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Recent Trends in the Prevalence of Marijuana Use and Associated Disorders in the United States

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Methods

Using data from two waves of the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC), Hasin and colleagues recently reported that the past-year prevalence of marijuana use in the United States has more than doubled in a decade (2002/2003–2012/2013), alongside a sharp increase in the past-year prevalence of DSM-IV marijuana use disorder.[1] We analyzed data from the adult samples (ages 18+) of the 2002–2013 National Survey on Drug Use and Health (NSDUH; N=451,160) to directly compare prevalences and trends in marijuana use and marijuana use disorder from that survey with those from the NESARC. The NSDUH is an annual survey representative of the household-dwelling population of the United States and is a primary source of information about prevalence and trends in drug use. Similar methods have been used annually since 2002 with typical response rates around 75%.[2–4]

Results

Annual past-year prevalences of marijuana use, DSM-IV marijuana use disorder, and marijuana use disorder among past-year users (conditional prevalence) are plotted in the Figure. Although the trends are not necessarily linear, we fitted each series to a trend line to evaluate the average annual change between 2002 and 2013. The trend for prevalence of marijuana use was positive and significant (β=0.021; 95% CI: 0.017, 0.025; p<0.001), reflecting a relative increase of 19%. The trend for prevalence of marijuana use disorder was flat (β=0.006; 95% CI: −0.015, 0.003; p=0.23). There was a net decrease in the conditional prevalence of marijuana use disorder (β=−0.018; 95% CI: −0.027, −0.009; p <0.001). The Table lists prevalence estimates for each outcome for the years 2002 and 2013, along with comparable NESARC results.

Discussion

In contrast to results from two waves of the NESARC covering roughly the same time period, NSDUH estimates suggest a more modest increase in marijuana use and no increase in the prevalence of marijuana use disorder. It is well known that individuals under-report

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socially proscribed behaviors in face-to-face interviews like those utilized by the NESARC.[5] In contrast, the NSDUH uses audio-computer administered self-interview and other methods known to enhance privacy and reduce social desirability bias.[2,4,5] Accordingly, a previous comparison of drug use prevalence estimates from NSDUH and NESARC (Wave 1) showed that NSDUH estimates were two- to five-times higher for all drugs.[4] Because marijuana has become more socially acceptable, people may now be more willing to disclose use to an interviewer than they were in 2002. This likely led to a partial closing of the gap in reported prevalence of use between NSDUH and NESARC (Table).

If marijuana use was under-reported in the NESARC, this likely led to bias in the prevalence estimate of marijuana use disorder, because only those who report past-year use are assessed for marijuana use disorder. If under-reporting was more prevalent in the first wave of the NESARC than in the most recent wave (Wave 3), this could explain the apparent increase in the prevalence of marijuana use disorder. Trends in the past-year conditional prevalence of marijuana use disorder were similar across surveys, though NESARC estimates were substantially higher, suggesting that its diagnostic assessment is more sensitive than the one used in the NSDUH.[1,4]

There were also methodological differences between the two NESARC waves. For example, in Wave 1, interviews were conducted by U.S. Census Bureau employees, whereas Wave 3 utilized a private company.[1,4] It is possible that individuals are less likely to disclose illegal behaviors to government employees than to private sector interviewers.

In summary, changes in the social acceptability of marijuana use and methodological changes likely account for much of the apparent doubling in prevalences of marijuana use and disorders reported by Hasin and colleagues.[1]

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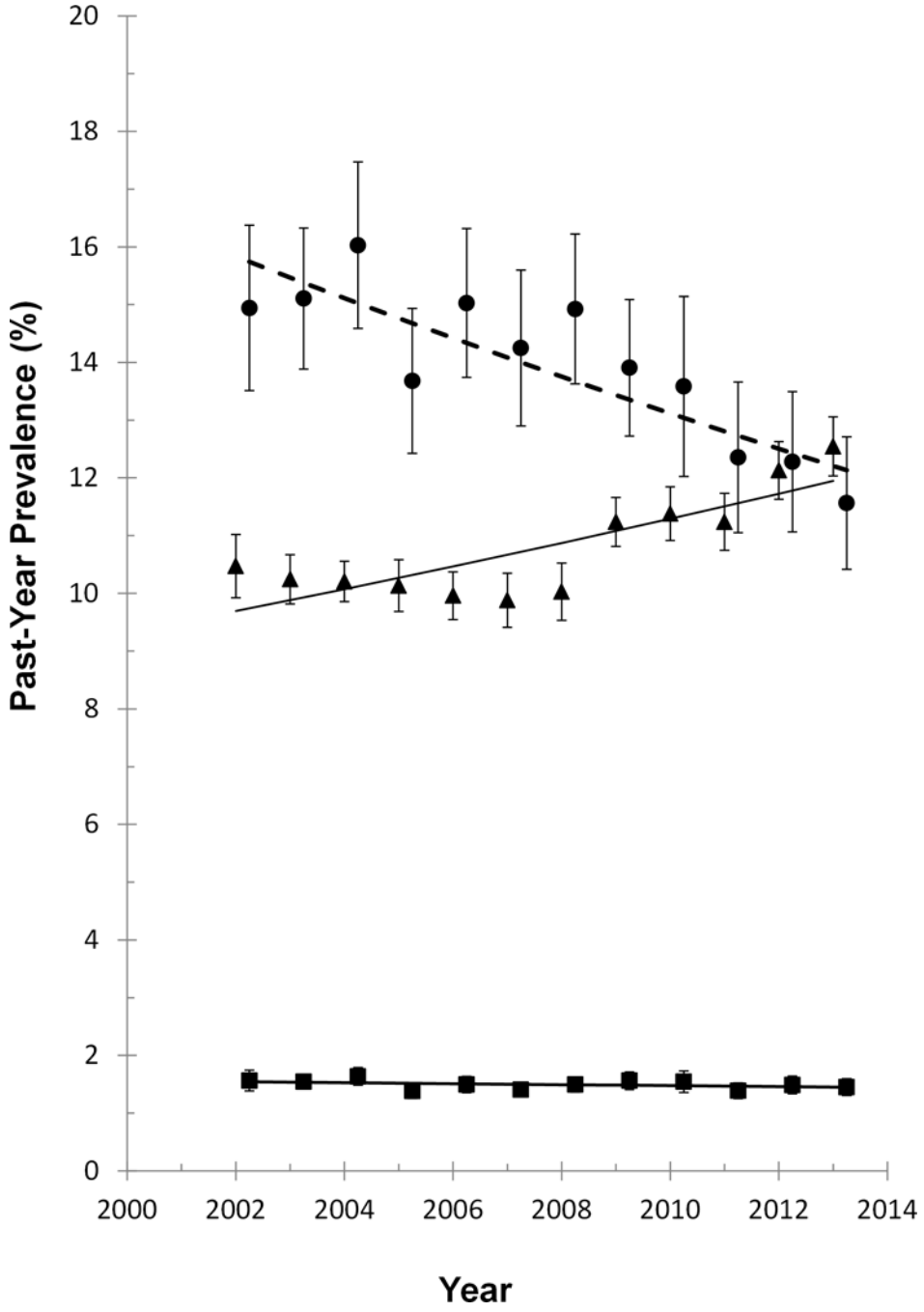

Figure.

Past-year prevalence estimates for marijuana use (triangles), marijuana use disorder (squares) and marijuana use disorder among past-year users (circles), 2002–2013. Lines represent fits to linear trend models and are not meant to describe the precise functional form of the trends. Error bars represent 95% confidence intervals. Trends were analyzed using the “surveylogistic” procedure in SAS version 9.4, modeling each outcome variable as a function of year of assessment.

Table

Past-year prevalences of marijuana use, marijuana use disorder and marijuana use disorder among past-year marijuana users, estimated from the 2001–02 NESARC, the 2012–13 NESARC3, the 2002 NSDUH and the 2013 NSDUH.

	Marijuana Use		Marijuana Use Disorder		Marijuana Use Disorder Among Users	
	Prevalence	**95% CI**	**Prevalence**	**95% CI**	**Prevalence**	**95% CI**
NSDUH						
2002	10.5	(9.9, 11.0)	1.6	(1.4, 1.8)	14.9	(13.5, 16.4)
2013	12.5	(12.0, 13.0)	1.5	(1.3, 1.6)	11.6	(10.4, 12.8)
Relative Change	*+19%*	*(12%, 22%)*	*−8%*	*(−22%, 8%)*	*−23%*	*(−13%, −35%)*
NESARC						
2001–2002 (Wave 1)	4.1	(3.8, 4.4)	1.5	(1.3, 1.7)	35.6	(32.8, 38.4)
2012–2013 (Wave 3)	9.5	(9.0, 10.0)	2.9	(2.6, 3.2)	30.6	(28.5, 32.7)
Relative Change	*+131%*	*(117%, 146%)*	*+93%*	*(73%, 113%)*	*−14%*	*(−5%, −23%)*

NSDUH prevalence estimates were estimated from public use files using the “surveyfreq” procedure in SAS version 9.4. NESRAC and NEARC3 estimates are from Hasin et al.[1] Confidence intervals for relative change estimates were calculated from pooled standard errors.