

“That’s Pot Culture Right There”: Purchasing Behaviors of People Who Use Cannabis Without a Medical Cannabis Card

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ABSTRACT

Introduction. The legal landscape surrounding purchasing cannabis without a medical cannabis card (i.e., without MCC) is changing rapidly, affecting consumer access and purchasing behaviors. Cannabis purchasing behaviors are related to subsequent use and experiencing greater cannabis-related negative consequences. However, purchasing behaviors of individuals who use cannabis without MCC are understudied. **Methods.** The current study analyzed qualitative data from focus groups with adults who use cannabis without MCC (n = 5 groups; 6-7 participants/group; n = 31 total participants). Focus groups followed a semi-structured agenda, and were audio recorded and transcribed. Two coders applied thematic analysis to summarize topics pertaining to cannabis purchasing attitudes and behaviors. Focus groups occurred in 2015 and 2016 in Rhode Island, when purchasing and use of cannabis without MCC was decriminalized but still considered illegal. **Results.** On average, participants (72% male) were 26 years old (SD = 7.2) and reported using cannabis 5 days per week (SD = 2.1). Thematic analysis revealed three key themes related to cannabis purchasing behaviors: (1) regular purchasing routines (i.e., frequency, schedule, amount of purchases), (2) economic factors (i.e., financial circumstances), and (3) contextual factors (i.e., quality of cannabis, convenience/availability) were perceived to influence purchasing decisions. Dealers’ recommendations affected participants’ purchases, who also reported minimal legal concerns. Participants reported saving money and using more cannabis when buying in bulk. **Discussion.** Purchasing behaviors were found to vary and were perceived to be affected by individual-level (e.g., routines) and contextual factors (e.g., availability) that, in turn, may impact use patterns. Future research should consider how factors (e.g., availability) that differ across contexts (e.g., location) and demographic groups interact to affect purchasing behaviors.

Key words: buying marijuana; cannabis purchase; qualitative methods; marijuana purchase task; focus groups

The past decade has seen a rapid increase in the legalization of cannabis use and purchasing (i.e., sale, possession) for recreational purposes. In the United States (U.S.), recreational cannabis

legalization is associated with increased use among adults (Hasin et al., 2017). Recent evidence suggests that recreational cannabis legalization has led to a ~20% increase in frequency of

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cannabis use among adults in the U.S. (Zellers et al., 2023). Higher prevalence of cannabis use is of concern to public health because it has been associated with several deleterious outcomes, including increased risk for cannabis-related emergency department and urgent care visits (Wang et al., 2018), cannabis use disorder (Cerdá et al., 2020), motor vehicle crashes (Rogeberg & Elvik, 2016), and negative effects on individuals' cardiovascular health (Cohen et al., 2019). Individuals who purchase cannabis use it more frequently relative to those who do not purchase cannabis but obtain it from other sources, such as their friends (Osilla et al., 2014). Purchasing cannabis is also associated with experiencing more cannabis-related negative consequences, more time spent with people who use cannabis, and is prospectively associated with higher likelihood of developing any substance use disorder (Osilla et al., 2014). However, purchasing behaviors of people who use cannabis without a medical cannabis card (MCC), and factors affecting purchases, are understudied. Examining purchasing decisions/behaviors in the context of the evolving legal landscape is particularly important to inform future interventions and policy decisions.

Legalization of recreational cannabis use is also associated with more favorable social norms surrounding use (Wallace et al., 2020), increased susceptibility for initiation among those who have never used cannabis (Palamar et al., 2014), and increased perceived ease of access (Azofeifa et al., 2016; Harpin et al., 2018). Cannabis legalization also facilitates rapid expansion of new dispensaries and allows for people to cultivate their own cannabis plants, resulting in increased access to cannabis. Indeed, the burgeoning legal retail marketplace has, in effect, decreased the price of illicit cannabis (Anderson et al., 2013; Hall & Lynskey, 2020; Hao & Cowan, 2020). From 2002 to 2014 – a time period when widespread recreational cannabis legalization was starting to occur – there was an increase in the rate of people endorsing buying and growing cannabis versus getting it for free and sharing it (Azofeifa et al., 2016). During the same time period, the number of people who reported that cannabis was fairly easy or very easy to obtain also increased (Azofeifa et al., 2016). Given that increased access to cannabis (e.g., increased access to retail cannabis stores) is associated with increased use (Everson

et al., 2019), it is important to better understand how both price and perceptions of access are related to cannabis purchasing behaviors among individuals without MCC. Further, although the illicit market remains the primary source of cannabis in the U.S., research on purchasing behaviors has thus far primarily aimed to characterize access to, and sources of, cannabis in the context of medical use and dispensaries (Capler et al., 2017; Reed et al., 2020). A recent systematic review on characteristics that affect purchase choices for cannabis products highlighted how our knowledge about relevant characteristics affecting consumers' choices is lacking and called for more research to elucidate cannabis purchasing behaviors (Donnan et al., 2022).

Prior research has shown that purchasing factors, such as source (i.e., cannabis supplier/provider/seller) and product availability, are associated with different cannabis use outcomes. Specifically, in a newly legalized market in Los Angeles, young adults who obtained cannabis from medical or non-medical retailers spent more money, used more cannabis products, and reported more consequences from use than young adults who obtained cannabis from family and friends (D'Amico et al., 2020). Results from a recent study in Canada indicated that living in closer proximity to legal cannabis retail outlets was associated with a higher likelihood of purchasing dried flower (Wadsworth et al., 2021). Similar patterns were observed in Washington state in a longitudinal study of over 85,000 individuals between 2009 and 2016 (Everson et al., 2019). Although rates of current cannabis use and frequency of use did not significantly change immediately following legalization, significant increases were observed following greater access to retailers (i.e., decreased distance to cannabis retailers) (Everson et al., 2019). Taken together, evidence indicates that certain purchasing factors like accessibility and source may affect certain cannabis use behaviors (e.g., number of cannabis products used, increased use quantity).

In the U.S., although the number of states that have legalized recreational cannabis is growing (19 states and Washington, D.C., as of March 2023), non-medical cannabis remains illicit in the majority of states and at the federal level (National Conference of State Legislators., 2022). Use of cannabis for medical purposes is also now

legal in most states in the U.S. Legalization of cannabis for medical use is followed by increased access to cannabis overall, in part via dispensary diversions, where people with a medical card resell cannabis to others (Reed et al., 2020).

Even though cannabis remains federally illicit and several U.S. states restrict its use for medical and/or recreational purposes, perceived legal consequences for cannabis use and possession have decreased. Moreover, policies that are ostensibly intended to deter use have had little effect in decreasing actual purchasing and use. Rather, these policies have engendered a detrimental impact on society by increasing involvement with the criminal legal system (Lenton, 2000). Indeed, there has been a significant increase in the number of people who support a fine as the maximum legal penalty for cannabis possession of an ounce or less versus harsher punishments (e.g., probation, incarceration) (Azofeifa et al., 2016). Correspondingly, cannabis purchasing is still occurring at high levels in many areas where it remains illegal. For example, prior qualitative research with people who use cannabis in Rhode Island demonstrated that they are generally satisfied with the cannabis decriminalization policies in Rhode Island including interactions with law enforcement, such that “cannabis already feels legal” (Benz et al., 2021). Relevant laws in one state also influence purchasing behaviors of individuals in neighboring states. Hao and Cowan (2020) described this phenomenon as the “cross-border spillover” effect, after finding that legalization of recreational cannabis was associated with increased use in neighboring states compared to non-neighboring states. Taken together, more research is needed to better understand how perceived legal consequences are related to purchasing behaviors of persons who use cannabis without MCC.

Recent years have also seen an increase in cannabis potency (i.e., levels of tetrahydrocannabinol [THC]). Specifically, the potency of illicit cannabis flower increased from ~4% in 1995, to ~12% in 2014, reaching up to 14-17% in 2019, and cannabis available on the current legal market is over 20% (Chandra et al., 2019; ElSohly et al., 2016, 2021). In places where use of cannabis for recreational purposes is legal, retail sales indicate an increased demand for cannabis extracts, which are over three times

more potent than traditional cannabis flower (e.g., 60-65% THC level in extracts versus 15-20% for flower) (Hammond, 2021; Smart et al., 2017). While increased access to cannabis is expected following legalization, concomitant increases in cannabis use may be especially concerning, in part, because of the increased potency of the cannabis that is being purchased and used. High-potency cannabis concentrates are implicated in the increasing cannabis use disorder (CUD) rates (Meier, 2017) and more severe CUD symptoms (Freeman et al., 2019). Thus, more research is needed to explicate relations among cannabis’ legal status, availability of different cannabis products (e.g., flower, concentrates), quality of available cannabis, cannabinoid potency, and associated effects on purchasing behaviors and use.

The integrated *behavioral* and *economic* paradigms framework may allow for better understanding of purchasing behaviors related to cannabis (Johnson & Golub, 2007; Sifaneck et al., 2007). The behavioral paradigm emphasizes use patterns and purchase experiences associated with cannabis use/purchasing, whereas the economic paradigm emphasizes purchase prices, dollar values, and overall understanding of illegal markets (Johnson & Golub, 2007). From these perspectives, contextual factors that might impact, and are related to, cannabis purchasing include the shifting legal landscape and changing policies relevant to cannabis. Growing legalization has also been accompanied by the rapidly expanding cannabis industry, changes in cannabis potency, and overall availability of cannabis. Thus, previous research has characterized cannabis purchasing in various contexts, including designer and commercial markets (Sifaneck et al., 2007), open-air cannabis markets (Moeller, 2016), post-legalization markets (Donnan et al., 2022) as well as medicalized cannabis purchases (Reed et al., 2020). Although much remains unknown about factors affecting cannabis purchase decisions, the existing research indicates that perceived quality and price influence cannabis purchase choices, such that consumers seek the lowest-cost cannabis to avoid reducing consumption (Donnan et al., 2022). However, less is known about cannabis purchased without MCC from various sources, particularly within the shifting legal landscape and changing policy contexts that

engender reduced stigma and increased cannabis availability.

In part because of the complicated and rapidly changing legal environment for cannabis, empirical research on purchasing behaviors of individuals who use and/or purchase cannabis without MCC in states where recreational use is illegal has been limited. Thus, in the present study, we aimed to characterize purchasing behaviors of people who use cannabis without MCC using qualitative data from focus groups, which provide rich and contextual information about participants' behaviors. Prior studies have employed qualitative methods to investigate sources of cannabis (e.g., Reed et al., 2020), which have resulted in several unique insights, as noted above. Understanding purchasing behaviors surrounding cannabis used without MCC is especially important because purchasing behaviors are related to use patterns and negative consequences, and this information could inform future interventions and policy decisions. Thus, among people who use cannabis without MCC, we sought to answer the following research questions: (1) what are participants' purchasing routines? and what are (2) economic and (3) contextual factors that are perceived to affect purchasing of cannabis without MCC?

METHODS

Participants

Individuals who reported using cannabis without MCC were recruited from Rhode Island and Massachusetts via advertisements on flyers and social media to participate in qualitative focus group interviews about their cannabis use and purchasing behaviors. Focus groups were conducted, in part, to inform the design of a larger experimental laboratory cannabis administration study (Aston et al., 2021). For inclusion in the study, individuals had to be 18 – 50 years of age; endorse weekly cannabis use, on average, during the past 6 months; purchasing cannabis ≥ 2 times in past 6 months; not seeking treatment for CUD; and not holding a medical cannabis card (MCC). Focus groups were conducted in 2015-2016, with participants from Rhode Island, during which time, cannabis use without MCC was considered illegal, but was decriminalized. Cannabis use with MCC was legal, and at the time of data collection

Rhode Island had three medical cannabis dispensaries. Legal consequences for cannabis use without an MCC included a fine of up \$150, but no jail time and no criminal record. Based on this context, and given that there were no other main avenues for purchasing cannabis use without MCC, the most likely source for purchasing cannabis for people without MCC in the state of Rhode Island was via nonmedical providers. Rhode Island, and neighboring states, Massachusetts and Connecticut, legalized cannabis without MCC after these data were collected, at the end of 2022, 2016, and 2021, respectively.

Procedure

A total of 31 individuals participated in 5 in-person focus groups, with 6-7 participants per group.

Before focus group discussions, participants first completed self-report measures of their demographic background and cannabis use. Focus groups followed a semi-structured interview guide, sessions were audio recorded, and on average lasted approximately an hour. Sample questions are in Table 2. Participants were compensated \$40. The study's principal investigator (E.A.) led the focus groups, with a trained research assistant who took notes during the discussions. All study procedures were approved by the University's Institutional Review Board.

Data Analysis

Audio recordings of each focus group discussion were transcribed verbatim. Debriefing discussions were held following each focus group. A deductive coding approach was implemented for the current analyses (Skjott Linneberg & Korsgaard, 2019a). Using the semi-structured interview agenda, a qualitative coding structure was developed. The coding structure was refined through an iterative process to incorporate topics that emerged in the discussions. Transcripts were manually coded separately by two research assistants using an open coding process (Saldana, 2022; Skjott Linneberg & Korsgaard, 2019b). Codes were then entered into NVivo software for thematic analysis to identify key topics (Guest et al., 2012). Data mining tools were used to identify relevant themes of interest (e.g., cost, amount, purchase).

Transcripts were thematically analyzed, first using descriptive coding followed by conceptual coding. First, all codes pertaining to cannabis purchasing behaviors were reviewed descriptively. Intensive coder discussion, coder adjudication, and simple coder consensus were used to resolve discrepancies and used to indicate agreement (Colditz et al., 2018b; Harry et al., 2005a; Kvale & Brinkmann, 2009; Sandelowski & Barroso, 2006). Secondary coding was implemented for relevant conceptual content to facilitate synthesis and organization of codes by the first and second authors. Discrepant codes were subsequently brought into concordance through discussion. All codes pertaining to cannabis purchasing were reviewed again, towards categorization, integration, synthesis,

and conceptualization of topics (Saldana, 2015). The final set of codes was then reviewed by the first four authors, and summarized to identify key themes, which are reported here. Representative quotations were selected and presented to illustrate the general idea of each theme. In line with presentation of emergent data, themes are described in detail, but number of participants endorsing a theme is not quantified as this would not be an accurate representation of the prevalence of a given behavior or belief in focus group discussions where all participants are not asked to answer all questions (Hannah & Lautsch, 2011). Quotations include the assigned participant study number, sex (Male/Female), and age in parentheses.

Table 1. *Sample Descriptive Characteristics*

<i>General Characteristics; N = 31</i>	<i>Mean (SD), range OR n, %</i>
Age, in years	26.10 (7.20), 18 – 41
Sex (n, % Male)	22 (71.0)
Education level (n, %)	
Less than high school	1 (3.2)
High school diploma (or equivalent)	8 (25.8)
Some college	15 (48.4)
College degree or higher	7 (22.6)
Individual annual income ^a (n, %)	
\$19,999 or less	17 (56.7)
\$20,000 – \$39,999	9 (30)
\$40,000 – \$59,999	3 (10)
\$60,000 or higher	1 (3.3)
Employment (n, % employed)	27 (87.1)
Ethnicity (n, % Hispanic)	7 (22.6)
Race (n, %)	
American Indian / Alaskan Native	1 (3.2)
Asian	2 (6.5)
Black	6 (19.4)
Native Hawaiian / Pacific Islander	1 (3.2)
White	18 (58.1)
Other	3 (9.7)
<i>Cannabis-related variables</i>	
Past-month use days/week	5.00 (2.15), 1 – 7
Duration of regular cannabis use, in years	6.94 (6.05), 0 – 22
<i>Notes:</i> ^a Income reported for n = 30	

RESULTS

Sample Characteristics

Sample descriptive characteristics are presented in Table 1. The majority of participants were male (72%). Reported mean age was 26.1

years old (SD = 7.2). Participants were of relatively diverse racial identity, with the majority identifying as White (58.1%). The rest of the participants identified as African American (19.4%), Asian (6.5%), American Indian/Alaska Native (3.2%), Native Hawaiian/Pacific Islander (3.2%), or other (9.7%). A majority of participants

reported using 1/4 ounce (29%) or more than 1/4 ounce (29%) of cannabis per week. Several others reported using less than 1/16 ounce (9.7%), 1/16 ounce (9.7%), or 1/8 ounce (22.6%) of cannabis per week. On average, in the past 30 days, participants reported using cannabis 5 days per week (SD = 2.1) and spent \$129.20 (SD = \$99.50) on cannabis. Participants started regularly using cannabis at 19 years of age (SD = 5.0 years), on average.

Qualitative Themes

Three main topics were queried during focus group discussions regarding: (1) regular purchasing routines for cannabis used without MCC, (2) economic factors, and (3) contextual factors perceived to influence cannabis purchasing behaviors. Each theme, along with subthemes and exemplar quotes, is further described below, with a complete list presented in Tables 2 and 3.

Table 2. *Summary of Qualitative Themes*

Sample Focus Group Agenda Questions	Theme	Sub-Theme
<ul style="list-style-type: none"> • How often are you buying marijuana? <ul style="list-style-type: none"> ○ Probes: Do you have a schedule? Do you plan ahead? • How much marijuana do you usually purchase? <ul style="list-style-type: none"> ○ Probes: Why? 	1. Regular purchasing routines	1.1. Purchasing frequency 1.2. Purchasing schedule 1.3. Amount per purchase
<ul style="list-style-type: none"> • About how much do you spend each time you buy marijuana? <ul style="list-style-type: none"> ○ Probes: Why? • Do you buy for yourself or do you typically buy for someone else in addition to yourself? (Significant other, friend?) <ul style="list-style-type: none"> ○ Probe: Why? 	2. Economic factors affecting cannabis purchasing behaviors	2.1. Finances/cost 2.2. Factors affecting cost 2.3. Effects of price increases
<ul style="list-style-type: none"> • Tell me about your relationship with your supplier. <ul style="list-style-type: none"> ○ Probe: Would you buy from elsewhere? Why? 	3. Contextual factors affecting cannabis purchasing behaviors	3.1. Quality of cannabis 3.2. Convenience/Availability 3.3. Legal concerns

Table 3. *Study Themes and Representative Quotes Concerning Purchasing Behaviors of Persons who use Cannabis without MCC*

Sub-Theme	ID #	Quote
Theme: Regular purchasing routines		
Purchasing frequency	1	I usually buy anywhere from one to three times a week, depending on how heavily I'm using
	5	Every week or couple weeks.
	7	Every day, almost
	9	If I'm smoking regularly, maybe once a week or once every two weeks for the—for that duration of time
	10	I usually get it four—, I'm pretty consistent with four days.
	11	Every day, unless I buy a quarter for the week
	14	If I had unlimited money, I could probably do,—a comfortable thing would be an eighth every day. A little more....But, right now I'm an eighth every other day. So every two days I'll probably get an eighth.
	16	Four—I'd say four or five times—four times—four to five times a week.
	21	Yeah. I would say once a week.
	22	But usually just once a week. I know what I want.
	26	About once a month.
	27	It might be different amounts every day, but definitely every day. I'm a pothead, every day.
	28	Usually, once a week.
	30	A couple of times a week
	32	I would say maybe two or three times a week.
33	I buy every few days	
Purchasing schedule	2	I usually try to get some before I'm completely out.
	4	Running out
	15	Yeah, before I run out, usually
	17	I usually go by how much I have left.
	18	No particular schedule...and then I'll try to go as long as possible without smoking.
	21	Pretty regular. I'd say go around between once a month to once a week. Kinda fluctuates.
	22	Overall I'm pretty set in my ways
31	When you're out.	
Amount per purchase	1	Eighths, pretty much always.
	2	Half-ounce at a time every two weeks.

Sub-Theme	ID #	Quote
	3	There's no set amount.
	6	Half-ounce.
	8	I usually get eighth, quarter.
	9	Anywhere from a gram to a quarter....An eighth or a Q or something.
	10	A quarter ounce. ...I'd say the eighth is probably the most popular thing to go, the most go-to
	11	It depends on the day...Sometimes when I hit the lottery or no. Just kidding. [Laughter] It just depends on the money situation. Bills and—...So, like, today I get a 20, but Friday I might get a quarter....Half-ounce, ounce....I get medical grade—if I buy an ounce for 220, which if I buy an eighth, it's 40, so it's worth spending the extra money to – but then I end up smoking more
	12	Varies
	14	Right now I'm an eighth every other day. You know?
	16	Cuz I'm cheap—I don't even wanna buy more than a 20 sack...—a half eighth, probably he gives me 1.7.
	17	Usually if I—when I buy bigger amounts I find that I smoke more.... I almost went through an eighth in like two hours. And I was like whoa, okay. Time to step back.
	29	About an ounce at a time
	33	I buy every few days. I buy 20 at a time
Theme: Economic factors affecting cannabis purchasing behaviors		
Finances/cost	1	\$100.00 for five months.
	3	\$35.00 to \$40.00.
	4	I want to get a 20 bag, I might buy a 20 bag, but usually, I'll purchase in bulk— just for cost's sake and convenience, really.
		Depends how much money I have. Between two and \$700.00
	5	How much money you have. \$20.00.
	6	Depending how much money you have, honestly...You really do what you want depending on how much money you have, find out what you're dealing with. Like, \$40.00.
	7	Depends on what you get, you know? Might spend 10 on a gram, 40 on a eighth. You know?
	10	I'm definitely all about the money on that one.
	11	Lately I haven't had a lotta money, so I've been buying a 20 sack to get me through the day. But usually, when my boyfriend and I are both working, we buy a quarter or maybe a little more a week. But, lately it's been day to day cuz we've been temping. So - I spend 15 on a gram, 40 on an eighth, 20 for 1.8.
	14	Yeah. Money—money's definitely—
	21	I'd say \$20.00 would be the average.
	22	Between \$40, \$80.00, depending on what we get.
	24	I get about \$50.00 a week. Because you figure four days a week, so.
	27	It depends on how much money I got at the beginning of the week.
Factors affecting cost	4	If you go to a dispensary, if they have some Betty kush or something, something made up by some dude, and then they have OG kush typically—I know at the dispensary, it's usually somewhere between 15 and 17 bucks a gram, but for OG kush or Purple Urkle, it's up to 27, 30 bucks a gram. It gets kind of excessive, especially in the medical marijuana market.
	5	It's really all just weight, and then I think if somebody's trying to make more money off of shitty weed, then they'll just sell you shitty weed for the same price.
	11	It's really expensive in Massachusetts. I'm from there, and when I was living there, I was paying 55 an eighth of good bud. ...I get medical grade. If I buy an ounce for 220, which if I buy an eighth, it's 40, so it's worth spending the extra money
	12	It's more the quality of it....If I'm goin' in on a bulk of some sort, then yeah. But, you see who's tryin' to get it. They'll pool in some money.
	13	Our dealer's straight out of the Pineapple Express and really wants to be friends with us. And he tries to have us watch TV with him and shit....But it's cool cuz he really likes us, so I notice that we've been kinda getting more for a better price.
	15	I would say that like what he said, when I was back home, I was buying dimes and dubs cuz eighths were \$50.00, but now that I'm here, I can get eighths for 35, and then that'll be cool with me.
	16	It's always cheaper, the more you buy.
	17	Sometimes for some dealers it might be the strain.
	18	I know it depends on the area, too.
	19	And the only thing that's changed is the fact that you can get it medically for that cheap, and that so many people have been able to obtain medical cards, grow it out of their own home, so then you call all these assholes out of the middle. And...the supply and demand [sic] completely changes at that point. Just because there's way more supply of it now, so the demand stays the same. But since the supply goes up it lowers the cost cuz you can get it from anywhere and everywhere....So that's why it's completely changed in the last couple of years, is because of that reason. The demand is always going to be the same-same demand, I mean you can change that a little bit by changing the supply. Because if there's not as much with it, like before when it was a criminal offense and it wasn't medical and the other thing, the supply was always the same, but the risk was larger also, you know?...So the thing is you're not like I need to make \$200.00 extra on this thing to go and try to spend, to save it for if I end up going to prison or something like that...like there's all sorts of different underlying factors that would change the price. For instance, like cocaine, it's not more expensive because of what it is, it's more expensive because of the amount of felonies you get from it.
	22	Obviously if you need to buy more you're gonna get a little better price.
	27	If you can buy over an ounce you're getting some good prices.

Sub-Theme	ID #	Quote
	28	Prices in general have gone way down in just the last two years....I think we've gotten a lot better about medical marijuana here, it was decriminalized here in 2013...so after it got decriminalized, everything went way down.
	32	I feel like those prices would be if you know the person.
Effects of price increase	11	It's really expensive in Massachusetts. I'm from there, and when I was living there, I was paying 55 an eighth of good bud. And out here, so I used to drive to—my friend lives in [redacted location]. I used to drive to [redacted location], go get my weed, and then go home.
	16	You're not paying any more...then I can go down the road and pay 40 here—
	28	Before, it was 50 [for an] eighth. Now, if you're charging 40 an eighth, people will laugh in your face and walk away.
Theme: Contextual factors affecting cannabis purchasing behaviors		
Quality of cannabis	4	If I find exceptional weed—, I don't typically buy weed, but I actually bought weed today just because it was really good weed, so I was like I'll buy some weed. So I bought an ounce of that, but that'll last me a while....If you go to a dispensary, if they have some Betty kush or something, something made up by some dude, and then they have OG kush typically—I know at the dispensary, it's usually somewhere between 15 and 17 bucks a gram, but for OG kush or Purple Urkle, it's up to 27, 30 bucks a gram. It gets kind of excessive, especially in the medical marijuana market.
	17	It's usually if it's something that they're like this is some bomb shit and I have to up the price a little bit. But it never varies a lot. It's usually every once in a while, it's something really, really great.
	22	The only time I buy more than once a week [is] if someone calls or I know they might have something special, I might try them for a sample— to see how it smokes. Maybe I'll pick up something during the week and just take a couple puffs of it, and then decide if I wanna buy it when I make my major purchase at the end of the week. All right, you got that same stuff? Let me sample out and I'll buy a quarter or a half ounce or something like that....That usually tides me over. Quarter if it's good stuff, a half—a half if it's midgrade stuff.
	28	[Price differences are] usually, not by strain. Usually by quality....So if you want super-dank shit, then that'll run you 250, maybe even 300 an ounce, if they're gouging you. But the best dude that I have charges 240 an ounce for his premium top-quality shit.
Convenience/Availability	4	I want to get a 20 bag. I might buy a 20 bag, but usually, I'll purchase in bulk - just for cost's sake and convenience, really.
	6	420 birthdays
	16	the kid that—the kid I get it from lives close with me, so I don't have to worry about going to get it, driving to go get it or this or that. So, probably four times a week.
	17	Well, currently as of right now, I know somebody who I can get medical for free right now, pretty much.
	18	Yeah, for me I used to at least buy at least two grams a week. But that's when I lived with my friends, and I was doing that for six years. And I recently just moved back with my mom, so now I really don't buy weed. And if I smoke it's if I'm down in [redacted location] where people have it.
	21	If someone offers you a gift, you're gonna take it. For sure
	22	Where you gonna keep it?
	24	Well, me and my roommate, we split it, so...four times a week we smoke. So I just give him—sometimes I give him \$10.00 a day, twice, but then maybe 15.
	26	So I'm not really purchasing, but I'm using from other people....Yeah, when I'm at a festival or maybe something else and it's offered to me from other people who already have...So I'm not really purchasing, but I'm using from other people.
	28	If they have multiples, then, yeah, I'll usually get half of one, half of the other, and if I'm buying in bulk, it's gotta be good. I gotta know what I'm getting. I gotta know that it's gonna be worth the buy. Whereas, if I'm just grabbing a 20 off of someone, as long as it's not dirt weed, it's like I'm only out 20 bucks.
	31	So if we're going to an event— Usually that's where we're on edibles or something. Something that you won't have to worry about, and then it'll take effects later....It depends on what's available. It's depending on who I go to. Some—one of my friends will get—like if I can get three or four different types at the same time, depending on what she has, and then I have another friend. It just depends on what it is in the cycle, so sometimes, if he, certain points have already—that he's just cultivated that week, if he only has one strain, I'll get an ounce of the one strain, but if he's got a couple of different, I'll get different—
Legal concerns	4	As long as you have less than 1,000 grams on you in Rhode Island, you're not going to jail. You're just paying fines. So—and if you have any weed at all, you're paying at least \$150.00 if you get pulled over. So, I think the most you'll pay is \$1,400.00 in fines or something, and that's if you have 999 grams, which is a ton of weed 50 ounces of weed or something like that. That's not right, but an excessive amount of weed. No one needs that much weed unless they're selling that much weed.
	6	It's almost legal everywhere.
	7	Not really [a concern], to be honest. Every time I get pulled over by a cop with weed, they—they don't really give me a hard time, you know? If it's a quarter, even a half, they don't really give me a hard time. Just tell me to go home. That's it.
	10	[Cops] are not really out for the potheads anymore.
	11	Drinking is worse....[Cops] are not as bad as they were. It's just certain people [cops] wanna get. That's it.
	14	I think of weed different. I smoked so long I just—I forget it's illegal sometimes. I really do. I always have it on me. I don't really hide it. I mean, it's near me. If I get pulled over, I'll try to do somethin' with it, but—...Like someone said earlier, the cops really don't even care. I think I've gotten pulled over and actually caught with weed three times—by state troopers, though—and they've let me go every time, so it's not really that big of a deal.
	22	That's that thin gray line between casual user and distributor.

Purchasing Routines for Cannabis without MCC

Participants were asked about the frequency and schedule with which they habitually purchased cannabis, the amount (i.e., unit) of purchase, and how purchasing decisions (e.g., amount purchased) may have affected cannabis use.

Purchasing Frequency. Most participants reported purchasing cannabis on at least a weekly basis, whereas only one participant reported purchasing cannabis “about once a month” (#26, *M*, 28) and another described how they will “try to go as long as possible without smoking” (#18, *M*, 24) when they run out of cannabis, colloquially known as a *tolerance check*. Many reported that they purchased cannabis daily or several times a week, with a handful of participants each reporting buying it “every day” (#7, 11, 27), “every few days” (#10, 14, 33), or “a couple of times a week” (#1, 30, 32).

Purchasing Schedule. Participants indicated that they generally do not plan or have “a particular schedule” (#18, *M*, 24) for purchasing cannabis, but still described their purchasing behavior as “pretty regular” (#21, *M*, 21). One participant reported being “pretty set in my ways” (#22, *M*, 41). Participants also reported that their decision regarding when to buy cannabis was generally prompted by “how much [they] have left” (#17, *F*, 20), or “when [they] run out” (#4, *M*, 19).

Amount Per Purchase. Most participants reported buying a consistent amount per purchase (i.e., usually buying the same amount). However, there was still considerable variability in the amount per purchase between participants. Some participants reported buying a “20 sack” (#16, *M*, 29), which is equivalent to 1/16 ounce of cannabis, about 1.75 grams, whereas others reported buying up to half-ounce or “an ounce at a time” (#29, *F*, 38). Many others reported buying an eighth or a quarter, with one participant noting that they buy “a quarter ounce”, but “I’d say the eighth is probably the most popular thing [sic], the most go-to” (#10, *M*, 18) amount per purchase. Notably, participants relayed how the amount of cannabis purchased influenced their use, with one saying, “when I buy bigger amounts, I find that I smoke more” (#17, *F*, 20).

*Economic Factors Affecting Cannabis Purchasing**Behaviors*

Participants were queried about economic factors that are perceived to affect their purchase of cannabis, including individuals’ financial circumstances, how they handled price increases, and strategies they used to save money.

Finances / Cost. Participants consistently reported the importance of their financial circumstances, noting that the quantity of cannabis they purchased depended on “how much money I have” (#4, 5, 6, 27). The general sentiment was captured by participant #14 (*M*, 35), who reported “If I had unlimited money, I could probably do...a comfortable thing would be... an eighth every day. A little more. But...right now I’m...an eighth every other day. You know? So every two days I’ll probably get an eighth.” (#14, *M*, 35).

There was a wide range in the dollar amount participants paid for cannabis, with one participant saying:

“Well... lately, I haven’t had a lotta money, so I’ve been buying... just like a 20 sack to get me through the day. But usually, when my boyfriend and I are both working, we buy... a quarter or... more a week” (#11, *F*, 36).

On the other hand, others reported spending considerably more, “between, like two and \$700” (#4, *M*, 19). In contrast, participants reported comparable prices for how much they paid per unit of their cannabis purchases, indicating consistent pricing. Participants reported purchasing cannabis for “\$15 for a gram, \$40 on an eighth, and \$20 for like 1.8” grams (#11, *F*, 36), with one participant noting that “\$20 would be the average” (#21, *M*, 21) amount of money they spent per purchase.

Factors Affecting Cost. Participants were queried about factors that affected the cost of (i.e., how much they are willing to spend on) cannabis purchases. Factors related to cost included cannabis quality and strain (i.e., better quality cannabis costs more). Others reported it largely depends on the quantity purchased, reporting “it’s really all just weight” (#5, *F*, 25).

Participants also described how they saved money when buying cannabis, with one capturing the groups’ sentiments as, “it’s always cheaper, the more you buy” (#16, *M*, 29). Participants also reported that if “I’m going in on a bulk of some sort...[we] will pool in some money” (#12, *M*, 29).

Some participants reported that the relationship with their dealer influenced price and indicated that it may cost less “if you know the person” (#32, *M*, 20). A few participants also noted that cannabis “prices in general have gone way down in like just the last two years...There’s more of it. I think we’ve gotten...a lot better about medical marijuana here, and...after it got decriminalized, everything went way down” (#28, *M*, 21).

Effects of Price Increases. Participants said if prices are much more than expected, “people will laugh in your face and walk away” (#28, *M*, 21) because “it’s just like you’re not paying any more...you know then I can go down the road...and pay \$40 here” (#16, *M*, 29). Indeed, some participants explained how cannabis used to be “really expensive” in areas where they resided, “so I used to drive to [redacted location far from residence], go get my weed, and then go home” (#11, *F*, 36).

Contextual Factors Influencing Cannabis Purchasing Behaviors

Participants said if prices are much more than expected, “people will laugh in your face and walk away” (#28, *M*, 21) because “it’s just like you’re not paying any more...you know then I can go down the road...and pay \$40 here” (#16, *M*, 29). Indeed, some participants explained how cannabis used to be “really expensive” in areas where they resided, “so I used to drive to [redacted location far from residence], go get my weed, and then go home” (#11, *F*, 36).

Quality of Cannabis. Similar to factors perceived to affect the cost of cannabis, participants noted the importance of cannabis quality in their purchasing decisions and indicated that they were more likely to purchase cannabis that was perceived to be of better quality. One participant reported “I don’t typically buy weed, but I actually bought weed today just because...it was really good weed, so I was like, yeah I’ll buy some weed. So I bought an ounce of that, but...that’ll last me a while” (#4, *M*, 19). Another said,

“The only time I buy more than once a week [is] if someone calls or I know they might have something special, I might...try them for like a sample to see how it smokes...then decide if I wanna buy it when I make my major purchase at

the end of the week...and I’ll buy...a quarter if it’s good stuff, and [an eighth] if it’s like midgrade stuff.” (#22, *M*, 41).

Convenience/Availability. Participants discussed the importance of easy access to cannabis in their purchasing decisions. Participants who resided near their supplier (i.e., had convenient access) reported purchasing cannabis frequently, noting “the kid I get it from lives...close with me, so I don’t have to worry about going to get it, driving to go get it, or this or that. So probably like four times a week” (#16, *M*, 29). Availability of free cannabis and types of cannabis were also perceived as important factors. One participant (#21, *M*, 21) described free cannabis as gifts, saying “If someone offers you a gift, you are gonna take it. For sure” with another participant noting “That’s pot culture right there” (#22, *M*, 41). Participants indicated that they would purchase more cannabis if it were readily available from others. Participants also described obtaining and using cannabis from other people and “not really purchasing” (#26, *M*, 28) when at festivals or other events where cannabis is more readily available. Participant #17 (*F*, 20) also reported getting their cannabis from “somebody who can get medical for free right now.” Participants also reported buying different amounts of cannabis if their supplier had multiple types of cannabis available, with participant 28 (*M*, 21) reporting “If they have multiples [*sic*] [kinds of cannabis], then yeah, I’ll usually get like half of one, half of the other.”

Other factors that were brought up by a few participants included individuals’ living situations and special occasions. One participant said they purchased more when living with roommates/friends, compared to parents, reporting, “I used to buy...at least two grams a week, but...I recently just moved back with my mom, so now I really don’t buy weed (#18, *M*, 24).” Others reported purchasing cannabis if they are “going to a concert” (#4, *M*, 19) and for “420 [and] birthdays” (#6, *M*, 25).

Legal Concerns. As noted, use of cannabis without MCC was decriminalized, but still considered illegal, at the time focus groups were conducted. Nevertheless, participants reported minimal concerns regarding legal consequences from their purchase and possession of cannabis, reporting that they perceived cannabis “is almost legal everywhere” (#6, *M*, 25) and another

reporting that “as long as you have less than [an excessive amount of weed] on you in Rhode Island, you’re not going to jail. You’re just paying fines (#4, *M*, 19).” Participants also characterized their experiences with law enforcement as “Not really [a concern], to be honest. Every time I get pulled over by a cop with weed, they don’t really give me a hard time....just tell me to, you know, go home. That’s it” (#7, *M*, 18). Others observed that “[Cops] are not really out for the potheads anymore” (#10, *M*, 18) and that “[Cops] are not as bad as they were. It’s just certain people [cops] wanna get. That’s it (#11, *F*, 36)”.

DISCUSSION

The current study used qualitative focus group data to assess cannabis purchasing behaviors among individuals who frequently used cannabis without MCC. The rapid expansion of the cannabis industry necessitates a better understanding of consumers’ purchasing behaviors given ongoing legislation decriminalizing and permitting cannabis use without MCC. Specifically, identifying common factors perceived to influence purchasing and use behaviors can inform future cannabis prevention, intervention, and policy decisions. In the present study, participants’ cannabis purchasing and use behaviors were perceived to be influenced by economic factors and the larger environmental and social context.

Participants reported relatively consistent purchasing routines despite not having set schedules. Participants also reported a consistent price structure when purchasing cannabis (e.g., \$15/gram), but they expressed a willingness to pay more when it was perceived to be of higher quality. This finding is consistent with results from a recent systematic review (Donnan et al., 2022) and other behavioral economic research demonstrating that individuals allocate more hypothetical monetary resources for higher (versus lower) quality cannabis when both are available (Amlung et al., 2019; Amlung & MacKillop, 2018; Vincent et al., 2017). Likewise, recent research indicated that adolescents and young adults perceived cannabis obtained from legal (versus illegal) markets to be of higher quality, and safer to use and purchase (Amlung et al., 2019; Fataar et al., 2021). Indeed, cannabis obtained illegally (i.e., not purchased from legal cannabis dispensaries) has been shown to contain harmful contaminants such as pesticides

and mycotoxins (Stempfer et al., 2021). Thus, enacting policies that seek to regulate, rather than punish, cannabis markets and implement quality and safety standards may appeal to consumers and reduce the sale and use of illegal cannabis. Alternatively, informational campaigns that emphasize safety standards and convey the quality of legal cannabis products relative to alternative, illegal ones may also affect purchasing behaviors and diminish the illegal marketplace.

Regarding economic factors, participants reported, as expected, that their financial circumstances dictated much of their purchasing behaviors. Participants also explained how bulk purchasing decreased the unit cost, which parallels traditional patterns of consumer demand for other commodities (e.g., alcohol, tobacco; Bray et al., 2009; Golden et al., 2016). Notably, participants also reported that when they purchased more cannabis than normal, they tended to increase their use as well, also mirroring patterns observed with alcohol and tobacco (Bray et al., 2009; Golden et al., 2016). A better understanding of germane factors that affect purchasing behaviors may also help identify who is at elevated risk for negative outcomes. As noted, legalization of recreational cannabis use leads to increased frequency of cannabis use (Zellers et al., 2023), and heavy cannabis use increases risk for cannabis use disorder (CUD) (Cerdá et al., 2020). Thus, it is important to ascertain whether bulk purchasing facilitates the types of heavier use patterns that lead to the development of CUD or increased severity of CUD symptoms. Equally important, future research should attempt to identify factors specifically related to bulk purchasing. One study found that older individuals and those who received a budtender’s recommendation for anxiety and/or sleeping problems (relative to recommendations for chronic pain) spent more money on products in a medical cannabis dispensary setting (Kepple et al., 2016). Moving forward, an important public health consideration will be to engage a wide-range of stakeholders (e.g., clinicians, public health agencies, law enforcement, community members, etc.) to ensure that policies concerning recreational cannabis use minimize cannabis initiation, particularly among vulnerable individuals, and prevent more frequent, and higher-risk use patterns.

Policy efforts could include strategies to regulate bulk purchasing and discounting among

licensed cannabis purveyors. Particularly at retail outlets, the effectiveness of price policies such as limiting bulk discounting, and discounting in general, is supported by empirical evidence from federal and state-level tobacco control efforts (Tobacco Control Legal Consortium, 2018). The maximum purchase amount allowed per customer varies across states with legal access to cannabis, and there is a need to evaluate how maximum purchase amounts, or policies that limit bulk discounts, may influence consumer purchasing and use patterns (Pacula et al., 2021). Certain states (e.g., Colorado) have already started implementing such measures to limit purchases up to 28 grams of flower (one ounce) in a single transaction, however enforcement of these measures varies. Policy changes related to purchasing high quantities of THC, such as additional taxes on high THC-content cannabis products, may be considered to reduce public health risks. Further research is needed before considering full policy implications of such efforts and current results. Yet, current results indicate that it is important to consider factors that may encourage bulk purchasing (e.g., budtender recommendations) that may facilitate increased use. For instance, policies may address the amount and type of information budtenders are able to share with customers at medical dispensaries or on reputable websites.

Greater legalization will also enable public health efforts to enhance the public's awareness and knowledge of evidence-based decision making (e.g., educational campaigns). On the other hand, strategies from other commodity purchasing environments (e.g., food cafeterias, grocery stores) may be adapted to promote healthier cannabis use choices (i.e., choice architecture; Thorndike et al., 2019; Walmsley et al., 2018). Especially in the context of cannabis dispensaries, future research should examine how product placement, pricing, and labeling influences cannabis purchasing behaviors and the extent to which these factors can be leveraged to reduce patterns of behavior associated with harmful outcomes.

Regarding contextual factors, cannabis was decriminalized in Rhode Island and Massachusetts in 2013 and 2008, respectively. Participants in the current study universally reported being unconcerned about potential legal consequences involving cannabis. This finding replicates earlier, nationally representative data suggesting that the perceptions of serious legal consequences from

using and possessing cannabis have declined over time (Azofeifa et al., 2016). As legislation continues towards widespread decriminalization, decreased criminal penalties, and expanded record clearing for lower-level cannabis offenses in the U.S. (National Conference of State Legislators., 2022), cannabis use or possession without MCC remains federally illegal and repercussions still exist in many regions. This is important given that perceptions of laws governing cannabis use are related to actual cannabis use (Amonini & Donovan, 2006). In context, these findings point to the need for geographically tailored public policy interventions that provide timely and accurate information about the legal environment for cannabis use and possession, as well as cannabis' potential therapeutic benefits and negative health consequences.

Cannabis policy and legislation has thus far largely focused on its sale, possession, cultivation, distribution, and purchase, including setting limits and punishments for possessing different amounts of cannabis, creating guidelines on who can grow cannabis, and where sales can take place. Although cannabis legalization advances important social justice goals (Hajizadeh, 2016), much remains to be done to address racial disparities in cannabis use outcomes, such as experiencing cannabis-related negative consequences and involvement with the criminal legal system. These racial disparities persist despite marginal differences in rates of use and neighborhood police presence (Mitchell & Caudy, 2015, 2017). One potential driver of such disparities may be purchasing behaviors. For example, using data from the National Survey on Drug Use and Health (NSDUH), Ramchand and colleagues (2006) found that Black/African Americans were significantly more likely to buy cannabis outdoors, to buy from a stranger, and to buy away from their homes – purchasing behaviors that significantly increased Black/African American individuals' likelihood of arrest by 2-3 times. Characterizing purchasing behaviors of persons who use cannabis without MCC, as we have sought to do in the current investigation, may be a first step in identifying potential explanations for disparities in rates of experiencing certain cannabis-related negative legal consequences.

The current study has limitations. Focus groups were conducted, in part, to inform a larger study involving laboratory cannabis administration, and thus excluded adults over 50

years of age due to potential cardiovascular risks from smoking cannabis and individuals with a diagnosis of affective, psychosis, or panic disorders. Prevalence of cannabis use among middle-aged and older adults has increased (Han & Palamar, 2020), and depression and anxiety are some of the most common reasons for cannabis use (Kosiba et al., 2019). Thus, future research should examine purchasing behaviors of older adults and individuals with mental health conditions.

Participants reported, on average, using cannabis five days a week. Purchasing behaviors may vary among those with different use patterns (e.g., monthly users). Further, given that focus groups were conducted when purchasing cannabis without MCC was not legally permitted, implications for cannabis purchasing behaviors in other contexts may be limited. Although legality of recreational cannabis use is increasing, these data are still informative as cannabis without MCC is still not legal in much of the U.S. Moreover, although greater details characterizing participants' own purchasing behaviors would have been ideal, care was taken to limit specificity of cannabis purchasing behaviors to protect confidentiality of potential suppliers. Given the context of where and when the focus groups were conducted (i.e., in Rhode Island between 2015 and 2016, when cannabis use without MCC was decriminalized), primary source of cannabis purchases were nonmedical sources. Other sources of cannabis without MCC likely included growing cannabis, receiving cannabis for free (i.e., gift), traveling to other places where cannabis purchasing without MCC was licit, or buying cannabis online. Further, because participants primarily used flower cannabis, much of the focus group discussions were on purchasing flower cannabis. As noted, at the time when focus groups were conducted in Rhode Island, it was difficult for people without MCC to purchase other kinds of cannabis (e.g., edibles) easily. As legalization of recreational cannabis purchases increases, future research will be able to address such limitations, and more fully characterize participants' cannabis purchasing and use behaviors, including potential differences by type of cannabis formulation (e.g., flower, non-flower). Moreover, data for the current study were collected prior to the COVID-19 pandemic. Thus, it is unclear whether pre-pandemic purchasing behaviors generalize to purchasing behaviors after the onset of the

pandemic as direct-to-consumer delivery services for cannabis have increased exponentially (Fertig et al., 2020; Opp & Mosier, 2020). Additional research is also needed that explores how purchasing behaviors may differ based on sociodemographic characteristics (e.g., race/ethnicity, having a medical cannabis card) or environmental contexts (e.g., states with permissive/restrictive cannabis laws). Lastly, although beyond the scope of the current investigation, contextual factors may also interact with other correlates of substance use outcomes, including individual level factors (e.g., impulsivity) (Jensen et al., 2017; Ray et al., 2016) and community level (e.g., networks) (Hyshka, 2013) social determinants of health – important areas for future research.

Taken together, findings from this study indicate that consumers believe several economic and contextual factors influence how they purchase cannabis. Accordingly, policymakers and public health agencies should invest in public education campaigns about the legal and health impacts of cannabis use, and implement policies that deter purchasing behaviors that facilitate greater consumption (e.g., through limits on bulk purchasing and bulk discounts). Further, enacting better policies that regulate the sale, manufacturing, and marketing of cannabis used without MCC and that establish quality and safety standards may appeal to consumers and shift their purchasing behaviors away from illicit cannabis markets.

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