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## How do high school seniors get marijuana? Prevalence and sociodemographic differences

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### Abstract

**Introduction:** Efforts to understand how adolescents acquire marijuana will help to contextualize its use among youth. Little is known about ways of getting marijuana and how they differ between subgroups of adolescents. The present study sought to determine how adolescents get marijuana and if modes of access vary by sociodemographic characteristics.

**Method:** Data were from the nationally representative Monitoring the Future study of 12th graders in the United States from 2012 to 2018 ( $N=4,262$  students). Participants used marijuana in the past 12 months and were asked how they got marijuana. Multivariable logistic regression models were used to predict modes of getting marijuana based on sex, race/ethnicity, urbanicity, parental education, and survey year. Cross-tabulation analyses compared how recent frequent and non-frequent use related to ways of getting marijuana.

**Results:** The most endorsed methods of getting marijuana were given for free by friends, bought from friends, and bought from a drug dealer/stranger. Differences by sociodemographic subgroup and recent frequent use emerged, including for riskier modes of obtainment such as buying from a drug dealer/stranger (for male students, urban students, and recent frequent users). Recent frequent users were more likely to endorse getting marijuana by nearly each method, except non-frequent users were more likely to be given marijuana for free by friends.

**Discussion:** Understanding the prevalence of different modes of getting marijuana among adolescents and which subgroups are most susceptible to riskier means of getting marijuana will allow drug use prevention efforts to be tailored appropriately so as to maximize effectiveness.

### Keywords

marijuana; adolescent; prevalence; prescription; drug dealer; friend

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## 1. Introduction

In 2018, 36% of high school seniors reported using marijuana in the past year (Miech et al., 2019). Despite the growing literature on adolescent marijuana use, there is a paucity of research regarding how adolescents obtain marijuana. Limited research shows adolescents frequently cite getting marijuana from friends and through sharing with friends (Coomber & Turnbull, 2007; Harrison, Erickson, Korf, Brochu, & Benschop, 2007), suggesting that peer networks are important for drug access. For adolescents who buy their marijuana, 69% last bought it from a friend; for those who get marijuana for free, 73% last got it from a friend (King, Merianos, & Vidourek, 2016). The prevalence of adolescents who use marijuana from other sources (e.g., buying from drug dealers) is unknown.

Ways of getting marijuana may differ across subgroups of adolescents. For example, in a nationally-representative study of 12<sup>th</sup> graders' medical marijuana use, males, Hispanic teens, and White teens were more likely than females and Black teens to use medical marijuana (from their own prescription or someone else's) (Boyd, Veliz, & McCabe, 2015). Another national study of adolescents found that females were more likely to obtain marijuana for free or by sharing it, and males were more likely to buy it (King et al., 2016). In a combined sample of adolescents who dropped out of high school or were in the juvenile justice system, females were less likely than males to get marijuana themselves (versus having someone else get it for them) (Harrison et al., 2007).

Yet more research is needed to further examine subgroup differences in a nationally-representative sample, particularly across demographics subgroups where primary disparities in drug use exist (i.e., sex, race/ethnicity, urbanicity, socioeconomic status [SES]) (Miech et al., 2019). Information on such differences would inform targeted intervention strategies based on an understanding of where and from whom adolescents get marijuana. For example, as marijuana is often shared by friends, its use may be viewed as normative within social networks (Coomber & Turnbull, 2007), and interventions could emphasize norms to prevent use. If prescribed medical marijuana is shared illicitly, interventions may focus on prescription drug misuse; conversely, if adolescents are accessing relatives' medical marijuana, prescribers could educate patients on secure storage and monitoring practices. Risk assessment for adolescents should include whether they are getting the substance from a trusted source: risk for arrest, personal safety threats, and physical violence are increased when buying from strangers (Barratt, Ferris, & Winstock, 2016; Nguyen & Reuter, 2012; Ramchand, Pacula, & Iguchi, 2006). Knowing how marijuana is acquired will ultimately contribute to the contextualization of its use among youth.

The present study examined how high school seniors get marijuana and if acquisition varies according to sex, race/ethnicity, urbanicity, SES (defined by parental education status), and survey year, as well as for more frequent versus less frequent use.

## 2. Methods

Data for the present study were from the nationally-representative Monitoring the Future (MTF) study (Miech et al., 2019) of 12<sup>th</sup> graders in the United States from 2012–2018<sup>1</sup>. The

sample included participants who completed one of six randomly distributed questionnaire forms that included questions about how they get marijuana (N=14,933). Of those, 5,343 (35.8%) used marijuana at least once in the past 12 months and were asked the following questions. First, "Where did you get the marijuana or hashish you used during the last year? (Mark all that apply.)" Responses included: *Took from a friend without asking*, *Took from a relative without asking*, *Given for free by a friend*, *Given for free by a relative*, *Bought from a friend*, *Bought from a relative*, *From my own "medical marijuana" prescription*, *Bought from a drug dealer/stranger*, *Other method* (endorsements of Other method [endorsed by 13.5%] were omitted from analyses due lack of specificity). Second, "Did you get any of the marijuana or hashish you used during the last year from someone else's medical marijuana prescription?" (*Yes*; *No*). Among past year marijuana users, recent frequent use was defined as using marijuana on 20+ occasions in the past 30 days (vs. not). Listwise deletion excluded those with missing data or unusable responses, with 17.3% deleted for missing data on demographics, an additional 0.3% for missing data on past 30-day marijuana use, and an additional 2.7% for missing data on outcome variables. The final analytic sample included 4,262 students who used marijuana in the past year. Demographics were: 51.2% female; 57.4% White, 9.8% Black, 16.2% Hispanic, 3.1% Asian, 13.5% Other<sup>2</sup>; 18.3% from rural, 48.2% from suburban, 33.5% from urban areas; 49.3% have a parent with a college degree.

All analyses were completed with Stata v.15 software (StataCorp., 2017). Multivariable logistic regression was used to predict how participants got marijuana based on sex (male, female), race/ethnicity (White, Black, Hispanic, Asian, Other), urbanicity (rural, suburban, urban), SES (a parent has college degree, no parent has college degree), and survey year (2012–2015 versus 2016–2018). Cross-tabs were used to examine the relationship between mode of obtainment and use status (recent frequent user versus not), with design-adjusted F-tests that accounted for the complex survey design. Sensitivity analyses confirmed prevalence estimates were similar using pairwise deletion and listwise deletion. We accounted for complex sampling design using MTF study sampling weights.

### 3. Results

The most endorsed ways of getting marijuana were: given for free by friends (61.7%), buying from friends (50.3%), and buying from a drug dealer/stranger (27.7%). Less prevalent methods included from medical marijuana prescriptions (2.3% own, 13.6% someone else's), given for free by relatives (12.6%), and buying from relatives (5.6%). Taking from friends or relatives without asking were each endorsed by less than 3% of participants (2.2% and 2.5%, respectively).

Based on multivariable logistic regression analyses, sex, race/ethnicity, urbanicity, SES, and survey year were associated with ways of getting marijuana (Table 1). By sex, females were more likely than males to be given marijuana for free by a friend but less likely to get it from their own or someone else's medical marijuana prescription, buying from a friend, or from a drug dealer/stranger.

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<sup>1</sup>In 2012, questions on getting marijuana through medical marijuana prescriptions were added.

<sup>2</sup>Other defined as multiracial (choosing more than one race/ethnicity), American Indian/Alaska Native, or Hawaiian/Other Pacific Islander.

Using White students as the reference group, White students were more likely than Black and Hispanic students to get it for free from friends, and more likely than Black students to buy it from friends. However, White students were less likely than Black students to get it for free or to buy it from relatives. Hispanic students were more likely to get it from a medical marijuana prescription—whether their own or someone else’s—compared to White students. Finally, White students were more likely than Black students, but less likely than Asian students, to get it from someone else’s prescription. There were also some significant differences between White and Other race/ethnicity students.

Using urban students as the reference group, students from urban areas were more likely than suburban and rural students to get marijuana from a drug dealer/stranger. Urban students were also more likely than rural students to be given marijuana for free by a friend, to buy it from a friend, or to get it from someone else’s medical marijuana prescription. Additionally, urban students were more likely than suburban students to be given it for free by a relative or take it from a relative without asking. By SES, lower SES students were more likely than higher SES students to get marijuana from relatives (whether taking it, getting for free, or buying it) or from a drug dealer/stranger. There were only two significant differences between the early (2012–2015) and recent (2016–2018) cohorts; see Table 1.

Cross-tabulation analyses showed that recent frequent users (16.4%) were more likely to get marijuana in nearly every way (Figure 1), especially bought from a friend (69.3% for recent frequent users vs. 46.5% for non-frequent users;  $F(1, 462)=87.44, p<0.0001$ ) and bought from a drug dealer/stranger (56.0% vs. 22.2%, respectively;  $F(1, 462)=215.58, p<0.0001$ ). However, non-frequent users were more likely to be given it for free by friends (44.6% for recent frequent users vs. 65.0% for non-frequent users;  $F(1, 462)=82.84, p<0.0001$ ).

#### 4. Discussion

Most past-year adolescent marijuana users got marijuana from friends (for free [61.7%] or buying [50.3%]). This underscores the importance that peer relationships have in how adolescents obtain drugs (Coomber & Turnbull, 2007; Harrison et al., 2007). However, about one-fourth got marijuana from drug dealers or strangers, which could increase risks such as arrest, exposure to violence, and tainted drugs (Barratt et al., 2016; Ramchand et al., 2006). Boys, urban dwellers, and recent frequent users were most at risk to buy from a drug dealer/stranger, suggesting these groups are in particular need of intervention due to the elevated risk of getting marijuana in this way.

The legalization of medical marijuana has possible implications for adolescent marijuana use and acquisition. With 33 states now enacting comprehensive medical marijuana programs (NCSL, 2019), there has been a greater focus on medical marijuana as a potential source for adolescent use. This study found that adolescents who used marijuana were more likely to get it from someone else’s medical marijuana prescription (13.6%) than their own (2.3%), corroborating earlier findings from MTF-based studies (Boyd et al., 2015). Additionally, male students and recent frequent users were more likely to obtain marijuana from someone else’s medical marijuana prescription. Yet despite the changing landscape of marijuana legalization, most adolescents do not get marijuana from a prescription (their own

or someone else's). It remains illegal for adolescents to purchase marijuana in any U.S. state, despite recreational legalization in 11 states (NCSL, 2019). Future research should examine how legislative changes affect ways of obtaining marijuana for adolescents who experience different local policies.

Frequent users purchased their marijuana (from a friend or a drug dealer/stranger) more than overall users, and they were less likely than non-frequent users to get marijuana for free from their friends. This could be because sharing among friends may not occur often enough or be convenient for someone who uses marijuana regularly; similarly, it may not be affordable to share marijuana with someone who uses frequently. For frequent users, there may be greater motivation to obtain marijuana themselves instead of relying on others to offer it.

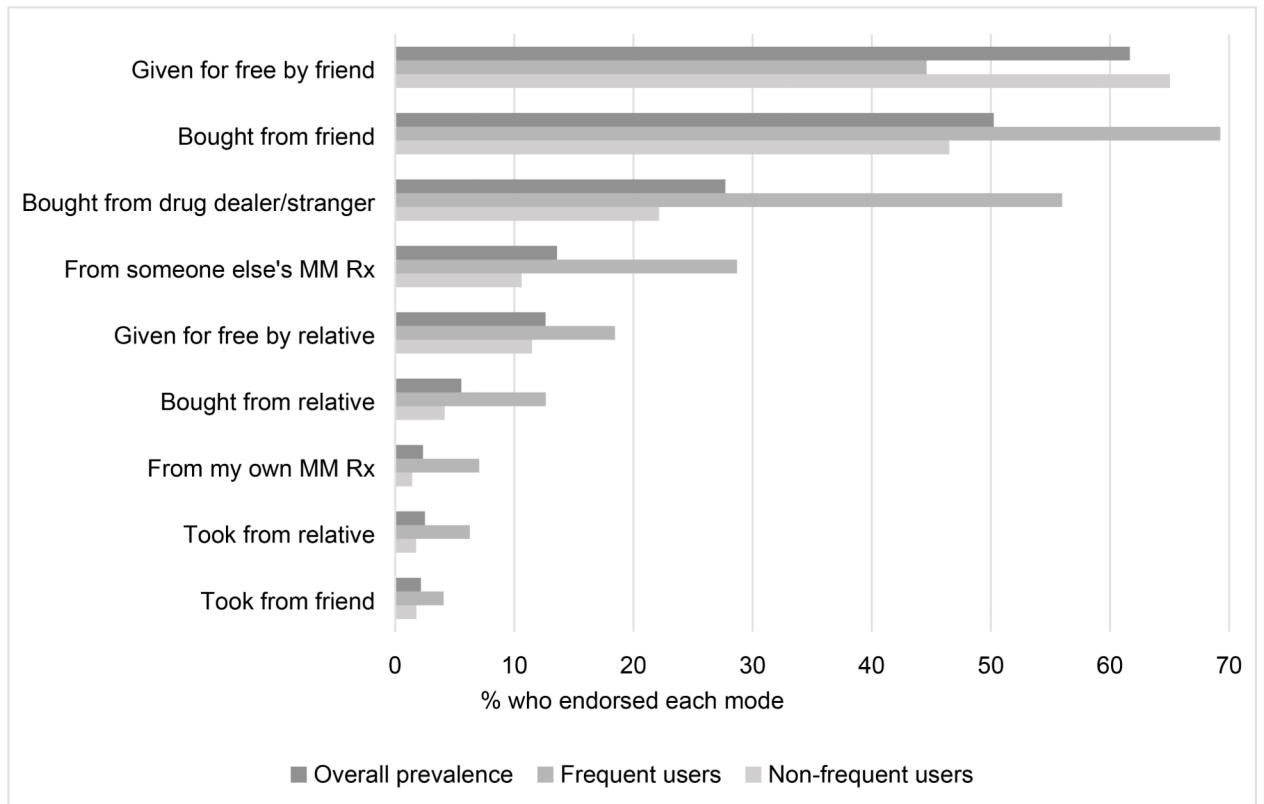
Limitations of this study include that the obtainment measure was a past-year checklist; how frequently marijuana was acquired in each specific way was not examined. The sample did not include adolescents who have dropped out of high school or were absent, limiting generalizability. Additionally, given the sample size, there was difficulty disentangling the racial and ethnic groups that made up the category of Other, making interpretation of results difficult. Results should be replicated and extended to increase understanding of how adolescents acquire marijuana and the associated risks.

Recognizing the ways in which adolescents come to possess marijuana could inform policy and prevention efforts. Interventions could be tailored to certain neighborhoods or subgroups; for example, for boys, frequent users, and those in urban areas, buying from a drug dealer/stranger is more common. Environmental interventions to reduce the presence of drug dealers may be needed, as well as examining how the relationship between the dealer and adolescent is created and maintained to inform applicable interventions at the individual, school, or community levels. The majority of marijuana used by adolescents is obtained from friends; therefore, interventions that target peer networks may be most effective. Acknowledging how adolescents get marijuana is a practical and important opportunity for intervention to reduce specific types of risk.

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**Figure 1. Endorsements of each way of getting marijuana by recent frequent and non-frequent marijuana users.**

Further analyses were done to look at differences between recent frequent users of marijuana (use 20+ times in past month) and non-frequent users (use <20 times in past month).

Significant differences were found between recent frequent and non-frequent users for all comparisons ( $p < 0.01$ ). MM Rx= medical marijuana prescription.

**Table 1.**

Main model with adjusted odds ratios (AOR) and 95% confidence intervals (CI) for multivariable logistic regression between modes of getting marijuana and sex, race/ethnicity, urbanicity, SES, and survey year.

	Took from friend	Took from relative	Given for free by friend	Given for free by relative	Bought from friend	Bought from relative	Bought from drug dealer/stranger	From my own MM Rx	From someone else's MM Rx
	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)
<b>Female<sup>a</sup></b>	0.76(0.46–1.26)	0.80(0.49–1.30)	1.78(1.53–2.06)***	1.06(0.83–1.34)	0.83(0.70–0.98)*	0.72(0.51–1.01)	0.64(0.54–0.75)***	0.35(0.21–0.56)***	0.56(0.46–0.68)***
<b>Black<sup>b</sup></b>	1.49(0.68–3.30)	1.85(0.94–3.63)	0.54(0.43–0.69)***	1.57(1.08–2.29)*	0.64(0.48–0.85)***	1.76(1.09–2.86)*	1.34(0.99–1.82)	1.83(0.85–3.96)	0.53(0.31–0.89)*
<b>Hispanic<sup>b</sup></b>	1.01(0.46–2.22)	0.65(0.28–1.49)	0.67(0.55–0.82)***	1.10(0.78–1.54)	0.94(0.75–1.18)	1.09(0.60–2.00)	0.86(0.68–1.09)	2.04(1.08–3.88)*	1.49(1.06–2.08)*
<b>Asian<sup>b</sup></b>	2.39(0.73–7.78)	0.25(0.03–1.81)	1.33(0.88–2.00)	0.55(0.25–1.22)	0.95(0.61–1.49)	0.69(0.24–2.02)	0.88(0.55–1.42)	1.88(0.59–6.00)	1.93(1.22–3.06)***
<b>Other<sup>b</sup></b>	1.29(0.64–2.61)	0.23(0.08–0.64)**	0.86(0.67–1.10)	1.71(1.28–2.28)***	1.18(0.95–1.46)	1.94(1.22–3.07)**	1.10(0.86–1.41)	2.11(1.12–3.96)*	1.55(1.13–2.13)***
<b>Rural<sup>c</sup></b>	0.98(0.48–2.02)	0.68(0.35–1.30)	0.82(0.67–0.996)*	0.85(0.60–1.20)	0.75(0.60–0.94)*	1.33(0.83–2.15)	0.75(0.57–0.98)*	0.68(0.29–1.57)	0.44(0.28–0.68)***
<b>Suburban<sup>c</sup></b>	1.05(0.58–1.91)	0.57(0.33–0.98)*	0.91(0.79–1.05)	0.76(0.58–0.99)*	0.87(0.73–1.04)	1.29(0.84–1.96)	0.77(0.61–0.97)*	1.40(0.79–2.47)	0.72(0.51–1.02)
<b>High SES<sup>d</sup></b>	0.83(0.52–1.31)	0.51(0.32–0.83)**	1.13(0.96–1.32)	0.64(0.50–0.82)***	1.10(0.95–1.27)	0.47(0.33–0.66)***	0.84(0.71–0.99)*	0.71(0.44–1.15)	0.95(0.74–1.23)
<b>2016–2018<sup>e</sup></b>	0.56(0.32–0.95)	0.64(0.39–1.06)	0.81(0.71–0.92)**	1.20(0.95–1.53)	0.89(0.76–1.05)	0.79(0.55–1.14)	0.99(0.81–1.20)	1.41(0.87–2.27)	0.65(0.47–0.90)***

\* p<0.05  
 \*\* p<0.01  
 \*\*\* p<0.001.

<sup>f</sup> MM Rx= medical marijuana prescription.

Reference groups:



<sup>e</sup> 2012–2015,  
<sup>d</sup> Low SES  
<sup>c</sup> Urban  
<sup>b</sup> White  
<sup>a</sup> Male

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