

Substance Use & Public Health: Are We Measuring What Matters?

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SIMON FRASER UNIVERSITY
FACULTY OF HEALTH SCIENCES



Centre for Addiction and Mental Health
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	HIV/AIDS DALYs		Drug use disorders* DALYs		Poisoning DALYs		Suicide/self-inflicted injuries DALYs		Trauma† DALYs		Total illicit drugs DALYs		Total alcohol DALYs		Total tobacco DALYs	
	Number (000s)	%	Number (000s)	%	Number (000s)	%	Number (000s)	%	Number (000s)	%	Number (000s)	%	Number (000s)	%	Number (000s)	%
Africa	0	0	939 000	100	9 000	0.8	46 000	3.7	136 000	0.7	1 131 000	0.3	7 759 000	2.1	1 930 000	0.5
Americas	231 000	10.7	2 446 000	100	55 000	9.3	81 000	5.0	297 000	2.8	3 110 000	2.2	13 102 000	9.1	8 837 000	6.1
Europe	620 000	52.5	1 369 000	100	23 000	1.1	170 000	5.5	213 000	1.7	2 395 000	1.6	17 342 000	11.4	17 725 000	11.7
Eastern Mediterranean	199 000	21.6	1 675 000	100	7 000	1.7	68 000	6.2	168 000	1.1	2 117 000	1.5	763 000	0.5	2 793 000	2.0
Southeast Asia	588 000	9.6	1 252 000	100	17 000	0.9	445 000	6.2	283 000	0.6	2 585 000	0.6	12 066 000	2.7	12 764 000	2.8
Western Pacific	788 000	54.1	674 000	100	22 000	1.7	39 000	0.7	363 000	1.4	1 886 000	0.7	18 393 000	6.9	12 848 000	4.8
Global DALYs	2 426 000	4.1	8 355 000	100	133 000	1.8	849 000	4.3	1 460 000	1.1	13 223 000	0.9	69 424 000	4.5	56 897 000	3.7

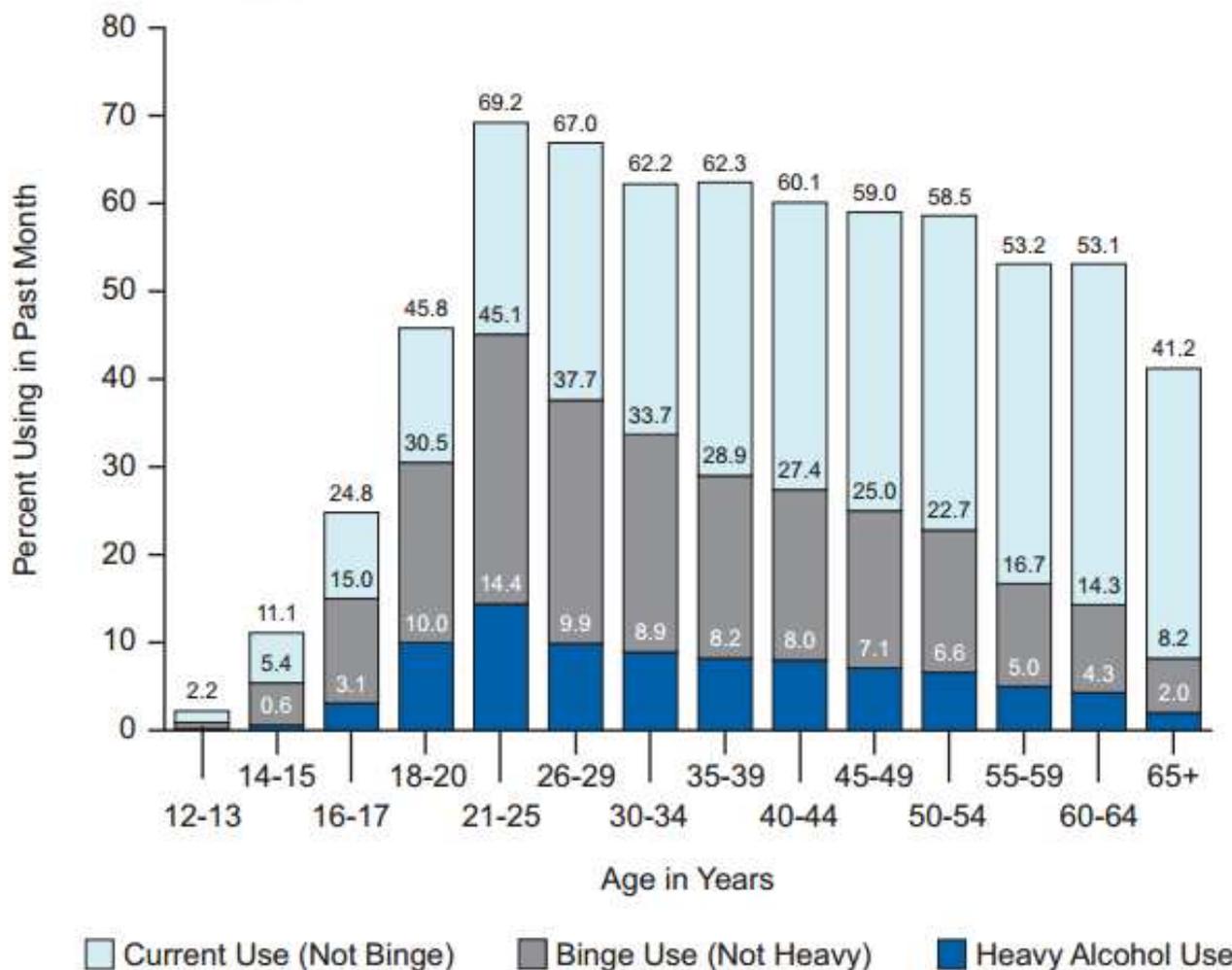
Extracted from reference 31. WHO regional definitions used.^{31,33} *Cannabis was not included in these estimates. †Included road-traffic accidents, falls, fires, drownings, and other unintentional injuries—these estimates specifically excluded violence as a potential consequence of illicit drug use.

Table 7: Estimated disability-adjusted life years (DALYs) attributable to illicit drug use according to several major causes, compared with alcohol and tobacco, 2004

Substance Use & Public Health:

- Drug use (i.e., illicit/prescription drugs) entails major health, social and economic problems in societies
- Main focus/indicator of measurement (e.g., population surveys) continues to be on drug 'use'
- BUT: Paradigm shift towards public health framework => 'harms' (not 'use') relevant for public health (example: alcohol)
- Morbidity (e.g., dependence, chronic/infectious disease) & mortality (e.g., overdose) as key harm categories relevant for public health
- Important: Key harm outcomes not evenly distributed across use; most are determined by few key 'mediators' => should be focus of systematic measurement

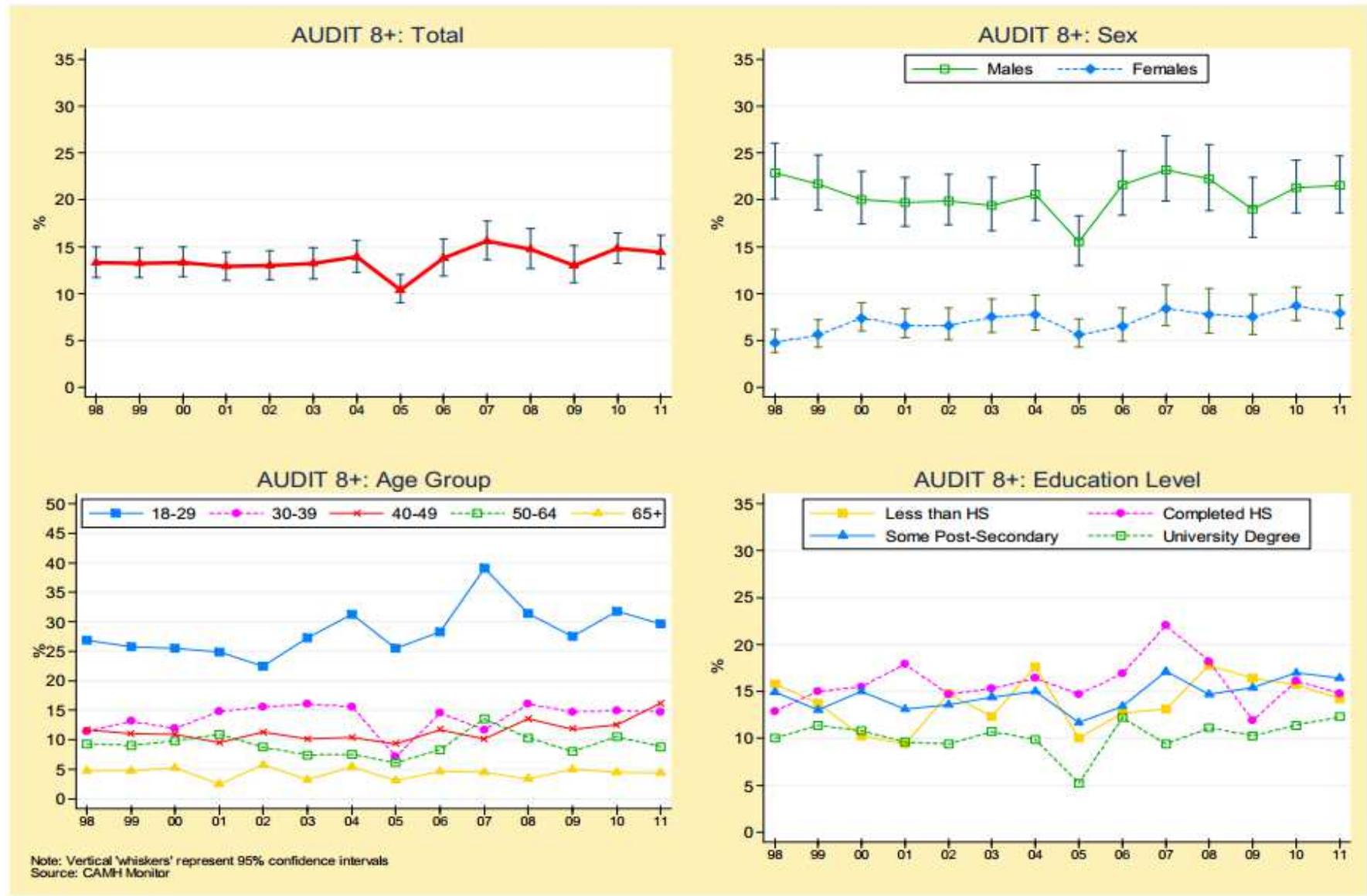
Figure 3.1 Current, Binge, and Heavy Alcohol Use among Persons Aged 12 or Older, by Age: 2012



Note: The past month binge alcohol use estimate for 12 or 13 year olds is 0.9 percent, and the past month heavy alcohol use estimate is 0.2 percent.

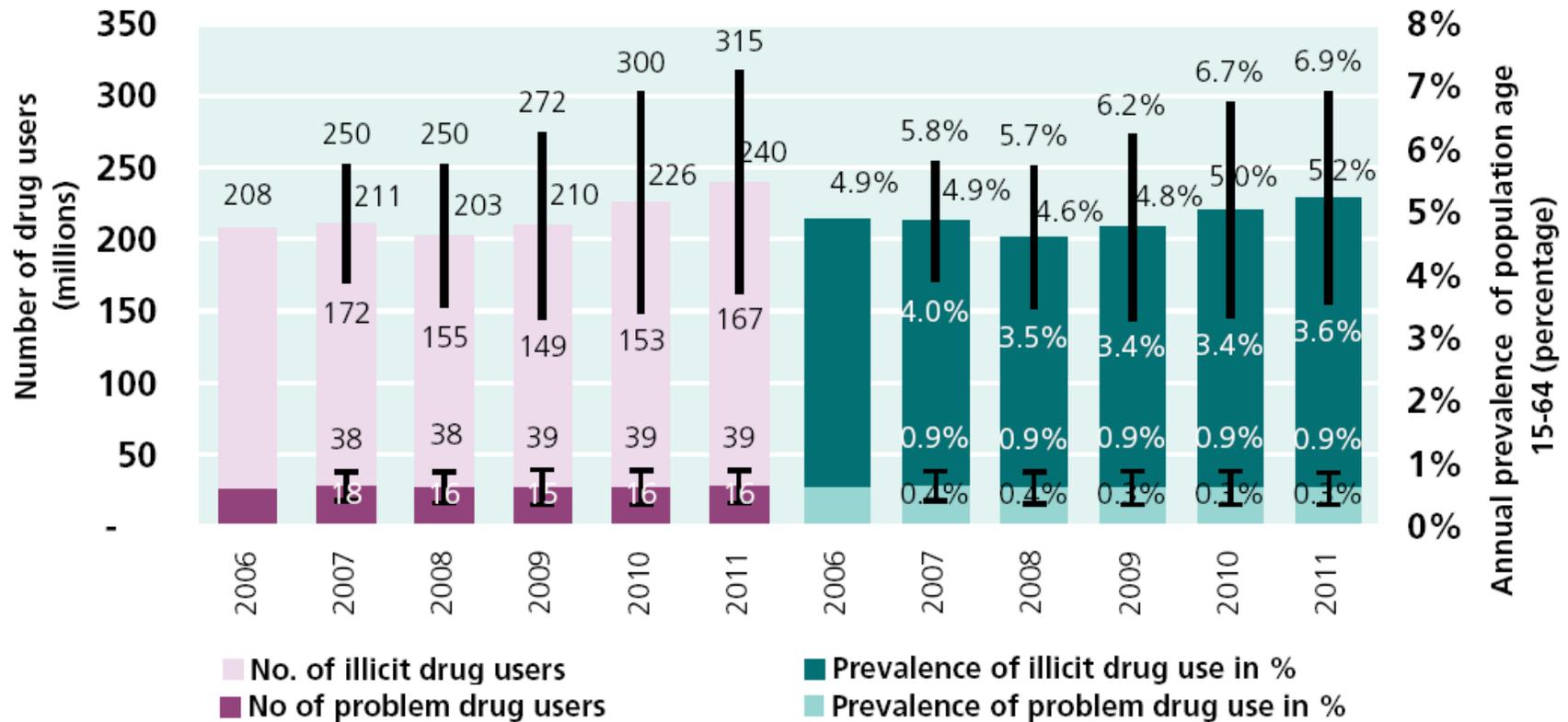
Source: Substance Abuse and Mental Health Services Administration. *Results from the 2012 national survey on drug use and health: summary of national findings*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2013.

Figure 3.6.2
Percentage Drinking Hazardously or Harmfully (AUDIT 8+) in the Past Year, Ontarians Aged 18+, 1998–2011



Source: Ialomiteanu AR, Adlaf EM, Hamilton H, Mann RE. 2011 CAMH Monitor eReport: Addiction and Mental Health Indicators Among Ontario Adults, 1977–2011. Toronto: Centre for Addiction and Mental Health; 2012.

Fig. 1. Trends in drug use, 2006-2011



Source: United Nations Office on Drugs and Crime (UNODC). *World Drug Report, 2013*. New York: United Nations Publications; 2013.

Example 1: Cannabis

- Cannabis as most widely used illicit drug globally (~ 150 – 200 million)
- Populations survey measurement mainly focuses on ‘use’; key reviews report ‘adverse effects’ (e.g., mental health/dependence, pulmonary disease, accidents) of use
- But: Bulk of cannabis harms occur in 20 – 30% of users, mainly mediated by: ->(young) age of onset; -> frequency of use (e.g., daily/near-daily); -> cannabis use & driving; -> use techniques
- These risk/harm indicators not systematically (or not at all) measured/considered in key surveys

REVIEW ARTICLE

Dan L. Longo, M.D., *Editor*

Adverse Health Effects of Marijuana Use

Nora D. Volkow, M.D., Ruben D. Baler, Ph.D., Wilson M. Compton, M.D.,
and Susan R.B. Weiss, Ph.D.

IN LIGHT OF THE RAPIDLY SHIFTING LANDSCAPE REGARDING THE LEGALIZATION of marijuana for medical and recreational purposes, patients may be more likely to ask physicians about its potential adverse and beneficial effects on health. The popular notion seems to be that marijuana is a harmless pleasure, access to which should not be regulated or considered illegal. Currently, marijuana is the most commonly used “illicit” drug in the United States, with about 12% of people 12 years of age or older reporting use in the past year and particularly high rates of use among young people.¹ The most common route of administration is inhalation. The greenish-gray shredded leaves and flowers of the *Cannabis sativa* plant are smoked (along with stems and seeds) in cigarettes, cigars, pipes, water pipes, or “blunts” (marijuana rolled in the tobacco-leaf wrapper from a cigar). Hashish is a related product created from the resin of marijuana flowers and is usually smoked (by itself or in a mixture with tobacco) but can be ingested orally. Marijuana can also be used to brew tea, and its oil-based extract can be mixed into food products.

The regular use of marijuana during adolescence is of particular concern, since use by this age group is associated with an increased likelihood of deleterious consequences² (Table 1). Although multiple studies have reported detrimental effects, others have not, and the question of whether marijuana is harmful remains the subject of heated debate. Here we review the current state of the science related to the adverse health effects of the recreational use of marijuana, focusing on those areas for which the evidence is strongest.

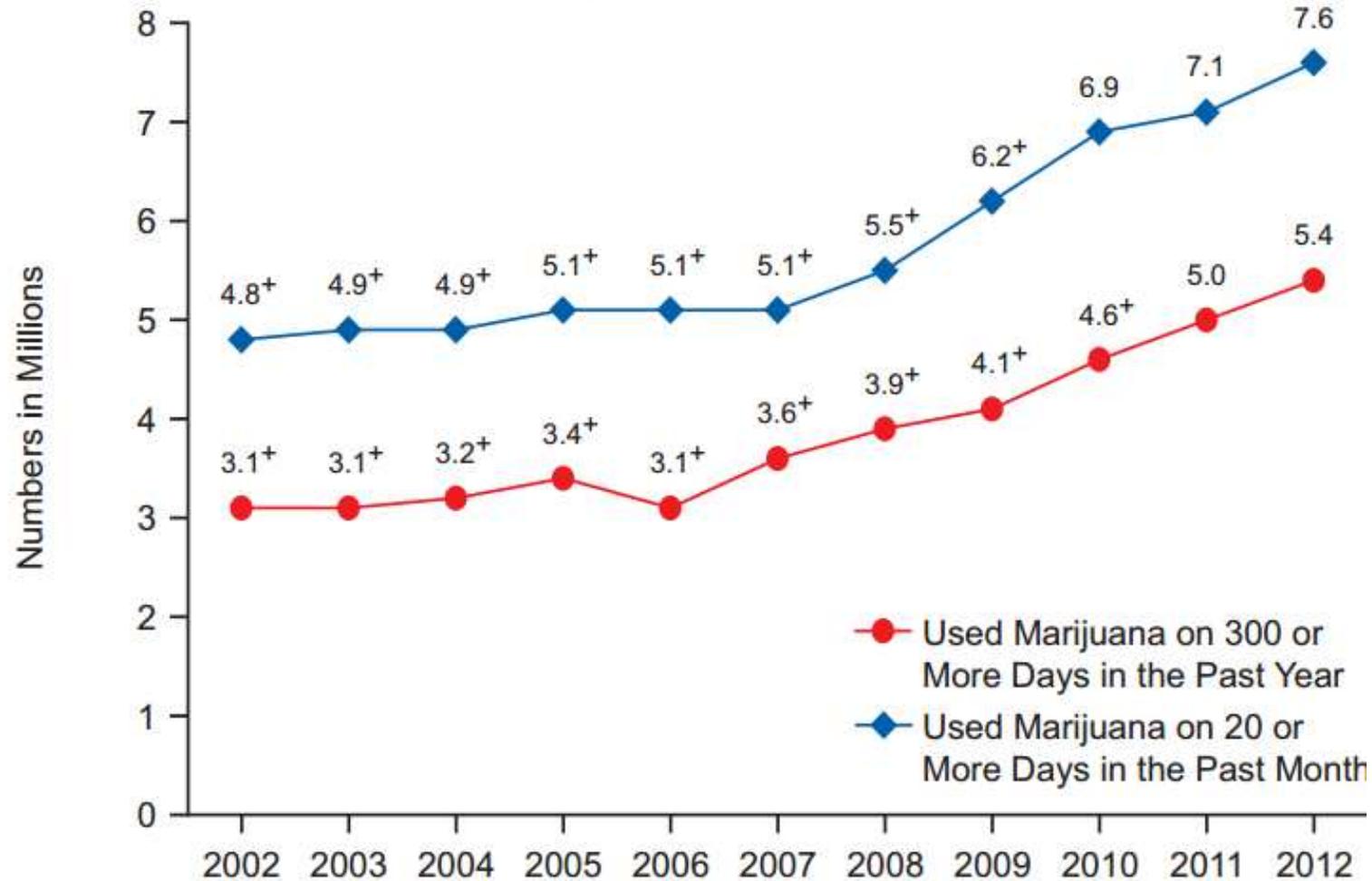
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Figure 2.15 Daily or Almost Daily Marijuana Use in the Past Year and Past Month among Persons Aged 12 or Older: 2002-2012



⁺ Difference between this estimate and the 2012 estimate is statistically significant at the .05 level.

Lower Risk Cannabis Use Guidelines for Canada (LRCUG): A Narrative Review of Evidence and Recommendations

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ABSTRACT

Objectives: More than one in ten adults – and about one in three young adults – report past year cannabis use in Canada. While cannabis use is associated with a variety of health risks, current policy prohibits all use, rather than adopting a public health approach focusing on interventions to address specific risks and harms as do policies for alcohol. The objective of this paper was to develop ‘Lower Risk Cannabis Use Guidelines’ (LRCUG) based on research evidence on the adverse health effects of cannabis and factors that appear to modify the risk of these harms.

Methods: Relevant English-language peer-reviewed publications on health harms of cannabis use were reviewed and LRCUG were drafted by the authors on the basis of a consensus process.

Synthesis: The review suggested that health harms related to cannabis use increase with intensity of use although the risk curve is not well characterized. These harms are associated with a number of potentially modifiable factors related to: frequency of use; early onset of use; driving after using cannabis; methods and practices of use and substance potency; and characteristics of specific populations. LRCUG recommending ways to reduce risks related to cannabis use on an individual and population level – analogous to ‘Low Risk Drinking Guidelines’ for alcohol – are presented.

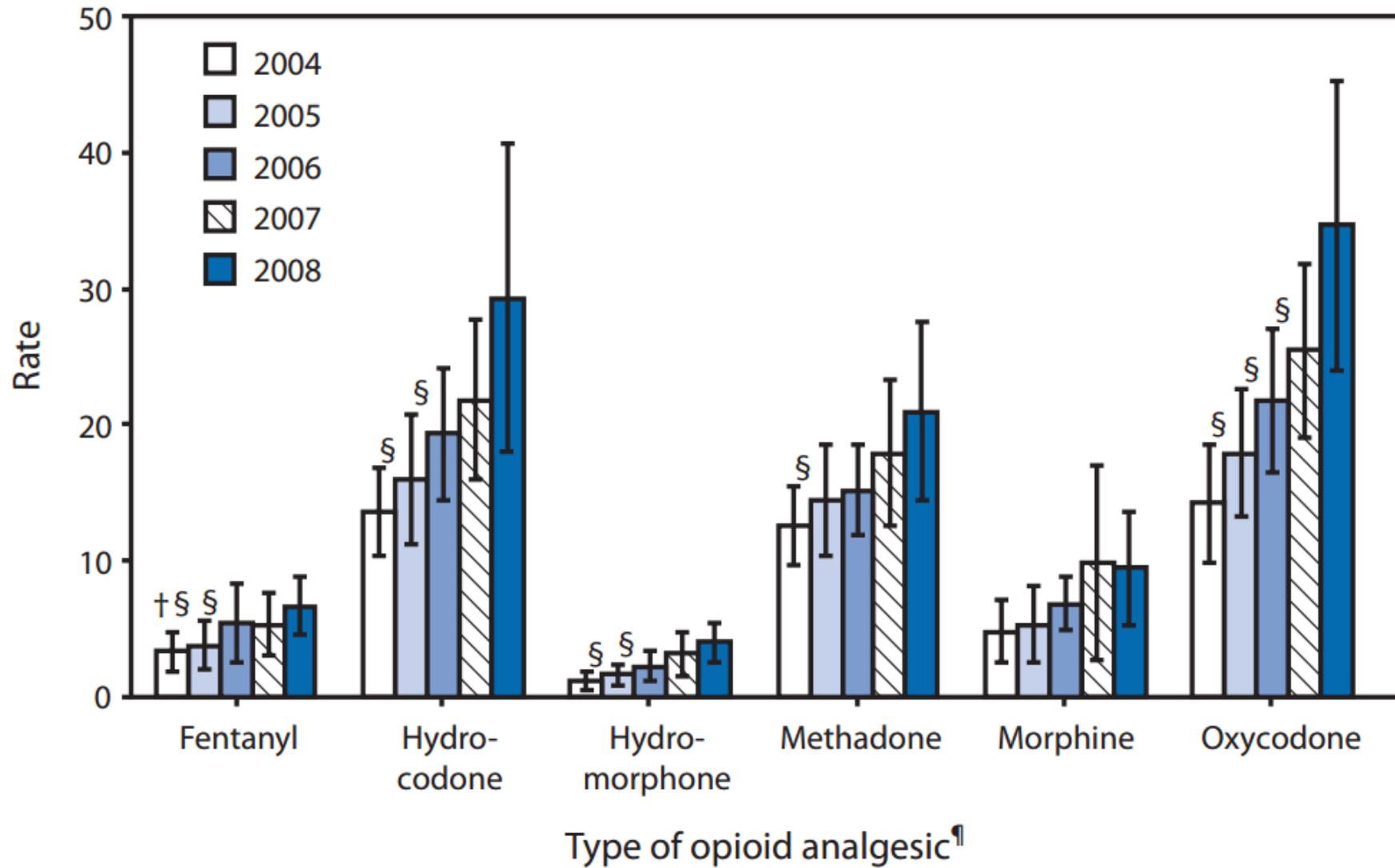
Conclusions: Given the prevalence and age distribution of cannabis use in Canada, a public health approach to cannabis use is overdue. LRCUG constitute a potentially valuable tool in facilitating a reduction of health harms from cannabis use on a population level.

Key words: Canada; cannabis; epidemiology; morbidity; policy; public health

La traduction du résumé se trouve à la fin de l'article.

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FIGURE 1. Rates of emergency department (ED) visits* for nonmedical use of selected opioid analgesics, by type — United States, 2004–2008



Source: Centers for Disease Control and Prevention. *Emergency department visits involving nonmedical use of selected prescription drugs – United States, 2004-2008*. Morbidity and Mortality Weekly Report 2010;59(23):705-709.

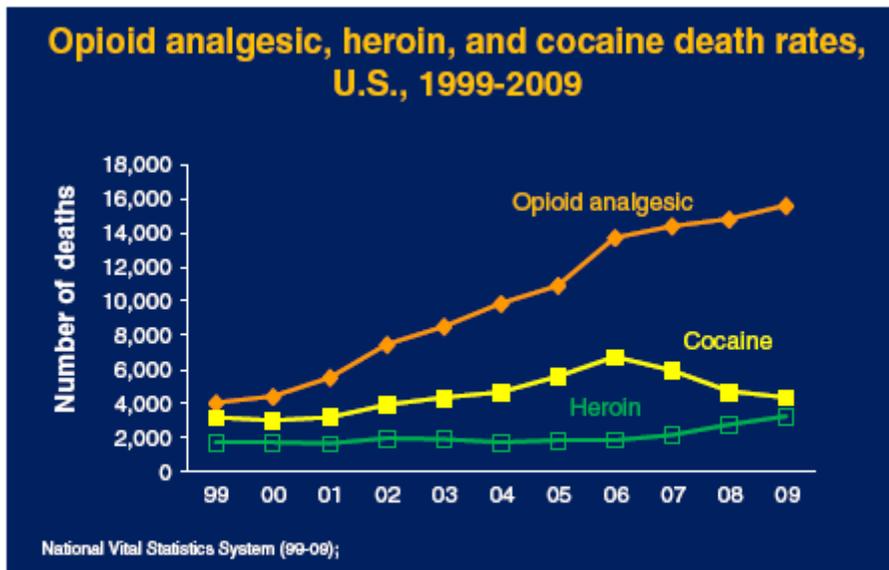


Fig. 2. Opioid analgesic, heroin, and cocaine death rates, U.S., 1999-2009. National Vital Statistics System (99-09).

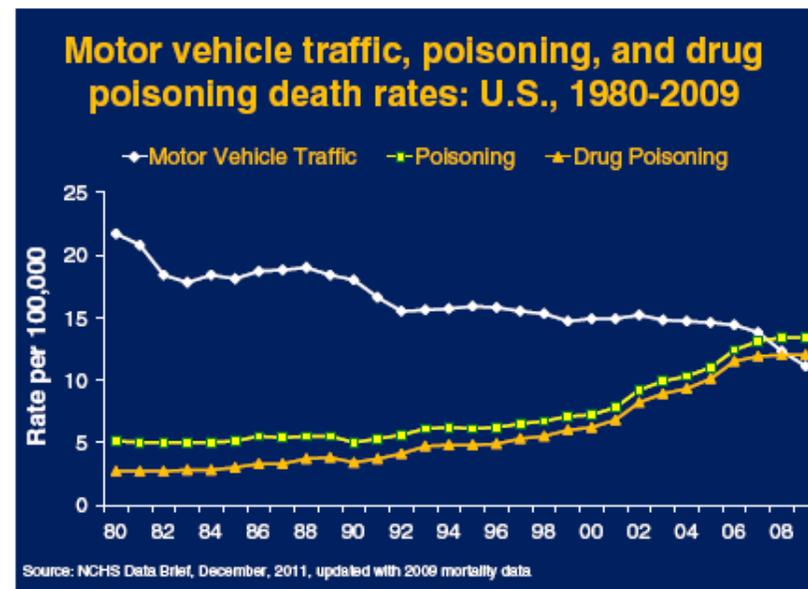


Fig. 1. Motor vehicle traffic, poisoning, and drug poisoning death rates: U.S., 1980-2009. Source: NCHS Data Brief, December, 2011, updated with 2009 mortality data.

Example 2: Prescription Opioids

- Major increases in PO use & harms, especially in North America
- POs as unique drug category (primary legitimate medical purpose => pain treatment)
- Principal measurement of ‘non-medical PO use’ (=> ‘... used PO not prescribed to you, or for purposes other than prescribed ...’; e.g. NSDUH) => technical ‘deviance’ definition quite irrelevant for public health outcomes
- Widespread myth that key harms (e.g., overdose) mainly occur in ‘non-medical’ versus medical PO users
- Relevant for morbidity/mortality harms: -> Length of PO use; -> high doses/volumes; -> co-use with other drugs (alcohol, benzos); -> injection vs. other use

TABLE 2. THE SOCIAL COSTS OF TOBACCO, ALCOHOL AND ILLEGAL DRUGS IN CANADA, 2002

	(in millions of dollars)			
	Tobacco	Alcohol	Illegal drugs	TOTAL TAD
1. Direct health care costs: total	4,360.2	3,306.2	1,134.6	8,800.9
1.1 morbidity - acute care hospitalization	2,551.2	1,458.6	426.37	4,436.2
- psychiatric hospitalization	-	19.6	11.5	31.2
1.2 inpatient specialized treatment	-	754.9	352.1	1,107.1
1.3 outpatient specialized treatment	-	52.4	56.3	108.7
1.4 ambulatory care: physician fees	142.2	80.2	22.6	245.0
1.5 family physician visit	306.3	172.8	48.8	527.9
1.6 prescription drugs	1,360.5	767.6	216.8	2,344.9
2. Direct law enforcement costs	-	3,072.2	2,335.5	5,407.8
2.1 police	-	1,898.8	1,432.0	3,330.7
2.2 courts	-	513.1	330.6	843.7
2.3 corrections (including probation)	-	660.4	573.0	1,233.4
3. Direct costs for prevention and research	78.1	53.0	16.5	147.6
3.1 research	9.0	17.3	8.6	34.9
3.2 prevention programs	69.1	33.9	7.9	110.9
3.3 salaries and operating funds	-	1.8	-	1.8
4. Other direct costs	87.0	996.1	79.1	1,162.2
4.1 fire damage	86.5	156.5	-	243.0
4.2 traffic accident damage	-	756.9	67.0	823.9
4.3 losses associated with the workplace	0.5	17.0	6.6	24.1
<i>4.3.1 EAP & health promotion programs</i>	0.5	17.0	4.2	21.7
<i>4.3.2 drug testing in the workplace</i>	N/A	-	2.4	2.4
4.4 administrative costs for transfer payments	0.0	65.8	5.4	71.3
<i>4.4.1 social welfare and other programs</i>	-	4.3	-	4.3
<i>4.4.2 workers' compensation</i>	-	61.5	5.4	66.9
5. Indirect costs: productivity losses	12,470.9	7,126.4	4,678.6	24,275.9
5.1 due to long-term disability	10,536.8	6,163.9	4,408.4	21,109.1
5.2 due to short-term disability (days in bed)	24.4	15.9	21.8	62.0
5.3 due to short-term disability (days with reduced activity)	36.2	23.6	-0.1	59.8
5.4 due to premature mortality	1,873.5	923.0	248.5	3,045.0
Total	16,996.2	14,554.0	8,244.3	39,794.4
Total per capita (In \$)	541	463	262	1,267
Total as % of all substance-related costs	42.7	36.6	20.7	100.0

TAD Tobacco, Alcohol, and Illegal Drugs

N/A not applicable

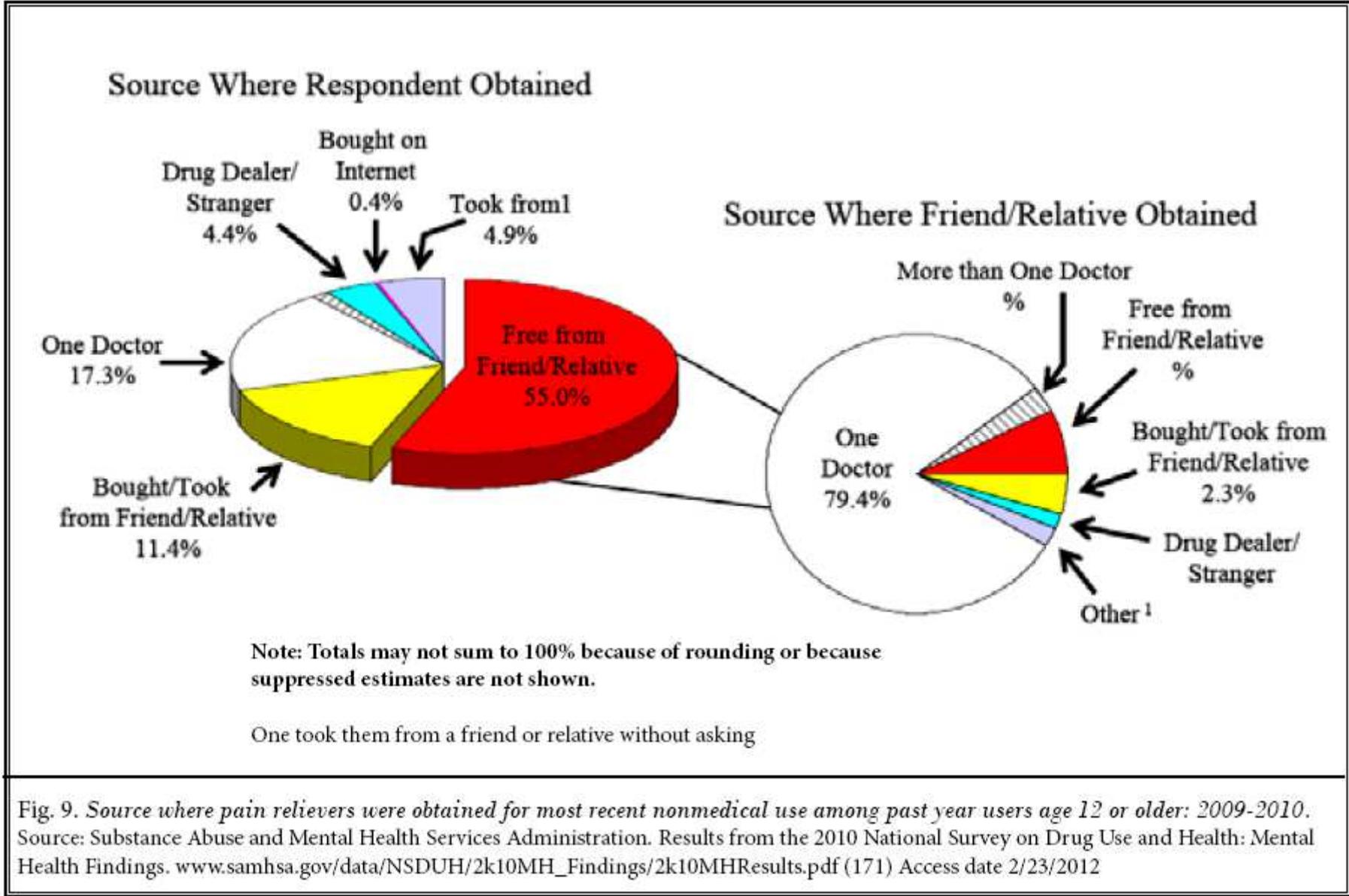
"- " not available

EAP Employee Assistance Programs

Categories in italics are sub-categories of immediate prior category

Drug-Crime and Public Health

- Drug-related crime as a substantive but tricky variable for public health ('chosen' cost as opposed to natural cost/harm)
- 'Simple' public health model, interested in whether there was a) victimization (personal/property); b) criminal justice (e.g., arrest) involvement as key indicators
- Many current forms of cannabis or PO use that are technically illegal but not involving direct crime impact/cost (e.g., non-criminal supply)



Source: Manchikanti L, Helm S, Fellows B, Janata JW, Pampati V, Grider JS, Boswell MV. *Opioid epidemic in the United States*. Pain Physician 2012;15(3 Suppl):ES9-ES38.

Conclusions

- Prescription/illicit drug use associated with major health/social harms
- Most material harms for public health concentrated in sub-population of users & associated with key risk/harm 'mediator' variables
- Key public health risk/harm variables not systematically (or not at all) measured in surveys
- Need & opportunity to advance measurement of illicit drug use to 'public health' paradigm
- => Develop brief/simple but standardized survey items or indices from key domains to qualify and measure 'public health' impact of drug use

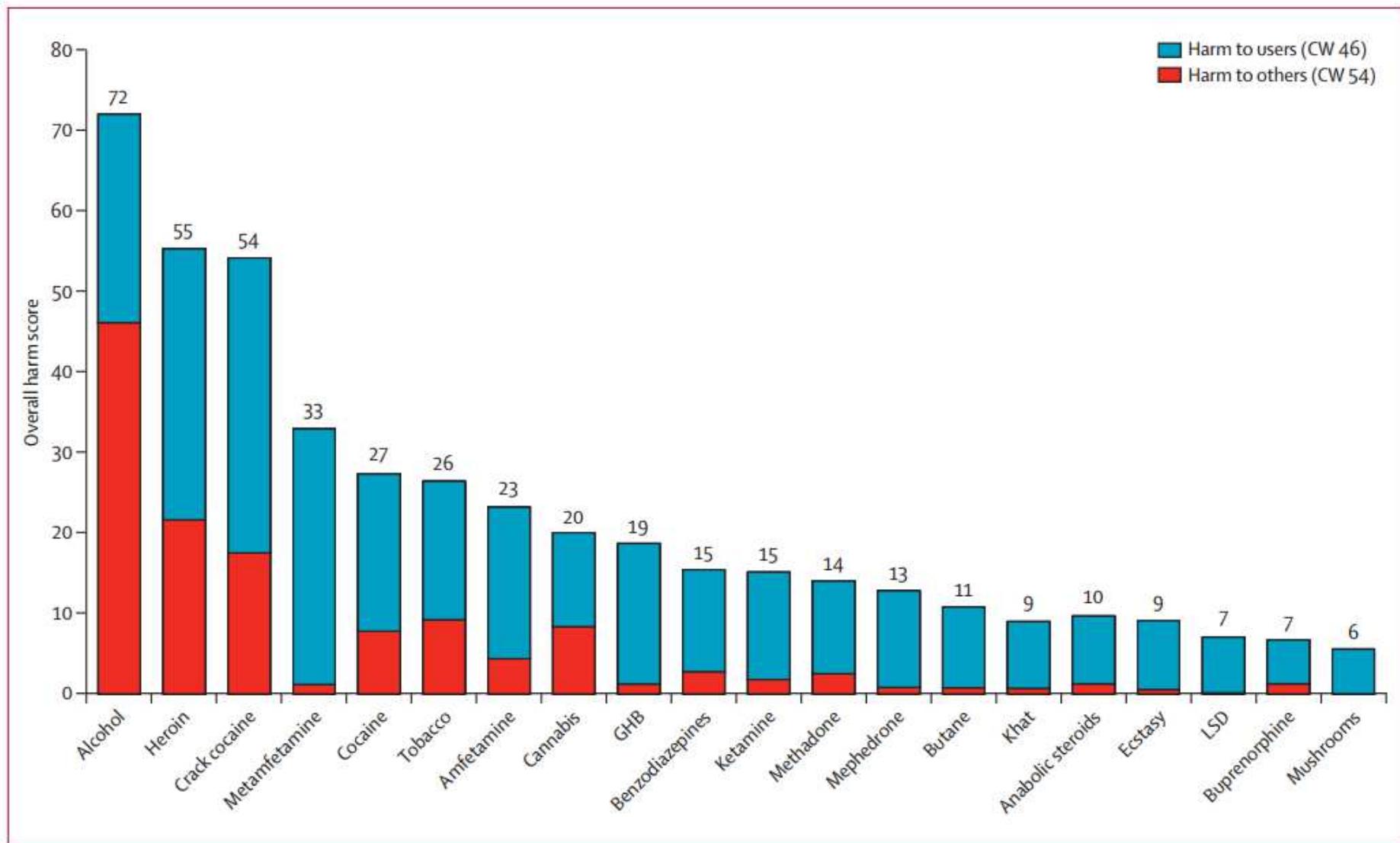


Figure 2: Drugs ordered by their overall harm scores, showing the separate contributions to the overall scores of harms to users and harm to others

The weights after normalisation (0-100) are shown in the key (cumulative in the sense of the sum of all the normalised weights for all the criteria to users, 46; and for all the criteria to others, 54). CW=cumulative weight. GHB= γ hydroxybutyric acid. LSD=lysergic acid diethylamide.