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Covariate Definitions Methods

Several covariates were created to incorporate into the analyses. The following text describes these measures in detail.

Item Level Covariates

Children's menu item. The MenuStat data contained character variables with text describing menu item names and menu item descriptions. Any menu item or menu item description containing the words "kid", "kids", "child", or "children" was classified to be a children's menu item. This was a binary measure of whether or not an item was a children's menu item.

Chicken menu category. A menu category was created to include only chicken items. Any menu item or menu item description containing the words "chicken", "drumstick", "breast", "thigh", or "nugget" was classified as being in the chicken menu category.

Restaurant Level Covariates

National restaurant chain. For each restaurant, we used Google maps to code whether or not a restaurant had any location in each of the 9 U.S. Census Divisions.[43] To indicate a national restaurant chain, a binary measure of whether a restaurant chain had locations in all 9 Census Divisions or not as created. This binary measure was included in the analysis after careful consideration of continuous measures of Census divisions (i.e., 1-9) or dummy variables for whether or not a restaurant had a location in each of the 9 Census divisions.

Restaurant type. Each restaurant was coded as either full service, fast casual, or fast food. The first step was to look at restaurants' websites to determine if they self-identified as full-service, fast causal, or fast-food/quick-service. If so, the restaurant's self-identification was used. If not, full-service restaurants were defined as those with table service. Fast casual restaurants were defined as those that had at least two of the following four criteria: non-disposable utensils, onsite food preparation, no table service, and commitment to higher-quality or fresh ingredients or sustainability.[44] Fast food restaurants were defined as those with no table service and meeting fewer than two of the above criteria.

A Note About the Data

This manuscript presents results using MenuStat data collected in January 2012, 2013, and 2014. During the summer of 2014, the MenuStat project made several changes in order to expand and improve the dataset. As part of these changes (which we learned about through personal communication with the MenuStat team), some menu items that were not previously included for 2012 and 2013 restaurant menus were added into the data (representing less than 0.5% of the total sample). These changes resulted in a 53-item discrepancy between the raw data that we downloaded in March 2013 (which we analyzed and published in January 2015 in the American Journal of Preventive Medicine[1]) and the raw data that we downloaded in November 2014 and analyzed in the present manuscript. This item discrepancy does not meaningfully change our results for 2012 and 2013; however, the careful reader will note that the present manuscript does not exactly replicate 2012 and 2013 results from our previous work.

Appendix Table A1. Characteristics of 66 Restaurants Included in the Study

Restaurant	No. items[a]	% items[a]	No. Census divisions[b]
Fast Food	**12,754**	**55.29**	**7.5**
Arby's	179	0.8	9
Baskin Robbins	427	1.9	9
Bojangles	89	0.4	6
Burger King	450	2.0	9
Carl's Jr.	294	1.3	3
Checker's Drive-In/Rallys	146	0.6	6
Chick-Fil-A	156	0.7	9
Church's Chicken	85	0.4	8
Culver's	632	2.7	7
Dairy Queen	818	3.5	9
Del Taco	151	0.7	6
Dominos	503	2.2	9
Dunkin' Donuts	841	3.6	9
Einstein Bros	263	1.1	9
El Pollo Loco	225	1.0	3
Five Guys	50	0.2	9
Hardee's	235	1.0	7
In-N-Out Burger	23	0.1	3
Jack in the Box	387	1.7	7
Jamba Juice	409	1.8	9
KFC	239	1.0	9
Krystal	162	0.7	2
Little Caesars	31	0.1	9
Long John Silver's	127	0.6	9
McDonald's	701	3.0	9
Panda Express	142	0.6	9
Papa John's	132	0.6	9
Popeyes	91	0.4	9
Quiznos	1,286	5.6	9
Sonic	1,068	4.6	9
Steak 'N Shake	398	1.7	8
Subway	363	1.6	9
Taco Bell	214	0.9	9
Tim Hortons	470	2.0	5
Wendy's	319	1.4	9
Whataburger	281	1.2	4
White Castle	446	1.9	4
Full Service	**6,315**	**27.4**	**8.3**
Applebee's	366	1.6	9
Bob Evans	383	1.7	6
California Pizza Kitchen	475	2.1	9
Chili's	262	1.1	9
Denny's	398	1.7	9

Restaurant	No. items[a]	% items[a]	No. Census divisions[b]
Friendly's	679	2.9	4
Golden Corral	443	1.9	9
IHOP	710	3.1	9
LongHorn Steakhouse	314	1.4	8
O'Charley's	217	0.9	6
Olive Garden	318	1.4	9
Outback Steakhouse	246	1.1	9
PF Chang's	295	1.3	9
Pizza Hut	245	1.1	9
Red Lobster	505	2.2	8
Romano's Macaroni Grill	202	0.9	9
Ruby Tuesday	299	1.3	9
TGI Friday's	163	0.7	9
Fast Causal	**4,057**	**17.6**	**7.6**
Boston Market	137	0.6	8
Captain D's	189	0.8	6
Chipotle	59	0.3	9
Ci Ci's Pizza	79	0.3	8
Jason's Deli	487	2.1	7
Jimmy John's	60	0.3	8
Panera Bread	743	3.2	9
Papa Murphy's	206	0.9	7
Qdoba	155	0.7	9
Starbucks	1,715	7.4	9
Zaxby's	227	1.0	4
TOTAL	**23,066**	**100.0**	**8.0**

[a] Indicates the total number and percentage of items in the MenuStat data in 2012-2013.
[b] Indicates the total number of 9 U.S. Census Divisions in which a restaurant has locations. Means are shown for numbers in bold.
[c] Focus refers to whether a restaurant has a primary type of menu item that is the specialty, based on content on each restaurant's website. Other focus indicates restaurants that do not specialize in burgers, pizza, or sandwiches.