How Data Science, AI, and Other Tech Approaches Can Help Address the Systems Leading to Obesity

October 28th, 2021

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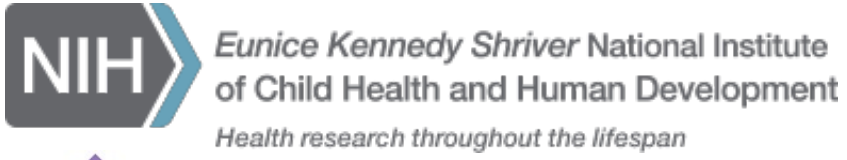

Meteorology vs. Obesity Prevention and Control

Forbes

Oct 12, 2016, 02:46pm EDT

The One Thing To Do To Stop The Obesity Epidemic

Bruce Y. Lee Senior Contributor

Healthcare

I am a writer, journalist, professor, systems modeler, computational and digital health expert, avocado-eater, and entrepreneur, not always in that order.

Forbes

Dec 3, 2016, 12:25am EST

Stephen Hawking Is Right But Also Wrong About Obesity

Bruce Y. Lee Senior Contributor

Healthcare

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Home - Public Policy - We need a whole systems approach to tackle obesity

We need a whole systems approach to tackle obesity

TIME

How Our Health-Care System Is Feeding the Obesity Epidemic

BY BRUCE Y. LEE SEPTEMBER 23, 2016 10:01 AM EDT

Forbes

Obesity Epidemic Getting Worse, What Happens When You Don't Do Enough

Bruce Y. Lee Senior Contributor

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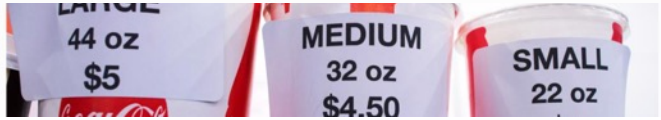

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Using only a single measure to determine the weather

Now, over to Al for the weather.

Today, the temperature is going to be 90°, and tomorrow it will be 95°, on Saturday it will be 92° and on Sunday it will be 89° - and that's the weather! Back to you, Cindy.

SOLUTION: Develop multiple, complex, and dynamic measures for obesity

Original Article
EPIDEMIOLOGY/GENETICS

Obesity

The Additional Costs and Health Effects of a Patient Having Overweight or Obesity: A Computational Model

Saeideh Fallah-Fini[1,2], Atif Adam[1], Lawrence J. Cheskin[1], Sarah M. Bartsch[1], and Bruce Y. Lee[1]

Objective: This paper estimates specific additional disease outcomes and costs that could be prevented by helping a patient go from an obesity or overweight category to a normal weight category at different ages. This information could help physicians, other health care workers, patients, and third-party payers determine how to prioritize weight reduction.

Methods: A computational Markov model was developed that represented the BMI status, chronic health states, health outcomes, and associated costs (from various perspectives) for an adult at different age points throughout his or her lifetime.

Results: Incremental costs were calculated for adult patients with obesity or overweight (vs. normal weight) at different starting ages. For example, for a metabolically healthy 20-year-old, having obesity (vs. normal weight) added lifetime third-party payer costs averaging $14,059 (95% range: $13,956-$14,163), productivity losses of $14,141 ($13,969-$14,312), and total societal costs of $28,020 ($27,751-$28,289); having overweight vs. normal weight added $5,055 ($4,967-$5,144), $5,358 ($5,199-$5,518), and $10,365 ($10,140-$10,590). For a metabolically healthy 50-year-old, having obesity added $15,925 ($15,831-$16,020), $20,120 ($19,887-$20,352), and $36,278 ($35,977-$36,579); having overweight added $5,866 ($5,779-$5,953), $10,205 ($9,980-$10,429), and $16,169 ($15,899-$16,438).

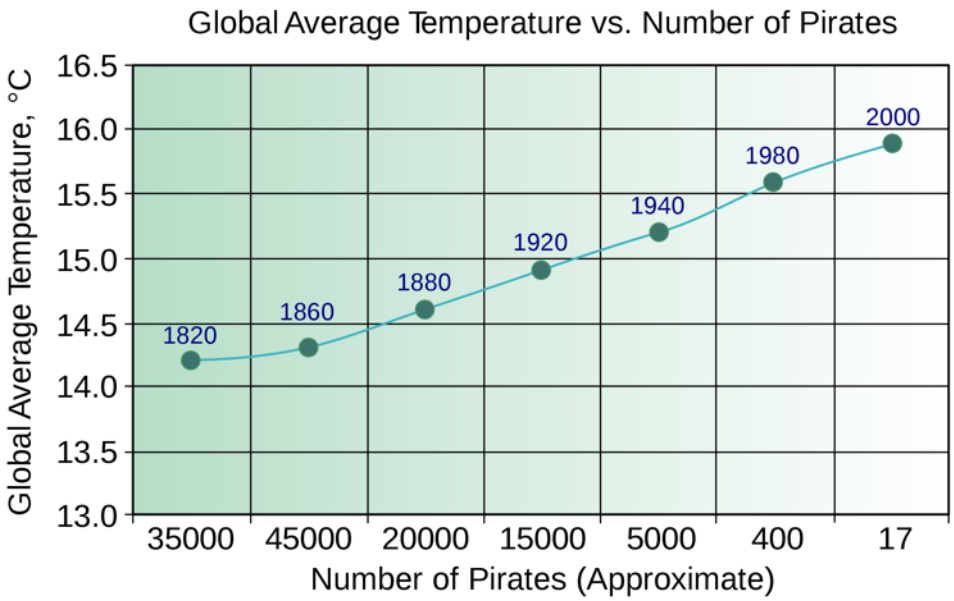
Conclusions: Incremental lifetime costs of a patient with obesity or overweight (vs. normal weight) increased with the patient's age, peaked at age 50, and decreased with older ages. However, weight reduction even in older adults still yielded incremental cost savings.

Relying on simple associations and correlations for the weather

Forbes

No, These Two Studies Don't Prove That Coffee Leads To Longer Life

Bruce Y. Lee Contributor
Pharma & Healthcare



SOLUTION: More systems approaches for obesity

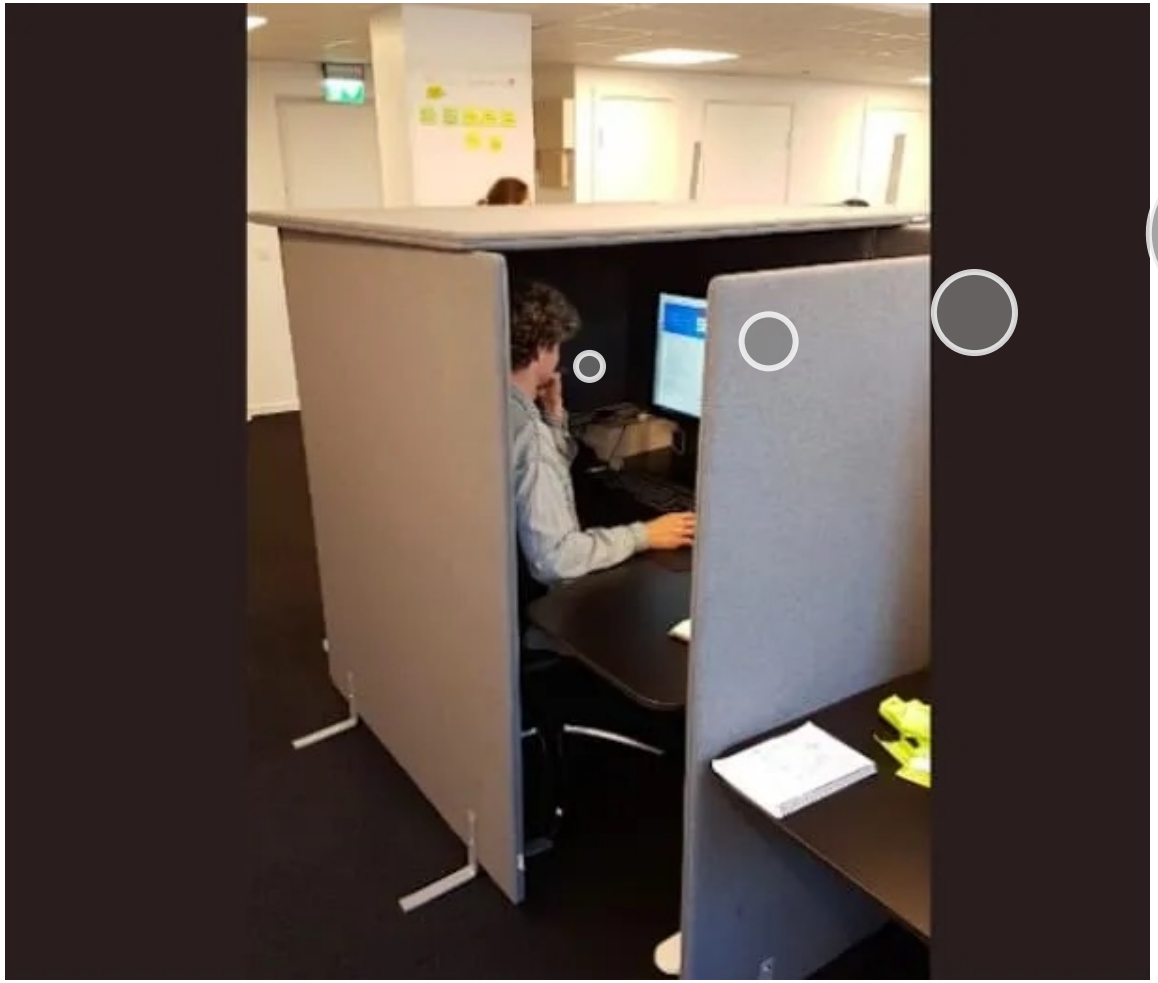
TOP DOWN

Look for patterns and associations

BOTTOMS UP

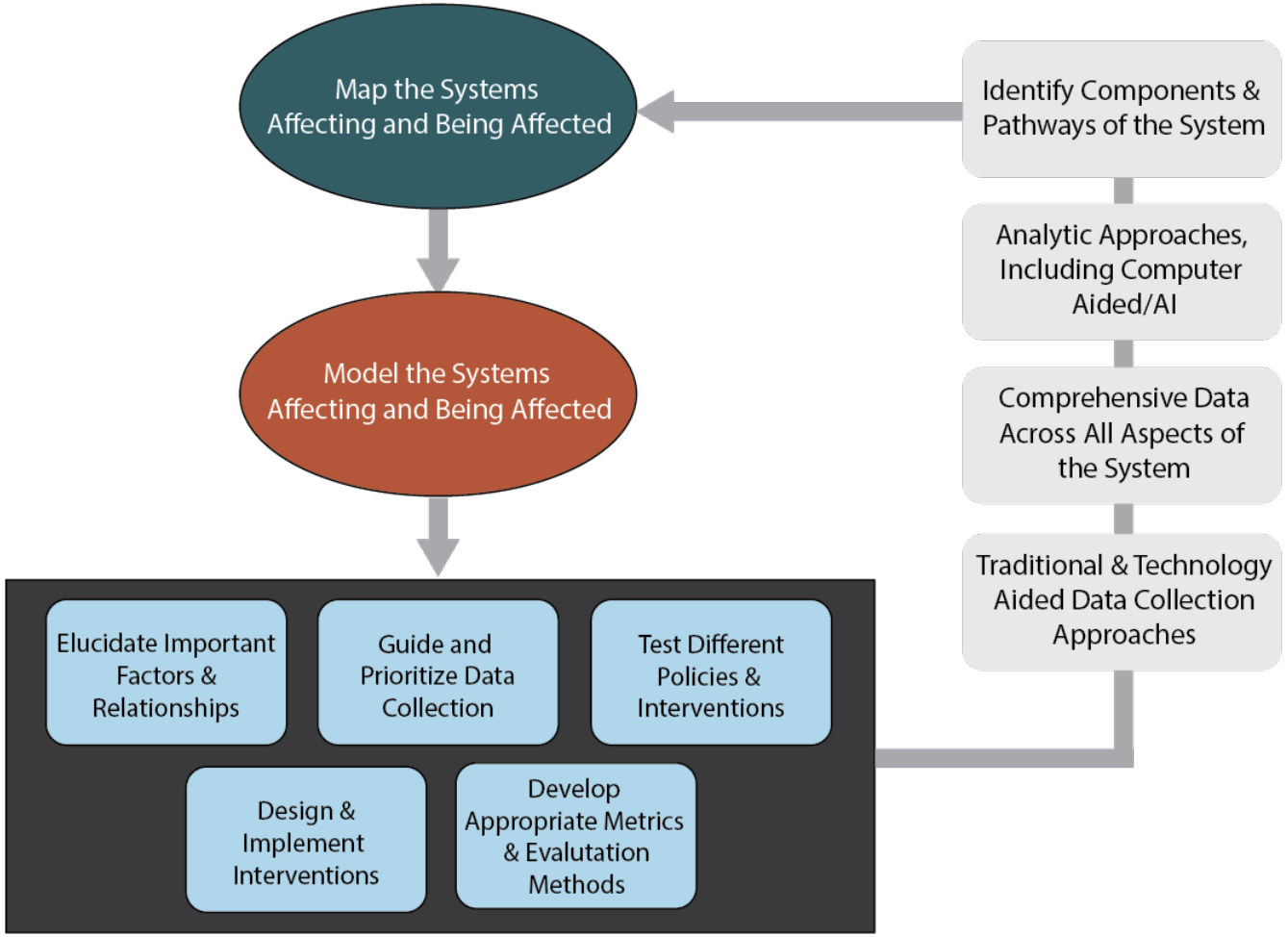
Re-create the system and understand mechanisms

Have data collection a separate and isolated activity



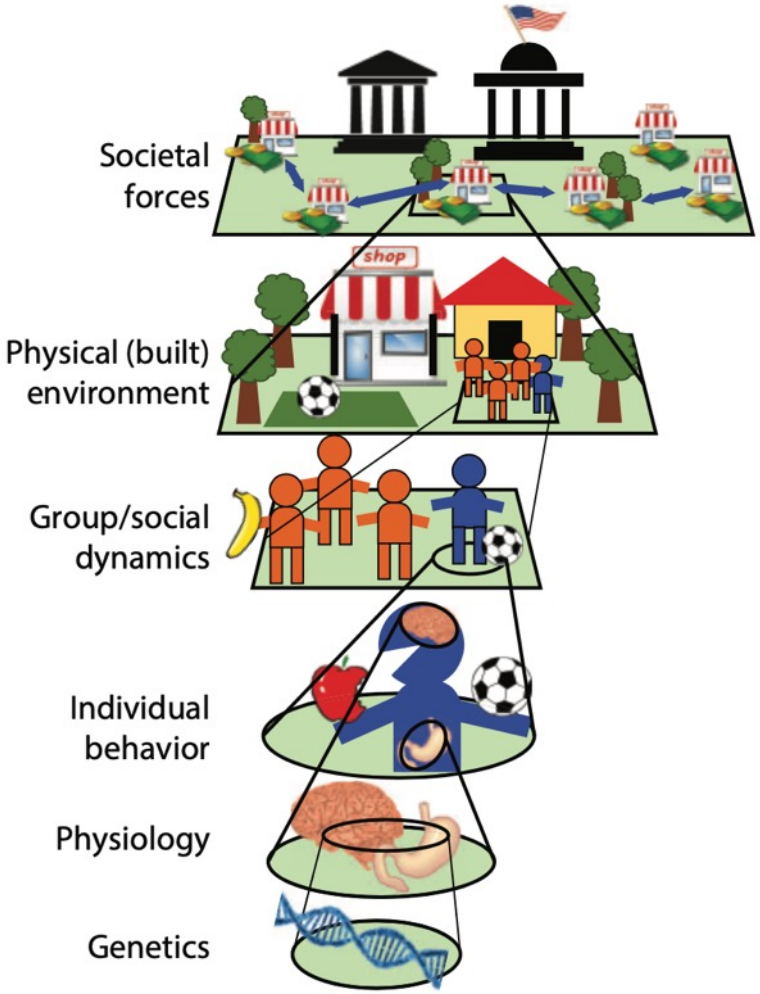
Barometric pressure…MY PRECIOUS

SOLUTION: Integrate data collection, systems mapping and modeling, and policies and interventions



Not readily sharing weather data

SOLUTION: More open data sharing



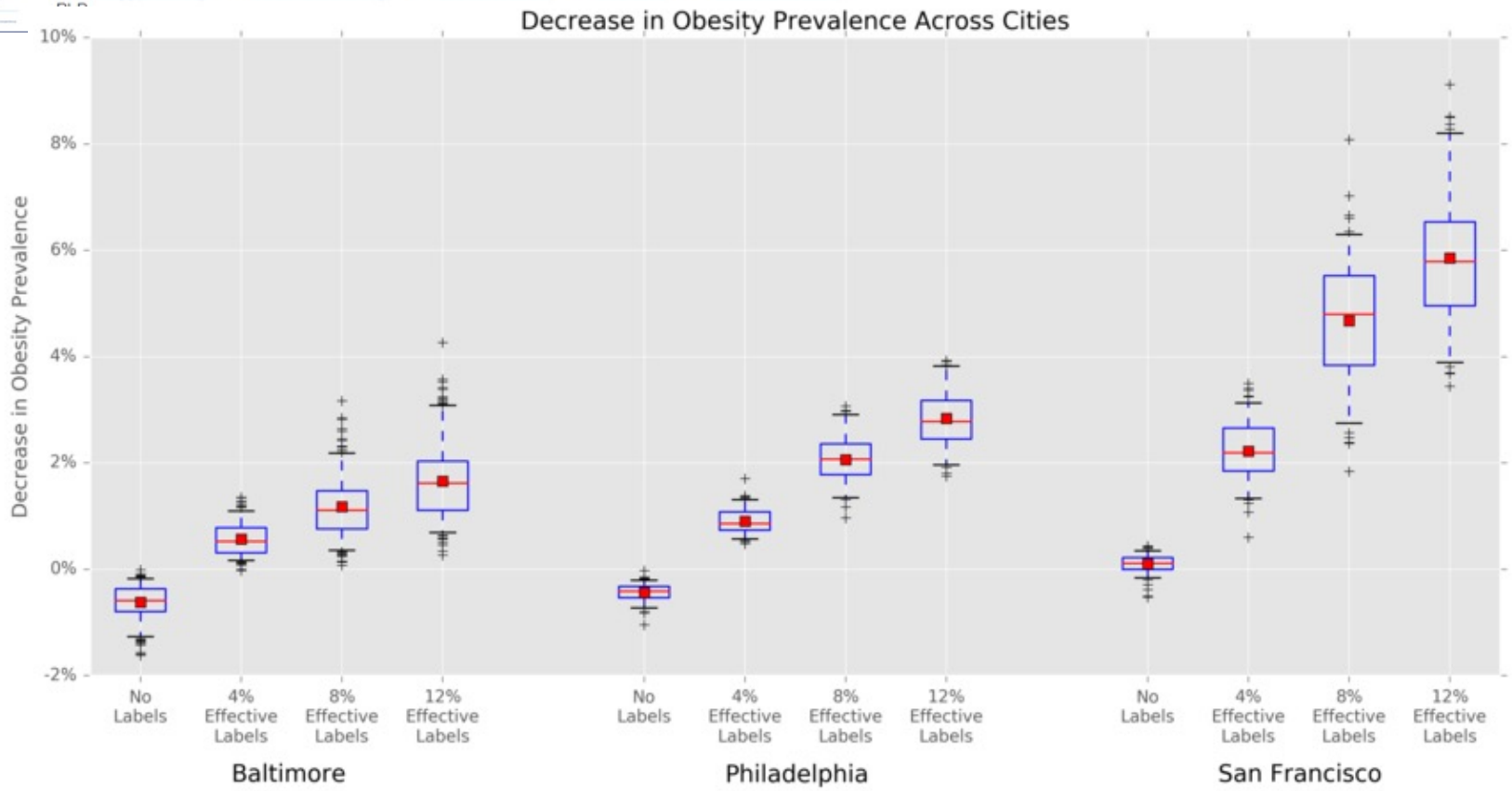
Assuming that the weather in one location is the same everywhere else

Source: https://www.youtube.com/watch?v=20VQuuqNvsc

SOLUTION: Consider the environment

Simulating the Impact of Sugar-Sweetened Beverage Warning Labels in Three Cities

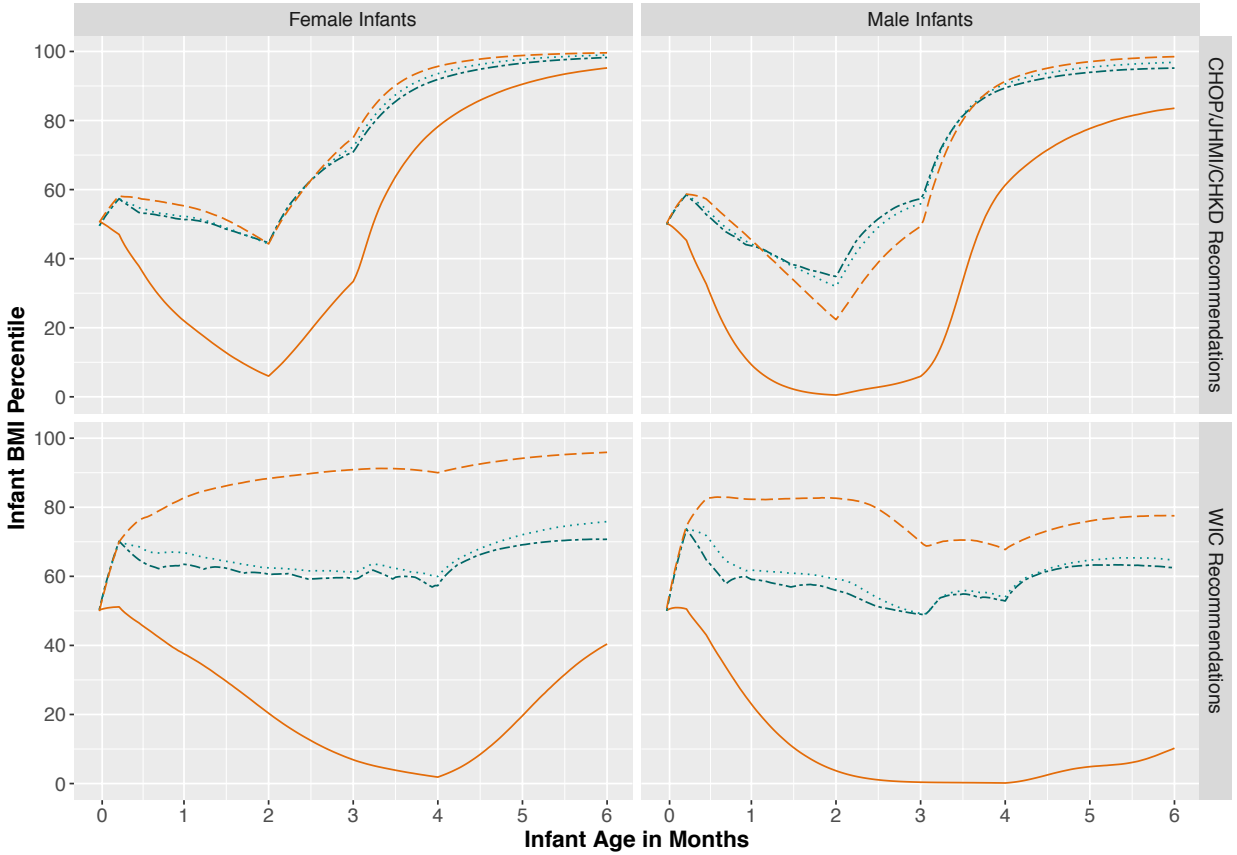
Bruce Y. Lee, MD, Marie C. Ferguson, MSPH, Daniel L. Hertenstein, BS, Atif Adam, PhD, Eli Zenkov, PhD, Peggy I. Wang, PhD, Michelle S. Wong, PhD, Joel Gittelsohn, PhD, Yeeli Mui, PhD, Shawn T. Brown,



Not factoring in time when it comes to the weather

Photo credit: tomazl
Website: Pexaby

SOLUTION: Move toward more real time surveillance



Pediatric RESEARCH

Ferguson, et al. *Pediatric research,* 2020.

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Blaming individuals for the weather

Source: Social media meme

SOLUTION: Factor in the surroundings such as social determinants

MAJOR LEAGUE BASEBALL
AMERICAN COLLEGE of SPORTS MEDICINE
UNITED STATES OLYMPIC COMMITTEE
NATIONAL FITNESS FOUNDATION
NBA
EVERY SEASON STARTS AT DICK'S SPORTING GOODS
USTA
PGA
THE ASPEN INSTITUTE
PROJECT PLAY
— 2020 —
SFIA Sports & Fitness Industry Association
RALPH C. WILSON JR. FOUNDATION
JOHNS HOPKINS GLOBAL OBESITY PREVENTION CENTER
HSS
SFA SPORTS FACILITIES ADVISORY
SFM SPORTS FACILITIES MANAGEMENT
Ketchum
NY RR NEW YORK ROAD RUNNERS
NBC SPORTS GROUP

Relying on single interventions to deal with the weather

Source: https://9gag.com/gag/a1ZxNE2

SOLUTION: Multiple multiscale layered and integrated policies and interventions

Obesity A Research Journal | OBESITY SOCIETY
Explore this journal >

Original Article

Simulating the Impact of Crime on African American Women's Physical Activity and Obesity

Tiffany M. Powell-Wiley, Michelle S. Wong, Joel Adu-Brimpong, Shawn T. Brown,

Change in Overweight and Obesity Prevalence Over One Year

Baseline Probability to Exercise	Percent of Accessible Physical Activity Locations: 10%	50%	90%
100%	-6.84%	-18.36%	-22.58%
50%	-0.72%	-4.46%	-5.87%
37.50%	0.63%	-2.35%	-3.42%
25%	1.92%	-0.05%	-0.69%

Change in Obesity Prevalence Over One Year

Baseline Probability to Exercise	Percent of Accessible Physical Activity Locations: 10%	50%	90%
100%	-9.04%	-20.11%	-24.38%
50%	-0.77%	-6.70%	-9.13%
37.50%	1.05%	-2.91%	-4.46%
25%	2.94%	0.25%	-0.79%

Not using the latest technology and advances when addressing the weather

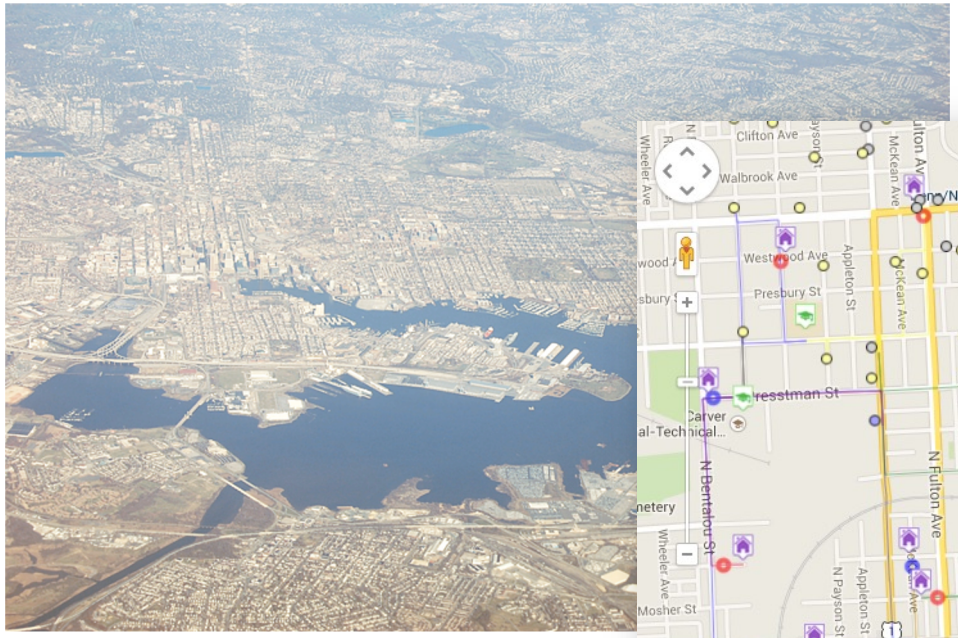
Source: Franklin Institute, Rachel D. Valletta, PhD
https://www.fi.edu/blog/groundhog-day-science

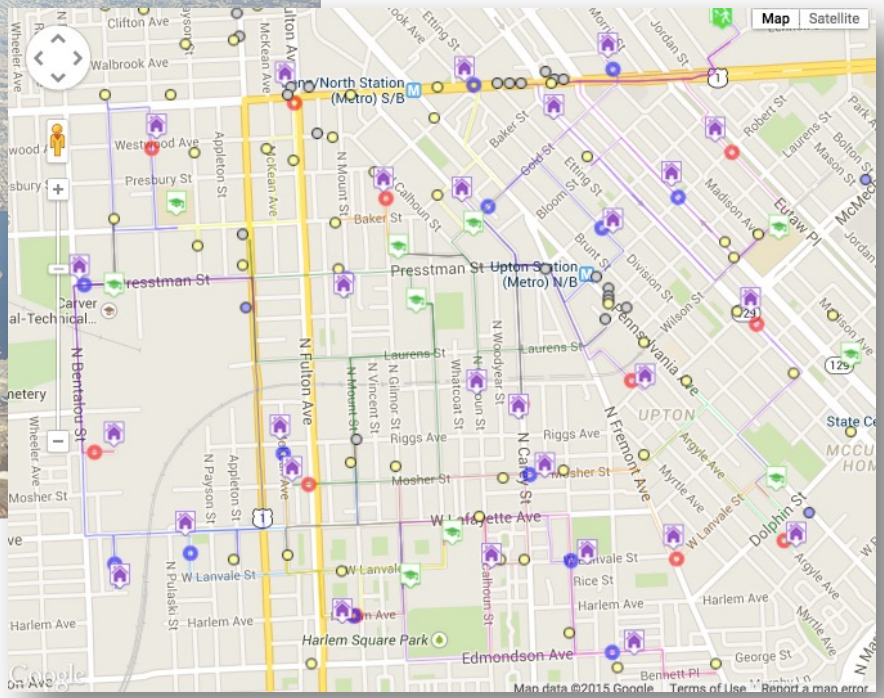
SOLUTION: Incorporate the latest technology and computational approaches

NUTRITION REVIEWS

A systems approach to obesity

Bruce Y. Lee, Sarah M. Bartsch, Yeeli Mui, Leila A. Haidari, Marie L. Spiker, Joel Gittelsohn





Claiming that the weather is too simple or too complex

SOLUTION: Perfect is the enemy of good, need to start somewhere

CHILDREN'S HEALTH

By Bruce Y. Lee, Atif Adam, Eli Zenkov, Daniel Hertenstein, Marie C. Ferguson, Peggy I. Wang, Michelle S. Wong, Patrick Wedlock, Sindiso Nyathi, Joel Gittelsohn, Saeideh Falah-Fini, Sarah M. Bartsch, Lawrence J. Cheskin, and Shawn T. Brown

Modeling The Economic And Health Impact Of Increasing Children's Physical Activity In The United States

Bruce Y. Lee (brucelee@jhu.edu) is executive director of the Global Obesity Prevention Center and an associate professor in the Department of International Health at the Johns Hopkins Bloomberg School of Public Health, in Baltimore, Maryland.

Atif Adam is a senior analyst at the Global Obesity Prevention Center.

ABSTRACT Increasing physical activity among children is a potentially important public health intervention. Quantifying the economic and health effects of the intervention would help decision makers understand its impact and priority. Using a computational simulation model that we developed to represent all US children ages 8–11 years, we estimated that maintaining the current physical activity levels (only 31.9 percent of children get twenty-five minutes of high-calorie-burning physical activity three times a week) would result each year in a net present value of $1.1 trillion in direct medical costs and $1.7 trillion in lost productivity

Increasing physical activity amongst children can save billions and billions of dollars

The New York Times

WELL | MOVE

Child's Play Is Good for All of Us

Phys Ed

By GRETCHEN REYNOLDS MAY 3, 2017

USA TODAY

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Overweight kids are costing America billions

USA TODAY NETWORK Sean Rossman , USA TODAY Published 4:00 p.m. ET May 1, 2017 | Updated 9:26 a.m. ET May 2, 2017

Overweight children are costing America billions according to a new study from Johns Hopkins University. Sean Dowling (@seandowlingtv) has more. Buzz60

Summary

- Develop multiple, complex, and dynamic measures for obesity
- More systems approaches for obesity
- Integrate data collection, systems mapping and modeling, and policies and interventions
- More open data sharing
- Consider the environment
- Move toward more real time surveillance
- Factor in the surroundings such as social determinants
- Multiple multiscale layered and integrated policies and interventions
- Incorporate the latest technology and computational approaches
- Perfect is the enemy of good, need to start somewhere

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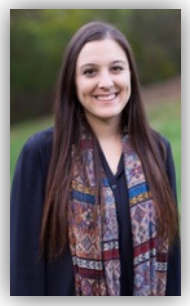
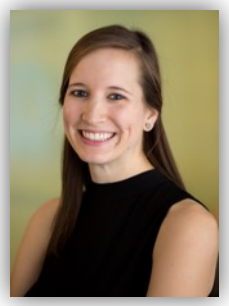

Sarah Cox, MSPH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Lily Kolb, BS


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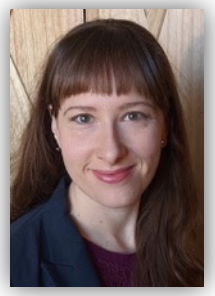
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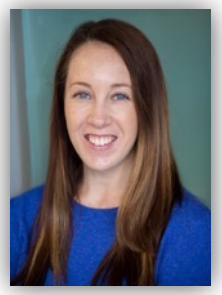
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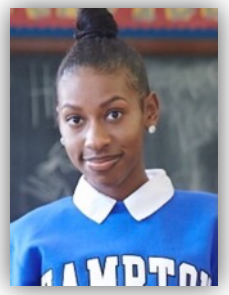
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Healthcare

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