

# Mexican Cohort Study Predates but Predicts the Type of Body Composition Changes Expected From the Mexican Sugar-Sweetened Beverage Tax

Important lessons can be learned from studies of the Mexican sugar-sweetened beverage (SSB) tax and related studies on the health effects of the tax. The Mexican government instituted a nationwide one peso per liter excise tax on SSBs that was effective on January 1, 2014. The tax applies to all nonalcoholic beverages with added sugar and represents an approximate 10% increase in prices. The Mexican SSB tax rate is less than the 20% rate in Philadelphia, Pennsylvania, and scholars globally recommend that the rate be at least 20% or larger to have a meaningful impact.

The article by Stern, et al. (p. 1801) uses data from before the tax was implemented but is the first published large-scale longitudinal study that uses the Mexican teachers cohort to examine the impact of SSBs on weight in Mexico. The Mexican teachers cohort was designed to follow procedures similar to those of the well-known Harvard cohort studies (the Nurses' Health Study and Health Professionals Follow-up Study) of health professionals and nurses' cohorts. Combining this study with others from Mexico provides some sense of the long-term benefits we can

realistically expect to achieve with this tax.

## SSB DECREASES AFFECT WEIGHT LESS THAN INCREASES

Stern et al. examine in the Mexican teachers cohort how decreases and increases in SSB servings are linked, respectively, with subsequent weight and waist circumference decreases

and increases. These are not symmetrical. An increase of one SSB serving per week has a larger impact on weight and waist circumference gain than the reverse, a decrease in SSB servings, which is linked with a smaller but still significant reduction in both outcomes. Because of a complex set of biological adjustments, the body needs to ingest more kilocalories to lose weight than to gain weight.<sup>1</sup>

After the implementation of the 10% SSB tax in Mexico, the volume of SSBs consumed kept falling as Mexicans became habituated to reduced SSB intake.<sup>2,3</sup> The first year of the tax was linked with about a 6% overall decline in SSB consumption, whereas the second year led to an added 4% decline among the overall population and a much greater decline among the low socioeconomic

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status population, with its higher levels of obesity, untreated diabetes, hypertension, and overall disease burden.

## DOES THE TAX WORK?

Big beverage companies pretend that the tax does not work because weight and obesity did not decline quickly. No one expected to see any decline in obesity from this small tax after one or two years, and advocates and scholars have called for doubling or tripling the tax to truly affect energy and sugar intakes. No reputable scholar expected to see a quick decrease in obesity with such a small decrease in SSB consumption.

Moreover, in 2016, a small interim nationwide survey was carried out in the summer, whereas all previous national surveys were carried out in between October and March. Intakes of SSBs and other key food groups exhibit extreme seasonality. The summer sees greater intakes, so an eminent international team of scholars reviewed the seasonality issues

in Mexico and noted the inappropriateness of comparing a survey carried out in between June and August with a survey implemented between October and March.<sup>4</sup>

Two well-done studies following different simulation models essentially show that over a longer time the tax, even at this low 10% level, will have a significant health benefit in Mexico. Using a slightly lower tax impact and an SSB intake reduced by 30 milliliters per day (taken from food frequency data), the Barrientos-Gutierrez study essentially predicted that the tax effect over a decade would reduce obesity by 2.5% and would prevent 86 000 to 134 000 new cases of diabetes within 25 years of the tax's implementation.<sup>5</sup> Using a higher SSB intake from 24-hour recall data (323 ml/day vs 303 ml/day) and focusing on an older population experiencing much higher tax effects, the second study showed that among Mexicans aged 35 years and older the tax would prevent 189 300 cases of type 2 diabetes and 18 900 deaths<sup>6</sup> but

within 10 years of the tax's implementation.

## RIGOROUS TAX EVALUATIONS ARE NEW

In 2018, when a nationally representative survey is carried out in the same season as the last nationally representative survey, we will be able to assess if the weight gain trajectory and the trend in obesity increases have shifted downward in Mexico.

The rigorous evaluation of SSB taxes is new. The only evaluations of the impacts of taxes of approximately 10% have been conducted in Mexico and subsequently in Berkeley, California.<sup>7</sup> However, on the basis of what is known and of the study of Stern et al., we can predict that the Mexican tax will result in reductions in weight gain and attenuate the upward trend in obesity prevalence. However, in the short term it is unlikely to decrease the absolute obesity levels.

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