From:	Marie Antoinette Duncan
To:	Marijuana, CED ABC (CED sponsored)
Subject:	Alaska Medical Marijuana Law Clarification
Date:	Thursday, December 13, 2018 12:19:11 PM
Attachments:	PastedGraphic-1.tiff

Hello,

I am a Quality Assurance consultant in the medical cannabis industry. I am currently investigating the state laws for medical cannabis nationwide. Upon reviewing AAC 306 - Regulations for the Marijuana Control Board, I am very impressed with the level of oversight and control that the state has implemented. I only had a couple of questions that I was hoping you could help me with:

- 306.475 mentions that cultivation facilities must list cannabinoid profile, microbial and solvent test results, and a list of contaminants on the label of the shipping container. However, I do not see anywhere in the law where this information gets to the final product label that the patient receives. Is there any requirement for this information to be visible to the patient? Or is the purpose to maintain documentation on file throughout the supply chain in case of any issues?
- 306.475 mentions that if the cultivation facility has not tested for one of the contaminants, that they must indicate this on the label. In what circumstances would it be acceptable for a batch to not be fully tested? If the batch is not fully tested by the cultivation facility, is the manufacturer (processor) or retailer responsible for completing any testing that was not performed?
- 306.645 states "testing for the listed residual solvents and **metals** on the listed marijuana products are required as follows…" and then there are a list a solvents with limits listed. Are there any limits set on metals? I don't see any metals listed here.
- Has the proficiency testing program per 306.625 become available in the state? If not, is there an expected date?

I appreciate your response and thank you for your time!

Thanks,

Antoinette Duncan
President and CEO

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From: Anderson, Campbell (CED)
To: Marijuana, CED ABC (CED sponsored)
Subject: FW: Received for Inbox
Date: Thursday, December 13, 2018 2:26:15 PM
Attachments: Public Comment - Marijuana Inbox.pdf

Received and to be added on the Agenda for MCB Meeting 2.20.019

Respectfully,

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5 December 2018

Erika McConnell
Director
Marijuana Control Board
550 West 7th Avenue Ste 1600
Anchorage Alaska 99501

Dear Erika:

I continue to follow the work of the Marijuana Control Board (MCB) in relation to marijuana and its effect on health (children, pregnant women, adolescents, all persons), economy, tax revenues, morbidity, mortality, and the needs/wants of those interested in "all things marijuana".

This recent study about the relationship of State Medical Marijuana Laws and the Prevalence of Opioids Detected among Fatally Injured Drivers is of interest. I thought you and perhaps some of the MCB might want to look at this.

As we move through these changes in society, I remain strongly supportive of careful evaluation of science-based data on both sides of the divide.

I hope you can share this as appropriate.

Thank you for this consideration.

Sincerely,

carolyn Brown

carolyn V Brown MD MPH

State Medical Marijuana Laws and the Prevalence of Opioids Detected Among Fatally Injured Drivers

June H. Kim, MPhil, MHS, Julian Santaella-Tenorio, DVM, MSc, Christine Mauro, PhD, Julia Wrobel, MS, Magdalena Cerdà, DrPH, Katherine M. Keyes, PhD, Deborah Hasin, PhD, Silvia S. Martins, PhD, and Guohua Li, MD, DrPH

Objectives. To assess the association between medical marijuana laws (MMLs) and the odds of a positive opioid test, an indicator for prior use.

Methods. We analyzed 1999–2013 Fatality Analysis Reporting System (FARS) data from 18 states that tested for alcohol and other drugs in at least 80% of drivers who died within 1 hour of crashing (n = 68 394). Within-state and between-state comparisons assessed opioid positivity among drivers crashing in states with an operational MML (i.e., allowances for home cultivation or active dispensaries) versus drivers crashing in states before a future MML was operational.

Results. State-specific estimates indicated a reduction in opioid positivity for most states after implementation of an operational MML, although none of these estimates were significant. When we combined states, we observed no significant overall association (odds ratio [OR] = 0.79; 95% confidence interval [CI] = 0.61, 1.03). However, age-stratified analyses indicated a significant reduction in opioid positivity for drivers aged 21 to 40 years (OR = 0.50; 95% CI = 0.37, 0.67; interaction $P < .001$).

Conclusions. Operational MMLs are associated with reductions in opioid positivity among 21- to 40-year-old fatally injured drivers and may reduce opioid use and overdose. (*Am J Public Health.* 2016;106:2032–2037. doi:10.2105/AJPH.2016.303426)

See also Galea and Vaughan, p. 1901.

In 1996, California Proposition 215, a voter-initiated medical marijuana law (MML), received 55.6% of the popular vote and became law. Proposition 215 provided criminal protections for patients as well as defined caregivers, who in turn could cultivate the marijuana that physicians could now recommend.[1] Since then, 22 additional states and the District of Columbia have enacted their own MMLs either by voter initiative or through state legislation. Of these laws, the MMLs in Connecticut, Maine, Massachusetts, Minnesota, New York, and the District of Columbia are the only ones that do not allow marijuana to be recommended or authorized for severe or chronic pain,[2] and they tend to be more medically oriented and restrictive.[3]

In the United States, nonmalignant chronic pain afflicts a growing proportion of adults.[4] The prescription of opioids for the treatment of this type of pain has also increased.[5,6] However, despite the legitimate benefits conferred by these drugs, the potential for harm has caused some concern,[7,8] perhaps because of large increases in opioid use disorders[9,10] and opioid overdoses[11,12] observed within the last 2 decades. Furthermore, recent policies aimed at reducing the supply of opioid prescriptions (e.g., prescription drug monitoring programs) may have also inadvertently led to recent increases in heroin overdoses.[13] Alternatives for the treatment of chronic pain are clearly needed.[14]

Marijuana may offer a substitute to opioids in many states with MMLs.[15,16] Unfortunately, data on treatment efficacy is limited, in large part because of current federal scheduling. Regardless, severe or chronic pain is among the most common indications cited by medical marijuana patients.[17] In theory, we would expect the adverse consequences of opioid use to decrease over time in states where medical marijuana use is legal, as individuals substitute marijuana for opioids. In a recent study of MMLs and opioid overdoses,[18] state MMLs were associated with reductions in the annual rate of state-level opioid overdoses. The relationship between MMLs and other indicators of opioid use or adverse consequences needs to be further examined, as this relationship potentially identifies actionable points of intervention on a growing opioid epidemic (e.g., expanding eligible medical conditions for marijuana to include chronic pain).

One such indicator is the prevalence of opioid use. Although opioid use can be difficult to measure, tested opioid positivity in blood or urine is objective, and it provides a clear indicator of any prior opioid use, for medical or recreational purposes. Although we know of no representative general population data with tested opioid positivity among living participants, toxicological tests for substances among drivers fatally injured in car crashes represents a potential data source. Repeated annual panels of drivers killed in crashes in states with and without MMLs are available; in some states, data are uniformly collected for the majority of deceased drivers. Furthermore, states that do not

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have an MML but eventually pass one are more similar to states in which an MML has already been passed, reducing the possibility of bias in comparing MML and non-MML states.[19] Thus, our aim was to empirically assess whether, among drivers who died within 1 hour of a traffic collision, crashing in a state with an MML was associated with a reduced likelihood of opioid positivity compared with crashing in a state that would eventually pass an MML but had not yet done so.

METHODS

We obtained study data from the Fatality Analysis Reporting System (FARS), which provides a census of all crashes on public roads that result in a traffic fatality. This includes data from police records, state administrative files, and medical records on the persons, vehicles, and circumstances related to each crash.[20] To limit any false positive drug testing results, we restricted our sample to drivers who died within 1 hour of crashing from 1999 to 2013 (n = 215 384).

We excluded drivers younger than 15 years (n = 507) or with missing data on age (included categories = 15–20, 21–40, and ≥ 41 years) or gender (n = 50). In addition, although the FARS provides data for all states, toxicological testing of fatally injured drivers is inconsistently performed across states.[21] States that do not perform drug and alcohol testing on the majority of their drivers may be selectively testing drivers that appear impaired.[22] Thus, we restricted our analysis to include only states that tested at least 80% of fatally injured drivers (n = 70 683) from 1999 to 2013 (18 states; Table 1), a threshold consistent with previous studies.[23–25] Although testing for New Mexico was above this threshold, because there were inexplicably low numbers of drivers testing positive for drugs, we deemed data from this state to be unreliable and excluded them.[22,26] Finally, we also excluded drivers with missing outcome data (n = 2289; 3.2%). In total, we included 68 394 deceased drivers from 18 states.

Measures

Drug and alcohol test results. Blood or urine specimens were tested for drugs through gas–liquid chromatography, mass spectrometry, and radioimmunoassay techniques.[27] For each driver, the FARS records up to 3 nonalcoholic drugs detected in the blood or urine. If multiple drugs are detected, the FARS records results in the following priority order: narcotics, depressants, stimulants, marijuana, and other.[20] In accordance with the FARS coding manual,[28] we based prior opioid use on the coding of any narcotic (codes 100–295). The FARS determines driver's blood alcohol content and drug content separately; we coded blood alcohol content as negative, positive, or missing.

State medical marijuana laws. Because state MMLs vary in how medical marijuana is provided and made available,[29] we coded only states that provided access to medical marijuana (through either one's own or collective cultivation or through public or private dispensaries) as having an operational medical marijuana law, and we based operational dates on when access was made available. For example, New Hampshire and Illinois have effective dates within or immediately after our study period (2013 and 2014, respectively); however, because they did not allow home cultivation and dispensaries were not operational until after our study period, we coded these states as negative throughout. For states that implemented an operational MML during our study period, we coded MML status as positive for all years following the operational date of availability and negative for the preceding periods. If the law became operational during

TABLE 1—State Medical Marijuana Law (MML) Operational Status Among the 18 States That Performed Majority Testing on Its Drivers Who Died Within 1 Hour of Crashing: United States, 1999–2013

State	Effective Date[a]	Operational Date[b]	First Year Coded as Operational	MML Status (No.)[c]	% of Drivers Tested
California	Nov 96	Nov 96	1999	After (20 614)	92.3
Washington	Nov 98	Nov 98	1999	After (3 649)	91.1
Hawaii	Dec 00	Dec 00	2001	Before (38), After (388)	97.2
Colorado	Jun 01	Jun 01	2002	Before (687), After (2373)	85.9
Vermont	Jul 04	Jul 04	2005	Before (122), After (264)	93.0
Montana	Nov 04	Nov 04	2005	Before (489), After (932)	89.8
Rhode Island	Jan 06	Jan 06	2006	Before (267), After (225)	99.2
New Jersey	Oct 10	Dec 12	2013	Before (2 679), After (167)	93.0
Connecticut	Oct 12	Not operational	...	Before (1 616)	97.2
Massachusetts	Jan 13	Not operational	...	Before (2 267)	82.0
New Hampshire	Jul 13	Not operational	...	Before (889)	94.0
Illinois	Jan 14	Not operational	...	Before (5 803)	88.8
Maryland	Jun 14	Not operational	...	Before (2 504)	88.7
North Dakota	...	...	...	Never (710)	87.2
Ohio	...	...	...	Never (7 328)	85.2
Pennsylvania	...	...	...	Never (7 280)	80.5
Virginia	...	...	...	Never (4 775)	82.9
West Virginia	...	...	...	Never (2 328)	94.6

Note. "Majority testing" is defined as testing at least 80% of a state's drivers who died within 1 hour of crashing.

Source. Fatality Analysis Reporting System.

[a]MML effective dates are based on when (month and year) the law went into effect.

[b]Operational dates are based on when (month and year) allowances for home cultivation or the presence of active dispensaries came into effect.

[c]Numbers of drivers who died before and after the operational date of the MML. ("Never" indicates that the state never implemented any type of MML.)

the first half of the year (i.e., before July 1), we coded MML status as positive starting with that year. If the law became operational during the second half of the year, we coded MML status as positive starting with the subsequent year, as follows: Hawaii, 2001; Colorado, 2002; Vermont, 2005; Montana, 2005; Rhode Island, 2006; New Jersey, 2013. We coded California and Washington as positive for MML status for the entire study period. We considered the remaining states that had not yet passed an operational MML as negative throughout the study period (North Dakota, Ohio, Pennsylvania, Virginia, and West Virginia). Additionally, in the state-combined analysis, we controlled for whether the state had ever passed a medical marijuana law.[19] This included the states with an operational MML at any point during the study period as well as states with laws that were not yet operational (Connecticut, Massachusetts, New Hampshire, Illinois, and Maryland).

State prescription drug monitoring program laws. Prescription drug monitoring programs (PDMPs) may confound any association between state MMLs and individual opioid use if PDMPs are associated with the timing of state MMLs and an independent cause of opioid use. To account for this, we used 4 time-varying measures of PDMP characteristics obtained from LawAtlas: (1) "PDMP mandatory," which requires health professionals to report their prescribing; (2) "PDMP real-time," which requires that prescribing data be updated at least once weekly; (3) "PDMP proactive," which requires proactive identification of suspicious prescribing, dispensing, or purchasing; and (4) "PDMP oversight," which requires an oversight board. These indicators have been used previously to characterize variations across PDMP programs.[30] In this study, we compared the absence of all of these PDMP characteristics with the presence of 1 or of 2 or more of them.

State-Combined Analysis

First, to help characterize our study population, we ran cross-tabs between MML status and multiple driver and state-level characteristics. To assess the average impact of MML across states, we used a multilevel logistic regression with a random effect for state of crash and fixed effects for year of crash, presence of PDMP characteristics, and driver's age category, gender, and blood alcohol content. The 2 main independent variables were operational MML status and whether the state had ever passed an MML (model 1). This specification allowed us to compare drivers crashing in states after an operational MML was implemented with drivers crashing in states before one was implemented. This reduced bias related to comparing states with and without an MML, as states that will eventually adopt an operational MML are more comparable to states with a current law than to states that have never passed a law.[19] Furthermore, to test whether the effect of operational MML varied by age category, we included separate interaction terms between age category and the 2 main independent variables. We report the test of overall significance for the interaction between age category and operational MML status; if it is significant, we present age-stratified estimates.

State-Specific Sensitivity Analysis

As a sensitivity analysis, we explored state-specific effects of an MML on opioid positivity using a "difference-in-difference" approach. In this method, state fixed effects are used to capture within-state changes in the outcome among the exposed group, which is then contrasted with the change in outcome observed among an unexposed control group. Under the assumption that the pre-intervention trend is similar in the 2 groups, any differences between states with and without an MML (measured or not) that may also influence opioid positivity (e.g., societal norms) is "differenced" out and does not bias effect estimates.[31] Although statistical power is limited in such analyses, they are useful in showing state-specific effects, and can be used to compare results from other designs and modeling specifications. We conducted state-specific analyses on 4 states with at least 3 years of data before and after an MML became operational: Colorado (1999–2004), Montana (2002–2007), Vermont (2002–2007) and Rhode Island (2003–2008). For each comparison, besides the state of interest, we included as controls only those states in our sample that performed majority testing (i.e., ≥ 80% of drivers who died within 1 hour of crashing) and did not have an operational MML during each 6-year period. Each difference-in-difference analysis first used all eligible states and then repeated the analysis only in states that ever passed an MML, regardless of whether it was operational or not. Sample size limitations precluded the ability to obtain age-stratified estimates. Results are provided in Table A and Figure A (available as a supplement to the online version of this article at http://www.ajph.org). We conducted all analyses using Stata SE version 13 (StataCorp LP, College Station, TX). The technical appendix (available as a supplement to the online version of this article at http://www.ajph.org) provides information required to replicate our analyses.

RESULTS

Among our sample of 68 394 deceased drivers, approximately 41.8% were fatally injured in states that had an operational MML, 25.4% died in states before an operational law went into effect, and 32.8% died in states that had never passed an MML (Table 2). The mean age of all deceased drivers was approximately 41 years, and most (> 75%) were male. There was also a relatively stable level of alcohol involvement across MML status, although there was more missing alcohol data for deceased drivers in states before an MML was operational (6.4%) than in states with an operational MML (2.1%) or in states that had never had an MML (3.7%). In addition, although nearly all states had some form of PDMP, the presence of PDMP characteristics appeared to vary by operational MML status (Table 2). Figure 1 displays trends in opioid positivity across the study years by the MML status of the state in which the deceased drivers crashed.

State-Combined Analysis

In the overall sample, after we adjusted for driver's age, gender, blood alcohol content, a state-level indicator of whether the state had ever passed a medical marijuana law, and PDMP characteristics, crashing in a state with an operational MML versus crashing in one where an MML was not yet operational was not associated with the odds of opioid

TABLE 2—Characteristics of Drivers Who Died Within 1 Hour of Crashing by State Status of Medical Marijuana Law (MML), Pooled Across the Years 1999–2013: United States

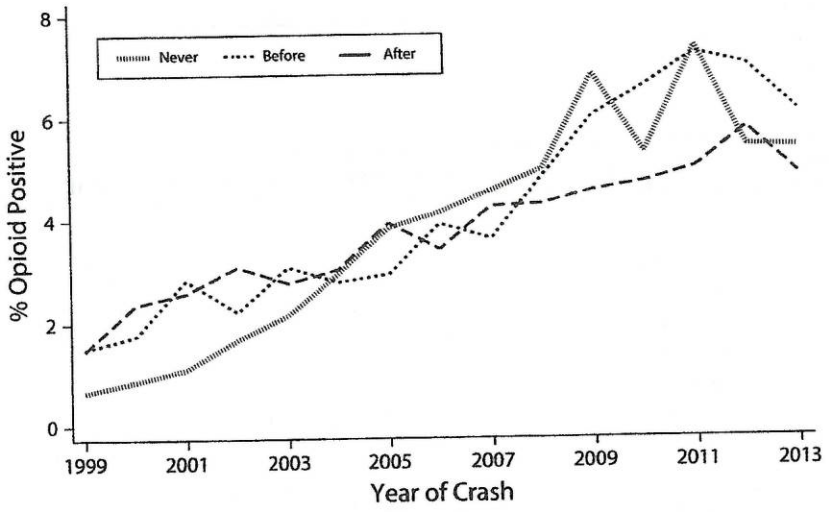
Characteristic	Operational Status[a] of State MML		
	Crashed in States After MML Was Operational, No. (%)	Crashed in States Before MML Was Operational, No. (%)	Crashed in States That Had Never Passed an MML, No. (%)
Total	28 612	17 361	22 421
Age, y			
15–20	3 264 (11.4)	2 116 (12.2)	2 767 (12.3)
21–40	12 889 (45.1)	7 523 (43.3)	9 172 (40.9)
≥41	12 459 (43.5)	7 722 (44.5)	10 482 (46.8)
Gender			
Male	22 377 (78.2)	13 467 (77.6)	17 026 (75.9)
Female	6 235 (21.8)	3 894 (22.4)	5 395 (24.1)
Alcohol involvement			
Sober drivers	17 068 (59.7)	9 394 (54.1)	13 080 (58.3)
BAC > 0.01 g/dL	10 965 (38.3)	7 074 (40.8)	8 553 (38.2)
Missing data	579 (2.0)	893 (5.1)	788 (3.5)
PDMP indicators			
None	11 231 (39.3)	7 827 (45.1)	5 024 (22.4)
1	6 670 (23.3)	2 144 (12.4)	11 213 (50.0)
≥2	10 711 (37.4)	7 390 (42.6)	6 184 (27.6)

Note. BAC = blood alcohol content; PDMP = prescription drug monitoring program.

Source. Fatality Analysis Reporting System.

[a]An operational medical marijuana law is defined as an effective law with allowances for either home cultivation or access to dispensaries.

positivity (odds ratio [OR] = 0.79; 95% confidence interval [CI] = 0.61, 1.03; Table 3). Tests of interaction between an operational MML and age indicated that the association between MML and opioid positivity varied significantly by age ($\chi^2 = 48.7$; $P < .001$). After we adjusted for both individual and PDMP characteristics (Table 3), compared with drivers aged 21 to 40 years who crashed in states before an operational MML, drivers of the same age range who crashed in states with an operational MML had lower odds of opioid positivity (OR = 0.50; 95% CI = 0.37, 0.67). We observed no significant associations for other age groups.



Source. Fatality Analysis Reporting System.

FIGURE 1—Opioid Positivity Trends in States Before vs After Passing an Operational Medical Marijuana Law (MML) Compared With States That Have Never Had an MML: United States, 1999–2013

State-Specific Sensitivity Analysis

Figure A plots the prevalence of opioid positivity for each MML state compared with the observed average among control states with no operational MML. For each state comparison (Table A), we contrast the count and percentage of opioid positivity before and after an operational MML was implemented (and the before-vs-after difference) with those of 2 overlapping controls groups: (1) controls in states that had performed majority testing (all eligible controls) and (2) controls only in states that had passed an MML. The difference-in-difference estimate signifies the estimated change in opioid positivity associated with an operational MML. For example, after we adjusted for state and year of crash as well as driver's age, gender, and blood alcohol content, Montana experienced a 1.7% reduction (risk difference = −1.72; 95% CI = −5.5, 2.1) in opioid positivity after its MML became operational relative to the expected change in opioid positivity among states that had ever passed an MML (Table A). Although none of these state-specific estimates were significant, there were trends in all states toward a reduction in opioid positivity.

DISCUSSION

In this study, we assessed whether, among comparable samples, implementing an operational MML was associated with reductions in opioid positivity. We did this by comparing drivers crashing in states with an operational MML with drivers crashing in states before a future MML became operational. We performed this comparison in 2 disparate ways: by grouping drivers across states (i.e., the state-combined analysis) and by comparing before-versus-after trends

TABLE 3—Estimated Odds Ratios of Testing Positive for Opioids Among Drivers Who Died Within 1 Hour of Crashing: United States, 1999–2013

Variable	OR[a] (95% CI)
Before an operational law was implemented (Ref)	1
After implementation, by age	
Overall	0.79 (0.61, 1.03)
15–20 y	0.95 (0.55, 1.64)
21–40 y	0.50 (0.37, 0.67)
≥41 y	1.04 (0.79, 1.37)

Note. CI = confidence interval; OR = odds ratio. For test of overall interaction of age-stratified estimates, $\chi^2_2 = 48.7$ ($P < .001$).

Source. Fatality Analysis Reporting System.

[a]Multilevel model includes a random intercept for state of crash and adjusts for operational medical marijuana law (MML) status, driver's age category (and the interaction with MML for age-stratified estimates), whether the state had ever passed an MML (and its interaction with age for age-stratified estimates), the presence of 1, ≥2, or no prescription drug monitoring program characteristics, and year of crash, plus driver's characteristics (gender and blood alcohol content).

within the same state (i.e., the state-specific analysis). We found that among 21- to 40-year-old deceased drivers, crashing in states with an operational MML was associated with lower odds of testing positive for opioids than crashing in MML states before these laws were operational. Although we found a significant association only among drivers aged 21 to 40 years, the age specificity of this finding coheres with what we know about MMLs: a minimum age requirement restricts access to medical marijuana for most patients younger than 21 years, and most surveyed medical marijuana patients are younger than 45 years.[17,32] Although the uptake of medical marijuana has been historically concentrated among young adults, we would expect to see similar reductions in opioid use among older cohorts if medical marijuana is increasingly embraced by older generations.

Our findings among those aged 21 to 40 years are consistent with previous findings that MMLs are associated with a 25% reduction in the annual rate of opioid overdose[18] and that states permitting medical marijuana dispensaries experience a slight decrease in opioid treatment admissions and in opioid overdose mortality.[30] Few studies have previously attempted to explain this mechanism. One study assessed opioid use among a large representative sample,[33] but it found no impact of MMLs on self-reported use. However, the survey question that captured opioid use only assessed "nonmedical use" of pain medications, limiting the information on medication used legitimately for pain. It is possible that the weight of any benefit is mostly conferred on patients who have legitimate need for pain medications. For example, in 1 study conducted in Utah the majority of opioid overdose decedents in 2008 and 2009 had previously been prescribed opioids for their own conditions.[34]

One other study found that MMLs were not associated with the quantity of opioids dispensed at the state level,[30] suggesting that any reductions in opioid overdoses may not be reflected in the overall sales of opioids. However, if MMLs are in fact reducing opioid overdoses, it follows that this mechanism would entail reductions in individual opioid use, which may not be characterized by an aggregate measure of opioids dispensed at the state level. By contrast, the findings in our study suggest that MMLs are associated with reductions in opioid positivity, an indicator for previous use, at least among drivers aged 21 to 40 years who died within 1 hour of crashing.

Limitations and Strengths

This study has several notable limitations. First, we cannot infer causation in the study; however, the results can be used to assess the plausibility of some alternative explanations. For example, the observed association could be explained by other factors (e.g., increased highway safety expenditures after MML implementation) or by differential selection into the study (e.g., opioid-exposed drivers are less willing to drive in MML states). Although these alternative explanations cannot be ruled out, the number of fatally injured drivers was remarkably consistent across years and states (online Table A), making such biases less likely. For example, in the 3 years prior to implementing its MML, Colorado had 687 drivers who died within 1 hour of crashing; in the following 3 years, it had 691 such deaths.

Second, because we included only a subset of states in our analysis, our results may not be generalizable to all of the United States. However, this was necessary to limit biases related to outcome-dependent selection (e.g., selective testing of inebriated drivers). Although our findings may apply only to deceased drivers in these states, we would expect to see similar findings across comparable samples living in states with and without an MML. Third, we used a broad measure of opioid use, which included any narcotic coded within the FARS. However, any resulting outcome misclassification is likely similar in states with and without medical marijuana laws (i.e., nondifferential), which would bias our results toward the null. This limitation is offset by the advantages of an objective measure of drug use, as most previous studies assessing the impact of medical marijuana laws have relied on self-reported measures.

There are also study strengths. First, few studies have assessed the association between state MMLs and opioid use at the individual level, and to our knowledge, this is the first to do so with an objective measure of opioid use. Second, although MMLs are heterogeneous across states, our classification of MML status was narrow and well defined. Although this degree of specificity did not allow us to explore other provisions of MMLs (e.g., criminal protection for patients), future studies should examine these as separate indicators with the potential to have disparate influences on substance use. Third, we accounted for the considerable state heterogeneity in both the measurement of our outcome (i.e., toxicological testing procedures) and trends in opioid use and opioid-related harms broadly. To correct for this in our state-combined analysis, we included a random intercept for state of crash and excluded states that did not perform majority testing. Furthermore, we also performed state-specific analyses that assessed within-state changes that eliminated most time-invariant sources of bias. Lastly, we observed consistent findings when making within-state and between-state comparisons, 2 models with varying assumptions.

Conclusions

Because of the uniqueness of our sample, it is worth noting again that our outcome is

opioid positivity (i.e., prior opioid use), which is not necessarily indicative of driving impairment. This study was not designed to assess whether opioids increase crash risk. Instead, we assessed whether, among comparable samples, implementing an operational MML was associated with reductions in opioid positivity. Although previous studies have suggested that MMLs are associated with decreased opioid overdose mortality rates at the state level,[18,30] our study suggests 1 plausible mechanism underlying this association: in states with MMLs, fewer individuals are using opioids. If these laws are actually causing reductions in opioid use—an explanation consistent with our results—then the hypothesis that MMLs reduce opioid-related overdoses and treatment admissions is more plausible. However, as states with MMLs move toward legalizing marijuana more broadly for recreational purposes, future studies are needed to assess the impact these laws may have on opioid use. AJPH

CONTRIBUTORS

J. H. Kim developed the study concept and design, collected and analyzed the data, interpreted the results, and drafted the article. J. Santaella-Tenorio, C. Mauro, and J. Wrobel collected and analyzed the data and interpreted the results. M. Cerdá, K. M. Keyes, D. Hasin, S. S. Martins, and G. Li helped develop the study concept and design and helped draft the article.

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HUMAN PARTICIPANT PROTECTION

Ethics approval was not needed for this work because it used publically available, anonymized data.

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From: Marijuana Licensing (CED sponsored)
To: Marijuana, CED ABC (CED sponsored)
Subject: FW: Marijuana Advertising
Date: Friday, December 28, 2018 8:05:23 AM

This is for the MCB's mailbox.

Jane

-----Original Message-----
From: Bryan <pherson_family@hotmail.com>
Sent: Thursday, December 27, 2018 4:47 PM
To: Marijuana Licensing (CED sponsored) <marijuana.licensing@alaska.gov>
Subject: Marijuana Advertising

Hi AMCO,
I have a question about Marijuana advertising.
This last couple of months, I have heard on the local Fairbanks radio station, TED FM, 103.9 - that this program is "brought to you by Good Cannabis at the Northgate square. That is where I get my mistletoe."
I do not know what the regulations are, but this is an audience of children to adult that listen to this radio station and I strongly feel that this form of advertising is inappropriate. To provide a radio program "service" by a business called 'Good Cannabis" is misleading and unduly promotes the notion that this is a safe thing for kids to try because it is "good."

I do not agree with this advertising scheme and would like to know if indeed this is appropriate based on the current regulations.

Thank you for your assistance in clarifying this for me.

Bryan Pherson

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Friday, January 18, 2019 3:12:14 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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Spam - Quarantined				
From	**Subject**	**Action**		
info@graphixly.com	January Newsletter - CLIP STUDIO PAINT - Graphixly	Release	Release and Allow Sender	Block Sender

DO NOT FORWARD THIS MESSAGE. For more information contact your SOA Department IT Staff at http://doa.alaska.gov/oit/dedpa.html

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Monday, January 21, 2019 3:09:49 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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Spam - Quarantined				
From	**Subject**	**Action**		
info@cannabislaw.report	Cannabis Law Report: 21 January 2019	Release	Release and Allow Sender	Block Sender

DO NOT FORWARD THIS MESSAGE. For more information contact your SOA Department IT Staff at http://doa.alaska.gov/oit/dedpa.html

From: Eric Riemer
To: Marijuana, CED ABC (CED sponsored)
Subject: Cannabis testing, transportation, and on-site consumption
Date: Monday, January 21, 2019 8:32:53 PM

Hello,

My name is Eric Riemer and I live in Ketchikan, AK. I am in the process of acquiring a borough permit to operate a cannabis retail store from the local government, and currently working with local government bodies contemplating local policy options in regards to transportation and on-site consumption. I have several questions and comments that speak to these matters:

We know that testing of legally cultivated cannabis is required by state law. Ketchikan, an island community, would be impacted by the distance of our cultivators from licensed state testing facilities. My questions that speak to this issue are as follows: has the MCB considered the option of mobile testing facilities? I realize it would fall to the private sector to create such a business, but would the MCB be open to permitting a mobile facility? Second, is the MCB considering a waiver for the State Marine Highway to allow transportation of small amounts of marijuana to travel from remote cultivation sites to testing facilities? Perhaps the waiver would go to individual cultivation transporters (IE here is your waiver allowing you to transport x grams of cannabis)? To further that question, has the MCB considered the option of transporting larger amounts of cannabis from mainland cultivators to smaller island communities for retail sale? Here again a waiver system could prove useful.

Another question I had concerns cannabis grown out of state; could an out of state grower apply to be registered on Alaska's seed-to-sale system? Consider a grower or product manufacturer in Washington state that wishes to distribute product in Alaska; could they be registered in Alaska's testing/growing database and legally sell products to Alaskan retail shops if their products were logged and testing in the same manner as cannabis and cannabis products grown and manufactured within Alaska?

My final questions and comments have to do with on-site consumption of cannabis in retail stores. The state legislation body is considering a state wide ban on smoking in public buildings to protect the health of employees. There has been discussion of a waiver - or alternate bill - for tobacco shops to exempt them from this law. Does the MCB plan on issuing a waiver for retail cannabis stores to allow consumption on-site? If so, what will on-site consumption look like in retail shops? Specifically, will consumption be confined to 'back rooms or lounges' separated by walls/doors from the main body of the shop? Or will consumption areas be determined by individual businesses?

Our vision of on-site consumption is to have an upstairs and back room lounge where consumption is allowed, and keep the main shop body smoke-free. We would prefer to NOT have a negative pressure system in place for consumption areas, due to both the prohibitive cost and uninviting, septic atmosphere such a division would cause in our establishment. The basic model of a dutch coffee shop is what we would encourage the MCB to adopt in regards to on-site consumption policy.

We realize that this is an emerging field and there are many grey areas, and at this point even more questions than answers. If the MCB is interested in comments and feedback from private sector establishments, we would be happy to share our views on any issues that arise in the spirit of synergy between policy and practice.

Thank you for your time, and we look forward to your response.

Eric Riemer
E & M Holdings
Ketchilan, AK 99901
907-617-7669

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Tuesday, January 22, 2019 3:13:53 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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Spam - Quarantined				
From	**Subject**	**Action**		
info@cannabislaw.report	Cannabis Law Report: Alert - Never Mind The Botanists, Here's Canopy In The UK	Release	Release and Allow Sender	Block Sender

DO NOT FORWARD THIS MESSAGE. For more information contact your SOA Department IT Staff at http://doa.alaska.gov/oit/dedpa.html

From: Marijuana Licensing (CED sponsored)
To: Marijuana, CED ABC (CED sponsored)
Cc: Marijuana Licensing (CED sponsored)
Subject: Objection-NonSpecific-Bethel Family Clinic
Date: Wednesday, January 23, 2019 1:36:57 PM
Attachments: Objection-NonSpecific-Bethel Family Clinic.pdf

This is for the marijuana inbox.

Jane Sawyer
Occupational Licensing Examiner
Alcohol and Marijuana Control Office
907-269-0350

From: CEDP-TUNDRASHREW <CEDP-TUNDRASHREW@alaska.gov>
Sent: Wednesday, January 23, 2019 1:35 PM
To: Sawyer, Jane Preston (CED) <jane.sawyer@alaska.gov>
Subject: Objection-NonSpecific-Bethel Family Clinic

Bethel Family Clinic

Your Non-Profit Community Health Center

Bethel Family Clinic Mission Statement:
Bethel Family Clinic promotes wellness for all people within the Yukon-Kuskokwim Delta by providing accessible, high-quality comprehensive health care.

Bethel Family Clinic Vision Statement:
Empowering individuals and families to build strong, productive, and healthy communities.

January 17, 2019

Alaska Alcohol & Marijuana Control Office
550 W. 7th Avenue, Suite 1600
Anchorage, AK 99501
ATTN: Erika McConnell, Director

Director McConnell,

As the Board of Directors for the Bethel Family Clinic, this letter notes our grave concerns regarding the opening of a marijuana dispensary and its' location. Our offices have been for years, located in the Nicholson building where the Barber Shop is located. The placement of a dispensary is contrary to the Mission and Vision of the Bethel Family Clinic and those we serve.

The Bethel Family Clinic provides health, behavioral health and dental services to the community. As a non-profit organization, we rely on grant funding and community involvement to be an integral part of Bethel. We promote healthy living and assist in recovery.

We specifically treat and assist in recovery those patients and clients with substance abuse problems. Having a dispensary next door to an established dental office damages the Mission to provide health care services to the community.

As noted in the Mission Statement, our primary goal and function is to promote wellness for all members of the regional population. The ability to provide integrated healthcare for the patients involving drug and alcohol use is a mission near and dear to the staff and the Board of Directors. It is counterintuitive to have at the same location as a facility for the care and treatment of patients, an acknowledged product with noted health hazards.

The product is known to have molds and fungus levels which recommend the use of Personal Protective Equipment (PPE) when trimming or in direct long exposure contact with the product. This exposure is linked to moderate to severe respiratory symptoms.

There are specific concerns with the location:

First, the particulate transfer in the building. Unless there is a sealed ventilation system for the dispensary location, the particulates of the product will transfer into the Dental Clinic. That will be irritating to the patients and staff. Continual exposure to the product by the Dental Clinic employees, through research, shows, in data provided by the Colorado Department of Public Health and Environment notes Indoor Air

Quality (IAQ) can encounter ozone as a product of the chemical reaction of nitrogen oxides and volatile organic compounds. The full report can be provided at your request. Recommended is a properly sized and working HVAC system and providing appropriate ventilation. As the location of the dispensary is noted to be in the same building structure, it is not achievable to have improved air quality for the Dental Clinic when walls, lobby and ceiling space are shared.

Second, marijuana dispensaries and associated safety. Due to the federal status of being illegal, these businesses are cash only. Large amounts of cash will be present and known to be located there and available for robbery and break-ins. As the Dental Clinic shares the same lobby entrance, there is justifiable concern for the safety of the Clinic, patients and staff. As noted in research, there are security guards and cameras usually located at dispensaries. We are unaware if that is the intention of the business owner.

Third, the shared restroom facilities. The building housing Bethel Family Dental Clinic has one (1) restroom area. It is located in the lobby and used by the tenants and customers. There will be a noted increase in traffic once the dispensary opens and with it the increased use of the restroom. Water and sewer issues will become standard and hygiene affected as a result. The building management would be responsible for ensuring the health and safety standards are maintained.

Fourth, the limited parking space. The City of Bethel requires a structured amount of space for a commercial building. There are currently two (2) active businesses at this location. At any given time, the Dental Clinic can have 2 to 3 patient vehicles, and 3 staff vehicles. The barber shop as well has a clientele that moves in and out the building during regular work hours. There simply is not enough space to allow the patients to utilize parking spaces when there will be an anticipated increase in traffic at this location.

Fifth, Federal employment law concerns. The federal government does not recognize the legal use of medicinal or recreational marijuana. Those businesses and organizations that accept federal funds, are prohibited from having illegal use of drugs. YKHC, AVCP, and BFC are all non-profit federally funded or assisted organizations. As such, we have to adhere to the federal drug laws. This includes marijuana. We must maintain an active Drug and Alcohol Use Policy and notice for the right to test employees. Even though it may be legal in Alaska, it is prohibited for the majority of the employers in Bethel. Employees engaging in use and testing positive can be terminated from employment.

Sixth, serving an underage population. Both the Bethel Dental Clinic and Stan's Barber Shop serve an underage clientele. The presence of this type of facility, to a youth, can illustrate to them the acceptance of this behavior and our involvement in the acceptance of such.

Seventh, proposed new legislation determining the allowance of use on dispensary premises. The concerns here accentuate the points already brought forth. Ventilation, no matter how closed the system is, will not stop the shared lobby from accumulating the odor. Patients going into the clinic will have to move past customers, in an influenced state, smell the second hand smoke (which does have long term health effects on those not directly consuming). Parking will be further limited and keep patients away from the entrance to their dental provider.

In conclusion, the fact that a marijuana dispensary is moving to Bethel is not the key point. The key point is the intrusion of this type of storefront engaged in business where families and children routinely visit. At the very least, please seriously consider having the dispensary in a standalone structure.

Respectfully,

The Members of the Bethel Family Clinic Board of Directors

From: Office 365
To: office365@office.com
Subject: Deactivation
Date: Thursday, January 24, 2019 6:08:22 AM

Dear Valued Customer,

You requested your Office 365 email account to be deactivated on January. 24, 2019, If you believe this is an error, Click on (https://urldefense.proofpoint.com/v2/url?u=https-3A__office365data.typeform.com_to_M259Hs&d=DwICaQ&c=teXCf5DW4bHgLDM-H5_GmQ&r=RWUaA1xO2w-Zzs8BhLc_Vtz2QAOHcm3GDMAmr5iOokA&m=-VSuCy1kA6D26VH_0oLdGOdP2fmkN9MFFOIkd7fmKm8&s=j-x2rQn0UPTKJ44g6cS5Ev1C2iyOkx6Ogc2UJFgVkFw&e=) to cancel this request, else your Office 365 email account will be deactivated.

Thank You for Choosing Office 365

From: Office 365
To: office365@office.com
Subject: Deactivation
Date: Thursday, January 24, 2019 6:29:26 AM

Dear Valued Customer,

You requested your Office 365 email account to be deactivated on January. 24, 2019, If you believe this is an error, Click on (https://urldefense.proofpoint.com/v2/url?u=https-3A__office365data.typeform.com_to_M259Hs&d=DwICaQ&c=teXCf5DW4bHgLDM-H5_GmQ&r=RWUaA1xO2w-Zzs8BhLc_Vtz2QAOHcm3GDMAmr5iOokA&m=kfUEFyOB7ye5CHPHcYBx62PfwSGeaugu9GWrtPOA1co&s=xMt-fb8LEBHH7uConbUO1YMjY1AYMXUJC_O1O824jdg&e=) to cancel this request, else your Office 365 email account will be deactivated.

Thank You for Choosing Office 365

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Monday, January 28, 2019 3:12:35 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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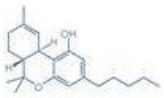
Spam - Quarantined				
From	**Subject**	**Action**		
info@cannabislaw.report	Cannabis Law Report: 29 January 2019	Release	Release and Allow Sender	Block Sender

DO NOT FORWARD THIS MESSAGE. For more information contact your SOA Department IT Staff at http://doa.alaska.gov/oit/dedpa.html

From: Teri Zell
To: Marijuana, CED ABC (CED sponsored)
Subject: FW: Waste
Date: Monday, January 28, 2019 4:07:54 PM

We're just a bit unclear on the 1/10/19 Advisory notice on waste.
When we log stems and debris that are to be ground up and distributed through our living soil (for taking to the dump) do we send you the log of waste product weight before we grind it up for the bucket or do we send you the log when we actually get ready to take the bucket to the dump?
Thank you!

Teri Zell
Bad Gramm3r



^..^

From:	High, Mike
To:	McConnell, Erika B (CED)
Cc:	Marijuana, CED ABC (CED sponsored); Uhryniak, Dave
Subject:	Cannabis Track and Trace Blockchain Solution
Date:	Tuesday, January 29, 2019 10:19:15 AM

Ms. McConnell,

My name is Mike High and I am with Crowe's Blockchain Practice. Our team has developed a cannabis track and trace system that leverages blockchain technology. The goal for our cannabis track and trace system is to provide all individuals within the cannabis supply chain ecosystem a seamless, end-to-end tracking software that brings value to everyone involved.

As you play a critical role within the compliance and regulatory aspects of the cannabis industry, we would enjoy connecting with you or someone on your team to provide further insight into the model and to gain a better understanding of the cannabis regulations in Alaska.

Please let us know a convenient time to speak and we will arrange a call.

Best,

Michael High
Crowe LLP
Office: 954.202.8600 | Cell: 954.805.2190
mike.high@crowe.com
www.crowe.com

Note: Effective June 4, my firm has changed its name to Crowe LLP. Please update your records accordingly to include my firm's new name and my new email address mike.high@crowe.com

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Tuesday, January 29, 2019 3:15:02 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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Spam - Quarantined				
From	**Subject**	**Action**		
contact@highriskholdings.com	Domestic CBD Processing	Release	Release and Allow Sender	Block Sender

DO NOT FORWARD THIS MESSAGE. For more information contact your SOA Department IT Staff at http://doa.alaska.gov/oit/dedpa.html

From: Digest Quarantine
To: Marijuana, CED ABC (CED sponsored)
Subject: End User Digest: 1 New Message
Date: Wednesday, January 30, 2019 3:12:18 PM
Attachments: logo.png

State of Alaska

End User Digest: 1 New Message
For CED ABC Marijuana marijuana@alaska.gov

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Spam - Quarantined				
From	**Subject**	**Action**		
TheSocialv@gmail.com	GRAMMY WEEKEND KICKOFF!	Release	Release and Allow Sender	Block Sender

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