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Baseline Assessment of Children's Meals and Healthy Beverage Options Prior to a State-Level Healthy Default Beverage (HDB) Law

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Abstract

In January 2020, Hawai'i became the second state with a healthy default beverage (HDB) law, requiring restaurants to offer HDBs with their children's meals. This observational study presents baseline characteristics of restaurants with a children's menu and meal. The study describes pre-law beverage options to inform future HDB policy language, implementation, and evaluation. Between November and December 2019, data were collected from a statewide sample of unique restaurants ($N = 383$) with health inspection permits. Restaurants were assessed separately for a children's menu and meal using website reviews, telephone calls, and in-person visits. Meals were evaluated for pre-law beverage type and compliance. Logistic regression was used to estimate the likelihood of having a children's menu and meal. Most of the restaurants were full-service (70.2%) and non-chains (67.9%). While 49.3% of restaurants had a children's menu, only 16.7% had a children's meal. Significant predictors of having a children's menu were being full-service, national/international or local chains, neighbor island (non-Honolulu) locations, and hotel locations. Only being a national/international chain significantly predicted having a children's meal. Although 35.9% of children's meals offered a non-sugar-sweetened beverage (SSB) option, only 3.1% offered law-compliant beverages. Inclusion of an SSB default option (60.9%) and not specifying the type of default beverage were the predominant factors for pre-law non-compliance. Results support the need for HDB regulations, especially for national/international chains, which were most likely to have children's meals, and provide data to inform policies in other jurisdictions.

Keywords: healthy default; beverage; children's meals; policy; childhood obesity

Sugar-sweetened beverages (SSBs) contribute significant excess sugar to the American diet (U.S. Department of Health and Human Services, 2015). Data show that nearly two-thirds of American youth drink an SSB on any given day (Russo et al., 2020). SSB consumption is associated with increased risk of obesity, other cardiometabolic diseases, and dental caries (Hu, 2013; Marshall, 2013; Xi et al., 2015). Children are particularly vulnerable to the obesogenic consequences of SSB consumption (Reilly & Kelly, 2011; Singh et al., 2008). With over a third of children eating fast food on a given day (Vikraman, Fryar, & Ogden, 2015) and higher SSB intake among children who eat out than those who eat at home (Powell & Nguyen, 2013), recent efforts to address childhood obesity have focused on the nutrition content of children's menus in restaurants.

Although some restaurants have voluntarily committed to improving the nutrition content of their children's menus or removing soda options for children (Moran et al., 2017),

implementation of such voluntary standards is inconsistent, and studies on changes to the overall healthfulness of menus and access to SSBs over time have been mixed (Moran et al., 2017; Mueller et al., 2019; Soo et al., 2018). Several municipalities and three states have taken legislative action to assure improvements to the nutrition content of children's meals offered at restaurants, through laws that require the default beverages in children's meals be healthy beverages as opposed to SSBs (Center for Science in the Public Interest, 2019).

On June 25, 2019, Hawai'i's Act 138 was signed into law, making Hawai'i the second of three states (along with California and Delaware) with a healthy default beverage (HDB) law. Hawai'i's HDB law stipulates that effective January 1, 2020, if a restaurant serves a children's meal, the default beverage served with the meal should be plain, sparkling, or unsweetened water, unflavored low-fat or nonfat milk, a nondairy milk equivalent, or 100% or unsweetened, diluted juice (Relating to Healthy Beverages

for Children, 2019). However, restaurants can offer alternative options, including SSBs, if requested.

HDB laws are based on findings that people will accept default options rather than ask for substitutes (Roberto & Kawachi, 2014). These laws nudge customers into healthier choices by making the healthy choice the easy choice (Ammerman et al., 2017; Matjasko et al., 2016). Studies of healthy default options indicate they have the potential to reduce children's sugar and energy intake and shift norms toward consuming healthy beverages (Anzman-Frasca et al., 2015; Peters et al., 2016).

While HDB laws are an active policy area and improving children's beverage options is a recommended action to reduce obesity (Institute of Medicine, 2012; Muth et al., 2019), the research base is limited due to the recency of these laws. Thus far, only one state and one city with HDB laws—California and Wilmington, Delaware—have reported any data about the impact of such laws. The California study found that restaurants increased their HDB offerings after the statewide law was passed, especially restaurants with voluntary HDB policies (Harpainter et al., 2020). However, the study was limited to quick-service restaurants (QSRs), not the full range of restaurants in a community that would be subject to an HDB law. The Wilmington study included both QSRs and full-service restaurants (FSRs), but it examined only 16 restaurants with children's meals within the city limits and was conducted prior to the implementation of the statewide law, limiting its generalizability in understanding how to scale-up an HDB law statewide (Karpyn et al., 2020). Other studies have examined voluntary industry initiatives to improve the nutrition content of children's menus in general (Moran et al., 2017; Peters et al., 2016), not laws regulating children's meal beverages. These studies also only focused on changes in children's menu offerings among limited restaurant types, such as a single restaurant chain over time (Anzman-Frasca et al., 2015; Wansink & Hanks, 2014) or only large national or regional chains (Moran et al., 2017; Mueller et al., 2019; Soo et al., 2018).

With many jurisdictions considering HDB laws, baseline data are urgently needed to understand characteristics of restaurants with children's menus and meals and factors of variation in children's meal beverage options. This will allow policy makers and advocates to evaluate the potential law impacts on all restaurant types in their jurisdictions and plan implementation strategies. It will also allow researchers to better understand the impact of HDB laws on children's SSB consumption over time. The objectives of this cross-sectional observational study are, first, to document the landscape of restaurants offering children's menus and meals in a statewide representative sample and, second, to examine the default beverages offered with children's meals before a statewide HDB law's implementation to inform future law language, implementation, and evaluation.

Methods

Study Sample

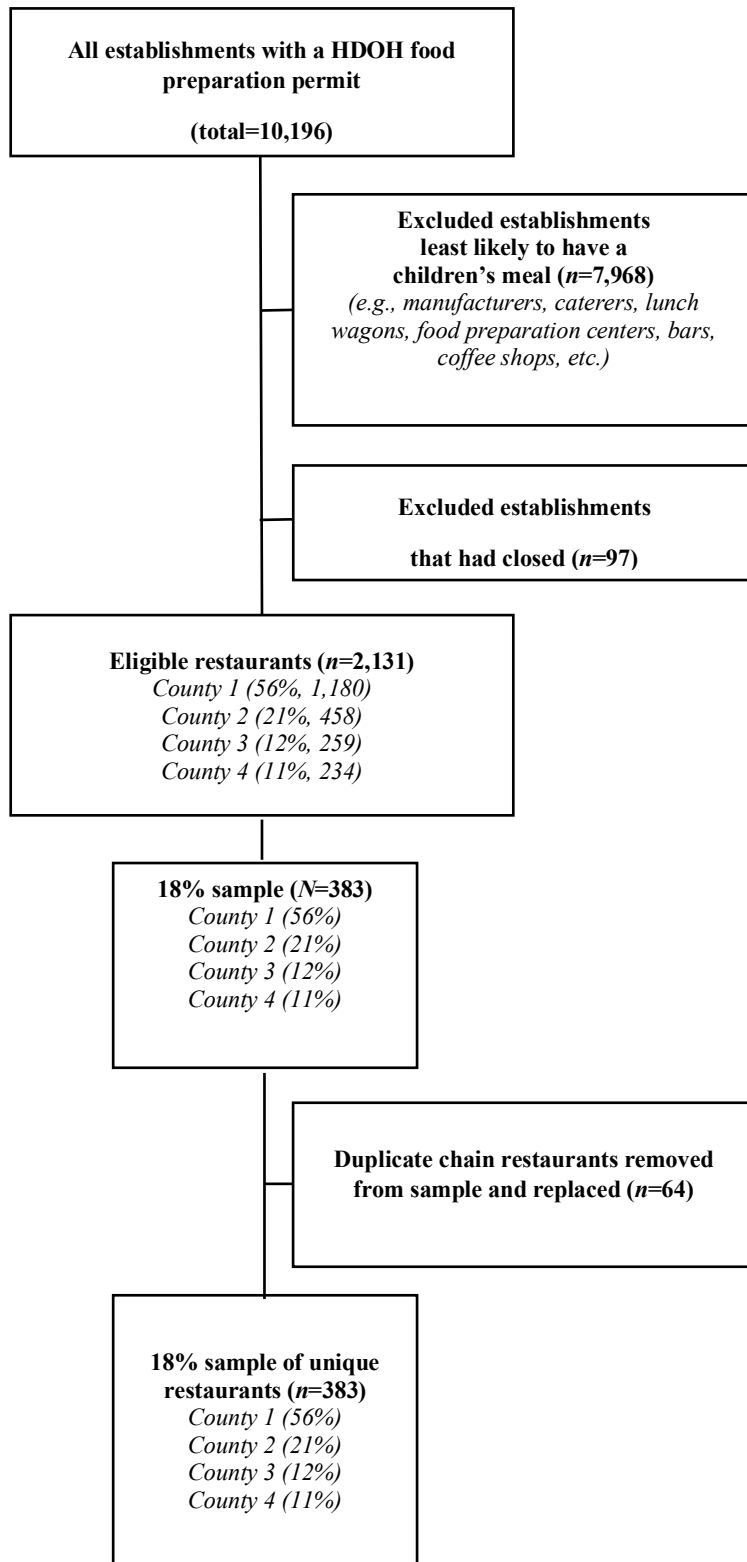
There is no database of restaurants that serve children's meals in Hawai'i that would indicate which restaurants would be subject to the HDB law. Therefore, sample development began with a list of all establishments with Hawai'i State Department of Health (HDOH) permits to prepare food. To be included in the sample, it needed to be plausible that the establishment could have a children's meal. Figure 1 describes the sample selection, starting with 10,196 permitted establishments, which were searched via Google and coded by type. Excluded establishments were bars, manufacturers, caterers, food preparation centers, tour companies, school/worksites cafeterias, ice cream parlors, coffee shops, or lunch wagons, because the law would not apply to them. This search resulted in 2,131 eligible, operating establishments that were distributed statewide, with over half located in Honolulu County on O'ahu, the most populated island. Insufficient time and personnel prohibited a full census sampling of establishments. Therefore, an 18% ($N = 383$) random sample was taken of all eligible establishments statewide, stratified by county in the same proportions found in the eligible establishments' population. A 15% sample was initially planned, but to assure sufficient representation of neighbor island counties (i.e., Maui, Hawai'i, Kaua'i), the sample size was increased. When multiple locations of a restaurant chain were sampled, only one location was kept; the rest were replaced through random sampling to ensure only unique restaurants were sampled.

Data Collection

Restaurant menus were collected from November–December 2019, before the law's effective date of January 1, 2020, using a methodology adapted from protocols used to assess children's menus (DuBreck et al., 2018; Krukowski et al., 2011). Six trained researchers first reviewed official websites to determine if sampled restaurants had a menu or items that were specifically for children (hereafter referred to as a "children's menu") and then if they sold a children's meal combination including a beverage (hereafter referred to as a "children's meal"). Only official websites were reviewed because third-party websites, where customers order delivery or takeout, did not distinguish between the default and substitute beverages available. When an establishment had a children's meal, the menu was downloaded ($n = 37$).

Next, all restaurants ($n = 346$) that did not have a confirmed children's meal online were called. If the restaurant had a children's meal, a copy of the menu was requested via email, text message, or fax. Restaurants that could not send their menu were visited. Additionally, locations with an online children's meal were visited ($n = 37$) to validate that online and in-person meal options matched. There was 64.9% concordance between online and in-person options; thus, in-person menus were utilized for menu analysis.

Figure 1. Sample Selection Process



Measures

This study treated having a children's menu and having a children's meal as two outcome variables. Restaurant characteristics were the predictors of interest, including restaurant service type, chain type, hotel location, and county location. Restaurant service type included "FSRs" or "QSRs" following definitions in the 2017 North American Industry Classification System (NAICS; U.S. Census Bureau, 2017). FSRs offered table service and payment after eating. QSRs (based on NAICS's "limited-service restaurants") had counter-ordering and prepayment. Restaurants were "non-chains" if there was only one location, "local chains" if there were multiple locations only in Hawai'i, and "national/international chains" if they had locations in the United States (U.S.) or other countries. Because much of Hawai'i's restaurant industry caters to tourists, restaurants were characterized as being "in a hotel" or "not in a hotel." Restaurants were also coded as being located either in "Honolulu County," the most populated, urban county, or in "neighbor island counties," the three other smaller, more rural counties.

Law compliance was defined by the implementing agency, HDOH, and is shared in Figure 2. The Children's Menu Assessment (CMA; Krukowski et al., 2011) was used with permission to assess menus. However, because the law is limited to beverages, only the CMA beverage and age limit measures are reported here. Additional measures were included to capture Hawai'i's specific beverage requirements. All menus with children's meals were independently coded for beverage type and compliance by two trained raters, to reduce bias and increase the accuracy of coding. Following protocols used by other menu assessment research (DuBreck et al., 2018; Krukowski et al., 2011; Saelens et al., 2007), the burden of proof was put on the menus to explicitly state compliant language. Raters discussed areas of discord until agreement was reached and menus were recoded for final analysis. This study was categorized as nonhuman subjects research by the University of Hawai'i Human Studies Program.

Figure 2: Hawai'i State Department of Health's (HDOH) Menu Compliance Guidelines

1. If menu only has "drink" listed for the meal, it is **NOT** in compliance. Healthy beverages* must be listed as the options.
2. In-store menu (both physical and/or menu board) must only list healthy beverage options for children's meals. †
 - Milk must be listed as 1% or nonfat
 - Juice must be listed as 100% **OR** as juice combined with water/carbonated water (no added sweetener)
 - No refills can be offered for any beverages other than water
3. If in-store menu has an image of a children's combo meal, it must show a healthy beverage.
4. All menus of a restaurant need to list healthy beverages to meet compliance (e.g., if a restaurant serves a children's meal for breakfast and lunch, both meals need to offer the healthy beverage)

*"Healthy beverage" is defined by Hawai'i's law, Act 138, as "water, sparkling water, or flavored water with no added sugar, corn syrup, or other natural or artificial sweeteners; unflavored nonfat or low-fat (1%) dairy milk or nondairy beverage that is nutritionally equivalent to fluid milk in a serving size of eight ounces or less; or 100% fruit or vegetable juice or fruit or vegetable juice combined with water or carbonated water, with no added natural or artificial sweetener, in a serving size of eight ounces or less."

†A "children's meal" is defined by Hawai'i's law, Act 138, as "a combination of food and a beverage, sold together at a single price by a restaurant, primarily intended for consumption by children."

Statistical Analysis

Data were analyzed using SPSS Statistics for Windows, version 26. Descriptive statistics and chi-square tests for independence were conducted on the final sample to determine if there were unique differences in having a children's menu and children's meal by restaurant service type, chain type, hotel location, and county location. Multiple logistic regressions were conducted to establish if these same variables predicted having a children's menu and children's meal, independent from other restaurant characteristics. Finally, descriptive statistics were run to establish the rate of law compliance among restaurants with a children's meal, and the types of beverages included in

children's meals before the law. Statistical significance for all tests was set at $p < 0.05$.

Results

The final sample comprised 383 unique restaurants; 70.2% were FSRs and 29.8% were QSRs. Most (67.9%) were not chain restaurants, while 15.7% were local chains and 16.4% were national/international chains. Only 13.1% of restaurants sampled were located in a hotel. Honolulu County had 55.9% of the restaurants. While almost half (49.3%) had a children's menu, only 64 unique restaurants

(16.7% of the sample) had a children’s meal that would be subject to the law.

Table 1 presents the characteristics of restaurants with a children’s menu and meal from chi-square tests. Compared to local chain and non-chain restaurants, a significantly greater proportion of national/international chains had

children’s menus and meals. However, only children’s meals are subject to the HDB law. A greater proportion of restaurants in hotels and in the neighbor island counties had children’s menus compared to restaurants not in hotels and those in Honolulu, but this did not translate into a greater proportion with children’s meals.

Table 1: Characteristics of Restaurants With a Children’s Menu and Children’s Meal†

Restaurant Characteristics	Final Sample (N=383)	Children’s Menu (n=189)		Children’s Meal (n=64)†	
		n (row %)	p-value	n (row %)	p-value
Restaurant service type			0.07		0.75
quick-service	114	48 (42.1%)		18 (15.8%)	
full-service	269	141 (52.4%)		46 (17.1%)	
Restaurant chain type			<0.001		<0.001
Not a chain	260	114 (43.8%)		27 (10.4%)	
Local chain	60	29 (48.3%)		10 (16.7%)	
National/international chain	63	46 (73.0%)		27 (42.9%)	
Restaurant in a hotel			<0.001		0.50
No	333	151 (45.3%)		54 (16.2%)	
Yes	50	38 (76.0%)		10 (20.0%)	
County			<0.001		0.54
Honolulu County	214	88 (41.1%)		38 (17.8%)	
Neighbor island counties	169	101 (59.8%)		26 (15.4%)	

Note. Boldface indicates statistical significance. †Only children’s meals are subject to the HDB law.

Table 2 presents the multiple logistic regression analyses, which depict the independent associations of the restaurant characteristics with having a children’s menu or meal. This analysis corroborated the observations presented in Table 1. National/international chains were much more likely than non-chain restaurants to have children’s menus ($OR = 5.32$, 95% CI = 2.75-10.29), as were restaurants in hotels ($OR = 3.77$, 95% CI = 1.83-7.75), those in neighbor island (non-Honolulu) counties ($OR = 2.49$, 95% CI = 1.58-

3.92), FSRs ($OR = 2.09$, 95% CI = 1.26-3.47), and local chains ($OR = 1.99$, 95% CI = 1.08-3.68), as compared to other restaurant characteristics. In the model predicting having a children’s meal, the only significant variable was restaurant chain type. National/international chains were significantly more likely ($OR = 7.57$, 95% CI = 3.85-14.90) than non-chain restaurants to have children’s meals that were subject to Hawai’i’s law.

Table 2. Restaurant Factors Associated With Having a Children’s Menu and Children’s Meal

Predictors	Children’s menu OR (95% CI)	Children’s meal OR (95% CI)
Restaurant service type		
Quick-service	1 [ref]	1 [ref]
Full-Service	2.09 (1.26–3.47)**	1.57 (0.80–3.07)
Restaurant chain type		
Not a chain	1 [ref]	1 [ref]
Local chain	1.99 (1.08–3.68)*	2.02 (0.89–4.580)
National/international chain	5.32 (2.75–10.29)***	7.57 (3.85–14.90)***

Restaurant in a hotel		
No	1 [ref]	1 [ref]
Yes	3.77 (1.83–7.75)***	1.59 (0.69–3.66)
County		
Honolulu County	1 [ref]	1 [ref]
Neighbor island counties	2.49 (1.58–3.92)***	0.94 (0.52–1.70)

Note. Boldface indicates statistical significance (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

Table 3 presents the results from assessing 64 restaurant menus that had children’s meals. Only two (3.1%) restaurants offered only compliant HDBs and thus had pre-law compliance. Both locations were national/international chains. Other restaurants (12.5%) offered compliant healthy beverages; however, they also offered noncompliant default beverages. Over a third of meals included at least one non-SSB option, either an HDB or an unsweetened beverage that was not compliant with the law, such as no-sugar-added high-fat milk. However, only 9.4% of meals included only non-SSB default options. In contrast, SSBs were offered as one of the default options by 60.9% of restaurants with a children’s meal and a soda or fountain drink was offered by almost half.

Lack of specificity about the default beverages was common; 29.7% of menus indicated that the meal came with a “drink,” without identifying the beverage type. Additionally, while almost half of restaurants offered a default juice option, about a quarter of those just listed “juice,” without further specification. Very few restaurants offering juice specified that it was the legally compliant 100% or unsweetened, diluted juice. Similarly, a milk option was offered by 37.5% of restaurants, but most just listed “milk,” without specifying the milk-fat. Only 6.3% of locations specifically offered low-fat or nonfat milk, in compliance with the law. Very few explicitly offered plain water. The majority of restaurants did not indicate an age limit for their children’s meals; however, for many of those that did have an age limit, it was restricted to children ages 12 and younger.

Table 3. Children’s Beverages Offered by Restaurants With Children’s Meals (n = 64)

Children’s meal includes	n	%
Only compliant HDB [†] options	2	3.1
At least 1 compliant HDB [†]	8	12.5
Only non-SSB [‡] options	6	9.4
At least 1 type of non-SSB [‡] option	23	35.9
Any type of SSB	39	60.9
Free refills on SSBs for children [§]	2	3.1
Unspecified “drink” or “beverage”	19	29.7
Specific types of beverages included		
Juice, any [§]	31	48.4
Juice, 100% ^{†, §}	2	3.1
Juice, diluted without added sweeteners [†]	4	6.3
“Juice,” not further specified	8	12.5
Juice, size specified as 8 oz or less	1	1.6
Milk, any [§]	24	37.5
Milk, low-fat (1%) or nonfat ^{†, §}	4	6.3
Milk, high fat (2% or whole)	2	3.1

Milk, flavored (any fat content)	6	9.4
“Milk” or “White Milk,” fat not specified	16	25.0
Milk, size specified 8 ounces or less	0	0.0
Nondairy milk equivalent [†]	0	0.0
Water, plain [†]	3	4.7
Water, sweetened or flavored	2	3.1
Soda or fountain drink targeted at children [§]	31	48.4
“Soda” or brand name listed	16	25.0
“Fountain drink” or “soft drink” listed	15	23.4
Diet soda, specified	9	14.1
Sweetened tea or other SSB	5	7.8
Unsweetened tea	1	1.6
Sports or energy drinks	0	0.0
Age limit [§]		
No age limit listed	27	42.2
10 years and younger	13	20.3
12 years and younger	16	25.0
Other age limit	8	12.5

[†]Compliant healthy default beverage (HDB) option per the law.

[‡]Non-SSBs (sugar-sweetened beverages) include HDBs and unsweetened beverages not acceptable by the Hawai‘i HDB law (e.g., whole milk and reduced-fat milk).

[§]Children’s Menu Assessment tool item.

Discussion

Results showed that among a statewide sample of diverse restaurants, all restaurant types had children’s menus and meals, not just large chain restaurants as examined by most of the previous studies (Harris et al., 2017; Moran et al., 2017; Mueller et al., 2019; Soo et al., 2018). However, national/international chains were much more likely than non-chains to have a children’s meal. This finding is important as a study examining purchases by U.S. households found families purchased more SSBs from national chain restaurants than other restaurant types (Moran et al., 2019).

This study also found that children’s meals inclusive of a drink were less common than children’s menus, which were offered by nearly half of the restaurants sampled, but are not subject to the law. This highlights a potential gap in the ability to reduce children’s access to SSBs. This study did not examine the beverages offered by restaurants with only children’s menus, as the objective was to examine the default beverages offered with children’s meals—the

subject of the new legislation—prior to statewide implementation of the HDB law. However, Moran and colleagues (2017) examined changes in beverages on children’s menus between 2012 and 2015 and found that despite the decrease in sodas on children’s menus over time, beverage calories did not change and 80% of children’s menus still contained SSBs because sodas were often replaced by flavored milks. Additional legislation or efforts may be needed to target children’s menus, in addition to children’s meals, to impact children’s SSB access and consumption. However, it should be noted that children’s meals in Hawai‘i restaurants are more prevalent than reported, due to this study’s sampling methodology of including only one of each national/international chain’s numerous locations statewide (e.g., one of the 60 McDonald’s locations statewide). Thus, children’s meal HDB legislation, if implemented in chains, can have broad reach.

Prior to the law, just two (3.1%) restaurants offered only compliant HDBs, and few offered even one compliant HDB. In California’s study, 0–15.5% of QSRs offered only

law-compliant HDBs (unflavored milk or water per California law), with higher rates among restaurants with voluntary beverage standards for children's meals (Harpainter et al., 2020). The California authors also found that when the definition of HDBs was expanded to include unsweetened juice, as is allowed in Hawai'i and Delaware, 4.4–65.2% of restaurants offered only HDBs. Lower rates found in this study could be due to the inclusion of FSRs, as 46 of the 64 children's meals in this study were from FSRs. They could also be due to the inclusion of only one location to represent each chain restaurant, as opposed to multiple locations of the same fast food chain as used in the California study. Chain restaurants are able to quickly and cheaply develop compliant menus and menu boards that can be used in multiple locations.

Despite low HDB rates in this study, over a third of children's meals included at least one non-SSB option. This is an improvement from a study among top-selling QSR chains that found increasing trends in non-SSB options bundled with children's meals between 2004 and 2015 but that less than 20% of children's meals included a non-SSB as a default option (Mueller et al., 2019). It is unclear if higher rates of non-SSB options in this study could be due to a continuation of trends, the inclusion of other restaurant types, or a difference in study methodology and context.

Low pre-law compliance was mostly attributable to the fact that SSBs were a default option for 60.9% of the children's meals. This is a major public health concern, as SSBs provide calories with no nutritional value (Cantor et al., 2016; U.S. Department of Health and Human Services, 2015) and continue to be bundled with meals explicitly targeting young children (Anzman-Frasca et al., 2017). This corroborates other studies that have found that despite industry pledges to improve children's beverage options, SSBs continue to be default options in many children's meals (Harris et al., 2017; Mueller et al., 2019). It adds further evidence that HDB laws may be necessary to improve the healthfulness of children's meal beverages and reduce children's access to SSBs.

Lack of beverage specificity was another reason for low pre-law compliance. Almost 30% of restaurants just said a "drink" was included in the children's meals, without specifying the type, and many did not specify the milk-fat or juice content. Lack of specificity may be a source of misclassification in this study. If restaurants served 100% juice but did not list it on their menus, they may have been compliant. Alternatively, if staff verbally offered options different from the menu options, restaurants may not have been compliant. Discrepancies between menu and verbal offerings of healthier beverage options for children have been found in other studies (Harpainter et al., 2020; Harris et al., 2017; Karpyn et al., 2020). Hawai'i's post-law evaluation study will need to examine if both the menu and the point-of-sale offerings are compliant to effectively understand HDB law impacts. Additionally, future policies may need to stipulate that HDBs should be offered both on menus and in point-of-sale offerings from cashiers.

Low pre-law compliance documented in this study also suggests additional efforts are needed to educate restaurants

in Hawai'i to improve children's meal compliance, considering pre-law data collection started four months after the law passed and was completed only weeks prior to the law going into effect. A recent study evaluating the implementation of Berkeley, California's SSB tax recommends that laws have appropriate lead time between passage and effective dates and that early communication, outreach, and evaluation are needed in order to facilitate law implementation (Falbe et al., 2020). Jurisdictions considering HDB laws should plan implementation and evaluation efforts prior to law passage.

The much higher likelihood of having a children's meal among national/international chains than non-chains may lend support for a national HDB regulation since there is considerable variation in what beverages are included under HDB laws across jurisdictions (Center for Science in the Public Interest, 2019), which can create challenges for restaurants. For example, one national chain in this study, with locations in both California and Hawai'i, served milk that was compliant with California's law, which allows unflavored milk of any fat content, but that was not compliant with Hawai'i's law, which only allows unflavored nonfat or low-fat milk. Cross-jurisdiction language may make menu development and ordering simpler for restaurants spanning multiple jurisdictions.

Finally, in a recent study, QSR and FSR executives reported that there is little incentive to modify children's items as children's menus are not revenue generating and are established based on ingredients already purchased by the restaurant to create main menu options (Anzman-Frasca et al., 2017). It is important to consider if HDB regulations will create cost burdens that could result in restaurants unbundling their beverages from their children's meals or removing "children" from meal names to circumvent the laws, which a few restaurants did during data collection for this study. Although advocates recognize this potential outcome (ChangeLab Solutions, 2014; Karpyn et al., 2020), data are not yet available on how many restaurants choose to unbundle their children's meals when faced with an HDB law, nor on the determining factors in that choice. Baseline data such as that collected in this study are critical for assessing HDB law impacts. Studies are also needed to understand the challenges restaurants face in offering HDBs, such as the role of third-party ordering websites, which have grown in popularity during the COVID-19 pandemic (Karpyn et al., 2020), and the drivers and consequences of restaurant decisions to unbundle their children's meals, so that HDB law impacts can be fully assessed.

Limitations

This study examined some restaurant characteristics particularly relevant to Hawai'i and other tourist destinations, such as hotel locations, thereby limiting the generalizability to all jurisdictions. However, the sample included restaurant types found in all communities, including 63 national/international chains and both QSRs and FSRs, resulting in broad relevance. Although random stratified sampling was used to obtain an unbiased representative sample, sampling may have missed

restaurants that had compliant HDBs. This study followed practices used by other studies (DuBreck et al., 2018; Krukowski et al., 2011; Saelens et al., 2007), in assuming items were unhealthy unless menus specifically stated types of beverages stipulated as permissible in the law. However, this may have also resulted in undercounting of compliant restaurants, who may have offered an HDB, when they listed a “drink” on their menu. Related to this, because data collection was restricted to written menus, it cannot be generalized to verbal point-of-sale offerings. Additionally, due to the cross-sectional study design, the data only represent what was on the menus when the study was conducted.

Other limitations include the fact that this study did not assess restaurant managers’ awareness of the law. Because data collection occurred so close to the law’s effective date, it is likely that some restaurant managers were aware of the law and had already changed their children’s meal beverages in preparation for it. As previously stated, during data collection, a few restaurants did change their menus, but mostly to circumvent the law through unbundling. Assessing restaurant manager awareness may have aided in understanding if, and why, restaurants made changes to their menus at the time of data collection, but would likely not change the principal conclusion of this study that compliance was low prior to the law going into effect. Additionally, manager awareness was likely to be low at data collection because no efforts had been made to educate Hawai’i restaurants on the upcoming law. The lack of education was due to the fact that the law did not stipulate implementation and enforcement guidelines but instead directed the HDOH to develop and adopt rules to implement the law, which are processes that take time to complete. Further, interviews with restaurant managers in Wilmington, Delaware, and in California 7–12 months after their HDB laws went into effect showed that between 0% and 29% of restaurant managers, respectively, were aware of the laws (Karpyn et al., 2020). That said, post-law data collection should assess restaurant managers’ law awareness.

Another limitation is that this study only examined children’s meals inclusive of a drink and did not examine the beverages offered by restaurants with general children’s menus that were not subject to the law. This limits the ability to draw conclusions about the types of beverages offered on children’s menus and what future regulations may be needed for children’s menus. Finally, although improved access to healthy options can increase the likelihood of purchasing them (Cantor et al., 2016), and customers are accepting of default options (Peters et al., 2016), this study did not capture purchasing or consumption behavior. Future studies are needed to determine if healthy options are being purchased and consumed by children, to understand how HDB laws impact children’s SSB consumption.

Conclusion

Despite these limitations, this study shows the baseline characteristics of restaurants with a children’s meal that would be subject to an HDB law, which can help inform

future HDB law language and implementation to reduce children’s SSB consumption in other jurisdictions. It also shows that few restaurants are offering HDBs and most are offering SSBs, providing evidence that HDB laws, either nationally or in smaller U.S. jurisdictions, may be needed to improve the default beverage options included in children’s meals.

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Conflicts of Interest

No financial disclosures or conflicts of interest are reported by the authors of this paper.

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References

- Ammerman, A. S., Hartman, T., & DeMarco, M. M. (2017). Behavioral economics and the Supplemental Nutrition Assistance Program: *American Journal of Preventive Medicine*, *52*(2), S145–S150. <https://doi.org/10.1016/j.amepre.2016.08.017>
- Anzman-Frasca, S., Folta, S. C., Glenn, M. E., Jones-Mueller, A., Lynskey, V. M., Patel, A. A., Tse, L. L., & Lopez, N. V. (2017). Healthier children's meals in restaurants: An exploratory study to inform approaches that are acceptable across stakeholders. *Journal of Nutrition Education and Behavior*, *49*(4), 285–295.e1. <https://doi.org/10.1016/j.jneb.2016.11.009>
- Anzman-Frasca, S., Mueller, M. P., Lynskey, V. M., Harellick, L., & Economos, C. D. (2015). Orders of healthier children's items remain high more than two years after menu changes at a regional restaurant chain. *Health Affairs*, *34*(11), 1885–1892. <https://doi.org/10.1377/hlthaff.2015.0651>
- Cantor, J., Breck, A., & Elbel, B. (2016). Correlates of sugar-sweetened beverages purchased for children at fast-food restaurants. *American Journal of Public Health*, *106*(11), 2038–2041. <https://doi.org/10.2105/AJPH.2016.303427>
- Center for Science in the Public Interest. (2019). *State and local restaurant kids' meal policies*. https://cspinet.org/sites/default/files/attachment/CSPI_chart_of_local_km_policies_October_2019_0.pdf
- ChangeLab Solutions. (2014). *Model healthy children's meals ordinance*. <https://www.changelabsolutions.org/product/healthy-childrens-meals-model-policies>
- DuBreck, C. M., Sadler, R. C., Arku, G., & Gilliland, J. A. (2018). Examining community and consumer food environments for children: An urban-suburban-rural comparison in Southwestern Ontario. *Social Science & Medicine*, *209*, 33–42. <https://doi.org/10.1016/j.socscimed.2018.05.004>
- U.S. Census Bureau. (2017). *North American Industry Classification System, United States, 2017*. <https://www.census.gov/naics/>
- Falbe, J., Grummon, A. H., Rojas, N., Ryan-Ibarra, S., Silver, L. D., & Madsen, K. A. (2020). Implementation of the first U.S. sugar-sweetened beverage tax in Berkeley, CA, 2015–2019. *American Journal of Public Health*, *110*(9), 1429–1437. <https://doi.org/10.2105/AJPH.2020.305795>
- Harpainter, P., Hewawitharana, S. C., Lee, D. L., Martin, A. C., Gosliner, W., Ritchie, L. D., & Woodward-Lopez, G. (2020). Voluntary kids' meal beverage standards: Are they sufficient to ensure healthier restaurant practices and consumer choices? *International Journal of Environmental Research and Public Health*, *17*(15), 5275. <https://doi.org/10.3390/ijerph17155275>
- Harris, J., Hyary, M., Seymour, N., & Choi, Y.-Y. (2017). *Are fast-food restaurants keeping their promises to offer healthier kids' meals?* 30.
- Hu, F. B. (2013). Resolved: There is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases: Sugar-sweetened beverages and risk of obesity. *Obesity Reviews*, *14*(8), 606–619. <https://doi.org/10.1111/obr.12040>
- Institute of Medicine. (2012). *Accelerating progress in obesity prevention: Solving the weight of the nation*. <https://doi.org/10.17226/13275>
- Karpyn, A., Ritchie, L., Harpainter, P., Lessard, L., Tsai, M., Atkins, J., McCallops, K., Tracy, T., Woodward-Lopez, G., & Gosliner, W. (2020). *Assessing the implementation of kid's meals healthy default beverage policies in the State of California and City of Wilmington, Del.* Healthy Eating Research. <https://healthyeatingresearch.org/wp-content/uploads/2020/08/HER-Default-Drinks-Brief-081820.pdf>
- Krukowski, R. A., Eddings, K., & Smith West, D. (2011). The Children's Menu Assessment: development, evaluation, and relevance of a tool for evaluating children's menus. *Journal of the American Dietetic Association*, *111*(6), 884–888. <https://doi.org/10.1016/j.jada.2011.03.018>
- Marshall, T. A. (2013). Preventing dental caries associated with sugar-sweetened beverages. *The Journal of the American Dental Association*, *144*(10), 1148–1152. <https://doi.org/10.14219/jada.archive.2013.0033>
- Matjasko, J. L., Cawley, J. H., Baker-Goering, M. M., & Yokum, D. V. (2016). Applying behavioral economics to public health policy. *American Journal of Preventive Medicine*, *50*(5 Suppl 1), S13–S19. <https://doi.org/10.1016/j.amepre.2016.02.007>
- Moran, A. J., Block, J. P., Goshev, S. G., Bleich, S. N., & Roberto, C. A. (2017). Trends in nutrient content of children's menu items in U.S. chain restaurants. *American Journal of Preventive Medicine*, *52*(3), 284–291. <https://doi.org/10.1016/j.amepre.2016.11.007>
- Moran, A. J., Subramanian, S. V., Rimm, E. B., & Bleich, S. N. (2019). Characteristics associated with household purchases of sugar-sweetened beverages in US restaurants. *Obesity*, *27*(2), 339–348. <https://doi.org/10.1002/oby.22380>
- Mueller, M. P., Wilde, P., Folta, S. C., Anzman-Frasca, S., & Economos, C. D. (2019). Availability of healthier children's menu items in the top selling quick service restaurant chains (2004–2015). *American Journal of Public Health*, *109*(2), 267–269. <https://doi.org/10.2105/AJPH.2018.304800>

- Muth, N. D., Dietz, W. H., Magge, S. N., Johnson, R. K. (2019). Public policies to reduce sugary drink consumption in children and adolescents. *Pediatrics*, 143(4). <https://doi.org/10.1542/peds.2019-0282>
- Peters, J., Beck, J., Lande, J., Pan, Z., Cardel, M., Ayoob, K., & Hill, J. O. (2016). Using healthy defaults in Walt Disney World restaurants to improve nutritional choices. *Journal of the Association for Consumer Research*, 1(1), 92–103. <https://doi.org/10.1086/684364>
- Powell, L. M., & Nguyen, B. T. (2013). Fast-food and full-service restaurant consumption among children and adolescents: Effect on energy, beverage, and nutrient intake. *JAMA Pediatrics*, 167(1), 14. <https://doi.org/10.1001/jamapediatrics.2013.417>
- Reilly, J. J., & Kelly, J. (2011). Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: Systematic review. *International Journal of Obesity*, 35(7), 891–898. <https://doi.org/10.1038/ijo.2010.222>
- Relating to Healthy Beverages for Children, Pub. L. No. Act 138 (19), Hawai'i Revised Statutes Chapter 321 (2019). https://www.capitol.hawaii.gov/session2019/bills/GM1240_.pdf
- Roberto, C. A., & Kawachi, I. (2014). Use of psychology and behavioral economics to promote healthy eating. *American Journal of Preventive Medicine*, 47(6), 832–837. <https://doi.org/10.1016/j.amepre.2014.08.002>
- Russo, R. G., Northridge, M. E., Wu, B., & Yi, S. S. (2020). Characterizing sugar-sweetened beverage consumption for US children and adolescents by race/ethnicity. *Journal of Racial and Ethnic Health Disparities*. <https://doi.org/10.1007/s40615-020-00733-7>
- Saelens, B. E., Glanz, K., Sallis, J. F., & Frank, L. D. (2007). Nutrition Environment Measures Study in Restaurants (NEMS-R) development and evaluation. *American Journal of Preventive Medicine*, 32(4), 273–281. <https://doi.org/10.1016/j.amepre.2006.12.022>
- Singh, A. S., Mulder, C., Twisk, J. W. R., Mechelen, W. V., & Chinapaw, M. J. M. (2008). Tracking of childhood overweight into adulthood: A systematic review of the literature. *Obesity Reviews*, 9(5), 474–488. <https://doi.org/10.1111/j.1467-789X.2008.00475.x>
- Soo, J., Harris, J. L., Davison, K. K., Williams, D. R., & Roberto, C. A. (2018). Changes in the nutritional quality of fast-food items marketed at restaurants, 2010 v. 2013. *Public Health Nutrition*, 21(11), 2117–2127. <https://doi.org/10.1017/S1368980018000629>
- U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2015). *2015–2020 Dietary guidelines for Americans. 8th Edition*. <http://health.gov/dietaryguidelines/2015/guidelines/>.
- Vikraman, S., Fryar, C.D., & Ogden C.L. (2015). *Caloric intake from fast food among children and adolescents in the United States, 2011–2012*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. <https://www.cdc.gov/nchs/data/databriefs/db213.pdf>
- Wansink, B., & Hanks, A. S. (2014). Calorie reductions and within-meal calorie compensation in children's meal combos. *Obesity*, 22(3), 630–632. <https://doi.org/10.1002/oby.20668>
- Xi, B., Huang, Y., Reilly, K. H., Li, S., Zheng, R., Barrio-Lopez, M. T., Martinez-Gonzalez, M. A., & Zhou, D. (2015). Sugar-sweetened beverages and risk of hypertension and CVD: A dose–response meta-analysis. *British Journal of Nutrition*, 113(5), 709–717. <https://doi.org/10.1017/S0007114514004383>