

The California Tobacco Tax for Healthcare, Research, and Prevention Act of 2016 (Proposition 56)

Projected Long-Term Health Impacts on the Los Angeles County Adult Population

Background

The dramatic decline in the prevalence of smoking in the United States, from a high of 42% among adults in 1965 to 23% in 2000, is considered one of the great public health achievements of the 20th century.¹ Unfortunately, since 2000 further progress in reducing tobacco use has slowed and tobacco use remains the single leading preventable cause of death in the nation.² In Los Angeles County, nearly one million persons continue to smoke cigarettes, and approximately 14% of the nearly 60,000 deaths in the county each year are attributable to smoking and other tobacco use.³

National, state, and local efforts to reduce tobacco use have included a broad array of strategies, including community education, restrictions on tobacco advertising, anti-tobacco counter-advertising, programs and services that help smokers quit smoking, and policies that prohibit smoking in workplaces, restaurants, bars, selected outdoor spaces, and apartments. In addition, strategies that increase the unit price of cigarettes have been shown to be effective in reducing smoking, particularly among youth and low income populations.⁴ Most prominent among the pricing strategies has been the use of excise taxes to increase the price of cigarettes. All 50 states have enacted such taxes, as has the federal government. However, California was the first state in the nation, in 1988, to adopt a tax with the specific intent of funding tobacco control and prevention programs and reducing tobacco use. Since then, other states have followed suit and California now lags behind most of them in the level of taxation. The tax rate in California (\$0.87 per pack) is approximately one-half the average of all states (\$1.60 per pack) and well below the peak rate of \$4.35 per pack in the State of New York (Figure 1).⁵

The California Tobacco Tax for Healthcare, Research, and Prevention Act of 2016 (Proposition 56), an initiative on

1. Centers for Disease Control and Prevention, Achievements in Public Health, 1900-1999: Tobacco Use--United States, 1900-1999. MMWR, 1999, accessed at: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4843a2.htm>.
2. Centers for Disease Control and Prevention. Fast facts, accessed at: https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/
3. Analysis conducted by the Tobacco Control and Prevention Program, Los Angeles County Department of Public Health, using the Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) software application.
4. Centers for Disease Control and Prevention. Reducing Tobacco Use and Secondhand Smoke Exposure: Interventions to Increase the Unit Price for Tobacco Products. Accessed at: <https://www.thecommunityguide.org/tobacco/increasingunitprice.html>.
5. Campaign for Tobacco Free Kids. State Cigarette Excise Tax Rates and Rankings. Accessed at: <https://www.tobaccofreekids.org/research/factsheets/pdf/0097.pdf>.

Figure 1. State tobacco tax rates (per pack of cigarettes) in the 5 most populous states and the national average state tax rate.



the ballot in the November 2016 general election, proposes a new tax of \$2.00 per pack of cigarettes, and an equivalent tax on all other tobacco products, including e-cigarettes. The California Legislative Analyst's Office estimates that the tax would generate revenue of \$1.0 to \$1.4 billion in fiscal year 2017-18.⁶ The initiative specifies that this revenue would be used to expand existing tobacco control and prevention programs, health care services, including services for those suffering from tobacco-related illnesses, and research to improve prevention, early detection, and treatment of tobacco-related disease.

This report describes the results of an analysis that projected the long-term future health impacts of this tax initiative, if passed, on the Los Angeles County adult population. The results may help inform discussions on the public health implications of the tobacco tax initiative and are important to consider given the high levels of tobacco-related disease in the county and across the state.

6. Legislative Analyst's Office. Proposition 56: Cigarette tax to fund healthcare, tobacco use prevention, and law enforcement. Initiative constitutional amendment and statute. July 18, 2016. Accessed at: <http://www.lao.ca.gov/ballot/2016/Prop56-110816.pdf>.

Methods

Scope of the analysis

The analysis included assessment of the following potential impacts of the tax on tobacco use and exposure to second-hand smoke: 1) an increase in the number of persons who quit smoking cigarettes as a result of the price increase; 2) a reduction in the number of persons who start smoking cigarettes because of the price increase; and 3) a decrease in second-hand smoke exposure as a result of a decline in smoking prevalence and initiation,

Methods (cont.)

as defined above. The analysis did not assess the potential impact of the tax on reducing the level of cigarette smoking among persons who continue to smoke because the future health impacts of this reduced consumption are difficult to quantify. Similarly, the analysis did not assess the potential impact of the tax on use of e-cigarettes and smokeless tobacco products because consumer response to price increases and the long-term health impacts of changing consumption levels for these products are not well established. Lastly, the analysis did not consider the potential health benefits of the programs and services that would be funded by the tax revenue.

The future health impacts of changes in cigarette smoking and exposure to second-hand smoke as defined above were assessed for the following health conditions: heart disease, stroke, cancer (all cancer types combined, including lung cancer), and chronic lung disease (e.g., emphysema and chronic bronchitis).

Analytic methods

Future health impacts were estimated using a dynamic microsimulation model, called the Future Los Angeles Model (FLAM), which was developed in collaboration with researchers at the University of Southern California (USC). FLAM is based on a similar model developed at USC and the RAND Corporation that has been used to project the long-term future health and economic impacts of a broad range of policies across the U.S. and internationally.⁷

Additional information on the model can be found at: publichealth.lacounty.gov/pa/PA_Model_Simulation.htm.

7. The Future Americans Model, Roybal Center for Health Policy Simulation, University of Southern California. Accessed at: <http://roybalhealthpolicy.usc.edu/fam/>

FLAM was developed specifically to project future health and economic trends in the Los Angeles County adult population aged 25 years and older through 2059. The model uses a variety of local, state, and national data sources on birth rates, death rates, and migration patterns to project future trends in the size and demographic characteristics of the county population. The model also uses local, state, and national health data to project future health trends, including the number of persons in the county population living with heart disease, stroke, cancer, and chronic lung disease. The model does not allow for analysis of different types of cancer (e.g., lung cancer). FLAM has the capacity to estimate how different social, economic, and health care factors influence future health risks and disease trends.

Simulations using FLAM were conducted for two scenarios: 1) the status quo, in which no new tax is enacted, and 2) the policy scenario in which the \$2.00 per pack tax increase is enacted and implemented in 2017. Differences in projected long-term (through 2059⁸) health outcomes between the two scenarios were compared to assess the potential impact of the tax. In the policy scenario, the impact of the tax on smoking prevalence and initiation was simulated using prior research on the relationship between tobacco price and consumption, referred to as price elasticity.⁹ Variation in price elasticity by age group was included in the simulation.

8. 2059 is the last year for which detailed demographic projections are available for model simulations.

9. Centers for Disease Control and Prevention. Response to increases in cigarette prices by race/ethnicity, income, and age groups--United States, 1976-1993. MMWR 1998. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/00054047.htm>

Results

Impact on smoking.

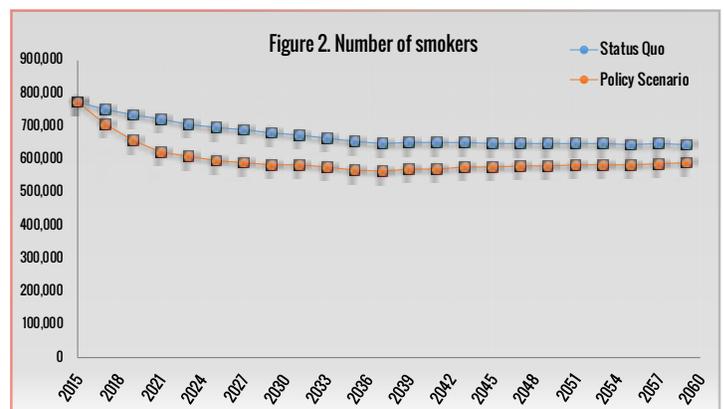
During the period 2017-2059, implementation of the tobacco tax (i.e., the policy scenario) would result in:

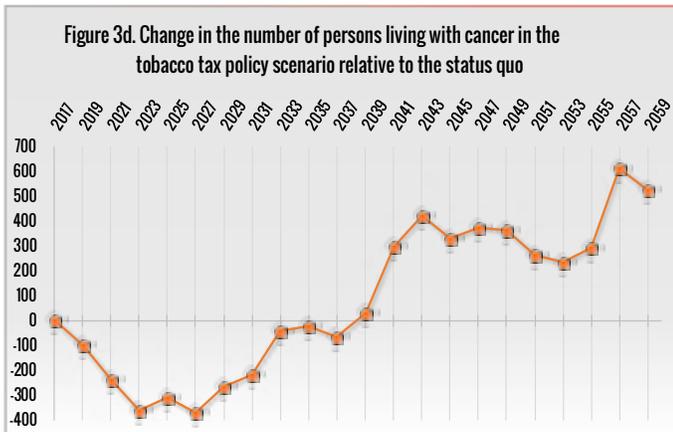
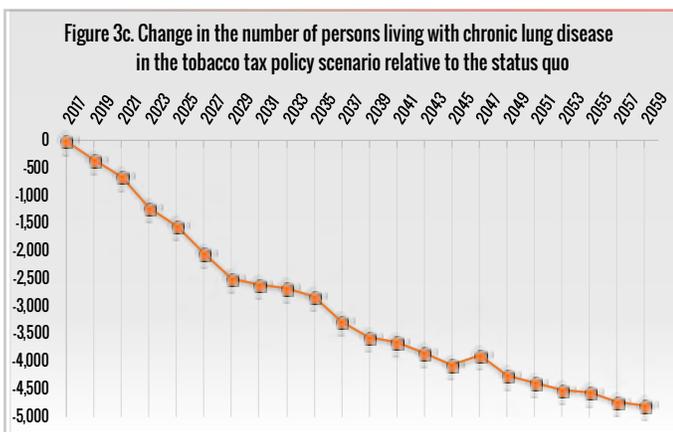
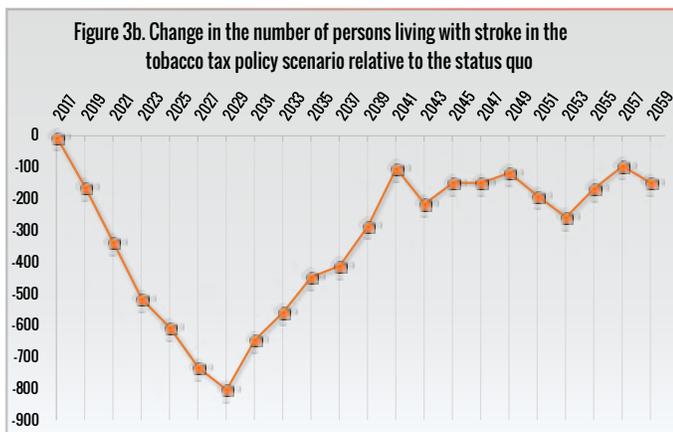
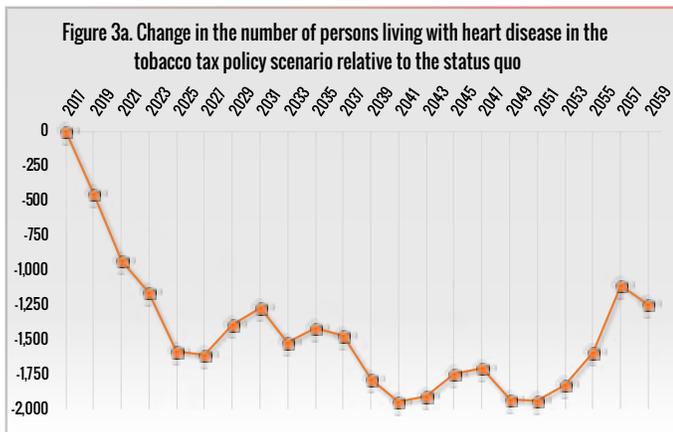
- 83,000 fewer smokers on average each year among adults 25 years and older (Figure 2).
- 50,000 fewer adolescents and young adults (24 years and younger) who initiate smoking.

Impact on health.

- The number of people living with heart disease, stroke, and lung disease (excluding lung cancer) is projected to be lower in the policy scenario as compared to the status quo throughout the entire 2017-2059 time period (Figures 3a-c).

- The number of people living with cancer is projected to be lower in the policy scenario through 2037, but then rises above the projected number in the status quo scenario from 2039 through 2059 (Figure 3d).





During the period 2017-2059, implementation of the tobacco tax (i.e., the policy scenario) would result in:

- 6,500 fewer cases of heart disease, 3,100 fewer cases of stroke, 11,000 fewer cases of lung disease, and 2,000 fewer cases of cancer in the total county adult population 25 years and older.
- 11,000 fewer premature deaths (deaths before age 75).
- a total of 250,000 years of life gained across the county's adult population.

Among adults in their most productive work years (ages 25 to 65 years), implementation of the tobacco tax would result in 7,800 fewer cases of heart disease, 3,800 fewer cases of stroke, 9,700 fewer cases of lung disease, and 2,300 fewer cases of cancer during the period 2017-2059.

Discussion

The findings suggest that the proposed tobacco tax initiative, if passed and implemented, would prevent large numbers of future cases of heart disease, stroke, lung disease, and cancer in the county's adult population. The impact would be particularly significant among adults in their most productive work years, suggesting the potential for positive economic impacts.

The higher number of persons living with cancer in the years after 2039 in the tobacco tax policy scenario reflects the fact that as persons avoid premature death from tobacco-related disease, some will subsequently develop cancer later in life. Likewise, for heart disease and stroke, the results suggest that the tax would result in an initial decrease in prevalence, followed by an increase in later years though the prevalence would remain below the level projected in the status quo (no tax increase) scenario. As with cancer, this trend reflects the fact that as persons are spared an early death from tobacco-related disease, some then develop heart disease and stroke in later life due to other causes.

For chronic lung disease, the projected trend shows a different pattern in which prevalence steadily declines throughout the study period. The lack of a rise in prevalence in later years reflects the fact that tobacco use is the predominant cause of this disease and, consequently, among persons who live longer as result of the tax, relatively few will develop chronic lung disease later in life.

The results are likely conservative estimates as they do not account for the potential health benefits that could accrue from the health-related programs and services that would be funded by the revenue generated from the tax. In addition, the analysis did not include the potential

health benefits associated with reduced consumption of e-cigarettes and other non-cigarette tobacco products that could result from the tax.

The microsimulation approach used in the analysis provides estimates of health impacts of the tobacco tax on the County's adult population at different points in time but does not provide estimates of impact across a given cohort over the course of their lifetimes. However, data from the Centers for Disease Control and Prevention indicate that approximately one in three adolescents and young adults who initiate smoking will eventually die from a smoking-

related disease.¹⁰ This would suggest that of the 50,000 youth who would not initiate smoking as a result of the tax, nearly 17,000 would be spared from a tobacco-related death. Similarly, many adults who quit smoking as a result of the tax would avoid dying of a tobacco-related disease.

In conclusion, the study findings suggest that implementation of the proposed tobacco tax would result in significant health gains in the Los Angeles County adult population over the next four decades.

10. Centers for Disease Control and Prevention. Projected smoking-related deaths among youth—United States, MMWR, 1996. Accessed at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/00044348.htm>.



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