Drug use patterns, harm reduction strategies and use of drug checking services in boom festival patrons

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Abstract

Purpose – *Recent studies have shown that people who attend electronic dance music events and use drug checking services (DCS) are a predominantly white male, highly educated middle-class population. However, there is still a lack of data beyond sociodemographic characteristics that must be addressed. This paper aims to describe the drug use patterns and protective behavior strategies (PBS) used by testers and nontesters at Boom Festival 2018 and analyze the relationship between these behaviors and the decision to use the DCS.*

Design/methodology/approach – *This is an exploratory research based on a cross-sectional design using baseline data collected at the Boom Festival from testers (*N *= 343) and nontesters (*N *= 115).*

Findings – *Nontesters presented, in general, slightly higher frequencies of use for most drugs, whereas testers tended to adopt PBS more frequently. Moreover, testers planned their drug use more often than nontesters and set more limits on the amount of drugs they used in one session. Both of these behaviors work as predictors for using the DCS.*

Practical implications – *Our data suggest that DCS might not be easily accessible to all people who use drugs, reaching almost exclusively highly educated people that already apply several harm reduction strategies. Actions should be taken to promote service accessibility.*

Originality/value – *To the best of the authors' knowledge, this paper is the first to compare the demographics, drug use and PBS adoption of DCS users with nonusers who attended the same festival.*

Keywords *Harm reduction, Drug checking, Drug use patterns, EDM events, Pill testing, Protective behavioral strategies*

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Introduction

Research around electronic dance music (EDM) events shows that drug use levels are higher in people attending these settings than in the general population (Halkitis and Palamar, 2006; Chinet *et al.*, 2007; Measham and Moore, 2009; EMCDDA, 2012; Van Havere *et al.*, 2011; Valente *et al.*, 2019). These elevated levels of drug use combined with drug-related emergencies (Ridpath *et al.*, 2014) have urged authorities and civil society organizations to allocate resources to implement specific interventions. Some interventions attempted to prevent drug use, like strip searches or sniffer dogs, detect and confiscate substances (Grewcock and Sentas, 2019). Others focused on reducing the potential risks of drug use, within a prohibitionist context, like drug checking services (DCS) (Valente *et al.*, 2018):

> A DCS focuses on public health and harm reduction for members of the public by analyzing drugs to detect their contents and returning the results of each analysis to service users to help the user reduce risk exposure without judgment of their decision to consume drugs. (TEDI, 2022, p. 3)

DCS began in the 1960s in North America with several stationary services associated with universities and private foundations (Valente and Martins, 2019). More than a decade later, DCS reached Europe. In the past 30 years, these services have been disseminated worldwide (Brunt, 2017; Barratt *et al.*, 2018) and, until recently, mainly served partygoers (Kriener *et al.*, 2001; Maghsoudi *et al.*, 2021; Giulini *et al.*, 2022).

Several studies have aimed to characterize people attending EDM events and found that this population applies several protective behavior strategies (PBS) before, during and after their drug-using sessions: avoiding certain drug mixtures, planning drug use sessions and buying drugs from reliable sources, among other strategies (Akram and Galt, 1999; Baggott, 2002; Chinet *et al.*, 2007; Riley *et al.*,, 2010; Fernández-Calderón *et al.*, 2011; Race, 2011; Van Havere *et al.*, 2015; Cruz, 2015; Palamar *et al.*, 2015; Hughes *et al.*, 2019; Betzler *et al.*, 2019).

Some researchers have described the actual subset of people who attend EDM events and use DCS and found a predominantly white male, highly educated middle-class population (Michelow and Dowden, 2015; Martins *et al.*, 2017; Measham, 2020; Valente *et al.*, 2019; Olsen *et al.*, 2019; Koning *et al.*, 2021). However, there is still a lack of data beyond sociodemographic characteristics that must be addressed.

Many DCS agree that their key objective is to promote informed decision-making and behavior change (Measham and Turnbull, 2021; Measham and Barratt, 2022; Valente *et al.*, 2022). It would be highly relevant to understand whether people testing their drugs engage in similar drug use patterns and harm reduction behaviors as the general population that attends festivals and other EDM events. Knowing the potential differences between the people who test and do not test their drugs is necessary to understand whether DCS is reaching those who need it most and improve the accessibility and efficacy of services.

Context

Boom Festival (www.boomfestival.org), held every two years in Portugal, is one of the world's most prominent psychedelic music and culture events.

In 2018 Kosmicare [1], a Portuguese nonprofit organization, offered a complete range of harm reduction services at the festival (Valente *et al.*, 2021). These harm reduction services were divided into two main areas that worked together and constantly exchanged information: the *Psychedelic Emergency Hub*, where people undergoing difficult psychological experiences, drug-related or not, could find specialized help, and the *Drug Checking and InfoHub*, which offered information, support and harm reduction materials, as well as an analytical service coupled with a short motivational intervention (Miller and Rollnick, 2002). Colorimetric reagents, thin-layer chromatography and a UV–vis spectrophotometer were used to provide festival patrons with qualitative and quantitative information about their samples (Martins *et al.*, 2017; Valente *et al.*, 2021; Valente *et al.*, 2022). Also, during this edition, Kosmicare partnered with Energy Control (ABD, Spain) to set up a high-performance liquid chromatography equipment. During the festival, 671 samples were analyzed. Eighty-four LSD blotters, 56 3,4-methylenedioxy-methamphetamine (MDMA) and three 2 C-B pills were quantified. Everyone that wished to test a pill or blotter was offered the possibility to quantify, and the criteria for quantification was to supply the service with an entire pill or blotter.

Aims

The present study aimed to:

- describe the drug use patterns and PBS used by testers and nontesters at Boom Festival 2018; and
- analyze the relationship between these behaviors and the decision to use the DCS service at Boom 2018.

Materials and methods

Design

This is an exploratory research based on a cross-sectional design using baseline data from testers and nontesters to establish comparisons.

Members of the research team invited everyone accessing Kosmicare's DCS (N = 352) to fill in a questionnaire before sample delivery.

Workers at Kosmicare's InfoHub were instructed to invite people they had more extended interactions with to participate in a research study. About 25% of 2,000 people who interacted over 10 min with harm reduction personnel, but did not test their drugs [2], were invited to participate in the study.

Data collection tools

The questionnaires were developed, adapted and made available in Portuguese and English following the International Test Commission (2017) Guidelines for Translating and Adapting Tests. A literature review was performed to understand the outcomes of studies focusing on similar interventions and target groups. People who use DCS and DCS workers/researchers were interviewed to help inform questionnaire development. Most DCS workers and peers consulted by the research team have agreed that drug checking aims to promote the adoption of different PBS (Valente *et al.*, 2022). Consequently, the research team decided to focus on these particular outcomes.

Native English speakers did the translation and retranslation processes, and 20 trial runs to test the adequacy of the surveys were performed with people who had previously used DCS (Valente *et al.*, 2022).

The questionnaire included the following sections under analysis in this paper:

- *Drug use patterns*: Participants were asked about the frequency of their use of the following substances: tobacco products, alcoholic beverages; cannabis; cocaine; MDMA; benzodiazepines, opioids, LSD, magic mushrooms, ketamine, LSD and Amphetamine. Each item was measured using a Likert scale ranging from 0 (Never), 1 (Once in your life), 2 (Less than once a year), 3 (one to three times a year), 4 (4–11 times a year), 5 (Monthly), 6 (Weekly) to 7 (Daily).
- *Protective behavior strategies scale*: A total of 22 items adapted from previous studies with similar populations (Fernández-Calderón *et al.*, 2014; Vidal Gine *et al.*, 2016). Each item was measured using a Likert scale ranging from 0 (Never), 1 (Rarely), 2 (Sometimes 50%), 3 (Almost always), 4 (Always) to 5 (Not applicable).

The reliability of the PBS scale was tested using Cronbach's alpha coefficient for internal consistency with a result of 0.819 [3].

- *Sociodemographic data*: Education, employment, age, gender, income and residence.

Data analysis

For the statistical purpose of calculating group differences across gender, education, employment and monthly income, chi-square and t-tests were used. Any option with less than five answers was eliminated from the chi-square tests.

Gender comparisons were only made between people identifying as male and female because of the extremely small group identifying outside this binary.

For calculating differences between testers and nontesters on drug using frequency t-tests were performed. The same was done for the different PBS.

Logistic regression analyses were performed to analyze the effects of frequency of drug use and level of adoption of PBS on the decision to use the DCS, using only the variables that had previously shown statistically significant relationships. We tested for multicollinearity of the items included in the regression using the variance inflation factor.

Gender was introduced as a dummy variable, considering males as the reference category. The odds ratio, confidence intervals and significance of the contribution of each variable to the model were calculated. The fit of the models was tested using the Hosmer–Lemeshow test.

All questionnaires were coded and analyzed with SPSS 28.

Participants

A total number of 343 testers agreed to participate in the study, over 95% of DCS users. Of the 500 nontesters invited to participate, only 115 people were willing to participate in the study. No differences were found between testers and nontesters in terms of age [$t(420) = 0.299$, $p = 0.765$; $d = 0.04$]; education [$t(407) = 0.606$, $p = 0.545$, $d = 0.08$] and employment [$\chi^2(4, 417) = 0.175$, $p = 0.996$]. However, significant differences were detected in the country of residence [$\chi^2(8, 395) = 68.439$, $p = <0.001$ with a Cramer's V value of 0.416], monthly income [$t(403) = 2.335$, $p = 0.020$, $d = 0.31$] and gender [$\chi^2(1, 450) = 4.598$, $p = 0.032$ with a Cramer's V value of 0.02].

The potential representativeness of our samples was assessed by comparing our data (age, gender and country of residence) with data supplied by the Boom Festival organization. Our samples seem to be representative of the overall Boom population (see Table 1).

Results

Drug use patterns

In general, nontesters reported higher frequencies of drug use than testers.

The frequency of drug use of testers and nontesters showed statistically significant differences between different drugs, with nontesters reporting higher frequencies of cocaine [$M = 2.4$ vs $M = 1.8$; $t(421) = -2.348$, $p = 0.019$, $d = 0.32$], amphetamine [$M = 2.2$ vs M 1.7; $t(422) = -2.226$, $p = 0.027$, $d = 0.25$], benzodiazepines [$M = 1.2$ vs $M = 0.79$; $t(422) = -2.350$, $p = 0.019$, $d = 0.26$] and opioids use [$M = 0.76$ vs $M = 0.32$; $t(416) = -3.9$, $p = <0.001$, $d = 0.41$]. Testers reported a higher frequency of Lysergic acid diethylamide (LSD use [$M = 2.5$ vs $M = 2.1$; $t(417) = 2.136$, $p = 0.033$, $d = 0.28$] (see Table 2).

Protective behavioral strategies

Testers reported higher adoption levels in 12 of the 21 PBS presented in the questionnaire, lower levels in four PBS and similar in five of the presented behaviors. Statistically significant differences were detected in the implementation of the following strategies: "I plan my drug use sessions instead of resorting to what I can get during a party" [$M = 3.1$ vs $M = 2.8$; $t(424) = 2.003$, $p = 0.046$, $d = 0.29$]; "I set a limit to the quantity I will take and try not to exceed it" [$M = 3.1$ vs $M = 2.8$; $t(434) = 2.671$, $p = 0.008$, $d = 0.30$]; "I avoid injecting drugs" [$M = 3.7$ vs $M = 3.5$; $t(395) = 0.2.012$, $p = 0.045$, $d = 0.23$], with testers showing higher means of adoption in all of these behaviors.

Nontesters showed a statistically significantly higher mean of adoption of the following PBS: "I avoid, or I'm cautious about mixing stimulants" [$M = 2.3$ vs $M = 2$; $t(402) = 2.395$, $p = 0.017$, $d = 0.25$] (see Table 3).

Table 1 Participants sociodemographics

	All testers (%, N = *343)*	*Nontesters (%,* N = *115)*	*Boom festival patrons*[a] *(%,* N = *35,485)*
Gender			
Male	72	63	59
Female	27	37	40
Other	1		1
Age	*M* = 29; DS = 6.282; Range = 19–55	*M* = 29; DS = 6.592; Range = 19–54	44% between 25 and 31 years
Education			
Secondary education (high school)	23	27	
Higher education (university)	77	73	
Occupation			
"Just study"	12	11	
"Just work"	56	54	
"Study and work"	24	26	
"Unemployed"	8	8	
Monthly income			
"€500 or less"	7	9	
"€501–€2,000"	41	56	
"€2,001–€3,000	22	16	
"€3,001–€5,000"	20	14	
"More than €5,000	11	6	
Country of residence			
Portugal	18	10	15
Germany	11	22	11
Netherlands	10	–	7
Sweden	9	36	4
UK	7	–	6
France	6	7	15
Spain	3	11	3
Rest of the world[b]	36	14	40

Notes: [a]The information displayed regarding the Boom Festival patrons was provided by the festival to the research team only in percentage. [b]Austria, Greece, Finland, Norway, Denmark, Poland, Romania, Switzerland, Belgium, Serbia, Belarus, Russia, Iceland, Ireland, Italy, Czech Republic, Estonia, Ukraine, Brazil, Australia, New Zealand, Canada, India, USA, Japan, China, Israel, Mexico, South Africa

Table 2 Mean of drug use patterns of testers and nontesters

	*Testers (*N = *342)*		*Nontesters (*N = *110)*		
Psychoactive substances	*Mean*	*SD*	*Mean*	*SD*	t-*test result*
Tobacco products	5	2.61	5	2.29	$t(378) = 0.062$, $p = 0.95$, $d = 0$
Alcoholic beverages	5.5	1.25	5.4	1.37	$t(422) = 0.320$, $p = 0.749$, $d = 0.07$
Cannabis	5.2	1.80	5.2	1.18	$t(422) = -0.119$, $p = 0.906$, $d = 0$
Cocaine	*1.8*	*1.73*	*2.4*	*2*	*$t(421) = -2.348$, p = 0.019, $d = 0.32$*
MDMA	3.1	1.23	3.1	1.48	$t(422) = 0.001$, $p = 0.999$, $d = 0$
Amphetamine	*1.7*	*1.75*	*2.2*	*2.16*	$t(422) = -2.226$, $p = 0.027$, $d = 0.25$
Benzodiazepines	*0.79*	*1.44*	*1.2*	*1.65*	$t(422) = -2.350$, $p = 0.019$, $d = 0.26$
Opioids	*0.32*	*0.78*	*0.76*	*1.29*	$t(416) = -3.900$, $p = <0.001$, $d = 0.41$
LSD	*2.5*	*1.40*	*2.1*	*1.40*	$t(417) = 2.136$, $p = 0.033$, $d = 0.28$
Magic mushrooms	2.1	1.42	2.1	1.53	$t(418) = -0.251$, $p = 0.802$, $d = 0.0$
Ketamine	1.3	1.72	1.8	2.04	$t(419) = -1.857$, $p = 0.064$, $d = 0.26$

Table 3 Frequency of PBS adoption among testers and nontesters

Protective behavioral strategies	*Testers (N = 331)* Mean	SD	*Nontesters (N = 110)* Mean	SD	t-*test result*
I buy drugs from a reliable source	2.8	0.984	2.7	1.124	$t(414) = 0.947$, $p = 0.344$, $d = 0.09$
When I party, I avoid taking four or more alcoholic drinks in a 2-h time frame	2.5	1.237	2.5	1.238	$t(414) = -0.408$, $p = 0.683$, $d = 0$
I plan my drug use sessions instead of resorting to what I can get during the party	*3.1*	*0.952*	*2.8*	*1.083*	*t(424) = 2.003,* p = *0.046,* d = *0.29*
Before using a drug for the first time, I get information about it	3.6	0.808	3.6	0.696	$t(432) = -0.431$, $p = 0.666$, $d = 0$
I set a limit to the quantity I will take and try not to exceed it	*3.1*	*0.952*	*2.8*	*1.073*	*t(434) = 2.671,* p = *0.008,* d = *0.30*
I space out sessions/parties where I use drugs	2.4	1.291	2.2	1.282	$t(411) = 1.430$, $p = 0.154$, $d = 0.16$
When I use drugs, there is someone sober in the group to take care of the rest of us	1.8	1.030	2	1.058	$t(431) = -0.622$, $p = 0.534$, $d = 0.19$
I avoid consuming drugs with strangers and/or in environments where I do not feel comfortable	3	1.049	3	1.045	$t(438) = -0.448$, $p = 0.655$, $d = 0$
I prefer taking small doses instead of large quantities	2.8	0.921	2.7	1.023	$t(445) = -0.1.202$, $p = 0.230$, $d = 0.10$
If I take powder or crystal ecstasy, I prepare it in "bombs"	1.9	1.416	2	1.530	$t(387) = -0.493$, $p = 0.623$, $d = 0.07$
When I am going to take a substance whose origin is unknown to me, I first take a test dose as a precaution	2.6	1.338	2.6	1.311	$t(415) = 0.290$, $p = 0.772$, $d = 0$
I wait for the effects of a drug to decrease before taking another one	3	0.975	2.8	0.984	$t(427) = -0.1.443$, $p = 0.150$, $d = 0.20$
When I drink alcohol, I avoid shots	2.8	1.165	2.9	1.139	$t(408) = -0.744$, $p = 0.457$, $d = 0.08$
I avoid injecting drugs	*3.7*	*0.962*	*3.5*	*1.276*	*t(395) = 2.012,* p = *0.045,* d = *0.23*
I alternate alcoholic and nonalcoholic beverages	2.6	1.180	2.6	1.195	$t(412) = -0.063$, $p = 0.950$, $d = 0$
I avoid, or I am very cautious, about mixing depressants (alcohol, GHB, opiates, etc.)	3.4	1.224	3.3	1.202	$t(330) = 0.689$, $p = 0.491$, $d = 0.08$
I avoid, or I am very cautious, about mixing stimulants (cocaine, methamphetamine, ecstasy, etc.)	*2*	*1.093*	*2.3*	*1.287*	*t(402) = −2.395,* p = *0. 017,* d = *0.25*
I avoid getting into a car when the driver is under the influence of alcohol or other drugs	3.3	0.992	3.2	1.042	$t(435) = -0.543$, $p = 0.588$, $d = 0.09$
I avoid driving under the influence of alcohol or other drugs	3.5	0.921	3.4	1.013	$t(407) = 0.651$, $p = 0.515$, $d = 0.10$
When I sniff a drug, I use my own tube and do not share it	2.1	1.309	2	1.307	$t(315) = -0.970$, $p = 0.333$, $d = 0.07$
If I am mixing drugs, the quantity of each of them I take is lower than if I take each of them separately	2.8	1.161	2.6	1.154	$t(359) = 1.031$, $p = 0.303$, $d = 0.13$

Relationship between drug use patterns, PBS and the decision to use DCS

Logistic regression was run to understand what variables under study contributed to predicting the behavior of testing drugs. The Hosmer and Lemeshow test [$\chi^2(8, 460) = 4.510$, $p = 0.808$] indicated a good fit for the model. The model explained 18% (Nagelkerke R^2) of the variance of use of the DCS and correctly classified 84% of cases.

The variables "I plan my drug use sessions instead of resorting to what I can get during a party"; "I set a limit to the quantity I will take and try not to exceed it"; "I avoid injecting drugs"; and "I avoid, or I'm cautious about mixing stimulants"; as well as the frequency of opioid and LSD use have made significant contributions to our model.

People who reported more frequently setting a limit to the amount of drugs they take (OR = 1.5, CI = 1.13–1.99, $p = 0.005$) showed a higher probability of using the DCS. This probability also increased for people who more frequently planned their drug use (OR = 1.31, CI = 1–1.55, $p = 0.047$). People who avoided injecting drugs (OR = 1.3, CI = 1.03–1.64, $p = 0.028$) also showed a higher probability of using DCS. It was also observed that a higher frequency of LSD consumption was positively related to using the DCS (OR = 1.31, CI = 1.10–1.60, $p = 0.003$). On the contrary, a higher frequency of opioid use (OR = 0.65, CI = 0.50–0.85, $p = 0.002$) decreased the odds of using the service. It was also

observed that avoiding mixing stimulants was negatively related to the decision to use DCS (OR = 0.62, CI = 0.47–0.81, p = <0.001) (see Table 4).

Discussion

The data collected at Boom Festival 2018 supports that people attending EDM events have high levels of drug use when compared with the general population but also show active engagement in protective strategies to prevent bad outcomes related to their use. As described in Table 3, regardless of being a tester or nontester, most of our research participants stated that they engage "almost always" in most PBS in our scale, with testers applying most of the strategies more frequently than nontesters. These data corroborate the idea that DCS is reaching a particular set of informed people, aware of the potential risks their drug use might entail and wanting to control their experiences (Bancroft, 2017; Taylor *et al.*, 2020).

Statistically significant differences between testers and nontesters in some items provided essential clues regarding the implementation of DCS services. Testers tended to plan their drug use more frequently than nontesters and also set a limit to the quantity of drugs they would use in a session/night out. Both of these variables worked as predictors of DCS use. At Boom, the DCS had a very high influx of people, creating long queues in the sample collection stations and more than 2h waiting to get results. The number of samples Kosmicare could test daily is limited, so people must arrive at the service early to secure a spot. Sample collection was only opened around 6 h a day because of a lack of material and human resources, so people must plan how to access the service and be willing to wait for the result (Valente *et al.*, 2022). This creates a "bottleneck" effect where only the most motivated and organized patrons will access DCS. Using the service at Boom Festival requires a fair amount of planning. However, it is known that unplanned drug use is widespread at EDM events, and this lack of planning tends to exacerbate potential adverse outcomes related to drug use (Palamar *et al.*, 2019).

A Kosmicare internal report from 2018 evaluated users' satisfaction with DCS and showed that "wait time" is the most common complaint of service users. Wait time was also mentioned as highly relevant by potential service users in Barratt *et al.* (2018) study. These results suggest that it is necessary to create accessible services and provide a rapid response to users by diversifying the analytic techniques and adapting them to the users'

Table 4 Logistic regression analyses between levels of PBS adoption and using the DCS service

	β	*Using the DCS service (testers/nontesters) Exp (β) (95% CI)*	p-*value*
Gender			
Men #			
Women	0.33	1.4 (0.79–2.47)	0.253
PBS adoption			
"I avoid injecting drugs"	*0.26*	*1.3 (1.03–1.64)*	*0.028*
" I avoid mixing stimulants"	*−0.48*	*0.62 (0.47–0.81)*	*<0.001*
"I plan my drug use sessions instead of resorting to what I can get during a party"	*0.22*	*1.31(1–1.55)*	*0.047*
"I set a limit to the quantity I will take and try not to exceed it"	*0.41*	*1.5 (1.13–1.99)*	*0.005*
Drug use patterns			
Amphetamine	−0.10	0.91 (0.77–1.11)	0.228
Cocaine	−0.06	0.94 (0.80–1.11)	0.470
Benzodiazepines	−0.05	0.95 (0.79–1.15)	0.598
Opioids	*−0.43*	*0.65 (0.50–0.85)*	*0.002*
LSD	*0.27*	*1.31 (1.10–1.60)*	*0.003*

needs. At the Boom 2018, we observed that although many people were interested in quantitative information, once they knew it was necessary to provide a more significant amount of their sample, they would decide not to quantify. The quality of analytical data must be weighed against the needs of service users, particularly the ones less aware of the importance of DCS as a harm reduction strategy.

The frequency of LSD use was also a predictor of DCS use; this fact might be linked to the high level of psychedelics use at the Boom Festival and the fact that in the 2014 edition, the LSD adulteration levels were extremely high. The LSD testing rate has been increasing considerably since several alerts concerning missold LSD were disseminated on festival grounds (Martins *et al.*, 2017).

Another difference between testers and nontesters is related to drug use. Testers at Boom Festival 2018 tended to mix stimulants more often than nontesters. This PBS positively predicts the use of the DCS, whereas the frequency of consumption of opioids negatively predicts DCS use. When looking at the drugs tested at the Boom 2018, we see a large majority of MDMA and cocaine samples (Kosmicare, 2018), which are drugs frequently associated with EDM events. In fact, until a few years ago, drug checking was commonly known as pill testing because of its association with ecstasy pills. People using drugs besides stimulants might feel this service is not of interest to them. DCS implemented in EDM events might need to invest in disseminating information concerning the adulteration of other drugs to attract a broader range of users. We have observed that nontesters present a higher frequency of use for several drugs than testers. This might entail that some DCS might only be reaching a particular set of concerned users and underlining the need to widen the services' target population to reach people who use drug (PWUD) that could highly benefit from this type of intervention.

Limitations

The sampling methods and the small size of our groups limit the generalizability of our results.

The generalizability of these findings is also limited by the setting (a transformational music festival) and the event's demographics. Furthermore, this data does not allow us to establish causal relationships between drug use, PBS adoption and DCS use. Additional research with a more significant number of participants, particularly those not engaging with any harm reduction services, and a longitudinal design is needed.

The data presented in this paper are part of a more extensive longitudinal research study focused on the impact of the Boom Festival 2018 DCS on the behavioral outcomes of the people that use the service (Valente *et al.*, 2022). Testers were invited to participate in a research project requiring their participation in three research points during the festival and an online survey after six months. Nontesters were invited to participate in a study that would require their involvement in two different points. However, engagement in the nontesters group was insufficient to establish a viable comparison with the testers group six months after the festival.

Conclusion

To our knowledge, this paper is the first to compare the demographics, drug use and PBS adoption of DCS users with nonusers who attended the same festival, providing useful empirical information to help the implementation of more effective DCS. Even though further research is necessary, our data suggest that DCS might not be easily accessible to all PWUDs, reaching almost exclusively highly educated males. These PWUDs already apply several harm reduction strategies and plan their drug use sessions, possibly minimizing the potential risks associated with their behaviors. Actions should be taken to promote service accessibility by increasing the service capacity in terms of human and material resources

and reducing waiting times. Improving DCS dissemination and communication strategies might also be an appropriate step to increase accessibility.

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Notes

1. Kosmicare.org
2. When going over the informed consent with participants, the research team asked whether they had used or intended to use the DCS during the festival. This was also the first question of the questionnaire nontesters had to fill.
3. The PBS scale was not validated and had no previous structure defined. A EFA was performed on all items and no clear structure was achieved, as a result of which we have decided to use the items separately.

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