MARIJUANA LEGALIZATION
KEY MARIJUANA FACTS

• Today’s marijuana is more potent than the marijuana of the 1970s

• Health impacts and social costs of legalization are largely unknown

• Perception of marijuana as harmful has decreased

• Marijuana is most harmful to adolescents, whose brains are still developing
THC content has increased significantly
Perception of harm from regular MJ smoking vs. actual MJ use

Source: Monitoring the Future 2014; 12th graders (National Data)
MJ Preparations in Legal States

**Marijuana**
- 18.7% avg. THC content; top shelf strains to 30%
- Dried flowering tops and leaves of the plant

**Hashish**
- THC content 2%-20%
- Dried and compressed resin secreted from plant

**Hash oil**
- THC content 15%-50%
- Oil-based extract of hashish
- Now often used in vaping
MJ Preparations in Legal States

- **Hash Oil Extracts**
  - THC content 50-75%+
  - THC extracted from MJ plant matter by butane, CO₂

- **Include Wax (or Earwax)**
  - Like hash oil but with a waxy consistency

- **Include Shatter**
  - THC content up to 90%
  - Semi-transparent, yellow or amber, thin substance that “shatters” when a piece is broken off
MJ Consumption in Legal States

- **Smoking**
  - Joints, bowls, bongs

- **Vaping**
  - I.e., e-cigarettes filled with hash oil, not liquid nicotine

- **Dabbing**
  - A dab of wax or shatter is placed on a heated surface, vaporizing the concentrate which is then inhaled
MJ Consumption in Legal States

- **Edibles, “infused” products**
  - Baked goods, candies, drinks, etc.

- **Tinctures**
  - Liquid concentrate that can be dropped on or under the tongue, or in food or drink
Edibles are Different!

Users expect effects experienced with inhaled THC, BUT . . .

- Onset of effects is delayed for edibles
- Effect of edibles is stronger than people realize
- Edibles create a longer high than expected
- THC with no CBD can cause extreme paranoia
- Edibles are attractive to naive users, tourists
CREATING HEALTHY NORMS AROUND MARIJUANA
Creating a Healthy Normative Environment: Policy Choices Matter

* The more MJ is seen like tobacco or alcohol, as a substance that has health consequences, the better the chance of mitigating harmful impacts to individuals.

* Likewise, enforcement of criminal laws, such as underage use and driving while impaired, mitigates community impacts.
MJ Codes Promoting a Healthy Normative Environment

- Legislate hours of operation, transportation
- Ensure that you will have responsible operators by requiring business insurance, operating plans, neighborhood responsibility plans, character & background checks for owners and employees
- Consider restrictions/prohibitions on business signage, advertising, promotional materials
Limits on Personal Possession, Use of MJ Promote a Healthy Normative Environment

- Restrictions on amounts one person/house can possess or cultivate (1 oz, 6 plants)
- Restrictions on public use, including general restrictions on smoking/vaping of all substances
- CO’s DUID law: 5 ng THC = presumed impaired
MJ Laws re: Packaging
Promote Safe Use

- RMJ must be labeled: “Contains MJ,” potency, health risks
- RMJ must be packaged in a sealed container; in some cases opaque child-resistant containers
- Edibles may not look like candy that is designed for consumption by children, e.g., gummy bears

For edibles, each unit/serving can include no more than 10 mg THC
Establish Safe Product Standards

* Require testing for pesticides, molds, bacteria
* Require testing for THC & CBD levels
* Consider limiting the potency of hash oil, shatter, wax, dab
Local legislation can supplement state regulations that are not sufficiently robust.
Legal Marijuana

Impacts in CO
Adult (26+) MJ Use (Past 30 days): Colorado vs. National Average

Source: NSDUH 2014
Average Past Month MJ Use Age 18 to 25

Source: SAMHSA.gov, NSDUH, 2006-2014
<table>
<thead>
<tr>
<th></th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never used</td>
<td>61.0</td>
</tr>
<tr>
<td>Used, but not in last 30 days</td>
<td>22.1</td>
</tr>
<tr>
<td>Used 1-9 days in last 30 days</td>
<td>10.9</td>
</tr>
<tr>
<td>Used 10-29 days in last 30 days</td>
<td>3.8</td>
</tr>
<tr>
<td>Used all 30 days</td>
<td>2.2</td>
</tr>
<tr>
<td>Any use within last 30 days</td>
<td>16.9</td>
</tr>
<tr>
<td>Any use within last 30 days (CO 18-25)</td>
<td>31.8</td>
</tr>
</tbody>
</table>

Note that use by college-aged students in CO is 2X that of college students nationally.
Past Month MJ Use: Aged 12-17

Source: SAMHSA/NSDUH
MJ-Related Traffic Fatalities

Percent of All Traffic Deaths That Were Marijuana-Related when an Operator Tested Positive for Marijuana

- **Commercialization**
  - 2009: 10.10%
  - 2010: 10.89%
  - 2011: 14.09%
  - 2012: 16.53%
  - 2013: 14.76%
  - 2014: 19.26%
  - 2015: 21.02%
  - 2016: 24.51%

- **Legalization**
  - 2006: 6.92%
  - 2007: 7.04%
  - 2008: 7.85%
Number of Positive Cannabinoid Screens

<table>
<thead>
<tr>
<th>Year</th>
<th>CDPHE and ChemaTox*</th>
<th>ChemaTox</th>
<th>CBI**</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>787</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>1,629</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>2,352</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2,430</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>2,513</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>2,853</td>
<td></td>
<td>522</td>
</tr>
<tr>
<td>2015</td>
<td>2,392</td>
<td></td>
<td>1,395</td>
</tr>
<tr>
<td>2016</td>
<td>2,034</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
% Drivers with 2 ng or more of THC

Toxicology screening by one of the state’s largest labs demonstrates an increase in both the number of screens and the % positive screens (Sara Urfer, Chematox Laboratory):

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Screens</th>
<th>% positive for THC metabolites</th>
<th>% active THC 2ng/ml†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1514</td>
<td>52%</td>
<td>28%</td>
</tr>
<tr>
<td>2010</td>
<td>2809</td>
<td>58%</td>
<td>38%</td>
</tr>
<tr>
<td>2011</td>
<td>3987</td>
<td>59%</td>
<td>49%</td>
</tr>
<tr>
<td>2012</td>
<td>4263</td>
<td>57%</td>
<td>52%</td>
</tr>
<tr>
<td>2013</td>
<td>4333</td>
<td>58%</td>
<td>63%</td>
</tr>
<tr>
<td>2014</td>
<td>4371</td>
<td>65%</td>
<td>67%</td>
</tr>
</tbody>
</table>

†2 ng/ml THC represents probable recent use but not necessarily impairment
THC + ALCOHOL

★ Both CNS Depressants

★ Additive, possible synergistic effect
  ■ Additive: \( 1 + 1 = 2 \)
  ■ Synergistic: \( 1 + 1 = 5 \)

★ Very low levels of both can cause major impairment
  ■ 0.035 BAC (under the legal limit) + low doses of THC \( \approx 0.09 - 0.14 \) BAC level of impairment (above the legal limit)

(Courtesy of Sarah Uhrfer, Chematox, Boulder CO)
Rocky Mtn Poison & Drug Center: MJ-Related Exposures by Age Range

https://drive.google.com/drive/folders/0BxqXhstk92Dbfm5xMDdNd1dPX1pvWWM4TkFkVHZtcTdMYWVpcWh6WVRKUXZHTJlfQXJoEm
Learning Outcomes
(DGB = Students from the Netherlands, Germany, and Belgium)

Revenue: Taxes & License Fees

- Potential for taxing at both state and local level
- COB MJ revenues were 1.75% of budget after 2 years ($6.7 million)
- State of CO MJ revenues are 15.56% of general fund beginning FY 2018/19

<table>
<thead>
<tr>
<th>Total taxes Boulder CO:</th>
<th>49.705%</th>
</tr>
</thead>
<tbody>
<tr>
<td>State MJ excise tax</td>
<td>15.000%</td>
</tr>
<tr>
<td>State MJ sales tax</td>
<td>10.000%</td>
</tr>
<tr>
<td>(now 15%)</td>
<td></td>
</tr>
<tr>
<td>State sales tax</td>
<td>2.900%</td>
</tr>
<tr>
<td>City MJ excise tax</td>
<td>5.000%</td>
</tr>
<tr>
<td>City MJ sales tax</td>
<td>3.500%</td>
</tr>
<tr>
<td>City sales tax</td>
<td>3.860%</td>
</tr>
<tr>
<td>City use tax</td>
<td>7.360%</td>
</tr>
<tr>
<td>County sales tax</td>
<td>0.985%</td>
</tr>
<tr>
<td>Other sales tax</td>
<td>1.100%</td>
</tr>
<tr>
<td>Initial license/fees</td>
<td>$7200-$13,000</td>
</tr>
<tr>
<td>Annual license/fees</td>
<td>$10,455-$18,755+</td>
</tr>
</tbody>
</table>
The Bottom Line:

- The sky has not fallen
- Good regulation goes a long way
- Monitor data and anecdotal reports for trends; respond quickly
- Dedicate resources to prevention, treatment, and other social costs
- Many impacts remain unknown
Questions?