

Daily cannabis use is associated with lower likelihood of **daily illicit opioid use** among people who use illicit drugs with **chronic pain** in Vancouver, Canada

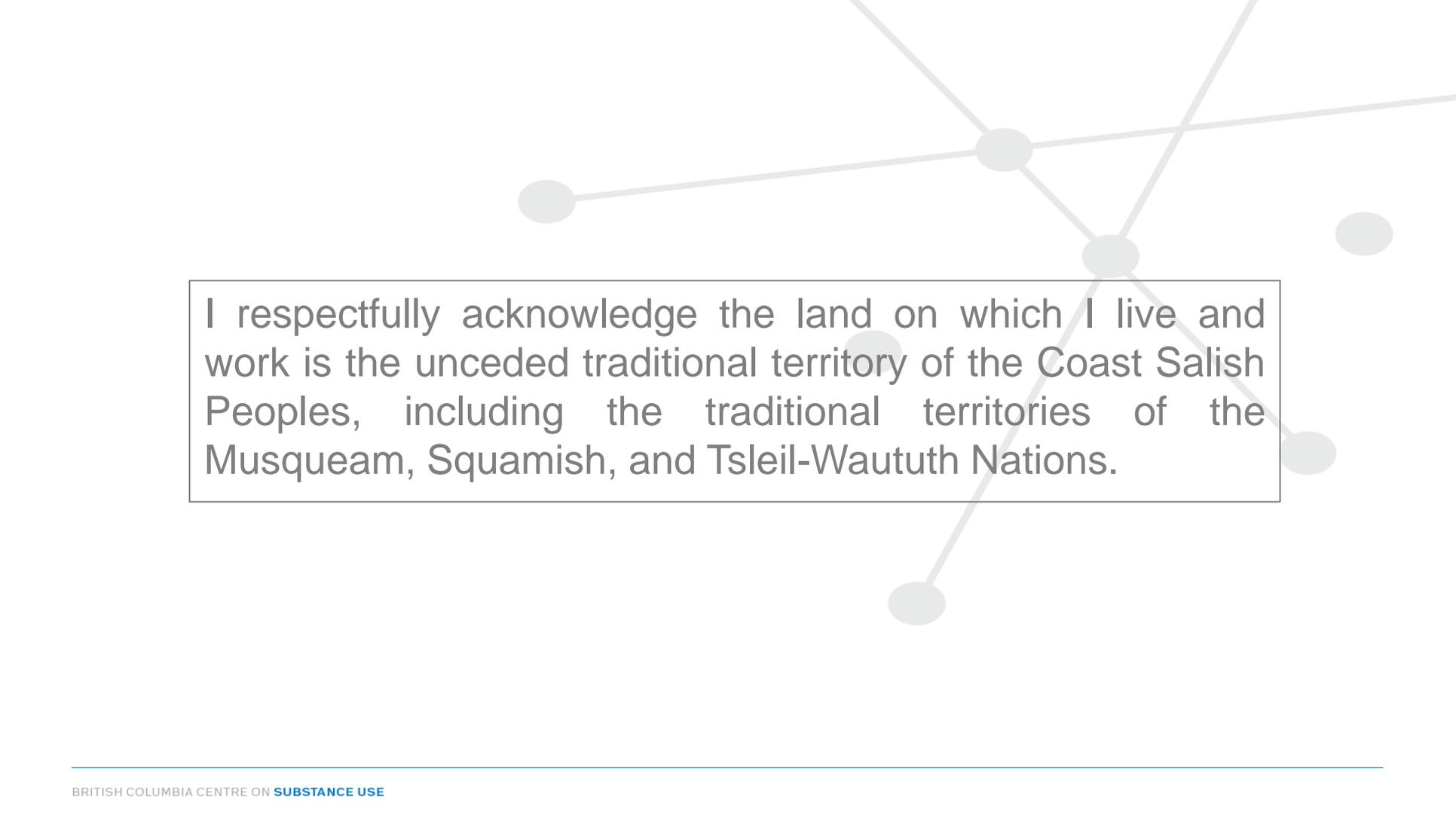
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Original Investigation

Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999-2010

Marcus A. Bachhuber, MD; Brendan Saloner, PhD; Chinazo O. Cunningham, MD, MS; Colleen L. Barry, PhD, MPP

[← Invited Commentary](#)

IMPORTANCE Opioid analgesic overdose mortality continues to rise in the United States, driven by increases in prescribing for chronic pain. Because chronic pain is a major indication for medical cannabis, laws that establish access to medical cannabis may change overdose mortality related to opioid analgesics in states that have enacted them.

OBJECTIVE To determine the association between the presence of state medical cannabis laws and opioid analgesic overdose mortality.

DESIGN, SETTING, AND PARTICIPANTS A time-series analysis was conducted of medical cannabis laws and state-level death certificate data in the United States from 1999 to 2010; all 50 states were included.

EXPOSURES Presence of a law establishing a medical cannabis program in the state.

MAIN OUTCOMES AND MEASURES Age-adjusted opioid analgesic overdose death rate per 100 000 population in each state. Regression models were developed including state and year fixed effects, the presence of 3 different policies regarding opioid analgesics, and the state-specific unemployment rate.

RESULTS Three states (California, Oregon, and Washington) had medical cannabis laws effective prior to 1999. Ten states (Alaska, Colorado, Hawaii, Maine, Michigan, Montana, Nevada, New Mexico, Rhode Island, and Vermont) enacted medical cannabis laws between 1999 and 2010. States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate (95% CI, -37.5% to -9.5%; $P = .003$) compared with states without medical cannabis laws. Examination of the association between medical cannabis laws and

Table 1. Association between medical cannabis laws and state-level opioid analgesic mortality rates in the United States, 1990–2010

INDEPENDENT VARIABLE	ESTIMATE (95% CI)
Medical cannabis law	-24.8 (-37.5 to -9.5)
Prescription drug monitoring program	3.7 (-12.7 to 23.3)
Law requiring/allowing pharmacists to request patient identification	5.0 (-10.4 to 23.1)
Increased state oversight of pain management clinics	-7.6 (-19.1 to 5.6)
Annual state unemployment rate	4.4 (-0.3 to 9.3)

Nevada, New Mexico, Rhode Island, and Vermont) enacted medical cannabis laws between 1999 and 2010. States with medical cannabis laws had a 24.8% lower mean annual opioid overdose mortality rate (95% CI, -37.5% to -9.5%; $P = .003$) compared with states without medical cannabis laws. Examination of the association between medical cannabis laws and

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JAMA Internal Medicine | Original Investigation | HEALTH CARE POLICY AND LAW

Association Between US State Medical Cannabis and Opioid Prescribing in the Medicare Part D

Ashley C. Bradford, BA; W. David Bradford, PhD; Amanda Abraham, PhD; Grace Bagwell Adams, PhD

AJPH RESEARCH

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

June H. Kim, MPhil, MHS, Julian Santaella-Tenorio, DVM, MS, 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



Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Recreational marijuana legalization and prescription opioids received by Medicaid enrollees

Yuyan Shi^{a,*}, Di Liang^a, Yuhua Bao^b, Ruopeng An^c, Mark S. Wallace^d, Igor Grant^e

Do Medical Marijuana Laws Increase Hard-Drug Use?

Yu-Wei Luke Chu Victoria University of Wellington

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Full length article

Medical marijuana policies and hospitalizations related to marijuana and opioid pain reliever

Yuyan Shi^{*}

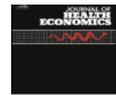
Department of Family Medicine and Public Health, University of California, San Diego, CA, USA



Contents lists available at ScienceDirect

Journal of Health Economics

journal homepage: www.elsevier.com/locate/econbase



Do medical marijuana laws reduce addictions and deaths related to pain killers?[☆]

David Powell^{a,*}, Rosalie Liccardo Pacula^{a,b}, Mireille Jacobson^{b,c}



ADDICTION

RESEARCH REPORT

SSA SOCIETY FOR THE STUDY OF ADDICTION

doi:10.1111/add.14382

Medical cannabis legalization and opioid prescriptions: evidence on US Medicaid enrollees during 1993–2014

Di Liang¹, Yuhua Bao², Mark Wallace³, Igor Grant⁴ & Yuyan Shi¹

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International Journal of Drug Policy

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Research paper

Medical cannabis access, use, and substitution for prescription opioids and other substances: A survey of authorized medical cannabis patients



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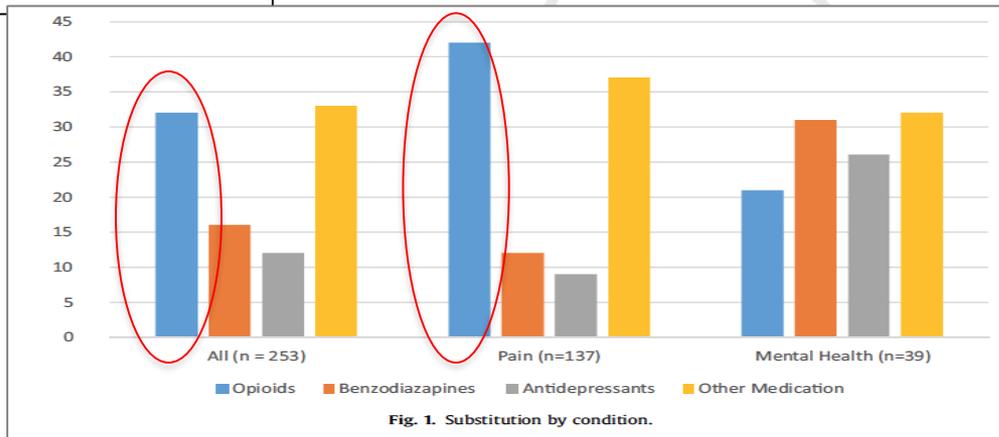


Fig. 1. Substitution by condition.

High Hopes For opioids — an

Downtown Eastside advocate

CBC News Posted: Aug 28, 2017 4:59 PM



Sarah Blyth, far right, president of the Downtown Eastside will save lives by ge



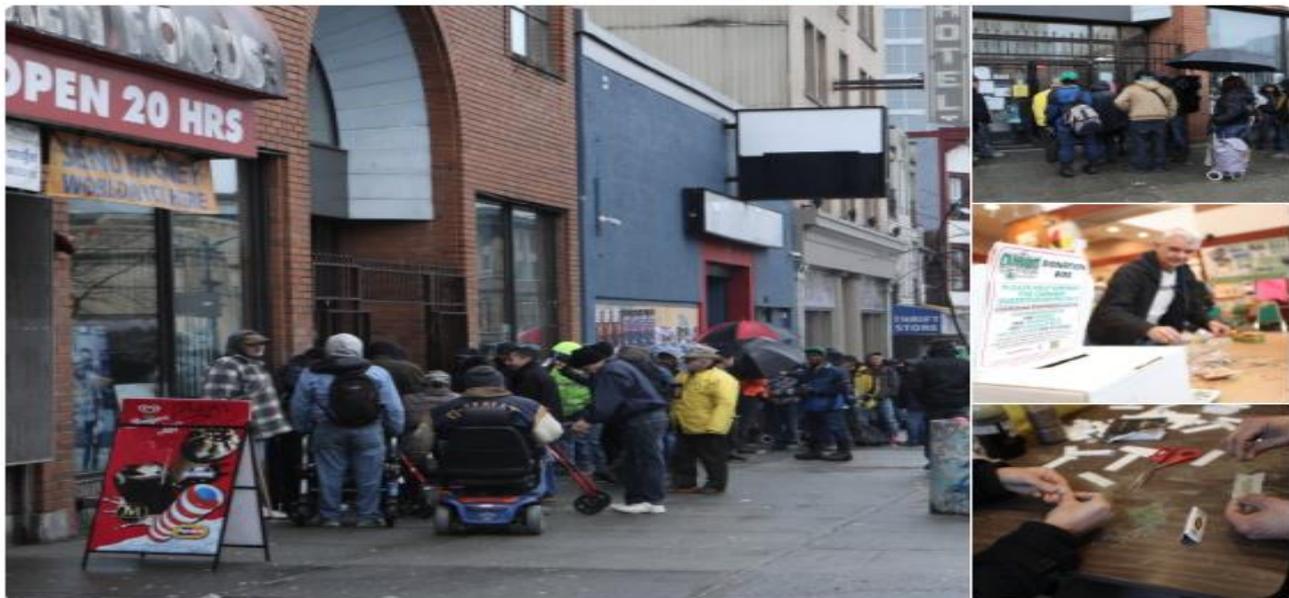
Amanda Siebert

@amanda_siebert

Following



More than 100 people lined up for free pre-rolled joints and edibles as part of the [#Cannabis](#) Substitution Project at VANDU today. [#DTES](#) [#harmreduction](#)



5:51 PM - 2 Dec 2017

63 Retweets 116 Likes



Among people who use illicit drugs with chronic pain...

- What is the prevalence and frequency of cannabis use?
- What are the therapeutic and non-therapeutic uses of cannabis?
- Do people who use cannabis use fewer illicit opioids?

Study methods

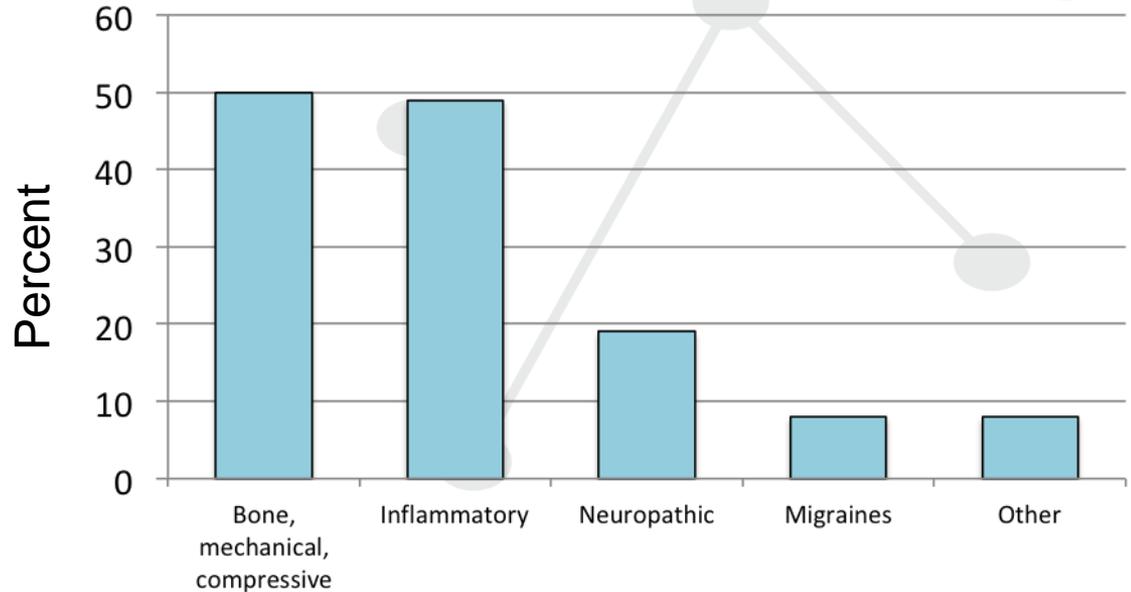
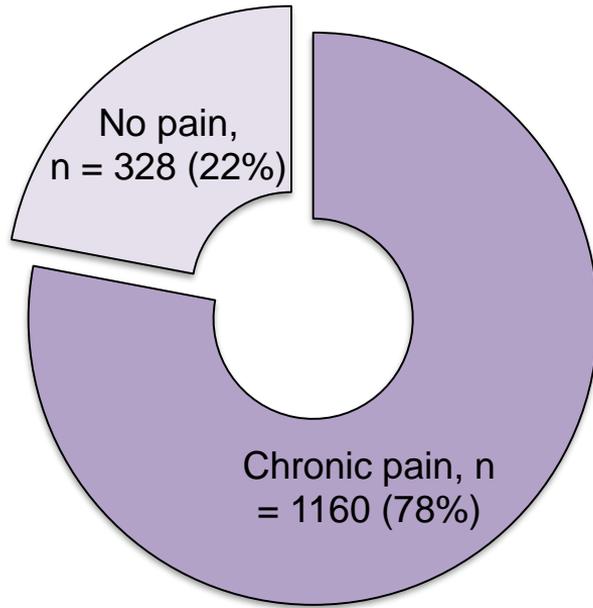
- Used data from two prospective cohort studies of people who use drugs
 - VIDUS: n = 1500 HIV-negative people who use injection drugs (1996-)
 - ACCESS: n = 1100 HIV-positive people who use drugs (2005-)
- Community recruited (mostly DTES)
- Biannual questionnaire eliciting socio-demographic info & up-to-date exposures (drug use, risk behaviours, health issues, etc.)

Study methods

- In June 2014, we added a question about pain:
 - “In the last six months, have you had any major or persistent pain (other than minor headaches, sprains, etc.)?”
 - Individuals included in the study from the first follow-up in which they reported pain (considered the “baseline” measurement in this study).
- Outcome = Illicit use (injection or non-injection) of opioids (heroin or pharmaceutical opioids) in previous six months
 - defined as: \geq once / day vs. $<$ once / day
- Main independent variable = Cannabis use in previous six months
 - defined as: \geq once / day vs. $<$ once / day

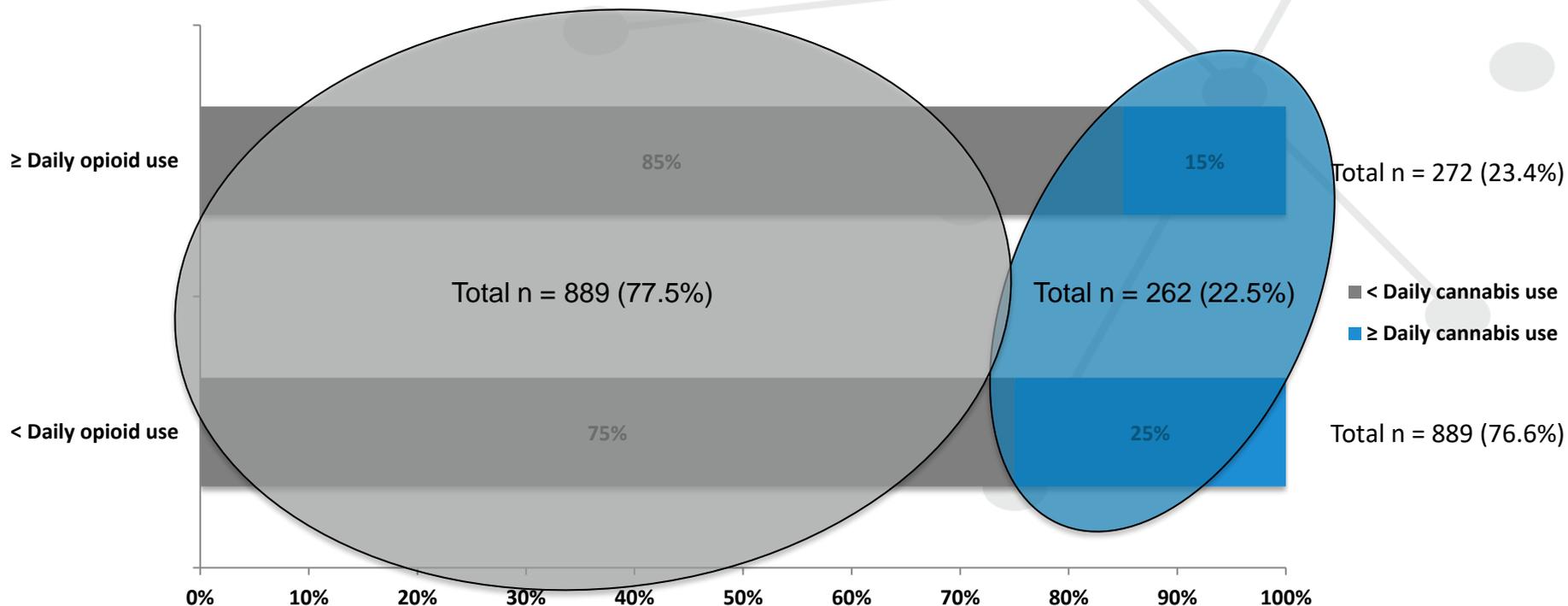
Results: Cannabis, opioids, and pain

Major or persistent pain, June 2014 – December 2017



Type of pain reported at baseline, n = 1160

Daily usage patterns at baseline, n = 1160



Lake et al., unpublished data

Longitudinal associations w/ daily opioid use

Adjusted generalized linear mixed effects models of the relationship between daily cannabis use and daily illicit opioid use among 1160 PWUD with chronic pain in Vancouver, Canada.

Characteristic	Adjusted odds ratio (95 % CI)	p-value
Daily cannabis use (vs. < Daily use)	0.46 (0.31 – 0.69)	<0.001
Male (vs. Female)	1.15 (0.74 – 1.80)	0.530
Age (per year older)	0.91 (0.89 – 0.94)	<0.001
Daily crack or cocaine use (vs. < Daily use)	2.52 (1.70 – 3.73)	<0.001
Daily methamphetamine use (vs. < Daily use)	4.17 (2.61 – 6.66)	<0.001
HIV-positive (vs. HIV-negative)	0.48 (0.31 – 0.73)	0.001
Prescribed medication for pain (vs. no)	0.69 (0.51 – 0.94)	0.017
Past-week pain rate = moderate (vs. low-none)	1.25 (0.85 – 1.84)	0.261
Past week pain rate = High (vs. low-none)	1.58 (1.05 – 2.37)	0.029

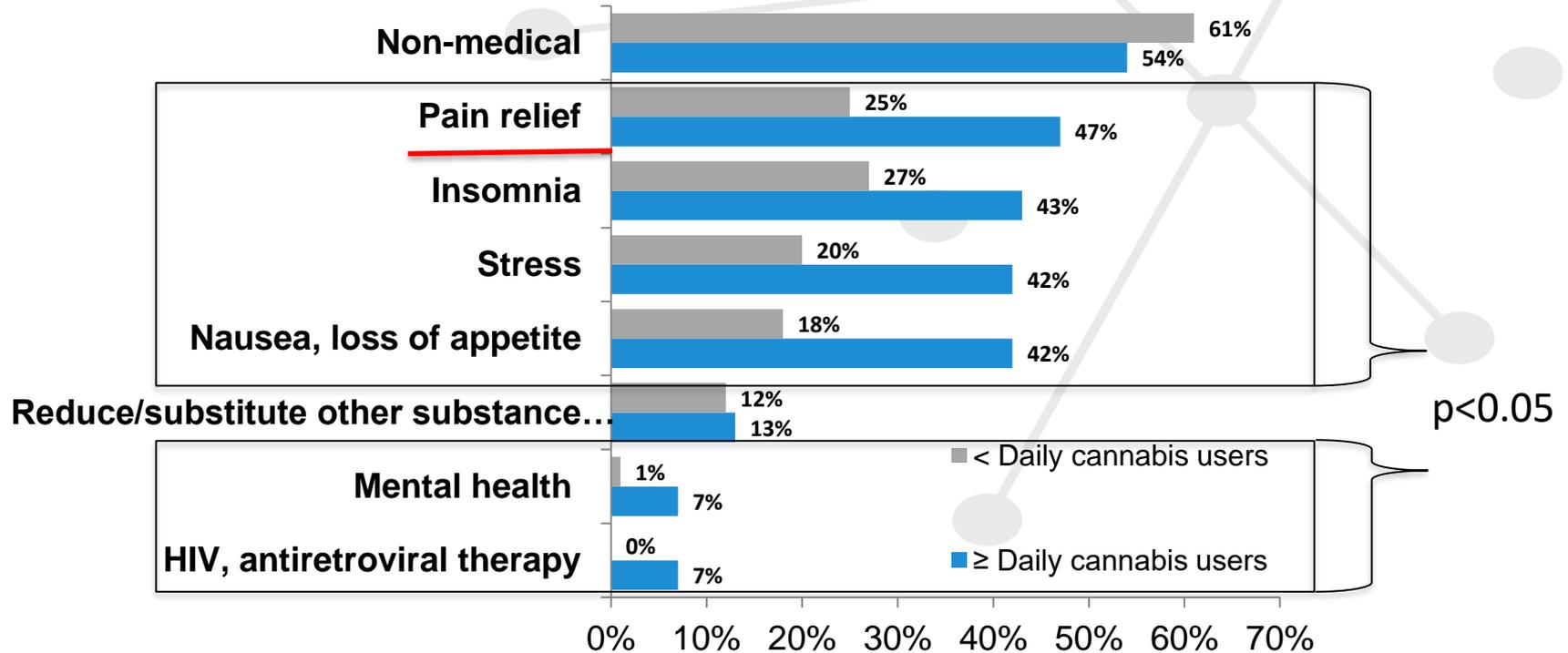
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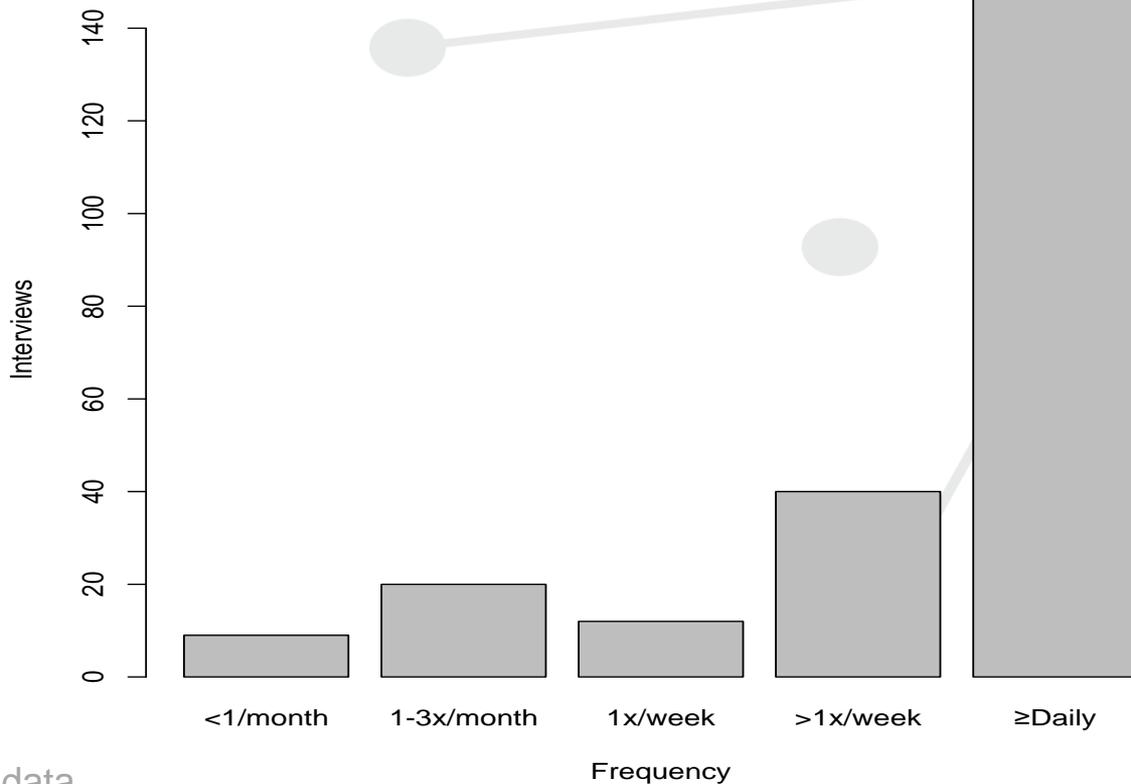
Relative to occasional or non-users of cannabis, the odds of daily illicit opioid use are 54% lower during periods of \geq daily cannabis use among PWUD with chronic pain

Self-reported reasons for cannabis use among 414 daily and occasional cannabis using PWUD with chronic pain, June-December 2017



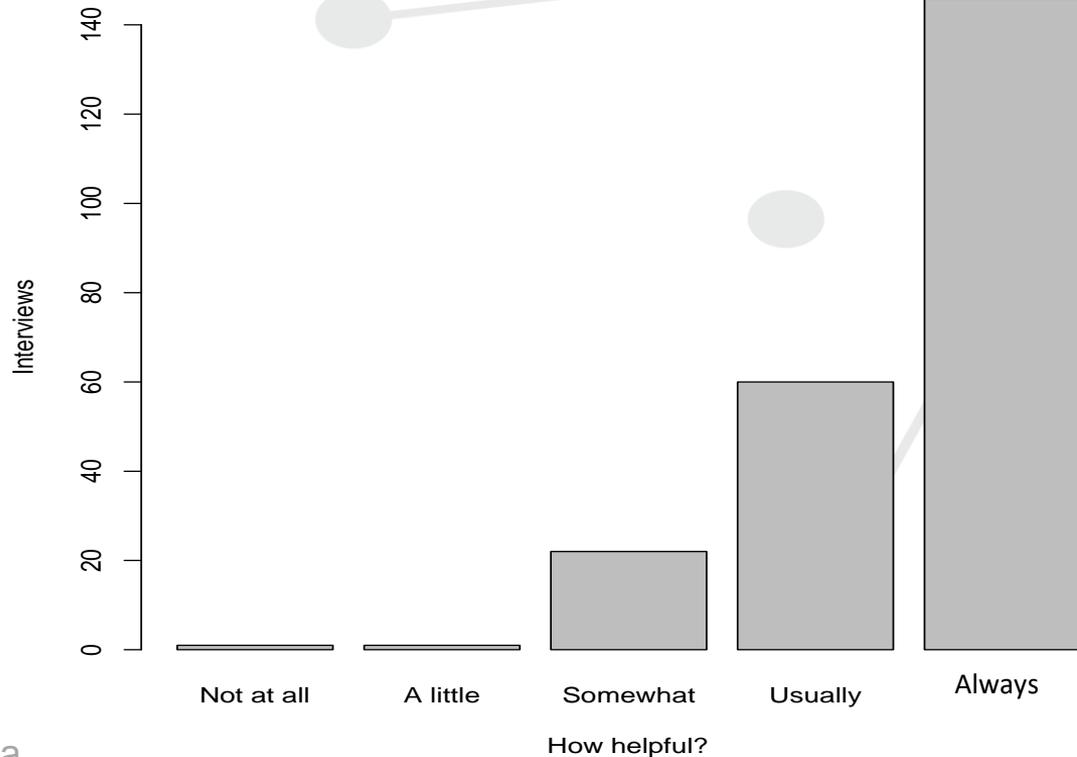
Lake et al., unpublished data

Frequency of use among respondents who cited “pain” as the main reason for using cannabis



Unpublished data

Perceived effectiveness of cannabis for pain management among respondents who cited “pain” as the main reason for using cannabis



Unpublished data

Summary of Findings

- Prevalence of major and persistent pain is very high among PWUD
- PWUD who use cannabis report a range of reasons of use
 - Therapeutic motivations significantly more common in daily users
 - Perceived effectiveness of cannabis is high among those who report using primarily for pain relief
- We observed an independent negative association between frequent cannabis use and frequent illicit opioid use

Interpretation & Discussion

- Findings consistent with *ad-hoc* use of cannabis as an adjunct or substitute for illicit opioids in the management of pain
 - Opioid-sparing hypothesis
- **Possible alternative explanations:**
 - Unmeasured characteristic(s) that predispose cannabis users to lower-risk substance use at the outset
 - Cannabis is effectively being used to manage health issues associated with pain leading to improved pain-related outcomes
 - E.g., insomnia, stress

Study Limitations

- Participants not randomly recruited; representativeness to other groups of people who use drugs unknown;
- Drug use data self-reported;
- Retrospective data on cannabis use does not include details of cannabis type, route of administration, dose, etc.;
- Causality cannot be inferred.

Conclusions

- Frequent cannabis use associated with lower risk of frequent opioid use among PWUD with pain
- Individual-level evidence to guide ongoing community cannabis-based harm reduction programs
- Follow-up experimental research needed to determine underlying mechanisms and establish optimal regimens, etc.

Thank You!

Acknowledgments



FONDATION
PIERRE ELLIOTT
TRUDEAU
FOUNDATION



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- Co-authors: Thomas Kerr, Jane Buxton, Zach Walsh, Evan Wood, M-J Milloy

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