Medical Marijuana Dispensaries and the Local Ecology

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What is environmental prevention?

Changes the context in which use and abuse occurs

Focuses primarily on the supply of drugs through reducing availability

Forms of Availability

– Economic availability (How much does it cost?)
– Physical availability (Where can I buy it?)
– Social availability (Who can I get it from?)
### Demand vs. Supply Approaches

<table>
<thead>
<tr>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces availability of marijuana and marijuana-related problems</td>
<td>Reduces individual marijuana use, abuse, and dependence</td>
</tr>
<tr>
<td>Focuses on changing policy</td>
<td>Focuses on changing the individual</td>
</tr>
<tr>
<td>Long-term policy development</td>
<td>Short-term program development</td>
</tr>
<tr>
<td>Collective action</td>
<td>Individual intervention</td>
</tr>
</tbody>
</table>
Current State of Marijuana Legalization

Medical use allowed in 29 states, D.C., Guam, and Puerto Rico (includes Ohio, beginning September 2018)

Recreation use in 9 states, D.C.

Majority of Americans approve of legalization
Economic Availability

How much does marijuana cost?

- Taxes
- Price (before taxes)
Patient and Dispensary Locations
Long Beach, CA

On average:

- Patient travels 3.9 miles to dispensary of choice
- Spends $40.82 on purchase
- 1.27 dispensaries within 2 miles of patient’s home address
ANNOVA for Distance
F (3, 116) = 4.118, p = .008

\[ \bar{x} = 4.39 \]
\[ \bar{x} = 5.73 \]
\[ \bar{x} = 3.56 \]
\[ \bar{x} = 1.99 \]
Distance and Average Amount Spent at Dispensaries
Long Beach, CA 2012

- $x_d = 4.39
- $x_p = $39.86

- $x_d = 5.73
- $x_p = $48.07

- $x_d = 3.56
- $x_p = $44.83

- $x_d = 1.99
- $x_p = $29.73

ANOVA for Price
$F (3, 113) = 1.631, p = .186$
## Frequency of purchase

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Long Beach</th>
<th>Los Angeles</th>
<th>Sacramento</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>21.15</td>
<td>15.63</td>
<td>7.50</td>
</tr>
<tr>
<td>Nearly every day</td>
<td><strong>82.7%</strong></td>
<td>11.54</td>
<td>8.65</td>
</tr>
<tr>
<td>3 to 4 a week</td>
<td>25.00</td>
<td>14.90</td>
<td>17.50</td>
</tr>
<tr>
<td>2 times a week</td>
<td>9.62</td>
<td>20.43</td>
<td>17.00</td>
</tr>
<tr>
<td>Once a week</td>
<td>15.38</td>
<td>18.03</td>
<td>18.50</td>
</tr>
<tr>
<td>2 to 3 times a month</td>
<td>11.98</td>
<td>13.70</td>
<td>24.00</td>
</tr>
<tr>
<td>Once a month</td>
<td>1.92</td>
<td>5.53</td>
<td>4.50</td>
</tr>
<tr>
<td>7 to 11 times in the last year</td>
<td>0.00</td>
<td>1.68</td>
<td>2.00</td>
</tr>
<tr>
<td>3 to 6 times in the last year</td>
<td>3.85</td>
<td>0.48</td>
<td>3.00</td>
</tr>
<tr>
<td>1 to 2 times in the last year</td>
<td>0.00</td>
<td>0.96</td>
<td>0.00</td>
</tr>
</tbody>
</table>
## Typical purchase amount

<table>
<thead>
<tr>
<th></th>
<th>Long Beach</th>
<th>Los Angeles</th>
<th>Sacramento</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gram</td>
<td>25.49</td>
<td>32.67</td>
<td>14.89</td>
</tr>
<tr>
<td>76.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8 ounce</td>
<td>50.98</td>
<td>46.63</td>
<td>53.72</td>
</tr>
<tr>
<td>79.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4 ounce</td>
<td>13.73</td>
<td>9.98</td>
<td>17.55</td>
</tr>
<tr>
<td>68.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 ounce</td>
<td>3.92</td>
<td>5.24</td>
<td>5.32</td>
</tr>
<tr>
<td>1 ounce</td>
<td>5.88</td>
<td>3.49</td>
<td>6.38</td>
</tr>
<tr>
<td>Greater than one ounce</td>
<td>0.00</td>
<td>2.00</td>
<td>2.13</td>
</tr>
<tr>
<td>Average times smoke per day</td>
<td>4.51</td>
<td>3.57</td>
<td>4.10</td>
</tr>
</tbody>
</table>
Economic Availability

Strategies to reduce access

– Higher taxes
  Tax wholesalers and distributors (who will likely pass onto customers)
  Increase at local-level?

– Higher prices for marijuana and marijuana products
  Limit amount of marijuana that can be grown in OH
  Limit amount of marijuana that can be imported
Physical Availability

Where can I buy marijuana?

Why does where I buy marijuana matter?

How do we restrict where and how marijuana can be purchased?
Physical Availability

Where can I buy marijuana?
- Retail Stores
- Delivery Services

How do I learn about where to buy it?
- Advertising
- Online (e.g., Weedmaps.com)
- Apps (e.g., EAZE for delivery)
Physical Availability

**Advertising**

- sixteen inches in height by eighteen inches in width
- Free giveaways, coupons, branded merchandise are banned
- Does not ban free gift with purchase
First-Time Patients

*** $50 Qtr (7 grams) Skagit Kush, and Moby Dick

*** TODAY’S SPECIAL: ALL STRAINS $110 1/2 oz or $200 for a full oz!!

$5 Off 1st Donation for New Patients!
5% military discount - retired military & dependents!

Announcement

** Tuesday and Sunday ** ALL STRAINS $110 1/2 OZ or $200 for a FULL OZ!!

** Check Out Our Medicated Pet Products!!

**$50 Qtr (7 grams) Skagit Kush, Black Betty, and Hammer!

** Select Strains are $8 a gram, $100 1/2 oz or $200 for a full oz EVERYDAY!
Los Angeles, California
Physical Availability

Delivery Services

– Can be retail outlets that also sell marijuana (found on Weedmaps)

– But also an app (Eaze) that delivers marijuana
First-Time Patients

$30 8th’s. And as a first time patient we are happy to say “Thank you!” from All Time High. And with that, you get a free gift. We always love new deliveries. Serving All County’s. $30 8th’s.

Announcement

$30 8th’s. New flowers every week. Candy coming soon. Serving All County’s. $30 8th’s.

About Us

$30 8th’s. Serving All County’s. All Time High gives the best. To Your Door Delivery in your neighborhood. Where friendly and prompt. Are flower is like fine wine. Cured and preserved to the nug. Call us anytime. We come to you...no matter where your at. $30 8th’s.

We are a 24/7 delivery service bringing the best to your front door. Where we come to you. Fast and affordable. Where only a phone call away. Serving All County’s. $30 8th’s. $30 8th’s. Serving All County’s. All Time High gives the best. To Your Door Delivery in your neighborhood. Where friendly and prompt. Are flower is like fine wine. Cured and preserved to the nug. Call us anytime. We come to you...no matter where your at. $30 8th’s.

We are a 24/7 delivery service bringing the best to your front door. Where we come to you. Fast and affordable. Where only a phone call away. Serving All County’s. $30 8th’s.

$30 8th’s. Don’t hesitate to call. Ask questions, whatever we can do to help. If you don’t know if we will delivery to you. Give us a ring. Also giving away a free gift every hour. Be the lucky winner. $30 8th’s.

$30 8th’s all day. Don’t forget to leave a review. Serving All County’s. $30 8th’s.

Sunday 12:00am-12:00am
Monday 12:00am-12:00am
Tuesday 12:00am-12:00am
Wednesday 12:00am-12:00am
Thursday 12:00am-12:00am
Friday 12:00am-12:00am
Saturday 12:00am-12:00am

Phone 206.429.0407
Email thealltimehigh@outlook.com
Facebook
Twitter
Instagram #TheAllTimeHighwa
Member Since July 25th, 2014
Physical Availability

Why does where I buy marijuana matter?

– Underage youth can access marijuana through legally licensed means

How do underage youth get marijuana at stores?

– Shoulder tap
– Purchase
Physical Availability

How easy is it for youth to get marijuana at retail stores?

- 82% compliant (18 of 22 stores; Washington State in 2015)
- 96% compliant (131 of 137 stores; Colorado in 2014 – 2015)
- How does this compare to alcohol and tobacco use?

Responsible ‘Bud’ Service
Physical Availability

Enforcement of Underage Access

– Requires good relationship with law enforcement (via coalition building)

– Cannot purchase if under 21

– Police stings (usually use 18 – 20) year olds to ensure compliance
Physical Availability

How do we restrict where and how marijuana can be purchased?

– Density of outlets

– Zoning Restrictions

– Days and Hours of Sale
Physical Availability

Density of Outlets

- How many outlets are allowed in the state or within a community?

- Initially 60 licensed dispensaries

- However, local jurisdictions can make their own decisions about whether or not to allow retail outlets
Density of Outlets and Problems

Dispensaries and Marijuana Use (Freisthler & Gruenewald, 2014)

- More dispensaries, more adults currently use
- More dispensaries, more frequent use
- No relationship between dispensaries and lifetime use
Density of Outlets and Problems

Dispensaries and Marijuana Abuse and Dependence (Mair, Freisthler, Ponicki, & Gaidus, 2015)

- Zip codes with more dispensaries have higher rates of abuse or dependence

- Measured via overnight hospital stay

- Abuse and dependence was secondary diagnosis
Density of Outlets and Problems

Dispensaries and Crime

– Major concern of law enforcement officials

– Cross sectional study in Sacramento found no relationship between dispensaries and crime (Kepple & Freisthler, 2012)
Average Number of Violent Crimes (per outlet)

Distance from Outlet (in feet)

Dispensaries
Bars
Off-Premise Outlets
Restaurants

Distance from Dispensary (in feet)
Security Measures

Locked Metal Screen Door

<table>
<thead>
<tr>
<th>Average Number of Violent Crimes</th>
<th>100 ft</th>
<th>250 ft</th>
<th>500 ft</th>
<th>1000 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (n=17)</td>
<td>0.24</td>
<td>1.00</td>
<td>4.88</td>
<td>13.65</td>
</tr>
<tr>
<td>No (n=14)</td>
<td>0.07</td>
<td>0.71</td>
<td>1.50</td>
<td>7.29</td>
</tr>
</tbody>
</table>
Density of Outlets and Problems

Dispensaries and Crime (Freisthler, Ponicki, Gaidus, & Gruenewald, 2016)

– Long Beach, CA

Went from 37 to 5 (83% reduction)

Density of dispensaries related to violent and property crime in spatially adjacent areas

Closing dispensaries saw decline of 183 violent crimes per year and 219 property crimes per year
Density of Outlets and Problems

Dispensaries and Crime

– Denver, CO (Freisthler, Gaidus, Tam, Ponicki, & Gruenewald, 2017)

Moved from medical to recreational markets

Density of dispensaries related to property crime in spatially adjacent areas
Density of Outlets and Problems

Dispensaries and Child Abuse and Neglect (Freisthler, Price Wolf, & Gruenewald, 2015)

- More dispensaries and delivery services per city, more frequent use of physical abuse
- No relationship between dispensaries and delivery services and supervisory neglect
Physical Availability

Zoning Restrictions

- Buffer restrictions

- Cannot be located within a 500 feet radius of a:
  - School, licensed child care facility and youth center
  - Substance abuse rehabilitation center
  - Public parks, public playground, public libraries, religious institutions

No restrictions related to licensed child care facilities or youth centers
Physical Availability

People move from place to place, especially older adolescents

What does this mean for zoning restrictions and youth access to marijuana?

Thinking about edge effects across jurisdictional boundaries
Physical Availability

Days and Hours of Sale

– If you purchase anytime, can encourage impulse buys

– Relationship to underage access
  Shoulder tap
  More lenient budtenders at certain times of day (e.g., late at night)

– Relationship to problems?
Physical Availability

Days and Hours of Sale

– Restrict sales on specific days (e.g., no weekend or Sunday sales)

– Restrict time of sales (e.g., later night sales of marijuana might increase heavy marijuana use and problems)
Physical Availability

Strategies to restrict where can be purchased

- Ban marijuana outlets and delivery services
- Decrease total number of outlets
- Keep current zoning restrictions
- Enforce underage access laws, bans, zoning restrictions
Social Availability

If youth can’t buy marijuana, where else can they get it?

How does advertising affect social availability?

Where are they using marijuana and how might recreational marijuana change that?
Social Availability

Sources of marijuana

– Cultivation – still allowed for medical users

– Family and friends – most common source for youth

– Black market
Social Availability

Why does advertising and amount sold matter?
TOP SHELF QP DEAL
LUNATIC OG
$825

CANNOT COMBINE WITH ANY OTHER SPECIALS OR PROMOTIONS / LIMIT ONE PER PATIENT 5/2/13 - 6/6/13
Social Availability

Selling in higher quantities may allow for greater access to individuals who can’t purchase marijuana via outlets (i.e., underage youth)

Taxes may reduce large quantity purchases, resulting in less marijuana “on the street”
Social Availability

Context of use

– Home
– Park
– Friend’s homes

Will there be new contexts? What might those look like?
Social Availability

Will some contexts result in special marijuana-related problems?

Will some contexts encourage co-use of other substances?

Largely unknown how legal marijuana will affect contexts, use, and problems
Context-Specific Drinking Frequency and Marijuana Use

Frequency

No MJ Use | Lifetime MJ Use | Past Year MJ Use

Home | Bar | Restaurant | Party | Family | Friends

0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
2.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0
3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0
4.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0
5.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
8.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0
Context-Specific Continued Volume and Marijuana Use

- No MJ Use
- Lifetime MJ Use
- Past Year MJ Use

Bar, Restaurant, Party, Family, Friends
Social Availability

Strategies to reduce social access to marijuana

– Higher taxes and prices

– Limit discrete and cumulative purchase amounts

– Identify contexts and ‘police’
Assessing Marijuana Retail Environment

Compliance
– Age Requirements Displayed
– ID Check

Security
– Security Cameras
– Personnel Outside
– Personnel Inside
Assessing Marijuana Retail Environment

Marketing – Ads
  – Exterior
  – Interior
  – Products on ads

Price Promotions
  – Early Bird/Happy hour
  – Daily/Weekly
  – Loyalty Club Memberships
Assessing Marijuana Retail Environment

Other Promotions
- Social media
- Take away materials

Health warnings and claims
- Allergy warnings
Assessing Marijuana Retail Environment

Other Promotions
– Social media
– Take away materials

Health warnings and claims (i.e., made in facilities with allergens)

Neighborhood Characteristics
– Alcohol Outlets (liquor stores, bars, restaurants that serve alcohol
– Smoke/Vape Shops
Food for thought?

Cannabis as a Treatment for Chronic Pain?

47.1% of patients report taking cannabis for chronic pain
(exit survey, n = 414)

Cannabis users experienced a reduction in chronic pain
(National Academies of Sciences, Engineering, and Medicine, 2017)

States with medical cannabis laws have lower rates of
opioid overdose deaths (Bachhuber et al., 2014)

States that allow medical dispensaries have lower
treatment admissions rates for opioid addictions (Powell et al., 2018)
Summary

- Environmental prevention efforts are often more sustainable than individual or family-based approaches.

- Can result in long term change and reduction of marijuana use through access and availability.

- Requires broad-based support from multiple segments of the community.