THE EFFECT OF ALCOHOL EXCISE TAX INCREASES ON ALCOHOL-ATTRIBUTABLE CANCER DEATHS

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This addendum complements the previously published report, *The Effect of Alcohol Excise Tax Increases on Public Health and Safety in Texas,* and subsequent addendum, *The Effect of Alcohol Excise Tax Increases on Sexual Assault.* It specifically addresses the effect that increases in alcohol excises taxes will have on alcohol-attributable cancers. More specifically, this addendum will show the effect a 5 cent, 10 cent, 25 cent, and 30 cent excise tax increase per drink will have on alcohol-attributable cancer mortality.

The data and background for this addendum are based heavily on the 2013 paper published by Nelson and colleagues, *Alcohol-Attributable Cancer Deaths and Years of Potential Life Lost in the United States.* There are two main reasons to use this paper: 1) few papers have focused on calculating the number of cancer deaths attributable to alcohol in the United States, and 2) the authors use two sound methodologies to calculate the fraction of cancer deaths that can be attributable to alcohol. It is important to keep in mind that, unlike other health conditions that can be 100% attributable to alcohol consumption (e.g., alcoholic liver disease[2]), only a fraction of deaths from certain types of cancer can be attributed to alcohol consumption.[1] Overall, alcohol is estimated to cause about three percent of US cancer deaths, with the greatest share attributable to oral cavity and pharynx, esophagus, and breast cancer.[1]

In this addendum, the percentages of alcohol-related cancer deaths in Texas are calculated using the population-attributable fractions (PAF) found in Table 1 of Nelson et al.'s published research.[1] The PAFs quantify how much a risk factor (i.e., alcohol consumption) contributes to disease or death. Nelson et al. use two separate methodologies[i] and two data sources[ii] to calculate these fractions for both women and men. The smallest percentage of these four estimates is used in this addendum. Additionally, the calculations focus on the seven cancers that both the International Agency for Research on Cancer (IARC) and the World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) consider causally associated with alcohol consumption: 1) oral cavity and pharynx, 2) larynx, 3) esophagus, 4) liver, 5) colon, 6) rectum, and 7) female breast.[3,4] Finally, the cancer mortality data are from the Texas Cancer Registry, which is a statewide population-based registry that measures the Texas cancer burden, among other priorities.[5]

i Method I triangulates estimates of alcohol consumption from surveys and per capita consumption, taking into account recorded sales, unrecorded consumption, abstinence, and average volume of consumption among drinkers. Method II is based on method I and adjusts for survey consumption underreporting of alcohol by using average per capita sales. For those interested in additional information, see Nelson et al.'s published report.

ii Data from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Alcohol Survey (NAS) was used to estimate the average number of drinks consumed per day.

Using the same methodology used in *The Effects of Alcohol Excise Tax Increases on Public Health and Safety in Texas* under the Health Gains section, the estimates in the table below indicate an annual overall decrease of 41, 77, 168, and 183 cancer deaths for a 5 cent, 10 cent, 25 cent, and 30 cent excise tax increase per drink, respectively. It is interesting to note the major decreases that will occur for female breast cancer, given the high number of annual deaths that affect women. Lastly, it is important to reiterate that these calculations are based on the smallest estimate provided for the percentages of cancer deaths attributable to alcohol, so these reductions should be considered a probable lower bound.

For cancer prevention, alcohol consumption is one of largest avoidable risk factors. Given that the fractions estimated include both people who drink more than three drinks a day and those who moderately drink one drink a day (about 30 percent of alcohol-attributable deaths), these reductions are significant.

Reductions in Cancer Mortality

				Expected Reduction with Tax Increase			
	Total Number (2013)	**Percent Attributable to Alcohol Consumption**	**Total Attributable to Alcohol Consumption**	**5 Cent Tax Increase per Drink**	**10 Cent Tax Increase per Drink**	**25 Cent Tax Increase per Drink**	**30 Cent Tax Increase per Drink**
Oral Cavity and Pharynx	679	26%	177	8	15	33	36
Larynx	279	11%	31	1	3	6	6
Esophagus	842	16%	135	6	12	25	28
Liver	1,690	8%	135	6	12	25	28
Colon excluding Rectum	2,902	2%	58	3	5	11	12
Rectum and Rectosigmoid Junction	665	4%	27	1	2	5	5
Female Breast	2,744	12.0%	329	15	28	62	68

Source: Age-Adjusted Cancer Mortality Rates by County in Texas, 2009 - 2013. Cancer Mortality File, September 2015. Texas Cancer Registry; Nelson et al.; and author's calculations

References

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4. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Alcohol Consumption and Ethyl Carbamate.* (International Agency for Research on Cancer; Distributed by WHO Press, 2010).
5. *Food, Nutrition, Physical Activity and the Prevention of Cancer: A Global Perspective: A Project of World Cancer Research Fund International /American Institute for Cancer Research.* (American Institute for Cancer Research, 2007).