

AN ANALYSIS OF CHILDREN'S MENUS IN RESTAURANTS IN SAN MARCOS,  
TEXAS: A BEST FOOD FOR FAMILIES, INFANTS, AND TODDLERS (BEST  
FOOD FITS!) INITIATIVE

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## **Abstract**

Rising rates of pediatric obesity have caught the attention of researchers and public health officials internationally. The obesogenic environment in the United States is one contributing factor to the rise in obesity, and as such it is the target of multiple interventions and research studies. This paper provides research support for the community intervention project “Best Food for Families, Infants and Toddlers (Best Food FITS!),” a campaign that aims to improve the food environment in the city of San Marcos, Texas, by making healthier food choices more readily available in San Marcos restaurants, especially for infants and toddlers. By analyzing menus from 135 restaurants, researchers were able to establish a baseline characterization of the children’s menus in San Marcos, in order to compare them with the new children’s menus San Marcos restaurants have volunteered to implement.

## **I. Introduction**

Obesity is internationally acknowledged as one of the most pressing public health issues today, and much of the focus has been on the high rates of pediatric overweight/obesity, which affect infants from birth to 24 months and children between the ages of 2 and 19. The causes of the increased incidence of obesity are complex. While it is tempting to assign blame to specific entities, such as parents, schools or fast food restaurants, in reality there are a plethora of environmental factors that may affect energy balance, and each of these factors constitutes only a part of the equation. Researchers describe the food environment in the United States as ‘obesogenic,’ meaning that the overall environment discourages physical activity and promotes excessive intake of calories, often by increasing the availability of inexpensive, unhealthy foods.<sup>1</sup> A promising approach to combat pediatric obesity is to change obesogenic environmental factors. For such changes to have a sustained effect, the process of change should be systematically documented and the results shared with other stakeholders in the campaign to fight pediatric obesity.

This study provides research support for the community intervention project “Best Food for Families, Infants and Toddlers (Best Food FITS!),” a campaign that aims to improve the food environment in the city of San Marcos, Texas, by making healthier food choices more readily available, especially for children. In 2010, the Texas Department of State Health Services (DSHS) funded the Best Food FITS! project through their Nutrition, Physical Activity, and Obesity Prevention Program.<sup>2</sup> Central to the strategic

plan for this state program is the “[implementation of] environmental changes that support healthy eating.” Three evidence-based strategies identified by this program include (1) increasing intake of fruits and vegetables, (2) decreasing intake of sugar-sweetened beverages (SSBs), and (3) decreasing intake of high energy-dense foods. Best Food FITS! aims to affect each of these strategies by offering cooking classes in participation with the San Marcos Farmer’s Market and by changing children’s menus in San Marcos restaurants in collaboration with restaurant owners/managers. Best Food FITS! hopes to improve menus by asking restaurant owners to voluntarily participate in the program and implement new children’s menus that offer healthier options.

## II. Literature Review

### *Pediatric Obesity*

In the United States, the weight status of a child between the ages of 2 and 18 is assessed by measuring height and weight, calculating his or her body mass index (BMI), and plotting the BMI value on the sex-specific Centers for Disease Control and Prevention (CDC) BMI growth chart. Children with a BMI at or above the 95<sup>th</sup> percentile are classified as obese, and children with a BMI at or above the 85<sup>th</sup> percentile and below the 95<sup>th</sup> percentile are classified as overweight.<sup>3</sup> Data from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) shows that nationwide, the BMIs of 16.9% of children over the age of 2 are at or above the 95<sup>th</sup> percentile, and 31.7% are at or above the 85<sup>th</sup> percentile. Thus, approximately a third of children in the US are overweight or obese. BMI is generally higher at all three levels for Hispanic males.<sup>4</sup>

In Texas, 2009 data revealed that 15.6% of high school students were overweight and 13.6% were obese. Measurements by school grade in 2004-05 determined that 42% of fourth graders, 39% of eighth graders, and 36% of eleventh graders were overweight or obese, again with the highest BMIs occurring among Hispanic males.<sup>5</sup> Overall, 32.3% of 10-17 year olds in Texas are overweight or obese.<sup>6</sup> The fact that Hispanic youth are disproportionately affected is significant because the Hispanic community comprises 35% of the overall population in San Marcos, Texas,<sup>7</sup> and an even higher percentage of the elementary school population – 60-85% of students at San Marcos public elementary schools are Hispanic.<sup>8</sup> A 2011 analysis of anthropometric data of youth enrolled in San



Marcos schools revealed that 44% of 7<sup>th</sup> graders had BMI values that fell at or above the 85<sup>th</sup> percentile.<sup>9</sup> Therefore, children in San Marcos may be at even greater risk than children in Texas and across the nation.

People who are obese suffer from increased risk for a wide range of medical and psychosocial consequences, including type 2 diabetes mellitus, hypertension, insulin resistance and glucose intolerance, menstrual abnormalities, gallstones, obstructive sleep apnea, hypertension, dyslipidaemia, and non-alcoholic fatty liver disease;<sup>10</sup> as well as elevated blood pressure and hyperinsulinemia,<sup>11</sup> cancer, and work-related disabilities.<sup>12</sup> Children who are overweight also have a 70% chance of being overweight or obese as adults.<sup>13</sup>

### *Causes of Obesity*

Social ecological models posit that health conditions, such as obesity, are influenced by biological, genetic, social, and environmental factors.<sup>14,15,16,17</sup> These can be depicted by a diagram illustrating concentric circles of influence. The outer circle includes macro-level factors such as government policy or school meals initiatives; the next circle includes physical environments; the next includes social environments; the innermost circle includes personal factors such as taste preferences and individual genetics. It is generally agreed upon that the increase in the incidence of obesity is due to interrelationships between environmental conditions and the genetic makeup of individuals in the population.<sup>15</sup>

Best Food FITS! focuses on the environmental component, which encompasses political, economic, social, and physical environments.<sup>18</sup> Physical environments consist of

the places within a community where people obtain food – restaurants, stores, work places, homes, and schools.<sup>15</sup> The incidence of Americans eating outside the home is increasing, as is the amount of money Americans spend on food consumed outside of the home.<sup>19</sup> Clearly, interactions with restaurants and other food service establishments have a considerable impact on the nutrition habits of Americans. Multiple studies have determined that restaurant foods or other foods eaten outside of the home are higher in energy density,<sup>19,20</sup> fat content, saturated fat content,<sup>19,21,22,23</sup> and energy derived from fat and saturated fat. Zoumas-Morse found it to be especially true that children consumed more energy from fat and saturated fat at restaurants.<sup>23</sup> Consumption of fast foods has been found to be especially associated with increases in BMI.<sup>24,25</sup> It has also been found that consumption of foods that are higher in energy density contributes to excess overall energy consumption.<sup>20</sup> However, to date, little research has focused exclusively on examining the nutritional content of children’s menus.

### *Obesity Prevention and Interventions*

Internationally, researchers have experimented with a wide variety of intervention styles: providing point-of-purchase information (putting calorie counts on menus, for example, or labeling certain options “heart healthy”), regulating the marketing of food to children, implementing nutrition guidelines at schools, and increasing the availability of healthier dietary options.

Since the rates of eating outside of the home have increased, restaurant-based interventions are a promising starting place for environmental changes. Many interventions have focused on the first technique listed above – providing point-of-

purchase information. While a variety of studies have proven point-of-purchase information to be effective,<sup>26,27,28,29</sup> an overview by Seymour et al. of published interventions revealed that most of the restaurant-based initiatives used this approach. Seymour, along with other researchers, proposes that further efforts should increase the availability of healthier food options in restaurants, including fruits and vegetables,<sup>30,31,32</sup> instead of focusing on point-of-purchase information. The goal of Best Food FITS! is to make it easier for children to eat more fruit and vegetables, and making those food items more available has been seen to increase intake among children and adults alike.<sup>33,34</sup> Best Food FITS! is similar in nature to the “Shape Up Somerville” program, where researchers worked with restaurants to increase the availability of healthy options and decrease access to unhealthy ones, like sugar-sweetened beverages.<sup>35</sup> Richard’s intervention also studied the feasibility of increasing healthier options at restaurants and found patrons to be promisingly interested in such items.<sup>36</sup>

David Just incorporates a behavioral economics perspective to suggest that people’s food decisions are often “extra-rational.” Consumers are often too distracted to make the best decisions for their health – as such, “food decisions are made with little cognitive involvement,” and certain “decisions occur because of the contexts in which they are made.”<sup>37</sup> Just recommends changing the contexts in which eating decisions are made, as it is likely more effective in affecting eating behaviors than providing point-of-purchase information, which requires a higher level of cognitive thought. The aim of Best Food FITS! is to change the context by making healthier foods more easily accessible, which reduces the level of cognitive involvement needed to make healthy decisions.

While other intervention approaches have proven effective, like the community-based health initiative in El Paso, Texas, which resulted in decreased obesity rates of school children,<sup>38</sup> the Best Food FITS! intervention is the first of its kind. Other intervention projects characterized restaurant menus;<sup>39, 40, 41, 42</sup> however, none of them focused solely on analyzing children's menus. The Shape Up Somerville program recruited restaurants to add labels to the healthier options on their menus, but no other study has approached restaurants about implementing new menus or altering their current ones.

Best Food FITS! aims to increase the number of fruits and vegetables available and reduce the number of sugar-sweetened beverages on children's menus. In order to meaningfully assess the impact of this project on the 'children's menu' environment in San Marcos, it is necessary to first analyze the children's menus available. This paper reports the development and completion of a database designed to characterize children's menus from every restaurant in San Marcos, Texas.

### III. Methods and Results

#### *Restaurant Selection*

At the outset of this study, the City of San Marcos provided a list of establishments within the city limits that were required to undergo annual health inspection because they sell food. We categorized the list by type of establishment to identify public restaurants that were likely to serve meals to families with children. For the purposes of this study, all retail/grocery store locations, convenience stores, bars, hotels/motels, schools, retirement facilities, ice cream parlors, bowling alleys, amusement parks, and food delivery or catering companies were excluded, leaving the following categories of restaurants on the final list:

1. Sandwich shops (10)
  2. Pizza parlors (15)
  3. Mexican restaurants (29)
  4. American/steakhouse restaurants (27)
  5. Asian restaurants (10)
  6. Fast food chains/fried chicken/snack bars (36)
  7. Bakeries and coffee shops (11)
  8. Italian restaurants (3)
  9. Barbeque/burger non-chain restaurants (11)
- Total: 152

We then attempted to collect menus from each location by collecting “to go” paper menus, taking photographs of menus or menu boards, or accessing online menus, where available. At this point, a few more restaurants were excluded because they went out of business or had no readily accessible menus (e.g., 2 Mexican restaurants). We also eliminated 9 of the coffee shops because they either did not cater to children or offered

only a limited array of snack food items. In total, we eliminated 17 additional establishments, bringing the total to 135 restaurants. While some fast-food chain restaurants had more than one store in San Marcos, we evaluated menus from each store as a separate restaurant.

### *Categorizing Menu Options*

In order to fully characterize the children's menus in San Marcos, we considered all items on all of the children's menus and consulted adult menus when necessary. This entailed categorizing all types of food and beverage and counting items within each category. In so doing, we created a database to itemize all of the available food options from each restaurant's menu. What follows is a description of the database, a breakdown of the different database categories, and an explanation for how items were counted.

### The Database

The database was created using Microsoft Excel. All 135 restaurant names, along with their code numbers, are listed vertically in the left-most column and locked in place. The following questions and categories are listed horizontally in the top rows and locked in place.

## Question Category #1: Children's Menus

The first questions addressed were:

1a. Was there a children's menu prior to the Best Food FITS! intervention?

1b. Are we changing the current children's menu?

1c. Are we adding a new children's menu?

The questions were answered with either a yes or a no. For statistical purposes, we numerically coded the answers, with a "yes" answer coded as "1," and "no" coded as "0." We used this coding method for all yes/no questions in the database.

The answer data for these first three questions is summarized in Table 1.

Table 1: Children's menus in San Marcos, Texas

<b>Question Category #1</b>			
	Yes (1)	No (0)	No Data (-)
1a. Children's menu prior to intervention?	81	54	0
1b. Changing the current children's menu?*	8	10	117
1c. Adding a new children's menu?*	10	8	117
*this data is subject to change, as researchers continue to approach restaurants about participating in the program.			

As seen in Table 1, a total of 81 restaurants in San Marcos had children's menus prior to the Best Food FITS! intervention and served as the basis of subsequent analyses.

## Question Category #2: Beverages – General Information

2a. How are drinks listed?

Drinks for children were listed in five different ways or categories. Options for question 2a were 1-5 as follows:

- Category 1: All drinks are listed and specified on the children's menu.
- Category 2: All drinks are listed on the children's menu; not all drinks are specified. (Example: children's menu offers choice of apple juice, milk, or soft drink. In this example, "soft drink" is unspecified.)
- Category 3: No drinks are listed on the children's menu; however, the children's menu refers to an unspecified drink. (Example: children's menu says "all entrées come with choice of kid's drink.")
- Category 4: No drinks are listed on the children's menu; children's menu makes no references to drinks.
- Category 5: No drinks are listed on the children's or adult's menu.

Each category type required a different method of counting, as follows:

- For category 1 menus, we counted **only** the drinks listed on the children's menu.
- For category 2 menus, we counted the drinks listed on the children's menu, and referred to the adult menu for counts of the type of unspecified drink referenced by the children's menu. (Example: children's menu offered choice of apple juice, milk, or soft drink. We counted apple juice and milk, and then referred to the adult menu for counts of soft drinks. We did not count other non-soft drinks listed on the adult menu.) If the



children’s menu listed an unspecified type of drink, i.e. “drink,” we counted all drinks available on the adult menu (excluding alcoholic and coffee beverages as specified below).

- For category 3 menus, we referred to the adult menu for counts of the referenced type of drink. Again, if the children’s menu did not specify the type of drink, we counted all drinks available on the adult menu. In the case that there were no beverages listed on the adult menu for this category, we called the restaurant to obtain a list of available drinks.
- For category 4 menus, we referred to the adult menu for all counts.
- For category 5 menus, we entered no data for the beverage section.

If data for unspecified drinks could not be found on the menus, data collectors called or visited the restaurant to obtain the necessary information.

In instances where drinks were not listed on the children’s menus (categories 3, 4, and 5), we referred to the adult menu, assuming that parents might order drinks from that menu for their children.

The answers to question 2a are summarized in Table 2.1.

Table 2.1: How Drinks are Listed

<b>Question Category #2: 2a</b>	
	# of menus
Category 1	8
Category 2	18
Category 3	30
Category 4	18
Category 5	6
No data	1

2b. Are sugar-sweetened beverages listed or referenced? (Yes = 1, No = 0)

We posed this question to determine how many menus listed sugar-sweetened beverages. The results are summarized in Table 2.2.

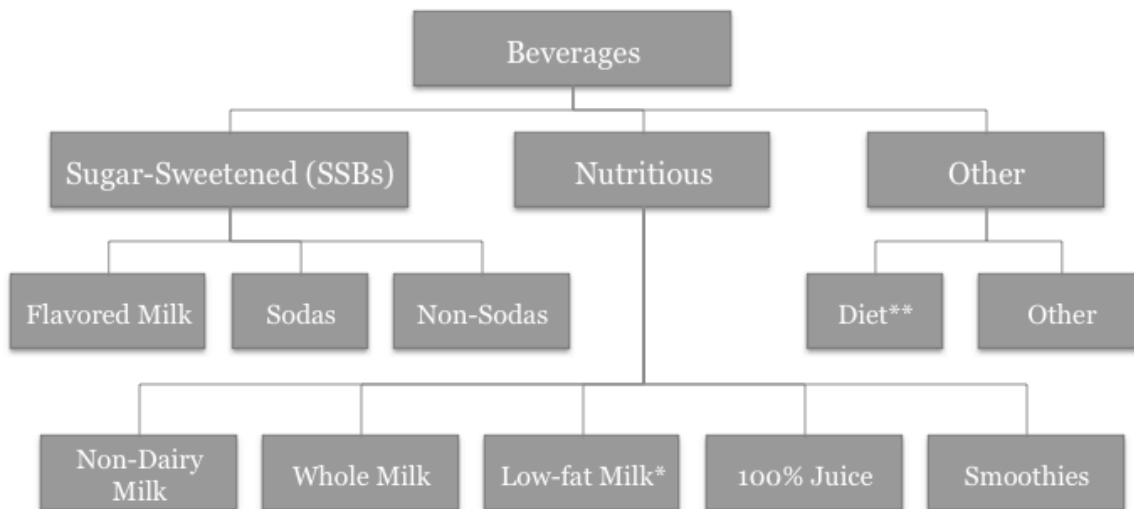
Table 2.2: Number of Menus Listing Sugar-Sweetened Beverages (SSBs)

<b>Question Category #2: 2b</b>		
# of menus with SSBs listed or referenced	# of menus with SSBs <b>not</b> listed or referenced	# of menus with no drink data
73	0	6

Question Category #3: Beverages – Specifics

The beverages were divided into three major subcategories: 1) sugar-sweetened beverages, 2) nutritious beverages, and 3) other beverages. These were then further broken down to distinguish different types of each beverage. Figure 2 is a visual representation of the category breakdowns.

Fig. 2



\*Includes fat-free milk

\*\*Includes Stevia- or Splenda-sweetened beverages and sugar-free beverages

We counted the numbers of each type of drink on each menu; this gives us the data to determine how many menus list each type of item. Using the category distinctions from question 2a, we are also able to determine how many of each beverage type is listed or referenced on children’s menus (by looking at category 1-3 menus) versus how many of each beverage type is listed on adult menus (by looking at category 4 menus). The breakdown of beverages listed on children’s menus is given in Table 3.1, the breakdown of beverages listed on adult menus is given in Table 3.2.

Table 3.1: # of Children’s Menus Listing or Referencing Beverage Types

Listing or referencing:	# of children’s menus
<b>SSBs</b>	55
Flavored milk	24
Any non-soda SSBs	48
1-5 non-soda SSBs	41
6-10 non-soda SSBs	2
11+ non-soda SSBs	5
Any sodas	53
1-5 sodas	47
6-10 sodas	6
11+ sodas	0
<b>Nutritious Beverages</b>	37
Non-dairy milk	0
Whole milk	9
Low-fat/Fat-free milk	25
100% juice	22
1-3 100% juice	22
4+ 100% juice	0
Nutritious Smoothies	0
<b>Other Beverages</b>	51
Diet or sugar-free	50
1-3 diet/sugar-free	47
4+ diet/sugar-free	3
Other	34
1-5 other	34
6-10 other	0
11+ other	0

Table 3.2: # of Adult Menus Listing or Referencing Beverage Types

Listing or referencing:	# of adult menus
<b>SSBs</b>	18
Flavored milk	3
Any non-soda SSBs	18
1-5 non-soda SSBs	12
6-10 non-soda SSBs	3
11+ non-soda SSBs	3
Any sodas	16
1-5 sodas	12
6-10 sodas	4
11+ sodas	0
<b>Nutritious Beverages</b>	12
Non-dairy milk	1
Whole milk	7
Low-fat/Fat-free milk	4
100% juice	7
1-3 100% juice	7
4+ 100% juice	0
Nutritious Smoothies	1
<b>Other Beverages</b>	17
Diet or sugar-free	16
1-3 diet/sugar-free	16
4+ diet/sugar-free	0
Other	17
1-5 other	15
6-10 other	1
11+ other	1

There were many special considerations that had to be taken into account for the beverage data collection. What follows is a list with information about how we handled each issue.

- If a type of drink is offered in multiple flavors – for example: regular iced tea, raspberry iced tea, and blackberry iced tea – we counted each flavor as a distinct drink. In this example, then, there are three drinks listed.

- If energy drinks are listed on the adult menu when referenced, (none were listed on children's menus), we included them in the "other" category based on the assumption that parents would not order energy drinks for their young children (12 or younger, as is the standard age cut-off for most children's menus).
- If coffee drinks were listed on the adult menu when referenced, they were included in the "other" category based on the same assumption as noted above for energy drinks. However, if the adult beverage menu had a separate section for coffee drinks, i.e. "Coffee Bar" or McDonald's "McCafé," the coffee drinks were not counted at all.
- No alcoholic drinks were counted.
- Milk was often listed unspecified on menus. In such cases, we called the restaurants to determine if it was whole, reduced-fat or fat-free milk.
- Juice was also often unspecified. We called restaurants to determine if the juice was 100% fruit (or vegetable) juice, or if it had added sugar. If it had added sugar, it was included in the SSBs: non-soda category.
- We called restaurants whose menus listed unspecified iced tea, to ask if tea was served sweetened or unsweetened by default. If the tea was served sweetened, it was included in the SSBs: non-soda category. If it was served unsweetened, it was included in the Other drinks: other category.
- To determine which smoothies were nutritious, we called and asked the restaurants for ingredient lists, and then compared them to our classification system:

Nutritious Smoothies: Made with fresh or frozen fruit, 100% fruit juice, or low-fat milk or yogurt, with no added sugars or ice cream. Included in the Nutritious Beverages – Smoothies category.

Dessert Smoothies: Made with ice cream or whole milk. Included in the unhealthy dessert category. If made with whole fruit, included in the unhealthy dessert – with fruit option category (see Tables 9.2 and 9.4).

Non-Soda SSB Smoothies: Made with sugary fruit juices or honey water. Included in the SSBs: Non-soda category.

- Some menus offered sodas in 2-liter sizes and/or a gallon of tea. Since these drinks are not intended for consumption by a single individual, we did not include them in our counts.

For a complete list of beverages included in each category, please refer to Appendix A, List 1: Beverages.

#### Question Category #4: Entrées

4a. What is the total number of entrées listed on the children’s menu?

Answering this question allowed us to count how many menus had a certain number of entrées listed. The counts we obtained are summarized in Table 4.1.

Table 4.1: # of Entrées on Children’s Menus

<b>Question Category #4: 4a</b>	
	# of menus
1-3 entrées on children’s menu	22
4-6 entrées on children’s menu	45
7-9 entrées on children’s menu	8
10+ entrées on children’s menu	6

4b. What is the total number of entrées accompanied by sides?

This question gives us an overview of how often sides are listed on children's menus, especially when compared to the answers from question 4a. The data obtained is summarized in Table 4.2.

Table 4.2: # of Entrées with Sides

<b>Question Category #4: 4b</b>	
	# of menus
0 entrées with sides	10
1-3 entrées with sides	26
4-6 entrées with sides	36
7-9 entrées with sides	5
10+ entrées with sides	4

4c. How many fruit entrées are offered?

4d. How many vegetable entrées are offered?

These questions allow us to see how many menus offer fruit or vegetable options in entrées. The counts are summarized in Table 4.3. For a list of food items counted as fruit and vegetable entrées, refer to Appendix A, List 2: Entrées.

Table 4.3: # of Fruit and Vegetable Entrées

<b>Question Category #4: 4c and 4d</b>	
	# of menus
1+ fruit entrée	10
1+ vegetable entrée	26

4e. How many of the entrées are high in energy density?

Entrées that were primarily fried, cheesy, greasy, or creamy were considered to have higher energy density. Using these qualifiers provided us with shorthand to pinpoint more energy dense food items. To accurately determine levels of energy density, the research team would have had to conduct a proper nutritional analysis. However, the team determined that such an analysis would be too time-consuming, too costly, and too

inconvenient for restaurant owners. This is especially true since reducing overall energy density is not a main focus of the project, so an estimation of high energy density was based on the characteristics listed above. For a list of all entrée items included in this category, refer to Appendix A, List 2: Entrées. The data on how many menus have entrées high in energy density (HED) is summarized in Table 4.4.

Table 4.4: # of Menus with HED Entrées

<b>Question Category #4: 4e</b>	
	# of menus
Any HED entrées	74
0 HED entrées	7
1-3 HED entrées	52
4-6 HED entrées	20
7+ HED entrées	2

Some children’s menus offered both breakfast and lunch, or lunch and dinner, or breakfast and dinner entrées. In these cases, we chose one set of entrées to include in the main database. If both breakfast and lunch options were listed, we chose to count lunch options. If breakfast and dinner options were listed, we counted dinner options. If lunch and dinner options were listed, we counted dinner options. No restaurants offered three separate menus for breakfast, lunch and dinner. We maintained the data for the options that were *not* included in the main database separately.

Question Category #5: Sides – Generic

5a. What is the total number of sides listed on the children’s menu?

5b. Are all sides specified on the children’s menu?

Answering question 5a allowed us to count how many menus had a certain number of sides listed. The counts we obtained are summarized in Table 5.1. For



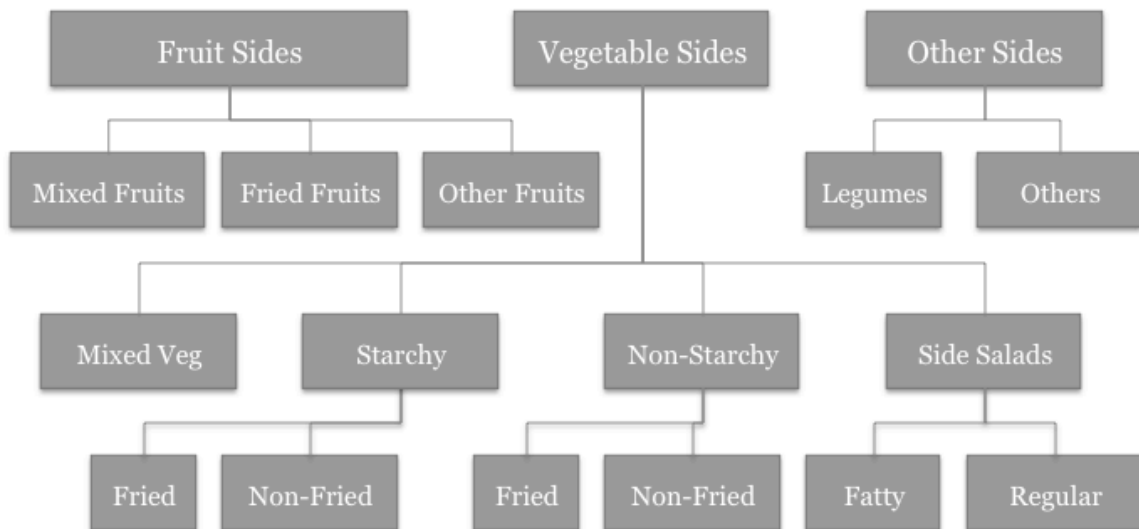
question 5b, what we mean by “specified” is when sides are identified clearly on the children’s menu. An *unspecified* side, then, is one which is not identified. For example, a “cheeseburger, with one side” lists an unspecified side. In this case we would refer to the adult side menu if available.

If the answer to 5b was yes (all sides are specified), we referred only to the children’s menu for counts of sides. If the answer was no (unspecified sides **are** listed), we referred to the adult sides menu for counts. If the children’s entrées did not come with sides, we did *not* refer to the adult menu, and instead entered no data for the “sides” category. The data obtained for question 5b is also summarized in Table 5.1.

Table 5.1: Sides Listed on Children’s Menus

<b>Question Category #5: 5a and 5b</b>	
<b>5a: sides on children’s menu</b>	<b># of menus</b>
0 sides on children’s menu	14
1-5 sides on children’s menu	62
6-10 sides on children’s menu	4
11+ sides on children’s menu	1
<b>5b: unspecified sides listed</b>	7

Fig. 3



The sides were broken down into three sub-categories: 1) fruit sides, 2) vegetable sides, and 3) other sides, all of which were further sub-divided, as illustrated in Figure 3.

Question Category #6: Sides - Fruit

6a. Are fruit side options listed on the children’s menu?

This question let us count how many restaurants in total offered any fruit sides on their children’s menu. We found that 20 of the children’s menus listed fruit sides; 61 did not. This information is also reflected in Table 6.2.

6b. What is the total number of fruit sides available to children?

If fruit side options were listed on the children’s menu, we counted only those that were listed, *unless* the children’s menu listed unspecified sides or otherwise referred to the adult menu for side selection. In the case of no fruit side options listed on the children’s menu, we also did not refer to the adult menu for this count unless unspecified sides were listed. Question 6b allows us to see the number of fruit sides available on both the children’s and adult menu. The data from this question is summarized in Table 6.1.

Table 6.1: Fruit Sides Available to Children

<b>Question Category #6: 6b</b>	
	# of menus
Any fruit side options available directly or indirectly	26
0 fruit sides available	55
1-3 fruit sides available	26
4-6 fruit sides available	0
7+ fruit sides available	0

In the case of unspecified sides listed on the children’s menu, the next question –

6c. What is the total number of fruit sides listed on the children’s menu?

- allows us to distinguish between options listed solely on the children’s menu and those listed on the adult menu. The numbers in these two columns would differ only if there were both a) fruit sides listed on the children’s menu and b) an unspecified side listed on the children’s menu which could be chosen from a fruit option from the adult menu.

Table 6.2 summarizes the data obtained from question 6c.

Table 6.2: Fruit Sides Listed on Children’s Menus

<b>Question Category #6: 6c</b>	
	# of menus
0 fruit sides listed on children's menu	61
1-3 fruit sides listed on children's menu	20
4-6 fruit sides listed on children's menu	0
7+ fruit sides listed on children's menu	0

The next three columns contained the three categories of fruit sides: mixed fruit sides, fried fruit sides, and other fruit sides. The numbers of each type were counted and entered in the appropriate column. For lists of the items in these categories, see Appendix A, List 3: Sides. The data regarding how many menus listed each type of fruit side is summarized in Table 6.3.

Table 6.3: # of Children’s Menus Listing or Referencing Fruit Sides

Listing or Referencing:	# of menus
Any mixed fruit sides	6
1 mixed fruit side	6
2+ mixed fruit sides	0
Any fried fruit sides	1
1 fried fruit sides	1
2+ fried fruit side	0
Any other fruit sides	21
1 other fruit side	17
2+ other fruit sides	4

Question Category #7: Sides – Vegetables

We asked the same questions for the vegetable side category as we did for the fruit side category.

7a. Are vegetable side options listed on the children’s menu?

This question let us count how many restaurants in total offered any vegetable sides on their children’s menu. We found that 58 of the children’s menus listed vegetable sides; 23 did not. This information is also reflected in Table 7.2.

7b. What is the total number of vegetable sides available to children?

If vegetable side options were listed on the children’s menu, we counted only those that were listed, *unless* the children’s menu listed unspecified sides or otherwise referred to the adult menu for side selection. In the case of no vegetable side options listed on the children’s menu, we also did not refer to the adult menu for this count unless unspecified sides were listed. Question 7b allows us to see the number of vegetable sides available on both the children’s and adult menu. The data from this question is summarized in Table 7.1.

Table 7.1: Vegetable Sides Available to Children

<b>Question Category #7: 7b</b>	
	# of menus
Any vegetable side options available directly or indirectly	62
0 vegetable sides available	19
1-3 vegetable sides available	56
4-6 vegetable sides available	2
7+ vegetable sides available	4

Again, to distinguish between any vegetable sides listed on the children’s menu and those listed on the adult’s menu (if included), we asked,

7c. What is the total number of vegetable sides listed on the children's menu?

Table 7.2 summarizes the data obtained from question 7c.

Table 7.2: Vegetable Sides Listed on Children's Menus

<b>Question Category #7: 7c</b>	
	<b># of menus</b>
0 vegetable sides listed on children's menu	23
1-3 vegetable sides listed on children's menu	55
4-6 vegetable sides listed on children's menu	2
7+ vegetable sides listed on children's menu	1

The sub-categories of vegetables can be seen in figure 3, and are as follows: 1) mixed vegetable sides; 2) starchy vegetables – further divided into a) fried/fatty and b) non-fried; 3) non-starchy vegetables – further divided into a) fried/fatty and b) non-fried; and 4) side salads – subdivided into a) regular and b) fatty salads. The numbers of each type were counted and entered in the appropriate column. For lists of the items in these categories, see Appendix A, List 3: Sides. The data regarding how many menus listed each type of vegetable side is summarized in Table 7.3.

Table 7.3: # of Children’s Menus Listing or Referencing Vegetable Sides

Listing or Referencing:	# of menus
Any mixed vegetable sides	8
1 mixed vegetable side	8
2+ mixed vegetable side	0
Any starchy fried/fatty vegetable sides	58
1 starchy fried/fatty vegetable side	52
2+ starchy fried/fatty vegetable sides	6
Any starchy non-fried/fatty vegetable sides	6
1 starchy non-fried/fatty vegetable side	2
2+ starchy non-fried/fatty vegetable sides	4
Any non-starchy fried/fatty vegetable sides	2
1 non-starchy fried/fatty vegetable side	1
2+ non-starchy fried/fatty vegetable sides	1
Any non-starchy non-fried/fatty vegetable sides	7
1 non-starchy non-fried/fatty vegetable side	3
2+ non-starchy non-fried/fatty vegetable side	4
Any one regular side salad	5
2+ regular side salads	1
Any one fatty side salad	2
2+ fatty side salads	1

Question Category #8: Sides - Other

Other sides offered on the children’s menu (or the adult’s menu if the children’s menu referred to it) were also counted and broken down into a legume subcategory and an “other” subcategory, which included everything else offered as a side that was not a fruit, vegetable, or legume. See Appendix A, List 3: Sides for a list of items included in these categories. The data regarding how many menus listed legume and other sides is summarized in Table 8.1.

Table 8.1: # of Children’s Menus Listing or Referencing Legume and Other Sides

Listing or Referencing:	# of menus
Any legume sides	13
2+ legume sides	0
Any other sides	23
1-3 other sides	20
4-6 other sides	3
7+ other sides	0

Question Category #9: Desserts

The team also thought it beneficial to include a categorization of desserts, in hopes that participating restaurants would reduce the number of unhealthy desserts they list on children’s menus. The first question is:

9a. Are desserts listed on the children’s menu?

If the answer was no, we referred to the adult menu, whether or not the children’s menu indicated that customers could order desserts off the adult menu. This decision was based on the assumption that parents, if they ordered dessert for their children, would do so from the adult menu. If the answer was yes, we limited our counts to just the desserts listed on the children’s menu. A total of 19 children’s menus had desserts listed.

9b. What is the total number of desserts available to children on **children’s** menus?

For this item, we counted all desserts available on the children’s menu. The answer data is summarized in Table 9.1.

Table 9.1: Desserts Listed on Children’s Menus

<b>Question Category #9: 9b</b>	
	# of menus
Total # of desserts listed	19
1-3 desserts listed	19
4-6 desserts listed	0
7+ desserts listed	0

We also took specific counts of the number of unhealthy desserts, unhealthy desserts with fruit, and healthy desserts with fruit that were listed on children’s menus. These counts are summarized in Table 9.2.

Table 9.2: # of Children’s Menus Listing or Referencing Desserts

Listing or Referencing:	# of menus
# of unhealthy desserts	
1-5 unhealthy desserts	19
6-10 unhealthy desserts	0
11- 15 unhealthy desserts	0
16+ unhealthy desserts	0
# of fruit options in unhealthy desserts	
0 fruit options	19
1-3 fruit options	0
4-6 fruit options	0
# of fruit options in healthy desserts	
0 healthy fruit desserts	19
1-3 healthy fruit desserts	0
4+ healthy fruit desserts	0

9c. What is the total number of desserts available to children on **adult** menus?

For this item, we counted all desserts available on the adult menu. The answer data is summarized in Table 9.3.

Table 9.3: Desserts Listed on Adult Menus

<b>Question Category #9: 9c</b>	
	# of menus
Total # of desserts listed	56
1-5 desserts listed	32
6-10 desserts listed	14
11-15 desserts listed	5
16+ desserts listed	5



As we did for the children’s menus, we also counted unhealthy desserts, unhealthy desserts with fruit, and healthy desserts with fruit as available on the adult menus. The results are summarized in Table 9.4.

Table 9.4: # of Adult Menus Listing or Referencing Desserts

Listing or Referencing:	# of menus
# of unhealthy desserts	
1-5 unhealthy desserts	32
6-10 unhealthy desserts	14
11- 15 unhealthy desserts	5
16+ unhealthy desserts	5
# of fruit options in unhealthy desserts	
0 fruit options	38
1-3 fruit options	18
4-6 fruit options	0
# of fruit options in healthy desserts	
0 healthy fruit desserts	56
1-3 healthy fruit desserts	0
4+ healthy fruit desserts	0

For a list of items that are in each category of dessert, see Appendix A, List 4: Desserts. Unhealthy desserts were considered to be any item high in fat and/or sugar content. Cookies and milkshakes were considered desserts no matter where they were listed on the menus – sometimes cookies were listed as sides and milkshakes were listed as drinks. Fruit desserts were considered healthy only if the fruit was not deep fried or included in a pastry shell (i.e. cobbler) or in fruit-flavored syrup. If a dessert was offered in different flavors – for example, milkshakes offered in chocolate, strawberry and vanilla flavors – each flavor was counted as a distinct dessert item.

## IV. Discussion

### *Significant Findings*

This study represents a unique undertaking, which was to thoroughly characterize children's menus in a discreet environment. After painstaking analysis of 81 children's menus from 135 restaurants in San Marcos, we were able to quantify all options from the four main menu categories: beverages, entrées, sides, and desserts.

#### 1. *Beverages*

Out of the 81 children's menus we analyzed, 73 listed or referenced sugar-sweetened beverages. 55 of these menus listing or referencing SSBs were Category 1, 2, and 3 menus, meaning the SSBs were listed or referenced directly on the children's menu. The remaining 18 of menus listing or referencing SSBs were Category 4 menus, meaning adult menus that were referenced.

Out of the 55 category 1-3 menus, 100% of them offered at least one type of SSB. 67% offered at least one type of nutritious beverage, and 93% offered at least one type of other beverage. Out of the 18 category 4 menus, 100% offered at least one type of SSB, 67% offered at least one type of nutritious beverage, and 94% offered at least one type of other beverage.

It is thus apparent that the ratios of sugar-sweetened beverages to non-sugar-sweetened nutritious beverages are about the same, whether the drinks are listed on children's menus or on adult menus.

The fact that 100% of menus listed SSBs means that any reduction in this number will support the effectiveness of the Best Food FITS! initiative.

## *2. Entrées*

Out of the 81 children's menus, 3% offered one or more fruit entrée and 14% offered one or more vegetable entrée. These categories are important because they offer restaurant patrons additional fruit and/or vegetable options. Any increase in these categories would be an improvement in the availability of fruits and vegetables.

On the other hand, 93% of the menus offered one or more high energy-density entrée, clearly indicating room for improvement.

## *3. Sides*

Since side dishes are the most common source of fruits and vegetables on a restaurant menu, it is important that many restaurants include healthy side options.

We found that 32% of the menus analyzed included at least one fruit side option. 81% of those included at least one non-fried fruit option from the "other" category.

77% of the menus (67 menus total) included at least one vegetable side option. The high number seemed impressive until we examined the menu more carefully. Out of the 67 menus listing a vegetable side option, 58 list at least one starchy fatty/fried vegetable, usually French fries. In fact, only 26 of the menus offered a healthy vegetable side option (mixed vegetables, starchy and non-starchy non-fried/non-fatty vegetables, and regular side salads).

#### 4. *Desserts*

Nineteen children's menus out of the total 81 listed desserts. None of the 19 listed fruit options, either as part of a healthy dessert or an unhealthy dessert. Desserts from 56 adult menus were available to children, as well. Out of these, 18 offered fruit options in an unhealthy dessert, and none offered fruit options in a healthy dessert.

A summary of menu data, organized by restaurant type, is included in Appendix B. Each table lists the number of children's menus that include the different categories of beverages, entrées, sides, and desserts. Fast food chains and Mexican restaurants comprise the two biggest groups of restaurants. Fast food chains have proven more difficult to recruit for the Best Food FITS! program. Often, local restaurant managers are not authorized to make major changes like implementing a new children's menu. The team has found more success with locally owned restaurants. This is promising in the case of Mexican restaurants, however. Duerksen found that among Mexican American families in San Diego, California, BMI was lowest among children and adults who ate primarily at Mexican restaurants, and highest among children who ate at fast-food chains and adults who ate at American buffet-style restaurants.<sup>43</sup> This information is significant because of the high proportion of Hispanic families in San Marcos, Texas. If the Best Food FITS! program can affect positive changes in the many Mexican restaurants, the changes could potentially benefit the Hispanic population.

### *Further Research*

Research for the Best Food FITS! initiative is ongoing. Data collectors are continuing to invite restaurants to participate, which involves an interactive, iterative process between the restaurant owners and the research team. Once all the new children's menus are in place, we will repeat the process outlined in this paper to obtain the "after" results, which can then be compared with these "before" results to observe increases and decreases in all target areas.

### *Strengths and Weaknesses*

This portion of the project is a very complex one. Its strengths lie in the amount of data collected and analyzed, and all the information the processed data affords us.

One of the weaknesses is that we had to rely on judgment instead of computer analysis of recipes to classify entrees as "high energy-dense" entrées. While this is an inexact science, at least 4 of the research team members are registered dietitians.

Furthermore, accurate nutritional analysis would have required obtaining recipes from owners and observing food preparation in the kitchens. Demanding this rigor would very likely have caused most owners to choose not to participate.

Other intervention studies have taken prices into account. While pricing is another significant determinant of eating behavior, again it was beyond the scope of this particular study.

### *Considerations*

While this study provides us with a great amount of data regarding the availability of fruits and vegetables, it is only one piece of the puzzle. Because more fruits and vegetables are listed on children's menus does not mean children will *necessarily* choose them, but the fact that they have the *ability* to choose fruit and vegetable options where they did not before is quite significant.

This paper does, however, provide other researchers interested in conducting similar interventions with a template for menu analysis. No other published studies were found to be using a method as extensive and as specific as the one we have developed, and we hope others will find it useful.

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## Appendix A: Category Lists

### List #1: Beverages

#### Sugar-Sweetened Beverages (SSBs)

##### 1. Flavored Milks

- Chocolate milk
- Strawberry milk

##### 2. SSBs: Non-Sodas

- Fruit punch
- Sports drinks (Gatorade, Powerade, etc.)
- Hot chocolate
- Lemonades/Limeades
- Slushes, ICEEs, Spritzers, Coolers, etc.
- Sweet teas/flavored teas
- Smoothies made with sugary juice
- Fruit juices with added sugar
- Vitamin Water
- Sobe Drinks
- Horchatas/Aqua Frescas

##### 3. SSBs: Sodas

- All non-diet fountain/carbonated sodas
- Coke, Pepsi, Sprite, 7-Up, Dr. Pepper, Root Beer, Mountain Dew, etc.
- Mexican sodas/ Jarritos

#### Nutritious Beverages

##### 1. Non-Dairy Milk

- Soy, almond, rice, or coconut

##### 2. Whole Milk

##### 3. Low-fat or Fat-free Milk

- 2%, 1%, reduced fat, low fat, skim

##### 4. 100% Juice

- 100% fruit juices; juice from concentrate
- V8

#### 5. Diet or sugar-free

- Diet sodas (Diet Coke, Diet Dr. Pepper, Coke Zero, etc)
- Stevia-sweetened beverages
- Sugar-free beverages (often “light”)
- Splenda-sweetened beverages

#### Other Beverages

- Coffee and coffee drinks
- Hot tea
- Water
- Energy drinks
- Unsweetened iced tea

### List #2: Entrées

#### Fruit Entrées

- Fruit cup or Fruit Salad

#### Vegetable Entrées

- Salad
- Vegetable Plate

#### Fried, Creamy, Greasy, Cheesy Entrées

- Anything fried (fried chicken, fried shrimp, fried catfish, etc.)
- Macaroni and cheese
- Alfredo or other cream sauce dishes
- Creamy or cheesy soups
- Chicken nuggets, tenders, or strips
- Corn dogs
- Pizzas
- Grilled cheese/cheese sandwiches
- Bean and cheese burritos
- Cheese enchiladas
- Quesadillas
- Chimichangas
- Talames
- Chalupas
- Cheeseburgers

## List #3: Sides

### Fruit Sides

#### 1. Mixed Fruit

- Mixed fruit cup
- “Fresh” or “seasonal” fruit cup
- Fruit salad

#### 2. Fried Fruit

- Fried apples
- Fried banana / tempura banana

#### 3. Other Fruit

- Apple slices
- Applesauce
- Mandarin Oranges
- Pineapple slices
- Banana
- Apple fries
- Cinnamon apples

### Vegetable Sides

#### 1. Mixed Vegetables

- “Fresh” or “seasonal” vegetables
- Steamed vegetables (unspecified)

#### 2. Starchy Vegetables

##### a. Fried/Fatty

- French fries
- Sweet potato fries
- Steak fries
- Tater tots
- Chips
- Dressed/loaded baked potato

##### b. Non-Fried/Non-Fatty

- Corn kernels or corn on the cob
- Mashed potatoes

- Roasted potatoes
- Baked potatoes
- Black-eyed peas

### 3. Non-Starchy Vegetables

#### a. Fried/Fatty

- Onion rings
- Fried okra

#### b. Non-Fried/Non-Fatty

- Eggplant
- Zucchini
- Celery
- Broccoli
- Green beans

### 4. Side Salads

#### a. Regular

- Side salad
- Green salad
- House salad

#### b. Fatty

- Coleslaw
- Caesar salad

### Other Sides

#### 1. Legume Sides

- Pinto beans
- Refried beans
- Black beans
- Chickpeas/hummus

#### 2. Other sides

- Breads
- Sauces
- Rice
- Meats
- Soups
- Chili
- Dumplings

- Yogurt
- Cheese

#### List #4: Desserts

##### Unhealthy Desserts

- Cakes
- Cupcakes
- Cheesecake
- Milkshakes/malts
- Cookies
- Ice cream
- Kolaches
- Fried ice cream
- Fried fruit
- Cobblers

##### Fruit Options in a Bad Dessert

- Fried fruit
- Fruit cobblers
- Bananas foster

##### Fruit Options in a Good Dessert

- Cinnamon apples
- Cinnamon peaches

## Appendix B: Children’s Menu Data by Restaurant Type

Table B.1

<b>Sandwich Shops – Specific Data</b>	
	# of Menus
Total	10
With children’s menus	8
<b>Beverages</b>	
SSBs	8
Flavored Milk	6
Non-soda SSB	3
Sodas	7
Nutritious	6
Non-dairy Milk	0
Whole Milk	0
Low-fat/Fat-free milk	6
100% Juice	5
Smoothies	0
Other	7
Diet	7
Other	7
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	6
1+ HED entrée	3
<b>Sides</b>	
1+ fruit side option available	6
1+ vegetable: starchy or non-starchy fried/fatty side option available	2
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	1
<b>Desserts</b>	
1+ unhealthy dessert available	8
1+ healthy fruit dessert available	0



Table B.2

<b>Pizza Parlors – Specific Data</b>	
	<b># of Menus</b>
Total	12
With children's menus	2
<b>Beverages</b>	
SSBs	2
Flavored Milk	0
Non-soda SSB	2
Sodas	2
Nutritious	2
Non-dairy Milk	0
Whole Milk	0
Low-fat/Fat-free milk	0
100% Juice	2
Smoothies	0
Other	2
Diet	2
Other	2
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	0
1+ HED entrée	2
<b>Sides</b>	
1+ fruit side option available	0
1+ vegetable: starchy or non-starchy fried/fatty side option available	0
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	0
<b>Desserts</b>	
1+ unhealthy dessert available	2
1+ healthy fruit dessert available	0

Table B.3

<b>Mexican Restaurants – Specific Data</b>	
	<b># of Menus</b>
Total	27
With children’s menus	15
<b>Beverages</b>	
SSBs	13
Flavored Milk	1
Non-soda SSB	11
Sodas	13
Nutritious	7
Non-dairy Milk	0
Whole Milk	5
Low-fat/Fat-free milk	1
100% Juice	4
Smoothies	0
Other	13
Diet	11
Other	13
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	2
1+ HED entrée	15
<b>Sides</b>	
1+ fruit side option available	0
1+ vegetable: starchy or non-starchy fried/fatty side option available	12
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	0
<b>Desserts</b>	
1+ unhealthy dessert available	12
1+ healthy fruit dessert available	0

Table B.4

<b>American/ Steakhouse Restaurants – Specific Data</b>	
	# of Menus
Total	24
With children's menus	19
<b>Beverages</b>	
SSBs	17
Flavored Milk	4
Non-soda SSB	15
Sodas	17
Nutritious	12
Non-dairy Milk	1
Whole Milk	8
Low-fat/Fat-free milk	5
100% Juice	6
Smoothies	1
Other	17
Diet	16
Other	13
<b>Entrées</b>	
1+ Fruit entrée	2
1+ Vegetable entrée	2
1+ HED entrée	18
<b>Sides</b>	
1+ fruit side option available	7
1+ vegetable: starchy or non-starchy fried/fatty side option available	16
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	7
<b>Desserts</b>	
1+ unhealthy dessert available	19
1+ healthy fruit dessert available	0

Table B.5

<b>Asian Restaurants – Specific Data</b>	
	<b># of Menus</b>
Total	10
With children's menus	4
<b>Beverages</b>	
SSBs	2
Flavored Milk	0
Non-soda SSB	2
Sodas	2
Nutritious	1
Non-dairy Milk	0
Whole Milk	0
Low-fat/Fat-free milk	0
100% Juice	1
Smoothies	0
Other	1
Diet	1
Other	0
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	1
1+ HED entrée	3
<b>Sides</b>	
1+ fruit side option available	0
1+ vegetable: starchy or non-starchy fried/fatty side option available	1
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	0
<b>Desserts</b>	
1+ unhealthy dessert available	2
1+ healthy fruit dessert available	0

Table B.6

<b>Fast Food Chains – Specific Data</b>	
	# of Menus
Total	36
With children’s menus	26
<b>Beverages</b>	
SSBs	25
Flavored Milk	14
Non-soda SSB	25
Sodas	23
Nutritious	16
Non-dairy Milk	0
Whole Milk	1
Low-fat/Fat-free milk	15
100% Juice	10
Smoothies	0
Other	25
Diet	25
Other	15
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	0
1+ HED entrée	26
<b>Sides</b>	
1+ fruit side option available	11
1+ vegetable: starchy or non-starchy fried/fatty side option available	24
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	0
<b>Desserts</b>	
1+ unhealthy dessert available	25
1+ healthy fruit dessert available	0

Table B.7

<b>Bakeries/Coffee Shops – Specific Data</b>	
	# of Menus
Total	2
With children’s menus	0

Table B.8

<b>Italian Restaurants – Specific Data</b>	
	<b># of Menus</b>
Total	3
With children’s menus	3
<b>Beverages</b>	
SSBs	3
Flavored Milk	2
Non-soda SSB	3
Sodas	3
Nutritious	3
Non-dairy Milk	0
Whole Milk	2
Low-fat/Fat-free milk	1
100% Juice	0
Smoothies	0
Other	3
Diet	3
Other	0
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	0
1+ HED entrée	3
<b>Sides</b>	
1+ fruit side option available	1
1+ vegetable: starchy or non-starchy fried/fatty side option available	0
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	0
<b>Desserts</b>	
1+ unhealthy dessert available	3
1+ healthy fruit dessert available	0

Table B.9

<b>BBQ/Burger non-chains – Specific Data</b>	
	<b># of Menus</b>
Total	11
With children's menus	4
<b>Beverages</b>	
SSBs	4
Flavored Milk	0
Non-soda SSB	4
Sodas	4
Nutritious	2
Non-dairy Milk	0
Whole Milk	1
Low-fat/Fat-free milk	1
100% Juice	1
Smoothies	0
Other	3
Diet	3
Other	1
<b>Entrées</b>	
1+ Fruit entrée	0
1+ Vegetable entrée	0
1+ HED entrée	4
<b>Sides</b>	
1+ fruit side option available	1
1+ vegetable: starchy or non-starchy fried/fatty side option available	4
1+ vegetable: starchy or non-starchy non-fried non-fatty side option available	1
<b>Desserts</b>	
1+ unhealthy dessert available	4
1+ healthy fruit dessert available	0