

- 1 Online Supplemental Table 1. Balance analysis for randomly assigned left/right position and 3
- 2 label variations.

Null hypothesis	Product category	Degrees of freedom	Chi-square	p-value ^a
No association between age category and 3 cereal label variations.	Cereal (n=1017)	10	13.85	0.180
	Crackers (n=1010)	10	14.04	0.171
	Bread (n=1015)	10	1.40	0.999
No association between age category and left/right position.	Cereal (n=1017)	5	2.53	0.772
	Crackers (n=1010)	5	2.16	0.827
	Bread (n=1015)	5	7.98	0.157
No association between race category and 3 cereal label variations.	Cereal (n=1015)	4	2.47	0.651
	Crackers (n=1008)	4	2.89	0.576
	Bread (n=1013)	4	5.97	0.202
No association between race category and left/right position.	Cereal (n=1015)	2	0.03	0.988
	Crackers (n=1008)	2	0.67	0.716
	Bread (n=1013)	2	1.82	0.402
No association between education category and 3 cereal label variations.	Cereal (n=1017)	6	3.74	0.711
	Crackers (n=1010)	6	2.65	0.851
	Bread (n=1015)	6	10.30	0.112
No association between education category and left/right position.	Cereal (n=1017)	3	5.80	0.122
	Crackers (n=1010)	3	0.86	0.834
	Bread (n=1015)	3	4.46	0.216

- 3 ^ap-value < 0.05 would indicate lack of balance in random assignment.

- 4 Online Supplemental Table 2. Relative frequency of correct response (unlabeled option was healthier) and incorrect response (WG
5 labeled option was healthier or both options were equally healthy), for the full sample and for 3 variations on the product labels^a

			Frequency	SE	Frequency	SE	Frequency	SE	Frequency	SE
	Cereal (n=1030)		Full Sample		1 Made with WG (n=310)		2 Multigrain (n=376)		3 WG Stamp (n=344)	
1	Unlabeled	Correct	68.9	1.4	70.6	2.6	66.0	2.4	70.6	2.5
2	Equally Healthy	Incorrect	19.6	1.2	15.8	2.1	22.1	2.1	20.3	2.2
3	Labeled	Incorrect	11.5	1.0	13.5	1.9	12.0	1.7	9.0	1.5
	Crackers (n=1016)		Full Sample		1 Made with WG (n=334)		2 Multigrain (n=353)		3 WG Stamp (n=329)	
1	Unlabeled	Correct	65.3	1.5	63.5	2.6	61.8	2.6	70.8	2.5
2	Equally Healthy	Incorrect	22.7	1.3	22.2	2.3	24.9	2.3	21.0	2.2
3	Labeled	Incorrect	12.0	1.0	14.4	1.9	13.3	1.8	8.2	1.5
	Bread (n=1022)		Full Sample		1 Multigrain (n=344)		2 Wheat (n=347)		3 WG Stamp (n=331)	
1	Unlabeled	Correct	53.0	1.6	54.1	2.7	53.0	2.7	52.0	2.8

2	Equally Healthy	Incorrect	20.7	1.3	18.3	2.1	20.2	2.2	23.6	2.3
3	Labeled	Incorrect	26.3	1.4	27.6	2.4	26.8	2.4	24.5	2.4

6 ^aImages for the hypothetical product comparison are in Online Supplemental Figure 1.

7 Online Supplemental Table 3. Ordered logit estimates for propensity to respond incorrectly when
 8 comparing hypothetical product pairs for which the unlabeled option was healthier (reduced
 9 model without a question about “difficult to determine” WG content).^a

	Cereal		Crackers		Bread	
Explanatory Var. ^b	Coef ^d	SE	Coef ^d	SE	Coef ^d	SE
Label variation 1 ^c	(comparison)		(comparison)		(comparison)	
Label variation 2	0.154	0.169	0.068	0.160	-0.002	0.151
Label variation 3	-0.050	0.176	-0.343	0.168	0.065	0.152
18 to 24 years old	(comparison)		(comparison)		(comparison)	
25 to 34 years old	0.470	0.260	0.544	0.256	0.127	0.242
35 to 44 years old	0.368	0.260	0.357	0.256	-0.001	0.240
45 to 54 years old	-0.190	0.273	-0.256	0.267	-0.481	0.247
55 to 64 years old	-0.478	0.290	-0.171	0.273	-0.561	0.255
Age 65 or more	-0.543	0.293	-0.876	0.300	-0.743	0.259
Black / Afr. Amer.	(comparison)		(comparison)		(comparison)	
Asian / Pacific Islander and Other	0.107	0.267	-0.394	0.274	-0.008	0.254
White / Caucasian	-0.523	0.187	-0.595	0.180	-0.658	0.178
College degree	(comparison)		(comparison)		(comparison)	
Grad / prof. degree	0.161	0.229	0.167	0.221	0.356	0.203
HS or less	0.546	0.178	0.450	0.176	0.757	0.163
Some college	0.2010653	0.188	0.214038	0.183	0.377096	0.170
Cutpoint 1 (Equal versus Unlabeled)	0.695	0.304	0.281	0.293	-0.250	0.282
Cutpoint 2 (Labeled versus Equal)	1.992	0.312	1.729	0.300	0.722	0.283
Obs	1,015		1,008		1,013	

10 ^aOutcome variable coded 1 (unlabeled), 2 (equally healthy), 3 (WG labeled). ^bSee also main
 11 ordered logit model in Table 4. An extended model is presented in Online Supplemental Table 4.
 12 ^cWG label variations for the cereal and cracker categories: (1) “made with whole grains,” (2)
 13 “multigrain,” and (3) a WG stamp; and for the bread category: (1) “multigrain,” (2) “wheat,” and
 14 (3) a WG stamp. ^dCoefficient shows effect of each explanatory variable on the log-odds of
 15 having the next higher value of the outcome variable (i.e. choosing equally healthy over
 16 unlabeled).

17 Online Supplemental Table 4. Ordered logit estimates for propensity to respond incorrectly when
 18 comparing hypothetical product pairs for which the unlabeled option was healthier (expanded
 19 model with additional demographic variables).^a

	Cereal		Crackers		Bread	
Explanatory Var. ^b	Coef ^d	SE	Coef ^d	SE	Coef ^d	SE
Label variation 1 ^c	(comparison)		(comparison)		(comparison)	
Label variation 2	0.144	0.174	0.005	0.163	-0.012	0.152
Label variation 3	-0.079	0.180	-0.356	0.171	0.095	0.154
WG in left position	-0.197	0.141	-0.160	0.136	-0.139	0.126
“Difficult to determine” which products contain WG						
strong disagreement	(comparison)		(comparison)		(comparison)	
some disagreement	-0.627	0.267	-0.308	0.247	-0.007	0.222
neither	0.274	0.244	0.209	0.236	0.490	0.219
some agreement	0.266	0.249	0.269	0.240	0.246	0.222
strong agreement	0.874	0.279	0.960	0.269	0.668	0.256
18 to 24 years old	(comparison)		(comparison)		(comparison)	
25 to 34 years old	0.452	0.266	0.477	0.261	0.050	0.246
35 to 44 years old	0.336	0.266	0.308	0.260	-0.045	0.243
45 to 54 years old	-0.195	0.282	-0.269	0.273	-0.534	0.252
55 to 64 years old	-0.402	0.298	-0.190	0.279	-0.527	0.260
Age 65 or more	-0.509	0.302	-0.834	0.305	-0.732	0.263
Male	0.250	0.146	-0.147	0.141	-0.033	0.130
Black / Afr. Amer.	(comparison)		(comparison)		(comparison)	
Asian / Pacific Islander and Other	0.208	0.279	-0.263	0.284	-0.085	0.264
White / Caucasian	-0.387	0.199	-0.341	0.190	-0.600	0.186
Non-Hispanic	0.028	0.222	0.160	0.221	-0.310	0.200
College degree			(comparison)		(comparison)	

Grad / prof. degree	0.038	0.237	0.112	0.227	0.356	0.208
HS or less	0.503	0.182	0.412	0.178	0.711	0.165
Some college	0.170	0.192	0.205	0.186	0.317	0.173
Cutpoint 1 (Equal versus Unlabeled)	0.922	0.431	0.575	0.417	-0.351	0.392
Cutpoint 2 (Labeled versus Equal)	2.271	0.438	2.058	0.424	0.630	0.392
Obs	1008		1001		1006	

20 ^aOutcome variable coded 1 (unlabeled), 2 (equally healthy), 3 (WG labeled). ^bSee also main
21 ordered logit model in Table 4. An extended model is presented in Online Supplemental Table 4.
22 ^cWG label variations for the cereal and cracker categories: (1) “made with whole grains,” (2)
23 “multigrain,” and (3) a WG stamp; and for the bread category: (1) “multigrain,” (2) “wheat,” and
24 (3) a WG stamp. ^dCoefficient shows effect of each explanatory variable on the log-odds of
25 having the next higher value of the outcome variable (i.e. choosing equally healthy over
26 unlabeled).

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28 Online Supplemental Table 5. Whole grain content comprehension questions for actual products
 29 with varying amounts of WG content^a

Product Description	Actual Whole Grain Content	Frequency of Respondent Choices (%)				
		“All the grain is whole grain”	“Half or more than half the grain is whole grain”	“Less than half the grain is whole grain”	“There is little or no whole grain”	“Other”
Honey Wheat Bread	“Less than half” or “little or no” is correct. Whole wheat flour (6th ingredient) is less than unbleached enriched wheat flour (1st ingredient).	17.89	24.95	22.44	30.46	4.26
Multigrain Cracker	“Less than half” or “little or no” is correct. Whole wheat flour (5th ingredient) is less than enriched wheat flour (1st ingredient).	14.33	26.62	30.40	25.56	3.10

Farmhouse 12 Grain Bread	“Less than half” or “little or no” is correct. Whole wheat flour (3rd ingredient) is less than enriched wheat flour (1st ingredient).	22.14	29.13	27.86	18.16	2.72
Apple Cinnamon Oat Cereal	“Half or more” is correct. WG oats (1st ingredient) is more than corn starch (3rd ingredient).	45.05	36.60	11.84	4.85	1.65

30 ^aProduct images are in Figure 1 (may be supplemental).

31 WG, Whole Grain

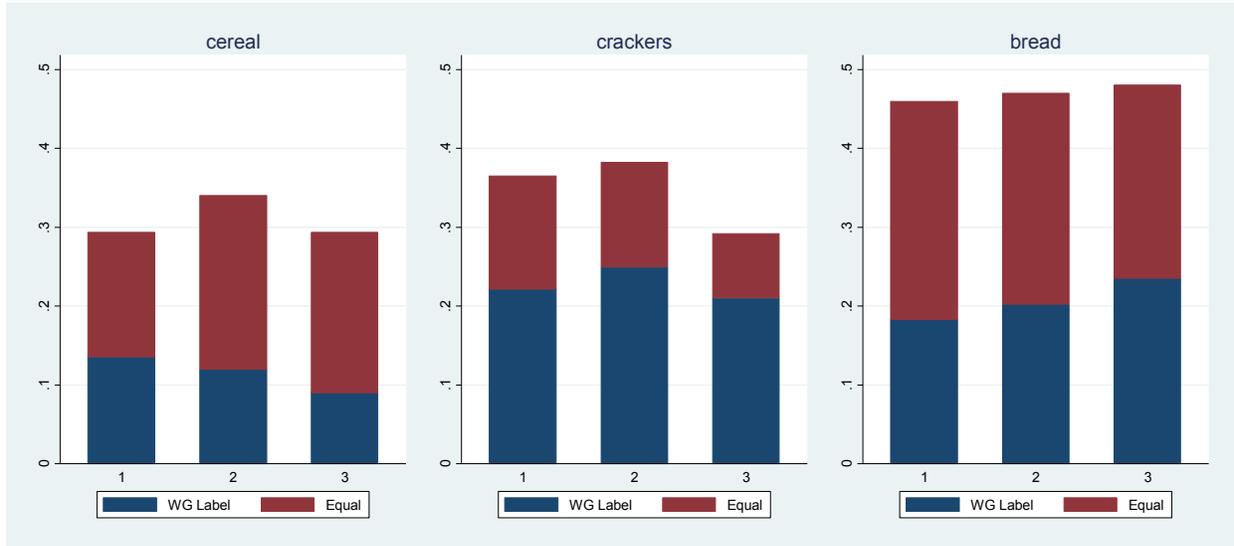
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33 Online Supplemental Table 6. Chi-square hypothesis tests from ordered logit models of correct
 34 responses (unlabeled option was healthier) and incorrect responses (WG labeled option was
 35 healthier or both options were equally healthy) in hypothetical product comparisons.^a

Null hypothesis	Product category	Degrees of freedom	Chi-square	p-value
No association with left/right position	Cereal (n=1030)	1	2.45	0.118
	Crackers (n=1016)	1	2.73	0.099
	Bread (n=1022)	1	2.54	0.111
No association with 3 label variations	Cereal (n=1030)	2	1.98	0.372
	Crackers (n=1016)	2	7.92	0.019
	Bread (n=1022)	2	0.00	0.998
No association with agreement that it is difficult to determine WG content	Cereal (n=1023)	4	56.71	0.000
	Crackers (n=1015)	4	48.21	0.000
	Bread (n=1021)	4	28.65	0.000

36 ^aImages for product comparisons are in Online Supplemental Figure 2. Ordered logit outcome
 37 variable coded 1 (unlabeled), 2 (equally healthy), 3 (WG labeled).

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5 Online Supplemental Figure 1. Relative frequency of incorrect responses (stating that the labeled
6 option was healthier or both options were equally healthy), in trials of hypothetical product pairs
7 for which the unlabeled option was healthier. There were 3 randomly-assigned variations of the
8 label within each of the 3 product categories: cereal (1 Made with WG, 2 Multigrain, 3 WG
9 stamp), crackers (1 Made with WG, 2 Multigrain, 3 WG stamp), and bread (1 Multigrain, 2
10 Wheat, 3 WG stamp), as shown in Online Supplemental Figure 2. Each respondent received only
11 1 variation within each product category, as shown in Online Supplemental Figure 3. Standard
12 errors and further details in Online Supplemental Table 1.

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15 (a) Cereal¹

No Treatment	Treatment		
	1	2	3
No claim	Stamp	Made with whole grains	Multigrain
			

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WG corn is 3 rd ingredient	WG corn is 6 th ingredient	WG corn is 6 th ingredient	WG corn is 6 th ingredient
Sugar is 5 th ingredient	Sugar is 2 nd ingredient	Sugar is 2 nd ingredient	Sugar is 2 nd ingredient
3g added sugars	13g added sugars	13g added sugars	13g added sugars
<p>More WG and less sugar</p>	<p>Less WG, more sugar, and a WG label</p>		

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20 (b) Crackers



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Whole wheat flour is 4 th ingredient	Whole wheat flour is 5 th ingredient	Whole wheat flour is 5 th ingredient	Whole wheat flour is 5 th ingredient
Salt is 5 th ingredient	Salt is 3 rd ingredient	Salt is 3 rd ingredient	Salt is 3 rd ingredient
80 mg sodium	280 mg sodium	280 mg sodium	280 mg sodium
More WG and less salt	Less WG, more salt, and a WG label		

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33 (c) Bread



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Whole wheat flour 1 st ingredient	Whole wheat flour 5 th ingredient	Whole wheat flour 5 th ingredient	Whole wheat flour 5 th ingredient
4g fiber	2g fiber	2g fiber	2g fiber
More WG	Less WG and a WG label		

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36 ¹Each respondent was presented with just 1 of the treatment options.

37 Online Supplemental Figure 2. Unlabeled (no treatment) and 3 randomly-assigned variations of
 38 WG labeled (treatment) images and descriptions, for hypothetical products in 3 product
 39 categories (cereal, crackers, bread).

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Which product is healthier? Select one option below.



Nutrition Facts	
10 servings per container	
Serving size	1 cup (31g)
Amount Per Serving	
Calories	110
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 150mg	7%
Total Carbohydrate 26g	9%
Dietary Fiber 1g	4%
Total Sugars 3g	
Includes 3g Added Sugars	6%
Protein 2g	4%
Not a significant source of vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Ingredients: wheat, rice, whole grain corn, brown rice syrup, sugar, corn starch, salt, malt flavor, vitamins and minerals

Nutrition Facts	
10 servings per container	
Serving size	1 cup (31g)
Amount Per Serving	
Calories	110
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 150mg	7%
Total Carbohydrate 26g	9%
Dietary Fiber 1g	4%
Total Sugars 13g	
Includes 13g Added Sugars	26%
Protein 2g	4%
Not a significant source of vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Ingredients: wheat, sugar, rice, brown rice syrup, whole grain corn, corn starch, salt, malt flavor, vitamins and minerals

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Equal



B



44 Online Supplemental Figure 3. Example of a comparison presented to respondents.

45 (a) Honey Wheat Bread



Nutrition Facts

22 servings per container

Serving size 1 slice (26g)

Amount Per Serving

Calories	70
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% Daily Value*

Total Fat 1g	1%
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Saturated Fat 0g	0%
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Trans Fat 0g	
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Cholesterol 0mg	0%
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Sodium 125mg	5%
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Total Carbohydrate 13g	5%
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Dietary Fiber < 1g	3%
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Total Sugars 2g	
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Includes 2g Added Sugars	4%
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Protein 3g	6%
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Not a significant source of vitamin D, calcium, iron, and potassium

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Unbleached enriched flour (wheat flour, malted barley flour, niacin, reduced iron, thiamin mononitrate, riboflavin, folic acid), water, honey, sugar, wheat gluten, whole wheat flour, rye flour, wheat bran, contains 2% or less of each of the following: yeast, soy flour, salt, soybean oil, monoglycerides, enzymes, ascorbic acid, cultured wheat flour, vinegar, calcium sulfate, monocalcium phosphate, soy lecithin, calcium carbonate

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Which of the following statements best applies to the product in the image?

- All the grain is whole grain
- Half or more than half the grain is whole grain
- Less than half the grain is whole grain
- There is little or no whole grain
- Other

55 (b) Multigrain Cracker



Nutrition Facts

10 servings per container	
Serving size	34 crackers (30g)
Amount Per Serving	
Calories	140
<small>% Daily Value*</small>	
Total Fat 6g	8%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 270mg	12%
Total Carbohydrate 20g	7%
Dietary Fiber < 1g	2%
Total Sugars 3g	
Includes 3g Added Sugars	6%
Protein 2g	4%
<small>Not a significant source of vitamin D, calcium, iron, and potassium</small>	
<small>*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

Ingredients: Enriched flour (wheat flour, niacin, reduced iron, vitamin B1 [thiamin mononitrate], vitamin B2 [riboflavin], folic acid), canola oil (with TBHQ for freshness), sugar, modified corn starch, whole wheat flour, toasted defatted wheat germ, whole wheat. Contains 2% or less of oat bran, salt, high fructose corn syrup, leavening (baking soda, sodium acid pyrophosphate, mono-calcium phosphate), corn syrup, degeminated yellow corn flour, soy lecithin

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Which of the following statements best applies to the product in the image?

- All the grain is whole grain
- Half or more than half the grain is whole grain
- Less than half the grain is whole grain
- There is little or no whole grain
- Other

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68 (c) Apple Cinnamon Oat Cereal



Nutrition Facts

20 servings per container	
Serving size	3/4 cup (28g)
Amount Per Serving	
Calories	110
% Daily Value*	
Total Fat 1.5g	2%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 110mg	5%
Total Carbohydrate 22g	8%
Dietary Fiber 2g	7%
Total Sugars 9g	
Includes 9g Added Sugars	18%
Protein 2g	4%

Not a significant source of vitamin D, calcium, iron, and potassium

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Whole grain oats, sugar, oat bran, corn starch, corn syrup, canola oil, apple puree concentrate, salt, refiner's syrup, cinnamon, trisodium phosphate. Vitamin E added to preserve freshness

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Which of the following statements best applies to the product in the image?

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All the grain is whole grain

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Half or more than half the grain is whole grain

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Less than half the grain is whole grain

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There is little or no whole grain

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Other

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81 (d) Farmhouse 12 Grain Bread



Nutrition Facts

14 servings per container

Serving size 1 slice (49g)

Amount Per Serving

Calories	140
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	% Daily Value*
Total Fat 2.5g	3%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 220mg	10%
Total Carbohydrate 25g	9%
Dietary Fiber 3g	11%
Total Sugars 4g	
Includes 4g Added Sugars	8%
Protein 5g	10%

Not a significant source of vitamin D, calcium, iron, and potassium

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Ingredients: Enriched wheat flour (flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), water, whole wheat flour, sugar, yeast, wheat berries, sunflower seeds, wheat gluten, oat fiber, soybean oil, contains 2% or less of: oats, salt, pearled barley, rye, triticale, corn grit, millet, flaxseed, calcium propionate and sorbic acid to extend freshness, monoglycerides, sodium stearoyl lactylate, flaxseed meal, buckwheat flour, millet flour, brown rice meal, amaranth flour, soy lecithin, whey (milk), citric acid, malted barley flour

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Which of the following statements best applies to the product in the image?

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All the grain is whole grain

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Half or more than half the grain is whole grain

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Less than half the grain is whole grain

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There is little or no whole grain

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Other

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90 Online Supplemental Figure 4. Product images and survey questions for WG content of 4 actual products

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