Webinar | April 26th at 2 pm EST

FRUITS & VEGETABLES:

Food Rooted in Better Mental Health

Presented by Dr. Taylor Wallace

Chief Food Scientist

Produce for Better Health Foundation

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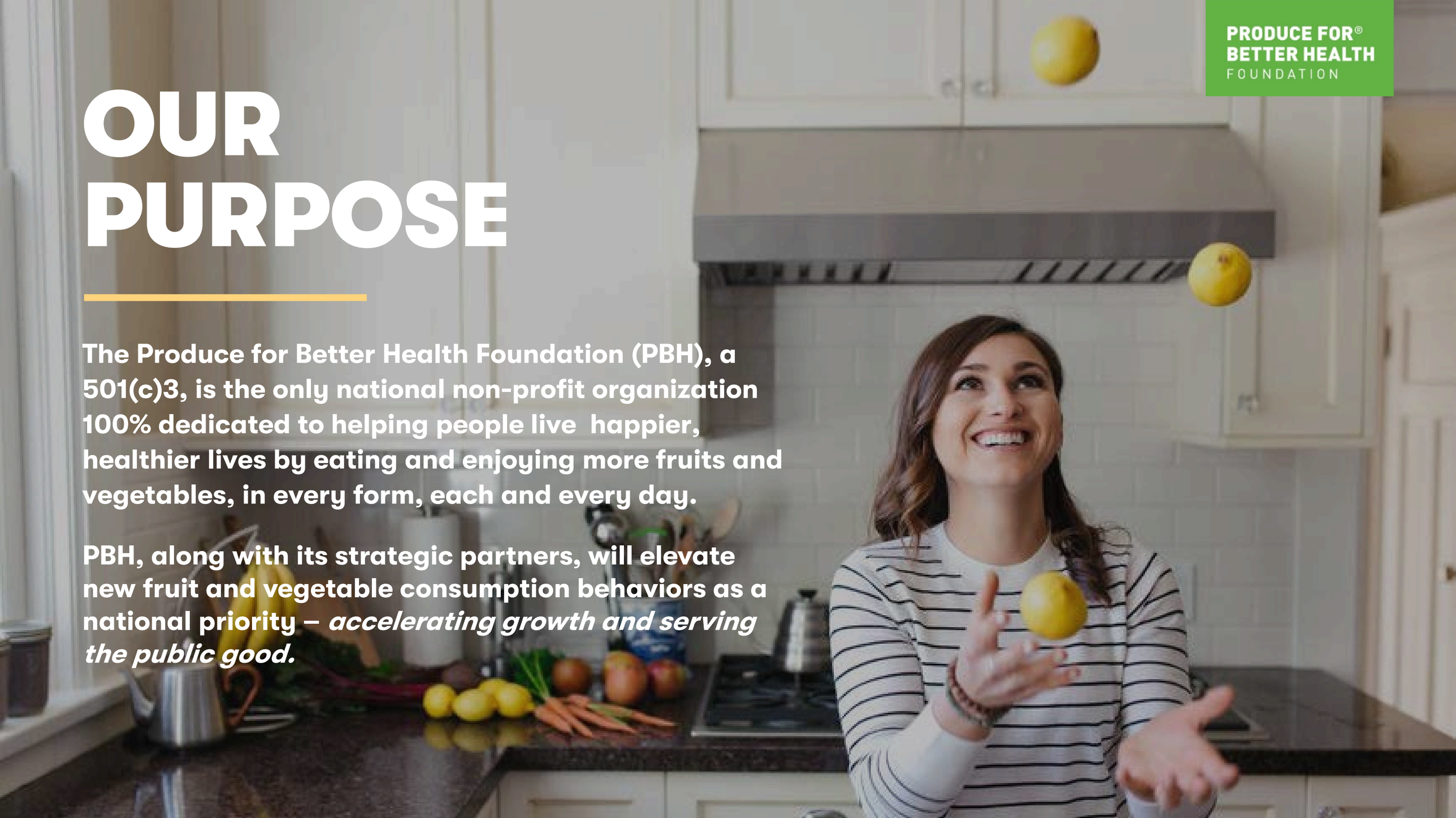
ABOUT PBH

PRODUCE FOR® BETTER HEALTH FOUNDATION

OUR PURPOSE



The Produce for Better Health Foundation (PBH), a 501(c)3, is the only national non-profit organization 100% dedicated to helping people live happier, healthier lives by eating and enjoying more fruits and vegetables, in every form, each and every day.

PBH, along with its strategic partners, will elevate new fruit and vegetable consumption behaviors as a national priority – *accelerating growth and serving the public good.*

THE AWARD-WINNING HAVE A PLANT® MOVEMENT REACHES MILLIONS

The award-winning Have A Plant® Movement is a way to inspire lasting behavior change by tapping into the emotional connection consumers have to the fruit and vegetable eating experience.

PBH is an undeniable resource for health & wellness professionals, given its trusted third-party credibility, breadth of nutrition and behavioral research, and strong consumer, influencer and industry reach.

2021 MINNESOTA PRSA CLASSICS
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have a plant® fruitsandveggies.org

330 Million
social media impressions

860 Million
traditional media impressions

*Numbers reflect 2021 reach only

Housekeeping

1 CPEU available through the Commission on Dietetic Registration (CDR)

You will receive a link to the certificate of attendance, the webinar recording and PDF of the presentation within 48-72 hours.

Type your questions and/or comments into the Q&A section located at the bottom of your screen at any time during the webinar.

PRODUCE FOR® BETTER HEALTH FOUNDATION

Fruits and Veggies:
Food Rooted in Better Mental Health

Taylor C. Wallace, PhD

Think Healthy Group
George Mason University
Produce for Better Health Foundation
Center for Magnesium Research & Education

Agenda

Today we will cover:

1. The Fruit and Vegetable Gap and PBH “State of the Plate”
2. Mental Health
3. Nutrients Impacting the Brain
4. The MIND Diet
5. The Bottom Line

Disclosures

Its always important to be transparent and declare perceived conflicts of interest:

Employment:
Think Healthy Group
George Mason University

Journal Editorships (paid):
Journal of Dietary Supplements
Journal of the American College of Nutrition
Annals of Medicine

Fellowships & Appointments:
Produce for Better Health Foundation
Center for Magnesium Education & Research
AND Flavan-3-ol Working Group
ORISE Established Scientist Appointment

Research Funding (past 3-years):
National Institutes of Health
Sabra Dipping Company
Produce for Better Health Foundation
Unilever
U.S. Department of Agriculture

Speaker Honoraria:
Produce for Better Health Foundation

**These conflicts of interest are those that could be perceived as relating to this presentation. All disclosures can be found at: www.drtaylorwallace.com.*

The Fruit and Vegetable Gap

Authoritative Review:

- Scientific evidence for providing public health recommendations to increase fruit and vegetable consumption for prevention of disease is strong.
- Fruits and vegetables have the strongest effects in relation to CVD, noting a threshold effect at about 800 g (i.e., 5-servings) per day.
- Certain types of fruits and vegetables, particularly cruciferous vegetables, dark-green leafy vegetables, citrus fruits, and dark colored berries have superior effects in relation to disease prevention.

CRITICAL REVIEWS IN FOOD SCIENCE AND NUTRITION
https://doi.org/10.1080/10408398.2019.1632258

Taylor & Francis
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Check for updates

REVIEW

Fruits, vegetables, and health: A comprehensive narrative, umbrella review of the science and recommendations for enhanced public policy to improve intake

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ABSTRACT

Fruit and vegetables (F&V) have been a cornerstone of healthy dietary recommendations; the 2015–2020 U.S. Dietary Guidelines for Americans recommend that F&V constitute one-half of the plate at each meal. F&V include a diverse collection of plant foods that vary in their energy, nutrient, and dietary bioactive contents. F&V have potential health-promoting effects beyond providing basic nutrition needs in humans, including their role in reducing inflammation and their potential preventive effects on various chronic disease states leading to decreases in years lost due to premature mortality and years lived with disability/morbidity. Current global intakes of F&V are well below recommendations. Given the importance of F&V for health, public policies that promote dietary interventions to help increase F&V intake are warranted. This externally commissioned

KEYWORDS
Fruit; vegetable; produce; health; nutrition

Crit Rev Food Sci Nutr. 2020;60(13):2174.

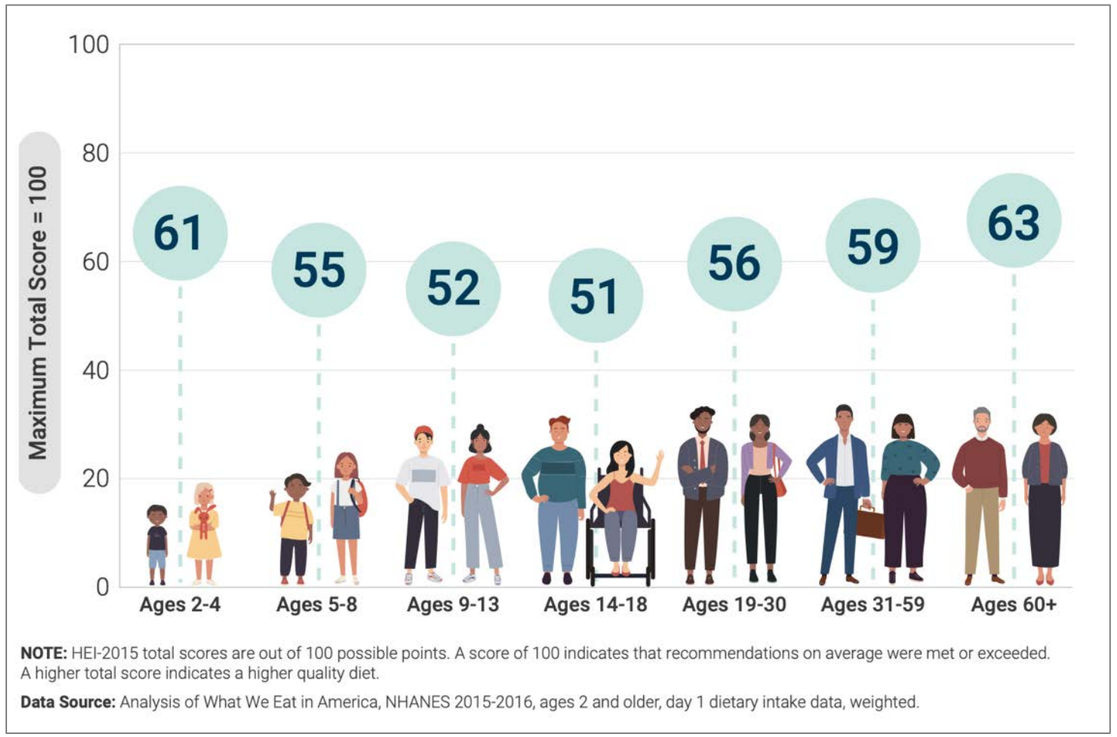
The Fruit and Vegetable Gap

Figure I-1

Adherence of the U.S. Population to the *Dietary Guidelines* Over Time, as Measured by the Average Total Healthy Eating Index-2015 Scores

NOTE: HEI-2015 total scores are out of 100 possible points. A score of 100 indicates that recommendations on average were met or exceeded. A higher total score indicates a higher quality diet.

Data Source: Analysis of What We Eat in America, National Health and Nutrition Examination Survey (NHANES) data from 2005-2006 through 2015-2016, ages 2 and older, day 1 dietary intake data, weighted.

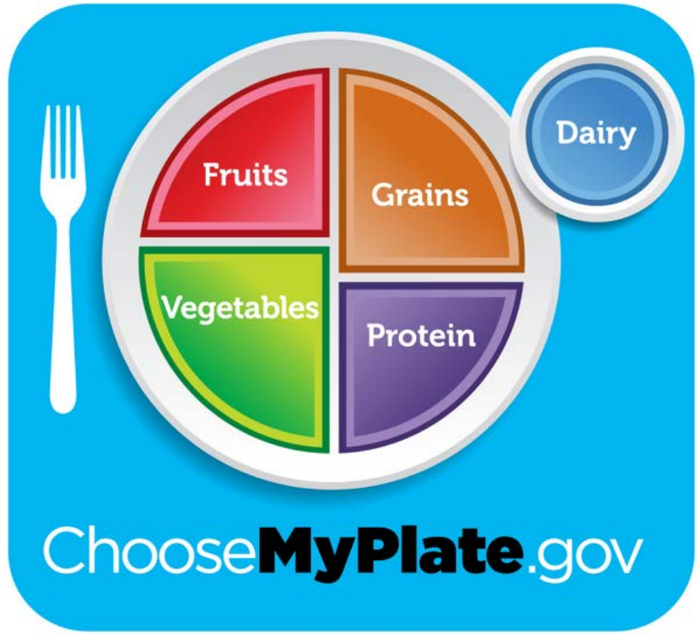


NOTE: HEI-2015 total scores are out of 100 possible points. A score of 100 indicates that recommendations on average were met or exceeded. A higher total score indicates a higher quality diet.

Data Source: Analysis of What We Eat in America, NHANES 2015-2016, ages 2 and older, day 1 dietary intake data, weighted.

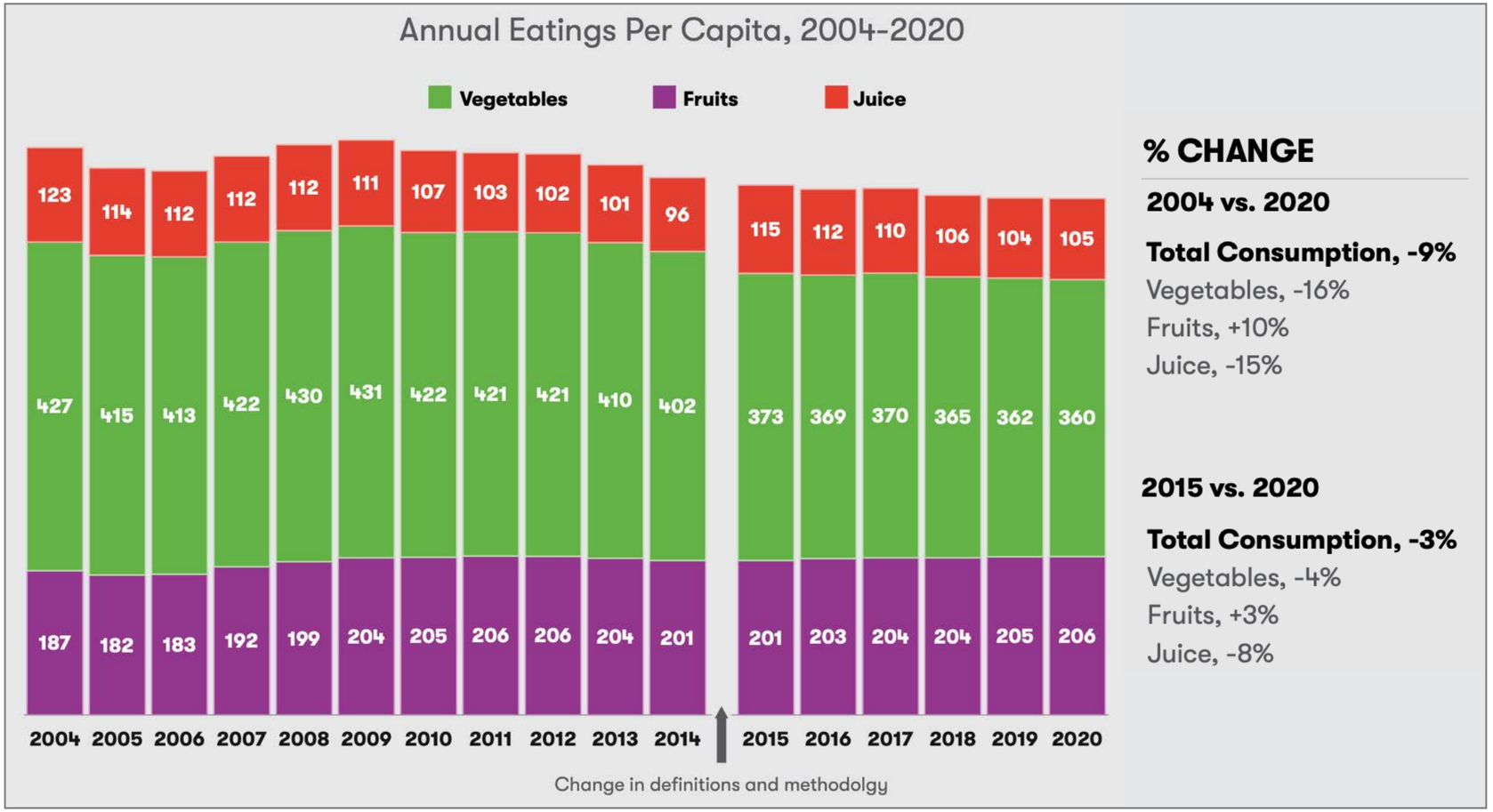
www.dietaryguidelines.gov

The Fruit and Vegetable Gap



www.dietaryguidelines.gov

PBH “State Of The Plate” Data



https://fruitsandveggies.org/wp-content/uploads/2021/04/2020-PBH-State-Of-The-Plate-Executive-Summary-1.pdf

PBH “State Of The Plate” Data

Consumption Trends:

- Since 2015, fruit (excluding juice) has experienced slight increases in net consumption frequency.
- Juice consumption declined by 8% between 2015 and 2020.
- Total number of vegetable eating occasions has been declining for the last 16-years. This is in part due to fewer side dishes and side salads being served at restaurants.

TOP GROWING FRUITS
Annual eating occasions per capita change, 2015-2020

1. Bananas, +2.3
2. Grapes, +1.9
3. Blueberries, +1.8
4. Strawberries, +0.9
5. Oranges, +0.7

TOP DECLINING FRUITS
Annual eating occasions per capita change, 2015-2020

1. Raisins, -1.3
2. Mixed Fruit, -0.8
3. Peaches, -0.8
4. Cantaloupe, -0.6
5. Pineapple, -0.5
6. Apples, -0.2

TOP GROWING VEGETABLES
Annual eating occasions per capita change, 2015-2020

1. Potatoes (including fries), +5.3
2. Caesar Salad, +2.5
3. Avocados, +1.2
4. Tomato Sauce/Paste, +0.9
5. Tomato Salsa, +0.9

TOP DECLINING VEGETABLES
Annual eating occasions per capita change, 2015-2020

1. Onions, -7.2
2. Tomatoes, -6.3
3. Green Salads, -6.0
4. Lettuce, -5.4
5. Carrots, -3.9

TOP FRUITS CONSUMED BY FREQUENCY
Annual eating occasions per capita

1. Bananas, 41.9
2. Apples, 28.2
3. Strawberries, 13.7
4. Oranges, 12.8
5. Grapes, 12.6
6. Blueberries, 11.7
7. Applesauce, 7.3
8. Watermelon, 5.8
9. Lemons, 5.7
10. Fruit salad, 4.9
11. Peaches, 4.7
12. Pineapple, 4.3

TOP FRUITS CONSUMED BY VOLUME
Average cups per occasion

1. Melons, 2
2. Apples, 1.3
3. Peaches, 1.2
4. Citrus, 0.9
5. Bananas, 0.9
6. Applesauce, 0.7
7. Berries, 0.7
8. Grapes, 0.6
9. Dried fruit, 0.5
10. Single/mixed nuts, 0.4

TOP VEGETABLES CONSUMED BY FREQUENCY
Annual eating occasions per capita

1. Lettuce/vegetable salads, 61.2
2. French fries, 45.3
3. Onions, 31.6
4. Tomatoes, 27.1
5. Carrots, 20.8
6. Mashed potatoes, 19.0
7. Beans/legumes, 18.3
8. Corn, 15.7
9. Peppers, 14.7
10. Broccoli, 13.7
11. Green beans, 13.7
12. Baked potato, 11.2
13. Celery, 8.7

TOP VEGETABLES CONSUMED BY VOLUME
Average cups per occasion

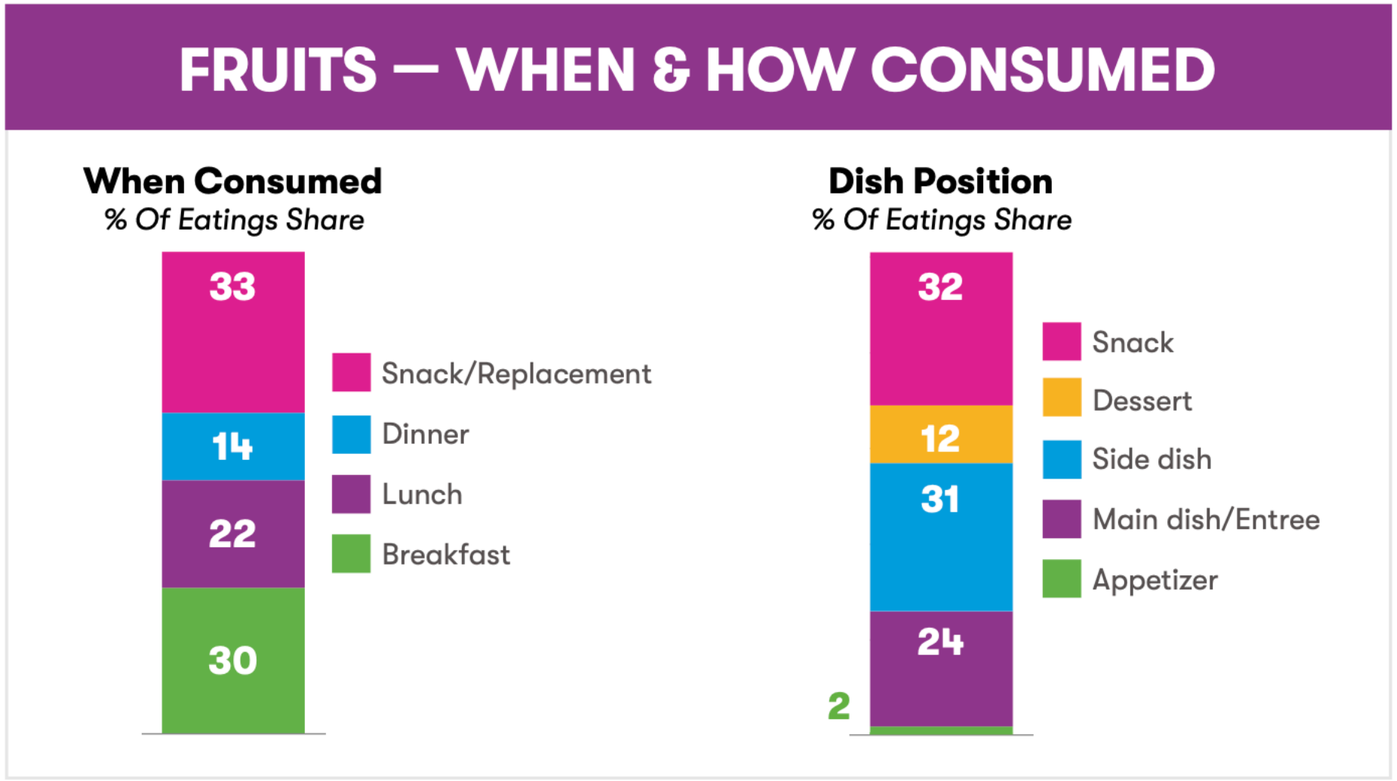
1. Lettuce/salads, 2.9
2. French fries, 2.1
3. Green beans, 1.6
4. Broccoli, 1.5
5. Beans/legumes, 1.4
6. Corn, 1.2
7. Carrots, 0.9
8. Mashed potatoes, 0.9
   Peppers, 0.8
9. Tomatoes, 0.7

https://fruitsandveggies.org/wp-content/uploads/2021/04/2020-PBH-State-Of-The-Plate-Executive-Summary-1.pdf

PBH “State Of The Plate” Data

Consumption Trends:

- By all accounts, fruit has a wide appeal. Consumption seems somewhat balanced throughout meal and snack occasions and is versatile across multiple dishes.
- The exception is appetizers, representing a growth opportunity for fruits.



PBH “State Of The Plate” Data

Motivators and Barriers to Intake:

- Most Americans already KNOW fruits and vegetables support better health and wellbeing – yet knowledge alone does not yield new fruit and vegetable consumption behaviors. Experts agree that effective consumer education and engagement must lean into how people feel about eating fruits and vegetables and then inspire environments that make Doing easy and habitual.
- Over half of adults in the U.S. say they are making an effort to eat more fruit (53%) and vegetables (56%) and this desire to eat more increases with age.
- Barriers to intake include finding new menu ideas, staying within budget, planning healthy meals, and finding meals quickly.

TOP FRUIT & VEGETABLE MOTIVATORS

Which of the following describes why the [fruit item] was chosen?

Rank	Motivators	% Of Occasions
1	*It was healthy/ nutritious*	34.1
2	*It was quick/ easy to make/ get*	33.0
3	*It's a favorite*	27.9
4	*I regularly serve or have*	23.0
5	*It was made with items on hand*	18.5

Which of the following describes why the [vegetable item] was chosen?

Rank	Motivators	% Of Occasions
1	*It's a favorite*	29.2
2	*It was quick/ easy to make/ get*	24.8
3	*It was healthy/ nutritious*	22.2
4	*It was made with items on hand*	19.2
5	*Satisfied craving/ specific taste*	15.5

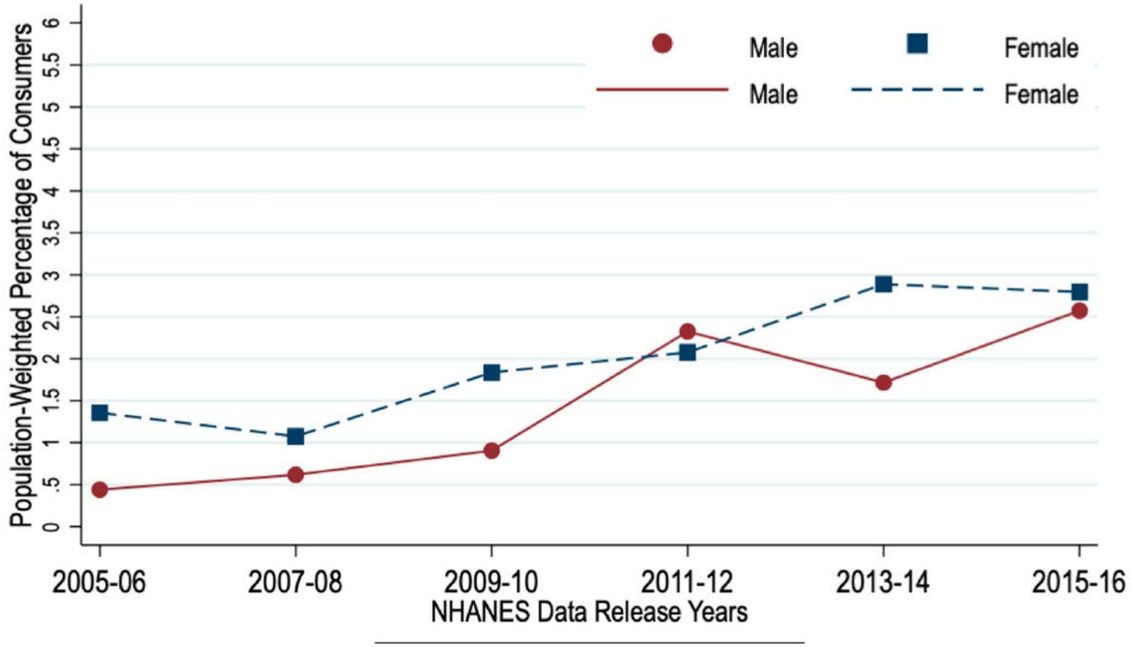
https://fruitsandveggies.org/wp-content/uploads/2021/04/2020-PBH-State-Of-The-Plate-Executive-Summary-1.pdf

Increasing Intake Through ”Carrier Foods”

Our Research – Chickpeas and Hummus:

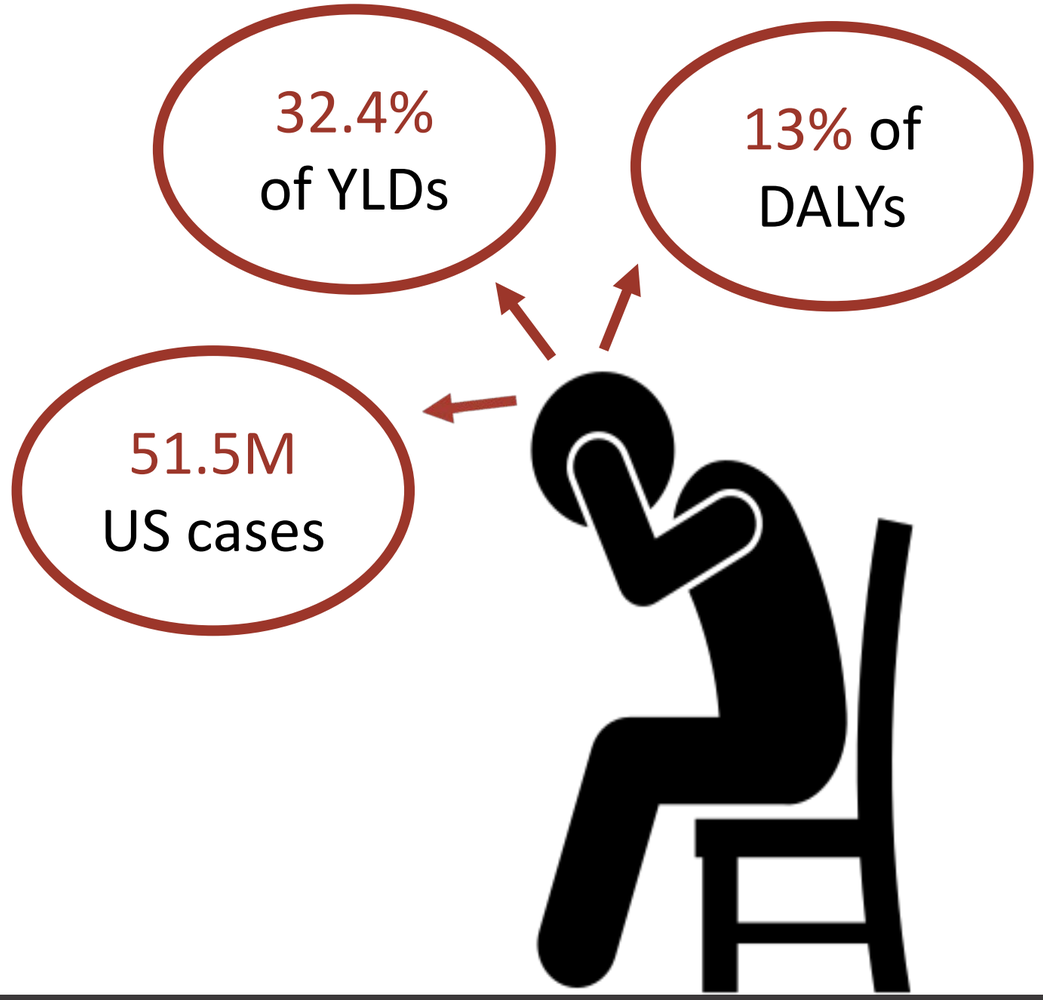
- Chickpea and hummus consumption was associated higher intakes of fruits, total and dark green vegetables, total protein foods, whole grains, and lower intakes of meat and added sugars.

Food Group	Hummus		
	Consumers (n = 392)	Non-Consumers (n = 37,160)	p [2]
Fruit (cup eq.)	1.36 (0.09)	1.00 (0.02)	<0.001
Vegetables (cup eq.)	1.98 (0.07)	1.36 (0.01)	<0.001
Dark green veg. (cup eq.)	0.31 (0.03)	0.13 (0.01)	<0.001
Whole grains (ounce eq.)	1.54 (0.10)	0.84 (0.01)	<0.001
Refined grains (ounce eq.)	5.86 (0.22)	5.67 (0.03)	0.252
Total protein foods (ounce eq.)	6.70 (0.27)	5.73 (0.04)	<0.001
Meat (ounce eq.)	1.02 (0.12)	1.53 (0.02)	<0.001
Total dairy (cup eq.)	1.69 (0.08)	1.72 (0.02)	0.895
Added sugars (g)	12.2 (0.67)	17.3 (0.16)	<0.001



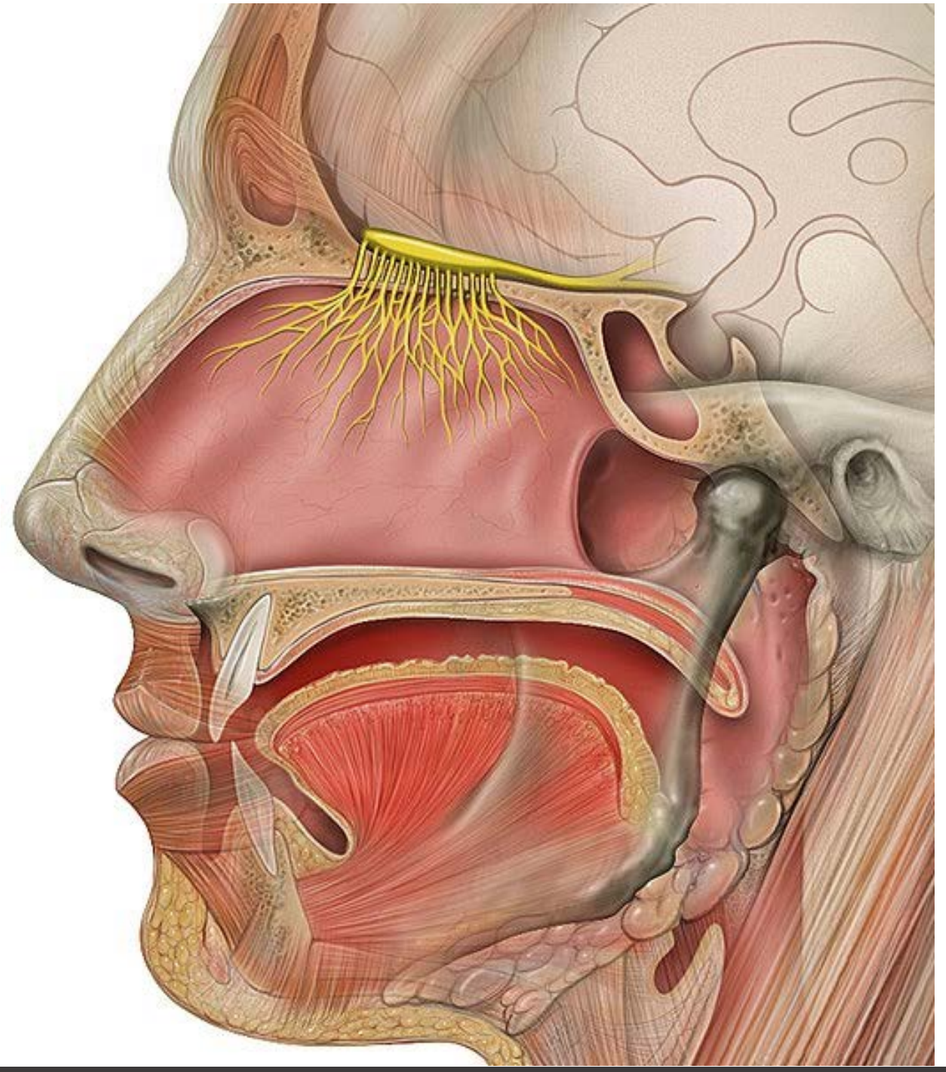
Appl Sci. 2020;10:7341.

Mental Health



Lancet Psychiatry. 2016; 3(2):171.
MentalHealth.com (click here)
National Institutes of Health (click here)

Mental Health



COVID-19, initially considered a respiratory illness, has a broader virulence spectrum with the ability to cross the blood-brain barrier and inflict a multitude of neuropathological manifestations in the brain.

Olfactory impairment is common.

Nature Med. 2020; 26: 1017.
Nat Rev Immunol. 2020; 20:363.
Neurol Neurosurg. 2020;106349.
Lancet Psychiatry. 2020; 7(10):875.

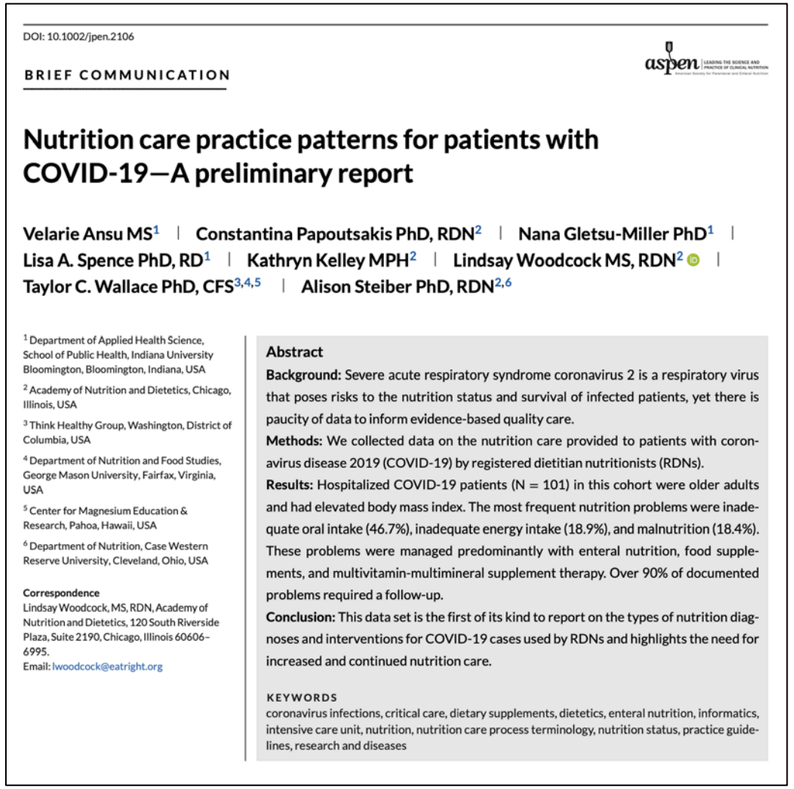
Post-COVID Health Complications

Over 13% of COVID-19 patients with severe initial disease had neurological complications such as hypoxic injury. Long—COVID syndrome, marked by fatigue, anxiety, depression, memory loss, and additional problems is not dependent on initial severity of the illness. Such symptoms may persist for six months or more in as many as 30% of patients with mild acute illness long after markers of infection have disappeared.

J Health Serv Psychol. 2022;48:1-2.

The RESTORE Study

- NutRitional CarE PracticeS and STatus Of SARS-CoV-2 PatiEnts
- The overall goal is to identify standard nutrition care practices that show potential in influencing the burden of disease in patients admitted to the Intensive Care Unit (ICU) using the AND Health Informatics Infrastructure (ANDHII).
- 10 ICUs collected data on ~100 patients utilizing the Academy of Nutrition and Dietetics Health Informatics Infrastructure (ANDHII).



DOI: 10.1002/jpen.2106

BRIEF COMMUNICATION

aspen

Nutrition care practice patterns for patients with COVID-19—A preliminary report

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Abstract

Background: Severe acute respiratory syndrome coronavirus 2 is a respiratory virus that poses risks to the nutrition status and survival of infected patients, yet there is paucity of data to inform evidence-based quality care.

Methods: We collected data on the nutrition care provided to patients with coronavirus disease 2019 (COVID-19) by registered dietitian nutritionists (RDNs).

Results: Hospitalized COVID-19 patients (N = 101) in this cohort were older adults and had elevated body mass index. The most frequent nutrition problems were inadequate oral intake (46.7%), inadequate energy intake (18.9%), and malnutrition (18.4%). These problems were managed predominantly with enteral nutrition, food supplements, and multivitamin-multimineral supplement therapy. Over 90% of documented problems required a follow-up.

Conclusion: This data set is the first of its kind to report on the types of nutrition diagnoses and interventions for COVID-19 cases used by RDNs and highlights the need for increased and continued nutrition care.

KEYWORDS
coronavirus infections, critical care, dietary supplements, dietetics, enteral nutrition, informatics, intensive care unit, nutrition, nutrition care process terminology, nutrition status, practice guidelines, research and diseases

J Parenter Enteral Nutr. 2021;45:1774-1778.

Mental Health

Brain activity is a high-energy and high-nutrient demanding process.

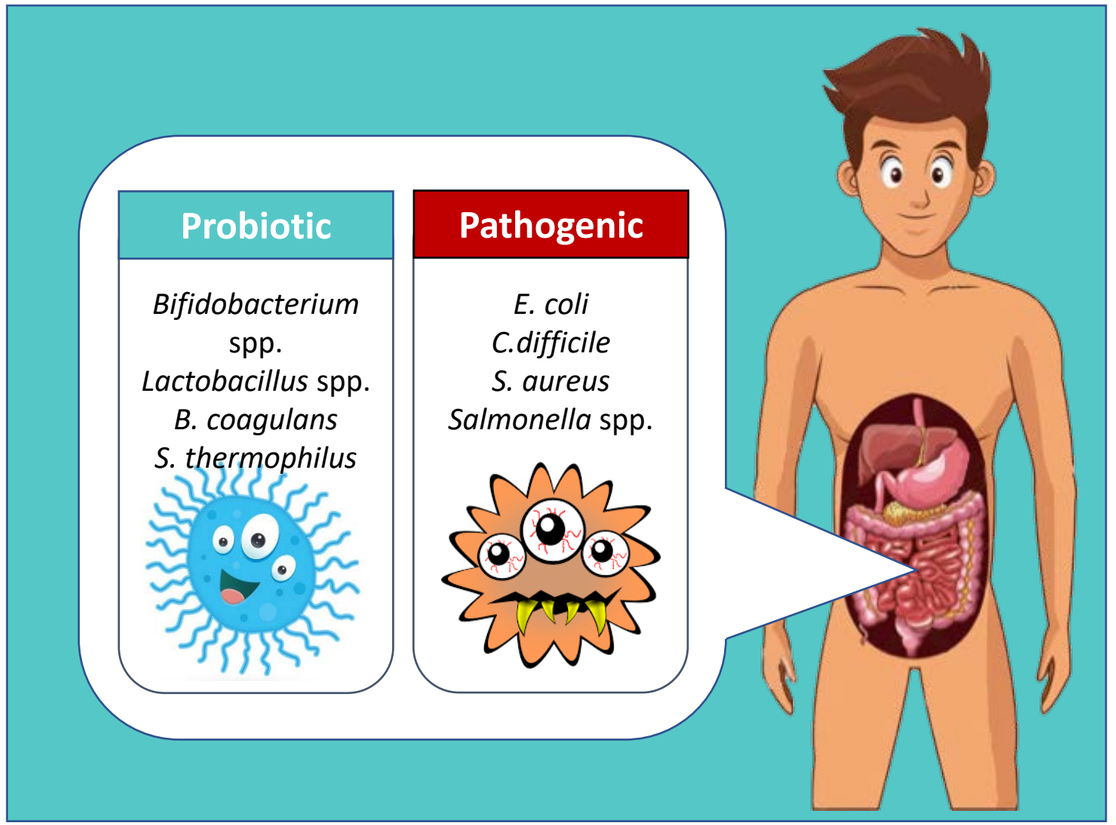
Imbalances in ROS and RNS leads to oxidative stress and damage.

J Diet Suppl. 2020. 1922567

Metal Health – the GI Microbiome

The gastrointestinal tract produces 95% of the body's serotonin.

Function of the millions of neurons lining the gastrointestinal tract is highly influenced by the microbiome.



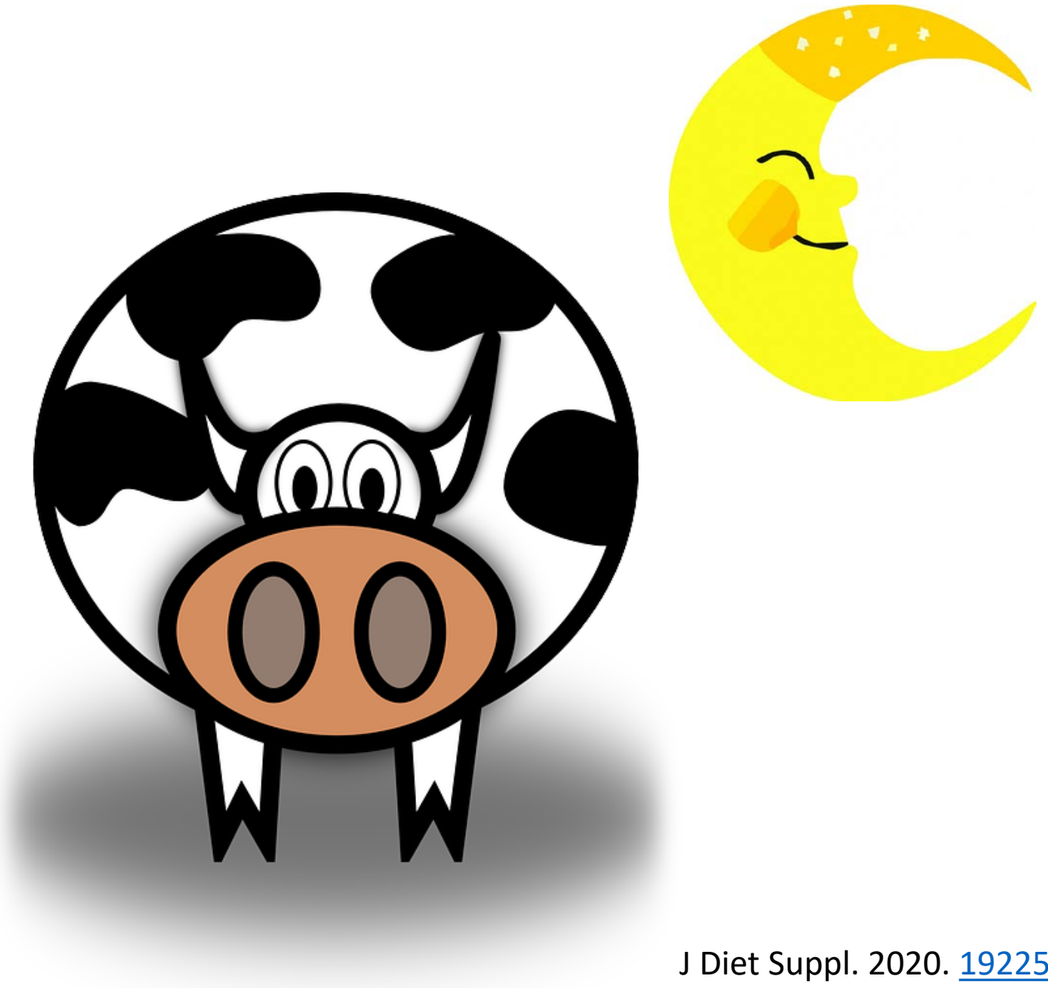
Harvard University

Nutrients. 2021; 13:690.

Mental Health - Sleep

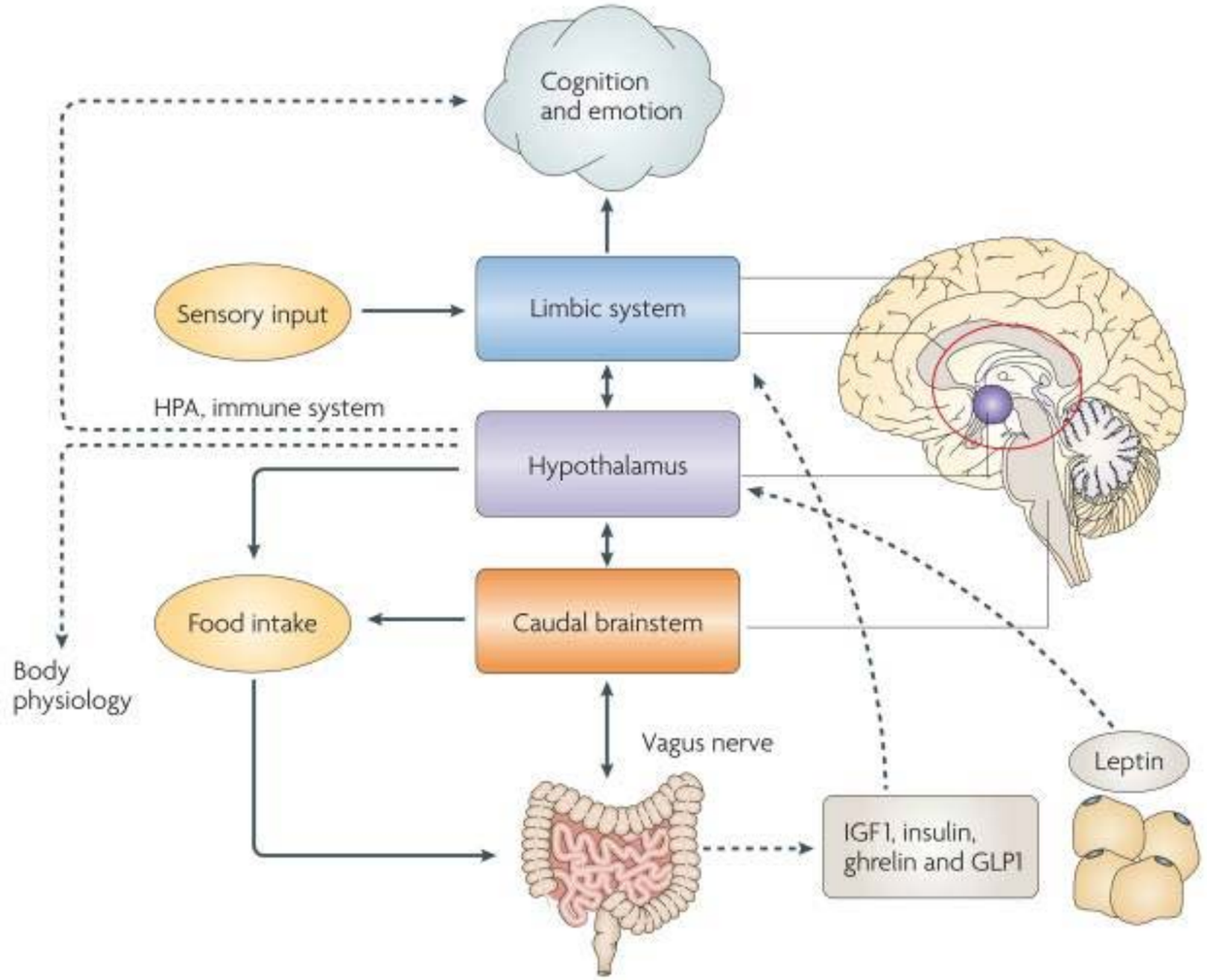
Serotonin helps regulate sleep. Sleep supports the clearance of waste products across the blood-brain barrier.

Circadian rhythm in the blood-brain barrier controls the transporter function and regulates permeability.



J Diet Suppl. 2020. 1922567

Mental Health



Nat Rev Neurosci. 2008; 9(7):568.

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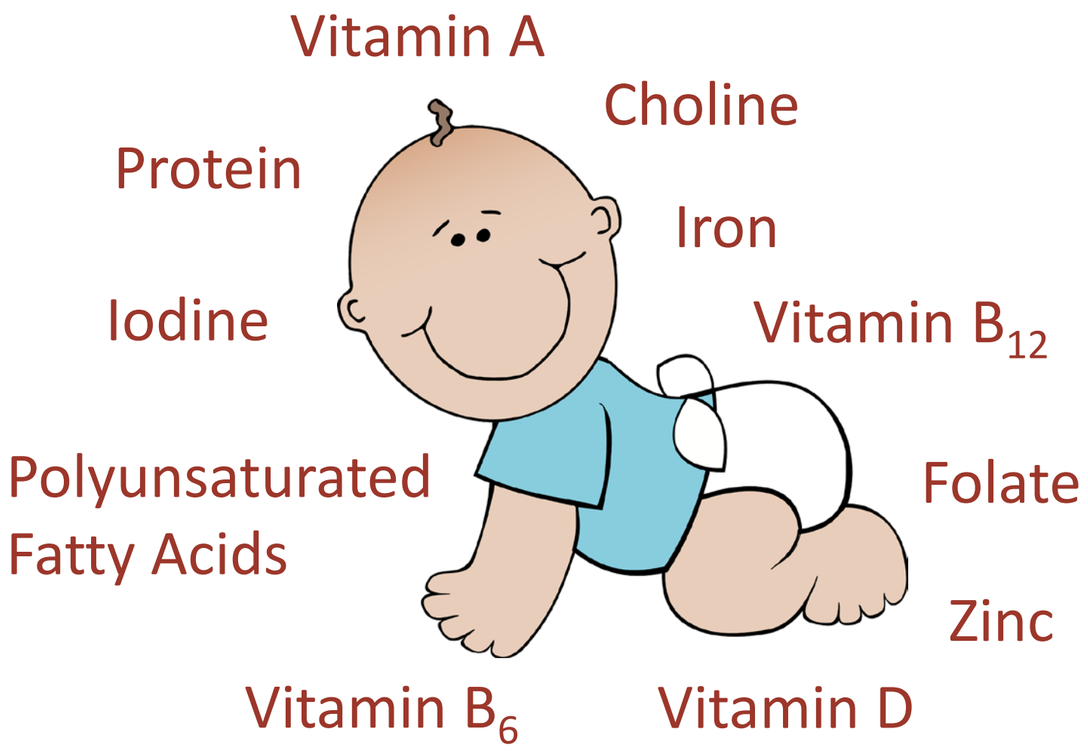
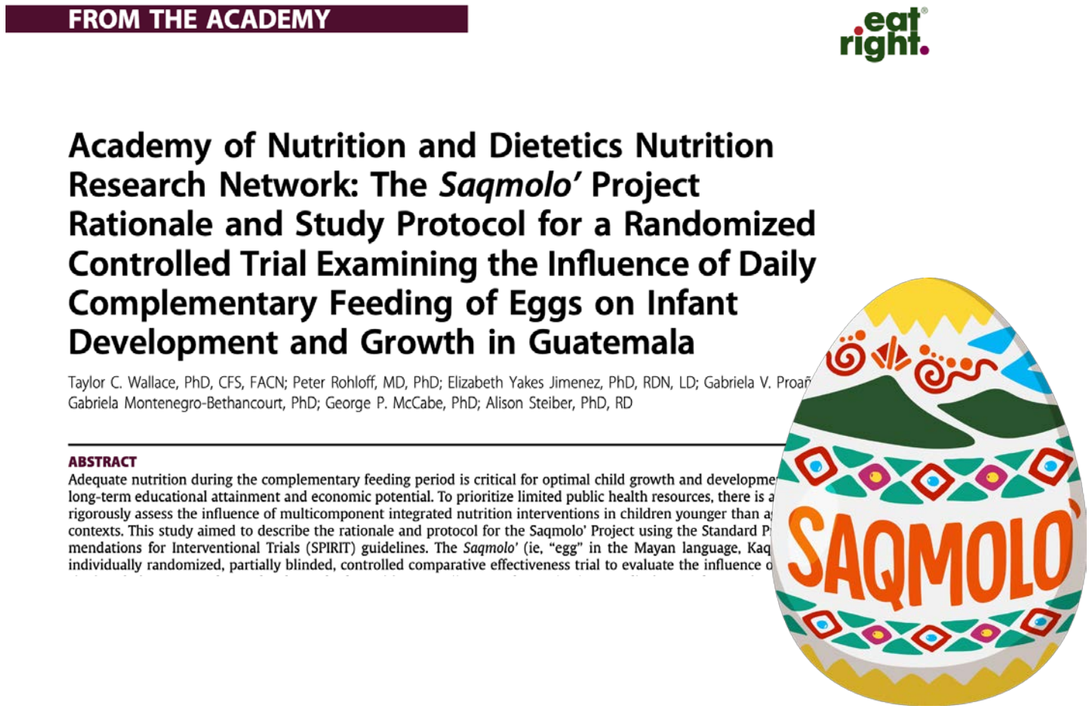




FROM THE ACADEMY

eat right.

Academy of Nutrition and Dietetics Nutrition Research Network: The *Saqmolo'* Project Rationale and Study Protocol for a Randomized Controlled Trial Examining the Influence of Daily Complementary Feeding of Eggs on Infant Development and Growth in Guatemala

Taylor C. Wallace, PhD, CFS, FACN; Peter Rohloff, MD, PhD; Elizabeth Yakes Jimenez, PhD, RDN, LD; Gabriela V. Proañ
Gabriela Montenegro-Bethancourt, PhD; George P. McCabe, PhD; Alison Steiber, PhD, RD

ABSTRACT

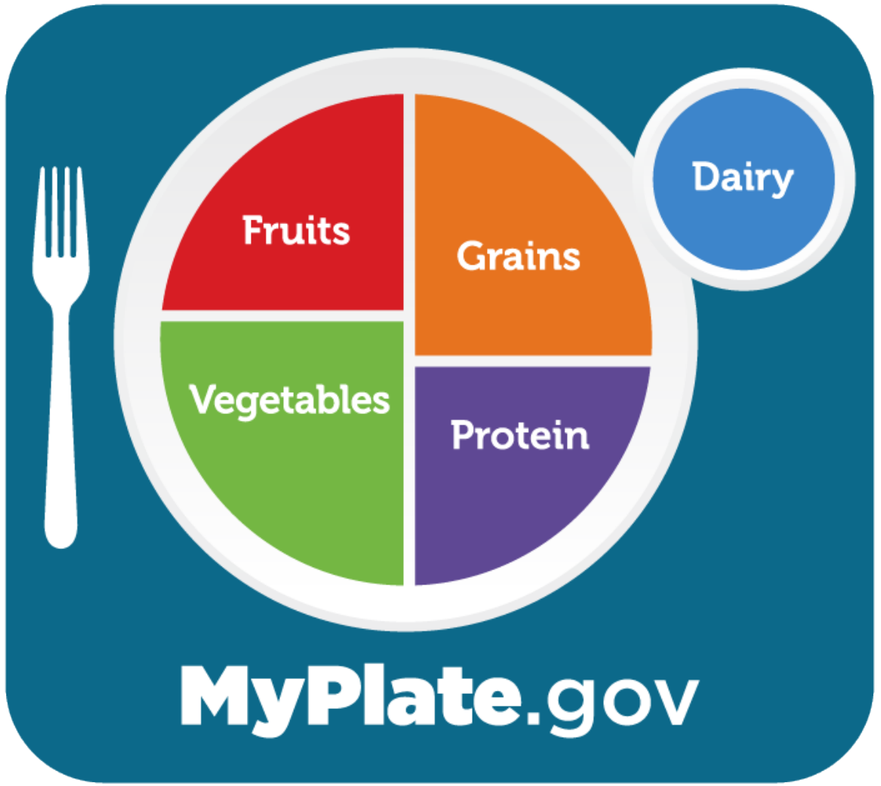
Adequate nutrition during the complementary feeding period is critical for optimal child growth and developme
long-term educational attainment and economic potential. To prioritize limited public health resources, there is a
rigorously assess the influence of multicomponent integrated nutrition interventions in children younger than a
contexts. This study aimed to describe the rationale and protocol for the Saqmolo' Project using the Standard P
mendations for Interventional Trials (SPIRIT) guidelines. The *Saqmolo'* (ie, "egg" in the Mayan language, Kaq
individually randomized, partially blinded, controlled comparative effectiveness trial to evaluate the influence o

Pediatrics. 2018; 141(2):e20173716.
J Acad Nutr Diet. 2022;122(2):432-444.
www.drtaylorwallace.com/saqmolo

Nutrients Impacting The Brain

There is a growing body of research to substantiate the benefits of many nutrients including omega-3 fatty acids, vitamin D, the B-complex vitamins, vitamin E, magnesium, iron, zinc, choline, calcium, and selenium to help optimize brain function and prevent mental disease.

It is not just one single nutrient that is important!



Pediatrics. 2018; 141(2):e20173716.

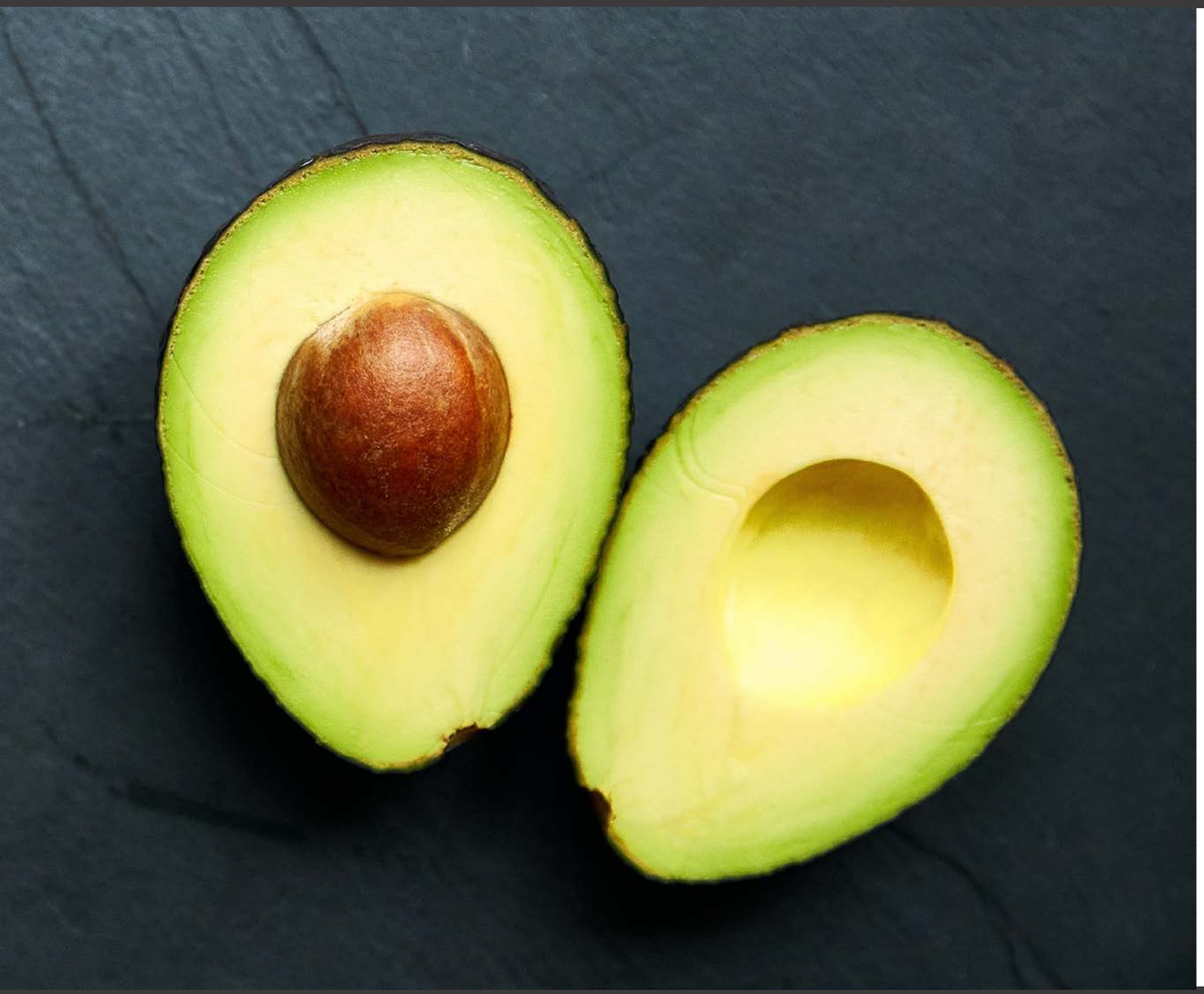
The MIND Diet

Born as a hybrid of two existing diets with decades of research – the DASH diet and Mediterranean diet – the MIND diet emphasizes foods that impact brain health:

- Green leafy and other vegetables
- Nuts
- Berries
- Beans
- Whole grains
- Fish
- Poultry
- Olive oil
- Wine

Rush University

The MIND Diet



Let's go beyond The MIND Diet. Certain foods have shown superior effects on cognition.

- Avocados
- Blueberries
- Concord grape juice
- Strawberries
- Brazil nuts
- Fresh, lean pork

Nutrients. 2017;9:919.
Adv Nutr. 2020;11(2):224.
Nutrients. 2019;11:3060.
Eur J Nutr. 2016;55(1):107.
Nutrients. 2019;11(7):1521.

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JOIN THE MOVEMENT

Show your support by joining the Have A Plant® community at fruitsandveggies.org/jointhenetwork

While you're there, check out our useful resources, continuing education opportunities to enhance your nutrition knowledge and tools that support you in empowering consumers at fruitsandveggies.org/educational-resources

And don't forget to follow PBH's social channels to keep up to date on all the insights and inspiration! #haveaplant

September is National Fruits & Veggies Month and each year we celebrate Have A Plant® during this monumental moment as a way to elevate fruit and vegetable consumption to a national priority.

Keep an eye out for the 2022 National Fruits & Veggies Month toolkit in early July with turnkey resources to make sharing the #haveaplant love deliciously easy!

Start planning for September today! #NFVM2022

PRODUCE FOR® BETTER HEALTH FOUNDATION

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If you enjoyed today's Health & Wellness webinar and would like to support our overall mission of increasing fruit and vegetable consumption, we encourage you to make a **tax-deductible donation** today.

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THANK YOU!

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