

The Role of Dispensaries: The Devil *is* in the Details

D. Mark Anderson and Daniel I. Rees

September 2013

Word Count: 1247

INTRODUCTION

Relying on results from Pacula et al. (2013), Pacula and Sevigny argue that medical marijuana dispensaries increase the consumption of marijuana, increase the consumption of alcohol, and lead to more alcohol-related traffic fatalities. Below, we will:

- Argue that the dispensary indicator used by Pacula et al. (2013) is essentially unrelated to whether dispensaries were actually in operation
- Briefly evaluate the studies cited by Pacula and Sevigny as providing evidence of complementarity between alcohol and marijuana
- Present new evidence on the role of dispensaries using data on emergency department visits and alcohol sales

MEASURING DISPENSARIES

Pacula et al. (2013) used data through 2009¹, but outside of California the dispensary phenomenon was just beginning to gain momentum in 2009. The so-called “Colorado green rush” began in the summer of 2009 (Spellman, 2009; Warner, 2009; Hesse, 2012; Kamin, 2012)²; dispensaries opened throughout Montana shortly thereafter (Haskell, 2010; Ritter 2010; Volz, 2010). Quasi-legal dispensaries (often called clinics, clubs, collectives or compassion

¹ YRBS data used by Pacula et al. (2013) were from 1993-2009; data from the Treatment Episode Data Set were from 1992-2009; the FARS data were from 1990-2009.

² Fewer than two dozen medical marijuana dispensaries were operating in Colorado as of January 2009; more than 70 dispensaries had opened by September 2009, 40 of which were located in Denver (Warner, 2009).

centers) did not become commonplace in Michigan, Oregon and Washington until 2010 (Allen, 2009; Cook, 2009; Jacklet, 2010; Johnson and Korn, 2010; Keeping, 2010; Rosevear, 2010; Martin, 2011; Pitkin, 2011; Tomlinson, 2011; Crombie, 2012). The first East Coast dispensary opened in 2011 (Palermo, 2013).³ Given this timeline, any credible analysis of dispensaries and their effects should either focus on California or include data collected after 2009. Pacula et al. (2013) did neither.

Moreover, the dispensary indicator used by Pacula et al. (2013) “turns on” the year in which legislation was passed (or the year in which a regulation/rule allowing dispensaries was promulgated) as opposed to the year of implementation. As a consequence, it is divorced from reality even in states that explicitly allowed dispensaries. For instance, the Pacula et al. (2013) dispensary indicator for Colorado goes from 0 to 1 in the year 2000, but the Colorado medical marijuana law did not come into effect until 2001 and the first Colorado dispensary did not open until 2004 (Weinstein, 2010); the Pacula et al. (2013) dispensary indicator for New Jersey goes from 0 to 1 in 2009, but the New Jersey law did not come into effect until 2010 and the first New Jersey dispensary did not open until 2012 (Wells, 2012); the Pacula et al. (2013) dispensary indicator for Maine goes from 0 to 1 in 2009, but the first Maine dispensary did not open until 2011 (Palermo, 2013).⁴ Clearly, any argument based on the Pacula et al. (2013) dispensary indicator should be viewed with a great deal of skepticism.

³ By January 2011 an estimated 40-65 medical marijuana clinics/dispensaries were operating in the Las Vegas Valley (Valley, 2011).

⁴ The Pacula et al. (2013) dispensary indicator for New Mexico goes from 0 to 1 in 2007, but the first New Mexico dispensary did not open until 2009 (Holms, 2010); the Pacula et al. (2013) dispensary indicator for Rhode Island goes from 0 to 1 in 2009, but the first Rhode Island dispensary did not open until 2013 (Adamson, 2013). There are also issues with the MML indicator used by Pacula et al. (2013). For instance, the Pacula et al. (2013) MML indicator for Arizona goes from 0 to 1 in 1996, but Proposition 203, which legalized medical marijuana, was approved by Arizona voters in 2010 (Sheridan, 2010); the Pacula et al. (2013) MML indicator for Maryland goes from 0 to 1 in 2003, but medical marijuana users in Maryland were, until recently, subject to arrest and prosecution (Graves, 2012).

NOT ALL PREVIOUS STUDIES SHOULD BE TREATED EQUALLY

Researchers should provide careful and accurate evaluations of previous studies. Most policymakers have never heard of year fixed effects, have no idea what a regression discontinuity is, and do not care whether state-specific time trends were included. They count on us to communicate which studies should be taken seriously and which should be ignored. Giving studies that rely on cross-sectional policy variation the same weight as those that rely on within-state policy variation comes with the risk of leading policymakers astray.

Citing a thoroughly-discredited study without mentioning its problems also has the potential to lead policymakers astray. Yörük and Yörük (2011) made a serious coding error. Crost and Rees (2013) pointed it out and Yörük and Yörük (2013) corrected it. It is time to stop citing Yörük and Yörük (2011) as providing evidence that alcohol and marijuana are complements.

DISPENARIES, EMERGENCY DEPARTMENT VISITS, AND ALCOHOL SALES

Since Colorado legalized the use of medical marijuana in 2001, marijuana use among Coloradans has increased.⁵ To explore whether dispensaries contributed to this increase, we turned to data from Drug Abuse Warning Network (DAWN) for the period 2004 to 2011.⁶ DAWN is a surveillance system that collects data on drug-related emergency department visits to non-Federal hospitals.

⁵ For instance, according to 2002-03 NSDUH data, 21.7 percent of 18- through 25-year-olds living in Colorado used marijuana in the past month. By 2010-2011, this figure had increased to 27.3 percent.

⁶ These data are available at <http://www.samhsa.gov/data/dawn.aspx> and cover the Denver-Aurora MSA.

Figure 1 shows the number of marijuana-related emergency department (ED) visits to hospitals in the Denver area (per 100,000 population). Marijuana-related ED visits increased steadily from 2004 to 2007. They leveled off after 2007, and then increased again from 2009 to 2010, the first two years of the “Colorado green rush.” However, ED visits involving marijuana fell from 2010 to 2011 despite the continued growth of medical marijuana retail sales in Denver.⁷ ED visits to Denver hospitals involving both alcohol and marijuana increased rapidly through 2008, but fell from 2008 to 2009. They increased again from 2009 to 2010, but fell from 2010 to 2011.

To further explore whether dispensaries had an impact on alcohol consumption, we examined data on bar and liquor store sales in Denver for the period 2007 to 2012. These data are available from the Colorado Department of Revenue and are based on sales tax returns.⁸ Figure 2 shows that per capita bar sales in Denver were stable throughout the period under study. Likewise, there is no evidence of an uptick in liquor store sales despite soaring retail sales of medical marijuana in Denver from 2009 to 2012 (Warner, 2009; Warner, 2010; National Cannabis Industry Association, 2012; Roberts, 2013).

In summary, dispensaries do not appear to have been an important contributor to the increase in marijuana use among Coloradans. Data on bar and liquor store sales in Denver provide no evidence that dispensaries somehow caused an increase in alcohol consumption.

⁷ Denver medical marijuana dispensary retail sales were \$52 million in FY2010; sales climbed to \$82 million in FY2011 and \$88 million in FY2012 (National Cannabis Industry Association, 2012; Roberts, 2013). As of January 2010, 390 dispensaries had applied for a city sales tax license, but most had not opened their doors (Warner, 2010). By September 2011, Denver was home to approximately 400 dispensaries and marijuana-infused product makers (Ingold, 2011).

⁸ Liquor store sales include sales made by beer and wine stores. Sales were deflated using the CPI for alcoholic beverages in the Denver-Boulder-Greeley area and divided by Census population estimates. The CPI deflator is available at: <http://data.bls.gov/pdq/querytool.jsp?survey=cu>; Census population estimates are available at: <http://www.census.gov/popest/>.

REFERENCES

- Adamson, A. (2013). Medical marijuana center to open in Prov. Thomas Slater Compassion Center set to open. WPRI.com, March 1. Available at:
<http://www.wpri.com/news/local/providence/med-marijuana-center-to-open-in-prov>.
- Allen, J. (2009). Medical marijuana dispensary to open downtown. The Ypsilanti Courier, December 30. Available at:
http://www.heritage.com/articles/2009/12/30/ypsilanti_courier/news/doc4b3b83896872b077548362.txt.
- Anderson, D.M., Hansen, B., & Rees, D.I. (2013). Medical marijuana laws, traffic fatalities, and alcohol consumption. *Journal of Law and Economics*, 56: 333-369.
- Cook, D. (2009). First U.S. marijuana cafe opens in Portland. Reuters, November 14.
<http://www.reuters.com/article/2009/11/14/us-oregon-potcafe-idUSTRE5AD06O20091114>.
- Crombie, N. (2012). Cracks in Oregon's medical marijuana law are filled with weed. The Oregonian, April 21. Available at:
http://www.oregonlive.com/health/index.ssf/2012/04/cracks_in_oregons_medical_mari.html#rpc_token=1293866519&forcesecure=1.
- Crost, B. and D. Rees (2013). The minimum legal drinking age and marijuana use: New estimates from the NLSY97. *Journal of Health Economics*, 32: 474-476.
- Graves, L. (2012). Medical marijuana bills introduced in Maryland House to help patients. Huffington Post, February 10. Available at:
http://www.huffingtonpost.com/2012/02/10/medical-marijuana-maryland-two-bills-dan-morhaim_n_1269567.html.
- Haskell, M. (2010). Medical marijuana: Maine learns lessons from Montana. The Bangor Daily News, Dec. 17. Available at:
<http://bangordailynews.com/2010/12/17/health/maine-proceeds-carefully-with-its-pot-program-after-other-states-face-legislative-complications/>.
- Hesse, J.M. (2012). Fight for the right: Political battles over marijuana reach new level. Out Front, October 23. Available at:
<http://outfrontonline.com/focus/features-focus/fight-for-the-right-political-battles-over-marijuana-reach-new-level/>.
- Holms, S.M. (2010). New Mexico medical marijuana providers too limited by regulations to provide for patients. The Huffington Post, July 16. Available at:
www.huffingtonpost.com/2010/07/16/new-mexico-medical-mariju_n_649543.html.

Ingold, J. (2011). A map of Colorado's medical-marijuana dispensaries. The Denver Post, September 26. Available at:

<http://blogs.denverpost.com/crime/2011/09/26/a-map-of-colorados-medical-marijuana-dispensaries/1553/>.

Jacklet, B. (2010). Marijuana goes mainstream in Southern Oregon. Oregon Business, May. Available at:

<http://www.oregonbusiness.com/articles/84-may-2010/3353-high-times-in-southern-oregon>.

Johnson, E. and P. Korn (2010). A growth industry? The Portland Tribune, April 14. Available at:

<http://portlandtribune.com/component/content/article?id=28347>.

Kamin, S. (2012). Medical marijuana in Colorado and the future of marijuana regulation in the United States. McGeorge Law Review, 43: 147-167.

Keeping, J. (2010). Fired up: Legality of medical marijuana dispensaries an issue of debate in Michigan. Ann Arbor.com, December 9. Available at:

<http://www.annarbor.com/news/hazy-medical-marijuana-law-leaves-washtenaw-county-communities-dealing-with-fallout/>.

Martin, J. (2011). Pot dispensaries sprouting statewide. The Seattle Times, January 29. Available at:

http://seattletimes.com/html/localnews/2014078275_marijuana30m.html.

National Cannabis Industry Association (2012). The Colorado Cannabis Industry: A Tale of Ten Cities. Available at:

<http://thecannabisindustry.org/The-Colorado-Cannabis-Industry-A-Tale-of-Ten-Cities.pdf>.

Pacula, R.L, Powell, D., Heaton, P., & Sevigny, E.L. (2013). Assessing the effects of medical marijuana laws on marijuana and alcohol use: the devil is in the details. NBER Working Paper No. 19302.

Palermo, S. (2013). Operator of Maine's first medical marijuana facility talks about two years of business. Concord Monitor, May 27. Available at:

<http://www.concordmonitor.com/news/6431161-95/operator-of-maines-first-medical-marijuana-facility-talks-about-two-years-of-business>.

Pitkin, J. (2011). Weed, the people: Meet the Oregonians driving the marijuana marketplace. Willamette Week, January 12. Available at:

http://www.wweek.com/portland/article-16397-weed_the_people.html.

Ritter, E. (2010). One grower's pains: pot profit elusive in Montana. NPR, June 10 Available at:

<http://www.npr.org/templates/story/story.php?storyId=127742176>.

Roberts, M. (2013). Medical marijuana revenues in Colorado for 2012: \$199 million-plus. The Denver Westword, June 4. Available at:
http://blogs.westword.com/latestword/2013/06/medical_marijuana_revenues_colorado_2012_199_million.php.

Rosevear, J.M. (2010). The Wild West: Medical marijuana comes to Ann Arbor. The Ann Arbor Observer, November 28. Available at:
http://arborweb.com/articles/the_wild_west_full_article.html.

Sheridan, M. (2010). Proposition 203 to legalize medical marijuana in Arizona passes with narrow victory. The New York Daily News, November 15. Available at:
<http://www.nydailynews.com/news/national/proposition-203-legalize-medical-marijuana-arizona-passes-narrow-victory-article-1.453535>.

Spellman, J. (2009). Colorado's green rush: medical marijuana. CNN, December 14. Available at:
<http://www.cnn.com/2009/US/12/14/colorado.medical.marijuana/index.html>.

Tomlinson, S. (2011). Federal, state law enforcement officials to crack down on marijuana dispensaries. The Oregonian, June 03, Available at:
http://www.oregonlive.com/portland/index.ssf/2011/06/federal_and_state_law_enforcem.html##Static.

Valley, J. (2011). 12 arrested with ties to Las Vegas medical marijuana clinic raids. The Las Vegas Sun, Jan. 6. Available at:
<http://www.lasvegassun.com/news/2011/jan/06/12-arrested-ties-las-vegas-medical-marijuana-clini/>.

Volz, M. (2010). Drug overdose: Medical marijuana facing a backlash. The Seattle Times, May 21. Available at:
http://seattletimes.com/html/nationworld/2011924549_apusmedicalmarijuana.html.

Warner, J. (2009). Ganjapreneurs are cashing in on Colorado's booming medical pot business. The Denver Westword, September 10. Available at:
<http://www.westword.com/2009-09-10/news/medical-marijuana-is-a-pot-of-gold-for-dispensaries/>.

Warner, J. (2010). Dismantling Denver's "Pot Capital" misnomer. The Denver Westword, Jan. 6. Available at:
http://blogs.westword.com/latestword/2010/01/dismantling_denvers_pot_capito.php.

Weinstein, J. (2010). Growing Pains: Entrepreneurs cash in on medical marijuana. Steamboat Today, October 7. Available at:
<http://www.steamboattoday.com/news/2010/oct/07/growing-pains-entrepreneurs-cash-medical-marijuana/>.

Wells, C. (2012). Medical marijuana dispensary clears final hurdle to begin selling in New Jersey. The New York Daily News, October 16. Available at: <http://www.nydailynews.com/news/national/dispensary-medical-pot-wins-permit-n-article-1.1185118>.

Yörük, B. and Yörük, C. (2011). The impact of minimum legal drinking age laws on alcohol consumption and marijuana use: Evidence from a regression discontinuity design using exact date of birth. *Journal of Health Economics*, 30: 740-753.

Yörük, B. and Yörük, C. (2013). The impact of minimum legal drinking age laws on alcohol consumption, smoking, and marijuana use revisited. *Journal of Health Economics*, 32: 477-479.

Figure 1
Emergency Department Visits to Denver Hospitals
 (per 100,000 population)

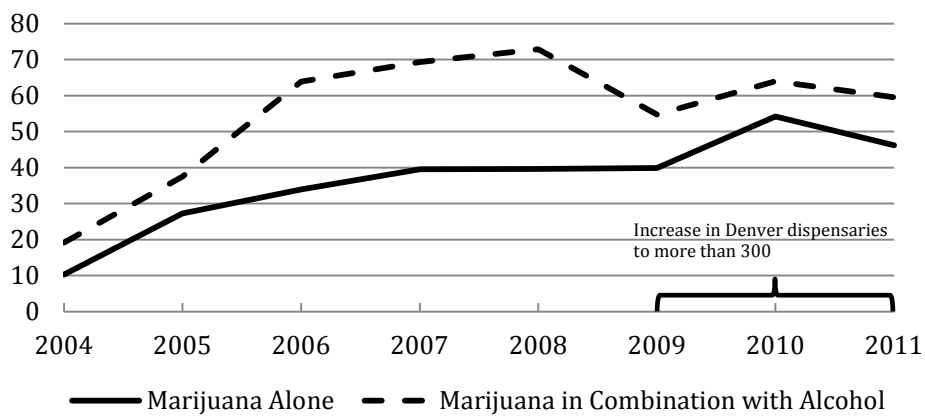


Figure 2
Per Capita Denver Alcohol Sales
 (in 2010 dollars)

