

# An Estimation of the Harm of Menthol Cigarettes in the United States from 1980-2018

**Thuy Le and David Mendez**

Department of Health Management and Policy,  
University of Michigan School of Public Health

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University of  
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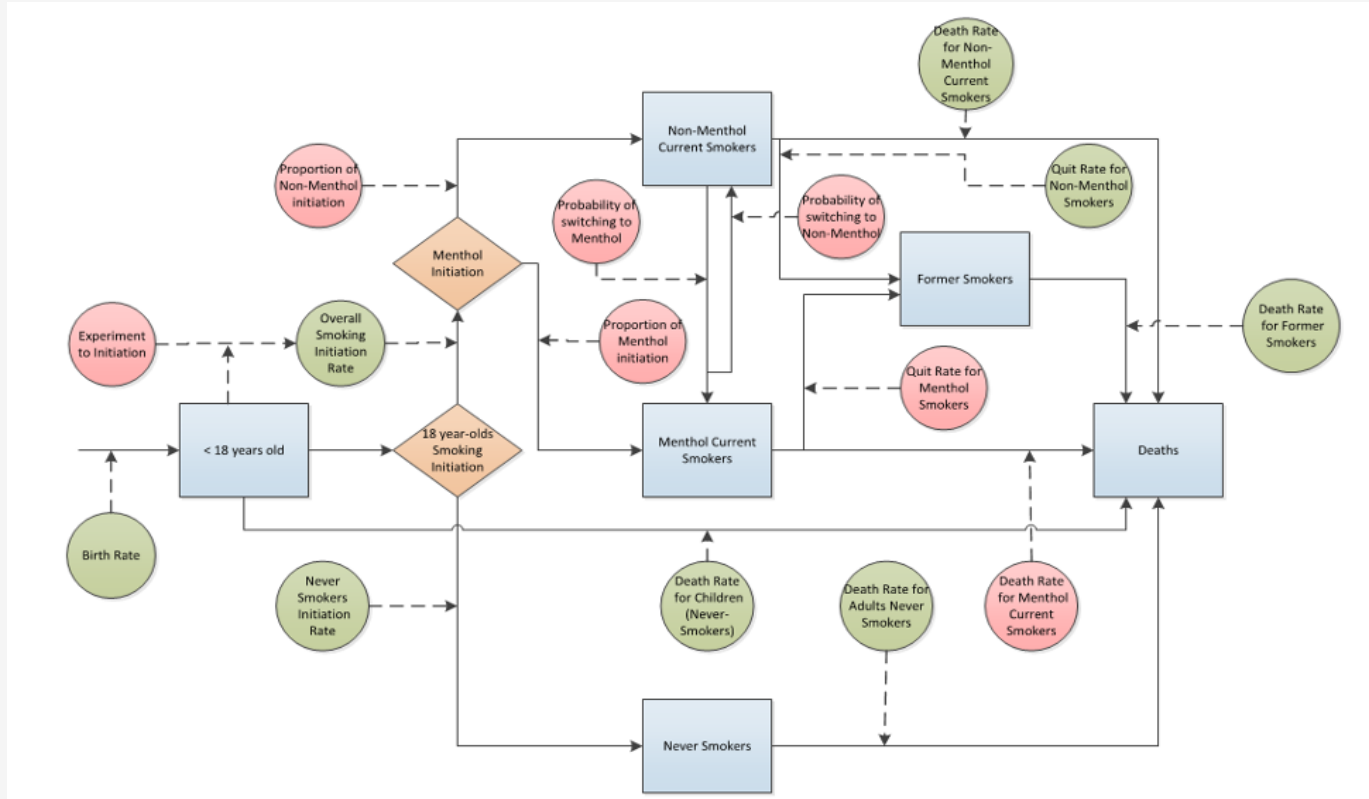
# Disclosures

- No conflict of interest
- Support is provided by grant U54CA229974 from the National Institutes of Health, National Cancer Institute and Food and Drug Administration (FDA)
- The content presented is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the FDA

# Objective

- To quantify the harm caused by menthol cigarettes, we estimate the excess smoking prevalence, smoking initiation, and mortality in the US, from **1980 through 2018**, that can be attributed to menthol cigarettes.

# Methods



**Figure 1.** The dynamics of the menthol cigarettes model (see the TPSAC menthol report).

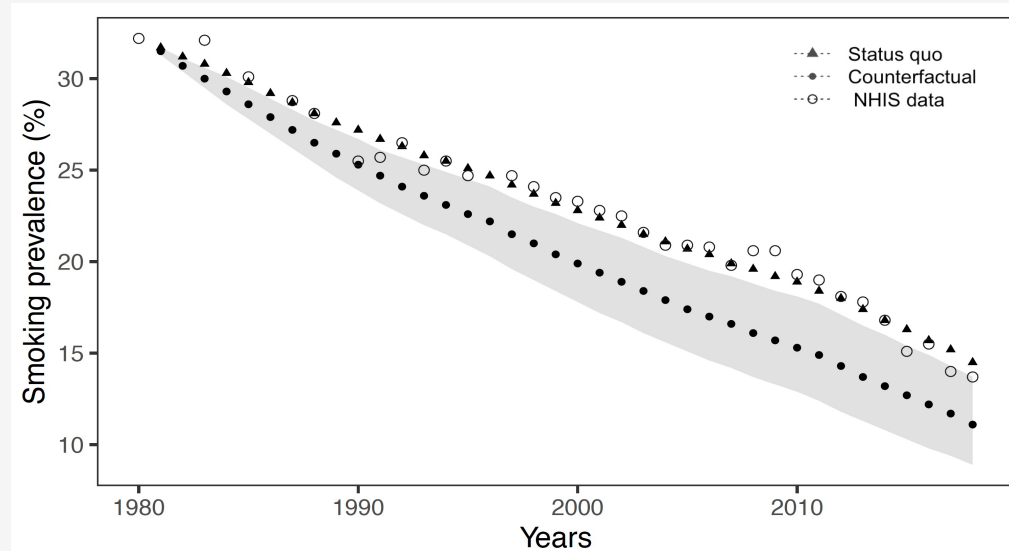
# Methods

- Used data from various published sources, for example menthol and non-menthol smoking prevalence data from the 1980-2018 National Health Interview Surveys (NHIS)
- Developed a simulation scenario using retrospective NHIS data to reproduce the US smoking trends from 1980 through 2018 (the **status quo ante** scenario)
- Constructed an alternative (**counterfactual**) scenario over the same period in which menthol cigarettes were assumed nonexistent over 1980-2018

# Methods

- Compared both scenarios to quantify the public health harm attributable to menthol over the 1980–2018 period
  - Smoking-related premature deaths
  - Life years lost
  - Excess new smokers
  
- Examined the individual contributions of changes in initiation and cessation due to menthol to the excess smoking-related deaths and life years lost

# Results



**Figure 2:** Simulated smoking prevalence under status quo ante and counterfactual scenarios. The shaded region shows the 95% confidence band of the estimated prevalence in the counterfactual scenario.

- The estimated smoking prevalence in the status quo ante scenario aligns very closely with the observed NHIS data (**pseudo- $R^2 = 0.98$** ).

# Results

From 1980 through 2018,

- menthol cigarettes were responsible for slowing down the decline in smoking prevalence by **2.6** percentage points (13.7% vs. 11.1% in 2018).
- about **10.1 million** extra smokers (approximately 266,000 additional smokers every year), **3 million** life-years lost, and **378,000** premature deaths (i.e., about 9,900 premature deaths per year) were caused by menthol cigarettes.



# Results

From 1980 through 2018,

- Smoking-related deaths due to menthol explained by
  - **decreases in smoking cessation: 56%**
  - **increases in smoking initiation: 44%**
- Cumulative life-years lost due to menthol explained by
  - **decreases in smoking cessation: 65%**
  - **increases in smoking initiation: 36%**

# Discussion

- From 1980 to 2018, menthol cigarettes were responsible for millions of excess smoking initiators and hundreds of thousands of smoking-related deaths.
- Menthol cigarette harm stems from the changes in smoking initiation and cessation. This is a population rather than an individual health effect.
- Menthol flavoring in other nicotine delivery products could exert the same effects as in cigarettes, stimulating the use of those products.

# Limitations

- The results rely on some key parameters taken from the literature. Therefore, the uncertainty of our results is associated with that of those parameters.
- The simulation model assumes population characteristics that may not be an appropriate representation for all situations (e.g., homogeneity of compartments, proportionality of effects, among others).

# Implications

- Over the last decade, the FDA has sought public comments, research results and other information on the impact of menthol cigarettes on smoking initiation, prevalence and other factors to inform regulatory actions that the FDA might take on mentholated cigarettes.
- In April 2021, the FDA announced plans to ban menthol cigarettes and flavored cigars.
- Thus, the outcomes of this work provide the FDA with additional evidence on the harmful effect of menthol cigarettes.

# Acknowledgments

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**Thank you!**