

condition were also more likely to have a higher density of tobacco retailing outlets in Missouri. Our finding implies that higher accessibility to tobacco retailing outlets might play an important role in geographic SED disparity in smoking. Future studies should examine the degree to which neighborhood SED effect on smoking behaviors is mediated by higher accessibility to tobacco retailing outlets. This insight can help policy-makers develop appropriate geographic priority to effectively allocate tobacco control programs to reduce cigarette smoking in Missouri.

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### The Association Between Post-Diagnosis Health Behaviors and Quality of Life in Survivors of Ductal Carcinoma In Situ

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**Background:** Survivors of ductal carcinoma in situ (DCIS), an early stage breast cancer, tend to decrease physical activity, gain weight, and maintain alcohol use following treatment. However, the impact of these health behaviors on long-term quality of life (QoL) in DCIS survivors has not been investigated. **Methods:** We examined the association of post-diagnosis body mass index (BMI), physical activity and smoking with QoL among 1,448 DCIS survivors aged 20–74, who were diagnosed during 1995–2006 and enrolled in the population-based Wisconsin In Situ Cohort. Health behaviors and QoL were self-reported during biennial post-diagnosis interviews. Physical and mental QoL were measured using the validated SF-36 questionnaire (higher scores reflect more positive QoL). Generalized linear regression was used to establish QoL mean scores in cross-sectional analyses, with multivariable adjustment for age, comorbidity status, education, and income. **Results:** Women reported 3,444 QoL observations over an average 7.9 years of follow-up. Physical health summary scale measures of QoL were significantly higher among women with healthy BMI (46.5 for healthy weight versus 40.5 for obese,  $P = 0.02$ ) and those who were physically active (45.9 for active women versus 42.6 for inactive,  $P = 0.03$ ). Mental health summary scale scores were significantly higher among non-smokers (51.2 for non-smokers versus 47.1 for current smokers,  $P < 0.01$ ). These associations were consistent over increasing time since treatment up to 15 years. **Conclusion:** Our preliminary analysis suggests that maintaining healthy behaviors following DCIS treatment is associated with improved long-term QoL. Longitudinal analysis using cross-lagged regression is underway to evaluate the temporal association between health behavior and QoL. Understanding factors that impact QoL in DCIS survivors may inform interventions aimed at preventing negative health behaviors and optimizing long term quality of life following a DCIS diagnosis.

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### Cigarette Tax Revenues and Consumption under Current and Minimum-Price Regimes

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Because nine out of ten lung cancer deaths are attributable to smoking, significant reductions in smoking are likely to reduce lung cancer death as well. It is well known that cigarette demand and consumption are negatively related to price, and that cigarette smokers use price minimization strategies to maintain their tobacco use patterns at a reasonably low cost when prices go up. Two consumer strategies that have received significant attention are legal tax avoidance and illegal tax evasion. These strategies are most common when there is a price differential in an area such as an adjacent state that imposes a relatively lower excise tax on cigarettes. Their effect is a reduction in the intended public health effect of excise taxes that is expected to occur via a drop in consumption, and a reduction in state tax revenues, which may be used to fund tobacco control efforts. An increasingly discussed solution is a minimum price law. If the price is set high enough, among-state price disparities of cigarettes and other tobacco products can be eliminated along with a prominent consumer price reduction strategy. **Purpose:** In this study, cigarette consumption data are used to inform a novel model of consumption that incorporates the effect of adjacent state price differentials. The model is then used to (1) estimate lost (or gained) revenues by state, as well as (2) expected changes in consumption in a scenario involving a minimum price law for cigarettes that sets a nationwide price of \$10 per pack (approximately the average price in New York state in 2014), which would eliminate an among-state price differential, and therefore much of the incentive to avoid or evade taxes. This scenario also raises the price of cigarettes substantially in almost all states. **Methods:** We use yearly state-level cigarette consumption and price data from the Tax Burden on Tobacco from the years 2004–2014. The developed model is a log-linear regression model that uses latent variables (i.e., random effects) to capture basic price effects and adjacent-state price differential effects in a mixed effects model framework. The latent variables offer a simple means of allowing both price effects to vary by state. We analyze the fitted model in two ways. First, we compare model-based consumption predictions under a regime of existing state price and border-state price differentials with predictions from a regime in which the differential is removed. This comparison results in estimates of state-specific consumption lost (or gained) due to border state price differentials; the estimates of lost consumption are multiplied by state-level excise tax and interpreted as lost (or gained) state revenues. A second analysis compares the current regime to one in which cigarette packs are set at \$10 each nationwide to determine the expected consumption reduction. **Results:** Overall, the effect of price on demand is negative, statistically significant, and well within range of the price elasticity estimates available in the literature. The effect of border-state price differential is also negative and statistically significant suggesting that a state's consumption is negatively related to the difference between its cigarette price and the average price of its neighboring states. Both effects are heterogeneous across states. In the first analysis of the fitted model, calculation of lost (or gained) revenue relative to what