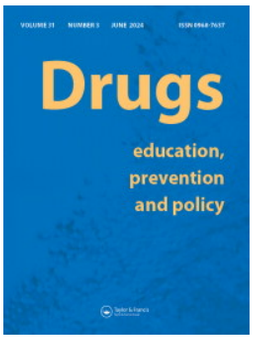

Drugs: Education, Prevention and Policy

ISSN: (Print) (Online) Journal homepage: informahealthcare.com/journals/idep20

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To cite this article: Felicity Wardle, Timothy Piatkowski, Sarah Clifford, Amy Peacock, Paul Dietze, Megan Lim, Caitlin Douglass, Penny Hill, Samuel Moore, Mia Miller, Jonathan Brett & Cassandra J. C. Wright (23 Mar 2024): Safe beats down under: investigating the support of drug checking at a regional festival in the Northern Territory, Australia, Drugs: Education, Prevention and Policy, DOI: 10.1080/09687637.2024.2330938

To link to this article: https://doi.org/10.1080/09687637.2024.2330938

Published online: 23 Mar 2024.

DRUGS: EDUCATION, PREVENTION AND POLICY
https://doi.org/10.1080/09687637.2024.2330938

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Safe beats down under: investigating the support of drug checking at a regional festival in the Northern Territory, Australia

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ABSTRACT

Background: In the context of Australian music festivals, including those in the Northern Territory (NT), drug-related harms persist. This study focused on gathering local insights into drug-related behaviours and attitudes, particularly regarding drug checking, among NT festival attendees.

Methods: In May 2022, attendees (aged 16+) at a single-day multi-genre music festival in the NT were surveyed onsite about their drug use and harm reduction behaviours. Logistic regression was employed to explore factors influencing attitudes and preferences toward drug checking.

Results: Out of 539 participants, 40% reported recent drug use in the past month. About 12% planned drug use at the festival. Notably, 73% supported drug checking, with 81% approval among people who use drugs. Older participants (>25 years) had 2.6 times (p = .001) greater odds of supporting drug checking. Participants with recent drug use had 2.1 times (p = .006) greater odds of supporting it. Among those opting for drug checking (n=270), people who have recently used drugs had 5.5 times (p <.001) greater odds of preferring an onsite service. Additionally, 67% believed any drug checking service increased their safety.

Conclusions: The study reveals NT festivalgoers' widespread support for drug checking and suggests the need for on-site drug checking services in the NT.

ARTICLE HISTORY
Received 4 December 2023
Revised 14 February 2024
Accepted 27 February 2024

KEYWORDS
Drug checking; drug use; harm reduction; music festival; public health

Introduction

People who attend festivals are more likely to consume alcohol at risky levels and use illicit drugs than the general population (Douglass et al., 2022; Fernández-Calderón et al., 2019; Healey et al., 2022; Lim et al., 2010). In Australia, research has found a considerably higher rate of illicit drug use for festival attendees than seen among same-age groups in the general population (Day et al., 2018; Jenkinson et al., 2014). Furthermore, drug-related harms continue to be a concern at music festivals, including hyperthermia, seizures, hyponatraemia, unintended substances, and overdose, in Australia (Barratt et al., 2018; Black et al., 2020; Brett et al., 2022; Santamarina et al., 2024) and internationally (Cruz et al., 2023; Turris et al., 2018). However, music festivals also present an opportunity to provide harm reduction interventions to high-risk groups (Ivers et al., 2022; Measham & Turnbull, 2021; Palamar et al., 2021). Harm reduction encompasses interventions designed to mitigate adverse consequences, without necessarily aiming to reduce the drug use to achieve those outcomes (Hawk et al., 2017). One approach to harm reduction in festival and nightlife settings is drug checking.

Drug checking, also known as pill testing or adulterant screening, is an integrated service that allows consumers to have their substances analysed and receive information about its contents (Barratt & Measham, 2022). Models of delivering drug checking services vary from fixed-site services located in a community setting or on-site/mobile services often located at festivals or events. Drug checking has been carried out for more than 50 years and is offered in over 20 countries worldwide (Colledge-Frisby et al., 2023; Vumbaca et al., 2019). Numerous models have been tested and put into practice. However, many modern service models must consider factors like resource availability, the service environment, the urgency of minimising wait times for particular groups, and the requirement for quantitative data (related to dosage), rather than just solely identifying the psychoactive elements present in the substances submitted (Harper et al., 2017; Van der Linden et al., 2022). These varying priorities are considered

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alongside the needs and demographics of those using the service and the wider policy, social, and funding context. The analytical methods span from basic reagent test kits to more sophisticated options like fourier-transform infrared spectroscopy (FTIR) and extend to comprehensive laboratory techniques such as gas chromatography-mass spectrometry (GCMS) (Anzar et al., 2022; Harper et al., 2017; Rose et al., 2023). Typically, a balance is struck between speed, accuracy, mobility, and cost, often involving a combination of methods to enhance the reliability and validity of information on both the potency and composition of submitted samples (Maghsoudi et al., 2022; Valente et al., 2019).

There is growing evidence of successful implementation of drug checking and reduced harms internationally (Barratt & Measham, 2022; Giulini et al., 2023; Maghsoudi et al., 2022; Palamar et al., 2021). Research from the US (Krieger et al., 2018; Sherman et al., 2019) and Canada (Kennedy et al., 2018) has documented a high willingness for people who inject drugs to use drug checking programs in community settings. In festival settings specifically, international research has documented that providing drug checking services at music festivals assists patrons to better manage their substance use and deal with drug adulteration (Measham, 2019; Valente et al., 2019; Valente et al., 2023). Further, young people who use drugs have positive attitudes toward drug checking, documented in both Irish (Ivers et al., 2022) and Canadian (McCrae et al., 2021) festival cohorts. Recent work offers caveats to this acceptability however, documenting the fear of criminalization and the expectation of receiving poor treatment as the primary obstacles affecting the uptake of people using drug checking services (Davis et al., 2022). New Zealand recently legislated the first legal, public health licensing scheme for drug checking services, while globally, most other drug checking services exist in legal grey areas, with politically and commercially sensitive challenges (Hutton, 2022; Measham & Simmons, 2022).

In Australia, drug checking is still highly contentious (McAllister & Makkai, 2021; Ritter, 2020). While the objectives of drug checking fit with Australia's National Drug Strategy, in practice Australian drug policy has typically favored law enforcement strategies and zero-tolerance positions (Department of Health and Aged Care, 2017; Groves, 2018). Currently, there is one fixed site drug checking service in the Australian Capital Territory, and Queensland has recently announced plans for fixed site and mobile services (Caldwell, 2023; D'Ath, 2023). Harm reduction advocates and the New South Wales and Victorian coroners' have called for further expansion of drug checking services across Australia (Coroners Court of Victoria, 2021, 2022a, 2022b, 2023; Howard, 2020; NSW State Coroner's Court, 2019; State and Territory Alcohol and Other Drug Peaks Network, 2019). While local evidence on effectiveness is only just starting to emerge from the Australian Capital Territory (Olsen et al., 2023), feasibility studies indicate support for drug checking among people who use drugs (Kennedy et al., 2018; Krieger et al., 2018; Piatkowski et al., 2023a). Public support can be an important factor in policymaking. The majority public support for drug checking was found in the Australian 2019 National Drug Strategy Household Survey (Caluzzi et al., 2023). While attitudes toward drug checking services have been investigated in other Australian jurisdictions (Barratt et al., 2018; Day et al., 2018; Hollett & Gately, 2019; Olsen et al., 2022; Piatkowski et al., 2023a; Southey et al., 2020) these are yet to be investigated in the Northern Territory (NT) where, historically, drug policy has adapted toward harm reduction approaches (Clough & Jones, 2004). Understanding attitudes towards drug checking is crucial for tailoring harm reduction strategies to local contexts and guiding policy decisions that align with the needs and attitudes of the NT population.

The NT has a geographically and culturally diverse population. A quarter of the NT's population are Aboriginal and Torres Strait Islander, compared to the national average of 3% (Australian Bureau of Statistics, 2021). Many NT residents (40%) live in remote and very remote areas, and it is the most sparsely populated jurisdiction in Australia with 17% of Australia's land mass and only 1% of its population (Australian Bureau of Statistics, 2022). For the NT, interstate mobility is greater than other Australian jurisdictions, 12.5% per annum (31,510) compared with 2-3% for other states (Department of Treasury and Finance, 2023). The NT's capital city Darwin, in contrast to every other Australian capital city, is the smallest by population, has unique climate seasonality factors, such as a wet and dry season, is closer to major Asian cities such as Jakarta than it is to other major metropolitan Australian cities, and it is considered a regional, not metropolitan/major city (Bureau of Meteorology, Australian Government, 2023; Department of Treasury and Finance, 2023; Northern Territory Tourism, 2019). These unique contextual characteristics need to be considered when exploring the behaviors and attitudes of patrons of an NT festival towards drug use and drug checking.

Both Australian (Douglass et al., 2022; Healey et al., 2022; Jenkinson et al., 2014) and international studies (Erickson et al, 1996; Hungerbuehler et al, 2011; Ivers et al., 2022; Valente et al., 2019) on alcohol and other drug use consumption patterns and risk behaviors have been examined at festivals showing high rates of substance use among young festival attendees and factors influencing risky behaviors. The current study complements this extant work, by providing relevant evidence of attitudes and drug use behaviors of patrons of a regional festival. Given the unique characteristics of the NT and the expansion of drug checking services in Australia, understanding attitudes to drug checking and consumer preferences for fixed site or mobile testing services may contribute to ongoing policy discussion about this harm reduction strategy. Therefore, our study had several specific aims. First, we aimed to understand current drug-related behaviours among festival attendees in the NT. Secondly, we aimed to investigate individuals' attitudes towards drug checking. Lastly, we sought to gain insights into people's preferences regarding different drug checking delivery settings.

Methods

Design

In May 2022, we conducted a cross sectional study with festival attendees in the NT. Participants completed a survey at

the festival and a follow-up survey two days later. This paper focuses on results from the first survey.

Sampling and procedure

The study was approved by the NT Human Research Ethics Committee (HREC2022-4267). In May 2022, trained data collectors attended a large single-day multi-genre music festival in the NT. The team approached festival attendees (aged >16 years) and invited them to complete a short anonymous survey. The survey was self-administered on tablet devices using REDCap software and conducted in a private, quiet area away from police and security presence when possible. In practice, finding a private and quiet area was not always possible, however, data collection away from police and security was generally feasible. Festival attendees who appeared visibly intoxicated were excluded. The research team carried a flyer with QR codes for participants who preferred to complete the survey on their own devices. Researchers stayed in close proximity to participants to answer questions. Participants received an AUD5 Uber voucher for taking part.

Measures

Survey content and structure were guided by existing literature in the field (Barratt et al., 2018; Caluzzi et al., 2023; Douglass et al., 2022; Healey et al., 2022; Hollett & Gately, 2019; Page et al., 2022; Southey et al., 2020) and the expertise of the research team in alcohol and drug, peer-based festival harm reduction and public health fields. The survey included questions about self-reported intentions to use alcohol and other drugs at the festival, typical alcohol and other drug use within a set timeframe, demographic questions, personal use of harm reduction/protective behavioral strategies for the festival, and perceptions of factors associated with safety at festivals. In order to ensure the integrity of the data and prevent potential logic errors, the survey design and responses underwent a rigorous process of logic checking.

Attitudes towards drug checking

For the second primary outcome measure, participants were asked about their support for drug checking. Participants were asked 'to what extent do you support or oppose allowing people to test their drugs at designated sites? The test would inform them of the purity and the substances the drug contains (pill testing/drug checking)'. Responses included a 5-point Likert scale of 'strongly support', to 'strongly oppose' as well as a 'don't know' option. Given the low frequency of oppositional attitude responses, attitudes to drug checking were dichotomized for analysis into 'support', and 'oppose and ambivalent/undecided'. To further explore attitudes towards drug checking, participants were asked if pill testing onsite would make them feel more or less safe.

Preferences for drug checking service delivery

For the third primary outcome measure, all participants were asked about the potential use of a drug checking service; 'when would you use a drug checking or testing service? Please select all that apply'. Two onsite options ('at festival before drug consumption' or 'at festival after drug consumption') and one off-site option (days or weeks before the event) were included as well as options 'I do not use drugs and would not use a drug checking or testing service' and 'I use drugs but would not use a drug checking or testing service'. Participants who indicated they would use a drug checking service were also asked about their preferences for where they would us such a service. For their potential use of onsite drug checking services, participants were asked 'if available, would you use a service based at clubs or festivals to have your drugs tested for contents and/or purity by a professional?'. For offsite drug checking, participants were asked 'if available, would you use a fixed-site service (e.g. a drop-in center) to have your drugs tested for contents and/or purity by a professional?'. Participants responded with 'yes,' 'no' or 'don't know' options. Onsite and offsite location preference were later collapsed for analysis into a preference for 'both onsite and offsite', 'neither onsite or offsite', 'offsite only', 'onsite only', and 'don't know'.

Other measures

Participant socio-demographic characteristics were collected and dichotomized including gender identity (male/female), usual residential location (NT resident yes/no), age (<25/>25), Aboriginal and Torres Strait Islander identity (yes/no), currently studying (no/yes), an education level (year 12 or below/post-high school), monthly recreational spending (less than $120/more than $120). Participants who identified as agender ($n=1$) and non-binary/gender fluid ($n=5$) were removed from detailed analysis due to small cell sizes.

For the first outcome measure, participants reported their drug use behavior. All participants were asked 'have you ever used drugs (besides alcohol)? This includes illicit drugs (e.g. ecstasy) and non-medical use of pharmaceutical drugs. Non-medical use means using pharmaceutical drugs which are not prescribed to you or which are prescribed to you but not taken in accordance with prescription directions (e.g. taking more or less than the prescribed dose).'. Response options included 'yes in the past year', 'yes but not in the past year', 'no' or' skip'. This was later dichotomized to a yes/no if they had ever used drugs (lifetime drug use). All participants were asked 'have you used any of these drugs (besides alcohol) in the last month?' and were presented with a list of specific drugs for indicating those which they had used in the last month (adapted from King et al., 2022). This list included illicit drugs (e.g. MDMA, cannabis) and non-prescribed pharmaceutical drugs. Participants could select as many that applied or select 'none of the above'. This was later dichotomized to a yes/no for recent drug use if they reported the use of any drug on the list in the last month.

Analysis

Data were analyzed in Stata (v18). The missing value rates for variables of interest ranged from 1% to 10%, leading to the application of listwise deletion. We calculated summary

statistics to understand the drug-related behaviors of our participants, and attitudes towards and preferences for drug checking services. In relation to our second and third aim, we conducted binomial logistic regression analysis to explore how eight exposures (gender, age, education level, current education status, spending habits, residential location, and recent drug use) were associated with (1) supportive or unsupportive attitude towards drug checking services as a binary outcome and (2) potential use of an onsite drug checking service as a binary outcome (would/would not use an onsite service). Both models were run as full models with all variables of interest selected. It was unknown the ways in which the socio-demographic factors and drug use factors would interact to influence attitudes and preferences for drug checking, thus, to capture the full scope of relationships between predictors and the outcome, authors ensured that all variables of interest were included from the outset (Greenland, 2011). All assumptions of binomial logistic regression were met, and no outliers were detected for the variables of interest. It should be noted that due to limited representation, Aboriginal and Torres Strait Islander participants were not included as a factor in the analysis.

Results

Participants

Overall, 539 participants completed the survey. The participants' median age was 25 years (IQR: 21–30 years) and most reported living interstate (56%, $n = 302$) or in Darwin (34%, $n = 183$). Other participant socio-demographic characteristics are reported in Table 1.

Table 1. Socio-demographic characteristics of festival patrons.

Variables	$N = 539$	%
Age		
16–17 years	35	6.5
18–24 years	215	39.9
25–29 years	118	21.9
30 years and above	142	26.3
Missing	29	5.4
Gender		
Female	366	67.9
Male	166	30.8
Non-binary/gender fluid	5	0.9
Gender not listed	1	0.2
Missing	1	0.2
Aboriginal or Torre Strait Islander		
No	493	92.1
Yes, Aboriginal	34	6.4
Yes, Torres Strait Islander	1	0.2
Yes, Aboriginal and Torres Strait Islander	3	0.6
Missing	8	1.5
NT Resident		
No	304	56.4
Yes	219	40.6
Missing	16	3.0
Currently studying		
No	363	67.4
Yes	165	30.6
Missing	11	2.0
Education level		
High school, year 10 or lower	29	5.4
High school, year 11	41	7.6
High school, year 12	137	25.4
TAFE, Certificate or diploma	113	21.0
Undergraduate course	150	27.8
Postgraduate course	57	10.6
Missing	12	2.2
Recreational Spending		
Less than $120 per month for recreational purposes	265	49.2
More than $120 per month for recreational purposes	254	47.1
Missing	20	3.7

Aim 1: drug-related behavior

Fifty-eight percent of all participants ($n = 315$) reported they had ever used drugs (besides alcohol). Two in five participants reported drug use in the past month (40%, $n = 215$), the most common drugs participants reported using included cannabis (28%, $n = 148$), cocaine (22%, $n = 120$) and MDMA (21%, $n = 111$). Thirty eight percent ($n = 207$) of participants had not used any drugs in the past month. A minority (12%, $n = 67$) reported they planned to use drugs besides alcohol while attending the festival (Tables 2 and 3).

Aim 2: drug checking attitudes

Almost three-quarters of all participants supported or strongly supported allowing people to test their drugs at designated sites (73%, $n = 392$). Of those participants who reported lifetime drug use ($n = 315$) most (81%) supported or strongly supported a drug checking service ($n = 256$) with less than 3% ($n = 9$) opposing or strongly opposing drug checking. Among all participants, 79% ($n = 424$) reported they would feel more safe with pill testing onsite, with a minority of 17% ($n = 93$) reporting they would feel less safe with pill testing onsite.

Logistic regression was conducted to assess the association of demographic factors and recent drug use on attitudes to drug checking ($N = 406$; see Table 4). Holding all other variables constant, being in the older age bracket (>25 years) was associated with 2.6 times higher odds ($p = .001$) of supporting drug checking compared to the younger age bracket (<25 years). Holding all other variables constant, having recently used drugs (in the past month) was associated with 2.1 times higher odds ($p = .006$) of supporting drug checking compared with those who had not recently used drugs. No other variables of interest were statistically significant at the $p < .05$ level.

Aim 3: preference for drug checking service delivery

Fifty percent of all participants ($n = 270$) indicated they would use a drug checking or testing service. Among participants who indicated they would use a drug checking or testing service, 64% ($n = 172$) said they would use both an onsite and offsite drug checking service, 10% ($n = 28$) preferred solely onsite drug checking, and 7% ($n = 21$) preferred exclusively offsite services, 14% ($n = 16$) preferred neither and 6% ($n = 16$) did not know. Among participants who indicated they would use a drug checking service, most reported they would use a drug checking service at the event where they planned to

Table 2. Drug-related behaviour of festival patrons.

Variables	*N* = 539	%
Have you ever used drugs besides alcohol?		
Yes, in the past year	208	38.6
No	195	36.2
Yes, but not in the past year	107	19.8
Skip question	24	4.5
Missing	5	0.9
Have you ever used drugs besides alcohol?		
Yes	315	58.4
No	195	36.2
Missing	29	5.4
Drugs used in the past month		
None	207	38.4
Cannabis (Marijuana, pot)	148	27.5
MDMA (Ecstasy, pingers)	111	20.6
Cocaine	120	22.3
LSD (trips, acid)	41	7.6
Hallucinogenic mushrooms (psilocybin, magic mushrooms)	41	7.6
Ketamine	38	7.1
Nitrous oxide (nangs)	31	5.8
Non-medical use of pharmaceutical stimulants (dexies)	23	4.3
Methamphetamine (speed, powder)	17	3.1
Methamphetamine (crystal, ice)	16	3.0
Amyl nitrites (amyl, poppers)	12	2.2
GHB/GBL/1,4-B-D (juice, G)	8	1.5
Non-medical use of Viagra/ erectile enhancer	<5	<1
Other	10	1.9
Skip question	53	9.8
Used drugs in the past month		
Yes	215	39.9
No	207	38.4
Missing	117	21.7
Do you plan to use any drugs while attending the festival (besides alcohol)?		
No	438	81.3
Yes	67	12.4
Skip question	23	4.3
Missing	11	2.0

Table 3. Drug checking attitudes of festival patrons.

	All participants		Those who ever used drugs	
Variables	*N* = 539	%	*N* = 315	%
To what extent do you support or oppose allowing people to test their drugs at designated sites?				
Strongly support	283	52.5	196	62.2
Support	109	20.2	60	19.0
Neither support nor oppose	60	11.1	35	11.1
Oppose	5	0.9	2	0.6
Strongly oppose	13	2.4	7	2.2
Don't know	23	4.3	4	1.3
Skip question	36	6.7	8	2.5
Missing	10	1.9	3	0.9

use the drugs prior to consumption (81%, *n* = 218) compared to the days or weeks before the event (19%, *n* = 51). Summary statistics showing drug checking preferences can be found in Table 5.

Logistic regression was conducted to assess the association of demographic factors and recent drug use on the potential use of an onsite drug checking service for those who indicated they would use drug checking (would/would not use an onsite service) (*N* = 189; see Table 6). Holding all other variables constant, having recently used drugs (in the past month) was associated with 5.5 times higher odds (p <.001) of using an onsite drug checking service compared with those who had not recently used drugs. No other variables of interest were statistically significant at the p < .05 level.

Table 4. Binomial logistic regression model related to attitudes to drug checking service at festivals (Model reference group: Supportive attitude towards drug checking) *N* = *406*.

		95% CI		
Correlates	Odds Ratio	LL	UL	*p*-value
NT resident (yes)	1.038	0.609	1.772	.890
Gender (male)	1.408	0.779	2.544	.257
Age (>25)	2.587	1.458	4.591	**.001***
Currently studying (yes)	1.229	0.693	2.181	.480
Education level (post-high school)	1.558	0.885	2.742	.124
Recreational spending (>$120 per month)	1.204	0.691	2.097	.513
Used drugs in past month (yes)	2.171	1.250	3.771	**.006***
_cons	1.117	0.603	2.068	.725

*Significant at 0.05 level.
The overall model was statistically significant (χ^2 (7) = 31.98, p < .001), with a McFadden's R^2 of .077.

Discussion

This study aimed to provide an understanding of current drug-related behaviours and attitudes toward drug checking among festival attendees in the NT. Most of the sample reported being supportive of drug checking services, irrespective of their own reported use of drugs. However, our sample included a substantial proportion of people who reported drug use, with approximately two in five reporting drug use in the past month. Participants most commonly reported using cannabis, cocaine, and MDMA in the past month. Notably, a high consensus emerged in favour of drug checking, aligning with extant work. This is reflective of the music festival setting and in line with Day et al.'s (2018) findings, where over eighty percent of attendees in both samples held positive supportive views of drug checking as a harm reduction strategy.

The current study however canvases attitudes and behaviors of patrons from a regional festival in contrast to other key Australian festival studies which have surveyed patrons from predominantly metropolitan areas (Douglass et al., 2022; Jenkinson et al., 2014) or where the festival locale has not been clarified (Day et al., 2018; Healey et al., 2022; Page et al., 2022). Of particular note are the findings that older participants (>25 years) had greater odds of supporting drug checking than younger participants. Most previous studies exploring attitudes to drug checking have focussed on young adult festival populations both in Australia (Southey et al., 2020; Day et al., 2018) and internationally (Ivers et al., 2022). The results of the current study align with work by Caluzzi and

Table 5. Preferences for drug checking service delivery among festival patrons.

Variables	All participants		Those who would use a drug checking service	
	N = 539	%	*N* = 270	%
When would you use a drug checking or testing service? Please select all that apply				
At event where I planned to use drugs, before consumption	218	40.4	218	80.7
I do not use drugs and would not use drug checking or checking service	127	23.6	–	–
Skip question	103	19.1	–	–
At event, testing a drug from the same batch after consumption	56	10.4	56	20.7
Days or weeks before the event where I planned to use drugs	51	9.5	51	18.9
I use drugs but would not use a drug checking or testing service	21	3.9	–	–
Missing	18	3.3	–	–
Other	11	2.0	–	–
If available, would you use a service based at clubs or festivals to have your drugs tested for contents and/or purity by a professional? (onsite)				
Yes	–	–	200	74.1
No	–	–	32	11.9
Don't know	–	–	28	10.4
Missing	–	–	13	4.8
If available, would you use a fixed-site service (e.g. a drop-in centre) to have your drugs tested for contents and/or purity by a professional? (offsite)				
Yes	–	–	193	71.5
No	–	–	37	13.7
Don't know	–	–	30	11.1
Missing	–	–	10	3.7
Derived variable: Preference for onsite and/or offsite drug checking service delivery				
Either onsite or offsite	–	–	172	63.7
Onsite only	–	–	28	10.4
Offsite only	–	–	21	7.8
Neither onsite or offsite	–	–	16	5.9
Don't know	–	–	16	5.9
Missing	–	–	17	6.3

Table 6. Binomial logistic regression model related to potential use of an onsite drug checking service at festivals (Model reference group: Would use an onsite service) *N* = 189.

Correlates	Odds Ratio	95% CI		*p*-value
		LL	UL	
NT resident (yes)	1.191	.464	3.057	.717
Gender (male)	1.251	.462	3.386	.659
Age (>25)	1.692	.633	4.523	.295
Currently studying (yes)	.639	.240	1.699	.369
Education level (post-high school)	1.137	.441	2.929	.790
Recreational spending (>$120 per month)	1.041	.403	2.685	.934
Used drugs in past month (yes)	5.523	2.163	14.105	**.000***
_cons	1.732	.576	5.213	.328

*Significant at 0.05 level.
The overall model was statistically significant (χ^2 (7) = 19.55, p =.007), with a McFadden's R^2 of 0.126.

colleagues, who found in the Australian household drug survey greater support for drug checking among 25–34-year-olds (Caluzzi et al., 2023). In the current study, older participants accounted for almost half the participants surveyed, capturing a more diverse spread of ages than many other Australian festival surveys (where older participants account for less than 20% of participants) (Day et al., 2018; Healey et al., 2022; Southey et al., 2020).

Regarding the placement of drug checking services, the current sample preferred drug testing at designated locations, specifically onsite at the festival. These preferences align with other research in Australian festival settings (Barratt et al., 2018; Day et al., 2018), where a high percentage of individuals intended to engage with drug checking services situated within festival premises. Previous research has suggested that offering drug checking services at major festivals aids patrons in managing drug consumption and addressing concerns of drug impurities (Valente et al., 2019), particularly given the high rates of drug adulteration in these contexts (McCrae et al., 2019).

The current findings add substantiation to the value which the provision of drug checking services at festival venues may have on the potential to attract substantial uptake and utilisation. Even among those who did not report using drugs, support for drug checking was high, and only a small minority (17%) indicated they would feel less safe at a festival that offered drug checking. Our sample favored, although modestly, onsite drug checking services, emphasizing the necessity of aligning service provision with consumer preferences—an essential aspect of aligning drug policy organically with consumer needs (Piatkowski et al., 2023b). The need to design drug checking services that are accessible to all types of people who use illicit drugs is emphasised in the academic literature (Bardwell et al., 2019; Barratt et al., 2018; Sande & Šabić, 2018; Sherman et al., 2019; Wallace et al., 2020). Notably, Rose et al. (2023) identified critical design features such as location, integration with other services, mobile versus fixed site operation, and hours of operation as pivotal factors in enhancing accessibility to drug checking services. However, designing a drug checking service in the context of the NT necessitates a delicate balance, considering factors like cost-effectiveness, accessibility, demand

patterns, and the prevailing political climate. As a result, discussing drug checking necessitates addressing drug policy. Drug checking is most salient in prohibitionist contexts, where unregulated markets facilitated by organized crime groups often lead to the sale of substances with unknown content and potency, with risk of adulteration with or substitution for unexpected or more toxic substances or unexpectedly high dose substances (Carroll, 2021). A shift in policy orientation would facilitate harm reduction and an enhanced capacity and reduced barriers to access for drug checking. Specifically, in the sparsely populated context of the NT, characterized by dispersed regions and seasonal events, a mobile drug checking service could be beneficial over a fixed site service. However, this approach necessitates a concomitant alignment with policy frameworks to ensure an effective and comprehensive harm reduction strategy.

Limitations

This data set is based on a convenience sample of music festival attendees and, therefore, respondents may not be representative of all festival attendees. Self-reported data can be impacted by social desirability bias, but it is generally considered reliable for self-reported drug use and drug-related behaviors if confidentiality is assured (Bharat et al., 2023). In an effort to reduce inaccurate reporting associated with the intoxication of patrons and ensure informed consent, surveys were only conducted during daylight hours and festival attendees who appeared visibly intoxicated were excluded. However, results may thus be influenced by self-selection bias, as these excluded individuals may have had particular characteristics which may have influenced results (Palamar et al., 2021).

Conclusions

A strength of this research is that this is the first large survey performed at a music festival in the NT which has measured attitudes and intended behaviours towards drug checking. As a result, our findings contribute significantly to the ongoing discourse in Australia regarding the role of drug checking services in harm reduction and drug policy. Nevertheless, these implications are not without reservations, as some have suggested potential adverse consequences of drug checking, such as encouraging drug use or providing false reassurance (Scott & Scott, 2020). However, available evidence suggests that offering drug checking services at festivals does not lead to increased drug use or intentions to use among individuals who have used drugs or use or intentions to use among individuals who have never used drugs (Murphy et al., 2021). This study sheds light on the attitudes regarding drug use and support for drug checking among both a general sample of regional festival attendees as well as festival attendees who use drugs. The findings underscore the potential value of incorporating drug checking services into harm reduction initiatives, particularly at festivals and venues in the NT. Overall, the study contributes to the ongoing discourse on harm reduction, emphasising the need for further exploration and attention to the role of drug checking services in addressing the complexities of drug-related harms in this context.

Authors contributions

Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing -original draft; and Writing - review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was funded by a Menzies School of Health Research internal grant. CW is supported by an ARC Discovery Early Career Fellowship. ML is supported by a NHMRC Career Development Fellowship. AP is the recipient of an NHMRC Emerging Leader Fellowship. AP has received untied educational grants from Mundipharma and Seqirus for study of opioid medicines in Australia. SC and MM are supported by Australian Government Research Training Program (RTP) Scholarships and a Menzies School of Health Research Top-Up Scholarships.

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