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Corporate strategies to market PAX vaporizers for cannabis use under federal restrictions in the United States

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Abstract

Objective: Legal restrictions have limited the overt marketing of cannabis and associated paraphernalia in the United States. This study assessed how one company, PAX Labs, marketed its devices for vaporizing cannabis while abiding by U.S. federal law on drug paraphernalia.

Methods: Internal documents from PAX Labs, dated January 2014 through December 2018, were accessed via the JUUL Labs Collection at University of California, San Francisco. An initial Boolean query of the collection followed by snowball sampling yielded 421 informative documents for a content analysis. Two additional sources, archived PAX webpages and political/lobbying expenditure reports, were analyzed to triangulate findings on messaging and legislative support, respectively. **Results:** The company first marketed PAX devices for vaporizing tobacco, transitioned to marketing use for an unnamed plant material, and then promoted cannabis vaporization as U.S. state cannabis laws became more liberalized. PAX Labs carefully navigated marketing restrictions on drug paraphernalia through use of ambiguous messaging (i.e., “plant agnostic”) and recruitment of cannabis-related third-party affiliates as a means of distancing the company from cannabis promotion. Although PAX Labs did not publicly or financially support U.S. state cannabis ballot measures in 2016, the company proposed to sponsor events facilitating public conversations on cannabis legalization.

Conclusion: Strategies used by PAX Labs pose challenges for government agencies that do not

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have purview to regulate cannabis vaporizers that are vaguely marketed. Yet, government agencies can better assess adherence to federal law on drug paraphernalia by carefully monitoring vaporizer companies' use of ambiguous messaging, affiliate marketing, and cannabis forum sponsorship.

Keywords: marketing; cannabis vaporizers; paraphernalia; archival analysis; industry documents

Introduction

From 2017 to 2019, an alarming increase in the prevalence of past-month cannabis vaping occurred among U.S. adolescents (e.g., 12th graders (7.5% - 14.0%)) (Miech et al., 2020). Despite the potential benefits of vaping versus smoking cannabis (Budney et al., 2015), the perceived reduction in risk associated with vaping may lead to earlier initiation, increased use, and decreased quit attempts. Further, vaporizing cannabis does not appear to mitigate adverse effects (e.g., impaired memory) associated with misusing cannabis (Volkow et al., 2014). While epidemiologic studies have reported associations between cannabis marketing and cannabis use (Cabrera-Nguyen et al., 2016; Trangenstein et al., 2019), the cross-sectional designs of these studies preclude causal inference. Nevertheless, changes in the way vaporizer companies (e.g., PAX Labs) and cannabis companies (e.g., MedMen) are redefining society's image of the typical cannabis consumer (Coskuner-Balli et al., 2021) could have profound impact on cannabis consumption.

The advertising of a Schedule I drug, including cannabis, is a violation of U.S. federal law according to Section 843 of the Controlled Substances Act (Kees et al., 2020). Given the complex legal landscape, Kees et al. (2020) suggested that cannabis might be more suitably marketed using digital media than traditional media (e.g., television) because geotargeting technologies can limit communications to U.S. states that permit cannabis sales. However, an

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examination of the marketing policies of 11 social media platforms (e.g., Facebook, Instagram) revealed that all prohibited cannabis sales and nine prohibited paid cannabis advertising (Berg et al., 2023). Cannabis companies have violated marketing restrictions on digital media and other media such as print ads, billboards, and point-of-sales materials in U.S. states (Cao et al., 2020; Carlini et al., 2022; Marinello et al., 2024; Moreno et al., 2022; Shi & Pacula, 2021). While these violations provide a glimpse into cannabis industry behavior, they do not reveal cannabis marketers' motivations or intentions which can be accurately assessed from internal industry documents (Cummings et al., 2002).

In June 2021, the Attorney General of North Carolina agreed to a \$40 million settlement with JUUL Labs along with the release of corporate documents to a university repository (North Carolina Department of Justice, June 28, 2021). The repository includes documents from PAX Labs, the predecessor of JUUL Labs that developed the first PAX device for vaporizing looseleaf tobacco. This device soon became popular for vaping cannabis, potentially making PAX1 and its later versions (PAX2, PAX3, PAX Era) illegal drug paraphernalia under U.S. Code Title 21 Section 863 (U.S. Department of Justice- National Drug Intelligence Center). According to the U.S. code, a vaporizer would qualify as drug paraphernalia if it were intended for inhaling a controlled substance into the human body. Advertising would be one means of conveying this intent. To conceal their intent, PAX Labs and other cannabis vaporizer companies seldom used cannabis references in Instagram posts (9% of all posts) (Spillane et al., 2021). Among PAX's posts (n=71), 17% used cannabis references but none of the "tagged" Instagram users was a cannabis influencer. A valuation report of PAX in 2017 highlighted the restrictions on social media marketing imposed by federal and state drug paraphernalia laws (PAX Labs, 2017c). The report also expressed concerns that the Trump Administration would rescind the Cole

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Memorandum, a U.S. Department of Justice memo stating that federal cannabis prohibition would not be enforced in U.S. states that legalized cannabis in some form (Cole, 2013).

Given the limited role of social media in promoting PAX as a cannabis vaporizer, the present study investigated how PAX Labs marketed its devices to become a leading cannabis vaporizer company. Further, we examined PAX Labs' cannabis-related political donations and lobbying activities (Rotering & Apollonio, 2022) intended to create a more cannabis-friendly business environment. We anticipate that like other vaporizer companies (Hardesty et al., 2020; Majmundar et al., 2020), PAX Labs utilized marketing strategies to promote its devices' use of cannabis through misleading or covert messaging and third-party groups.

Materials & Methods

Source of Documents

Internal documents released as part of the settlement between JUUL Labs and North Carolina's Department of Justice (DOJ) were accessed via the JUUL Labs Collection in the Truth Tobacco Industry Documents Library at the University of California, San Francisco (UCSF). Within the broad discovery request to JUUL Labs, North Carolina's DOJ defined "JUUL" to include "PAX" and other predecessors (e.g., "Ploom") (*communications with archivist Emma James, UCSF*). Documents relevant to PAX Labs, possessed by JUUL Labs before and after the spin-off of JUUL in July 2017, were included in the JUUL Labs Collection. The date range of the documents analyzed in this study, January 2014 through December 2018, encompassed transitions in messaging (i.e., tobacco vs. cannabis use) and development of the PAX2, PAX3, and PAX Era vaporizers. The internal documents, which ranged from email correspondence to corporate strategic reports, were often written by high-ranking company personnel such as directors and vice presidents of corporate communications and marketing.

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Sampling and Analysis of Documents

The internal documents were sampled through an iterative process starting with general marketing keywords in the following Boolean search string: (Organization: PAX AND (cannabis OR marijuana) AND (marketing OR promotion OR advertising OR media OR celebrity OR influencer) AND dd:[20140101 TO 20181231] AND (type:email OR type:document OR type:presentation OR type:spreadsheet)). This initial search yielded over 1,000 documents that were reviewed by co-authors (JP, JR, AS, YP, AMS) for content related to the research question. Based on these documents, we compiled a list of key personnel, public relations events, marketing strategies, and other relevant content that were used to refine searches. The iterative process of reviewing documents and refining searches was based on snowball sampling (Anderson et al., 2011; Malone & Balbach, 2000), an established research method which is effective for identifying interconnected documents within a large archive of data. For example, our initial search revealed that PAX Labs sought to be a leading voice on cannabis legalization. Upon conducting searches on personnel involved in the effort (i.e. Sarah Richardson), we discovered strategies to publicize PAX Labs' voice on legalization (e.g., Snapchat campaign). The final analytical sample of our study (n=421 documents) was reached once we observed the same key documents from conducting multiple searches that incorporated different search terms (Anderson et al., 2011).

Additional data sources

We analyzed two additional data sources to increase credibility of the study's findings, a research practice referred to as data triangulation (Apollonio & Glantz, 2020; Patton, 2015). Using the Wayback Machine (wayback.archive.gov) for the period February 2015 through May 2018 (N=565 webpages), two co-authors (JP, AMS) coded the webpages www.pax.com,

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www.paxvapor.com, and sub-pages for any reference to tobacco (e.g., tobacco, nicotine), an ambiguous material (e.g., loose leaf, material, smoking), and cannabis denoted by the plant (e.g., herb, flower), cannabis celebratory events (e.g., 4/20 national cannabis day), cannabis paraphernalia (e.g., grinders to crush flower), or cannabis companies (e.g., Bloom Farms). The other data source, FollowTheMoney.org, was searched to identify PAX Labs' financial contributions to U.S. state ballot measures and lobbying expenditures from 2014 through 2018. Additional searches of employees and executives, including co-founders James Monsees and Adam Bowen, were conducted to identify independent contributions that would have benefited the company. These expenditures in conjunction with internal documents indicated PAX Labs' level of support for legislation favorable to the cannabis industry.

Results

Evolving messaging of PAX's intended use

PAX Labs marketed PAX1 as a vaporizer for looseleaf tobacco through communications with consumers (Ian (PAX Support), 2015), a public relations firm (Richardson, 2015b), websites (PAX Labs, 2015d), and production of a premium blend of pipe tobacco (Blend X) (Rodzen, 2014). In August 2014, Marketing Director Sarah Richardson corresponded with a media company about promoting and sending samples of Blend X to tobacco trade journals (e.g., Tobacco Reporter) (Njoo, 2014). Whether it was Blend X or another preferred blend, the PAX1 user guide on the company's website clearly indicated that the device was intended to vaporize tobacco (see Table 1). In April 2015, the company informed consumers that it was discontinuing sales of tobacco Blend X but announced the release of PAX2, the “*best looseleaf vaporizer in the world*” (PAX Labs, 2015f). Leading up to the launch of PAX2, Sarah Richardson suggested that the vaporizer be promoted for consuming medical cannabis without the downsides (e.g., second-

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hand smoke) (Richardson, 2015a). A key document on corporate positioning in 2015, however, recommended that the company “... *expand beyond tobacco but not yet embrace cannabis*” (PAX Labs, 2015b). This recommendation marked a turning point in conveying a general vaporization message that could appeal to a tobacco or cannabis user. This message was reinforced by the company’s legal department which stated in early 2016 that PAX communications should be “*plant agnostic*” (Pederson, 2016). While the general vaporization message may have evaded federal scrutiny over cannabis marketing, the messaging also provided the company a strategic advantage over other tobacco paraphernalia companies. By removing references to tobacco or nicotine on the PAX website, the company could use paid searches to improve placement on search engine results (Pederson, 2016). The Standard Operating Procedures of PAX Labs had forbidden employees from using text references or visuals of cannabis on social media (PAX Labs, 2017b). Yet, this company policy did not preclude marketing or selling PAX vaporizers in cannabis dispensaries (next section) or at cannabis-related events.

< Insert Table 1 here >

Messaging on PAX webpages obtained from the Wayback Machine (wayback.archive.gov) coincided with documents indicating transitions from vaporizing tobacco to an ambiguous material to cannabis. As illustrated in Figure 1, tobacco references on webpages predominated in the early part of 2015 (with exception) but were replaced completely with ambiguous references by July 2016. Starting in September 2016, cannabis references were introduced and were equal in proportion (~50%) to ambiguous messages through January 2018. By February 2018, cannabis references dominated PAX webpages, an interesting shift that

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promptly followed the effective date of California’s Proposition 64 (January 1, 2018), the Adult Use of Marijuana Act.

< Insert Figure 1 here >

How and to whom Pax Labs marketed its vaporizers for cannabis

Consistent with the evolving messaging about intended use, the company’s marketing strategy increasingly involved persons and spaces associated with cannabis, including influencers, celebrities, media outlets, conferences and exhibits, and sponsored events (see Table 2). A key question is how the original PAX vaporizer became popular among cannabis users in the absence of a more concerted marketing campaign. The closest answer to this question comes from co-founder and CEO James Monsees who said in an interview that PAX’s portability and ability to vaporize THC from flower generated a cult following of “*technology-minded cannabis users who congregate on a subsection of Reddit*” (Richardson, 2015c). While PAX’s popularity among technology-minded cannabis users may have occurred organically (at least to some degree), PAX Labs intended to target this consumer segment which, unlike the stereotypical cannabis consumer, preferred new products and brands (PAX Labs, 2017a). In building its brand and reaching its target audience, PAX Labs partnered with menswear and lifestyle boutiques, sponsored events at music festivals, and utilized unique digital and social marketing strategies (Mumby, 2016). One such strategy, “*plant agnostic*” messaging, allowed the company to advertise in cannabis-user magazines (e.g. High Times) and sell its vaporizers through cannabis channels (e.g., dispensaries) without communicating intent to sell cannabis paraphernalia (PAX Labs, 2018b). The “*plant agnostic*” messaging minimized legal risk and precluded subjection to complex state-specific regulations.

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PAX Labs took additional steps to ensure that its marketing abided by state and federal law. In 2015, the company changed its policy and engaged directly with cannabis dispensaries that sold PAX vaporizers, but only in U.S. states that legalized sales for adult use (i.e., Colorado, Washington State) (PAX Labs, 2015c). In April 2015, PAX Labs initiated an affiliate program to recruit third parties to post links on their websites to PAX vendors (Martin, 2015). Employing third-party cannabis companies as affiliates enabled PAX Labs to market its devices for cannabis use without directly communicating intent. One PAX representative said “... *we can’t engage with cannabis sites through normal advertising placements, that’s why we can only work through affiliates*” (Lutz, 2015). Affiliates could earn as much as 22% commission on the sale of PAX2 devices (equal to \$62/device) or \$150 for 100 clicks on a PAX advertisement banner. In some cases, PAX personnel recruited affiliates such as stuff@stuffstonerslike.com who posted a positive review about a PAX device. Examples of other affiliate websites were hempista.com, 420vapezone.com, and herb.co. In 2016, the affiliate program generated \$430,000 in revenue, representing 7.3% of its e-commerce revenue (PAX Labs, 2018a). The company planned to grow the affiliate program by increasing recruitment of publisher websites, expanding publisher categories (e.g., fashion), offering higher commissions, recruiting cannabis-prescribing physicians, and other strategies.

In early 2016, PAX Labs considered recruiting third-party medical cannabis influencers who could talk freely to the press about industry issues as a means of circumventing company restrictions on cannabis communications (S.; Richardson, 2016b). PAX’s interest in medical cannabis influencers, versus cannabis influencers in general, may reflect the broader strategy of abiding by state cannabis laws that predominantly permitted sales for medical use, not non-medical use. In June 2016, the company proposed to recruit cannabis-prescribing physicians to

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sell PAX vaporizers to patients (Bain, 2016). The November 2016 U.S. elections, which doubled the number of U.S. states permitting cannabis sales for non-medical use (4 to 8), may have emboldened PAX Labs to market its vaporizers for any type of cannabis use. In 2017, the company sponsored or participated in several cannabis events, e.g., the PAX Era Recycling 4/20 event and the Marijuana Business Conference and Expo in Las Vegas, Nevada (Bain, 2017; Reyes, 2017).

< Insert Table 2 here >

Supporting Cannabis Legalization and Lobbying

The legalization of medical and non-medical cannabis at the U.S. state and federal level was an uncertainty that could impact the company's future growth (PAX Labs, 2017c). Marketing executive Peter Bain hailed the benefits of legalizing sales of non-medical cannabis and suggested that cannabis sales may have displaced alcohol sales in Denver, Colorado (Bain, 2015). Efforts to track the impact of legalization on PAX sales (PAX Labs, 2015e) underscore executives' views on the potential profitability of liberalizing cannabis retail. PAX Labs developed in-store marketing for retailers that sold its vaporizers in Colorado and Washington and added dispensaries to its store locator (PAX Labs, 2015c). The company's confidence that any such marketing would not be federally prosecuted arose from the Cole Memorandum; however, the Trump administration rescinded the memo in January 2018 which caused grave concern among PAX executives (e.g., "*it's horrifying*" (Brammell, 2018)). Despite vested interest in cannabis legalization, PAX Labs' communications guidelines stated that personnel should honor but not endorse state-level decisions on cannabis retail (PAX Labs, 2018c). The public relations firm Havas Formula reinforced this message by instructing personnel to say that

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PAX Labs is agnostic about cannabis legalization but fervent about “*reinventing the smoking experience*” (Wilkie, 2016).

Leading up to U.S. elections in November 2016, PAX Labs aimed “*to serve as a mouthpiece on cannabis legalization*” while complying with communications guidelines (Marand, 2016). To achieve this challenging goal, PAX Labs and Havas Formula proposed discussions and forums on cannabis legalization that did not officially endorse a particular position. In March 2016, one proposal entailed recruiting social media influencers to interview millennials about legalizing cannabis and post the videos on Snapchat (S.; Richardson, 2016a). Executive Sarah Richardson stated that the Snapchat campaign was one element of a multi-component campaign to achieve press coverage. In April 2016, Havas Formula proposed a local meet-up of consumers, businesses, and industry influencers “*...to have a real conversation about cannabis*” in an area like the Civic Center in San Francisco, CA (S. Richardson, 2016). The goal of the meet-up was to “*...position PAX as leading the charge in sparking an honest and impactful discussion about cannabis*”. To downplay any perceptions about PAX Labs’ pro-legalization stance, Havas Formula suggested that discussions include both pros and cons of legalizing cannabis for business, medicinal use, and the justice system.

PAX executives sought to refrain from violating communications guidelines that prohibited endorsement of initiatives to legalize cannabis. In July 2016, a representative of the ArcView Group, an investment firm that supports cannabis businesses, pressured PAX Labs to donate \$50,000 – \$100,000 to support cannabis state-level ballot measures in the 2016 elections (Monsees, 2016). Despite the threat of retaliation against any company that did not “*contribute to the cause*”, neither corporate documents nor the website FollowTheMoney.org indicate that PAX Labs or executives donated money to support the ballot measures. However, the data sources

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revealed that PAX Labs hired the firm Platinum Advisors to lobby the executive and legislative branches of the California state government for a monthly retainer of \$5,000 (Fina, 2015). PAX Labs sought to work behind the scenes with the lobbying firm to create a business environment favorable to cannabis interests (PAX Labs, 2015a).

Discussion

PAX Labs marketed its vaporizers for cannabis use while carefully navigating marketing restrictions on drug paraphernalia. Key strategies included recruitment of third-party affiliates and use of ambiguous messaging which evolved with changing U.S. state cannabis policies. Prior to the groundswell of ballot measures that legalized cannabis sales for non-medical use in the U.S. in November 2016, the company adopted a general vaporization message that minimized legal risk from marketing a device that was popular for cannabis use. PAX executives repeatedly emphasized the importance of “*plant agnostic*” messaging which allowed the company to embed its vaporizers in cannabis spaces without communicating intent to market the devices as cannabis paraphernalia. PAX Labs was not the only vaporizer company to mask its intent while amassing a large following of cannabis users. The e-cigarette company KandyPens marketed its products for aromatherapy and seldom posted messages with cannabis terminology (2.2%) or images (2.3%) on its Instagram account (Spillane et al., 2021). However, 32% of public, non-corporate Instagram posts with the hashtag “#kandypens” referenced cannabis-related solutions (Majmundar et al., 2020).

Our findings suggest that PAX Labs’ transition from using tobacco references to cannabis references on its website reflected the new intended use of PAX vaporizers, which coincided with the liberalization of U.S. cannabis laws in late 2016. PAX Labs may have also discontinued the marketing of its vaporizers for tobacco use to evade the Food and Drug Administration’s

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(FDA) regulation of electronic nicotine delivery systems as part of the “deeming rule” in August 2016 (Hardesty et al., 2020). Hardesty et al. (2020) suggested that KandyPens deceptively marketed its vaporizers solely for aromatherapy to evade the FDA’s premarket application and approval process.

PAX Labs initiated its affiliate program to market vaporizers for cannabis use without violating company guidelines or federal law on drug paraphernalia. The cannabis-related affiliates offered an ideal solution that allowed PAX Labs to market its devices covertly as cannabis paraphernalia. Other vaping and e-cigarette companies employed affiliates to distance themselves from harm reduction messaging and other marketing practices that could potentially result in fines, regulatory action, or litigation. For example, the e-cigarette company VaporFi may have incentivized affiliates to reach novice tobacco users (Rastogi et al., 2024), and affiliates, not vendors, marketed electronic nicotine delivery systems with unsubstantiated claims about smoking cessation (Cobb et al., 2015). While PAX’s affiliate program generated a modest percentage (7.3%) of e-commerce revenue, the company intended to grow the program using various strategies such as expanding publisher categories and offering higher commissions. Affiliate marketing provided PAX Labs an opportunity to raise brand recognition and increase sales (Candara, 2024). The company’s strategy of recruiting cannabis-related affiliates, such as 420 Vapezone and Cannabis Vape Reviews, was one means of promoting the PAX brand in cannabis spaces. PAX Labs’ plan to recruit and incentivize cannabis-prescribing physicians to market its devices to patients (15%-20% commission/sale) was novel but ethically questionable (Sagy et al., 2018). A physician’s financial incentive to promote PAX devices would likely counter the professional obligation to discuss potential harms associated with cannabis vaping.

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Comparing the marketing strategies used by vaporizer companies like PAX Labs and actual cannabis companies provides valuable insight. Unlike cannabis companies, PAX Labs struggled with branding due to changes in its messaging on intended use from tobacco to an unspecified plant material to cannabis. Also, PAX executives spent considerable time seeking guidance from their legal department on potential marketing campaigns that implicated cannabis use. Yet, our study revealed similarities between PAX Labs and cannabis companies like MedMen, in that both aimed to disrupt their respective industries by constructing cannabis user identities that differed from the stereotypical stoner image (Coskuner-Balli et al., 2021; Jenkins et al., 2021). PAX Labs targeted consumers who were receptive to innovative technologies, products, and brands, and MedMen ran campaigns that broadly appealed to both young and old (i.e., “*the new normal*”). Another similarity between vaporizer and cannabis companies was the practice of employing lobbying firms to support pro-cannabis policies. These companies spent over \$7 million, including \$64,000 from PAX, lobbying the Colorado state legislators to pass cannabis-friendly bills from 2010 to 2021 (Rotering & Apollonio, 2022). Although PAX Labs did not publicly or financially support U.S. state cannabis ballot measures, the company proposed to sponsor public conversations on cannabis legalization.

Strengths and Limitations

This study benefited from access to corporate documents and other data sources that spanned a period marked by significant changes in U.S. state cannabis policies. These changes allowed for an examination of how a vaporizer company modified its messaging to appeal to cannabis consumers. Despite these study strengths, this work was limited by the inaccessibility of some PAX documents that did not migrate to the JUUL Labs document repository following JUUL’s spinoff from PAX Labs in July 2017. Since the company was less vigilant about

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concealing its intent to promote cannabis vaping following the spinoff, any relevant documents missing from the repository probably addressed marketing strategies that overtly targeted cannabis consumers. A second limitation was the inability to verify whether proposed PAX initiatives, such as the Snapchat movement campaign, came to fruition. Yet, even if some initiatives never occurred, they still illustrate corporate strategy. Third, we could not generalize findings from a single vaporizer company to the broader industry. Fourth, PAX executives may have concealed their true intentions in reports and email correspondence given concerns about future discovery. One possible example of this practice, referred to as “eavescasting” (Proctor, 2018), was the legal department’s strict policy of not using cannabis references on social media. Lastly, access to PAX Labs’ social media marketing would have further contributed to data triangulation. Our university provided access to a large social media repository, but it yielded too few tweets on PAX corporate marketing for a meaningful analysis (N=36 tweets).

Conclusion

PAX Labs’ use of cannabis-related affiliates, indirect support for cannabis legalization, and “*plant agnostic*” messaging in cannabis spaces are tactics that will likely be replicated in the U.S. and globally by vaporizer companies. This approach poses challenges for government agencies that do not have purview to regulate vaporizers that are vaguely marketed. This challenge was recognized by the U.S. Department of Justice which advises marketing materials and retailer types be considered when monitoring drug paraphernalia (Hardesty et al., 2020).

Given the challenges of regulating vaporizers, policymakers should consider limiting the product rather than the delivery device. One option is to restrict the manufacture, sales and promotion of flavored cannabis vapes (D'Mello et al., 2023) to curb youth uptake of cannabis vaping. As indicated on their website, PAX Labs now sells fruit- and candy-flavored Era pods

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containing cannabinoids (*PAX Pods*). In 2021, Canadian legislators proposed to ban flavored cannabis extracts sold for medical and non-medical purposes (Gazette, 2021). Lawmakers from the U.S. and other countries should consider similar action in lieu of regulating the marketing and use of vaporizers.

Declarations of Interest

The authors report there are no competing interests to declare.

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Table 1. PAX Labs' evolving messaging about the intended use of its vaporizers

Year/ Quarter	Data Source	Quote or Description
2015/Q1	User guide on PAX website	PAX1: “Loosely fill the oven with your preferred tobacco blend” vs. PAX2: “....pack with your loose leaf material” (PAX Labs, 2015d)
2015/Q1	Presentation on positioning	Recommendation to expand beyond tobacco (but not yet embrace cannabis) by communicating a general vaporization message (PAX Labs, 2015b)

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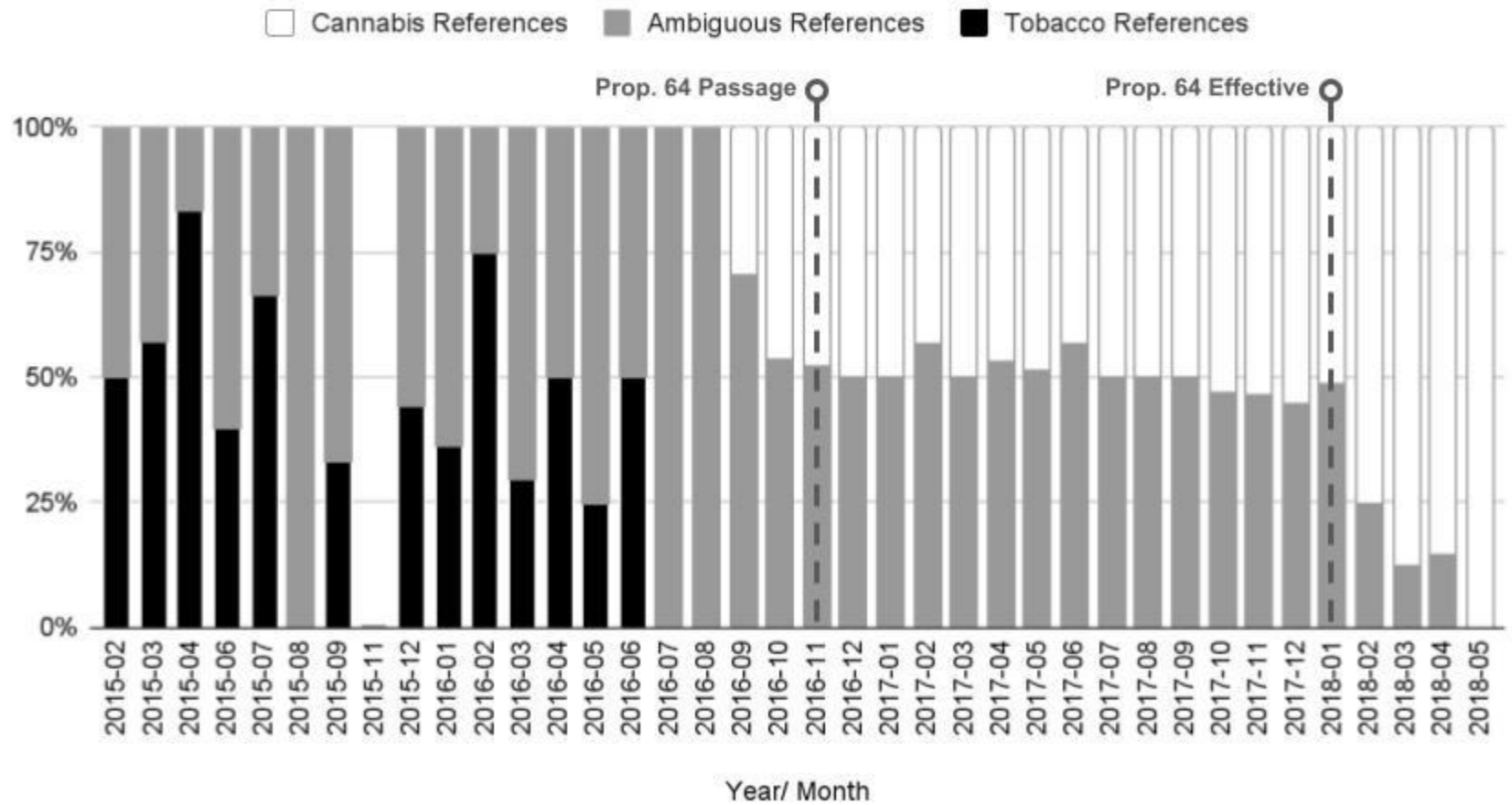
2015/Q3	Email from Media Director	<i>“...we are a product intended for use of tobacco/nicotine. We don’t have to overtly say it, but we can’t say anything contradictory.”</i> (Phillips, 2015)
2016/Q1	Memo from legal department	<i>“... All communications and operations for PAX should remain ‘plant agnostic’ ...[but] wiggle room in legal cannabis states”</i> (Pederson, 2016)
2016/Q1	Talking points with apparel retailers	<i>“PAX can be for stoners – but [also] the anti-stoner..... we intend to be the ‘out-of-category’ vaporizer, meaning we don’t associate with traditional 420 culture”</i> (Livengood, 2016)
2017/Q2	PAX2 webpage	<i>“Designed for use with loose leaf material”</i>
2017/Q3	Standard Operating Procedures for social media	Employees could not use the terms “cannabis”, “marijuana”, other slang terms (e.g., “dank”, “bong”, cannabis strains), avatars, profiles, or pictures of cannabis on social media. (PAX Labs, 2017b)
2017/Q4	PAX2 webpage	<i>“Designed for use with dry herb material”</i>
2018/Q2	PAX3 webpage	Offered a grinder and stash jar with purchase of PAX3

Table 2. PAX Labs’ strategies for marketing its devices for vaporizing cannabis in the U.S.

Strategy	Example or Description
Dispensaries	<i>“Engage directly with dispensaries in states where marijuana/medical marijuana is legal to increase PAX sales velocity, e.g., add dispensaries to our store locator”</i> (5/2015 (PAX Labs, 2015c))
Affiliates	Affiliates with cannabis-related websites earned commission on the sale of each PAX2 device or clicks on a PAX website banner (~\$150/100 clicks) (10/2015 (Lutz, 2015)).
Third-Party Influencers	PAX’s communication restrictions were circumvented through third-party influencers (e.g., Women Grow) who could talk freely and broadly about the medical cannabis industry (1/2016 (S.; Richardson, 2016b))
Physicians	Recruited cannabis-prescribing physicians to sell PAX directly or serve as affiliates and receive a 15-20% commission for each sale (6/2016 (Bain, 2016))
4/20 Billboards	Purchased billboards along “Green Mile” in Denver for a 4/20 [cannabis day] rally (3/2016 (Phillips, 2016))
4/20 Promotion	Ran PAX Era Recycling 4/20 event where the first 100 customers who recycled an old vaporizer or pen battery could purchase a PAX Era for \$4.20 (3/2017 (Reyes, 2017))
Conference	Ran booth at Marijuana Business Conference & Expo in Las Vegas (6/2017 (Bain, 2017))
Media	Worked with cannabis media (e.g., High Times) to promote vaporizers (6/2015 (Livengood, 2015))

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Figure 1. Proportions of cannabis, ambiguous, and tobacco references on PAX webpages from February 2015 through May 2018 (N= 565 webpages)



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