Exploring the Perils of Cross National Comparisons of Drug Prevalence: The Effect of Survey Modality

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ABSTRACT

Background: There is significant interest in comparing countries on many different indicators of social problems and policies. Cross-national comparisons of drug prevalence and policies are often hampered by differences in the approach used to reach respondents and the methods used to obtain information in national surveys. The paper explores how much these differences could affect cross-country comparisons. **Methods:** This study reports prevalence of drug use according to the most recent national household survey and then adjusts estimates as if all national surveys used the same methodology. It includes in the analysis European countries for which the European Monitoring Centre for Drugs and Drug Addiction provides the data, the United States, Canada, and Australia. Adjustment factors are based on US data. **Findings:** Adjusting for modality differences appears likely to modestly affect the rankings of countries by prevalence, but to an extent that could be important for comparisons. For example, general population surveys suggest that the US had some of the highest cannabis and cocaine prevalence rates circa 2012, but this is partially driven by the use of a modality known to produce higher prevalence estimates. This analysis shows that country rankings are partly an artifact of the mode of

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interview used in national general population surveys. **Conclusions:** Our preliminary efforts suggest that cross-national prevalence comparisons, policy analyses and other projects such as estimating the global burden of disease could be improved by adjusting estimates from drug use surveys for differences in modality. Research is needed to create more authoritative adjustment factors.

Keywords: survey methods; drug prevalence; cross-national comparisons; self-report data; general population surveys; drug misuse

1. Introduction

No discussion of social problems or social policy is complete today without comparisons with other countries. How well educated are British 15 year olds; look up their scores in the Program for International Student Assessment (OECD, 2016). How awful is homicide in America; look at UNODC's report on World Homicide Rates (2014). It is hardly surprising that there is growing interest in making comparisons for drug problems as well.

Unfortunately, there are few internationally standardized measures of drug prevalence available; two European-wide school surveys (the European School Survey Project in Alcohol and Drugs and the WHO Health Behavior in School-Aged Children) and, very occasionally, a general population survey (GPS) in a broader array of countries. Thus, several international comparisons of substance use and its consequences—including the World Health Organization estimates of the burden of disease (Degenhardt and Hall, 2012)—partially rely on figures from national general population surveys. These general population surveys are now fairly standardized in terms of the key drug use questions, such as recentness of consumption (lifetime, last year, or last month) or type of drug used (e.g. cannabis, heroin, etc.). This gives an illusion of comparability or downplays methodological issues affecting cross-country comparability such as differences in the mode of questioning (Gowing et al., 2015; Mounteney et al., 2016).

Prevalence surveys employ two main approaches to administer the questionnaire, Self-Administered Questionnaires (SAQ) and Interviewer-Administered Questionnaires (IAQ) and different modes of gathering information; e.g. Pencil & Paper (P&P), telephone-assisted and computer-assisted. Multiple studies have shown that the type of

interaction between interviewer and respondent affects the estimated prevalence rates for sensitive behaviors. For example, SAQ will produce higher rates than IAQ (Aquilino, 1994; Bowman-Bowen and Menard, 2016; Turner et al., 1992). The specific method of implementation of a modality also has consequences. For example, Audio Computer Assisted Self Interviews (ACASI) produce higher rates than traditional Pencil and Paper (P&P) methods for SAQ interviews (Lessler et al., 2000; Lessler and O'Reilly, 1997; Turner et al., 1998).

This paper explores how much these differences affect the comparisons that are reported in various studies (Gowing et al., 2015; Greenwald, 2009; MacCoun, 2011; Mounteney et al., 2016). The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is the source for most of our data, reflecting the fact that it has pioneered efforts to make such cross-national comparisons on a regular basis. The paper reports the results of a preliminary effort to normalize reported prevalence in general population surveys and explore how much that affects the rankings of countries.

2. Background

Mode of questioning affects the reporting of any behavior, but in particular, sensitive behaviors, such as drug use. Differences arise from variations in respondent willingness to report sensitive information in a particular mode (Aquilino, 1994, 1997; Beck et al., 2002; Corkrey and Parkinson, 2002; Cox et al., 1992; Turner et al., 1992), the likelihood of reaching the respondent, and by catching response inconsistencies during the interview (Lessler et al., 2000; Wright et al., 1998).

Modes of questioning that offer a greater prospect of confidentiality are associated with increased respondent willingness to report drug use. Every survey implements some protocols aiming at affording a higher perception of privacy to the respondents. For instance, sensitive information and personal details that could identify the respondent are often kept in separate files (Aquilino, 1997). However, respondents are rarely aware of these protocols and much of their willingness to disclose drug use depends on the anonymity granted by the method of collection. For these reasons, most of the surveys aiming at measuring sensitive behaviors (drug use, sexual practices, etc.) do not use an IAQ but a SAQ. Several studies show that SAQs report a higher estimate of drug use than IAQ interviews (Aquilino, 1994, 1997; Cox et al., 1992). SAQs allow researchers to give a higher degree of privacy to the respondent in the possibility to complete the

questionnaire in private and then return it in a sealed envelope. The same logic works for telephone interviews. Telephone surveys can be conducted through a Computer Assisted Telephone Interviewing (CATI) or an audio computer-assisted self-interviewing (T-ACASI). In the CATI the computer dials the telephone number to be called and the interviewer reads the questions and records the respondent's answers into the computer. In the T-ACASI the computer reads the question to the respondent who answers by pressing numbers on the touch-tone telephone; this results in higher prevalence rates (Corkrey and Parkinson, 2002; Turner et al., 2005). Reporting drug use to a telephone interviewer raises the same concern that respondents have in face-to-face surveys. P&P, SAQs, and T-ACASI guarantee a higher level of privacy and anonymity.

Modern computerized SAQs – i.e. Computer Assisted Self-Interview (CASI) and ACASI – reduce the errors and response inconsistencies inherent in traditional P&P (Lessler et al., 2000; Lessler and O'Reilly, 1997; Tourangeau and Smith, 1996; Tourangeau and Yan, 2007; Wright et al., 1998). Computer SAQs may be programmed to detect and edit inconsistencies or to employ 'skip patterns' which avoid giving respondents questions that do not logically apply to them given their previous answers. For instance, if respondents report their last drug use more than 30 days ago they cannot report any drug use in the previous month (Cox et al., 1992). ACASI also allows those with limited reading ability to easily answer the questionnaire. Indeed the ACASI system administers questions that have been digitally recorded to which respondents may listen using headphones. Finally there is some evidence that computer SAQs may increase respondents' perception of privacy and anonymity (Lessler et al., 2000; Tourangeau and Smith, 1996).

Some factors – in particular age, sensitivity of the item, and recentness of the consumption being reported – modulate the effect of the mode of questioning in reporting drug use. The impact of the mode of questioning varies substantially across age, with teenagers more inclined to report drug use to surveys using instruments guaranteeing a higher level of privacy and anonymity (such as CASI rather than P&P). For instance, Wright et al. show the difference in reporting sensitive behaviors between a classical P&P and SAQ and CASI among respondents aged 12–18 and 19–34 (Wright et al., 1998). The 19–34 group does not show significant differences in reporting alcohol use in the previous year (both CASI and P&P – SAQ groups report a prevalence of about 42%). In contrast, those using P&P – SAQ in the 12–18 group report a prevalence of 18.5%, while those

interviewed with CASI report a last year prevalence of alcohol use of 28.4%. Beside these, other factors may modulate the effect of mode of interview in reporting consumption of illicit drugs. These factors are in the background – such as home v school; the presence of another at the moment of the interview (parents or spouse); race or ethnicity; and level of mistrust (Aquilino, 1997; Beck et al., 2002; Schober et al., 1992; Wright et al., 1998).

The effect of survey methods in disclosing sensitive behaviors decreases as the response moves from recent to less recent drug use. Indeed respondents are less willing to report drug consumption in the last month than lifetime consumption. Table 1 shows cocaine consumption prevalence in the last month (LMP), last year (LYP), and in life (LTP) according to the results presented by Turner et al., (Turner et al., 2005). Reporting cocaine prevalence in the last month increases threefold moving from CATI to T-ACASI while lifetime prevalence increases of just 1.2 times.

Table 1. Prevalence of cocaine use among US population obtained by T-CASI and CATI

Prevalence	**CATI**	**T-ACASI**	**Ratio T-ACASI/ CATI ***
Lifetime prevalence	17.90%	22.10%	1.2
Last year Prevalence	2.80%	4.80%	1.7
Last Month Prevalence	0.70%	2.10%	3.0

Source: (Turner et al., 2005) **Authors' calculation*

Similarly, survey methods granting a higher level of privacy and anonymity are generally more effective in disclosing stigmatized than socially acceptable behaviors. Table 2 reports prevalence of drug use in the last month for alcohol, marijuana, and cocaine using SAQ – P&P and IAQ – P&P (Turner et al., 1992). For the all three substances the SAQ shows higher use, with the SAQ:IAQ ratio increasing as we move from the least stigmatized (alcohol) to the most stigmatized substance (cocaine).

Table 2. Last month prevalence use of alcohol, marijuana and cocaine by mode of questioning

Last Month Prevalence	SAQ - P&P	IAQ -P&P	Ratio SAQ/ IAQ *
Alcohol	54.78	51.86	1.1
Marijuana	5.02	3.11	1.6
Cocaine	1.23	0.5	2.5

Source: (Turner et al., 1992) **Authors' calculation*

3. Data and Methods

This study attempts to standardize reported level of drug consumption by different surveys to explore how methods, and more specifically mode, of questioning, may affect cross-country comparability. It reports prevalence of drug consumption according to the most recent general population survey and then adjusts estimates as if all national surveys used the same methodology (Table A in the appendix reports year and characteristics of the national household survey used in these analyses). We made three standardizations in this analysis. First, we adjusted last month prevalence of cannabis use reported by national household population surveys as if surveys employed a CASI. Second, we adjusted last year prevalence of cannabis as if all national surveys used a SAQ – P&P. Finally, we standardized last year prevalence of cocaine use as if all national surveys used a CASI.

Two criteria guide the inclusion of countries in the standardization. The first is the availability of data from national household surveys. As such, we included in the analysis European countries – for which the EMCDDA provides detailed information about levels of prevalence and metadata – the United States (SAMHSA, 2014), Australia (AIHW, 2014), and Canada (Health Canada, 2015). The second criterion is the availability of a conversion factor between surveys using a different mode of questioning. We considered just those countries employing survey methods for which we have been able to calculate a conversion factor for standardizing prevalence across countries. For instance, the figures below do not report data for Germany because in the last household survey it employed a multi-method survey (mail, phone, internet) for which the literature does not provide data for standardizing with other surveys.

To identify the relevant literature, we reviewed the most-cited scientific journals for the categories substance abuse and searched the databases offered by Medline and Google Scholar. Table B in the appendix summarizes the results of this search. Then we considered age, recentness, and type of substance in the elaboration. We calculated conversion factors from studies reporting differences in consumption for the adult population and not for adolescents only. Similarly, we compared the same kind of prevalence (LMP and LYP) and substance (cannabis and cocaine). These factors modulate the effect of the survey method in reporting drug use and omitting them could heavily bias the results. Where more than one study provided a conversion factor, we calculated the average.

Table 3 shows the conversion factors used to adjust and standardize levels of prevalence across countries (see Tables C, D and E in the appendix for additional information). This study does not aim to estimate 'true consumption' nor to develop conversion ratios to make reported level of drug consumption comparable across countries. Respondents to drug consumption questions are likely to underreport their consumption (Colón et al., 2002; Harrison et al., 2007). It is common to correct this underreporting by adjusting estimates upward (Kilmer et al., 2011); however, willingness to report sensitive questions such as use of illicit drugs may vary across countries and time. All the adjustment factors calculated in this study are based on US data and might not apply to other countries. People can be more reluctant to report drug use in countries with a stricter enforcement of drug use than where the enforcement of illicit drugs is less intense. The same can be true if a country changes across years its policy and cultural attitude towards drugs (Chalmers et al., 2016). Beside mode of administration other characteristics of national surveys can affect reporting and estimated level of prevalence. These include sampling procedures, setting of the interview, use of incentives, response rate, and wording (Bowman-Bowen and Menard, 2016). Finally, studies used for the elaboration of the adjustment ratios can use different research design. For instance, they can use different sampling and weighting procedures or have a different ethnic composition of the sample.

It is currently impossible to account for the impact of all these methodological and cultural variations. Adjusting for differences in survey modality can make country data more comparable but other factors – setting, negative attitudes towards drug taking, etc. – can still affect the accuracy of responses to drug-use surveys. This study is just a

first attempt to look into the effect that mode of questioning can have on cross-country comparison. It standardizes reported prevalence to explore how much that affects the rankings of countries. Readers should not focus on adjusted levels of prevalence but on differences in the rankings between un-adjusted and adjusted figures

Table 3. Conversion factors for survey methods.

	Cannabis LMP* (CASI)	**Cannabis LYP** (P&P - SAQ)**	**Cocaine LYP*** (CASI)**
P&P - SAQ	1.16 [a]		
ACASI	0.72 [b]	0.9 [c]	0.5 [b]
CAPI	1.19 [b]		1.4 [b]
CATI		1.63 [d]	
P&P - IAQ		1.26 [d e f]	

Conversion factors used for Figure 1; Conversion factors used for Figure 2;*** Conversion factors used for Figure*

Sources: [a] Wright et al., 1998; [b] Tourangeau and Smith, 1996; [c] Lessler et al., 2000; [d] Aquilino, 1994; [e] Schober et al., 1992; [f] Turner et al., 1992

4. Results

Figure 1 A reports, in descending order, prevalence of consumption of cannabis in the last month for eight countries, as reported by surveys that used a variety of methods: ACASI, P&P – SAQ, CASI, and Computer Assisted Personal Interviewing (CAPI). Figure 1 B adjusts the level of prevalence reported on Figure 1 A, as if all the countries employed a CASI in their national household surveys, according to the conversion factors presented in Table 3. Although the correlation among unadjusted and adjusted prevalence rates is high ($r = .877$ and Spearman's rank correlation (r_s) = $.928$), there are some important differences. After the standardization, the US moves from first to third ranked for last month cannabis prevalence. In Figure 1 B, Spain exceeds by far Australia and the US for cannabis consumption.

Figure 2 A reports levels of cannabis prevalence in the last year for eleven countries employing ACASI, P&P – SAQ, CATI, and P&P – IAQ systems in their

national surveys. Figure 2 B adjusts these values as if all the national household surveys were carried out with a traditional P&P – SAQ. Figure 2 B shows several differences in the rank compared to Figure 2 A ($r = .862$; $r_s = .936$). Countries employing a CATI system, Canada, France, and Norway, shift upwards with France moving from the second to the first position just before Canada. The US stands in third position. Canada, Norway, and Belgium shift one position in the distribution.

Figure 3A reports cocaine prevalence in the last year for the US (ACASI), UK (CASI), Netherlands (CASI), Ireland (CAPI), and Portugal (CAPI), and Figure 3B adjusts these estimates as if all the surveys were carried out with a CASI system. Figure 3B shows that, after adjusting for the conversion factor, Ireland (2.1%) reports almost the same prevalence as the neighboring UK (2.4%). Similarly, the US shows a level of consumption lower than the Netherlands.

Figure 1 A. Last month prevalence of cannabis use by National Household Population Surveys

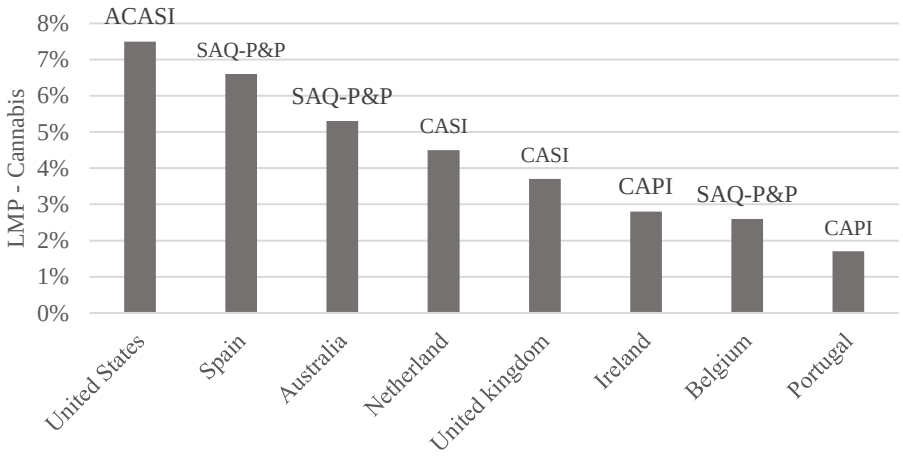


Figure 1 B. Adjusted last month prevalence of cannabis use. Standardization as CASI. Change in country's rank in brackets

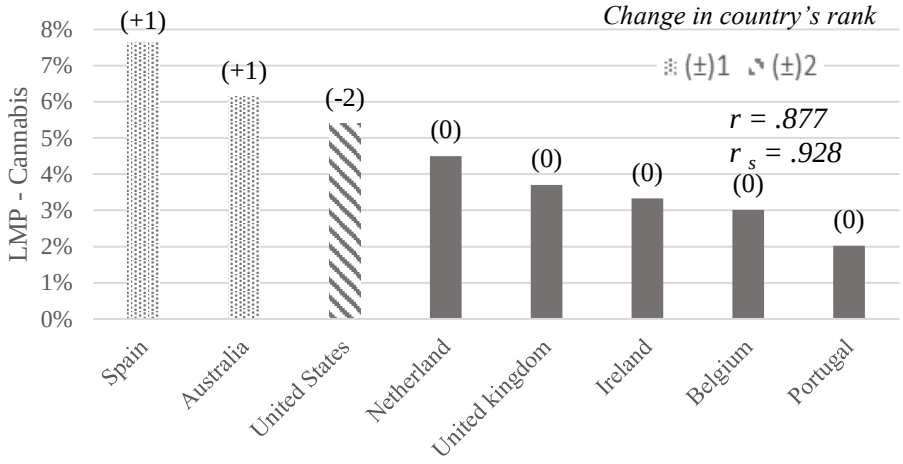


Figure 2 A. Last year prevalence of cannabis use by National Household Population Surveys

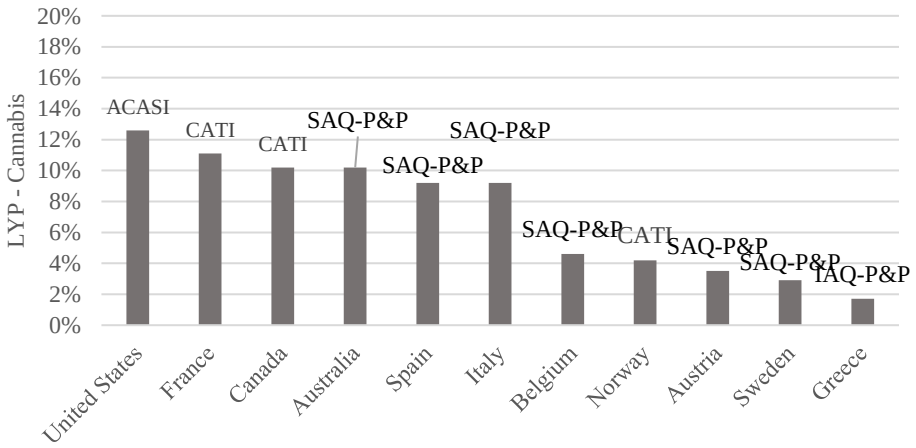


Figure 2 B. Adjusted last year prevalence of cannabis use. Standardization as SAQ – P&P. Change in country's rank in brackets

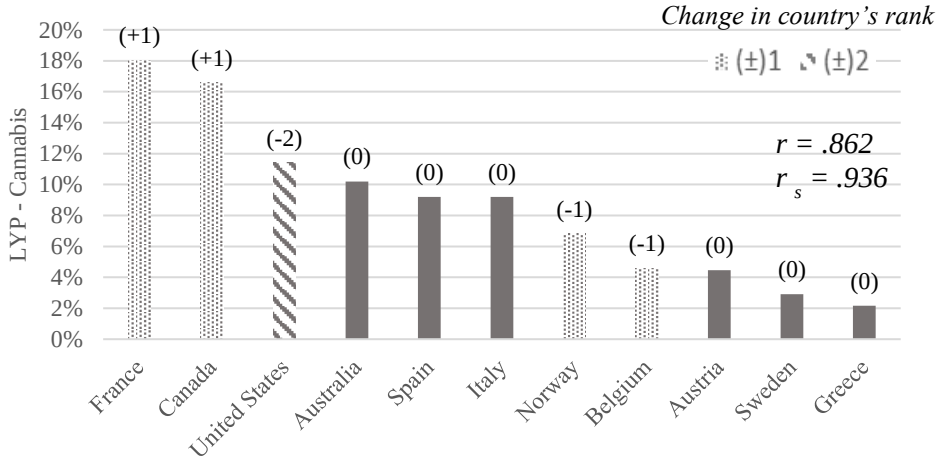


Figure 3 A. Last year prevalence of cocaine use by National Household Population Surveys

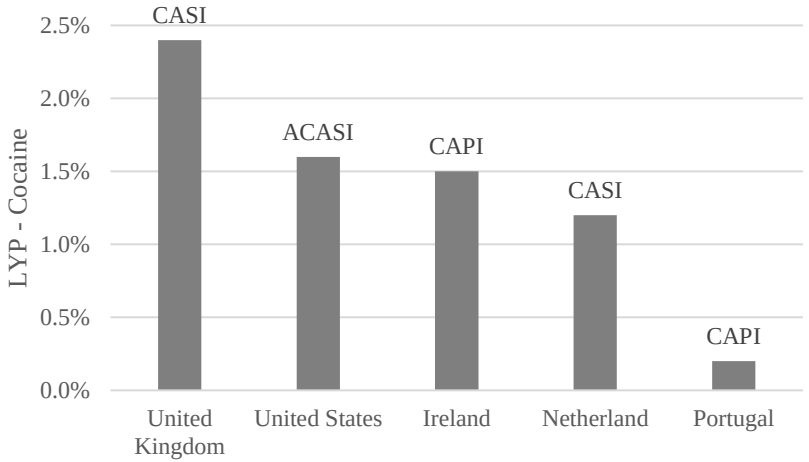
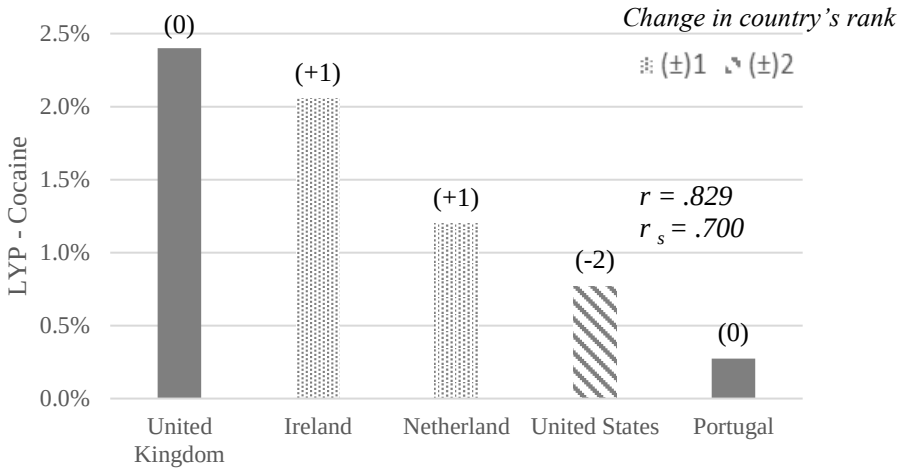


Figure 3 B. Adjusted last year prevalence of cocaine use by National Household Population Surveys. Standardization as CASI. Change in country's rank in brackets



5. Discussion

It is not uncommon to find popular media sources announcing "Country X top world consumer of drug Y" (Lee, 2014; Smith, 2015; Travis, 2016). These league tables of drug prevalence are not restricted to the media but also sometimes appear in scientific papers (Mounteney et al., 2016; Zobel and Götz, 2011). This analysis shows that country rankings are partly an artifact of the mode of interview. The methods of contacting respondents and the technology for questioning respondents in household surveys complicate cross-country comparisons. For instance, Figure 1 A, Figure 2 A, and Figure 3 A show that using unadjusted general population surveys, the United States has the highest prevalence rates for several indicators of drug prevalence. The analysis shows that this result may partially reflect that the US employs a modality (ACASI) that is known to produce higher estimates for a given population. Differences can seem modest but our comparison is limited to a small subset of countries driven by the availability of data.

Bigger differences can emerge if this exercise is extended to several countries. Research also suggests that survey differences can in particular affect the cross-country comparison of the most useful drug prevalence measures for policy analysis. Survey mode has little impact on life-time prevalence, a measurement that is of little use for policy purpose since it might refer to people who consumed drug many years ago. Past-month prevalence, a measure often used to estimate the number of regular drug users, is much more influenced by instruments guaranteeing a higher level of privacy and anonymity in the survey. The effect of survey modality can then be negligible when comparing generational dynamics of drug taking but can considerably affect the comparison of current (LYP) and regular (LMP) drug use across countries. Similarly, the influence of survey differences can be limited for more socially acceptable drugs (e.g. cannabis) than for highly stigmatized substances (e.g. cocaine). The good news is that it is possible to improve comparability. Our analysis was just a demonstration of the effect that survey differences can have on cross-country comparisons of drug use prevalence. We cannot conclude that our adjustment made drug use measures more comparable as the conversion factors rely primarily on data from US surveys. We suggest, instead, that more studies on the impact of survey modality should be carried out across different

countries. Data from different settings can produce more precise and authoritative adjustment factors to make drug use prevalence comparable across countries.

Almost as serious a problem is the fact that nations sometimes change methods in successive surveys. The Netherlands, Germany, Italy, and Australia have all made changes in modality. This leaves them with two options: an inability to determine trends in drug use across years or forcing a comparison among surveys employing a different methodology. This study offers an alternative, showing how it would be possible to roughly estimate the extent to which variation across years is due to actual differences in in the level of consumption or to a shift in the methodology. For instance, between 2005 and 2009 the Netherlands shifted from CAPI to CASI. This, as the EMCDDA (2016) and the Dutch Focal Point (2015) report, precluded the determination of trends between 2005 and 2009. We can use the parameter reported in Table 3 to adjust the 2009 estimates and elaborate a possible scenario on how cannabis prevalence evolved (assuming for the moment that the Dutch and US adjustment factors are similar; this may not be correct). The reported data from the two surveys suggest that cannabis prevalence increased as last month prevalence rises from 3.3% in 2005 to 4.2% in 2009. After the correction for methodological change, last month cannabis prevalence in 2009 drops to 3.5, showing a very small change compared to 2005 and a much smaller change between 1998 and 2009 (1998 = 3.0; 2001 = 3.4).

The coverage of the population also varies across countries. Age range is an important factor defining target population. Most European countries follow the EMCDDA recommendation and restrict coverage to the group age 15–64 (see Table a in the appendix). Australia (14+), Canada (15+), Denmark (16+), and the United States (12+) do not provide an upper age limit while the lower limit varies between 12 (Greece and the United States), and 18 (Germany). Countries can easily adjust prevalence estimates to the group 15–64 when collecting data for broader ranges. For some countries, (e.g. Germany, UK, etc.), however, the targeted age group is narrower. For these countries the EMCDDA does not make any adjustment (personal communication with Jane Mounteney).

Differences across countries in the number of institutionalized people may also affect cross-country comparability. While all surveys exclude the imprisoned population, that is a much more important exclusion for the United States than for any Western European country, since the incarceration rate in the US (ca. 700 per 100,000) is about

seven times that for most EU member states (Walmsley, 2016). Since the incarcerated population has a higher rate of drug use (particularly frequent use), estimates of, for example, lifetime cocaine use among 15–34 year olds will be under-estimated to a greater extent in the US than in other countries. Still other factors – sampling, setting of the survey (house v school), question wording, etc., – may affect the reporting of drug use to surveys (Bowman-Bowen and Menard, 2016).

The issue of cross-country comparability is not limited solely to drug use prevalence but affects also other drug-related indicators, such as mortality, the burden of disease, and treatment penetration (Kilmer et al., 2015). Cross-country comparisons are possible but need care in interpretation. International surveys should be privileged over national household surveys for identifying main patterns. Comparisons of national surveys should explicitly take account of modality and adjust for targeting the same age group, and when possible be cross-checked with other sources.

Ignoring these differences and how they can influence cross-country comparisons may lead to incorrect inferences and misinterpretation of the effect of drug policies. The good news is that so far the effects have been modest.

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Supplementary materials

Table d. Year and characteristics of national household surveys used in comparisons

Country	Year	Age range	Data collection procedure(s)	Sample size	Response rate (%)
Australia	2013	14+	SAQ - D&C[a]	23,855	49.1%
Austria	2008	15-93	IAQ – P&P	3761	34%
Belgium	2013	15-64	SAQ – P&P		
Canada	2012	15+	CATI	11,090	39.8%
Denmark	2013	16+	SAQ – Mail[b]	10470	61%
Finland	2010	15-69	SAQ – Mail[b]	1873	48%
France	2014	15-85	CATI	13488	
Germany	2012	18-64	MM [c]	9084	54%
Greece	2004	12-64	IAQ – P&P	4351	
Ireland	2010/11	15-64	CAPI	5128	
Italy	2014	15-74	SAQ – Mail	6590	
Netherland	2014	15-64	CASI		
Norway	2013	16- 79	CATI	1794	
Portugal	2012	15-74	CAPI	5355	52%
Spain	2013	15-64	SAQ – P&P	23136	94%
Sweden	2014	16-84	SAQ – Mail	6523	
United States	2013	12+	ACASI	67,838	71.7%
UK - England and Wales	2014	16-59	CASI	21691	

[a] *D&C: Drop and collect*

[b] *Respondents have also the possibility to complete a web-questionnaire*

[c] *Multi method: Mail, phone, Internet*

Table e. Prior studies on the effect of modality choice on reporting drug use

Study	Age range	Comparison				Country	Drugs	Prevalence
Beck et al., 2002	15-19	SAQ-P&P	CATI			France	Cannabis	LYP
Lessler et al., 2000	12-17; 18+; 12+	SAQ-P&P	ACASI			USA	Tobacco, cannabis, Alcohol, cocaine	LTP, LYP, LMP
Wright et al., 1998	12-18; 12-34; 19-34	SAQ-P&P	CASI			USA	Tobacco, cannabis, Alcohol	LMP, LTP
Corkrey and Parkinson, 2002	18+	CATI	Hybrid I	Hybrid II	T-ACASI	Australia	Alcohol, cannabis, amphetamines, heroin	LTP, LYP, LMP, age of onset
Turner et al., 2005	18-45	CATI	T-ACASI			USA	Alcohol, Cannabis, Cocaine, Injecting drugs	LTP, LYP, LMP, L3YP
Spijkerman et al., 2009	15-64	Web	CASI			Netherlands	Alcohol, Cannabis, Ecstasy, Cocaine, Performance enhancing drugs	LTP, LYP
Turner et al., 1992	12+	SAQ-P&P	IAQ-P&P			USA	Alcohol, Cannabis, Cocaine	LTP, LYP, LMP
Aquilino, 1994	18-45	SAQ-P&P	IAQ-P&P	CATI		USA	Alcohol, Cannabis, Cocaine	LTP, LYP, LMP
Turner et al., 1998	15-19*	ACASI	SAQ-P&P			USA	Alcohol, Cannabis, Cocaine, Injecting drug	LTP, LYP, LMP, L3YP
Tourangeau and Smith, 1996	18-45	CAPI	CASI	ACASI		USA	Cannabis, Cocaine	LTP, LYP, LMP
Lessler and O'Reilly, 1997	12-20	SAQ-P&P	CAPI	ACASI		USA	Alcohol, Cannabis, Cocaine	LTP, LYP, LMP
Aquilino, 1997	18-45	SAQ-P&P	IAQ-P&P	CATI		USA	Cannabis, cocaine, pills, any illicit drugs	LTP
Schober et al., 1992	14-21	SAQ-P&P	IAQ-P&P([b])	IAQ-P&P([a])		USA	Cannabis, Cocaine	LTP, LYP, LMP
Beebe et al., 1998	+12 students	CASI	P&P			USA	Alcohol, Cannabis, cocaine, LSD, Amphetamines	LYP
Knapp and Kirk, 2003	Undergraduate students	SAQ-P&P	Web	CATI		USA	Cannabis	LTP

Note: this table reports studies on the effect that survey modality can have on reporting illicit drugs use. It does not include studies on the effect that mode of questioning can have on other sensitive questions (abortion, sexual partners, etc.).
*L3YP: last three year prevalence; (a) private (b) non-private *Just males*

Table f. Studies and data used for the elaboration of the conversion factor in Figure 1*

Study	CASI (Prevalence %)	Comparison		Ratio
		Survey modality	Prevalence (%)	
Wright et al., 1998	11	P&P - SAQ	9.5	1.16
Tourangeau and Smith, 1996	12.5	ACASI	17.4	0.72
		CAPI	10.5	1.19

** Last month prevalence for cannabis*

Table g. Studies and data used for the elaboration of the conversion factor in Figure 2*

Study	P&P - SAQ (Prevalence %)	Comparison		Ratio
		Survey modality	Prevalence (%)	
Lessler et al., 2000	8.6	ACASI	9.5	0.9
Aquilino, 1994	13	CATI	8	1.63
		P&P - IAQ	10	1.28#
Schober et al., 1992	23.5	P&P - IAQ	19.5	1.21#
Turner et al., 1992	8.64	P&P - IAQ	6.63	1.30#

** Last year prevalence for cannabis*

 # The conversion factor is given by the average of these ratios

Table h. Studies and data used for the elaboration of the conversion factor in Figure 3*

Study	CASI (Prevalence %)	Comparison		Ratio
		Survey modality	Prevalence (%)	
Tourangeau and Smith, 1996	2.6	ACASI	5.4	0.5
		CAPI	1.9	1.4

**Last year prevalence for cocaine*