

Family Smoking Prevention and Tobacco Control Act

Banning Outdoor Tobacco Advertising Near Schools and Playgrounds

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Background: The tobacco industry has challenged new FDA rules restricting outdoor tobacco advertising near schools and playgrounds on First Amendment grounds, arguing that they would lead to a near complete ban on tobacco advertising in dense urban areas.

Purpose: To examine how the 2009 Family Smoking Prevention and Tobacco Control Act (FSPTCA) rules banning outdoor tobacco advertising near schools and playgrounds would affect tobacco retailers.

Methods: GIS spatial analyses of two different states (Missouri, New York), along with more detailed analyses of two urban areas within those states (St. Louis, New York City), were conducted in 2010. The percentage of tobacco retailers falling within 350-, 500-, and 1000-foot buffer zones was then calculated.

Results: 22% of retailers in Missouri and 51% in New York fall within 1000-foot buffers around schools. In urban settings, more retailers are affected, 29% in St. Louis and 79% in New York City. Sensitivity analyses demonstrate that smaller buffers decrease the proportion of affected retailers. That is, 350-foot buffers affect only 6.7% of retailers in St. Louis and 29% in New York City.

Conclusions: The effects of new outdoor tobacco advertising restrictions vary by location and population density. In Missouri and New York, outdoor tobacco advertising would still be permitted in many locations if such advertising was prohibited in a 1000-foot buffer zone around schools and playgrounds. Much smaller buffer zones of 350 feet may result in almost no reduction of outdoor advertising in many parts of the country.

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Introduction

The National Cancer Institute (NCI) summarized the evidence on tobacco use and tobacco marketing and concluded that “the evidence base indicates a causal relationship between tobacco advertising and increased levels of tobacco initiation and continued consumption” and that even brief exposure to tobacco

advertising influences adolescents’ attitudes and perceptions about smoking as well as their intentions to smoke.¹ Although tobacco advertising has been banned in TV, radio, billboard, and transit ads, youth are still routinely exposed to tobacco advertising at the point of sale (POS).^{2–4} In fact, 85% of youth reported exposure to POS advertising,⁵ and reducing adolescents’ exposure to POS tobacco marketing is a new objective of Healthy People 2020.⁶

The new Family Smoking Prevention and Tobacco Control Act (FSPTCA)⁷ granted the U.S. Food and Drug Administration (FDA) specific regulatory authority to restrict the sale, distribution, accessibility, advertising, and promotion of tobacco products “consistent with and to the full extent permitted by the first amendment to the Constitution” (Title 1, Sec 906(d)(1), pg. 54). The FDA has asked for public comment on rules governing out-

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Table 1. Description of state data sets

Data set	Missouri		New York	
	<i>n</i>	Source	<i>n</i>	Source
Retailers	6012 (4730 matched)	MO Dept. of Mental Health	21,988 (17,672 matched)	New York State Department of Taxation and Finance
Schools	2893	MO Dept. of Elementary and Secondary Education	6,162 (5,640 matched)	New York State Education Department and MapPLUTO
Public	2314		4,156 (3,765 matched)	
Nonpublic	579		2,016 (1,875 matched)	
Local parks	773	ESRI Data and Maps 9.3	1,028	ESRI Data and Maps 9.3

ESRI, Environmental Sciences Research Institute; MO, Missouri

door cigarette and smokeless tobacco product advertising, and is particularly interested in the impact of banning advertising at various distances from schools (e.g., 350 feet or 1000 feet). FDA is required to reissue rules from 1996, taking into account recent legal rulings related to regulation of tobacco advertising, including Massachusetts’s unsuccessful attempt to ban cigarette and smokeless tobacco product advertising within 1000 feet of schools.⁸

The tobacco industry has formally stated that if an advertising ban were implemented within 1000 feet of schools and playgrounds, “In many, if not most, communities, this would be tantamount to a general ban, for there would be virtually no outdoor location that could escape the rule’s prohibition (p. VII-243).⁹ They presented data from more than a dozen large U.S. cities showing that 85%–95% of the *land area* would be off-limits to tobacco advertising.⁹ Under the Central Hudson test for restricting commercial speech, the restrictions need to be “narrowly tailored” to avoid running afoul of First Amendment speech protections.¹⁰ In a new lawsuit, the industry argued that the 1000-foot ban was not narrowly tailored and, therefore, unconstitutional (*Commonwealth Brands, Inc. v. United States of America*).⁸

The only estimates of the potential impact of the 1000-foot ban are those generated by the tobacco industry for litigation. In this study, the goal is to examine how the FSPTCA rules banning outdoor ads near schools and playgrounds would affect retailers who would be prohibited from displaying outdoor tobacco advertising in two states, New York and Missouri. The specific research questions are (1) How does the ban on ads near schools and playgrounds affect retailers in more densely populated urban areas compared to more rural areas? (2) Are most outdoor point-of-sale ads completely banned in urban areas because of store proximity to parks and playgrounds? and (3) How do the various restriction zone distances ranging from 350 to 1000 feet affect retailers?

Methods

State and Community Selection

To examine the effects on retailers of the proposed FSPTCA advertising restrictions, a GIS spatial analysis study of two different states (Missouri and New York), along with more detailed analyses of two urban areas within those states (St. Louis and New York City), were conducted. Missouri and New York were chosen because they have a good mix of urban, suburban, and rural areas and have good data available on tobacco retailer locations from retailer licenses, and to replicate earlier retailer analyses conducted by the tobacco industry in New York City.

Data Collection and Management

Table 1 describes the primary sources of data used in this study. 2009 tobacco retailer location data were obtained from the state governmental departments responsible for tracking or licensing tobacco retailers. School location data were obtained from the state departments of education. Missouri had 100% geocoded school location data. The state tobacco retailer data, and the New York school location data needed to be geocoded to allow for spatial analyses. Geolytics, Inc., performed the geocoding and was able to match 79% of the Missouri retailer addresses (4730/6012); 80% of the New York retailers; and 91.5% of the New York schools.

In addition to retailer and statewide school address point data, GIS shapefiles for parks and St. Louis City/County and New York City schools were obtained. The shapefiles allow mapping of the actual park and school boundaries. School perimeter data were available for the two urban areas, but not statewide. There were no readily available shapefiles for playgrounds, so a more conservative measure of the full park rather than just the playground area inside the park was used. Rural and urban designations were based on updated 2000 Census data contained in ESRI’s ArcMap 9.3.

All data were entered into ArcMap 9.3 for GIS analysis. The impact of the FSPTCA 1000-foot ban on retailers was assessed using a proximity analysis. For St. Louis City/County and New York City, buffer zones of varying distances (350, 500, 1000 feet) around all local parks and parcels containing schools were constructed. The count and percentage of tobacco retailers falling within these buffers were then calculated. To perform the statewide

St. Louis, Missouri

Manhattan, New York

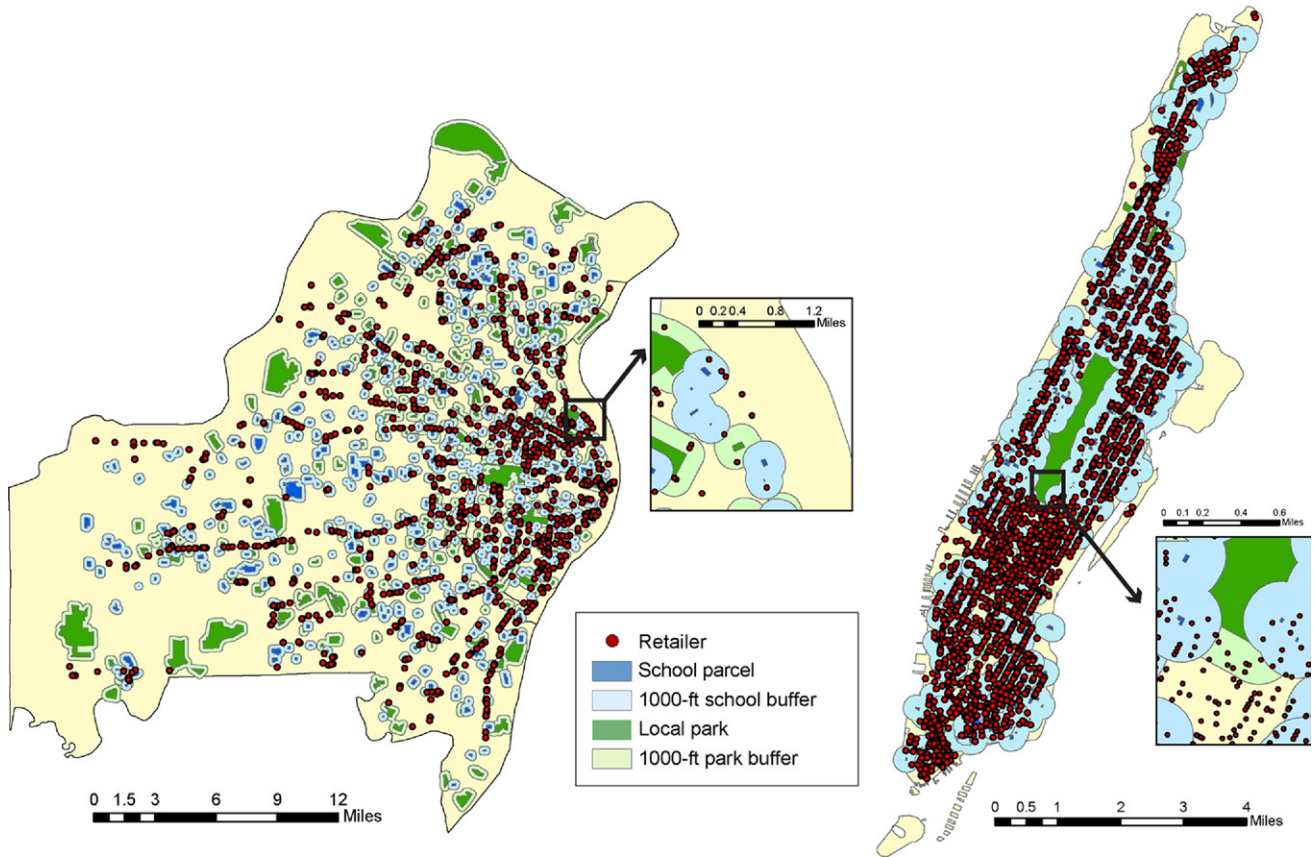


Figure 1. Map of tobacco retailers and advertising restriction buffers for St. Louis City and County and Manhattan

analyses (where actual perimeter data were not available), radial buffers were constructed around the school address center points to approximate the perimeter buffers (see below).

Results

The primary purpose of this paper was to collect and analyze GIS data to assess the potential impact on retailers of banning outdoor cigarette and smokeless tobacco advertising within a certain distance from schools under the 2009 FSPTCA.

Regional Analyses of New York City and St. Louis City and County for 1000-ft Zone

Parcel data marking the exact perimeter boundaries of schools were available for St. Louis and New York City. This allowed construction of exact 1000-foot buffer zones around each school. Figure 1 displays the school and park buffer zones for St. Louis and New York City, with tobacco retailer locations marked individually. Spatial analysis was conducted to assess which retailers fell into the 1000-foot buffer zones for St. Louis and New York City (Table 2). Approximately 29% of retail-

ers would be affected by school boundary zones in St. Louis, whereas 79% of retailers would be affected in New York City. The percentages increase when parks are included, to 43% and 81%, respectively. However, the data used here are perimeters for entire city and county parks. The original 1996 FDA restrictions called for 1000-foot boundary zones around playgrounds. Most playgrounds exist within parks, and the playground restriction zone would in nearly all instances be smaller than the restriction zone around the park perimeter. Therefore, it is best to interpret the numbers presented in Table 2 as potential ranges of the retailer effects—the school-only number is a lower bound, while the school and park total number is an upper bound. Therefore, in St. Louis, anywhere from 29% to 43% of retailers would be expected to be affected by a 1000-foot advertising restriction. A higher proportion of retailers would be affected in New York City because of its much greater urban density and greater percentage of commercial zoning. In New York City, 79%–81% of retailers would be affected by a 1000-foot advertising ban.

Table 2. St. Louis and New York City retailers affected by 1000-, 500-, and 350-foot advertising restrictions

Retailers	St. Louis			New York City		
	1000-ft	500-ft	350-ft	1000-ft	500-ft	350-ft
Total number	1229	1229	1229	8311	8311	8311
Affected by (n [%])						
All schools	351 (28.6)	138 (11.2)	82 (6.7)	6535 (78.6)	3621 (43.6)	2425 (29.2)
Public schools	238 (19.4)	96 (7.8)	54 (4.4)	5499 (66.2)	2668 (32.1)	1780 (21.4)
Nonpublic schools	156 (12.7)	56 (4.6)	29 (2.4)	3514 (42.3)	1421 (17.1)	816 (9.8)
Local parks	267 (21.7)	113 (9.2)	71 (5.8)	1555 (18.7)	618 (7.4)	449 (5.4)
All schools and/or local parks	534 (43.4)	245 (19.9)	151 (12.3)	6762 (81.4)	3948 (47.5)	2738 (32.9)

Note: The original 1996 Food and Drug Administration policy banned outdoor advertising near playgrounds and playground areas in parks; given the lack of GIS playground data, boundaries for parks were used.

Alternative Boundary Analyses for Urban Areas

A sensitivity analysis of the current GIS data was conducted to determine what might happen in urban settings if the buffer were reduced to 500 feet (the distance tobacco companies agreed to ban billboard tobacco advertising near schools and playgrounds in the Voluntary Cigarette Advertising and Promotion Code) or 350 feet (distance proposed as a possibility by the FDA). The reduced buffer analyses are presented in the middle and right-hand columns for each city in Table 2. The reduced 500-foot buffer lowers the proportion of retailers in St. Louis to between 11% and 20% and between 44% and 48% in New York City. The 350-foot buffer would affect between 7% and 12% of retailers in St. Louis and 29%–33% of retailers in New York City.

Table 3 shows how retailers are affected across the five boroughs. Staten Island has the lowest population den-

sity, and its estimate of school boundary retailer percentage (52%) is more similar to St. Louis than any of the other boroughs.

In addition to examining the proportion of individual tobacco retailers affected by the proposed advertising restrictions, a calculation was made of the proportion of commercially zoned land area that would be subject to the restrictions. Using zoning data provided by St. Louis and New York City Planning Departments, it was determined that 20.2% of commercially zoned land area would be affected by the 1000-foot school and park buffers in St. Louis City and County, whereas 56.8 % of the commercially zoned area would be affected in New York City.

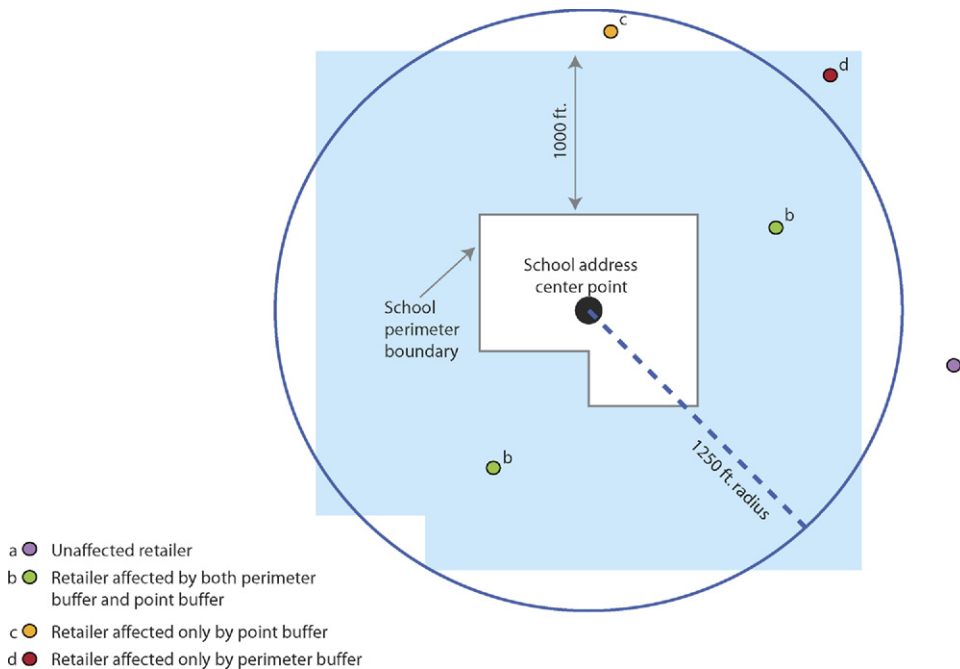
Statewide Analyses

City-level analyses described above take advantage of comprehensive “gold standard” data with school parcels that allow analysis of restriction zones that would match

Table 3. NYC retailers affected by 1000-foot advertising restrictions by borough

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	All boroughs (NYC)
Population	1,391,903	2,556,598	1,634,795	2,293,007	487,407	8,363,710
Density (people/sq mi)	33,140	36,008	71,078	36,008	8,403	27,603
Total no. of retailers	1,564	2,900	2,260	1,157	430	8,311
Retailers affected by (n [%])						
All schools	1,323 (84.6)	2,477 (85.4)	1,845 (81.6)	673 (58.2)	222 (51.6)	6,535 (78.6)
Public schools	1,212 (77.5)	2,136 (73.7)	1,520 (67.3)	48 (42.6)	154 (35.8)	5,499 (66.2)
Nonpublic schools	591 (37.8)	1,261 (43.5)	1,208 (53.4)	326 (28.2)	128 (29.8)	3,514 (42.3)
Parks	353 (22.6)	332 (11.4)	710 (31.4)	133 (11.5)	27 (6.3)	1,555 (18.7)
All schools and/or parks	1,368 (87.5)	2,505 (86.4)	1,940 (85.8)	720 (62.2)	234 (54.4)	6,762 (81.4)

NYC, New York City



the school boundary restrictions, ranging up to approximately 29% when including playgrounds (left side of Table 5). New York’s numbers are higher, a little more than half (51%) of retailers would be included in the school restriction zones, ranging just a little higher (57%) when playgrounds are included.

The city analyses (especially New York City) suggested that a greater percentage of retailers are potentially affected in denser urban areas. Table 5 also presents state-wide results broken

Figure 2. Construction of appropriate address center point radius based on perimeter buffer

exactly how the advertising restriction would be implemented (i.e., 1000-foot buffers that are drawn from the perimeter of the school property). Unfortunately, neither New York nor Missouri have school perimeter parcel data available for all schools in the state. However, accurate geocoded school address data were available that allowed us to locate the center point of every school based on its address. A simulation was conducted to determine whether adjusted buffers around the school points that would approximate the real or gold standard 1000-foot perimeter buffers could be drawn (see Figure 2). Circular buffers around each school point were drawn with varying radii, and the retailer percentages in St. Louis and New York City using the circular buffers were compared to the real perimeter buffers (Table 4). For St. Louis, a 1250-foot circular buffer obtains retailer percentages most closely matching the real perimeter percentages (28.0% compared to 28.6%). For New York City, a 1150-foot buffer produces the closest match (78.2% compared to 78.6%). These circular point buffers were used as best estimated proxies for perimeter buffers for the statewide analyses. This approach is superior to simply computing how many retailers are within 1000 feet of a school address point because the FDA policy would ban ads in the zone around the *perimeter* of the entire school property, not just around the school address center point.

Table 5 displays the results of the statewide analyses, using these adjusted buffers. Using the same interpretation approach as before, across the state of Missouri at least 22% of retailers would be expected to be affected by

down by urban versus rural classification. Schools are much more spread out in rural areas, and there is much less commercial zoning. For both states, fewer than 20% of retailers in rural areas are affected by 1000-foot school boundary restrictions. On a percentage basis, the above results suggest that 2.5 to 3 times as many retailers are affected in urban areas compared to rural areas.

Given this stark difference between urban and rural areas, a “hybrid” approach was tested with different buffer zones for rural (e.g., 1000 feet) and urban areas (e.g., 500 feet). The effects of this hybrid policy (1000-foot rural, 500-foot urban) were tested using the same simulation approach described above, and resulted in a reduc-

Table 4. School buffer comparison

Retailers	St. Louis	New York City
Total no.	1229	8311
Affected by (n [%])		
Parcels with 1000-ft buffer	351 (28.6)	6535 (78.6)
Points with 1000-ft buffer	229 (18.6)	5931 (71.4)
Points with 1150-ft buffer	—	6502 (78.2)
Points with 1200-ft buffer	323 (26.3)	6669 (80.2)
Points with 1250-ft buffer	344 (28.0)	—
Points with 1300-ft buffer	365 (29.7)	—

Note: Boldface indicates best matching buffer.

Table 5. Statewide results estimating the proportion of retailers affected by varying buffer definitions

Retailers	Single 1000-foot buffer (same for urban and rural) ^a						Hybrid buffer (500-ft urban; 1000-ft rural) ^b					
	Missouri			New York			Missouri			New York		
	Urban ^c	Rural	Total	Urban	Rural	Total	Urban ^c	Rural	Total	Urban	Rural	Total
Total number of retailers	2535	2195	4730	14,367	3305	17,672	2535	2195	4730	14,367	3305	17,672
Affected by (n [%])												
All schools	753 (29.7)	278 (12.7)	1031 (21.8)	8,381 (58.3)	641 (19.4)	9,022 (51.0)	282 (11.1)	259 (11.8)	541 (11.4)	4,278 (29.8)	540 (16.3)	4,818 (27.3)
Public schools	554 (21.8)	222 (10.1)	776 (16.4)	6,615 (46.0)	477 (14.4)	7,092 (40.1)	192 (7.6)	204 (9.3)	396 (8.4)	2,886 (20.1)	408 (12.3)	3,294 (18.6)
Nonpublic schools	300 (11.8)	65 (3.0)	365 (7.7)	4,592 (32.0)	226 (6.8)	4,818 (27.3)	122 (4.8)	61 (2.8)	183 (3.9)	1,926 (13.4)	172 (5.2)	2,098 (11.9)
Local parks	350 (13.8)	94 (4.3)	444 (9.4)	2,582 (18.0)	190 (5.8)	2,772 (15.7)	191 (7.5)	93 (4.2)	284 (6.0)	1,110 (7.7)	177 (5.4)	1,287 (7.3)
All schools and/or local parks	1000 (39.4)	355 (16.2)	1355 (28.6)	9,254 (64.4)	771 (23.3)	10,025 (56.7)	452 (17.8)	334 (15.2)	786 (16.6)	5,030 (35.0)	666 (20.2)	5,696 (32.2)

^aMissouri: 1250-ft school buffer, 1000-ft local park buffer; New York: 1150-ft school buffer, 1000-ft local park buffer

^bMissouri: rural: 1250-ft school buffer, 1000-ft park buffer; urban: 750-ft school buffer, 500-ft park buffer; New York: rural: 1150-ft school buffer, 1000-ft park buffer; urban: 650-ft school buffer, 500-ft park buffer

^cBased on the 2000 Census designation of urban area or urban cluster

tion in the proportion of retailers affected (see right side of Table 5). In New York, the proportion of retailers affected by the school boundaries would go from 51% to 27.3%; in Missouri the proportion is reduced from 21.8% to 11.4%. Thus, a hybrid urban/rural policy might help avoid constitutional issues for very densely populated areas such as New York City, but it would still have the effect of weakening the policy dramatically for many other parts of the country.

Discussion

The GIS analyses of Missouri and New York tobacco retailer data indicate that new FDA advertising restrictions have the potential to reduce the amount of outdoor tobacco advertising, which should result in reduced youth exposure to tobacco advertising. Within 1000 feet of schools, it is estimated that approximately 22% of retailers in Missouri would be affected, 51% in New York. The results also suggest that in densely populated urban settings, more retailers will be affected by the advertising restrictions. In some very densely populated areas such as Manhattan, more than 80% of retailers would be affected. Although the current analyses were conducted in two states, they are believed to have generalizability to other states, including more urban ones. For example, the U.S. is 2.5% urban; Missouri is similar to this average (2.7%), whereas New York is nearly triple the national average (7.2%).¹¹

FDA has been considering weakening the proposed advertising restriction rule, including reducing the restriction perimeter to 350 feet around schools (about one city block). The current sensitivity analyses suggest that smaller buffer sizes in urban areas would certainly lower the proportion of retailers affected by a ban near schools (from 79% for a 1000-foot buffer to 29% in New York City for a 350-foot buffer). However, in St. Louis a restricted buffer of 350 feet around schools ends up affecting only 6.7% of tobacco retailers. So weakening the restrictions for all U.S. communities to address a small number of very densely populated settings such as New York City may result in a policy that does little to reduce outdoor advertising in much of the rest of the country. A more appropriate approach balances the negative consequences of exposure to outdoor cigarette advertising on youth with allowing the tobacco companies to communicate to their adult consumers. One possible option considered here was a hybrid policy that would have a smaller buffer for urban retailers compared to rural retailers. However, the results show that fewer than 12% of retailers would be affected in Missouri. The hybrid option would not appear to adequately reduce outdoor retail tobacco advertising for much of the U.S.

It is critical to point out one subtle, but important, difference between the analysis that the tobacco industry conducted and the analysis presented here. Their analyses focused on the percentage of *land area* off-limits to tobacco advertising (see page VII-244).⁹ In this study, the *number* and *proportion* of retailers affected were calculated, not the land percentage. The number of retailers affected, not the land area, is the more appropriate metric to use when making policy decisions. First, the “real-world” regulatory impact is felt by people and businesses, not by land. Second, tobacco retailers are clustered in commercial zones and showing that a high percentage of *all* land is unavailable for advertising under outdoor advertising bans overstates the impact of the policy. A key question is not what percentage of land is off-limits under an advertising ban, but rather, what is the additional or incremental impact of an advertising ban given existing zoning regulations.

There are at least four unanswered policy research questions that need to be addressed in future work:

First, although the results presented here speak to the number and proportion of retailers affected by various advertising restriction zones, the final distance has not yet been decided on by the FDA. There is no national census of existing outdoor cigarette and smokeless tobacco advertising currently available that allows us to precisely estimate how much advertising would actually be removed around schools and/or playgrounds or parks. Past studies have shown that there are more exterior cigarette ads near schools^{12,13} and more ads where kids shop.¹⁴ Using the retailer estimates produced here, an estimate of five outdoor ads per store (averaging the estimates from two studies),^{13,14} and assuming 543,000 retail outlets,¹⁵ it is predicted that somewhere between 592,000 and 1.5 million pieces of advertising would be removed nationwide around schools with a 1000-foot boundary policy (using conservative estimates from Missouri and liberal estimates from New York). Ideally, retail tobacco industry marketing surveillance systems should be developed, as recommended at a National Tobacco Monitoring, Research, and Evaluation Workshop.¹⁶

Second, there are limitations associated with commercial geocoding of both the tobacco outlets and the schools. The latest address lists provided by government agencies were used here; however, it was not possible to geocode all retailers, despite using a professional geocoding service. This underscores the need for enforcement agencies to have better store location data, perhaps collecting the exact store latitude and longitude using GPS during compliance checks. Geocoding has errors¹⁷ and the geocoded address may not correspond exactly to the actual store location. It is not known how either of these geocoding issues affects these results, but it is pos-

sible that the non-geocoded stores could be similar to the geocoded ones and that any locational errors cancelled each other out.

Third, the inclusion of restriction zones around playgrounds remains very difficult to assess given existing data sources. Most GIS data available to communities provide information about the size of parks and park land, but not necessarily playgrounds. Small buffers around playgrounds within larger parks may result in restriction areas that never include commercially zoned property. Given the high level of park usage by youth, FDA may consider expanding the playground ban to include a park ban.

Finally, conducting this study has made it clear that there will be a number of challenges for states and communities in implementing and enforcing any final FDA advertising regulations. In particular, the quality and availability of tobacco retailer location data and school and playground parcel data vary from state to state and community to community. Further policy research and extensive technical assistance will be needed to help states and communities implement and administer these policies.

Tobacco advertising reaches children and adolescents in a variety of ways. Given the effectiveness of tobacco advertising, efforts to restrict the exposure of young people to tobacco advertising is an important health policy goal. The current health policy analyses suggest that weakening of outdoor advertising policies may result in phantom policies that do little to reduce youth exposure to tobacco product advertising.

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