

Appendix

I. Figures

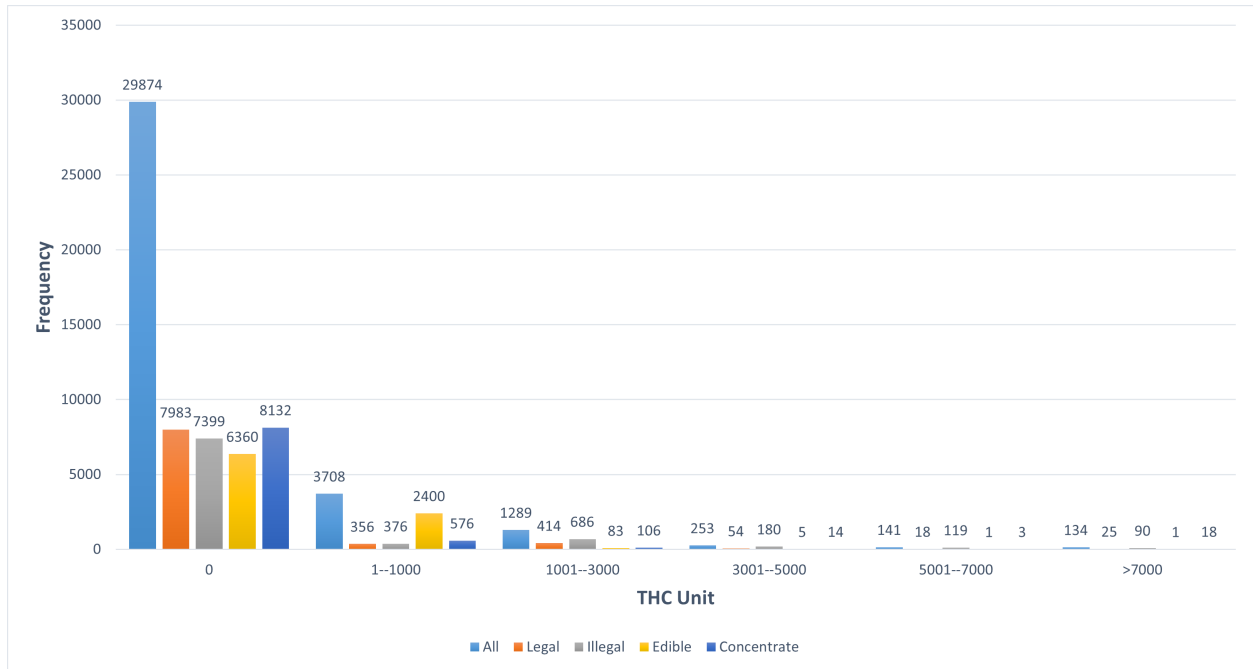


Figure A.1 The THC Unit by Product Category¹

¹In Figure A.1, for all categories, the average THC unit is 239, with standard deviation at 2,357.98; For legal consumption, the average THC unit is 245 (SD: 3,342.92); For illegal consumption, the average THC unit is 469.32 (SD: 2,140.07); For Edible, the average THC unit is 78.41 (SD: 287.10); For Concentrate, the average THC unit is 164.65 (SD: 2,514.06). In Figure A.2, for all categories, the average unit is 0.44, with standard deviation at 3.32; For legal consumption, the average unit is 0.37 (SD: 5.07); For illegal consumption, the average unit is 0.64 (SD: 2.74); For edible, the average THC unit is 0.52 (SD: 1.50); For Concentrate, the average THC unit is 0.22 (SD: 2.92)

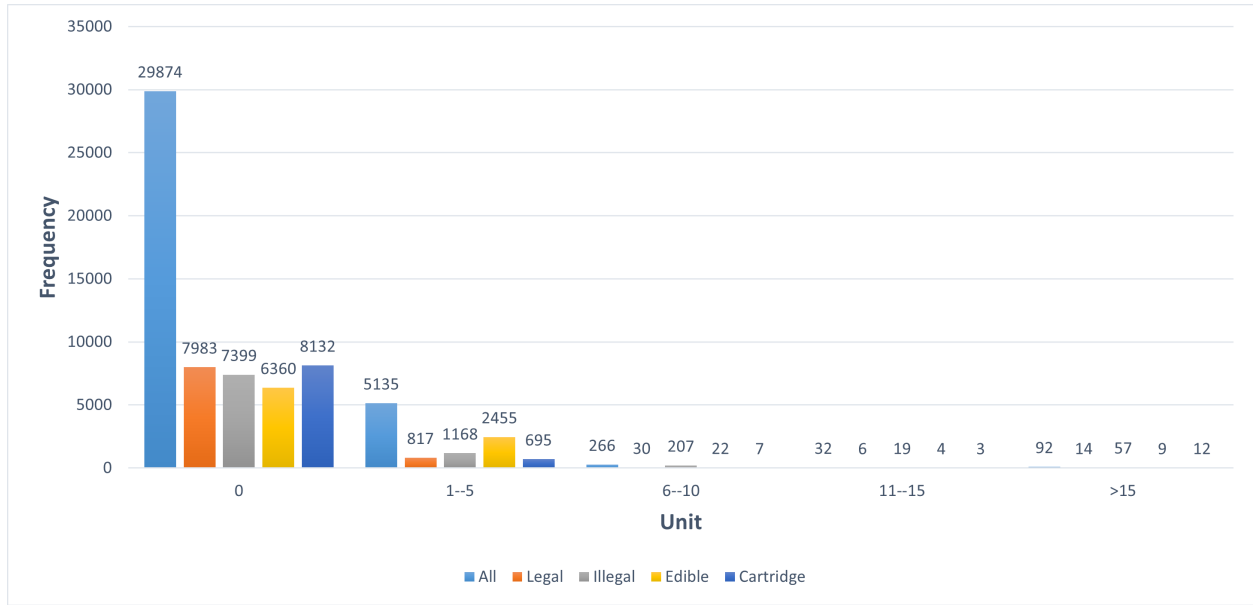


Figure A.2 The Unit by Product Category¹

II. Tables

Table A.1 Summary Statistics (Observation = 1,010)

Variables	Percent/Mean (SD)
Sociodemographic Factors:	
Age	17.68 (1.69)
Gender	
Female	54.46%
Male	45.25%
Do not Know	0.30%
Race / Ethnicity	
White, Non-Hispanic	59.21%
Black, Non-Hispanic	11.39%
Other, Non-Hispanic	3.07%
Hispanic	18.61%
2+ Races, Non-Hispanic	7.72%
Education	
No High School or GED	43.27%
High School Graduate	28.22%
Some College	25.45%
Bachelor's Degree	1.78%
Master's Degree or Higher	1.29%
Household Income	
Less than \$10,000	5.35%
\$10,000 to \$24,999	6.34%
\$25,000 to \$49,999	12.57%

\$50,000 to \$74,999	13.56%
\$75,000 to \$99,999	15.54%
\$100,000 to \$149,999	21.39%
\$150,000 or more	25.25%
<u>Cannabis Use:</u>	
Current Users	24.46%
Former Users	24.85%
Susceptible Never Users	50.69%
Monthly Expenditure	119.34 (86.76)

Table A.2 Other factors contributing to Cannabis Consumption, Estimated using ZINB, N=35,323

	(1)	(2)	(3)	(4)
VARIABLES	Outcome=Unit		Outcome=THC	
<u>Within-Subject Effects:</u>				
Product Constant (Base: Legal Flower)				
Illegal Flower	0.50*** (0.16)	0.60*** (0.13)	0.45*** (0.15)	0.52*** (0.13)
Edible	0.82*** (0.13)	0.90*** (0.11)	-1.14*** (0.11)	-1.08*** (0.10)
Cartridge	-0.43** (0.21)	-0.49*** (0.14)	-0.55*** (0.19)	-0.63*** (0.13)
<u>Between-Subject Effects:</u>				
Expenditures	0.63*** (0.07)	0.63*** (0.07)	0.30*** (0.07)	0.31*** (0.06)
Age	2.15*** (0.83)	1.76** (0.80)	2.06*** (0.66)	1.75*** (0.63)
Gender (Base: Male)				
Female	-0.04 (0.09)	-0.05 (0.08)	-0.09 (0.07)	-0.10* (0.06)
Race and Ethnicity (Base: White, Non-Hispanic)				
Black, Non Hispanic	0.04 (0.16)	-0.07 (0.16)	0.20 (0.16)	0.16 (0.16)
Other, Non-Hispanic	-0.21 (0.22)	-0.28 (0.26)	-0.05 (0.11)	-0.11 (0.10)
Hispanic	0.22 (0.17)	0.06 (0.15)	0.17 (0.13)	0.11 (0.11)
2+ Races, Non-Hispanic	0.03 (0.15)	-0.02 (0.15)	0.15 (0.11)	0.09 (0.10)
Household Income (Base: Less than \$10000)				
\$10000 to \$24999	-0.56	-0.43	-0.48	-0.42

	(0.45)	(0.40)	(0.47)	(0.40)
\$25000 to \$49999	-0.67*	-0.65*	-0.69*	-0.70**
	(0.38)	(0.32)	(0.41)	(0.33)
\$50000 to \$74999	-0.43	-0.42	-0.57	-0.55
	(0.42)	(0.33)	(0.44)	(0.34)
\$75000 to \$99999	-0.94**	-0.86***	-0.81**	-0.75**
	(0.38)	(0.32)	(0.41)	(0.33)
\$100000 to \$149999	-0.89**	-0.79**	-0.98**	-0.87***
	(0.37)	(0.31)	(0.40)	(0.32)
\$150000 or more	-0.73*	-0.65**	-0.86**	-0.75**
	(0.38)	(0.31)	(0.41)	(0.32)
Parents' Education (Base: No High School diploma or GED)				
High School Graduate	-0.47***	-0.36**	-0.43***	-0.36***
	(0.17)	(0.15)	(0.14)	(0.12)
Some College	-0.46**	-0.35**	-0.45***	-0.35***
	(0.18)	(0.16)	(0.15)	(0.13)
Bachelor	-0.54**	-0.49**	-0.51***	-0.42***
	(0.24)	(0.22)	(0.15)	(0.13)
Master or Higher	-1.11**	-1.10*	-0.22**	-0.10
	(0.54)	(0.65)	(0.10)	(0.13)
State Fixed Effects:	No	Yes	No	Yes

Note: Robust standard errors are reported in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.2. shows product preferences in consumption and the associations between controls and cannabis consumption for AYA cannabis users and susceptible users. Compared with legal flowers, illegal flowers and edibles are associated with higher unit and THC consumption, whereas cartridges are associated with less unit and THC consumption. A 10% higher cannabis expenditure is associated with a 4% to 5% higher consumption. Age is positively associated with consumption. Gender was not significantly associated with consumption. Race/ethnicity is not significantly associated with cannabis consumption. AYAs with higher household incomes and parents' educational attainment, particularly those whose parent(s) has some college or a bachelor's degree, exhibit lower consumption compared to the reference group (household income less than \$10,000 and no high school diploma or GED).

Table A.3 Own- and Cross- Price Elasticities of Demand Among Different Cannabis Forms, Estimated using Zero-Inflated Negative Binomial Regressions, N=35,323

	(1)	(2)	(3)	(4)
Variables	Outcome=Unit		Outcome=THC	

Within-Subject Effects:				
Product Constant (Base: Legal Flower)				
Illegal Flower	0.43 (0.47)	0.40 (0.56)	0.08 (0.46)	0.05 (0.43)
Edible	5.18*** (1.14)	0.72 (0.44)	0.19 (0.38)	0.16 (0.36)
Cartridge	-0.81 (0.50)	-1.10* (0.66)	-0.59 (0.48)	-0.43 (0.40)
THC Levels (Base: 10%)				
15%	0.08 (0.07)	-0.10 (0.10)	0.64*** (0.06)	0.66*** (0.06)
25%	0.10 (0.06)	0.01 (0.07)	1.19*** (0.06)	1.20*** (0.06)
30%	0.12* (0.07)	-0.04 (0.10)	2.10*** (0.07)	2.10*** (0.07)
Between-Subject Effects:				
Bases of Tax Imposed (Base: Weight)				
Price	-0.06 (0.11)	-0.18 (0.15)	-0.12 (0.10)	-0.14 (0.10)
THC	0.21* (0.11)	0.07 (0.17)	0.14 (0.11)	0.08 (0.11)
Expenditure	0.62*** (0.08)	0.26*** (0.07)	0.31*** (0.07)	0.32*** (0.07)
Age	2.07** (0.81)	2.98** (1.20)	2.15*** (0.64)	1.83*** (0.61)
Gender (Base: Male)				
Female	-0.02 (0.09)	0.04 (0.19)	-0.09 (0.07)	0.03 (0.12)
Race and Ethnicity (Base: White, Non-Hispanic)				
Black, Non-Hispanic	0.09 (0.15)	0.44 (0.37)	0.22 (0.16)	0.18 (0.15)
Other, Non-Hispanic	-0.23 (0.22)	-0.05 (0.25)	-0.07 (0.10)	-0.11 (0.09)
Hispanic	0.23 (0.15)	-0.06 (0.21)	0.16 (0.12)	0.10 (0.11)
2+ Races, Non-Hispanic	0.06 (0.14)	0.25 (0.19)	0.18* (0.11)	0.11 (0.10)
Household Income (Base: Less than \$10000)				
\$10000 to \$24999	-0.61 (0.42)	-0.44 (0.47)	-0.52 (0.46)	-0.44 (0.39)
\$25000 to \$49999	-0.66* (0.37)	-0.73* (0.42)	-0.65 (0.41)	-0.66** (0.33)
\$50000 to \$74999	-0.49 (0.40)	-0.48 (0.45)	-0.57 (0.44)	-0.53 (0.34)

\$75000 to \$99999	-0.94** (0.37)	-0.89** (0.42)	-0.81* (0.41)	-0.72** (0.33)
\$100000 to \$149999	-0.87** (0.36)	-0.95*** (0.35)	-0.97** (0.40)	-0.85*** (0.32)
\$150000 or more	-0.73** (0.37)	-0.91** (0.41)	-0.86** (0.41)	-0.73** (0.32)
Parents' Education (Base: No High School diploma or GED)				
High School Graduate	-0.42*** (0.16)	-0.73** (0.29)	-0.45*** (0.13)	-0.37*** (0.12)
Some College	-0.44** (0.17)	-0.74*** (0.24)	-0.48*** (0.14)	-0.40*** (0.12)
Bachelor	-0.46** (0.23)	-0.80** (0.31)	-0.47*** (0.15)	-0.39*** (0.13)
Master or Higher	-1.17** (0.54)	-1.52* (0.92)	-0.25** (0.11)	-0.14 (0.14)
State Fixed Effects:	No	Yes	No	Yes
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table A.4 The Impact of Attributes on Cannabis Consumption, Estimated using Zero-Inflated Negative Binomial Regressions (current users), N=8,675

	(1)	(2)	(3)	(4)
VARIABLES	Outcome=Unit		Outcome=THC	
Within-Subject Effects:				
Pre-Tax Price Levels (Base: \$10)				
\$20	-0.70*** (0.06)	-0.74*** (0.06)	-0.68*** (0.06)	-0.69*** (0.06)
\$30	-0.87*** (0.11)	-0.95*** (0.10)	-0.69*** (0.10)	-0.83*** (0.08)
\$40	-1.26*** (0.13)	-1.32*** (0.12)	-1.12*** (0.11)	-1.19*** (0.10)
THC Levels (Base: 10%)				
15%	0.05 (0.10)	0.07 (0.10)	0.66*** (0.10)	0.73*** (0.09)
25%	0.01 (0.13)	0.02 (0.12)	1.16*** (0.10)	1.22*** (0.09)

30%	-0.08 (0.13)	-0.09 (0.12)	1.66*** (0.10)	1.66*** (0.09)
Tax Rate Levels (Base: 20%)				
40%	-0.52*** (0.15)	-0.38*** (0.13)	-0.63*** (0.14)	-0.46*** (0.11)
60%	-0.44*** (0.14)	-0.44*** (0.12)	-0.38** (0.14)	-0.30*** (0.10)
80%	-0.30** (0.12)	-0.33*** (0.11)	-0.20* (0.11)	-0.26** (0.10)
Between-Subject Effects:				
Bases of Tax Imposed (Base: Weight)				
Price	0.13 (0.17)	0.27 (0.19)	0.03 (0.18)	-0.01 (0.17)
THC	0.73*** (0.18)	0.64*** (0.22)	0.56*** (0.18)	0.35* (0.19)
<i>N</i>	8675	8675	8675	8675
State Fixed Effects:	No	Yes	No	Yes
Note: Robust standard errors are reported in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table A.5 The Impact of Attributes on Cannabis Consumption, Estimated using Zero-Inflated Negative Binomial Regressions (potential users), N=17,816

	(1)	(2)	(3)	(4)
VARIABLES	Outcome=Unit	Outcome=THC	Outcome=Unit	Outcome=THC
Within-Subject Effects:				
Pre-Tax Price Levels (Base: \$10)				
\$20	-0.47*** (0.06)	-0.48*** (0.05)	-0.58*** (0.05)	-0.58*** (0.05)
\$30	-0.79*** (0.09)	-0.79*** (0.08)	-0.87*** (0.10)	-0.89*** (0.09)
\$40	-1.30*** (0.10)	-1.28*** (0.10)	-1.43*** (0.10)	-1.45*** (0.10)

THC Levels (Base: 10%)

15%	0.00 (0.08)	0.02 (0.08)	0.77*** (0.09)	-0.79*** (0.08)
25%	-0.02 (0.08)	-0.005 (0.07)	1.28*** (0.08)	1.29*** (0.08)
30%	-0.15 (0.09)	-0.14* (0.08)	2.21*** (0.09)	2.21*** (0.10)

Tax Rate Levels (Base: 20%)

40%	-0.09 (0.11)	-0.05 (0.10)	-0.15 (0.10)	-0.14 (0.10)
60%	-0.34*** (0.08)	-0.35*** (0.07)	-0.38*** (0.07)	-0.39*** (0.07)
80%	-0.30*** (0.08)	-0.27*** (0.08)	-0.46*** (0.08)	-0.46*** (0.08)

Between-Subject Effects:

Bases of Tax Imposed (Base: Weight)

Price	-0.18 (0.17)	-0.08 (0.16)	-0.18 (0.15)	-0.17 (0.15)
THC	0.10 (0.17)	0.15 (0.16)	0.03 (0.15)	-0.01 (0.15)

<i>N</i>	17816	17816	17816	17816
State Fixed Effects:	No	Yes	No	Yes

Note: Robust standard errors are reported in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.6 Economic Relationship based on THC Consumption between Different Forms in The Matrix

Consumption \ Price	Legal flowers	Illegal flowers	Edibles	Cartridges
Legal flowers	Reduction	Substitutes		
Illegal flowers	Substitutes	Reduction		Substitutes
Edibles	Complements	Complements	Reduction	Complements
Cartridges	Substitutes			Reduction

Notes: Matrix of relationships based on Table 4, Column 4.