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# Nutrition & Mental Health

## Food and the Aging Brain: Updates on Nutrition and Cognitive Health in Older Adults

November 18th, 2020

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# Roadmap

1) Stress/Mood ⟷ Nutrition Nexus

2) Interventions: Can we reverse these effects?

# Background: Metabolic health & Brain Health

OBESITY Reviews
WORLD OBESITY

OBESITY COMORBIDITY | Open Access

**Association of anthropometry and weight change with risk of dementia and its major subtypes: A meta-analysis consisting 2.8 million adults with 57 294 cases of dementia**

Crystal ManYing Lee, Mark Woodward, G. David Batty, Alexa S. Beiser, Steven Bell, Claudine Berr, Espen Bjertness, John Chalmers, Robert Clarke, Jean-Francois Dartigues ... See all authors

First published: 03 January 2020 | https://doi.org/10.1111/obr.12989

UC-eLinks

THE LANCET
Neurology

Volume 19, Issue 9, September 2020, Pages 758-766

Series

**Brain insulin resistance in Alzheimer's disease and related disorders: mechanisms and therapeutic approaches**

Derek Kellar BS [a], Suzanne Craft PhD [b]

Xioa-Ying-Li et al, 2019**, Midlife Modifiable Risk Factors for Dementia: A Systematic Review and Meta-analysis of 34 Prospective Cohort Studies**

# How does stress impact diet?


"Self Regulation 101"

**"I'm on a low-carb diet.**
**Whenever I feel low, I eat carbs!"**

The Washington Times

**"Recession-proof: Alcohol, cigarette, chocolate sales thrive in hard times" Associated Press, 8/13/08**

# Stress Eating

--1 in 4 use food to cope with stress (APA, 2007)

--48% increased eating during lock-down (Buckland et al, 2020; Appetite)

# Stress, diet, and visceral fat

- Stress induces drive for comfort food
- Comfort food feeds off stress

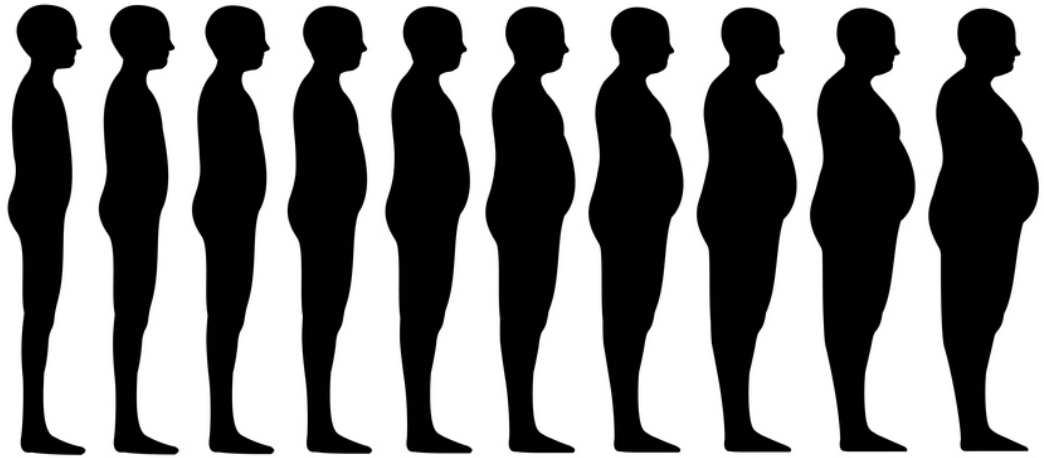

Sugar + Stress = Visceral fat

Kuo et al, 2007, Nature Medicine

# How does stress affect weight gain?

- Job stress predicted weight gain over 20 years (OR 1.30) (Klinebergt et al, 202, n = 3,872 Swedish adults)

- Caregivers gained abdominal fat over time (Radin et al, 2019)



# How does nutrition impact mood?

- 15 population based studies on whole foods (vs processed)
- 8  trials on B complex
- Micronutrients

Molecular Psychiatry
https://doi.org/10.1038/s41380-020-00925-x

EXPERT REVIEW

# Diet and depression: exploring the biological mechanisms of action

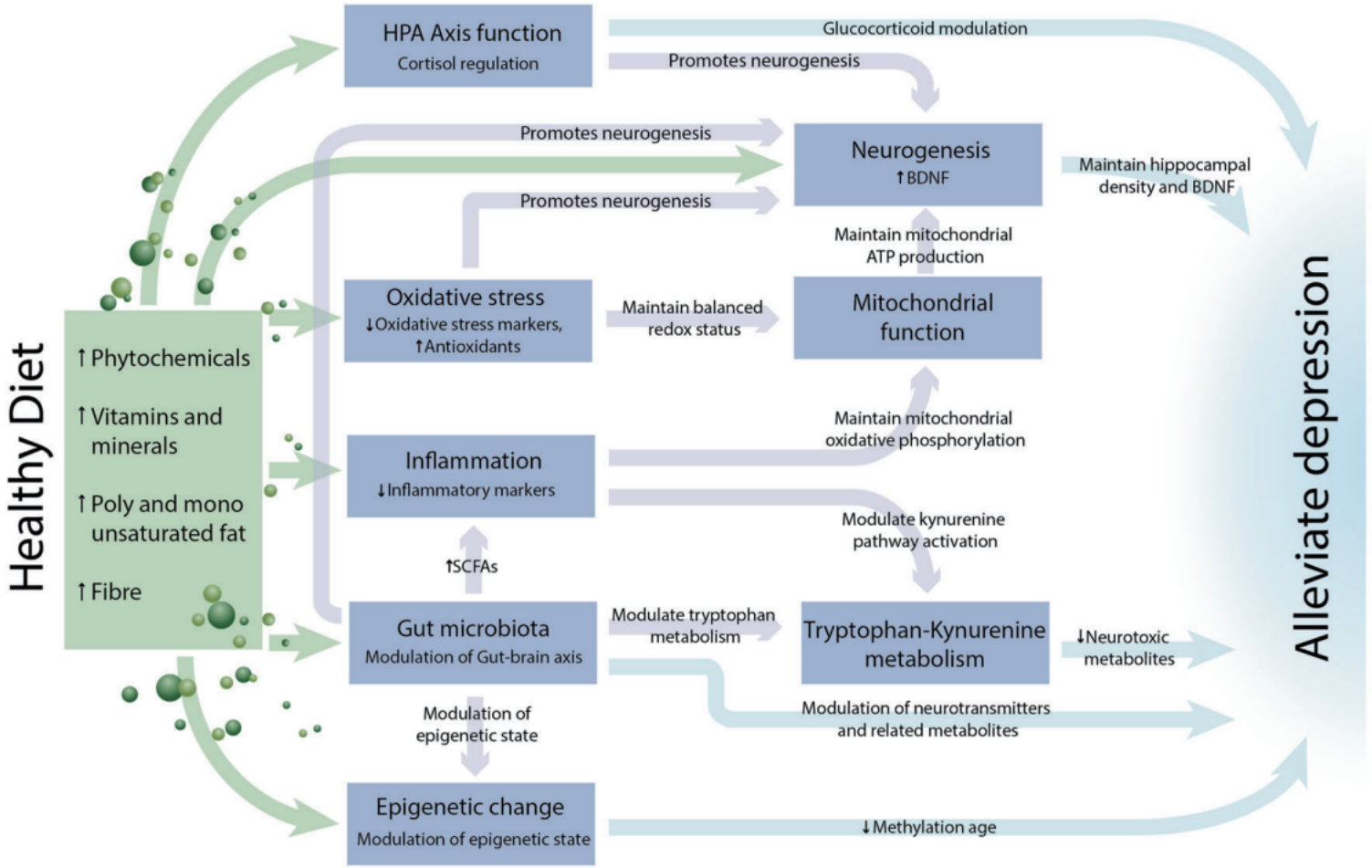



**Fig. 2 Proposed interplay between dietary quality and implicated mechanisms in alleviating depression.** This figure represents the pathways in this review. The black arrows represent increased consumption of individual components of a healthy dietary pattern.

# How does nutrition impact depression?

- N = 67 with MDD
- Remission in 8% vs. 32%

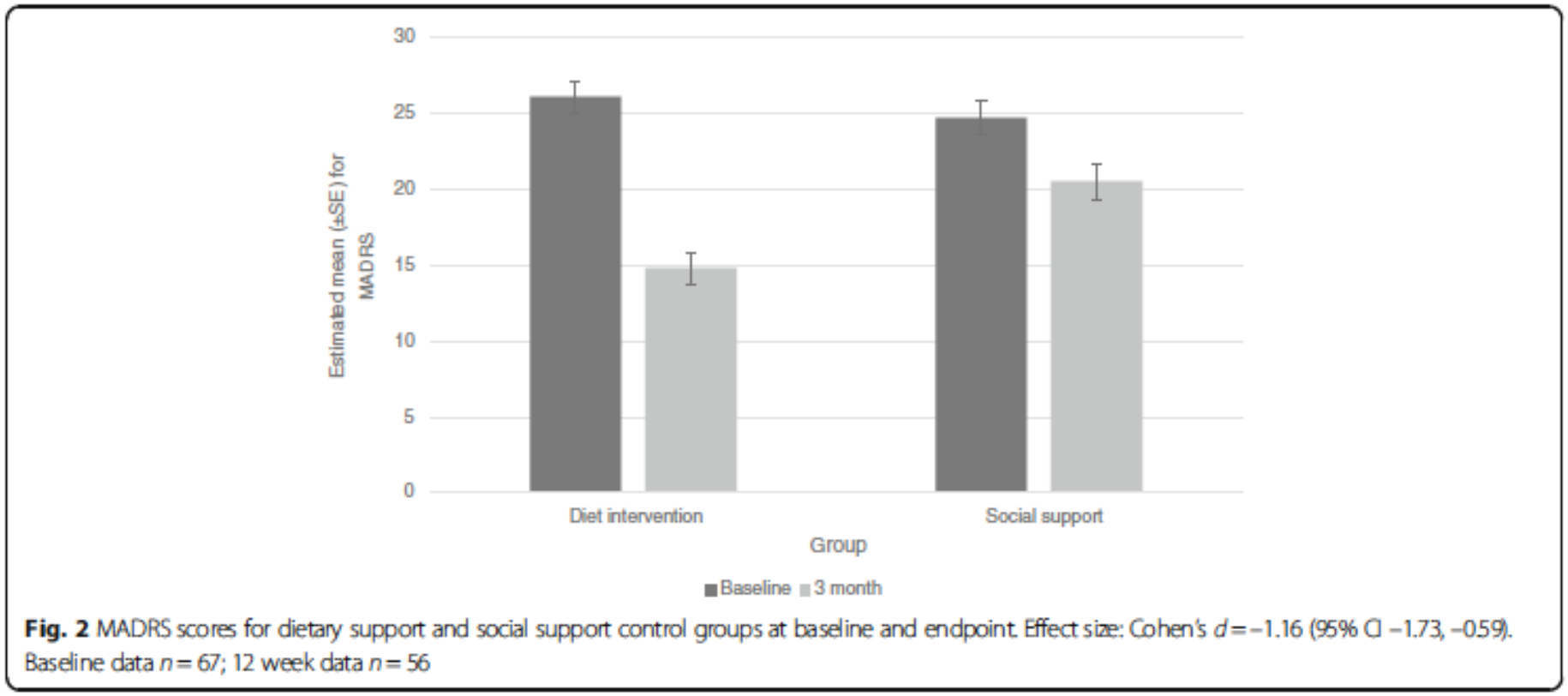



**Fig. 2** MADRS scores for dietary support and social support control groups at baseline and endpoint. Effect size: Cohen's $d = -1.16$ (95% CI −1.73, −0.59). Baseline data $n = 67$; 12 week data $n = 56$

Jacka et al, 2017, BMC Med

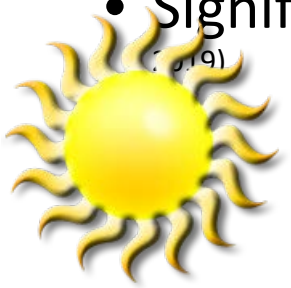
# The rainbow

# Part 2: Interventions

# Mindful Eating for weight loss

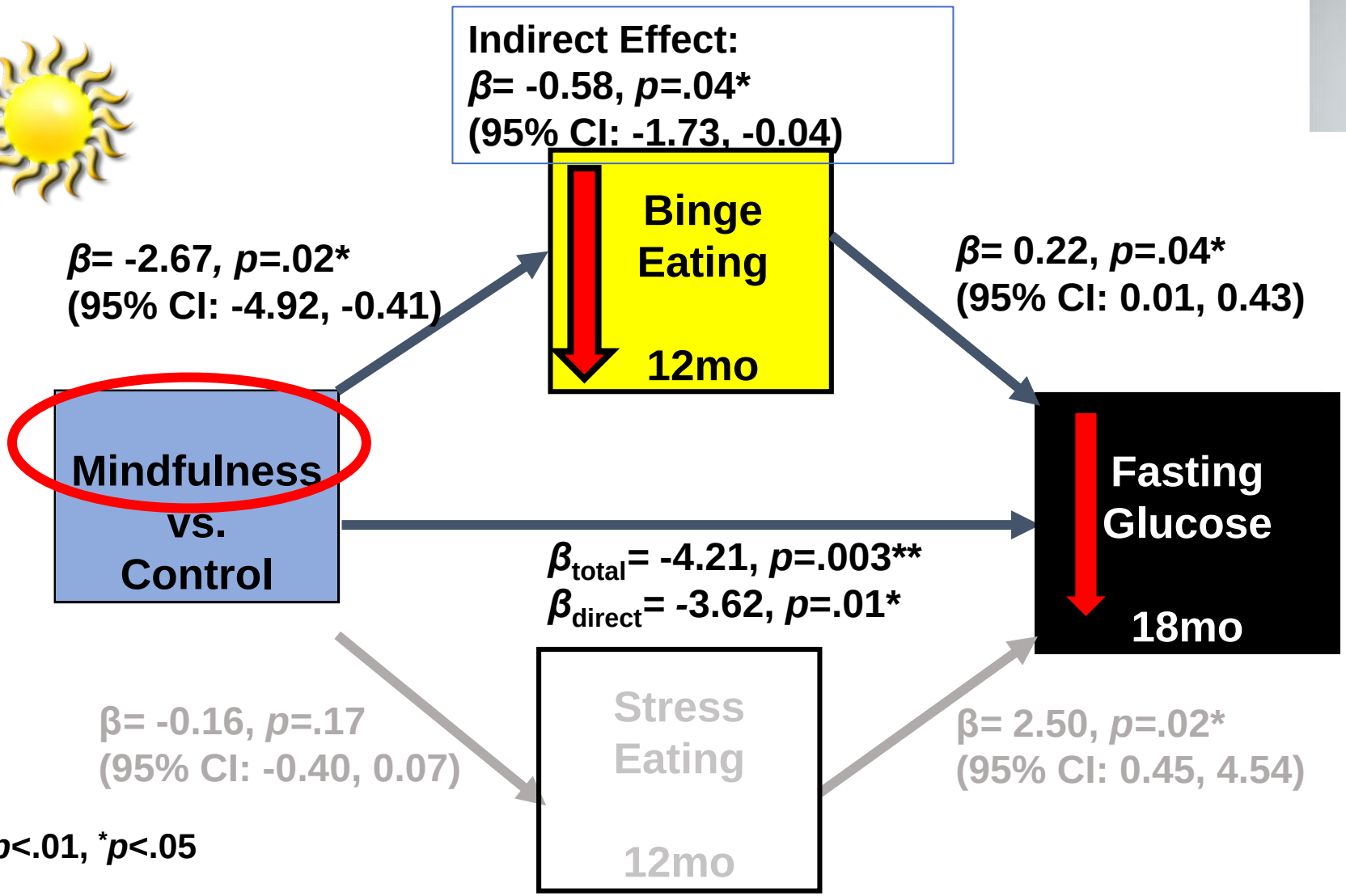
- Both groups lost weight
- Weight: Mindfulness group showed maintenance effects:
  - Marginally better weight loss maintenance.

  (Those who maintained weight loss had telomere lengthening (Mason et al, 2018).
  - Reduced hedonic drive explained 47% of weight loss (Mason et al, 2016)
- Significantly decreased glucose & lipids (12, 18 months) (Daubenmier et al, 2016)
  - Significantly decreased sugar intake with mindfulness (Mason et al, 2016)
- Significantly improved autonomic stress responses (Daubenmier et al, 2019)



NCCIH P01--Mindfulness & Obesity, SHINE clinical trial
(Hecht PI, Epel, Co-PI)

# Mechanisms:



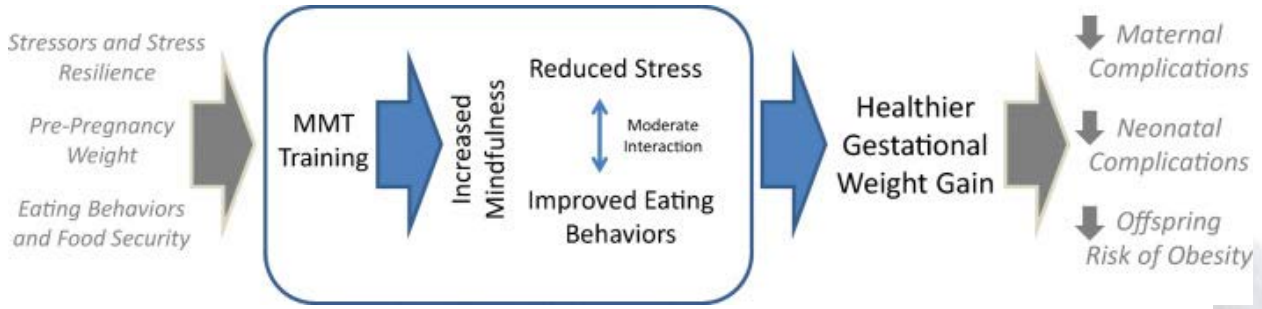

**p<.01, *p<.05

Radin, Epel et al, 2020, Health Psychology

# Mindful Moms Training

8 weekly 2-hour classes, 2 phone booster sessions, and 1 postpartum group session

- Acceptance based emotion regulation
  - Reduce stress using mindfulness
  - Increase self-awareness and acceptance
  - recognize body's signals for hunger and fullness
- 8-10 women (12-20 wks gestation)/ per group




Laraia et al. (2018) *Maternal and Child Health Journal*
Vieten et al. (2018) *BMC Pregnancy and Childbirth*

# Effects of mindful eating during pregnancy :

- Pregnancy is a critical period to intervene for high stress low income women.
- High stress during pregnancy was associated with risk for infants:
    - Infant illness (Roubinov et al, 2020)
    - Greater autonomic reactivity of infant (under review)
    - Greater odds of Rapid Infant Growth (Felder, 2020)

- A mindful eating class during pregnancy reduced maternal stress and depression, improved glucose tolerance, and better ANS reactivity profiles in offspring (Epel et al, 2018; Bush et al, under review).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October 28, 2019

More

# Association of a Workplace Sales Ban on Sugar-Sweetened Beverages With Employee Consumption of Sugar-Sweetened Beverages and Health

Elissa S. Epel, PhD[1,2]; Alison Hartman, BA[2]; Laurie M. Jacobs, PhD[3]; et al

» Author Affiliations

*JAMA Intern Med.* Published online October 28, 2019. doi:https://doi.org/10.1001/jamainternmed.2019.4434

Full Text

## Key Points

**Question** Was a workplace sales ban on sugar-sweetened beverages (SSBs) associated with a reduction in employee intake of sugar-sweetened beverages and improvement in their cardiometabolic health?

**Findings** In this before-after study and trial that included 214 adults who regularly drank SSBs, participants reported consuming less SSBs after a workplace sales ban and a reduction in waist circumference and sagittal diameter but no change in body mass index or insulin sensitivity. Those randomized to receive a brief motivational intervention had greater improvements.

**Meaning** A workplace sugar-sweetened beverage sales ban, especially if combined with a brief intervention, may be a feasible and effective way to improve employee health.

CULTURE OF HEALTH

By Sanjay Basu, Laurie M. Jacobs, Elissa Epel, Dean Schillinger, and Laura Schmidt

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HEALTH AFFAIRS 39,
NO. 7 (2020): 1140–1148
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# Cost-Effectiveness Of A Workplace Ban On Sugar-Sweetened Beverage Sales: A Microsimulation Model

**Sanjay Basu** (sanjay_basu@hms.harvard.edu) is director of research and population health at Collective Health, in San Francisco, California, and a faculty member at the Center for Primary Care, Harvard Medical School, in

ABSTRACT **Sugar-sweetened beverages (SSBs) increase chronic disease risk. We estimated the impact on employee health and health care spending of banning SSB sales in California-based health care organizations. We used survey data from a large, multisite health care organization in California, sampling 2,276 employees three months before and twelve months after a**

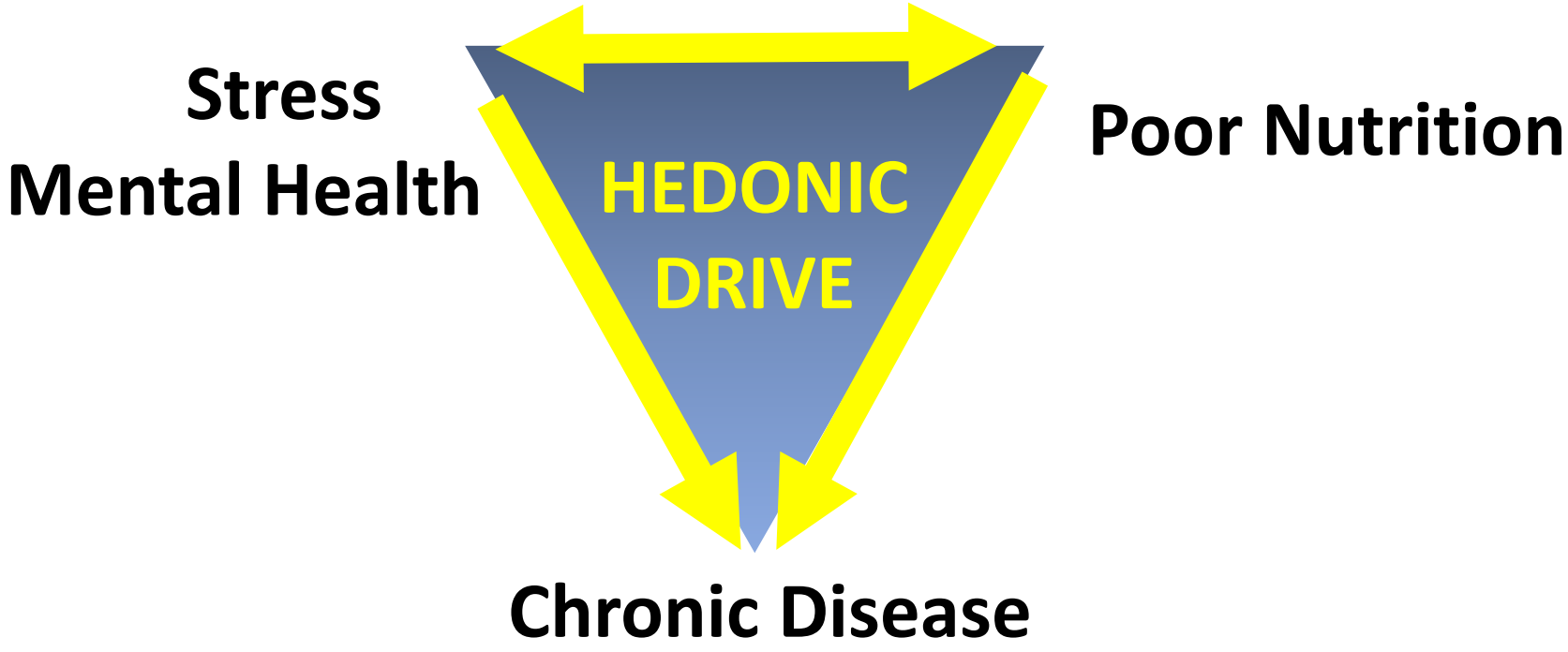
"saves about **$300,000 per 10,000 people over ten years**"

# Roadmap

1) Stress/Mood ⟷ Nutrition Nexus

   Strong observational data, some trials with depression

2) Interventions: Co-targeting has health benefits



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