakland	Philadelphia	San Francisco	Seattle	All Cities
<b>Cents per ounce</b>	1	1	2	1	1.5	1	1.75	–
<b>Month and year tax began</b>	Apr-17	Mar-15	Jul-17	Jul-17	Jan-17	Jan-18	Jan-18	–
<b>City Demographics</b>								
Population, 000's	20	121	106	433	1,584	882	754	–
% Non-Hispanic White	46%	54%	80%	28%	35%	41%	65%	–
% of People in Poverty	9%	20%	21%	18%	25%	11%	12%	–
<b>Fiscal year studied</b>	2019–2020	2020–2021	2019	2019–2020	2020–2021	2019–2020	2018	–
<b>Average annual tax revenue, \$000's<sup>a</sup></b>	\$273	\$1,615	\$4,957	\$10,155	\$77,687	\$16,098	\$23,112	\$133,897
<b>Allocations in fiscal year studied, \$000's<sup>b</sup></b>	\$305	\$1,900	\$4,649	\$17,910	\$77,050	\$11,530	\$19,884	\$133,228
<b>Allocations serving impacted communities, \$000's (%)<sup>c</sup></b>								
People with low incomes or people of color	\$0 (0%)	\$1,164 (61%)	\$4,259 (92%)	\$8,503 (47%)	\$74,343 (96%)	\$9,015 (78%)	\$15,628 (79%)	\$112,912 (85%)
People with low incomes	\$0 (0%)	\$786 (41%)	\$4,232 (91%)	\$6,547 (37%)	\$74,343 (96%)	\$6,965 (60%)	\$14,247 (72%)	\$107,120 (80%)
People of color	\$0 (0%)	\$626 (33%)	\$2,180 (47%)	\$7,279 (41%)	\$57,585 (75%)	\$5,167 (45%)	\$10,496 (53%)	\$83,334 (63%)
Youth	\$160 (52%)	\$1,396 (73%)	\$2,098 (45%)	\$5,724 (32%)	\$55,369 (72%)	\$5,268 (46%)	\$9,759 (49%)	\$79,773 (60%)

City demographics come from US Census QuickFacts July 2019. Philadelphia taxes both sugar-sweetened and artificially-sweetened beverages; all other cities tax sugar-sweetened beverages only.

<sup>a</sup> Mean annual revenue for fiscal years with full-year data through 2019.

<sup>b</sup> Dollar amounts represent SSB tax revenue allocations for: 2018 for Seattle; 2019 for Boulder; fiscal year 2019–2020 for Albany, Oakland and San Francisco; and fiscal year 2020–2021 for Berkeley and Philadelphia. In San Francisco, revenue allocations exclude \$3.36 M, 22% of total tax revenues that must support preexisting voter-mandated budget obligations.

<sup>c</sup> Impacted communities refers to communities that experience health inequities, social, political and/or economic discrimination and exclusion because of unequal power relationships.



**Fig. 1.** Total SSB tax revenue allocations by goal category, overall and by city. Dollar amounts represent SSB tax revenue allocations for: 2018 for Seattle; 2019 for Boulder; fiscal year 2019–2020 for Albany, Oakland and San Francisco; and fiscal year 2020–2021 for Berkeley and Philadelphia. In San Francisco, revenue allocations exclude \$3.36 M, 22% of total tax revenues that must support preexisting voter-mandated budget obligations.

consumption—a primary purpose of SSB taxes—through nutrition education in schools, training community members to advocate for SSB reduction, and promoting policies to reduce SSBs. An additional \$3.7 M supported activities included in other goal categories that incorporated SSB reduction activities.

Only 5% of revenue allocations (\$6.8 M) fell under the administrative category, with \$5.4 M funding tax administration and \$1.4 M dedicated to assessing the impact of funded activities in 4 cities.

Overall, 85% of revenue allocations (\$112.9 M) either supported impacted communities (e.g., children in the pre-kindergarten program supported by Philadelphia’s tax are 86% non-white and 69% live in low-income households (City of Philadelphia, 2020) or organizations whose overall mission included an explicit focus on supporting impacted communities (Table). Finally, 60% (\$79.8 M) of total allocations focused on youth ages 0 to 18 years.

Only Boulder’s (Boulder, 2017) and Seattle’s (Seattle, 2020) ordinances state how revenues are to be allocated, and 87% of allocations in Boulder and 88% in Seattle were consistent with their ordinances’ stated intent. In Philadelphia, 96% of allocations were consistent with promises made in the Mayor’s budget address (Otterbein, 2016) (eTable 3). In California, due to specific features of California tax law, none of the 4 tax ordinances specified how revenues would be spent; however, all California ordinances referenced the intent to reduce SSB consumption and/or associated diseases (eTable 3) and the majority of allocations made by California cities focused on health.

#### 4. Discussion

The present study is the first to systematically analyze the allocation of SSB tax revenues in the U.S. The goals cities commonly pursued with tax revenues were increasing access to healthy foods and beverages (\$17.2 M across all 7 cities) and promoting general health and wellbeing (a total of \$5.5 M across 6 cities). Beyond these shared goals, investments were diverse and specific to each community’s needs. Albany, Berkeley, Boulder and San Francisco focused their allocations on health-related goals. Philadelphia was the only city to focus almost solely on human and community capital, allocating more than 90% of its revenues to expand access to pre-K and improve community infrastructure. Oakland and Seattle divided their investments between health and human and community capital. Aggregated across cities, the largest investments were in early childhood development (\$57.6 M),

community infrastructure improvements (\$21.2 M) and healthy food and beverage access (\$17.2 M); tax administration accounted for only \$6.8 M (5% of total allocations).

SSB tax revenues represent a new source of funding for activities that can address the social determinants of health and increase health equity, two important public health goals. We found that allocations reflected interest in racial, social and health equity, with 83% of funds directed towards benefitting populations affected by inequities. To promote greater racial and economic equity, the influence of impacted communities over revenue allocation should be maximized through community leadership in setting tax legislation funding priorities and shaping the revenue allocation processes. Additionally, tax legislation should, to the extent that is legally feasible: create a dedicated budget fund governed by clear specifications for revenue use; describe processes and structures for community roles in allocation decisions; make promotion of social and health equity a priority goal for the tax; and outline specific processes to publicly report on tax revenue collections, allocations, and spending. Finally, expanding investments to address social determinants of health outside the traditional health sector may increase support for the tax among the public and policy makers, engage advocates from sectors working in these areas, and increase tax impact on equity and long-term health outcomes.

Allocations to a large extent reflected commitments made to the community during the tax adoption process or in tax ordinance language. Berkeley, Boulder, Oakland, San Francisco and Seattle established community advisory boards to make recommendations on allocations and assure accountability to the original intent of the taxes. Despite these protections, in Seattle and Oakland, mayors attempted to divert funds to other purposes; however, community advocacy and responsive city council action blocked these attempts (Debolt, 2017; Daniels, 2019). In Seattle, the council created a dedicated budget fund for tax revenues with clear parameters for their use. Establishing systems to monitor and report on the use of SSB taxes going forward would increase transparency and accountability. Similarly, ongoing monitoring may help ensure that revenue investments continue to focus on health and human capital. Historically, public health advocates sought to allocate tobacco tax revenues for tobacco control purposes, but revenues were diverted over time to government general funds (Kaufmann et al., 2012). This provides a cautionary tale and underscores the need for monitoring tax uses and establishing dedicated budget funds.

It is worth noting what types of activities were not funding priorities.

Communication to retailers and community members about tax purposes and revenue allocation received little support—a missed opportunity given community perceptions about the lack of transparency surrounding taxes (Falbe et al., 2020). Activities building community power (e.g., leadership development or coalition building) or influencing the fundamental determinants of health (Academies, 2017), such as educational attainment and economic development, similarly received less attention. Reflecting their understanding that all investment decisions carry tradeoffs, the 7 cities studied had mechanisms for incorporating community input in the allocation decisions they made. Given the unique circumstances faced by local communities, any state-level SSB tax proposals should build in ongoing opportunities for local decision making to ensure that tradeoffs are acknowledged and agreed on by multiple stakeholders.

The health impacts of SSB taxes are of great interest but will be challenging to rigorously assess. Concurrent local policy, programmatic and educational efforts to protect public health make attributing health impacts to a single policy or program difficult, particularly since such programs could impact health via multiple pathways.

Our findings are subject to several limitations. We relied on government documents and websites to code allocation goals; when information in documents lacked detail, we sought supplementary information from fund recipient websites and city officials but details were not always available. We report on allocations for a single fiscal year, but revenue allocations change over time. Additionally, dividing allocations evenly among multiple goals may misclassify investments. Cities may not fully spend funds as planned for various reasons, including carrying forward unspent funds or re-allocating funds (e.g., San Francisco and Seattle provided grocery subsidies in response to COVID-19). Analysis of allocations over time is needed to ensure that revenue use remains consistent with the stated intent of taxes, including reaching impacted communities.

## 5. Conclusions

SSB taxes are raising substantial revenues which are being invested in impacted communities to address important needs. The largest investments support early childhood development, improvements to community infrastructure, and increased access to healthy foods. While allocations appear to be consistent with the taxes' original intent, strengthening community influence over tax allocation decisions and providing timely and transparent information to stakeholders about revenue use will assure ongoing accountability. For stakeholders seeking to implement similar taxes, these results bolster arguments that beyond reducing SSB consumption, SSB taxes generate revenues that can promote community health, human and community capital, and health equity. The wide range of goals cities have pursued with SSB tax revenues also offers examples for tax proponents of what might be accomplished with such taxes.

## CRedit authorship contribution statement

**James Krieger:** Funding acquisition, Conceptualization, Methodology, Validation, Supervision, Writing - original draft, Writing - review & editing. **Kiran Magee:** Project administration, Formal analysis, Data curation, Writing - original draft. **Taylor Hennings:** Project administration, Formal analysis, Data curation, Writing - original draft. **John Schoof:** Formal analysis, Data curation, Writing - review & editing.

**Kristine A. Madsen:** Funding acquisition, Conceptualization, Methodology, Validation, Supervision, Writing - original draft, Writing - review & editing.

## Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Dr. Krieger is employed by Healthy Food America, which has organizational policy positions and advocates on behalf of sugary drink taxes. In his role at Healthy Food America, he has received funding from the Panta Rhea Foundation to provide technical support for adoption and implementation of sugary drink taxes.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2021.101388>.

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