

2015



What Cannabis can do for Vermont

How to grow a thriving, community-based, legal cannabis economy



Vermont Cannabis Collaborative

Common Sense Commerce

What Cannabis can do for Vermont.

How to grow a thriving, community-based, legal cannabis economy.
By the Vermont Cannabis Collaborative.

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What Cannabis can do for Vermont

2016 may be the year that Vermont legalizes cannabis:

a plant with potential as an engine of scientific research, medical healing, and economic growth that is only starting to be realized in the United States. Momentum is building in Montpelier and around the state to end the prohibition of cannabis, safely and responsibly. An economy that's been operating in the shadows—without testing, standards, and protections for kids or safeguards for the public—is about to emerge as a regulated and taxed industry.

Vermont has a unique opportunity to define what this industry looks like. What if our cannabis economy became known for the same values that make Vermont unique: collaboration, innovation, community, creativity, environmental stewardship, healthy lifestyles and artisanal goods? What if:

Production and distribution of cannabis could resemble community-supported agriculture, a system designed to benefit the many, not the few?

The cannabis industry could create 4,000 direct and indirect jobs—from farming to lab technicians to plumbing to renewable energy?¹

Vermont became a national research center of cannabis excellence, unlocking the plant's potential to treat illnesses and relieve pain and suffering?

Law enforcement in Vermont was able to focus on higher priorities rather than marijuana-related arrests?

These issues are at the heart of the Vermont Cannabis Collaborative's work. We're a group of Vermonters from a range of backgrounds—business, communications, technology, agriculture, politics, finance and education—who share a common goal: when cannabis is legalized in our state, we want Vermont to get it right. We see a cannabis economy in which a farmer who wants to add a new crop has easy entry into the market. We'd like craft growers

to be able to participate as members/owners of cannabis cooperatives. We want entrepreneurs, who may not have access to a lot of venture capital, but have great ideas, to have the opportunity to succeed where others like them in Colorado and Washington have been unable to enter the market. We see a new genetics research industry emerging. And we see ways to create jobs—good, long-term jobs that won't go away after an initial boom in demand.

1. This estimate is based on an economic model that VTCC commissioned in collaboration with two Denver-based groups of experts: the Marijuana Policy Group, an economic and policy research group, and the law firm Vicente Sedarberg, both of whom have worked extensively with the State of Colorado throughout the legalization process there. We discuss this model in detail in later chapters, but to utilize the model and learn how we reached our projections, visit our website at vtcannabiscollaborative.org.

When cannabis is legalized
in our state, we want Vermont
to get it right.

Participants.

Brian Leven, Jordan Wellington, Michael Jager, Ashley Grant, Rob Williams, Ken Merritt, Matt Simon, Bill Lofy, Zach Santarsiero, Will Raap, Martin Hamburger, Neil Joseph, Tripp Murray, Eli Harrington, Shanna Rattner, Tobias Paquet, Alan Newman, Hinda Miller, Andrew Livingston, Judy MacIsaac Robertson.



We also share a vision of what we don't want to see in this new industry: concentrated wealth and limited opportunities for small entrepreneurs to enter the market. Voters in Ohio rejected a similar proposed industry at the ballot box, and we encourage Vermont lawmakers to do the same, and oppose a regulatory structure that concentrates wealth in the hands of the few. Vermont has the benefit of studying how other states have fallen short in these areas, and we can learn from their experiences.

So, during this past year we dove into the question of "How can Vermont seize this opportunity to create a thriving and responsible industry?" We looked at cannabis legalization from a variety of angles—through the lens of industry, business development, financial services and technology. We invited experts from California, Colorado and Oregon to tell us what they've done right and what they would do differently. We held public forums across the state—from Bennington to Brattleboro to St. Johnsbury—to engage Vermonters in the dialogue. We've thought hard and debated heartily about how to make the most of what cannabis can do for Vermont.

After literally thousands of email exchanges, numerous meetings and statewide community conversations, a picture started to emerge of Vermont as a center for cannabis excellence. We see a market open to any Vermonter who wants to participate, where homegrown cultivators, craft growers and larger grow operations are integrated to meet existing but currently illegal adult demand. We see an opportunity to become the national leader in cannabis genetics and medical research. The purpose of this report is to fill in that picture for Vermonters. We propose a system of social enterprise centered on craft growing and cooperative agriculture, complemented by a regulatory structure that encourages shared wealth and access to capital. We hope this report informs the legislative debate in Montpelier, but this is a conversation for all Vermonters.

While our focus is on commerce, any discussion of cannabis legalization must include safety, education and prevention. While we're not experts in those areas, we've given them a lot of thoughtful consideration and incorporated them into our recommendations.

Where we do have expertise, and many years of combined experience, is in growing the type of businesses that Vermont can be proud of. We know that with a sensible regulatory environment, progressive industry structure and innovative entrepreneurs, Vermont's economy grows. We've seen it happen with craft beer, cheese, maple syrup, and our local food, recreation and lifestyle industries—and we see it happening again, once cannabis is legalized.

This is an exciting time for Vermont. Opportunities like this—to create a thriving, responsible new economy that embraces Vermont values and keeps young people working here—don't come along often. Our neighboring states, including Massachusetts and Maine, are poised to approve legalization by ballot measure in 2016, and with the Liberal Party winning in Canada and committing to legalization, our neighbors to the north may have legalized cannabis within a year. Change is coming to the Northeast. We can build on our strengths and thrive in this new order, moving thoughtfully and responsibly to legalization. This is a defining moment for Vermont and the Vermont brand; let's grab it.

We propose a system of social enterprise centered on craft growing and cooperative agriculture, complemented by a regulatory structure that encourages shared wealth and access to capital.

Intervale Event

June 2015



Cannabis Conversations

October 2015



VTCC Retreat

September 2015



Why Legalize?

“

In 1969 4% of Americans admitted using marijuana. The “war on drugs” was launched in 1971 and by 1973 it was 11%. Then laws for mandatory jail time for possession were imposed in the 1980’s and use jumped again. Now we imprison 700,000 non-violent marijuana users every year. Almost 44% of Americans admit trying marijuana including 1/3 of today’s high school students. Over 20 million adults used marijuana last year and 14 million use it regality. The ‘war on drugs’ has cost almost \$2 trillion and it is a failure. As with prohibition of alcohol, we need to stop the policy stupidity and legalize marijuana.

Will Raap

Founder, Gardener’s Supply Company
and Intervale Center

”

“

There are so many opportunities! Personally, as an aspiring entrepreneur living in Vermont, I want to get involved in something that is new, exciting, and applicable to my peers. Vermont is in need of a new industry for the younger generation to get involved in and Cannabis could be that industry. Not only are there amazing medicinal benefits to the Cannabis plant, there are also countless economic benefits that could be seen from legalization.

Zach Santarsiero

Student at University of Vermont

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“

It is time to liberate this remarkable plant - cannabis - from the federal prohibition prison it has been in for almost a century, and fully research and utilize the productive powers of cannabis to catalyze Vermont’s agripreneurial economy, increase our economic independence, boost our tourism base, and provide increased quality of life options for a wide variety of cannabis users.

Rob Williams

Media and Communications Professor,
University of Vermont

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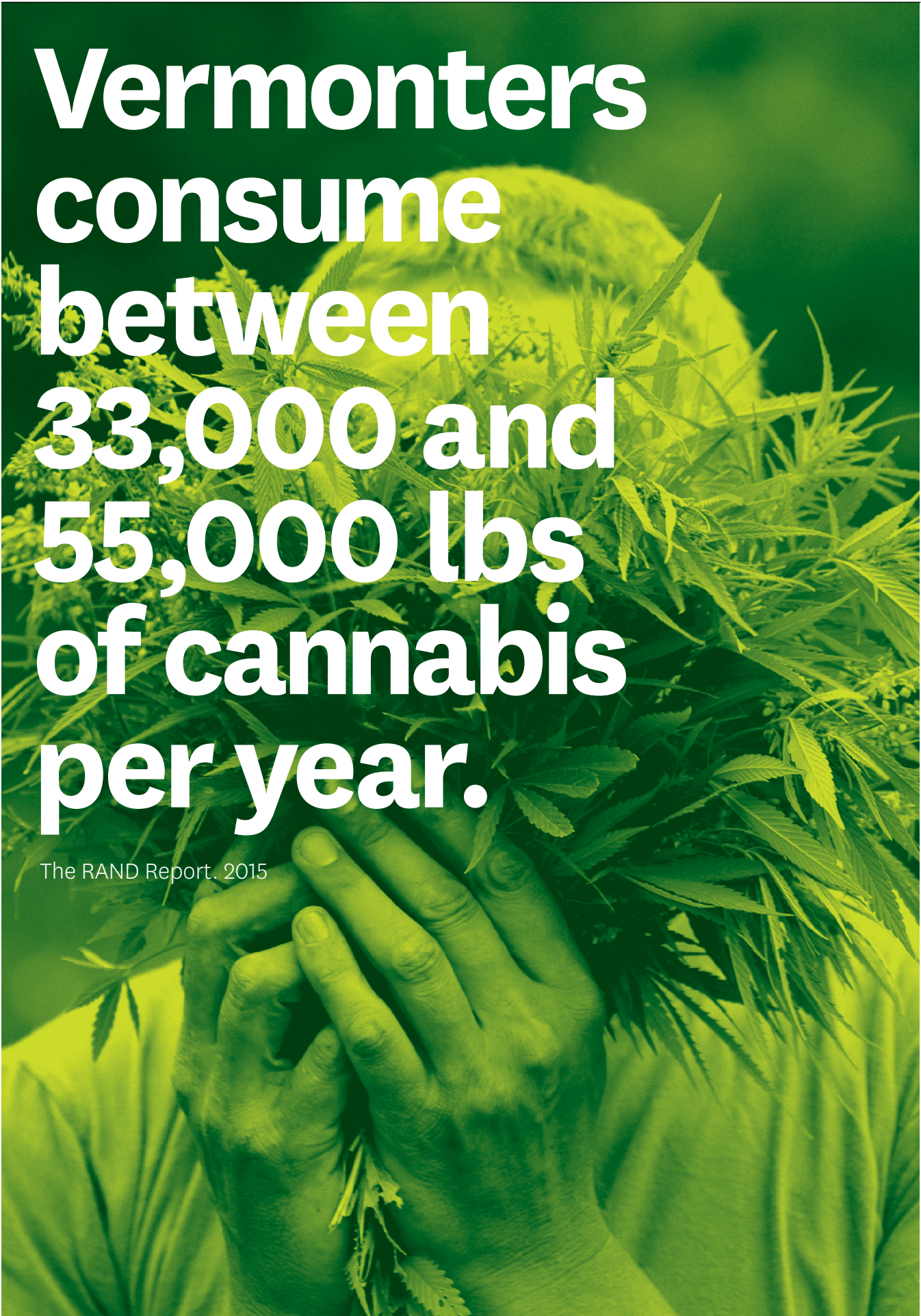
“

The political dynamic does matter, the voting does matter. Whatever we pass next year... because we are doing it through the legislature as apposed to referendum, we will have opportunities in the next few years to fix the law where we don’t quite get it right, whether concerns that we know about, or concerns that we don’t know about come up. So, I just want to impress upon everybody that engaging your friends and participating in the voting part of our democracy does actually still matter...

David Zuckerman

Vermont Senator

”



Vermonters consume between 33,000 and 55,000 lbs of cannabis per year.

The RAND Report. 2015

From Chaos to Common Sense Commerce

*The Vermont approach to
the new cannabis economy*

Let's start by defining a few key terms. You've probably noticed that we keep referring to "cannabis" instead of "marijuana." What's the difference? There really isn't one. Marijuana is a term that came into use relatively recently; those advocating for the prohibition of its use, historically used it as a derogative term, and has no scientific foundation. Cannabis, on the other hand, is the scientific name for a genus of flowering plants that consists of three species: cannabis sativa, cannabis indica, and cannabis ruderalis. Each species contains varying levels of an ingredient commonly known as THC—the stuff that gets you high from smoking or ingesting in edible form.² Because it's more precise, "cannabis" is the term we use throughout this report. Whichever word you choose—cannabis, marijuana, pot, reefer, weed—we're all talking about the same plant, one that has been illegal in the United States for almost a century.

Those hundred years are an historical anomaly. Cannabis has been legally used worldwide for most of human history. Indigenous to Central and South Asia, it's been consumed for over 5,000 years, and evidence of its use has been found in Egyptian mummies and in archaeological discoveries of charred seeds dating back to 3000 B.C. Cannabis was also used as medicine in cultures ranging from India, Central and South Asia and the Middle East, with many experts believing it to be the first plant species ever cultivated.³

Cannabis has been consumed for over 5,000 years.

Despite that long history, it took a while for cannabis to reach the United States. When it did, it came from the south—primarily from Mexicans fleeing the Mexican Revolution at the turn of the century.⁴ The arrival of these new Americans, some of whom used cannabis, spurred a reaction that sounds familiar to anyone following the current immigration debate: Mexican immigrants were ostracized by many in their new country, as were their customs.

As one historian put it, "Many early prejudices against marijuana were thinly veiled racist fears of its smokers, promulgated by reactionary newspapers."⁵ Criminalization of cannabis soon followed. By the 1930s, the federal government outlawed cannabis and hemp throughout the United States. Other countries followed America's lead. Since the beginning of the 20th century, most countries have enacted laws against the cultivation, possession or transfer of cannabis.

By the 1930s, the federal government outlawed cannabis and hemp throughout the United States.

As science has advanced in recent decades, attitudes towards cannabis have begun to change and evolve. With increasing research and review, scientists and medical researchers are now re-learning what human civilizations have known for centuries. A wealth of research has definitively concluded that cannabis is less addictive and less harmful than alcohol, and has vast potential as a treatment for a range of medical conditions, from cancer to AIDS and chronic pain.⁶ While still illegal and classified as a Schedule I drug by the federal government, cannabis is recognized by the U.S. Surgeon General for its effectiveness in treating certain medical conditions.⁷ Other countries—Israel, Great Britain and Spain in particular—have embraced the benefits of medical cannabis and are leading a global research effort that is increasingly legitimizing cannabis as a medical treatment.

2. Not all cannabis plants contain high concentrations of THC. Hemp, for example, is a variety of cannabis that contains very little THC but has a wide array of uses, from clothing to oils. Hemp cultivation has been legal and regulated in Vermont since 2013.

3. <http://ngm.nationalgeographic.com/2015/06/marijuana/sides-text>

4. Warf, Barney, "High Points: An Historical Geography of Cannabis." Found at: <http://onlinelibrary.wiley.com/doi/10.1111/j.1931-0846.2014.12038.x/full>

5. Ibid.

6. <http://www.cnn.com/2013/08/08/health/gupta-changed-mind-marijuana/>

7. <http://ngm.nationalgeographic.com/2015/06/marijuana/sides-text>

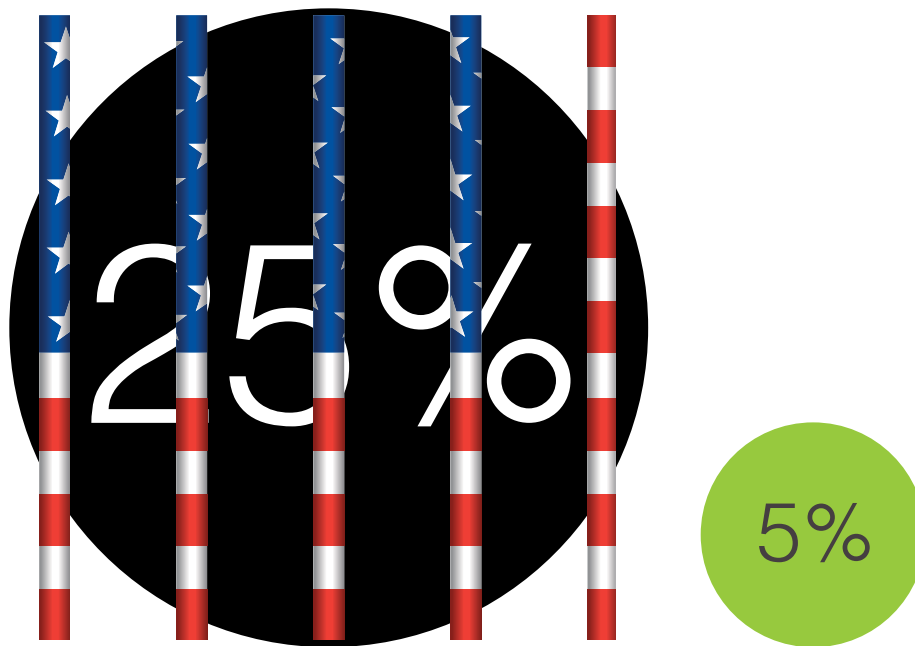
Cannabis is less addictive and less harmful than alcohol, and has vast potential as a treatment for a range of medical conditions, from cancer to AIDS and chronic pain.



Meanwhile, the war on drugs, with cannabis in its crosshairs, has failed. Despite over a trillion dollars in law enforcement spending and decades of cracking down on drug use, nearly half of all Americans say they have tried cannabis—12 percent in the past year.⁸ The population of non-violent drug offenders in our prison system has ballooned (the U.S. represents 5 percent of global population, but 25 percent of its prisoners), and hundreds of thousands of Americans who have committed nonviolent one-time drug possession offenses—the majority for cannabis—are left with permanent criminal records that can

prevent them from getting jobs, borrowing money, pursuing educational opportunities and becoming the next Steve Jobs. As former Seattle Police Chief Norm Stamper puts it: “The plain and simple truth is that alcohol fuels violent behavior and marijuana does not... alcohol contributes to literally millions of acts of violence in the United States each year. It is a major contributing factor to crimes like domestic violence, sexual assault, and homicide. Marijuana use, on the other hand, is absent in that regard from both crime reports and the scientific literature. There is simply no causal link to be found.”⁹

Alcohol fuels violent behavior and marijuana does not.



The U.S. represents 5 percent of global population, but 25 percent of its prisoners

8. <http://www.pewresearch.org/fact-tank/2015/04/14/6-facts-about-marijuana/>

9. <https://www.mpp.org/marijuana-is-safer-than-alcohol-its-time-to-treat-it-that-way/>

Americans from across the ideological spectrum are recognizing that it's time for a new approach, and they're taking action. Voters in four states and the District of Columbia have approved, through ballot initiatives, cannabis legalization. More states are considering similar initiatives in 2016, including California, Maine and

Massachusetts. Despite some unforeseen challenges and lessons that other states can learn from, the experiences in Colorado and Washington have demonstrated that legalizing, regulating and taxing cannabis is leading to better results than the drug war.

Cannabis use among teens has held steady, before and after legalization—overall use went up moderately, but didn't spike.¹⁰ Spending on education, treatment and prevention has gone up.¹¹ Medical research is advancing more rapidly.¹² Entrepreneurs are creating innovative businesses, directly and indirectly involving cannabis.¹³



10. <http://www.usnews.com/news/articles/2014/08/07/pot-use-among-colorado-teens-appears-to-drop-after-legalization>

11. <http://www.psmag.com/business-economics/drug-money-funding-drug-education-76387>

12. <http://www.thecannabist.co/2014/12/17/8-million-medical-pot-research-grants-paying-eight-studies/25534/>

13. <http://bit.ly/1QL2Rn>

Vermont is unique from these post-prohibition states: our constitution doesn't allow ballot initiatives, so the path to legalization runs through the legislature and governor. If the legislature passes and the governor signs a legalization bill into law, Vermont will become the first state in the nation to end prohibition by an act of the legislature rather than public referendum. There's precedence for such a move—we were the first state to legalize marriage equality by legislative action rather than court order—but the legislative process presents a challenge for legalization advocates. Unlike other states where voters approved the principles of legalization but the regulatory framework was followed by a separate rule-making process, in Vermont lawmakers will decide not only if prohibition will end, but also how a legalized regulatory system will be implemented.¹⁴

Our legislators have their work cut out for them. Framing a regulatory system around a substance that has been illegal for so many years is a complex, multi-faceted effort. Lawmakers will confront tough issues ranging from safety to law enforcement to education. They have a unique challenge in creating a policy that remains illegal at the federal level for the foreseeable future, as well as their need to fulfill requirements laid out in the so-called Cole memo that advises states on how to avoid inviting federal enforcement action.¹⁵ They'll hear from advocates, opponents, law enforcement officials, scientists, medical providers, drug counselors, teachers and social workers. Each of those voices has an important role to play in the debate, and each contributor's input will go a long way in determining if, and how, legalization proceeds in Vermont.

Lawmakers will also hear the voices of many Vermonters who see an opportunity for economic development and job growth. That's where VTCC's work comes in. While the issues of safety, education, and law enforcement have been an integral part of our collaboration—and subjects that we address throughout this report—they're not our central focus or expertise. Our primary contribution to the conversation is a framework for common sense cannabis commerce, based on Vermont values and designed to benefit as broad a spectrum of Vermonters as possible.

Vermont will become the first state in the nation to end prohibition by an act of the legislature rather than public referendum.



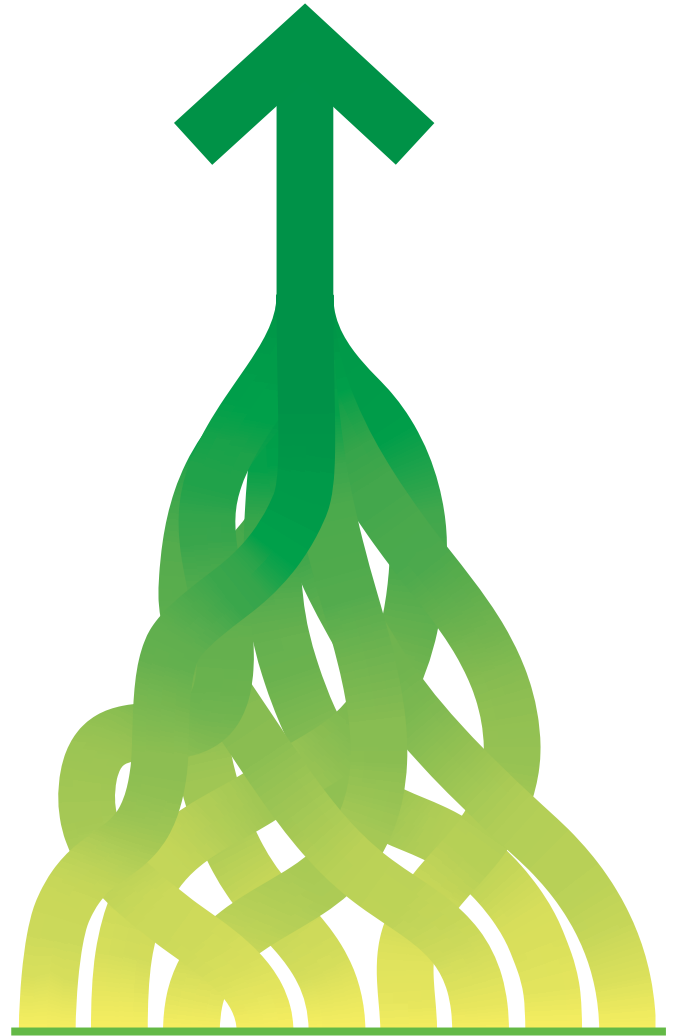
14. That's not to say that legislature needs to decide what every aspect of the regulatory environment will look like – it's common practice for the legislature to pass legislation that is then refined through a subsequent administrative rule-making process.

15. <http://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf>

When people talk about the legalization of cannabis, they often invoke a notion of “liberating” cannabis from prohibition. While it’s true that legalization lifts restrictions on cannabis, a more accurate description of legalization is that it’s a way to regulate a currently large and uncontrolled underground economy. It brings order and structure to a market, that today, is wholly unregulated. Think about the cannabis industry in Vermont, as it exists today: tens of thousands of Vermonters consume this substance, yet there aren’t any controls over quality or potency.¹⁶ To the best of our knowledge, thousands of Vermonters grow cannabis, yet their facilities don’t have to pass any inspections, aren’t spot-checked for quality control and don’t have to meet any safety standards. And even worse, untold amounts of cannabis with unknown quality and contaminants are still imported into Vermont from the west coast and Canada. Many Vermonters sell cannabis, but there are no regulations on how revenue is concentrated, no protections for industry employees, and of course, no tax revenue.

A legal, regulated industry looks very different. Strict testing lets consumers know what’s in the product they are consuming. Safety standards for growers mean better control of pesticides and mold. Financial regulations ensure more responsible, local ownership of business revenue. Tax revenue generated from the industry can go to underfunded drug prevention and treatment programs, medical research and workforce training. Contrary to the notion of legalization as liberation, we might look instead at legalization as a way to bring order to the chaos that defines the current cannabis economy nationally.

Specifically, legalization puts a regulatory framework around the five core functions of the cannabis economy: the cultivation, consumption, distribution, quality control and sale of cannabis. The way in which Vermont defines these regulations will determine if we have a cannabis economy that reflects “the Vermont Way.” Will we establish a system that rewards social enterprise over profits that flow out of Vermont? Will we find ways to smoothly transition the players in the current underground economy into a fair, legal one while learning from their decades of expertise? Will we provide incentives for businesses that rely on renewable energy sources and pay their workers good wages and benefits? This report is dedicated to answering these and many other key questions facing legislators this winter.



A more accurate description of legalization is that it’s a way to regulate a currently large and uncontrolled underground economy.

16. http://www.rand.org/pubs/research_reports/RR864.html

Spreading the Wealth of Opportunity and Commerce.

*How cannabis can benefit
all Vermonters*

A lot of Vermonters Consume Cannabis.

According to one study, Vermont has the third highest per capita rate of consumption in the country, with about 13 percent of Vermonters saying they've used it in the past year.¹⁷ When the RAND Institute issued its legislative report on cannabis in Vermont in 2014, it estimated that Vermonters consume between 33,000 and 55,000 pounds of cannabis per year—not including tourists.¹⁸ With 25 million people living within 200 miles of Vermont, we get a lot of tourists—over 14 million per year, a number sure to increase if adult use cannabis is legalized.¹⁹ Colorado saw a year one tourism increase of about 7 percent²⁰, but it doesn't have nearly the population density in surrounding

states; we expect Vermont's increase to be higher—over 10 percent.²¹ How will we meet rising demand with enough supply to keep prices low and reduce the illegal market, while at the same time spreading the economic benefits across the widest spectrum of Vermonters as possible? How can we give small craft growers—thousands of current illicit growers plus new market gardeners—the opportunity to enter and thrive in the market? And, with a rapidly aging workforce—we're already the second oldest state in the country based on median age—how will Vermont create the types of jobs, from agriculture to technology, that will draw young people to our state?

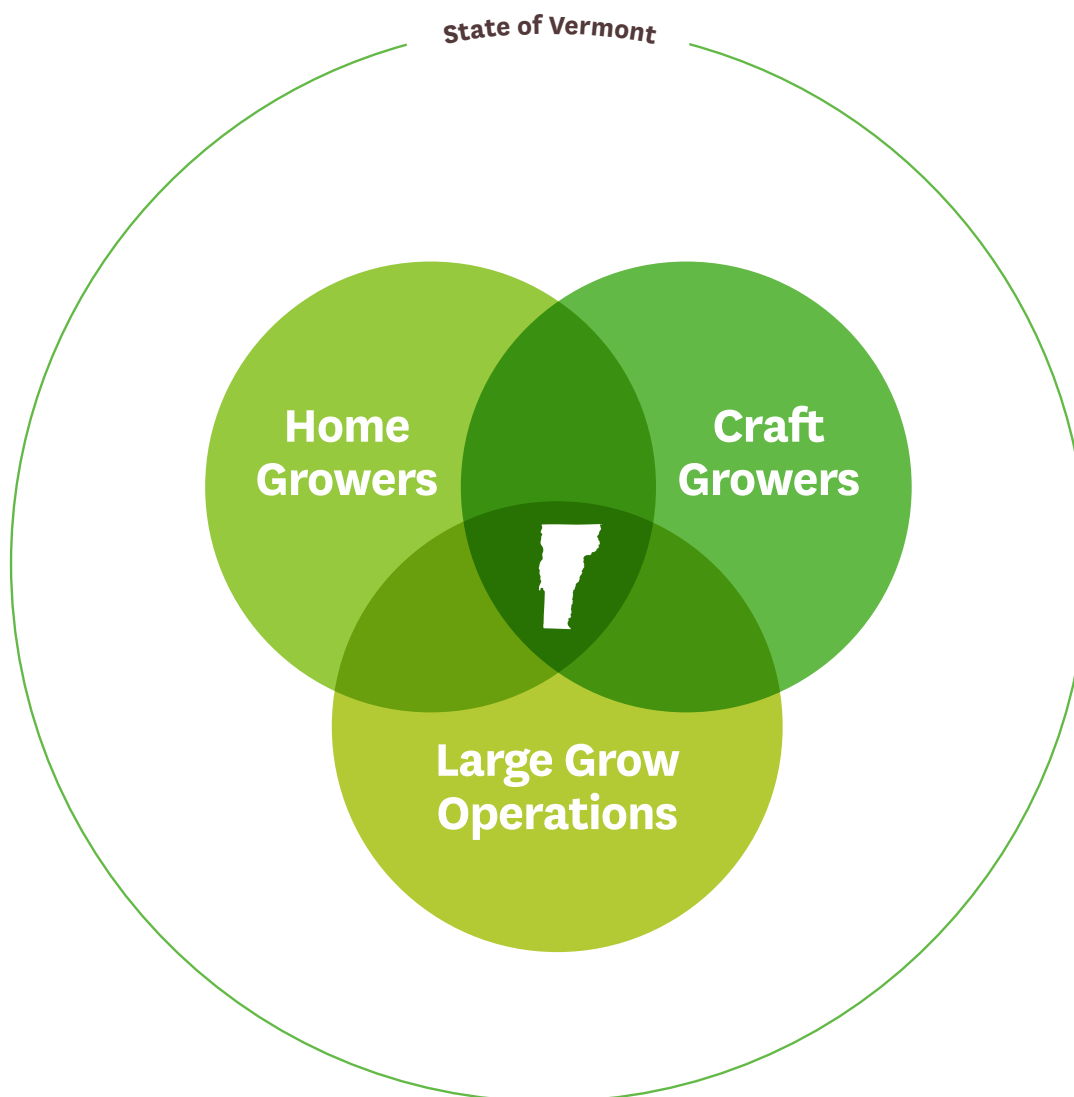
17. <http://www.washingtonpost.com/news/wonkblog/wp/2014/08/05/where-americans-smoke-marijuana-the-most/>

18. http://www.rand.org/pubs/research_reports/RR864.html

19. http://accd.vermont.gov/tourism_and_marketing/tourism

20. http://www.denverpost.com/business/ci_28368011/2014-record-colorado-tourism. As this article notes, Colorado's increase may not all be attributed to cannabis tourism.

21. For details, see our economic model at vtcannabiscollaborative.org



To help answer these questions, we retained two Denver-based experts—the Vicente Sederberg Law Firm and the Marijuana Policy Group (a collaborative effort between researchers from the University of Colorado Boulder Business Research Division and BBC Research & Consulting in Denver), both of whom have been deeply engaged in Colorado’s transition to regulated adult use.²² In addition to reviewing and commenting on VTCC materials, these partners helped us create an economic model to guide us in predicting consumer demand, the type of jobs created and the number of licenses needed to meet demand.²³ Using RAND data, research from Colorado, and national survey information, allowed us to make educated assumptions about overall demand in Vermont. Our model predicts that Vermont will experience a total demand of about 50,000 pounds each year.

Three categories of cultivators will grow all that cannabis: home growers who consume but don’t sell their harvests, craft growers supported by a cooperative business model, and a small number of large grow operations. This approach gives home cultivators the freedom to produce and consume their own products, provided they not sell it. It creates a market, with minimal barriers to entry (but effective oversight and enforcement), for craft cultivators—those that are both new to the market as well as current growers in the underground economy—to create small businesses. And delivers an opportunity for cultivation on a larger scale to serve market demand with quality product, provided that these large cultivators meet a set of social enterprise standards.

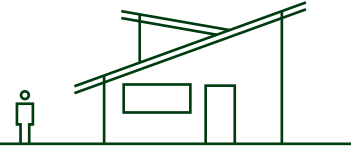
22. <http://vicensederberg.com>, <http://www.mjpolicygroup.com>

23. vtcannabiscollaborative.com

Home Growers



Home Growers



The most straightforward of the three categories is the first: people who grow cannabis on their personal property strictly for personal consumption. They would be allowed to consume their harvest on their own property, but they could not sell it. Vermont should follow the lead of other post-prohibition states by placing limits on the quantity of cannabis that home growers can produce. A key question for the legislature to consider will be how to define those limits:

- Should it be limited by number of plants, as other states operate—including Vermont’s current medical cannabis system? This option has the benefit of being simple for the grower to understand and easy for police to enforce—if law enforcement has cause to investigate a potential violation in someone’s home, it’s easy to count the number of plants that person has. On the other hand, the amount of cannabis produced by individual plants varies widely—some cultivators grow plants that produce a few ounces per plant, while others produce much more.

- This variation in yield per plant has led some to suggest that a better measure of production is gross weight. The advantage of a weight measurement is fairness—it treats all growers the same, regardless of how much they produce on a per plant basis. There are a couple disadvantages. First, it’s much harder for police to enforce—they have no way of knowing, until after plants have been harvested, if an individual has exceeded his or her weight limit. Second, the system makes it easy for growers to over-produce. What if a law-abiding home grower has a bumper crop and exceeds his or her limit? What happens with the excess cannabis, and do we want to focus law enforcement resources on policing production overages?

- A third option is to limit production by canopy space. Under this scenario, any Vermonter would be allowed to grow his or her own plants in a defined (say, 10 foot by 10 foot) space of growing canopy. That gives the grower more flexibility to grow as many plants as they can fit in that defined canopy space, or choose to grow fewer, higher-yielding plants. The disadvantage of this scenario is that it’s hard to measure grow space—is it acceptable to grow in, say, a 5 by 20 space instead of 10 by 10? It is also relatively easy to stack cultivation, effectively doubling the amount of production in a defined canopy. It’s also difficult for law enforcement to measure the space, and we shouldn’t expect police officers to take out tape measures during an enforcement action.

Of these options, VTCC recommends measuring home-grown production by number of plants, and establishing a limit of six female plants per household. Plant number is not the most accurate measure of production, and it can lead to some home growers producing more volume than others, but since these are home cultivators who are growing only for personal consumption or to give to friends (and not for sale), a limit of six plants is reasonable for even the most enthusiastic cannabis consumers.



We also recommend that home growers not be required to hold a license. While licensing would produce additional revenue from application fees, the drawbacks of a licensing requirement exceed the benefits. First, licenses for home growers would be very hard to enforce, and would tend to keep growing underground, with more risk for commercial-scale violations. Our goal now is to make home growing the next logical phase of cannabis decriminalization. Second, a licensing system would add an additional layer of government at a time when state resources would be better spent focused on enforcement, regulation and education. And third, as long as home growers aren't growing beyond the six-plant limit or selling any of their harvests, they should be free to grow without government interference.

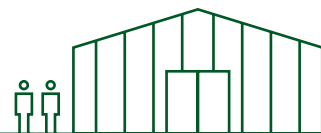
In sum, we recommend a per-household home growing limit of six female plants, prohibition of commercial sales by home growers and no license requirement.



Craft Growers



Craft Growers



Over the past few years, Vermont has seen a burst of growth in craft brewing, helping set the state's reputation for artisanal excellence (and creating jobs while they're at it). A lot of these entrepreneurs got their start as home brewers, creating beer in garages and basements across the state. We see the same possibilities for small and medium size cannabis producers—growers at the heart of an economy built on the principles of “the Vermont way,” and reflective of business practices that have come to define the Vermont brand. Vermont should be the nationally renowned center for artisanal cannabis, much as we're the national leader in the local food and community-supported agriculture movement. We could apply to cannabis the same principles of farm-to-plate agriculture that have put us at the center of the national conversation about food consumption: community-scale commerce that supports multiple bottom line goals for enterprises, including environmentally sustainable business practices, livable wages and transparency.

Think of the kinds of Vermonters who might see an opportunity in growing and selling craft cannabis. It's a diverse group, with different interests and goals. It could be a dairy farmer looking to add a new crop. It could be an entrepreneur starting out in a new industry. It could be a longtime cannabis grower who wants to emerge from the risky underground to the legitimate mainstream. Some may want to grow start-up businesses into larger operations that may someday graduate to a large grow license.²⁴ Others may want to stay small, and focus on artisanal strains or genetic innovation.

Vermont should be the nationally renowned center for artisanal cannabis, much as we're the national leader in the local food and community-supported agriculture movement.

Whatever their goals, craft growers would have three options for selling into the market: bulk, wholesale or directly to the consumer. Selling bulk means the craft grower is selling his or her product before it's tested and inspected. Most small craft grow operations will not have the resources to invest in expensive testing materials, nor have a license to test their products. Since testing will be required for all cannabis before it's sold to consumers, craft growers without a testing license either have to sell their product in bulk, or contract out testing to a licensed lab and testing service that conforms to Vermont standards, and then get the product back. Once they get it back, tested and inspected, the craft grower would be able to sell on the wholesale market. In some cases, that could mean selling to a retail store. In others, it means selling to an on-site consumption business, or “lounge.” In still others it might mean selling to a licensed Marijuana-Infused Products (MIPs) business, or the craft growers could get their own MIPs license.

24. Under the type of “go slow” approach that we advocate here, the system would be designed to include annual market supply and demand check-ins, at which point the state could allocate more licenses to meet high demand.

Cooperatives

We believe the best way for craft growers to enter the cannabis industry is through a market structure rooted in Vermont tradition and proven to create jobs and growth: cooperatives. Cooperative agriculture has been part of the fabric of Vermont for decades. From the Intervale and the establishment of community-supported agriculture (CSAs) to the growth of the Farm to Plate movement and the maple industry, Vermont has been the national leader in agricultural innovation. Other states, looking to revitalize their agricultural economies, have looked to Vermont as a model of how to grow an economy while spreading its benefits to the greatest number of participants. This work sparked a renaissance in Vermont agriculture that is evident throughout the state and beyond. Vermont is known as a national center for artisanal ag products, from cheese to maple syrup to beer, to say nothing of Ben and Jerry's and Cabot Creamery cheddar. It's not a big leap to envision Vermont cannabis as the standard-bearer for the entire east coast.

Let's make it easy for Vermont cultivators—specifically craft growers—to continue that tradition of excellence. We recommend that regional cooperatives be established in strategic locations in the state with the purpose of serving as a commerce hub for the cannabis market. Just as Cabot Creamery serves as a purchaser, product tester and brand for participating dairy farmers, the co-ops would buy products in bulk from craft growers, test it and sell it to consumers at a lounge or store. Like Cabot, the cooperative can also brand and market the products, taking that burden off the grower. Meanwhile, craft cultivators would be able to produce cannabis out of a home business, and wouldn't require a commercial facility—keeping barriers to entry low.

Cooperative agriculture has been part of the fabric of Vermont for decades.



This is a unique model. It's intended to lower the barriers to entry for two groups of people: current growers in the underground market and new entrepreneurs who see an opportunity to start a small business. We've seen in other states that it's challenging for these growers to enter the market because they're small, not well capitalized, and—much like a lot of great craft brewers who've started successful businesses—may not have a background in business. But now they'd have a “built-in” market to sell to, a testing facility and a business structure that encourages collaboration and entrepreneurship. They could lease community lots, where they'd be responsible for growing their individual harvests, but the co-op would operate the facility. Smart, skilled people who've been operating in the shadows can come together in a shared space to trade ideas and create craft products for the Vermont market. These are the places where we want as much of our cannabis to be produced! The more we encourage small growers, the more we spread the economic wealth. We think that's worth incentivizing.



We recommend the creation of a craft cultivator license with these characteristics:

- Craft growers would be encouraged, but not required, to join a co-op, and would be allowed to change co-ops if they so chose. Being part of a co-op not only provides predictability for the grower but also strengthens the market share of the co-op. It also makes it easier for law enforcement—for example, the co-op could supply and manage the RFID plant tagging process, which allows law enforcement to track a plant from seed to sale.²⁵
- Craft growers would be limited to a range of 7 to 99 plants, and would pay a progressively increasing fee as they increase their plant count. For example, they could pay one fee for their first 20 plants, an additional fee for the next 20, and so on. This way, the very small growers won't have to pay the same fee as a grower with 99 plants.
- The license would be available to any Vermonter who wishes to apply, with no cap on the number of craft licenses issued. We want to maximize the number of craft growers we can bring into the regulated market.
- Growers are allowed to hold multiple licenses if they wish to expand beyond cultivation.
- Grow facilities would be subject to state inspection, but growers would be allowed to cultivate on their own property. The co-op would be obligated to assure their member growers' compliance with quality and quantity, so some of this enforcement burden shifts from the state to the co-ops themselves. Craft growers who aren't members of a co-op could pay an additional fee to cover the expense of state inspection.

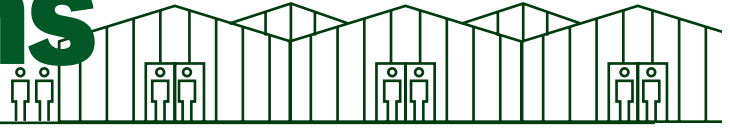


25. <http://mashable.com/2014/02/11/marijuana-rfid-tracking/#He5FrkzQiqqS>

Large Grow Operations



Large Grow Operations



While cooperatives can go a long way in creating an economy that reflects Vermont values, small growers alone will fall short of meeting overall demand—and balancing demand is the best way to shrink the underground market. To fill that gap, large grow operations, limited in scale to avoid market dominance, will be an important component of the legalized economy.

Large grow operations can conjure a negative image of massive cultivation centers and concentrated wealth. In Colorado, two main factors have contributed to that image. First, Colorado allows unlimited licenses for large grow operations and lets the market sort out winners and losers. As a result, the initial boom of start-ups in the state turned many businesses into busts, as increasingly larger grow operations with deeper pockets squeezed smaller producers out of the market.



Small growers alone will fall short of meeting overall demand.

26. <http://www.mjineews.com/colorado-law-change-puzzles-marijuana-investors/>

27. <http://www.cannabislawnow.com/2015/07/permitted-economic-interest/>

Second, Colorado’s residency requirement—which seemed like a great way to keep ownership local—actually hurt small start-ups by making it difficult to raise investment capital. When many small entrepreneurs—already unable to borrow from banks worried about federal intervention—tried to raise capital for their businesses, they found that Colorado-based “friends and family” money only goes so far. Even in a large state like Colorado, there’s only so much local capital to invest, and many of those equity investments have gone to large grows that earn higher margins due to economies of scale. As one frustrated Colorado cannabis entrepreneur put it, “It’s still impossibly difficult for licensed Colorado marijuana businesses to raise capital because of the two-year residency requirement.”²⁶ In response, Colorado has already approved a law that eases the residency requirement starting in 2016, and may take further steps in the next legislative session to relax the requirements even further.²⁷ Taken together, these two factors have inadvertently helped Big Marijuana dominate Colorado’s cultivation market.

That’s not the picture we envision for Vermont. We would cap the size of a large grow at 30,000 square feet of building footprint—about the size of an average Barnes and Noble store. We’d require all large cultivators to adhere to a rigorous testing protocol, either conducted internally with state oversight or contracted out to a testing facility. We’d allow out-of-state investors to own up to, but no more than, 49 percent equity in a licensed business—while still providing incentives for businesses to be entirely Vermont-owned.

To make this process as simple as possible for license applicants as well as the body granting the licenses, we recommend establishing a set of requirements for all applicants. These include security measures, zoning requirements, financial strength and background checks on all owners. We think applicants should have incentives to go beyond these baseline standards to create businesses that reflect Vermont values. Under this system, applicants would have to meet these requirements:

- Be established as a benefits corporation. A benefits corporation is a legally defined category of business, authorized in 30 states, including Vermont, which allows the directors of the corporation to consider interests other

than the pure economic interests of shareholders. Those interests include the impact of the corporation’s activities on the environment, the interests of the customers, the interests of employees of the corporation, the interests of suppliers of the corporation and the interests of each community in which the corporation or its suppliers are located. In short, a benefits corporation cares about more than just making money—they measure success not just on revenue but on the social and environmental benefits they create.²⁸

- Vermont residents must hold ownership of at least 51% of the business. For reasons we mentioned earlier, a residency requirement sounds like a great way to keep the money in Vermont, but it’s got serious drawbacks, as Colorado has learned. Instead of requiring that 100 percent of ownership be held by Vermonters, we believe at least a majority of 51 percent of ownership should be held by Vermonters.

In addition, the state might consider creating a points system that incentivizes applicants to:

- Generate renewable energy. Cannabis cultivation is an electricity- and water-intensive endeavor when grown indoors. With powerful lighting needed for significant time during the day and night, it’s no wonder that law enforcement frequently uses a facility’s electricity usage as a way to determine if there is illegal grow activity. Giving points to applicants that are able to self-generate significant amounts of electricity through solar or other renewable capacity is a great way to incentivize green growing, and it also helps Vermont’s renewable energy industry by creating more opportunities to partner with start-up businesses.
- Adhere to organic and sustainable growing practices as a way to boost the Vermont brand and product quality.
- Pay high wages and benefits. Part of the application process will require businesses to provide detailed information about wages and benefits for all employees. While businesses would be free to pay the Vermont minimum wage to their employees, they will get more points the closer they move from a minimum wage to a living wage. The licensing body will be able to see the contrast in wages between each applicant, and take that into consideration when issuing a license.

28. A benefits corporation should not be confused with a B Corp. B Corp is a certification mark that can be obtained through a non-profit entity known as B Lab. The B Corp certification is a valuable branding tool for businesses, but is not a legal form.

What about the existing medical dispensaries?

Throughout this narrative, you may be wondering how the current medical cannabis dispensaries fit into the new adult use environment. We believe the existing dispensaries have a crucial role to play, not only in bridging the transition from medical to adult use, but as permanent businesses in the adult use market if they so choose. Operating a legalized cannabis business is unfamiliar territory for nearly everyone in Vermont—except the three organizations that manage the current four dispensaries. We have a lot to learn from their experiences. VTCC recommends that adult use cultivation and sales should start with the existing dispensaries. Like in Colorado, these dispensaries could have the market to themselves for a short period of time while the administrative rule-making progressives and new businesses go through the application process and begin to start up.

Medical dispensaries have much to offer to a new adult use economy. They already have attracted, tested and are growing dozens of Vermont strains, so they are the legal depositories of Vermont's rich underground genetics. Plus, they are innovating product testing and certification (and even developing partnerships with other Vermont-based national food safety testing businesses), thus building the foundation we want for the best cannabis product testing and certification in the US, including for infused products. Vermont will benefit from bringing these existing dispensaries into the adult use market as a first phase of legalization.



Home grow + craft + large grow = Balanced supply and demand

A quick review of where we're at: Three categories of growers. Home growers don't need a license but do need to abide by production limits, and sales are prohibited. Craft cultivators have the choice of where to sell their products but would be encouraged to join a co-op. Large growers have the same choices but produce higher volumes of cannabis to meet demand and undermine economic incentives in the underground market. The question then becomes, how do these three categories fit together to meet demand?

That leads us back to our economic model. The model—based on the RAND study, Colorado data, and Vermont's unique economy—predicts that demand will be approximately 50,000 pounds.²⁹ How will that get divided up between growers?

Start with home growers. An average home grower, with a six-plant limit on production, could produce about 2.5 pounds per year if he or she is producing multiple crops in a year.³⁰ Our model estimates that about 3,000 Vermonters will grow their own under a legalized economy, putting homegrown production at approximately 7,000 pounds, or 14 percent of demand. How reliable are these estimates? We can't be certain because the current underground market is very difficult to measure, but if anything we believe we are underestimating the size of Vermont's current and potential home growing population. Consider a recent nationwide survey of 2,000 Americans conducted by the Harris Poll about their gardening habits. The poll found that an estimated 24.5 million Americans—10 percent of the adult population in our country—would grow their own cannabis if it were legal to do so.³¹ There will certainly be an increase in home growing in a legal cannabis economy.

So we've established that home growers will account for about 14 percent of total demand in the state. Now, how do we maximize the role that craft cultivators (especially the thousands of current small illegal growers in VT) can play in meeting the remaining demand? We need those craft growers in the market, both for practical reasons and because it's good for the Vermont brand. On a practical level, it's critical to move underground growers into the light of day. These are experts in cultivation with decades of experience, and in many cases they are intrepid entrepreneurs who can make a positive contribution to the legal industry. As experience in other states has shown, it's not easy to eliminate the underground cannabis economy—something that took decades to build will not go away overnight. But as long as an underground market exists, so will its drawbacks: untested products, no controls on dosage or quality, no tax revenue and no protections for kids. We can and must police this activity, but the market is the best tool for bringing these growers above ground. If a legalized economy can offer an illicit grower economic opportunities—a fair price and a legal market for her goods—and the peace of mind to know they're not going to get arrested, then we'll have succeeded in moving an underground market into a thriving industry.

29. vtcannabiscollaborative.com

30. vtcannabiscollaborative.org

31. <http://www.vermontbiz.com/news/october/nationwide-poll-finds-millions-would-grow-your-own>



If a legalized economy can offer an illicit grower economic opportunities—a fair price and a legal market for her goods—and the peace of mind to know they’re not going to get arrested, then we’ll have succeeded in moving an underground market into a thriving industry.

This is where the cooperative comes in. Craft growers need a market for their products; the cooperative can buy their cannabis in bulk. Some growers want to sell their own cannabis but need it tested; cooperatives can operate their own testing facilities. Some growers want to develop new genetic strains of cannabis; cooperatives can serve as centers of genetic research and seed banks. Some growers may not have enough space in which to grow; cooperatives can offer shared grow spaces. Cooperatives are an entryway into the regulated economy that would otherwise not be open to small, craft cultivators who don't have a lot of money to invest in a big grow operation, but want to succeed as entrepreneurs. We should give them every chance to do so.

Cooperatives are an entryway into the regulated economy that would otherwise not be open to small, craft cultivators.

As a way to encourage the creation and growth of cooperatives, VTCC recommends a licensing system that creates two categories of "large grow" licenses. The first is an industrial grow license that applies to the large operation that we previously described—30,000 square feet of building footprint, inspections, residency and benefits corporation requirements. Under our recommendation, an industrial license would allow vertical integration, and include the right to test and extract cannabis-infused products (MIPs) and sell in retail stores or lounges.

The second is a cooperative license. A cooperative would be owned by member growers and run by a board of directors and executive leadership. It would be established as a for-profit entity, with profits flowing back to members/owners. It would fall under the same cultivation regulations as an industrial grow—same size restrictions, residency requirements and benefits corporation. But where the industrial grow operates out of one facility, a

cooperative might consolidate the harvests of dozens of farmers in the region. The cooperative would also have a physical location, where members can grow their own harvests, much like a community garden. And, like the industrial licensees, the cooperative would be vertically integrated, and would serve as a market for craft growers, providing a full range of services, including testing, research, cannabis infusion technology, and even workshops and learning opportunities.

How should the licenses be allocated? First, consider how much a large grow operation can produce. In a facility with a 30,000 square foot footprint, the actual grow space will be limited by as much as 50% of the total footprint, as it will also need room for extraction, curing or infusing. Therefore, the yield of these facilities will likely be in the range of about 6,000 pounds of cannabis per year. If we're trying to meet demand of about 43,000 pounds (50,000 minus the 7,000 produced by home growers), we would need a little over seven licensed large grows. But that assumes that every industrial licensee has both the interest and the capital to build a grow operation at that large scale. In reality, many industrial licensees won't reach that maximum capacity, which is why we recommend expanding the limit beyond seven. A more realistic target would be in the range of 15-20 industrial licenses statewide. Whatever the exact number, we believe limits on industrial licensees are important to establish in Vermont, as a way of preventing overproduction and a boom and bust cycle that could leave many businesses failing.³² This is why we recommend an annual supply/demand/pricing check-in by the state to rebalance supply as the legal market matures.

We recommend that the cooperative license bring with it a license to test, extract, infuse, and sell cannabis.

32. Another way to address this issue is to establish annual production limits for each grow operation as a way of controlling overproduction.

Other Licenses

Up to this point, our discussion of business categories and licensing has focused on cultivation. But several other areas require attention. How will retail stores operate? What is the best way to handle value-added products, including marijuana infused products, or MIPS? Where can tourists and travelers consume cannabis safely and responsibly? The answers to these questions depend on our ability to establish the right licensing structure for each category. Let's start with retail.

Retail licenses

There will be plenty of entrepreneurs in Vermont who may not have expertise in growing, but want to start a business on the retail side of the cannabis economy. We recommend a retail license protocol that provides enough consumer choices to meet supply, but doesn't flood the market with retail stores. Without a sufficient number of retail outlets, legalization won't work well—supply will be bottlenecked in only a few locations, and consumers will have incentive to return to the underground market. Too many retail outlets creates its own chaos; let's not set up a system in which there are so many retail stores that most of them end up out of business after the first year.

Here are the characteristics we'd like to see in a retail license:

- Cap the number of retail stores, at least in the first couple years while the market matures. The exact amount is a question that the legislative process will resolve—a target range of 30-40 retail stores seems a reasonable starting point in that discussion.
- Allow municipalities to say no. While we hope that communities across the state will allow the presence of

cannabis businesses—regional distribution is important to maintaining the legal market and eliminating the underground market—local communities should have control over siting of businesses.

- Same residency requirements (at least 51% Vermont owned, and benefits corporation as outlined for cooperative and industrial grow licenses), as well as a recommended points system. Social responsibility should be rewarded in retail operations just as it would under the large grow licenses.

“Marijuana-infused products” or MIPS

Critics—and many supporters—of legalization have legitimate concerns about allowing cannabis-infused products to be sold on the adult use market. MIPS include, but aren't limited to, “edibles,” which are food products—from gummy bears to granola bars—infused with THC extracted from the cannabis plant.³³ They are increasingly popular in states like Colorado, where many prefer consuming edibles to smoking cannabis, both because it's better for your lungs and because some just prefer the effect that edibles produce. In fact, between edibles and other products, MIPS proved far more popular in Colorado's adult use market than most people expected. By the end of the first year of legalization in that state, MIPS accounted for a whopping 45 percent of the adult use cannabis marketplace, far exceeding expectations.³⁴

While Washington State dealt with MIPS well—through stringent labeling standards—some avoidable problems arose in Colorado. First, Colorado did not do enough to regulate the labeling of edible products—many of which were candies and cookies that would inevitably appeal to children, and which did not provide proper childproof packaging or warnings about dosage. Second, testing standards are not uniform in Colorado, making dosage highly inconsistent. Independent testing of edibles has found significant mislabeling of edibles, and stories began to surface about unwitting consumers taking much higher doses than recommended—eating entire chocolate bars when just a small piece would suffice. While these stories may have been overblown—over 5 million edibles were sold in Colorado last year, and very few serious incidents occurred—the problems of labeling and potency are real.³⁵

33. Other MIPS products include salves, lotions, and balms.

34. http://www.denverpost.com/potanniversary/ci_27174833/pot-edibles-were-big-surprise-first-year-recreational

35. <http://www.thecannabist.co/2015/02/27/marijuana-report-colorado-pot-med/30604/>

We believe MIPs should be allowed in a legalized market, but that Vermont should implement controls on MIPs similar to Washington State's. Here's how:

- Create uniform testing standards. In the next section we discuss this issue in far greater detail, but by requiring testing labs in Vermont to adhere to standard ISO 17025 regulations, we can address the uneven standards that have plagued Colorado and helped create this problem. Uniform testing standards allows us to have a much better sense of what is contained in the cannabis consumers are purchasing.
- Limit each edible unit to 10 milligrams of THC. Provided the product has been properly and accurately tested, a 10-milligram dose is widely accepted as one that is safe for consumers.
- Require proper packaging and labeling. Washington State adopted a comprehensive set of packaging guidelines that we can learn from. They include childproof packaging, clearly marked dosage, harvest date, limits on THC content and warning labels.³⁶ These standards are a great starting point for Vermont's packaging and labeling regulations.
- Ban foods that are appealing to children. There's no reason that cannabis needs to be infused in a gummy bear that might look appealing to a child. We support a system similar to Washington State's, in which all edible products must be approved by the state, with an eye toward keeping them out of the mouths of children—by limiting candy production and creating spicy or exotic flavors that kids will spit out if consumed.

With these protocols in place, we believe MIPs can be integrated well into the legal cannabis market in Vermont—and provide a safer alternative to people experimenting with cannabis infusion at home, where they are far less likely to have dosage and safety assurances. The reality is that consumers want the choice of edibles and other MIPs, and if they're not available on the regulated market, opportunities arise for an underground market to emerge—and with it, all the drawbacks of the current illicit market. While concerns about edibles are real and need to be addressed, the solution is not to take MIP production underground, with no testing, no labeling, no childproofing and no clarity on dosage.

For entrepreneurs interested in creating a cannabis-infusion business that sells MIPs products on the wholesale market

(to retail or on-site consumption licensees) or directly consumer (assuming the business is also licensed in either retail or on-site consumption), we recommend the designation of a MIPs license. In addition to meeting the residency and benefits corporation requirements of the other licenses, MIPs licensees would be required to ensure that the cannabis is properly tested by an accredited lab, and would fall under the regulatory standards we just described. We would not limit the number of licenses allocated, and licensees would be free to pursue additional licenses if they're interested in vertically integrating into the market.

On-site consumption (lounge) licenses

A growing issue in Colorado and other post-prohibition states is what to do about tourists (as well as residents who are away from their home communities) who have no place to consume cannabis. Hotels prohibit smoking, and smoking lounges are generally prohibited (some states allow members-only clubs where smoking is allowed), leaving visitors with few options for consuming cannabis—other than smoking in a rental car or risking arrest by smoking in public. It's not surprising that these states have been averse to allowing on-site consumption facilities—for many, the idea of a cannabis-smoking lounge is beyond their comfort level—but the problem is a real one. We don't want people consuming in their cars, nor do we want them smoking illegally in public. If we're willing to accept legalization, logic follows that we should be willing to allow people to consume cannabis in a designated, safe and regulated location. After all, you can find a bar that serves alcohol—a drug that can cause violent, dangerous behavior —on every corner of Vermont.

That said, we recognize that such facilities should be phased in as the legal market matures. We recommend the establishment of perhaps a dozen on-site consumption licenses, distributed regionally (preferably in locations with heavy tourism traffic, like ski towns). The provisions of the license would include the following:

- The facility would be allowed to sell cannabis under the same regulations that apply to retail stores (see above).
- The consumption of cannabis would be allowed, but alcohol sales and consumption would be prohibited.
- Anyone can apply for an on-site consumption license.

4000 NEW JOBS

Thousands of jobs can be created in a legal cannabis economy. Cannabis businesses need everything from architects and lawyers to builders and marketers.

Attorneys

**Building, HVAC,
plumbing, electrical,
roofing, and paving
contractors**

Architects



Cleaning supplies



Packaging

Security services

Real Estate brokers

**Transportation and
trucking companies**

**Shelving and display
case manufacturers
and installers**

**Marketing services,
including web design
and social media
specialists**



**Computer hardware
and software
providers**

Accountants



Financial services

**Oils and chemicals
used in the production
of non-edible
products**



Research facilities

Tech support services

**Communications
equipment providers**

Testing laboratories

**Machinery and
equipment**



**Agricultural products
related to the
production of edibles**

**Commercial kitchen
equipment**



Jobs

We believe the recommendations outlined in this chapter would create a system of common sense commerce, in which entrepreneurs at all levels are able to enter the market and pursue their dreams. We also know that such a system will create jobs for Vermonters, and help keep and attract young people to Vermont. The economic model that we created with our Colorado partners, using data from that state and others, suggests that legalized cannabis will create 2,500 direct jobs and 1,500 indirect jobs in Vermont.³⁷

By direct jobs, we're referring to any job that requires a license to operate. That includes employees handling the plant—growers, trimmers, bud tenders, sales experts, testers—as well as managers and anyone else directly employed by a licensed enterprise.

A surprising number of indirect jobs can be created in a legal cannabis economy. Cannabis businesses need everything from architects and lawyers to builders and marketers.

In addition to these “traditional” ancillary jobs, entrepreneurs will have opportunities to build creative new businesses that may not involve directly handling cannabis, but can be highly valuable to the industry. Examples in other states illustrate the point: staffing agencies that exclusively service the cannabis industry; delivery and ride sharing services (one imaginative Colorado company provides taxi services for consumers—call it the Uber of Cannabis); and a training and management consulting firm aimed at empowering women to take leadership roles in cannabis businesses. The opportunities for creative entrepreneurs are limitless, as are possibilities for job creation in higher education, as UVM and other schools offer cannabis science courses, horticulture and testing courses, and testing and certification oversight in conjunction with the state.



37. See economic model at vtcannabiscollaborative.com

Knowledge Makes the Difference

*How technology and research can ensure
safety, increase quality, and create jobs
in post-prohibition Vermont*

We have painted a picture so far of a cannabis economy driven by a thriving agricultural sector, in which home growers, craft growers, cooperatives and large growers drive a new regulated industry. There will also be opportunities for Vermont's emerging knowledge industry to ignite economic growth. The role that technology and research can play in the legalized cannabis economy—particularly as a way of ensuring product safety and establishing the highest quality testing standards in the country—is a rich one. Just as Vermont is known as a center of innovative agriculture, we also have a strong and growing knowledge industry that could get a boost from cannabis legalization. What do technology and research have to do with cannabis? Three things: safety, quality and jobs.

At the center of the debate around cannabis safety is the question of how we can guarantee that we know what's in our products: the potency, dosage of THC, cannabinoids, presence of contaminants and chemicals and overall quality. Consumers care about what they're putting in their bodies, and Vermonters especially care about it, as the recent GMO labeling debate suggests. Studies show that Americans are twice as likely to buy organic cannabis over conventional, and consumers are insisting on knowing what they're consuming.³⁸ But the market is not going to create a mandated, uniform standard; it's up to the state to so. Left to the market, standards change from lab to lab: different labs come up with different results, consumers aren't sure what's in the products they're buying, and instead of providing a sense of security and reliability, testing creates uncertainty, and inaccurate labeling

becomes a public health threat. It may actually be better to have no testing than to have this kind of inaccurate and inconsistent system of testing.

That's not an option for Vermont. We have an opportunity to set ourselves apart from other states by creating a highly rigorous set of testing standards to help make the Vermont brand synonymous with quality and safety.



38. Marijuana Business Daily, "What Cannabis Patients and Consumers Want," report found here: <https://mjbizdaily.com/consumer-report/>

First, some background on how cannabis testing works, and why it's important to have. We'll spare you a discussion of chromatography and mass spectrometry; what's important to know is that testing labs take samples of cannabis and cannabis-extracted products to determine their chemical profiles. They're testing two primary categories: potency (and thus dosage) and contaminants. A potency test determines the level of THC contained in the sample—powerful strains can contain up to 25 percent THC, while others, particularly those used for medical treatments, contain far less. A contaminant test looks for a wide range of chemicals that can cause bodily harm—from pesticides to molds to heavy metals. Cannabis testing businesses are starting up across the country, including states like California that have not yet legalized adult use, but where consumers still want to know what they are getting.



That's all good news from a health and safety perspective, but there's one major flaw in how testing is currently done in the United States: there's no uniform set of testing standards. There are no standards for equipment, skill level of employees or truth-in-labeling. A 2014 study by the Cannabis Safety Institute³⁹ framed the problem this way:

There are clear and internationally accepted standards for proper laboratory operation, but none of the Cannabis testing laboratories that have opened in the last year currently meet these standards. Many are run by inexperienced analytical chemists, or by non-scientists. Many of them purport to offer tests that are known to be expensive and time-consuming, for far less than the cost of the materials required to perform them. These testing laboratories frequently return only pass/fail information, rather than quantitative results. Most concerning, many reports indicate that when the majority of these laboratories are given identical samples, they return results with very little correlation.⁴⁰

Clearly, Vermont needs to address this problem by developing a uniform set of highly rigorous laboratory standards that would apply to any facility testing cannabis for either the medicinal or adult use markets.



There's one major flaw in how testing is currently done in the United States: there's no uniform set of testing standards.

What might those standards look like? There's a straightforward answer, and it's well known to any scientist who has worked in an accredited laboratory in the United States or elsewhere. The best option is a set of standards known as the ISO 17025 accreditation, which refers to a set of guidelines established by the International Organization for Standardization (ISO). While these guidelines are technical in nature, they cover both the management requirements (ensuring that lab operation is consistent with its quality management standards) and the technical requirements (test and calibration methods, control checks) of operating a lab.⁴¹ The vast majority of the safety-testing laboratories operating today—those testing food, soil, medicines, and drinking water—meet these rigorous standards, and accept them as the industry norm.

We should insist on those same high standards in Vermont. First, the state should create an organic growing certification. Just as the food industry needed to establish a third-party, industry-wide standard for organic food, so should Vermont define a set of standards for organic cannabis growing. While we don't recommend an organic requirement, we believe organic growing should be incentivized through the testing schema just as we suggest it be a criterion for merit points for large grow licenses. For example, by setting very low thresholds for acceptable systemic pest controls and zero tolerance for bad offenders when it comes to carcinogenic and other harmful compounds, many growers will be pushed to grow organic. Of course, organic cannabis will be tested just as rigorously as any other.

39. <http://cannabissafetyinstitute.org/mission/>

40. <http://cannabissafetyinstitute.org/wp-content/uploads/2015/01/Standards-for-Cannabis-Testing-Laboratories.pdf>

41. For a detailed description of ISO standards, see the United Nations Industrial Development Organization (UNIDO)'s guidelines on ISO 17025 here: https://www.unido.org/fileadmin/user_media/Publications/Pub_free/Complying_with_ISO_17025_A_practical_guidebook.pdf

We have five more recommendations for testing, but we can't claim them as our own. They come from the Cannabis Safety Institute, whose work focuses on advocating high safety standards. We embrace their recommendations, and stress the importance of establishing these standards on the front end, not as an after-thought. Colorado, Washington and Oregon have all learned that adopting uniform standards would have avoided some of their problems related to edibles, potency and labeling.

These standards should be the starting point for Vermont's cannabis testing system:

1. All Cannabis laboratories must be certified to the ISO 17025 standard.

Vermont is never going to win the race to create the cheapest mass-produced cannabis, but that's not our goal. It's in the race for safest and highest quality.

2. The assessment and accreditation process must be carried out by a third party accreditation body that is itself accredited to the ISO 17011 standard.

3. All Cannabis laboratories must include all of their methods that have public health implications on their scope of accreditation. This includes, at minimum: cannabinoids, pesticides, microbiology, residual solvents and water activity.

4. All Cannabis laboratories must pass rigorous and regular proficiency testing programs. These must cover ALL methods on the accreditation scope that carry public health implications. Proficiency testing must be administered by a body that is itself accredited to the ISO 17043 standard.

5. A full-time on-site chemist must manage cannabis-testing laboratories, with a PhD in a relevant field or at least eight years of experience specific to analytical chromatography.⁴²

These, along with an organic certification standard, are common sense ways to make Vermont stand out from other places.

42. <http://cannabissafetyinstitute.org/wp-content/uploads/2015/01/Standards-for-Cannabis-Testing-Laboratories.pdf>

Medical and Genetic Research



Safety and quality are also going to come from medical and genetic research. There's so much that we don't know about the cannabis plant. As one writer recently put it, "We're finding surprises, and possibly miracles, concealed inside this once forbidden plant."⁴³ For 85 years, not only has cannabis been illegal to consume and sell in most of the United States, it's also been illegal for most scientists to study. Thankfully, the work of international scientists has created a body of knowledge about cannabis that's helping change attitudes toward the plant. Israel, for example, has been a leading center of cannabis research,

and the place where THC was identified as the psychoactive agent in the plant. The pioneering Israeli researcher Raphael Mechoulam first discovered THC in 1963 and has since unearthed many of the plant's benefits. Yet Mechoulam, now in his mid-80s after a career of discoveries in the cannabis field, feels that this work is only now really getting started. "We have just scratched the surface," he says, "and I greatly regret that I don't have another lifetime to devote to this field, for we may well discover that cannabinoids are involved in some way in all human diseases."⁴⁴

43-44. <http://ngm.nationalgeographic.com/2015/06/marijuana/sides-text>

“We’re finding surprises, and possibly miracles, concealed inside this once forbidden plant.”

How can we continue—and accelerate—the work of Mechoulam and other researchers right here in Vermont? Just as Israel and other countries like Spain have become international centers for cannabis research, Vermont should stake claim to that title for the United States.

Just as Israel and other countries like Spain have become international centers for cannabis research, Vermont should stake claim to that title for the United States.

We have the facilities: both the University of Vermont and the Vermont State Colleges, led by Vermont Technical College, are equipped with state-of-the-art research laboratories that can be adapted for work on cannabis. We have the talent: Vermont researchers⁴⁵ are at the forefront of medical cannabis research in the United States and are involved in groundbreaking work to identify specialized treatments using cannabis, THC and the growing array of lesser known but therapeutically promising cannabinoids such as cannabidiol (CBD) which is gaining prominence as an anti inflammatory as well as an alternative form of treatment for alleviating seizure symptoms in treatment resistant epilepsy patients. Medical providers are also pursuing promising leads in using cannabis to treat opiate addiction—a crisis that Vermonters are all too familiar

with. And, we have the will: UVM, Vermont Tech, and other institutions of higher education have expressed interest not only in leading research work, but also incorporating it into courses, as UVM recently has done by offering courses in cannabis, including a Medical School pharmacology course that will be offered in the spring of 2016.

We should expand genetic research in the state. By genetics, we’re referring to plant genetics—the science that deals with heredity in plants, and how genes are transmitted among similar or related organisms. If that already sounds confusing, don’t fret: unless you really want to geek out on things like autoflowering and seed feminization, you only need to know the basics. Remember that cannabis consists of three species: indica, sativa, and ruderalis. Indica and sativa are the categories that most people think of when describing the different effects cannabis can have on the mind. Indica strains typically have a calming, “couch-lock” effect, whereas sativa strains are known for being uplifting and energizing. Since ruderalis contains very little THC, it’s not typically grown for adult use, but because it often contains a higher ratio of secondary cannabinoids (like CBD), medical cannabis growers and breeders still occasionally use it to impart desired traits.

The science of cannabis genetics has expanded rapidly in the past couple decades, as breeders rush to create boutique strains that provide a unique high to adult use consumers. As a result, a dizzying number of cannabis strains are available in both the underground and legalized markets. Adult use stores in Colorado, Washington and Oregon sell hundreds of different strains to their customers, making it difficult for the casual cannabis user to choose between the different options. Not surprisingly, businesses like the website Leafly, which catalog user experiences and the type of high each strain provides, have surged in popularity as people look for help in choosing the right strain.

The science of cannabis genetics is still in its adolescence.

45. <https://learn.uvm.edu/program/uvm-cannabis-speaker-series/>

Despite this vast catalog of strains, the science of cannabis genetics is still in its adolescence. Federal law has prohibited university research, and the kind of laboratory research that is emerging in Europe and Israel barely exists in the United States. It's also a subject that many people don't understand, and this lack of understanding can lead to bad policy choices, like strict limits on male plants in states that have legalized medical or adult use cannabis.

You don't need to know about cross-pollination and gametes and Mendel to understand the implications of a smart approach to breeding, but you do need a few key facts:

- The product of the breeding process is a seed, which is either male or female. If it's male, it will produce male flowers, and ultimately pollen. If it's female, it will produce female flowers, or the buds that we think of when we picture cannabis.
- Many growers don't bother growing male plants. They may not be interested in breeding and don't want to bother with seeds that they would otherwise not bother using or selling.
- Regardless of what they cultivate, growers need seeds. Underground businesses, many operating out of countries like the Netherlands and Spain, serve as massive seed banks for a global market. While still illegal in the United States, a huge illicit trade—served by breeders in foreign countries—exists here.
- Selective breeding requires as large a gene pool as possible. The more seeds you can produce, the deeper the pool, and the higher the chances of finding more specialized strains. You can't breed a horse like American Pharoah if you don't have a large gene pool; the same logic applies to cannabis breeding.
- Cannabis breeders have many motivations for what they do. Some are looking to find the next blockbuster strain, others are medical researchers searching for specialized treatments, while others are hobbyists who love creating new expressions of the cannabis plant.
- Seed breeders don't actually need the male plants once they have harvested its pollen. From a law enforcement perspective, breeders that pollenate their female plants are easy to police: they aren't producing cannabis flowers with a market value, as the market is only interested in "sinsemilla" or seedless buds, and they can dispose of—or sell as trim for extraction—their male plants as soon as pollen is collected.

As the science of cannabis breeding has grown in recent years, and as choices have multiplied, has quality improved? Certainly the potency of available cannabis is higher than ever, but that's not the only measure of quality. Before craft brewing, there were plenty of choices for consumers of beer in the United States. The problem was, most of them weren't very good. Some think the cannabis industry is headed down a path of homogeneity that favors fast-flowering, indica-dominant strains, all with a similar flavor profile. These strains are often pumped full of chemical nutrients for maximum yields. In post-prohibition states, that market trend has led to mass production of similar breeds.

Some think the cannabis industry is headed down a path of homogeneity that favors fast-flowering, indica-dominant strains, all with a similar flavor profile.

Vermont has an opportunity to pursue a different path. We've already carved out a position of distinction when it comes to artisanal beer by focusing on quality over gross production. Higher quality (and more expensive) ingredients, blended in an artful manner, have created a world-class craft brewery positioning for the state. It stands to reason that a similar focus on quality over quantity will lead to artisanal innovations in the cannabis industry. Frankly, that's already happening in Vermont, and has been for decades, but in the underground market. Cannabis has been Vermont's unofficial cash crop for decades, with many of the world's most elite strains originating right here.

Focus on quality over quantity will lead to artisanal innovations in the cannabis industry.

Why are Vermont breeders so good at what they do? Probably for the same reason that we produce some of the best skiers and snowboarders. Our climate forces us to adjust to changing conditions—ice, cold, snow—and get better because of them. Without the specter of being arrested and needing to quickly turn a profit, Vermont growers could embrace some of the marginalized but highly promising facets of the cannabis genotype like long flowering sativas, low yielding but medicinally novel medical strains, and other genetic outliers that have been given very little room to exist in the profit driven free markets like Colorado.

A flourishing cannabis breeding economy in Vermont will also benefit medical research. Despite the progress that medical researchers have made in recent years, we are still years away from doctors being able to prescribe individual strains to treat the many individualized medical conditions that respond to cannabis treatment. There's no website where you can go to find the best strain to treat the chronic pain in your foot, or your type of epilepsy or cancer, to say nothing of psychological illnesses like opiate addiction. We know that cannabis can treat these conditions, but we don't know enough about which strains provide the best, most effective treatments.

A flourishing cannabis breeding economy in Vermont will also benefit medical research.

Big strides have been made in this area in recent years. The University of Colorado at Boulder recently created the Cannabis Genomic Research Initiative, with a stated goal of mapping the cannabis genome. Led by a biology professor named Nolan Kane, the lab is a major initiative to provide cannabis growers worldwide with a blueprint for breeding high-value strains far more efficiently than currently possible. A journalist recently toured the lab and had this to report:

A sketchy outline of the cannabis genome already exists, but it's highly fragmented, scattered into about 60,000 pieces. Kane's ambitious goal, which will take many years to achieve, is to assemble those fragments in the right order. "The analogy I use is, we have 60,000 pages of what promises to be an excellent book, but they're strewn all over the floor," he says. "We have no idea yet how those pages fit together to make a good story."

Many people are more than a little eager to learn how Kane's story will play out. "There's a certain pressure," he says, "because this work will have huge implications, and anything we do in this lab will be under a lot of scrutiny. You can feel it. People are just wanting this to happen."...

...As Kane leads me around his lab, I see the excitement on his face and on the faces of his young staff. The place feels almost like a start-up company.⁴⁶

Think of a lab, similar in size, scale, and purpose as Raphael Mechoulam's or Nolan Kane's, but located on the campus of the University of Vermont or Vermont Technical College. That's the goal we should be chasing. Creating those kinds of labs in Vermont is good for science, good for medicine, good for our economy, and creates the kinds of entrepreneurial jobs that will keep young people in Vermont. For those reasons, VTCC recommends that five percent of tax revenue from cannabis sales be dedicated to medical research at the University of Vermont and Vermont Technical College. By partnering with Vermont's institutions of higher learning to partially fund these research facilities, the state would be investing in knowledge, innovation, and all the economic activity that comes with a thriving center of groundbreaking research.

46. <http://ngm.nationalgeographic.com/2015/06/marijuana/sides-text>

VTCC recommends that a percentage of tax revenue from cannabis sales be dedicated to medical research at the University of Vermont and Vermont Technical College.

As investments of cannabis tax revenue go into research initiatives and create new opportunities for our higher education institutions, simple steps can also be taken to bring underground breeders into the mainstream. We can build on our reputation for genetics excellence by embracing their work and giving them tools to expand it. As other states end prohibition, we can keep our pioneering breeders here in Vermont, and attract new talent from all over the world. We can become known as the center of cannabis genetics excellence. On the following page are our recommendations.



1. Create a category of genetics research licenses. These licenses would allow a breeder to grow an unlimited number of male plants (a breeder could apply for and hold a separate license for flower cultivation) for breeding purposes only. Once the pollen is harvested from the plant, the breeder would be required to dispose of the plant under state supervision, either by composting it, sell it for trim or repurposing and using it to make fiber or even raw juice.⁴⁷

2. Allow genetic research and breeding to begin immediately. While most of the industry will be established in a phased-in process, because the genetic research will not involve female plants grown for sale or the creation of sellable products that contain THC, it should be allowed to begin before legalization takes effect. Or, perhaps the first phase of legalization has two component parts: consumption is legalized and genetic research is allowed.

3. Establish safety and security protocols for outdoor breeding. Breeding in Vermont could create strains that are acclimatized to the environment in which they're intended to be grown—New England—rather than the temperate climates where many strains originate. No other state has considered the value of an outdoor breeding program as a differentiator.

These steps, while simple, could help the Vermont cannabis economy make big leaps in the global effort to unlocking the scientific potential of cannabis.

47. <http://sensiseeds.com/en/blog/males-useless-think/>

Other uses of Tax Revenue

We said earlier that a share of the tax revenue should go to medical research at Vermont's higher education institutions. The rest of the revenue, or as much as possible, should go to public safety and opiate addiction treatment programs. Public safety is a no-brainer: cannabis can be a dangerous drug when used irresponsibly, and other states have shown that smart, targeted public education campaigns are effective, especially when properly funded. Public safety is the first priority of any tax revenue, and in Vermont right now, there's no greater public safety issue than opiate addiction. It's a crisis that's shaken Vermont to its core, and we need more funding to address it. Since the governor declared an opiate epidemic in 2013, spending on opiate programs has increased, but state budgetary pressures keep these programs from being fully funded. Wait lists at methadone clinics still persist, and the state continues to wrestle with a crisis that has become an epidemic.

Public safety is the first priority of any tax revenue, and in Vermont right now, there's no greater public safety issue than opiate addiction.

Throughout the dialogue we've been having with Vermonters about legalization, we've frequently heard this: Don't make tax revenue part of your argument—we shouldn't do this for the money, we should base this decision on whether legalization is good for Vermont. Fair enough. Tax revenue alone is not a good justification for ending cannabis prohibition. There are plenty of other good reasons—jobs,

knowledge, agriculture, technology and community—to legalize cannabis in Vermont. But if we can use the revenue—between \$20 and \$70 million per year, according to RAND—and address our opiate crisis, Vermont will be better off. Our goal is not to be overly prescriptive on how tax revenue is spent—the legislative process is the place to sort out those questions after testimony and debate—but we do hope the legislature puts a priority on medical research, workforce training, public safety, and opiate addiction treatment.

We covered a lot of ground in this report—from craft cultivating to genetics—and tried to capture the breadth of the conversation we've been having for the past year, without going too far into the depth of detail that this complex topic requires. There's a lot we didn't cover in this report, and we recognize that there are a lot of questions about cannabis legalization—Which agency would oversee it? How would enforcement work? How does the rule-making process work?—that we haven't attempted to answer here. For those questions, the RAND legislative report that we've cited throughout is a great resource. We also hope that—however you come down on this issue—you will engage in the debate, and raise your voice.

Through the course of our work, we found out a lot about what cannabis can do for Vermont. Jobs. Knowledge. Agriculture. Technology. Community. We hope this report has shed some light on the opportunities that Vermont can create by adopting a smarter, more effective approach to cannabis regulation and taxation. Each one of us who took part in the VTCC collaboration is excited about what's ahead. While this report marks the conclusion of VTCC's formal contribution to the cannabis dialogue—the organization will no longer formally operate by the end of the year—we're looking forward as individuals to being part of the discussion in the months ahead. We think cannabis can do great things for Vermont.

Appendix

Recommended license framework for regulated adult use cannabis

Home Grow: No License

LICENSES:

- 1 Craft Grow License (fee based on number of plants) 7-99 max
- 2 Cooperative license
- 3 Industrial (large grow) license
- 4 Testing License
- 5 Marijuana-Infused Products (MIPs) License
- 6 Retail License
- 7 Lounge License
- 8 Genetics License

APPLICATIONS:

Craft Growers Application: Only includes the grow license. They may apply for any other license, but cannot concurrently hold a craft grower license AND a cooperative (#2) license or industrial (#3) license.

Cooperative Application: With the license comes authorization to conduct all activities allowed under licenses 4-8 above: testing, MIPs, retail, lounge, and genetics.

Industrial Application: With the license comes authorization to conduct all activities allowed under licenses 4-8 above: testing, MIPs, retail, lounge, and genetics.

Testing Application: Only includes testing. They may apply for all other licenses.

MIPs Application: Only includes creating value-added marijuana-infused products (MIPs). They may apply for all other licenses.

Retail Application: Only includes retail sales. They may apply for all other licenses.

Lounge Application: Only includes lounge facilities. They may apply for all other licenses.

Genetics Application: Only includes genetics license. They may apply for all other licenses.

DETAILS ON EACH CATEGORY:

Home growers:

- No license
- No taxation
- Six plant limit

Craft grower license:

- Unlimited craft licenses.
- Craft growers are free to apply for other licenses.
- They would not pay tax on cannabis sold in bulk to co-ops.
- They could cultivate a minimum of 7 and maximum of 99 plants.
- They would pay a licensing fee for every 10 plants that they grow.
- If they grow in their own facility and aren't members of a co-op, the state would inspect the facility, and the grower would pay an inspection fee.
- If they grow in their own facility and ARE members of the co-op, the co-op would be responsible for facility inspection.

Cooperatives:

- Three licenses available.
- A cooperative license includes licenses to:
 - Grow,
 - Test,
 - Sell tested product wholesale to other co-ops or industrial grows,
 - Sell tested products at their own retail store (limited to one per license) or their own lounge (also limited to one per license),
 - Make MIPs,
 - Conduct genetic research.
- Co-ops collect tax from bulk purchases from growers, and from sales to consumers.
- The co-op would be a for profit business, with profits going back to member/owners.

Industrial license

- Four licenses available.
- Includes licenses to:
 - Grow,
 - Test,
 - Sell tested product wholesale to other co-ops or industrial grows,
 - Sell tested products at their own retail store (limited to one per license) or their own lounge (also limited to one per license),
 - Make MIPs,
 - Conduct genetic research.
- Industrial licensees pay production tax at the point of product testing.
- For-profit business, with incentives given for benefits corporations and other social benefit criteria.

Existing dispensaries

- Would be the first allowed to apply for adult use license—for either cooperative or industrial licenses.
- Same tax structure applies, depending on whether the dispensary chooses cooperative or industrial.
- Would need to create a for-profit entity. Since the dispensary will de facto receive the license, the for-profit would be required to be a benefits corporation, with minimum 51% Vermont ownership and 51% Vermont investors.

Marijuana-Infused Products (MIPs)

- Allowed to purchase bulk cannabis, limited by weight, of tested product from licensed small growers, co-ops or industrial grows.
- Allowed to sell on wholesale market to co-ops or industrial grows, or to retailers and lounges.
- Allowed to hold other licenses.

Retail license

- Limited to 30 stores, regionally distributed.
- Sales tax collected at point of sale.

Recommended license framework for regulated adult use cannabis

On-site consumption (lounge)

- Limit of ten statewide, but must be located in designated downtown.
- Allowed to sell cannabis products on premises.
- Consumption of cannabis is allowed within the premises.
- No alcohol sales.

Testing facility

- Unlimited licenses.
- Needs to meet ISO standard plus any new VT-approved protocols.

Genetics license

- Unlimited license.
- Allowed to grow but only for breeding purposes—plants/flower disposed of.
- Limit on female plants but unlimited male plants.

Will adult cannabis use increase after prohibition?

By Matt Simon of the Marijuana Policy Project



Throughout the course of our work, we collaborated closely with the Marijuana Policy Project, a national policy advocacy group dedicated to ending cannabis prohibition. Matt Simon, MPP's New England Political Director, has been a great partner, and a source of much of the research and knowledge contained in this report. We asked Matt to answer a few questions that we've frequently heard from Vermonters about rates of use and safety of cannabis.

It's too early to be certain about the long-term impact of legalization and regulation on rates of adult consumption. So far, it appears that Colorado and Washington have experienced a modest increase in adult use, but not a large spike.

Colorado Gov. John Hickenlooper, who opposed passage of Amendment 64 in 2012, confirmed this in April 2015: "The people who used to be smoking it are still smoking it. They're now just paying taxes. The people who didn't smoke it still aren't. We haven't seen a spike." Hickenlooper added that regulating marijuana has turned out to be "not as vexing as we thought it was going to be."¹

Data from the National Survey on Drug Use and Health (NSDUH) indicates that Colorado and Washington experienced a modest increase in adult use in 2013, the first year it was legal for adults to possess marijuana (and, in Colorado, to grow it). This increase "happened almost exclusively among the 26-and-older crowd," Christopher Ingraham noted at the Washington Post's blog.²

The Rand Corporation, in its report for Vermont, suggests that rates of marijuana use should not be considered in a vacuum, but should rather be looked at in context with other trends relative to substance use and abuse, notably alcohol. Their report notes "The total social cost associated with alcohol abuse is very much larger than all costs and outcomes related directly to marijuana use."³ Additionally,

in a hypothetical scenario where adult marijuana use doubles following the end of prohibition, the Rand Corporation suggests that "Even a 10-percent reduction in alcohol abuse accompanying the doubling in marijuana use could be a net win for society."⁴

Similarly, if marijuana regulation results in reduced abuse of opiates, this should obviously should be considered a beneficial result of the policy. In encouraging news, a study published in August 2014 found, "Medical cannabis laws are associated with significantly lower state-level opioid overdose mortality rates."⁵ Unfortunately, although Vermont is one of the states in the group of 13 states that was studied, it appears to be an outlier in that overdose mortality rates appear to be increasing despite the legality of medical marijuana for certain patients.⁶ This may be because Vermont's medical marijuana law, which only allows patients to be certified with a pain diagnosis if they experience "severe pain" that is "intractable," is one of the most restrictive in the nation—only 2,055 patients, or 0.33% of the state's population, are qualified for the program as of September 2015, and many patients suffering from chronic pain have complained about not being able to become certified, despite the fact that they have had no problems gaining access to prescribed opioids.⁷

What about traffic safety, and driving under the influence?

The issue of driving while impaired by substances other than alcohol presents challenges to public safety challenge regardless of whether or not Vermont moves forward with taxation and regulation of marijuana. The question boils down to whether or not Vermont could achieve better results via marijuana regulation than prohibition.

There is, at present, no clear evidence that shows repealing marijuana prohibition laws will result in more traffic accidents. In fact,

some early research has found that traffic fatalities have been decreasing more rapidly in states that have adopted medical marijuana laws—perhaps because some people with drinking problems are substituting marijuana for alcohol.⁸

The Rand report for Vermont cites "clear evidence from strictly controlled laboratory trials that marijuana use reduces psychomotor performance in ways that increase overall risk of accidents and, in particular, impairs driving."⁹ However, it concludes, "Much will depend on how legalization influences the use of other substances, especially alcohol... Those trying to evaluate how legalization influences traffic safety should focus on the overall accident or fatality rate, not just the number of cases involving marijuana or other substances."¹⁰

Although impairment caused by marijuana use certainly "reduces psychomotor performance," this effect should be looked at in context with the extremely negative effects of alcohol. As reported in the Washington Post's blog, research conducted by the National Highway Traffic Safety Administration found, "drivers who use marijuana are at a significantly lower risk for a crash than drivers who use alcohol. And after adjusting for age, gender, race and alcohol use, drivers who tested positive for marijuana were no more likely to crash than [drivers] who had not used any drugs or alcohol prior to driving."¹¹

Similarly, a study published in 2013 found, "The highest driver risk of being severely injured by driving with psychoactive substances is associated with driving with high concentrations of alcohol in the blood ($\geq 0.8\text{g/L}$)... The least risky drugs were cannabis and benzodiazepines and Z-drugs."¹²

The number of fatal traffic accidents in Colorado has remained steady and at near-historic lows since 2012, the year marijuana became legal for adults.¹³

1. <http://www.thecannabist.co/2015/04/29/hickenlooper-colorado-pot-marijuana-vexing-video/34193/>
 2. "More adults are using weed in the states that legalized, but teen use is flat." <http://www.washingtonpost.com/news/wonkblog/wp/2014/12/30/more-adults-are-using-weed-in-the-states-that-legalized-but-teen-use-is-flat/>
 3. Caulkins, Jonathan P., et al. "Considering Marijuana Legalization: Insights for Vermont and Other Jurisdictions." Santa Monica, CA: RAND Corporation, 2015. Page 43. http://www.rand.org/pubs/research_reports/RR864
 4. Ibid, page 44
 5. <http://www.ncbi.nlm.nih.gov/pubmed/25154332>
 6. http://healthvermont.gov/research/documents/databrief_drug_related_fatalities.pdf
 7. <https://www.mpp.org/issues/medical-marijuana/state-by-state-medical-marijuana-laws/medical-marijuana-patient-numbers/>

8. Anderson and Rees, "Medical Marijuana Laws, Traffic Fatalities, and Alcohol Consumption," *Journal of Law and Economics*, May 2013. <http://ftp.iza.org/dp6112.pdf>
 9. Caulkins et al, page 33.
 10. Ibid, page 34.
 11. <http://www.washingtonpost.com/news/wonkblog/wp/2015/02/09/stoned-drivers-are-a-lot-safer-than-drunk-ones-new-federal-data-show/>
 12. <http://www.sciencedirect.com/science/article/pii/S0001457513002315>
 13. Colorado Department of Safety, Fatal Crash Data. Accessible at <https://www.codot.gov/library/traffic/traffic-manuals-guidelines/safety-crash-data/fatal-crash-data-city-county>

Will adult cannabis use increase after prohibition?

By Matt Simon of the Marijuana Policy Project



One federally funded taskforce, the Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA), has released a misleading report attempting to make the case that marijuana regulation has resulted in a dramatic increase in traffic fatalities. Unfortunately, the stats used by groups like RMHIDTA do not differentiate between whether the person with detectable marijuana in his or her system was actually at fault. If someone who used marijuana two days ago (or even two hours ago) is driving safely and gets hit by someone, the fact that the driver had detectable marijuana in his or her system is irrelevant. RMHIDTA also does not differentiate between whether the person was actually under the influence or if they had used marijuana days or even weeks earlier. For example, they call any accident involving a person who had a detectable amount of marijuana in their body (be it active or inactive) a “marijuana-related” accident.

A very credible analysis of the RMHIDTA claims was published by Forbes.com.¹⁴

Although policymakers will understandably wish to adopt policies aimed at reducing marijuana-impaired driving, they should avoid adopting a *per se* standard that is not justified by scientific evidence. Although Washington state adopted a 5ng/ml *per se* standard and Colorado also adopted a 5ng/ml permissible inference standard (which is not a *per se* standard—the presumption of impairment can be refuted in court), a recent study suggests “13.1 nanograms per milliliter is the actual equivalent to the .08 BAC alcohol intoxication level.”¹⁵ However, unlike a 0.08 BAC level, a person—including patients—may have a level that high or higher 10 hours or longer after last using cannabis. In addition, THC levels have been shown to spike even after abstinence.

A far better way to promote road safety is to educate against driving under the influence of any substance, while having a standard that looks at the totality of the evidence, including the level of THC in one’s system and all other evidence of impairment—or lack thereof.

This is a very important issue, and policymakers should continue to take it very seriously as new data and new technologies emerge. Regardless, since marijuana is already widely used in Vermont, this public safety concern is not a good reason to maintain the *status quo* of prohibition, under which marijuana production and sale are left to the unregulated, illicit market.

What about use by adolescents?

Opponents of marijuana legalization and regulation often assume that rates of teen marijuana use will increase following legalization. They typically fail to acknowledge several important benefits of regulation:

- (1) Prohibition hasn’t stopped marijuana from being available to adolescents.
- (2) Illicit drug dealers don’t check IDs.
- (3) Illicit drug dealers don’t typically educate consumers about responsible use, including the importance of keeping marijuana away from young people.
- (4) Illicit drug dealers may recruit teens to sell marijuana to other teens, and they may introduce teen consumers (or, for that matter, adult consumers) to more dangerous substances.
- (5) A taxed system produces revenue that can be used to educate marijuana consumers about the importance of responsible use and to provide young people with evidence-based education about the risks of using marijuana and other drugs.

One of the leading arguments against the passage of medical marijuana laws has been that they would “send the wrong message” to young people and result in increased rates of teen use. However, although teen marijuana use rates are higher in states that allow medical marijuana, research shows that rates were already higher than average in those states before passing these laws—rates did not increase following passage of a medical marijuana law. As one recent study concluded, “Our findings, consistent with previous evidence, suggest that passage of state medical marijuana laws does not increase adolescent use of marijuana.”¹⁶

A good explanation of current teen use data is provided in the following Forbes article:

It is not clear whether the loosening of marijuana prohibition in Colorado has led to an increase in consumption by teenagers. According to data from the National Survey on Drug Use and Health presented in the RMHIDTA report, the share of 12-to-17-year-olds in Colorado who admitted using marijuana in the previous month rose from 10.17 percent in 2009, when dispensaries began to proliferate, to 11.16 in 2013, the first year after Amendment 64 passed. That’s an increase of about 10 percent. During the same period, the national average for past-month use rose only slightly, from 7.03 percent in 2009 to 7.15 percent in 2013. That’s an increase of about 2 percent.

That comparison looks like evidence that Colorado’s marijuana policies have increased underage consumption. But there was a similar divergence between Colorado and the national average before 2009. In fact, the rate of past-month use by Colorado teenagers rose by 34 percent between 2006 and 2009, more than three times the increase between 2009 and 2013, while the national average rose by about 4 percent. That hardly fits the story the RMHIDTA wants to tell, according to which greater availability of marijuana from dispensaries, beginning in 2009, resulted in more adolescent pot smoking. State-specific results from this survey are not available yet for 2014. It will take several more years of data to get a clearer sense of where underage consumption is headed in Colorado and how that trend compares to what is happening in states that have not legalized marijuana.

Early data from surveys conducted by Colorado and Washington appear to indicate that teen use rates aren’t increasing. In fact, since marijuana became legal for adults’ use in Colorado and Washington, according to the Healthy Kids Colorado Survey and the Washington Healthy Youth Survey, teen marijuana use has decreased slightly in both states.

The Colorado Healthy Kids Survey conducted biannually by the Colorado Department of Public Health and Environment—which includes 40,000 students from more than 220 Colorado middle and high schools (a much larger sample than the NSDUH)—found a decrease in use.¹⁷

14. <http://www.forbes.com/sites/jacobsum/2015/09/17/supposedly-neutral-federal-report-stacks-the-deck-against-marijuana-legalization/>
 15. <http://www.westword.com/news/pot-driving-study-suggests-colorados-stoned-driving-standard-way-too-low-7214203>

16. [http://www.thelancet.com/pdfs/journals/lanpsy/PIIS2215-0366\(15\)00217-5.pdf](http://www.thelancet.com/pdfs/journals/lanpsy/PIIS2215-0366(15)00217-5.pdf)
 17. <http://www.usnews.com/news/articles/2014/08/07/pot-use-among-colorado-teens-appears-to-drop-after-legalization>

Will adult cannabis use increase after prohibition?

By Matt Simon of the Marijuana Policy Project



Washington's Healthy Youth Survey is taken every two years by students in grades 6, 8, 10, and 12 in almost 1,000 public schools in Washington. More than 200,000 youth took part in the survey in October 2014. Rates of marijuana use did not change at all for high school seniors between 2012 and 2014, and rates of use by 10th and 8th graders appear to have declined.¹⁸

Generally, much probably depends on the effectiveness of educational programs developed following the passage of a legalization and regulation bill. Colorado's initial campaign, called "Don't be a lab rat," was widely criticized as ineffective and insulting to teens' intelligence.¹⁹ A subsequent campaign called "Good to know Colorado" appears to be more thoughtful and evidence-based.²⁰

In Washington state, public education campaigns include "Start talking now"²¹ and "Learn about marijuana."²² Both appear to be dramatic upgrades over the "this is your brain on drugs" approach that characterized anti-marijuana propaganda during the heyday of the War on Drugs era.

18. <http://www.askhys.net/library/2012/StatewideGro8.pdf>

19. <http://dontbealabrat.com/>

20. <http://goodtoknowcolorado.com/>

21. <http://Starttalkingnow.org>

22. <http://learnaboutmarijuanawa.org/>

Understanding our Economic Model

The best way to understand our economic model is that it takes different inputs—fluctuation in prices, yields per pound, tourism estimates—and estimates how they will impact the cannabis economy. Here are the kinds of questions the model was designed to answer:

- How much supply will a large grow operation yield? Home and craft growers?
- What happens to job estimates if market prices drop?
- How many employees will the various categories of licensees need, and what are their wage levels?
- What's the total economic impact on Vermont and the potential tax revenue when factoring tourism?

Here's how to read the model:

Our demand analysis starts by assessing the total potential market for cannabis in Vermont. We begin with the RAND estimates of between 33,000 and 55,000 pounds per year, and add a low/mid/high estimate of an increase between 7.5 and 17.5 percent in overnight tourism.

Using an estimate of \$5,000 per pound on the retail market, the model estimates a range between \$146 and \$292 million in sales.

Under "Licenses," we estimate how many pounds would be produced under various numbers of licenses. For example, in a scenario with 10 licensed large grows, all operating at maximum capacity, we estimate total production of 44,000 from the large grows. We also include estimates here for total yield from extracted cannabis.

The Profit and Loss tab estimates a gross and net profit for both large grows and craft growers, while the employment tab lays out various direct jobs and their estimated wages.

We also look at tourism. Given the RAND report didn't contemplate the impact of tourism to the state, we looked at tourist information estimating a total of 12.8 million trips, of which 43.0% were overnight stays (or approximately 5.5 million overnight visitors).¹

We estimated that overnight visitors would increase by 10.0% to 20.0% after legalization, bringing the total number of tourist to the state

from 5.5 million overnight visitors to between 6 and 6.6 million. To estimate the number of tourist consuming cannabis, we based our assumptions on a 2014 Marijuana Policy Group Study that forecasts an Implied Prevalence Rate of between 7.5% and 17.5%, and an average consumption of a one-eighth to a quarter of an ounce of cannabis for a 3.8 nights stay.³

The tourist market could create an increase in the overall consumption of cannabis for the state of Vermont by 10.0% to 25.0%, bringing the total demand for cannabis to approximately 37,000 pounds to 73,000 pounds.

Supply Capacity

With approximately 37,000 pounds to 73,000 pounds of demand, we then looked at the tiered licensing structure.

Home Grower. We estimate that home cultivation will reduce the overall demand by approximately 7,000 pounds annually. This number is based on the idea that home growers will be able to cultivate six female plants with a potential number of home growers reaching 2,900. However, we also assume that only 50% of the 2,900 home growers will grow the maximum number of plants allowed.

Craft Grower. We estimate that Craft Growers could supply the cannabis market with between 2,900 and 21,000 pounds.

Large Growers. The large grower in our model absorbed the balance between the total demand and the estimated supply capacity between the Home Growers and Craft Growers.

Employment Impact

Given the ramp up in time and the ability to find qualified employees for all of the required positions, we have looked at the overall impact of employment. We estimate that the cannabis industry within Vermont could generate approximately 4,000 jobs statewide, comprising approximately 2,500 direct jobs and 1,500 indirect jobs.

These employment figures are based on the number of licenses issued and the assumed human capital required to fully the demand. The following assumptions are:

Direct Jobs

Large Grow – Each licensed Large Grow will employ on average 34 employees, broken down as follows: 5 Corporate Professionals, 22 grow workers and 7 retail works.

Craft Grower – Each Craft Grow will employ 4 people to assist with the growing, packaging and upkeep of their craft facility.

MIPs – Each MIPs producer will employ 6 individuals to handle the extraction, infused product manufacturing and packaging

Testing Labs – Each testing lab will employ approximately 10 employees, broken down as follows: 5 Corporate Professionals and 5 lab employees.

The Multiplier Effect on Jobs

For a detailed description of the types of jobs a regulated cannabis economy can create in Vermont, we asked the Marijuana Policy Group to provide a detailed breakdown of the jobs picture. Here's what they had to say (thanks to MPG's Adam Orens for this explanation):

The discussion of industry supported employment falls into three categories: direct employment, indirect employment and induced employment. Direct employment in the cannabis industry is defined as employment directly related to the cultivation, production, and sale or testing of cannabis/cannabis products (i.e. any activity that requires a license to perform). The quantification of direct employment requires estimating the number of employees a typical business in each sub-industry (cultivator, producer, retailer-dispensary, testing facility) will support and multiplying it by the number of anticipated licenses. The economic model projects direct employment between 1,500 jobs and 3,300 jobs.

Indirect employment comes from the ancillary businesses providing supplies and services to the cannabis industry. The cannabis industry in Vermont will support employment in numerous sectors, such as construction, legal, technology, security, etc. The standard technique to estimate indirect employment is through the use of economic input-output models, where prepackaged datasets and models (IMPLAN or RIMS are widely-used modeling software) contain detailed information about how one sector of the economy interacts with the others.⁴

1. <http://accd.vermont.gov/sites/accd/files/Documents/travel/vermont-tourism-benchmark-study-2013.pdf>

2. http://www.denverpost.com/business/ci_28368011/2014-record-colorado-tourism

3. <https://www.colorado.gov/pacific/sites/default/files/Market%20Size%20and%20Demand%20>

Study,%20July%209,%202014%5B1%5D.pdf

4. IMPLAN and RIMS are regional input-output economic modeling systems that estimate secondary economic impacts based on user-supplied direct impacts.

Understanding our Economic Model

As the cannabis industry is not incorporated into any existing economic input-output models, MPG took the approach of identifying ancillary industries and estimating the number of ancillary employees the various cannabis businesses would support. This is a simplified methodology that serves as a multiplier effect proxy. A more precise calculation of the multiplier effect would involve heavily surveying cannabis businesses and analyzing the economic flow of each industry in Vermont as it relates to cannabis (using IMPLAN or RIMS industry categorizations). MPG only included ancillary employment that would potentially occur in Vermont, as ancillary employment outside of the defined economic study area is referred to as leakage and not included.

The ratio of indirectly supported employees to directly supported employees represents the indirect effect employment multiplier. Using the proxy based approach, MPG estimated the indirect multiplier effect of the Vermont cannabis industry to be 0.39—for every 100 directly supported cannabis jobs, an additional 39 indirectly jobs are supported by the cannabis industry. As a robustness check of the calculated indirect multiplier effect, MPG reviewed Vermont indirect multipliers from similar industries (retail, agriculture, food manufacturing, etc.) contained in the IMPLAN model. The indirect multiplier effect for these industries is between 0.27 and 0.51.

Induced employment is the amount of supported employment in the economy created from increased spending by direct and indirect employees and firms. For example, employees of a cannabis dispensary will spend a portion of their labor income within the defined economic study area (Vermont) and that expenditure will support additional jobs, in industries such as food and dining, entertainment, retail, etc. As developing an induced employment model specifically for the cannabis industry would be a time and resource intensive task, MPG utilized an average induced multiplier effect from Vermont specific IMPLAN data, limiting to the similar industries mentioned above. The average induced multiplier effect is 0.21—for every 100 directly supported cannabis jobs, 21 induced jobs are additionally supported by the cannabis industry.

The aggregate of direct employment (assigned a multiplier effect of 1.0), indirect employment (0.39) and induced employment (0.21) represents the overall multiplier effect of 1.60. This multiplier effect states that for every 100 directly supported cannabis employees, the industry supports an additional 60 employees through indirect and induced economic channels. This multiplier effect value is consistent with one of VTCC's central messages: the legal cannabis market will have a significant economic impact that permeates throughout the Vermont economy, from local craft growers to attorneys and accounts—cannabis benefits all Vermonters.

1. <http://accd.vermont.gov/sites/accd/files/Documents/travel/vermont-tourism-benchmark-study-2013.pdf>

2. http://www.denverpost.com/business/ci_28368011/2014-record-colorado-tourism

3. <https://www.colorado.gov/pacific/sites/default/files/Market%20Size%20and%20Demand%20>

Study,%20July%209,%202014%5B1%5D.pdf

VTCC Guiding Principles

Strengthen Vermont's economy to benefit all Vermonters: avoid monopoly and concentration of ownership, and support distribution of opportunities and wealth generation across many businesses, communities, and sectors of the economy.

Support bridging from the old underground economy in VT to the new legal economy.

Distinguish Vermont products (quality, reliability, uniqueness, safety, proper labeling) and gain competitive advantage.

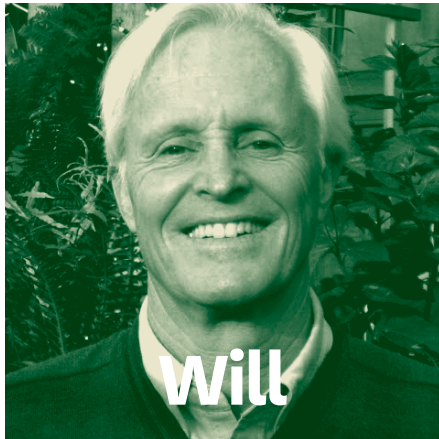
Support the VT working landscape and environmentally sustainable business practices.

Transparency, accountability, and multiple bottom-line goals for enterprises.

Support proper education for all Vermonters in the realm of safety, prevention, and treatment.

Acknowledgements

The Vermont Cannabis Collaborative is led by a 7-person Steering Committee.



Will

Will Raap

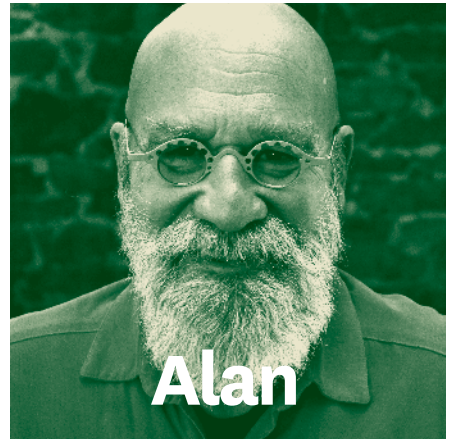
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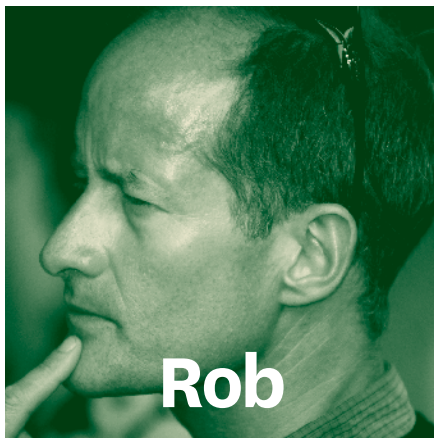
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Michael

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Founder, Chief Creative Officer, Solidarity of Unbridled Labor

Acknowledgements

This report is the product of countless volunteer hours, free advice from smart and knowledgeable people, and a core group of members who stuck with it through intense debate and deliberation. The lead author of the report was Bill Lofy, but this is the work of dozens of contributors. The process leading up to the report's completion was exactly the kind of collaborative, creative endeavor that we hope a new cannabis economy will give life to in the coming years. To the community leaders, entrepreneurs, law enforcement officers, legislators, Colorado experts and health and safety leaders who've contributed to our understanding of this new market and helped guide our conversations: a sincere thank you.

In the summer of 2015, the steering committee, with new voices that had joined the conversation, established four summer study committees to examine cannabis regulation from four perspectives: Industry, Business Development, Financial Services and Health and Safety.

The leaders of these committees were:

- **Industry:**
Judy MacIsaac Robertson and Will Raap
- **Business Development:**
Bill Lofy and Neil Joseph
- **Health and Safety:**
Rob Williams
- **Financial Services:**
Tripp Murray and Ken Merritt

Throughout the course of the summer, our groups met regularly, and developed the recommendations described in this report. In early fall, we held a daylong retreat to summarize our findings and prepare for the writing and release of this report. Along with the steering committee members, many others participated in these conversations and work sessions, and we're grateful for the time and energy they put into steering this dialogue. They include:

Steering Committee:

Hinda Miller
Will Raap
Judy MacIsaac Robertson
Alan Newman
Michael Jager
Rob Williams
Bill Lofy

Legislative Affairs Committee:

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Bill Lofy
Ashley Grant
Will Raap
Brian Leven

Communication/media Committee

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Retreat Attendees:

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Tripp Murray
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Eli Harrington
Leyla Bringas
Julie Lineberger
Enid Wonnacott
Andrew Livingston
Joe Veldon

Business development

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Neil Joseph
Bill Lofy

Youth Education / Prevention

Rob Williams
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Alison Hobart
Rob Williams
Judy MacIsaac Robertson
Annie Galloway
Laura Subin
Joel Miller

Professional Services

Co-Leads: Tripp Murray and Ken Merritt

Through the course of our work, we found out a lot about what cannabis can do for Vermont. Jobs. Knowledge. Agriculture. Technology. Community. We hope this report encourages Vermonters to take part in this important debate. Your voice matters! If you see the same opportunity that we do for Vermont to take a smarter, more effective approach to cannabis regulation, we hope you'll take action. Contact your legislator, send a letter to the editor, organize your communities, and join the conversation. We think cannabis can do great things for Vermont.

For questions about this report or VTCC's work, contact Bill Lofy at bill@lofystrategies.com



Vermont Cannabis Collaborative

Common Sense Commerce

What Cannabis can do for Vermont

vtcannabiscollaborative.org