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Sugar: The Unsweetened Truth
and What We Can Do About It

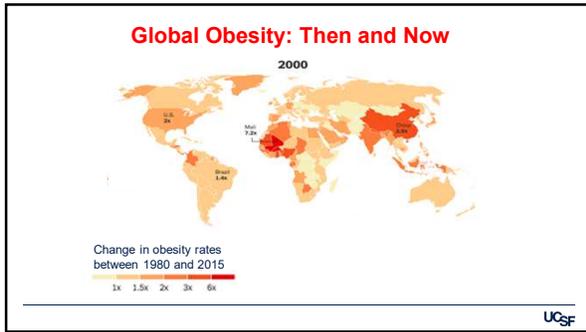


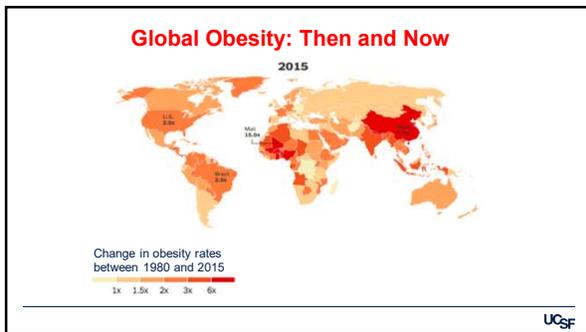
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No conflicts of interest

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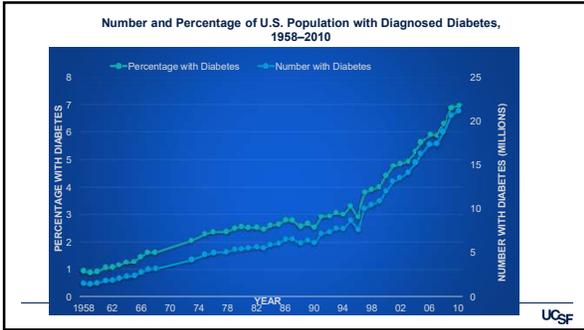
Canaries in the Coal Mine

Children Are Contracting Diseases of Adulthood

"Adult onset" type 2 diabetes is now a disease of children

- 1990: 1 in 11 American teens had prediabetes or diabetes
- Today: 1 in 4
- High personal and economic costs: blindness, heart and kidney disease, amputation, lifelong monitoring and injections

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Silent Epidemics

Many people don't know they have these conditions

"Adult onset" type 2 diabetes is now a disease of children

- 1990: 1 in 11 teens had prediabetes or diabetes; Today: 1 in 4
- High personal and economic costs: blindness, heart and kidney disease, amputation, lifelong monitoring

Non-alcoholic fatty liver disease (NAFLD)

- 30 years ago, the diagnosis didn't exist
- Today: 31% of adults, 13% of children
- By 2020, America's leading cause for liver transplant
- Known risk factors: obesity, heavy sugar and trans fat consumption

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Causes of the Epidemic

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A Saturated Environment

It puts cheap, hyper-processed foods, always close, within reach 24/7



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Solutions That Work

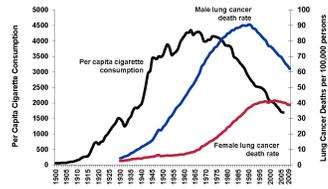
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**Taking Lessons From Tobacco:
How Quickly We Forget**



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Trends in Tobacco Use and Lung Cancer Death Rates* in the US



*Age-adjusted to 2000 US standard population.
Source: Death rates: US Mortality Data, 1960-2006; US Mortality Volumes, 1950-1999, National Center for Health Statistics, Centers for Disease Control and Prevention. Cigarette consumption: US Department of Agriculture, 1960-2005.

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**All Effective Solutions Follow
The Iron Law of Public Health**

Reducing the *availability* of harmful substances in the environment...

...will reduce *consumption*...

...thereby reducing *harms to health*.

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**The Most Effective Strategies
Follow the Iron Law**

- *Pricing and taxation strategies:* make junk more expensive
- *Controls at the point of sales:* put the junk a bit farther out of reach
- *Counteradvertising and warning labels:* send the right message
- SSB Free Zones in workplaces and schools

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Why Taxation Works

- Reduces availability by effectively raising the price of the commodity
- Easy and cheap for governments to implement and enforce
- Evidence shows it impacts the heaviest consumers
- Differentially impacts vulnerable populations
- Earmarks funds for health promotion: Sets off a virtuous cycle of policy change

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Controls at the Point of Sales

- Getting sugary beverages out of schools, workplaces and public environments
- Licensing and zoning controls number of sales outlets
- Use permits that control hours of operation and product placements

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Counteradvertising and Warning Labels

- *Counter-Ad campaigns:* "Denormalize" the product

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The average smoker needs over five thousand

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Changing Perspectives



"Pouring on the Pounds"
NYC Dept. of Health Campaign, 2015

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Changing Perspectives



Both brought to you by R.J. Reynolds

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The New York Times

How Big Tobacco Hooked Children on Sugary Drinks

Researchers combing through archives discovered that cigarette makers had applied their marketing wizardry to sweetened beverages and turned generations of children into loyal customers.

By Andrew Jacobs

March 14, 2019

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UCSF Healthy Beverage Initiative

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UCSF Healthy Beverage Initiative

What?

UCSF eliminated the sale of sugar sweetened beverages. Combined this with a social marketing campaign, *SugarScience*.

When?

Began July 1, 2015 and was completed November 1, 2015.

Where?

All vending machines, cafeterias, campus eateries and retail locations. All catering services and even patient menus.

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Why Focus on Sugar-Sweetened Beverages?

- No nutritional value
- They are the largest-single source of added sugars in our diet (36%)
- They are not as satiating as solid foods
- They may be digested and metabolized quickly, thereby taxing vital organs

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Campus Vendors

All food operations are voluntarily participating!

Food Trucks

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Acceptable Beverages under HBI

Smart Choices	Other Alternative Choices
<p>Contain no added sugars and no artificial sweeteners</p> <ul style="list-style-type: none"> Still water Flavored water Sparkling water Unsweetened iced tea Unflavored milk Hot coffee and tea (sugar packets may still be provided) 	<p>Contain no added sugars but may contain artificial sweeteners</p> <ul style="list-style-type: none"> 100% fruit juice Diet/zero-calorie soda Diet iced tea Diet sports and vitamin drinks

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Effects on Employee Health

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Healthy Beverage Initiative Evaluation: Effects of Employee Health

Representative survey of 2276 UCSF employees

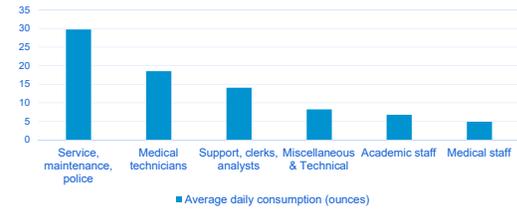
- Interviewed before the Healthy Beverage Initiative went into effect
- Followed and re-interviewed 6 and 12 months after (86% retention)

Embedded sub-study of 214 heavy SSB drinkers

- Complete physicals before the Healthy Beverage Initiative
- And 10 months after

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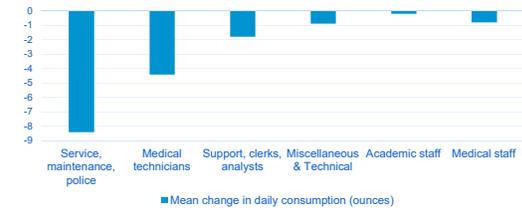
Before the Healthy Beverage Initiative: Daily Sugar-Sweetened Beverage Consumption by Job Classification



N=2276

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12 Months After the Healthy Beverage Initiative: Daily Sugar-Sweetened Beverage Change by Job Classification



N=1908

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**Embedded Sub-Study of Heavy SSB Drinkers:
Employees Before and 10 Months After Healthy
Beverage Initiative**

	N	Full Sample		p
		Baseline Mean (SD)	10 months Mean (SD)	
Daily SSB intake (oz)	195	35.0 (26.8)	18.0 (19.7)	.00
<i>Adiposity</i>				
BMI (kg/m ²)	171	29.4 (6.5)	29.5 (6.5)	.38
Waist circumference (cm)	170	98.7 (16.7)	96.5 (15.8)	.00
Sagittal diameter (cm)	171	24.7 (5.6)	24.3 (5.6)	.01
Waist-Hip Ratio	170	.94 (.09)	.94 (.10)	.28

SSB=sugar-sweetened beverage

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Biggest Impacts on the Most At-Risk Employees

	N	Lean	Overweight/Obese
		Mean (SE)	Mean (SE)
SSB consumption	183	-6.2 (4.1)	-19.6 (2.4)
<i>Adiposity</i>			
BMI (using BL height)	171	-.12 (.19)	-.08 (.12)
Waist circumference (cm)	170	-1.2 (.7)	-2.6 (.44)
Sagittal diameter (cm)	171	-.03 (.32)	-.55 (.20)
Waist-Hip ratio	170	.00 (.01)	.00 (.01)

SSB=sugar-sweetened beverage

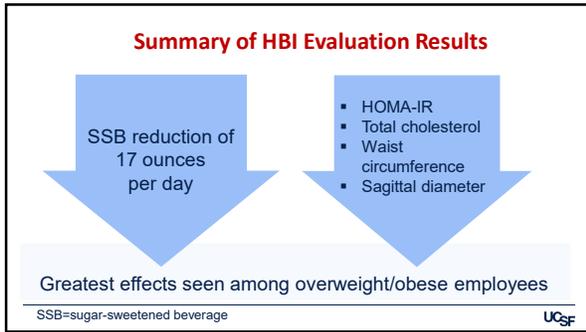
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**Blood Biomarkers
for Metabolic
Health Got Better
Due to Declines in
SSB Consumption**

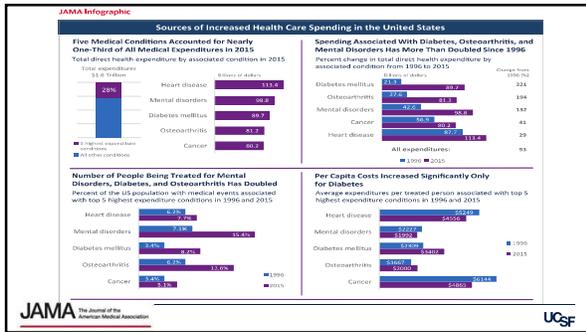
Outcome	Correlation with Change in SSB Consumption (r)	p
<i>Adiposity</i>		
Change in BMI	-.02	.80
Change in waist circumference	-.01	.94
Change in sagittal diameter	-.10	.20
Change in waist-hip ratio	.01	.92
<i>Lipid profile</i>		
Change in triglycerides	-.14	.06
Change in total cholesterol	-.22	.004
Change in HDL	-.13	.10
Change in LDL	-.15	.06
Change in ApoA1	.08	.33
Change in ApoB	-.11	.17
<i>Metabolic control</i>		
Change in uric acid	.09	.22
Change in GST	.004	.96
Change in ALT	.08	.31
Change in HbA1c	-.12	.12
Change in insulin	.16	.04
Change in glucose	-.09	.27
Change in HOMA	-.16	.03

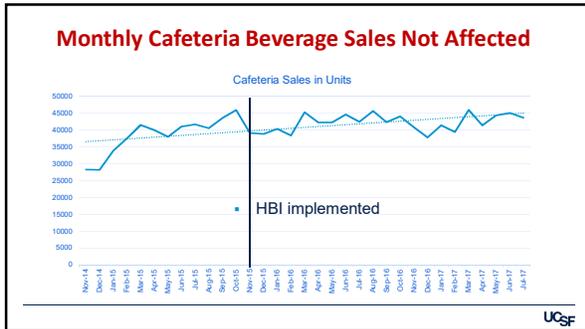
SSB=sugar-sweetened beverage

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Cost-effectiveness of a workplace ban on sugar-sweetened beverage sales

Sanjay Basu, Laurie Jacobs, Elissa Epel, Dean Schilling, Laura Schmidt

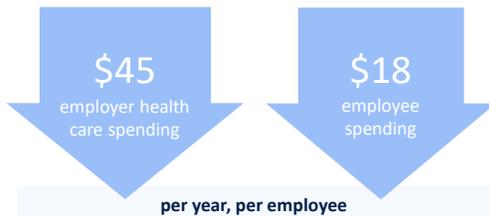
Objective: To understand whether an SSB workplace sales ban will ultimately be cost-effective for employers and society, and under what longer-term impact scenarios.

Methods: Construction and application of microsimulation model of national private-sector employee populations, including SSB consumption, associated rates of diabetes and cardiovascular disease-related costs and quality-adjusted life-years (QALYs) from employer and healthcare system perspectives.

Preliminary estimates: A SSB sales ban would be expected to reduce employer health care spending by about \$45 per year per employee (95% CI: \$41, \$111), and employee spending by about \$18 per year per employee (95% CI: 45, \$43), or about 3.2% and 0.4%, respectively.

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Conservative Cost-Effectiveness Estimates



Disseminating the Idea



The Telegraph

News More

Sugary drinks banned from sale in NHS hospitals from July



Scale of the NHS Healthy Beverage Initiative

NHS Trust sites/hospitals	232
Number of employees	1.3 million
Overweight/Obese employees	700,000
Number of Patients every 24hrs	1 million
Accident/Emergency attendances per year	22 million
Outpatient appointments per year	85 million



University of California's Healthy Beverage Initiative



University of California systemwide initiative that promotes innovative reforms in all dimensions of health and well-being "to make UC the healthiest place to work, learn and live."



The UC Healthy Beverage Initiative

 TAP WATER ACCESS	 SOCIAL MARKETING	 SSB REDUCTION
<ul style="list-style-type: none"> ✓ Installation of water refill stations ✓ Installation of signage and prompts ✓ Observation & flowmeter evaluation 	<ul style="list-style-type: none"> ✓ Social marketing campaign ✓ Education ✓ How-To toolkit 	<ul style="list-style-type: none"> ✓ SSB procurement policies ✓ Bev company contracts ✓ Choice architecture ✓ Point of purchase prompts ✓ Warning labels ✓ SSB removal
Phase 1	Phase 2	Phase 3

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SUMMING UP

- Tackling the diabetes epidemic requires a prevention approach that de-saturates the food environment
- The tobacco experience provides a model
- The private sector is a key leverage point
- Healthy Beverage Initiatives are a win-win for employee health and employer spending

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