

The background is a light green gradient with several white butterfly silhouettes scattered across it. The butterflies are of various sizes and orientations, some appearing to fly towards the right and others away from it. The overall aesthetic is clean and modern.

# **Legal Marijuana in Oregon**

## **Taxation and Revenue**

Estimates by Mazen Malik,  
Legislative Revenue Office

# Decriminalization and Legalization

Decriminalization does not mean that people can use drugs with impunity. Instead it means that possessing small amounts no longer lands the perpetrator with a criminal record or a jail sentence.

By contrast, legalization means that consumers face no penalty at all (unless, for instance, they smoke in public places). More importantly, it means that the supply side of the business—cultivation, transportation and retailing—is also legal.

# Decriminalization & Legalization

- Oregon was the first state to decriminalize cannabis possession in 1973.
- Followed by Alaska, California, Colorado, Mississippi, New York, Nebraska, North Carolina, and Ohio( by 1978) .
- In the 1990's many states adopted medical marijuana programs. In 1996, California was the first state to legalize medical marijuana through Proposition 215.
- Since then, 23 states (including Oregon in 1998) and the District of Columbia have adopted medical marijuana programs.
- Full-scale legalization of recreational marijuana was first adopted in Washington and Colorado In 2011. Voters in these two states passed ballot measures (Initiative 502 in Washington) (Amendment 64 in Colorado) to legalize recreational marijuana.
- Oregon, Alaska and DC legalized in 2014.
- Other states California, Nevada and many north Eastern states are likely.
- Other nations moved to decriminalize marijuana, but legalization remains relatively rare .
  - In December 2013, Uruguay was the first nation to adopt full legalization. It is the first national government to approve full-scale legalization of the drug.
  - Even the coffee shops in the Netherlands must rely on black market suppliers, as the wholesaling of marijuana remains illegal.
  - The same is true in Portugal 14 years after decriminalization .

# The Federal government

- At the federal level, marijuana remains on the list of Schedule I controlled substances under the Controlled Substances Act.
  - The classification is reserved for substances that have a high level of addictive potential and no accepted medicinal value.
  - In October, 2009, the Obama administration sent a memo to federal prosecutors urging them not to prosecute people who had been distributing medical marijuana in accordance with state law.
  - In August 2013, the United States Department of Justice announced an update to their marijuana policy. A memo drafted by Deputy Attorney General James Cole " Cole memo". outlined the priorities for federal enforcement of marijuana prohibition under the Controlled Substances Act.
  - The priorities are as follows:

# Federal government “Cole Memo”

The priorities are as follows:

- Prevent the revenue from going to **criminal** enterprises, gangs, and cartels
- Preventing the distribution to **other states**
- Preventing marijuana activity from being used as a **cover** or pretext for the trafficking of other illegal drugs or illegal activity
- Preventing violence and the use of **firearms** in the cultivation and distribution of marijuana
- Preventing drugged **driving** and the exacerbation of other adverse **health** consequences of marijuana use
- Preventing the growing of marijuana on **public lands** and the attendant public safety and environmental dangers posed by marijuana production on public lands
- Preventing marijuana possession or use **on federal** property

# 2014 Ballot Measure 91

- Initiative Petition 53 (became M-91) New Approach Oregon
- \$35 tax per ounce of flowers, \$10 per ounce of leaves, \$5 per immature plant assessed to the producer at the first sale.
- members of the public would be able to grow up to four plants at a time, and allowed to give limited amounts of marijuana and marijuana products to other individuals over age 21.
- Establishes Oregon Marijuana Account to fund OLCC obligations.
- Remaining revenue distribution:
  - 40% to the Common School Fund
  - 20% to the Mental Health, Alcoholism, and Drug Services Account
  - 15% to the State Police
  - 20% to cities and counties distributed by population
  - 5% to Oregon Health Authority
- 2 other Initiatives were not pursued
  - IP 21 is a constitutional amendment prohibiting criminal offenses and sanctions from being applied to the private personal use, possession, or production of cannabis
  - IP 22 creates the Oregon Cannabis Commission to sell cannabis through contractor's stores and allows for 24 plants and 24 ounces of marijuana for personal use without a license

# Estimating Tax Revenue

- The market already exists with suppliers and consumers
- Estimate the size of the (black) market
- Demand (quantity Demanded)
- Supply is bigger than the Oregon Market
  
- What is the role of government ?
  - A new participant (entrant) to the market
  - Establish a monopoly (what kind),
  - alcohol state controlled or utility regulated market
  - Turning the Black into grey Markets

# Demand Estimates

- What is the total size of demand?
- Rand corporation estimates of California market (Oregon adjust)
- For a number of years we had an assumption of 2(+/-) million oz.
- We also accepted the premise of the price falling if legalized
- Thus under the hypotheses of “turning the light on” and taxing
- You should reasonably expect around \$70 million in revenue
- However, and regrettably
- Things don't usually work according to assumptions of Economists
- Thus, lets try to inject more reality into the picture.



# Demand Estimates, size of Market?

## **The general methodology would progress in the following steps:**

- Estimate the number of current users.
- Adjusted to population estimates of age groups over 21
- Reduce the number of users by the medical participants (OMMP) and the self-growers.
- Estimate the rates of consumption to calculate the overall volume of ounces
- Estimate the price which will determine how much the black market competes with the legal market. The price will be determined by the costs and markups that the new structure will impose on the product.
- Estimate the size of the legal market which is established by the price elasticity.
- Add new (induced) users and the tourist/commuter (only utilize the legal market).
- Estimate the base year revenue with all the above assumption. and adjust to reflect startup difficulties and agency costs, particularly in the first fiscal year

# Size of Market, current users

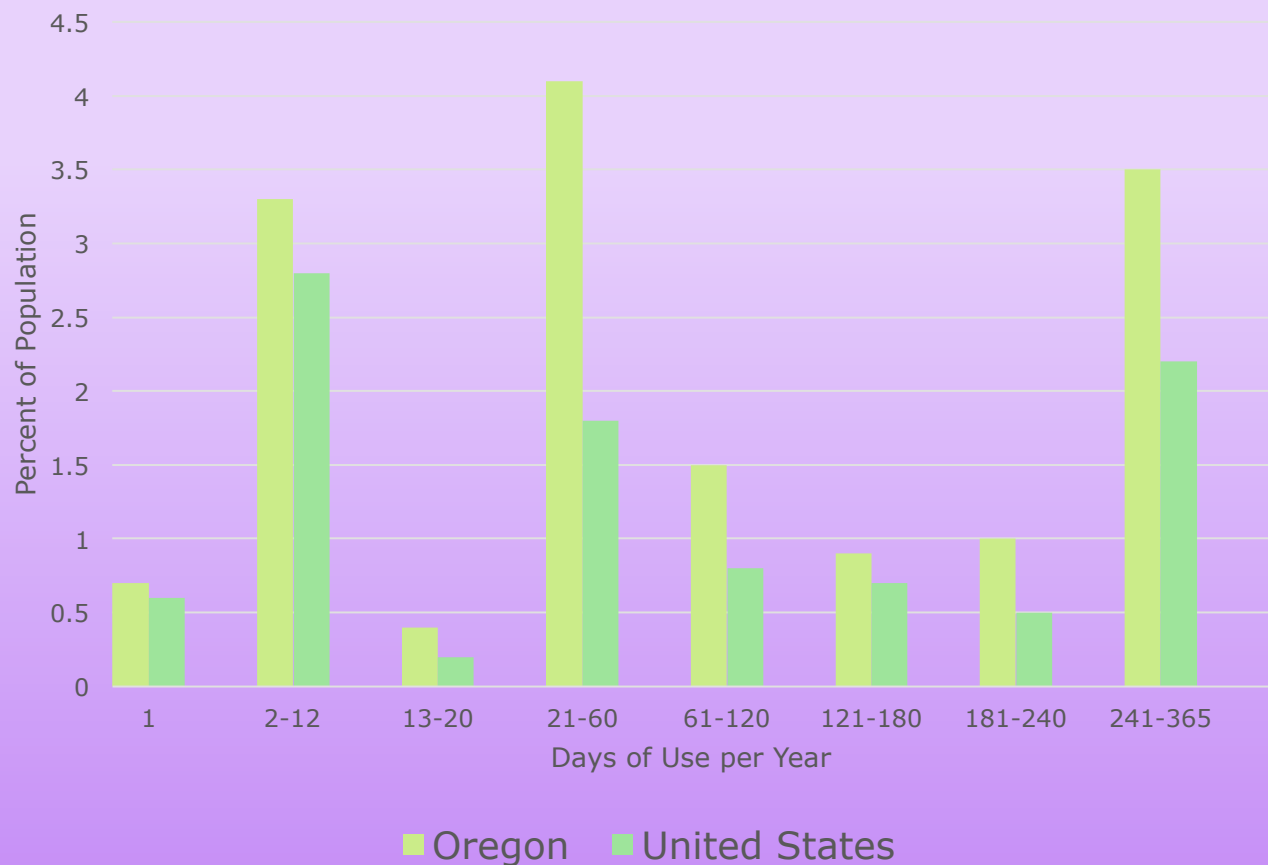
Utilized the National Survey on Drug Use and Health for 2010-2011. The Substance Abuse and Mental Health Services Administration (SAMHSA) has been publishing state estimates of the prevalence of marijuana use (both percentages and estimated counts). In 2013, SAMHSA developed a more accurate model (Model-Based Prevalence Estimates) for the 2012 data.

<b>Estimates of below 18 Users as percentage of population</b>			<b>12 or Older Estimate</b>	<b>12 or Older 95% CI (Lower)</b>	<b>12 or Older 95% CI (Upper)</b>	<b>12-17 Estimate</b>	<b>12-17 95% CI (Lower)</b>	<b>12-17 95% CI (Upper)</b>
Last Month	1	Oregon	10.98	9.31	12.90	10.26	8.45	12.40
		U.S.	6.94	6.71	7.17	7.64	7.30	8.00
Past Year	2	Oregon	16.01	14.05	18.20	18.63	16.21	21.32
		U.S.	11.55	11.25	11.86	14.13	13.66	14.60
<b>Estimates of over 18 Users as percentage of population</b>			<b>18-25 Estimate</b>	<b>18-25 95% CI (Lower)</b>	<b>18-25 95% CI (Upper)</b>	<b>26 or Older Estimate</b>	<b>26 or Older 95% CI (Lower)</b>	<b>26 or Older 95% CI (Upper)</b>
Last Month	1	Oregon	25.35	22.14	28.87	8.73	6.88	11.00
		U.S.	18.78	18.22	19.35	4.80	4.54	5.07
Past Year	2	Oregon	39.19	35.26	43.27	11.96	9.82	14.50
		U.S.	30.38	29.67	31.09	7.95	7.62	8.30

# Current Users

- Marijuana use estimates use the National Survey on Drug Use and Health to estimate marijuana consumption in different age groups.
- 17% of Oregon adults reported marijuana use at least once during that year.
- The survey asks for use of flower or hash products.
- The figure presents Oregon annual consumption rates compared to national rates.

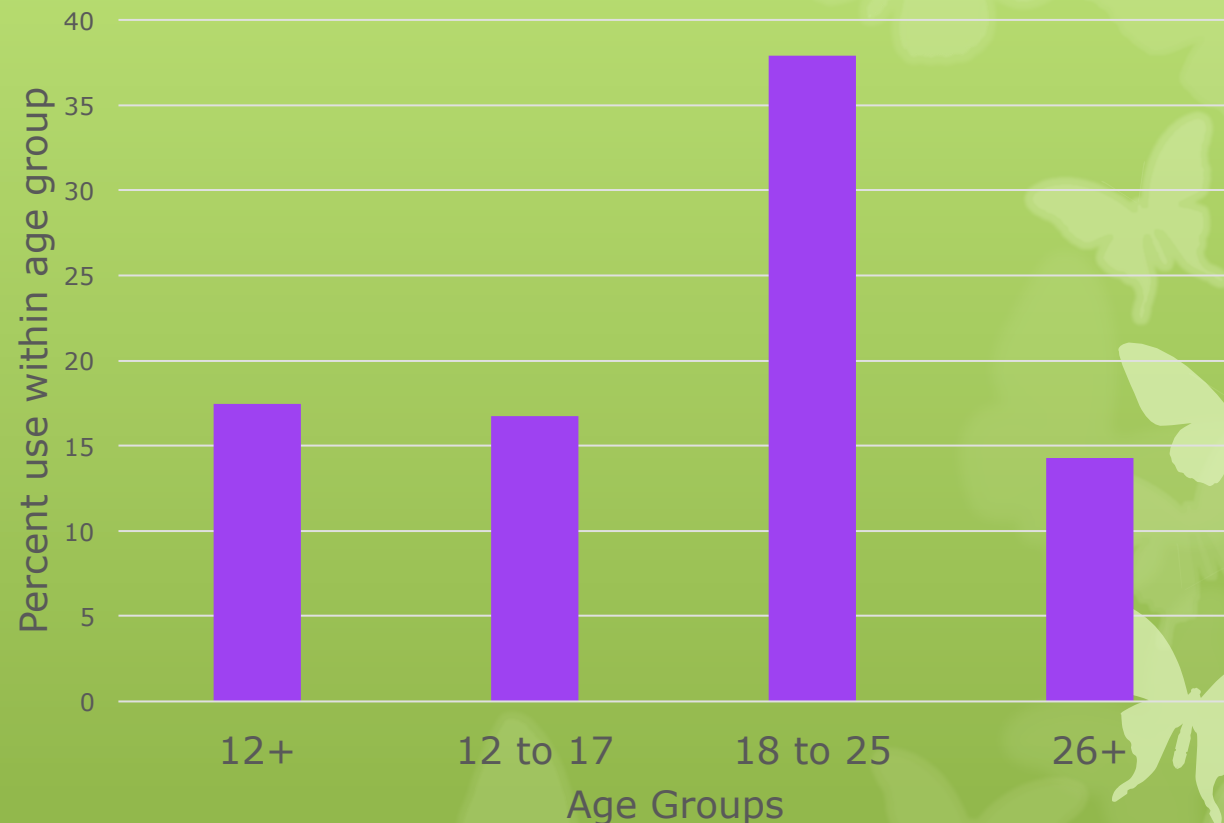
## 21+ Population Annual Use of Marijuana 2010-2011



# Oregonians who have used marijuana

- The 18-25 age group has the highest past-year use rate according to 2013 data.
- The 17% of Oregon adults have used marijuana at least once during that year.
- Need to adjust to 21 and older

Past Year Oregonian Marijuana Use Within Age Group NSDUH 2011-2013



# The two main age groups of users

	<b>21-25 Estimate</b>	<b>21-25 95% CI (Lower)</b>	<b>21-25 95% CI (Upper)</b>	<b>26 or Older Estimate</b>	<b>26 or Older 95% CI (Lower)</b>	<b>26 or Older 95% CI (Upper)</b>
<b>Population</b>	<b>256,773</b>			<b>2,641,939</b>		
Last Month Users	65,103	56,843	74,118	230,528	181,835	290,719
Past Year Users	100,625	90,527	111,096	316,096	259,438	383,139
Additional Month (13) Percentage	39%	39%	40%	42%	41%	43%

The additional month percentage (13th month), is only shown as an indication of use patterns. It can be thought of as a rough measure of the ratio of people who reported using in an additional month of the year to people who reported using in the last year and it comes to an average of 40%.

# Take outs (subtractions)

- Medical users are known to number 66,922 and are distributed between the age groups:
  - 5,928 are assumed to be of the 21 to 25 age group
  - while the rest are in the 26 and older group.

Medical marijuana users are likely to have preferable price and access conditions through the OMMP program, which will entice them to continue in that program.

- Users who grow their own are observed by Crawford at an 8% level.
  - This is a reasonable level to continue in the new legalized structure. It is also reasonable in relation to a high-price product and the allowance present in the initiative for selling plants which encourages growers to continue their horticultural practice.

The growers' assumption reduction of the number of users who will potentially purchase from licensed retail outlets by

- 27,984. That number is also distributed according to the age groups.
- 7,576 of those aged 21-25 are assumed to grow their own and the rest of the home growers are allocated to the 26 and older age group.

# Consumption (Use) Rates

The use rates utilized much of the information from the study conducted by OSU Crawford. The survey utilized in the study was parsed out to identify different levels of consumption for various categories of users: Super users and regular users

	21-25 Estimate	21-25 95% CI (Lower)	21-25 95% CI (Upper)	26 or Older Estimate	26 or Older 95% CI (Lower)	26 or Older 95% CI (Upper)
Super Users	5,590	5,029	6,172	17,561	14,413	21,286
Regular Users	81,531	72,802	90,583	217,133	168,155	275,088

The Heavy (Super) Users: This group consisted of the everyday heavy users (mostly men) at an average of **2.25 ounces in a month** (27 ounce/year).

The Regular (Occasional) Users: This category showed men to use an average of **11.8 grams**, while **women** are found to use slightly less at **11.1 grams**. 40% are calculated to have used all 12 months of the year, and 60% are assumed to use for 8 months of the year.

The New (Induced) Users: New users induced by legalization are assumed to be **3.9%** of the total using one month increase use for the occasional users. This is equivalent to **72,818 ounces per year**. These users are assumed to be attracted by a reduced social stigma, increased availability, and the elimination of fines for possession.

Adding the usage rate of the new users to the occasional user rate will result in an **average of 9.8 grams a month** (4.145 ounces/year). The resulting consumption estimated results are shown in Table.

Consumption in ounces	21-25 Estimate	21-25 95% CI (Lower)	21-25 95% CI (Upper)	26 or Older Estimate	26 or Older 95% CI (Lower)	26 or Older 95% CI (Upper)
Super Users	150,937	135,790	166,645	474,145	389,156	574,709
Regular Users (+Induced)	337,931	301,751	375,451	899,982	696,974	1,140,195
<b>Total Use</b>	<b>488,869</b>	437,541	542,095	<b>1,374,127</b>	1,086,131	1,714,905

# Prices in a Regulated Market

The regulated market is segmented vertically into three types of businesses: **producers, processors, and retailers**. Could be combined or vertically integrated

However, in order to guard for compliance with the department of Justice Memo, it's likely that each business will have a cost structure that will be manifested in a markup to the price received from the previous level. **The markup** will cover each of the businesses costs and profits.

Usually the markup in various other businesses represents different costs based on the type of business and products sold. Different industries impose varying markups to the product being transacted (from 60% to more than 120%). OLCC currently marks up liquor at around 110%.

used the following schedule to approximate markup: although many permutations of markup percentages were examined.

with 20% Fed tax 280E implication included elsewhere	
As % of price	Cost Category
6.80%	Federal Corporation Tax Rate at around 34%
33.3%	Costs of Labor (Compensation, Social Security, Unemployment, Insurance, and Other labor costs)
15.5%	Cost of doing Business (Insurances, Security, Transport, Finance, Rent, Inventory)
7.5%	Fees (Lab, Regulation, Certification, Other)
20.0%	Net Profit
1.80%	State Taxes @ 9%
84.9%	Total



# Price Estimate Models

- Current producer's costs based on a paper by the Rand Corporation and other research finds the cost of producing a gram of marijuana at \$2 (\$50 per ounce.) This price is consistent with the cost of the Oregon Medical Marijuana Program.
- Cost models are created by starting with this baseline price and stepping through the different levels of the business layers. The models will give us a reasonable estimate of what the price of the regulated legal marijuana is likely to be.
- According to the white paper on legalized cannabis in Washington State, the federal tax code, strictly applied, could actually prevent the viable existence of any legal cannabis business. It is assumed here however, that some means of compliance will exist and still allow for the businesses to somewhat comply with the IRC. In that regard, it is assumed that the inability to deduct cost of goods under IRC section **280E will impose about 20 to 25% additional costs** to the businesses. The first combination assumes the cost passed to the processor to only include the producer cost and the tax added, while the IRC 280 E implication will be added only to the retailer price at the end of the process.
- Pg. 10-11 in M-91 report tables 6,7,8 and 9

# Price Model combinations

	Cost	Tax	Producer's	Markup	Markup	Federal Tax 280E
	OMMP		Cost	Processor	Retailer	Implication
				100%	100%	20%
Price	\$50.0	\$28.0	\$78.0	\$156.0	\$312.0	\$374.4
				89%	89%	20%
Price	\$50.0	\$28.0	\$78.0	\$147.0	\$277.9	\$333.5
				88%	88%	20%
Price	\$50.0	\$28.0	\$78.0	\$146.6	\$275.7	\$330.8
				85%	85%	20%
Price	\$50.0	\$28.0	\$78.0	\$144.2	\$266.7	\$320.0
				75%	85%	20%
Price	\$50.0	\$28.0	\$78.0	\$136.5	\$252.5	\$303.0
				65%	80%	20%
Price	\$50.0	\$28.0	\$78.0	\$128.7	\$231.7	\$278.0

# Elasticity of Demand

- Elasticity is the measure by which demand responds inversely to percentage changes in price.
  - The Rand Corporation assumed -0.54
  - different sources ranged from -0.5 to -0.85 (inelastic)
  - most work starts with elasticity higher than that of tobacco
  - elasticity of tobacco in Oregon is measured at 0.6% then it is reasonable to assume that marijuana (with its higher price) has a slightly higher elasticity (between -0.7 and -0.75%).

# Oregon's "sharing economy" extends to cannabis.

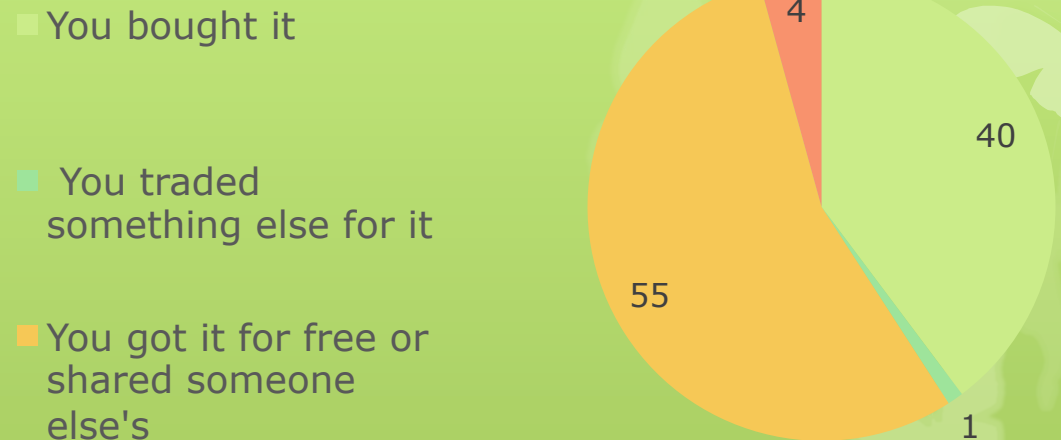
## ➤ **By Respondent**

- The survey pre-dates establishment of the OMMP dispensary system.
- 55% report receiving marijuana for free or sharing the last time they used it.
- 10% of frequent users report using marijuana they grew themselves.

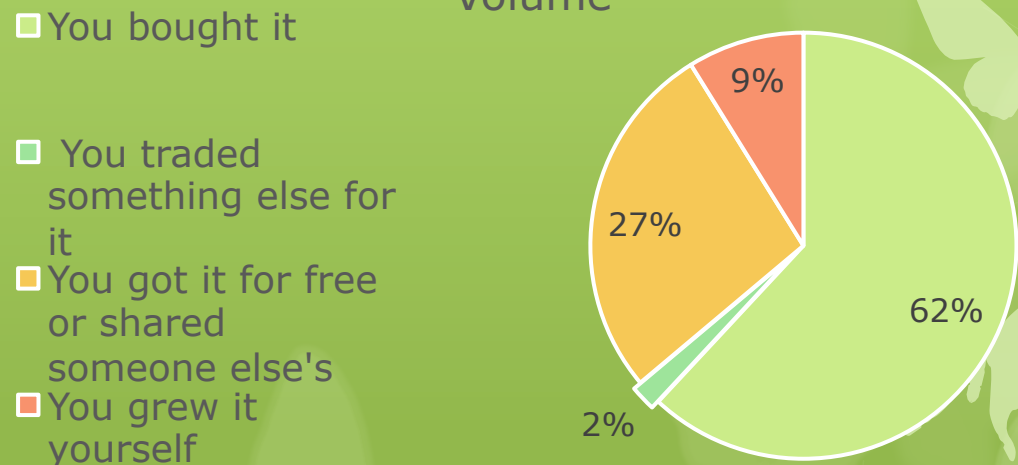
## ➤ **By Volume**

- numbers look different
- 63% Purchased Marijuana
- 10% Grew Their Own
- 28% Shared

### How Oregonians Acquired Cannabis 2002-2011



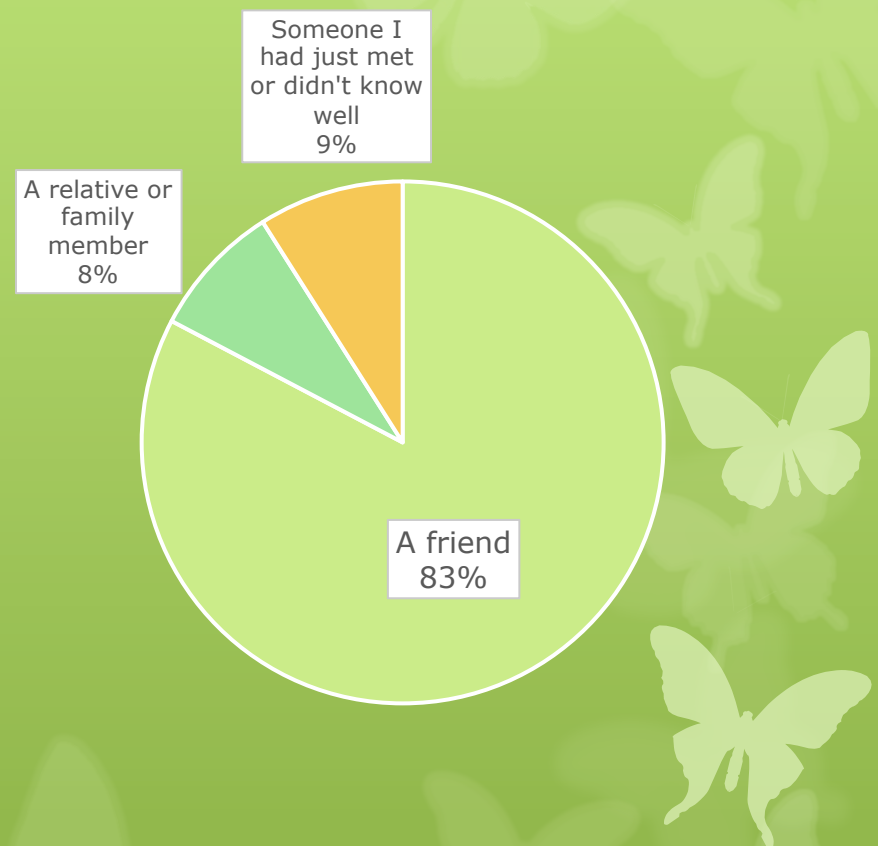
### How Oregonians Acquire Cannabis By Volume



# Oregon's Cannabis Delivery Network.

- Friends and family account for 91% of purchases.
- The survey questions limits choices- there is no dispensary or "dealer." option.
- An analysis of a group of Oregon marijuana growers and users indicates that there is high participation across medical and illegal markets, but within social networks.
- 71% of Oregonians purchased their marijuana inside a private residence vs. a shop or a public area.
- 21% Stated other.

## From Whom Oregonians Get Cannabis



# Elasticity and the Gray Market

- Elasticity of a product emerging from the black market is likely to work in a discrete fashion with movement in and out of the legal to the gray market.
- In other words, the quantity of demand in Oregon (a closed market) is likely to stay the same, but the source of the supply will be determined by the difference in price.
- Proportions between the two markets will be dependent on the price.
- Thus, the elasticity will determine the size of each market. If the legal market is able to provide a supply at an advantageous (consumer) price and equal or better quality than that of the gray market, then the gray markets will quickly become unprofitable and will be squeezed out.
- The illicit price however, is likely to start aligning around a mean in a tighter arrangement as a response to (can't impose higher prices) competition from the legal market.
- The gray market size will vary under the assumptions of various elasticities and a range of future regulated prices.
- Under high prices and high elasticities the (closed) Oregon market will be dominated by the gray market.
- Assuming the elasticity of marijuana is somewhere between 0.7 and 0.75, and averaging the middle values of the different scenarios results in an initial gray market size of about **65.7%**.

# Market shares

Assumed Gray Market Price: \$177/oz.

Elasticity	Price	\$321	\$332	\$338	\$342	\$347	\$411
-0.5		40.7%	43.8%	45.3%	46.7%	48.0%	66.1%
-0.55		44.7%	48.2%	49.9%	51.4%	52.8%	72.7%
-0.6		48.8%	52.5%	54.4%	56.1%	57.6%	79.3%
-0.65		52.9%	56.9%	58.9%	60.7%	62.4%	85.9%
-0.7		56.9%	61.3%	63.5%	65.4%	67.2%	92.5%
-0.725		59.0%	63.5%	65.7%	67.7%	69.6%	95.8%
-0.75		61.0%	65.7%	68.0%	70.1%	72.0%	99.2%
-0.8		65.1%	70.1%	72.5%	74.8%	76.8%	105.8%
-0.85		69.2%	74.4%	77.1%	79.4%	81.6%	112.4%

# Base Year Revenue Estimates

- A base year is an analysis unit where we assume all elements are working under constant assumptions.
- Applying all the assumptions introduced while using the 95% confidence intervals to signify the lower and upper range for the estimate.
- Thereafter, adjustments for the initial start year and subsequent years will be introduced to allow for possible changes and variation of the assumptions in the base.
- Thus, we determined the quantity demanded in the base year to be about **1.86 million** ounces.
- The gray market, at \$177 per ounce will retain **65.7%** of the current demand. The blended tax rate is assumed to be \$28 per ounce (\$35 flowers and \$10 leaf) with 72:28 flowers to leaf ratio.
- Increased consumption due to tourism and commuters is estimated at **19.6%**. This is derived from the reported 42% tourist traffic in Colorado proportioned to the number of surrounding states with medical marijuana programs.
- Including all these assumptions, results in a base year estimate of **\$21.4** million with a lower range of \$17.5 million and an upper range of \$25.9 million.



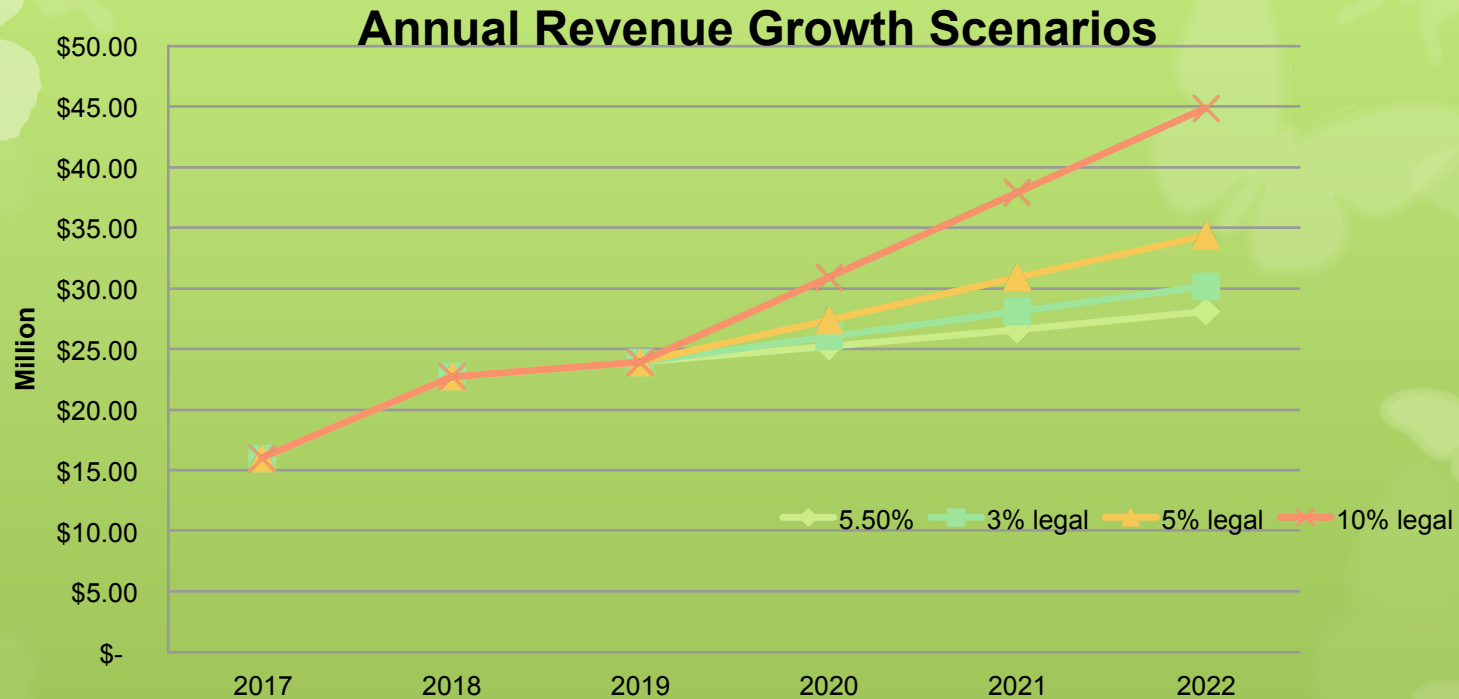
# Fiscal Year (17) Revenue Estimates

FY 2017 Revenue expectation		Estimate	Lower Range	Upper Range	
Annual Base Revenue		\$21,381,107	\$17,486,781	\$25,902,988	
Fiscal Year 2017 Revenue and distributions					
Revenue Expected (@70%) due to program startup and other unforeseen difficulties adding 1.5 % average annual pop growth (3 years) (Gross Revenue)	75% of annual Base	\$16,035,830	\$13,115,086	\$19,427,241	
OLCC start up and Administration Costs		\$(7,074,934)	\$(7,074,934)	\$(7,074,934)	
License and Application Fee Revenue		\$424,800	\$424,800	\$424,800	
	<b>Net Revenue</b>	<b>\$9,385,696</b>	<b>\$6,464,952</b>	<b>\$12,777,107</b>	
<b>Distributions</b>					
Common School Fund	40%	\$3,754,279	\$2,585,981	\$5,110,843	
Mental Health Alcoholism and Drug Services Account	20%	\$1,877,139	\$1,292,990	\$2,555,421	
State Police Account	15%	\$1,407,854	\$969,743	\$1,916,566	
Cities	10%	\$938,570	\$646,495	\$1,277,711	
Counties	10%	\$938,570	\$646,495	\$1,277,711	
Oregon Health Authority	5%	\$469,285	\$323,248	\$638,855	

# Revenue Estimates for 2017-19 BN

	FY 2018	FY 2019	BN 17-19
Gross Revenue	\$22,663,973	\$23,910,492	\$46,574,466
OLCC Costs	\$(3,162,209)	\$(3,291,278)	\$(6,453,487)
License Fees			
Annual	\$360,000	\$360,000	\$720,000
App Fees	\$45,000	\$45,000	\$90,000
<b>Net Revenue</b>	<b>\$19,906,765</b>	<b>\$21,024,214</b>	<b>\$40,930,979</b>
<b>Distribution</b>			
Common School Fund	\$7,962,706	\$8,409,685	\$16,372,391
Mental Health Alcoholism and Drug Services Account	\$3,981,353	\$4,204,843	\$8,186,196
State Police Account	\$2,986,015	\$3,153,632	\$6,139,647
Cities	\$1,990,676	\$2,102,421	\$4,093,098
Counties	\$1,990,676	\$2,102,421	\$4,093,098
Oregon Health Authority	\$995,338	\$1,051,211	\$2,046,549

# Long-Range Revenue Scenarios



- The Regulated legalized market is likely to achieve higher efficiency and more innovation which exerts downward pressure on price and consequently on the Gray Market
- The chart shows several of these possibilities. They include an annual growth of 5.5 in the legal market, a 3% annual increase in market share for the regulated market (reduction in gray market), a higher level of 5% annual growth in the regulated market, and 10% annual expansion of the legal market

# The 2015 legislative Session

- HB 2041 changed the taxation point and method to capture edibles and other products
- Changes the tax from a privilege tax (\$35/oz) on producers to a point of sale tax (17%) on retailers with 3% for local option.
- DOR not OLCC collects the tax. Oregon new point of sale tax.
- the price to consumers is likely to be lower benefiting from lower markup of the harvest tax and less product price impact from the effects of the IRC 280 E.
- legal market is able to carve a bigger niche. In other words the price that is carried from the initial point in the supply chain is lower, and results in lower amplification as the price passes the different links until it reaches the consumer. This means a lower final price to the consumer of around \$277 in comparison to more than \$320 in Measure 91 estimates.
- HB 3400, Counties that voted against M-91 with at least 55% can opt out with no revenue sharing. (8% of population)
- Others can take it to a vote. (49.5 % assumed to opt out some ) (14.5 % of population).
- The likely range of impact is anywhere from 5% in the short term to about 10% over the long range. 1% change in revenue in a fully phased-in and functioning legalized marijuana market is expected to be about \$200,000.

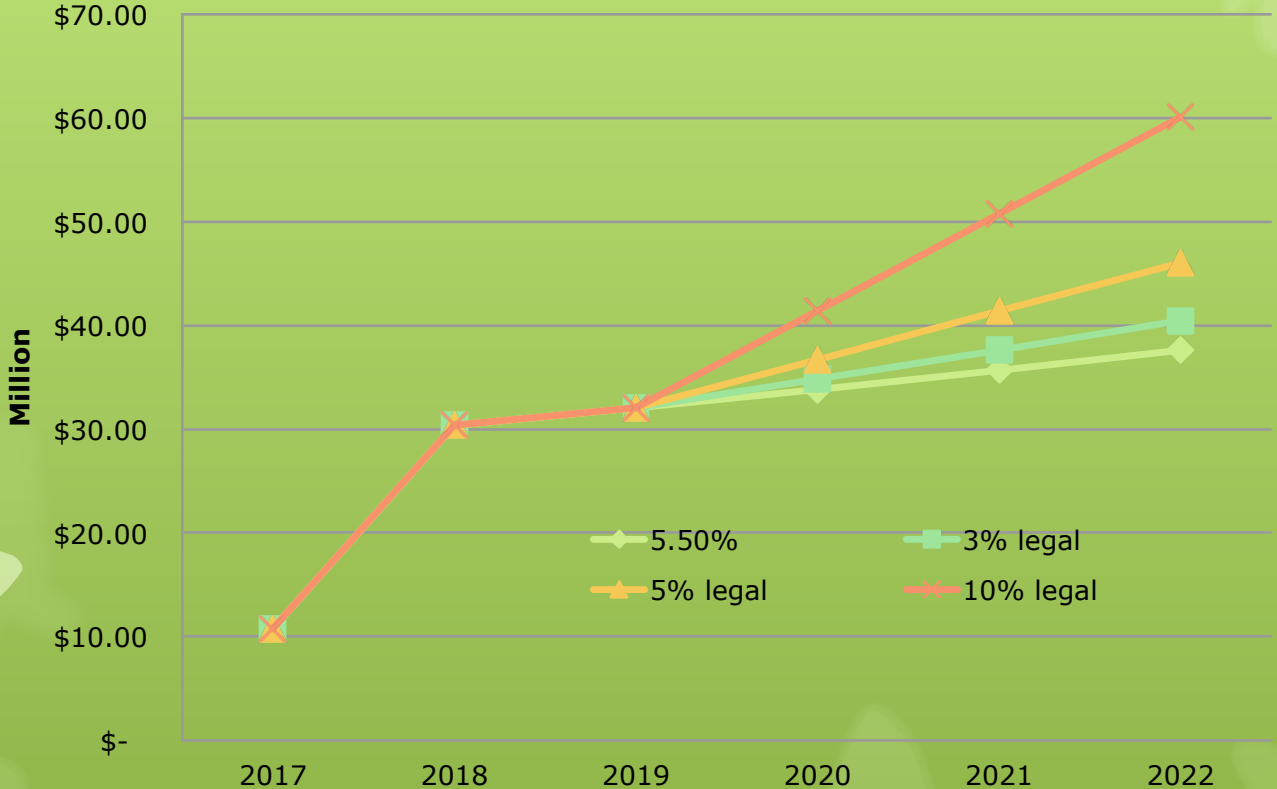
# HB 2041 point of sale @ 17% +3%

		FY 2016	FY 2017	FY 2018	FY 2019	BN 15-17	BN 17-19
Revenue			\$10.75	\$30.37	\$32.04	\$10.75	\$62.42
collection costs			(\$11.56)	(\$6.84)	(\$6.94)	(\$11.56)	(\$13.78)
Fee & License revenue			\$5.17	\$5.24	\$5.30	\$5.17	\$10.54
<b>Net Revenue</b>			<b>\$4.36</b>	<b>\$28.77</b>	<b>\$30.40</b>	<b>\$4.36</b>	<b>\$59.17</b>
<b>Revenue Distribution</b>							
Common School Fund	40%		\$1.74	\$11.51	\$12.16	\$1.74	\$23.67
Mental Health	20%		\$0.87	\$5.75	\$6.08	\$0.87	\$11.83
State Police Account	15%		\$0.65	\$4.31	\$4.56	\$0.65	\$8.88
Cities	10%		\$0.44	\$2.88	\$3.04	\$0.44	\$5.92
Counties	10%		\$0.44	\$2.88	\$3.04	\$0.44	\$5.92
Oregon Health Authority	5%		\$0.22	\$1.44	\$1.52	\$0.22	\$2.96

- Higher start up costs but higher level of revenue. (6% more market share)
- The early start by medical dispensaries is expected to provide \$2 to \$3 million in revenue (at 25% rate) assuming no major implementation difficulties.
- This however remains a major risk and needs to be monitored not to further disrupt the unfolding of the legal commercial system.

# Point of sale Revenue forecast

## Annual Revenue Growth Scenarios



# The 2015 legislative Session

- Revenue will increase in the coming biennia as prices, quality and safety of the product improves.
- These results are contingent on the ability of the regulation regime to establish control on the legal market from production and processing to distribution and retailing.
- Assumed that the medical system will continue to be strictly isolated from the commercial market.
- Taxes on edibles and other extracts are expected to be about 10% of the total revenue
- Users from out of state about an equal percentage.
- New users enticed by legalization are expected to reach 6.4% of the legal market.
- The legal market however will probably need about a decade with strong enforcement tools before it is able to dislodge the gray market and become the dominant supplier of marijuana in the state.
- Risks are numerous and they are all bounded by federal policy and its impacts on enforcement mechanisms, tax policy and delisting from the drug schedules. The movement of federal policy in either direction will have a significant impact on marijuana taxation and revenue.
- Implementation of marijuana policies on the local level and the construction of a solid system on the state level are paramount on future direction of success in dominating the markets.
- Early start amendment, October 1<sup>st</sup> for medical with no tax, and 25% tax on 1/1/16.
- might delay that transition and pose a further risk to the intended system.