TCORS 2.0
University of Michigan & Georgetown University

Center for the Assessment of Tobacco Regulations [CAsToR]

SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF MICHIGAN

Tobacco Transitions Tool: Development of a Web Aid to Facilitate Exploration of Tobacco Use Patterns and Transitions in PATH

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DISCLOSURES

I have no conflicts of interest to disclose.

The content presented is solely the responsibility of the authors and does not necessarily represent the official views of the NCI or the Food and Drug Administration.

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Objective

- To understand how tobacco use patterns are changing in the US
  - New and emerging tobacco products such as electronic nicotine delivery systems (ENDS)
  - Provide insights into tobacco regulatory research

- To monitor the dynamics of tobacco use and estimate transition rates across product use categories
  - May vary depending on use definitions, type of products, sociodemographic factors
  - Interactive web aid tools to facilitate exploration of tobacco use patterns

- Population Assessment of Tobacco and Health Study (PATH)
  - Nationally representative longitudinal data for US population
  - Detailed information on multiple tobacco products

Motivation - CISNET smoking parameter estimates

NIH NATIONAL CANCER INSTITUTE
Cancer Intervention and Surveillance Modeling Network

CISNET Publication Support and Modeling Resources

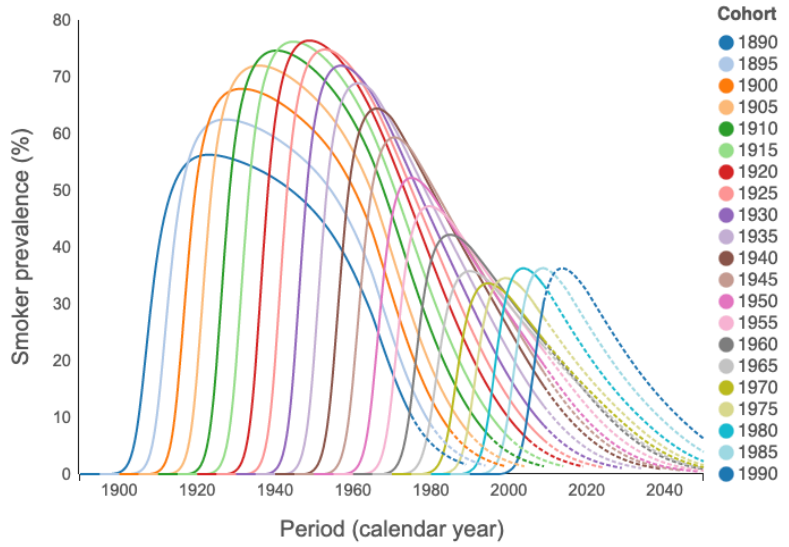
Home | About | Contact | Choose Publication | Model Stress Tests

Patterns of Birth Cohort-Specific Smoking Histories, 1965-2009
Holford TR, Levy DT, McKay LA, et al., Am J Prev Med 2013;46(2).

- Summary
- Fig. 2: Current prevalence

  Current smoker prevalence by gender, calendar year, and birth cohort.

  As published in AJPM 2014, Figure 2, Males | Females
- Fig. 3: Former prevalence
- Fig. 4: Smoking initiation
- Fig. 5: Smoking cessation
- Fig. 6: Mean cigarettes per day
- Fig. 7: Population prevalence comparison



Period/Cohort by cohort: male
All Cohorts from 1890 to 1990 in 5 year intervals
Dashed lines indicate regions of extrapolation

Male | Female | Both | Chart | Table | Show advanced

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https://resources.cisnet.cancer.gov/projects/

Motivation - CISNET smoking parameter estimates

Several researchers and modelers, including some from the FDA, have used these estimates

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL REPORT

Potential Public Health Effects of Reducing Nicotine Levels in Cigarettes in the United States

Benjamin J. Apelberg, Ph.D., M.H.S., Shari P. Feirman, Ph.D., Esther Salazar, Ph.D., Catherine G. Corey, M.S.P.H., Bridget K. Ambrose, Ph.D., M.P.H., Antonio Paredes, M.S., Elise Richman, M.P.H., Stephen J. Verzi, Ph.D., Eric D. Vugrin, Ph.D., Nancy S. Brodsky, Ph.D., and Brian L. Rostron, Ph.D., M.P.H.

Methods

Tobacco Transitions Tool (TTT)

- A web aid tool to facilitate the exploration of tobacco use and transition patterns

- Weighted prevalence and transition rates between Waves 1-5 in PATH study (2013-2019)
  - Various tobacco use definition based on use frequency in the past 30 days & regular use criteria
  - **Single** tobacco use: **Cigarette (menthol/non-menthol) and ENDS**
  - **Dual** tobacco use of cigarette and ENDS
  - Stratified by sex, age, race/ethnicity

- Developed using R-Markdown
  - Facilitate presentation of multiple interactive tables and figures
  - Facilitate interactive exploration of estimates
  - Facilitate update as new data becomes available

Results

ENDS and Cigarette Prevalence and Transition rates in PATH Waves 1-5

- Current Use definition
  - Youth: Use definition by frequency (1+, 5+, 10+, 20+, 30 days use in the past 30 day)
  - Adults: Use definition by someday/everyday use or frequency (1+, 5+, 10+, 20+,30 days use in the past 30 day)

- Established/regular use condition
  - Have smoked 100+ cigarettes in their lifetime
  - Have used ENDS fairly regularly

- Stratified by Race/Ethnicity
  - All races combined, Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Other, Hispanic

- Stratified by age group
  - Youth (ages 12-17), Adults (ages 18+)
  - Ages 12-14, 15-17, 18-24, 25-44, 45-64, 65+

Prevalence and Transition rates in PATH Waves 1-5

- Cross-section prevalence of single product use (Cigarettes and ENDS)
- Cross-section prevalence of cigarette use (menthol vs. non-menthol)
- Cross-section prevalence of dual product use (Cigarettes and ENDS)
- Transition rates of dual product use between Waves in all combinations
- Longitudinal trajectories across Waves 1-5

TTT tool

Cross-sectional prevalence of single product use

Adults (ages 18+) | Adults-Males | Adults-Females

Everyday/Someday | 1+ days | 5+ days | 10+ days | 20+ days | 30 days

All races | Non-Hispanic White | Non-Hispanic Black | Non-Hispanic Other | Hispanic

	Never regular		Non-Current		Current someday use		Current everyday use	
	Population	Prevalence	Population	Prevalence	Population	Prevalence	Population	Prevalence
Cigarette Use								
Wave 1 (N=32173)	15853	61.7%	4918	20.1%	2381	3.7%	9021	14.5%
Wave 2 (N=28288)	13442	58.7%	5152	22.6%	2235	4.5%	7459	14.2%
Wave 3 (N=28080)	13732	57.9%	5335	23.7%	1999	4.2%	7014	14.1%
Wave 4 (N=33574)	17606	59%	6103	23.3%	2323	4.2%	7542	13.6%
Wave 5 (N=32672)	18412	59.3%	6188	24.2%	2011	4%	6061	12.4%
ENDS Use								
Wave 1 (N=32246)	29984	96.6%	687	1%	942	1.4%	633	1%
Wave 2 (N=28252)	25068	94.2%	1435	2.5%	1016	1.8%	733	1.4%
Wave 3 (N=27940)	23948	92.5%	2255	4.1%	948	1.8%	789	1.6%
Wave 4 (N=33537)	28214	91.6%	3341	5.2%	1048	1.6%	934	1.7%
Wave 5 (N=32672)	26567	89.6%	3148	5.7%	1454	2.2%	95% CI: 2.3% - 2.8%	2.5%

Transition rates: ENDS/Cigarette use

Adults (ages 18+) | Adults-Males | Adults-Females

Everyday/Someday | **1+ days** | 5+ days | 10+ days | 20+ days | 30 days

All races | Non-Hispanic White | Non-Hispanic Black | Non-Hispanic Other | Hispanic

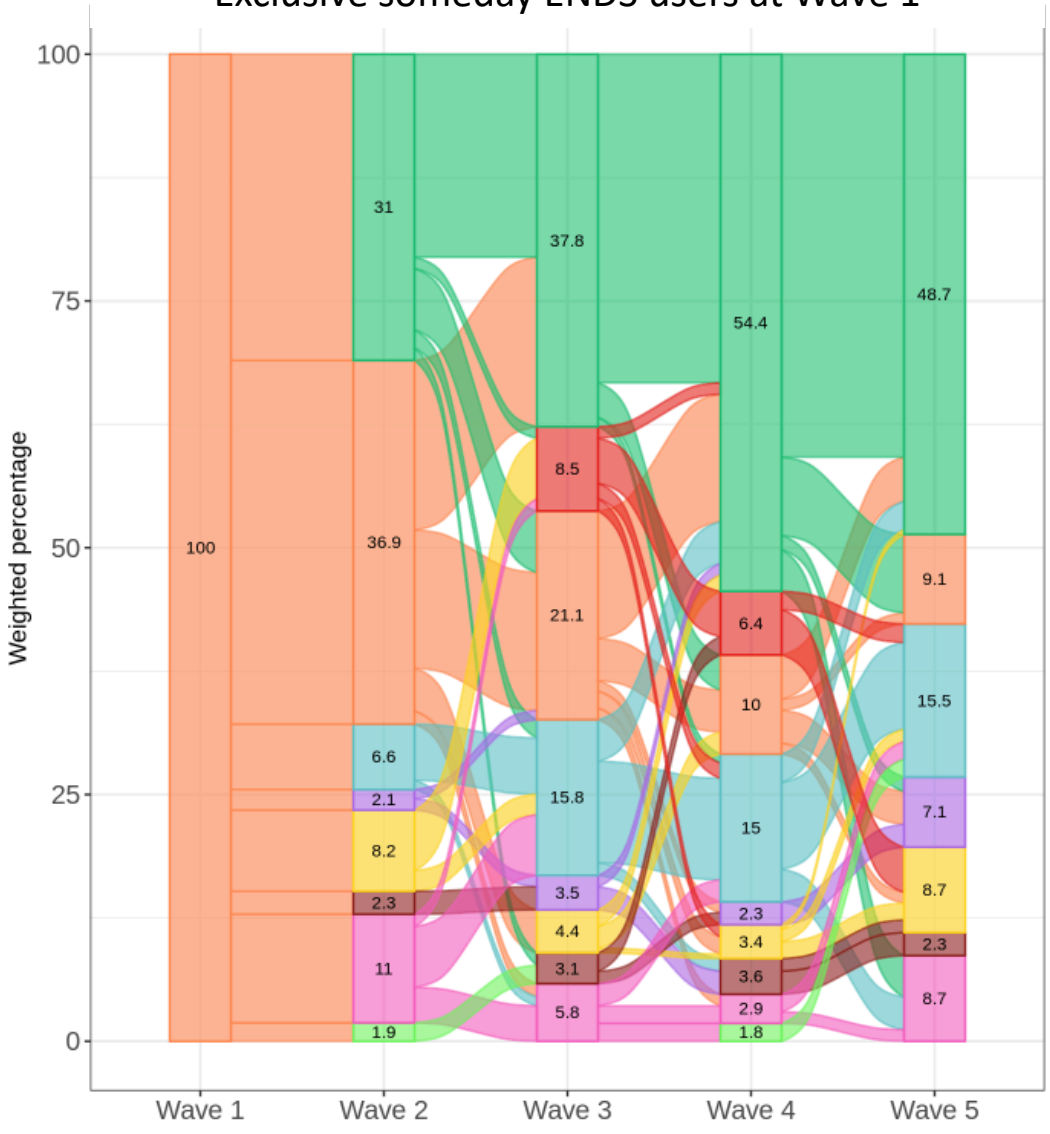
Wave1 & Wave2 | Wave2 & Wave3 | Wave3 & Wave4 | Wave1 & Wave3 | Wave2 & Wave4 | Wave4 & Wave5 | Wave1 & Wave4 | Wave3 & Wave5 | Wave2 & Wave5

Wave1 & Wave5 | Avg.1-year (Wave1-Wave4)

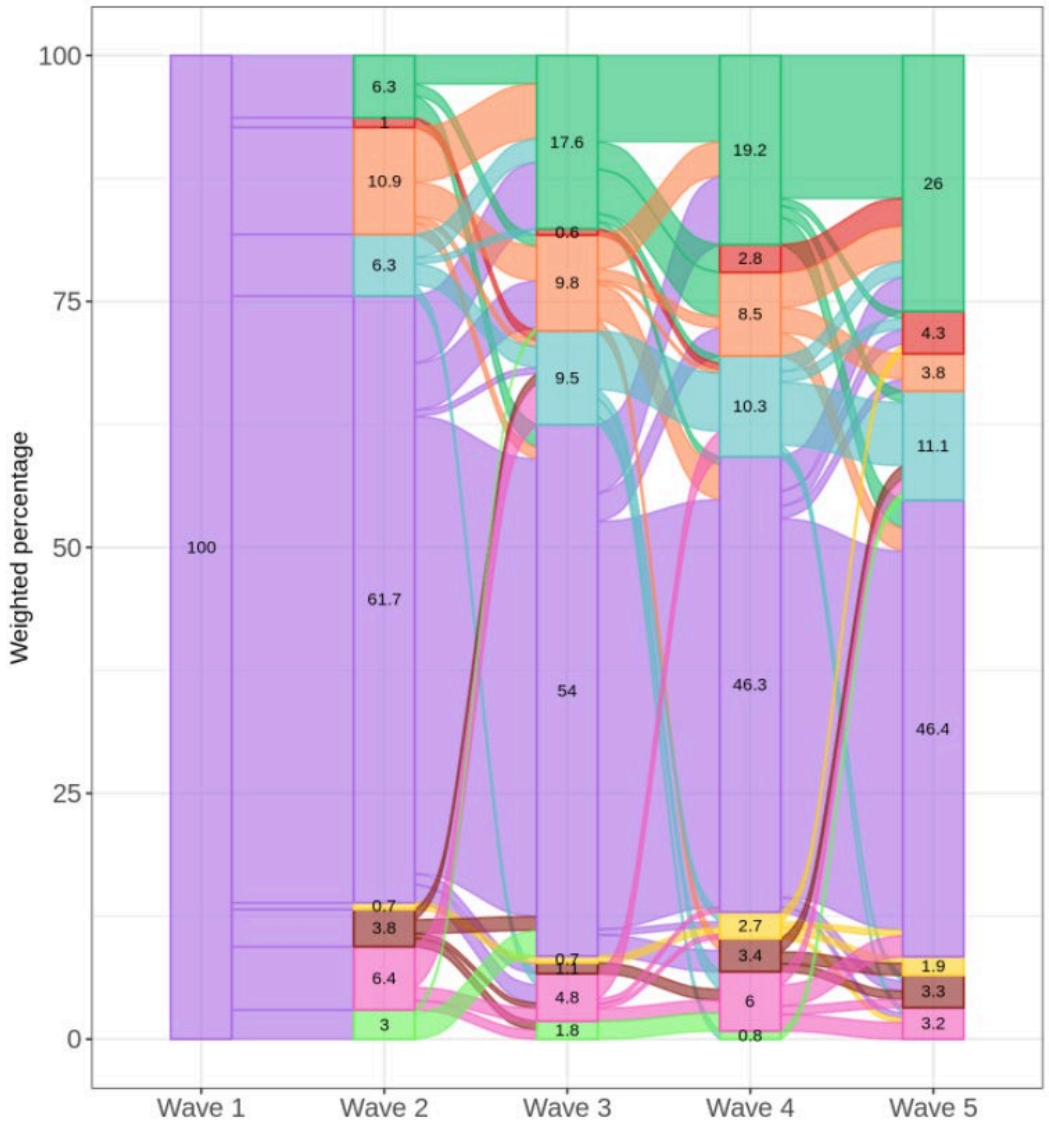
	Y2-Never regular (N=33490; 56.8%)	Y2-Non-Current (N=14924; 23.6%)	Y2-Exclusive Cigarette 1+ days (N=22816; 16.6%)	Y2-Exclusive ENDS 1+ days (N=1799; 1.3%)	Y2-Cigarette 1+ days & ENDS 1+ days (N=2326; 1.6%)
Y1-Never regular (N=35692; 58.9%)	33490 (96.5%)	901 (2%)	993 (1.2%)	258 (0.3%)	50 (0%)
Y1-Non-Current (N=13040; 21.9%)	0 (0%)	11423 (93.9%)	1308 (5.1%)	216 (0.8%)	93 (0.3%)
Y1-Exclusive Cigarette 1+ days (N=22808; 16.5%)	0 (0%)	2071 (9.5%)	19425 (85.1%)	244 (1.1%)	1068 (4.3%)
Y1-Exclusive ENDS 1+ days (N=1633; 1.2%)	0 (0%)	401 (21.5%)	142 (8.8%) **95% CI: 52.5% - 61.4%**	877 (57%)	213 (12.7%)
Y1-Cigarette 1+ days & ENDS 1+ days (N=2182; 1.5%)	0 (0%)	128 (5.5%)	948 (42.9%)	204 (9.5%)	902 (42%)

PATH - Adult Females (ages 18+)

Exclusive someday ENDS users at Wave 1



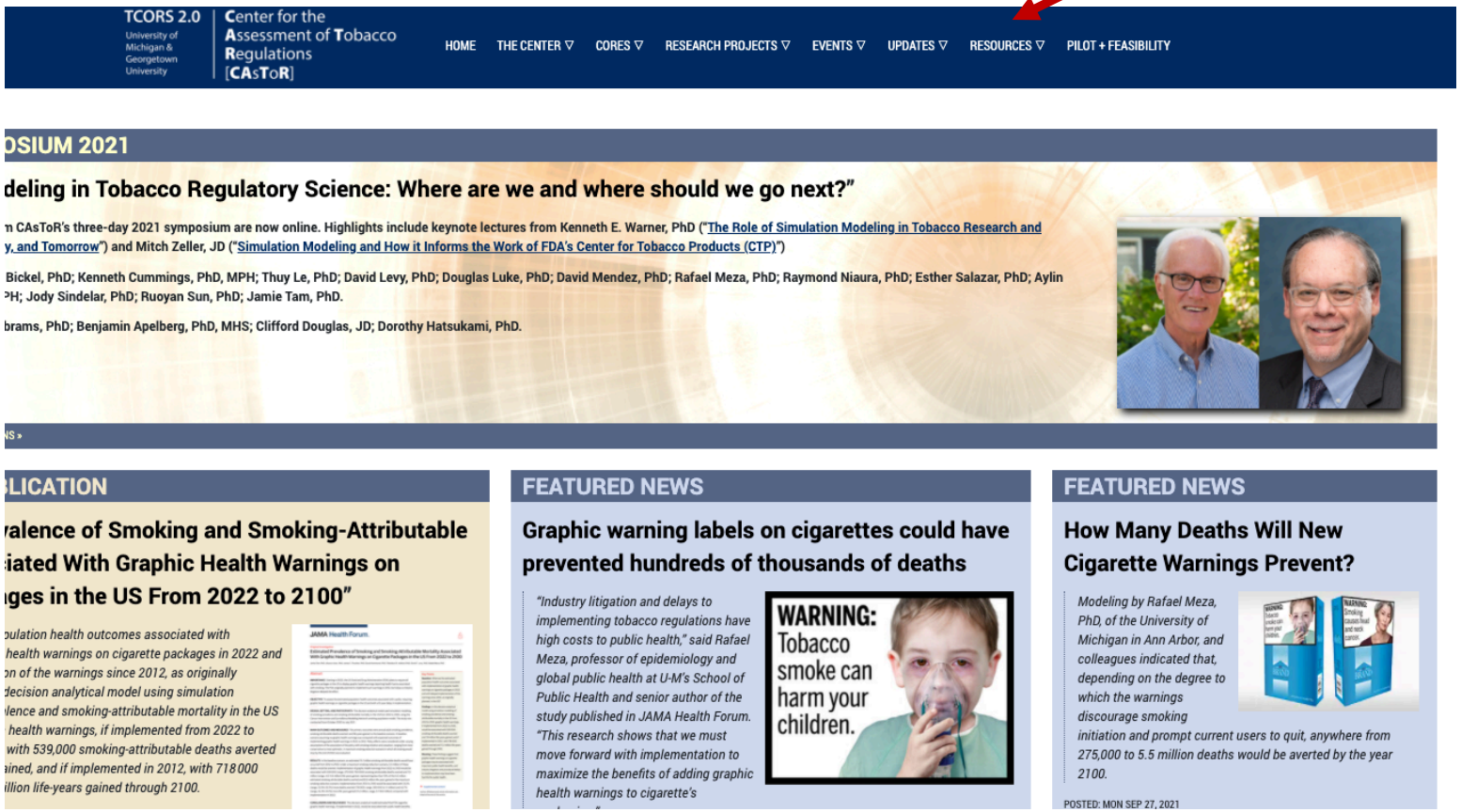
Exclusive daily ENDS users at Wave 1



How to share the TTT tool?

TCORS-CAsToR resource webpage

https://tcors.umich.edu/Resources_Research.php



Currently under development!!

Summary

- The TTT will facilitate rapid dissemination of tobacco transition estimates and analyses of patterns of tobacco product use
- The tool will be updated as new PATH data are released and more tobacco products are included
- The tool will be publicly available at https://tcors.umich.edu/
- Include other tobacco products, e.g., cigars
- Usability testing and stakeholder feedback pending

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  - **Andrew Brouwer, University of Michigan**
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  - **Ritesh Mistry, University of Michigan**
  - **Rafael Meza, University of Michigan**
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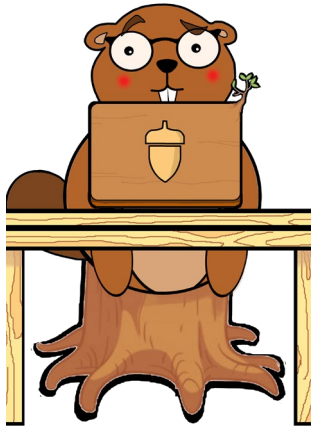
  - **NCI/FDA grant U54CA229974 (TCORS-CAsToR)**



Thank you !!

Any Questions?

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