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The Authors Respond

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To the Editor:

We share the concerns expressed by Soneji et al.¹ about the potential for e-cigarettes to increase smoking initiation. In fact, this study was prompted by the uncertainty surrounding the effects of e-cigarettes on smoking behavior.² We excluded adolescents from the model because relevant studies, including those cited by Soneji et al.^{3–5}, have primarily measured adolescent 'ever use' of e-cigarettes. Data on 'ever use' of e-cigarettes or 'any use in the past 30 days' are not ideal for calibrating computational models of long-term smoking behavior into and throughout adulthood.

Nevertheless, we acknowledge that any effect of e-cigarettes on adolescent smoking initiation will also affect adult smoking prevalence, so we ran additional experiments to account for smoking initiation resulting from e-cigarette use among youth. If we assume that youth e-cigarette use increases the likelihood of smoking initiation before age 18 by 200% (i.e., relative risk of 3.0), compared to never users of e-cigarettes, while having no effect on smoking cessation in the population, our model estimates that adult smoking prevalence would reach 16.6% in 2060. This is a 23.8% increase from the corresponding estimate in our baseline model (13.4%), which assumes no e-cigarette effects on initiation or cessation. Our original adults-only model shows that if e-cigarette use increases the likelihood of smoking initiation by 200% with no impact on cessation, smoking prevalence would reach 14.1% by 2060—a much smaller increase of 4.7% relative to baseline. However, our primary objective was to evaluate population-level outcomes that consider e-cigarette effects on both smoking initiation and cessation. If e-cigarette use increases smoking cessation by 200% among adults, while also increasing smoking initiation by 200% among both adolescents and adults, our model estimates that smoking prevalence would drop to 10.3% by 2060—a 23.1% decrease compared to baseline. Thus, even when the model accounts for large initiation

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effects whereby youth and adult smoking initiation rates escalate due to e-cigarettes, the cessation effects of e-cigarettes on adult smoking offset these undesirable 'gateway' effects. This is the primary conclusion of our study.² We presented a wide range of potential smoking prevalence outcomes when considering both the possible harms and benefits of e-cigarette use on long-term smoking behavior. Our results show smaller relative changes in smoking prevalence generated by e-cigarette effects on smoking initiation in contrast to larger changes generated by e-cigarette effects on smoking cessation.

Adolescent smoking rates continue to decline each year, and recent developments suggest that youth e-cigarette use is unlikely to change that trend going forward; FDA has now imposed restrictions on youth access to e-cigarettes, and adolescent e-cigarette 30-day use prevalence remained stagnant from 2014–2015.⁶ Our model simulates a range of smoking prevalence outcomes associated with e-cigarettes amidst a heated tobacco control debate. Robust longitudinal data on e-cigarette use patterns are needed to draw better conclusions about their true impact on smoking. Until then, simulation models such as ours can help decision-makers determine the best public policies that tip the balance towards desirable public health outcomes.

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