Presentation

Mathematical and computational modeling of complex systems and the potential to change behaviour around obesity (or other public health challenges) and outcomes in the future

- **Professor Bruce Y. Lee**, Associate Professor of International Health, Johns Hopkins Bloomberg School of Public Health; Executive Director, Global Obesity Prevention Center, Johns Hopkins

Mathematical and computational modelling of complex systems and the potential to change behaviour around obesity (or other public health challenges) and outcomes in the future

January 17th, 2019

Bruce Y. Lee, MD, MBA

Associate Professor, Department of International Health at Johns Hopkins Bloomberg School of Public Health and Carey Business School

Executive Director, Global Obesity Prevention Center (GOPC) at Johns Hopkins University

Email: Bruceleemdmba@gmail.com | Twitter: @bruce_y_lee

Forbes

Stephen Hawking Is Right But Also Wrong About Obesity

Bruce Y. Lee, CONTRIBUTOR
FULL BIO
Opinions expressed by Forbes Contributors are their own.

74-year old Stephen Hawking is one of the world's most renowned living physicists. (Photo credit: NIKLAS HALLEN/AFP/Getty Images)

More Evidence That Obesity Is A Global Catastrophe In Slow Motion

Bruce Y. Lee, CONTRIBUTOR
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- has everyone around the world responded as if the obesity epidemic were indeed a catastrophe?
- no country so far has truly successfully curbed the obesity epidemic

Report Shows It's Time To Change The Picture Of Obesity

Bruce Y. Lee, CONTRIBUTOR
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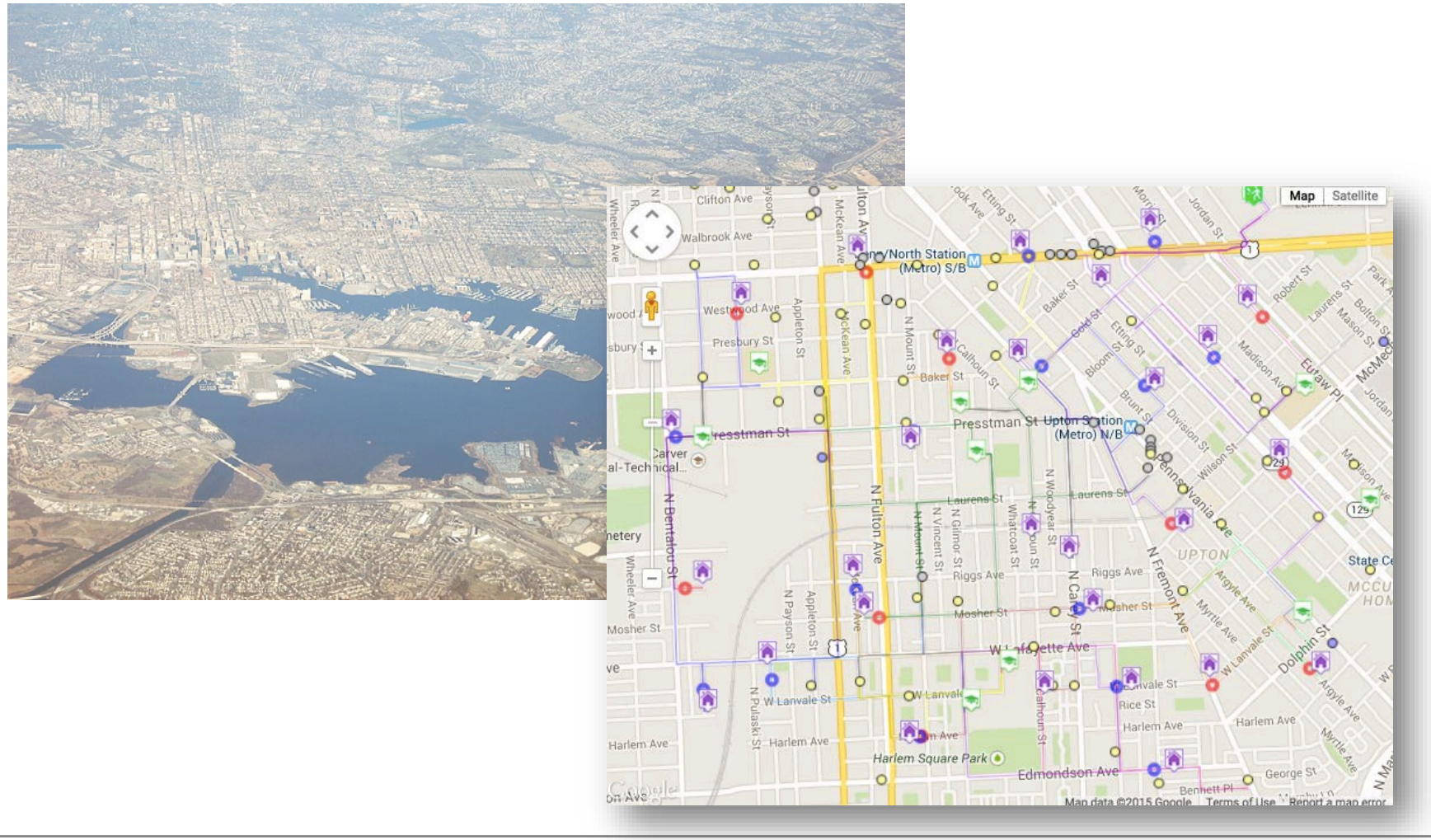
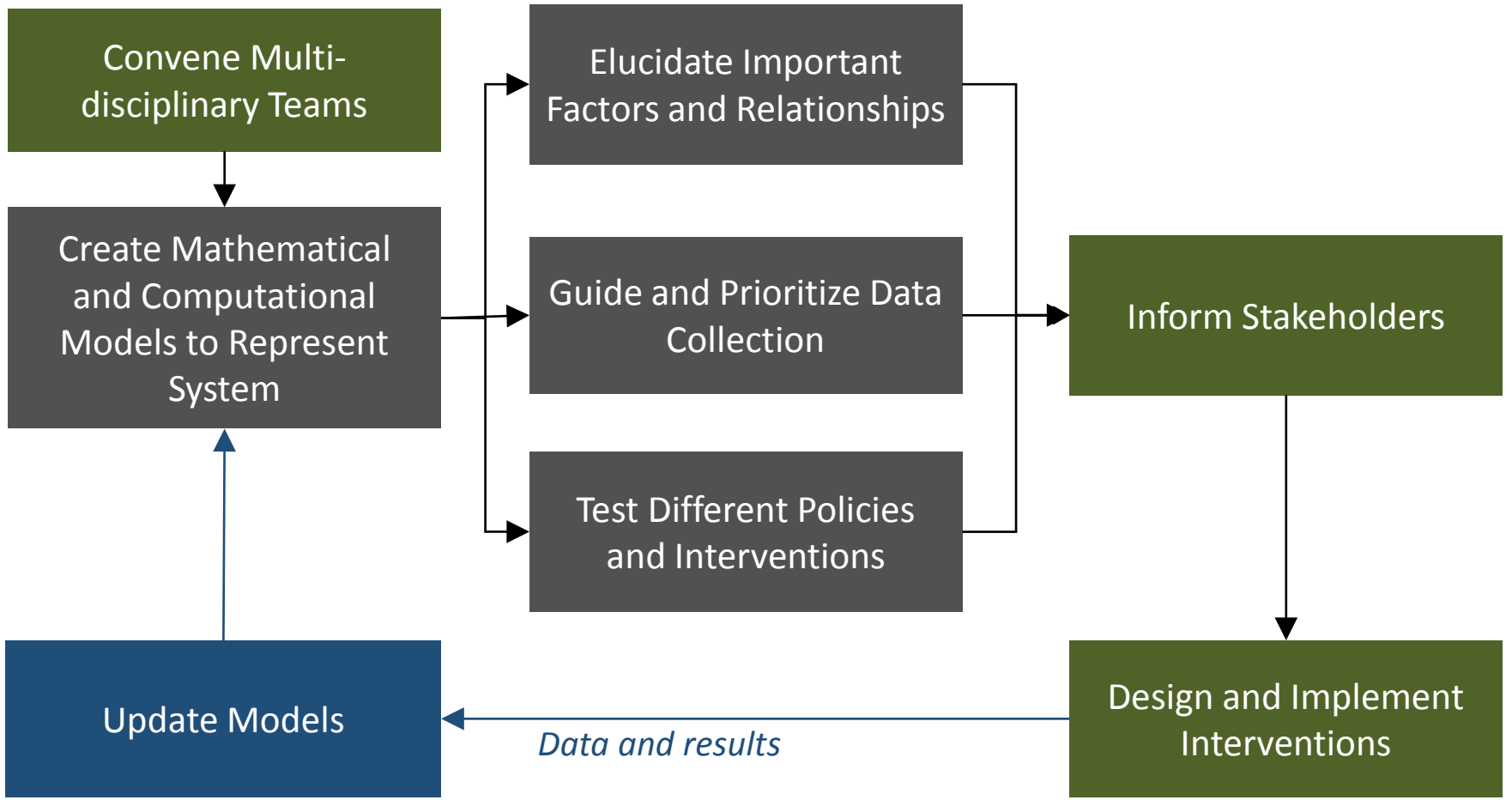
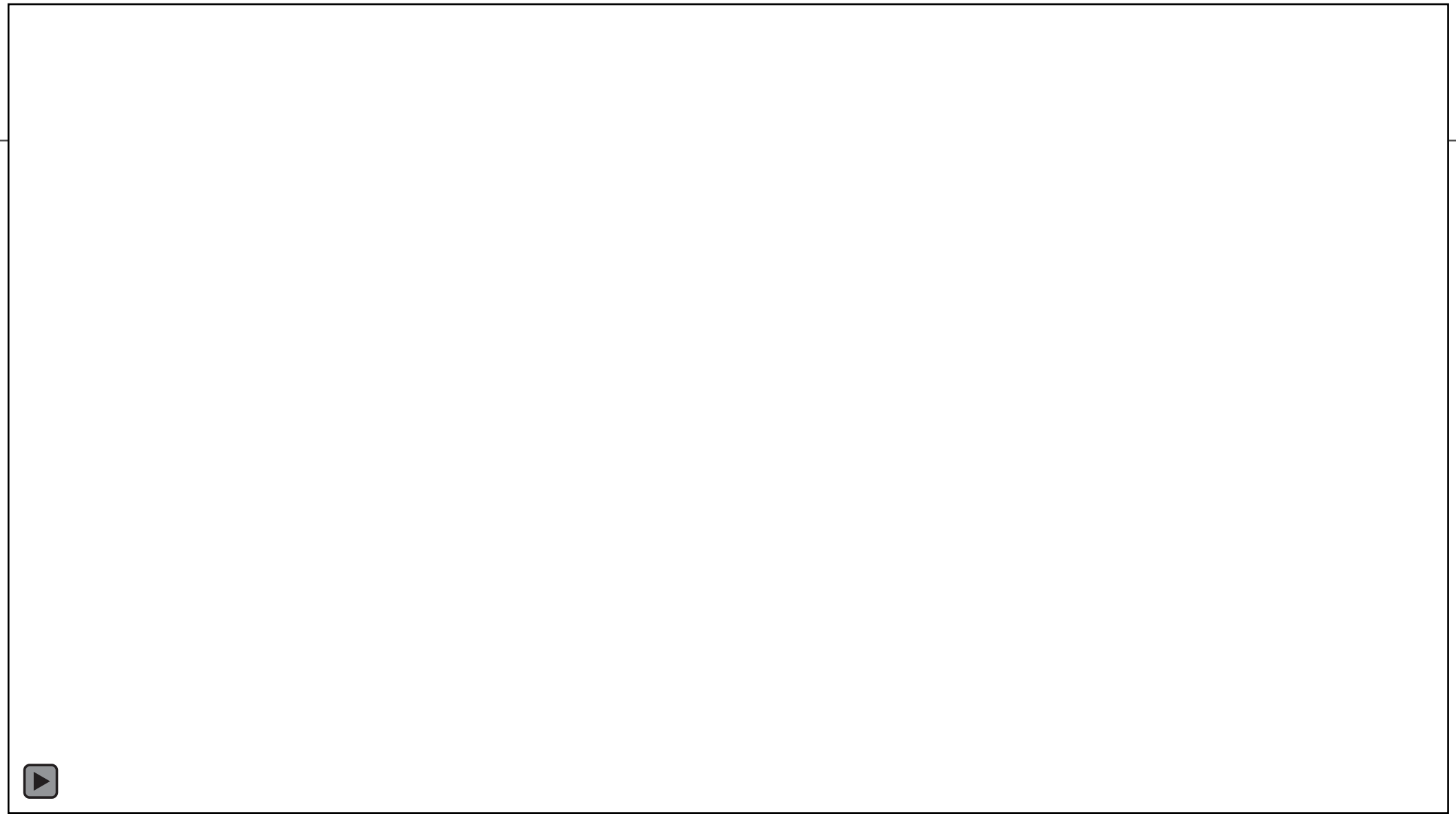
Here's a photo from the Obesity Action Coalition (OAC) Image Gallery. (Photo: Courtesy of OAC)

Virtual Population Obesity Prevention (VPOP) Labs: “SimCity” for obesity prevention



Iterative approach to systems modeling





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**

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

Obesity A Research Journal | OBESITY SOCIETY

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Original Article

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

Saeideh Fallah-Fini, Atif Adam, Lawrence J. Cheskin, Sarah M. Bartsch, Bruce Y. Lee

First published: 26 September 2017 Full publication history

DOI: 10.1002/oby.21965 View/save citation

Cited by (CrossRef): 0 articles Check for updates Citation tools

View issue TOC
Volume 25, Issue 10
October 2017
Pages 1809–1815

Funding Information

Funding agencies: This work was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the Office of Behavioral and Social Sciences Research, and the Global Obesity Prevention Center (U01 HD086861, R01 HD08601301, and U54HD070725); the Agency for Healthcare Research and Quality (R01HS023317); and a pilot grant awarded by the Mid-Atlantic Nutrition Obesity Research Center and funded by the National Institute of Diabetes and Digestive and Kidney Diseases. The funders had no role in the design and conduct of the study; the collection, management, analysis, and interpretation of the data; or the preparation, review, and approval of the manuscript.

Disclosure: The authors declared no conflict of interest.

Abstract

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.

Men's Health

The Crazy Amount Of Money Losing Weight Can Save You

A new study suggests that going from being obese to a healthy weight will save you thousands of dollars

Newsweek

HEALTH

WEIGHT LOSS SAVES OBESE ADULTS NEARLY $30,000, ACCORDING TO STUDY

BY MELISSA MATTHEWS ON 9/26/17 AT 7:14 PM

U.S.News & WORLD REPORT

Study Calculates How Much You'll Save If You Lose Weight

The study researchers how much people at different stages of life would spend on additional costs because of obesity

AJPM American Journal of Preventive Medicine
A Journal of the American College of Preventive Medicine and Association for Prevention Teaching and Research

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, PhD

PlumX Metrics

DOI: http://dx.doi.org/10.1016/j.amepre.2017.11.003

Article Info

Abstract | Full Text | Images | References | Supplemental Materials

Introduction

A number of locations have been considering sugar-sweetened beverage point-of-purchase warning label policies to help address rising adolescent overweight and obesity prevalence.

Methods

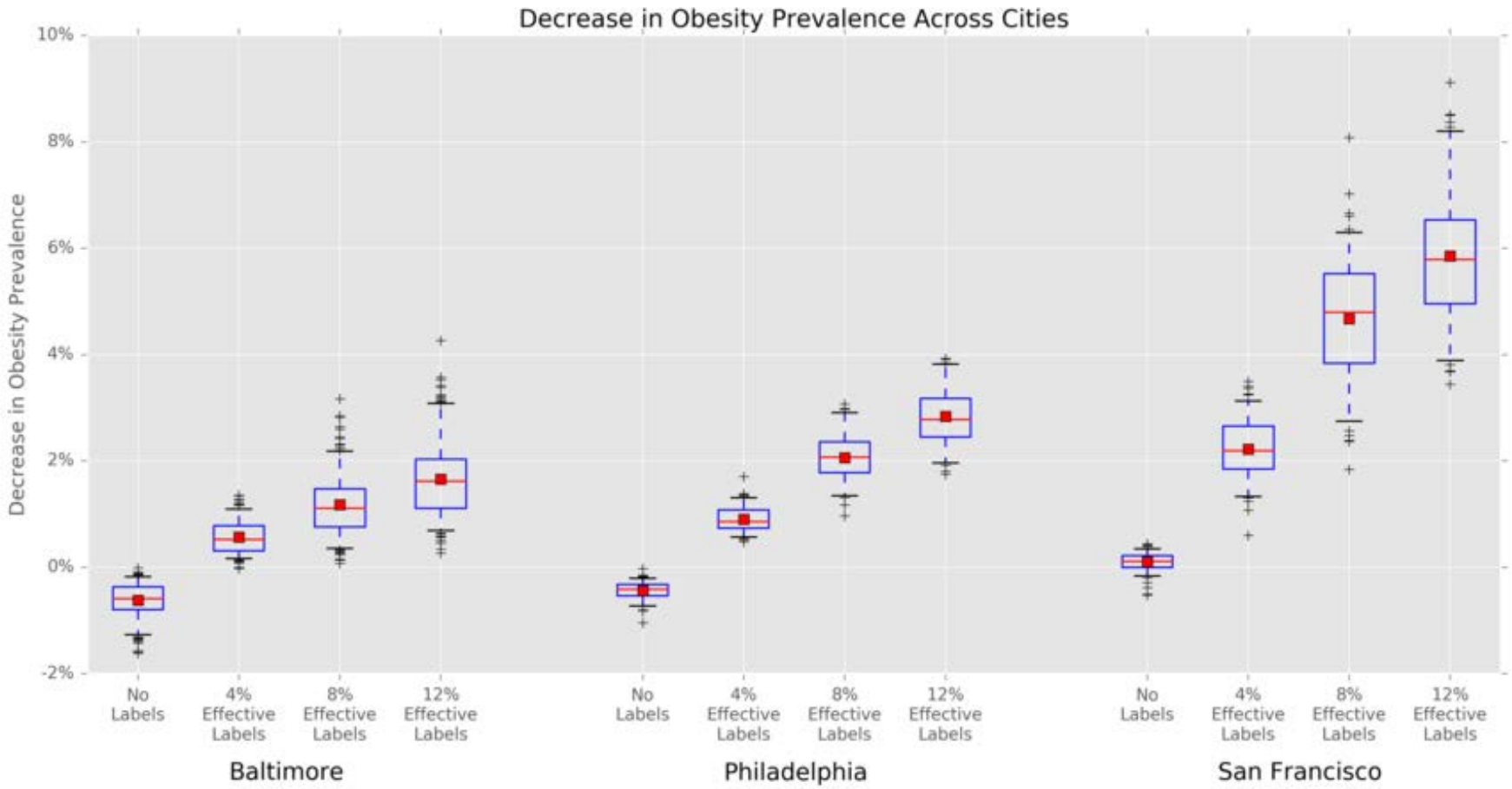
To explore the impact of such policies, in 2016 detailed agent-based models of Baltimore, Philadelphia, and San Francisco were developed, representing their populations, school locations, and food sources, using data from various sources collected between 2005 and 2014. The model simulated, over a 7-year period, the mean change in BMI and obesity prevalence in each of the cities from sugar-sweetened beverage warning label policies.

Forbes

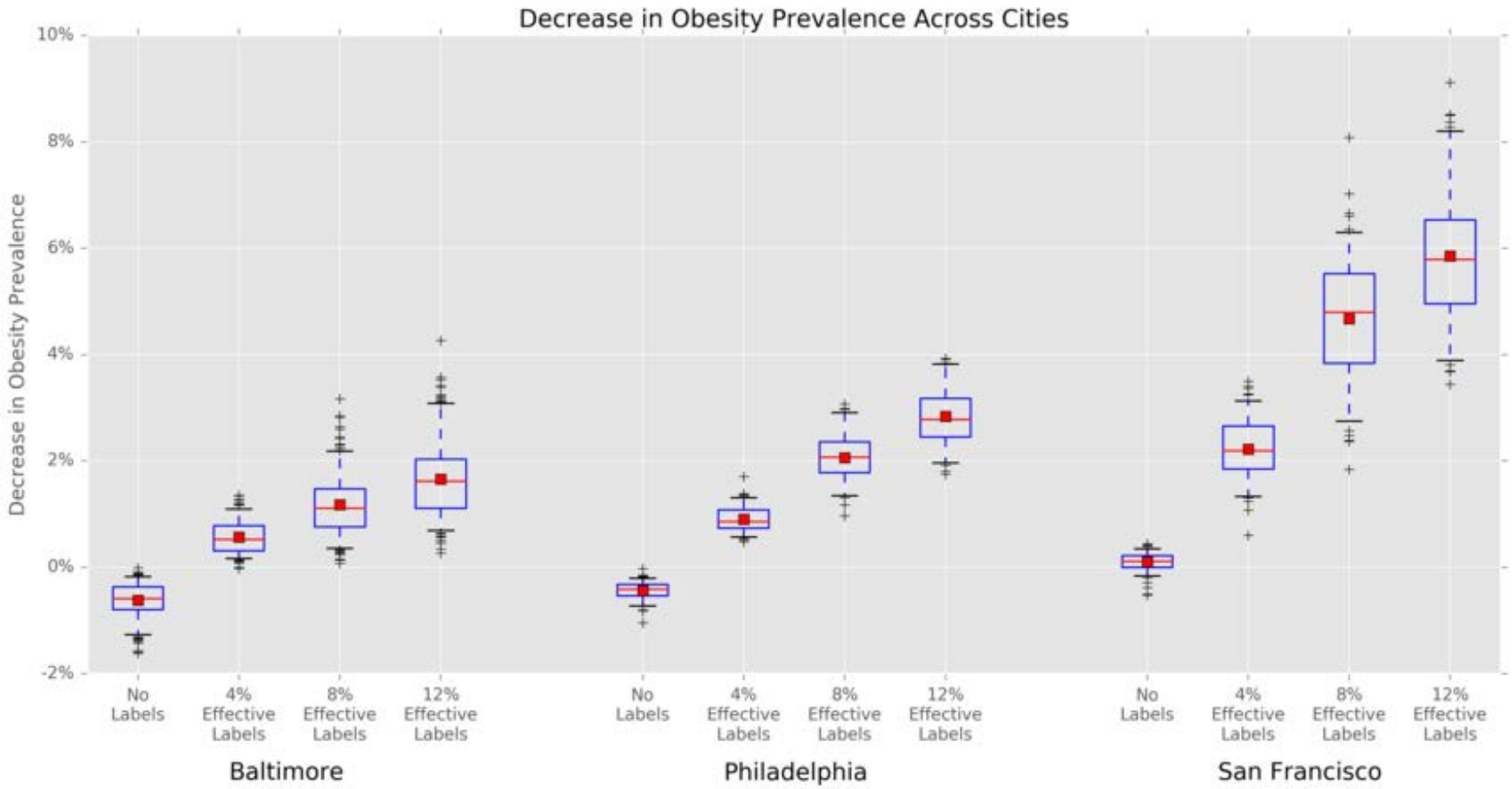
Here Is What Sugar-Sweetened Drink Warning Labels May Do To Obesity

Bruce Y. Lee Contributor
Pharma & Healthcare

Impact of sugar-sweetened beverage (SSB) warning labels



Impact of sugar-sweetened beverage (SSB) warning labels



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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, Daniel L. Hertenstein, Eli Zenkov, Marie C. Ferguson, Samantha Thomas, Dana Sampson, Chaarushi Ahuja, Joshua Rivers, Bruce Y. Lee

First published: 31 October 2017 Full publication history

DOI: 10.1002/oby.22040 View/save citation

Cited by (CrossRef): 0 articles Check for updates Citation tools

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Funding Information

Funding agencies: The project was supported by the Global Obesity Prevention Center (GOPC) and the Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD). The project is cofunded by the NICHD and the Office of Behavioral and Social Sciences Research (OBSSR). This project is also funded by the NICHD via grant U01HD086861 and the Agency for Healthcare Research and Quality (AHRQ) via grant R01HS023317. This project is also funded by contract HHSN268201600067P through the Division of Intramural Research at the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH). The Powell-Wiley research group is funded by the Division of

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Summary

- Obesity as well as most health and public health issues can't be explained as a result of a single cause or factor, therefore, it can't be tackled with one single cause-single effect intervention.
- A systems approach that incorporates all of the complex network of factors such as policy, economics, environment, social influences, behavior and physiology is needed.
- Without help and tools such as computational simulation modeling, people may struggle to understand the system of factors that play into the obesity epidemic.
- Computational simulation modeling can test different proposed policies and interventions with the safety of a computer before trying them in real life.
- Computational modeling can help leverage other trends in digital health such as wearables and big data.