

The Lifetime Mortality Implications of Vaping and Smoking Initiated During Adolescence

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Background

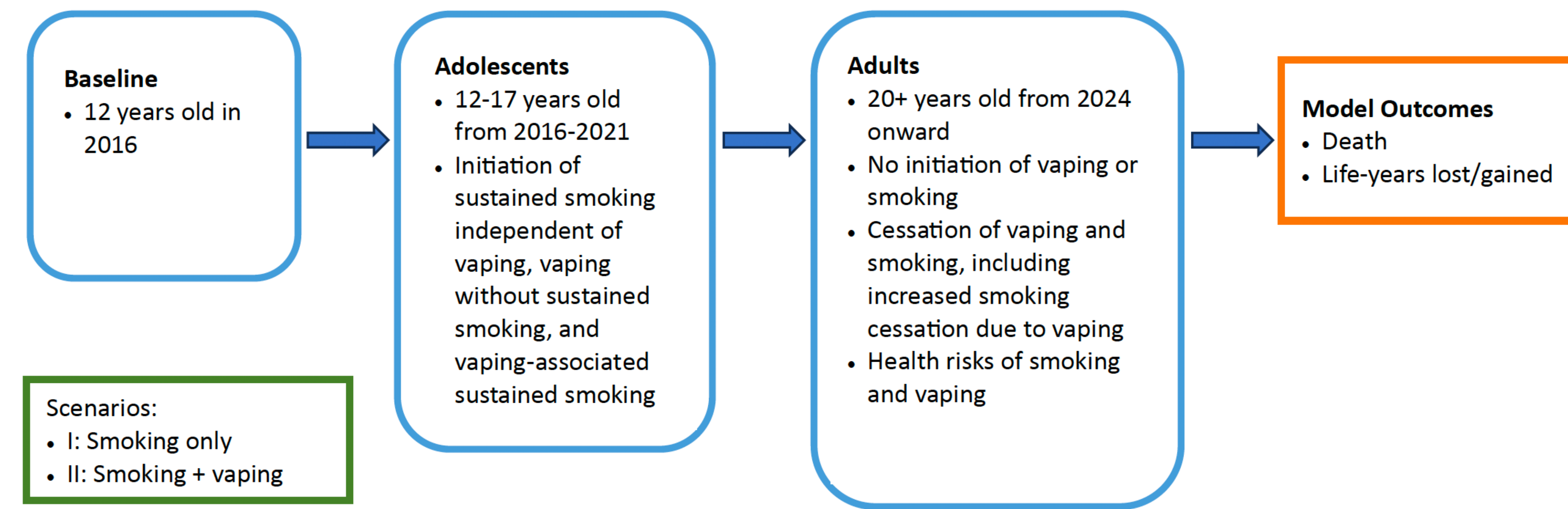
- Some never-smoking adolescents who use e-cigarettes (vape) may become cigarette smokers as a result.
- Some adolescents become smokers independent of vaping.
- As adults, some smokers may eventually quit smoking by switching to e-cigarettes.
- There are elevated lifetime mortality risks associated with smoking and likely with exclusive vaping.

Objectives

To estimate the net lifetime mortality consequences of vaping and smoking initiated during adolescence, considering

- Mortality attributable directly to vaping itself;
- Mortality attributable to vaping-associated smoking;
- Mortality attributable to smoking independent of vaping;
- Reduction in mortality due to smokers switching to vaping as adults.

Model Flowchart



Model Description

Cohort: Lifetime model of 4.1 million 12-year-olds in 2016

Structure: Microsimulation model with annual updates

Data Sources: Population Assessment of Tobacco and Health; National Youth Tobacco Survey; Census population estimates.

Outcomes:

- Probability of premature death due to exclusive vaping, vaping-associated smoking, and vaping-associated smoking cessation
- Life years gained or lost due to exclusive vaping, vaping-associated smoking, and vaping-associated smoking cessation

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- No tobacco interests to declare.

Results

Figure. Change in a cohort member's lifetime probability of premature mortality, comparing Scenario II (with vaping) with Scenario I (no vaping).

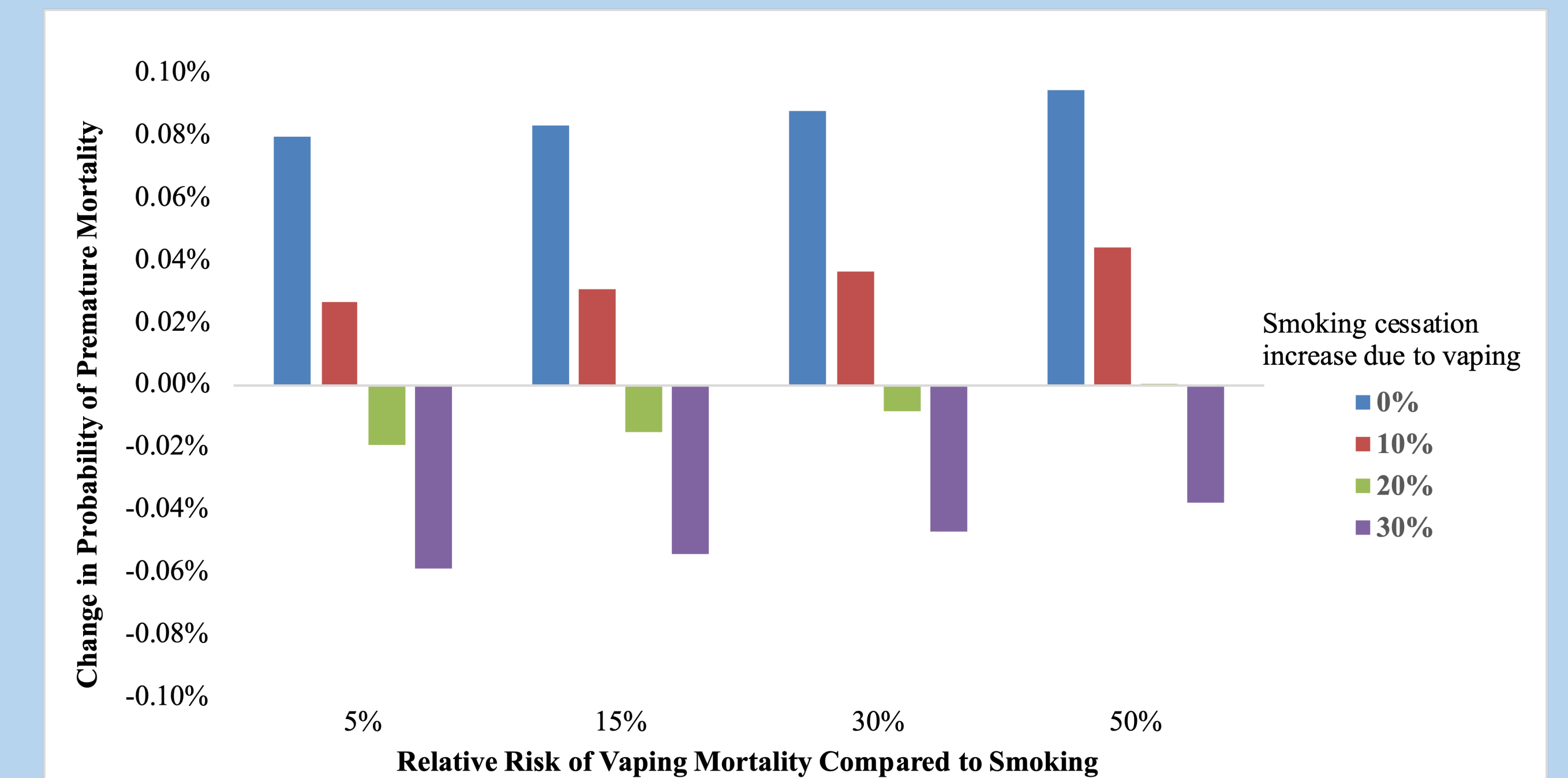


Table. Number of days lost or gained by the average cohort member associated with vaping.

RR*	Smoking cessation increase due to vaping			
	0%	10%	20%	30%
5%	6.1	2.8	-0.2	-2.7
15%	6.6	3.4	0.5	-2.0
30%	7.4	4.2	1.4	-1.1
50%	8.4	5.3	2.6	0.2

Conclusions

- Compared to a world without vaping, the eventual premature deaths associated with vaping initiated during adolescence in our cohort are small, ranging from -3,865 to 3,829. The worst case constitutes less than one-tenth of 1 percent of the cohort.
- Other behaviors initiated during adolescence are far greater causes of avoidable premature mortality, including alcohol abuse, drug overdose, motor vehicle injuries, and firearm deaths.