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Availability of Tobacco Products Associated with Use of Marijuana Cigars (Blunts)

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Abstract

Objectives—This study examines factors associated with availability of tobacco products for marijuana cigars (i.e., blunts) in 50 non-contiguous mid-sized California communities.

Methods—The study is based on data collected in 943 tobacco outlets. Neighborhood demographics, community adult marijuana prevalence, medical marijuana policy and access to medical marijuana dispensaries and delivery services were included.

Results—Multilevel logistic regression analyses indicated that compared with small markets, availability of tobacco products associated with use of blunts was significantly higher in convenience stores, smoke/tobacco shops and liquor stores. None of the neighborhood demographics were associated with availability of blunt wrappers and only a small percent of Whites was positively associated with availability of blunt cigars, small cigars or cigarillos at the store. Controlling for outlet type and neighborhood demographics, higher city prevalence of adult marijuana use was associated with greater availability of blunt wrappers. Also, policy that permits medical marijuana dispensaries or private cultivation was positively associated with availability of tobacco products for blunts. Density of medical marijuana dispensaries and delivery services, however, was negatively associated with greater availability of these products at tobacco outlets.

Conclusions—Results suggest that availability of tobacco products associated with blunts is similar in neighborhoods with different socioeconomic status and racial and ethnic composition. Results also suggest the important role that community norms that support marijuana use or legalization of medical marijuana and medical marijuana policy may play in increasing availability of tobacco products associated with blunts.

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Contributors: Sharon Lipperman-Kreda conceptualized the study and was primarily responsible for data analysis and manuscript preparation. Juliet Lee assisted in conceptualizing the study and contributed to the lit review and writing of this manuscript. Chris Morrison assisted in creating the GIS-based variables and in substantial editing of the manuscript. Bridget Freisthler provided the medical marijuana policy and density measures in the 50 communities and assisted in substantial editing of the manuscript. All of the authors helped to interpret findings, review drafts of the manuscript and approved the final manuscript.

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Keywords

Blunts; Tobacco; Marijuana; Availability; Policy; Community demographics

1. Introduction

Marijuana use has become increasingly normalized in the US and abroad. Since 1996, California has allowed marijuana for medical use. An additional 17 states and the District of Columbia have followed suit by either allowing medical marijuana use or legalizing recreation use of marijuana. A trend among young people is smoking marijuana cigars (i.e., blunts). Marijuana cigars or blunts refer to cannabis rolled with a shell from an inexpensive cigar called a blunt, although any commonly available inexpensive small cigars or cigarillos are likely to be used (Sifaneck et al., 2005). Blunt wrappers, which are tobacco leaf rolling papers that come in sealed packages, are also sold for rolling blunts. Due to the tobacco content in the wrapper leaf, smoking marijuana cigars may be considered as concurrent use of marijuana and tobacco. In this paper, we use the term “blunts” to talk about marijuana cigars and the term “blunt cigars” to talk about the inexpensive tobacco cigar that is typically used to make the marijuana cigars. Blunt cigars are cheap, frequently available at urban convenience stores, typically pre-cut with a blunt tip (hence the name), and sold singly or in small packs of five. The present study examines factors associated with availability of tobacco products commonly used for blunts.

Epidemiological surveys indicate that blunts are most commonly used by emerging adults (age 18 to 25), and that their use is generally increasing across all age groups. In 2005, 3.5% of all American youth aged 12–17 years were estimated to have used blunts in the past month (National Survey on Drug Use and Health, 2007), and a study among young adults aged 18-25 reported that between 2005 and 2008 past month blunts use ranged between 9% and 10.1% (Cullen et al., 2011). By comparison, in 2011, 4.1% of youth aged 12–17 years, 11% of young adults aged 18-25 years, 4.2% of adults aged 26-34 years and 1% of adults aged 35 or older reported using blunts in the past month (Substance Abuse and Mental Health Services Administration (SAMHSA), 2013). A recent study reported a moderate increase in the annual prevalence of blunt smoking among respondents aged 12-34 years old from 12% in 2004 to 14% in 2010 (Timberlake, 2013). Other studies indicate that blunt smoking appears to be practiced among a growing number of racial/ethnic groups (Timberlake, 2013), such as Southeast Asian youth and young adults in California (Soller and Lee, 2010).

Previous studies have found that, compared to other intake forms of marijuana, smoking blunts is more associated with male gender, low GPA, poor school attachment, not attending college, not working, and living in low income areas (National Survey on Drug Use and Health, 2007; Ream et al., 2006; Soldz et al., 2003; Timberlake, 2009). Also, blunts smokers may have greater odds of being dependent on cannabis and tobacco and are at risk for smoking-related diseases (Golub et al., 2005; Timberlake, 2009). While tobacco remains the leading cause of preventable and premature death, killing an estimated 443,000 Americans each year (U.S. Department of Health and Human Services, 2012), risks associated with marijuana use include impaired respiratory, cardiovascular and cognitive functioning and reduced mental health, as well as impaired driving ability and impaired function in school and at work (Center on Addiction and Substance Abuse, 2008; Compton et al., 2009; Foley, 2006; Pujazon-Zazik and Park, 2009).

Blunts availability is likely to increase blunts use and problems associated with marijuana and tobacco use in local neighborhoods. Previous research suggests that exposure to and

availability of drugs increase drug use and abuse (Crum et al., 1996; Freisthler et al., 2005; Saxe et al., 2001; Storr et al., 2004a; 2004b). However, very little is known about availability of tobacco products associated with use of blunts. Studying the associations between neighborhood characteristics and availability of tobacco products used for blunts may help to identify areas at risk for blunts use and help policymakers and community advocates make better decisions about allocation of prevention resources.

Analyzing 2000-2003 data from the National Survey on Drug Use and Health (NSDUH), Golub and colleagues (2005) showed that more than half (54.7%) of past-30-day marijuana users also reported current use of blunts. Among current blunts users, over two-thirds (68%) reported no current use of cigars, indicating blunts smokers may not define this practice as tobacco use. Similarly, a recent study suggested that young people recognize blunts as a form of marijuana use but do not recognize it as cigar use (Delnevo et al., 2011). Qualitative studies have also shown that youths may not consider blunts smoking to be a form of cigar use at all (Moolchan et al., 2005; Yerger et al., 2001). These studies suggest the importance of studying the relationships between availability of tobacco products associated blunts use and societal-level influences related to normalization of marijuana use. Increased recognition of “recreational drug use” (Glassner and Loughlin, 1987; Nicholson, 2002; Parker et al., 1998) and increased support for legalizing some forms of marijuana use (Millhorn et al., 2009) may contribute to normalization of marijuana and therefore to availability of products associated with blunts use.

Societal-level influences related to normalization of marijuana use in the community may include rates of adult marijuana use. Recent studies have found that prevalence of adult drinking or smoking in the community are associated with increased underage drinking and youth cigarette smoking (Chen et al., 2010; Paschall et al., 2012; Thrul et al., 2013). These studies suggested that the level of adult drug use in the community reflect both community drug norms and availability. Medical marijuana policy and availability should also be considered as social influences related to normalization of marijuana. Our previous studies indicated that tobacco and alcohol policies were directly related to community norms (Lipperman-Kreda and Grube, 2009; Lipperman-Kreda et al., 2010). Although blunts smoking and use of other forms of marijuana may be seen as different practices (Dunlap et al., 2005; Johnson et al., 2006; Ream et al., 2006), medical marijuana dispensaries might increase availability and ease of access to marijuana. Also, medical marijuana dispensaries may indirectly affect general acceptability of marijuana in the community. The present study focuses on the associations between availability of tobacco products for blunts and social factors including neighborhood demographics, community-level marijuana use, medical marijuana policy and access to medical marijuana dispensaries and delivery services.

2. Methods

2.1 Study sample and survey methods

This study used data from access surveys conducted at 1,000 tobacco outlets in 50 California cities with populations between 50,000 and 500,000. The sampling procedures for the 50 cities are described elsewhere in detail (Lipperman-Kreda et al., 2012a, 2012b). This sample was a purposive geographic sample intended to maximize validity with regard to the geography and ecology of the state. Twenty randomly selected tobacco outlets in each city were surveyed. The sampling procedures for the tobacco outlets and survey procedures are also described in detail (Lipperman-Kreda et al., 2012a).

The current study is based on data from 943 outlets with data for at least one of the outcome variables. In each city, data for the study were available for between 14 and 20 outlets ($M=18.86$, $SD=1.56$). The selected tobacco outlets in each city were surveyed by two

research assistants. At each outlet, a single research assistant attempted to purchase a pack of cigarettes and conducted a brief observation. After leaving the outlet, the research assistants recorded outlet data on a standardized form including whether blunt cigars, small cigars or cigarillos and blunt wrappers were for sale. Institutional review board approval was obtained prior to study implementation.

2.2 Measures

2.2.1 Outlet availability of tobacco products associated with blunts—The unit of interest for this study was tobacco outlets. The two binary outcome variables were (1) sale of blunt cigars, small cigars or cigarillos and (2) sale of blunt wrappers.

2.2.2 Type of outlets—Research assistants also documented the type of outlet they surveyed (i.e., small market, supermarket, convenience store, pharmacy/drug store, liquor store, tobacco store, and other). We created six outlet type dummy variables with small market as the reference category.

2.2.3 Outlet block group demographics—Demographic data were 2010 estimates for the Census block group in which each outlet was located (GeoLytics Inc., 2010). Measures used in this study included population density (i.e., population per square mile), proportion aged under 18 years, proportion White, proportion African American, proportion Hispanic, median household income, proportion with a college education, and proportion unemployed. A single socioeconomic status (SES) factor score was derived from median family income, proportion of population with a college education, and proportion unemployed. Other measures were standardized.

2.2.4 Prevalence of past year adult marijuana or hashish users—Adult prevalence of past year marijuana use in each city was ascertained from 8,807 adults over the age of 18 years old ($M_{age} = 54.79$, $SD = 17.46$) who participated in a general population telephone survey conducted in the same 50 cities (Gruenewald and Remer, in press). Respondents were surveyed through a computer-assisted telephone interview. Listed addresses and telephone numbers obtained from various sources were used to develop a sample for the study. Listed samples of phone numbers is unbiased relative to random digit dialing techniques (Brick et al., 1995; Kempf and Remington, 2007; Tucker et al., 2002). Respondents were asked if they ever, even once, used marijuana or hashish. Respondents who had used marijuana or hashish were then asked about the number of days in the past 12 months they used marijuana or hashish. Those who reported never using marijuana or hashish or not doing so in the past 12 months were assigned a value of 0. All the others were assigned the value of 1. Adult prevalence of past year marijuana use was computed as the percent of past 12 month marijuana or hashish users in each city. Because of the skewed distribution, this variable was \log_{10} transformed for analyses.

2.2.5 Medical marijuana dispensary/private cultivation policy—Although California allows medical marijuana use, the state leaves regulations regarding the distribution of medical marijuana to patients up to local jurisdictions. Some localities have banned the distribution of marijuana through storefront dispensaries, have strict regulations on cultivation sites, have density restrictions on dispensaries, or some combination. Between June 2012 and July 2012, local city ordinances (e.g., municipal codes) and policies around distribution and cultivation of marijuana were reviewed to determine whether the city permitted medical marijuana dispensaries or private cultivation in its jurisdiction. Cities were coded as allowing (1) or not allowing (0) medical marijuana storefront dispensaries and/or private cultivation within city boundaries.

2.2.6 Density of medical marijuana dispensaries and delivery services—The density of medical marijuana dispensaries and delivery services is a measure of physical availability of medical marijuana in each of the 50 cities. Delivery services are an alternative means for users to obtain medical marijuana. These services can be available in any of the 50 cities, but are often more available in cities that do not allow distribution through dispensaries. Locations of storefront dispensaries and delivery service areas were obtained from seven different websites listing the information for these businesses in March – April 2012. The websites used to determine the locations of medical marijuana dispensaries and delivery services were obtained by conducting a comprehensive search of such databases available on the web and by asking dispensary owners where they advertise their services. These websites provide the most up-to-date information on locations of dispensaries as some offer free listing services for new dispensaries (ensuring that we obtain information when new dispensaries open) with a pay option to continue the listing (e.g., WeedMaps.com).

To determine how well these on-line sources correspond with other sources of data (e.g., official city lists), we conducted a premise assessment of all the dispensaries in one of the 50 cities (Sacramento) in March, 2013. Lists of dispensaries were compiled from the sources above and from official city lists. Of the 51 dispensaries identified, only 16 were opened and operating. All of these dispensaries were identified using the on-line sources used in the current study. The official city list accounted for the dispensaries that were no longer in operation.

Counts of dispensaries were denominated by the total length of roadways within cities (rather than land area or population) to provide a representation of the functional access to these businesses (Gruenewald et al., 1996). A strength of our study is that we calculate these densities for the entire city; thus while the count of dispensaries may not be perfectly accurate, cities with contrasting (i.e., high vs. low) levels of dispensaries can still be differentiated. This variable was standardized for analyses.

2.3 Data analysis

Multilevel logistic regression analyses were conducted with HLM version 7 software to adjust for clustering of observations within cities (Raudenbush et al., 2011). Although some outlets were nested within the same block group, 74% of the block groups in the current study had only one outlet within it. We therefore examined two-level models with outlets (level 1) nested within cities (level 2). Intraclass correlations (i.e., the proportion of variance that is between cities) were .29 and .31 for whether blunt cigars, small cigars or cigarillos were for sale and whether blunt wrappers were for sale, respectively. These intraclass correlation values suggest that observations within the cities were not independent and indicate the value of including cities as a random second-level unit.

Prevalence of adult marijuana or hashish users, medical marijuana dispensary or private cultivation policy and density of medical marijuana dispensaries and delivery services were included as city-level variables in all models (level 2). Availability of blunt cigars, small cigars or cigarillos (outcome 1), availability of blunt wrappers (outcome 2), outlet type and outlet block group demographic variables were included at the outlet-level (level 1). In each model, variables at both levels were entered simultaneously. All observations with complete data for any specific model were included in the analysis.

The model equations were:

$$\text{Prob}(\text{Sale of blunt cigars, small cigars or cigarillos/sales of blunt wrappers}_{i,j}=1|\beta_j)=\phi_{i,j} \quad \begin{array}{l} \text{Level-1} \\ \text{Models} \end{array}$$

$$\log[\phi_{ij}/(1 - \phi_{ij})] = \eta_{ij}$$

$$\begin{aligned} \eta_{ij} = & \beta_{0j} + \beta_{1j} * (\text{convenience store}_{ij}) \\ & + \beta_{2j} * (\text{Smoke/tobacco shop}_{ij}) \\ & + \beta_{3j} * (\text{Supermarket}_{ij}) \\ & + \beta_{4j} * (\text{Drug/pharmacy store}_{ij}) \\ & + \beta_{5j} * (\text{Liquor store}_{ij}) \\ & + \beta_{6j} * (\text{other}_{ij}) + \beta_{7j} * (\text{population density}_{ij}) \\ & + \beta_{8j} * (\text{proportion of minors}_{ij}) \\ & + \beta_{9j} * (\text{SES}_{ij}) \\ & + \beta_{10j} * (\text{proportion of Whites}_{ij}) \\ & + \beta_{11j} * (\text{proportion of African-Americans}_{ij}) \\ & + \beta_{12j} * (\text{proportion of Hispanic}_{ij}) \end{aligned}$$

$$\begin{aligned} \beta_{0j} = & \gamma_{00} + \gamma_{01} * (\text{prevalence of adult marijuana/hashish users}_j) \\ & + \gamma_{02} * (\text{medical marijuana dispensary policy}_j) \\ & + \gamma_{03} * (\text{density of dispensaries and/or delivery services}_j) + u_{0j} \end{aligned}$$

Level-2
Models

$$\begin{aligned} \beta_{1j} = & \gamma_{10}, \beta_{2j} \\ & = \gamma_{20}, \beta_{3j} \\ & = \gamma_{30}, \beta_{4j} \\ & = \gamma_{40}, \beta_{5j} \\ & = \gamma_{50}, \beta_{6j} \\ & = \gamma_{60}, \beta_{7j} \\ & = \gamma_{70}, \beta_{8j} \\ & = \gamma_{80}, \beta_{9j} \\ & = \gamma_{90}, \beta_{10j} \\ & = \gamma_{100}, \beta_{11j} \\ & = \gamma_{110}, \beta_{12j} = \gamma_{120} \end{aligned}$$

$$\text{Level-1 variance} = 1 / [\phi_{ij}(1 - \phi_{ij})]$$

3. Results

3.1 Descriptive statistics

Descriptive statistics for study variables are provided in Table 1. Percentage of outlets that sold blunt cigars, small cigars or cigarillos was 65% and percentage of outlets that sold blunt wrappers was 59%. Percentage of tobacco outlets that sold both products was 58%.

Prevalence rate for past-year adult marijuana or hashish use in the 50 cities ranged between 1.1% and 19.3% ($M=5.35$, $SD=3.45$). Percentage of cities that permitted medical marijuana dispensaries and/or private cultivation was 22%. Also, medical marijuana dispensaries and/or delivery services were identified in all 50 cities, whether or not the city permitted dispensaries within city boundaries (ranged from 1 to 50). On average, the number of medical marijuana dispensaries and delivery services per roadway mile in the 50 cities was .02 ($SD=.02$).

3.2 Multilevel analyses

Results of multilevel analyses to examine correlates of availability of tobacco products associated with blunts use are provided in Table 2. At the outlet level, results indicated significant associations between the type of the outlet and availability. Specifically, compared with small markets, availability of tobacco products associated with use of blunts was significantly higher in convenience stores, smoke/tobacco shops and liquor stores. The associations with smoke/tobacco shops was in particular higher; 91% and 93% of these outlets sold blunt cigars, small cigars or cigarillos and blunt wrappers, respectively. None of the outlets' block group demographics were associated with availability of blunt wrappers and only percent of Whites was positively associated with availability of blunt cigars, small cigars or cigarillos at the store.

Controlling for outlet type and block group demographics, higher city prevalence of adult marijuana or hashish use was associated with greater availability of blunt wrappers. It was only marginally associated with availability of blunt cigars, small cigars or cigarillos. Also, policy that permits medical marijuana dispensaries or private cultivation was positively associated with availability of tobacco products associated with blunts. Density of medical marijuana dispensaries and delivery services per city, however, was negatively and strongly associated with greater availability of these products at places where tobacco products are typically sold.

4. Discussion

The current study examined social factors associated with availability of tobacco products for blunts. Other studies have shown that the tobacco industry aggressively markets specific products, such as menthol cigarettes, in low-income communities and communities of color (Feighery et al., 2001; Gardiner, 2004; Henriksen et al., 2004, 2012; Moore et al., 1996; Muggli et al., 2002; Sutton and Robinson, 2004). This may not be the case for blunts and blunt wrappers. Results of our study indicate, that for the most part, availability of tobacco products associated with blunts was similar in neighborhoods with different socioeconomic status and racial and ethnic composition. Focusing on socioeconomic status, these results are less expected given the associations between some low socioeconomic indicators and use of blunts (National Survey on Drug Use and Health, 2007; Ream et al., 2006; Soldz et al., 2003; Timberlake, 2009).

Our results regarding racial and ethnic composition are consistent with recent findings that blunt smoking appears to be practiced among a growing number of racial/ethnic groups (Timberlake, 2013). Moreover, our finding about the positive association between percent of Whites and availability of cigars (i.e., blunt cigars, small cigars or cigarillos) at the store is consistent with results of a recent study that cigar use including big cigars, cigarillos, and little cigars has increased among White non-Hispanic men aged 18 to 25 years (Cullen et al., 2011).

Additionally, our findings suggest that convenience stores, smoke/tobacco shops and liquor stores may provide greater availability of tobacco products associated with blunts than do

other types of stores that sell tobacco. Because previous studies have shown that exposure to and availability of drugs increase drug use and abuse (Crum et al., 1996; Freisthler et al., 2005; Saxe et al., 2001; Storr et al., 2004a, 2004b), policies that limit young people retail access to these products may help to reduce use of blunts and therefore related problems such as cannabis and tobacco dependence and smoking-related diseases (Golub et al., 2005; Timberlake, 2009).

Interestingly, all three community-level factors related to marijuana use and access to medical marijuana were found associated with availability of tobacco products associated with blunts. Specifically, higher prevalence of marijuana/hashish use and policy that permits medical marijuana dispensaries and private cultivation were positively associated with availability of tobacco products for blunts in tobacco outlets. Density of medical marijuana dispensaries and/or delivery services, however, reduced odds of availability of these products. Possible explanations of these results include considering community norms and physical demand.

Focusing on the associations between medical marijuana policy and availability, it is possible that community norms that support marijuana use may affect medical marijuana policy which in turn may increase availability of tobacco products associated with blunts. Using structural equations modeling, our previous studies indicated that community norms were directly related to tobacco and alcohol policies (Lipperman-Kreda and Grube, 2009; Lipperman-Kreda et al., 2010).

Community-level prevalence of adult marijuana/hashish use was another important factor. Community-level prevalence of adult marijuana may simply be a proxy of community norms. In this case, higher rates of marijuana use contribute to more acceptability of marijuana (i.e., community norms) which affects policy and availability. However, it is also possible that increased acceptability of marijuana (i.e., community norms that support marijuana use and legalization) affects policy and access to marijuana which in turn increases rates of marijuana/hashish users in the community. A recent study found higher odds of marijuana use in states that legalized medical marijuana (Cerdá et al., 2012). The cross-sectional design of the current study limits our understanding of these relationships. Future studies should explore these potential mediation effects and its relationships to youth and adults marijuana and blunts use.

We also found that greater density of medical marijuana dispensaries and delivery services reduced odds of availability of tobacco products associated with blunts. These relationships may be explained by economic equilibrium theory (McKenzie, 1981). That is, tobacco stores may service demand for products associated with marijuana use when supply through medical marijuana dispensaries and delivery services is low. Also, tobacco stores that sell products associated with blunts and medical marijuana dispensaries and delivery services may serve different types of marijuana users and therefore emerge in different types of business. Some research suggests that blunts use is a distinct subcultural formation associated with hip hop or rap music and with distinct configuration of rituals, jargon, and drug use norms (Dunlap et al., 2005; Johnson et al., 2006; Ream et al., 2006).

Results of this study should be considered in light of several limitations. First, the cross-sectional design of the study limited our ability to make directional inferences about relationships between the community-level factors and availability. For example, prevalence of adult marijuana/hashish use can be a proxy of community norms or it can be a result of availability of marijuana and marijuana products through density of medical marijuana dispensaries and delivery services. Also, the study included only selected tobacco outlets in midsized cities. Including rural communities and a larger sample of tobacco outlets may

help to more closely explore the relationships between neighborhood demographics and availability. Third, it is possible that our community-level measures do not capture societal level influences related to normalization of marijuana use comprehensively. Other studies should include other variables related to popular culture and more direct measures of adult beliefs. Finally, information about individuals' blunts use in these communities was not available for the study. Prevalence of blunt smoking in regions of California is unknown. Such information is only available from of a qualitative study of Southeast Asian Americans in two communities in San Francisco Bay Area. In that study, 62% of youth and young adults (15-28 years old) and 10% of adults reported lifetime blunts use (Lee et al., 2010). This limits our understanding of the relationships among community norms, medical marijuana policy, availability of tobacco products associated with blunts and actual blunts use.

Despite these limitations, results of this study suggest the important role that community norms that support marijuana use or legalization of medical marijuana and medical marijuana policy may play in increasing availability of tobacco products associated with blunts. Since blunts have become popular over time and expanded into growing number of racial/ethnic groups (Timberlake, 2013), these results may be of particular importance to different communities in California and elsewhere. Tobacco and marijuana policymakers should be aware of the larger social contexts of blunts use and availability and the importance of considering societal-level influences related to normalization of marijuana use to reduce blunts use and/or other forms of concurrent use of tobacco and marijuana. Similarly, results of this study also suggest the importance of studying blunts use and availability within the larger social contexts of marijuana use, related policies and community norms to better inform policies to reduce blunts use and/or other forms of concurrent use of tobacco and marijuana.

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Table 1
Descriptive statistics

Variables	% or mean (SD)	Range
City level (N=50)		
Prevalence of adult marijuana or hashish use	5.35 (3.46)	1.1 – 19.3
Medical marijuana dispensary or private cultivation permitted	22	
Density of dispensaries and/or delivery services	.02 (.02)	.00-.07
Outlet level (N=943)		
Blunt cigars, small cigars or cigarillos	65	
Blunt wrappers	59	
Type of outlet		
Small market	11.3	
Convenience store	47.3	
Smoke/tobacco shop	5.7	
Supermarket	10.2	
Drug/pharmacy store	9.9	
Liquor store	12.3	
Other	3.3	
Block group population density ^a	-.04 (.95)	-1.18 – 6.13
Block group proportion aged under 18 years ^a	-.01 (1.00)	-4.89 – 2.17
Block group socioeconomic status ^b	.00 (1.00)	-3.47 – 3.74
Block group proportion of Whites ^a	.01 (.96)	-4.17 – 1.23
Block group proportion of African-Americans ^a	-.03 (.90)	-.65 – 8.33
Block group proportion of Hispanics ^a	.01 (.99)	-1.35 – 2.52

^a standardized values

^b factor score derived from median family income, proportion of population with a college education, and proportion of unemployed

Table 2
Results of multi-level analyses, odds ratio (95% confidence interval), to examine the associations between availability of tobacco products associated with blunts and outlet- and community-level characteristics

Predictors	Availability of blunt cigars, small cigars or cigarillos	Availability of blunt wrappers
City level (N=50)		
Prevalence of adult marijuana/hashish use	4.60 (.83, 25.15) [^]	7.13 (1.23, 41.30) *
Medical marijuana dispensary policy	2.39 (1.00, 5.73) *	2.76 (1.11, 6.88) *
Density of dispensaries and delivery services	.55 (.41, .75) **	.49 (.37, .65) **
Outlet level		
	N=940	N=934
Type of outlet (small market reference)		
Convenience store	7.07 (4.01, 12.45) **	6.48 (3.50, 12.05) **
Smoke/tobacco shop	38.21 (17.27, 84.57) **	40.06 (16.07, 99.83) **
Supermarket	1.11 (.55, 2.23)	.82 (.39, 1.71)
Drug/pharmacy store	1.31 (.62, 2.78)	.75 (.34, 1.69)
Liquor store	4.88 (2.44, 9.76) **	3.74 (1.87, 7.48) **
Other	1.92 (.72, 5.16)	1.32 (.49, 3.56)
Block group population density	1.04 (.83, 1.30)	.82 (.63, 1.06)
Block group proportion of minors	1.08 (.78, 1.48)	1.13 (.81, 1.57)
Block group socioeconomic status	1.02 (.76, 1.36)	1.06 (.80, 1.41)
Block group proportion of Whites	1.39 (1.04, 1.87) *	1.03 (.74, 1.45)
Block group proportion of African-Americans	1.22 (.89, 1.68)	1.11 (.78, 1.58)
Block group proportion of Hispanics	.75 (.51, 1.10)	.92 (.62, 1.39)
MLE	47.2032	54.4097
ICC	.29	.31

* p .05;

** p .01;

[^] p=.08