

A stylized landscape graphic featuring a large orange sun in the upper half, a light blue sky, and two green hills in the lower half. The hills are rendered in shades of green, with a darker green in the foreground and a lighter green behind it.

Whole Grains for Growing Minds: Nourishing the Next Generation

November 15, 2023



Disclosures

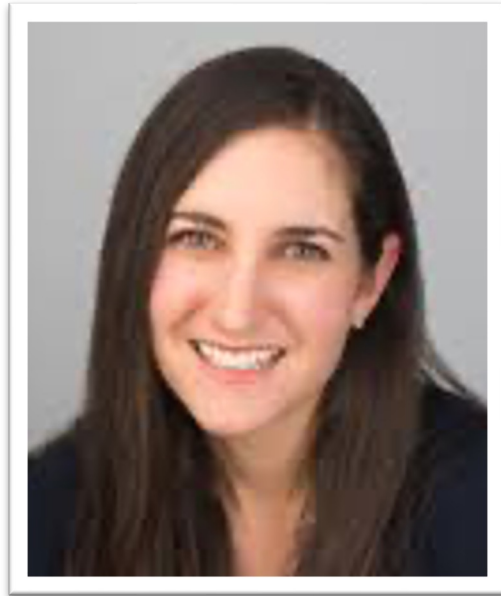
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Today's Speakers



Dr. Juliana Cohen
Adjunct Professor of Nutrition
Harvard T.H. Chan School of Public Health



Sharon Palmer, MSFS, RDN
The Plant-Powered Dietitian



Whole Grains for Growing Minds: Nourishing the Next Generation

Juliana Cohen, ScM, ScD

Professor & Director of the Center for Health Inclusion, Research and Practice (CHIRP), Merrimack College
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Conflicts of Interest/Disclosures

COI: None

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National Institutes of Health

Benefits of Whole Grains in the School Context

Impact on Child Wellbeing and Academics

- Whole grains have a lower glycemic index which promote blood sugar levels/ satiety and executive functioning
- B vitamins are cofactors for enzymes that synthesize neurotransmitters, thus impacting cognition
- Folate impacts myelin sheath integrity and nerve cell membranes, which affect neuron function



Source: Cohen JF, Gorski MT, Gruber SA, Kurdziel LB, Rimm EB. The effect of healthy dietary consumption on executive cognitive functioning in children and adolescents: a systematic review. *British Journal of Nutrition*. 2016 Sep;116(6):989-1000.

Benefits of Whole Grains in the School Context

Overall, a healthier diet – including whole grains – may lead to changes in brain structure and function, particularly in the frontal cortical regions involved, through synapse formation, in neurogenesis, myelination, and glucose control.



Source: Cohen JF, Gorski MT, Gruber SA, Kurdziel LB, Rimm EB. The effect of healthy dietary consumption on executive cognitive functioning in children and adolescents: a systematic review. *British Journal of Nutrition*. 2016 Sep;116(6):989-1000.

Benefits of Whole Grains in the School Context

Other Benefits

- Compliments Nutrition Education
- Peer modeling of healthy habits
- Opportunities for students to try new foods (especially for those from low-income households)



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Will Students Eat Whole Grains at School?



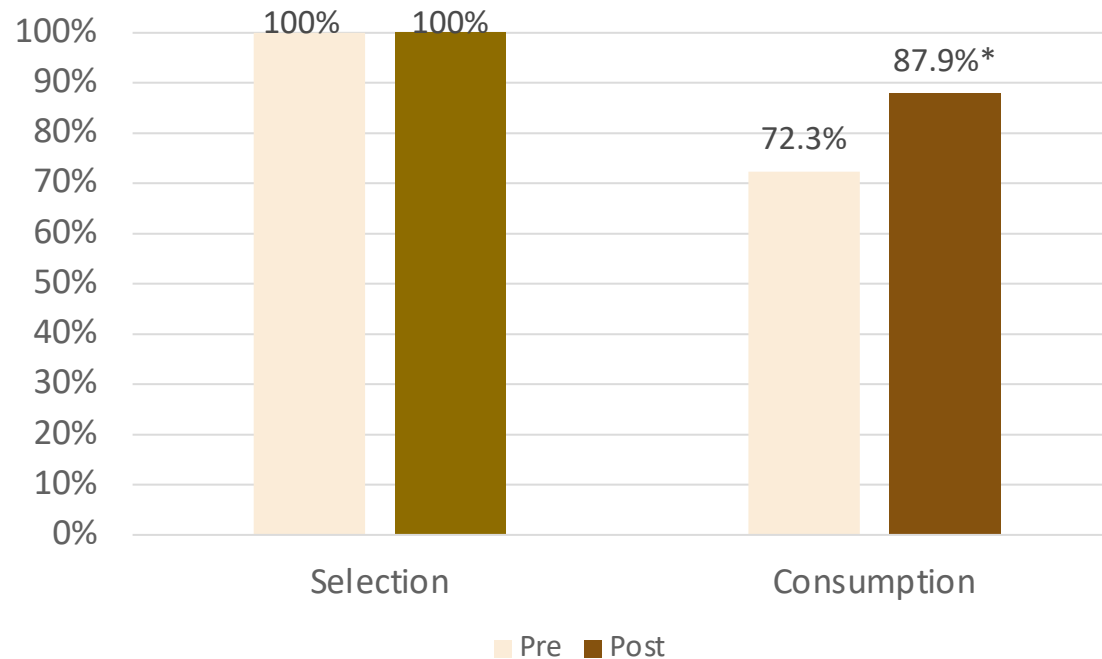
Will Students Eat Whole Grains at School?

YES!!!



Will Students Eat Whole Grains at School?

- When the HHFKA was implemented (requiring whole grains), school entrée consumption *increased*



*p < 0.05

Source: Cohen, Juliana FW, et al. "Impact of the new US Department of Agriculture school meal standards on food selection, consumption, and waste." *American journal of preventive medicine* 46.4 (2014): 388-394.

Encouraging and promoting whole grain consumption in schools: What Works?

- With strong nutrition standards, whole grains become the new norm
- Adapting recipes to focus on palatability and cultural appropriateness of the school meals
- Taste tests
- Providing choices
- Collaborations with local culinary experts/chefs



Source: Cohen JF, Hecht AA, Hager ER, Turner L, Burkholder K, Schwartz MB. Strategies to improve school meal consumption: a systematic review. *Nutrients*. 2021 Oct 7;13(10):3520.

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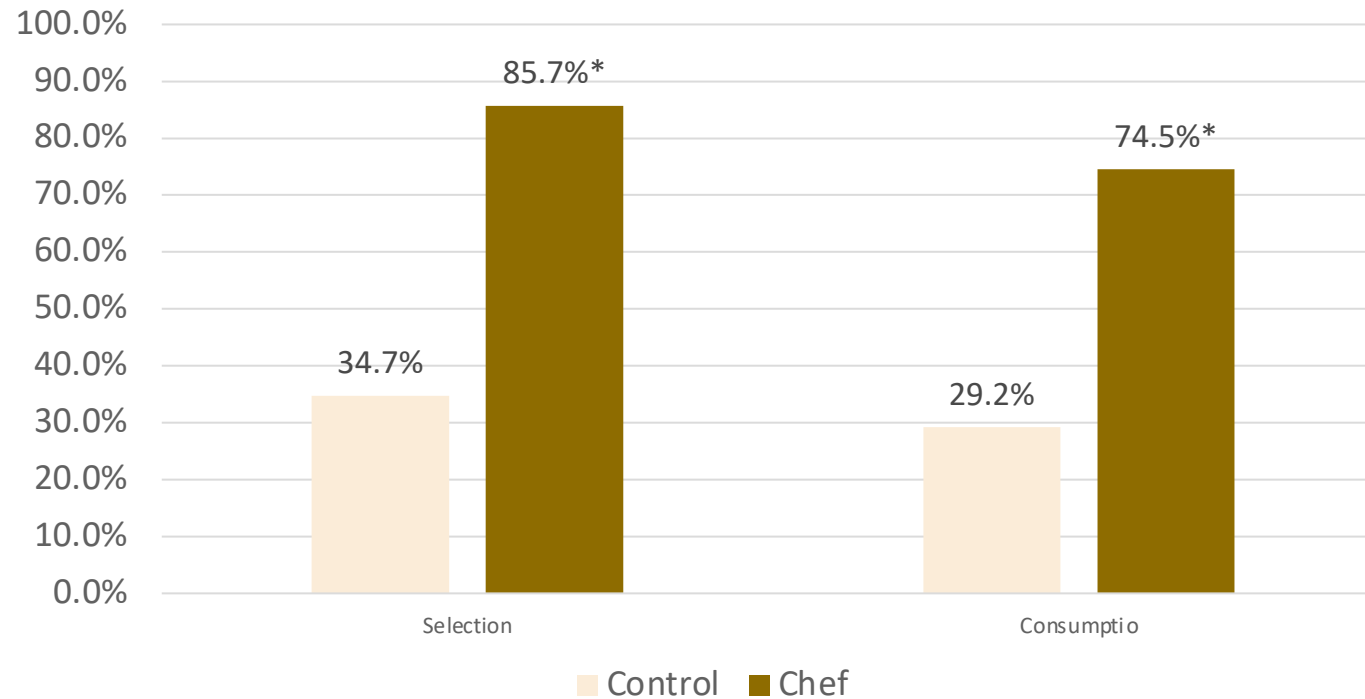
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Impact of Chef Initiative



*p < 0.05

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Additional Initiatives and Policies to promote whole grain consumption

- Promotion as nourishing, appetizing foods (not ‘healthy’)
- Strong school wellness policies that promote:
 - Sufficient time to eat
 - Recess before lunch
 - Limited access to competitive foods



Source: Cohen JF, Hecht AA, Hager ER, Turner L, Burkholder K, Schwartz MB. Strategies to improve school meal consumption: a systematic review. *Nutrients*. 2021 Oct 7;13(10):3520.

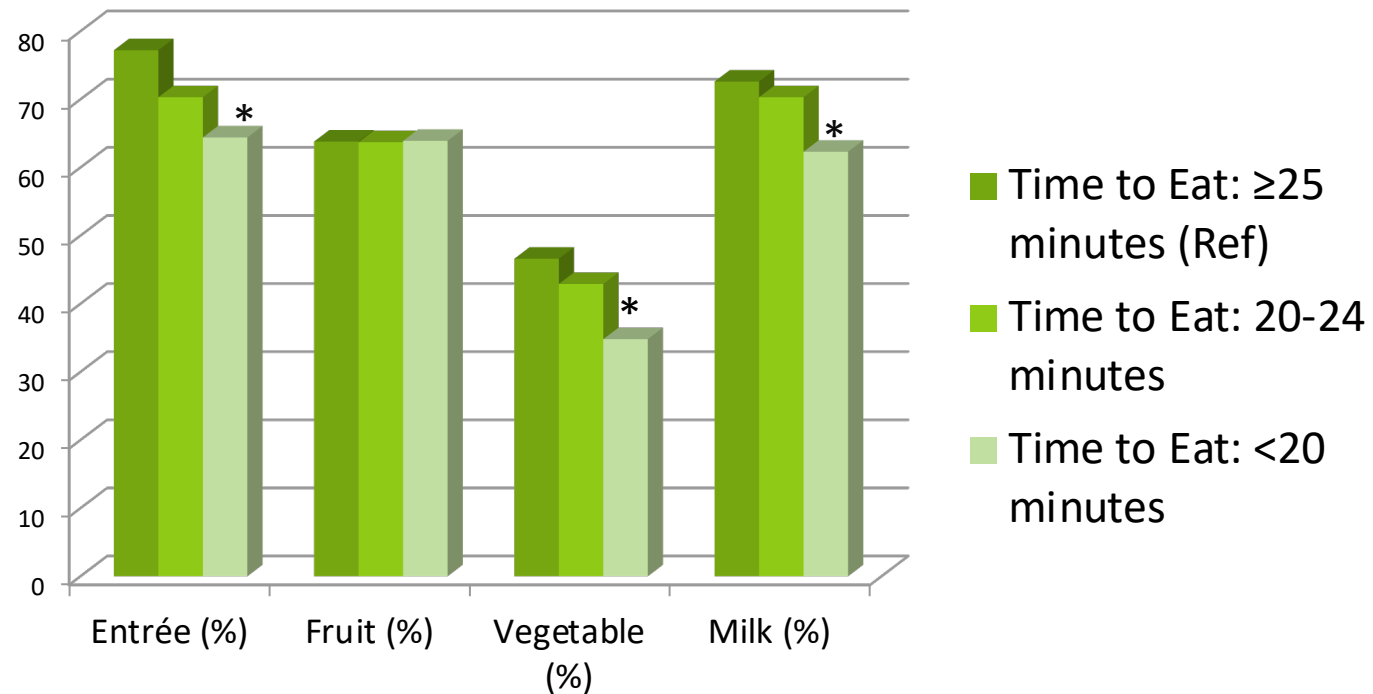
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Impact of Time to Eat



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Conclusions

- Whole grain consumption can support healthy physical and cognitive development
- School meals are an ideal opportunity for students to be exposed to whole grains
- Supportive strategies can further encourage students to consume whole grains in school meals



Thank you

Juliana Cohen

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Kids: Powering Up on Whole Grains



Sharon Palmer MSFS, RDN

The Plant-Powered Dietitian

Disclosures

- Co-founder Food + Planet
- Nutrition Consultant Oldways
- Nutrition Editor Today's Dietitian
- Adjunct Faculty, Prescott College

Getting my kids to eat whole grains...



My son Nicholas cooking with his mom, Sharon Palmer



Oat Baby Muffins, Sharon Palmer

Why Whole Grains in Kids' Diets?

- It's about more than just fruits & veggies!
- Whole grains are:
 - Nutrient-dense
 - Important for growth & development
 - Better diet quality
 - Better satiety

(BMC Public Health, 2014; BMJ Clin. Res. Ed. 2016)



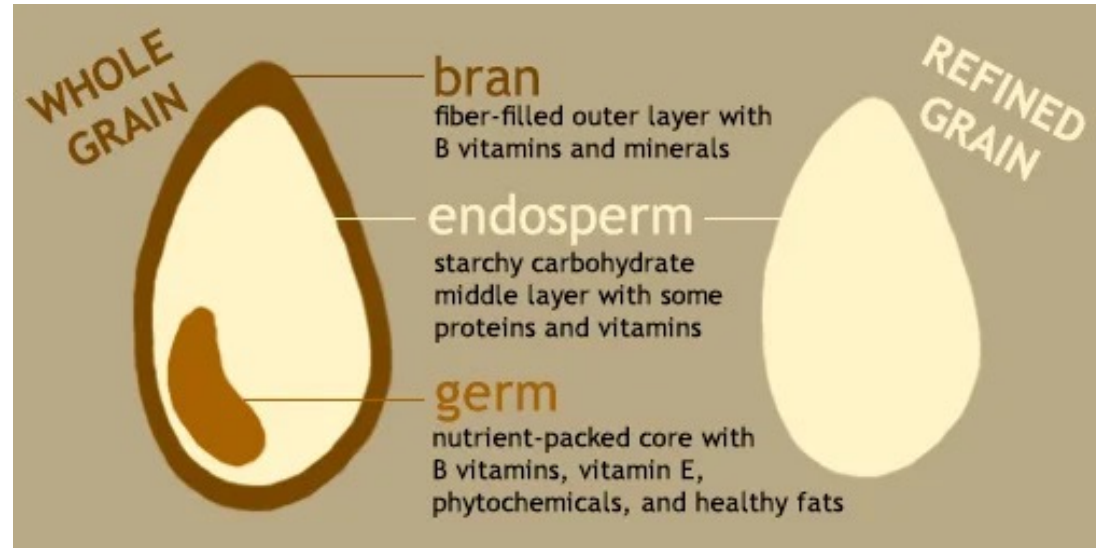
Banana Quinoa Pudding, Sharon Palmer

Whole Grain Nutrition

Whole grains made up of all three parts:

- Outer bran: fiber, B vitamins, iron, copper, zinc, magnesium, phytochemicals
- Inner germ: B vitamins, vitamin E, phytochemicals, healthy fats
- Starchy endosperm: protein, vitamins, carbohydrates

Refined grains contain only endosperm
(Harvard School of Public Health)



Benefits Now & Down the Road

Whole grain consumption protective effects:

- Weight gain & obesity
- Type 2 diabetes
- Certain types of cancer
- Cardiovascular diseases; better biomarkers
- Digestive issues
- Asthma

(*BMJ Clin. Res. Ed.* 2016; *Atherosclerosis*, 2007; *Thorax*. 2006)



Bean Corn Burrito with Whole Grain Wrap, Sharon Palmer

- About 1/5 kids in US (2-19) affected by obesity (BMI \geq 95th percentile for age & sex per CDC growth chart).
Disproportionately impacts disadvantaged children.
- Associated with physical/psychological health problems, greater risk of obesity & chronic diseases now & during adulthood.
- New AAP guidelines: behavior & lifestyle at the forefront.
- The CHANGE study: children who consumed >1.5 servings of whole grains/d 40 % lower risk of being obese compared with children who consumed <1.0 serving/d.
- Possible effects: hormonal factors, satiety, digestion/absorption CHO.

(AAP, 2023; PHN, 2013)

Helping Children with Obesity



Berry Oat Tahini Bars, Sharon Palmer

Dietary Guidelines: Whole Grains for Kids

- Since 2005, DGAs recommend people (including children) eat at least half of daily cereal/grains as whole grains (about 3 oz grain equiv/day).
- 2020-2025 DGAs new emphasis on children's nutrition.
- Benchmark standard 1.5 oz grain equiv/1000 calories
- 1 oz equiv = 1 sl bread, 1 c ready-to-eat cereal, ½ c cooked rice, cooked pasta, or cooked grains/cereal (USDA, 2020)

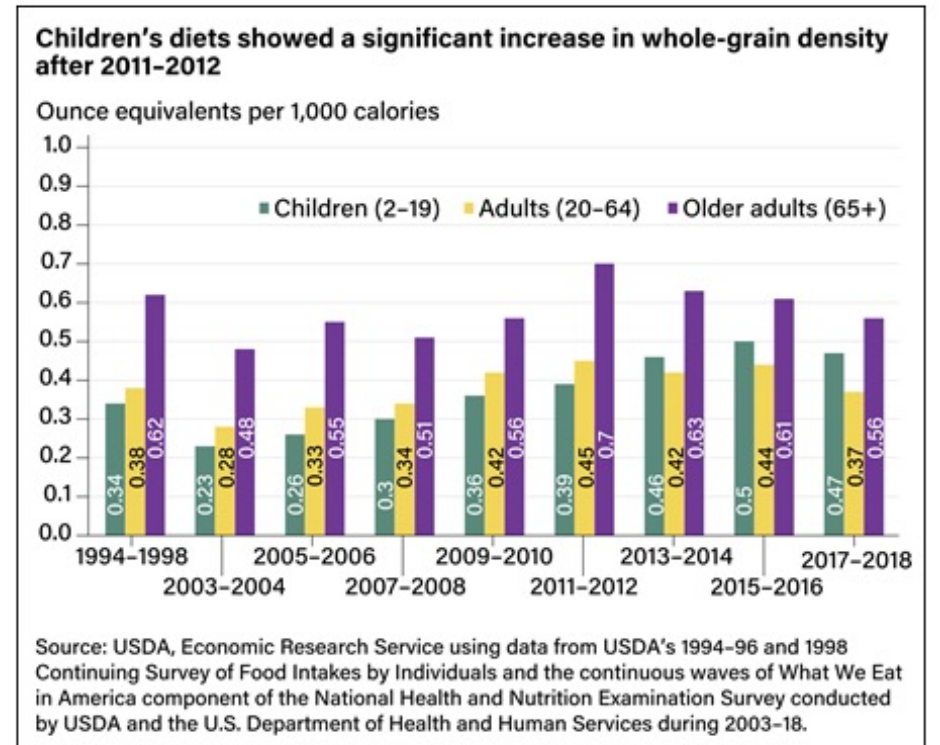
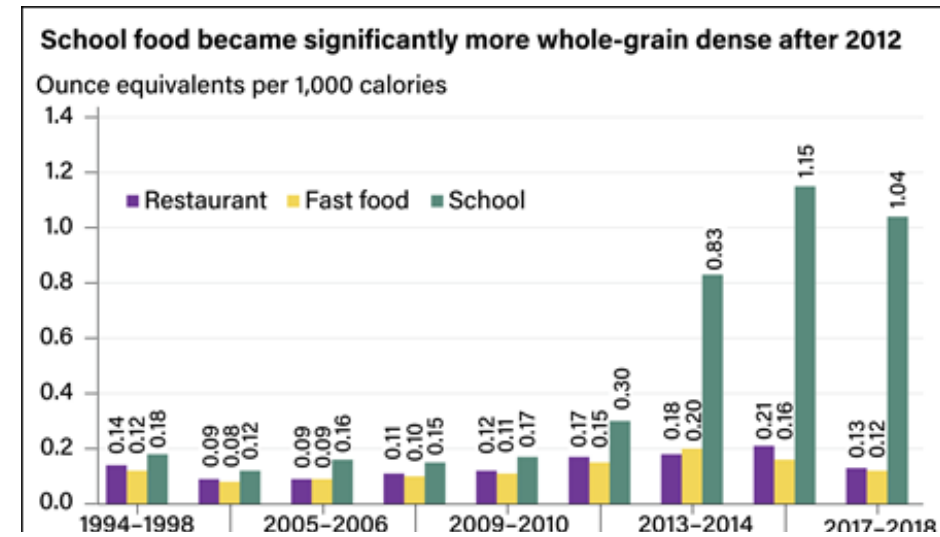
		Total Grains in ounce-equivalents	Whole Grains in ounce-equivalents
Toddlers	12 to 23 months	1¼ to 3 oz-equiv	1½ to 2 oz-equiv
Children	2-3 yrs	3 to 5 oz-equiv	1½ to 3 oz-equiv
	4-8 yrs	4 to 6 oz-equiv	2 to 3 oz-equiv
Girls	9-13 yrs	5 to 7 oz-equiv	2½ to 3½ oz-equiv
	14-18 yrs	6 to 8 oz-equiv	3 to 4 oz-equiv
Boys	9-13 yrs	5 to 9 oz-equiv	3 to 4½ oz-equiv
	14-18 yrs	6 to 10 oz-equiv	3 to 5 oz-equiv
Women	19-30 yrs	6 to 8 oz-equiv	3 to 4 oz-equiv
	31-59 yrs	5 to 7 oz-equiv	3 to 3½ oz-equiv
	60+ yrs	5 to 7 oz-equiv	3 to 3½ oz-equiv
Men	19-30 yrs	8 to 10 oz-equiv	4 to 5 oz-equiv
	31-59 yrs	7 to 10 oz-equiv	3½ to 5 oz-equiv

Myplate.gov

Kids Eating More Whole Grains

- Older adults eat the most whole grains, but only children are increasing intake.
- Only children's diets more whole-grain dense in 2013–2018 than in 1994–2010.
- Coincided with updated school meal nutrition standards in 2012 that required regular inclusion of whole-grain-rich foods.

(USDA ERS, 2023)



Whole Grains at School

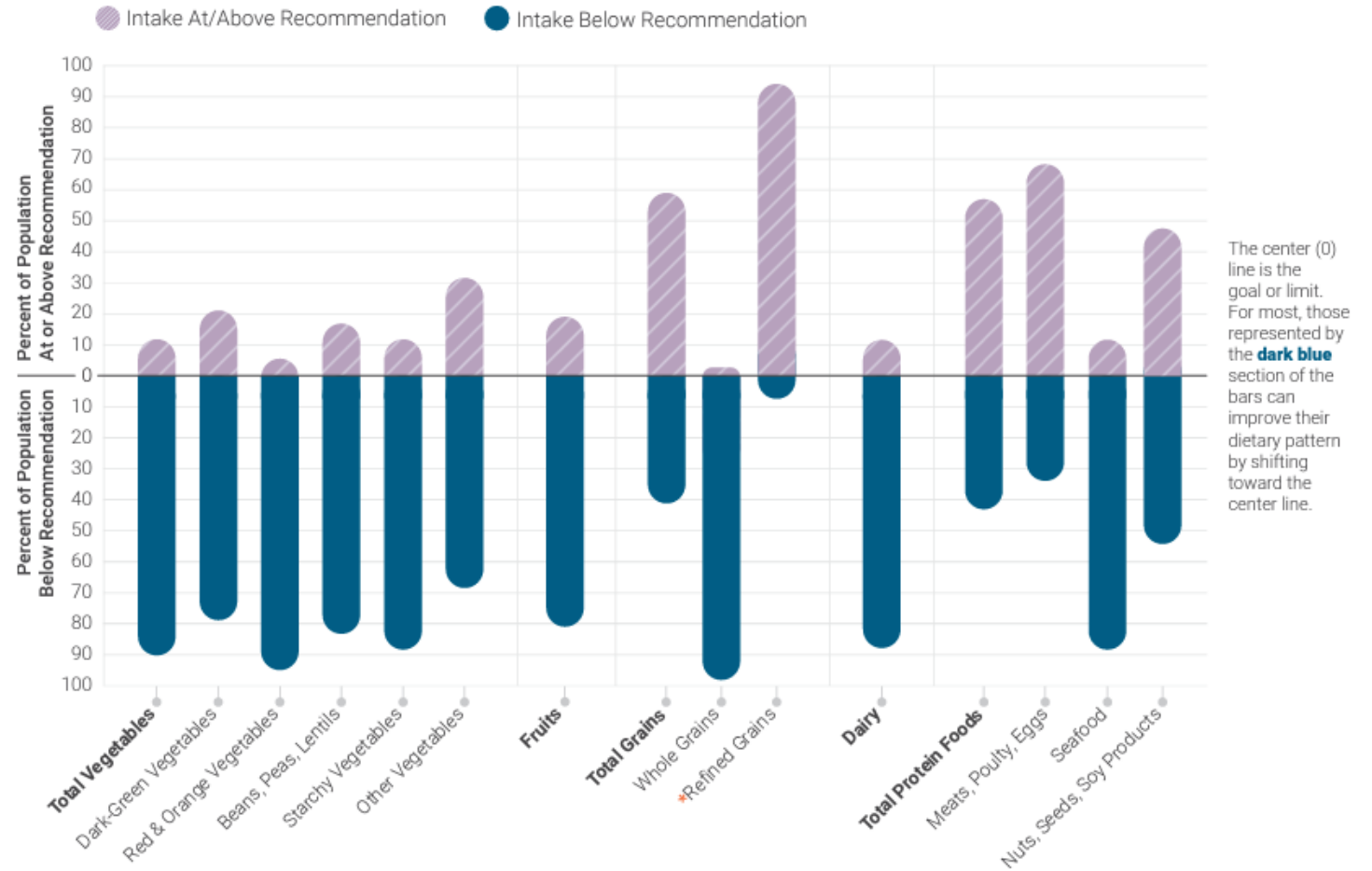
- Current program regulations require at least 80% of grains offered in school lunch & breakfast programs per week to be whole grain-rich, based on ounce equivalents.
- USDA's whole grain-rich criteria: product must contain at least 50% whole grains.
(FNS, USDA)



Rainbow Pizza on Whole Grain Crust, Sharon Palmer

Still Not Enough Whole Grains!

Dietary Intakes Compared to Recommendations: Percent of the U.S. Population Ages 1 and Older Who Are Below and At or Above Each Dietary Goal



USDA, 2020

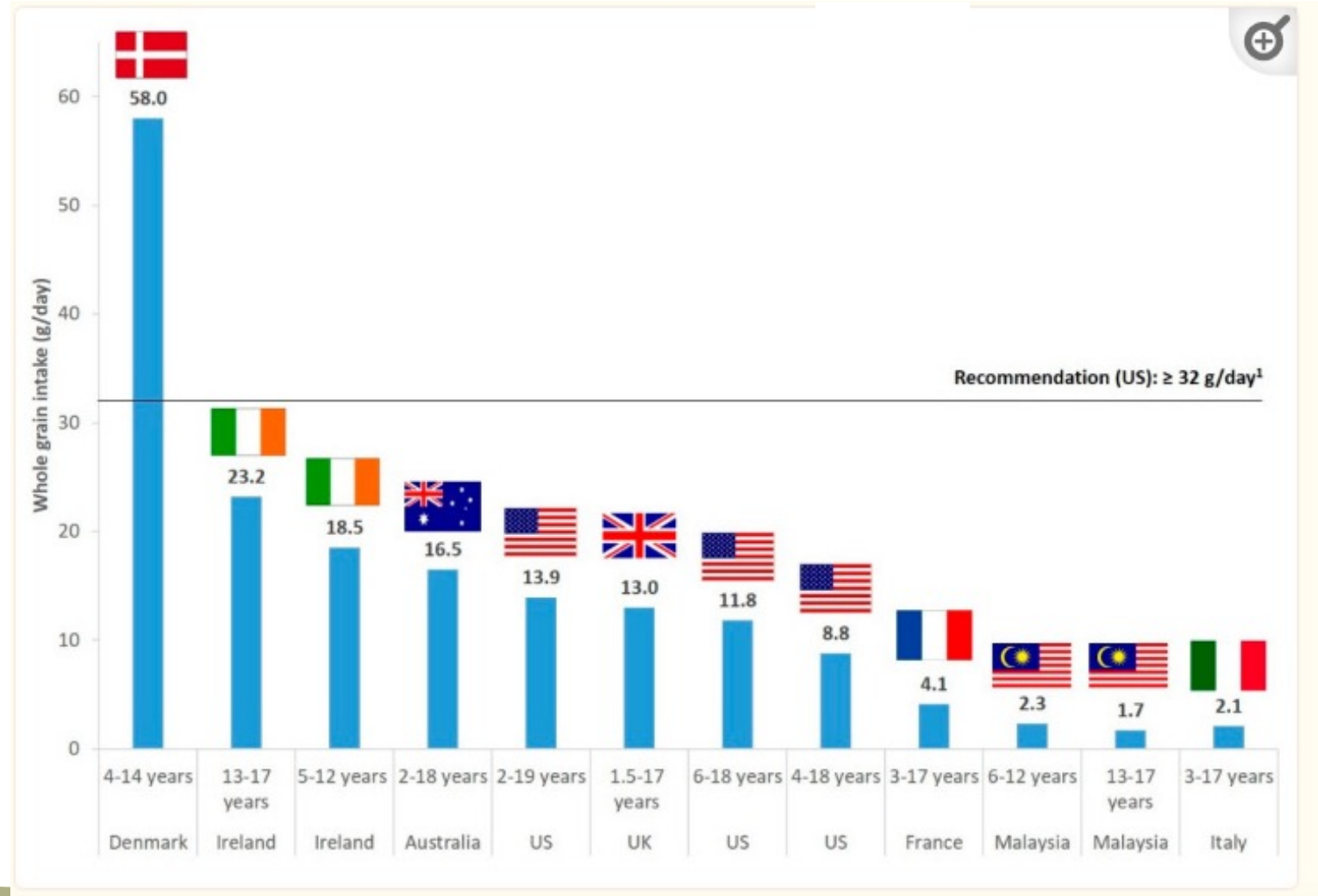
*NOTE: Recommended daily intake of whole grains is to be at least half of total grain consumption, and the limit for refined grains is to be no more than half of total grain consumption.

Data Source: Analysis of What We Eat in America, NHANES 2013-2016, ages 1 and older, 2 days dietary intake data, weighted. Recommended Intake Ranges: Healthy U.S.-Style Dietary Patterns (see [Appendix 3](#)).

Children's Whole Grain Intake Around the World

Danish study:

- Increased whole grain intake in 8-11 yo linked with better insulin, fat mass, LDL, BP.
 - Despite benefits, intakes of whole grains below recommended levels in most countries.
 - Impact: Increase sensory appeal, reduce cost, use familiarization period to introduce, improve communication and labeling.
- (Nutrients, 2020)



Offer More Whole Grains

- Univ FL study: Most parents don't feed kids whole grains under the assumption they won't like them.
- If you offer children whole grains, they will eat them.
- Tried foods kids enjoy, i.e., mac & cheese, snacks, popcorn, oats, breads.
- Ate the same amount whether they were whole or refined.
- 1/3 children's whole grain intake ready-to-eat and hot cereals.

(University of Florida, 2014; USDA, 2020)



Whole Grain Cornbread, Sharon Palmer

- Swap the pasta
- Kick up the sides
- Bake & switch
- Sell 'em on cereal
- Let kids help with dinner
- Try new foods more than once
- Breads & beyond
- Fun foods & shapes
- Look for 100% WG on labels

Strategies to Boost Whole Grains



Creamy Peach Yogurt Parfait with Granola, Sharon Palmer

Climb Aboard the Whole Grain Train

MP3 of music, with chorus, all verses, instrumental accompaniment.

Download:

<https://wholegrainscouncil.org/resources/whole-grain-train-song>



Our song, the Whole Grain Train, gets kids excited about whole grains! It's the perfect sing-along for children in preschool and lower elementary classes, for scout groups, church groups, or any gathering of young children.

The Whole Grain Train encourages positive attitudes toward healthy eating, and reinforces the idea that food should be healthy, delicious and fun — all at once! See how quickly your kids can learn the names of a dozen different whole grains, and giggle along with some great ideas for eating those grains.

Oldways

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Thank You!

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