

APPENDIX F
SUPPORTING TABLES FOR NUTRIENT DENSITY

Table F.1 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NFSPS Data

	All Foods	Fruit	Vegetables	Grains and grain products	Breads and Rolls	Ready-to-Eat Cereals	Milk Products	Milk	Nonmilk	Meat and beans	Meat, poultry, and fish alternates ^a	Frozen, Carry-out, Deli Prepared Foods	Sweets, Desserts, and Salty Snacks
Ln(food expenditures)	0.46 **	0.40	0.39	1.35 **	-0.17 *	0.89 **	-0.28	-0.11	-0.01	0.36 *	0.68 **	0.36	1.46 **
Ln(AME)	-0.12 **	-0.10 *	-0.04	-0.05	-0.02	0.01	-0.01	-0.04 *	0.00	-0.07 **	-0.08 **	-0.10 **	-0.27 **
Ln(proportion of meals consumed away from home)	-0.05	0.02	0.05	-0.08	-0.01	-0.04	-0.03	-0.03	-0.02	-0.01	-0.03	-0.06	-0.02
Multiple adult heads of household (referent category is "single adult head of household")	0.07 **	0.04	0.07	0.01	0.02	0.01	-0.02	-0.02	0.01	0.06 *	0.06 *	0.08 *	0.07
One or more children in household (referent category is "no children in household")	0.02	0.01	-0.12 *	0.19 **	0.00	0.03	0.03	-0.02	-0.06 **	-0.02	-0.04	-0.04	0.06
One or more elderly adults in household (referent category is "no elderly in household")	0.06 **	0.00	0.11 **	0.00	0.04 **	-0.01	0.05 *	0.01	0.01	0.04	0.05	0.01	0.26 **
Race (referent category is "White, non-Hispanic")													
Black, non-Hispanic	-0.03	0.08 *	0.13 **	-0.11 **	0.02 *	-0.03	-0.07 **	-0.08 **	-0.03 *	-0.01	-0.03	0.01	-0.21 **
Hispanic	0.00	0.15 *	0.25 **	-0.17 **	-0.01	-0.08	-0.05	-0.06 *	-0.02	0.04	0.01	-0.01	-0.23 *
Other	-0.02	0.10	0.24 **	-0.21 *	0.02	0.01	-0.09 *	-0.03	-0.04	0.00	-0.01	0.18 *	-0.14
Geographic Residence (referent category is "Western")													
Northeast	-0.02	0.02	0.00	-0.08	0.02	-0.03	0.01	-0.04	0.00	0.02	0.03	-0.03	-0.03
Midatlantic	0.00	0.03	0.00	0.06	0.00	-0.06	0.01	0.01	-0.03	-0.01	0.00	0.01	0.15
Midwest	-0.02	0.04	-0.12 *	0.07	0.01	0.06	0.05	0.02	-0.01	-0.06	-0.07	0.00	0.01
Southeast	-0.07 *	-0.02	-0.06	-0.04	-0.01	-0.08	-0.02	-0.03	-0.04	-0.11 **	-0.12 **	-0.02	-0.01
Southwest	-0.08 *	0.05	-0.10	-0.10	0.02	-0.02	-0.01	-0.06	-0.02	-0.04	-0.06	0.01	-0.14
Mountain	-0.02	-0.06	-0.12	0.07	0.01	-0.06	0.04	0.02	0.03	0.00	0.02	-0.05	0.09
Household Location (referent category is "rural")													
Urban	0.01	-0.01	0.04	-0.01	0.03 *	-0.05	-0.07 **	-0.07 **	-0.03	0.04	0.04	0.01	-0.08
Suburban	0.02	-0.05	0.00	0.03	0.01	-0.04	-0.02	-0.02	-0.03	0.00	-0.01	-0.05	-0.06
Income to Poverty Ratio (referent category is "less than 1.0")													
1.0-1.3	0.02	-0.04	-0.01	0.12 *	0.01	0.10 *	0.00	-0.01	-0.01	0.00	0.03	0.03	-0.01
Above 1.3	0.02	-0.09	-0.08	-0.04	-0.02	0.04	0.01	-0.01	0.03	0.06	0.07	0.03	-0.07
_cons	4.45 **	4.68 **	5.28 **	4.18 **	4.39 **	5.42 **	5.08 **	5.24 **	4.65 **	4.61 **	4.48 **	4.41 **	3.18 **

Source: 1996 NFSPS data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

Table F.2 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts
Ln(food expenditures)	0.01 *	0.12 **	0.09 **	0.12 **	0.10 **	-0.01	-0.01	-0.02	-0.04 **	0.00	0.05 **	0.06 **	0.02 *	0.01	0.15 **	0.15 **
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	-0.09 **	-0.15 **	-0.19 **	-0.04	-0.06	-0.03	0.02	-0.02	-0.05 **	-0.06 **	-0.02	-0.03	-0.03	0.01	-0.30 **	-0.35 **
SNAP Eligible Nonparticipant	-0.08 **	-0.15 **	-0.21 **	0.00	0.00	-0.06 *	0.02	-0.05	-0.01	-0.03	-0.02	-0.03	-0.04	0.00	-0.30 **	-0.39 **
Gender (referent category is "female")																
Male	0.00	-0.01	0.01	-0.03	-0.10 **	0.04 **	-0.02	0.02	-0.04 **	-0.02 **	0.00	-0.01	0.00	0.02 *	-0.09 **	-0.15 **
Age																
Age	0.00 **	0.00 **	0.00	0.01 **	0.01 **	0.00 **	0.00 *	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00 **
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.03 **	0.06 **	0.15 **	-0.09 **	0.07 **	-0.09 **	0.01	0.05 **	-0.06 **	0.00	0.06 **	0.07 **	0.08 **	0.03 **	-0.17 **	-0.19 **
Hispanic	-0.05 **	0.07 **	0.02	0.02	-0.05 *	-0.08 **	0.05 **	0.01	-0.12 **	-0.02	-0.05 **	-0.08 **	0.10 **	0.00	-0.17 **	-0.30 **
Other	0.04 **	-0.04	0.10 **	-0.18 **	0.23 **	-0.16 **	-0.07 **	0.07 *	0.00	0.02	0.09 **	0.10 **	0.08 **	0.00	-0.28 **	-0.52 **
Education (referent category is "more than high school")																
Less than high school	0.03 **	-0.03	0.03	-0.13 **	-0.06 *	0.07 **	0.04 **	0.10 **	-0.08 **	-0.03 **	-0.03 **	-0.04 **	-0.01	0.03 **	0.01	-0.06
High School	-0.08 **	0.00	0.02	-0.01	-0.09 **	-0.02	0.01	0.05 *	-0.05 **	-0.06 **	-0.04 **	-0.04 **	-0.01	-0.01	-0.05	-0.12 **
Marital Status (referent category is "not married or living together")																
Married or living together	-0.04 **	-0.01	0.03	-0.07 **	-0.04	-0.11 **	0.02 *	0.06 **	-0.02 *	-0.01	0.04 **	0.04 **	0.01	0.00	-0.21 **	-0.35 **
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	-0.01	0.04	0.07 *	-0.01	0.00	0.01	-0.02	0.03	-0.01	-0.03 *	0.01	0.01	0.02	-0.01	0.00	-0.06
Above 1.3	-0.05 **	-0.12 **	-0.10 *	-0.06	0.02	0.00	0.01	-0.04	0.03	-0.03	-0.02	-0.01	-0.04	-0.02	-0.18 **	-0.24 **
Constant	4.57 **	4.72 **	4.56 **	4.80 **	4.75 **	4.99 **	4.27 **	5.87 **	5.03 **	4.70 **	4.71 **	4.72 **	4.71 **	4.57 **	3.82 **	3.66 **
R-Square	0.04	0.02	0.03	0.09	0.04	0.04	0.07	0.02	0.05	0.04	0.04	0.05	0.02	0.04	0.03	0.03
Sample Size (unweighted)	10,998	6,106	4,353	3,414	7,212	9,674	969	3,160	7,659	3,875	9,313	8,308	4,206	6,527	9,521	8,736

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.3 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, SNAP Participants

	Grains and										Meat, Poultry, and Fish										Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat Beans	Meat and Poultry, and Fish Alternates	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts					
Ln(food expenditures)	0.03 *	0.06 *	0.02	0.10 *	0.13 **	-0.01	0.00	-0.02	-0.04 **	-0.03 **	0.02 *	0.03 *	0.04 **	0.02	0.01	0.15 **	0.15 *					
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
SNAP Participant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Gender (referent category is "female")																						
Male	0.05 **	-0.03	0.08	-0.06	-0.18 **	0.10 **	-0.01	0.00	-0.02	-0.03 **	-0.01	0.00	0.01	0.00	0.02	0.04	-0.01					
Age																						
Age	0.00 **	0.00	0.00	0.01 **	0.01 **	0.00 **	0.00	0.00	0.00 *	0.00 **	0.00	0.00 **	0.00 **	0.00	0.00 **	-0.01 **	-0.01 **					
Race (referent category is "White, non-Hispanic")																						
Black, non-Hispanic	0.01	0.04	0.18 **	-0.16 **	0.02	-0.13 **	-0.04	0.07 **	-0.08 **	-0.07 **	0.02	0.10 **	0.14 **	0.10 **	0.02	-0.07	-0.09					
Hispanic	-0.04 *	0.07	0.03	0.06	-0.03	-0.08 **	0.05 **	0.00	-0.12 **	-0.07 **	0.00	-0.03	-0.04 *	0.10 **	-0.04 **	-0.11	-0.15 *					
Other	-0.08 *	-0.05	-0.04	-0.01	0.02	-0.17 **	-0.02	0.08	-0.03	-0.01	0.00	0.03	0.04	0.05	-0.12 **	-0.26 *	-0.32 *					
Education (referent category is "more than high school")																						
Less than high school	0.07 **	-0.09 *	-0.12 *	0.04	0.13 **	0.00	0.03	0.07 *	0.01	-0.03	-0.06 **	-0.02	-0.05 *	0.05 *	0.04 *	-0.13	-0.23 *					
High School	-0.08 **	-0.01	-0.03	0.18 *	-0.01	-0.12 **	0.00	-0.06	-0.04	-0.02	-0.04 *	-0.01	-0.02	0.01	-0.01	-0.06	-0.17					
Marital Status (referent category is "not married or living together")																						
Married or living together	-0.07 **	-0.11 **	-0.19 **	0.02	-0.02	-0.09 **	0.03 *	0.05	-0.01	-0.02	0.01	0.06 **	0.06 **	-0.02	0.01	-0.58 **	-0.75 **					
Income to Poverty Ratio (referent category is "less than 1.0")																						
1.0-1.3	0.02	0.11 *	0.07	0.14 *	-0.03	0.03	0.01	-0.02	0.02	-0.01	-0.01	0.02	0.00	0.06 *	0.01	-0.15 *	-0.06					
Above 1.3	-0.04	-0.11 **	-0.12 *	-0.04	0.03	0.02	0.01	-0.03	0.03	0.03 *	-0.03 *	-0.01	-0.02	-0.03	-0.01	-0.18 **	-0.20 *					
Constant	4.44 **	4.71 **	4.60 **	4.58 **	4.51 **	5.10 **	4.29 **	5.91 **	5.02 **	5.15 **	4.64 **	4.69 **	4.68 **	4.61 **	4.58 **	3.71 **	3.54 **					
R-Square	0.04	0.03	0.04	0.09	0.05	0.07	0.12	0.04	0.05	0.11	0.03	0.04	0.06	0.05	0.05	0.07	0.07					
Sample Size (unweighted)	2,678	1,419	933	895	1,653	2,301	244	854	1,846	1,471	938	2,257	2,053	900	1,617	2,335	2,123					

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.4 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Eligible Nonparticipants

	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grains and Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat, Poultry, and Fish	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts
Ln(food expenditures)	0.01	0.07 **	0.05	0.08 *	0.04	-0.02	-0.02	-0.04	-0.04 **	0.00	-0.01	0.05 **	0.08 **	-0.02	0.00	0.28 **	0.24 **
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SNAP Participant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gender (referent category is "female")																	
Male	0.01	0.01	-0.01	0.01	-0.01	0.04 *	0.03	0.03	0.02	-0.03 **	0.00	-0.01	-0.01	0.00	0.00	-0.19 **	-0.36 **
Age	0.00 **	0.00 *	0.00 *	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00 *	0.00 **	0.00	0.00	0.00 **	-0.01 **	0.00
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	0.06 **	0.14 **	0.21 **	0.00	0.10 *	-0.01	-0.04	0.05 *	-0.02	-0.05 **	0.01	0.05 **	0.06 **	0.08 **	0.05 **	-0.12 *	-0.12
Hispanic	-0.08 **	0.12 **	0.06	0.01	-0.12 **	-0.08 **	0.05 *	0.03	-0.10 **	-0.15 **	-0.03	-0.05 **	-0.08 **	0.17 **	0.00	-0.17 *	-0.44 **
Other	0.07 **	0.00	0.16 **	-0.26 **	0.38 **	-0.16 **	-0.08 **	0.03	0.02	-0.02	0.07 **	0.07 **	0.09 **	0.08 **	0.01	-0.20 *	-0.35 **
Education (referent category is "more than high school")																	
Less than high school	0.01	-0.05	0.02	-0.24 **	-0.15 **	0.05 *	0.03	0.03	-0.01	-0.11 **	-0.04 **	-0.05 **	-0.05 **	-0.07 **	0.01	0.05	0.04
High School	-0.04 *	0.08 *	0.06	-0.01	-0.10 *	0.04	0.00	0.04	-0.07 **	-0.08 **	-0.04 *	-0.05 *	-0.04 *	-0.04	0.00	-0.07	-0.05
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.04 **	-0.04	0.00	0.00	-0.05	-0.15 **	0.03	0.06 *	0.02	0.01	-0.02	0.04 **	0.04 **	0.00	0.03 *	-0.25 **	-0.39 **
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	-0.02	0.03	0.07 *	-0.03	0.02	0.02	-0.04 *	0.06 **	-0.02	0.00	-0.03 **	0.01	0.01	0.01	-0.02	0.10 *	-0.02
Above 1.3																	
Constant	4.53 **	4.58 **	4.36 **	4.90 **	4.86 **	4.98 **	4.29 **	5.89 **	5.01 **	5.23 **	4.69 **	4.73 **	4.71 **	4.76 **	4.59 **	3.40 **	3.17 **
R-Square	0.03	0.02	0.03	0.08	0.05	0.06	0.19	0.03	0.04	0.09	0.03	0.03	0.05	0.04	0.05	0.05	0.04
Sample Size (unweighted)	3,542	1,974	1,438	1,071	2,310	3,119	278	930	2,400	1,905	1,166	2,963	2,586	1,432	2,091	2,998	2,718

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.5 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Ineligible Nonparticipants

	Grains and													Meat,				Sweets and Desserts
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, and Fish	Meat Alternates	Mixed Dishes	Total Snacks		
Ln(food expenditures)	0.01	0.16 **	0.14 **	0.15 **	0.12 **	0.00	0.00	-0.01	-0.05 **	0.02	0.00	0.06 **	0.05 **	0.05 **	0.01	0.08 *	0.09 *	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SNAP Participant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Gender (referent category is "female")																		
Male	-0.01	-0.02	0.01	-0.03	-0.12 **	0.01	-0.04 *	0.02	-0.02	-0.05 **	-0.03 **	0.01	-0.01	0.00	0.03 **	-0.09 *	-0.08	
Age	0.00 **	0.00 *	0.00	0.01 **	0.01 **	0.00	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00	
Race (referent category is "White, non-Hispanic")																		
Black, non-Hispanic	0.03 *	0.01	0.09 **	-0.13 **	0.07	-0.12 **	0.04	0.05	-0.08 **	-0.10 **	-0.01	0.04 **	0.04 *	0.07 **	0.01	-0.23 **	-0.28 **	
Hispanic	-0.06 **	0.05	0.00	-0.01	-0.04	-0.08 **	0.05 *	0.02	-0.12 **	-0.15 **	-0.02	-0.06 **	-0.09 **	0.07 **	0.04 *	-0.23 **	-0.33 **	
Other	0.05 *	-0.06	0.08	-0.20 **	0.14 *	-0.16 **	-0.08	0.10	0.00	-0.05	-0.02	0.13 **	0.13 **	0.08 *	0.05 *	-0.36 **	-0.74 **	
Education (referent category is "more than high school")																		
Less than high school	0.04 **	0.01	0.09 **	-0.12 **	-0.06	0.12 **	0.06 **	0.14 **	0.01	-0.07 **	-0.01	-0.01	-0.02	0.00	0.03 *	0.05	-0.04	
High School	-0.10 **	-0.02	0.01	-0.06	-0.09 **	-0.02	0.03	0.07 *	-0.07 **	-0.05 **	-0.07 **	-0.04 **	-0.04 **	0.00	-0.01	-0.04	-0.15 *	
Marital Status (referent category is "not married or living together")																		
Married or living together	-0.04 **	0.02	0.10 **	-0.12 **	-0.04	-0.10 **	0.01	0.07 **	-0.04 **	0.00	-0.01	0.03 **	0.03	0.03 *	-0.01	-0.07	-0.20 **	
Income to Poverty Ratio (referent category is "less than 1.0")																		
1.0-1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Above 1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Constant	4.50 **	4.51 **	4.37 **	4.71 **	4.76 **	4.90 **	4.28 **	5.77 **	5.05 **	5.24 **	4.65 **	4.65 **	4.70 **	4.63 **	4.54 **	3.61 **	3.38 **	
R-Square	0.06	0.02	0.03	0.11	0.04	0.04	0.05	0.03	0.06	0.12	0.04	0.05	0.05	0.03	0.05	0.02	0.03	
Sample Size (unweighted)	4,778	2,713	1,982	1,448	3,249	4,254	447	1,376	3,413	2,691	1,771	4,093	3,669	1,874	2,819	4,188	3,895	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.6. Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Males

	Grains and											Meat,				Sweets	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, and Fish	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts
Ln(food expenditures)	-0.01	0.14 **	0.11 **	0.11 **	0.10 **	-0.04 **	-0.02	-0.02	-0.07 **	-0.02 **	0.00	0.06 **	0.06 **	0.03 *	0.02 *	0.12 **	0.06
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	-0.03	-0.30 **	-0.28 **	-0.23 *	-0.15 *	0.00	0.02	0.01	-0.05	-0.07 **	-0.03	-0.05	-0.04	-0.02	0.04	-0.26 *	-0.37 **
SNAP Eligible Nonparticipant	-0.05	-0.28 **	-0.33 **	-0.16	-0.01	-0.08	0.06	-0.01	0.00	-0.02	0.00	-0.06 *	-0.04	-0.02	0.03	-0.37 **	-0.60 **
Gender (referent category is "female")																	
Male	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Age																	
Age	0.00 **	0.00	0.00	0.00 **	0.01 **	0.00 **	0.00	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00 *	0.00 **	-0.01 **	0.00 *
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	0.00	0.01	0.12 **	-0.13 **	0.00	-0.14 **	0.02	0.06 **	-0.07 **	-0.06 **	-0.01	0.05 **	0.05 **	0.09 **	0.03 *	-0.12 *	-0.12 *
Hispanic	-0.07 **	0.03	-0.02	-0.04	-0.02	-0.09 **	0.05 **	0.00	-0.11 **	-0.01	-0.06 **	-0.09 **	-0.09 **	0.12 **	0.00	-0.31 **	-0.40 **
Other	0.02	-0.19 **	-0.02	-0.31 **	0.18 **	-0.14 **	-0.16 **	0.04	-0.08 **	-0.03	-0.05 *	0.08 **	0.07 **	0.14 **	0.02	-0.30 **	-0.32 **
Education (referent category is "more than high school")																	
Less than high school	0.01	-0.11 **	0.01	-0.23 **	-0.01	0.07 **	0.05 **	0.07 **	0.00	-0.09 **	-0.06 **	-0.05 **	-0.06 **	-0.01	0.04 **	-0.08	-0.10
High School	-0.10 **	-0.11 **	-0.03	-0.14 **	-0.08 *	-0.07 **	0.10 **	0.00	-0.08 **	-0.08 **	-0.06 **	-0.05 **	-0.07 **	0.03	0.02	-0.08	-0.08
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.03 **	-0.03	0.04	-0.12 **	-0.06	-0.12 **	0.01	0.06 **	-0.01	0.03 **	-0.03 **	0.02	0.02	-0.02	0.00	-0.12 *	-0.29 **
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	-0.02	-0.06	-0.01	-0.08	0.02	0.01	-0.05 *	0.06 *	-0.02	0.00	0.00	0.00	-0.01	0.02	-0.01	0.01	-0.06
Above 1.3	-0.04	-0.29 **	-0.23 **	-0.25 *	-0.01	-0.03	-0.01	0.01	-0.01	0.00	0.00	-0.05	-0.04	-0.01	0.03	-0.23 *	-0.32 *
Constant	4.64 **	4.98 **	4.73 **	5.14 **	4.70 **	5.13 **	4.27 **	5.84 **	5.11 **	5.25 **	4.69 **	4.77 **	4.79 **	4.65 **	4.51 **	3.95 **	3.77 **
R-Square	0.03	0.04	0.03	0.09	0.03	0.07	0.18	0.04	0.06	0.13	0.03	0.05	0.05	0.04	0.04	0.04	0.03
Sample Size (unweighted)	5,250	2,753	1,945	1,525	3,281	4,587	406	1,496	3,651	2,924	1,813	4,449	3,986	2,020	3,146	4,521	4,131

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.7 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Females

	Grains and													Meat, Poultry, and Fish					Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat, Poultry, and Fish Alternates	Meat	Mixed Dishes	Total Snacks	Sweets and Desserts			
Ln(food expenditures)	0.05 **	0.10 **	0.07 **	0.12 **	0.11 **	0.03 *	-0.01	-0.03	-0.02	0.03 **	0.00	0.04 **	0.06 **	0.02	-0.01	0.18 **	0.23 **			
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																				
SNAP Participant	-0.13 **	-0.04	-0.12 *	0.09	0.01	-0.04	0.00	-0.06	-0.01	-0.04	-0.09 **	0.01	-0.02	-0.04	-0.02	-0.34 **	-0.34 **			
SNAP Eligible Nonparticipant	-0.10 **	-0.07	-0.12	0.08	0.00	-0.05	-0.02	-0.09	0.00	-0.01	-0.05	0.01	-0.02	-0.04	-0.02	-0.24 *	-0.21			
Gender (referent category is "female")																				
Male	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
Age																				
Age	0.00 **	0.00 **	0.00	0.01 **	0.01 **	0.00 **	0.00 *	0.00 *	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00			
Race (referent category is "White, non-Hispanic")																				
Black, non-Hispanic	0.07 **	0.11 **	0.18 **	-0.04	0.14 **	-0.04	0.01	0.04	-0.05 **	-0.10 **	0.01	0.07 **	0.09 **	0.06 **	0.03 *	-0.22 **	-0.26 **			
Hispanic	-0.04 **	0.11 **	0.06	0.07	-0.08 *	-0.07 **	0.06 **	0.03	-0.13 **	-0.15 **	-0.02	-0.04 **	-0.06 **	0.09 **	0.00	-0.05	-0.21 **			
Other	0.05 *	0.05	0.15 **	-0.08	0.27 **	-0.17 **	0.00	0.09	0.05 *	-0.03	0.07 **	0.09 **	0.12 **	0.04	-0.01	-0.28 **	-0.67 **			
Education (referent category is "more than high school")																				
Less than high school	0.04 **	0.03	0.05	-0.05	-0.09 **	0.08 **	0.04 *	0.12 **	0.01	-0.06 **	-0.02	-0.02	-0.02	-0.01	0.01	0.07	-0.03			
High School	-0.06 **	0.09 **	0.05	0.09 *	-0.09 *	0.03	-0.04 *	0.08 **	-0.04 **	-0.03 *	-0.06 **	-0.02	-0.01	-0.04 *	-0.03 *	-0.04	-0.16 **			
Marital Status (referent category is "not married or living together")																				
Married or living together	-0.04 **	0.02	0.03	-0.01	-0.01	-0.10 **	0.02	0.05 *	-0.02	-0.01	0.01	0.06 **	0.06 **	0.03 *	0.00	-0.24 **	-0.38 **			
Income to Poverty Ratio (referent category is "less than 1.0")																				
1.0-1.3	-0.01	0.12 **	0.13 **	0.05	-0.01	-0.01	0.00	0.01	-0.01	0.00	-0.05 **	0.02	0.02	0.02	-0.01	0.00	-0.06			
Above 1.3	-0.06 *	0.00	-0.01	0.08	0.06	0.02	0.00	-0.08	0.04	0.05 *	-0.05	0.01	0.02	-0.07	-0.05 *	-0.14	-0.18			
Constant	4.51 **	4.51 **	4.44 **	4.53 **	4.68 **	4.90 **	4.31 **	5.92 **	4.95 **	5.17 **	4.69 **	4.65 **	4.66 **	4.74 **	4.63 **	3.67 **	3.48 **			
R-Square	0.06	0.03	0.03	0.10	0.05	0.03	0.08	0.03	0.06	0.15	0.05	0.04	0.06	0.02	0.05	0.03	0.04			
Sample Size (unweighted)	5,748	3,353	2,408	1,889	3,931	5,087	563	1,664	4,008	3,143	2,062	4,864	4,322	2,186	3,381	5,000	4,605			

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.8. Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Children

	Grains and													Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Mixed Dishes	Total Snacks	Sweets and Desserts				
Ln(food expenditures)	0.05 **	0.14 **	0.11 **	0.13 **	0.16 **	0.06 **	-0.01	0.03 *	-0.01	0.00	0.03 **	0.03 **	0.03 **	0.11 **	0.17 **				
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																			
SNAP Participant	-0.01	0.00	-0.20 *	0.14	0.02	0.03	0.03	-0.03	0.00	-0.05 *	-0.02	-0.06	-0.01	-0.16 *	-0.11				
SNAP Eligible Nonparticipant	-0.01	-0.03	-0.29 **	0.13	0.00	-0.06	0.01	-0.08 **	0.01	-0.03	0.00	-0.12 **	0.00	-0.27 **	-0.31 **				
Gender (referent category is "female")																			
Male	0.03 **	0.02	0.00	0.05	0.00	0.06 **	-0.04 **	-0.03 **	-0.01	-0.03 **	0.02	-0.02	0.03 **	-0.06 *	-0.11 **				
Age																			
Age	-0.02 **	0.01 **	0.01	0.01 **	0.00	-0.02 **	0.00	0.00 **	0.00 *	0.00 **	0.01 **	0.00	0.00	0.00	0.00				
Race (referent category is "White, non-Hispanic")																			
Black, non-Hispanic	0.06 **	0.11 **	0.14 **	0.11 **	0.07	0.00	0.00	0.07 **	-0.04 **	0.01	0.10 **	0.13 **	0.03 *	0.01	-0.02				
Hispanic	-0.02	0.05	-0.03	0.10 *	-0.12 **	-0.02	0.06 **	0.02	-0.08 **	0.00	-0.04 *	0.09 **	0.01	-0.12 **	-0.23 **				
Other	0.00	-0.08	-0.02	-0.05	0.05	-0.12 **	-0.06	0.03	0.01	0.04 *	0.11 **	0.10 **	-0.01	-0.03	-0.16 *				
Education (referent category is "more than high school")																			
Less than high school	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
High School	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
Marital Status (referent category is "not married or living together")																			
Married or living together	-0.17	0.16	0.30	0.09	-0.14	-0.05	0.00	0.03	-0.04	0.05	-0.19	-0.08	-0.10	0.14	0.53				
Income to Poverty Ratio (referent category is "less than 1.0")																			
1.0-1.3	0.01	0.05	0.07	0.01	0.07	0.10 **	-0.03	0.05 **	0.02	0.00	-0.04 *	-0.06 **	-0.02	-0.02	-0.15 *				
Above 1.3	0.01	-0.01	-0.21 **	0.15	0.03	0.02	0.02	-0.04	0.06 **	-0.02	-0.03	-0.13 **	-0.01	-0.27 **	-0.28 **				
Constant	4.68 **	4.45 **	4.62 **	4.28 **	4.61 **	5.13 **	4.35 **	5.98 **	5.01 **	4.66 **	4.64 **	4.82 **	4.60 **	3.80 **	3.52 **				
R-Square	0.07	0.03	0.03	0.04	0.02	0.04	0.12	0.03	0.03	0.01	0.04	0.05	0.01	0.01	0.02				
Sample Size (unweighted)	5,009	2,903	1,914	1,884	2,993	4,401	370	1,989	3,866	1,805	4,119	3,698	3,311	4,499	4,078				

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.9 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Adults

	Grains and										Meat,				Sweets	
	All	Fruit	Whole	Juice	Vegetables	Grain	Breads	Cereals	Milk	Fluid Milk	Other	Meat and	Meat	Mixed	Total	Sweets
Ln(food expenditures)	Foods ^a	Fruit	fruit			Products			Products ^a	Milk	Milk	Beans	Alternates	Dishes	Snacks	Desserts
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")	0.03 **	0.11 **	0.09 **	0.12 **	0.10 **	0.02	-0.01	-0.04	-0.03 **	0.00	0.03 **	0.04 **	0.02	0.02	0.18 **	0.18 **
SNAP Participant	-0.10 **	-0.28 **	-0.27 **	-0.18	-0.13	0.02	0.01	-0.03	0.00	-0.05	-0.02	-0.02	-0.03	0.01	-0.33 **	-0.36 **
SNAP Eligible Nonparticipant	-0.08 *	-0.27 **	-0.24 **	-0.09	-0.01	0.03	0.01	-0.02	0.03	-0.01	-0.04	-0.04	-0.01	0.00	-0.26 *	-0.31
Gender (referent category is "female")																
Male	-0.02	-0.01	0.01	-0.06	-0.16 **	0.01	-0.01	0.06 *	-0.01	-0.03 **	0.01	0.00	0.01	0.00	-0.10 *	-0.22 **
Age																
Age	0.00 **	0.00	0.00	0.00 *	0.01 **	0.00 *	0.00	0.00	0.00 **	0.00	0.00 **	0.00 **	0.00 **	0.00 **	-0.01 **	-0.01 **
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.07 **	0.05	0.17 **	-0.22 **	0.05	-0.07 **	0.03	0.07	-0.04 *	0.01	0.03	0.05 **	0.03	0.02	-0.17 **	-0.14
Hispanic	-0.03 *	0.09 *	0.04	-0.02	-0.06	-0.02	0.03	0.04	-0.10 **	-0.02	-0.07 **	-0.10 **	0.10 **	0.00	-0.08	-0.20 *
Other	0.06 *	-0.04	0.16 **	-0.26 **	0.30 **	-0.17 **	-0.11 *	0.04	-0.03	0.02	0.09 **	0.08 **	0.11 **	0.00	-0.36 **	-0.69 **
Education (referent category is "more than high school")																
Less than high school	-0.04 **	-0.02	0.06	-0.12 *	-0.02	-0.03	0.04	0.09 *	-0.06 **	-0.04 **	-0.01	-0.03	0.03	0.05 **	-0.12	-0.31 **
High School	-0.09 **	0.00	0.06	-0.02	-0.10 **	-0.02	0.01	0.07 *	-0.08 **	-0.05 **	-0.03 *	-0.03 *	0.00	0.00	-0.09	-0.18 **
Marital Status (referent category is "not married or living together")																
Married or living together	0.00	-0.02	0.01	-0.07	-0.04	-0.03	0.04 *	0.04	0.02	0.01	0.04 **	0.04 **	0.03	0.00	-0.17 **	-0.31 **
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	-0.03	0.06	0.06	0.02	-0.01	-0.04	-0.02	0.00	-0.04 *	-0.04 *	0.04 *	0.02	0.11 **	0.00	0.02	-0.03
Above 1.3	-0.08 **	-0.22 **	-0.09	-0.19	0.03	0.02	-0.01	-0.05	0.00	-0.03	-0.02	-0.02	0.00	-0.01	-0.09	-0.12
Constant	4.47 **	4.91 **	4.62 **	5.00 **	4.74 **	4.84 **	4.28 **	5.92 **	4.96 **	4.70 **	4.73 **	4.75 **	4.74 **	4.57 **	3.83 **	3.70 **
R-Square	0.05	0.03	0.05	0.08	0.04	0.02	0.08	0.04	0.04	0.03	0.03	0.04	0.04	0.02	0.03	0.05
Sample Size (unweighted)	4,042	1,932	1,392	973	2,784	3,444	352	704	2,460	1,503	3,461	3,087	1,637	2,355	3,326	3,007

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.10 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Older Adults

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat Beans	Mixed Dishes	Meat Alternates	Total Snacks	Desserts
Ln(food expenditures)	0.04 *	0.05	0.06	0.03	0.12 **	0.01	0.01	-0.08	0.00	0.05 **	0.01	0.11 **	-0.06 *	0.06 **	0.25 **	0.24 **
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	0.08	0.11	0.16	0.03	0.12	0.06	0.09	0.04	-0.03	-0.08	-0.14	-0.02	0.03	0.02	-0.03	-0.22
SNAP Eligible Nonparticipant	0.11	0.07	0.16	-0.14	0.15	0.04	0.17 *	-0.02	0.02	-0.01	-0.08	0.00	0.00	0.04	0.10	-0.05
Gender (referent category is "female")																
Male	-0.03 *	-0.09 *	-0.02	-0.08	-0.07	0.02	0.01	0.04	-0.06 **	-0.09 **	-0.08 **	-0.04 *	0.03	0.02	-0.20 **	-0.16 *
Age																
Age	0.00 **	0.00	0.00	0.00	0.00	0.01 **	0.00	0.01	0.00 *	0.00	0.01 **	0.00 *	0.00	0.00	0.00	0.01
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.01	-0.06	0.04	-0.29 **	0.13	-0.09	-0.04	-0.05	-0.05	-0.06 *	-0.04	0.05	0.02	0.08 *	-0.38 **	-0.40 **
Hispanic	-0.06 **	0.08	0.07	-0.16 *	0.04	-0.18 **	0.07 *	-0.11	-0.18 **	-0.22 **	-0.01	0.01	0.00	0.08 *	-0.44 **	-0.57 **
Other	0.11 *	0.09	0.17	-0.17	0.35 **	-0.12	0.02	0.46 *	0.07	-0.03	-0.16	0.05	0.19 *	-0.08	-0.57 **	-0.66 **
Education (referent category is "more than high school")																
Less than high school	-0.05 **	-0.03	-0.05	-0.05	-0.12 *	-0.04	0.05	0.06	-0.07 **	-0.12 **	-0.07 *	-0.03	-0.03	0.03	0.04	0.07
High School	-0.07 **	0.01	-0.06	0.03	-0.03	-0.05	0.01	0.00	-0.08 **	-0.08 **	-0.11 **	-0.06 **	-0.03	-0.03	0.02	-0.01
Marital Status (referent category is "not married or living together")																
Married or living together	-0.01	0.06	0.10 *	-0.02	-0.04	-0.06 *	-0.01	0.14 *	0.02	0.05 **	-0.02	0.01	0.01	-0.06 **	-0.01	-0.04
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	-0.03	-0.02	0.04	-0.07	-0.04	0.01	-0.02	0.11	-0.03	0.01	-0.02	0.02	-0.07 *	-0.04	-0.03	-0.07
Above 1.3	0.11 *	0.06	0.18	-0.18	0.13	0.15	0.12	0.05	0.05	0.03	-0.07	0.04	-0.06	0.02	0.14	-0.03
Constant	4.33 **	4.56 **	4.16 **	5.40 **	4.63 **	4.22 **	4.25 **	5.56 **	4.92 **	5.44 **	4.33 **	4.52 **	4.70 **	4.75 **	3.01 **	2.71 **
R-Square	0.04	0.01	0.02	0.06	0.02	0.05	0.10	0.05	0.05	0.15	0.11	0.04	0.03	0.04	0.04	0.04
Sample Size (unweighted)	1,947	1,271	1,047	557	1,435	1,829	247	467	1,333	1,115	567	1,733	861	965	1,696	1,651

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.11 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, White non-Hispanic Individuals

	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, Fish and Alternates	Meat	Mixed Dishes	Total Snacks	Sweets and Desserts	
Ln(food expenditures)	0.03 *	0.13 **	0.09 **	0.15 **	0.08 *	0.00	-0.01	-0.02	-0.04 **	0.01	-0.01	0.07 **	0.07 **	0.04 *	0.00	0.12 **	0.13 *	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																		
SNAP Participant	-0.10 **	-0.12	-0.21 *	0.14	0.01	0.04	0.02	-0.03	0.00	-0.06 *	-0.07 *	-0.06	-0.07	-0.08	0.06	-0.29 *	-0.41 **	
SNAP Eligible Nonparticipant	-0.09 *	-0.17	-0.28 *	0.18	0.06	0.00	0.02	-0.05	0.01	0.00	-0.04	-0.06	-0.05	-0.09	0.03	-0.24	-0.37 *	
Gender (referent category is "female")																		
Male	0.01	0.02	0.04	0.02	-0.08 *	0.05 **	0.00	0.03	-0.01	-0.06 **	-0.01	0.00	0.00	-0.02	0.02	-0.06	-0.14 **	
Age																		
Age	0.00 **	0.00	0.00	0.01 **	0.00 **	0.00	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00	
Race (referent category is "White, non-Hispanic")																		
Black, non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Education (referent category is "more than high school")																		
Less than high school	0.04 **	-0.06	0.00	-0.19 **	-0.15 **	0.11 **	0.05 *	0.12 **	0.01	-0.08 **	-0.03 *	-0.02	-0.05 **	0.02	0.02	-0.06	-0.12	
High School	-0.09 **	0.01	0.03	0.01	-0.14 **	-0.02	0.00	0.06	-0.06 **	-0.06 **	-0.07 **	-0.03	-0.03	0.01	-0.01	-0.11 *	-0.20 **	
Marital Status (referent category is "not married or living together")																		
Married or living together	-0.05 **	0.00	0.05	-0.04	-0.08 *	-0.11 **	0.03	0.08 **	-0.02	-0.01	-0.01	0.05 **	0.04 *	0.03	0.00	-0.20 **	-0.34 **	
Income to Poverty Ratio (referent category is "less than 1.0")																		
1.0-1.3	-0.04	0.07	0.17 **	-0.03	0.04	-0.02	-0.02	0.04	-0.03	-0.01	-0.03	0.00	0.01	0.03	-0.02	-0.03	-0.09	
Above 1.3	-0.07 *	-0.09	-0.11	0.14	0.11	0.07	-0.01	-0.04	0.04	0.05	-0.04	-0.06	-0.03	-0.09	0.02	-0.11	-0.21	
Constant	4.53 **	4.67 **	4.58 **	4.55 **	4.81 **	4.84 **	4.28 **	5.84 **	4.98 **	5.20 **	4.70 **	4.72 **	4.73 **	4.70 **	4.54 **	3.75 **	3.61 **	
R-Square	0.06	0.03	0.03	0.14	0.04	0.04	0.04	0.03	0.04	0.12	0.05	0.04	0.05	0.01	0.06	0.02	0.03	
Sample Size (unweighted)	3,567	1,881	1,447	927	2,498	3,172	366	1,112	2,654	2,156	1,405	2,974	2,652	1,295	2,040	3,147	2,932	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.12 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Black non-Hispanic Individuals

	Grains and													Meat, Poultry, and Fish Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat Beans	Meat				
Ln(food expenditures)	0.01	0.10 **	0.05	0.16 **	0.13 **	0.00	0.03 **	-0.04 **	-0.03 *	-0.01	0.00	0.03 *	0.01	-0.01	0.21 **	0.25 **	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	-0.08 **	-0.07	-0.16 *	0.14	-0.03	-0.09 **	0.03	-0.06 *	-0.07 **	-0.03	-0.06 **	0.00	-0.01	-0.07 **	-0.38 **	-0.32 **	
SNAP Eligible Nonparticipant	-0.13 **	-0.07	-0.20 *	0.13	-0.11	-0.15 **	0.03	-0.06	-0.06 *	-0.06 *	0.01	-0.01	0.05	-0.07 **	-0.45 **	-0.58 **	
Gender (referent category is "female")																	
Male	0.01	-0.04	-0.02	-0.10 **	-0.03	0.05 *	-0.02	-0.01	0.01	0.00	0.00	0.00	0.03	0.01	-0.34 **	-0.38 **	
Age																	
Age	0.00 **	0.00	0.00	0.00 **	0.01 **	0.00 **	0.00 **	0.00	0.00	0.00	0.00 **	0.00 **	0.00	0.00 **	-0.01 **	-0.01 **	
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Education (referent category is "more than high school")																	
Less than high school	0.02	-0.03	-0.04	-0.08	0.02	0.02	0.03 *	0.01	-0.05 **	-0.04 *	-0.04 *	-0.03	-0.07 **	0.06 **	0.07	0.06	
High School	-0.06 **	0.03	0.01	-0.03	0.14 **	-0.06 *	0.02	0.06 *	-0.09 **	-0.04 *	-0.06 **	-0.02	-0.07 *	0.02	0.25 **	0.18	
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.05 **	0.09 *	0.17 **	0.00	0.01	-0.05 *	0.00	0.01	-0.04 *	-0.01	0.00	0.01	-0.07 **	0.03	-0.19 **	-0.33 **	
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	0.00	0.14 **	0.15 *	0.09	-0.03	0.04	-0.01	-0.01	0.05 *	-0.01	0.03	0.02	0.03	-0.01	0.13	0.05	
Above 1.3	-0.06 *	-0.03	-0.12	0.14	-0.02	-0.07	0.02	-0.06	-0.02	-0.03	0.01	0.01	-0.04	-0.04	-0.31 **	-0.23 *	
Constant	4.59 **	4.71 **	4.70 **	4.59 **	4.49 **	5.11 **	4.26 **	6.06 **	5.04 **	5.14 **	4.70 **	4.64 **	4.84 **	4.63 **	3.87 **	3.42 **	
R-Square	0.02	0.02	0.03	0.06	0.07	0.08	0.07	0.02	0.03	0.02	0.02	0.02	0.04	0.05	0.07	0.06	
Sample Size (unweighted)	3,190	1,619	952	1,074	2,053	2,721	405	865	1,931	1,417	946	2,762	927	1,844	2,738	2,492	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.13 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Hispanic Individuals

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts
Ln(food expenditures)	-0.03 **	0.09 **	0.12 **	0.03	0.15 **	-0.01	0.00	0.03	-0.05 **	-0.02 *	0.02	0.01	0.00	0.01	0.20 **	0.12 *
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	-0.05	-0.32 **	-0.18 **	-0.49 **	-0.22 **	-0.03	-0.10	-0.01	-0.01	-0.03	0.06 *	0.05	0.07 *	-0.05	-0.08	-0.22
SNAP Eligible Nonparticipant	0.01	-0.29 **	-0.15 *	-0.42 **	-0.15	0.02	-0.08	-0.04	0.05	0.03	0.03	0.02	0.04	-0.07	-0.04	-0.17
Gender (referent category is "female")																
Male	-0.03 **	-0.05 *	-0.02	-0.02	-0.22 **	-0.03	-0.01	0.01	-0.01	-0.04 **	0.00	0.00	0.00	0.01	0.01	-0.05
Age	0.00 *	0.00 **	0.00	0.01 **	0.01 **	0.00 **	0.00	0.00	0.00 **	0.00	0.00 *	0.00 **	0.00	0.00 **	-0.01 **	-0.01 **
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Education (referent category is "more than high school")																
Less than high school	0.03 *	0.07 *	0.18 **	-0.03	0.23 **	0.03	0.00	0.06 *	0.00	-0.06 **	-0.05 **	-0.05 **	-0.01	0.02	0.20 **	0.17 *
High School	-0.05 **	-0.01	0.05	-0.05	0.03	-0.02	0.05	-0.07	-0.10 **	-0.04 *	-0.06 **	-0.09 **	0.00	0.01	-0.12	-0.09
Marital Status (referent category is "not married or living together")																
Married or living together	-0.02	-0.07 **	-0.06 *	-0.15 **	0.02	-0.11 **	0.04 *	0.05 *	0.02	0.04 **	0.00	0.05 **	0.01	0.00	-0.14 *	-0.19 **
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	-0.01	-0.04	-0.09 *	-0.01	-0.01	-0.01	-0.04	0.03	0.02	0.00	-0.01	-0.03	0.01	0.00	-0.02	-0.06
Above 1.3	0.02	-0.32 **	-0.11	-0.54 **	-0.10	-0.01	-0.07	-0.03	0.03	0.04	0.03	0.00	0.06 *	-0.12 **	-0.01	-0.16
Constant	4.65 **	4.94 **	4.58 **	5.26 **	4.70 **	5.04 **	4.40 **	5.91 **	4.97 **	5.12 **	4.65 **	4.84 **	4.73 **	4.69 **	3.28 **	3.26 **
R-Square	0.03	0.03	0.04	0.04	0.05	0.07	0.13	0.03	0.03	0.07	0.02	0.02	0.01	0.03	0.04	0.03
Sample Size (unweighted)	3,832	2,361	1,772	1,281	2,384	3,420	162	1,081	2,804	2,276	1,404	3,239	1,847	2,399	3,286	2,990

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.14 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Other non-Hispanic Individuals

	All Foods ^a	Grains and										Meat, Poultry, and Fish				Sweets and	
		Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Milk	Other Milk	Meat Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts
Ln(food expenditures)	0.05	0.05	0.11	-0.15	0.03	-0.07	-0.10	-0.11 *	-0.06	0.00	-0.04	0.14 **	0.13 **	0.00	0.17 **	-0.02	-0.04
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	-0.26 *	0.09	-0.04	0.14	-0.51	-0.16	0.27	0.00	-0.19	0.00	-0.18	-0.31 *	-0.34 *	-0.01	-0.04	-0.45	-0.61
SNAP Eligible Nonparticipant	-0.18	0.16	0.29	-0.08	-0.31	-0.31	0.41 *	-0.07	-0.13	0.08	-0.10	-0.27	-0.26	0.08	0.03	-0.34	-0.64
Gender (referent category is "female")																	
Male	-0.01	-0.16 *	-0.14	-0.11	-0.14	0.09	-0.19 **	0.00	-0.11 **	-0.06	-0.15 *	-0.02	-0.04	0.05	0.03	-0.07	0.12
Age																	
Age	0.00 *	0.00	0.00 *	0.01	0.01 **	0.00	0.00	0.00 **	0.00	0.00	0.00	0.00	0.00	0.00 *	0.00	-0.01 **	-0.01 *
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hispanic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Education (referent category is "more than high school")																	
Less than high school	0.01	-0.07	0.01	-0.12	-0.18	0.02	0.22 *	0.09	0.04	-0.07	-0.15	0.03	0.07	-0.23 **	0.02	-0.02	-0.32
High School	-0.09	0.04	-0.12	0.09	-0.29 *	0.03	0.09	0.22 *	0.08	-0.12 *	-0.07	-0.07	-0.06	-0.14	-0.04	0.06	-0.02
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.02	-0.11	-0.05	-0.08	-0.06	-0.16 *	0.08	-0.05	-0.04	0.03	0.02	0.07	0.10 *	0.06	-0.03	-0.43 *	-0.74 **
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	0.11 *	-0.04	-0.15	0.22	0.02	0.23 **	-0.20	0.06	-0.08	-0.10 *	-0.09	0.06	0.06	-0.04	0.00	0.22	0.08
Above 1.3	-0.12	0.10	0.20	-0.05	-0.11	-0.11	0.21	0.00	-0.15	0.04	-0.23	-0.20	-0.20	0.01	0.11	-0.22	-0.68
Constant	4.65 **	4.55 **	4.29 **	4.92 **	5.47 **	5.09 **	4.01 **	6.00 **	5.25 **	5.18 **	5.15 **	4.86 **	4.89 **	4.95 **	4.32 **	4.09 **	4.23 **
R-Square	0.07	0.06	0.09	0.08	0.16	0.10	0.57	0.20	0.08	0.11	0.13	0.11	0.11	0.15	0.14	0.08	0.09
Sample Size (unweighted)	409	245	182	132	277	361	36	102	270	218	120	338	310	137	244	350	322

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.15 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals with Less Than a High School Education

	All Foods ^a	Grains and										Meat, Poultry, and Fish				Sweets and	
		Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts	
Ln(food expenditures)	-0.01	0.11 **	0.08 **	0.14 **	0.10 **	0.00	-0.02	0.01	-0.03 **	0.00	0.00	0.04 **	0.05 **	0.00	0.17 **	0.16 **	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	-0.04 *	-0.15 **	-0.36 **	0.03	-0.03	-0.05	0.01	0.00	-0.01	-0.02	-0.07 **	-0.01	-0.05	0.03	-0.31 **	-0.37 **	
SNAP Eligible Nonparticipant	-0.05 *	-0.17 **	-0.38 **	0.03	-0.04	-0.10 **	0.00	-0.05	0.01	0.00	-0.03	-0.02	-0.04	0.02	-0.28 **	-0.39 **	
Gender (referent category is "female")																	
Male	0.01	-0.03	0.00	-0.04	-0.06 **	0.06 **	-0.03 **	-0.01	0.00	-0.03 **	-0.02 **	0.00	0.00	0.02 *	-0.12 **	-0.17 **	
Age																	
Age	0.00 **	0.00 **	0.00	0.01 **	0.00 **	0.00 **	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	0.04 **	0.12 **	0.20 **	0.03	0.14 **	-0.09 **	-0.03	0.06 **	-0.05 **	-0.07 **	0.01	0.07 **	0.09 **	0.07 **	-0.04	-0.05	
Hispanic	-0.06 **	0.09 **	0.02	0.09 *	-0.06 *	-0.08 **	0.03 **	0.00	-0.11 **	-0.10 **	0.00	-0.05 **	-0.06 **	0.08 **	-0.14 **	-0.25 **	
Other	0.01	-0.04	0.07	-0.06	0.16 **	-0.17 **	-0.07 **	0.04	0.01	-0.02	0.02	0.11 **	0.15 **	0.02	-0.15 *	-0.42 **	
Education (referent category is "more than high school")																	
Less than high school	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
High School	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.03 **	0.00	0.05	-0.13 **	0.05	-0.13 **	0.04 **	0.02	-0.02 *	-0.01	0.00	0.03 **	0.04 **	0.04 **	-0.38 **	-0.59 **	
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	-0.01	0.04	0.00	0.03	-0.04	0.05 *	-0.01	0.04 **	0.02	0.01	-0.01	0.01	0.01	-0.02 *	-0.09 *	-0.17 **	
Above 1.3	-0.02	-0.11 *	-0.27 **	0.03	-0.01	-0.02	0.01	0.00	0.05 *	0.05 **	-0.02	-0.01	-0.01	0.01	-0.23 **	-0.32 **	
Constant	4.63 **	4.67 **	4.79 **	4.50 **	4.71 **	5.12 **	4.35 **	5.91 **	5.01 **	5.12 **	4.66 **	4.68 **	4.69 **	4.58 **	3.83 **	3.65 **	
R-Square	0.01	0.02	0.05	0.05	0.04	0.07	0.10	0.03	0.04	0.09	0.03	0.04	0.05	0.05	0.05	0.05	
Sample Size (unweighted)	7,531	4,202	2,909	2,478	4,626	6,614	602	2,423	5,428	4,459	2,586	6,280	5,587	4,624	6,551	5,967	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.16 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals with a High School Education

	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grains and Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, and Fish Alternates	Meat	Mixed Dishes	Total Snacks	Sweets and Desserts
Ln(food expenditures)	0.08 **	0.11 **	0.16 **	0.02	0.10 *	-0.01	-0.02	-0.05	-0.05 *	-0.02	0.00	0.05 **	0.03	0.07 **	0.00	0.07	0.12
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	-0.12 **	-0.14	0.06	-0.15	-0.01	0.07	0.01	-0.10	0.09	-0.02	0.00	-0.04	-0.02	-0.09	0.00	-0.33	-0.54 *
SNAP Eligible Nonparticipant	-0.08	-0.05	0.11	-0.16	0.17	0.19 **	0.06	0.00	0.12	0.04	0.03	-0.05	-0.03	-0.05	0.00	-0.35	-0.60 *
Gender (referent category is "female")																	
Male	-0.03	-0.10 *	-0.07	-0.09	-0.11 *	-0.05	0.09 **	0.01	-0.04	-0.08 **	-0.02	-0.01	-0.03	0.03	0.04 *	-0.06	-0.06
Age																	
Age	0.01 **	0.00	0.00	0.01 **	0.01 **	0.00 **	0.00 **	0.00	0.00 **	0.00 *	0.00	0.00 *	0.00 *	0.00	0.00 **	0.00	0.00
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	0.07 *	-0.04	0.01	-0.29 **	0.04	-0.04	0.10 *	-0.03	-0.08 *	-0.07 *	0.00	0.02	0.01	0.04	0.04	-0.32 **	-0.25
Hispanic	0.00	0.09	0.02	-0.10	0.14	-0.05	0.10 **	0.07	-0.12 **	-0.15 **	-0.03	-0.05	-0.09 **	0.07	0.01	0.06	-0.05
Other	0.06	-0.01	0.01	-0.08	0.24 *	-0.14 *	0.05	0.25	0.10	-0.07	0.06	0.02	0.03	0.02	0.00	-0.27	-0.47
Education (referent category is "more than high school")																	
Less than high school	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
High School	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Marital Status (referent category is "not married or living together")																	
Married or living together	0.01	0.00	0.12 **	-0.02	-0.16 **	0.01	0.01	0.13 **	0.05 *	0.01	0.01	0.04 *	0.04	0.00	-0.02	-0.09	-0.18 *
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	-0.02	-0.05	0.19 *	-0.27 **	0.06	-0.07	-0.11 **	0.14	-0.06	-0.03	-0.05	0.00	0.00	0.02	0.02	0.19	0.22
Above 1.3	-0.13 **	-0.17	0.20	-0.43 *	0.20	0.15 *	-0.02	0.03	0.11	0.09	0.00	-0.06	-0.02	-0.06	0.00	-0.11	-0.38
Constant	4.25 **	4.73 **	4.20 **	5.29 **	4.48 **	4.61 **	4.20 **	5.90 **	4.75 **	5.16 **	4.59 **	4.74 **	4.77 **	4.72 **	4.58 **	3.63 **	3.34 **
R-Square	0.13	0.03	0.05	0.14	0.06	0.03	0.22	0.05	0.12	0.12	0.02	0.02	0.02	0.04	0.03	0.02	0.02
Sample Size (unweighted)	1,622	834	615	412	1,167	1,432	171	328	1,009	719	556	1,416	1,285	670	916	1,373	1,275

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.17 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals with More Than a High School Education

	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat, Poultry, and Fish	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts	
Ln(food expenditures)	0.03	0.12 **	0.04	0.14 *	0.11 **	0.03	0.01	-0.09	-0.04	0.03	0.00	0.07 **	0.10 **	0.02	0.02	0.23 **	0.18 *	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																		
SNAP Participant	-0.09 *	-0.17	0.00	-0.19	-0.13	0.02	-0.01	-0.04	-0.12 *	-0.14 **	-0.10 *	-0.01	0.00	-0.07	-0.05	-0.14	-0.01	
SNAP Eligible Nonparticipant	-0.04	-0.27 *	-0.07	-0.09	0.03	-0.06	0.01	-0.08	-0.09	-0.07	-0.08	0.00	0.01	-0.02	-0.06	-0.17	-0.04	
Gender (referent category is "female")																		
Male	0.00	0.10 **	0.07	0.08	-0.15 **	0.03	-0.07 *	0.10 *	-0.02	-0.04 *	-0.02	0.01	0.00	-0.02	-0.01	-0.08	-0.17 *	
Age																		
Age	0.00 **	0.00	0.00	0.00	0.01 **	0.00 **	0.00	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00	0.00 **	0.00 *	0.00	
Race (referent category is "White, non-Hispanic")																		
Black, non-Hispanic	0.02	-0.06	0.04	-0.31 **	-0.13 *	-0.07	0.06	0.09	-0.06	-0.09 **	-0.02	0.07 **	0.07 *	0.08 *	0.02	-0.38 **	-0.47 **	
Hispanic	-0.06 **	0.04	0.03	-0.07	-0.14 *	-0.05	0.05	0.04	-0.10 **	-0.16 **	-0.02	-0.05 *	-0.09 **	0.14 **	-0.02	-0.34 **	-0.51 **	
Other	0.08 *	-0.08	0.14	-0.38 **	0.28 **	-0.14 **	-0.13	0.07	-0.04	-0.02	0.01	0.09 *	0.07	0.17 **	0.02	-0.47 **	-0.68 **	
Education (referent category is "more than high school")																		
Less than high school	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
High School	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Marital Status (referent category is "not married or living together")																		
Married or living together	-0.04 *	-0.05	-0.03	-0.06	0.00	-0.10 **	0.00	0.05	-0.02	0.01	-0.03	0.04 *	0.05 **	0.01	-0.01	-0.11	-0.19 *	
Income to Poverty Ratio (referent category is "less than 1.0")																		
1.0-1.3	-0.02	0.12	0.14 *	0.12	0.07	-0.05	-0.01	-0.08	-0.08 *	-0.03	-0.04	0.03	0.01	0.11 *	-0.03	0.11	0.00	
Above 1.3	-0.01	-0.14	0.07	-0.08	0.03	-0.04	-0.04	-0.15	-0.12	-0.06	-0.09	0.00	0.01	-0.01	-0.09	0.00	0.19	
Constant	4.43 **	4.83 **	4.41 **	4.97 **	4.74 **	4.79 **	4.33 **	6.01 **	5.09 **	5.24 **	4.73 **	4.63 **	4.59 **	4.73 **	4.61 **	3.51 **	3.20 **	
R-Square	0.08	0.03	0.02	0.08	0.05	0.03	0.09	0.03	0.06	0.09	0.03	0.04	0.05	0.05	0.05	0.03	0.04	
Sample Size (unweighted)	1,845	1,070	829	524	1,419	1,628	196	409	1,222	889	733	1,617	1,436	799	987	1,597	1,494	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.18 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals Who Are Married or Living Together

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts
Ln(food expenditures)	0.07 **	0.12 **	0.08 *	0.08	0.08 *	0.04 **	0.01	0.01	-0.01	0.02	0.00	0.03 *	0.04 *	0.00	0.19 **	0.14 *
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	-0.14 **	-0.42 **	-0.54 **	-0.14	0.13	0.05	0.02	-0.02	0.02	-0.07	-0.02	-0.02	-0.02	0.06	-0.55 **	-0.59 **
SNAP Eligible Nonparticipant	-0.13 **	-0.39 **	-0.44 **	-0.08	0.27 *	0.00	0.03	-0.01	0.07	-0.01	0.01	-0.06	-0.05	0.07	-0.26	-0.31
Gender (referent category is "female")																
Male	-0.04 **	-0.04	0.03	-0.08	-0.15 **	-0.03	-0.02	0.05	-0.04 *	-0.04 **	-0.05 **	-0.01	-0.02	0.02	-0.07	-0.12
Age	0.01 **	0.00	0.00	0.00 **	0.01 **	0.00 **	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 *	0.00 **	0.00 **	0.00	0.00
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.05 **	-0.02	0.04	-0.24 **	0.09 *	-0.07 **	0.04	0.05	-0.03	-0.04 *	0.00	0.04 *	0.06 **	0.02	-0.17 *	-0.12
Hispanic	-0.06 **	0.12 *	0.12	-0.03	0.01	-0.06 *	0.04	-0.03	-0.14 **	-0.03	-0.09 **	-0.09 **	-0.10 **	0.02	-0.20 *	-0.31 **
Other	0.09 **	-0.10	0.06	-0.27 **	0.32 **	-0.16 **	-0.13 **	0.06	-0.04	-0.01	-0.02	0.10 **	0.13 **	-0.01	-0.54 **	-0.88 **
Education (referent category is "more than high school")																
Less than high school	-0.01	0.04	0.13 **	-0.11	-0.03	0.01	0.07 **	0.08	-0.04 *	-0.10 **	-0.03	-0.03 *	-0.05 **	0.02	0.05 **	-0.13
High School	-0.06 **	0.01	0.09 *	-0.01	-0.17 **	0.03	0.04 *	0.09 *	-0.05 **	-0.06 **	-0.05 **	-0.04 *	-0.05 *	-0.01	-0.05	-0.12
Marital Status (referent category is "not married or living together")																
Married or living together	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	-0.06 **	-0.02	0.04	-0.13	-0.03	-0.08 **	0.02	0.07	-0.09 **	-0.04	-0.07 **	0.05 *	0.01	0.02	-0.07	-0.05
Above 1.3	-0.14 **	-0.36 **	-0.31 **	-0.28	0.29 *	0.02	0.01	0.00	0.01	-0.01	-0.01	-0.04	-0.03	0.05	-0.08	-0.09
Constant	4.41 **	4.97 **	4.84 **	5.06 **	4.48 **	4.63 **	4.30 **	5.74 **	4.86 **	5.15 **	4.66 **	4.83 **	4.83 **	4.52 **	3.49 **	3.04 **
R-Square	0.10	0.03	0.05	0.09	0.04	0.03	0.11	0.04	0.09	0.13	0.04	0.02	0.03	0.05	0.04	0.05
Sample Size (unweighted)	3,007	1,664	1,318	746	2,177	2,688	304	554	1,941	1,470	1,032	2,646	2,340	1,615	2,565	2,418

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.19 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals Who Are Not Married or Living Together

	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grains and Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, Fish and Alternates	Meat	Mixed Dishes	Total Snacks	Sweets and Desserts	
Ln(food expenditures)	-0.01	0.12 **	0.09 **	0.14 **	0.12 **	-0.02	-0.02	-0.02	-0.05 **	0.00	0.00	0.06 **	0.07 **	0.03 *	0.01	0.14 **	0.18 **	
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																		
SNAP Participant	-0.05 **	-0.06	-0.06	-0.01	-0.13 *	-0.02	0.01	-0.02	-0.03	-0.04 *	-0.08 **	-0.02	-0.03	-0.03	-0.02	-0.15 *	-0.18 *	
SNAP Eligible Nonparticipant	-0.04 *	-0.08	-0.12	0.01	-0.11	-0.06	0.02	-0.04	-0.02	-0.01	-0.05 *	-0.01	-0.02	-0.03	-0.04	-0.23 **	-0.31 **	
Gender (referent category is "female")																		
Male	0.01	0.01	0.01	0.00	-0.07 **	0.05 **	0.00	0.00	-0.01	-0.05 **	0.00	0.01	0.01	0.01	0.02 *	-0.12 **	-0.20 **	
Age																		
Age	0.00 **	0.00 *	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	
Race (referent category is "White, non-Hispanic")																		
Black, non-Hispanic	0.04 **	0.11 **	0.20 **	-0.01	0.05	-0.07 **	-0.01	0.06 **	-0.06 **	-0.09 **	0.00	0.07 **	0.08 **	0.09 **	0.03 **	-0.15 **	-0.20 **	
Hispanic	-0.05 **	0.06 **	0.00	0.04	-0.09 **	-0.08 **	0.06 **	0.02	-0.10 **	-0.12 **	-0.01	-0.03 **	-0.06 **	0.13 **	0.00	-0.16 **	-0.30 **	
Other	0.02	-0.01	0.12 **	-0.12 *	0.19 **	-0.16 **	-0.02	0.07 *	0.01	-0.04 *	0.03	0.08 **	0.09 **	0.07 **	0.00	-0.16 **	-0.35 **	
Education (referent category is "more than high school")																		
Less than high school	0.02 *	-0.06 *	-0.01	-0.14 **	-0.07 *	0.07 **	0.03	0.08 **	0.00	-0.07 **	-0.04 **	-0.02	-0.03 *	-0.01	0.01	0.09 *	0.06	
High School	-0.09 **	0.00	-0.05	-0.01	0.00	-0.07 **	-0.01	0.01	-0.09 **	-0.05 **	-0.07 **	-0.03 *	-0.03	-0.01	0.00	-0.05	-0.11 *	
Marital Status (referent category is "not married or living together")																		
Married or living together	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Income to Poverty Ratio (referent category is "less than 1.0")																		
1.0-1.3	0.01	0.06 *	0.10 **	0.02	0.02	0.05 **	-0.05 **	0.02	0.01	0.00	-0.01	-0.01	0.00	-0.03 **	-0.03 **	0.08	-0.02	
Above 1.3	-0.02	-0.05	-0.02	0.01	-0.08	-0.01	0.01	-0.03	0.02	0.04 *	-0.04 *	-0.01	0.00	-0.07 **	-0.04 *	-0.16 *	-0.23 **	
Constant	4.58 **	4.64 **	4.48 **	4.69 **	4.85 **	5.03 **	4.29 **	5.90 **	5.05 **	5.23 **	4.71 **	4.66 **	4.67 **	4.69 **	4.61 **	3.70 **	3.50 **	
R-Square	0.03	0.02	0.03	0.09	0.05	0.04	0.08	0.02	0.05	0.14	0.04	0.04	0.05	0.04	0.04	0.02	0.02	
Sample Size (unweighted)	7,991	4,442	3,035	2,668	5,035	6,986	665	2,606	5,718	4,597	2,843	6,667	5,968	2,800	4,912	6,956	6,318	

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.20 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals With Family Income-to-Poverty Ratio Less Than 1.0

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat Alternates	Mixed Dishes	Total Snacks	Desserts
Ln(food expenditures)	-0.01	-0.01	-0.04	0.06	0.10 **	-0.02	0.02	-0.03	-0.04 **	-0.01	0.00	0.03 **	0.04 **	0.00	0.26 **	0.30 **
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	-0.03 *	0.02	0.04	-0.04	-0.05	0.02	-0.01	0.04 *	-0.03 *	-0.04 **	0.00	0.00	-0.01	0.00	0.03	0.02
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gender (referent category is "female")																
Male	0.03 **	0.09 **	0.09 **	0.06	-0.08 **	0.06 **	0.03 *	-0.01	0.01	-0.02 *	0.01	0.02	-0.01	0.00	-0.11 *	-0.25 **
Age																
Age	0.00 **	0.00	0.00	0.00 **	0.01 **	0.00 **	0.00 **	0.00	0.00	0.00 **	0.00	0.00 *	0.00 *	0.00 **	-0.01 **	-0.01 **
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.02	0.15 **	0.26 **	-0.01	0.08 *	-0.04	-0.03	0.07 **	-0.05 **	0.01	0.07 **	0.10 **	0.07 **	0.04 **	-0.13 *	-0.15 *
Hispanic	-0.06 **	0.08 *	0.05	0.03	-0.05	-0.05 *	0.05 **	0.02	-0.11 **	-0.01	-0.05 **	-0.07 **	0.12 **	-0.01	-0.16 **	-0.31 **
Other	-0.03	0.01	0.19 **	-0.16	0.30 **	-0.23 **	-0.04	0.07	0.04	0.10 **	0.03	0.05	0.07	-0.07 **	-0.27 **	-0.35 **
Education (referent category is "more than high school")																
Less than high school	0.04 **	-0.07 *	0.01	-0.13 *	-0.01	0.02	0.01	-0.02	-0.05 **	-0.06 **	-0.04 **	-0.06 **	0.02	0.01	0.08	0.08
High School	-0.04 **	0.08 *	0.01	0.15 *	-0.10 *	-0.03	0.03	-0.06	-0.10 **	-0.05 **	-0.02	-0.03	0.02	-0.02	-0.08	-0.10
Marital Status (referent category is "not married or living together")																
Married or living together	-0.01	-0.04	-0.01	0.04	-0.04	-0.09 **	-0.02	0.03	0.04 **	0.01	0.02	0.05 **	-0.07 **	-0.01	-0.28 **	-0.47 **
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Above 1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Constant	4.56 **	4.67 **	4.45 **	4.79 **	4.69 **	5.03 **	4.27 **	5.97 **	5.08 **	4.70 **	4.73 **	4.73 **	4.67 **	4.59 **	3.44 **	3.17 **
R-Square	0.02	0.02	0.04	0.08	0.04	0.06	0.11	0.02	0.05	0.12	0.03	0.05	0.04	0.06	0.06	0.06
Sample Size (unweighted)	4,062	2,228	1,540	1,335	2,529	3,548	319	1,206	2,802	2,217	1,398	3,403	1,495	2,431	3,497	3,161

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.21 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals With Family Income-to-Poverty Ratio 1.0 to 1.3

	Grains and										Meat,				Sweets		
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Poultry, and Fish	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts
Ln(food expenditures)	0.02	0.20 **	0.14 **	0.14 *	0.03	-0.01	-0.04 *	-0.04	-0.02	0.00	0.01	0.06 **	0.09 **	-0.03	0.00	0.15 *	0.00
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																	
SNAP Participant	0.02	0.06	0.00	0.13	-0.08	0.04	0.03	-0.01	0.00	-0.04 *	-0.01	0.01	-0.01	0.04	0.03	-0.24 **	-0.05
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gender (referent category is "female")																	
Male	0.00	-0.15 **	-0.11 *	-0.09	-0.02	0.07 **	-0.02	0.06 *	0.01	-0.04 **	0.02	-0.02	-0.03	0.00	0.00	-0.10	-0.22 *
Age	0.00 **	0.00	0.00	0.01 **	0.00 **	0.00 **	0.00 *	0.00 *	0.00 **	0.00 **	0.00	0.00 *	0.00	0.00	0.00 **	0.00 **	0.00
Race (referent category is "White, non-Hispanic")																	
Black, non-Hispanic	0.06 **	0.04	0.02	-0.01	0.06	-0.05	-0.07	0.04	0.00	-0.05 *	0.04 *	0.05	0.05	0.05	0.06 **	-0.06	-0.03
Hispanic	-0.06 *	0.13 *	0.04	0.07	-0.12	-0.06	0.06 *	-0.02	-0.05	-0.11 **	-0.02	-0.03	-0.07 *	0.15 **	0.00	0.00	-0.25
Other	0.14 **	-0.08	-0.02	-0.08	0.34 **	-0.03	-0.08	0.04	-0.01	-0.05	-0.02	0.10 **	0.12 **	0.06	0.01	-0.11	-0.24
Education (referent category is "more than high school")																	
Less than high school	0.02	-0.06	-0.04	-0.19 **	-0.19 **	0.10 **	0.03	0.14 **	0.05 *	-0.06 **	-0.04 *	-0.05 *	-0.05	-0.10 **	0.01	-0.17	-0.19
High School	-0.02	0.00	0.05	-0.14	-0.09	0.01	-0.05	0.16 **	-0.05	-0.08 **	-0.06 *	-0.05	-0.04	-0.07 *	0.03	-0.04	0.07
Marital Status (referent category is "not married or living together")																	
Married or living together	-0.07 **	-0.07	-0.02	-0.09	-0.09	-0.20 **	0.07 **	0.11 **	-0.05 *	-0.02	-0.05 **	0.08 **	0.07 **	0.08 **	0.06 **	-0.46 **	-0.54 **
Income to Poverty Ratio (referent category is "less than 1.0")																	
1.0-1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Above 1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Constant	4.48 **	4.55 **	4.47 **	4.77 **	4.96 **	4.94 **	4.29 **	5.83 **	4.91 **	5.19 **	4.63 **	4.71 **	4.69 **	4.81 **	4.58 **	3.73 **	3.49 **
R-Square	0.04	0.06	0.03	0.11	0.06	0.09	0.30	0.07	0.04	0.09	0.04	0.05	0.06	0.06	0.05	0.06	0.04
Sample Size (unweighted)	1,717	939	678	499	1,157	1,488	153	464	1,155	937	555	1,432	1,270	680	1,014	1,455	1,327

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

Table F.22 Multivariate Regression of Nutrient Rich Score on Food Expenditures, NHANES Data, Individuals with Family Income-to-Poverty Ratio More Than 1.3

	Grains and										Meat, Poultry, and Fish				Sweets and	
	All Foods ^a	Fruit	Whole fruit	Juice	Vegetables	Grain Products	Breads	Cereals	Milk Products ^a	Fluid Milk	Other Milk	Meat and Beans	Meat Alternates	Mixed Dishes	Total Snacks	Sweets and Desserts
Ln(food expenditures)	0.03 **	0.17 **	0.15 **	0.16 **	0.13 **	0.00	0.00	-0.02	-0.05 **	0.01	0.00	0.06 **	0.05 **	0.04 **	0.09 *	0.10 *
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")																
SNAP Participant	-0.09 **	-0.15 **	-0.17 **	-0.05	-0.06	-0.02	0.02	-0.02	-0.03	-0.05 **	-0.06 **	-0.02	-0.03	0.00	-0.27 **	-0.32 **
SNAP Eligible Nonparticipant	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gender (referent category is "female")																
Male	-0.01	-0.03	0.00	-0.05	-0.13 **	0.02	-0.04 *	0.03	-0.02 *	-0.05 **	-0.03 **	0.00	-0.01	0.03 **	-0.09 *	-0.09
Age																
Age	0.00 **	0.00 *	0.00	0.01 **	0.01 **	0.00	0.00	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00 **	0.00
Race (referent category is "White, non-Hispanic")																
Black, non-Hispanic	0.03 *	0.00	0.11 **	-0.18 **	0.06	-0.13 **	0.04	0.06	-0.08 **	-0.10 **	-0.01	0.05 **	0.05 **	0.00	-0.21 **	-0.27 **
Hispanic	-0.05 **	0.06	0.00	0.01	-0.04	-0.10 **	0.05 **	0.02	-0.13 **	-0.15 **	-0.02	-0.05 **	-0.08 **	0.08 **	-0.24 **	-0.32 **
Other	0.04	-0.06	0.10	-0.20 **	0.12	-0.17 **	-0.07	0.10	-0.01	-0.05	-0.02	0.12 **	0.12 **	0.08 *	-0.36 **	-0.74 **
Education (referent category is "more than high school")																
Less than high school	0.05 **	0.01	0.05	-0.10 *	-0.04	0.11 **	0.06 **	0.14 **	0.02	-0.06 **	-0.01	-0.01	-0.03	0.04 **	0.02	-0.08
High School	-0.10 **	-0.02	0.01	-0.06	-0.08 *	-0.02	0.03	0.07 *	-0.06 **	-0.04 **	-0.07 **	-0.04 **	-0.04 **	-0.01	-0.05	-0.18 **
Marital Status (referent category is "not married or living together")																
Married or living together	-0.05 **	0.00	0.06 *	-0.12 **	-0.01	-0.10 **	0.01	0.07 **	-0.04 **	0.00	-0.01	0.03 **	0.03 *	-0.01	-0.11 **	-0.24 **
Income to Poverty Ratio (referent category is "less than 1.0")																
1.0-1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Above 1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Constant	4.47 **	4.52 **	4.39 **	4.70 **	4.74 **	4.93 **	4.28 **	5.77 **	5.05 **	5.24 **	4.65 **	4.66 **	4.70 **	4.53 **	3.64 **	3.41 **
R-Square	0.07	0.03	0.03	0.11	0.04	0.04	0.06	0.03	0.06	0.12	0.04	0.05	0.05	0.05	0.02	0.03
Sample Size (unweighted)	5,219	2,939	2,135	1,580	3,526	4,638	497	1,490	3,702	2,913	1,992	4,478	4,019	3,082	4,569	4,248

Source: 2001-2004 NHANES appended with price data

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

^a Excludes infant formula

APPENDIX G

SUPPORTING TABLES FOR CONTRIBUTIONS TO MYPYRAMID GROUPS

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Table G.1 Relative Contribution of Specific Foods to Availability of MyPyramid Food Group Equivalents for Fruit, Vegetables, and Milk

MyPyramid Group	Percent Contribution	MyPyramid Group	Percent Contribution
Fruit			
100% Fruit Juice	21.7	Other Foods	13.0
		Juice drinks and other sweetened beverages	2.6
Fruit	65.3	Syrup, jellies, and jams	2.8
Fresh fruit	55.1	Baked desserts	2.7
Canned fruit	4.1	RTE cereals	0.8
Fruit canned in water or juice	0.0	Biscuits, muffins, cornbread, croissants	0.4
Fruit canned in syrup	0.0	Candy	1.4
Dried/frozen fruit	5.1	Babyfood desserts	0.0
Baby food	0.0	Granola bars	0.3
		Other foods	1.9
Vegetables			
Vegetables	63.4	Other Foods	28.8
Raw	35.1	Potato chips	15.3
Cooked	28.3	Condiments/cooking ingredients	11.0
Baby food	0.0	Meats and beans	1.4
		Rice	0.7
Mixed Dishes	7.8	Other	0.4
Meat mixture with grain and/or vegetable	1.6	Vegetables Other than Baby Food	63.4
Soups	0.7	French fries and other fried potatoes	0.0
Pizza	2.1	Other potatoes (not fried)	0.0
Spaghetti with meat sauce, lasagna, ravioli	1.0	Tomatoes/tomato sauce	7.5
Mexican-style entrees	0.6	Dark green vegetables	15.4
Other grain-based mixtures	0.6	Deep yellow vegetables	4.2
Chili, frank and beans	0.4	Other vegetables	20.3
Other mixed dishes	0.8		
Milk			
Fluid Milk	21.4	Cheese	55.9
Flavored	1.5	Regular	51.5
Unflavored	19.9	Lowfat or fat-free	4.3
Whole	8.2		
0.02	8.4	Other Foods	21.8
0.01	2.3	Pudding, frozen yogurt, and ice cream	3.1
Skim	2.5	Milk/cocoa drinks	1.5
Infant formula	0.0	Macaroni and cheese	1.2
		Spaghetti with meat sauce, lasagna, ravioli	0.3
Yogurt	0.9	Mexican-style entrees	1.5
Whole milk	0.1	Pizza	5.0
Lowfat or fat-free	0.8	Other	9.2

Source: 2001–2004 NHANES data

Table G.2 Relative Contribution of Specific Foods to Availability of MyPyramid Food Group Equivalents for Grain and Grain Products and Meat, Poultry, and Fish

MyPyramid Group	Percent Contribution	MyPyramid Group	Percent Contribution
Grains and Grain Products			
Grains and Grain Products	60.7	Mixed Dishes	8.8
Whole grains	5.4	Pizza	3.1
Non-whole grains	55.4	Spaghetti with meat sauce, lasagna, ravioli	0.5
Breads and rolls	39.1	Mexican-style entrees	1.1
Crackers	6.8	Sandwiches	2.1
Rice	1.9	Macaroni and cheese	0.6
Pasta	0.6	Other grain-based mixtures	0.6
Biscuits, muffins, cornbread, croissants	3.1	Meat mixture with grain and/or vegetable	0.4
RTE breakfast cereals	7.3	Soups, chili, and other bean-based mixtures	0.3
High sugar	3.0	Sweets and Desserts and Salty Snacks	27.3
Not high in sugar	4.3	Cakes, cookies, and brownies	8.9
Pancakes, waffles, and French toast	1.4	Pies, pastries, doughnuts, and coffee cake	3.2
Infant cereals	0.0	Salty snacks	11.2
Cooked cereals	0.6	Popcorn	1.9
Flours and meals	0.0	Pretzels	2.4
		Corn, tortilla, and other chips	7.0
		Other Foods	3.2
Meat, Poultry, and Fish			
Meat, Poultry, and Fish	60.4	Poultry	16.0
Lean meats, poultry, and fish	23.5	Lean poultry	6.7
Higher-fat meats and poultry	36.9	Higher-fat poultry	9.3
Beef	12.6	Fish	5.7
Lean beef	3.0	High in Omega-3 fatty acids	0.9
Higher-fat beef	9.6	Low in Omega-3 fatty acids	4.8
Pork/ham	7.7	Eggs	6.0
Lean pork/ham	1.7	Dried Beans and Peas	3.9
Higher-fat pork/ham	6.0	Peanut Butter, Nuts, and Seeds	16.1
Lamb, veal, and game	0.6	Soybean Products/Meat Substitutes	0.7
Lean lamb, veal, and game	0.4	Mixed Dishes	7.9
Higher-fat lamb, veal, and game	0.2	Meat mixture with grain and/or vegetable	1.8
Sausages, cold cuts, and frankfurters	17.6	Sandwiches	2.3
Lean sausages, cold cuts, frankfurters	8.4	Mexican-style entrees	1.4
Higher-fat sausages, cold cuts, frankfurters	9.2	Chili, frank, and beans	0.7
Organ meats	0.2	Soups	0.4
Lean organ meats	0.1	Other Foods	1.3
Higher-fat organ meat	0.1	Other Foods	4.9

Source: 2001-2004 NHANES data

Table G.3 Relative Contribution of Specific Foods to Availability of MyPyramid Food Group Equivalents for Discretionary Oils and Saturated Fat

MyPyramid Group	Percent Contribution	MyPyramid Group	Percent Contribution
Discretionary Oils			
Fats and Oils	50.5	Sweets and Desserts	6.5
Vegetable oils	1.7	Cookies, cakes, and brownies	1.1
Salad dressings, mayonnaise	32.2	Candy	4.8
Margarine	16.6	Pies, pastries, doughnuts, coffee cake	0.3
		Pudding, frozen yogurt, and ice cream	0.1
Salty Snacks	20.2	Granola bars	0.2
Potato chips	10.3		
Corn, tortilla, and other chips	7.5	Grains	4.5
Popcorn	2.3	Biscuits, muffins, cornbread, croissants	0.4
		RTE breakfast cereals	0.3
Meats and Beans	14.6	Breads and rolls	3.3
Peanut butter, nuts, and seeds	9.9		
Soybean products/meat substitutes	0.4	Mixed Dishes	1.8
Eggs	0.5	Condiments and Cooking Ingredients	0.2
Meat, poultry, fish	3.4	Other Foods	1.5
Vegetables	1.6		
Saturated Fat			
Meats and Beans	24.0	Cakes, cookies, and brownies	3.5
		Pies, pastries, doughnuts, and coffee cake	1.9
Beef	5.5	Granola bars	0.2
Pork	2.3	Candy	2.6
Sausage, cold cuts, and frankfurters	5.7		
Poultry	4.1	Mixed Dishes	21.2
Peanut butter, nuts, and seeds	1.7	Sandwiches	4.7
		Mexican-style entrees	3.2
Milk and Milk Products	19.2	Pizza	6.1
Cheese	8.7	Other mixed dishes	7.1
Milk	10.4		
		Grains and Grain Products	5.1
Fats and Oils	7.8	Biscuits, muffins, cornbread, croissants	0.8
Butter	2.1	Crackers	0.6
Margarine	0.6		
Vegetable oils	0.1	Salty Snacks	3.8
Lard and shortening	0.0	Potato chips	2.0
Cream cheese, sour cream, cream	3.1	Popcorn	0.6
Salad dressings and mayonnaise	1.8	Corn, tortilla, and other chips	1.1
Sweets and Desserts	13.2	Other Foods	5.8
Pudding, frozen yogurt, and ice cream	4.8		

Source: 2001–2004 NHANES data

Table G.4 Relative Contribution of Specific Foods to Availability of MyPyramid Food Group Equivalents for Sodium

MyPyramid Group	Percent Contribution	MyPyramid Group	Percent Contribution
Sodium			
Meats and Beans	23.5	Mixed Dishes	25.3
Sausage, cold cuts, and frankfurters	7.1	Pizza	6.4
Pork	2.5	Soups	2.9
Beef	3.2	Sandwiches	4.4
Fish	1.7	Other mixed dishes	11.7
Soybean products/meat substitutes	0.2		
Peanut butter, nuts, and seeds	0.7	Sweets and Desserts	5.0
		Fats and Oils	3.9
Grains and Grain Products	18.8	Margarine	0.4
Breads and rolls	8.8	Salad dressings, mayonnaise	2.2
RTE breakfast cereals	2.5	Butter	0.2
Crackers	1.0		
Biscuits, muffins, cornbread, croissants	1.6	Salty Snacks	3.6
		Pretzels	0.8
Milk and Milk Products	7.1	Corn, tortilla, and other chips	1.3
Cheese	4.2	Potato chips	0.9
Milk	2.8		
		Condiments and Cooking Ingredients	2.8
Vegetables	7.5	Other Foods	2.5
Cooked	6.4		
Raw	1.1		

Source: 2001–2004 NHANES data

Table G.5 Relative Contribution of Specific Foods to Availability of MyPyramid Food Group Equivalents for Calories from SOFAAS

MyPyramid Group	Percent Contribution	MyPyramid Group	Percent Contribution
SOFAAS			
Meats and Beans	10.0	Fats and Oils	17.0
Beef	1.5	Margarine	2.6
Sausage, cold cuts and frankfurters	3.2	Lard and shortening	0.0
Pork	2.1	Butter	7.4
Poultry	1.2	Salad dressing and mayonnaise	0.8
Eggs	1.1	Cream cheese, sour cream, cream	6.2
Sweets and Desserts	34.6	Grains and Grain Products	8.7
Sugar, syrup, jellies, and jams	11.5	RTE breakfast cereals	2.7
Cakes, cookies, and brownies	9.3	Breads and rolls	2.5
Cookies	6.6	Crackers	1.9
Cakes and cupcakes	2.3	Biscuits, muffins, cornbread, croissants	1.1
Pies, pastries, doughnuts, coffee cake	0.0	Mixed Dishes	4.2
Granola bars	0.4	Sandwiches	1.0
Candy	7.6	Mexican-style entrees	0.6
Pudding, frozen yogurt, and ice cream	2.6	Pizza	1.4
Other desserts (babyfood, gelatin, popsicles)	3.2	Other grain-based mixtures	0.2
Milk and Milk Products	10.3	Other mixed dishes	1.0
Milk	1.5	Salty Snacks	1.3
Cheese	8.6	Potato chips	0.3
Beverages Other than Milk	9.2	Corn, tortilla, and other chipcs	0.3
Alcohol [Check this]	5.2	Other Foods	4.7
Carbonated sodas	2.5		
Juice drinks	0.9		
Other sweetened drinks	0.4		

Source: 2001–2004 NHANES data

Table G.6 Tobit Regression of Share of Total Fruit from Fresh Fruit, NFSPS Data

Ln(food expenditures)	8.150**
Ln(AME)	4.708
Ln(Proportion of meals consumed away from home)	6.561
Multiple adult heads of household (referent category is “single adult head of household”)	-2.739
One or more children in household (referent category is “no children in household”)	1.162
One or more elderly adults in household (referent category is “no elderly in household”)	9.514*
Race (referent category is “White, non-Hispanic”)	
Black, non-Hispanic	-4.459
Hispanic	7.345
Other	11.683
Geographic Residence (referent category is “West”)	
Northeast	-8.376
Mid-Atlantic	-15.749*
Midwest	-12.151*
Southeast	-7.433
Southwest	-4.851
Mountain	-6.019
Household Location (referent category is “rural”)	
Urban	3.745
Suburban	3.314
Income to Poverty Ratio (referent category is “less than 1.0”)	
1.0–1.3	11.621*
Above 1.3	6.080
Constant	10.626
Variance Parameter	41.071**

Source: 1996 NFSPS data

Note: Estimates are marginal effects on latent variable.

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

Table G.7 Tobit Regression of Share of Total Fruit from Fresh Fruit, NHANES Data

Ln(food expenditures)	12.530**
SNAP Participation and Eligibility Status (referent category is “SNAP Ineligible Nonparticipant”)	
SNAP Participant	-4.004
SNAP Eligible Nonparticipant	3.267
Gender (referent category is “female”)	
Male	0.482**
Age	-4.112*
Race (referent category is “White, non-Hispanic”)	
Black, non-Hispanic	-3.606
Hispanic	-5.945*
Other	3.740
Education (referent category is “more than high school”)	
Less than high school	-41.143**
High School	13.586**
Marital Status (referent category is “not married or living together”)	
Married or living together	2.797
Income to Poverty Ratio (referent category is “less than 1.0”)	
1.0–1.3	0.997
Above 1.3	0.331
Constant	-15.942*
Variance Parameter	73.986**

Source: 2001–2004 NHANES data

Note: Estimates are marginal effects on latent variable.

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

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APPENDIX H
SUPPORTING TABLES FOR EXPENDITURE SHARES

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Table H.1 Categorizations of Foods Purchased for Home Use in CE–Diary Data

Food Group	CES Item
Foods Recommended for Frequent Consumption	
Fruits and Juices	
Fresh Fruit	110110 Apples
	110210 Bananas
	110310 Oranges
	110410 Other fresh fruits
	110510 Citrus fruits excluding oranges
Other Fruits	130310 Canned fruits
	130320 Dried fruits
	130121 Frozen fruits
Vegetables	
Fresh Vegetables	120110 Potatoes
	120210 Lettuce
	120310 Tomatoes
	120410 Other fresh vegetables
Other Vegetables	140110 Frozen vegetables
	140210 Canned beans
	140220 Canned corn
	140230 Miscellaneous canned vegetables
	140310 Other processed dried vegetables
	140340 Dried carrots, onions, leafy greens, and cabbage
	140410 Frozen vegetable juices
	140420 Fresh/canned vegetable juices
180611 Prepared salads	
Foods Not Recommended for Frequent Consumption	
Sweetened Beverages	170110 Cola drinks
	170210 Other carbonated drinks
	170510 Noncarbonated fruit flavored drinks, including lemonade–nonfrozen
	170530 Other noncarbonated beverages and ice, excluding coffee and tea
Baked Desserts	020410 Cakes and cupcakes, fresh and other, excluding frozen
	020510 Cookies, excluding refrigerated dough
	020710 Doughnuts, sweet rolls, coffeecakes, fresh and other, excluding frozen
	020810 Frozen refrigerated and canned bakery products, such as biscuits, rolls, muffins, cakes, cupcakes, doughnuts, pies, tarts, turnovers, and miscellaneous products, including dough and batter
	020820 Pies, tarts, turnovers, fresh and other, excluding frozen
Other Sweets	150110 Candy and chewing gum
	150211 Sugar
	150212 Artificial sweeteners
	150310 Jams, jellies, preserves, and other sweets
	180612 Prepared desserts

Table H.1 (continued)

Food Group	CES Item	
Salty Snacks	180310 Potato chips and other snacks	
High-Fat/Sodium Meats	040110 Bacon	
	040510 Pork sausage, excluding canned	
	050110 Frankfurters, excluding canned	
	050210 Bologna, liverwurst, salami, excluding canned	
	050310 Other lunchmeat	
High-Fat Dairy	090210 Cream	
	100210 Cheese	
	100410 Ice cream and related products, including frozen yogurt	
Fats and Oils	160110 Margarine	
	160211 Fats and oils	
	160212 Salad dressings	
	160310 Non-dairy cream substitutes	
	100110 Butter	
Alcohol	200111 Beer and ale	
	200210 Whiskey	
	200310 Wine	
	200410 Other alcoholic beverages	
Juices	130110 Frozen orange juice	
	130122 Frozen fruit juices	
	130211 Fresh fruit juices	
	130212 Canned/bottled fruit juices	
Other Foods		
Grains and Grain Products	010110 Flour	
	010120 Prepared flour mixes	
	010210 Cereal	
	010310 Rice	
	010320 Pasta, cornmeal, other cereal products	
	020110 White bread	
	020210 Bread other than white	
	020310 Fresh biscuits, rolls, muffins	
	020610 Crackers, excluding crumbs	
	020620 Bread and cracker products	
	Meats/Meat Alternates	Beef
030210 Chuck roast, excluding canned		
030310 Round roast, excluding canned		
030410 Other beef roast, excluding canned		
030510 Round steak, excluding canned		
030610 Sirloin steak, excluding canned		
030710 Other steak, excluding canned		
030810 Other beef, excluding canned		
Pork		040210 Pork chops
		040310 Ham, excluding canned
		040410 Other pork, excluding canned
		040610 Canned ham
Other Meats		050410 Lamb and organ meats, excluding canned

Table H.1 (continued)

Food Group	CES Item
Poultry	050900 Mutton, goat, game
	060110 Fresh and frozen whole chicken
	060210 Fresh or frozen chicken parts
	060310 Other poultry
Fish And Shellfish	070110 Canned fish, seafood and shellfish
	070230 Fresh fish and shellfish
	070240 Frozen fish and shellfish
Eggs	080110 Eggs
Nuts And Seeds	160320 Peanut butter
	180320 Nuts
Dried Beans and Peas	140320 Dried peas
	140330 Dried beans
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Dairy Products	
Milk	090110 Fresh milk, all types
Other Dairy	100510 Other dairy products, including powdered milk, and fresh, canned, and non-frozen yogurt
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Coffee and Tea	170310 Coffee, roasted
	170410 Coffee, instant or freeze-dried
	170520 Tea
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Mixed Dishes	180110 Soup
	180210 Frozen meals
	180220 Frozen prepared food other than meals
<hr/>	
Condiments and Seasonings	180410 Salt, other seasonings and spices
	180420 Olives, pickles, relishes
	180510 Sauces and gravies
	180520 Other condiments
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Miscellaneous	180620 Baby food
	180710 Miscellaneous prepared foods, including items such as canned meats, fresh and canned ethnic foods, fresh and canned pizza
	180720 Vitamin supplements

Table H.2 Tobit Regression of Expenditure Shares in CE–Diary Data

	Foods Recommended for Frequent Consumption	Foods Not Recommended for Frequent Consumption	Other Foods
ln(food expenditures)	3.743**	–1.904**	2.206**
SNAP Participation and Eligibility Status (referent category is "SNAP Ineligible Nonparticipant")			
SNAP Participant	–1.588*	–1.799	2.966*
SNAP Eligible Nonparticipant	–1.048	–1.640	2.425
Income to poverty ratio (referent category is "income to poverty ratio <= 1.0")			
1.0 < Income to poverty <= 1.5	0.040	0.115	–0.209
1.51 < Income to poverty <= 2	–0.483	–0.490	0.911
2 < Income to poverty	–0.637	–1.236	1.622
Marital Status of Head of Household (referent category is "single")			
Married	0.621	–0.744	0.253
Gender of Head of Household (referent category is "male")			
Female	1.764**	–2.736**	1.762**
Elderly (over 64) in Household (referent category is no elderly)			
Any elderly	0.953	–3.033	2.250
Children Less than 18 in Household (referent category is "no children")			
One Child	–2.113 *	0.132	1.256
Two children	–1.394	–1.780	2.400*
Three or more children	–2.866*	–2.124	3.519**
Race (referent category is "Hispanic")			
White, non-Hispanic	–5.414**	5.360**	–0.785
Black, non-Hispanic	–3.878**	3.035*	0.747
Other	1.037	–3.128	1.584
Geographic Residence (referent category is "West")			
Northeast	–0.683	–1.743*	2.508*
Midwest	–0.347	–0.861	1.031
South	–2.323**	–0.109	2.348**
Population Density (referent category is "less than 125,000")			
125,000 to 329,900	–1.569	–0.783	1.634
329,900 to 1.19 million	–1.647	–2.663**	3.019**
More than 1.2 million	–0.108	–1.367**	0.531
Age of Household Head (referent category is "24 and younger")			
25–49	–0.733	–2.190	1.891
50–64	4.294**	–6.570**	3.073*
65+	5.871**	–4.735*	0.661
Season (referent category is December, January, February):			
March, April, May	–0.982	1.205	–0.340
June, July, August	0.892	0.516	–1.119
September, October, November	–0.466	–0.805	0.924
Constant	0.755**	50.868**	30.731**
Variance Parameter	15.826**	23.428**	22.643**

Source: 2005 CE–Diary data

Note: Estimates are marginal effects on latent variable.

* or ** denotes significantly different than zero at the 0.05 or 0.01 level, respectively, two-tailed test

APPENDIX I

AN EXAMINATION OF HOW THE ASSOCIATION BETWEEN EXPENDITURES AND DIET QUALITY DIFFERS BY EXPENDITURE LEVEL

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AN EXAMINATION OF HOW THE ASSOCIATION BETWEEN EXPENDITURES AND DIET QUALITY DIFFERS BY EXPENDITURE LEVEL

As explained in discussing the general empirical methodology in Chapter II, the associations between the diet quality measures and expenditures in the report assume either (1) the relationship is constant across all expenditure levels (for example, the energy density and nutrient density regressions) or (2) the relationship varies by expenditure. In the latter case, the relationship is evaluated at the mean expenditure level in the sample for the sake of presentation (for example, the HEI-2005 score regressions). In both cases, with only one association presented for all expenditure levels, it is important to discuss how the association may differ by expenditure level.

In Chapter II, we discuss the process by which we selected the functional form of the models used in the report. To summarize that discussion here, we first transformed many outcome measures using natural logarithms due to their skewed distributions and to help reduce the risk of heteroscedasticity. Next, specification tests indicated that using the natural logarithm of expenditures as the main independent variable, rather than a non-transformed level of expenditures, resulted in an improved fit between the empirical model and the data. This was also true for outcome measures like the HEI-2005 score for which it was not possible to use logarithm transformations. In making these transformations, we acknowledged the tradeoff between (1) allowing the relationship between expenditures and diet quality to vary by expenditure level and (2) improving the fit of the empirical model to the data and providing greater validity to the assumptions behind the econometric model.

In this appendix, we present analyses by expenditure subgroups for a selected set of outcome measures. Specifically, we examine in the NFSPS data how the associations between expenditures and the HEI-2005 score, energy density, and nutrient density vary by expenditure subgroups. We then repeat this using diet cost in the NHANES. For simplicity, we focus only on the HEI-2005 total score and the energy density and nutrient density of “all foods,” rather than HEI-2005 component scores and food subgroups. In addition, we do not re-examine the relative contribution of specific foods to MyPyramid groups and other dietary components (Chapter VII), nor the share of food expenditures spent on food categories (Chapter VIII), because of the focus in those chapters on food subgroups.

A. NFSPS Results Based on Expenditure Subgroups

We define two expenditure subgroups in the NFSPS according to whether a household’s expenditures are below the median expenditure level (\$47.72) versus at or above that level. While it is possible to partition the distribution into more than two groups, there is a tradeoff between the number of expenditure groups and the precision of the estimates associated with smaller numbers of households in each subgroup. Below, we refer to these subgroups as the “lower expenditure” and “higher expenditure” subgroups. For each subgroup we estimate an identical set of models as presented in chapters III, V, and VI. The results are displayed in Table I.1 for all three outcome measures.

Table I.1 Percentage Change in Outcome Measure associated with a 10 Percent Increase in Expenditures for SNAP Participant Households, by Expenditure Level

Expenditure Group	HEI-2005 Score	Energy Density	Nutrient Density
Lower Expenditure Subgroup (\$0 to \$47.72)	0.37	-0.55	0.68**
Higher Expenditure Subgroup (\$47.73 and above)	-0.12	-0.32	0.37
Full Sample	0.33**	-0.57**	0.46**

Source: 1996 NFSPS data

Note: * or ** denotes estimate is statistically significant at the 0.05 or 0.01 level, respectively.

We find that the signs of the associations observed using the low expenditure subgroup match those of the full sample, but the same is not consistently true for the high expenditure subgroup. In addition, only one result is statistically significant at the 0.05 level, unlike for the full sample in which all three the estimates are significant.

For the one outcome measure for which a statistically significant association exists (nutrient density), we find a larger association among lower expenditure group than the higher expenditure group. In the full sample, a 10 percent increase in expenditures is associated with a 0.46 percent increase in nutrient density. The association is larger for the lower expenditure subgroup (0.68 percent) than for the higher expenditure subgroup (0.37 percent). Only the association for the lower expenditure subgroup is significant at the 0.05 level.

B. NHANES Results Based on Expenditure Subgroups

Because of the larger sample sizes available, in NHANES, as compared to the NFSPS, we define four expenditure subgroups in the NHANES using quartiles of the sample distribution of diet cost. The groups include individuals with diet cost from \$0 to \$2.69; \$2.70 to \$3.77; \$3.78 to \$5.35; and \$5.36 and above.

HEI-2005 Score. The findings (Table I.2) show the associations between diet cost and diet quality are largest for individuals with the lowest diet costs and smallest (and even negative) for individuals with the highest diet costs. For individuals in the first quartile of the diet cost distribution, the associations are much larger than those observed in the full sample. In the full sample, a 10 percent increase in expenditures is associated with a 0.30 percent increase in the score. For the first quartile diet cost subgroup, the estimate is 1.25, more than four times the full sample magnitude. For the highest expenditure quartile, the association is negative, with a 10 percent increase in diet cost associated with a 1.07 percent *decrease* in the HEI-2005 score.

Energy Density. The full sample results presented in Chapter V showed that diet costs are negatively related with energy density, with a 10 percent increase in expenditures associated with a 0.17 percent decrease in energy density. Like the HEI-2005 scores, the positive relationship between diet cost and diet quality (meaning that greater diet cost is associated with lower energy density)

decreases in magnitude and even switches sign as diet cost increases, although all associations are statistically insignificant.

Nutrient Density. This pattern is also found in the results for the nutrient density analyses. In the full sample, there is a positive and statistically significant association between diet cost and nutrient density, with a 10 percent increase in diet cost associated with a 0.15 percent increase in nutrient density. The findings in Table I.2 show a much larger association in the lowest diet cost subgroup (1.72 percent). For the highest subgroup, a 10 percent increase in diet cost is associated with a 1.70 percent decrease in nutrient density.

Table I.2 Percent Change in Outcome Measure associated with a 10 Percent Increase in Diet Cost for SNAP Participants Households, by Diet Cost Level

Diet Cost Group	HEI-2005 Score	Energy Density	Nutrient Density
First Diet Cost Subgroup (\$0 to \$2.69)	1.25**	-0.35	1.72**
Second Diet Cost Subgroup (\$2.70 to \$3.77)	0.70	-1.20	-0.33
Third Diet Cost Subgroup (\$3.78 to \$5.35)	-0.70	-0.61	-0.67
Fourth Expenditure Subgroup (\$5.36 and above)	-1.07**	0.17	-1.70**
Full Sample	0.30**	-0.17**	0.15*

Source: 1996 NFSPS data

Note: * or ** denotes estimate is statistically significant at the 0.05 or 0.01 level, respectively.

C. Synthesis of NFSPS and NHANES Expenditure Subgroup Findings

The expenditure subgroup findings using the NFSPS and NHANES are strikingly consistent. For both data sets and for all three outcome measures, the association between expenditures and diet quality is larger and more likely to be positive, the lower the level of expenditures or diet cost. For the lowest expenditure or diet cost groups, the associations were generally 1 to 1.5 times larger than the associations found in the full sample using the NFSPS and were 2 to 11 times larger than the associations found in the full sample using the NHANES. However, most results for expenditure subgroups were not statistically significant in the NFSPS, most likely due to smaller samples sizes and less variation in expenditures in those subgroups.

The overall research presented in the body of this report has been done as part of a broader research project designed to assess the impact of SNAP participation on low-income households. While far from conclusive, the results summarized in this appendix suggest that, even among samples of relatively low-income households, relationships between food expenditures and diet quality may be stronger the lower is a household's level of food expenditures. If confirmed by additional research, this may have important implications for assessing SNAP policy.

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APPENDIX J

ALCOHOL PRICE SENSITIVITY ANALYSES

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IMPUTING PRICES FOR ALCOHOL IN NHANES

As noted, the data set with pricing information available from CNPP does not include prices for alcoholic beverages. Although one could exclude from the analysis file the food-code-level observations corresponding to alcoholic beverages prior to aggregating dietary intake and food expenditure information for each individual, doing so could affect the relationship between diet quality and food expenditures. For a given level of income and SNAP benefits, many individuals presumably assess food prices and use their knowledge of diet, nutrition, and health to determine what types of food to buy, making the purchase of alcoholic beverages a part of the overall food demand decision. In fact, we estimate that the HEI-2005 total score can differ by more than 2 points when alcohol is excluded from the measure. Because of the influence of alcoholic beverages on HEI-2005 scores, we chose to retain these food-code-level observations in our analysis by imputing their prices. This appendix describes our imputation approach. We demonstrate that the results are not sensitive to the imputation by providing results for selected measures (Tables J.1 to J.3).

To impute the prices of beer and wine in the NHANES, we obtain national average prices for beer and wine by averaging the four regional average prices and deflate these prices to the 2001-2004 NHANES analysis period. Because information on prices of spirits is not available through the BLS, we obtain a national average price for spirits by:

1. Obtaining 2009 Massachusetts average wholesale prices for beer and spirits
2. Estimating the markup on beer using the northeast regional average price from the BLS and the average wholesale price for Massachusetts
3. Applying the beer markup to the Massachusetts average wholesale price for spirits to obtain an average retail price for spirits for the northeast
4. Estimating a national average retail price of spirits by adjusting the northeast average retail price for spirits using the ratio of the northeast average retail price for beer to the national average retail price for beer (both of which are obtained from BLS data)

We investigated several potential sources to obtain spirits prices, including information available through the National Alcohol Beverage Control Association (NABCA) (see <http://www.nabca.org/Default.aspx>), as well as sources described in economic analyses of alcohol consumption, but these sources did not provide usable price data. Instead, we used information from the Massachusetts Beverage Business (MBB) “Price Listings Index.”

The MBB provides monthly wholesale prices for beer and spirits for all major Massachusetts distributors. We randomly selected 12 distributors for beer and 5 distributors for spirits and collected retail prices for 14 and 32 brands of beer and spirits, respectively, representing a wide range of qualities. For each brand of beer, such as Budweiser, we averaged the price of beer across distributors to obtain an average brand price. Next, we averaged (over the brands) the average brand prices to obtain an average wholesale price of beer. We repeated this procedure for spirits. In the end, we had one average wholesale price of for beer and one price for spirits.

The average wholesale price for spirits is limited in terms of its use in imputing spirits prices in the modified NHANES data set. First, it is a wholesale price and thus does not reflect retailers’ markups or the prices consumers actually face. Second, it is representative of prices in

Massachusetts, but is not representative of prices in other parts of the country. We use the BLS regional average beer prices to address each of these limitations.

We divide the BLS regional average beer price by the Massachusetts average wholesale price of beer to obtain an average price markup of 1.21, or 21 percent that retailers place on wholesale beer purchases. Next, we apply the markup of 1.21 to the 2009 average wholesale prices for spirits, which is reasonable given its similar magnitude to the markup for spirits estimated in a recent study.¹

The final step in the imputation procedure is to deflate the price from 2009 to the 2001-2002 and 2003-2004 NHANES analysis period. This results in an average bottle of spirits (750ml) costing \$17.10 (stated in 2009 prices for convenience).

¹ See Nelson, Jon P. "Distilled Spirits: Spirited Competition or Regulated Monopoly" in Industry and Firm Studies: New York: M.E. Sharpe, Victor J. Tremblay and Carol Horton Tremblay, editors, 2007.

APPENDIX K

PROPENSITY SCORE MATCHING

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PROPSENSITY SCORE MATCHING

This appendix describes the propensity score matching methodology used to adjust for observable differences between individuals with low energy cost and individuals with high energy cost in the analysis of usual intakes (nutrient inadequacy and excess) in Appendix B. Energy cost is defined as the ratio of the value of food consumed to the amount of calories consumed. As noted in Appendix B, there are likely observable and unobservable differences between individuals with high and low levels of energy cost. It is possible that the outcome measures for each group differ not because of different levels of energy cost, but because of these differences between the two groups. Statistically adjusting for these underlying differences allows a comparison of the intakes of high- and low-energy-cost individuals who are otherwise similar according to many observable characteristics.

A standard approach to account for differences in observable characteristics between two groups is regression analysis, and this approach (based on expenditures and diet cost, rather than energy cost) was used in the analyses of HEI-2005 scores, energy density, nutrient density, nutrient availability/intake, and contributions of specific foods to MyPyramid food groups. However, regression analysis cannot be used for the usual intake analyses that use NHANES data because they require information for each person in the sample. Thus, these outcome measures can typically only be estimated at the *group* level.¹ Indeed, meeting the analysis objectives of the usual intakes analysis required us to use the SIDE software to adjust for day-to-day fluctuations in intake. Using a sample of individual-level observations of nutrient intake, this software estimates a single usual intake distribution for each nutrient. Thus, the output from this estimation procedure is at the group-level and the values cannot be assigned to each individual in the sample.

Given that regression analysis was not feasible, we used an alternative method in which we compared outcomes for groups of high- and low-energy-cost individuals. The sequence of analysis steps was (a) to divide the sample into two groups based on energy cost; (b) to run each of those two samples through the SIDE estimation software, and (c) to compare the usual intake distributions across the two groups. Propensity score matching, with its ability to identify matched groups, provided a convenient context for adjusting for differences in observable characteristics between the two groups, each of which could then be separately examined and corrected for the day-to-day bias using the SIDE software.

The propensity score matching approach used observable characteristics to construct a comparison group of low- energy-cost individuals who were similar to high-energy-cost individuals according to observable characteristics, and then applied the group-level estimators to estimate the outcome measures for high-energy-cost individuals and for a matched comparison group of low-energy-cost individuals.

As with the regression analysis, the propensity score matching procedure can only adjust for differences in *observable* characteristics, and high-energy-cost individuals may also differ from low-energy-cost individuals in unobservable ways that may influence these outcome measures. For this

¹ For usual intakes (nutrient adequacy and excess) see the procedure recommended by the Institute of Medicine (IOM 2000).

reason, the findings based on the propensity score matching approach cannot be definitively interpreted as causal effects of how higher energy cost changes the diet quality of foods consumed. Instead, the goal of these procedures was to adjust to the extent possible for observable differences likely to be correlated with the outcome measures so as to compare similar energy cost groups, while still acknowledging that unobservable factors may influence differences in outcome measures.

A. An Overview of Propensity Score Matching Estimation

Propensity score matching is a well-established technique (Rosenbaum and Rubin 1983; Dehejia and Wahba 2002; Smith and Todd 2001) for adjusting for observable differences between two groups—typically a “program group” such as SNAP participants and a comparison group such as SNAP eligible nonparticipants. However, the technique is not limited to comparing program participants and nonparticipants. It can be applied to any two groups for which one is interested in comparing outcomes, such as low- and high-energy-cost groups or males and females. In general, to implement this technique, the researcher estimates a probit or logit model of the variable that indicates to which group the individual belongs (such as whether an individual is in the high-energy-cost group). This is a function of covariates that are thought to influence the group to which the individual belongs and is also correlated with the outcome(s) of interest (in this case, outcome measures of diet quality). In our case, the model is a logit model relating the “high-energy-cost group” variable, which is a variable that indicates if the individual’s energy cost is greater than the median energy cost in the sample, to a set of demographic and economic characteristics. The results of this model are then used to predict a “propensity score” reflecting the estimated probability that each high- and low-energy-cost individual has an energy cost level that places them in the high-energy-cost group based on their observed characteristics.

Each individual in the high-energy-cost group is then matched to an individual (or individuals) in the low-energy-cost comparison group with a similar estimated propensity score. The original approach developed in the propensity score matching literature is “nearest neighbor matching,” which matches each high-energy-cost group member with the low-energy-cost group member (or members) with the closest value of the propensity score (Rosenbaum and Rubin 1983). Alternative, more recently developed approaches include caliper matching, kernel matching, and local linear matching, each of which constructs a matched low-energy-cost group as a weighted average of low-energy-cost individuals, with weights reflecting the “quality” of the match to each high-energy-cost group member based on the estimated propensity score. Each of these approaches is described in greater detail by Heckman, Ichimura, and Todd (1997). Nearest neighbor matching remains one of the most commonly used methods, in part because of the clear intuition underlying the approach of constructing a matched low-energy-cost group comprised of low-energy-cost individuals who are similar to high-energy-cost individuals according to observed characteristics. In general, research has shown that nearest neighbor matching tends to perform as well as alternative matching methods with cross-sectional data, although all estimates may fail to fully account for selection bias due to differences in unobservable characteristics (Heckman, Ichimura, and Todd 1997).

Although each matched low-energy-cost group member will not necessarily have identical characteristics to the high-energy-cost group member to whom he or she is matched, the matched pair will have a set of observable characteristics that suggests they are equally likely to be in the high-energy-cost group. Furthermore, on average, the high-energy-cost and matched low-energy-cost groups should have similar observable characteristics if the two groups are well matched.

Once the researcher is satisfied that the two groups are similar according to observable characteristics, a simple comparison of the average value of the outcome variable(s) (in this case, usual dietary intakes) between the high-energy-cost and matched low-energy-cost groups yields an estimate of the difference in the outcome between the high-energy-cost group and a similar group of low-energy-cost individuals.

B. Propensity Score Matching Estimation for the NHANES Usual Intakes Analysis

To implement the propensity score matching approach for the NHANES usual intake analysis, a logit model of having high energy cost (energy cost greater than the median energy cost value) was estimated separately for SNAP participants, eligible nonparticipants, and ineligible nonparticipants, using Stata statistical software. We perform the matching procedure separately for these three groups since we consider them the most policy-relevant subgroups in the study. The covariates included in this model were identical to the characteristics the regression analyses for the other NHANES analyses and include age, gender, race and ethnicity, marital status, income, and household size. The results of this model were used to predict a propensity score for each individual. Table K.1 displays the results of these logit models. The sample used to estimate the models in Table K.1 excludes pregnant and lactating women and forms the basis for sample used in the usual intake analyses.

Table K.1 Logistic Regression Models of Being in the High Energy Cost Group for Estimating Propensity Scores for Usual Intake

	SNAP Participants	SNAP Eligible Participants	SNAP Ineligible Participants
Gender (referent category is “female”)			
Male	-0.597	-0.049	0.110
Age	0.015**	0.011**	0.017**
Race (referent category is “Hispanic”)			
White, non-Hispanic	-0.028	0.075	0.113
Black, non-Hispanic	-0.005	-0.074	-0.037
Other	-0.082	0.289	0.372*
Marital Status (referent category is “not married or living together”)			
Married or living together	0.308*	0.363**	0.141
Income to Poverty Ratio	-0.015	-0.035	0.122
Household Size	-0.029	-0.061**	-0.074**
Constant	-0.646**	-0.436*	-0.758**
Sample Size (unweighted)	2,553	3,410	4,617

Each individual in the high-energy-cost group was then matched to an individual in the low-energy-cost group using the nearest neighbor matching method, with a single nearest neighbor. Matching was done “with replacement,” meaning a given individual in the low-energy-cost group could be matched to multiple individuals in the high-energy-cost group. Analysis weights for matched high-energy-cost individuals were simply their initial sampling weight (which accounted for selection probabilities and nonresponse). The analysis weight for each matched low-energy-cost

individual was the sampling weight of the high-energy-cost individual to whom he or she was matched, if he or she was matched to only one high-energy-cost individual. If a low-energy-cost individual was matched to more than one high-energy-cost individual, his or her analysis weight was the sum of the sampling weights of the high-energy-cost individuals to whom he or she was matched.

To test whether the high-energy-cost and matched low-energy-cost groups were similar according to observable characteristics, two sets of tests were performed for each model: Hotelling's t-squared test of the joint equality of the means all covariates in the model across the two groups and separate two-tailed t-tests of the equality of means of each covariate in the model. The high-energy-cost and matched low-energy-cost groups were considered balanced if (1) the null hypothesis of the Hotelling test was not rejected with a 5 percent critical value and if (2) fewer than 5 percent of the individual t-tests were rejected with a 5 percent critical value for each model. Table K.2 displays p-values from the Hotelling and individual t-tests for the final logit models. As shown in the table, across all groups, the p-values of the Hotelling tests are well over the 5 percent critical value. Furthermore, across all groups and characteristics, differences in means are generally small, and not statistically significant at the 10 percent level for each of the characteristics in each group. These statistics suggest that the high-energy-cost and matched low-energy-cost groups are well-balanced in terms of observable characteristics.

Once the high-energy-cost and matched low-energy-cost group samples had been constructed, the IOM approach for estimating nutrient inadequacy and excess for the two groups was applied using these weights.

Table K.2 P-Values of Balancing Tests of High-Energy-Cost and Matched Low-Energy-Cost Individuals for Usual Intake Analysis

	SNAP Participants	SNAP Eligible Participants	SNAP Ineligible Participants
Hotelling's t-squared test	0.962	0.837	0.341
Gender (referent category is "female")			
Male	0.323	0.508	0.696
Age	0.913	0.947	0.481
Race (referent category is "Hispanic")			
White, non-Hispanic	0.359	0.600	0.174
Black, non-Hispanic	0.386	0.292	0.195
Other	0.651	0.766	0.077
Marital Status (referent category is "not married or living together")			
Married or living together	0.552	0.569	0.559
Income to Poverty Ratio	0.997	0.179	0.357
Household Size	0.925	0.835	0.512
Sample Size (unweighted)	2,553	3,410	4,617

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