Title
INFORMATION DIFFUSION IN THE EVALUATION OF MEDICAL MARIJUANA LAWS' IMPACT ON RISK PERCEPTION AND USE RESPONSE

Permalink
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Journal
AMERICAN JOURNAL OF PUBLIC HEALTH, 106(12)

ISSN
0090-0036

Authors
Schmidt, LA
Jacobs, LM
Spetz, J

Publication Date
2016-12-01

DOI
10.2105/AJPH.2016.303490

Peer reviewed
INFORMATION DIFFUSION IN THE EVALUATION OF MEDICAL MARIJUANA LAWS’ IMPACT ON RISK PERCEPTION AND USE

Up to date, 25 US states have legalized medical marijuana use through state legislation, but no consistent information has been provided to policymakers, parents, and the general public to assess whether the passage of medical marijuana laws (MMLs) may increase or reduce the risk of marijuana use. With data from the 2004 to 2014 National Survey on Drug Use and Health (NSDUS), the article “Young people’s more permissive views about marijuana: local impact of state laws or national trend,” published in the August issue of AJPH, documented a progressive decline in the perceived risk of marijuana use among adolescents and young adults living in MML states. However, upon further analysis by controlling unmeasured between-state differences, this MML-related risk disappeared, as observed in a number of other studies also using national survey data. On the other hand, studies using hospital data and criminal records consistently indicate a positive association between MMLs and marijuana use. Unfortunately, findings from these studies cannot be generalized to the US population because the study samples are not representative.

Despite the strengths of national survey data, using such data to assess MML must consider the process by which laws and regulations affect people. It is well established that information diffusion is a key process for public health laws and regulations to exert their impact. This mechanism becomes more salient in the information era with increased amount and speed of effective information exchange. Just like the effect of cross-contamination in interfering with the evaluation of a behavioral intervention trial, the effect of MML may be masked, to a great extent, by information diffusion. No valid conclusion would be possible without considering this diffusion process if national survey data were used to assess MML.

In MML research practice, it is neither easy to directly measure the diffusion process nor simple to analyze it with designs and statistical methods commonly used in research. Two approaches can be potentially employed to control for diffusion effect without a direct measurement of the diffusion process: individual-based informational correlation and population-based diffusion modeling. In the first approach, the diffusion effect can be modeled through informational correlation by randomly pairing participants in MML states with participants in non-MML states using a method we developed to assess between-participant communications in an intervention trial. In the second approach, the effect of MMLs can be effectively detected by incorporating a nonlinear component that characterizes the informational correlation.

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REFERENCES

ABOUT THE AUTHOR
Xinguang “Jim” Chen, MD, PhD

Xinguang “Jim” Chen is with the Department of Epidemiology, College of Public Health and Health Professions, College of Medicine, University of Florida, Gainesville. Correspondence should be sent to Xinguang “Jim” Chen, Professor, Department of Epidemiology, University of Florida,
borders. Now, with more than half of US states having passed medical marijuana laws, the cumulative effects on society may be significant.

Although it was beyond the scope of our study to test the mechanisms of shifting norms, future studies should consider how information about marijuana policy diffuses through the social networks of young people. The authors suggest a particular statistical strategy for doing so. However, we would urge hypothesis-driven research that tests multiple mechanisms. Symbolically powerful political events at the national level should be explored, such as President Obama’s 2006 public admission to marijuana use and the national debate over the constitutionality of marijuana legalization. Researchers should consider how marketing of new marijuana products (e.g., “dabs”) popularized by music celebrities impacts young people’s views. More generally, they should study the impacts of commercialization of marijuana by producers and distributors.1,2 Finally, age-period-cohort studies should consider how cohorts of parents who experimented with drugs while young might influence attitudes in subsequent generations.

We agree that it is important for researchers to measure the extent to which the trend toward more permissive attitudes is impacting marijuana consumption. A young person’s attitude about drugs is the strongest single predictor of drug consumption.3,4 When a generation of young people grows more permissive in their views, repercussions may be felt over subsequent decades. Thus, those who came of age during the repeal of alcohol prohibition became a “wet generation” on the forefront of a long wave of rising alcohol consumption in America.5,6 As current generations mature to voting age, views forged during adolescence may drive more liberal drug policy choices by the electorate. The national trend toward more permissive views among young people observed in our study may portend the continuing relaxation of marijuana controls in America. 

Laura A. Schmidt PhD, MSW, MPH
Laurie M. Jacobs, PhD
Joanne Spetz, PhD

California San Francisco (UCSF). Laura A. Schmidt is also with the Department of Anthropology, History, and Social Medicine, School of Medicine, UCSF. Joanne Spetz is also with the Department of Family and Community Medicine and Department of Social and Behavioral Sciences, School of Nursing, UCSF.

Correspondence should be sent to Laura A. Schmidt, Professor, 3333 California Street, Suite 265, San Francisco, CA 94118 (e-mail: laura.schmidt@ucsf.edu). Reprints can be ordered at http://www.ajph.org by clicking the “Reprints” link.

This letter was accepted September 19, 2016. doi: 10.2105/AJPH.2016.303490

CONTRIBUTORS
All of the authors contributed equally to this letter.

REFERENCES

Laura A. Schmidt PhD, MSW, MPH
Laurie M. Jacobs, PhD
Joanne Spetz, PhD

ABOUT THE AUTHORS
All of the authors are with the Philip R. Lee Institute for Health Policy Studies, School of Medicine, University of California San Francisco (UCSF). Laura A. Schmidt is also with the Department of Anthropology, History, and Social Medicine, School of Medicine, UCSF. Joanne Spetz is also with the Department of Family and Community Medicine and Department of Social and Behavioral Sciences, School of Nursing, UCSF.

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