Original Investigation

Beyond Strong Enforcement: Understanding the Factors Related to Retailer Compliance With Tobacco 21

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Abstract

Introduction: Tobacco 21 (T21), which sets the minimum legal sales age for tobacco to age 21, is now a national law in the United States. Although T21 is expected to help curb youth tobacco use, its impact may be dampened due to poor retailer compliance. Even within environments where enforcement is strong (ie, compliance checks are conducted with tough sanctions for violations), compliance might vary due to other factors.

Aims and Methods: Three studies were conducted in Columbus, OH, where T21 became strongly enforced in 2018. These studies examined how retailer compliance related to features of the neighborhood in which a retailer was located (Study 1), features of the retailer (Study 2), and features of the retail cashier (Study 3).

Results: Study 1 found that, after controlling for race- and age-based factors, retailers located in high (vs. low)-poverty neighborhoods had a lower likelihood of conducting identification (ID) checks. Study 2 found that ID checks were related to whether retailers displayed signage about T21, as required by the city law. Study 3 found that, among cashiers, T21 awareness (which was high) and perceptions about T21 (which were moderate) were not generally related to their retailer's compliance; having (vs. not having) scanners for ID checks was related to a higher likelihood of compliance.

Conclusions: These studies emphasize the many, multilevel factors influencing T21 outcomes. Findings also indicate the potential for T21 to widen disparities in tobacco use, indicating the need for strategies to equitably improve T21 compliance.

Implications: T21, which sets the minimum legal sales age for all tobacco products to age 21, is now a national law in the United States. Despite optimistic projections about what T21 could achieve, the ultimate impact may be dampened when it is applied in real-world settings. Our project revealed the many, multilevel factors influencing T21 compliance. Findings also indicate the potential for T21 to widen disparities in tobacco use if gaps in compliance persist. Strategies for equitably improving T21 compliance are discussed. This article is of relevance to areas interested in implementing or improving their local T21 enforcement.

Introduction

The last 15 years have witnessed the rise of Tobacco 21 (T21) as a central tobacco control approach in the United States. Beginning in 2005 with the first local ordinance and later spreading to state laws, T21 reached the national level in 2019 when it became federal law. T21 laws set the minimum legal sales age (MLSA) for all tobacco products to age 21, thus prohibiting retailers from selling tobacco products to anyone under that age. The goal of T21 is to delay, prevent, or reduce youth tobacco initiation and use. Such trends are, in turn, expected to reduce the overall prevalence of tobacco use in the long term.[1,2] The Institute of Medicine predicted that, beyond the declines expected as a result of long-term trends in tobacco use, cigarette smoking would drop by an additional 12% with a national MLSA of 21.[1]

Despite the optimistic projections about what T21 could achieve, however, the ultimate impact may be dampened when it is applied in real-world settings. Of central concern is whether tobacco retailers are compliant with a T21 policy, such that retail staff are checking the identifications (IDs) of young customers and refusing sale to those underage. Unfortunately, despite the popularity of T21, few studies have evaluated compliance. The few published evaluations of T21 show a wide variation in retailer compliance—from 62% to 94%.[3,4]

Given this wide variation in retailer compliance, it is important to understand what leads to good versus poor T21 compliance. Enforcement is one factor widely contended to be crucial for good compliance.[5,6] Indeed, several studies investigating MLSA laws of age 18 indicate that such laws reduce youth tobacco use *only when* they are well enforced and disrupt the sale of tobacco products to minors.[7–9] Strong enforcement is largely comprised of compliance checks (ie, sending supervised underage youth into retailers to attempt to purchase tobacco) plus sanctions for violations. Yet even within environments where enforcement is strong, compliance among retailers might vary due to other factors. These include features of the neighborhood in which the retailer is located (eg, poverty level), the tobacco retailer (eg, tobacco marketing), and the retail cashier conducting the transaction (eg, attitudes about T21). Some research has investigated these factors for an MLSA of 18[7,10] but not for T21. Understanding these additional factors is critical to improving enforcement efforts, increasing compliance, and, ultimately, reducing tobacco use.

The purpose of this project was to understand the factors related to T21 compliance in an environment where T21 is strongly enforced. All work for this project was conducted in Columbus, OH, where the City Council passed a T21 ordinance in December 2016. Beyond prohibiting the sale of all tobacco products to anyone under the age of 21, this law also stipulated that retailers must check the ID of anyone who looks under the age of 30 and display signage indicating the new MLSA; a licensing component to the ordinance also required retailers to obtain a tobacco retailer license from the city. The ordinance further stipulated that T21 enforcement would be led by Columbus Public Health (CPH), the city health department. Their work began by connecting with the nearly 800 retailers in the city to issue tobacco retail licenses, supply free T21 educational materials, and provide the required signage displaying the new age of sale. Following this, public health officials attempted to conduct compliance checks with all retailers within the first year of the law going into full effect (which started October 2017). Sanctions for violations were as follows: a warning notice for the first offense, a $500 fine for the second offense, and a $1000 fine and the risk of a suspended tobacco license for any further offenses.

To investigate the factors related to T21 compliance in Columbus, this project conducted three evaluation studies. In the first, we used data collected from CPH T21 compliance checks to determine whether ID checks for adolescents varied by retailer type and neighborhood sociodemographics. In the second study, we conducted our own compliance checks both before and after the start of T21 enforcement to determine whether there were pre–post T21 changes in ID checks and if ID checks varied by the retailer's tobacco marketing and signage. Finally, in the third study, we interviewed cashiers conducting tobacco sales to determine whether retailer T21 compliance was associated with general perceptions and practices surrounding T21 at the retailers. Together, these studies were intended to provide a comprehensive picture of the factors operating in a strongly enforced T21 environment.

Study 1: City-Wide T21 Compliance Data With Adolescents

Overview

In this first study, we examined data recorded by CPH workers conducting T21 compliance checks. Data are cross-sectional because city data on compliance prior to T21 were not collected. However, advantages of the current data are that they are nearly comprehensive of all Columbus retailers, provide adequate power to assess neighborhood differences, and concern purchases by underage adolescents. Given previous findings when the MLSA was 18, we hypothesized that T21 compliance would vary by retailer type and neighborhood sociodemographics.

Methods

Compliance Inspections

CPH attempted to visit all licensed tobacco retailers in the city within the first year of implementation. Two retailers were visited in December 2016 (excluded from these analyses). A remaining 800 unique retailers were visited between October 2017 and July 2018. During these visits, an underage youth would attempt a tobacco purchase while an adult member of CPH's Environmental Health Division waited outside the establishment. Each purchase attempt was dichotomously coded as *compliant* or *non-compliant*, based on whether the underage sale was refused or transacted, respectively. Inspectors additionally recorded retailer type (coded as bar and/or restaurant, gas station, carryout, grocery store, specialty tobacco shop, or "other").

Sociodemographic Measures

For all census tracts in which retailers were located, we obtained sociodemographic information from the 2017 American Community Survey 5-Year estimates. The main factors assessed were percent of the population that was African American, percent living in poverty, and percent under the age of 18. Other racial and/or ethnic groups could not be analyzed because of their low prevalence in the city. To address the skewed distribution of these factors and to simplify presentation and interpretation of our results, all sociodemographic measures for each census tract were dichotomized (high vs. low) based on a median split.

Analysis

Descriptive statistics were first used to determine retailer T21 compliance. As this was a cross-sectional design, chi-square

Table 1. Summary of Project Studies and Their Findings Pertaining to Tobacco 21 (T21) Compliance in Columbus, OH

Study	Sample	Factors associated with ID checks
Study 1: city-wide T21 compliance data with adolescents conducting ID checks	800 retailers visited after T21 became enforced	• Time 　◦ Compliance declined in the year following T21 enforcement • Retailer type 　◦ Compliance was lowest in bars and/or restaurants and tobacco shops, and was highest among gas stations, grocery stores, and carryouts • Neighborhood poverty 　◦ Accounting for the prevalence of African Americans and people under the age of 18, compliance was less likely in high-poverty neighborhoods
Study 2: pre–post T21 data with young adults conducting ID checks	91 retailers visited both before and after T21 became enforced	• Time 　◦ The prevalence of ID checks increased following T21 • T21 signage 　◦ ID checks were more prevalent among retailers with T21 signage
Study 3: retailer interviews	150 individuals who conduct tobacco sales	• Perceptions 　◦ Compliance was less prevalent for retailers where clerks strongly believed tobacco companies try to get young people to start using tobacco • Training 　◦ Compliance was more prevalent for retailers where owners and managers reported the retailer had training on ID checks • Scanners 　◦ Compliance was more prevalent for retailers that had scanners to automatically check IDs

analyses assessed how compliance varied by time (the year immediately following T21 vs. later); chi-square analysis also assessed differences by retailer type. Next, the address of each retailer was geocoded by our team to determine its census tract. Using ArcGIS software, addresses were projected onto a map and joined to their respective census tracts using "Spatial Join" in ArcMap. In instances where a retailer could not be geocoded, the census tract for an individual addresses was determined using the web site http://www.latlong.net. The retailer data were then merged with the tract-level socioeconomic measures to determine the sociodemographic characteristics of the communities in which each retailer was located. Finally, logistic regression was used to determine which sociodemographic factors were associated with retailer T21 compliance.

Results

Among the 800 retailers visited in Columbus, the overall prevalence of T21 compliance was 65.8% (Table 1). In the period immediately following T21 enforcement (October through the end of December 2017; 217 retailers), compliance was 74.4%, but declined to 62.4% in the subsequent year ($\chi^2(1) = 10.16$, $p = .001$). Compliance also differed by retailer type ($\chi^2(5) = 14.79$, $p = .011$). Specifically, compliance was lowest among bars and/or restaurants (48.8%) and tobacco shops (60.2%), and was highest among gas stations, grocery stores, and carryouts (72.4%, 70.6%, and 69.8%, respectively).

In a multivariable logistic regression model that examined associations between neighborhood sociodemographic factors and T21 compliance, only poverty was found to be a significant predictor (odds ratio = 1.40, 95% confidence interval, 1.03–1.89, $p = .031$). Specifically, accounting for the prevalence of African Americans and people under the age of 18 in the census tract, retailers located in a census tract with a high (vs. low) prevalence of poverty had 1.4 times greater odds of selling tobacco to an underage youth.

Study 2: Pre–Post T21 ID Checks With Young Adults

Overview

For this study, we conducted our own compliance checks (separate from City-sponsored compliance checks) with young adult fieldworkers in Columbus, both before and after T21 went into full effect. This pre–post design allowed us to evaluate if retailer compliance changed following the implementation of the T21 law. We considered all types of cigarette retailers (eg, tobacco shops, grocery stores, gas stations) and assessed our sample for retailer characteristics and ID checks. At both timepoints, the young adults making cigarette purchases were in the age range of 21–22; this ensured their appearance required an ID check but avoided the potential legal issues associated with fieldworkers making an underage purchase. We hypothesized that there would be an improvement in ID checks following T21, and that post-T21 ID checks would be associated with the retailer's tobacco marketing and its compliance with posting T21 signage. Due to concerns about statistical power, we did not examine differences across neighborhoods.

Methods

Retailer Visits

In summer 2017, pairs of undergraduate fieldworkers (aged 20–21, with only 21-year-olds making the purchases) visited 110 retailers within Columbus city limits.[11] This was after the Columbus T21 law had been enacted, but before it had taken effect. These retailers were drawn from a list of all licensed tobacco retailers in Franklin County, OH (where Columbus is located) and the sample was selected using proportional sampling, stratified by location in the county. Because the new law had not yet gone into effect, the MLSA in Columbus was 18 and cashiers were federally required to ID anyone who looked under the age of 27. Of the 110 retailers, eight were temporarily or permanently out of business, being renovated, or no longer

selling tobacco; another seven were vape and/or hookah shops (our protocol was for cigarettes). Fieldworkers thus conducted compliance checks in 95 Columbus retailers in 2017.

In summer 2018, the same sample of retailers was visited again. By this time, T21 was being enforced in Columbus and cashiers were required to ID anyone who looked under the age of 30. All undergraduate fieldworkers were aged 20–22 (with only those aged 21 and older making the purchase). Of the 95 retailers with compliance checks the previous year, three were permanently or temporarily out of business; in one retailer, fieldworkers were identified as working for the university. After these exclusions, 91 retailers were available for analyses.

At both timepoints, fieldworker pairs visited all retailers during daylight hours and used a Qualtrics application on their smartphones to discretely collect data on retailer marketing practices and what tobacco products were being sold. At the end of each visit, one fieldworker also attempted to purchase the cheapest pack of cigarettes in the retailer. Fieldworkers received extensive training on how to conduct the visits and achieved good internal reliability (kappa statistics >.67) at practice retailers prior to beginning data collection.

Measures

Items were based on previous work.[12,13] In 2018, fieldworkers recorded external tobacco advertising on retailers' buildings (eg, windows, doors) and site (eg, parking lot, fuel pumps). The items were used to create a continuous scale for the number of different product types advertised (possible scale range: 0–5). If there was external advertising located on the property site or on the building itself, fieldworkers also recorded whether the advertising was *discreet* (few advertisements that most customers would not readily notice), *in your face* (numerous and/or very large advertisements that were immediately obvious), or *moderate* (which fell between these two extremes). Both building and site were rated separately (from 1 = *no advertisements* to 4 = *in your face*) and these two ratings were averaged to provide each retailer with an external advertising impression score.

In 2018, fieldworkers also recorded whether there were tobacco control signs posted anywhere inside the retailer. Options included *no signs*, *age 18 MLSA signage* (eg, "We card 18," which was by then out of date), *T21 signage* (eg, "Under 21: No Tobacco or Tobacco Products"), or *other* (eg, handwritten signs stating "we card under 40").

At both timepoints, a fieldworker asked a cashier at each retailer for the price of their cheapest pack of cigarettes. Once the cashier responded, the fieldworker said "Great. I'll take those." If the cashier asked for ID, the fieldworker provided his and/or her driver's license and subsequently recorded that the retailer conducted an *ID check*; if the cashier did not ask for ID, or only verbally asked the fieldworker for his and/or her age or birthday, the fieldworker subsequently recorded this as *no ID check*.

Analyses

As this was a repeated-measures design, McNemar's test was used to assess pre–post differences in retailers' ID checks (2017 vs. 2018). Independent *t* tests were used to determine whether tobacco advertising scores differed between retailers that did (vs. did not) conduct ID checks in 2018. Finally, chi-square tests were used to examine how ID checks in 2018 differed by the presence of T21 signage.

Results

Among the sample of 91 retailers where tobacco purchases were made at both timepoints, 39% conducted ID checks in summer 2017 and 78% conducted ID checks in summer 2018. This increase in compliance was statistically significant ($\chi^2(1) = 23.56$, $p < .001$).

No significant differences in advertising were observed between retailers that did versus did not check for IDs in 2018 (all ps > .05). However, chi-square analyses indicated that ID checks were more common among the retailers with T21 signs vs. those with other signage (83.1% vs. 50.0% checked IDs, respectively; $\chi^2(1) = 4.45$, $p = .035$).

Study 3: Retailer Interviews

Overview

In this final study, we interviewed individuals working at the retail point of sale. Our aim was to supplement the findings of the previous two studies, which focused on factors in the broader environment, with information about what was going on inside the retailers themselves. Tobacco retailer staff are at the forefront of the tobacco sales transaction and their behavior ultimately determines T21 compliance—and the policy's success. Yet extremely little research has examined retailers' understanding and perceptions of T21. This information seemed particularly relevant for Columbus, where much time and energy were devoted toward educating retailers about T21. Therefore, data from this study were analyzed to gain insights into the general perceptions and practices in retailers regarding T21. We hypothesized that T21 compliance would be associated with more positive attitudes toward T21 and better training on conducting ID checks.

Methods

Participants and Procedures

All procedures for this study were approved by our University IRB. Our team selected a random sample of 200 retailers, stratified on compliance, based on the list of retailers visited by CPH. Each retailer was visited by a pair of trained undergraduate fieldworkers during the summer and fall of 2018. Upon entering a retailer, the fieldworkers approached an individual working at the check-out counter, explained the study, and invited them to participate. To be eligible to participate, individuals needed to be an employee at the retailer who conducted sales for tobacco purchases. Only one interview was conducted per retailer. Participants first completed a consent form on an electronic tablet device; one fieldworker then verbally administered all survey questions. Participants received $10 for their time.

Of the 200 retailers visited, staff at 150 retailers agreed to participate. The most common reasons for refusal were company policies prohibiting survey-taking or concerns that the owner or manager would disapprove. Another six participants did not have complete responses for all survey questions of interest, resulting in a final sample of 144 for analyses.

Measures

The survey began with questions about whether the retailer was independent or part of a chain and/or franchise, and what the participant's position was in the retailer. Responses were later coded as: owner, manager (including shift leads and assistant managers), clerk, or other.

Awareness of T21 was assessed with the question "Based on where this store is located, what is the legal age for purchasing tobacco?" (*open response*). Participants were also asked "How young does someone need to look in order for you to ask for his and/or her ID?" (*open response*).

Training on ID checks was first assessed with the question: "Are employees at this store given any specific training or instructions for how to ID customers?" (*yes*, *no*, *don't know*). Two open-ended questions were then asked to assess the specific type of training provided, as well as the specific criteria used when deciding whether to check someone's ID.

To assess perceptions surrounding T21, staff were read a series of statements and asked how much they agreed with each. For example, support for T21 was assessed with the statement "The legal age to buy tobacco products should be 21" (1 = *strongly disagree*, 5 = *strongly agree*). Other statements concerned penalties for underage purchases, the addictiveness of nicotine, the potential impact of T21 (eg, "I think Tobacco 21 will help youth in Columbus use tobacco products less often or not at all"), and the history of tobacco companies marketing to vulnerable populations (eg, "Tobacco companies try to get young people to start using tobacco").

Survey items additionally assessed staff's demographic characteristics and tobacco-use behavior. Retailer compliance data were drawn from CPH's official compliance-check data.

Analyses

Analyses began with descriptive statistics to characterize the sample and understand overall awareness of T21 and attitudes toward the policy. For the qualitative data, investigators developed codes based on an initial review of responses; two independent coders next used the coding scheme to double-code all responses, while periodically meeting together with the lead investigator to resolve discrepancies and identify new codes as necessary. Chi-square analyses were used for the quantitative data and the coded qualitative data, to examine associations between retailer compliance and staff's attitudes and reports about training practices.

Results

Sample Characteristics

As reported elsewhere,[14] the sample was extremely diverse, with characteristics indicating a vulnerable population: 41% were racial and/or ethnic minority, 35% were born outside the United States, and 58% had educations that did not go beyond high school. Over 36% of staff learned a first language other than English, including Arabic, Spanish, Urdu, and Hindi. Average age was 36 (SD = 13.3), 27% of staff were female, and 52% were tobacco users themselves. When asked about their position in the store, 11% reported being the owner, 40% were managers, and 40% were clerks (the remaining participants described other types of roles).

Nearly the entire sample (98%) correctly reported "21" as the legal age for purchasing tobacco at their store. Fewer staff (81%) correctly reported "30" as the minimum age that people needed to appear to not have their ID checked. In terms of policy support, 66% agreed that the legal age to buy tobacco products should be 21.

Compliance and Perceptions

Due to our stratified sampling on compliance, 50% of the staff we interviewed worked at retailers that had failed their first CPH compliance check. Staff demographic characteristics and awareness of

T21 were not related to their retailer's compliance. Staff perceptions were also generally not related to their retailer's compliance. However, staff who agreed that tobacco companies try to get young people to start using tobacco were more likely to work at retailers that failed their compliance check ($\chi^2(1) = 6.35$, $p = .012$).

Compliance and Training

Most (76%) of staff reported that employees received training on conducting ID checks. Training was more likely among chain than independent stores (85% vs. 68%). Coding of the qualitative responses indicated that training varied widely in formality and medium. Many mentioned computer and/or online training; however, some attended in-person classes, shadowed a more experienced cashier, or were just instructed verbally to ID anyone who looked young. Likewise, qualitative coding revealed many different approaches for deciding when to card someone. Approaches included: using a scanner to automatically check IDs; having a personal rule for age cutoffs (eg, anyone who looks under 40); or having personal rules based on physical characteristics (eg, anyone who does not have gray hair). Receiving training had no association with support for T21, but it was related to agreeing that T21 would help youth in Columbus use less tobacco ($\chi^2(1) = 7.05$, $p = .008$).

Among the overall sample, retailer compliance was not related to reported training. However, higher retailer compliance was related to reported training when just looking at the owners and managers ($\chi^2(1) = 5.09$, $p = .024$). For the overall sample, reports of retailers having (vs. not having) scanners was related to a much higher likelihood of compliance (71% vs. 45%; $\chi^2(1) = 6.38$, $p = .012$).

Discussion

T21 laws will only be impactful if they are adhered to in real-world practice. The importance of enforcement in T21 adherence is already understood.[5] Therefore, this project focused on a location considered to have strong T21 enforcement, in order to investigate additional factors related to T21 success. Study 1 found that T21 compliance was lowest among bars and/or restaurants and tobacco shops. Further, after controlling for important race- and age-based factors, retailers located in census tracts with a high (vs. low) prevalence of poverty had a higher likelihood of T21 noncompliance. Study 2 found that ID checks for young adults were not related to a retailer's marketing for tobacco products; however, ID checks were related to whether the retailer displayed MLSA 21 signage, as required by the city law. Finally, Study 3 found that, among retailer staff, there was nearly universal awareness of T21; with this ceiling effect, noncompliance was not related to lack of awareness of the law. Staff perceptions about T21 were likewise not generally related to their retailer's compliance; however, reports of retailers having (vs. not having) scanners for ID checks was related to a much higher likelihood of compliance. Overall, these studies emphasize the many factors at play, at both the retailer- and community level, that influence T21 outcomes.

Implications for Enforcement

At various timepoints and with various ages of purchasers, this study found T21 compliance among Columbus, OH retailers ranging from 62% to 78%. Study 2 further demonstrated an increase in ID checks following the start of T21 enforcement. This compliance rate might be considered modest, falling somewhat short of most government minimum targets (80% compliance). Columbus outcomes were

better than those reported for New York City—where enforcement is considered weak—as retailer ID checks for young adults there actually declined from 71% to 62% following T21.[3] Nevertheless, better T21 outcomes were reported by a study in California, which found retailer ID checks with adolescents improved from 90% to 94% after T21.[4] Thus, while the present findings support the benefits of strong T21 enforcement, they also demonstrate room for improvement.

Study 1 suggests there may have been an initial spike in ID checks immediately following the start of T21 enforcement; however, this spike also appeared to be followed by a slight decline in ID checks in the subsequent year. It therefore appears that continued enforcement will be necessary.

T21 enforcement strategies vary widely across communities. Current recommendations are to take enforcement into account in drafting T21 laws, rather than considering it only after a proposal is adopted.[5] This includes specifying the dedicated enforcement agency, the dedicated funds, the required number of compliance checks each year, and the penalties for violations.[5,6] Incorporating many of these elements, the enforcement plan in Columbus has been considered a "gold standard."[14] However, as there is little evidence about the details of these elements (eg, frequency of compliance checks, cost of penalties for violation),[1] more research is needed on the most effective strategies.

Implication for Disparities

Study 1 of this project indicated there are disparities in T21 compliance, with the rates of ID checks being lower in low-income communities. This finding aligns with other research across the United States from when the MLSA was age 18, which indicated disparities in ID checks based on neighborhood income and racial and/or ethnic composition.[15–17] Study 3 further demonstrated that the majority of store cashiers were members of vulnerable populations, including racial and/or ethnic minorities, immigrants, non-native English speakers, and/or individuals with low education. Overall, these findings indicate the potential for T21 to widen disparities in tobacco use if such gaps in compliance persist. For example, if youth living in low-income neighborhoods have easier access to tobacco products, they will not benefit as much from the policy as youth living in more affluent areas. Similarly, if retail staff face barriers to T21 compliance based on language, culture, or literacy, the communities living in the neighborhoods they serve would likewise not attain T21 benefits.

This project highlights the importance of cultural competence and sensitivity to literacy levels in organizing outreach, education and/or training, and enforcement. It likewise emphasizes the need for tasking education and enforcement to public health or other non-police officials.[18] In addition, enforcement needs to be designed with equity in mind. For example, there is evidence that stratified, clustered sampling may be an efficient and equitable design for compliance inspections, as it reduces travel costs and prioritizes inspections in the most vulnerable neighborhoods.[19]

Avenues for Improvement

The objective of this project was to understand the factors related to T21 compliance in an environment where T21 is strongly enforced. It is worth noting some of the factors that were *not* related to compliance. For example, as mentioned above, awareness of the T21 ordinance among retailer staff was not related to compliance, as awareness was nearly universal. This finding demonstrates the benefits of educational outreach directed by CPH. Support for T21 among retailer staff was also not related to compliance; thus, retailers did not need to agree with T21 in order to follow its provisions. When examining the overall Study 3 sample, whether or not employees reported receiving training on conducting ID checks was not related to retailer compliance; however, the association was significant when examining just the owners and managers. This pattern of findings may be due to some employees forgetting about the training they received from owners and managers and suggests that annual trainings may be beneficial. We also found that training was more common in chain stores, possibly because they have more developed programs and/or policies for onboarding new employees, including training on how to conduct ID checks. The development of training programs for independent stores may thus be particularly needed.

It is also worth noting the factors that *were* related to compliance. As discussed above, retailers located in low-income neighborhoods had lower T21 compliance, which indicates the need for broad-level changes, such as culturally sensitive enforcement that focuses on vulnerable communities. Retailers that posted the required MLSA 21 signage showed better T21 compliance, suggesting the absence of these signs may be useful indicators of what retailers to target for compliance checks. Finally, findings suggest that encouraging ID scanners may be a useful target for improving retailer compliance; incentives or other support for obtaining scanners may be a means to encourage T21 compliance in an equitable manner.

Conclusions

It may take years to observe whether T21 implementation was associated with a decline in youth tobacco use, but retailer T21 compliance is an informative short-term outcome we can observe now. As demonstrated by the present project, assessing T21 compliance is, in fact, critical for investigating issues with policy implementation. Our project revealed factors related to the tobacco retailer and the neighborhood in which the retailer is located that may help (or hinder) the impact of T21. Overall, these findings show that enforcement is necessary but not sufficient for T21 success.

Supplementary Material

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Declaration of Interests

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