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Short Communication

Point-of-sale marketing and context of marijuana retailers: Assessing reliability and generalizability of the marijuana retail surveillance tool

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ABSTRACT

As recreational marijuana expands, standardized surveillance measures examining the retail environment are critical for informing policy and enforcement. We conducted a reliability and generalizability study using a previously developed tool involving assessment of a sample of 25 randomly selected Seattle recreational marijuana retailers (20 recreational; 5 recreational/medical) in 2017. The tool assessed: 1) contextual/neighborhood features (i.e., facilities nearby); 2) compliance/security (e.g., age-of-sale signage, age verification); and 3) marketing (i.e., promotions, product availability, price). We found that retailers were commonly within two blocks of restaurants ($n = 23$), grocery stores ($n = 17$), liquor stores ($n = 13$), and bars/clubs ($n = 11$). Additionally, two were within two blocks of schools, and four were within two blocks of parks. Almost all ($n = 23$) had exterior signage indicating the minimum age requirement, and 23 verified age. Two retailers had exterior ads for marijuana, and 24 had interior ads. Overall, there were 76 interior ads ($M = 3.04$; $SD = 1.84$), most commonly for edibles ($n = 28$). At least one price promotion/discount was recorded in 17 retailers, most commonly in the form of loyalty membership programs ($n = 10$) or daily/weekly deals ($n = 10$). One retailer displayed potential health harms/warnings, while three posted some health claim. Products available across product categories were similar; we also noted instances of selling retailer-branded apparel/ paraphernalia (which is prohibited). Lowest price/unit across product categories demonstrated low variability across retailers. This study documented high inter-rater reliability of the surveillance tool ($Kappas = 0.73$ to 1.00). In conclusion, this tool can be used in future research and practice aimed at examining retailers marketing practices and regulatory compliance.

1. Introduction

The most commonly used federally illicit drug is marijuana; 8.4% of US adults report past-month use (a 35% increase since 2002) (Azofeifa et al., 2016). As of 2016, eight states and the District of Columbia have legalized recreational marijuana. An additional 29 states have legalized medical marijuana use and/or decriminalization laws. With a majority of US adults favoring legalization (Pew Research Center, 2013), further legalization is likely to occur. Moreover, marijuana is among the fastest growing industries in the US, with the legal market projected to be worth \$22 billion by 2020 (Sola & Legal, 2016).

Standardized measures to monitor retail marketing of tobacco and alcohol have been critical to inform federal, state, and local policy and

enforcement (Henriksen et al., 2016; Monteiro et al., 2017; Babor et al., 2017). To fill an important gap in research on marijuana retail marketing, this study builds on the development and pilot testing of the Marijuana Retail Surveillance Tool (MRST), conducted in a convenience sample of 20 Denver retailers (Berg et al., 2017). The MRST was based on relevant and reliable measures, specifically a premise survey used to characterize medical marijuana dispensaries in California (Thomas & Freisthler, 2016) and the vape shop module of the Standardized Tobacco Assessment for Retail Settings (V-STARS) (Kong et al., 2017). Reviews of the literature were conducted to inform assessments of product offerings (e.g., (Bierut et al., 2017)), as well as promotional strategies used on marijuana retailer websites (e.g., (Bierut et al., 2017)). We also assessed the community context (e.g., proximity to

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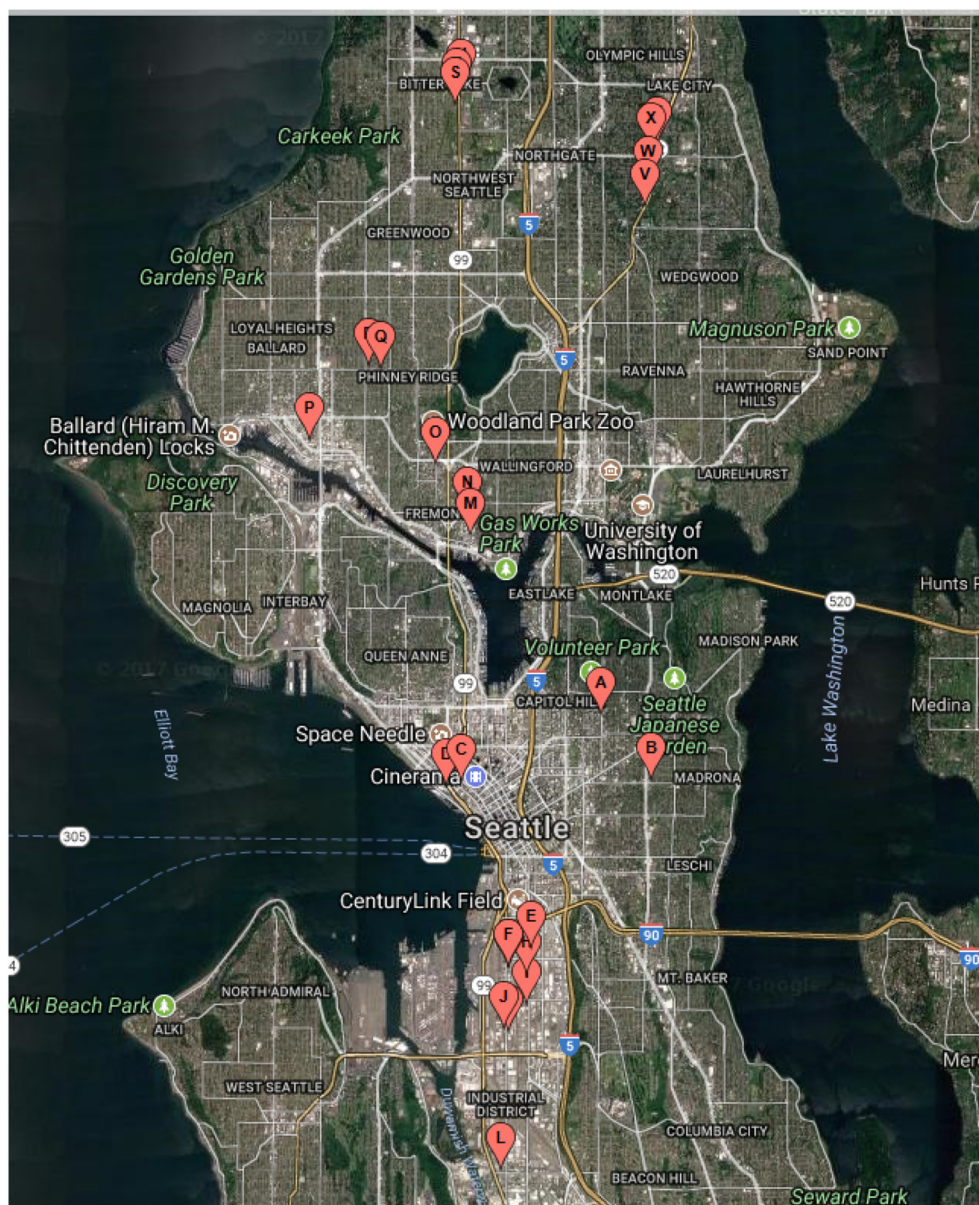


Fig. 1. Map of sampled marijuana retailers in Seattle, N = 25.

Source: www.geobatch.com

other retailer types) in order to contextualize marijuana retailer location (Glanz et al., 2005). Regarding regulatory issues, we documented high compliance with age verification, but nearly half of the shops posted health claims. In terms of marketing, price promotions and promotions for novel products (e.g., edibles) were prevalent (Berg et al., 2017).

Building on this pilot study (Berg et al., 2017), this study examined the inter-rater reliability of the MRST and its applicability to a context with different marijuana-related policies.

2. Methods

2.1. Study site

Seattle was chosen as the study site because Washington was the second state to legalize recreational marijuana and open a non-medical retail marijuana marketplace and now includes a large market (> 1000 recreational retailers) (Washington State Liquor and Cannabis Board, 2017). Washington laws require: 1) licensing (e.g., retailers must

possess a recreational license and can apply for an added license for medical marijuana endorsement); 2) mandatory age verification and prohibition of sales to customers < 21 unless medicinal; 3) limits on amount purchased (e.g., one ounce of useable marijuana, 16 oz of solid edibles); 4) restrictions on advertising (e.g., limits on outdoor advertising, prohibiting coupons/giveaways, prohibiting health claims); 5) prohibiting sales of merchandise beyond marijuana and paraphernalia; 6) mandatory packaging (e.g., child-resistant, warning statements); and 7) prohibiting retailers within 1000 ft of youth-serving facilities (e.g., schools, parks), among other requirements. State law allows further local regulation (Washington State Liquor and Cannabis Board, 2016).

2.2. Data collection

In July 2017, two independent observers, the first author and a MPH-level research assistant, visited a sample of 25 Seattle-metro area retailers, randomly selected from a list of retailers derived from Weedmaps.com (Bierut et al., 2017), a user-driven website for locating retail sources that includes forums for discussing products/dispensaries (Fig. 1). Each

observer independently completed the MRST (Berg et al., 2017) using a survey program (surveygizmo.com) operated via iPhones, guided by recommended procedures (Feld et al., 2016). As with the original pilot (Berg et al., 2017), open fields were embedded throughout the MRST to capture data that emerged in order to inform future iterations of the MRST.

2.2.1. Contextual/neighborhood characteristics

The observers coded: whether the shop was *recreational only or both recreational and medicinal* (per Weedmaps and signage); and *other nearby facilities* (e.g., liquor stores, schools, parks) by walking/driving around each retailer covering two blocks in each direction using reliable, validated methods (Raudenbush & Sampson, 1999).

2.2.2. Compliance/security

The following variables were coded: exterior signage indicating minimum age requirement; age verification; security cameras; and security personnel.

2.2.3. Marketing

Product availability was coded for each of the following: bud (loose or pre-packaged); joints (pre-rolled marijuana); concentrates (e.g., hash oil, shatter, wax, tinctures, kief); beverages (e.g., sodas); edibles (e.g., gummies, cookies); topicals (e.g., lotions, lip balms, etc. applied transdermally); clones (cloned marijuana plants); seeds (to grow a new plant); other marijuana product (describe); glassware (e.g., bowls, waterpipes); vaporizers; rolling papers; branded apparel (e.g., t-shirts, hats); branded paraphernalia (e.g., glassware); and other non-marijuana product (describe).

Regarding *advertising/promotion*, the number of ads, defined as professionally-printed and branded signs, were counted separately for exterior and interior. Product type advertised was coded qualitatively. Price promotions were counted and categorized as: early bird/happy hour specials, daily/weekly deals, loyalty club memberships, promotional product discounts (i.e., products featured on sale), or other (describe). In addition, any social media promotions; types of take away materials (describe); number of health warnings including any signage or printed materials indicating potential health risks (describe); and number of health claims including any signage or printed materials indicating any potential health benefits (describe).

Lowest *price* per unit for each marijuana product category was recorded using a review of each retailer's website in order to ensure accuracy of data collection. Unit was determined by the conventions used across product category, leveraging reviews of the websites and pilot findings from the Denver study (Berg et al., 2017), specifically per eighth (3.5 g) for bud, per gram for pre-rolled or joints, per half gram for concentrates, and per 10 mg for beverages and edibles. Topicals demonstrated the greatest variability in terms of form (e.g., lip balm, lotion, soap) and volume; thus, price was thus recorded as lowest purchase price of a topical.

Completing the MRST assessment took an average of 18.7 (SD = 8.4) minutes. After completing all assessments, retailer websites were examined to compare data collected on site. (Few differences were documented and thus not presented.)

2.3. Data analysis

This paper reports descriptive statistics and inter-rater reliability analyses (Kappa for categorical variables; intraclass correlation coefficients [ICCs] for continuous variables), using SPSS 23.0.

3. Results

3.1. Contextual and neighborhood characteristics

This sample included 20 recreational only retailers and 5 with a medicinal endorsement (Table 1). Retailers were commonly within two

Table 1
Seattle marijuana retailer characteristics, n = 25.

Variable	n (%)	Kappa ^a (ICC ^b)
Contextual & neighborhood characteristics		
Type of retailer		1.00
Recreational only	20 (80.0)	
Recreational and medical	5 (20.0)	
Other facilities within two blocks		0.92
Restaurants ^c	23 (92.0)	
Grocery stores ^c	17 (68.0)	
Liquor stores	13 (52.0)	
Bars/clubs	11 (44.0)	
Schools	2 (8.0)	
Parks	4 (16.0)	
Compliance & security		1.00
Indicating age requirement; minors not allowed	23 (92.0)	
ID check ^c	23 (92.0)	
Security personnel outside door	9 (36.0)	
Security cameras	25 (100.0)	
Marketing – promotion		1.00
Ads		1.00
Exterior product ads	2 (8.0)	
Interior product ads ^c	24 (96.0)	
Number of ads per retailer (M, SD; ICC) ^{b,c}	3.04 (1.84)	0.83
Any price promotions/discounts	17 (68.0)	1.00
Types of promotions		0.92
Loyalty club memberships ^c	10 (40.0)	
Daily/weekly deals	10 (40.0)	
Early bird/happy hour specials ^c	2 (8.0)	
Promotional product discounts	7 (28.0)	
Social media promotions	6 (24.0)	1.00
Take away materials	25 (100.0)	1.00
Health warnings and claims		1.00
Health warnings	1 (4.0)	
Health claims posted ^c	3 (12.0)	
Marketing – lowest price ^c	(M, SD) ^c	ICC ^b
Bud (per eighth or 3.5 g)	10.56 (1.23)	0.79
Pre-roll (per gram)	4.68 (0.75)	0.91
Concentrates (per half gram)	9.18 (1.13)	0.73
Beverages (per 10 mg)	7.68 (0.69)	0.87
Edibles (per 10 mg)	3.64 (0.95)	0.95
Topicals (per purchase)	9.60 (0.82)	0.91

^a Kappa refers to Cohen's kappa coefficient.

^b ICC = intraclass correlation coefficient.

^c The first author's data is presented where discrepancies occurred.

blocks of restaurants (n = 23), grocery stores (n = 17), liquor stores (n = 13), and bars/clubs (n = 11). Additionally, two were within two blocks of schools, and four near parks (Kappas = 0.92 to 1.00).

3.2. Compliance and security

Almost all (n = 23) had exterior signage indicating minimum age requirement. Additionally, 23 retailers had personnel verifying age, with 9 having security personnel at the entrance. All had at least one security camera inside and outside.

3.3. Marketing

3.3.1. Product availability

Product offering assessments demonstrated no discrepancies across observers and indicated that all offered bud, joints/pre-rolled, concentrates, beverages, edibles, topicals, glassware, vaporizers, and rolling papers (not shown in tables). Two shops sold retailer-branded apparel, one sold branded paraphernalia, and three sold art (e.g., paintings). Three operated retail shops adjacent to the marijuana shop through which they sold branded paraphernalia, apparel, and other merchandise not allowed for sale in the marijuana retailer.

3.3.2. Advertising and promotion

Two retailers had exterior ads for marijuana; 24 posted interior ads

(Kappa = 0.92). There were 76 total interior ads (range: 0–6; ICC = 0.83), most commonly for edibles (n = 28), followed by bud (n = 16), beverages (n = 14), and topicals (n = 12). At least one price promotion/discount was recorded in 17 retailers, the most common involving loyalty membership programs (n = 10); daily/weekly deals (n = 10); and promotional discounts (n = 7; Kappas = 0.78 to 1.00). Additionally, 6 retailers used social media (per signage, take-away materials, or television screens), and all 25 retailers had take-away materials (e.g., menus; signs/stickers promoting brands, discounts, or the shop). Notably, one retailer displayed signage indicating potential health harms or warnings (regarding monitoring consumption levels), while three retailers posted some type of health benefit claim (Kappas = 0.92 to 1.00).

3.3.3. Price

Average lowest price was \$10.56 (range \$8–12) for bud, \$4.68 (range \$3–5) for a joint/pre-roll, \$9.18 (range \$7.50–10) for concentrates, \$7.68 (range \$6–8) for beverages, \$3.64 (range \$3–5) for edibles, and \$9.60 (range \$8–10) for topicals (ICCs = 0.73 to 0.91).

4. Discussion

This study extends our prior work by providing evidence of reliability and generalizability of a surveillance tool for assessing the marketing practices and sociocontextual characteristics of recreational marijuana retailers. While this study is limited by its focus on a convenience sample of 25 retailers in Seattle chosen from Weedmaps, this data builds on prior tool utilization among 20 Denver retailers. This study also helped to identify distinct variables relevant within differing policy contexts (e.g., types of products or promotions allowed).

In the current and previous studies (Berg et al., 2017; Buller et al., 2016), high compliance with age requirement/verification practices, as well as use of security measures, was documented. In terms of promotion, novel products (e.g., edibles, beverages, topicals) were frequently advertised, likely in an attempt to familiarize customers with newer products (Marijuana Business Daily, 2016). Unlike the Colorado study (Berg et al., 2017), however, bud was also frequently advertised among Seattle retailers. Loyalty club memberships and daily/weekly deals were prevalent, similar to the Denver study (Berg et al., 2017). However, using social media was not as common in this sample of Seattle retailers compared to the sample of Denver retailers (Berg et al., 2017), which may reflect more conservative policies regarding online promotion and sales in Washington (Washington State Liquor and Cannabis Board, 2016) relative to Colorado (Permanent Rules Related to the Colorado Retail Marijuana Code, 2013).

Similar to our prior work (Berg et al., 2017), this study also documented little product and price variability among the shops. This lack of variability in product offerings and price suggests that other shop characteristics (e.g., promotional strategies, branding) might be used to differentiate retailers from one another. Indeed, unlike the tobacco and alcohol industry, building strong brand affiliation with shops rather than products may be strategic in the marijuana industry, potentially given limited variability in product offerings and price across marijuana retailers (Aaker, 1996; Dawes, 2014).

This study highlighted that assessments of the marijuana retail environment should be informed by policies and regulations given activities that may be differentially prohibited or restricted in differing jurisdictions. For example, while marijuana retailers are allowed to sell clones and seeds in Colorado (albeit not commonly offered (Berg et al., 2017)), retail sale of clones and seeds is prohibited in Washington. Similarly, Washington retailers are prohibited from selling branded apparel or other merchandise (outside of marijuana products and paraphernalia) in the retail store (though stores are allowed to have a merchandise store co-located). However, the Colorado market is not restricted in this way. This is particularly relevant given that this study noted violations of these regulations, specifically in relation to the sale

of branded apparel in Seattle. Furthermore, this study documented retailers being proximal (i.e., within two driving blocks) to schools, parks, and playgrounds, despite regulations limiting them to further than 1000 ft (Washington State Liquor and Cannabis Board, 2016); however, our assessment tool lacked the specificity to capture if retailers were indeed within 1000 ft.

Attempts to circumvent policies are also noteworthy. This study noted that some Seattle retailers had separate storefronts adjacent to the marijuana shop where they could sell branded apparel and justify larger exterior signage. Our previous study in Denver also noted other attempts to circumvent policies; for example, publicizing “private” parties where marijuana use would be allowed despite prohibition of marijuana in public places (Berg et al., 2017). Surveillance of such activities is critical to informing regulatory and enforcement efforts.

The MRST demonstrated perfect inter-rater reliability in two-thirds of items and ≥ 0.73 congruence in the remaining items. Incongruence occurred in assessments of the external environment, marketing and promotion, and price. Greater rigor in training regarding the use of the MRST, including standardized protocols that include examples and practice assessments, is needed. Additionally, in assessing products, complexities in mode of consumption, tetrahydrocannabinol versus cannabidiol, and strain (indica, sativa, hybrid) make thoroughly assessing each product category cumbersome and complicated. Moreover, assessing lowest price across marijuana product categories is complex given the diversity of product offerings in any single product category (e.g., edibles) and the ranges in volume, potency, strain, etc. Thus, this approach will need to be further refined over time and adapted as differing policy contexts may prohibit certain types of products (e.g., loose joints) or regulate how they are packaged (e.g., loose versus pre-packaged bud). Finally, studies involving larger sample sizes could examine differences between recreational only retailers versus those with a medicinal endorsement.

5. Conclusions

This study established good inter-rater reliability and generalizability of the MRST. This surveillance tool can be in future research to examine the impact of point-of-sale marketing on marijuana use and on how sociocontextual differences impact retail marketing. Future research should assess larger, representative samples to further validate the MRST and its applicability to a broad range of marijuana contexts.

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Contributors

The authorship team collectively designed the MRST and conceptualized the study approach. Dr. Berg led data collection, analyses, and initial manuscript writing. Drs. Henriksen, Cavazos-Rehg, Schauer, and Freisthler contributed to the final drafting of the manuscript. All authors contributed to and have approved the final manuscript.

Conflicts of interest

The authors declare no conflicts of interest.

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