

Policy Recommendations for Reducing Tobacco Exposure for Youth and Adults in Wilmington, Delaware

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Abstract

Objective: To highlight and recommend policies that can be projected to reduce disproportionate tobacco exposure for youth and adults in Wilmington, Delaware's densest and most disadvantaged neighborhoods. Four policy options were drawn from the literature: pharmacy tobacco bans, zoning-based tobacco retailer reductions, residential density caps, and buffers around K-12 schools. **Method:** Changes in tobacco retailer density and resident-to-retailer distance in Wilmington's medium- and high- density residentially zoned neighborhoods were projected using GIS analysis of current conditions and projections for each of the four policies. **Results:** Banning tobacco sales in pharmacies was found to be least effective, while 500-meter buffers around K-12 schools was projected to have the greatest impact on both retailer density and resident-to-retailer distance. **Policy Implications:** As a result of these findings, the authors recommend a ban of tobacco sales with a 500-meter radius of all K-12 schools in the City of Wilmington.

Introduction

Despite national progress in reducing smoking rates over the last fifty years, racial and socioeconomic disparities in smoking behavior remain.¹ Seventy percent of the current adult smoking population has a low socioeconomic status (SES).² While the rate of smoking is roughly similar between racial groups, African Americans have lower quit rates than their white counterparts, increasing their risk of lung cancer and other tobacco-attributable illnesses.³ Reductions in smoking behavior that have been achieved in the last fifty years have come largely from the introduction of excise taxes, mass media marketing bans, public messaging campaigns, and smoking cessation treatment. The tobacco industry has sidestepped many marketing regulations of the last half century by investing in point-of-sale marketing campaigns within communities of color to "...establish and maintain demand for tobacco products in low SES and segregated communities" (p. 2).⁴ For example, two thirds of the tobacco industry's marketing budget is spent on retailer discounts in order to nullify excise taxes on tobacco.⁵ In response, local governments have made efforts in recent years to reduce exposure to point-of-sale marketing by reducing the geographic concentration of tobacco retailers, with mixed result. We join these efforts by examining the projected impacts of policy solutions that have demonstrated success elsewhere, including nearby Philadelphia.

Combs et al. refer to areas with high concentrations of tobacco retailers as *tobacco swamps*.⁶ In these areas, residents can be impacted by tobacco retailer *proximity* (as in the distance between

residents and retailers), *density* (as in the number of retailers per geographic unit, or per capita), or both.⁶

Living in close proximity to tobacco retailers—stores that are licensed to sell tobacco products (e.g., “corner stores”)—contributes to a higher risk of cigarette smoking and a greater difficulty in quitting.⁷ Individuals who currently smoke and live within 500 meters of a tobacco retailer are about half as likely to quit smoking as those outside of that radius. A 500-meter buffer between a person’s place of residence and the nearest retailer disincentivizes smoking and correlates with a 20 to 60% increase in their chances of successfully quitting.⁸

Living in a neighborhood with a high density of retailers can make exposure to tobacco products difficult to avoid. Adolescents with frequent exposure to tobacco retailers can develop pro-smoking attitudes and are more likely to initiate smoking.^{9,10} Adults who want to quit smoking report frequent and easy access to tobacco products as a significant barrier.⁷ Low-SES, urban communities with higher concentrations of people of color tend to have the greatest concentration of tobacco retailers.¹¹ Many urban neighborhoods experience both proximity and density effects, and reducing tobacco retailer density by 50% has been shown to reduce the proportion of residents living within 500 meters of a tobacco retailer.⁶

Delaware Context

Similar to the disparities observed nationally, recent research has shown that the density of tobacco retailers is considerably higher in lower-SES, highly segregated communities in Delaware.^{4,5} For example, an analysis of New Castle County found that Wilmington accounts for 15% of the county’s population but more than 27% of the county’s tobacco retailers. Among Wilmington residents who smoke, in a deidentified ChristianaCare sample, more than 80% lived in medium- and high-density residential zones, zones which house 54% of the city’s population. It might be expected that a city with a commercial district would have more businesses of any type relative to the surrounding communities. However, more than 40% of Wilmington’s tobacco retailers were located in residential zones, more than ten times the rate observed for more affluent and predominantly White parts of the county. At least 60% of Wilmington youth reside in the same residential zones that contain a high density of tobacco retailers. Outside of Wilmington, tobacco retailers were much more likely to be situated in commercially zoned areas.^{4,5}

Solutions

Relatively recently, efforts to limit the number and density of tobacco retailers have been implemented in New York, San Francisco and Philadelphia with mixed but promising results.¹² Many of these approaches reduce density by curtailing tobacco retail licenses by store type, location, or proximity to certain other features. “The primary policy approaches to reducing tobacco retailer density include prohibiting sales in specific retailer types and near youth-populated areas, targeting clusters of retailers, and capping the number of retailers to a certain amount within a community” (p. 2).¹²

Limiting tobacco retail in pharmacies shows promise in affluent, suburban areas, but in low-SES, urban communities, pharmacies don’t account for enough of the tobacco retailer density to make a difference.¹² This strategy has indeed resulted in reductions in tobacco retailer numbers, but

most of the reductions have taken place in more affluent, predominantly White, and less dense communities.¹²

Philadelphia took a much more comprehensive approach to reducing tobacco retailer density in 2017. Philadelphia's policies included capping retailer density to one retailer per 1,000 daytime population in each district, 500-foot buffers around schools, increasing the licensing fee from \$50 to \$300, and toughening penalties for youth sales violations. Lawman et al.'s longitudinal study of these efforts demonstrated an overall 20% reduction in tobacco retail locations three years after the policies were implemented.¹³ Relative reductions were greatest in low-income districts, but tobacco retailer density still remained higher in less affluent areas.¹³ Other studies have also found that denying licenses within varying radii of K-12 schools has shown promise in reducing tobacco retailer density in low-SES communities of color.¹³

Proposed Solutions for Wilmington

Our policy goal is to reduce the number and density of tobacco retailers and increase the resident-to-retailer distance in Wilmington's low-SES, medium- and high-density, residentially zoned neighborhoods. Philadelphia's success at reducing tobacco retailer density is promising and offers a few policy suggestions worth examining in Wilmington. Some of these solutions are out of reach of Wilmington city government alone but could be bolstered with support from the State of Delaware. For example, the city of Philadelphia controls tobacco licenses,¹³ whereas in Delaware tobacco licensing is handled by the state.

We projected the impacts of four policies on tobacco retailer density and resident-to-retailer distance in Wilmington by building on previous spatial analyses conducted by Brooks et al.⁵ Tobacco retailers were identified using Delaware Division of Revenue data for businesses with a tobacco retail license as of April 17, 2019. Geographic information systems were used to map these retailers and estimate their density citywide and within medium- and high-density residential zones (Table 1), as well as retailers' proximity to K-12 schools. Average resident-to-retailer distance was estimated by simulating point locations for city residents, proportional to population counts within block groups, and measuring their average straight-line distance from the nearest tobacco retailer (Table 2).

As expected, banning tobacco sales within pharmacies had the least impact on both density and distance in all of Wilmington and its medium- and high-density residential zones, with zero impact on density in those zones and a meager 3.4% decrease in citywide density. The impact on distance is negligible.

In keeping with the benchmark set by Combs et al., we projected the impact of a 50% reduction in retailers within medium- and high-density residential zones.⁶ Reducing retailer density by half increases the average resident-to-retailer distance by 12.1% in medium- and high-density residential zones and by 6.4% in all of Wilmington.

Imposing a density cap of one retailer per 1,000 residents would have an even greater impact on retailer density and distance, reducing the city's overall density to one from 2.38 tobacco retailers and increasing the average distance by 41.2%. Even more significantly, this policy is projected to increase resident-to-retailer distance in medium- and high-density residential zones by 62%.

The most effective solution examined, by far, is banning tobacco sales within 500 meters of a school. Eliminating tobacco sales within 500 meters of a school in Wilmington would reduce density city-wide by 78.2% and by 73.3% in medium- and high-density residential zones. Average resident-to-retailer distance is increased by 115% in the city as a whole and by a whopping 141.5% in medium- and high- density residential zones. In both, the average distance increases to more than 500-meters, which is associated with a greater likelihood of quitting.⁸

Table 1. Comparison of Policies by Changes in Tobacco Retailer Density

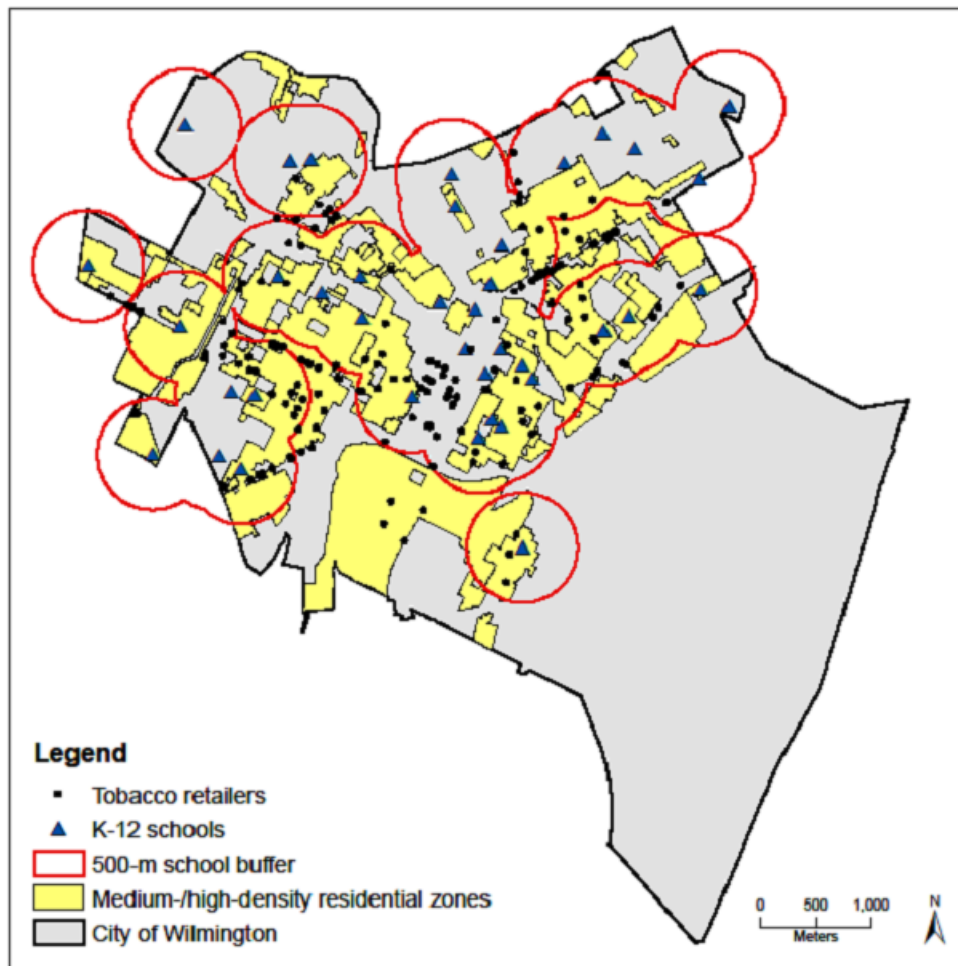
Policy Option	City of Wilmington Tobacco Retailer Density (Retailers per 1,000 Residents)			Medium-/High-Density Residential Zone Tobacco Retailer Density (Retailers per 1,000 Residents)		
	Pre-policy	Post-policy	% change	Pre-policy	Post-policy	% change
Ban within pharmacies	2.38	2.30	-3.4%	1.76	1.76	0.0%
50% reduction in retailers within medium-/high-density residential zones	2.38	1.90	-20.2%	1.76	0.88	-50.0%
Citywide density cap of 1 retailer/1000 people	2.38	1.00	-58.0%	1.76	0.78	-55.7%
Ban within 500 m of K-12 schools	2.38	0.52	-78.2%	1.76	0.47	-73.3%

Table 2. Comparison of Policies by Changes in Tobacco Retailer Proximity

Policy Option	City of Wilmington Average Resident-to-Retailer Distance (Meters)			Medium-/High-Density Residential Zone Average Resident-to-Retailer Distance (Meters)		
	Pre-policy	Post-policy	% change	Pre-policy	Post-policy	% change
Ban within pharmacies	277.94	279.63	+0.6%	220.61	221.32	+0.3%
50% reduction in retailers within medium-/high-density residential zones	277.94	295.65	+6.4%	220.61	247.21	+12.1%
Citywide density cap of 1 retailer/1000 people	277.94	392.37	+41.2%	220.61	357.37	+62.0%
Ban within 500 m of K-12 schools	277.94	597.46	+115.0%	220.61	532.84	+141.5%

Given these findings, a compelling case can be made for banning tobacco sales within 500 meters of K-12 schools. Not only is this policy highly effective in other places,¹² including Philadelphia,¹³ but it demonstrably achieves the largest impact on retailer density and resident-to-retailer distance in Wilmington and its medium- and high-density neighborhoods. Figure 1 provides a useful visualization of the locations of tobacco retailers, medium- and high-density neighborhoods, and the places where tobacco sales would be eliminated if tobacco sales were banned within 500 meters of a school.

Figure 1. Wilmington Policy Context and Solution Mapped



Challenges and Drawbacks

Any policy limiting or prohibiting tobacco sales will necessarily impact the businesses that sell tobacco. Retailers that make significant portions of their income from tobacco sales can be expected to oppose these regulations. Retailers would not be alone in their opposition to such an approach, as we have seen tobacco companies go to great lengths to skirt regulations. Whether their methods include sowing community discord, or direct legal challenges, officials should be prepared for conflict. Tobacco companies may also try to appeal to state lawmakers to preempt city regulations. While this strategy may have worked in other states, Delaware lawmakers recently increased the age of tobacco sales from 18 to 21,¹⁴ signaling a statewide interest in reducing smoking behavior and protecting youth.

To make zoning-based restrictions more palatable to store owners, policymakers may also choose to include incentives for ceasing tobacco sales. As part of Philadelphia's Food Trust Initiative, participating corner stores were incentivized to offer healthier food products and were provided storage and refrigeration equipment to maintain their stock. To become certified as a Healthy Corner Store, they had to agree to decrease the promotion of tobacco products.¹⁵

Opponents to this strategy may suggest this policy is an over-regulation that impinges on individual decision making. While it may not be news to any adult that smoking is a health hazard, those who currently smoke in our target neighborhoods report a similar desire to quit to many of their White, suburban counterparts who successfully have.⁷ Reducing retailer density and increasing resident-to-retailer distance would make it more possible for these individuals to avoid incessant tobacco exposure in their daily lives and increase their probability of quitting, while also reducing the likelihood that Wilmington's youth become the next generation of tobacco industry customers.

Public Health Implications

There are demonstrable disparities in smoking-related health outcomes in New Castle County. Brooks et al. have shown that those who currently smoke disproportionately live in Wilmington, and the majority of those individuals live in Wilmington's densest, lowest-income, and most racially segregated neighborhoods.⁵ These neighborhoods contain the densest concentrations of tobacco retailers of any residentially zoned areas in New Castle County.⁴

The literature tells us that retailer density and proximity are strongly correlated with smoking initiation among youth,¹¹ and with a lower likelihood of quitting.⁸ Easy access to cigarettes can be a temptation, but repetitive exposure to in-store advertising makes tobacco nearly impossible to avoid.⁷ This plays out both nationally and locally as members of low-SES, dense urban communities of color tend to smoke later into their lives than their White suburban counterparts.³

For these reasons, cities around the country have introduced a number of policies to reduce retailer density, including school-based buffer zones, district population rate caps, and bans on tobacco sales in pharmacies.¹² Of these, we have found school-based buffer zones to be the most effective policy for reducing tobacco retailer density and increasing average resident-to-retailer distance. These impacts have a demonstrable effect on smoking cessation and uptake prevention among youth. Cigarette smoking remains the leading modifiable cause of early death in America,¹ and the impacts of tobacco retailer density and proximity are visited disproportionately on Delaware's most vulnerable populations.^{4,5} We believe it is long past time to redress this disparity and hope lawmakers invested in Wilmington find our recommendations useful.

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