

INTRODUCTION

- While e-cigarette use has increased cigarette smoking has reached historical lows particularly in young adults¹⁻⁶
- Existing simulation models estimate e-cigarette impacts on smoking prevalence and mortality, but don't model transitions between cigarette and e-cigarette use over time^{7,8}

METHODS

Novel Markov population model

- Simulates US cohorts across cigarette/e-cigarette status by age, sex, birth cohort and calendar year
- Uses nationally representative, time-varying parameters
- Simulates tax policy scenarios

Parameters

- US birth counts⁹
- Smoking initiation/cessation and mortality probabilities (NHIS data and Age-Period-Cohort models)¹⁰⁻¹²
- Transitions between cigarette and e-cigarette use (PATH data and Markov multistate transition models)¹³⁻¹⁵
- Modeled tax elasticities after a \$1 tax increase in cigarettes e-cigarettes^{16,17}

Assumptions

- E-cigarette use mortality risk of 15% that of cigarettes⁷
- Price change affects initiation/cessation rates for each product itself (own-price elasticities) and for the other product (cross-price elasticities)¹⁸

Outcomes

- Prevalence and smoking attributable deaths (SVADs)

CONCLUSIONS

- Under current patterns of cigarette and e-cigarette use transitions, prevalence is projected to peak at current levels*
- Overall, smoking will continue to decrease as younger cohorts with lower prevalence reach older ages*
- Policies targeting a single product may lead to unintended increases in the use of other products*
- These results emphasize the need for coordinated regulation of cigarettes and e-cigarettes*

REFERENCES & ACKNOWLEDGEMENTS

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References



RESULTS

Under status quo conditions

- Cigarette smoking prevalence in the US is projected to decline to ~5% by 2050, while overall e-cigarette use is projected to decline to ~2%
- E-cigarette use is projected to reach ~2% for males and females
- Among young adults (ages 18–24), e-cigarette prevalence is projected to remain at current levels at ~10% (~9.7% for females, ~10.5% for males), while cigarette prevalence will decrease and reach ~5% for females and ~7% for males
- Cigarette and e-cigarette use will result in 7.9 million premature deaths from 2025 to 2050 and 20.5 million from 2025 to 2100

Under three tax scenarios implemented in 2026

- Compared to the status quo, a cigarette tax of 1 dollar is projected to avert ~46,000 premature deaths by 2050 and ~109,000 by 2100 among females, and ~60,000 and ~240,000, respectively, among males
- In contrast, an e-cigarette tax of 1 dollar is projected to result in ~400,000 additional premature deaths by 2050 and ~680,000 by 2100
- Simultaneous increases in both cigarette and e-cigarette prices are projected to result in ~200,000 premature additional deaths by 2100

