Snapshot: Sugary Drinks, chronic disease disparities, policy implications in San Francisco

SF Government Audit and Oversight Committee

Akshay Govind, DMD, MPH

University of California, San Francisco

May 22, 2014

In Association with:

Department of Family and Community Medicine, UCSF

My background

- Dentist – graduated HSDM in 2008
- Practiced in hospitals and community health centers treating adults and children, primarily low SES populations
- MPH in Family & Community Health – graduated from HSPH in 2011
- UCSF 2011 – 2017 – OMFS
  - Currently working on Community Health Project

Outline

- What are SSB?
- Science of SSB and health outcomes
- Disparities
  - Consumption of SSB
  - Obesity
  - Diabetes and other health outcomes
- Changing Behavior
  - Implications for policy

Outline

- **What are SSB?**
- Science of SSB and health outcomes
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  - Implications for policy

What are SSBs?

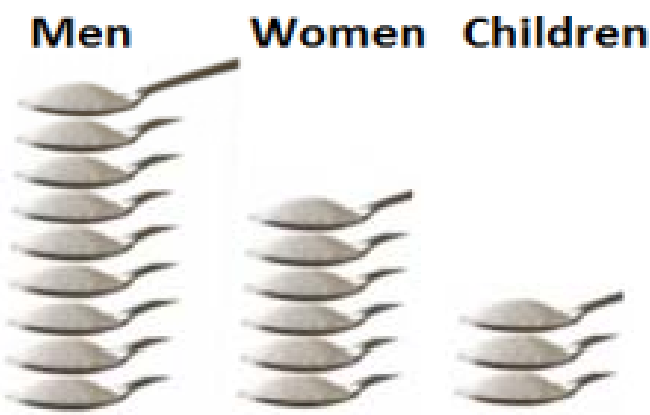
- Soda
- Juices
- Fruit punch
- Lemonade
- Sweetened powder drinks
- Sports drinks
- Energy drinks

How much sugar?

American Heart Association®

Max Added Sugar Recommendations

12 OZ CAN OF COLA HAS:

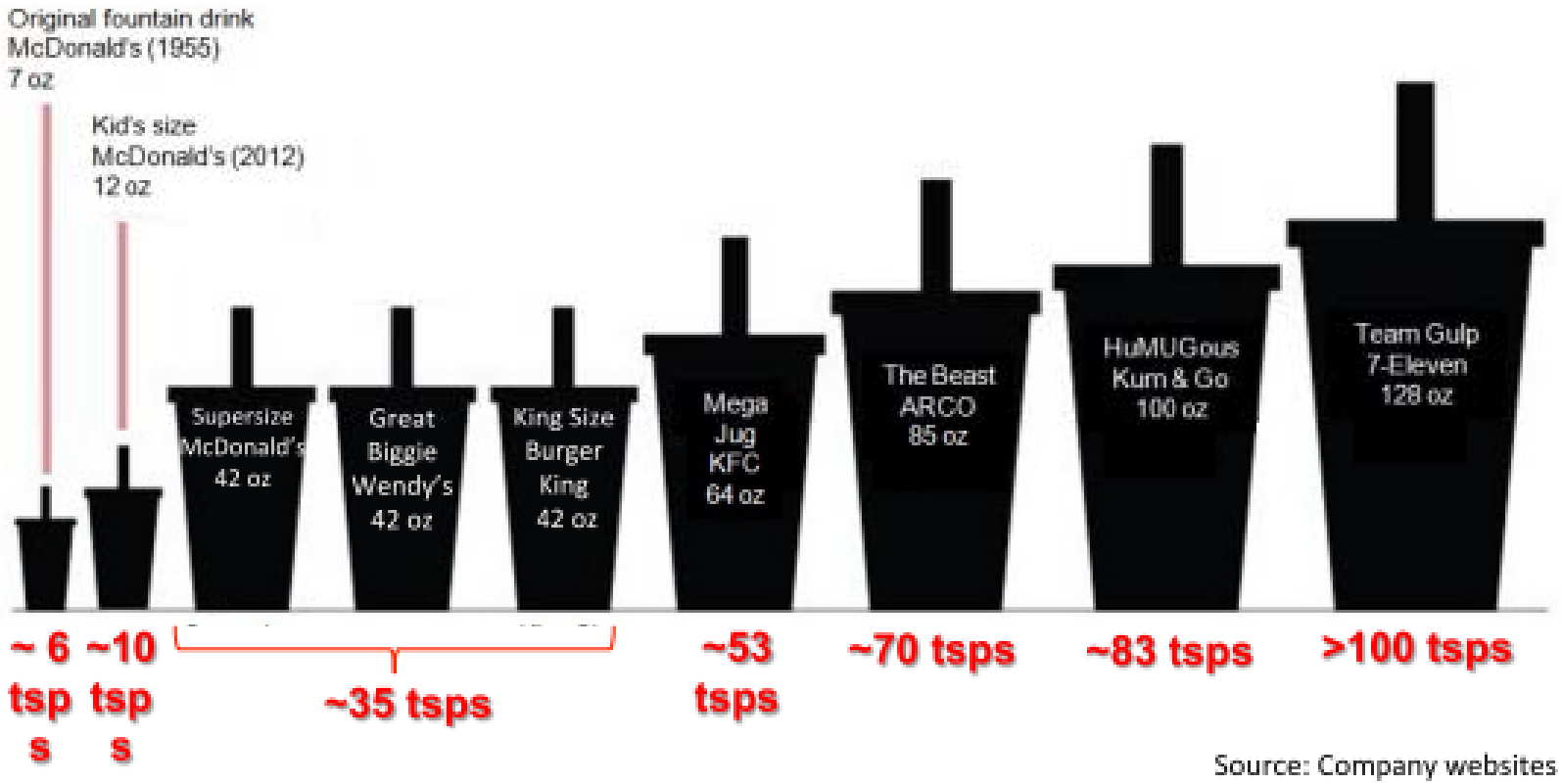


<

~10 tsps of added sugar

The Biggest of the Big Gulps

The most outrageous soda sizes ever sold, by franchise



Source: Company websites

* Calculations based on a 12 oz cola that has ~10 tsps of added sugars.

Mother Jones

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Sugar-Sweetened Beverages, Weight Gain, and Incidence of Type 2 Diabetes in Young and Middle-Aged Women

Matthias B. Schulze, DrPH
JoAnn E. Manson, MD
David S. Ludwig, MD
Graham A. Colditz, MD
Meir J. Stampfer, MD
Walter C. Willett, MD
Frank B. Hu, MD

Context Sugar-sweetened beverages like soft drinks and fruit punches contain large amounts of readily absorbable sugars and may contribute to weight gain and an increased risk of type 2 diabetes, but these relationships have been minimally addressed in adults.

Objective To examine the association between consumption of sugar-sweetened beverages and weight change and risk of type 2 diabetes in women.

Design, Setting, and Participants Prospective cohort analyses conducted from 1991 to 1999 among women in the Nurses' Health Study II. The diabetes analysis included 91 249 women free of diabetes and other major chronic diseases at baseline in 1991. The weight change analysis included 51 603 women for whom complete dietary information and body weight were ascertained in 1991, 1995, and 1999. We identified 741 incident cases of confirmed type 2 diabetes during 716 300 person-years of follow-up.

Main Outcome Measures Weight gain and incidence of type 2 diabetes.

Results Those with stable consumption patterns had no difference in weight gain, but weight gain over a 4-year period was highest among women who increased their sugar-sweetened soft drink consumption from 1 or fewer drinks per week to 1 or more drinks per day (multivariate-adjusted means, 4.69 kg for 1991 to 1995 and 4.20 kg for 1995 to 1999) and was smallest among women who decreased their intake (1.34 and 0.15 kg for the 2 periods, respectively) after adjusting for lifestyle and dietary confounders. Increased consumption of fruit punch was also associated with greater weight gain compared with decreased consumption. After adjustment for potential confounders, women consuming 1 or more sugar-sweetened soft drinks per day had a relative risk [RR] of type 2 diabetes of 1.83 (95% confidence interval [CI], 1.42-2.36; $P<.001$ for trend) compared with those who consumed less than 1 of these beverages per month. Similarly, consumption of fruit punch was associated with increased diabetes risk (RR for ≥1 drink per day compared with <1 drink per month, 2.00; 95% CI, 1.33-3.03; $P=.001$).

Conclusion Higher consumption of sugar-sweetened beverages is associated with a greater magnitude of weight gain and an increased risk for development of type 2 diabetes in women, possibly by providing excessive calories and large amounts of rapidly absorbable sugars.

JAMA. 2004;292:927-934 www.jama.com

TYPE 2 DIABETES MELLITUS AFfects about 17 million US individuals.[1,2] The prevalence of diabetes has increased rapidly during the last decades[2,3] in parallel to the obesity epidemic.[1,2] Coinciding with the increasing prevalence of obesity and type 2 diabetes, soft drink consumption in the United States increased by 61% in adults from 1977 to 1997[4] and more than doubled in children and adolescents from 1977-1978 to 1994-1998.[5] Recent evidence suggests an association between the intake of sugar-sweetened soft drinks and the risk of obesity in children,[6] but data among adults are limited. Besides contributing to obesity, sugar-sweetened soft drinks might increase risk of diabetes because they contain large amounts of high-fructose corn syrup, which raises blood glucose similarly to sucrose.[7] Soft drinks are the leading source of added

ORIGINAL INVESTIGATION

Sugar-Sweetened Beverages and Incidence of Type 2 Diabetes Mellitus in African American Women

Julie R. Palmer, ScD; Deborah A. Boggs, MS; Supriya Krishnan, DSc; Frank B. Hu, MD; Martha Singer, MPH; Lynn Rosenberg, ScD

Background: Type 2 diabetes mellitus is an increasingly serious health problem among African American women. Consumption of sugar-sweetened drinks was associated with an increased risk of diabetes in 2 studies but not in a third; however, to our knowledge, no data are available on African Americans regarding this issue. Our objective was to examine the association between consumption of sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes mellitus in African American women.

Methods: A prospective follow-up study of 59 000 African American women has been in progress since 1995. Participants reported on food and beverage consumption in 1995 and 2001. Biennial follow-up questionnaires ascertained new diagnoses of type 2 diabetes. The present analyses included 43 960 women who gave complete dietary and weight information and were free from diabetes at baseline. We identified 2713 incident cases of type 2 diabetes mellitus during 338 884 person-years of follow-up. The main outcome measure was the incidence of type 2 diabetes mellitus.

Results: The incidence of type 2 diabetes mellitus was higher with higher intake of both sugar-sweetened soft drinks and fruit drinks. After adjustment for confounding variables including other dietary factors, the incidence rate ratio for 2 or more soft drinks per day was 1.24 (95% confidence interval, 1.06-1.45). For fruit drinks, the comparable incidence rate ratio was 1.31 (95% confidence interval, 1.13-1.52). The association of diabetes with soft drink consumption was almost entirely mediated by body mass index, whereas the association with fruit drink consumption was independent of body mass index.

Conclusions: Regular consumption of sugar-sweetened soft drinks and fruit drinks is associated with an increased risk of type 2 diabetes mellitus in African American women. While there has been increasing public awareness of the adverse health effects of soft drinks, little attention has been given to fruit drinks, which are often marketed as a healthier alternative to soft drinks.

Arch Intern Med. 2008;168(14):1487-1492

The Journal of Nutrition
Nutritional Epidemiology

Consumption of Sweetened Beverages and Intakes of Fructose and Glucose Predict Type 2 Diabetes Occurrence[1]

Jukka Montonen,[2] Ritva Järvinen,[3] Paul Knekt,[2,4] Markku Heliövaara,[2] and Antti Reunanen[2]

[2]National Public Health Institute, Helsinki FIN 00300, Finland; [3]University of Kuopio, Department of Clinical Nutrition, Kuopio FIN 70211, Finland; and [4]Social Insurance Institution, Helsinki FIN 00100 and Turku FIN 20720, Finland

Abstract

The role of intakes of different sugars in the development of type 2 diabetes was studied in a cohort of 4,304 men and women aged 40–60 y and initially free of diabetes at baseline in 1967–1972. Food consumption data were collected using a dietary history interview covering the habitual diet during the previous year. The intakes of different sugars were calculated and divided in quartiles. During a 12-y follow-up, 177 incidents of type 2 diabetes cases were identified from a nationwide register. Combined intake of fructose and glucose was associated with the risk of type 2 diabetes but no significant association was observed for intakes of sucrose, lactose, or maltose. The relative risk between the highest and lowest quartiles of combined fructose and glucose intake was 1.87 (95% [CI] = 1.19, 2.93; $P = 0.003$). The corresponding relative risks between the extreme quartiles of consumption of food items contributing to sugar intakes were 1.69 (95% [CI] = 1.17, 2.43; $P < 0.001$) for sweetened berry juice and 1.67 (95% [CI] = 0.98, 2.87; $P = 0.01$) for soft drinks. Our findings support the view that higher intake of fructose and glucose and sweetened beverages may increase type 2 diabetes risk. J. Nutr. 137: 1447–1454, 2007.

Intake of Fruit, Vegetables, and Fruit Juices and Risk of Diabetes in Women

Lydia A. Bazzano, md, phd[1]
Tricia Y. Li, md, ms[2]
Kamudi J. Joshipura, bds, ms, scd[3]
Frank B. Hu, md, phd[4]

OBJECTIVE — The purpose of this study was to examine the association between fruit, vegetable, and fruit juice intake and development of type 2 diabetes.

RESEARCH DESIGN AND METHODS — A total of 71,346 female nurses aged 38–63 years who were free of cardiovascular disease, cancer, and diabetes in 1984 were followed for 18 years, and dietary information was collected using a semiquantitative food frequency questionnaire every 4 years. Diagnosis of diabetes was self-reported.

RESULTS — During follow-up, 4,529 cases of diabetes were documented, and the cumulative incidence of diabetes was 7.4%. An increase of three servings/day in total fruit and vegetable consumption was not associated with development of diabetes (multivariate-adjusted hazard ratio 0.99 [95% CI 0.94–1.05]), whereas the same increase in whole fruit consumption was associated with a lower hazard of diabetes (0.82 [0.72–0.94]). An increase of 1 serving/day in green leafy vegetable consumption was associated with a modestly lower hazard of diabetes (0.91 [0.84–0.98]), whereas the same change in fruit juice intake was associated with an increased hazard of diabetes (1.18 [1.10–1.26]).

CONCLUSIONS — Consumption of green leafy vegetables and fruit was associated with a lower hazard of diabetes, whereas consumption of fruit juices may be associated with an increased hazard among women.

Diabetes Care 31:1311–1317, 2008

and vegetables, specific groups of fruits and vegetables, and fruit juices among women enrolled in the Nurses' Health Study diet cohort.

RESEARCH DESIGN AND METHODS

— The Nurses' Health Study was established in 1976 with responses of 121,700 female registered nurses between the ages of 30 and 55 years from 11 different U.S. states to an initial mailed questionnaire regarding medical history, lifestyle, diet, and other health practices. Follow-up questionnaires were mailed every 2 years to update information on health-related behavior and determine incident disease, including diabetes and other chronic diseases. The diet cohort was established in 1980 with 98,462 participants. Of those, 81,757 completed the 1984 questionnaire, had a total energy intake that was between 600 and 3,500 kcal, and left fewer than 12 food items blank (n = 16,705 excluded). We also excluded women who died be-

Soft Drink and Juice Consumption and Risk of Physician-diagnosed Incident Type 2 Diabetes

The Singapore Chinese Health Study

Andrew O. Odegaard*, Woon-Puay Koh, Kazuko Arakawa, Mimi C. Yu, and Mark A. Pereira

* Correspondence to Dr. Andrew O. Odegaard, 1300 South Second Street, Suite 300, Minneapolis, MN 55454 (e-mail: odeg0025@umn.edu).

Initially submitted March 18, 2009; accepted for publication December 16, 2009.

Soft drinks and other sweetened beverages may contribute to risk of type 2 diabetes and obesity. However, research has not addressed higher risk and Asian populations. The authors examined the association between soft drinks and juice and the risk of type 2 diabetes among Chinese Singaporeans enrolled in a prospective cohort study of 43,580 participants aged 45–74 years and free of diabetes and other chronic diseases at baseline. The incidence of physician-diagnosed type 2 diabetes was assessed by interview and validated; 2,273 participants developed diabetes during follow-up. After adjustment for potential lifestyle and dietary confounders, participants consuming $\geq$2 soft drinks per week had a relative risk of type 2 diabetes of 1.42 (95% confidence interval (CI): 1.25, 1.62) compared with those who rarely consumed soft drinks. Similarly, consumption of $\geq$2 juice beverages per week was associated with an increased risk (relative risk (RR) = 1.29, 95% CI: 1.05, 1.58). The association was modified by 5-year weight gain for $\geq$2 soft drinks per week among those who gained $\geq$3 kg (RR = 1.70, 95% CI: 1.34, 2.16) compared with those who gained less weight (RR = 1.20, 95% CI: 1.03, 1.41). Relatively frequent intake of soft drinks and juice is associated with an increased risk for development of type 2 diabetes in Chinese men and women.

Consumption of sweet beverages and type 2 diabetes incidence in European adults: results from EPIC-InterAct

The InterAct consortium

Diabetologia (2013) 56:1520–1530
DOI 10.1007/s00125-013-2899-6

Received: 21 December 2012 / Accepted: 11 March 2013 / Published online: 26 April 2013

Abstract
Aims/hypothesis Consumption of sugar-sweetened beverages has been shown, largely in American populations, to increase type 2 diabetes incidence. We aimed to evaluate the association of consumption of sweet beverages (juices and nectars, sugar-sweetened soft drinks and artificially sweetened soft drinks) with type 2 diabetes incidence in European adults.
Methods We established a case–cohort study including 12,403 incident type 2 diabetes cases and a stratified subcohort of 16,154 participants selected from eight European cohorts participating in the European Prospective Investigation into Cancer and Nutrition (EPIC) study. After exclusions, the final sample size included 11,684 incident cases and a subcohort of 15,374 participants. Cox proportional hazards regression models (modified for the case–cohort design) and random-effects meta-analyses were used to estimate the association between sweet beverage consumption (obtained from validated dietary questionnaires) and type 2 diabetes incidence.
Results In adjusted models, one 336 g (12 oz) daily increment in sugar-sweetened and artificially sweetened soft drink consumption was associated with HRs for type 2 diabetes of 1.22 (95% CI 1.09, 1.38) and 1.52 (95% CI 1.26, 1.83), respectively. After further adjustment for energy intake and BMI, the association of sugar-sweetened soft drinks with type 2 diabetes persisted (HR 1.18, 95% CI 1.06, 1.32), but the association of artificially sweetened soft drinks became statistically not significant (HR 1.11, 95% CI 0.95, 1.31). Juice and nectar consumption was not associated with type 2 diabetes incidence.
Conclusions/interpretation This study corroborates the association between increased incidence of type 2 diabetes and high consumption of sugar-sweetened soft drinks in European adults.

Keywords Artificially sweetened soft drinks · Case–cohort study · Europe · Juices and nectars · Prospective study · Sugar-sweetened soft drinks · Sweet beverages · Type 2 diabetes incidence

Abbreviations

EPIC	European Prospective Investigation into Cancer and Nutrition study
MDP	Mediterranean dietary pattern
rMED	Relative Mediterranean Diet Score

Introduction

Use of caloric sweeteners (i.e. products used for sweetening that are either derived from sugar crops, cereals, fruits or

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men

Dariush Mozaffarian, M.D., Dr.P.H., Tao Hao, M.P.H., Eric B. Rimm, Sc.D., Walter C. Willett, M.D., Dr.P.H., and Frank B. Hu, M.D., Ph.D.

ABSTRACT

BACKGROUND

Specific dietary and other lifestyle behaviors may affect the success of the straightforward-sounding strategy "eat less and exercise more" for preventing long-term weight gain.

METHODS

We performed prospective investigations involving three separate cohorts that included 120,877 U.S. women and men who were free of chronic diseases and not obese at baseline, with follow-up periods from 1986 to 2006, 1991 to 2003, and 1986 to 2006. The relationships between changes in lifestyle factors and weight change were evaluated at 4-year intervals, with multivariable adjustments made for age, baseline body-mass index for each period, and all lifestyle factors simultaneously. Cohort-specific and sex-specific results were similar and were pooled with the use of an inverse-variance–weighted meta-analysis.

J Am Coll Nutr. 2009 Dec;28(6):619-26.

The effects of high fructose syrup.

Moeller SM[1], Fryhofer SA, Osbahr AJ 3rd, Robinowitz CB; Council on Science and Public Health, American Medical Association.

⊕ Collaborators (13)

⊕ Author information

Abstract

High fructose corn syrup (HFCS) has become an increasingly common food ingredient in the last 40 years. However, there is concern that HFCS consumption increases the risk for obesity and other adverse health outcomes compared to other caloric sweeteners. The most commonly used types of HFCS (HFCS-42 and HFCS-55) are similar in composition to sucrose (table sugar), consisting of roughly equal amounts of fructose and glucose. The primary difference is that these monosaccharides exist free in solution in HFCS, but in disaccharide form in sucrose. The disaccharide sucrose is easily cleaved in the small intestine, so free fructose and glucose are absorbed from both sucrose and HFCS. The advantage to food manufacturers is that the free monosaccharides in HFCS provide better flavor enhancement, stability, freshness, texture, color, pourability, and consistency in foods in comparison to sucrose. Because the composition of HFCS and sucrose is so similar, particularly on absorption by the body, it appears unlikely that HFCS contributes more to obesity or other conditions than sucrose does. Nevertheless, few studies have evaluated the potentially differential effect of various sweeteners, particularly as they relate to health conditions such as obesity, which develop over relatively long periods of time. Improved nutrient databases are needed to analyze food consumption in epidemiologic studies, as are more strongly designed experimental studies, including those on the mechanism of action and relationship between fructose dose and response. At the present time, there is insufficient evidence to ban or otherwise restrict use of HFCS or other fructose-containing sweeteners in the food supply or to require the use of warning labels on products containing HFCS. Nevertheless, dietary advice to limit consumption of all added caloric sweeteners, including HFCS, is warranted.

PMID: 20516261 [PubMed - indexed for MEDLINE]

Curr Atheroscler Rep. 2012 Dec;14(6):570-8. doi: 10.1007/s11883-012-0276-6.

Fructose and risk of cardiometabolic disease.

Bray GA.

Author information

Abstract

Fructose and glucose in soft drinks and fruit drinks account for just under 50 % of added sugars. Soft drinks intake has risen five-fold between 1950 and 2000, and this increase in intake of simple sugars has raised health concerns. The risks of cardiovascular disease, obesity and the metabolic syndrome have all been related to consumption of sugar-sweetened beverages in several, but not all meta-analyses. Fructose and sugar-sweetened beverages have also been related to the risk of gout in men, and to non-alcoholic fatty liver disease. Studies show that the calories in sugar-sweetened beverages do not produce an adequate reduction in the intake of other foods, leading to increased caloric intake. Plasma triglycerides are increased by sugar-sweetened beverages, and this increase appears to be due to fructose, rather than to glucose in sugar. Several 10-week to 26-week randomized trials of sugar-containing soft drinks show increases in triglycerides, body weight, and visceral adipose tissue; there were also increases in muscle fat and liver fat, which might lead to non-alcoholic-fatty liver disease.

PMID: 22949106 [PubMed - indexed for MEDLINE]

Gen Dent. 2014 May-Jun;62(3):63-8.

Which is a stronger indicator of dental caries: oral hygiene, food, or beverage? A clinical study.

Jain P, Gary JJ.

Abstract

Dental caries is a multifactorial disease with various risk factors. Oral hygiene and diet-specifically, the consumption of snacks and beverages with added sugars-have been shown to be risk indicators for this disease. It is critical for dental professionals to understand the relative roles of each of these food categories in the dental caries process. This article presents a cross-sectional study of 76 people living in a Southern Illinois fluoridated community. The amount of sugar-sweetened beverages, snack food consumption, plaque index, and age showed statistically significant relationships with the outcome variable-dental caries ($P < 0.05$). The results indicated that dietary factors and oral hygiene both contribute equally to dental caries in young adults living in a fluoridated community. Sugar-sweetened beverage consumption was a much stronger indicator of dental caries than snack food consumption in our study population.

PMID: 24784517 [PubMed - in process]

J Dent. 2014 May 9. pii: S0300-5712(14)00119-5. doi: 10.1016/j.jdent.2014.04.011. [Epub ahead of print]

Sugar-sweetened beverages and dental caries in adults: A 4-year prospective study.

Bernabé E[1], Vehkalahti MM[2], Sheiham A[3], Aromaa A[4], Suominen AL[5].

⊕ Author information

Abstract

AIMS: To explore the association between frequency of consumption of sugar-sweetened beverages (SSB) and caries increment over 4 years in adults. A second aim was to explore whether the association between frequency of SSB consumption and caries increment varied by socio-demographic characteristics and use of fluoride toothpaste.

METHODS: Data from 939 dentate adults who participated in both the Health 2000 Survey and the Follow-Up Study of Finnish Adults' Oral Health were analysed. At baseline, participants provided information on demographic characteristics, education and dental behaviours, including two questions on frequency of SSB consumption. The 4-year net DMFT increment was calculated using data from baseline and follow-up clinical oral examinations. The association was tested in negative binomial regression models and the moderating role of sex, age, education and use of fluoride toothpaste was examined by adding their two-way interaction with SSB consumption to the main effects model.

RESULTS: A positive association was found between frequency of SBS consumption and 4-year net DMFT increment, regardless of participants' socio-demographic and behavioural characteristics. Adults drinking 1-2 and 3+ SSB daily had, respectively, 31% (Incidence Rate Ratio: 1.31; 95%CI: 1.02-1.67) and 33% (IRR: 1.33; 95%CI; 1.03-1.72) greater net DMFT increments than those not drinking any SSB. None of the four two-way interaction terms was significant (all p>0.05).

CONCLUSION: There seems to be a dose-response relationship between frequency of SSB consumption and caries increment in adults. That association was consistent across socio-demographic characteristics, and more importantly, use of fluoride toothpaste.

CLINICAL SIGNIFICANCE: Drinking sugar-sweetened beverages on a daily basis is related to greater caries risk in adults.

Summary of the Science

- Sugar-sweetened beverage consumption plays a significant role in the development of obesity, diabetes, cardiovascular disease, dental decay.
- There are several other areas where the role of SSB is still being explored.
- Reduction of SSB consumption plays an important part in reducing the burden of these diseases.

Reducing Sugary Drink Consumption Recommended by:

erage Association | American Beverage Association - Google Chrome

www.ameribev.org

AMERICAN BEVERAGE ASSOCIATION

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All Beverages Provide Hydration

Drinking Fluids is Essential

Fluids both from the beverages we consume daily to those contained in the foods we eat make up our body's primary source of water, which is needed to control body temperature, keep skin moist and transport oxygen and other essential nutrients to our cells.

Beverage Landscape Changed

School beverage mix strikes the right

Clear on Calories Initiative

See how our industry is helping make calorie information more clear for

Today's SmartBrief

PepsiCo to unveil range of self-serve beverage

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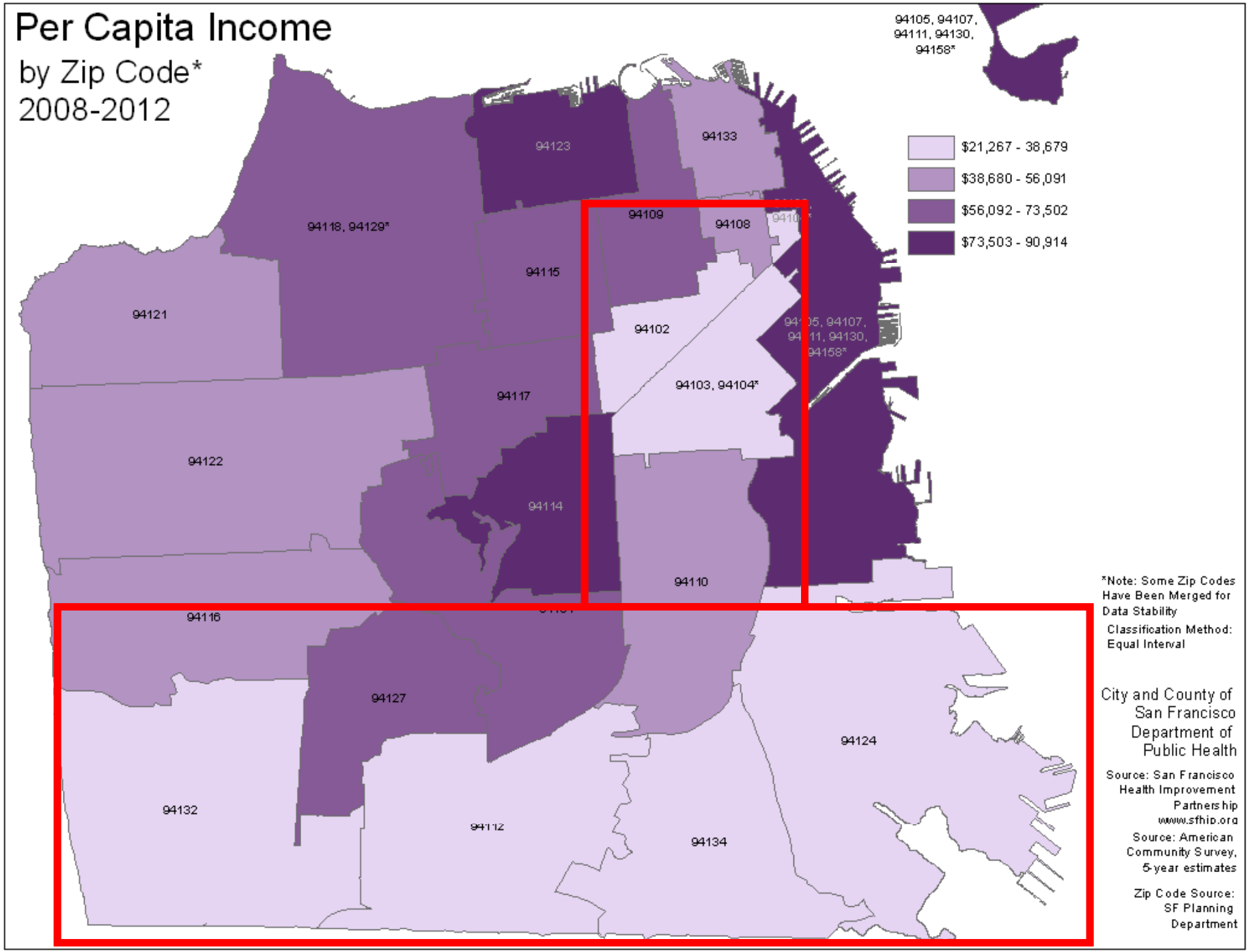
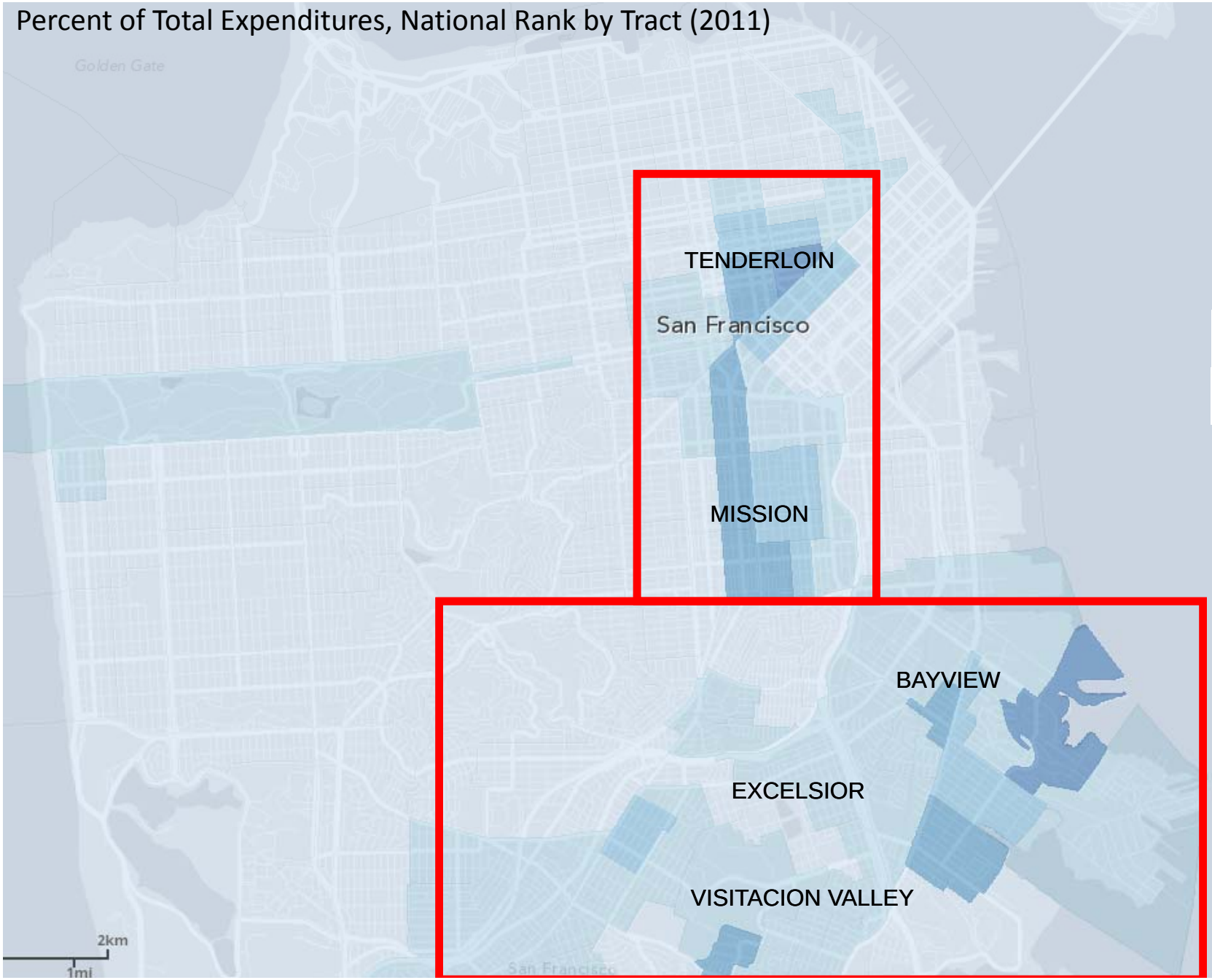

Per Capita Income
by Zip Code*
2008-2012
94105, 94107, 94111, 94130, 94158*
$21,267 - 38,679
$38,680 - 56,091
$56,092 - 73,502
$73,503 - 90,914
94123
94133
94118, 94129*
94109
94108
94115
94121
94102
94103, 94104*
94117
94122
94114
94110
94116
94127
94124
94132
94112
94134
*Note: Some Zip Codes Have Been Merged for Data Stability
Classification Method: Equal Interval
City and County of San Francisco Department of Public Health
Source: San Francisco Health Improvement Partnership www.sfhip.org
Source: American Community Survey, 5-year estimates
Zip Code Source: SF Planning Department

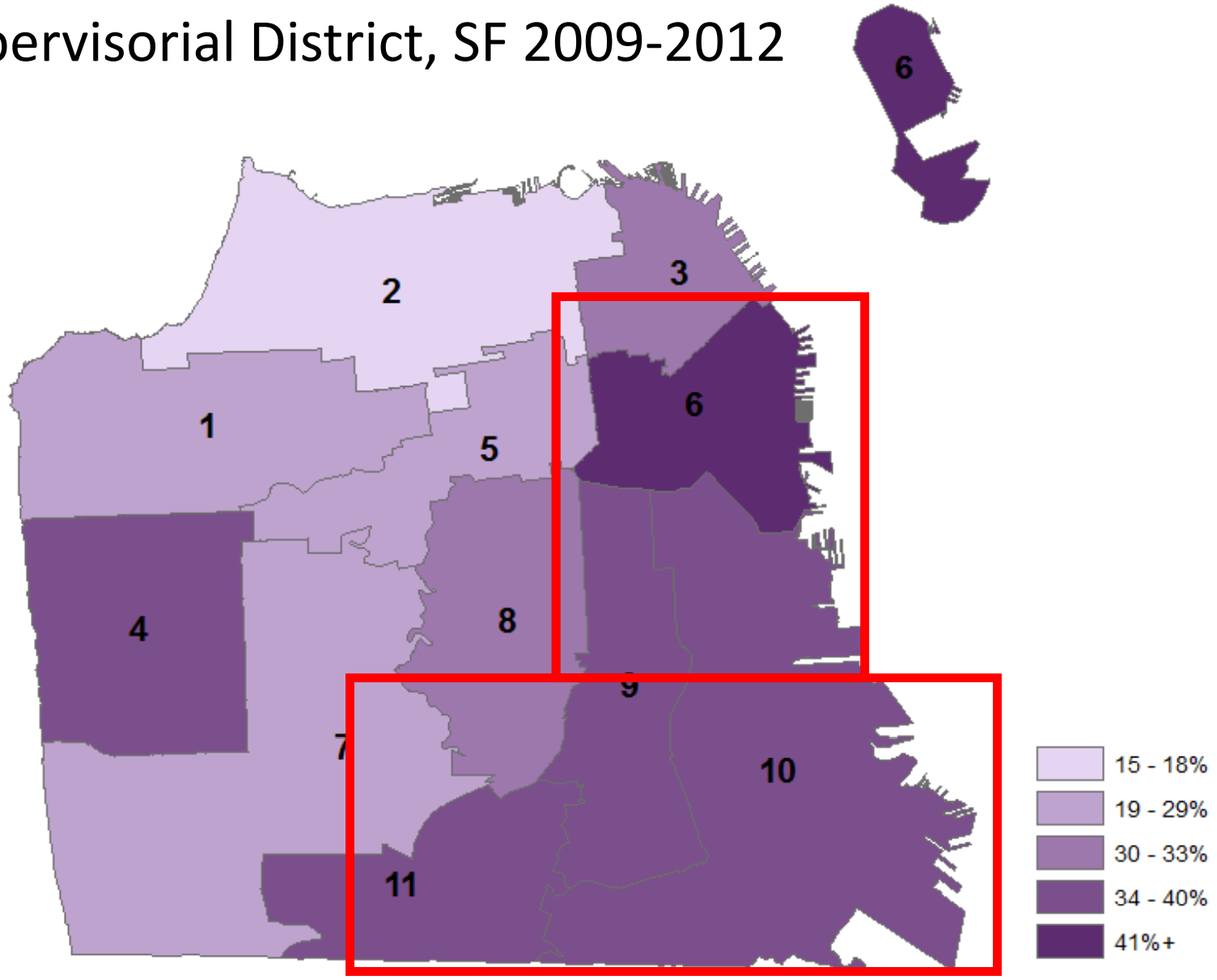
SODA EXPENDITURES

Percent of Total Expenditures, National Rank by Tract (2011)

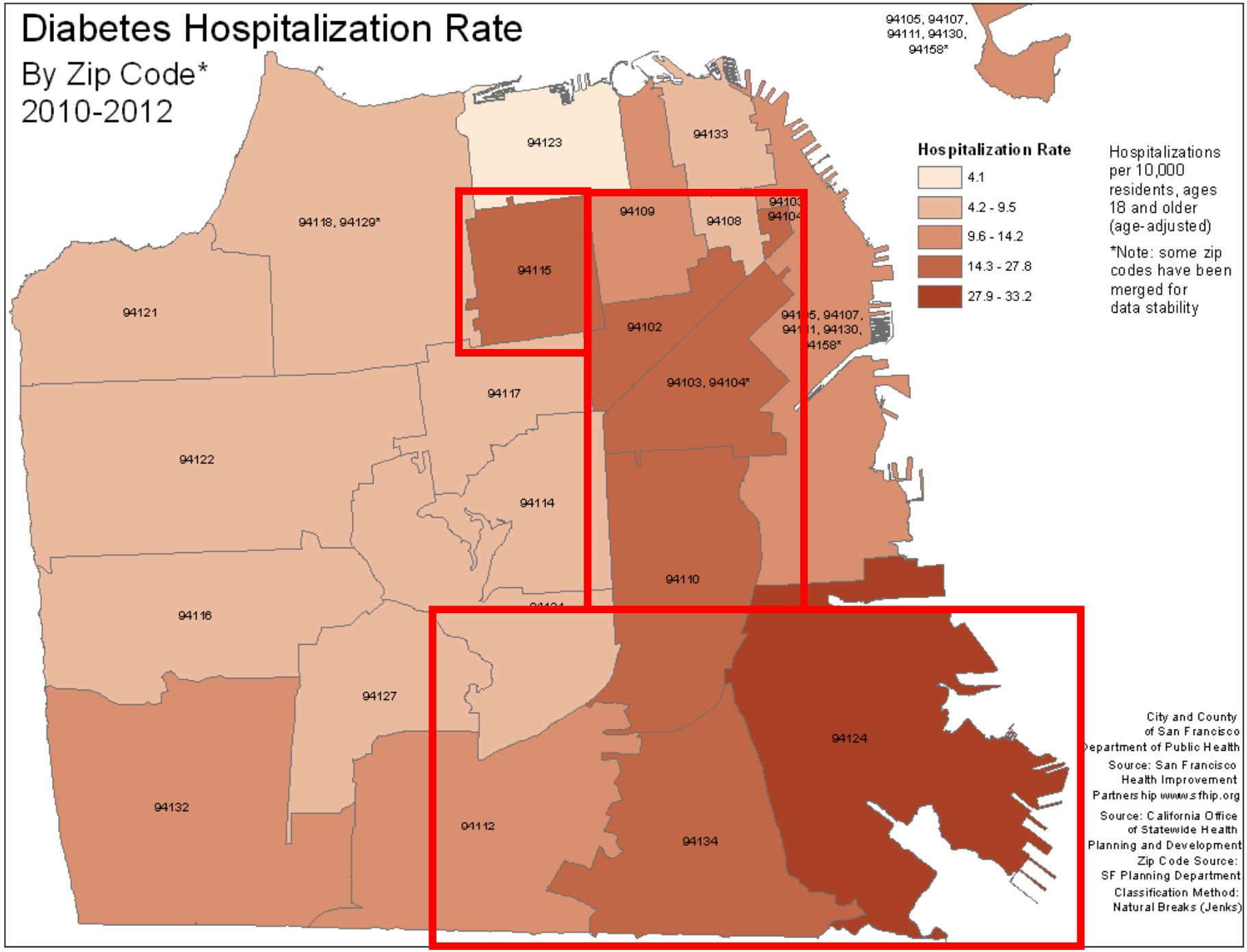


Data Source:
Nielsen, Nielsen SiteReports: 2011

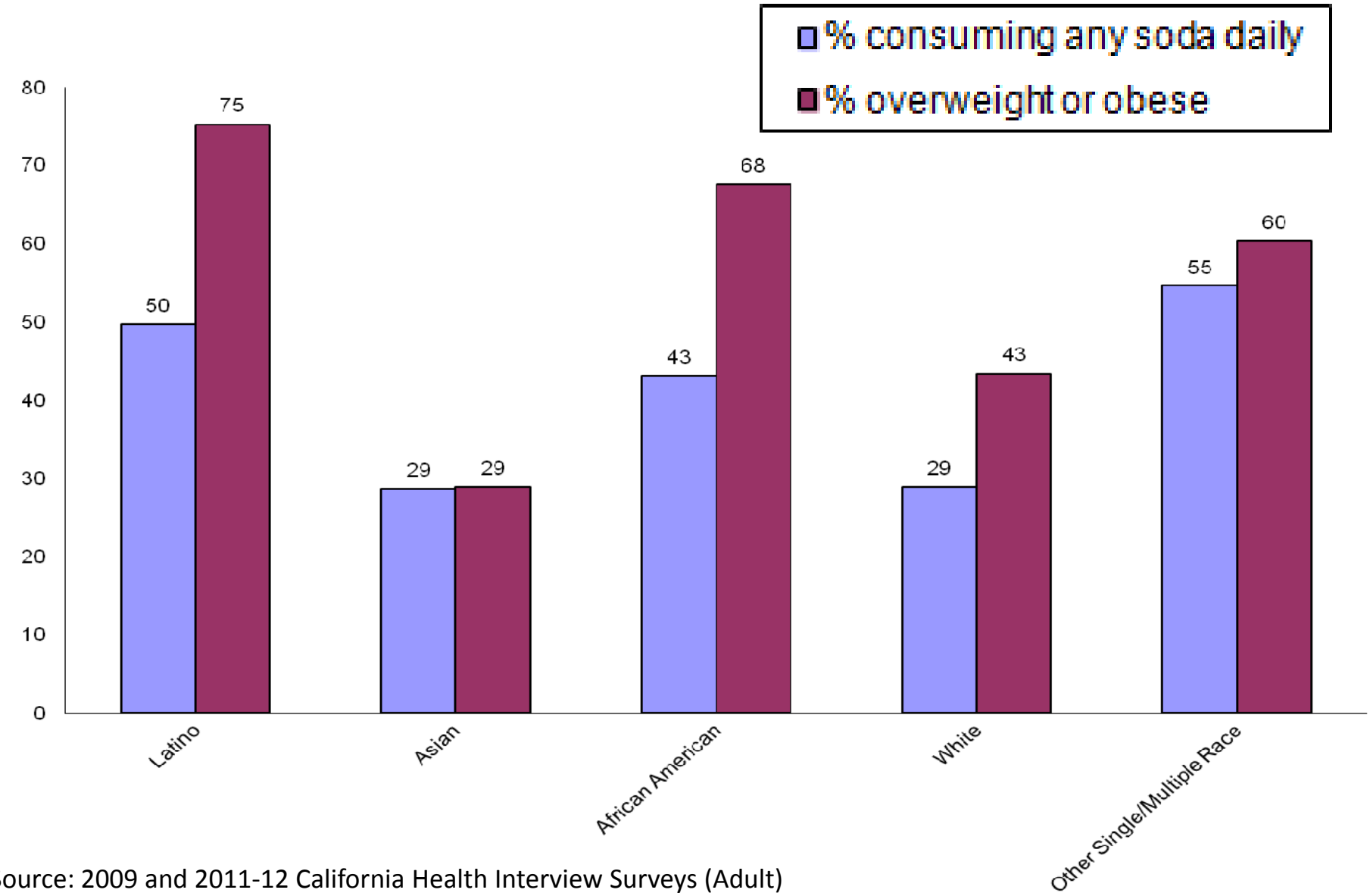
Percent Adult Residents Drinking Any Soda Daily by Supervisorial District, SF 2009-2012



San Francisco Department of Public Health. Data Source: 2009 and 2011-12 California Health Interview Surveys.

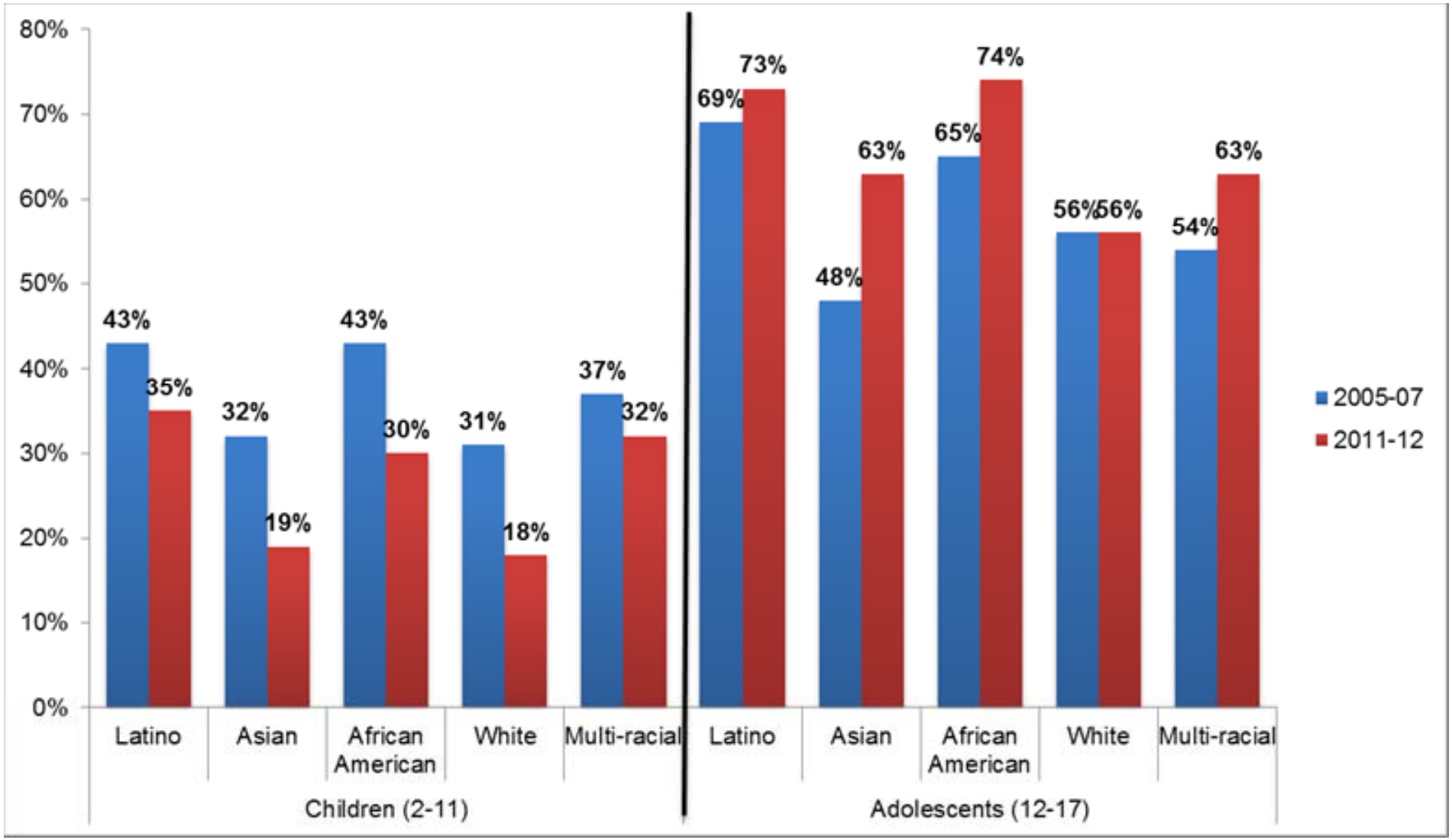

Diabetes Hospitalization Rate
By Zip Code*
2010-2012
94105, 94107, 94111, 94130, 94158*
94123
94133
94118, 94129*
94109
94108
94115
94102
94103, 94104*
94121
94117
94122
94114
94110
94116
94127
94124
94132
94112
94134
Hospitalization Rate
4.1
4.2 - 9.5
9.6 - 14.2
14.3 - 27.8
27.9 - 33.2
Hospitalizations per 10,000 residents, ages 18 and older (age-adjusted)
*Note: some zip codes have been merged for data stability
City and County of San Francisco
Department of Public Health
Source: San Francisco Health Improvement Partnership www.sfhip.org
Source: California Office of Statewide Health Planning and Development
Zip Code Source: SF Planning Department
Classification Method: Natural Breaks (Jenks)

SF Adults

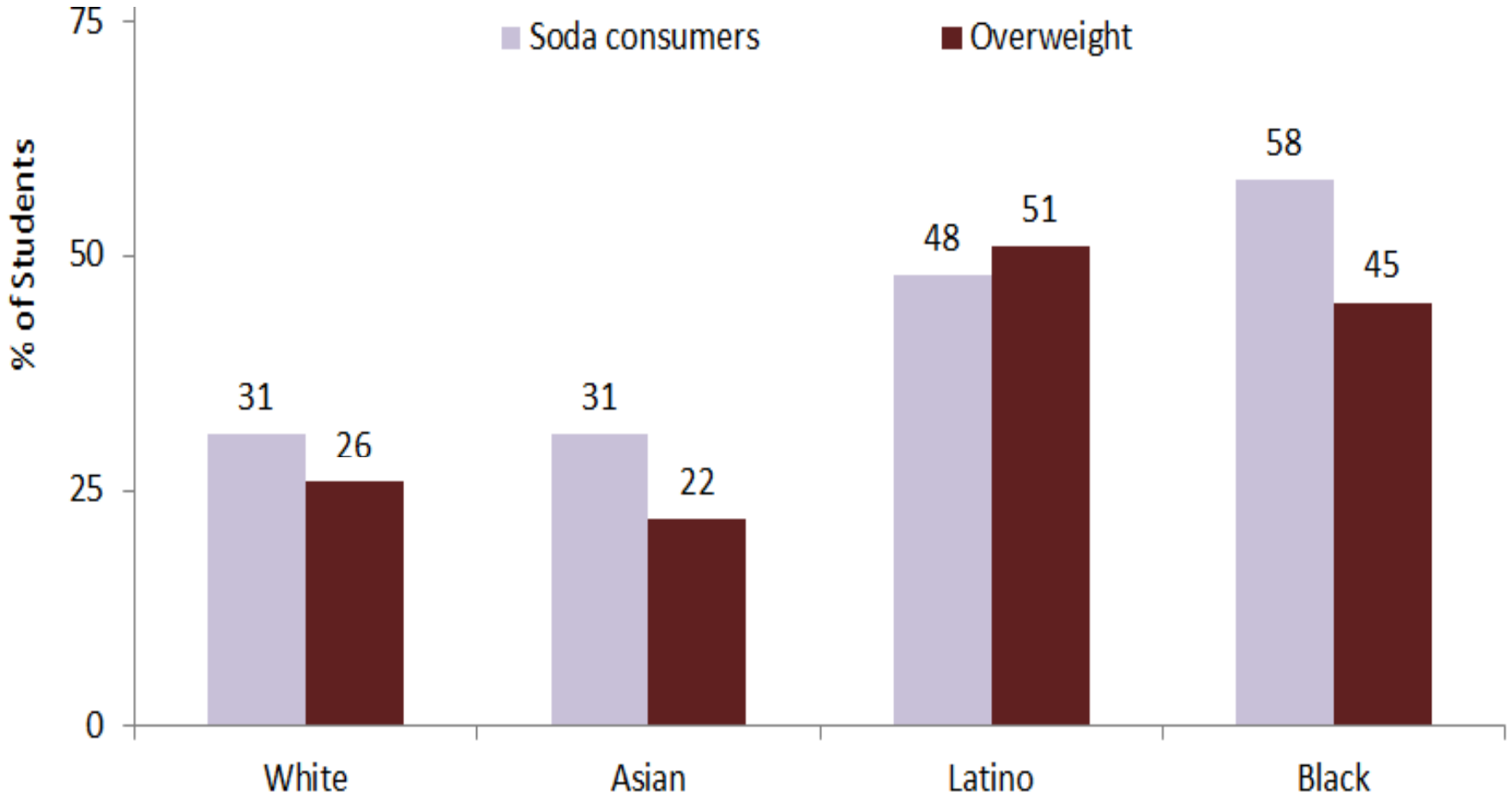


Source: 2009 and 2011-12 California Health Interview Surveys (Adult)

Percent of Children (Ages 2-11) and Adolescents (Ages 12-17) Drinking At Least One Sugar-Sweetened Beverage per Day in 2005-07 and 2011-12, by Race/Ethnicity



SF 9th Graders



Data sources: The proportion of soda consumers was estimated from the California Healthy Kids Survey, 2010-2011. Students were asked "Yesterday, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite?". Soda consumers reported drinking soda one or more times yesterday. California Department of Education Fitnessgram Data, 2010-2011, were used to estimate the prevalence of overweight, defined as measured BMI percentile ≥ 85% based on CDC growth curves. Data analyzed by SFDPH MCAH Epidemiology, Sept. 2013.

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  - Obesity
  - Diabetes and other health outcomes
- **Changing Behavior**
  - Implications for policy

Changing Behavior

- Education is an important component
  - **The Bigger Picture.org**
    - **Online videos and curriculum**
    - **School-based workshops**
  - **Shape Up San Francisco's Education Campaign**
    - **Community-based workshops**
    - **Billboard campaign**
- Unfortunately, **education is not enough to influence health outcomes.**

Shape Up SF education campaign

- A campaign used by LA DPH
- Intended to raise awareness of sugar content in drinks

The Bigger Picture is a collaboration between the University of California, San Francisco Center for Vulnerable Populations at San Francisco General Hospital and Trauma Center and Youth Speaks. Support has been provided by The UCSF Diabetes Family Fund for Innovative Patient Care, Education and Scientific Discovery, the National Institute On Minority Health And Health Disparities of the National Institutes of Health under Award Number P60MD006902, Shape Up San Francisco, Metta Fund and AT&T through the San Francisco General Hospital Foundation. Additional funding provided by the S.D. Bechtel, Jr. Foundation, the Stephen Bechtel Fund and The California Endowment. The content does not necessarily reflect the views of the sponsor organizations.

THE BIGGER PICTURE.ORG

Raise Your Voice and Join the Conversation about Diabetes. Take a Look at The Bigger Picture.

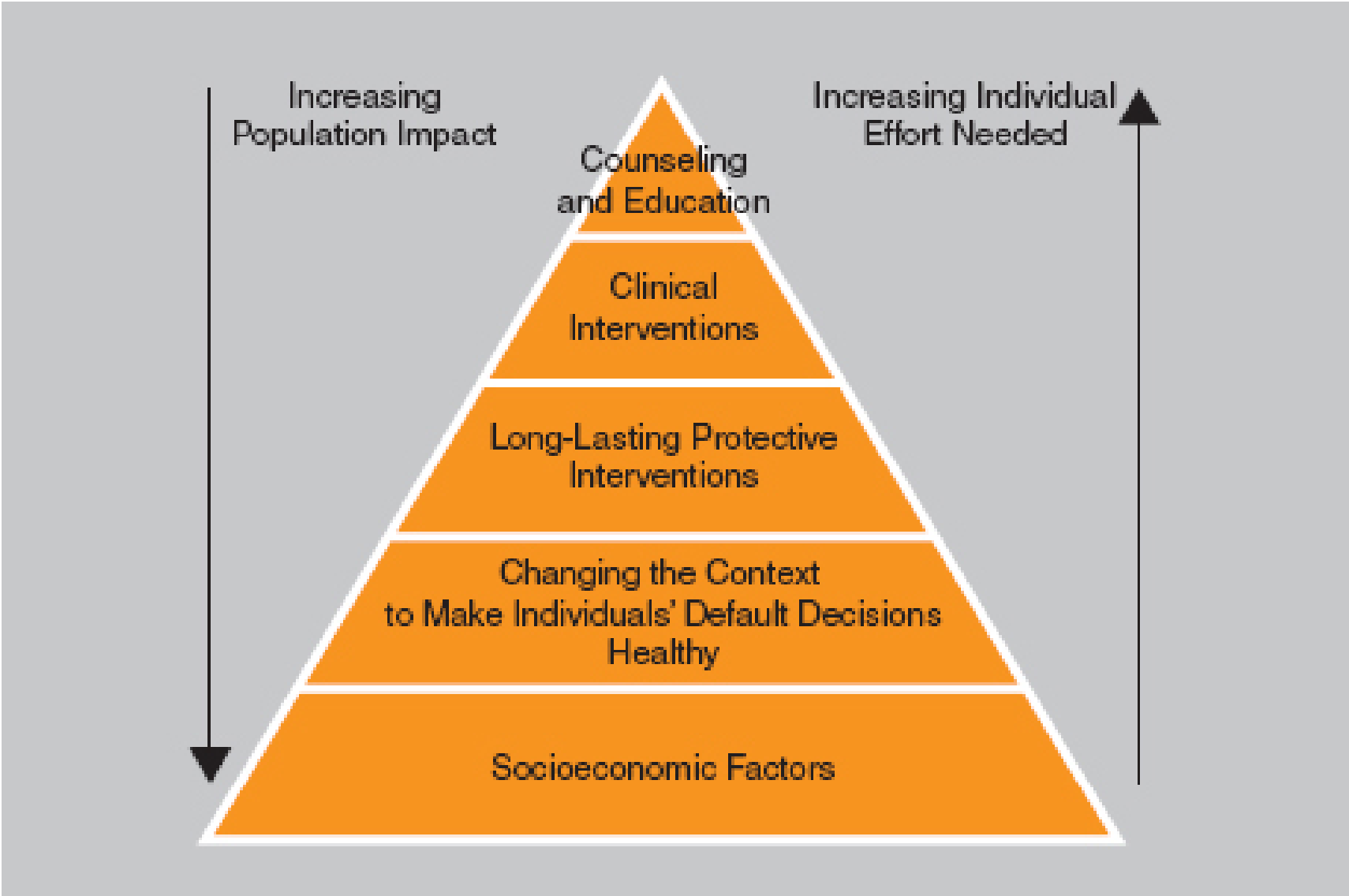
UCSF

CVP
Center for Vulnerable Populations
at San Francisco General Hospital and Trauma Center

The Living Word Project
Youth Speaks inc
Brave New Voices
identity. voice. power. imagination.
youthspeaks.org

CHARM
Comprehensive Center of Excellence for Health and Risk in Minority Youth and Young Adults

Why not education alone?



Health Impact Pyramid. SOURCE: Frieden, T.R. 2010

Institute of Medicine: local gov't policies to ↓ consumption, unhealthy foods

- Implement a tax strategy to discourage consumption of foods and beverages that have minimal nutritional value, such as sugar-sweetened beverages.
- Adopt land use and zoning policies that restrict fast food establishments near school grounds and public playgrounds.
- Implement local ordinances to restrict mobile vending of calorie-dense, nutrient-poor foods near schools and public playgrounds.
- Implement zoning designed to limit the density of fast food establishments in residential communities.
- Eliminate advertising and marketing of calorie-dense, nutrient-poor foods and beverages near school grounds and public places frequently visited by youths.
- Create incentive and recognition programs to encourage grocery stores and convenience stores to reduce point-of-sale marketing of calorie-dense, nutrient-poor foods (i.e., promote "candy-free" check out aisles).

Prices influences choices

- Positively Incentivizing healthy decisions and negatively incentivizing unhealthy decisions provides an environment where people still have choice, but are more likely to make a healthier choice.
- Translation: Costs more → Buy less
  - Especially effective in low income communities, which are in the greatest need of behavioral change.
- Often referred to as a soda tax.
  - Would reduce SSB consumption
  - Raises revenue for the city
    - Has the potential to mitigate impacts of SSB if $ used for nutrition education, access and physical activity
    - "Internalizes the externality"

Proposed SF "Sugary Beverage Fee"

An example of a policy to reduce consumption, grounded in science	
$.02 per oz. excise tax on distributors	
Revenue would go to:	
(25%) Rec & Park – Staffing; active recreation supports	
(40%) SFUSD – PE, nutrition programs, school food and recreation (during and after-school hours)	
(25%) DPH/DCYF – healthy eating and active living programs in the community; health education and outreach **(10%) HEAL programs**	**Healthy Food Access – expanding school nutrition programs, incentivizing healthy retail, water bottle filling stations**
Focus on vulnerable populations; an independent body identifies needs and priorities for use of revenue	

Summary

- SSBs are unhealthy, and their effect on many diseases has been well documented.
- Reduction in SSB consumption would reduce the burden of several diseases in San Francisco, both in terms of financial and social capital.
- Along with education campaigns, policy approaches can incentivize healthy behaviors, discourage unhealthy behaviors, and raise revenue for the city --without restricting choice

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