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Longitudinal Tracking of Vape Shop Compliance With State Business Regulations Within Southern California Ethnic Neighborhoods During the COVID-19 Pandemic

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Abstract

The overall aim of this study is to examine vape shop business operations during COVID-19 among a cohort of 88 vape shops in the Greater Los Angeles area in Southern California, located in ethnically diverse communities. A total of six web- and/or phone-based assessments were conducted over a 12-week period (April 1, 2020–June 10, 2020), extending from the mandated closure of nonessential businesses (Stage 1; Assessments 1–3) to the reopening of nonessential sectors (Stage 2; Assessments 4–6), to evaluate business operations (open and closure statuses). The proportion of vape shops found to be noncompliant with the Governor's executive order (i.e., open) during Stage 1 gradually increased from 54 (61.4%) at Assessment 1 (week of April 1, 2020) to 58 (65.9%) at Assessment 3 (week of April 29, 2020). Moreover, vape shops located in Hispanic/Latino and Korean/Asian communities (vs. those in non-Hispanic White and African American communities) were more likely to stay open both during and after the shutdown at Assessments 1 and 6. More specifically, vape shops located in Hispanic/Latino communities were significantly more likely to offer walk-in service during Assessment 1 (during the shutdown), and vape shops in Hispanic/Latino and Korean/Asian were significantly more likely to offer walk-in service during Assessment 6 (after the re-opening). This study demonstrates high rates of noncompliance with shutdown orders among vape shops located in ethnic communities, thus suggesting higher contextual risk factors of COVID-19 exposure among certain ethnic communities.

Keywords

COVID-19, vape shops, compliance, California, nonessential businesses

Introduction

On March 19, 2020, California Governor Gavin Newsom was the first US state governor to issue an Executive Order (Executive Order N-33-20, 2020) to slow the spread of the novel coronavirus (COVID-19). The executive order allowed only essential business sectors to remain open, thus mandating sectors not listed as essential to close and comply with state regulations (California Resilience Roadmap, 2020). Previous evidence in Southern California indicated that in violation of state law, vape shops—a nonessential sector within California—remained open during the beginning of the pandemic (Berg et al., 2020; Medel et al., 2020; Winton & Hernandez, 2020). Because noncompliance with the state order could compromise public safety during COVID-19, it is critical to conduct periodic compliance assessments within nonessential businesses such as vape shops to verify adherence to both state and local policies over time. The information gleaned from longitudinal assessments of vape shop compliance and business operations provides insight into shifts in business practices within the retailer environment as a result of the pandemic.

In addition, particular attention should be paid to vape shop business violations in vulnerable ethnic locations; a tobacco retailer's business operations directly affect minority groups who are at an increased risk of contracting and dying from

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COVID-19 (Centers for Disease Control and Prevention, 2020). Moreover, vapers appear to be more susceptible to acquisition of COVID-19 (Li et al., 2020). As the pandemic continues to spread, it is imperative that we understand the public health implications resulting from vape shops' noncompliance with the state order. By remaining operational, vape shops in vulnerable communities may further the magnitude of disparities already experienced among ethnic minority groups such as Hispanic/Latino, Korean/Asian, and African American communities amid the pandemic (Keating et al., 2020). Further, tobacco-related health disparities continue to persist within ethnic communities (Trinidad et al., 2011). This study suggests that these same communities continue to experience disproportionate rates of e-cigarette use, exposure to and acquisition of COVID-19 during the pandemic.

Given the aforementioned literature and the pressing need to understand and prevent widening ethnic disparities in health outcomes related to both COVID-19 and tobacco/nicotine use, the overall aim of this analysis is to examine vape shop business operations during COVID-19 among a cohort of 88 vape shops in the Greater Los Angeles area in Southern California located in African American, Hispanic/Latino, Korean/Asian, and non-Hispanic White communities.

Methods

Shop Recruitment and Data Collection

In this study, we assessed vape shop business operations from our existing longitudinal vape shop cohort of 88 brick-and-mortar vape shops (24 shops in African American, 20 shops in Hispanic/Latino, 24 shops in Korean/Asian and 20 shops in non-Hispanic White communities) located in the Greater Los Angeles area in Southern California. A vape shop's neighborhood ethnic designation was achieved by examining ethnic composition proportions for each shop's location using the U.S. Census Bureau American FactFinder (see Galimov et al., 2020; Galstyan et al., 2018; Sussman et al., 2014). The executive order was issued on March 19, 2020 and was lifted for businesses such as vape shops on May 8. From March 19, 2020 to May 7, vape shops were not permitted to provide in-person retail sales; walk-in service and curbside pickup service were only allowed for essential critical infrastructures. On May 8, 2020, vape shops were allowed to reopen and indoor retailing was permitted. Data was collected every 2 weeks over a 12-week period (April 1, 2020–June 10, 2020); Assessments 1–3 were conducted during Stage 1 of the order when vape shops were mandated to close (i.e., no walk-in, home delivery, or curbside pickup services), and Assessments 4–6 were conducted during Stage 2 of the order when vape shops were allowed to reopen.

Social media has been used to understand a vape shop's environment, presence, communication efforts, and future operational status (Galimov et al., 2020; Sussman et al., 2014). Thus, we first examined each vape shop's publicly accessed social media pages including Yelp, Facebook, Instagram, and/or Google to evaluate if a vape shop was open or

closed at each periodic assessment. If no information was provided on a shop's current status, we then conducted telephone calls to evaluate if the store was open and to clarify what services were offered. Up to three telephone calls were made at each vape shop throughout the week at different time points of the day. Vape shop business operations, irrespective of neighborhood ethnic composition, were conducted in the same manner: first, an online surveillance was conducted and, if there was no relevant information found online, telephone calls were conducted. For Assessments 1–6, if there were no recent social media posts and if a shop was nonresponsive via telephone, we labeled the shop as nonresponsive and considered "closed."

A vape shop was categorized as open if it offered one or more of the following services: walk-in service, curbside pickup service, and/or home delivery service. A vape shop was considered closed if it was temporarily or permanently closed based on information provided from the shop's social media pages. For analysis purposes, if a shop offered walk-in service, it was identified as walk-in service regardless of whether the shop also offered curbside pickup service or home delivery service. Also, if a store offered a combination of curbside pickup service and home delivery service only, it was categorized as "curbside pickup service." Lastly, if a shop was nonresponsive, the shop was considered closed. These categorizations permitted meaningful distinctions between higher versus lower risk transmission of COVID-19.

Data Analysis

We first report descriptive statistics on open versus closed vape shop status at each wave of assessment. Bivariate associations between open versus closed vape shop status and vape shop ethnic location at each wave of assessment is reported next. Additionally, an association between walk-in service and vape shop ethnic location was examined.

Results

Vape shop business operations were determined based on social media and phone call searches. All vape shops ($n = 88$) underwent an online surveillance from Assessments 1–6. The average number of phone calls (and standard deviation) by ethnic location across shops and assessment points were 1.28 (1.24) in African American communities, 1.12 (1.01) in Hispanic/Latino communities, 1.26 (1.09) in Korean/Asian communities and 1.34 (1.19) in non-Hispanic White communities. The number of calls to each vape shop varied from one to three and failed to differ significantly by ethnic location (all $ps > .1$).

Overall, the prevalence of open vape shops that were in violation of the California Governor's Executive Order N-33-20 on nonessential business closures (during Stage 1) gradually increased from 54 (61.4%) shops at Assessment 1 to 58 (65.9%) shops at Assessment 3. For Assessment 1, a slight majority of shops in violation with the statewide mandate allowed walk-in service (53.7%, $n = 29$) and 38.9% ($n = 21$)

Table 1. Data on Vape Shop Business Operations: During Mandated Closure of Nonessential Businesses (Stage 1; Assessments 1–3) Through Reopening of Nonessential Sectors (Stage 2; Assessments 4–6) Overall and by Ethnic Location.

Assessment (Week of Assessment)		Non-Hispanic White	African American	Hispanic/Latino	Korean/Asian	Total
Assessment 1 (April 01, 2020; Stage 1)	Walk-in	4 (20.0%)	6 (25.0%)	12 (60.0%)	7 (29.2%)	29 (33.0%)
	Curbside	4 (20.0%)	5 (20.8%)	3 (15.0%)	9 (37.5%)	21 (23.9%)
	Delivery	1 (5.0%)	2 (8.3%)	0 (0%)	1 (4.2%)	4 (4.6%)
	Open	9 (45.0%)	13 (54.2%)	15 (75.0%)	17 (70.8%)	54 (61.4%)
Assessment 2 (April 15, 2020; Stage 1)	Walk-in	3 (15.0%)	2 (8.3%)	8 (40.0%)	6 (25.0%)	19 (21.6%)
	Curbside	5 (25.0%)	5 (20.8%)	7 (35.0%)	10 (41.7%)	27 (30.7%)
	Delivery	3 (15.0%)	3 (12.5%)	0 (0%)	1 (4.2%)	7 (8.0%)
	Open	11 (55.0%)	10 (41.7%)	15 (75.0%)	17 (70.8%)	53 (60.2%)
Assessment 3 (April 29, 2020; Stage 1)	Walk-in	3 (15.0%)	3 (12.5%)	8 (35.0%)	6 (25.0%)	19 (21.6%)
	Curbside	5 (25.0%)	7 (29.2%)	9 (45.0%)	12 (50.0%)	33 (37.5%)
	Delivery	3 (15.0%)	3 (12.5%)	0 (0%)	0 (0%)	6 (6.8%)
	Open	11 (55.0%)	13 (54.7%)	16 (80.0%)	18 (75.0%)	58 (65.9%)
Assessment 4 (May 13, 2020; Stage 2)	Walk-in	6 (30.0%)	5 (20.8%)	6 (30.0%)	7 (29.2%)	24 (27.3%)
	Curbside	6 (30.0%)	12 (50.0%)	12 (60.0%)	14 (58.3%)	44 (50.0%)
	Delivery	2 (10.0%)	0 (0%)	0 (0%)	0 (0%)	2 (2.3%)
	Open	14 (70.0%)	17 (70.8%)	18 (90.0%)	21 (87.5%)	70 (79.6%)
Assessment 5 (May 27, 2020; Stage 2)	Walk-in	9 (45.0%)	9 (37.5%)	12 (60.0%)	12 (50.0%)	42 (47.7%)
	Curbside	5 (25.0%)	8 (33.3%)	7 (35.0%)	10 (41.7%)	30 (34.1%)
	Delivery	1 (5.0%)	0 (0%)	0 (0%)	0 (0%)	1 (1.1%)
	Open	15 (75.0%)	17 (70.8%)	19 (95.0%)	22 (91.7%)	73 (83.0%)
Assessment 6 (June 10, 2020; Stage 2)	Walk-in	10 (50.0%)	12 (50.0%)	17 (85.0%)	16 (66.7%)	55 (62.5%)
	Curbside	3 (15.0%)	4 (16.7%)	3 (15.0%)	5 (20.8%)	15 (17.0%)
	Delivery	1 (5.0%)	0 (0%)	0 (0%)	0 (0%)	1 (1.1%)
	Open	14 (70.0%)	16 (66.7%)	20 (100%)	21 (87.5%)	71 (80.7%)

of the noncompliant shops allowed curbside pickup service. For Assessments 2 and 3, fewer noncompliant vape shops offered walk-in service and more noncompliant shops offered curbside pickup service (see Table 1). With regard to vape shop ethnic composition, the shops located in Hispanic/Latino ethnic locations were more likely to offer walk-in service during Assessment 1 ($p = 0.037$, Table 1). For Assessments 1–3, the number of closed (nonresponsive) shops ranged from 10–17 vape shops.

After California entered Stage 2 on May 08, 2020—which allowed lower-risk businesses such as vape shops to open with precautions—the prevalence of open vape shops increased from 70 (79.6%) vape shops at Assessment 4 to 71 vape shops (80.7%) at Assessment 6. The number of vape shops offering curbside pickup service reached its peak at Assessment 4 ($n = 44$; 50.0%) but ultimately declined at Assessment 6 ($n = 15$; 17.0%) which may be the result of vape shops switching to walk-in service. The prevalence of walk-in service more than doubled from 24 (27.3%) vape shops offering walk-in service at Assessment 4 to 55 (62.5%) vape shops offering walk-in service

at Assessment 6. Focusing on closure rates, the number of stores temporarily closed decreased from 11 shops at Assessment 4 ($n = 11$; 12.5%) to six vape shops at Assessment 6 ($n = 6$; 6.8%). Within this 6-week period during lifting of the order, three vape shops permanently closed ($n = 3$; 1 in African American, 1 in Korean/Asian and 1 in non-Hispanic White neighborhoods). In relation to neighborhood ethnic location, vape shops located in Hispanic/Latino and Korean/Asian ethnic locations were significantly more likely to be open at Assessment 6; there were 20 (100%) and 21 (87.5%) open shops located in Hispanic/Latino and Korean/Asian ethnic locations, respectively, compared to 14 (70.0%) and 16 (66.7%) open shops located in non-Hispanic White and African American ethnic locations ($p = 0.01$, Table 1). Most importantly, vape shops located in Hispanic/Latino and Korean/Asian ethnic locations were significantly more likely to allow walk-in service at Assessment 6 compared to shops located in non-Hispanic White and African American ethnic locations ($p = 0.05$, Table 1). For Assessments 4–6, the number of closed (nonresponsive) shops ranged from 6–8 vape shops.

Discussion

This study revealed a continuing high prevalence and accessibility of open vape shops located in the Greater Los Angeles area in Southern California during a state order when nonessential businesses such as vape shops were mandated to close. During Stage 1 and Stage 2, vape shops located in Hispanic/Latino and Korean/Asian neighborhoods were more likely to stay open compared to shops located in African American or non-Hispanic White neighborhoods. In addition, vape shops located in Hispanic/Latino communities were significantly more likely to offer walk-in service during the initial weeks of California's order (Stage 1), in noncompliance with state law. As time progressed and nonessential sectors were allowed to reopen, vape shops located in Hispanic/Latino and Korean/Asian communities were significantly more likely to offer walk-in service (Stage 2). This is concerning, since the pandemic has both emphasized and exacerbated ethnic inequities (Tai et al., 2020), and these effects could persist if small businesses within ethnic minority communities do not abide by state and local policies implemented to reduce and prevent the transmission of COVID-19.

Our findings are consistent with previous patterns of noncompliance within tobacco retailers and vape shops by ethnic location (e.g., Huh et al., 2020; Lee et al., 2016). Studies have shown vape shops in ethnic communities are more likely to defy regulations, which is concerning, as minority communities have shown to be disproportionately impacted by smoking-related diseases (Trinidad et al., 2011). Further, the fact that noncompliance occurred within Hispanic/Latino and Korean/Asian communities during the COVID-19 pandemic highlights one of the mechanisms that might account for the greater risk of contracting COVID-19 among minority and vulnerable communities. However, it is important to note that vape shops in African American communities were no more likely than vape shops serving other communities to remain open during the COVID-19 pandemic.

This study adds to existing literature by further supporting the notion that the frequency of vape shop noncompliance within certain ethnic communities may be attributed to the lack of proper culturally sensitive messages and the quality of communication between public health officials and small businesses amid a pandemic which may lead to a misunderstanding of the state order (Medel et al., 2020). Pandemic-specific material from local and state authorities must be culturally and linguistically sensitive when disseminated to vulnerable, ethnic communities (such as Hispanic/Latino and Korean/Asian communities). Such information should clearly and easily state the regulations and should stress the importance of 1) pandemic safety, such as social distancing and mask wearing, and 2) the seriousness of violations to public health amid a pandemic. Culturally inclusive and multilingual information is crucial, as distrust in government agencies is searing in vulnerable communities during the COVID-19 pandemic based upon a history of ethnic inequities within American society (Barrón-Lopez, 2020). Lastly, everchanging state and local guidelines

may be onerous for vape shops within ethnic communities to follow and understand. The efficacy of regulatory communications at the consumer level—as well as their cultural inclusivity—regarding the impact and seriousness of violating public health regulations amid the COVID-19 pandemic should be examined.

It is important to note other possible reasons for vape shop noncompliance. The increase in the number of open vape shops—particularly those offering walk-in services—may reflect an important shift in recent policy priorities at the state level, where an emphasis on economic survival began to supplant the limiting of COVID-19 infections (Roy, 2020). Small businesses have been detrimentally impacted by the global pandemic (Flitter, 2020); thus, vape shops have been placed in the precarious situation of keeping their businesses operational to increase their viability. This creates inherent risks—either increasing the likelihood of COVID-19 exposure or closing the shop to prevent further COVID-19 transmission. A recent report suggested neighborhoods with significant Hispanic/Latino and Korean/Asian populations within Los Angeles County are more vulnerable to economic uncertainty during the COVID-19 pandemic (Ong et al., 2020). Accordingly, economic uncertainty could plausibly explain why vape shops in Hispanic/Latino and Korean/Asian communities had the highest percentages of open shops throughout Stage 1 and Stage 2. Moreover, the COVID-19 pandemic began at a time when vape shops had recently been faced with the decision to close or rebrand their inventory due to local and federal regulations banning the sale of certain flavored tobacco products (Tully, 2020), such as the federal ban on flavored cartridge-based products and California's Senate Bill 793 which bans the sale of flavored e-cigarette products and devices, placing them in a more economically precarious position than other industries. Future work should consider the importance of economic reasons for noncompliance rates within the vape shop industry and the economic impacts of COVID-19 on the vape shop retail landscape.

This study details the changing vape shop retail environment during the COVID-19 pandemic and vape shops' noncompliance with state law during the initial weeks of California's executive order. Our findings are important as vape shop business operations affect a customer's accessibility and ability to purchase e-cigarette products in-person. The COVID-19 pandemic and California state law requires the use of facial coverings to prevent transmission; however, facial coverings could deter vape shop employees from requirements to check the photo identification of everyone under age 27 who attempts to purchase e-cigarettes in-person, which is in direct violation of federal law (Center for Tobacco Products, 2020). Recent social media posts have portrayed how underage teenagers are taking advantage of mask-mandating measures to purchase alcohol (Dellatto, 2020) which may suggest that youth could use this tactic to purchase substances such as tobacco. Vape shops are the most commonly reported location for buying e-cigarette devices and products among adolescents (Braak et al., 2020). By remaining operational during the pandemic, vape shops are allowing for a greater possibility that

minors take advantage of face mask policies and find effortless methods to purchase and acquire e-cigarette products. It is important to document the changing vape shop retail landscape, as this affects the accessibility of e-cigarette products to customers, including adolescents.

This study has several limitations. First, we were unable to conduct vape shop observational data (visiting the shops) at each assessment period to verify our social media and phone call searches due to COVID-19 transmission risks. Our current methods of assessing vape shop compliance (social media searches followed by telephone calls) should be treated with some caution. That is, it is possible (though perhaps implausible) that the data were underestimates of open shops. Second, vape shops could have changed their operational status during the period between assessments. Third, and most importantly, our data does not reveal why stores remained open or closed during the closure, and after the executive order was lifted. A more thorough analysis focusing on small business noncompliance is needed to determine factors leading businesses to remain operational during the closure period. Future research regarding vape shop customers' perceptions and behaviors during the pandemic is vital. Pandemic-related stress may increase vaping prevalence; thus, a vape shop's business operations could perpetuate nicotine addiction by remaining operational.

The high rates of noncompliance within the vape shop environment have implications for the health professions, including serving as potential super spreader locations which need closer monitoring. Also, health practices may need to be informed on creating culturally sensitive means of achieving compliance if certain vulnerable, ethnic populations are being disproportionately impacted by the vape shop retail landscape. Vape shop periodic assessments could aid federal regulatory authorities in the future protection of vulnerable populations that may be exposed to tobacco products, especially amid a stressful life event like a world-wide pandemic.


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