What can be learned from cross-national comparisons of data on illegal drugs?

Beau Kilmer, RAND
Peter Reuter, University of Maryland
Luca Giommoni, Università Cattolica del Sacro Cuore of Milan & Transcrime

Motivation

- Growing interest in cross-national comparisons in many policy areas
  - Another manifestation of globalization
  - Identifying countries with anomalously low problems might help identify successful policy approaches
- Assessment of innovations (e.g. Portugal's decriminalization, Dutch coffee shops) often rely on comparative figures
- UNODC, EMCDDA figures cited frequently in policy discussions generally

What should be compared?

- Problem measures:
  - Drug-related mortality and morbidity
    - Harms
  - Number of problematic users
    - Treatment demand
  - Quantity consumed
    - Health risks
  - Expenditure
    - Size of criminal incomes and drug-related crime
- Policy measures
  - Extent and quality of programs aimed at reducing:
    - Demand
    - Harms
    - supply

What is in fact compared?

- Prevalence
  - General population
  - Youth
  - Problematic drug use
- Treatment client numbers
  - Some quality measures
- Drug law enforcement outputs, not outcomes
  - Arrests, seizures, incarcerations
    - Rarely as meaningful rates

Why are most problems not measured?

- Drug-related mortality presents conceptual and institutional problems
  - Only acute causes but not drug-related homicides
    - So Mexico has low drug-related mortality
- Expenditures requires data on rare behavior in elusive population
  - Frequent cocaine users (ca. <1% of population) account for most of total
- Quantities derived from expenditures
  - Divide by average purity-adjusted price which is rarely available

Goals of paper

- Assess comparability across Australia, France, Germany, Italy, Netherlands, U.K., U.S.A.:
  - General population prevalence of drug use
  - Problematic drug use prevalence
  - Drug law enforcement
- Suggest possible paths to improvement
  - Work in progress

Method of data collection affects prevalence estimates

- All drug surveys face problems of coverage, willingness to self-report drug use and accuracy of frequency and intensity responses
  - Alcohol surveys rarely generate estimates of total consumption more than 50% of total from administrative records
- Face-to-face surveys generate both higher response rates and higher prevalence than telephone surveys
  - Telephone similarly higher than mail surveys
- Even apparently small changes in modality can affect prevalence estimate
  - Computer Assisted Telephone Interview (CATI) higher than Interviewer Administered Telephone survey (T-IAQ)

Estimates of drug prevalence use by different method of questioning

Measurement	Prevalence of drug use (%)	
	SA - P&P	ACASI
Ever taken street drugs using a needle	1.4%	5.2%
Injected drug within last year	0%	0.8%
Ever shared needle	0.1%	1.1%
Smoked marijuana daily during last year	4.1%	6.7%
Used crack/cocaine within last year	3.3%	6.0%
Ever smoked marijuana	41.2%	43.0%

Estimates of drug prevalence use by different method of questioning.

Measurement	Prevalence of drug use (%)	
	CATI	T-IAQ
Marijuana use in last 30 days	10%	5.7%
Cocaine use in last 30 days	2.1%	0.7%
Drug injection in the last year	1.3%	0.1%

Validity of self-reports context specific

of those testing positive who self-report use in previous 30 days

	Household survey respondents aged 12-25 in 2000/2001 (N=~4,000)	Male arrestees in 2003 (N=9,000)
Tobacco	80%	na
Cannabis	61%	82%
Cocaine	21%	56%

Much variation in methods used by different countries

- Face-to-face, telephone, mail, web are all used
  - Response rates vary substantially within method
- Some countries change methods over time
  - Not generally reported
  - Implications rarely discussed
- Age range for survey similarly important but also varies within countries over time
- Comparisons don’t adjust for differences in methods

Table 6. Characteristics of survey by country by year, 2000-2010

Country		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
England and Wales*	Modality	CASI	CASI	CASI	CASI	CASI	CASI	CASI	CASI	CASI	CASI	CASI
	Sample size	14364	23935	26973	28448	33840	35847	35402	35707	35177	33925	35533
	Response rate	74%	73%	74%	75%	75%	75%	75%	76%	76%	76%	76%
	Age range	16-59	16-59	16-59	16-59	16-59	16-59	16-59	16-59	16-59	16-59	16-59
France	Modality	CATI					CATI					CATI
	Sample size	13685					30514					27700
	Response rate	70.8%					63.1%					n.a.
	Age range	12-75					12-75					15-85
Germany	Modality	Mail			Mail			Mail, CATI			Mail, CATI, Web	
	Sample size	8139			8061			7912			8030	
	Response rate	51%			55%			45%			50.1%	
	Age range	18-59			18-59			18-64			18-64	

Prevalence of Marijuana use in 2012
NSDUH: 12+ vs. 15-64

	MJ-Past 30 days	MJ-Past Year
12+	7.3%	12.2%
15-64	8.9%	14.9%

Prevalence rates for 7 countries

Country	LYP	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
England and Wales	Cannabis	10.5	10.6	10.9	10.8	9.7	8.7	8.2	7.6	7.9	6.6	6.8
	Cocaine	2.0	2.0	2.1	2.5	2.0	2.4	2.6	2.4	3.0	2.5	2.2
	Amphetamines	2.1	1.6	1.6	1.5	1.4	1.3	1.3	1	1.2	1.0	1.0
	Ecstasy	1.8	2.2	2.0	2.0	1.8	1.6	1.8	1.5	1.8	1.6	1.4
France	Cannabis	8.4					8.6					8.0
	Cocaine	0.2					0.6					0.9
	Amphetamines	0.2					0.1					0.2
	Ecstasy	0.2					0.4					0.3
Germany	Cannabis	6.0			6.9			4.7			4.8	
	Cocaine	0.9			1			0.6			0.8	
	Amphetamines	0.6			0.9			0.5			0.7	
	Ecstasy	0.7			0.8			0.4			0.4	
Netherlands	Cannabis		5.5				5.4				7.0	
	Cocaine		0.7				0.6				1.2	
	Amphetamines		0.4				0.3				0.4	
	Ecstasy		1.1				1.2				1.4	
Italy	Cannabis		6.2		7.1		11.2			14.3		5.2
	Cocaine		1.1		1.2		2.2			2.06		0.9
	Amphetamines		0.1		0.2		0.4			0.7		0.18
	Ecstasy**		0.2		0.4		0.5			0.4		0.16
US	Cannabis***		9.3	11.0	10.8	10.7	10.5	10.3	10.2	10.3	11.4	11.6
	Cocaine		1.9	2.5	2.5	2.4	2.2	2.5	2.3	2.1	2	1.8
	Stimulants (a)		1.1	1.4	1.2	1.2	1.2	1.3	*1.1*	*1.1*	*1.1*	*1.1*
Australia	Cannabis		12.9			11.3			9.1			10.3
	Cocaine		1.3			1.0			1.6			2.1
	Amphetamines		3.4			3.2			2.3			2.1

GPS greatly underestimate prevalence of expensive addictive drugs

- In USA NSDUH estimates 60,000 daily/near-daily heroin users, while arrestee-based estimates ca 1,000,000
  - Arrestee Drug Abuse Monitoring (ADAM) Program critical to generating the better estimates
  - Coverage omissions probably important for NSDUH or any GPS in estimating cocaine, heroin, meth
- ADAM-like surveys available in only a few countries
  - Has just been terminated in the US (again!)

Various methods and concepts used for frequent use

- EMCDDA encourages estimates of Problem Drug Use (PDU) defined as:
  - “Injecting drug use or long duration or regular use of opioids, cocaine and/or amphetamines’. This definition specifically includes regular or long-term use of prescribed opioids such as methadone but does not include their rare or irregular use nor the use of ecstasy or cannabis”
- Estimates can be based on police, treatment or mortality data
  - Can use multiplier, capture/recapture, regression
- Results difficult to compare even within EU
  - “Time trend analysis is restricted by the fact that few countries are able to provide regular estimates of PDU prevalence and even fewer can provide regular estimates of IDU prevalence.” (EMCDDA,2014)

Comparisons beyond EU more difficult

- PDU definition not used elsewhere
- US estimates based on self-reports of frequency in criminal justice setting
  - May reflect emphasis on arrest in US
  - Produces estimates that are drug specific
- Australia has no opioid dependence estimate later than 2002

Measures of heavy opioid users ~2010

Country	Year	Method	Drug	Central Estimate	Lower Bound	Upper Bound	Central per 1000 (15-64)
France	2011	Treatment Multiplier	Opioid & Stimulant	222,000	176,000	267,000	5.5
Germany	2010	Mortality Multiplier	Opioid	n/a	82,467	137,444	4.1*
Germany	2010	Police Multiplier	Opioid	n/a	81,493	116,628	3.7*
Germany	2010	Treatment Multiplier	Opioid	n/a	156,164	185,445	6.3*
Italy	2010	Treatment Multiplier	Opioid	218,423	197,285	231,106	5.5
Netherlands	2008	Treatment Multiplier	Opioid	17,700	17,300	18,100	1.6
UK	2004-10	Cap-Recap, Combined	Opioid	335,496	327,659	351,438	8.2
US	2010	Multivariate Indicator	Heroin	1,500,000	800,000	2,600,000	7.2
US	2010	Multivariate Indicator	Heroin	1,000,000	n/a	n/a	4.8

Drug law enforcement statistics: many sources of non-comparability

- Goal: compare intensity of enforcement of drug laws
  - Probability of arrest/conviction/incarceration per transaction or per dealer FTE?
  - Share of drugs seized?
  - Value of assets seized annually relative to earnings from selling?
  - Need to distinguish between enforcement against sellers and users
    - Plea bargaining complicates task

Drug law enforcement statistics: many sources of non-comparability

- Goal: compare intensity of drug enforcement
- **Differences in legal definitions**
  - Is issuance of a civil fine by the police an arrest?
    - Not in Switzerland but certainly in the US?
  - What is dividing line between possession and distribution?
    - Set by judge in Italy, by raw weight in most countries
    - Weight limit for possession varies across states in US

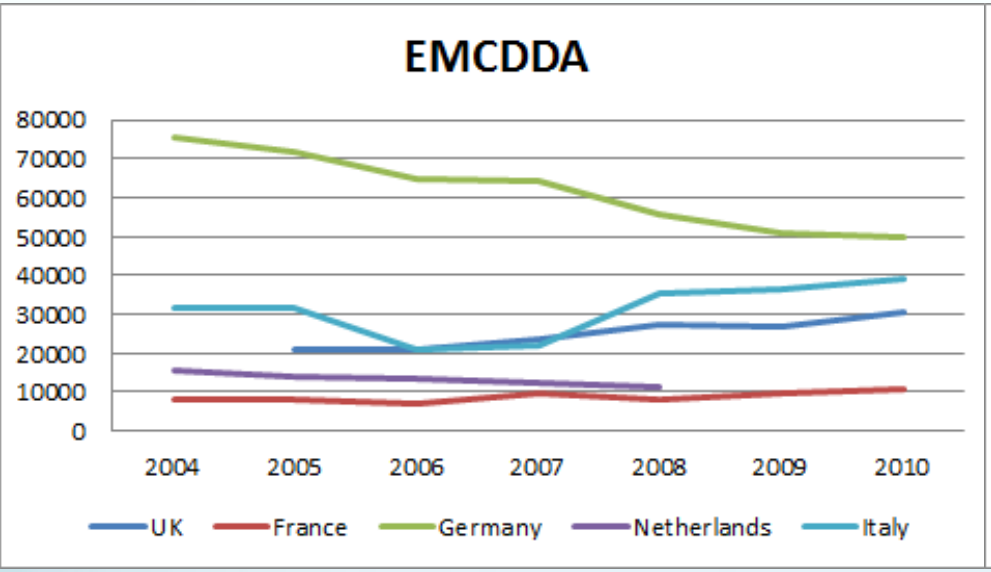
Drug law enforcement statistics: many sources of non-comparability

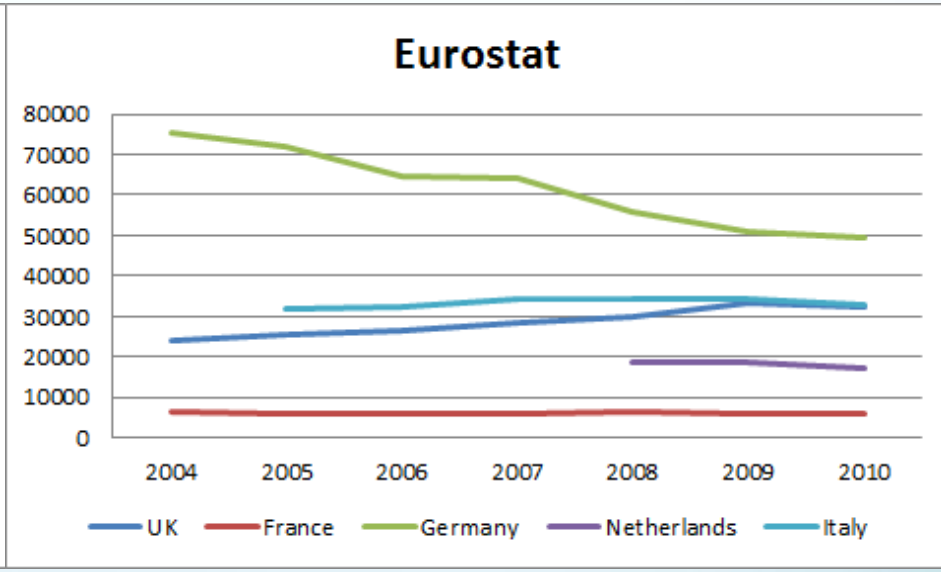
- Goal: compare intensity of drug enforcement
- Differences in legal definitions
- **Institutional arrangements vary**
  - Drug law offenses may be police arrests or prosecutor charges
    - Hierarchy rule variations
  - What counts as incarceration?
    - Pretrial detention can be substantial but not recorded as sentence if defendant not convicted
  - Ensuring coverage of all levels of government in federal systems
    - Many analysts (even from US) ignore jail populations, though one day count is 2/3 of state prison population

Drug law enforcement statistics: many sources of non-comparability

- Goal: compare intensity of enforcement of drug laws
- Differences in legal definitions
- Institutional arrangements
- Continuing inconsistencies between Eurostat and EMCDDA publications
  - Major sources of comparative statistics

Differences in drug trafficking offenses reported to EMCDDA and Eurostat





Cannabis offense rates with different denominators circa 2011

	(1) Cannabis Offenses in 2011	(2) GPS Year	(3) GPS Age Range	(4) Past Month Cannabis (PM) Users	(5) Offenses per 1000 PM Users	(6) Population in 2011	(7) Offences per 1000 Population
Australia	61,011	2011	14+	1,050,172	58.1	22,340,024	2.7
France	137,741	2010	15-64	2,845,829	48.4	64,994,907	2.1
Germany	131,951	2009	18-64	1,748,240	75.5	81,751,602	1.6
Italy	37,118	2012	18-64	777,538	47.7	60,626,442	0.6
Netherlands	9,236	2009	15-64	698,728	13.2	16,655,799	0.6
US	757,969	2011	12+	18,071,000	41.9	311,591,917	2.4

Persons convicted per 100 000 population in the UK: Drug trafficking

	2003	2004	2005	2006	2007
E & W	2.0	1.9	2.0	1.6	1.5
N. Ireland	7.0	10.6	8.6	9.1	-
Scotland	32.0	35.5	33.5	-	-

Percentages of the prison population sentenced for drug trafficking

Country	Prison population sentenced for drug trafficking	Total prison Population	% Sentenced for Drug Trafficking
UK (England & Wales)	10630	71964	14.8
France	7878	55869	14.1
Germany	8840	59563	14.8
Netherlands	910	5673	16
Italy	14868	37622	39.5
Australia	3,633	30,768	11.8
US (excluding jails)	237,000	1,362,028	17.4

Findings

- Prevalence comparisons for marijuana, ecstasy etc. limited by differences in survey modalities
  - E.g. telephone surveys produce lower estimates than face-to-face surveys
  - Inconsistencies within countries over time worsen problem
- Comparisons of abuse/dependence hindered by definitional and methodological differences
  - E.g. US uses ADAM survey and frequency of use while France uses treatment multiplier
- Enforcement comparisons even more difficult because of legal and institutional differences

A few thoughts about the way forward (work in progress)

- Cross-national comparisons are inevitably made. Goal must be to minimize distortions
- Short-term agenda: create data archive facilitating adjustments of prevalence for modality, age range, other exclusions (language, prison)
- Longer-term agenda: use ESPAD/ICVS model to supplement existing national surveys
  - Small scale, occasional (3-5 years) survey with consistent modality, instrument, age range etc.

Lifetime Cannabis Use (%) in 7 countries:

World Mental Health Survey vs. ESPAD

	WMHS Figures		ESPAD Figures
	15 years	21 Years	
USA	20.2	54	31*
Belgium	4.7	22.2	32
France	15.3	44.1	38
Germany	13	41	27
Italy	3.3	13.7	27
Netherlands	7	34.6	28
Ukraine	1.3	12.3	21

* Monitoring the Future, 10th grade