

Table of Contents

-  **1** German sugary drink tax projected to significantly cut obesity. Schwendicke & Stolpe. *BMC Public Health*
-  **2** SNAP households spend some of their benefit on sugary drinks. Garasky et al. *USDA, Food and Nutrition Service*
-  **3** SNAP households are supportive of removing sugary drinks and adding healthy incentives to their benefit. *Leung et al. Am J Prev Med*
-  **5** Soft drink intake and the risk of metabolic syndrome. Narain et al. *Int J Clin Pract*
-  **6** Diabetes may be deadlier than previously thought. Stokes & Preston. *PLoS One*
-  **7** Signs of progress in relative weight among WIC infants. Sharma et al. *Pediatrics*

 Policy

 Epidemiology

 Science

 Communications

FIND US ON SOCIAL MEDIA



We'd love to hear from you! Provide feedback on this publication at this [link](#). Send us articles you think should be included in future issues: pvallila@hfamerica.org.

To subscribe to Research Watch or other Healthy Food American publications, click [here](#).

POLICY

Taxing sugar-sweetened beverages: impact on overweight and obesity in Germany.

Schwendicke F, Stolpe M. *BMC Public Health*. 2017; 17(1):88.

Key Question: Would a 20 percent sugary drink tax affect rates of obesity and overweight in Germany?

Key finding: The modeled tax was projected to reduce cases of overweight by 1 million and reduce cases of obesity by half a million cases. The effects occurred primarily in young adult men.

Implications: A 20 percent sugary drink tax could substantially reduce cases of overweight and obesity, though the effect may be limited to certain sub-groups.

Studies around the world have projected that national taxes on sugary drinks could have a substantial long-term effect on chronic disease rates. An earlier study led by Schwendicke modeled the effect of a sugary drink tax on dental caries in Germany. This study by Schwendicke and Stolpe extended the previous one by modeling the effect of a sugary drink tax on obesity and overweight in Germany.

The authors modeled a 20 percent sugary drink sales tax as an addition to an existing value added tax (VAT). They used elasticity estimates – which they assumed to be higher

for low-income populations – based on evidence from other countries, and applied them to data on sugary drink consumption in Germany.

Overall, the tax reduced the prevalence of overweight by 1.028 million cases and the prevalence of obesity by 479,000 cases. These represented declines of 3 percent and 4 percent, respectively. The impact was larger in men than women, and it was greatest in young adults (aged 20-29). The impact was also larger in low-income populations, particularly among women. For example, the tax would prevent 60,000 cases of overweight among low-income, 40-49-year-old women, but have no effect among middle- or high-income women of the same age.

Limitations: The authors assumed elasticity did not vary by age. As they discussed, this may have led to misleading results among older populations. German-specific elasticity estimates also were unavailable. The authors assumed energy intake had a linear effect on weight, and they acknowledged that this was likely an oversimplification. ■

Under the microscope; The Supplemental Nutrition Assistance Program

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal food assistance program in the US. Over \$71 billion in SNAP benefits were redeemed in 2011.

A report released by USDA's Food and Nutrition Service at the end of 2016 got a lot of media attention because it showed that SNAP households spend some of their benefit on sugary drinks. In this issue, we review both the USDA report and recent research that suggests SNAP beneficiaries would be supportive of a policy to limit sugary drinks while offering incentives for healthy purchases via SNAP.

Foods Typically Purchased by Supplemental Nutrition Assistance Program (SNAP) Households.

Garasky, S, Mbwana K, Romualdo A, Tenaglio A, Roy M. Prepared by IMPAQ International, LLC for USDA, Food and Nutrition Service, November 2016.

Key Question: *What are the spending habits of Supplemental Nutrition Assistance Program (SNAP) households? Do SNAP households purchase different foods and beverages than households not participating in the program?*

Key Finding: *SNAP households have a similar purchasing profile as non-SNAP households. All households spent nearly one of every ten dollars of grocery expenditures on sugary drinks.*

Implications: *Though SNAP recipients purchase sugary drinks at rates similar to all households, the large proportion of grocery spending devoted to an unhealthy product raises the question of whether and how to better align the program with federal dietary guidelines.*

Previous research conducted by the program that administers SNAP found more similarities than differences in food purchases, consumption patterns, and dietary outcomes comparing low- versus high-income families. This research relied on consumers to recall what they ate or to report or scan every purchase.

Garasky and colleagues add to this research by using monthly point-of-sale (POS) food purchase data from 2011 to understand the purchasing habits of SNAP households and how these habits compare with households not participating in the program. SNAP-eligible foods and beverages were compared. Total expenditures by SNAP and non-SNAP households over the 12 months totaled \$39 billion.

Authors found that there were no major differences in the purchasing patterns of SNAP and non-SNAP households.

- SNAP households spent 13 percent of expenditures on solid fats and added sugars compared with 12 percent of expenditures among non-SNAP households.
- SNAP households spent 9 percent of expenditures on sugary drinks compared with 7 percent of expenditures among non-SNAP households.
- Expenditures were greater for sugary drinks compared to milk for both groups.

Limitations: Data source did not capture all SNAP benefit expenditures. Some transactions included both SNAP and cash or credit transactions; it was not possible to differentiate between items purchased with SNAP benefits and those purchased by other means. ■

Improving the nutritional impact of the Supplemental Nutrition Assistance Program: Perspectives from the participants.

Leung CW, Musicus AA, Willett WC, Rimm EB. *Am J Prev Med.* 2017;52(2S2):S193-S198.

Key Question: *What do Supplemental Nutrition Assistance Program (SNAP) participants and food insecure adults who don't participate in SNAP think about approaches to improving the impact of the program on diet?*

Key Finding: *SNAP participants and non-participants who are likely eligible for the program are supportive of revising the benefit to exclude sugary drinks and offer incentives for the purchase of healthy foods.*

Implications: *Jurisdictions pursuing waivers to exclude sugary drinks from SNAP should consider including incentives for healthy foods to garner maximum support from those impacted by changes to program benefits.*

SNAP participants have been largely missing from the debate about the value of SNAP and its impact on diet. Leung and colleagues collected the opinion of SNAP participants and food insecure non-participants on, 1) perceptions of SNAP; 2) support for policies to strengthen its positive nutritional impact; and 3) preferences for an alternative program that paired incentives for healthy food with exclusions for sugary drinks.

Adults were recruited through Amazon Mechanical Turk (a marketplace where individuals complete paid tasks for various organizations) to complete a 37-item online survey about demographics, grocery shopping habits, and food insecurity. Adults were US residents who either receive SNAP (n=118) or were considered food insecure (n=269) per a US Department of Agriculture screening tool. Food insecure non-participants were considered likely to be eligible for SNAP. SNAP participants completed an additional 12 questions on program strengths, strategies for overall improvement, and strategies to improve nutritional intake. Non-participants were asked ten questions about their perceptions of the program.

The majority of SNAP participants (76 percent) and non-participants (81 percent) supported pairing monetary incentives for fruits and vegetables with excluding sugary drinks. More than half (54 percent) of SNAP participants and most non-participants (80 percent) support removing sugary drinks without providing an incentive for healthy foods. Authors also analyzed whether respondents would select an enhanced program (SNAP+) that offered incentives for healthy foods and excluded sugary drinks over the current SNAP benefit. For the same level of benefits, twice as many SNAP participants and five times as many non-participants selected SNAP+. Nonparticipants were more likely to select SNAP+. ■

Limitations: Sample included more women and whites than average SNAP and low-income populations.

Low sugar nutrition policies and dental caries: A study of primary schools in South Auckland.

Thornley S, Marshall R, Reynolds G, Koopu P, Sundborn G, Schofield G.
J Paediatr Child Health. 2017 (in press)

Can a school-based policy that limits sugary drinks impact tooth decay among students? In 2007, the principal of Yendarra primary school in South Auckland, New Zealand, banned sugary drinks. Thornley and colleagues evaluated the impact of the policy on tooth decay among students by comparing levels of tooth decay among Yendarra students with students from surrounding schools with a similar socio-economic background and no restriction on sugary drinks. Authors collected dental records from the Auckland Regional Dental Service for students aged eight to eleven from ten schools. Cavities were significantly less common in Yendarra compared with schools with no ban. The policy prevented one cavity per three students. School-based sugary drink bans may be an effective way to reduce student tooth decay. ■

HEALTH IMPACTS

Soft drink intake and the risk of metabolic syndrome: a systematic review and meta-analysis.

Narain A, Kwok CS, Mamas MA. *Int J Clin Pract.* 2017 (in press)

Key question: Do sugary drinks and artificially sweetened beverages (ASBs) increase the risk of metabolic syndrome?

Key finding: Only ASBs were associated with a significantly higher risk of metabolic syndrome. Differences across studies made it difficult to draw conclusions about sugary drink consumption.

Implications: Individual studies have linked sugary drinks to metabolic syndrome, but overall, the evidence is too inconsistent to draw a firm conclusion.

Metabolic syndrome is a combination of cardio-metabolic risk factors that increases the risk of cardiovascular disease. Several individual studies have looked at whether consumption of sugary and artificially sweetened drinks increases the risk of metabolic syndrome, but results have been inconsistent and questions remain.

Narain and colleagues conducted a systematic review and meta-analysis to pool results across past studies on sugary drinks, ASBs, and metabolic syndrome. They included cross-sectional and cohort studies but reported results for different study designs separately. The meta-analysis included 12 studies with a total 56,244 participants. Eight of the studies were cross-sectional and four were cohort studies.

Both sugary drink and ASB consumption were associated with the presence of metabolic syndrome in cross-sectional studies. However, only ASB consumption was significantly associated with the risk of metabolic syndrome in cohort studies. People who consumed ASBs were 32 percent more likely to develop metabolic syndrome over time, and this association was relatively consistent across studies.

The pooled effect size for sugary drinks was larger than the effect size for ASBs (47 percent) but studies were less consistent. Due to the inconsistency, the effect was not statistically significant. Narain and colleagues described many differences between studies that contributed to this inconsistency. Studies varied substantially in terms of how sugary drink consumption was quantified, how metabolic syndrome was defined, and what variables were adjusted for. The authors were cautious in their conclusions about both ASBs and sugary drinks due to these limitations.

Limitations: As Narain and colleagues thoroughly discussed, all individual studies may have been biased by factors that authors did not control for (e.g., dieting). Studies also relied on food frequency questionnaires that are often biased. ■

Beverage intake and metabolic syndrome risk over 14 years: The Study of Women's Health Across the Nation

Appelhans BM, Baylin A, Huang M, et al. *J Acad Nutr Diet*. 2017 (in press)

Ironically, this cohort study on beverages and metabolic syndrome was published at the same time as the meta-analysis by Narain and colleagues, but drew slightly different conclusions. Appelhans and colleagues found that consumption of energy-dense, nonalcoholic beverages significantly increased the odds of metabolic syndrome by 5 percent per year in middle-aged women. (To reiterate, Narain and colleagues found an increase in risk that was not statistically significant.) The study differed from past studies on the topic in many ways (e.g., cohort characteristics, beverage definition).

CHRONIC DISEASE TRENDS

Deaths attributable to diabetes in the United States: comparison of data sources and estimation approaches.

Stokes A, Preston SH. *PLoS One*. 2017;12(1):e0170219.

Key Question: What proportion of deaths in the US is due to diabetes?

Key Finding: Authors found a much higher proportion of deaths attributable to diabetes (11.5–11.8 percent) compared to traditional approaches that rely entirely on death certificates (3.3–3.7 percent).

Implications: Using the authors' estimates, diabetes was the third leading cause of death in the US in 2010. These results reinforce the need for effective diabetes prevention and care interventions.

In 2010, diabetes was listed as the underlying cause of death in about three percent of deaths, making it the seventh leading cause of death. Estimates like these come from an analysis of death certificates that identify the underlying cause of death. Vital statistics records may not be a reliable data source for estimating the contribution of diabetes to overall mortality because people with diabetes often have other conditions that contribute to mortality, and death certificates may not accurately capture the contribution of diabetes. Stokes and Preston used another approach to estimate the proportion of deaths in the US that can be attributed to diabetes and found that diabetes is a more significant contributor to death.

Authors calculated a population attributable fraction (PAF) to estimate deaths that would not have occurred in the absence of diabetes. They did this by following cohorts of adults 30–84 from 1997 to 2011 in two nationally representative surveys, the National Health Interview Survey (NHIS: n = 282,322) and the National Health and Nutrition Examination Survey (NHANES: n = 21,814). Authors determined whether or not these adults had diabetes using self-report data in NHIS and NHANES and average blood sugar levels in NHANES (a biomarker for diabetes). Survey respondents were then linked to deaths in the National

Death Index, a centralized database of death record information on file in state vital statistics offices. Authors compared their estimates with what the death records alone suggested about the contribution of diabetes to mortality.

Authors found that diabetes contributed to 11.5 to 11.8 percent of deaths depending on survey and method of diabetes diagnoses (self-report versus biomarker). In comparison, diabetes was listed as the underlying cause of death in 3.3 to 3.7 percent of deaths. When diabetes was mentioned anywhere on the death certificate, including as underlying cause, authors considered diabetes to be a contributing cause of death. Diabetes was a contributing cause of death in 10.8 to 12.1 percent of deaths. Using this 12 percent estimate, in 2010, diabetes was the third leading cause of death, not the seventh. Including pre-diabetes raised the proportion of deaths attributable to diabetes by an additional 2 percent. ■

Limitations: Diabetes status was only measured at baseline and may have changed over time.

Trends in weight-for-length among infants in WIC from 2000 to 2014.

Freedman DS, Sharma AJ, Hamner HC, et al. *Pediatrics*. 2017 (in press)

Key question: What is the prevalence of high relative weight among WIC infants? Has the prevalence changed over time?

Key finding: After increasing in the early 2000s, the prevalence of high weight-for-length (a measure of relative weight) decreased from 2010 to 2014.

Implications: WIC infants' average weight status has improved. Differences in trends across states suggest that state policies may have played a role, though this is only speculation.

Reports on the prevalence of obesity in the US commonly focus on ages 2 and higher. Trends in infant weight status are not studied as much; relatively little is known about the prevalence of high relative weight among infants, which is known to increase the risk of obesity.

Freedman and colleagues analyzed trends in high weight-for-length, a measure of relative weight, using data from 17 million infants in the Women, Infants, and Children Participant Characteristics (WIC-PC) Survey, a biennial census of WIC participants. Trained WIC professionals take weight and length measurements. The authors used data from 17 million infants (age 3-23 months) in all 50 states, the District of Columbia, and five territories. Their definition of “high” weight-for-length was based on World Health Organization standards.

The authors found trends have shifted since 2000. The prevalence of high weight-for-length was 13.4 percent in 2000, increased to 14.5 percent in 2004, remained stable through 2010, and then decreased to 12.3 percent in 2014. There were substantial differences by race/ethnicity and income over time, as the prevalence was consistently highest in American Indian/Alaskan Native and low-income infants. The shape of trends over time was similar regardless of race or income, though.

Substantial differences by state/territory were found. Across states, the prevalence of high weight-for-length in 2014 ranged from 5.5 percent (Wyoming) to 22.6 percent (Virginia). Forty states showed a statistically significant decrease in prevalence from 2010 to 2014, whereas two states showed a statistically significant increase. The authors speculated that these differences might be partially due to differences in state policies related to infant nutrition.

Limitations: The study only included infants enrolled in WIC; the results do not represent all infants. Changes in WIC eligibility criteria over time may have affected trends.

Research Watch reviews the evidence on the health effects of sugar and the effectiveness of policy and other interventions to curb consumption to inform sugar reduction activities across the US.

Healthy Food America acts on scientific evidence to drive change in food policy and industry practice, giving people greater control over their health and reducing diet-related illnesses, such as obesity, diabetes, and heart disease.

This publication was prepared by Dan Taber (@DanTaber47) and Petra Vallila-Buchman.