**Appendix Figure 1: Combination Meals Sample Identification**

**MenuStat**

(restaurant nutrition database)

Included n=94 restaurants in 2017

**Excluded n=68 restaurants**

* Did not offer children’s combination meals (n=57)
* Meal did not advertise a default version of the children’s combination meals (n=9)
* Missing children’s combination meals in the MenuStat database (n=2)

**Online Restaurant Menus**

Searched n=94 restaurants in 2017 to determine if they offered children’s combination meals

**Final Restaurant Sample**

Included n=26 restaurants that offered children’s meals (**Appendix Table 1**)

**MenuStat**

Contains nutrition information

Merged at item-level

**Children’s Combination Meal Sample**

Used restaurant menus from 26 restaurants to construct default, minimum, and maximum versions of combination meals

**Final Children’s Combination Meals Sample with Nutrition Information**

Database with nutrient information on combination meals:

 Distinct combination meals (n=276 total meals; 92 of each default, low-calorie, and high-calorie)

Meal component sub-analysis (n=252 total meals; 84 of each default, low-calorie, and high-calorie)

**Appendix A: Creation of Combination Meals**

Restaurant combinations were built primarily using restaurants’ websites in October–December 2017 with quality checking completed September–October 2018. When combinations could not be determined from the restaurant website, the most recent drive-thru menu image on Yelp was used. Versions of each combination were assembled as follows:

1. Default: as-advertised combination that included an main dish, side(s), beverage, and any default add-ons (e.g., dipping sauce; see Appendix Table 2 for details).
	1. The default beverage was chosen as advertised in the children’s size (see Appendix Table 3 for details).
	2. When no default side was identified, the side with the closest number of calories to the mean calories across all possible sides was selected. Some meals included multiple side dishes if those were part of the advertised meal.
	3. For dipping sauces/condiments, the default combination meal included one dipping sauce/condiment for the main dish and one dipping sauce/condiment for the side. When no specific default dipping sauce/condiment was identified, the same mean calorie rule as for sides was used to select the default dipping sauce/condiments.
2. Minimum: lowest-calorie version of the default combo that included an main dish, side(s), beverage, and any applicable removals (e.g., toppings).
	1. The minimum-calorie beverage was chosen as water (or if not available, unsweetened tea or the lowest-calorie children’s sized beverage was used) (See Appendix Table 3 for details).
	2. The minimum side was chosen as the lowest-calorie option offered.
	3. Only high-calorie toppings and ingredients were removed from the main dish (e.g., mayonnaise, cheese) unless they were included in the name of the main dish (e.g., for a cheeseburger, the cheese would not be removed).
	4. For dipping sauces/condiments, the minimum combination meal included one of the lowest-calorie dipping sauce/condiment for the main dish and no dipping sauce/condiments for the side (see Appendix Table 2 for details).
3. Maximum: highest-calorie version of the default combo that included an main dish, side(s), beverage, and add-ons (e.g., dipping sauce; see Appendix Table 2 for details).
	1. The highest-calorie kid’s size beverage was chosen (See Appendix Table 3 for details).
	2. The maximum side was chosen as the highest-calorie option offered.
	3. For dipping sauces/condiments, the maximum combination meal included one of the highest-calorie dipping sauce/condiment for the main dish and one for the side (see Appendix Table 2 for details).

**Appendix Table 1: Restaurants included in final analytic sample, with total number of default meal combinations**

|  |  |  |
| --- | --- | --- |
| **Restaurant**  | **Restaurant Typea** | **# Combination Meals** |
| Arby’s | Fast Food | 3 |
| Bojangles | Fast Food | 3 |
| Burger King | Fast Food | 3 |
| Captain D’s | Fast Casual  | 5 |
| Carl’s Jr./Hardees | Fast Food | 3 |
| Checker’s Drive-In/Rallys | Fast Food | 3 |
| Chick-Fil-A | Fast Food | 3 |
| Culver’s | Fast Food | 5 |
| Dairy Queen | Fast Food | 5 |
| Del Taco | Fast Food | 2 |
| El Pollo Loco | Fast Food | 4 |
| Firehouse Subs | Fast Food | 4 |
| Frisch’s Big Boy | Fast Casual  | 2 |
| Jack in the Box | Fast Food | 4 |
| Jersey Mike’s Subs | Fast Food | 3 |
| KFC | Fast Food | 4 |
| Krystal | Fast Food | 3 |
| Long John Silver’s | Fast Food | 3 |
| McDonald’s | Fast Food | 2 |
| Sonic | Fast Food | 5 |
| Steak ‘N Shake | Fast Food | 4 |
| Subway | Fast Food | 4 |
| Wendy’s | Fast Food | 4 |
| Whataburger | Fast Food | 4 |
| White Castle | Fast Food | 4 |
| Zaxby’s | Fast Casual  | 3 |
| **Total** |  | 92 |

a Restaurants were categorized as fast casual if they offered at least two of the following: non-disposable utensils, onsite food preparation, no table service, or commitment to higher-quality or fresh ingredients or sustainability. Restaurants were categorized as fast food if they didn’t meet criteria for fast casual. These categorizations have been used by authors in previous analyses using MenuStat.1-3

**Appendix Table 2: Rules for choosing main dish and side dish add-ons in default, minimum and maximum meal versions**

|  |
| --- |
| **Main dish Add-Ons** (e.g.,dipping sauces with chicken tenders; tartar sauce with breaded fish, clam strips;cocktail sauce with shrimp) |
| Default | As advertised or closest to mean calorie option | quantity = 1 |
| Minimum | Lowest-calorie option | quantity = 1  |
| Maximum  | Highest-calorie option | quantity = 1 |
| **Side Dish Add-Ons** (e.g., ketchup with fries, marinara sauce with breadsticks) |
| Default | As advertised or median calorie option | quantity = 1  |
| Minimum | n/a | quantity = 0 |
| Maximum  | Highest-calorie option | quantity = 1 |

**Appendix Table 3: Rules for choosing beverages in default, minimum and maximum meal versions**

|  |  |
| --- | --- |
| **Default** | Advertised beverage, children’s size |
| **Minimum** | Water (if n/a, used unsweetened tea or lowest-calorie beverage), children’s size  |
| **Maximum** | Highest-calorie beverage (usually chocolate milk or sugar-sweetened beverage), children’s size  |

**Appendix Table 4. Default, minimum, and maximum versions of children’s meal from Chick-fil-A.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Combination** | **Main dish** | **Side** | **Beverage** | **Total calories** |
| **Default** | Chicken Strips, 2-count (962 kJ (230 kcals))Honey Roasted BBQ Dipping Sauce (251 kJ (60 kcals)) | Fruit Cup (126 kJ (30 kcals))Toy (N/A) | Honest Kids Apple Juice (146 kJ ((35 kcals)) | 1485 kJ(355 kcals) |
| **Minimum** | Chicken Strips, 1-count (502 kJ (120 kcals))Buffalo Dipping Sauce ( 42 kJ ((10 kcals)) | Fruit Cup (126 kJ ((30 kcals))Toy (N/A) | Water (0 kJ (0 kcals)) | 669 kJ(160 kcals) |
| **Maximum** | Chicken Strips, 2-count (962 kJ (230 kcals))Chick-fil-A Dipping Sauce (586 kJ ((140 kcals)) | Waffle Fries, Small (1297 kJ ((310 kcals))Ice Cream (1088 kJ ((260 kcals)) | Lemonade, Kids’ Size (544 kJ (130 kcals)) | 4477 kJ(1070 kcals) |

Notes: The default version of a Chick-fil-A Chick-n-Strips Kids Meal included 2 Chick-N-Strips with Honey Roasted BBQ Dipping Sauce, a fruit cup, and an Honest Kids Apple Juice. The meal is also served with a “special surprise,” or children’s toy. To create a minimum version of the meal, a smaller main dish was selected (i.e., 1 Chick-N-Strip option), the Buffalo Dipping Sauce replaced the BBQ Dipping Sauce, the side option remained the same (a lower-calorie side is not available), and water replaced the apple juice. To create the maximum version, the Chick-fil-A Dipping Sauce replaced the BBQ Dipping Sauce; a small side of waffle fries replaced the fruit cup, an Icedream (ice cream cone) replaced the toy, and a kids’ sized lemonade replaced the apple juice. This is an illustrative example to show changes made to each of the meal components to create minimum and maximum meals. Chick-fil-A was chosen as an example restaurant and not for any particular reason.

**Appendix Table 5: Differences in Mean Nutrient Value for Default versus Maximum and Minimum, by Meal Component (n=252 meals)a**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Beverage** | **Main dish** | **Side** |
| **Kilojoules (kJ)** |  |  |  |
|  Minimum vs. Default  | -418 (-460, -377) b | -84 (-138, -29) b | -247 (-318, -180) b |
|  Maximum vs. Default  | 243 (184, 301) c | 126 (59, 188) c | 536 (427, 644) c |
| **Calories (kcal)** |
|  Minimum vs. Default  | -100 (-110, -90) b | -20 (-33, -7) b | -59 (-76, -43) b |
|  Maximum vs. Default  | 58 (44, 72)c | 30 (14, 45) c | 128 (102, 154) c |
| **Fat (g)** |
|  Minimum vs. Default  | -0.7 (-1.4, -0.1) b | -2.1 (-3.1, -1.1) b | -3.5 (-4.5, -2.5) b |
|  Maximum vs. Default  | 0.1 (-0.9, 1.1) | 3.1 (2.1, 4.2) c | 7.5 (6.1, 8.9) c |
| **Saturated Fat (g)**  |
|  Minimum vs. Default  | -0.5 (-0.8, -0.3) b | -0.4 (-0.7, -0.1) b | -1.1 (-1.6, -0.7) b |
|  Maximum vs. Default  | 0.0 (-0.4, 0.4) | 0.7 (0.4, 0.9) c | 2.3 (1.8, 2.8) c |
| **Sodium (mg)** |
|  Minimum vs. Default  | -51 (-72, -29) b | -10 (-38, 19) | -69 (-99, -39) b |
|  Maximum vs. Default  | 23 (-3, 48) | 35 (3, 67) c | 202 (161, 244) c |
| **Sugar (g)** |
|  Minimum vs. Default  | -20 (-22, -18) b | 0 (-1, 2) | -1 (-2, 0) |
|  Maximum vs. Default  | 16 (13, 19) c | 0 (-2, 1) | -1 (-3, 1) |

Predicted mean difference (bootstrapped 95%CI) using Margins command in Stata.

a Twenty-four meals (9% of the sample: 8 default, 8 minimum, and 8 maximum) were excluded because restaurants nutrition information was only available for the entire meal.

b Indicates significant difference between minimum and default (p<0.05).

c Indicates significant difference between maximum and default (p<0.05).

**References**

1. Jarlenski MP, Wolfson JA, Bleich SN. Macronutrient composition of menu offerings in fast food restaurants in the US. *American journal of preventive medicine.* 2016;51(4):e91-e97.

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