Committee Report

CONSENT CALENDAR

April 18, 2018

HOUSE OF REPRESENTATIVES

REPORT OF COMMITTEE

The Committee on Health, Human Services and Elderly Affairs to which was referred SB 388,

AN ACT (New Title) relative to dispensary locations for therapeutic cannabis. Having considered the same, report the same with the recommendation that the bill OUGHT TO PASS.

Rep. Jess Edwards

FOR THE COMMITTEE

Original: House Clerk
Cc: Committee Bill File

COMMITTEE REPORT

Committee:	**Health, Human Services and Elderly Affairs**
Bill Number:	**SB 388**
Title:	**(New Title) relative to dispensary locations for therapeutic cannabis.**
Date:	**April 18, 2018**
Consent Calendar:	**CONSENT**
Recommendation:	**OUGHT TO PASS**

STATEMENT OF INTENT

This bill is one of many that have been heard attempting to address the access issue. If passed, this bill would permit the Department of Health and Human Services (DHHS) to investigate the need for up to two additional Alternative Treatment Centers (ATCs). One may operate in Carroll, Coos, or Grafton County, and the other in Cheshire or Sullivan County. Private investors would still need to determine whether the DHHS recommendation is financially viable. If this bill results in more ATCs, it will reduce driving times and allow for transportation within NH without having to cross state lines to access high-speed routes.

Vote 23-0.

Rep. Jess Edwards
FOR THE COMMITTEE

Original: House Clerk
Cc: Committee Bill File

CONSENT CALENDAR

Health, Human Services and Elderly Affairs
SB 388, (New Title) relative to dispensary locations for therapeutic cannabis. **OUGHT TO PASS.**
Rep. Jess Edwards for Health, Human Services and Elderly Affairs. This bill is one of many that have been heard attempting to address the access issue. If passed, this bill would permit the Department of Health and Human Services (DHHS) to investigate the need for up to two additional Alternative Treatment Centers (ATCs). One may operate in Carroll, Coos, or Grafton County, and the other in Cheshire or Sullivan County. Private investors would still need to determine whether the DHHS recommendation is financially viable. If this bill results in more ATCs, it will reduce driving times and allow for transportation within NH without having to cross state lines to access high-speed routes. **Vote 23-0.**

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SB 388 relative to dispensary locations for therapeutic cannabis.

OTP 23-0 Consent Calendar

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Rep. Jess Edwards for the Committee

OK

COMMITTEE REPORT

COMMITTEE: HHS & EA

BILL NUMBER: SB 388

TITLE: relative to dispensary locations for therapeutic cannabis

DATE: 17 APRIL 2018 **CONSENT CALENDAR:** YES ☒ NO ☐

☒ **OUGHT TO PASS**

☐ **OUGHT TO PASS W/ AMENDMENT**

☐ **INEXPEDIENT TO LEGISLATE**

☐ **INTERIM STUDY** (Available only 2nd year of biennium)

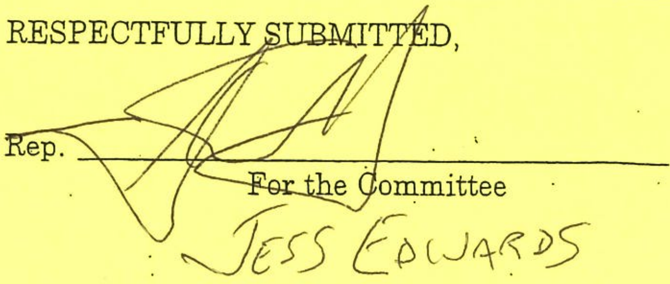
Amendment No. ____________

STATEMENT OF INTENT:

THIS BILL IS ONE OF MANY THAT HAVE BEEN HEARD ATTEMPTING TO ADDRESS THE ACCESS ISSUE. IF PASSED, THIS BILL WOULD PERMIT DHHS TO INVESTIGATE THE NEED FOR UP TO TWO ADDITIONAL ATCs. ~~IN CARROLL, COOS AND/OUR GRAFTON COUNTIES~~ ONE MAY OPERATE IN CARROLL, COOS OR GRAFTON COUNTY AND THE OTHER IN CHESHIRE OR SULLIVAN COUNTIES. PRIVATE INVESTORS WOULD STILL NEED TO DETERMINE WHETHER THE DHHS RECOMMENDATION IS FINANCIALLY VIABLE. IF THIS BILL RESULTS IN MORE ATCs, IT WILL REDUCE DRIVING TIMES AND ALLOW FOR TRANSPORTATION WITHIN NH WITHOUT HAVING TO CROSS STATE LINES TO ACCESS HIGH SPEED ROUTES.

COMMITTEE VOTE: 23-0

RESPECTFULLY SUBMITTED,



Rep. ____________________
For the Committee
JESS EDWARDS

- Copy to Committee Bill File
- Use Another Report for Minority Report

Rev. 02/01/07 - Yellow

Voting Sheets

HOUSE COMMITTEE ON HEALTH, HUMAN SERVICES AND ELDERLY AFFAIRS

EXECUTIVE SESSION on SB 388

BILL TITLE: (New Title) relative to dispensary locations for therapeutic cannabis.

DATE: April 17, 2018

LOB ROOM: 205

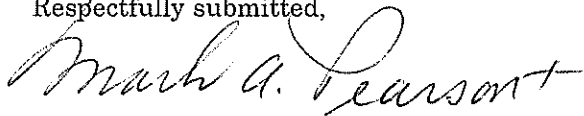
MOTIONS: **OUGHT TO PASS**

Moved by Rep. J. Edwards Seconded by Rep. Weber Vote: 23-0

CONSENT CALENDAR: YES

Statement of Intent: Refer to Committee Report

Respectfully submitted,



Rep Mark Pearson, Clerk

HOUSE COMMITTEE ON HEALTH, HUMAN SERVICES AND ELDERLY AFFAIRS

EXECUTIVE SESSION on SB 388

BILL TITLE: (New Title) relative to dispensary locations for therapeutic cannabis.

DATE: 4-17-18

LOB ROOM: 205

MOTION: (Please check one box)

☑ OTP ☐ ITL ☐ Retain (1st year) ☐ Interim Study (2nd year) ☐ Adoption of Amendment # ________ *(if offered)*

Moved by Rep. Edwards Seconded by Rep. Weber Vote: 23 - 0

MOTION: (Please check one box)

☐ OTP ☐ OTP/A ☐ ITL ☐ Retain (1st year) ☐ Interim Study (2nd year) ☐ Adoption of Amendment # ________ *(if offered)*

Moved by Rep. ________ Seconded by Rep. ________ Vote: ________

MOTION: (Please check one box)

☐ OTP ☐ OTP/A ☐ ITL ☐ Retain (1st year) ☐ Interim Study (2nd year) ☐ Adoption of Amendment # ________ *(if offered)*

Moved by Rep. ________ Seconded by Rep. ________ Vote: ________

MOTION: (Please check one box)

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Moved by Rep. ________ Seconded by Rep. ________ Vote: ________

CONSENT CALENDAR: ✓ YES ____ NO

Minority Report? ____ Yes ✓ No If yes, author, Rep: ________ Motion ________

Respectfully submitted: Mark A. Pearson

Rep Mark Pearson, Clerk

STATE OF NEW HAMPSHIRE
OFFICE OF THE HOUSE CLERK

2018 SESSION

3/14/2018 12:12:24 PM
Roll Call Committee Registers
Report

HHS&EA

Bill #: SB 388 Title: relative to dispensary locations for therapeutic cannabis.

PH Date: 4 / 11 / 18 Exec Session Date: 04 / 17 / 18

Motion: OTP Amendment #: ____________

MEMBER	YEAS	NAYS
Kotowski, Frank R. Chariman	23	
LeBrun, Donald L. Vice Chairman	1	
McMahon, Charles E.	2	
Nelson, Bill G. ~~Clerk~~	3	
Guthrie, Joseph A.	4	
Donovan, Daniel A.	5	
Fothergill, John	6	
Bove, Martin N.	7	
MacKay, Mariellen J.	8	
Edwards, Jess	9	
Fedolfi, Jim	10	
Marsh, William M.	11	
Pearson, Mark Clerk	12	
MacKay, James R.	13	
Freitas, Mary C.	14	
Weber, Lucy M.	15	
Gordon, Pamela S.	16	
Knirk, Jerry	17	
Messmer, Mindi F.	18	
Salloway, Jeffrey C.	19	
Campion, Polly Kent	20	
~~Ayala, Jessica~~ HIGGINS, PATRICIA	21	
Spagnuolo, Philip	22	
TOTAL VOTE:	23	0

Hearing Minutes

HOUSE COMMITTEE ON HEALTH, HUMAN SERVICES AND ELDERLY AFFAIRS

PUBLIC HEARING ON SB 388

BILL TITLE: **(New Title) relative to dispensary locations for therapeutic cannabis.**

DATE: **April 11, 2018**

LOB ROOM: **205** **Time Public Hearing Called to Order:** **11:28 a.m.**

Time Adjourned: **12:25 p.m.**

Committee Members: **Reps. Kotowski, LeBrun, M. Pearson, McMahon, Guthrie, Donovan, Fothergill, M. MacKay, J. Edwards, W. Marsh, J. MacKay, Freitas, Weber, P. Gordon, Knirk, Messmer and Campion**

Bill Sponsors:

Sen. Reagan	**Sen. French**	**Rep. Nelson**
Rep. Knirk	**Rep. LeBrun**	**Rep. Stone**

TESTIMONY

* Use asterisk if written testimony and/or amendments are submitted.

Sen. John Reagan presents his bill.

Michael Holt from DHHS administering their therapeutic cannabis program. This bill is not from DHHS but parallels DHHS' work on this to open up other dispensaries - (greater patient access) actually satellite facilities based on fact-based and proven need. They are to dispense only, not grow cannabis.

Rep. Kotowski - Does this prevent outsiders to come in and bid for these new dispensaries?

Mr. Holt - This bill does not add new operators but expands existing operators.

Rep. Guthrie - Who grows the product?

Mr. Holt - Only the Alternative Treatment Centers (ATC). The organizations already approved to dispense. Growing locations are elsewhere from dispensaries. Three companies; one has two of the four licenses. This one has one cultivation place and two dispensaries.

Rep. J. MacKay - Could people presently having difficulty in getting to a dispensary be helped by "home grown" cannabis bill, making this bill unnecessary?

Mr. Holt - "Home grown" issues are access and price. This bill addresses access only.

Rep. Edwards - How many dispensaries will be on the ground if bill passes?

Mr. Holt - Six store fronts.

Rep. Edwards - What if one or both new dispensaries are not economically viable?

Mr. Holt - No mandate for these two facilities to open. It would allow them to open if they wish, and close if they don't work out.

Rep. Guthrie - Still have questions to where product comes from. Does the bill add more growing facilities?

Mr. Holt - No. Existing cultivation facilities occupy enough space to expand if necessary. Not sure if additional store fronts will increase the number of patients - it's primarily ease of access.

Sen. Jay Kahn - in support of bill. No personal interest in marijuana. I represent needs of people in Cheshire County, 3 of whom called me recently. Closest location to Cheshire County is way up in Lebanon. Some people legally allowed to use medical marijuana but no access then resort to street purchases which could involve bad substances, or buy out of state and bring it home (violating federal law).

Rep. LeBrun - Isn't the intent ultimately to legalize pot?

Sen. Kahn - I wouldn't put my name to it.

Rep. LeBrun - me neither.

Rep. Edwards - Why don't we let free market rule where anyone can open a dispensary anywhere and let the free market rule?

Sen. Kahn - We wish to control medical marijuana tightly.

Rep. Edwards - Do you see a problem with some states allowing medical marijuana and other states not? Federal jurisdiction over it all would be better than a patchwork, no?

Sen. Kahn - NH and others can exercise their states rights.

***Michele Merritt**, New Futures, is opposed. Not philosophically opposed to approved people, but key to our opposition:

- Amendment so there is a real needs assessment before we go further.
- Advertising to increase desires to use the product. Tighten up language (see my testimony) re advertising.

Rep. Edwards - Should legislature regulate where CVS regulates its pharmacies.

Ms. Merritt - A business question not marijuana one.

Rep. Edwards - Free speech questions about advertising.

Ms. Merritt - We have concerns about advertising to youth on a variety of things (alcohol, cigarettes).

***Paul Morrissette** - see written testimony. Concerned with too few dispensaries and controlled by only a few companies.

Rep. Kotowski - Were you one of the original applicants to run a dispensary and were turned down?

Mr. Morrissette - Yes, and I have legal action.

Rep. Guthrie - Is this a billion dollar business?

Mr. Morrissette - It will become so. It is growing - 20,000 patients take existing 5,000 legal medical marijuana users and their purchases and extrapolate to 20,000 patients -- $25 million business.

Philip Poirer, Administrator, Temescal Wellness, which has medical marijuana dispensaries in Lebanon and Dover. It's all about access to patients.

Rep. Kotowski - Are you concerned that the "home grown" bill will cut into your business?

Mr. Poirier - Issues for patients. Not easy to grow.

Rep. Kotowski - Wouldn't home grown really impact your bottom line?

Mr. Poirier - We will not be able to lower price.

Rep. Kotowski - Pushes his question.

Mr. Poirier - Yes.

Rep. Guthrie - This bill is just to add one or two storefronts, so it is just for existing licensed groups?

Mr. Poirer - Yes.

Rep. Edwards - Do you imagine mail order delivery or currier delivered services would work better than store fronts?

Mr. Poirier - Viable in other states but patient has to be home to receive the product. Security/privacy questions.

John Lucey - (Personal statement as to how medical marijuana helped. He's wheel chair bound so very difficult for him to go from Keene to Lebanon.)

***Rep. Larry Laflamme** - see written testimony.

Rep. Edwards - Given staff levels and cost levels, what is the minimal number of patients needed for an ATC to be fiscally viable?

Rep. Laflamme - No idea, but sanctuary ATC dispensary was in favor of having a north country dispensary.

***Dan Stockwell** - Advocating for the bill as a volunteer, qualified NH cannabis caregiver. Only one who can go get medical cannabis for the patient. Lots of hurdles to become such a caregiver. Total cost near $100 for background check. Must give up rights to possess firearms. Numbers of people need caregivers but there are very few available so a Keene dispensary would be very helpful!

Rep. Kotowski - Do you believe accessibility will bring costs down besides saving gas money?

Mr. Stockwell - Yes.

Rick Naya, Executive Director NORM - prime marijuana advocate/activist in the state. It's easy to grow cannabis and has been done for 20,000 years, but medical grade marijuana is more complex/difficult to grow so "home grown" may not be particularly helpful. Dispensaries are having financial issues. Illegal home grown, street/black market all eat into.

Rep. Kotowski - Are you in favor of more outlets?

Mr. Naya - Yes, and more companies.

Respectfully submitted,

Rep. Mark Pearson, Clerk

HOUSE COMMITTEE ON HEALTH, HUMAN SERVICES AND ELDERLY AFFAIRS

PUBLIC HEARING ON SB 388

BILL TITLE: (New Title) relative to dispensary locations for therapeutic cannabis.

DATE: 4-11-18

ROOM: 205 Time Public Hearing Called to Order: 11^28

Time Adjourned: ______

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pg 3 SB 388

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pg 4 #388

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Poirier Yes

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Poirier Yes

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PG 5 #388

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Rick: yes and more companies

SIGN UP SHEET

To Register Opinion If Not Speaking

11:00 am

Bill # SB 388 Date 4-11-18

Committee HHS&EA

**** Please Print All Information ****

Name	Address	Phone	Representing	Pro	Con
Rep Werner D. Horn			Merrimack 2	✓	
Darryl W Perry			Liberty Lobby LLC	X	
Paul Morrissette	3412 Oak Hill Rd Loudon			✓	
Jeanne Hruska	Concord, NH		ACLU-NH	✓	
Rick Naya			NORML	✓	

Testimony

STATEMENT
from
Daniel B. Curll, 3rd
East Alstead, N.H.

before

Health, Human Services, and Elderly Affairs Committee
NH House of Representatives
Room 205, Legislative Office Building
on
Wednesday, April 11th at 11:00 am

concerning

Senate Bill 388, relative to dispensary locations for therapeutic cannabis.

My name is Dan Curll. I have been a full time resident in East Alstead for the last ten years. My ancestors settled across the road from where I now live soon after the American revolution.

Yesterday morning, I fell into a gutter in Walpole when my left leg collapsed under me due to back problems and leg nerve pain. I have been taking increasing amounts of OXYCODONE and OXYCONTIN in the last three years. I have also been trying to find less dangerous alternatives to OXY drugs. My doctors and others have repeatedly recommended marijuana and its cannabinoids. But due to poorly drafted regulations, my efforts to use marijuana based products have not gone well. I am becoming increasingly dependent upon habit forming OXY drugs in my efforts to control my pain and maintain mobility.

Once back safe at home yesterday, I sent my doctors the following email:

"I fell again today but without injury. Since mid March l have been trying to get an appointment with the Cheshire Pain Clinic. I have finally gotten an appointment for two weeks from now. As you know, my leg pain has been increasing, I have increased the OXY drugs to control it and I am quite stressed about the possibility of becoming seriously addicted to these drugs. I am deeply frustrated that I have been unable to make use of marijuana products as many of my doctors have suggested. In short, I am now in a bad space. The plan that I should try pain control next followed by surgery as the next option seems best. I want to implement this quickly!"

New Hampshire legislators are playing a negative role in my attempts to manage my medical challenges by setting up roadblocks to access and to successful use of marijuana. These roadblocks include:

1. An onerous application process for patients seeking to purchase marijuana products. What other medication puts a photo license burden on patients? Should getting a drivers license really be easier?
2. An annual renewal obligation which a sick person may find untimely and challenging.

3. Restrictions on doctors and sales staff at dispensaries that actually prevent them from advising patients on the use of the products being sold. Providing access to a drug but actively keeping secret all dosage, delivery options, side effects, interactions, etc. is inconceivable stupid. Even the most benign over-the- counter product shares more with users. I believe I am not alone among people in first using marijuana for pain control. Guidance should be available!
4. Blocking caregivers from helping mobility impaired patients access to dispensaries unless they also personally have a license.
5. Assignment of patients to a single dispensary thus giving dispensaries monopoly power to set prices, fix store hours, set stock availability etc.

The current limited number of dispensary locations adds yet another roadblock to access to marijuana products.

Although I live in northern Cheshire Country, I have been assigned to the Lebanon dispensary. It is one hour away. It is open only three days a week, never on weekday mornings. I must go in person with no mail order option. This is a facility servicing people with health problems, yet my caregiver cannot help me enter the building. I cannot check on availability in advance by phone.

At issue today is whether a dispensary in Cheshire Country would be helpful to patients using marijuana products. Given the hurdles those in pain face with pain management, improved access to marijuana dispensaries is the least the legislature could do.

I strongly support the approval of a cannabis dispensary in Cheshire Country.

SB388 Public Testimony 4/11/18

Dan Stockwell, PO Box 211,Dublin NH 03444
Email danstockwell.nh@gmail.com

The purpose of my testimony to this committee today is to support SB388 to add new satellite dispensaries, one specifically located in the Cheshire/Sullivan area to better since I am from Dublin which is in the Keene area. NH Therapeutic Cannabis Program patients of the SW corner of our New Hampshire would greatly benefit from this and it is a critical need.

I am a qualified NH Cannabis Caregiver in the NH Therapeutic Cannabis program. I am also an active member of Americans for Safe Access, the DC based national non-profit organization that advocates for federal legislation that promotes for safe legal access to cannabis for therapeutic and research purposes.

At this point in time in NH, there are a range of obstacles to safe, affordable, legal access to medical cannabis for those who need it most. Hopefully it is easy to understand this from a patient point of view. But the impact is greater than just the patient, which no doubt is our chief concern, but the reality is whether it is a physical, financial, or a distance issue, many cannabis patients would be not be able to access their medicine without the assistance of a qualified caregiver.

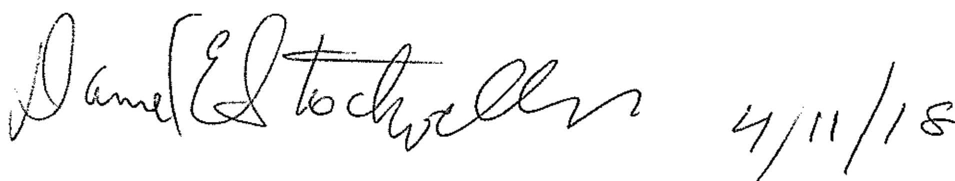
For a patient it is not necessarily easy to find a designated caregiver who is trusted, able to provide the service for free as a volunteer, willing to pass and pay for a criminal background check, etc.

In my present caregiver situation, the circumstances of my first patient happened to be that his designated dispensary is on the other side of him from me in Dover. So to access the dispensary for him I would go to Dover and come back to him that's two hours to get to the dispensary then back to him, still then I have an hour ride home.

The closest dispensary to me right now, if I were to have patients in the area, would be the Prime ATC location in Merrimack. Which if this were my current patient's dispensary it would be better for me because it is as the bird flies to see him and would cut my trip by one hour.

Again bear in mind all my work is volunteer including my being here today speaking to you. I am not a qualified NH medical cannabis patient, but I am one of the very few people qualified to help these people get their cannabis medicine and it is not easy. By adding the satellite dispensaries you will not only provide relief to the patients that the NH Therapeutic Cannabis Program serves, but also critical relief to the family, friends, relatives, and area services that the patient is fortunate to have advocating and helping them access their cannabis medicine.

Thank You, Daniel Elwood Stockwell Jr.



April 10, 2018

SENATE BILL 388

NEED FOR MEDICAL MARIJUANA DISPENSARY-CHESHIRE COUNTY

My name is Jacqueline Eno and I live in North Swanzey. I am a medical marijuana patient in the state of New Hampshire, and the closest dispensary to me is in Lebanon. Lebanon is an hour and fifteen minute drive from North Swanzey. Having to travel this distance for medicine has created an unnecessary hardship as it is difficult for me to travel long distances with my health issues.

I am disabled and have several conditions which prevent me from having a good quality of life. That makes medical marijuana extremely important to me. After finding a large pelvic abscess, I spent nearly the entire summer of 2015 in Dartmouth Hitchcock's Lebanon undergoing three major surgeries which left me with a colostomy and other woman's pelvic issues. In the spring of 2016 I had unsuccessful reversal surgery leaving me with a permanent colostomy and many complications ranging from chronic nausea to severe pelvic inflammation, pain and insomnia. As adverse as these conditions are to my life, the State of New Hampshire issued me a medical marijuana card for my glaucoma and high intraocular pressure.

I had to take an exorbitant amount of opioids during 2015 and 2016. I am extremely thankful that they did not get their grip on me like they do so many others. Having had to be on them for such a duration, I wonder why I did not become addicted. However, I can honestly testify that the pain relieving benefits of the cannabis seem greater to me than opioids did without making me feel incoherent. A typical day for me is full of challenges, and I am happy just to be able to help my ten year old daughter with school work, or fold a simple basket of laundry. Thankfully I have a wonderful husband who takes excellent care of me and helps me tremendously.

establishing advertising restrictions within Department's rulemaking authority. The Department currently has similar language in its rules and New Futures recommends that language is also included in the statute.

> Amend RSA 126-X:6 Departmental Rules, III, (12) -Advertising restrictions, including a prohibition ***on advertising for the purpose of inducing, or which are likely to induce, directly or indirectly, the purchase of cannabis or cannabis infused products***, misrepresentation and unfair practices.

Thank you for your consideration of these suggested changes to SB 388. Please contact me if you have any questions.

Sincerely,

Kathryn (Kate) Frey
Vice President of Advocay

Sanctuary ATC

October 12 at 11:57am

Another new strain and another new week! Alien Rift is back on our shelves after a hearty and full grow cycle. We also have restocked Durban Poison and Gorilla Bomb. Lastly, we now have Purple Trainwreck in .4g and .8g prerolls. Come on in to see which therapeutic cannabis option best alleviates your pain and helps you feel YOU again!

Sanctuary ATC

October 19 at 1:37pm

Lots of changes and new items have taken over at Sanctuary ATC! We are excited to announce our very own strain Banana Bread Hybrid #14 is now available for all of our patients. This is a well balanced hybrid created from Gorilla Bomb crossed with Cornbread. We also have Gorilla Bomb #2, a different phenotype from Gorilla Bomb #3, now available.

Lastly, we have restocked on our mints, cookies, PB Cups, and we now have 5 different flavors of fruit chews; Tropical Punch, Watermelon, Green Apple, Sour Lime, and Sour Grape.

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U.S. cannabis legalization and use of vaping and edible products among youth

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ABSTRACT

Background: Alternative methods for consuming cannabis (e.g., vaping and edibles) have become more popular in the wake of U.S. cannabis legalization. Specific provisions of legal cannabis laws (LCL) (e.g., dispensary regulations) may impact the likelihood that youth will use alternative methods and the age at which they first try the method – potentially magnifying or mitigating the developmental harms of cannabis use.
Methods: This study examined associations between LCL provisions and how youth consume cannabis. An online cannabis use survey was distributed using Facebook advertising, and data were collected from 2630 cannabis-using youth (ages 14–18). U.S. states were coded for LCL status and various LCL provisions. Regression analyses tested associations among lifetime use and age of onset of cannabis vaping and edibles and LCL provisions.
Results: Longer LCL duration (OR_{vaping}: 2.82, 95% CI: 2.24, 3.55; $OR_{edibles}$: 3.82, 95% CI: 2.96, 4.94), and higher dispensary density (OR_{vaping}: 2.68, 95% CI: 2.12, 3.38; $OR_{edibles}$: 3.31, 95% CI: 2.56, 4.26), were related to higher likelihood of trying vaping and edibles. Permitting home cultivation was related to higher likelihood (OR: 1.93, 95% CI: 1.50, 2.48) and younger age of onset (β: −0.30, 95% CI: −0.45, −0.15) of edibles.
Conclusion: Specific provisions of LCL appear to impact the likelihood, and age at which, youth use alternative methods to consume cannabis. These methods may carry differential risks for initiation and escalation of cannabis use. Understanding associations between LCL provisions and methods of administration can inform the design of effective cannabis regulatory strategies.

1. Introduction

Cannabis legalization is evolving rapidly in the United States. This has prompted a need to study how legal cannabis laws (LCL) such as medical cannabis laws (MCL) or recreational cannabis laws (RCL) may impact cannabis use patterns. Understanding how such laws affect youth is crucial because of this group's vulnerability to the adverse effects of cannabis. Chronic cannabis use during adolescence has been associated with impaired brain development, educational achievement, and psychosocial functioning (Hall and Degenhardt, 2015; Rigucci et al., 2016; Volkow et al., 2014), and early initiation of cannabis use elevates the risk of developing a cannabis use disorder (DeWit et al., 2000; Swift et al., 2008).

Cannabis legalization promotes the creation and proliferation of alternative cannabis use products such as edibles and vaping devices (Hopfer, 2014; Hunt and Miles, 2015; Subritzky et al., 2015). Access to such products may alter how cannabis is consumed by the close to two million adolescents and seven million young adults currently using cannabis (Center for Behavioral Health Statistics and Quality, 2015), and may impact age of onset of cannabis use. Edible products such as cannabis-infused baked goods, drinks, and candy, have become increasingly popular but are often inaccurately labeled and deliver variable doses of cannabis' primary psychoactive constituent, tetrahydrocannabinol (THC) (Subritzky et al., 2015; Vandrey et al., 2015). Most of the edible cannabis products currently marketed lack empirically-based safety standards and packaging regulations (Benjamin and Fossler, 2016; Cao et al., 2016; Subritzky et al., 2015), and products continue to be marketed in ways that are attractive to youth (MacCoun and Mello, 2015). Some LCL states have taken measures to limit products' attractiveness to youth and require child-resistant packaging (Marijuana Enforcement Division, 2017) in response to the sharp increase in edible cannabis overdoses among youth (Wang et al., 2016).

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Table 1
U.S. States with Medical or Recreational Cannabis Laws (May 2016).

State	Has MCL	MCL duration (years)	Has RCL	Permit home cultivation	Permit dispensary	# de jure operating dispensaries	U.S. Census Population (2015)	Dispensary per 100,000 people
AK	Yes	18	Yes	Yes	No	0	738,432	0.00
AZ	Yes	6	No	Yes	Yes	93	6,828,065	1.36
CA	Yes	20	No	Yes	Yes	1000–2000[a]	39,144,818	2.55–5.11
CO	Yes	16	Yes	Yes	Yes	949	5,456,574	17.39
CT	Yes	4	No	No	Yes	6	3,590,886	0.17
DC	Yes	6	Yes	Yes	Yes	5	945,934	0.53
DE	Yes	5	No	No	Yes	1	672,228	0.15
HI	Yes	16	No	Yes	Yes	0	1,431,603	0.00
IL	Yes	3	No	No	Yes	36	12,859,995	0.28
ME	Yes	17	No	Yes	Yes	8	1,329,328	0.60
MD	Yes	2	No	No	Yes	0	6,006,401	0.00
MA	Yes	4	No	Yes	Yes	6	6,794,422	0.09
MI	Yes	8	No	Yes	No	0	9,922,576	0.00
MN	Yes	2	No	No	Yes	3	5,489,594	0.05
MT	Yes	12	No	Yes	No	0	1,032,949	0.00
NV	Yes	16	No	Yes	Yes	26	2,890,845	0.90
NH	Yes	3	No	No	Yes	0	1,330,608	0.00
NJ	Yes	6	No	No	Yes	6	8,958,013	0.07
NM	Yes	9	No	Yes	Yes	23	2,085,109	1.10
NY	Yes	2	No	No	Yes	17	19,795,791	0.09
OR	Yes	18	Yes	Yes	Yes	423	4,028,977	10.50
PA	Yes	0.1	No	No	Yes	0	12,802,503	0.00
RI	Yes	10	No	Yes	Yes	3	1,056,298	0.28
VT	Yes	12	No	Yes	Yes	4	626,042	0.64
WA	Yes	18	Yes	Yes	Yes	237	7,170,351	3.31

MCL = Medical Cannabis Law, RCL = Recreational Cannabis Law.
[a] Range of estimates based on combination of multiple sources.

Despite these critical issues, few data are available documenting patterns of use of cannabis edibles among youth.

E-cigarettes and other vaping devices are becoming increasingly popular among middle and high school aged youth in the United States (Anand et al., 2015; Krishnan-Sarin et al., 2015; Singh et al., 2016). These devices heat liquid or solid preparations of substances to allow a user to inhale the psychoactive compounds (e.g., nicotine, THC) from these substances in non-combusted forms. Vaping can significantly reduce carcinogenic toxins consumed when inhaling combustible cannabis and tobacco smoke (Polosa, 2015; Van Dam and Earleywine, 2010) and youth do perceive e-cigarettes to be healthier and less risky than traditional combustible cigarettes (Camenga et al., 2015; Kong et al., 2015). Cannabis vaping has received limited study but also appears to be on the rise among adolescents and young adults (Jones et al., 2016; Morean et al., 2015). Among e-cigarette users, cannabis vaping occurs more often in populations of high school aged youth than adults (Morean et al., 2015). Recent data suggest that adolescents who vape cannabis most often use highly potent cannabis oil, wax, or liquid preparations (Morean et al., 2015). How the use of these high-potency products impacts neurodevelopment is unknown, but of pressing concern as it may place youth at risk for psychosis (Di Forti et al., 2014) and cannabis use disorders (Freeman and Winstock, 2015). Moreover, vaping has the potential to contribute to increased rates of cannabis uptake, lower age of cannabis use onset (Budney et al., 2015), and increased public cannabis use (Giroud et al., 2015; Jones et al., 2016; Morean et al., 2015), all of which may prompt more frequent and perhaps larger quantities of cannabis use (Budney et al., 2015; Fischer et al., 2015). To date, however, few data exist on the use of vaping devices for cannabis consumption among youth despite these potential risks.

States have passed unique LCL each with different combinations of legal provisions (Hunt and Miles, 2015) – creating a heterogeneous landscape of cannabis regulatory models across the U.S. (Bestrashniy and Winters, 2015; Pacula et al., 2014a). Some states only allow medicinal cannabis use while other states allow both medicinal and recreational cannabis use. Within these two regulatory frameworks, access and distribution mechanisms vary dramatically. Some states permit for-profit cannabis dispensaries or home cultivation (HC) of cannabis while other states do not. Limits on personal possession amounts range from 1 to 24 ounces or are ambiguously defined as a "30-day" or "60-day" supply. In some states, cannabis can only be vaporized or used in edible form (not smoked). Equivocal results in the literature concerning the effect of cannabis legalization on public health are likely a product of poor accounting for this diversity among LCLs (Pacula et al., 2015; Sevigny et al., 2014). Each LCL provision has the potential to affect patterns and consequences of use, and interaction among LCL provisions may yield additive, synergistic, or counter effects.

In a previous study, we used Facebook sampling methods to demonstrate strong cross-sectional relations between the presence of LCL provisions and increased likelihood of vaping and edible use among adults (Borodovsky et al., 2016). Specifically, we found that adults from states with (1) higher numbers of cannabis dispensaries per person and (2) longer durations of having an MCL in place were significantly more likely to have tried vaping cannabis and cannabis edibles. Age of onset of vaping and edibles use was not related to these LCL provisions. In the present study, we used this same valid and reliable sampling method (Ramo et al., 2012) to examine these same associations in a youth sample and explore the impact of two additional LCL provisions (home cultivation and recreational legalization) on vaping and edible use. We hypothesized that longer durations of having an MCL in place, a greater number of dispensaries per 100,000 people, the presence of a recreational cannabis law, and the presence of a home cultivation provision would be associated with higher likelihood of lifetime use and younger age of onset of cannabis vaping and edibles.

2. Methods

2.1. Survey

An anonymous online survey hosted by Qualtrics collected information on demographics (including state residence) and cannabis

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Table 2
Participant characteristics (n = 2630).

	Overall Sample	Legal Cannabis Law (LCL) Status	
		Non-LCL States (n = 1178)	LCL States (n = 1452)
Age, m (SD)	16.36 (1.09)	16.35 (1.12)	16.37 (1.06)
Gender			
Male, n (%)	1201 (45.7)	523 (44.4)	678 (46.7)
Female, n (%)	1337 (50.8)	616 (52.3)	721 (49.7)
Trans, n (%)	49 (1.9)	20 (1.7)	29 (2.0)
Other, n (%)	43 (1.6)	19 (1.6)	24 (1.7)
Race and Ethnicity			
Caucasian, n (%)	2067 (78.6)	935 (79.4)	1132 (78.0)
African American, n (%)	89 (3.4)	47 (4.0)	42 (2.9)
Hispanic, n (%)	355 (13.5)	151 (12.8)	204 (14.1)
Other, n (%)	119 (4.5)	45 (3.8)	74 (5.1)
Level of Education[a]			
6th grade, n (%)	4 (0.2)	2 (0.2)	2 (0.1)
7th grade, n (%)	35 (1.3)	18 (1.5)	17 (1.2)
8th grade, n (%)	257 (9.8)	120 (10.2)	137 (9.4)
9th grade, n (%)	542 (20.6)	261 (22.2)	281 (19.4)
10th grade, n (%)	738 (28.1)	293 (24.9)	445 (30.7)
11th grade, n (%)	657 (25.0)	300 (25.5)	357 (24.6)
12th grade, n (%)	279 (10.6)	135 (11.5)	144 (9.9)
Started college, n (%)	118 (4.5)	49 (4.2)	69 (4.8)
Lifetime days cannabis use[a]			
Once, n (%)	60 (2.3)	36 (3.1)	24 (1.7)
2–5 days, n (%)	179 (6.8)	81 (6.9)	98 (6.8)
6–10 days, n (%)	139 (5.3)	66 (5.6)	73 (5.0)
11–30 days, n (%)	268 (10.2)	106 (9.0)	162 (11.2)
31–100 days, n (%)	337 (12.8)	131 (11.1)	206 (14.2)
101–365 days, n (%)	572 (21.8)	256 (21.7)	316 (21.8)
> 365 days, n (%)	1075 (40.9)	502 (42.6)	573 (39.5)
Age first use cannabis, m (SD)[a]	13.71 (1.83)	13.57 (1.98)	13.83 (1.70)
Past month use, n (% yes)	2185 (83.1)	968 (82.7)	1217 (84.2)
Days used in past month, m (SD)[b]	16.7 (11.1)	17.0 (11.1)	16.4 (11.2)

Chi-squared and *T*-Tests used to calculate p values.
[a] Analysis of differences for this variable comparing Non-LCL states vs. LCL states was significant ($p < 0.05$).
[b] Among those who had used in the past month.

use. Cannabis use items focused on lifetime use, current use, and age of onset of both cannabis use in general and of different methods of cannabis administration (smoking, vaping, and eating). Qualtrics data quality functions prevented multiple responses from a single individual and ensured that responses came from people and not internet bots. The survey required all items to be answered, and no compensation was provided. The study was approved by the Dartmouth Committee for the Protection of Human Subjects.

2.2. Recruitment and consent

The survey URL link was administered via Facebook advertising methods (Ramo et al., 2014). To target cannabis using youth, advertisements with cannabis-related imagery were sent to the screens of youth ages 14–18 who had endorsed cannabis-related interests on their Facebook profile. Examples of these interests included cannabis-related organizations (e.g., Marijuana Policy Project), magazines (e.g., High Times Magazine), music (e.g., Pink Floyd), and notable individuals (e.g., Tommy Chong). Advertisements were distributed from April 29th, 2016 to May 18th, 2016 and shown to 126,945 individuals. Of these individuals, 5480 (4.3%) clicked the advertisement and were redirected to the survey's informed consent/assent page. Among those, 33 (0.6%) did not consent, and 210 (3.8%) were not within the targeted age. Of those who started the survey, 3035 (58.0%) completed it and passed data quality checks. Of these, 405 (13.3%) had never used cannabis and were excluded from the present analyses, resulting in a final sample size of n = 2630. Among those who initiated the survey, comparisons between those who did and did not complete the survey revealed no significant differences in age, race, education, lifetime days of cannabis use, likelihood of lifetime vaping or edible use, and age of onset of vaping. Those who completed were more likely to be female (53% vs. 46%, $p < 0.05$) and had a slightly older age of onset of edibles (14.9 years vs. 14.6 years, $p < 0.05$) than those who did not. Parental consent was waived because youth were surveyed anonymously. The consent page explained that anyone between the ages of 14 and 18 inclusive could take our anonymous survey. It also explained that researchers at the Geisel School of Medicine at Dartmouth were conducting the survey and stressed the importance of being cautious about providing personal information on the internet. Finally, the consent explained that our research group was not encouraging cannabis use and youth should consider first discussing the survey with a parent before taking it.

2.3. Primary outcome variables

A survey item asked, "What ways have you used marijuana? (check all that apply)" and listed three response options: (1) Smoking, (2) Vaporizing (3) Eating. Examples of each method of administration were included next to each response option. Those who reported lifetime vaping or edible use were asked how old they were when they tried the method for the first time.

2.4. LCL provision classifications (primary independent variables)

Multiple sources were reviewed to classify all 50 U.S. States and Washington D.C. as having specific LCL provisions (or not). Sources included peer-reviewed papers (Pacula et al., 2015), state government and cannabis legislation-related websites (ProCon.org, 2016), and communications with state government officials involved in administration and coordination of medical and recreational cannabis programs. States were classified by: (1) LCL status (yes/no) (2) LCL status duration (0–5 years, 6–10 years, > 10 years) (3) permitting dispensaries (yes/no) and density of dispensaries (< 1dispensary per 100,000 people, ≥1dispensary per 100,000 people) (U.S. Census Bureau Population Division, 2016) (4) recreational cannabis law (RCL) or medical cannabis law-only (MCL-only) and (5) home cultivation (HC) status (yes/no) (Table 1). Non-LCL states were defined as states with no current MCL or RCL. Ohio, North Dakota, Florida, and Arkansas were categorized as Non-LCL states because data were collected before LCL were enacted in these states (Table 1).

2.5. Analytical approach

Our aim was to examine the relation between LCL provision variables described above and vaping and edible use. First, descriptive statistics of the sample were calculated (Table 2). Then unadjusted bivariate analyses were performed using *t*-tests, ANOVAs, and chi-squared analyses to test for differences in the prevalence and onset of use of a method of administration between LCL provisions (Table 3). Subsequent multiple logistic and linear regression analyses further examined these associations (Tables 4 and 5). To account for demographic differences across states and cannabis user heterogeneity, analyses adjusted for sociodemographic covariates (age, gender, race, grade level), lifetime days of cannabis use, and age of onset of any cannabis use. LCL provision variables were dummy coded, and analyses were performed first using Non-LCL states as the reference group, and then, among only LCL states, using the "lowest level" category of each provision variable as the reference group (e.g., comparing LCL states that prohibit home cultivation (reference) to LCL states that permit home cultivation). Analyses were conducted using Stata® version 14 (StataCorp, 2015).

Table 3
Comparisons of method of administration outcomes within each legal cannabis law (LCL) provision variable.

LCL provision variables	% with lifetime vaping	% with lifetime edible use	Age onset vaping mean (sd)[a]	Age onset edible mean (sd)[a]	# states per category[b]
LCL Status					
No LCL	35.6	52.0	15.34 (1.70)	14.88 (1.73)	26
LCL	50.8	67.8	15.31 (1.38)	14.92 (1.60)	25
Duration of LCL					
No LCL	35.6	52.0	15.34 (1.70)	14.88 (1.73)	26
0–5 years	48.1	60.7	15.37 (1.34)	15.27 (1.42)	9
6–10 years	45.4	64.7	15.16 (1.70)	14.90 (1.80)	6
> 10 years	56.5	77.7	15.31 (1.30)	14.60 (1.61)	10
Dispensary (per 100 k people)					
No LCL	35.6	52.0	15.34 (1.70)	14.88 (1.73)	26
LCL: prohibit dispensaries	46.7	74.1	15.38 (1.07)	14.77 (1.80)	3
< 1	49.0	62.0	15.34 (1.41)	15.16 (1.54)	16
≥1	54.4	74.8	15.26 (1.42)	14.66 (1.57)	6
MCL-Only vs. RCL Status[c]					
No LCL	35.6	52.0	15.34 (1.70)	14.88 (1.73)	26
MCL-Only	49.3	66.2	15.33 (1.40)	14.97 (1.63)	20
RCL	57.4	75.2	15.24 (1.31)	14.73 (1.43)	5
Home cultivation (HC)					
No LCL	35.6	52.0	15.34 (1.70)	14.88 (1.73)	26
LCL: prohibits HC	48.4	60.2	15.33 (1.47)	15.25 (1.54)	9
LCL: permits HC	52.5	73.3	15.30 (1.33)	14.72 (1.60)	16

Bold numbers = significant difference ($p < 0.05$) in outcome (e.g., % with lifetime vaping) when compared across categories of an LCL provision variable (e.g., No LCL vs. LCL that prohibits HC vs. LCL that permits HC).
Chi-squared tests used for % with lifetime method use analyses, T-tests and ANOVA used for age onset analyses.
[a] Among lifetime users of that method.
[b] Washington DC counted as a state.
[c] MCL = Medical cannabis law, RCL = Recreational cannabis law.

3. Results

3.1. Sample description

Table 2 displays overall characteristics of the sample and characteristic comparisons between Non-LCL vs. LCL states. The mean age of the entire sample was 16.36 years (SD = 1.09), and approximately 46% were male. Minorities were somewhat underrepresented (approx. 3% African-American, and 14% Hispanic). Approximately 84% were between 9th and 12th grade. Participants from LCL and Non-LCL differed significantly across current education level, lifetime days of cannabis use, and age of cannabis use onset (Table 2). A comparison with 2015 United States Census data indicated that the proportion of study participants from each state corresponded closely to the proportion of the total U.S. population represented in each state (Pearson's $r = 0.82$, $p < 0.0001$) (U.S. Census Bureau Population Division, 2016). Compared to a sample of lifetime cannabis-using youth (ages 14–18) from the 2014 National Survey on Drug Use and Health (NSDUH), our sample contained a higher proportion of past-month users (12.4% vs. 83.1% respectively) who had on average used more frequently in the past month (11.2 days (SD = 13.5) vs. 16.7 days (SD = 11.1) respectively) (Center for Behavioral Health Statistics and Quality, 2014).

3.2. Unadjusted bivariate analyses

3.2.1. Lifetime use of vaping and edibles

Lifetime prevalence of cannabis vaping and edible use was approximately 15 percentage points greater among youth in LCL states than youth in Non-LCL states (Table 3). Across LCL duration categories, the prevalence of lifetime vaping and edible use ranged from 35.6% to 56.5% ($p < 0.001$) and 52.0% to 77.7%, ($p < 0.001$) respectively. Across dispensary density categories the prevalence of lifetime vaping and edible use ranged from 35.6% to 54.4% ($p < 0.001$) and 52.0% to 74.8% ($p < 0.001$) respectively. Across types of law (Non-LCL, MCL-only, RCL) the lifetime prevalence of vaping and edible use ranged from 35.6% to 57.4% ($p < 0.001$) and 52.0% to 75.2% ($p < 0.001$) respectively. Across HC status categories the prevalence of lifetime vaping and edible use ranged from 35.6% to 52.5% ($p < 0.001$) and 52.0% to 73.3% ($p < 0.001$) respectively (Table 3).

3.2.2. Age onset of vaping and edible use

The age of onset of vaping did not differ across any LCL provision variables. Age of onset of edible use ranged from 14.6 to 15.3 years across LCL duration categories ($p < 0.001$), 14.7 to 15.2 years across dispensary density categories ($p < 0.001$), and 14.7 to 15.3 years across HC status categories ($p < 0.001$) (Table 3).

3.3. Multivariable logistic and linear regression analyses

3.3.1. Lifetime use of vaping and edibles

3.3.1.1. LCL vs. non-LCL and LCL duration

Youth in LCL states were over twice as likely to have tried vaping (OR: 2.14, 95% CI: 1.80, 2.55) and edibles (OR: 2.24, 95% CI: 1.88, 2.68) than youth in Non-LCL states. Youth from each LCL duration category were more likely to have tried vaping and edibles than youth from Non-LCL states (see Table 4 for odds ratios). Compared to youth from the shortest LCL duration category (0–5 years), youth from states with the longest LCL duration (> 10 years) were more likely to have tried vaping (OR: 1.52, 95% CI: 1.18, 1.96) and over twice as likely to have tried edibles (OR: 2.48, 95% CI: 1.86, 3.31) (Table 4).

3.3.1.2. Dispensary density

Youth from each dispensary density category were up to twice as likely to have tried vaping and up to three times more likely to have tried edibles than youth from Non-LCL states (see Table 4 for odds ratios). However, the odds ratios showed a linear increase across dispensary density categories (prohibited to < 1 to ≥1) in the vaping model but were "U-shaped" in the edible model (i.e., states that prohibit dispensaries and states with ≥1 dispensary per 100,000 people, had similarly elevated odds ratios). Compared to youth from LCL states that

Table 4
Adjusted logistic regressions: likelihood of lifetime use of alternate method of administration (vaping and edibles) across legal cannabis law (LCL) provisions[a].

	Ever Vaped Cannabis	Ever Used Cannabis Edibles
	OR (95% CI)	OR (95% CI)
LCL Status		
No LCL	ref	ref
LCL	**2.14 (1.80, 2.55)**	**2.24 (1.88, 2.68)**
Duration of LCL		
No LCL	ref	ref
0–5 years	**1.91 (1.54, 2.37)**	**1.63 (1.32, 2.03)**
6–10 years	**1.61 (1.19, 2.17)**	**1.88 (1.38, 2.57)**
> 10 years	**2.82 (2.24, 3.55)**	**3.82 (2.96, 4.94)**
Duration of LCL		
0–5 years	ref	ref
6–10 years	0.84 (0.61, 1.17)	1.21 (0.86, 1.70)
> 10 years	**1.52 (1.18, 1.96)**	**2.48 (1.86, 3.31)**
Dispensary (per 100k people)		
No LCL	ref	ref
LCL: prohibit dispensaries	**1.59 (1.08, 2.35)**	**3.15 (2.03, 4.88)**
< 1	**1.96 (1.60, 2.40)**	**1.69 (1.38, 2.07)**
≥1	**2.68 (2.12, 3.38)**	**3.31 (2.56, 4.26)**
Dispensary (per 100k people)		
LCL: prohibit dispensaries	ref	ref
< 1	1.24 (0.83, 1.85)	**0.53 (0.33, 0.83)**
≥1	**1.76 (1.15, 2.69)**	1.11 (0.69, 1.80)
MCL-Only vs. RCL Status[b]		
No LCL	ref	ref
MCL-Only	**1.98 (1.65, 2.38)**	**2.05 (1.70, 2.46)**
RCL	**3.13 (2.30, 4.24)**	**3.57 (2.55, 5.01)**
MCL-Only vs. RCL Status		
MCL-Only	ref	ref
RCL	**1.59 (1.17, 2.15)**	**1.78 (1.26, 2.51)**
Home cultivation (HC)		
No LCL	ref	ref
LCL: prohibits HC	**1.95 (1.56, 2.43)**	**1.60 (1.28, 2.00)**
LCL: permits HC	**2.30 (1.88, 2.81)**	**2.95 (2.38, 3.64)**
Home cultivation (HC)		
LCL: prohibits HC	ref	ref
LCL: permits HC	1.20 (0.95, 1.52)	**1.93 (1.50, 2.48)**

Bolded odds ratios = statistical significance ($p < 0.05$).

[a] All models adjusted for age, race, gender, education, age onset of cannabis use, and lifetime days of cannabis use.

[b] MCL = Medical cannabis law, RCL = Recreational cannabis law.

prohibit dispensaries, youth from LCL states with the highest dispensary density were more likely to have tried vaping (OR: 1.76, 95% CI: 1.15, 2.69) while youth from lower dispensary density LCL states were half as likely to have tried edibles (OR: 0.53, 95% CI: 0.33, 0.83) (Table 4).

3.3.1.3. Medical-only and recreational laws

Youth from MCL-only states were significantly more likely to have tried vaping and edibles than youth from Non-LCL states (OR_{vaping}: 1.98, 95% CI: 1.65, 2.38; $OR_{edibles}$: 2.05, 95% CI: 1.70, 2.46) as were youth from RCL states (OR_{vaping}: 3.13, 95% CI: 2.30, 4.24; $OR_{edibles}$: 3.57, 95% CI: 2.55, 5.01). Youth from RCL states were significantly more likely to have tried vaping (OR: 1.59, 95% CI: 1.17, 2.15) and edibles (OR: 1.78, 95% CI: 1.26, 2.51) than youth from MCL-only states (Table 4).

3.3.1.4. LCL home cultivation status

Compared to youth from Non-LCL states, youth from LCL states that prohibit home cultivation (OR_{vaping}: 1.95, 95% CI: 1.56, 2.43; $OR_{edibles}$: 1.60, 95% CI: 1.28, 2.00) and from LCL states that permit home cultivation (OR_{vaping}: 2.30, 95% CI: 1.88, 2.81; $OR_{edibles}$: 2.95, 95% CI: 2.38, 3.64, respectively) were more likely to have tried vaping and edibles. Youth from LCL states that permit home cultivation were approximately twice as likely to have tried edibles (but not vaping) than youth from LCLs that prohibit home cultivation (Table 4).

3.3.2. Age of onset of vaping and edible use

3.3.2.1. LCL vs. non-LCL and LCL duration

Youth from LCL states began vaping 1.7 months earlier (15.27 years vs. 15.41 years, $p < 0.05$) and began using edibles 2.3 months earlier (14.83 years vs. 15.02 years, $p < 0.01$) than youth from Non-LCL states. Youth from states in the ≥10 years LCL duration category began using edibles approximately five months earlier than youth from Non-LCL states (14.60 years vs. 15.02, $p < 0.001$) and youth from states in the 0–5 year category (14.60 years vs. 15.02 years, $p < 0.001$) (Table 5).

3.3.2.2. Dispensary density

Youth from high dispensary density LCL states began vaping 2.2 months earlier (15.23 years vs. 15.41 years, $p < 0.05$) and began using edibles 4.2 months earlier (14.67 years vs. 15.02 years, $p < 0.001$) than youth from Non-LCL states (Table 5).

3.3.2.3. Medical-only and recreational

Youth from MCL-only states began using edibles 2.1 months earlier than youth from Non-LCL states (14.85 years vs. 15.02 years, $p < 0.01$). Youth from RCL states began using edibles 3.1 months earlier than youth from Non-LCL states (14.76 years vs. 15.02 years, $p < 0.01$) (Table 5).

3.3.2.4. LCL home cultivation status

Youth from LCL states that permit HC began using edibles 3.7 months earlier than Non-LCL state youth (14.71 years vs. 15.02 years, $p < 0.001$) and 3.6 months earlier than youth from LCL states that prohibit HC (14.71 years vs. 15.01 years, $p < 0.001$) (Table 5).

4. Discussion

This study examined relations among specific provisions of LCL and cannabis vaping and use of edibles in youth ages 14–18. Consistent with our previous study of adult cannabis users recruited via Facebook, the present analyses indicated that longer LCL duration and higher dispensary density were related to a higher likelihood of lifetime vaping and edible use. The current study extended those findings by showing that provisions for recreational cannabis use and for permitting home cultivation were also related to a higher likelihood of lifetime vaping and edible use. Some of these increased likelihoods were substantial. For example, living in a high dispensary density state doubled the likelihood of trying vaping and tripled the likelihood of trying edibles.

In contrast to the previous adult study, age of onset of edibles and vaping was related to certain LCL provisions. Specifically, among youth, longer LCL duration, higher dispensary density, medical and recreational cannabis laws, and permitting home cultivation of cannabis were associated with younger age of onset of edibles. Additionally, higher dispensary density was associated with younger age of onset of vaping. The different age of onset findings between the current sample and our previous adult sample may be due to youths' particular vulnerability to changes in cannabis norms that accompany cannabis legalization. However, in the present analyses, relatively small differences of between 2–5 months in age of onset of vaping and edibles, translated into statistically significant differences across LCL provisions because of the large sample size; the functional importance of this magnitude of difference is unclear.

We also observed multiple instances of results demonstrating a unique relationship between home cultivation provisions and edible use. First, only the LCL states that permit home cultivation were

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Table 5
Adjusted linear regression coefficients and adjusted mean age of onset of vaping and edibles across legal cannabis law (LCL) provisions[a].

	Age Onset Vaping		Age Onset Edible	
	β Coeff (95% CI)	Mean Age Onset[a]	β Coeff (95% CI)	Mean Age Onset[a]
LCL Status				
No LCL	ref	15.41	ref	15.02
LCL	**−0.14 (−0.28, −0.01)**	15.27	**−0.19 (−0.31, −0.07)**	14.83
Duration of LCL				
No LCL	ref	15.41	ref	15.02
0–5 years	−0.12 (−0.29, 0.04)	15.29	0.02 (−0.14, 0.17)	15.04
6–10 years	−0.19 (−0.41, 0.04)	15.23	−0.10 (−0.3, 0.10)	14.92
> 10 years	−0.14 (−0.31, 0.02)	15.27	**−0.42 (−0.57, −0.27)**	14.60
Duration of LCL				
0–5 years	ref	15.29	ref	15.02
6–10 years	−0.06 (−0.28, 0.16)	15.23	−0.09 (−0.3, 0.11)	14.93
> 10 years	−0.02 (−0.19, 0.15)	15.27	**−0.43 (−0.59, −0.27)**	14.60
Dispensary (per 100k people)				
No LCL	ref	15.41	ref	15.02
LCL: prohibit dispensaries	0.08 (−0.22, 0.37)	15.48	−0.24 (−0.49, 0.01)	14.78
< 1	−0.15 (−0.31, 0.004)	15.26	−0.05 (−0.19, 0.09)	14.97
≥1	**−0.18 (−0.35, −0.01)**	15.23	**−0.35 (−0.5, −0.2)**	14.67
Dispensary (per 100k people)				
LCL: prohibit dispensaries	ref	15.49	ref	14.78
< 1	−0.22 (−0.5, 0.06)	15.27	0.18 (−0.07, 0.42)	14.96
≥1	−0.26 (−0.55, 0.02)	15.22	−0.12 (−0.37, 0.13)	14.67
MCL-Only vs. RCL Status[b]				
No LCL	ref	15.41	ref	15.02
Only MCL	−0.14 (−0.28, 0.004)	15.28	**−0.17 (−0.3, −0.05)**	14.85
RCL	−0.16 (−0.38, 0.05)	15.25	**−0.26 (−0.46, −0.07)**	14.76
MCL-Only vs. RCL Status				
Only MCL	ref	15.28	ref	14.84
RCL	−0.04 (−0.23, 0.15)	15.24	−0.09 (−0.27, 0.09)	14.76
Home cultivation (HC)				
No LCL	ref	15.41	ref	15.02
LCL: prohibits HC	−0.15 (−0.31, 0.02)	15.26	0.01 (−0.15, 0.16)	15.03
LCL: permits HC	−0.14 (−0.29, 0.01)	15.27	**−0.31 (−0.44, −0.17)**	14.71
Home cultivation (HC)				
LCL: prohibits HC	ref	15.26	ref	15.01
LCL: permits HC	0.01 (−0.14, 0.17)	15.27	**−0.30 (−0.45, −0.15)**	14.71

Bolded β coefficients = significant ($p < 0.05$).
Note: some adjusted mean age estimates change slightly due to inclusion/exclusion of Non-LCL states in the model.
[a] All models adjusted for age, race, gender, education, age onset of cannabis use, and lifetime days of cannabis use.
[b] MCL = Medical cannabis law, RCL = Recreational cannabis law.

associated with younger and more probable use of edibles and not associated with vaping (Tables 4 and 5). Second, the LCL of states that prohibit dispensaries, and of states with ≥1 dispensary per 100,000 people, both permit home cultivation, but the majority of LCL of states with < 1 dispensary per 100,000 people prohibit home cultivation. This seems to help explain why youth in states that prohibit dispensaries and in states with ≥1 dispensary per 100,000 people were both over three times more likely to have used edibles, while youth from states with < 1 dispensary per 100,000 people were only slightly more likely to have used edibles. Conversely, the odds ratio trend for the likelihood of vaping across dispensary densities maintained a linear dose-response pattern (Table 4). One theory for the observed relationship between home cultivation and earlier and more probable initiation of use of edible (but not vaping) products is that adults may condense the low-THC "leftover" parts of the plants they grow, to extract enough THC to make edible products. This may make edible products more commonly used and available, potentially increasing the risk of diversion to youth.

The potential implications of the observed relationships between dispensary density, home cultivation, and methods of cannabis use warrant comment. Some data indicate that adolescents and young adults receive diverted legally-purchased cannabis (Boyd et al., 2015; Lankenau et al., 2017; Salomonsen-Sautel et al., 2012; Thurstone et al., 2011) despite qualifying medical condition or minimum purchase age (21 and up)(Hall and Lynskey, 2016) requirements. States that do not place limits on the number of medical or retail dispensaries permitted may experience a proliferation of dispensaries, and without strict oversight, vaping and edible products may also be directly sold to youth or diverted from adult users to youth users. To mitigate demand and diversion of these products to youth, regulatory strategies previously utilized for alcohol and tobacco products (Pacula et al., 2014b) should be considered, such as limiting product flavoring, packaging, and marketing that appeal to youth (Ashley and Backinger, 2012; Mosher and Johnsson, 2005) as well as regularly conducting dispensary compliance checks (Wagenaar et al., 2005). Similarly, LCL provisions such as home cultivation may normalize household cannabis use and increase exposure, access, or diversion to youth – making it more difficult for state governments to effectively prevent youth from engaging in cannabis use (Caulkins et al., 2012; Pacula et al., 2015) or cultivation (Bouchard et al., 2009). More generally, lack of effective control over patterns of access to cannabis products may elevate population levels of cannabis initiation and risks of problematic cannabis use among youth.

Facebook has been demonstrated to be a reliable and valid method for sampling young cannabis users (Ramo et al., 2012; Ramo and

Prochaska, 2012). Nonetheless, several sampling-related limitations of the present study should be considered. First, data were provided by a self-selected convenience sample of social media users. Cannabis-using youth sampled with other methods may respond differently. Second, our targeted sampling strategy identified potential respondents based on their online endorsement of cannabis culture-related topics. This is likely the reason that the present sample contained primarily regular, heavy cannabis users. Thus, the observed associations may not generalize to subgroups of light cannabis users or heavy users who do not affiliate themselves with cannabis culture-related topics online. Going forward, it will be important to investigate how different cannabis access models (e.g., home cultivation or dispensaries) impact patterns of cannabis use among these other subgroups. It is also important to note that our lifetime use outcome variable is only one of multiple ways of measuring the use of different methods of cannabis administration. Other, more fine-grained indices of current cannabis use behaviors, may uncover important relationships between LCL provisions and use of vaping and edible products not observed in the present study. Last, a substantial number of youth did not complete the survey. While those who did and did not complete the survey did not differ on multiple demographic and outcome variables, it is possible that unmeasured characteristics caused systematic attrition and may have limited the generalizability of the observed results. Despite these limitations, this study provided an examination of important associations between cannabis-related legalization provisions and cannabis use in a sample at high risk for future problems – a population that can be difficult to access via other research methodologies.

Study of other LCL provisions and their association with changes in population-level patterns of cannabis use may reveal additional findings with potentially significant public health implications. The effects of various provisions are not likely to occur in isolation, and thus it will be important to focus on separating the effects of LCL provisions that are designed to serve similar functions (e.g., dispensaries and home cultivation are both regulatory strategies for providing access to cannabis). By examining characteristics that pertain specifically to each access-related provision, it may be possible to untangle potential additive, synergistic, or offsetting effects of LCL provisions. For example, future research might investigate behavioral patterns of making edibles at home versus purchasing edibles in dispensaries. The present study provides a small sampling of the types of data that are needed to help guide policy decisions to effectively regulate legal cannabis. Social media is a potentially useful research tool for facilitating such study because it provides the ability to rapidly collect data on novel cannabis-legalization-related questions not addressed by traditional survey methods.

Contributors

JTB, DCL, BSC, JDS, JLG and AJB designed the survey. DCL and JTB managed online recruitment and data cleaning efforts. JTB conducted the analyses of the data. JTB and AJB wrote the initial draft of the manuscript. All authors contributed to the writing and have approved the final manuscript.

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Conflict of interest

The authors have no conflicts of interest to declare.

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SB388

Dear House Health, Human Services, and Elderly Affairs Committee,

My name Is Paul Morrissette and I am in favor of Senate Bill 388. I think it makes complete sense to give NH's Patients more convenience and shorter drives to get their medicine.

Allowing the easterly and northern less sparsely populated geographic zones in NH, who have less densely populated areas and longer drive times, to have a satellite dispensary location makes sense, but there is a couple of issues:

1. There is only 3 venders and 4 geographic areas in the entire state of NH. These venders have a semi monopoly on an ever growing list of patients (currently standing at over 5000) and only 3 Companies have the exclusive right to sell Cannabis medicine to them. By allowing them a second dispensing location it allows for further entrenchment of the existing semi monopoly which does nothing to foster more competition to give patients more choices to bring prices down to benefit NH Patients.
2. A Possible better choice would be to allow all the Dispensaries to conduct home deliveries just like Pharmacies in NH deliver. Many states allow Medical Cannabis to be delivered like this. Allowing Home Deliveries would make patient drive times irrelevant, give patients access to a provider that may be in another geographic area entirely with different product offerings, and actually foster competition between the ATC Providers.
3. Even if this bill passes it will not help patients in the most populated

region Geographic Area 2. In Geographic area 2 which includes all of Hillsborough and Merrimack Counties has by far the most access to patients. 580,000 alone are located in that zone plus it has a border with all 3 other Geographic areas. The dispensary there is actually in Merrimack which is at the southern portion of that zone. The next closest Dispensary is in Plymouth which is a very long distance for patients to drive.

Instead of adding a satellite dispensary location to that area I would instead suggest adding another provider to be located in Merrimack County. Amend SB388 to allow for another provider in Merrimack County to bolster competition, patient geographic access, and give patients more choice and competition. NH Patient counts are already at 5000 and climbing and adding another Vender (who will take approx. 2 years to actually come online), is prudent and forward thinking, instead of reacting after the need exists. Prudence dictates we act now so they are ready in 2 years to service patients when they are needed.

Bottom line is I think this Bill should pass, but be amended to allow DHHS to select another vendor to service NH in Merrimack County.

Thanks,
Paul Morrissette

Testimony by Representative Larry L. Laflamme, Coos 3, in support of SB-388

Chairman Kotowski and members of the House Committee on Health, Human Services, and Elderly Affairs, my name is Larry L. Laflamme and I am a State Representative from Coos District 3, City of Berlin. I appear before you today in support of Senate Bill 388, relative to dispensary locations for therapeutic cannabis. According to the New Hampshire Department of Health and Human Services 2017 report on the Therapeutic Cannabis Program, there were 4,753 patients and care givers participating in the state program as of December 2017. This number is more than double the number of 2089 patients being served in 2016. The number of dispensaries, however, remains at four. If this bill passes, two more dispensaries would be permitted, one of which would be located in the area of Coos, Carroll, and northern Grafton counties. These "satellite" dispensaries would be engaged in only dispensing therapeutic cannabis and educational materials.

When the DHHS report was released, the Sanctuary ATC dispensary in Plymouth New Hampshire had 951 clients, with 430 being from Coos and Carroll counties. When I spoke with Sanctuary ATC on April 10, 2018 (yesterday), they reported their clients now number over 1,500- an increase of more than 50%. They reported 115 clients in the Berlin-Gorham area alone. If the town of Lancaster is included, this number becomes 137. This represents an increase of over 25% in the number of clients from these three towns. I assume similar increases in the number of patients in northern Coos County, as well as in Carroll County. These patients have to travel as much as 2 hours one way to the dispensary in Plymouth, which is the closest one. Because of dispensing rules, some must travel as often as every 10 days.

On April 2, 2018, CNN reported that states that allow the use of cannabis for medical purposes had 2.21 million fewer daily doses of opioids prescribed per year under Medicaid Part D, as compared to those states that don't. Furthermore, opioid prescriptions under Medicaid dropped 5.88% in states with a medical cannabis program. Surely, better and easier access to medicinal cannabis contributes to these numbers.

I thank you for allowing my testimony, and I urge the committee to report SB 388 as "ought to pass".

Bill as Introduced

SB 388 - AS AMENDED BY THE SENATE

03/14/2018 0952s
03/15/2018 1086s

2018 SESSION

18-2870
01/04

SENATE BILL *388*

AN ACT relative to dispensary locations for therapeutic cannabis.

SPONSORS: Sen. Reagan, Dist 17; Sen. French, Dist 7; Rep. Nelson, Carr. 5; Rep. Knirk, Carr. 3; Rep. LeBrun, Hills. 32; Rep. Stone, Rock. 1

COMMITTEE: Judiciary

AMENDED ANALYSIS

This bill authorizes the department of health and human services to establish a second dispensary location in the geographic area that includes Carroll, Coos, and Grafton counties, for therapeutic cannabis. This bill also authorizes the department of health and human services to establish a second dispensary location in the geographic area that includes Cheshire and Sullivan counties.

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Explanation: Matter added to current law appears in ***bold italics.***
Matter removed from current law appears [~~in brackets and struckthrough.~~]
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

SB 388 - AS AMENDED BY THE SENATE

03/14/2018 0952s
03/15/2018 1086s

18-2870
01/04

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Eighteen

AN ACT relative to dispensary locations for therapeutic cannabis.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 1 New Paragraph; Use of Cannabis for Therapeutic Purposes; Departmental Rules. Amend
2 RSA 126-X:6 by inserting after paragraph III the following new paragraph:
3 IV. The department may adopt rules regarding the establishment of a second dispensary
4 location by the alternative treatment centers described in RSA 126-X:7, X including, but not limited
5 to, fees, operational requirements, and geographic location.
6 2 New Paragraph; Use of Cannabis for Therapeutic Purposes; Dispensary Locations. Amend
7 RSA 126-X:7 by inserting after paragraph IX the following new paragraph:
8 X. If the department determines that having additional locations for the dispensing of
9 therapeutic cannabis is necessary to adequately and effectively meet the needs of qualifying
10 patients and designated caregivers, the department may authorize the alternative treatment center
11 allowed to operate in the geographic area that includes Carroll, Coos, and Grafton counties, not
12 including the town of Hanover and the city of Lebanon in Grafton county, to establish a second
13 dispensary location within that same geographic area. In addition, the department may authorize
14 the alternative treatment center allowed to operate in the geographic area that includes Cheshire
15 and Sullivan counties and the town of Hanover and the city of Lebanon in Grafton county to
16 establish a second dispensary location within that same geographic area. A second dispensary
17 location shall only be established in a geographic location approved by the department, shall be
18 limited solely to the dispensing of cannabis and educational efforts, and shall not be used for
19 cultivation or other activities relative to the production of cannabis. A second dispensary location
20 shall be subject to rules adopted by the department under RSA 126-X:6, III, and any additional
21 rules adopted by the department relative to a second dispensary location under RSA 126-X:6, IV,
22 and all applicable provisions of this chapter relative to alternative treatment centers including, but
23 not limited to, compliance with local zoning laws. The department shall, in conjuction with the local
24 governing body of the town or city where the second dispensary location would be located, solicit
25 input from qualifying patients, designated caregivers, and residents of the town or city in which the
26 second dispensary location would be located.
27 3 Effective Date. This act shall take effect 60 days after its passage.