("Diet/economics"[Mesh] OR "Food/economics"[Mesh] OR “Health food/economics”[Mesh]) AND (healthy[tw] OR unhealthy[tw] OR nutritious[tw] OR market basket [tw] OR thrifty food plan [tw] OR food stamps [tw] OR dietary guidelines [tw] OR price [tw] OR cost [tw] OR affordable [tw] OR fast food [tw] OR restaurant [tw] OR supermarket [tw] OR grocery [tw] OR store [tw]) AND ("2000"[Date - Publication] : "3000"[Date - Publication]) AND English[Language].

Supporting Appendix 1. PubMed search query used to identify studies comparing prices of healthier and less healthy foods/diet patterns.

Reporting of background should include
- Problem definition
- Hypothesis statement
- Description of study outcome(s)
- Type of exposure or intervention used
- Type of study designs used
- Study population

Reporting of search strategy should include
- Qualifications of searchers (eg, librarians and investigators)
- Search strategy, including time period included in the synthesis and keywords
- Effort to include all available studies, including contact with authors
- Databases and registries searched
- Search software used, name and version, including special features used (eg, explosion)
- Use of hand searching (eg, reference lists of obtained articles)
- List of citations located and those excluded, including justification
- Method of addressing articles published in languages other than English
- Method of handling abstracts and unpublished studies
- Description of any contact with authors

Reporting of methods should include
- Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested
- Rationale for the selection and coding of data (eg, sound clinical principles or convenience)
- Documentation of how data were classified and coded (eg, multiple raters, blinding, and interrater reliability)
- Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)
- Assessment of study quality, including blinding of quality assessors; stratification or regression on possible predictors of study results
- Assessment of heterogeneity
- Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated
- Provision of appropriate tables and graphics

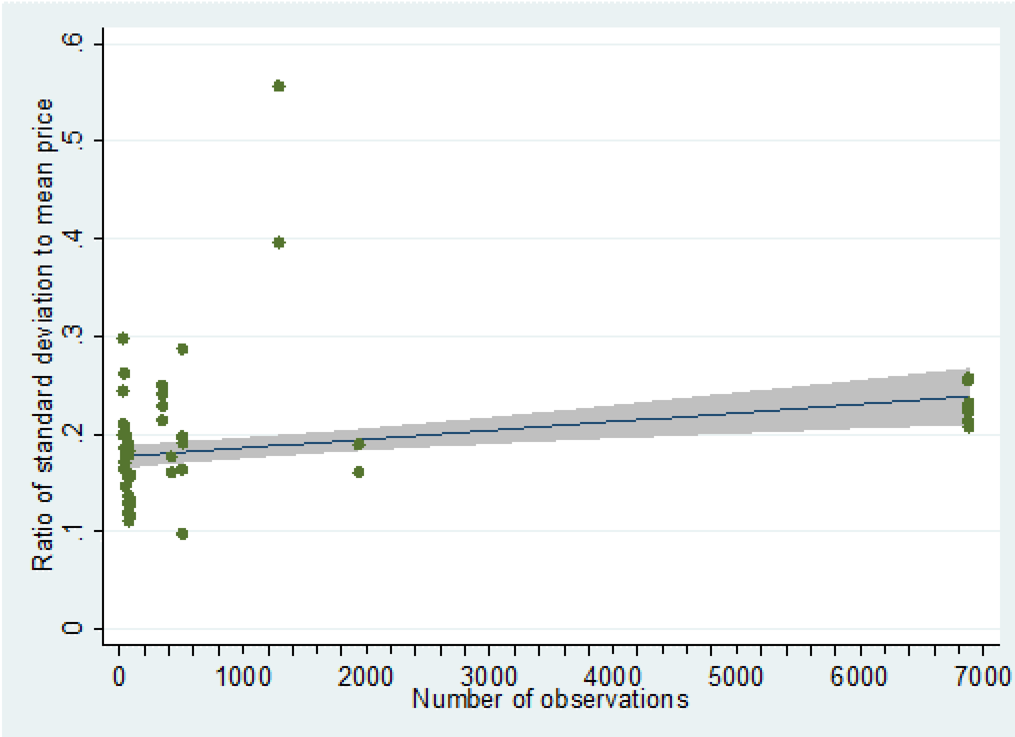
Reporting of results should include
- Graphic summarizing individual study estimates and overall estimate
- Table giving descriptive information for each study included
- Results of sensitivity testing (eg, subgroup analysis)
- Indication of statistical uncertainty of findings

Reporting of discussion should include
- Quantitative assessment of bias (eg, publication bias)
- Justification for exclusion (eg, exclusion of non-English-language citations)
- Assessment of quality of included studies

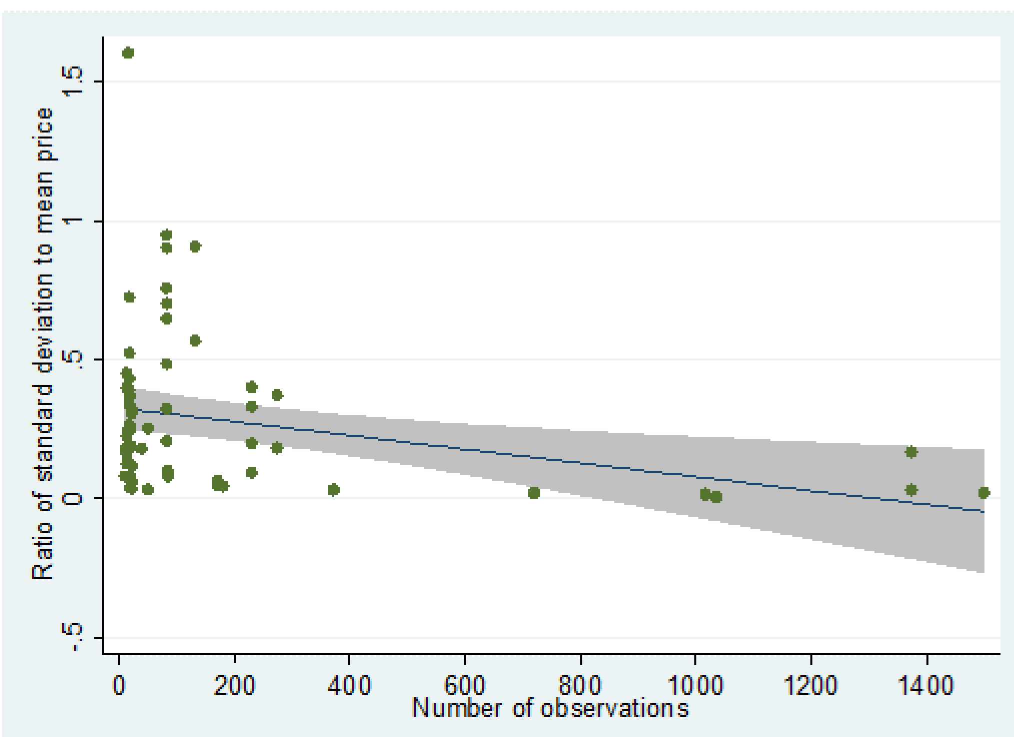
Reporting of conclusions should include
- Consideration of alternative explanations for observed results
- Generalization of the conclusions (ie, appropriate for the data presented and within the domain of the literature review)
- Guidelines for future research
- Disclosure of funding source

Supporting Appendix 2. **Meta-analysis Of Observational Studies in Epidemiology checklist.** We followed the Meta-analysis of Observational Studies in Epidemiology (MOOSE) guidelines throughout all stages of design, implementation, and reporting.[12]

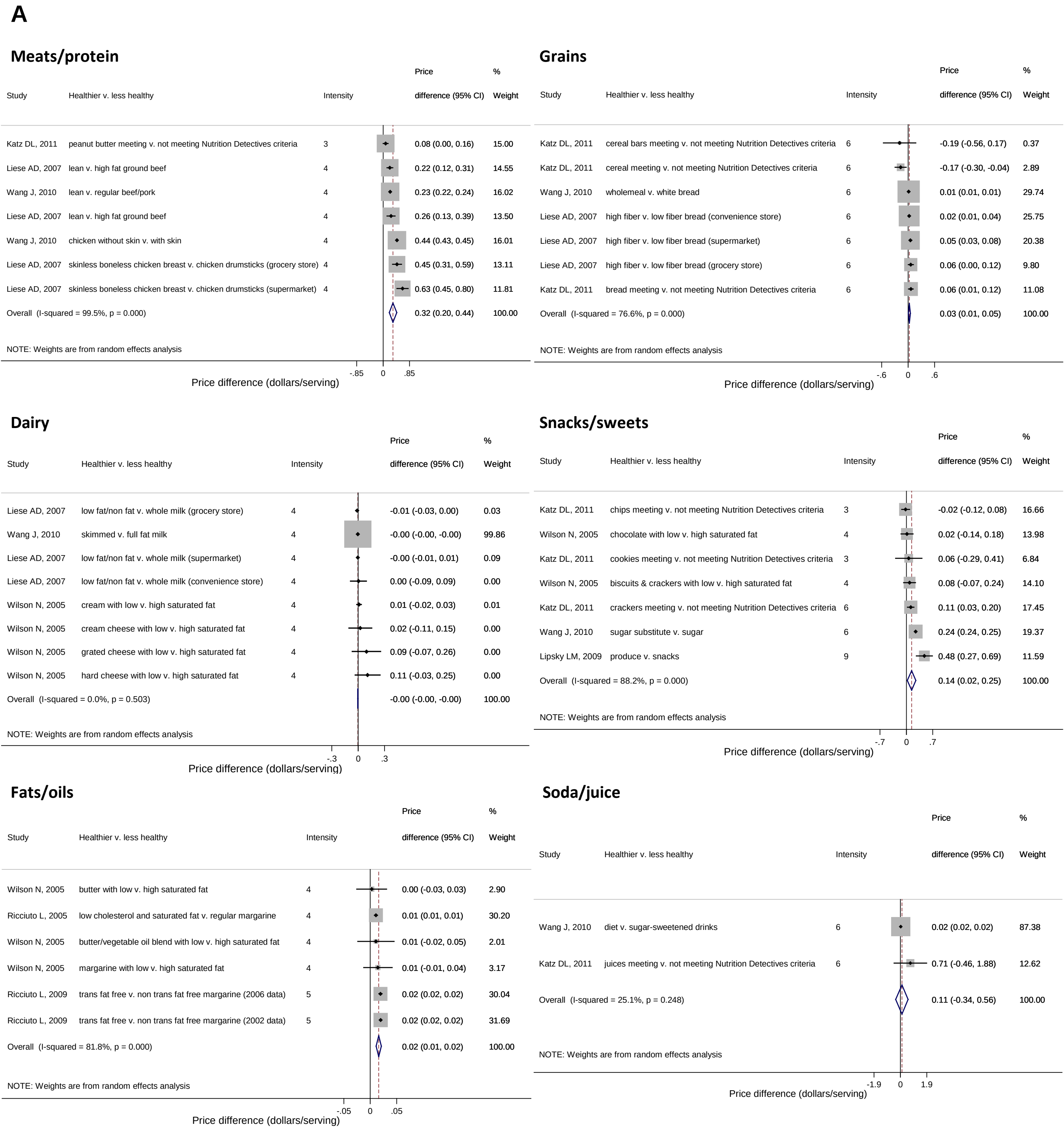
Dietary surveys



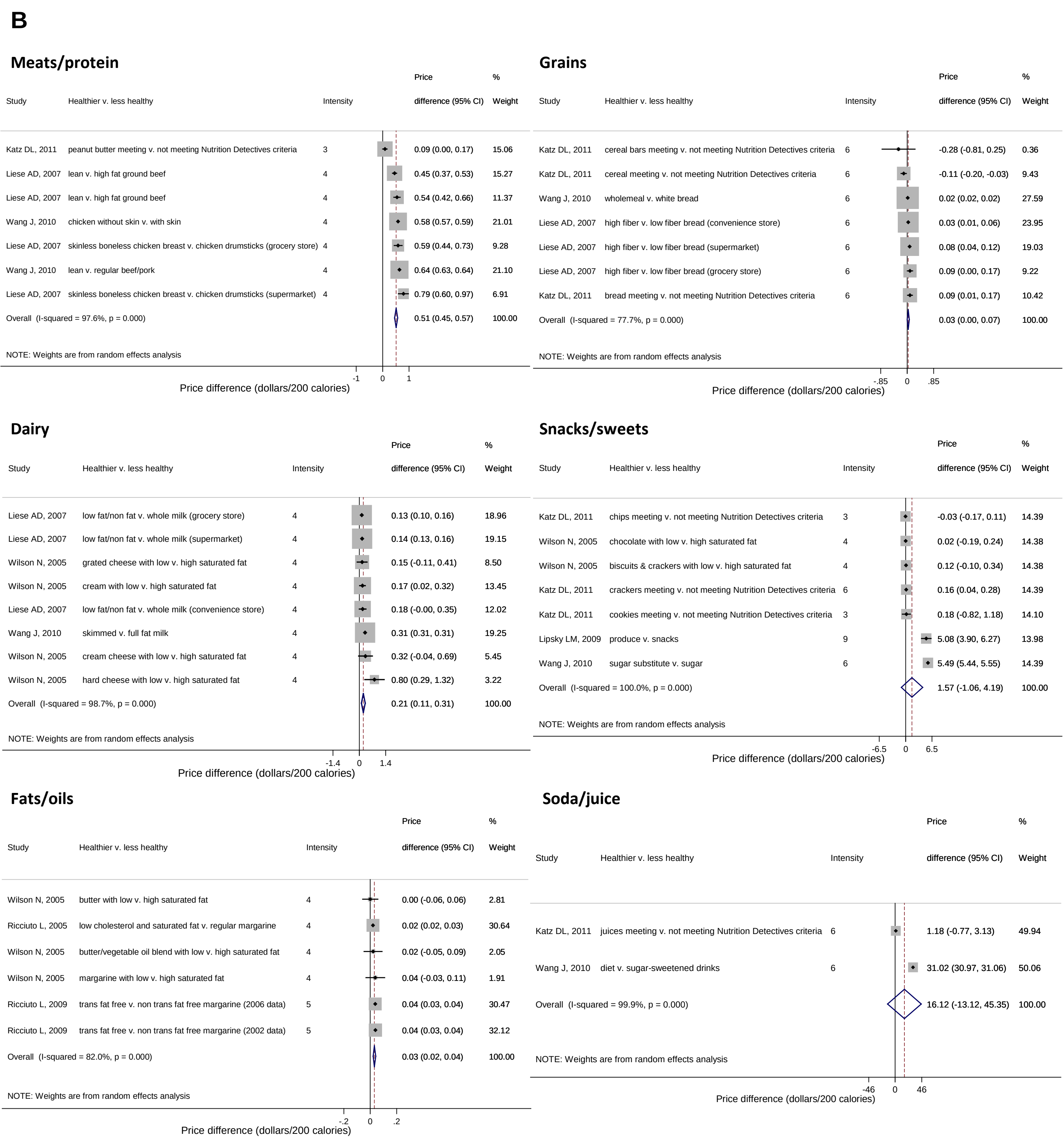
Market surveys



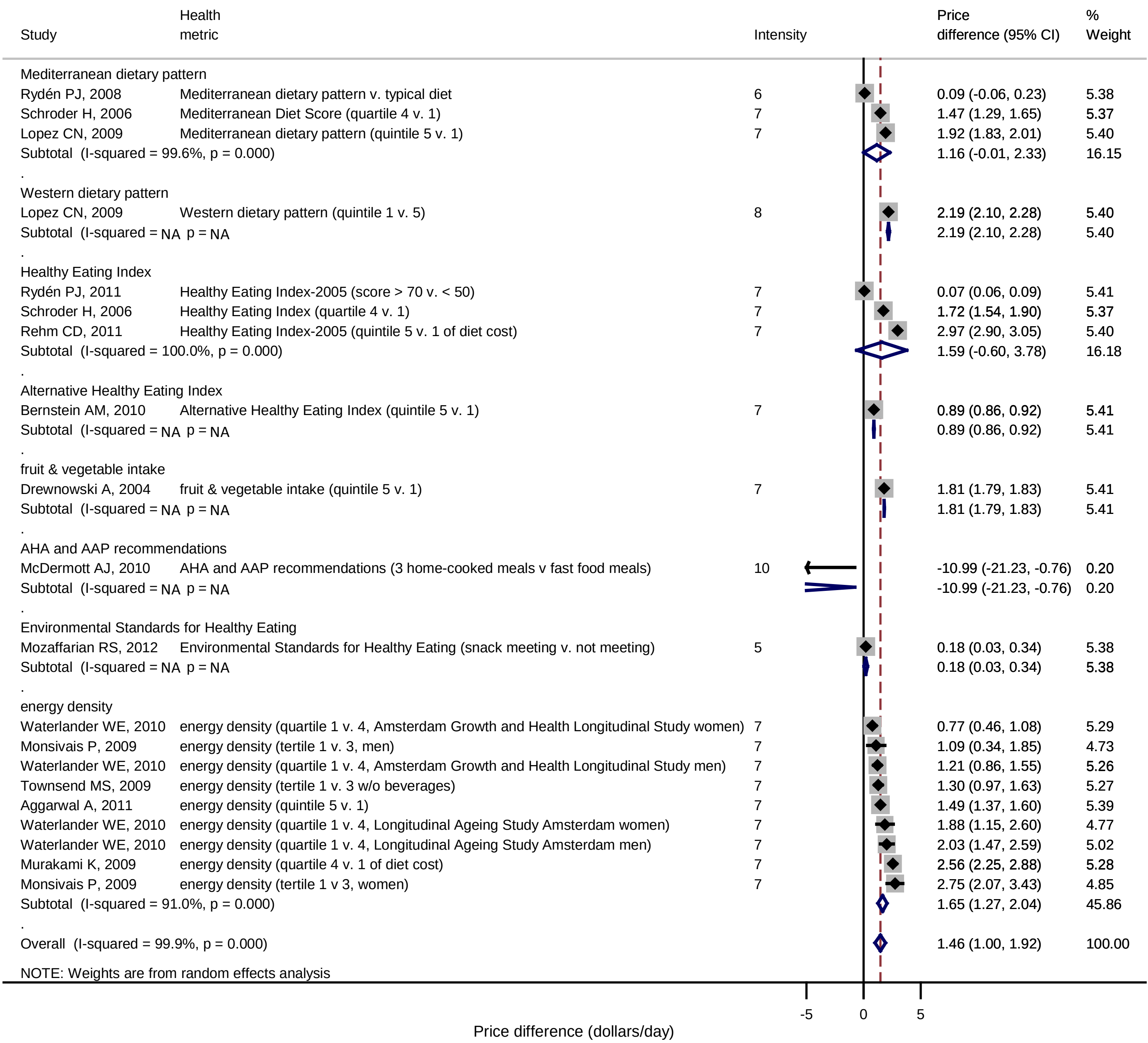
Supporting Figure 1. Linear regression of ratios of SD to mean price vs. number of observations for studies with complete data. Regression results were used to impute the SE of the price difference from the number of observations in each category for nine studies (3 dietary surveys and 6 market surveys) in which the mean price was reported without its uncertainty. Imputations were performed separately for dietary surveys and market surveys. Regression coefficients were 8.99 x 10^{-6} (95%CI 4.43 x 10^{-6}, 1.35 x 10^{-5}) for dietary surveys and -2.486 x 10^{-4} (-4.14 x 10^{-4}, -8.33 x 10^{-5}) for market surveys.



Supporting Figure 2. Price difference between healthier and less healthy foods per serving (A) and per 200 kcal (B), standardized to mean intensity. Price difference defined as the healthier category minus the less healthy category. Each comparison was assigned an intensity between 1 and 10, with 1 signifying that the healthfulness of the two foods was almost the same and 10 signifying that the healthfulness of the foods was extremely different. Each price difference was multiplied by the ratio of the intensity of the study comparison to the mean intensity of the food group. Standardized serving sizes were derived from 2011 USDA MyPlate guidelines or, if not available from MyPlate, nutrition labels from a major grocery website. Summary estimates were generated using a random effects model in which studies were weighted according to the inverse variance of the price difference. All estimates were adjusted for inflation and purchasing power parity – standardized to the international dollar, defined as one US dollar – by country to reflect prices in 2011.

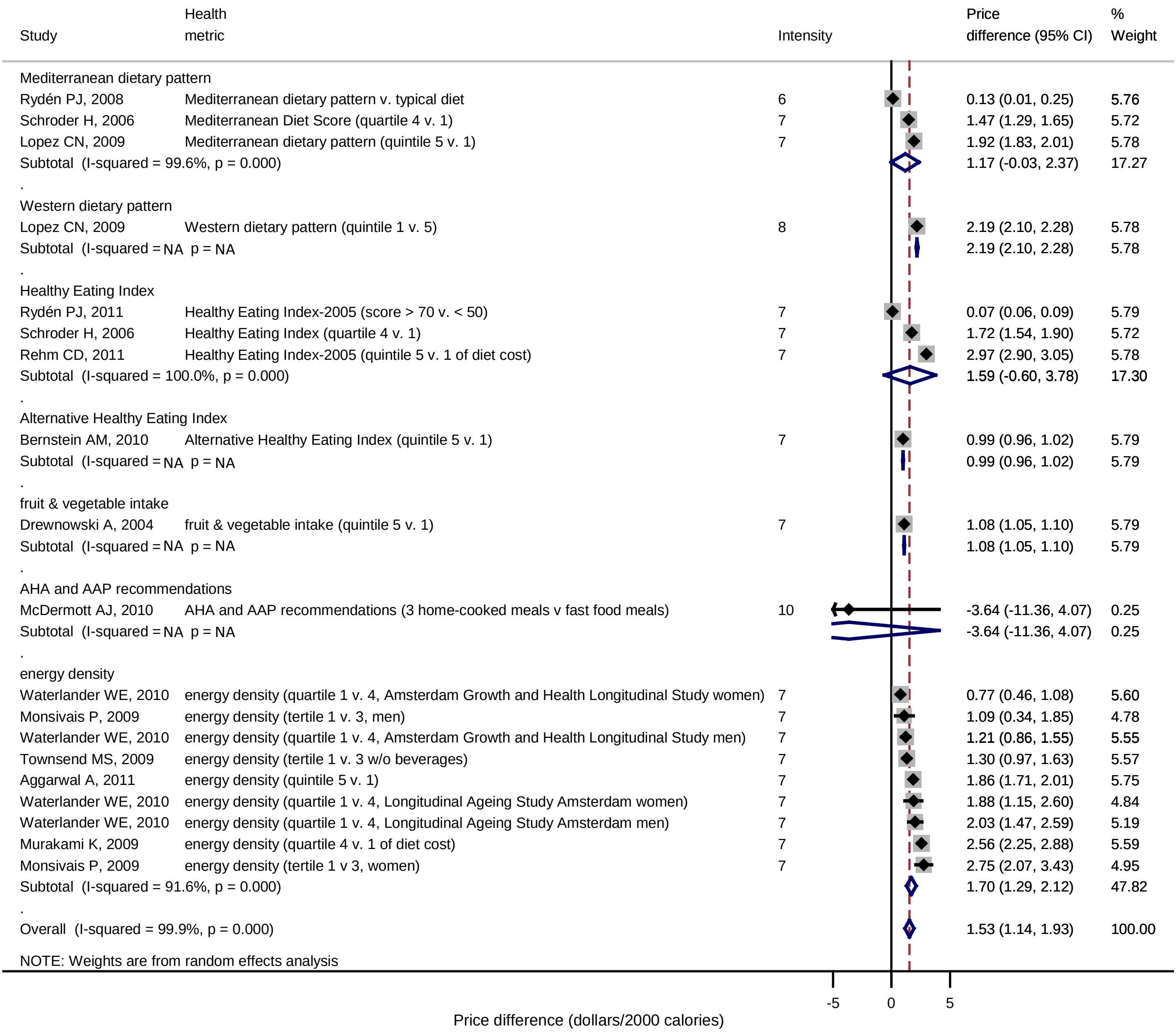

B
Meats/protein
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Katz DL, 2011 | peanut butter meeting v. not meeting Nutrition Detectives criteria | 3 | 0.09 (0.00, 0.17) | 15.06
Liese AD, 2007 | lean v. high fat ground beef | 4 | 0.45 (0.37, 0.53) | 15.27
Liese AD, 2007 | lean v. high fat ground beef | 4 | 0.54 (0.42, 0.66) | 11.37
Wang J, 2010 | chicken without skin v. with skin | 4 | 0.58 (0.57, 0.59) | 21.01
Liese AD, 2007 | skinless boneless chicken breast v. chicken drumsticks (grocery store) | 4 | 0.59 (0.44, 0.73) | 9.28
Wang J, 2010 | lean v. regular beef/pork | 4 | 0.64 (0.63, 0.64) | 21.10
Liese AD, 2007 | skinless boneless chicken breast v. chicken drumsticks (supermarket) | 4 | 0.79 (0.60, 0.97) | 6.91
Overall (I-squared = 97.6%, p = 0.000) | 0.51 (0.45, 0.57) | 100.00
NOTE: Weights are from random effects analysis
-1 0 1
Price difference (dollars/200 calories)
Grains
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Katz DL, 2011 | cereal bars meeting v. not meeting Nutrition Detectives criteria | 6 | -0.28 (-0.81, 0.25) | 0.36
Katz DL, 2011 | cereal meeting v. not meeting Nutrition Detectives criteria | 6 | -0.11 (-0.20, -0.03) | 9.43
Wang J, 2010 | wholemeal v. white bread | 6 | 0.02 (0.02, 0.02) | 27.59
Liese AD, 2007 | high fiber v. low fiber bread (convenience store) | 6 | 0.03 (0.01, 0.06) | 23.95
Liese AD, 2007 | high fiber v. low fiber bread (supermarket) | 6 | 0.08 (0.04, 0.12) | 19.03
Liese AD, 2007 | high fiber v. low fiber bread (grocery store) | 6 | 0.09 (0.00, 0.17) | 9.22
Katz DL, 2011 | bread meeting v. not meeting Nutrition Detectives criteria | 6 | 0.09 (0.01, 0.17) | 10.42
Overall (I-squared = 77.7%, p = 0.000) | 0.03 (0.00, 0.07) | 100.00
NOTE: Weights are from random effects analysis
-.85 0 .85
Price difference (dollars/200 calories)
Dairy
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Liese AD, 2007 | low fat/non fat v. whole milk (grocery store) | 4 | 0.13 (0.10, 0.16) | 18.96
Liese AD, 2007 | low fat/non fat v. whole milk (supermarket) | 4 | 0.14 (0.13, 0.16) | 19.15
Wilson N, 2005 | grated cheese with low v. high saturated fat | 4 | 0.15 (-0.11, 0.41) | 8.50
Wilson N, 2005 | cream with low v. high saturated fat | 4 | 0.17 (0.02, 0.32) | 13.45
Liese AD, 2007 | low fat/non fat v. whole milk (convenience store) | 4 | 0.18 (-0.00, 0.35) | 12.02
Wang J, 2010 | skimmed v. full fat milk | 4 | 0.31 (0.31, 0.31) | 19.25
Wilson N, 2005 | cream cheese with low v. high saturated fat | 4 | 0.32 (-0.04, 0.69) | 5.45
Wilson N, 2005 | hard cheese with low v. high saturated fat | 4 | 0.80 (0.29, 1.32) | 3.22
Overall (I-squared = 98.7%, p = 0.000) | 0.21 (0.11, 0.31) | 100.00
NOTE: Weights are from random effects analysis
-1.4 0 1.4
Price difference (dollars/200 calories)
Snacks/sweets
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Katz DL, 2011 | chips meeting v. not meeting Nutrition Detectives criteria | 3 | -0.03 (-0.17, 0.11) | 14.39
Wilson N, 2005 | chocolate with low v. high saturated fat | 4 | 0.02 (-0.19, 0.24) | 14.38
Wilson N, 2005 | biscuits & crackers with low v. high saturated fat | 4 | 0.12 (-0.10, 0.34) | 14.38
Katz DL, 2011 | crackers meeting v. not meeting Nutrition Detectives criteria | 6 | 0.16 (0.04, 0.28) | 14.39
Katz DL, 2011 | cookies meeting v. not meeting Nutrition Detectives criteria | 3 | 0.18 (-0.82, 1.18) | 14.10
Lipsky LM, 2009 | produce v. snacks | 9 | 5.08 (3.90, 6.27) | 13.98
Wang J, 2010 | sugar substitute v. sugar | 6 | 5.49 (5.44, 5.55) | 14.39
Overall (I-squared = 100.0%, p = 0.000) | 1.57 (-1.06, 4.19) | 100.00
NOTE: Weights are from random effects analysis
-6.5 0 6.5
Price difference (dollars/200 calories)
Fats/oils
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Wilson N, 2005 | butter with low v. high saturated fat | 4 | 0.00 (-0.06, 0.06) | 2.81
Ricciuto L, 2005 | low cholesterol and saturated fat v. regular margarine | 4 | 0.02 (0.02, 0.03) | 30.64
Wilson N, 2005 | butter/vegetable oil blend with low v. high saturated fat | 4 | 0.02 (-0.05, 0.09) | 2.05
Wilson N, 2005 | margarine with low v. high saturated fat | 4 | 0.04 (-0.03, 0.11) | 1.91
Ricciuto L, 2009 | trans fat free v. non trans fat free margarine (2006 data) | 5 | 0.04 (0.03, 0.04) | 30.47
Ricciuto L, 2009 | trans fat free v. non trans fat free margarine (2002 data) | 5 | 0.04 (0.03, 0.04) | 32.12
Overall (I-squared = 82.0%, p = 0.000) | 0.03 (0.02, 0.04) | 100.00
NOTE: Weights are from random effects analysis
-.2 0 .2
Price difference (dollars/200 calories)
Soda/juice
Study | Healthier v. less healthy | Intensity | Price difference (95% CI) | % Weight
Katz DL, 2011 | juices meeting v. not meeting Nutrition Detectives criteria | 6 | 1.18 (-0.77, 3.13) | 49.94
Wang J, 2010 | diet v. sugar-sweetened drinks | 6 | 31.02 (30.97, 31.06) | 50.06
Overall (I-squared = 99.9%, p = 0.000) | 16.12 (-13.12, 45.35) | 100.00
NOTE: Weights are from random effects analysis
-46 0 46
Price difference (dollars/200 calories)

A

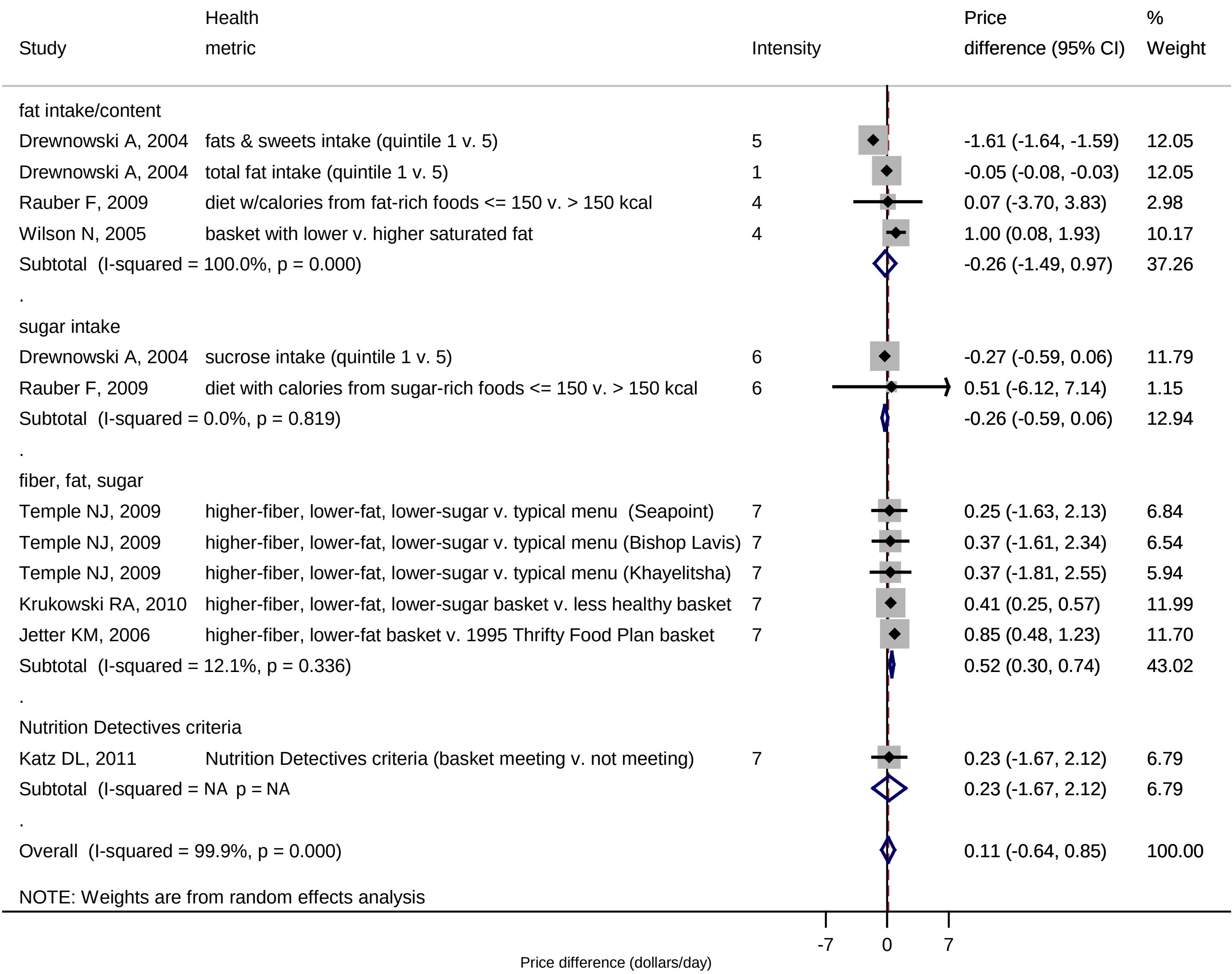


Supporting Figure 3. Price difference between healthier and less healthy food-based diet patterns per day (A) and per 2000 kcal (B), standardized to mean intensity. Price difference defined as the healthier category minus the less healthy category. Dollars/day was defined as dollars/3 meals. One serving of any food was assumed to comprise one-fourth of a meal, except for condiments, fats, and oils for which one serving was assumed to comprise one-eighth of a meal. Calorie-adjustment of price differences based on the USDA database. Information reported was not sufficient to perform calorie-adjustment for Mozaffarian RS, 2012.[37] Energy density was included as a food-based pattern since this metric represents a set of foods more than it represents any single nutrient.[19] Each comparison was assigned an intensity between 1 and 10, with 1 signifying that the healthfulness of the two diet patterns was almost the same and 10 signifying that the healthfulness of the two diet patterns was extremely different. Each price difference was multiplied by the ratio of the intensity of the study comparison to the mean intensity across all studies. For studies reporting price across quantiles of healthfulness, the most extreme quantile comparison was selected for meta-analysis. Summary estimates were generated using a random effects model in which studies were weighted according to the inverse variance of the price difference. All estimates were adjusted for inflation and purchasing power parity – standardized to the international dollar, defined as one US dollar – by country to reflect prices in 2011.

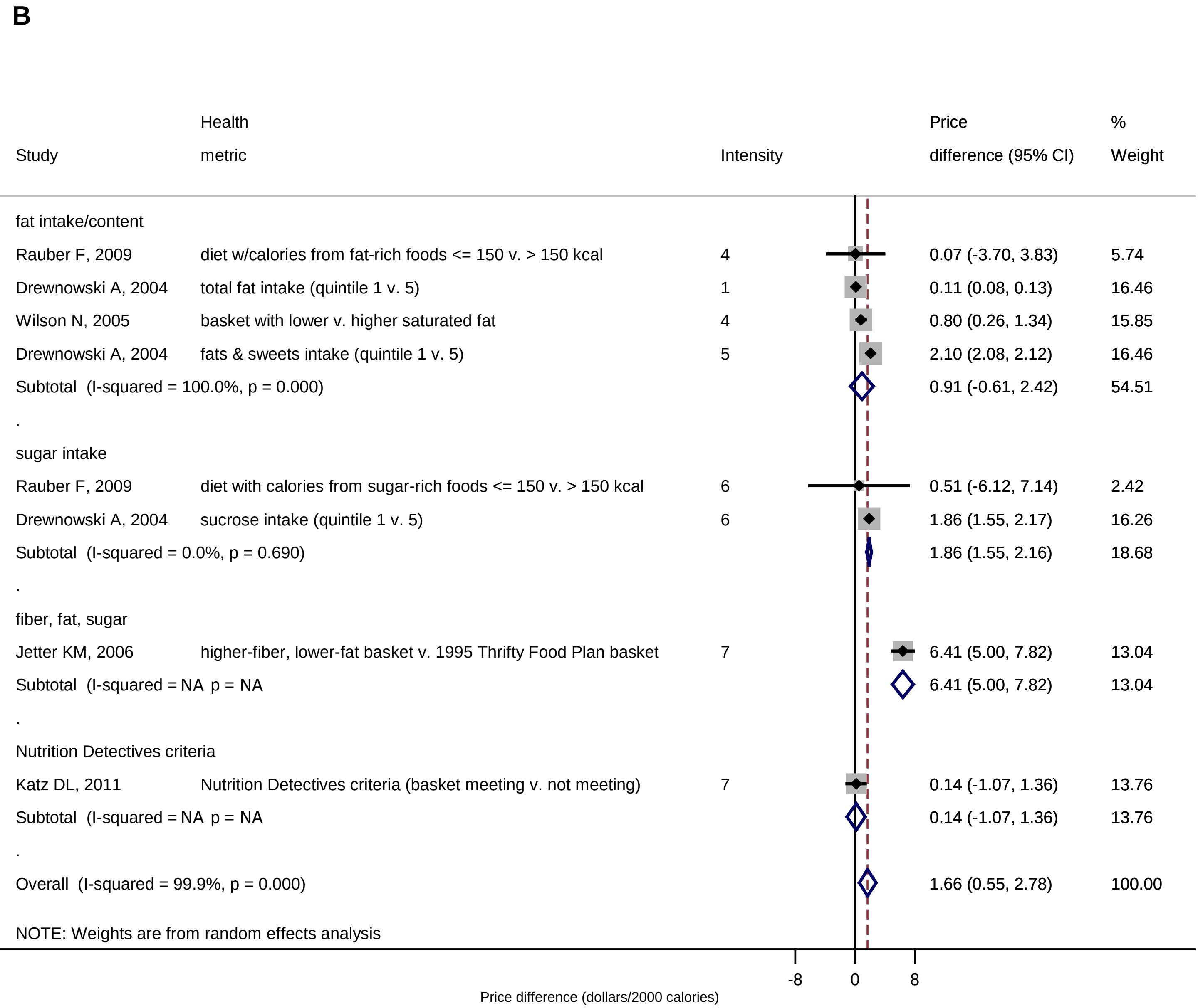
B

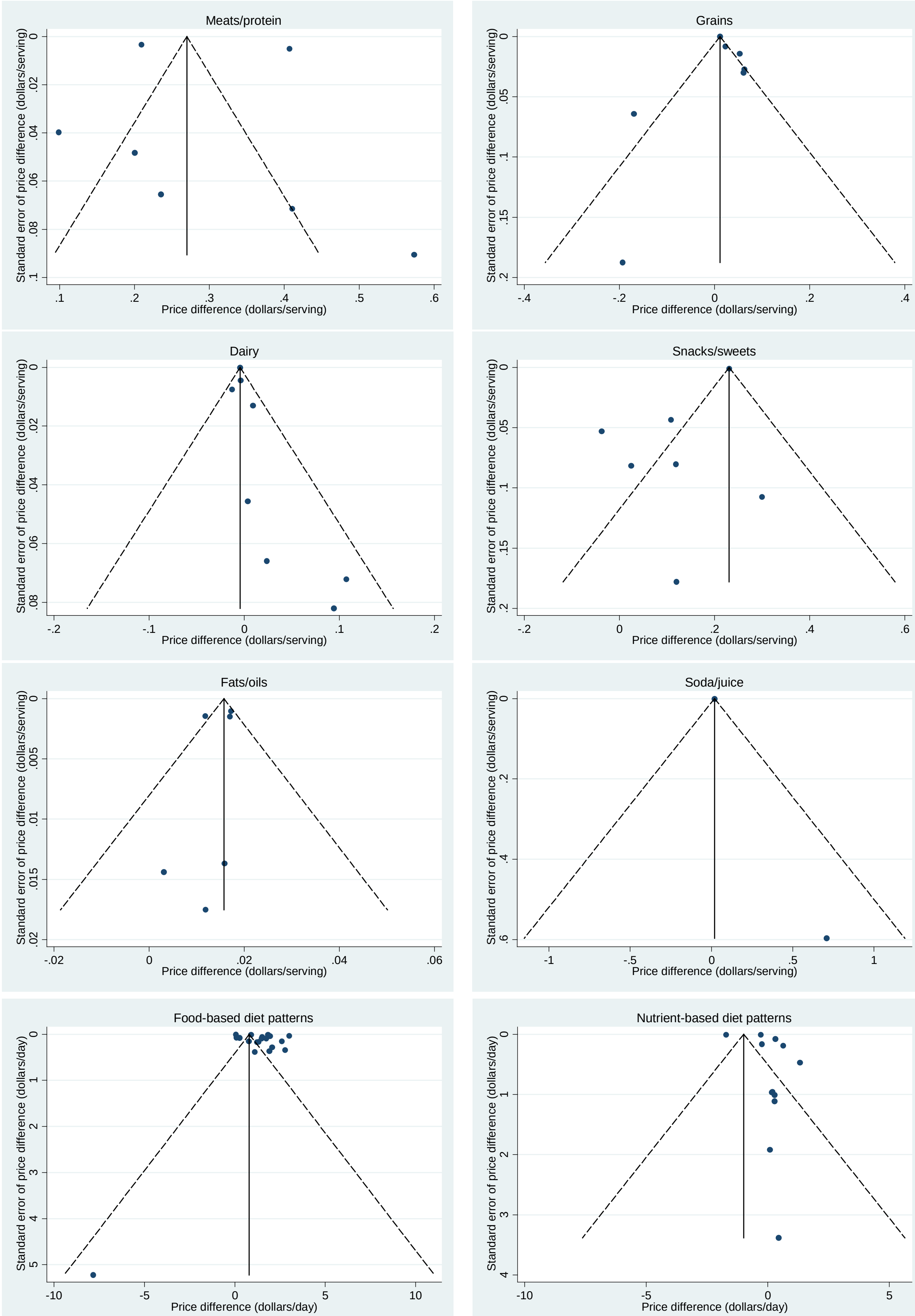

Study | Health metric | Intensity | Price difference (95% CI) | % Weight
Mediterranean dietary pattern
Rydén PJ, 2008 | Mediterranean dietary pattern v. typical diet | 6 | 0.13 (0.01, 0.25) | 5.76
Schroder H, 2006 | Mediterranean Diet Score (quartile 4 v. 1) | 7 | 1.47 (1.29, 1.65) | 5.72
Lopez CN, 2009 | Mediterranean dietary pattern (quintile 5 v. 1) | 7 | 1.92 (1.83, 2.01) | 5.78
Subtotal (I-squared = 99.6%, p = 0.000) | 1.17 (-0.03, 2.37) | 17.27
Western dietary pattern
Lopez CN, 2009 | Western dietary pattern (quintile 1 v. 5) | 8 | 2.19 (2.10, 2.28) | 5.78
Subtotal (I-squared = NA p = NA | 2.19 (2.10, 2.28) | 5.78
Healthy Eating Index
Rydén PJ, 2011 | Healthy Eating Index-2005 (score > 70 v. < 50) | 7 | 0.07 (0.06, 0.09) | 5.79
Schroder H, 2006 | Healthy Eating Index (quartile 4 v. 1) | 7 | 1.72 (1.54, 1.90) | 5.72
Rehm CD, 2011 | Healthy Eating Index-2005 (quintile 5 v. 1 of diet cost) | 7 | 2.97 (2.90, 3.05) | 5.78
Subtotal (I-squared = 100.0%, p = 0.000) | 1.59 (-0.60, 3.78) | 17.30
Alternative Healthy Eating Index
Bernstein AM, 2010 | Alternative Healthy Eating Index (quintile 5 v. 1) | 7 | 0.99 (0.96, 1.02) | 5.79
Subtotal (I-squared = NA p = NA | 0.99 (0.96, 1.02) | 5.79
fruit & vegetable intake
Drewnowski A, 2004 | fruit & vegetable intake (quintile 5 v. 1) | 7 | 1.08 (1.05, 1.10) | 5.79
Subtotal (I-squared = NA p = NA | 1.08 (1.05, 1.10) | 5.79
AHA and AAP recommendations
McDermott AJ, 2010 | AHA and AAP recommendations (3 home-cooked meals v fast food meals) | 10 | -3.64 (-11.36, 4.07) | 0.25
Subtotal (I-squared = NA p = NA | -3.64 (-11.36, 4.07) | 0.25
energy density
Waterlander WE, 2010 | energy density (quartile 1 v. 4, Amsterdam Growth and Health Longitudinal Study women) | 7 | 0.77 (0.46, 1.08) | 5.60
Monsivais P, 2009 | energy density (tertile 1 v. 3, men) | 7 | 1.09 (0.34, 1.85) | 4.78
Waterlander WE, 2010 | energy density (quartile 1 v. 4, Amsterdam Growth and Health Longitudinal Study men) | 7 | 1.21 (0.86, 1.55) | 5.55
Townsend MS, 2009 | energy density (tertile 1 v. 3 w/o beverages) | 7 | 1.30 (0.97, 1.63) | 5.57
Aggarwal A, 2011 | energy density (quintile 5 v. 1) | 7 | 1.86 (1.71, 2.01) | 5.75
Waterlander WE, 2010 | energy density (quartile 1 v. 4, Longitudinal Ageing Study Amsterdam women) | 7 | 1.88 (1.15, 2.60) | 4.84
Waterlander WE, 2010 | energy density (quartile 1 v. 4, Longitudinal Ageing Study Amsterdam men) | 7 | 2.03 (1.47, 2.59) | 5.19
Murakami K, 2009 | energy density (quartile 4 v. 1 of diet cost) | 7 | 2.56 (2.25, 2.88) | 5.59
Monsivais P, 2009 | energy density (tertile 1 v 3, women) | 7 | 2.75 (2.07, 3.43) | 4.95
Subtotal (I-squared = 91.6%, p = 0.000) | 1.70 (1.29, 2.12) | 47.82
Overall (I-squared = 99.9%, p = 0.000) | 1.53 (1.14, 1.93) | 100.00
NOTE: Weights are from random effects analysis
-5
0
5
Price difference (dollars/2000 calories)

A



Supporting Figure 4. Price difference between healthier and less healthy nutrient-based diet patterns per day (A) and per 2000 kcal (B), standardized to mean intensity. One outlying, implausible estimate from Aggarwal A, 2011 (mean adequacy ratio) was excluded ($17.23; 95% CI: $14.35, $20.11).[38] Price difference defined as the healthier category minus the less healthy category. Dollars/day was defined as dollars/3 meals. One serving of any food was assumed to comprise one-fourth of a meal, except for condiments, fats, and oils for which one serving was assumed to comprise one-eighth of a meal. Calorie-adjustment of price differences based on the USDA database. Information reported was not sufficient to perform calorie-adjustment for Temple NJ, 2009 and Krukowski RA, 2010.[39,40] Each comparison was assigned an intensity between 1 and 10, with 1 signifying that the healthfulness of the two diet patterns was almost the same and 10 signifying that the healthfulness of the two diet patterns was extremely different. Each price difference was multiplied by the ratio of the intensity of the study comparison to the mean intensity across all studies. For studies reporting price across quantiles of healthfulness, the most extreme quantile comparison was selected for meta-analysis. Summary estimates were generated using a random effects model in which studies were weighted according to the inverse variance of the price difference. All estimates were adjusted for inflation and purchasing power parity – standardized to the international dollar, defined as one US dollar – by country to reflect prices in 2011.


B
Study
Health metric
Intensity
Price difference (95% CI)
% Weight
fat intake/content
Rauber F, 2009 | diet w/calories from fat-rich foods <= 150 v. > 150 kcal | 4 | 0.07 (-3.70, 3.83) | 5.74
Drewnowski A, 2004 | total fat intake (quintile 1 v. 5) | 1 | 0.11 (0.08, 0.13) | 16.46
Wilson N, 2005 | basket with lower v. higher saturated fat | 4 | 0.80 (0.26, 1.34) | 15.85
Drewnowski A, 2004 | fats & sweets intake (quintile 1 v. 5) | 5 | 2.10 (2.08, 2.12) | 16.46
Subtotal (I-squared = 100.0%, p = 0.000) | 0.91 (-0.61, 2.42) | 54.51
sugar intake
Rauber F, 2009 | diet with calories from sugar-rich foods <= 150 v. > 150 kcal | 6 | 0.51 (-6.12, 7.14) | 2.42
Drewnowski A, 2004 | sucrose intake (quintile 1 v. 5) | 6 | 1.86 (1.55, 2.17) | 16.26
Subtotal (I-squared = 0.0%, p = 0.690) | 1.86 (1.55, 2.16) | 18.68
fiber, fat, sugar
Jetter KM, 2006 | higher-fiber, lower-fat basket v. 1995 Thrifty Food Plan basket | 7 | 6.41 (5.00, 7.82) | 13.04
Subtotal (I-squared = NA p = NA | 6.41 (5.00, 7.82) | 13.04
Nutrition Detectives criteria
Katz DL, 2011 | Nutrition Detectives criteria (basket meeting v. not meeting) | 7 | 0.14 (-1.07, 1.36) | 13.76
Subtotal (I-squared = NA p = NA | 0.14 (-1.07, 1.36) | 13.76
Overall (I-squared = 99.9%, p = 0.000) | 1.66 (0.55, 2.78) | 100.00
NOTE: Weights are from random effects analysis
-8
0
8
Price difference (dollars/2000 calories)



Supporting Figure 5. Funnel plots of standard error vs price difference, per serving for food groups and per day for diet patterns. Egger test was performed to assess publication bias; p-values for per serving and per day analyses were 0.797 for meats/protein, 0.498 for grains, 0.190 for dairy, 0.061 for snacks/sweets, 0.582 for fats/oils, 0.197 for food-based diet patterns, and 0.621 for nutrient-based diet patterns with one outlier removed from Aggarwal A, 2011 (quintile 5 v. 1 of mean adequacy ratio). P-values for per 200 kcal and per 2000 kcal analyses were 0.206 for meats/protein, 0.533 for grains, 0.162 for dairy, 0.139 for snacks/sweets, 0.621 for fats/oils, 0.053 for food-based diet patterns, and 0.962 for nutrient-based diet patterns. There were too few soda/juice studies to perform the Egger test for this food group.