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Advancing Science & Practice in the Retail Environment

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Assessing the relationships between tobacco retailer density and tobacco use and tobacco-related health outcomes

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STANFORD PREVENTION RESEARCH CENTER
the science of healthy living

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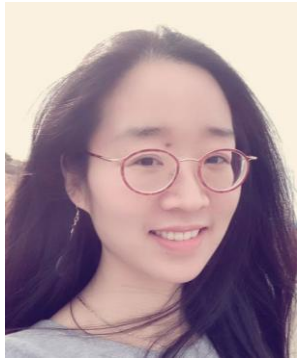

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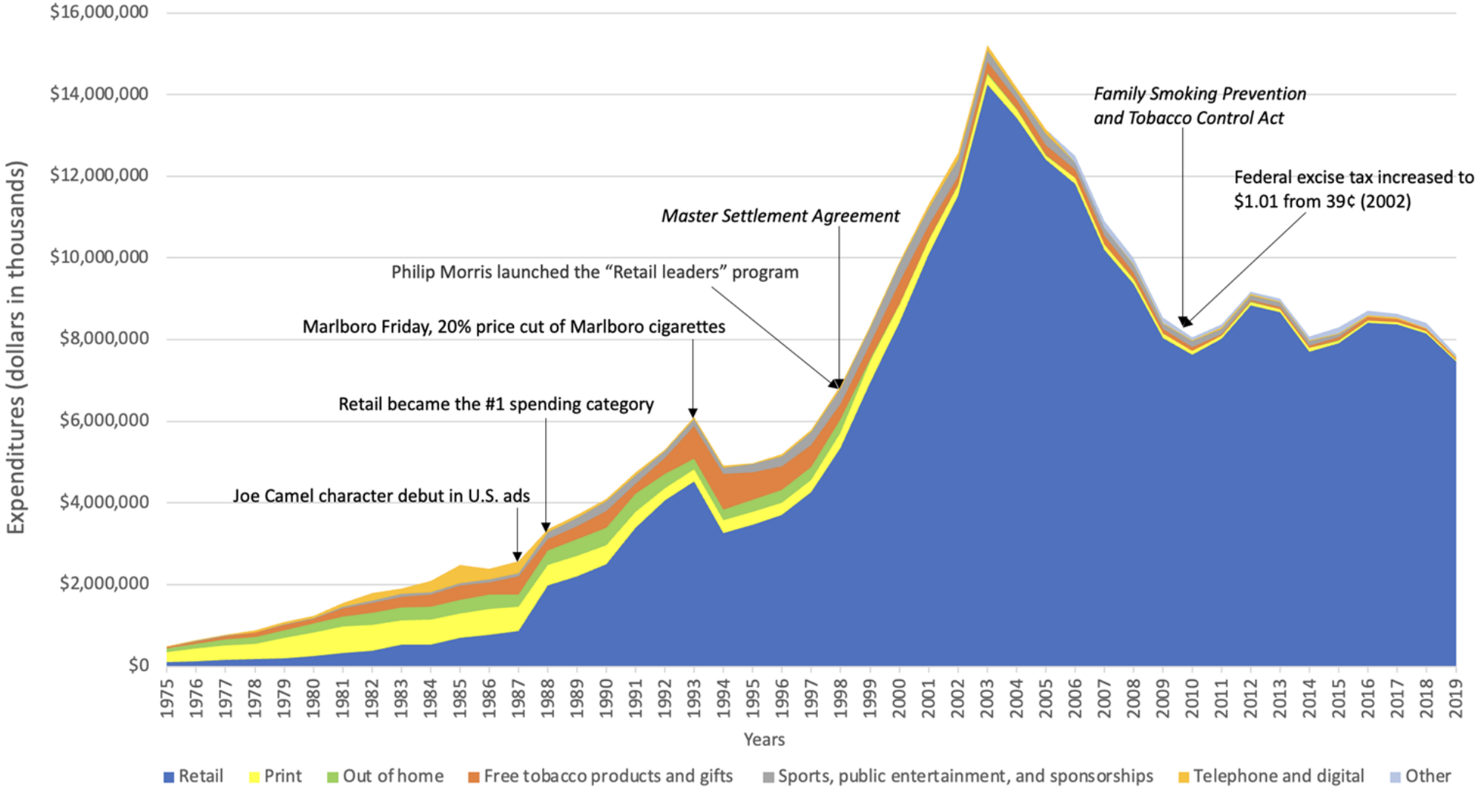
Tobacco Company Marketing Expenditures



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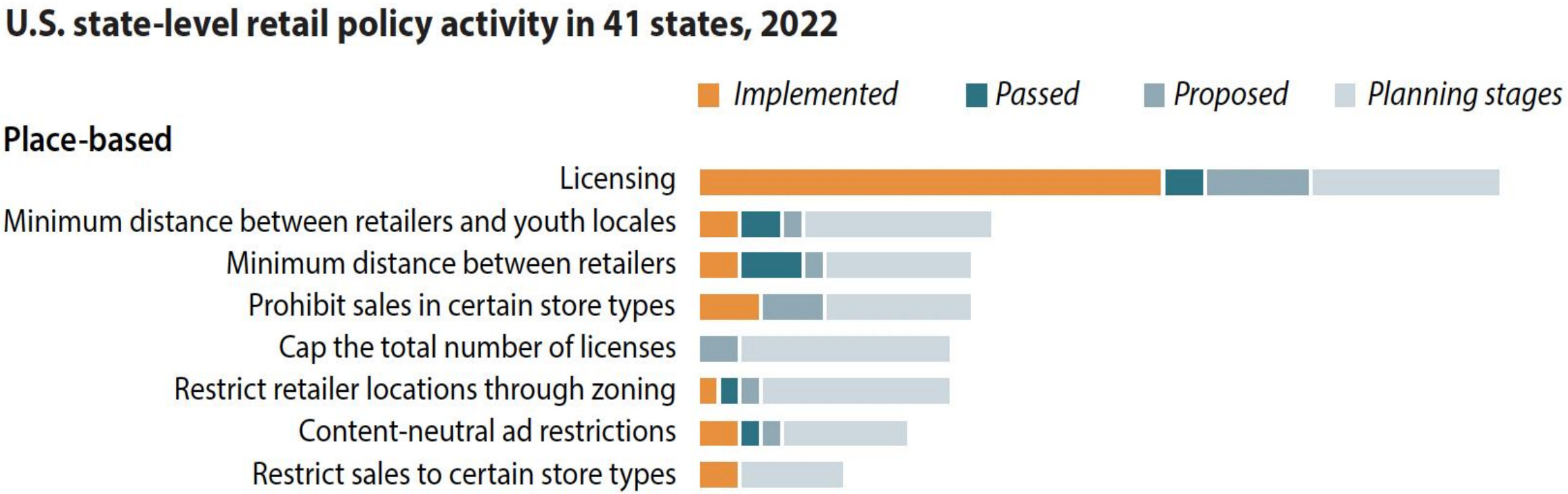
Ma et al., Nicotine Tob Res. 2022

Tobacco control in the retail environment



Tobacco Retail Policy Trends in 2022 Accessed August 25, 2025. https://aspirecenter.org/resources/tobacco-retail-policy-trends-in-2022/

Tobacco Retailers in the United States

National Establishment Time Series Database (2000-2017)

Convenience store/gas station

Grocery store/supermarket

Liquor store

Mass merchandiser

Dollar store

Drug store/pharmacy

Tobacco shop

Exclusion examples:

- Retailers known to not sell tobacco (e.g., Whole Foods, Trader Joes, CVS after 2014)
- Small, non-chain pharmacies
- Pharmacies in places with tobacco sales pharmacy bans
- Some state run alcohol stores

Protocol described in detail in Golden et al. (2022). https://doi.org/10.1093/ntr/ntab150

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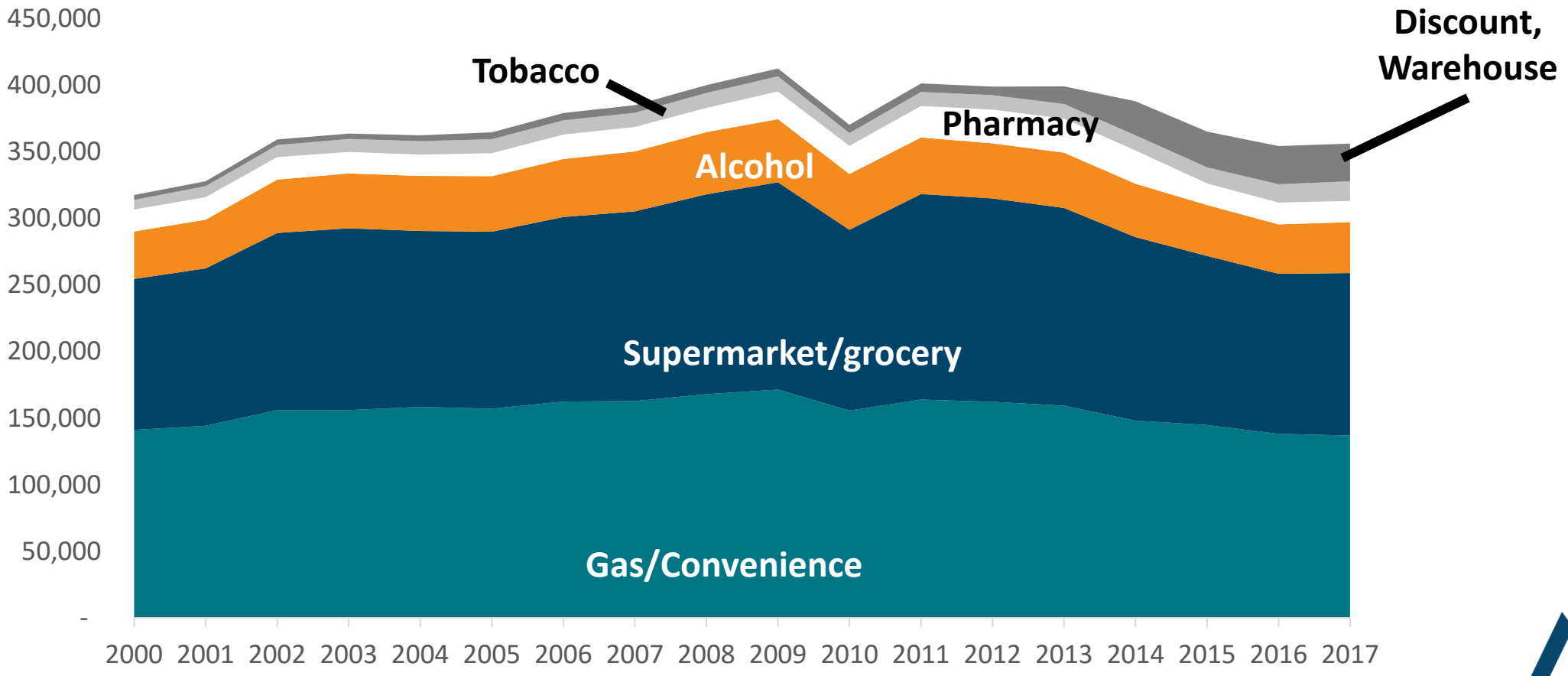
More than 300,000 Tobacco Retailers Each Year, 2000-2017



In 2017, this represented more than 25X as many  **OR** 

Would reducing the number or concentration of retailers in a community reduce **tobacco use**?

Tobacco retailers associated with behavior

Preventive Medicine Reports 17 (2020) 101005

Contents lists available at ScienceDirect

Preventive Medicine Reports

journal homepage: www.elsevier.com/locate/pmedr

County-level associations between tobacco retailer density and smoking prevalence in the USA, 2012

Shelley D. Golden[a,b,*], Tzy-Mey Kuo[b], Amanda Y. Kong[a], Christopher D. Baggett[b,c], Lisa Henriksen[d], Kurt M. Ribisl[a,b]

Smoking prevalence was 0.86 percentage points higher in the most retailer-dense counties, compared to the least.

Similar associations hold even when controlling for the possibility that retailers choose to locate where smokers live

Supply and demand effects between tobacco retailer density and smoking prevalence

Shelley D Golden [1,2] Tzy-Mey Kuo,[2] Todd Combs,[3] Amanda Y Kong [4] Kurt M Ribisl [1,2] Chris D Baggett [2,5]

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Tobacco retailers associated with behavior (cont.)

Review

OPEN ACCESS

Associations of tobacco retailer density and proximity with adult tobacco use behaviours and health outcomes: a meta-analysis

Joseph G L Lee [1,2] Amanda Y Kong [3] Kerry B Sewell,[4] Shelley D Golden [2,3] Todd B Combs [5] Kurt M Ribisl [2,3] Lisa Henriksen [6]

~2.5% reduction in tobacco use following reductions in tobacco retailer density and proximity

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Would restricting the number or concentration of retailers in a community reduce **tobacco-related disease**?

Tobacco-Related Birth Outcomes

- Smoking (and maternal SHS exposure) increases risk of:
  - **Preterm birth**
  - **Low birthweight infants**
  - **Sudden infant death syndrome** (SIDS).
- More retailers -> more tobacco use among pregnant women in Scotland (Clemmons et al. 2020)
- Cigarette taxes and smokefree air laws reduce risk of preterm birth (Faber et al. 2017)

Relative risk of adverse birth outcomes in counties (n=3,105) with >1.4 retailers per 1,000 people

Primary data sources: National Center for Health Statistics & National Establishment Time Series, 2000-2016; Models employ propensity score weights to adjust for differences in counties by employment, education, poverty, racial composition, rurality, region, air quality.

Tobacco retailer density and birth outcomes

Embedded PDF

Original research

Tobacco retailer density and its association with birth outcomes in the USA: 2000–2016

Chris D Baggett [1,2] David B Richardson,[3] Tzy-Mey Kuo,[2] Jacqueline E Rudolph,[4] Amanda Y Kong [5,6] Kurt M Ribisl [2,7] Shelley D Golden [2,7]

A cap of 1.4 retailers per 1,000 people ->

- 4,276 fewer preterm births
- 6,094 fewer babies born small for gestational age
- 3,483 fewer low birthweight babies

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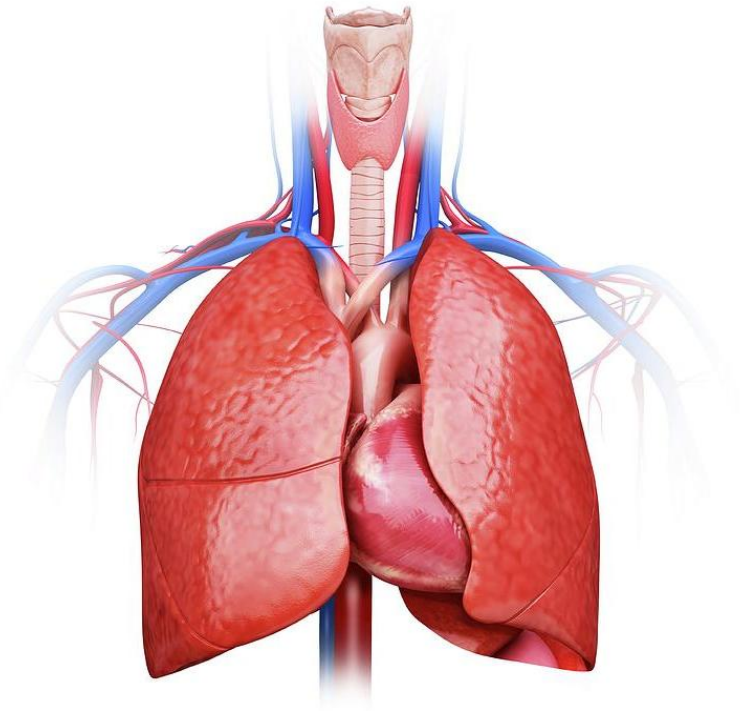
Tobacco-Related Cardiovascular and Respiratory Diseases

- Smoking is associated with:
  - 1 in 4 **heart disease deaths**
  - 70% of **COPD cases** in high income countries
- Tobacco smoke is a common trigger for **asthma**
- Studies in Australia, California and Baltimore find associations between higher tobacco retailer density and:
  - **Hospitalizations** from COPD/heart disease (Lipton et al, 2007, Barnes et al 2026)
  - **Decreased life expectancy** from lower respiratory disease (Galiatsatos et al. 2018)



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Tobacco Retail Density and COPD

Contents lists available at ScienceDirect

Health and Place

journal homepage: http://www.elsevier.com/locate/healthplace

Associations of tobacco retailer availability with chronic obstructive pulmonary disease related hospital outcomes, United States, 2014

Amanda Y. Kong [a,*], Christopher D. Baggett [b,c], Nisha C. Gottfredson [a], Kurt M. Ribisl [a,c], Paul L. Delamater [c,d], Shelley D. Golden [a,c]

In 2014, higher retailer density was associated with:

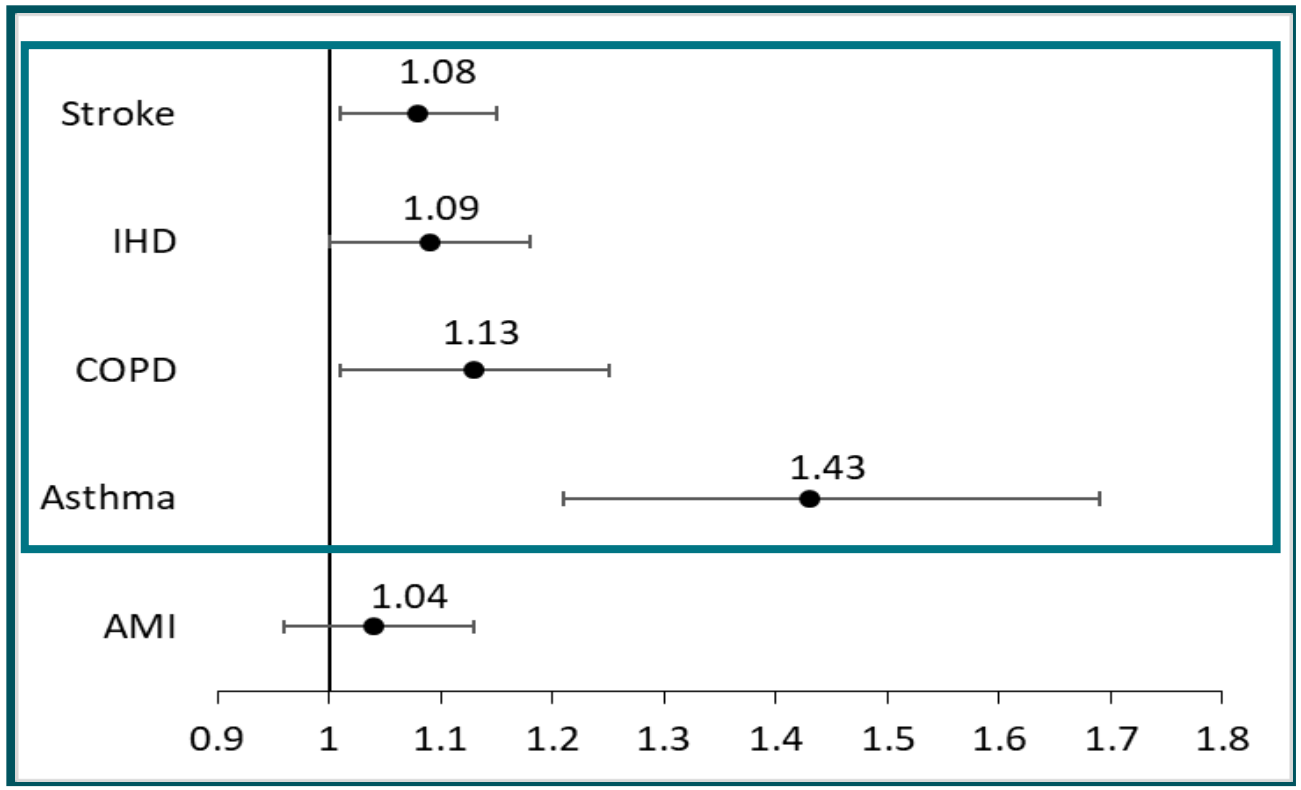
- **19% HIGHER** hospital discharge rates
- **22% MORE** days in the hospital
- **30% HIGHER** hospital costs

…for Chronic Obstructive Pulmonary Disease (COPD)

Our most recent study expands on this work by:

- Looking at data over time since disease outcomes take time to emerge
- Adding heart disease and other pulmonary outcomes to previous COPD research
- Modeling specific retailer density cap level

Incidence rate ratio of hospitalizations in high- versus low-tobacco retailer counties for CVD & respiratory outcomes



<- Lower risk Greater risk ->

Preliminary findings

High density defined as >1.2 retailers per 1000 people. Primary data sources: Healthcare Cost & Utilization Project and National Establishment Time Series, 2002-2016. States included: Kentucky, Maryland, New Jersey, New York, and North Carolina; Models employ propensity score weights to adjust for differences in counties by employment, education, poverty, racial composition, rurality, region, air quality.

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Annually, counties with low tobacco retailer density had fewer hospitalizations than high density counties.

Preliminary findings

22,286 fewer asthma hospitalizations

18,906 fewer Ischemic Heart Disease (IHD) hospitalizations

11,549 fewer COPD hospitalizations

8,342 fewer stroke hospitalizations

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Limitations and Conclusions

- Potential for unknown confounders
- Findings may differ across density levels, density measures, outcome selected, states analyzed

- Findings provides further evidence of association between tobacco retailer density, smoking and adverse health outcomes
- Strengthens scientific basis for policies that reduce tobacco retailer density

Disparities in the Retail Environment

Nicotine and Tobacco Research, 2022, **24**, 1291–1299
https://doi.org/10.1093/ntr/ntac020
Advance access publication 25 January 2022
Original Investigation

SRNT OXFORD

Sociodemographic Disparities in Tobacco Retailer Density in the United States, 2000–2017

Sarah D. Mills PhD, MPH[1,2], Amanda Y. Kong PhD, MPH[1,3,4], Alexandria E. Reimold MA[1], Chris D. Baggett PhD[2,5], Christopher A. Wiesen PhD[6], Shelley D. Golden PhD, MPH[1,2]

Tobacco retailers were more concentrated in neighborhoods with:

- **A higher proportion of Black residents**
- **A higher proportion of Hispanic residents**
- **Lower median household incomes**

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Evidence-Based Point-of-Sale Policies to Reduce Youth Tobacco Use in North Carolina

Sarah M. Halvorson-Fried, Alexandria E. Reimold, Sarah D. Mills, Kurt M. Ribisl

NCMJ North Carolina Medical Journal

Many states and localities in the United States are implementing evidence-based tobacco control policies at the retail level, including Tobacco 21 laws, tobacco retailer licensing, restrictions on point-of-sale promotions, and bans on flavored tobacco products. With the passage of new point-of-sale tobacco control policies, North Carolina could reduce youth tobacco use rates.

Introduction

While cigarette smoking among North Carolina youth has steadily decreased over time, e-cigarette use has increased dramatically [1]. According to the North Carolina Youth Tobacco Survey, self-reported e-cigarette use increased 510% for middle schoolers and 1129% for high schoolers from 2011 to 2019 [1]. Compared to 5.7% of high schoolers and 2.4% of middle schoolers reporting cigarette smoking, 20.9% of high schoolers and 6.1% of middle schoolers reported e-cigarette use in 2019 [1]. This rise in e-cigarette use offsets declines in smoking, stagnating progress in reducing youth tobacco use. As North Carolina continues to work to prevent youth tobacco use and eliminate tobacco-related health disparities, key state-level policy changes would bolster the effectiveness of tobacco control efforts. In this commentary we describe the evidence base for point-of-sale policies, including Tobacco 21 laws, restrictions on advertising and promotion, flavored tobacco product bans, tobacco retailer licensing, and repealing preemption.

Tobacco 21

Both projections and real-world studies show that raising the minimum legal age for tobacco sales from 18 to 21 Because 95% of adults who use tobacco begin before age 21 [4], the IOM report predicted that T21 would reduce tobacco use not only in the short term but also over time [2]. Projections indicated that smoking prevalence would decrease by 12% by the time current teenagers became adults [2]. Decreased smoking prevalence would lead to "substantial reductions in smoking-related mortality" and long-term improvements in health outcomes related to other tobacco use, secondhand smoke, and pregnancy [2]. The IOM projected that enacting T21 nationwide in 2015 would have resulted in approximately 249,000 fewer premature deaths among people born between 2000 and 2019 [2].

A recent evaluation found that from 2009 to 2019, state-level T21 policies reduced cigarette smoking among young adults (aged 18–20 years) by 2.5%–3.9% [3]. Among 18-year-old high-school students, these policies reduced smoking by 3%–7% and e-cigarette use by 6%–12% [3]. The laws also had spillover effects, reducing cigarette use among youth (aged 16–17 years) and marijuana and alcohol use among young adults [3].

As of December 2019, it is illegal under federal law to sell nicotine or tobacco products to anyone under age 21 [5]. Although this law applies to all retailers in the United States, complementary state and local laws are important for policy implementation and enforcement [6]. Compliance with T21 is necessary for states to receive "Synar funding" from the Substance Abuse and Mental Health Services Administration [7]. North Carolina risks losing this federal funding for substance abuse prevention, treatment, and recovery efforts if 20% or more of randomly sampled tobacco retailers are found to be in violation of the