

TCORS 2.0 CAsToR 2023 Symposium

Modeling the Impact of Flavored Cigars Ban: Challenges and Perspectives

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University of
Michigan &
Georgetown
University

Center for the
**Assessment of Tobacco
Regulations**
[CAsToR]



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Outline

- Background for the flavored cigars ban
- Examples of simulation models for flavored restrictions
 - Smoking and Vaping model (SAVM) – Levy et al. *Tobacco Control* (2021)
 - Cigar and Cigarette Model (CACM)
 - Two tobacco products & flavors population (TTPFP) model
 - Tobacco Simulation Models for vulnerable populations
- Input data for simulation models
- Discussion

Background

- The U.S. Food and Drug Administration (FDA) has proposed new rules that ban the manufacture and sale of menthol cigarettes and all flavored cigars, according to an April 28, 2022 announcement.
- Final rulings are expected by fall 2023
- These bans aim to prevent Youth initiation of smoking and to reduce tobacco-related disease and death, especially in a population that disproportionately uses flavored tobacco products



Source:
<https://www.newscenter1.tv/news/>

PUBLIC HEALTH IMPACT OF A U.S. BAN ON MENTHOL IN CIGARETTES AND CIGARS: A SIMULATION STUDY

Model simulates potential **impact of banning menthol** in cigarettes and cigars



By 2026:

Smoking

15%

Smoking Deaths

5%

By 2060:



650,000
Lives Saved

11M
Life-Years Gained

Conclusion:

The findings strongly support implementing a ban on menthol in cigarettes and cigars.



tcors.umich.edu

Levy et al, Tobacco Control, Sept. 2, 2021
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Models for cigar and cigarette use

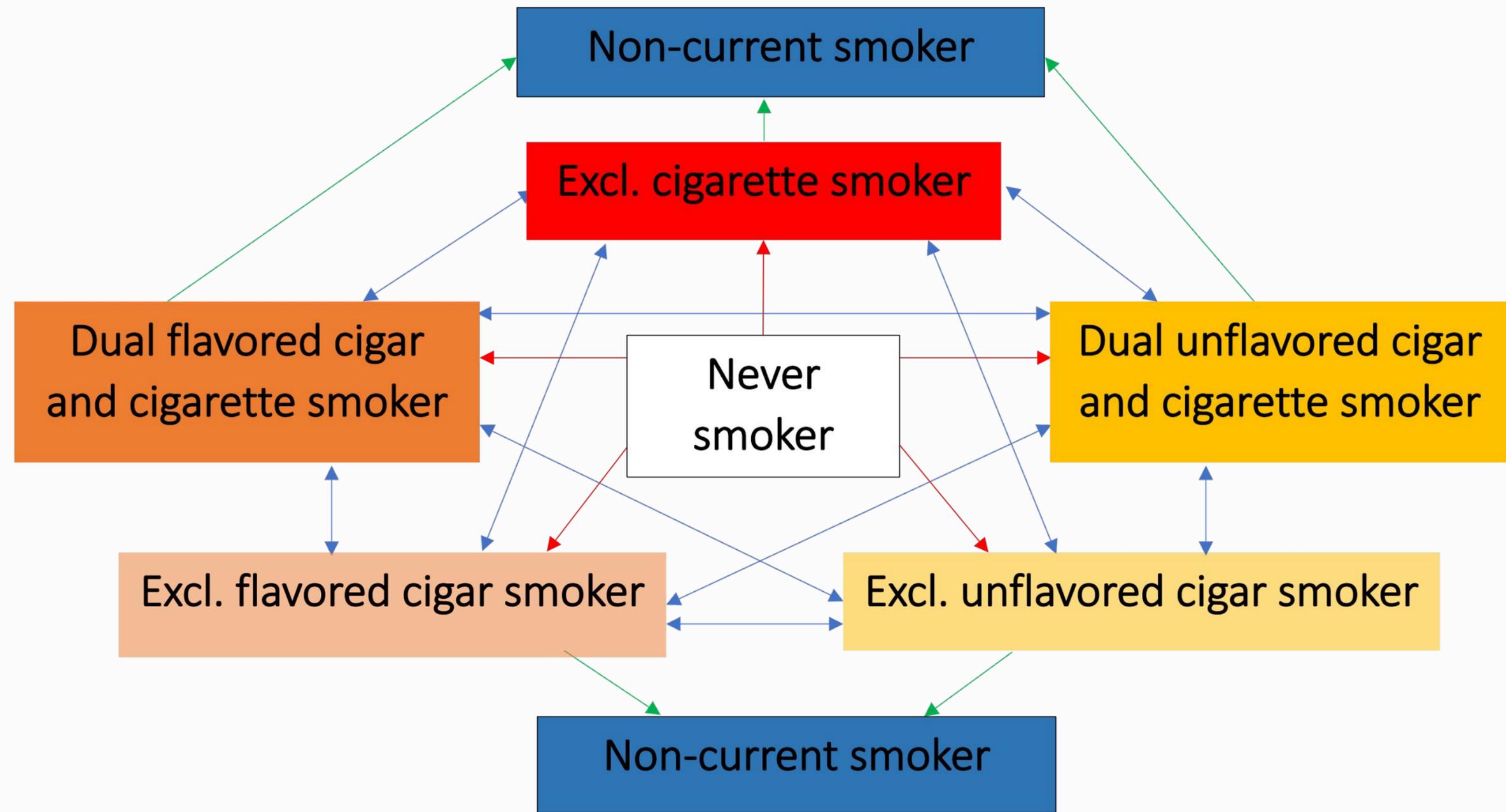
- Evaluate the impact of regulations restricting flavors in cigars
 - Develop simulation models to project the pattern of cigar and cigarette use
 - Transitions within the product through initiation and cessation
 - Transitions between the products through switching
 - Evaluate the impact of a cigar flavor ban
 - Changes in smoking patterns of cigars and cigarettes in future
 - Estimate the public health impact given these changes in tobacco use patterns

Cigar and Cigarette Model (CACM)

- Markov model that projects the annual prevalence of cigar and cigarette smoking, currently under development by the Georgetown team in collaboration with the CAsToR – Project 3 and DAD.
- Simulation modeling under two scenarios
 - Base case scenario without a cigar flavor ban
 - Flavor cigar ban scenario - simulates changes in cigar and cigarette use when the ban is implemented
- Evaluate public health impact by comparing two scenarios
 - Smoking-attributable deaths (SADs)
 - Life-year lost (LYL)



Cigar and Cigarette Model (CACM)



*Excl. = Exclusive

Other CAsToR simulation models

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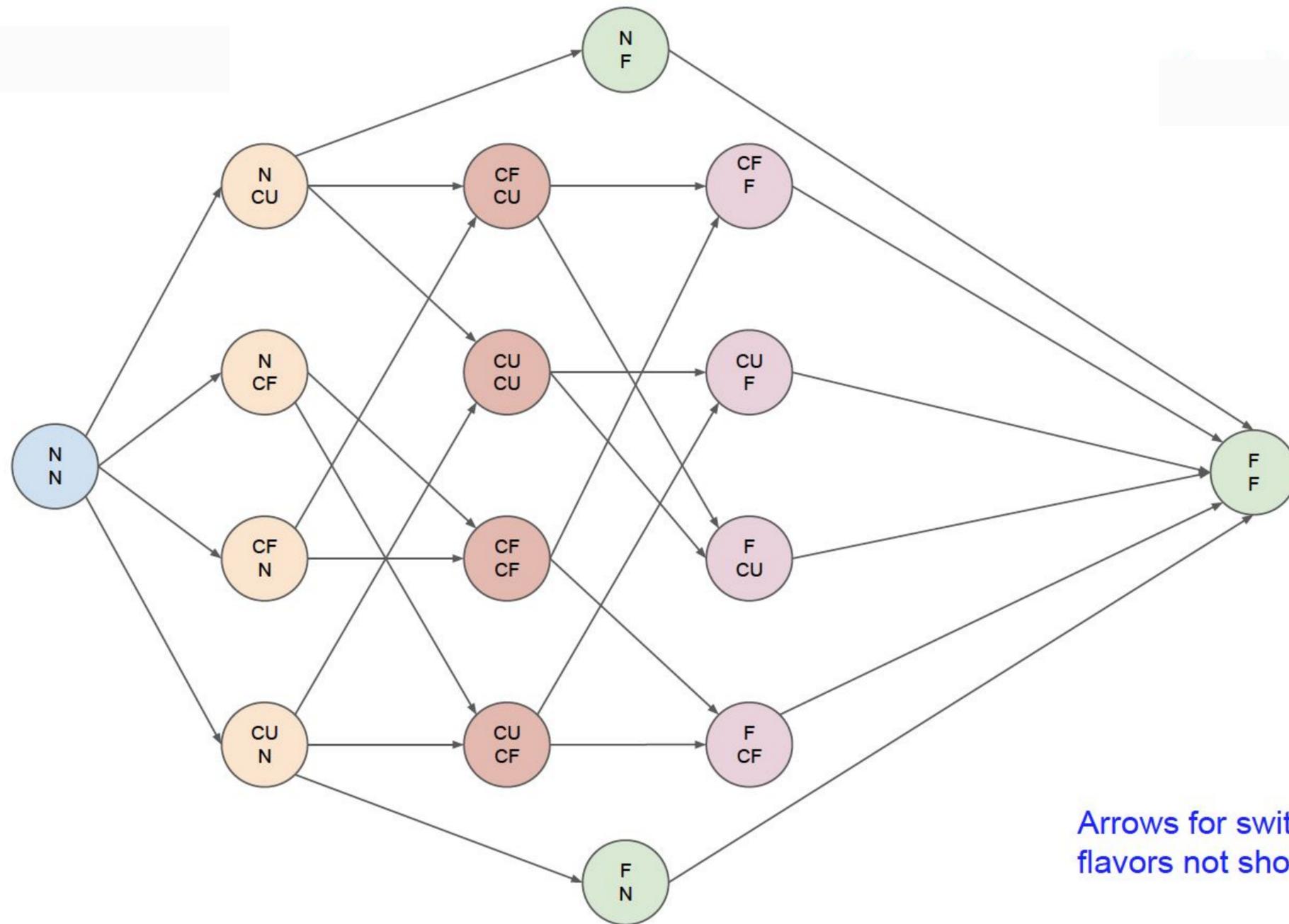


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CAsToR 2.0 Project 1 - Two tobacco products & flavors population (TTPFP) model

- Simulation model for cigarette and cigar use
- Four use categories per product
 - Never use
 - Current flavored product use
 - Current unflavored product use
 - Former use; do not differentiate flavored vs. unflavored
- Evaluate the impact of the cigar flavor ban

CAsToR 2.0 Project 1 - TTPFP Model



First letter = Cigarettes
Second letter = Cigars

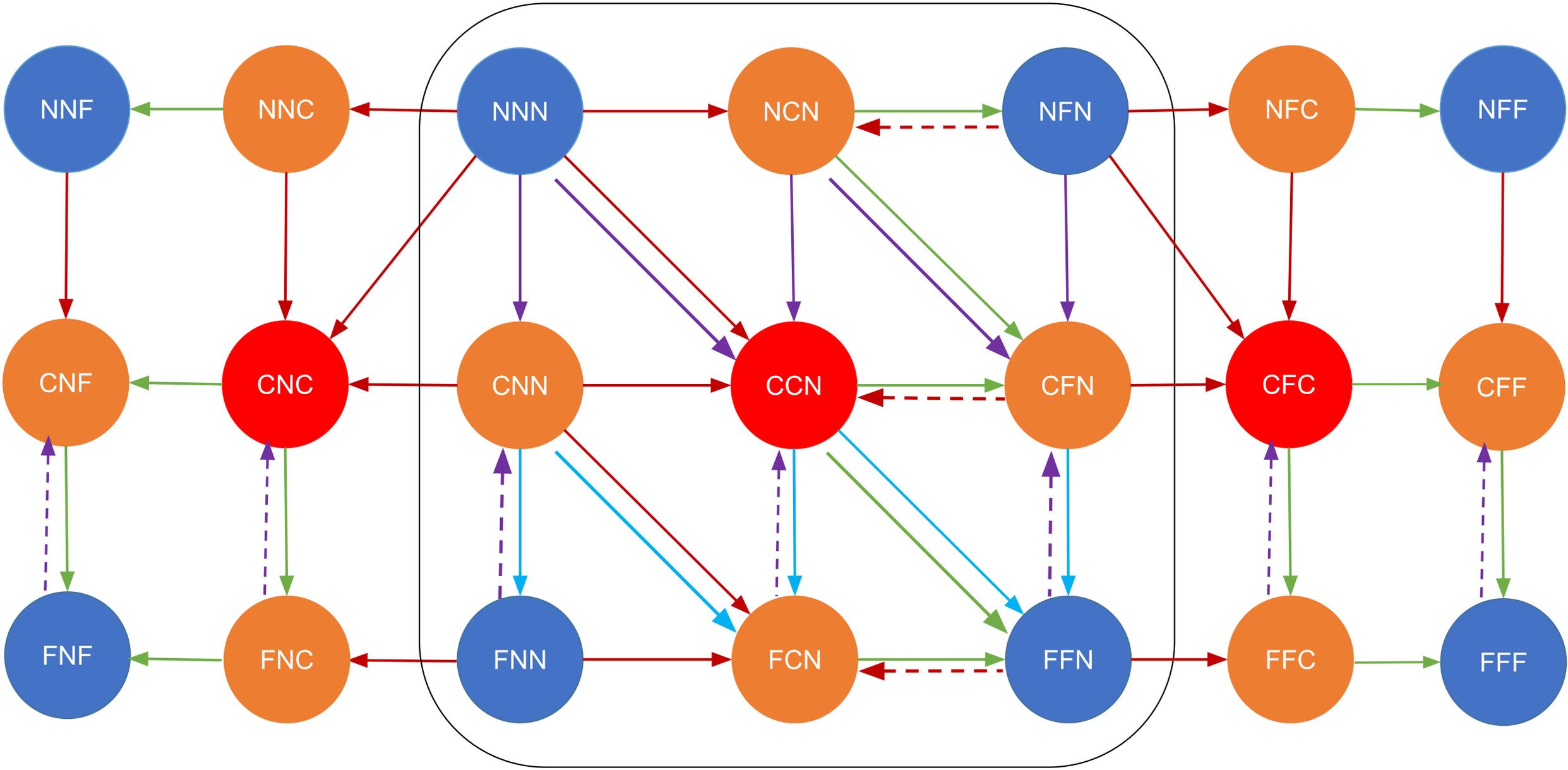
N=never
CF=current flavored
CU=current unflavored
F=former

Arrows for switching between flavors not shown

CAsToR 3.0 Project 4 - Tobacco Simulation Models

- Develop simulation models for vulnerable populations
 - Hispanic and American Indian/Alaskan Native populations
 - Vulnerable subgroups at the intersection of race/ethnicity and socioeconomic status
- Incorporate the use of three tobacco products (cigarettes, ENDS, and cigars) in tobacco simulation models across key vulnerable populations
- Evidence-based, expert-informed estimates of the effects of flavor restriction policies on rates of initiation, cessation, and switching between products across key population subgroups
- Comprehensive estimates of the short-term and potential long-term effects of tobacco regulations under various policy scenarios
 - Tobacco use prevalence
 - Tobacco-attributable deaths
 - Life-year lost

CAsToR 3.0 Project 4 - Cigarette/ENDS/Cigar Model



First letter = Cigarettes
 Second letter = ENDS
 Third letter = Cigars

N=never
 C=current
 F=former

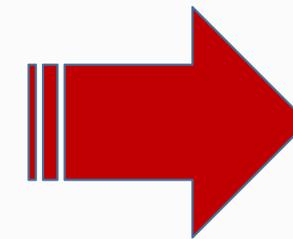
→ cig or cigar init
 → ENDS init
 → cig or cigar cess
 → ENDS cess

● no use
 ● single use
 ● dual

Input data for simulation models

Input parameters for simulation models

- Initiation, cessation, current use rates per product
- Transition rates between products
- Mortality/morbidity rates by product use category
 - Never use
 - Former use
 - Exclusive single-product use
 - Dual or poly use
- Policy/intervention effects on use/transition rates



Input data for the CACM model

- PATH Waves 1-5
 - Current use prevalence
 - Transition rates
- TUS-CPS
 - Current use prevalence
 - Initiation
 - Cessation

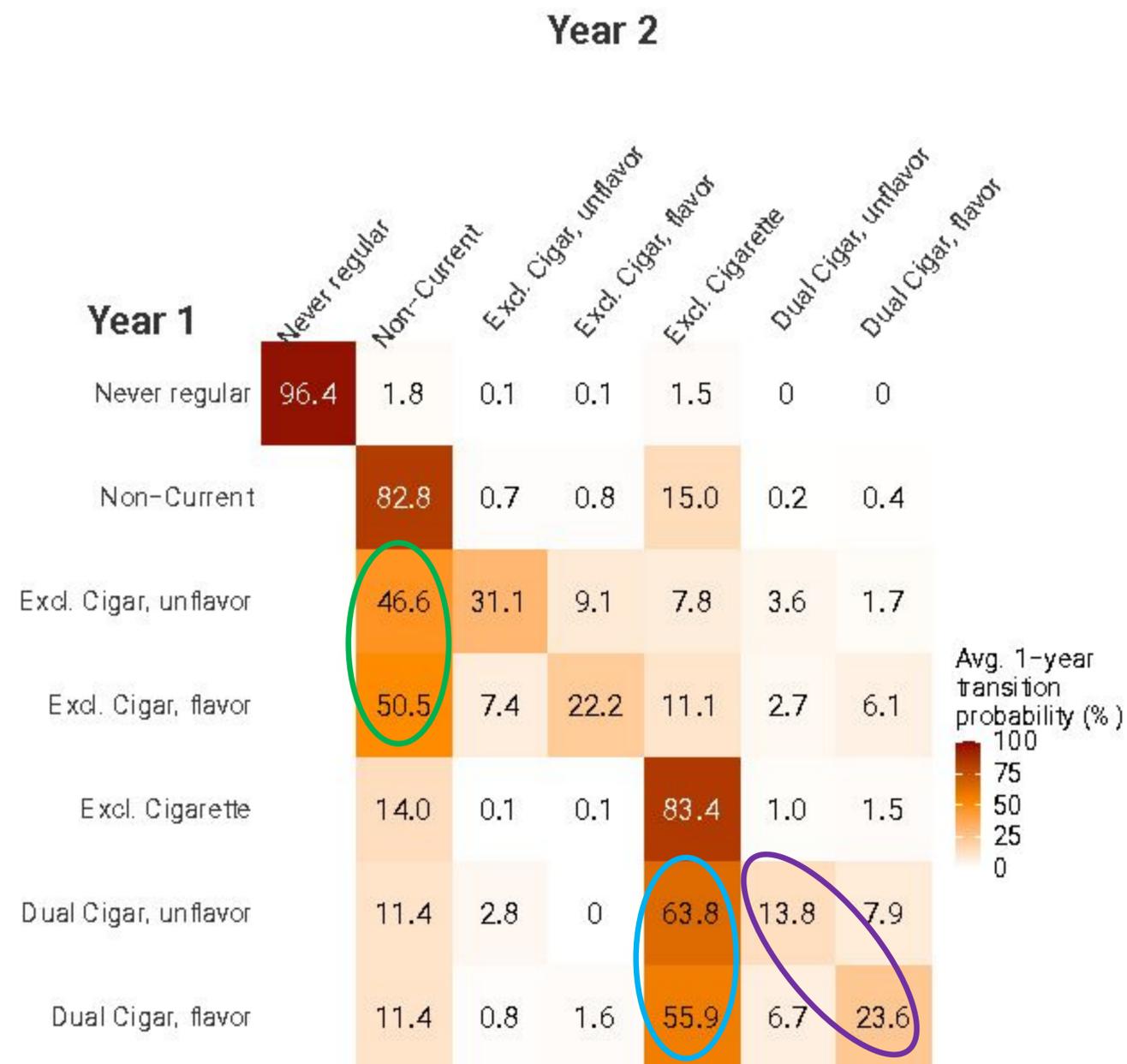
PATH – Cigar and Cigarette use for the CACM model

- Current regular cigar use – Used cigars “fairly regularly” and 5 or more days in the past 30 days on the summed days used over all cigar types in PATH
 - Flavored vs. unflavored
 - Not include exclusive premium cigar use
- Current regular cigarette use – smoked 100+ cigarettes in their lifetime and currently smoke every day or someday use

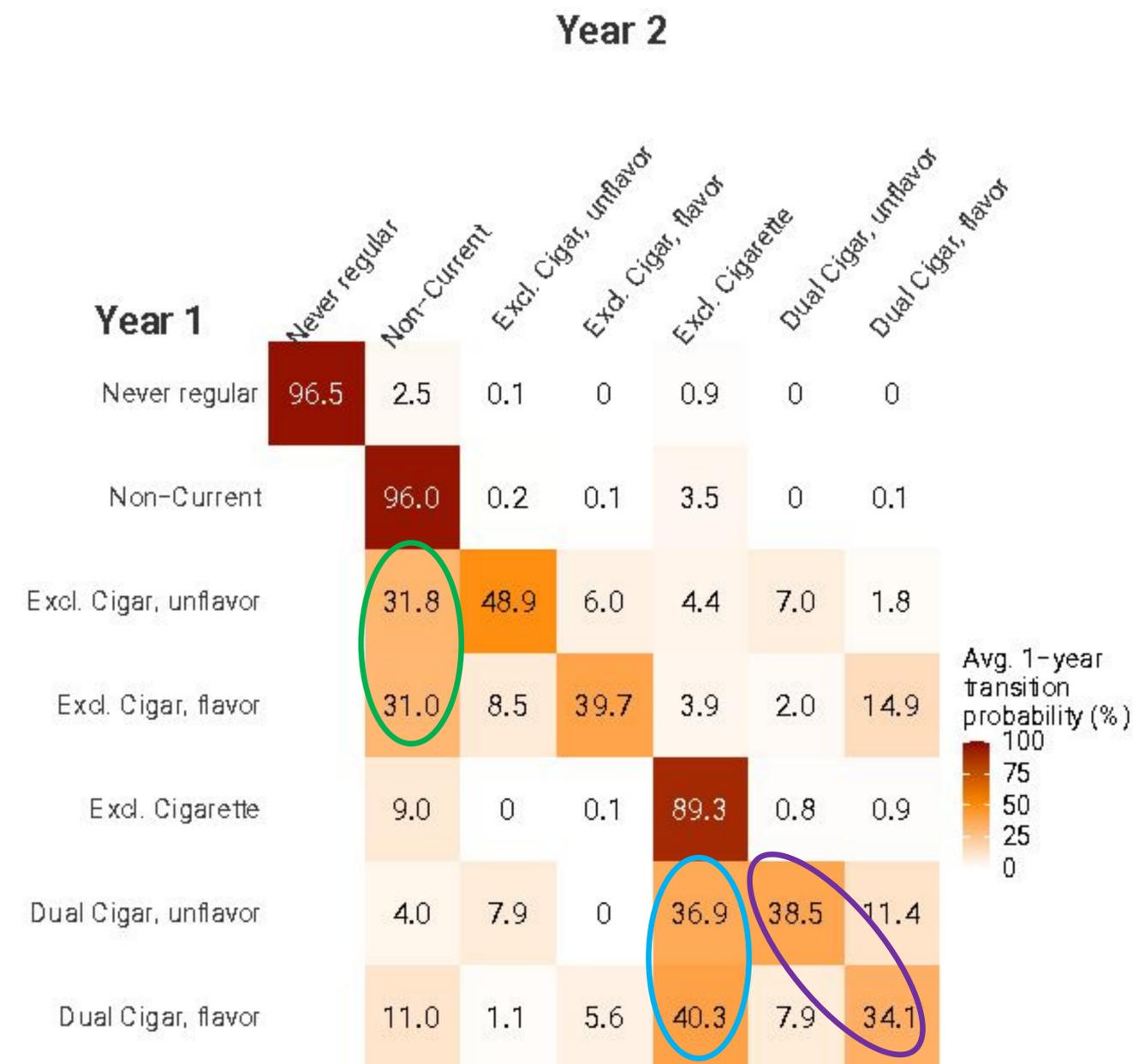
PATH – Cigar and Cigarette use for the CACM model

- Cigar (flavored vs. unflavored) and cigarette use categories
 - Never regular cigar and cigarette use
 - Non-current cigar and cigarette use or exclusive premium cigar use
 - Exclusive unflavored cigar use
 - Exclusive flavored cigar use
 - Exclusive cigarette use
 - Dual use of unflavored cigars and cigarettes
 - Dual use of flavored cigars and cigarettes

(a) 1-year transition probability (PATH: ages 18–34)



(b) 1-year transition probability (PATH: ages 35+)



TUS-CPS Survey data - Cigar use

	1992-1993	1995-1996	1998-1999	2000	2001-2002	2003	2006-2007	2010-2011	2014-2015	2018-2019
Ever use	X	X	X	X	X	X	X	X	X	X
Current use	X	X	X	X	X	X	X	X	X	X
Years since quit								X	X	X
Duration in years								X	X	X
Flavor								X	X	X

- **Ever use:** Have you ever used any of the following EVEN ONE TIME? A regular cigar or cigarillo OR a little filtered cigar?
- **Current use:** Do you NOW smoke regular cigars or cigarillos or little filtered cigars every day, some days or not at all?
- **Years since quit:** About how long has it been since you COMPLETELY quit smoking cigars, cigarillos or little filter cigars?
- **Duration:** In total, how many years (have you smoked/did you smoke) cigars or cigarillos or little filtered cigars?
- **Flavor:**
 - 2010-2011: During the past 30 days, did you usually smoke flavored cigars? By flavored, we mean fruit, candy, alcohol, clove or any other flavorings.
 - 2014-2015 & 2018-2019: Some tobacco products come in flavors such as menthol or mint, clove, spice, fruit, chocolate, alcohol, or other flavors.

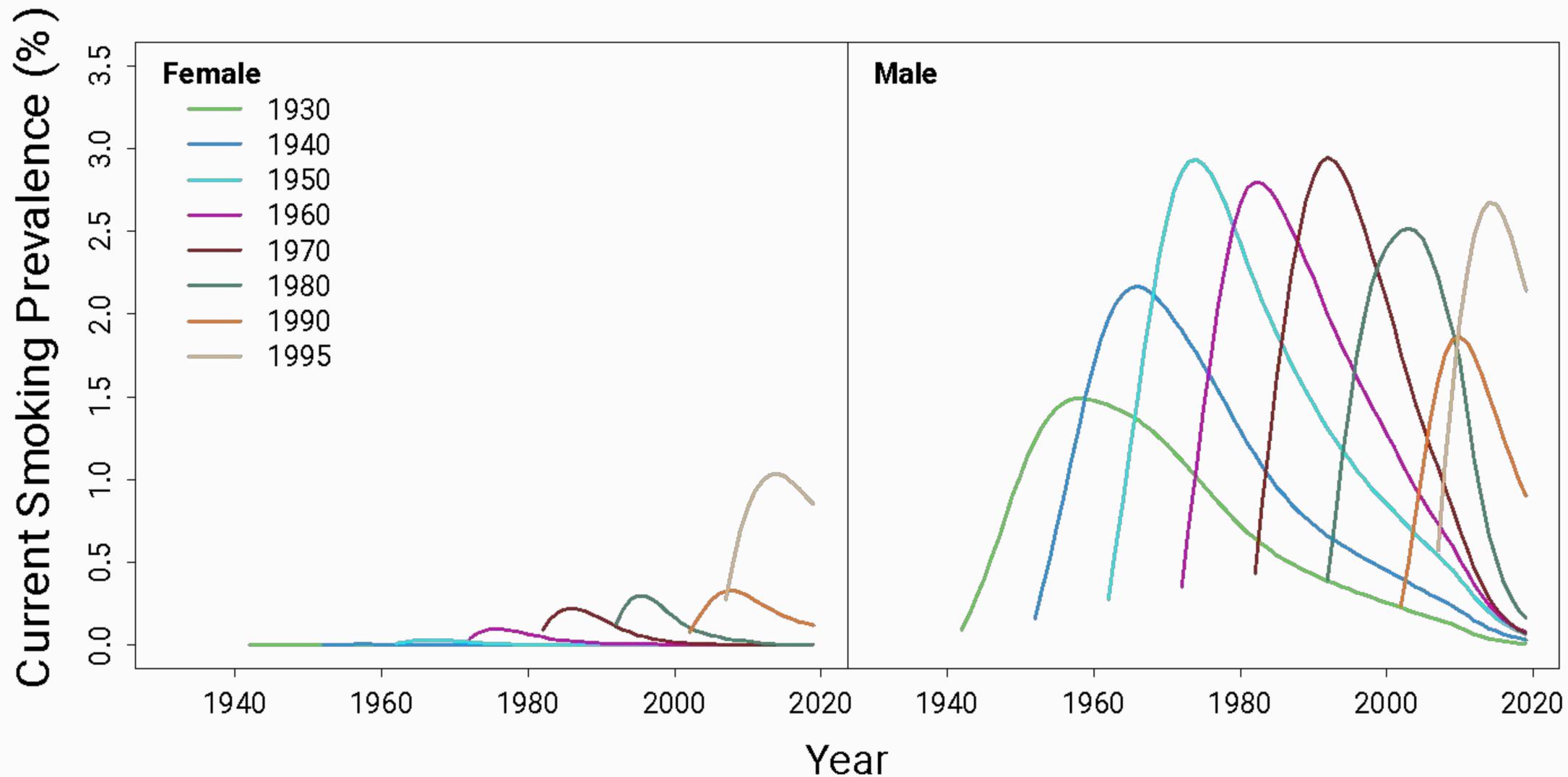
When you smoke a cigar is it usually flavored?

Cigar use: Age-Period-Cohort Analysis

- Logistic regression analysis with constrained natural splines accounting for sample weights
 - Prevalence of ever, current, former, and never cigar use
 - Initiation and Cessation probabilities
 - All these estimates were obtained by age, sex, birth cohort
- Detailed methodology in the **AJPM Special Issue** by the CISNET- Lung Working Group



TUS-CPS: Current cigar use prevalence



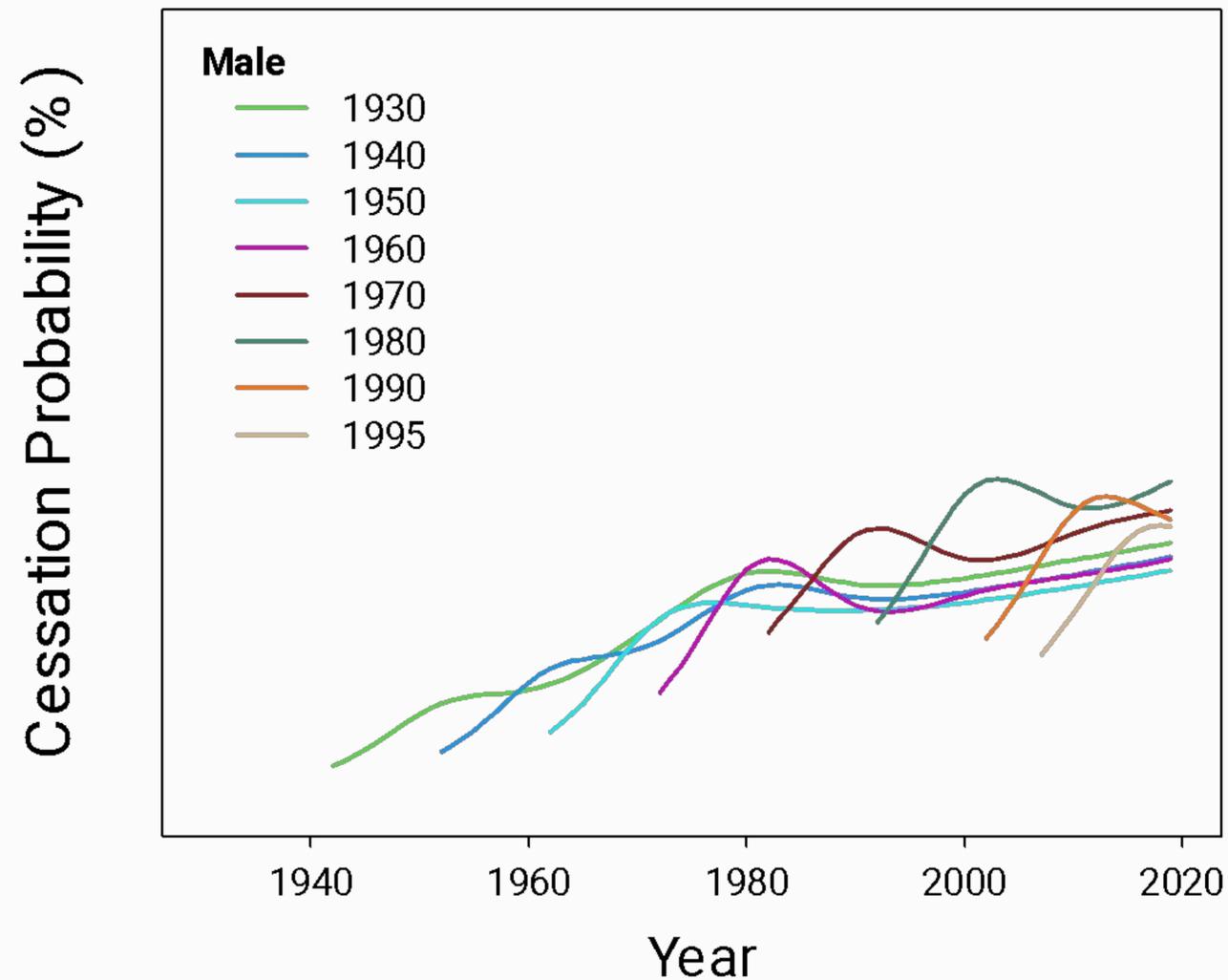
- Cigar use was dominated by males
- Among males,
 - Peaked around age 20 and then declined afterward
 - Increased until the 1970 birth cohort, then decreased
- Increased in the 1995 birth cohort for both males and females

TUS-CPS: Cigar initiation



- Bimodal distribution,
 - First peak around age 20
 - Second peak around the calendar year 2005
- Increased by birth cohort until the 1970 cohort (males) or the 1980 cohort (females), then decreased afterward

TUS-CPS: Cigar cessation



- Increased until the birth cohort 1980, then decreased afterward
- Increased by age in males
- Age pattern is less clear in females due to lack of data

Limitations of PATH and TUS-CPS datasets

- PATH data
 - Definition of current cigar use combining four cigar types
 - Small sample size in some sub-categories
- TUS-CPS data
 - Limited data on flavor vs. unflavored cigar use
 - No information for “regular” cigar use

Discussion

- What is the role of simulation modeling in exploring the impact of tobacco regulations?
 - Assess the potential impact of specific tobacco regulations on the patterns of tobacco product use and related health outcomes
 - Requires careful modeling of past and current patterns of use
 - Integrate multiple data sources into a single analysis framework
 - Identify information gaps, identifying priorities for additional data collection and future research
- Challenges to developing simulation models of cigar use
 - Lack of long-term use data
 - Changes in the cigar product landscape
 - Lack of data on flavors
 - Haphazard patterns of use; use of some cigar types concentrated on specific population groups

Acknowledgments

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