



Policy Development and Analysis for Tobacco Retail Strategies

Despite the reduced prevalence of tobacco use around the world, tobacco use remains a significant contributor to the global burden of disease for those who use tobacco and for those who are exposed to second-hand smoke.¹ The American Heart Association (AHA) is working toward a tobacco endgame to reduce use of tobacco products to $\leq 5\%$ in the United States by 2035.² This goal is very ambitious and likely not fully achievable without greater policy development and intervention.³ Accordingly, the AHA continues to explore and identify evidence-based strategies that can contribute to achieving the endgame goal.²

In 2007, the Institute of Medicine recommended that the number and location of tobacco retail outlets (TRO) be regulated.⁴ According to the Aspire Center⁵, there are about 375,000 TROs nationwide. For comparisons, that is 31 times more TROs than McDonald's restaurants. There are 4.7 times more TROs per square mile in the lowest-income census tracts than the highest-income tracts in the U.S. A majority (63%) of schools in this country have a TRO within 1000 feet of school grounds. To achieve the equity focused tobacco endgame with an emphasis on equity, it is both essential and logical to target public policy interventions that address the supply side and prevalence of TROs in communities.

In addition to drawing attention to and limiting the tobacco industry's targeted marketing practices, the AHA and its tobacco control partners are aligned on a multi-pronged policy approach that includes meaningful U.S. Food and Drug Agency (FDA) regulation, raising the price on tobacco products, eliminating the sales of products with characterizing flavors, and finding effective strategies to help users successfully quit.³ The AHA currently advocates for age restrictions and comprehensive tobacco retail licensure (TRL) at the state and community level and is exploring the evidence that would support additional retail strategies.³

The recent AHA Tobacco Endgame Presidential Advisory² and roadmap identified three additional policy interventions to focus on restricting the sale of tobacco products. The first is to restrict the siting of TROs from one another (retailer buffer) and away from youth-serving institutions and organizations (school buffer). The second strategy is to reduce the density of TROs by reducing the number of retailers within a given geography. This policy intervention can be designed to purposefully address equity by focusing on the oversaturation of retail outlets in certain jurisdictions, including communities that have been historically under-resourced. A third strategy is to restrict the sale of tobacco products beyond the AHA's current flavoring restrictions work and support for tobacco free pharmacies and other health related retailers. This could include limiting sales to adult-only, tobacco-only shops; or completely ending sales in local jurisdictions.

The purpose of this policy analysis was to explore the evidence and equity impact regarding the benefits, limitations, and barriers of these additional retail policy approaches in impacting

public health and tobacco use prevalence. This analysis was completed using critically appraised topics (CAT) for each policy intervention by answering the following three questions:

- 1) What is the level of evidence for the effect of each of the three primary policy approaches on public health and youth tobacco use prevalence?
- 2) What is the equity impact of the three primary policy approaches?
- 3) What is the feasibility of advocacy campaigns addressing each of these policy approaches, especially in rural communities and Tobacco Nation?

Background: To further assess evidence around public policy to address the number and location of retail outlets, the American Heart Association’s policy research team, in coordination with leading experts, conducted a thorough review and analysis of the literature. The focus was on three primary policy approaches: to restrict the location of tobacco retail outlets away from each other (retailer buffer) and away from youth-serving institutions and organizations (school buffer), the second was to reduce the density of RTOs by reducing the number and density of retailers with a purposeful equity goal across different jurisdictions. The last strategy was to restrict the eligibility to sell through TRL; completely ending sales in local jurisdictions; limiting sales to adult-only, tobacco-only shops; or maintaining tobacco-free pharmacies and other health-related retailers.

Methodology: Analysis of the literature was done using a CAT approach for each policy strategy to answer three key questions related to the level of evidence of the impact each strategy has on public health and youth tobacco use prevalence; the equity impact of each strategy; and the feasibility of advocacy campaigns addressing each of these strategies. The PubMed database (www.pubmed.gov) was searched on Dec 20, 2021 using search terms derived from the ASPIRE ([October 2021 retail tobacco-related literature search results - ASPIRE Center](#)).

Results: **Figure 1** outlines the results of the search and the process used to derive the papers used to complete the analysis. The final 28 papers included original research that was written in the English language, conducted in a U.S. market, had primary or secondary outcomes related to policy implementation of the target strategies, and were published/published ahead-of-print between January 1, 2006 and the date the search was done December 20, 2021.

The level of evidence for each strategy was determined by using the Quality and Impact of Component (QuIC) Evidence Assessment and classified along the QuIC evidence continuum (**Figure 2**). Only 2 articles evaluated Adult-only, Tobacco-Only outlets and this strategy was not further analyzed. No studies included in analysis evaluated the complete ending of tobacco product sales. **Table 1** summarizes important key findings related to equity and health impacts found for each of the strategies.

Key Recommendations:

The strongest of the identified additional retail sales policy interventions from the Tobacco Endgame Roadmap was the School and Retailer Buffer strategy. Specifically, the research supports the use of 1000 ft. school buffers⁶⁻¹² and 500 ft buffer between retailers.^{8,9,11,13}

Summary of CAT Analysis: The eight studies that were evaluated in this area demonstrated strong potential for impact, particularly in the areas of equitability and generalizability for general health. When sub-analysis was performed on the studies that explicitly focused on youth outcomes (none of the studies analyzed changes in youth tobacco use prevalence) the school buffer strategy was classified as Promising Impact, maintaining strong equitability. However, the low quality score demonstrated a need for more research with particular attention to changes in youth tobacco use prevalence. In terms of the feasibility of advocacy campaigns, two of the studies analyzed laws that were already in place,^{6,12} which could provide some modeling in future campaigns. Furthermore, school buffers have been in many U.S. cities, including in California, Illinois, Louisiana, and New York.¹⁴ These range from 500 ft¹² to the already stated 1000 ft buffer zone. Although fewer, there are laws in jurisdictions in California that restrict distance between retailers to 200 – 500 ft.¹⁴ In the study from Farley et al.⁶, the majority of adults surveyed in New York City were in favor of a 1000 ft school buffer (69% of non-smokers and 60% of smokers). [See Appendix A for summary table of the literature related to school and retailer buffers, and the QuIC Evidence Assessment results]

The impact and equity of retailer strategies can be optimized when strategies are combined, particularly as part of or along-side TRL laws. This approach can allow for more localized modification of the combination of strategies to best suit the needs of a particular community.

Summary of CAT Analysis: There were a total of 14 articles that evaluated TRL laws and the QuIC Evidence Assessment classified the TRL laws as Best. However, four of the studies compared the strength of TRL laws between jurisdictions,¹⁵⁻¹⁸ which prompted a consideration to perform a CAT analysis on studies that had “Comprehensive” policies. Two of the studies graded the strength of TRL laws using model criteria from the American Lung Association that requires an annual fee, all retailers have a license and re-new it each year, any violation is a violation of the license, and violations have fines and penalties (including license suspension and revocation).^{15,16} The study by Usidame et al.¹⁷ considered the strength of the TRL law between jurisdictions based on the Massachusetts Tobacco Control Program which includes policies that limit tobacco sales permits, minimum pricing for cigars, regulating e-cigarette and nicotine delivery products to minors, a ban on all flavored tobacco products, and tobacco-free pharmacy laws.¹⁷ Considering the variation in measuring the strength of TRL laws in these studies, additional studies were included in this analysis for assessing compounding strategies that could be controlled within TRL laws.

The findings of this analysis demonstrated a QuIC Evidence Assessment classification as Best, with the strongest potential for a public health impact than the other policies and high levels of evidence quality. Effectiveness for a positive health impact and equity are strengthened because individual jurisdictions (state, county, city, etc.) can design the TRL law that best suits their community. For example, Craigmile et al.¹⁰ found that the best combination of TRL laws were dependent on the community. The authors found that 1000 ft school buffer was more equitable and impactful when based on prevalence of Black residents, but TRL capping laws were more equitable for rural communities where schools and retailers are more likely to already be spaced apart. They also found that tobacco-free pharmacy laws had inequitable impacts.¹⁰ In studies that compounded policy strategies (not necessarily with TRL laws), a greater density reduction was found when tobacco-free pharmacy law and school buffer were combined⁸ and limiting cigarette sales to tobacco-only retailers and a retailer buffer enhanced density impact and equalized total purchasing cost across communities.¹³ The evidence of the impact to youth smoking prevalence is very promising as well. Enactment of an e-cigarette licensing policy added to the existing TRL law in Pennsylvania resulted in a nine percentage-point reduction in youth e-cigarette use prevalence, which was 5% lower than New York and more than 7% lower than Virginia (neither of which had e-cigarette licensure laws at the time).¹⁸ Furthermore, Astor et al.¹⁵ found that more restrictive laws resulted in significantly lower odds of youth having ever used cigarettes and e-cigarettes, as well as past-30 days use of cigarettes and e-cigarettes. Similarly, Hong et al.¹⁶ found youths in weaker TRL ordinance areas were more likely to report using e-cigarettes. Advocacy campaigns should be feasible, similar to the School and Retail Buffer strategy, several of the studies were performed in areas where these laws were already in place^{12,15-19} providing precedence and modelling for campaigns. [See Appendix B for summary table of literature related to Comprehensive TRL strategies and the QuIC Evidence Assessment results]

Conclusion: The evidence, as summarized in this analysis, found that 1000 ft school buffers and 500 ft retailer buffers are impactful policy interventions that would advance the AHA's tobacco endgame goal and contribute to health equity. These two policy interventions are enhanced and can be utilized more effectively when combined with TRL laws that are already advocated for by the AHA. Zoning or stand-alone laws addressing retailer density can be layered on top of comprehensive TRL.¹⁴

There are legal considerations to weigh when considering these policy interventions, including the Takings Clause under the Fifth Amendment and portions of the Fourteenth Amendment (particularly equal protection and procedural due process).¹⁴ The Fifth Amendment is commonly known for protecting against self-incrimination. However, it also requires the government to provide compensation when it takes private property for public use, known as the Takings Clause.²⁰ The Equal Protection Clause in the Fourteenth Amendment requires that a governing body must treat an individual the same as those in similar circumstances.²⁰ The Fourteenth Amendment also includes the Due Process Clause that contains two concepts, procedural due process and substantive due process.²⁰ Procedural due process guarantees

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that there is fairness given to everyone.²⁰ To the extent possible, it will be important to design state and local laws and regulations that can withstand such legal challenges.

Another legal risk and consideration relates to allowing exemptions to legislation that can potentially lead to legal challenges related to equal protections.¹⁴ For example, eliminating the tobacco sales in all stores that contain licensed pharmacies rather than limiting the law to stand-alone pharmacies only can be legally problematic.¹⁴ Issues related to the Takings Clause and procedural due process may be mitigated by “grandfathering” existing TROs and letting these naturally phase out over time.¹⁴ While this may delay the realization of the health benefit of the policy, it can be an effective strategy to withstand legal challenge. Santa Clara, CA experienced a 30.6% decline in grandfathered TROs that ceased selling tobacco products in lieu of paying the TRL fee.¹⁹ This suggests that the enactment of comprehensive TRL laws may have an immediate positive impact on retail density. After 3 years, a Philadelphia comprehensive TRL that included a 1000 ft. school buffer led to a 20% decline in TRO density and 12% reduction in TROs near schools.¹²

Figure 1: Results of literature search and screening process

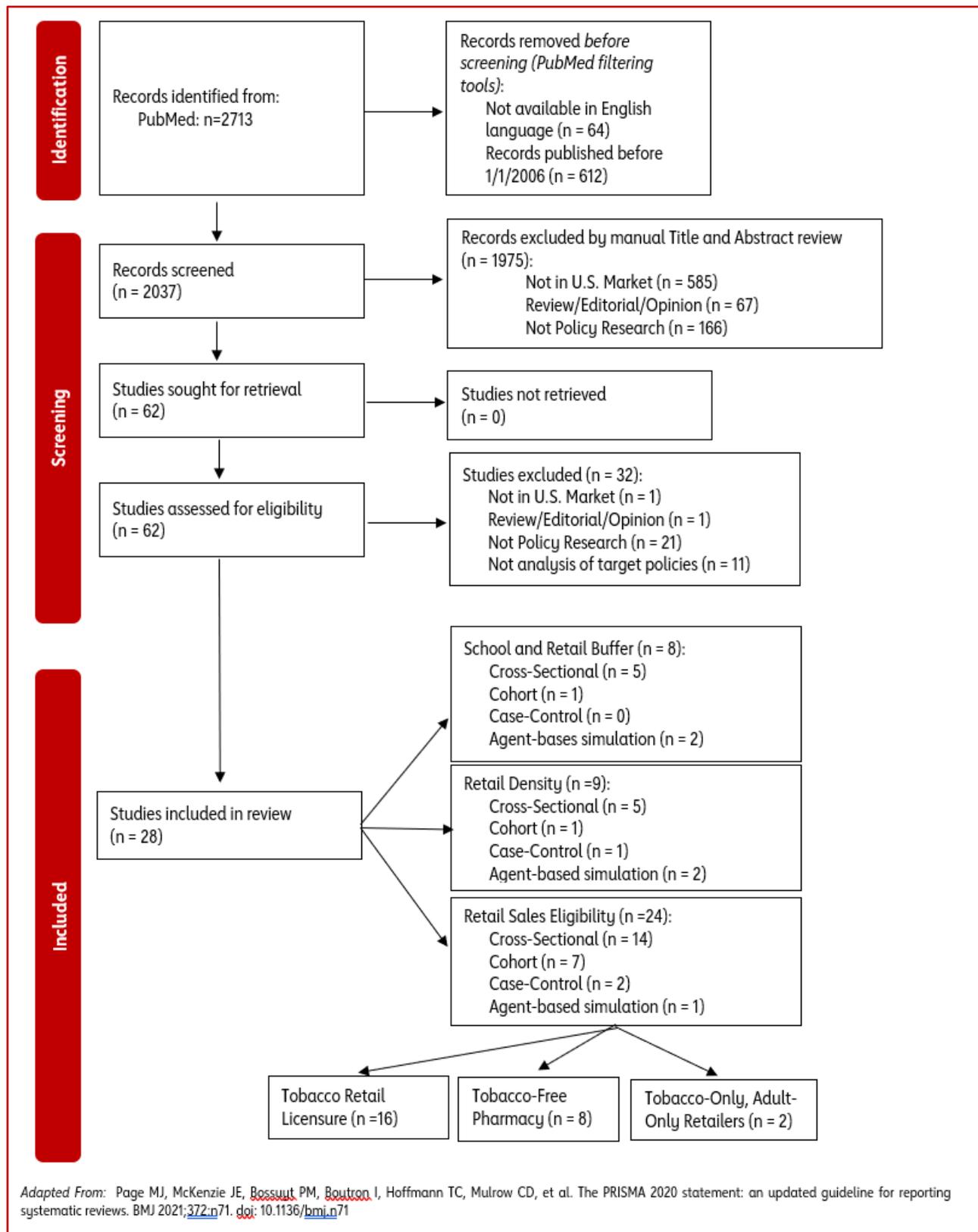
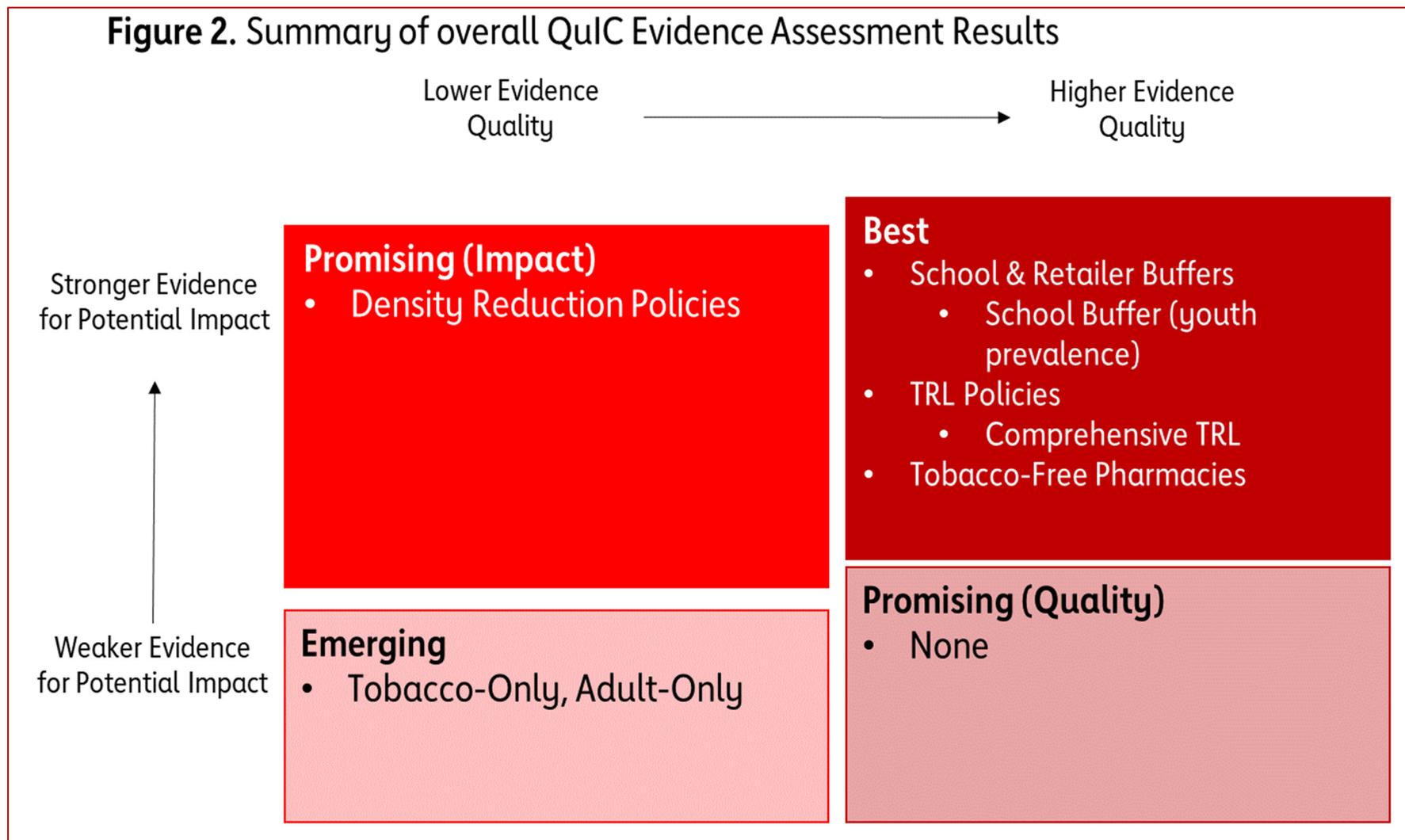


Figure 2. Summary of overall QuIC Evidence Assessment Results



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Table 1: Summary of the Equity and Health Impacts, Level of Evidence from QuIC, and AHA Strategic Alignment for Each Tobacco Retailer Strategy Explored

Tobacco Retail Strategy	Equity Impact (QuIC Score)	Health Impact (QuIC Score)	Level of Evidence (QuIC Classification)	Strategic Alignment
School & Retailer Buffer	7.5/10 pts - This a strong score. School Buffer is not as equitable for rural communities, where limiting the number of licenses (capping) works better.	5/10 pts. - This is a moderate score. The findings from studies demonstrated direct evidence of an expected positive outcome to health. This was due to very few studies evaluating actual health impacts (e.g., decreased youth tobacco use or increased adult cessation attempts). However, density changes and reductions of retailers near schools infer a possible positive impact.	BEST	3
Density Reduction	7.5/10 pts - This is a strong score. This is due to the fact that most density reduction strategies have an equity focus.	5/10 pts. - This is a moderate score. Particularly retailer buffer policies are one method of reducing density. Similar to the School & Retailer Buffer Strategy, the findings from studies demonstrated direct evidence of an expected positive outcome to health.	PROMISING IMPACT (more research needed)	3
Restricting Eligibility to Sell Tobacco Retail License	5/10 pts - This is a moderate score. Studies that have evaluated compliance (mostly related to ID checks and age-of-sales violations) in licensed outlets, particularly, found worse compliance is low SES communities and communities with a high African American population.	5/10 pts. - This is a moderate score. This score was weakened by the studies that found lower compliance to laws low SES communities and communities with a high African American population.	BEST	3

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Comprehensive Retail Licensure	7.5/10 pts - This is a strong score. Utilizing more comprehensive approaches (using more than one strategy) increased equitability of TRL laws because of more stringent compliance laws, and laws that better fit the community.	7.5/10 pts. - This is a strong score. The score for this strategy benefited from studies that evaluated youth tobacco use prevalence before and after stronger TRL laws enacted, and in areas with stronger TRL laws compared to areas with weaker laws.	BEST	3
Tobacco-Free Pharmacies	2.5/10 pts. - This is a weak score. Research in this area demonstrates this strategy can be effective at reducing density, but areas that are commonly found to be "pharmacy deserts" did not see a reduction in density/number of retailers.	7.5/10 pts. - This is a strong score. The score for this strategy benefited from studies that evaluated tobacco use prevalence among adult users and higher quit attempts for adult users. No studies in this area evaluated youth prevalence or exposure.	BEST	3



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Appendix A: Summary of the QuIC Evidence Assessment for Retail and School Buffers

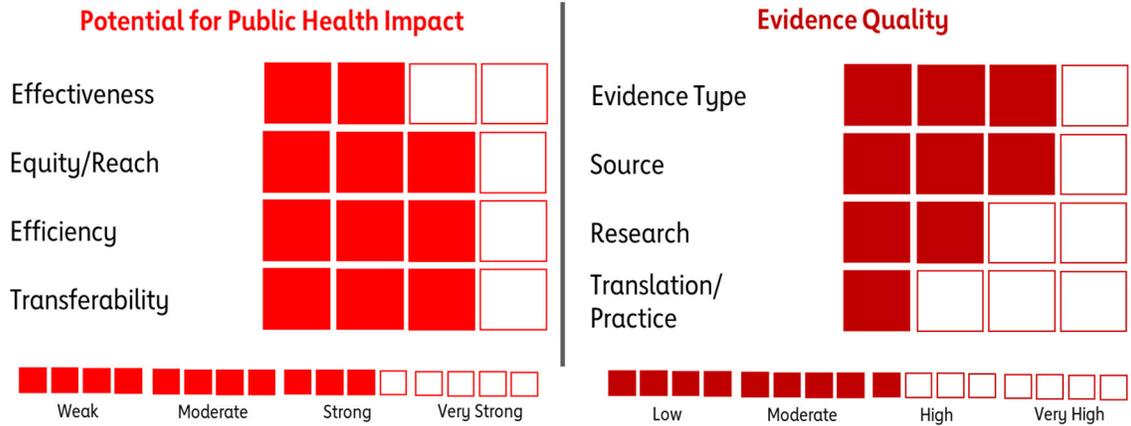
Table summarizing the studies related to Retail and School Buffers

Authors	Buffer Type	Results	STROBE Grade
Myers AE, et al. 2015	School & Retailer	500 ft retailer buffer ↓ density 22.1% (state); 20.8% (16.6% - 27.9%; county). Tobacco-free pharmacy & school buffer ↓ density 29.3% (state); 29.7% (26.3 to 35.6%; county).	Good
Farley SM, et al. 2015	School	Limiting TRL: 54% (non-smokers) & 30% (smokers) in favor; School Buffer: 69% (non-smokers) & 60% (smokers) in favor.	Fair
Luke DA, et al. 2017	School & Retailer	↓ density leads to ↓ accessibility by ↑ search and purchase costs. Proximity policies best in dense, urban; Random retailer reduction best in less-dense, suburban settings.	N/A
Ribisl KM, et al. 2017	School	1000 ft. school buffer: retailer density ↓ from 1.28/1000 ppl to 0.36/1000 ppl (low income); from 0.84/1000 ppl to 0.45/1000 ppl (highest income). ↓ disparate retailer density by income level and by proportion of African Americans.	Fair
Combs TB, et al. 2020	Retailer	Restricting all cigarette/menthol cigarette sales to tobacco specialty; largest effect on the total costs of purchase. Couple with Retailer buffer: Enhances impact & equalizes total cost across communities & populations.	N/A
Lawman HG, 2020	School	3 yrs after TRL Law implementation in large urban area: retailer density ↓ 20.3% (significantly greater in low-income districts vs high-income), ↓ 12% in retailers near schools (1000 ft buffer).	Fair
Craigmile PF, et al. 2021	School	Best TRL law dependent on community. 1000 ft. School Buffer: 9.2% ↓ in communities with low-prevalence of African-Americans vs. 17.7% ↓ in communities with high-prevalence of African-Americans; Capping-based reductions: Equitable for rural communities. Tobacco-Free Pharmacy: demonstrated inequitable impacts.	Fair
Obinwa U, et al. 2022	School & Retailer	Simulation of the 1000 ft school buffer led to a slightly greater reduction in advertisements (19.4%) vs 500 ft retailer ban (17.9%). The reduction in all advertisement types was greater around middle schools and greatest for e-cigarettes (23.6%).	Fair

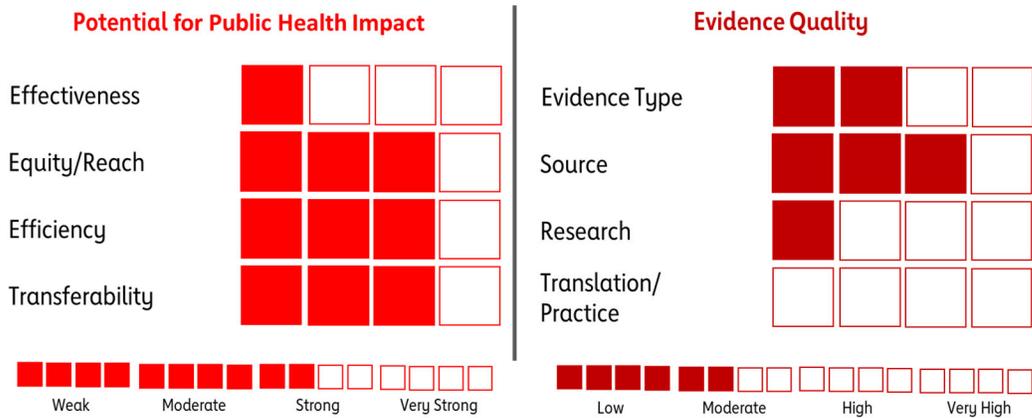
ft = feet; ↓ = decreased; ↑ = increased; TRL = tobacco retail license; ppl = people; N/A = not applicable

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The QuIC Evidence Assessment for the effectiveness of School Buffer Policies for general health



The QuIC Evidence Assessment for the effectiveness of School Buffer Policies on youth tobacco use prevalence



Appendix B: Summary of the QuIC Evidence Assessment for Retail and School Buffers

Table summarizing the studies related to "Comprehensive" Tobacco Retail Licensure Laws

Authors	Results	STROBE Grade
Coxe N, et al. 2014	Pre- to Post- local TRL law: 30.6% ↓ in number of tobacco retailers. 91% of closed were non-traditional retailers.	Fair
Myers AE, et al. 2015	500 ft retailer buffer ↓ density 22.1% (state); 20.8% (16.6% - 27.9%; county). Tobacco-free pharmacy & school buffer ↓ density 29.3% (state); 29.7% (26.3 to 35.6%; county).	Good
Astor RL, et al. 2019	Stronger (most restrictive) vs weaker (least restrictive) TRL laws: Stronger laws ↓ odds of ever cigarette use (OR 0.61; 95% CI 0.41–0.90), past 30-day use (OR 0.51; 95% CI 0.29–0.89), cigarette use initiation (OR 0.67; 95% CI 0.45–0.99), e-cigarette initiation (OR 0.74; 95% CI 0.55–0.99), & e-cigarette initiation within past 30-day use (OR 0.45; 95% CI 0.23–0.90).	Good
Hong H, et al. 2019	Participants in jurisdictions with weaker TRL ordinances were more likely to report use of e-cigarettes because they are less harmful than cigarettes (50.1% vs. 36.2%), more acceptable to non-tobacco users (38% vs. 25%), and because they can use e-cigarettes in places where smoking is prohibited (30.7% vs. 18.3%; all p < .05).	Good
Usidame B, et al. 2019	Retail stores in municipalities with more comprehensive local tobacco control policies were more likely to have fewer tobacco ads (IRR = 0.92, p < 0.01) and a lower number of tobacco ad categories (OR = 0.88, p < 0.05).	Fair
Combs TB, et al. 2020	Restricting all cigarette/menthol cigarette sales to tobacco specialty; largest effect on the total costs of purchase. Couple with Retailer buffer: Enhances impact & equalizes total cost across communities & populations.	N/A
Azagba S, et al. 2020	Pennsylvania e-cigarette licensing policy was significantly associated with reduced youth e-cigarette use. ↓21.6% - 30.7% from baseline prevalence; ↓ 5.2% compared to NY youth; ↓ 7.4% compared to VA youth.	Good
Lawman HG, et al. 2020	3 yrs after TRL Law implementation in large urban area: retailer density ↓ 20.3% (significantly greater in low-income districts vs high-income), ↓ 12% in retailers near schools (1000 ft buffer).	Fair
Craigmile PF, et al. 2021	Best TRL law dependent on community. 1000 ft. School Buffer: 9.2% ↓ in communities with low-prevalence of African-Americans vs. 17.7% ↓ in communities with high-prevalence of African-Americans; Capping-based reductions: Equitable for rural communities. Tobacco-Free Pharmacy: demonstrated inequitable impacts.	Fair

ft = feet; ↓ = decreased; ID = identification; TRL = tobacco retail license; RVRm = Retail Violation Rate for sales to minors; OR = Odds Ratio; CI = confidence interval; IRR = Incidence Rate Ratio; NY = New York; VA = Virginia; N/A = not applicable

