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Understanding the patterns of use, motives, and harms of New Psychoactive Substances in Scotland

HEALTH AND SOCIAL CARE

social research

Understanding the patterns of use, motives, and harms of New Psychoactive Substances in Scotland

Final Report to the Scottish Government

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This report is dedicated to the memory of:

Zoe Wilson

(1974 – 2016)

Glossary: Abbreviations & Terms

A&E	Accident and Emergency
ADP	Alcohol & Drug Partnership
BBV	Blood-Borne Viruses
Benzos	Benzodiazepine
BZP	Also known as party pills. Tablets containing benzylpiperazine (a piperazine which produces empathogenic and stimulant effects)
Comedown	To lose the effects of a drug and return to a normal or more normal state
Chemsex	The use of drugs, often illegal ones, to increase pleasure during sex
Chems	In the context of chemsex, the use of crystal methamphetamine, mephedrone, and/or GHB/GBL
DRD	Drug Related Deaths
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
GGC	Greater Glasgow and Clyde
Headshop	A retail outlet selling a range of NPS or 'legal highs' and other paraphernalia used for consumption of drugs such as cannabis
IEP	Injecting Equipment Provider
IDU	Injecting Drug User
MDA	Misuse of Drugs Act 1971
MSM	Men who have Sex with Men
NEET	Not in Education, Employment, or Training
NPS	New (or Novel) Psychoactive Substances
On tick	To buy drugs, usually with the agreement to pay later
ORT	Opiate Replacement Therapy
Party pills	See BZP
PSA	Psychoactive Substances Act 2016
PWID	People/Person Who Inject Drugs
SALSUS	Scottish Schools Adolescent Lifestyle & Substance Use Survey
SCJS	Scottish Crime and Justice Survey
SDF	Scottish Drugs Forum
SDMD	Scottish Drug Misuse Database
Slamming	Injecting during chemsex
TCDO	Temporary Class Drug Order
UNODC	United Nations Office on Drugs and Crime

Glossary: Drug Wheel Categories

This report utilises The Drugs Wheel to categorise substances into comparable groups. This tool, developed by Mark Adley, was developed in response to the rapidly expanding number of psychoactive substances available. More information on this tool can be found at www.thedrugswheel.com. A visual presentation of the wheel is found within the 'Introduction' section of this report. The table below presents a breakdown of the categories, providing common effects and examples for each.

Name	Common Effects[1]	Example(s)
Cannabinoids	"Stoned", calm, munchies, chilled out, floaty, giggly, sensual, paranoid, dry mouth, anxiety, lazy, mental health issues.	Cannabis
Depressants	"Buzzing", euphoric, confident, relaxed, risk-taking, withdrawal, unconsciousness, coma, vomiting, death.	Diazepam, GHB/GBL, Gabapentin
Dissociatives	"Out of body", euphoric, floaty, disconnected, relaxed, numb, scared, unable to move, in a "hole".	Ketamine, Salvia, Methoxetamine
Empathogens	"Loved up", connectedness, warmth, understanding, sweating, arousal, mood swings, depression.	MDMA (ecstasy), PMA, MDAI
Opioids	"Invincible", confident, pain-free, safe, euphoric, constricted pupils, addiction, hallucinations, withdrawal, overdose.	Heroin, Tramadol, Morphine
Psychedelics	"Trips", spiritual connection, heightened senses, visual or auditory hallucinations, anxiety, panic, mental health issues.	LSD, 5-MeO-DALT, AMT
Stimulants	"Uppers", increased energy, increased heart rate, euphoria, dilated pupils, paranoia, anxiety, sexual arousal, sexual impotence, comedowns.	Amphetamine, Cocaine, Mephedrone

[1] All common effects taken from Adley (2016) The Drugs Wheel. Available at: http://www.thedrugswheel.com/downloads/TheDrugsWheelCategories_2_0.pdf [last accessed: 26/7/2016]

Glossary: NPS Categories

Throughout this report, NPS types will be linked to Drug Wheel categories. The table that follows sets out the categories we discuss, the corresponding Drug Wheel category, and some commonly used names.

Name	Drug Wheel Category	Commonly Used Names
Synthetic Cannabinoids	Cannabinoid	Bombay Blue, Annihilation, Clockwork Orange, Doctor Green Thumb, Exodus, Herbal Haze, Joker, Sensate, Pineapple Express, Spice, Herbal Incense
Benzodiazepine-type NPS	Depressant	Phenazepam, Etizolam, Diclazepam, Flubromazolam, Flubromazepam
Stimulant-type NPS	Stimulant	Gogaine, Ching, Mr. White, Columbiana, Charly Sheen, Dust till Dawn, Ivory Wave, Blue Stuff, Bath Salts, Sniff
Mephedrone	Stimulant	Magic, Bubbles, M-Cat, Meow Meow, Plant Food
GHB/GBL	Depressant	G
Ethylphenidate	Stimulant	EP, Burst, Ocean Burst
Salvia	Dissociative	Salvia, Sally D

Executive Summary

Background

New or Novel Psychoactive Substances (NPS) imitate the effects of illegal drugs and are commonly (although misleadingly) referred to as 'legal highs'. Over the last decade the use of NPS has expanded in Scotland. Current data sources and anecdotal reports have identified a number of vulnerable or potentially at risk groups. This report presents results of mixed methods research on NPS use among five key target populations: vulnerable young people, people in contact with mental health services, people affected by homelessness, people who inject drugs (PWID) and men who have sex with men (MSM).

Methods

Qualitative interviews were undertaken with 33 people who had taken NPS. Over half of participants belonged to two or more target groups. Four focus groups were run with front line staff working with people who use NPS across Scotland, and attended by 42 practitioners. Key themes from qualitative analysis of the interviews and focus groups were used to inform the design of two surveys: one for service users[2] (the NPS survey), and one for staff (the staff survey). 424 service users and 184 front line workers completed the surveys.

Findings

Findings are presented on patterns of NPS use, motivations for and consequences of use, and treatment and legislative responses.

Patterns of NPS Use: Key Findings

Various service data sets were explored, including specialist drug service data and national data sets, in an attempt to derive prevalence estimates within vulnerable populations across Scotland, but none were sufficiently robust.

However, local estimates for NPS use among people who inject drugs were derived in two parts of Scotland from data from injecting equipment providers. From analysis of existing needle exchange data for NHS Greater Glasgow and Clyde (GGC) and NHS Lothian, we estimate that there are 190 (confidence interval 114-265)[3] injecting NPS users in NHS GGC and a further 673 (confidence interval 562-784) NPS injectors in the NHS Lothian area.

Use of NPS was widespread in the survey sample with 59% (n=252) of

[2] Participants for the survey were recruited primarily through services including homeless drop ins. To increase reach, participants were also recruited online. The majority of surveys were by clients of services, however a small proportion were completed online by individuals not necessarily in contact with services.

[3] A confidence interval gives an estimated range of values which is likely to include the true value.

respondents reporting that they had ever used NPS. Of those, 74% (n=185) reported having used NPS within the last six months.

Poly-substance use amongst the sample was very high. Only one person reported being a sole NPS user, with 99% (n=251) of NPS users also reporting traditional drug use. The most commonly used NPS were **synthetic cannabinoids** (41%, n=104) and **benzo-type NPS** (41%, n=102), while approximately one fifth reported taking **stimulant-type NPS** (21%, n=53) and **mephedrone** (19%, n=48).

Preferred route of administration varied by substance. Smoking was most common for **synthetic cannabinoids** (98%, n=91), whereas oral (66%, n=57) and sublingual (under the tongue) (28%, n=24) were most common for **benzodiazepine-type NPS**. **Stimulant-type NPS** were more commonly taken by snorting (51%, n=25) or injecting (33%, n=16).

Motives: Key Findings

There were a wide range of reasons reported for people using NPS. The key motives related to ease of access, curiosity and influence of peers, as well as pleasure, price and potency. Legal status did not appear to be a key motivator for use.

Other specific motivations were associated with particular groups of respondents. For example MSM were more likely to highlight improving sex as a key motivator for use. Those with a history of benzodiazepine use were more likely to highlight substitution from prescribed drugs as a key motivator for use.

Reasons for not trying: Reasons for not trying NPS were explored in the qualitative interviews only. These generally related to awareness of the harms from observing NPS use among their peers.

Reasons for trying: The key reasons for trying NPS related to price, curiosity and ease of access, including being offered through peers.

Reasons for stopping: The key reasons for stopping use of NPS reported in the study related to ‘not liking it’ or in relation to specific harms that individuals had experienced, for example having a negative impact on mental or physical health.

Reasons for continuing to use: The reasons for continuing to use NPS overlapped with reasons for trying and in particular around ease of access. In addition, motives for continuing also related to pleasure and compulsion. More functional reasons for continued use related to people using in an attempt to self-manage underlying mental health problems or dependency and a desire to avoid going into withdrawal.

Consequences of Use: Key Findings

The surveys identified multiple harms associated with the consequences of using NPS. The negative consequences of use can broadly be described in terms of mental and physical health harms and social harms.

Positive effects were identified by some. This was generally when under the influence of NPS, and negative after effects were often described. Use of NPS by MSM for chemsex saw half of respondents report no negative after effects for mental health (n=15/29) or social consequences (n=15/29). Those who reported benzodiazepine-type NPS use also identified positive effects on managing sleep and mental health, with 91% (n=52) reporting that use helped them sleep and 81% (n=47) stating that use reduced their anxiety.

Mental Health harms

Across all NPS users who had used in last 6 months, 25% (n=47) identified anxiety, 12% (n=22) paranoia and 20% (n=38) depression as key mental health harms. There was also a significant impact reported on underlying mental health conditions and use of NPS to reduce mental health symptoms.

Physical harms

A range of physical harms were reported. Physical harms varied because of the variations in the type of NPS people were using. The negative impact on sleep through NPS use was the most commonly reported physical health harm. Across all NPS users who had used in last 6 months 20% (n=37) reported problems with sleep. Co-ordination problems were also reported by 20% (n=38) of the sample and appeared to be particularly prevalent among those who reported use of benzodiazepine-type NPS. Population-specific harms were identified such as chemsex harms among MSM, injecting NPS among PWID, and unsupervised opiate detoxification among opiate users.

Wider social harms

Financial issues: Money and debt were highlighted as major issues. 60% (n=105) of respondents to the NPS survey said they had spent more money than they planned to on NPS. 39% (n=89) reported that they borrowed money to pay for NPS.

Missed appointments: Missing appointments was reported by 60% (n=104) of the overall NPS survey sample and highlighted a potential consequence of NPS use that could lead to significant further harms, including potential sanctions by the Department of Work and Pensions.

Education and Employment: While this was identified as a significant harm in the staff survey, it did not feature highly among the harms reported in the NPS

survey. It was however recognised as a greater issue by MSM than for other vulnerable populations.

Loss of tenancy: Staff perceived loss of tenancy as a social harm amongst people who use NPS (49%, n=90). Although it was reported less frequently in the NPS survey approximately 20% (n=35) of those who responded to a question on problems caused by NPS use, reported losing a tenancy as a result of NPS use.

NPS use and relationships: The majority of NPS survey respondents reported negative effects on their relationships with family following on from NPS use, something that was also identified by the staff survey. A quarter (26%, n=45) reported struggling with caring commitments.

Treatment and Psychoactive Substances Act: Key Findings

Contact with services: 36% (n=69) of all NPS users were not in contact with drug services at all for any issue[4]. Overall contact with services was high, which was not surprising given the nature of the population and the fact that a large proportion were recruited through services. However only 11% (n=26) of NPS survey respondents reported being in contact with one or more services specifically in relation to their NPS use. People in contact with mental health services reported the highest level of contact with services regarding their NPS use (20%, n=18).

Use of emergency services: While the vast majority of vulnerable people in the study chose not to discuss their NPS use specifically with the services they were in contact with, there was a higher level of use of emergency services. 32% (n=77) had called an ambulance for someone else and 23% (n=55) had an ambulance called for them as a result of NPS use. 26% (n=63) of NPS users had attended A&E as a result of NPS use.

Provision of information and support: Sources of information on NPS consisted primarily of talking to family and friends (32%, n=70). 31% (n=67) had not tried to source any information on NPS prior to use. 16% (n=34) had talked to a drug service and 16% (n=35) accessed information leaflets. 16% (n=34) had obtained information on NPS from TV documentaries.

This low uptake of obtaining information from services was explained by a perception among those surveyed that in general workers knew little about NPS. This perception was borne out by services who felt that it was hard to ‘keep up to date’.

[4] Not all respondents answered each question. Where answers are missing these have been excluded from the analysis so figures that describe the same population may have different base sizes

Providing support - client disclosure of NPS use: Only a small proportion of those surveyed said they had discussed their NPS use with services. This contrasted with services, with 75% (n=131) of staff reporting that they ask service users about NPS use at first presentation. This suggests that there is considerable under-reporting of NPS, making effective engagement by services challenging. Qualitative focus group feedback suggested that how questions about NPS use are asked can affect disclosure of use from clients.

Client service relationship: The qualitative interviews and focus groups suggested that improving the provision of credible information and building trust were key to improving disclosure and enabling services to respond more effectively.

Improving services: There were a range of views on what service developments were required from respondents to the NPS survey. Those who had used NPS were asked what one option was the most important service to offer. Responses included:

- Detox/rehab (27%, n=66)
- Specialist services for NPS (15%, n=38)
- Information provision (13%, n=33)
- Specialists within services (13%, n=31)

Service providers identified some similar themes on what they would like to offer in the staff survey, particularly the development of local specialist services for NPS (47%, n=87), specialists within a service (45%, n=82) and information leaflets (40%, n=73).

The Psychoactive Substances Act (PSA): The Act came into force after most of the survey work had been completed and therefore findings are largely focused on the likely impact. 57% (n=141) of those surveyed felt it would have no impact, this being highest among MSM with 74% (n=28) of this group believing it would have no impact on their NPS use. Over a quarter (29%, n=73) of all respondents to the NPS survey said they would move or return to traditional drugs.

45% (n=112) of the NPS survey sample said they bought NPS from shops and clearly this will have changed following the closure of ‘head shops’. Staff anticipated a shift to online buying to a greater extent than those who reported using NPS.

Key Learning Points

Prevalence estimates of NPS use among vulnerable populations

1. *Database tools such as DAISy should be adapted and in the case of needle exchange data collection, standardised, to include specific questions relating to NPS use, this may include individual NPS names or categories. Training for frontline workers in how best to apply these tools should be incorporated in this process.*

In order to develop more robust estimates of NPS use there needs to be an improvement in data collection within services. The new database for drug and alcohol services currently being developed (Drug and Alcohol Information System – DAISy) provides an opportunity to collect reliable data provided staff are enabled to undertake thorough initial assessments and adequately record these. Similarly needle exchange data has the potential to provide useful prevalence data, again provided staff are appropriately equipped to encourage accurate disclosure of NPS use.

Motives for use

2. *Motives for use should be identified in assessments and reviews with service users and used to inform care plans undertaken by support services and frontline staff.*

A better understanding of motives for NPS use and the ways they vary by population group and type of NPS can inform interventions by services. In particular there may be benefits of targeted interventions for people who intend to continue using, reduce use, or want to stop.

Consequences of use

3. ***Mental health harms:*** *Greater partnership working between substance use and mental health services and a review of care pathways for those with substance use and mental health difficulties should be considered.*

Given the reported mental health impacts of NPS use better collaboration and partnership working between mental health services and drug services may help to improve care for this population. A review of care pathways for those with substance use and mental health difficulties would assist in improving the treatment response for service users. Further research would also help to better understand the complex effects of NPS use on mental health, both in relation to specific substances and mental health conditions.

4. ***Physical harms***: *Assessments within key services should cover a range of physical health areas including sleep management.*

The most common reported physical harm across the majority of NPS types was sleep problems. Dedicated resources or information on sleep management could be useful to explore. Taking account of the range of other physical harms reported and given the low levels of reported disclosure of NPS use, assessments within key services which cover a range of health areas could assist in opening up a dialogue regarding NPS use and related harms. Such assessments may also encourage better disclosure of NPS use.

5. ***Social harms:*** *Multi-agency and flexible working approaches such as assertive outreach should be continued and developed to support people with the range of social harms experienced.*

NPS use had a significant impact on a range of aspects related to the ability to cope with daily living including finance, maintaining appointments and tenancies. NPS use can result in the most vulnerable populations experiencing significant harm, which puts them at great risk. Approaches should be explored which protect such vulnerable individuals and highlight the need for multi-agency and flexible working to support people with a range of different issues.

Improving practice

6. *Frontline services should consider providing basic NPS training for all staff, as well as training in a variety of health based topics and assessment for support staff.*

The lack of expertise and ability to keep up to date with knowledge on NPS within services was reported by both NPS users and staff. In relation to workforce development, a minimum requirement in terms of improving practice is the provision of basic NPS training for all staff. Linked to this would be the provision of at least annual updates on new NPS trends. Training in a variety of health based topics and assessment would also assist in being able to identify NPS use and harms.

Service Developments

7. *Health board and ADP areas should review possibilities for service developments or adaptations to existing services to respond to those who use NPS.*

Specialist treatment for NPS including detox was identified as important for staff and service users alike. Development and expansion of the remit of established treatment services including use of specialist workers could be explored to meet this need. Services should explore how they might adapt to attract less traditional client populations who use NPS. This could include exploring specific clinics, opening outwith standard hours and changing service branding. Services should also consider developing the skills and expertise of one member of staff who can keep up to date with new developments and provide advice and assistance to other staff.

Vulnerable populations

8. *Multi agency and targeted responses should be explored for the different populations using NPS.*

There was considerable cross over between the target populations of this study, although MSM and vulnerable young people were largely separate groups. Multi-agency responses are required for those groups experiencing multiple disadvantages. There is a need for specific service developments within key services that MSM are likely to use, for example, sexual health services and targeted MSM health provision where it exists. Similarly services for vulnerable young people should explore how best to address NPS and wider substance use among their young people.

Information on NPS to users

9. *Information resources in a variety of formats are required to reach the different populations who use NPS.*

The lack of access to information sources on NPS was evident. Reliable and credible sources of information on NPS need to be developed which can be made accessible to those from vulnerable populations who use NPS.

Psychoactive Substances Act

10. *Monitoring of the impact of the Psychoactive Substances Act (PSA) on vulnerable populations should be undertaken by ADPs, health boards and services with a particular focus on increased overdose risk.*

There were a range of views on the potential impact of the new legislation but no real clarity on its likely impact. It will be important to track the impact of the PSA particularly in relation to changes in supply routes that might have specific effects on vulnerable populations who use NPS. For example there may be increased risk of overdose for opioid users who also use NPS, who return to opioid use and may have reduced tolerance. Alcohol and Drug Partnerships and Naloxone coordinators should be alerted to the potential for increased overdose risk so that appropriate action can be taken, including supply of Naloxone to vulnerable populations.

1. Introduction

1.1 Background to the Study

New (or Novel) Psychoactive Substances (NPS) are a category of substances, either manufactured or plant based, which seek to imitate the effects of illegal drugs[5]. These substances are commonly, although misleadingly, referred to as 'legal highs'.

Globally, in recent years the number of NPS being reported has grown exponentially. Since 2008, 644 NPS have been reported to the United Nations Office on Drugs and Crime (UNODC) Early Warning Advisory on NPS. This has included a widening of the the profile of substances being reported to include new groups of substances[6]. Notifications to the EU Early Warning System have also risen rapidly, from 14 in 2005 to 98 in 2015[7].

Often, newly reported NPS are derivatives of previously reported substances with a slightly modified molecular structure[8]. This has resulted in a rapidly changing drug use landscape[9] with some NPSs remaining on the market for a long time (such as mephedrone and other cathinones) with others only being reported briefly before disappearing from the market[10].

Prevalence of NPS use in Scotland from traditional drug prevalence estimates such as the Scottish Crime and Justice Survey (SCJS), and Scottish Schools Adolescent Lifestyle and Substance Use Survey (SALSUS) suggests that use amongst the general population is low. SCJS found just under 2% of adults reported that they had taken any NPS (powders, pills, herbal mixtures or crystals that are sold as 'legal highs'), at some point in their lives. Use of NPS was higher amongst younger age groups, with 4% of 16-24 year-olds reporting having ever used 'legal highs'[11]. The 2015 SALSUS survey highlighted that 13% of 15 year olds had ever been offered NPS. However, a lower proportion reported use: approximately 5% of 15 year olds reported ever using one or more NPS, and of these, 2% reported having taken at least one NPS in the last month[12].

However, there are limitations associated with these estimates. SALSUS is a school-based survey, and the SCJS is an opt-in household survey. This means

[5] UNODC (2013) *The Challenges of New Psychoactive Substances*.
[6] EMCDDA (2015) *NPS in Europe An update from the EU Early Warning System March 2015*
[7] EMCDDA (2016) *Health Responses to New Psychoactive Substances*.
[8] UNODC (2016) *World Drug Report*.
[9] Wyckmans et al (2015) 'Novel Psychoactive Substances: a worldwide problem that requires an adequate approach'.
[10] Seddon (2014) 'Drug policy and global regulatory capitalism: The case of new psychoactive substances (NPS)'.
[11] SCJS (2016) *Scottish Crime and Justice Survey 2014/15: Drug Use*.
[12] SALSUS (2016) *Drug use Report 2015*

that they are unlikely to capture young people who may be absent, truant or excluded from school, and the marginally housed[13,14].

There is also a need to better understand the harms associated with NPS use. Over the last few years, Scottish statistics on Drug Related Deaths (DRD)[15] have shown a significant increase in the recording of NPS present at time of death, rising from four deaths in 2009 to 112 deaths in 2015. The profile of NPS-related deaths follows a fairly typical pattern to other DRDs in Scotland, with those experiencing fatalities being on the whole from vulnerable populations. In addition, poly-drug use is common, and in the majority of cases, traditional drugs either play a key role in that death, or remain the main cause of death.

From the NRS DRD figures in 2015, NPS were implicated in 74 deaths, with 3 where NPS were the only substance present. The most commonly implicated NPS in these 74 deaths were benzodiazepine-type NPS such as phenazepam, etizolam, and diclazepam[16].

1.2 The Legal Context of NPS in Scotland

The Psychoactive Substances Act 2016 (PSA)[17] makes it an offence to produce, supply or offer to supply any psychoactive substance if the substance is likely to be used for its psychoactive effects, regardless of its potential for harm. The only exemptions from the Act are those substances already controlled by the Misuse of Drugs Act 1971 (MDA), and nicotine, alcohol, caffeine, medicinal products and specified foodstuffs.

Prior to the PSA coming into force, the two key legal instruments which affected the production, supply, and possession of NPS in the UK were the Misuse of Drugs Act (MDA) 1971 and Temporary Class Drug Orders (TCDOs) 2011.

1.3 Aims and Objectives of the Study

In 2014, the Scottish Government established a programme of analytic work to develop the evidence base on NPS, including establishing a deeper understanding of the motives for, and harms of NPS use. Following the Scottish Government's evidence review[18] and suggestions from the NPS Evidence Group, it was proposed[19] that research into the motives, prevalence, and harms of NPS-use amongst vulnerable or potentially at risk populations was conducted. The Scottish Government commissioned this research in June 2015, in order to address the gap in current published work on NPS in Scotland.

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[13] SALSUS (2016) *Technical Report 2015*.
[14] SCJS (2016) *Scottish Crime and Justice Survey 2014/15: Drug Use*
[15] NRS Scotland (2016) *Drug Related Deaths in Scotland - 2015*.
[16] Ibid
[17] The PSA came into force on the 26th May 2016, which fell during the quantitative survey phase of data collection (which ran from 28th April to 10th June 2016).
[18] Fraser (2014) *New Psychoactive Substances – Evidence Review*.
[19] Gillies, A. (2015) *Closing the Evidence Gaps on the Prevalence and Harms of New Psychoactive Substances in Scotland*.

The aim of this study is to provide data on the patterns of use, motivations for and harms of NPS use amongst the following groups:

- Vulnerable young people, including:
  - looked after and accommodated children
  - care leavers
  - young homeless
  - those not in education, employment, or training (NEETs)
- People in contact with or identified by mental health services
- People affected by homelessness
- People who inject drugs (PWID)
- Men who have sex with men (MSM)

The research questions driving this project were as follows:

i. What is the **prevalence** of use of different categories of NPS amongst target populations in Scotland?
ii. What are the stated **motivations** for experimenting with and continued use of NPS among target populations in Scotland?
iii. How are the **harms** associated with the use of NPS understood by those who use them and those who provide specialist services to target populations in Scotland?

1.4 Study Population

In recent years, there has been much public debate about NPS use in Scotland. There is limited evidence on prevalence of use in Scotland, however anecdotal information has been reported to national drug agencies, and drug monitoring groups in Scotland. Early concerns were raised by frontline services, including Accident and Emergency departments who were identifying acute NPS intoxication, and mental health services who were reporting both new and existing patients with significant issues potentially linked to NPS use. From as early as 2009, enquiries about NPS were being made to national drug support and information agencies, including Scottish Drugs Forum. It was established through information and training requests that NPS use was an emerging issue faced by homelessness services, and services for looked after and accommodated children and vulnerable young people. The use of NPS in these settings proved to be a significant issue for staff in terms of management of people who use NPS, but also in terms of the harms that people who use NPS were experiencing.

More recently, there have been concerns about use among existing intravenous drug users, particularly injectors in Edinburgh and Lothian who were experiencing injecting-related injuries as a consequence of ethylphenidate injecting. In some cases this included outbreaks of serious bacterial infections[20]. There have also

[20] Lafferty et al (2016) 'The Experience of an Increase in the Injection of Ethylphenidate in Lothian, April 2014 – March 2015'.

been ongoing concerns about substance use, and particularly NPS use in MSM who are engaging in drug use for the purpose of enhancing sex, known as 'chemsex'. The extent and nature of 'chemsex' in Scotland has been the subject of much discussion[21]. However, while specialist services have developed in England, Scotland has struggled to identify any patterns in reported use, and developing appropriate responses has been hampered by a lack of data.

There has also been evidence of NPS use in acute mental health services, with NPS use identified in over a fifth of admissions in Edinburgh inpatient wards[22].

It is worth noting that some of the patterns of use observed elsewhere in the UK and in Ireland have not been reported in Scotland. For example there was evidence of stimulant injecting reported in Ireland[23] when there seemed to be very little of this pattern of use being observed or reported in Scotland. The question of whether such behaviours were being missed or whether they could be predicted to develop is partly answered in this report.

This research is focused on the five vulnerable groups described above. These groups have been selected for two reasons. Firstly, the emerging picture suggests there are distinctive issues amongst these groups where problem use is a significant feature. Secondly, an improved understanding of use in these groups can contribute to an improved response to NPS use in Scotland.

1.5 Defining NPS

Various definitions for NPS exist and at the time of data collection for this research, there was no legal definition. However, the Psychoactive Substances Act, which came into effect on 26th May 2016, defined Psychoactive Substances as:

> *"Any substance which is capable of producing a psychoactive effect in a person who consumes it, and is not an exempted substance [i.e. alcohol, tobacco, medicines and controlled drugs, caffeine and foodstuffs such as nutmeg and chocolate]…A substance produces a psychoactive effect in a person if, by stimulating or depressing the person's central nervous system, it affects the person's mental functioning or emotional state… A person consumes a substance if the person causes or allows the substance, or fumes given off by the substance, to enter the person's body in any way."*[24]

In this study, the approach taken was to work with, and use, participants' own understandings of what constitutes NPS, or as participants commonly called them, legal highs or 'legals'. They did not always distinguish NPS from 'traditional' drugs, and often did not know about, or in some cases care about, the legal status of a

[21] SDF et al. (2016) *Chemsex, starting the conversation*
[22] Stanley et al (2016) 'Use of Novel Psychoactive Substances by Inpatients on General Adult Psychiatric Wards'.
[23] Van Hout, M.C. and Bingham, T. (2012) 'A costly turn on: patterns of use and perceived consequences of mephedrone based head shop products amongst Irish injectors'.
[24] New Psychoactive Substances Act 2016.

given substance. As a result, the analysis presented here follows the participants' understandings of NPS, regardless of their legal status at the time of writing, data collection or event recalled.

Unlicensed benzodiazepines*:* Of particular note is one substance group which differs in some ways from other NPS. Anecdotal evidence from services suggested high rates of unlicensed benzodiazipine use. 'Unlicensed benzodiazepines' refer to benzodiazepines classified as medicines in other countries in Europe and elsewhere, but not licensed for medical use in the UK. These include substances such as Phenazepam, Etizolam and Dicalzepam. Their comparatively recent availability in Scotland, the fact that they have been sold in shops and online and their inclusion as NPS in DRD figures in Scotland coupled with anecdotal evidence from services has led to their inclusion as NPS for analysis within this study. For the purposes of this report we will refer to them as benzodiazipine-type NPS.

Chems: A final point to note is the use of the term 'chems' in the gay community and amongst MSM more widely. 'Chems' is an all-encompassing term which can include both NPS and what might be described as more traditional drugs. Where specific drugs are named in definitions of chemsex, these tend to be crystal methamphetamine, mephedrone and GHB/GBL. Amongst MSM, the term G is used to refer to both GHB and GBL, thus the term 'G' or GHB/GBL will be used.

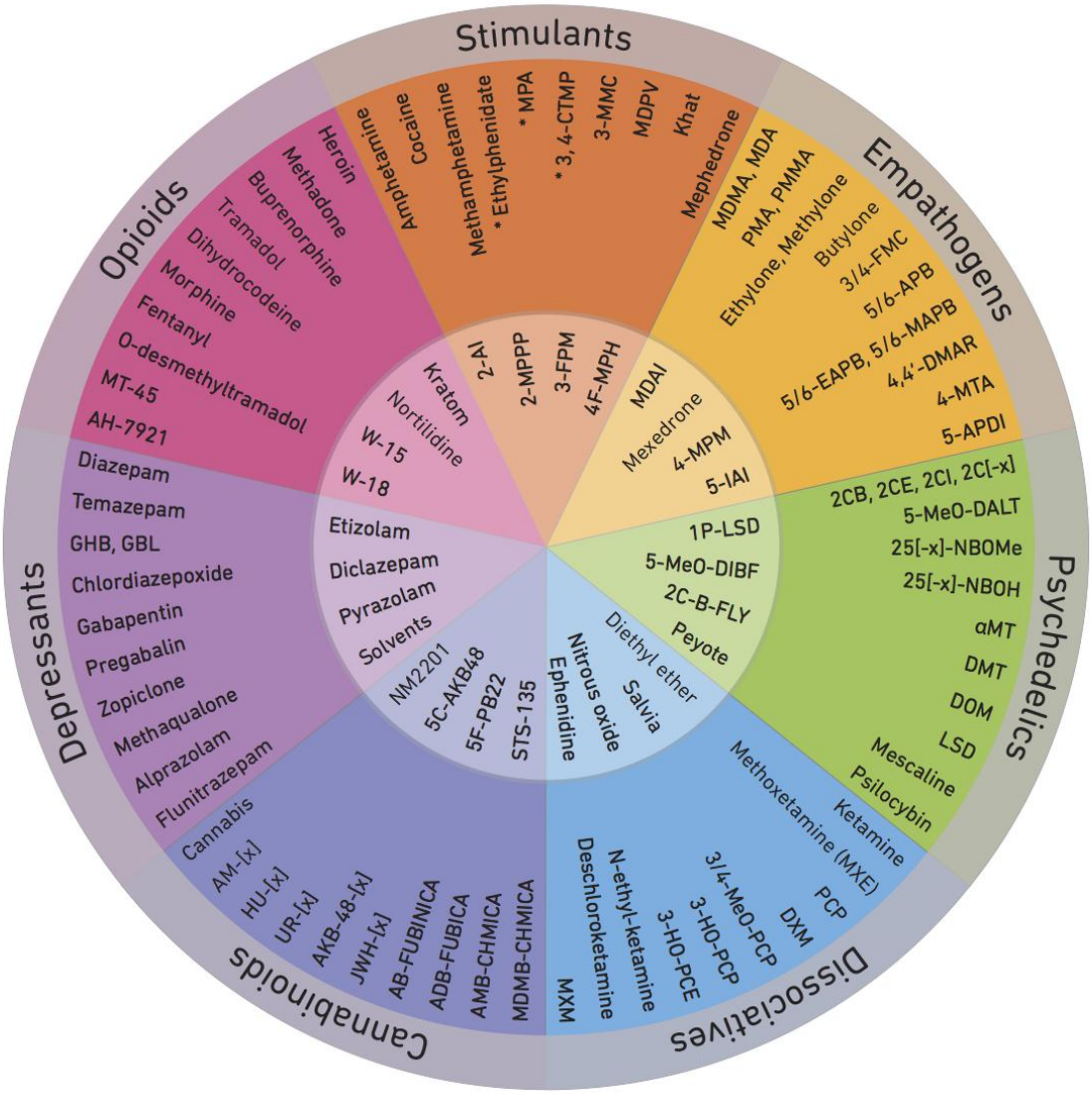
Categorising NPS

In February 2016, the Scottish Government published the results of a stakeholder consultation on defining NPS[25]. This found a strong consensus for utilising the Drugs Wheel model [Fig.1, below] to classify psychoactive substances.

Therefore, within the broad definition described above, substances were categorised according to their effects. The Drugs Wheel categorises both traditional and NPS substances in this way. This approach is useful for this research because it reflects the way that users commonly categorise the substances they take – i.e. that they are like another substance with a similar effect - rather than being concerned with other possible categorisations – legal status or route of administration, for example.

[25] Wallace (2016) *New Psychoactive Substances (NPS): results of a questionnaire on the definition of NPS, proposals to establish a forensic centre for excellence, and improving data collection and information sharing*

Fig 1.1 *Adley (2016) The Drugs Wheel [www.drugswheel.com]*



Outer ring: Controlled under the Misuse of Drugs Act 1971 or The Human Medicines Regulations 2012

Inner ring: Controlled under the Psychoactive Substances Act 2016

* Temporary Class Drug Order

2. Methods

This mixed-methods research was carried out between December 2015 and July 2016. Qualitative interviews and focus groups were used to identify key themes and concerns about motives and consequences of NPS use. This informed the design of two surveys, one exploring issues with those who use NPS in Scotland, and another aimed at staff working in services, where they may encounter people who have taken NPS. Models to estimate prevalence were explored using the survey data, data from the Scottish Drug Misuse Database (SDMD) and the analysis of needle exchange data from existing Neo360 data sets for Glasgow and Lothian.

2.1 Ethics and Research Governance Permissions

Ethical approval for this project was given by the NHS West of Scotland Research Ethics Committee (15/WS/2010). Research and Development (R&D) approval was granted for all 14 territorial health boards except Forth Valley for qualitative data collection, and all 14 territorial health boards for survey data collection. Pseudonyms have been used throughout for interview participants.

2.2 Prevalence Estimates

When attempting to quantify the number of people in a population that use drugs we have recourse to a number of different methods.[26] Traditionally, surveys based on random sampling have been used to give information on the extent of drug use among the general population, for example the Scottish Crime and Justice Survey (SCJS). However there are limitations to this approach, particularly when trying to assess patterns of drug use amongst vulnerable populations.

Other approaches to estimate 'hidden' groups that may not be picked up in survey data (such as capture-recapture) have been used in Scotland to estimate national and local prevalence of problem opioid and benzodiazepine use. This approach uses multiple data sources to estimate the size of the hidden population of problem opioid and benzodiazepines users[27], although estimates to date do not include problematic use of other substances such as cocaine. There are several challenges posed in estimating NPS use in this way. Recording of data on NPS within existing routine datasets is currently limited[28]. This is the case not just within Scotland, but across Europe and internationally, where the systematic collection of data on NPS in healthcare settings is scarce[29]. This means that sufficient numbers of NPS users do not appear in existing data sources to make a multi-source method such as capture-recapture viable.

[26] EMCDDA (1996) *Estimating the Prevalence of Problem Drug Use in Europe*
[27] ISD (2016) *Estimating the National and Local Prevalence of Problem Drug Use in Scotland 2012/13*
[28] Gillies (2014) *Mapping Current and Potential Sources of Routine Data Capture on NPS in Scotland*
[29] Heyerdahl, F, Hovda, K, Giraudon, I, et al (2014) 'Current European data collection on emergency department presentations with acute recreational drug toxicity: gaps and national variations'

In light of these challenges, the approach adopted for this study was to explore the multiplier method. We also estimated the number of injecting NPS users in two NHS areas: NHS Greater Glasgow & Clyde and NHS Lothian.

2.2.1 Multiplier Method

The multiplier method is a simple way of estimating unknown populations such as prevalence of drug use. The method uses the available information on the population in question as a benchmark, e.g. number of drug users in treatment, and applies a multiplier that is related to the population and has normally been derived from a small-scale study. For this study, this method involved using the number of NPS users from our quantitative 'NPS survey' who reported contact with drug treatment services. From this a multiplier was calculated and used in combination with the numbers of NPS users in treatment from the Scottish Drug Misuse Database (SDMD). This provides data on the total number of people in Scotland who presented for initial assessment at drug treatment services.

The construction of the treatment multiplier used the 125 NPS users identified in the quantitative survey in contact with drug treatment services. 194 NPS survey participants answered this question giving a treatment rate of 64%. This was then used in combination with data from ISD on treatment numbers for 2014/15 to produce an estimate.

However, **this estimate was not considered to provide a sufficiently robust prevalence figure for NPS use in this population**. The analysis demonstrated that data sets were not sufficiently complete and too many assumptions had to be made. One major limitation of the SDMD data is it collects data on new treatment episodes and there is very limited follow up data available. In addition, the data from SDMD referred to both Mephedrone and 'other' drug users. It is unclear what drugs this 'other' category includes and it may not be mainly other NPS users. This adds to the uncertainty around the estimate and impacts on its robustness. More details on the calculation are provided in Appendix B.

2.2.2 Estimating the prevalence of injecting NPS takers using NEO data

For this estimation, data from pharmacies/needle exchange services in both areas were used and an estimate of the hidden population was made by examining the frequency of visits to the needle exchange by NPS injectors. Further information on the methods applied can be found in the technical report (see Appendix A).

2.3 Qualitative data

Qualitative data were collected from interviews with people who have taken NPS, as well as from focus groups with staff working in services likely to come into contact with NPS users.

Purposive sampling was used in recruitment for both interviews and focus groups as the aim of the qualitative component of the research was not to create a representative sample of people who had taken or worked with people who have

taken NPS, but to ensure a diverse range of views to enhance the understanding of NPS use amongst vulnerable groups.

2.3.1 Interviews: Recruitment and Sampling

Purposive sampling was used to recruit 33 people who had taken NPS (self-defined) for interviews, including participants from both urban and rural areas, and men and women. In addition, participants were purposively recruited from the following groups:

- Vulnerable young people (aged 16-24)[30]
- People in contact with mental health services (formerly or currently in contact)
- People who inject drugs (PWID)
- Adult homeless people (current or formerly homeless)
- Men who have sex with men (MSM)

Participants were recruited for interview by circulating information to managers, lead contacts in Alcohol and Drug Partnerships (ADPs), Managed Care Networks (MCN), statutory and third sector settings, and across all Scottish health boards except NHS Forth Valley[31]. Potential participants were invited to make contact with a researcher by posters placed in service waiting rooms or where appropriate by being given the information by their key worker. Researchers also attended drop-in services where people were offered the opportunity to opt in to the study directly through the researcher who attended on the day. See Appendix C for a full list of interview participants.

2.3.2 Interviews: Data Collection

In-depth interviews were undertaken with 33 people who identified themselves as having taken NPS, from nine Scottish Health Boards. Around two thirds of participants were recruited from Ayrshire and Arran, Greater Glasgow and Clyde and Lothian, with smaller numbers from Dumfries and Galloway, Fife, Grampian, Highlands, Lanarkshire, and Tayside.

In line with findings from current research on people with drug dependencies[32], almost half (48%) of interviewees belonged to two or more of the target groups.

[30] This includes young homeless people, care leavers, looked after and accommodated young people, and NEETs (those not in education, employment or training).
[31] This was because R&D access was not granted in time for inclusion in the qualitative stages of the study.
[32] Chen et al (2013) 'Service Use and Barriers to Mental Health Care among Adults with Major Depression and Comorbid Substance Dependence'; Lloyd et al (2013) 'Factors Influencing Mortality among Alcohol and Drug Treatment Clients in Victoria, Australia: The Role of Demographics and Substance Use Characteristics'; Thompson et al (2013) 'Substance-Use Disorders and Poverty as Prospective Predictors of First-Time Homelessness in the United States.

For example, many injecting drug users were also in contact with mental health services.

20 (61%) participants were men, and 13 (39%) participants were women. As one of the target groups was MSM, this increased the size of the male sample. The mean age was 32 (range: 16-61).

Of the total, 20 (61%) reported they no longer took NPS at the time of interview. No participant reported having taken NPS only. That is, all reported having, at some time, taken illegal or more traditional drugs.

Interviews addressed circumstances of NPS use initiation, NPS knowledge and what they perceived to be positive and negative effects and consequences. Sources of support in relation to first use of NPS and most recent use of NPS were also addressed (see Appendix D for topic guides). Interviews lasted on average 45 minutes, and participants were given a £10 high street voucher to thank them for their contribution.

2.3.3 Focus Groups: Recruitment and Sampling

Purposive sampling was used to recruit 42 staff working with clients who use NPS, including participants from both urban and rural areas, drug and non-drug services (e.g. sexual and mental health services). Four focus groups were undertaken in NHS Lothian, NHS Greater Glasgow and Clyde, NHS Highland, and NHS Grampian, with front line workers from across these and other areas. Focus group participants were purposively sampled for geographical range and type of service represented. A full breakdown of regional information for focus group participants can be found in Appendix E.

Focus group participants were recruited by asking managers and lead contacts at ADPs, NHS, Social Work and third sector organisations to cascade an email invitation to front line workers. It was also cascaded through Scottish Drugs Forum membership list and advertised on national bulletins, newsletters and via social media. The study was advertised across Scotland in NHS, statutory and third sector settings, and across all Scottish health boards, excluding NHS Forth Valley.

2.3.4 Focus Groups: Data Collection

42 statutory and third sector service practitioners contributed to the focus group discussions. Almost half of participants were from drug services, with small numbers from vulnerable young people's services, needle exchange, mental health, sexual health, criminal justice, housing and homelessness and social work services. Some services catered to more than one group. The breakdown is described in table 2.1 overleaf.

Table 2.1 *Focus group participants (service practitioners) and service type*

Service Type	N
Drugs	20
Vulnerable young people	7
Needle exchange	6
Mental health	6
Sexual health	6
Criminal justice	6
Housing and homelessness	5
Social work	4

Focus groups lasted, on average, for 90 minutes. Focus group discussion covered participants' estimates of prevalence and trends, their understandings of why their clients take NPS and what distinguishes them from clients who do not, and the consequences of NPS use.

2.3.5 Analysis of qualitative data

All interviews and focus groups were transcribed verbatim, anonymised, and analysed using the qualitative analysis software Quirkos to generate themes within the three key areas: prevalence, motives and harms. Additional themes around service provision and the then-forthcoming Psychoactive Substance Act were also coded. These themes formed the basis of closed option responses in the survey, but were also separately analysed thematically for the qualitative analysis.[33]

2.4 Quantitative Data

Quantitative data were collected from two surveys. The first survey sought to explore NPS use in Scotland, specifically amongst the vulnerable populations listed in section 2.3.1 (the 'NPS survey'). The second survey gathered data from staff within services ('the 'Staff survey'). Over two thirds of staff survey respondents worked in services that provided drug and alcohol support, and around one third worked in services that provided mental health services or housing and homelessness services.

[33] Braun & Clark (2006) 'Using Thematic Analysis in Psychology'

2.4.1 NPS Survey: Recruitment and Sampling

Two sampling strategies were used to recruit 545 participants within the five groups of interest. The first combined purposive sampling of drug and alcohol services for geographical range and urban and rural characteristics with convenience sampling (whereby everyone who entered the waiting room was approached to participate in the survey during data collection). In a small number of cases, it was preferred that that workers would bring clients to researchers in a separate space. Face to face surveys happened primarily in drug services, homeless drop-ins, needle exchange sites, and in some areas mental health wards and vulnerable young people's services. Overall, uptake in vulnerable young people's services was limited compared to other target groups. Services which had large drop-ins or waiting rooms were the most effective in terms of recruitment. As there were larger numbers of people attending, researchers could directly approach people using the drop in or who were waiting for appointments. A substantial number of approached services were unable to facilitate survey data collection due to short timescales, workload considerations, participation in Care Commission inspections, and perceived lack of interest from service users.

The second sampling strategy was targeted recruitment for hard-to-access groups such as MSM and people in rural areas where it was not possible to recruit by attending services in person e.g. in parts of the Highlands and Islands. This involved promotion of the survey online with additional targeted recruitment of MSM which took place through a peer researcher recruiting in gay bars, and via a banner advert on Grindr, an online dating 'app' used by MSM. The online version of the survey was promoted through the SDF news bulletin, through Facebook and Twitter accounts, and was also promoted by many key stakeholders on social media. This dual-approach strategy was selected to ensure wide coverage of target groups across Scotland.

2.4.2 NPS Survey: Data Collection

The survey was developed as an online survey, compatible with administration via a handheld tablet computer so it could be administered offline with support of a researcher. Peer researchers received information about NPS, and training in administering surveys, from SDF and the University of Glasgow prior to data collection. Where requested by services, a project team member supported clients in completing the survey in place of peer researchers.

The survey explored last 6 month drug use, including alcohol, NPS and 'traditional' drugs, and focused on motives and health consequences of use for NPS categories in terms of the seven drugs wheel categories[34]. In addition to this, based on findings from qualitative stage, mephedrone (commonly understood by interview participants to be NPS despite having been controlled since 2010), ethylphenidate (understood by some, particularly homeless, interview participants to be NPS), GHB/GBL (commonly used in chemsex), salvia divinorum, and

[34] For more information on The Drugs Wheel, please see the Glossary at the start of this document, or visit www.thedrugswheel.com

benzodiazepine-type NPS were also explored. Finally, participants were asked about relationships and social harms in relation to their NPS use overall. Their views on services and on the then-forthcoming Psychoactive Substances Act were also sought.

Ten SDF peer researchers[35] administered the survey, helping and supporting service users to fill it in using a tablet. This ensured literacy was not a barrier to participation and that someone was able to brief people on the survey. It also ensured participants' consent, gave the opportunity to answer any questions about the study, and allowed for signposting to additional support where necessary. Peer researchers approached people in service waiting areas.

All participants in this survey were invited to provide contact details (recorded and stored separately from their survey responses) if they wished to be entered into a draw for a £100 high street voucher.

A total of 545 individuals were recruited to the NPS survey, which was completed by 424 participants (although not all participants responded to all questions). 59% (n=251) were recruited in treatment or service settings and 41% (n=173) online.[36]

The largest group represented were people who inject drugs (PWID), totalling one third of all survey responses. There was significant overlap between the 'risk' groups which increased the size of the PWID sample. Vulnerable young people were the least represented in the sample, at 16%.

Table 2.2 overleaf presents an overview of the composition of the sample according to the target populations, and a breakdown by risk group of the 59% (n=252) of respondents who reported ever using NPS.

[35] Researchers recruited by SDF who have past lived experience of drug use and were formerly or currently representative of the research target group, MSM, PWID, in contact with mental health services, homeless. Due to ethical agreements, vulnerable young people were not recruited as researchers and at request of services, staff researchers were used for vulnerable young person recruitment.

[36] Participants for the survey were recruited primarily through services including homeless drop ins. To increase reach, participants were also recruited online. The majority of surveys were by clients of services, however a small proportion were completed online by individuals not necessarily in contact with services.

Table 2.2: Composition of respondents to NPS survey, by 'risk' group[37]

	All respondents		NPS users	
Group	**N**	**%**	**N**	**%**
PWID	141	33	136	54
Mental health service users	99	23	94	37
Homeless	92	22	76	30
Vulnerable young people	69	16	39	16
MSM	70	17	38	15

The survey respondents fell into a number of 'risk' group categories and highlighted the common issue that vulnerable populations often present with multiple issues and treatment needs. We tested whether contact with mental health services was independent of homelessness status, and of injecting status, and found that those accessing mental health services were at a greater risk of being homeless[38], and of being PWID[39], than those not accessing mental health services. Similarly, we tested whether homelessness status was associated with injecting status, and found that those who were homeless were more likely to be PWID[40] than those who were not homeless.

Respondents had a mean age of 36.7 (range 16-66). NPS users were slightly younger than the rest of the sample (average age of 35, compared to average age of 39). The overall sample was two thirds (66%) male, 73% male for NPS users. This is consistent with existing research that people who have used NPS tend to be younger, and tend to be predominantly male[41].

Figure 2.1. gives the breakdown of all drug use from the whole sample who completed the survey n=424.

[37] Many participants fell into more than one population, thus figures here will not total 100%, or the total number of respondents (n=424).

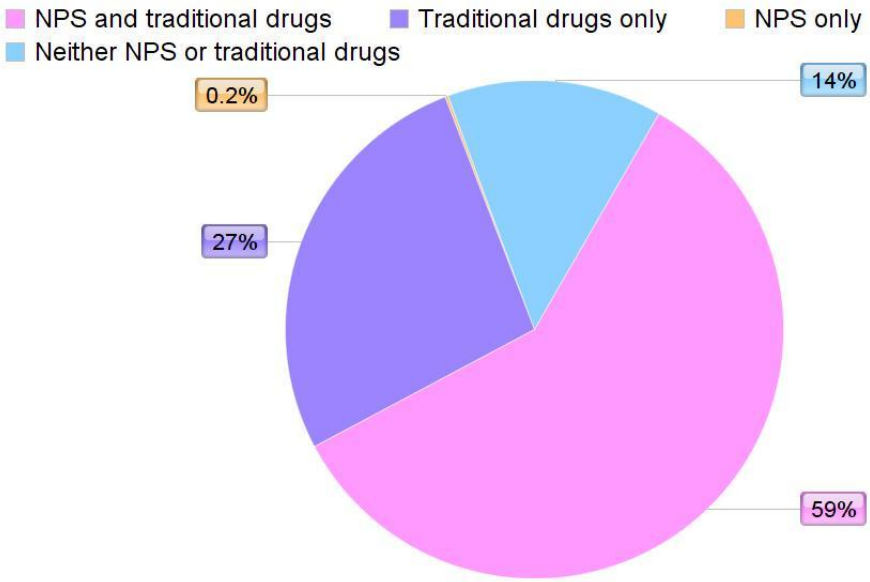
[38] $p<0.001$

[39] $p<0.001$

[40] $p<0.001$

[41] O'Brien, K Chatwin, C, Jenkins, C and Measham, F (2015) 'New Psychoactive Substances and British Drug Policy: A View from the Cyber-Psychonauts *Drugs: Education, Prevention and Policy* 22(3): 217-223.

Fig. 2.1 *Reported drug use by survey respondents*



Base n=424

2.4.3 Staff Survey: Recruitment and Sampling

The survey was developed as an online survey and checked it was accessible from different NHS and council systems. Managers of NHS, statutory and voluntary sector services across all 14 Scottish Health Boards were contacted regarding the staff survey, and asked to cascade an invitation email and link to the survey web URL to front line workers.

2.4.4 Staff Survey: Data Collection

Staff surveys were completed by 184 respondents within 13 Health Boards. Table 2.3 below presents the breakdown of services offered by the organisation which staff respondents come from. Staff respondents often worked in organisations where more than one service type was offered. 70% of respondents worked in drug and alcohol services, and around one third in mental health services or in housing support. Please note, as some workers offer services across two or more of these categories, these percentages will not total 100.

Table 2.3: *Services provided by organisations of staff survey respondents*

Service Type	N	%
Drug & alcohol support	128	70
Mental health services	61	33
Housing and homelessness support	56	30
Sexual health services	44	24
Needle exchange	39	21
Specialist support services[42]	13	7
Other	41	22

Table 2.4 presents a breakdown of the client groups that staff respondents work with. Due to the services provided, service providers tended to encounter several different types of client groups. Four-fifths of staff worked with people with mental health issues, and over 70% worked with homeless clients or injecting drug users.

Table 2.4 *Client groups that staff survey respondents work with*

Client Group	N	%
People with mental health issues	154	84
Homeless people	136	74
People who inject drugs (PWID)	132	72
Vulnerable young people	82	45
Men who have sex with men (MSM)	56	30
I do not work with any of these groups	2	1

2.4.5 Analysis of survey data

The survey data were analysed using SPSS (IBM SPSS Statistics 22). The descriptive analysis of the sample was carried out using frequency tables and cross tabulations with chi-squared tests performed to ascertain statistical significance. Where differences are statistically significant, this is reported in the text.

[42] e.g. for women, BME communities, LGBTQI+ groups.

As previously stated, there were 424 respondents to the NPS survey, and 184 respondents to the staff survey. Not all participants completed all questions, and thus the data presented within this report should be interpreted in light of this.

It was also found that respondents who were a young person or an MSM were less likely to overlap with the other three ‘risk’ groups. In particular, vulnerable young people were less likely to also be a PWID, and MSM were less likely to be homeless.

3. NPS Use among vulnerable populations in Scotland

As described in the Methods chapter, we explored the use of the multiplier method (using a treatment multiplier) to estimate the prevalence of NPS use amongst vulnerable groups in Scotland. This analysis concluded that it is not currently possible to generate a reliable estimate of overall prevalence.

As a result, this chapter focuses on estimates for one of the key target groups (injecting drug users), where data from the NEO 360 database were more robust. It also describes patterns of NPS use amongst each of the key groups, based on responses to the NPS survey, and presents the perceptions of staff in services about prevalence of NPS use amongst their clients, based on responses to the staff survey.

3.1 Quantitative survey and 'risk' groups

3.1.1 NPS and other drug use amongst NPS survey respondents

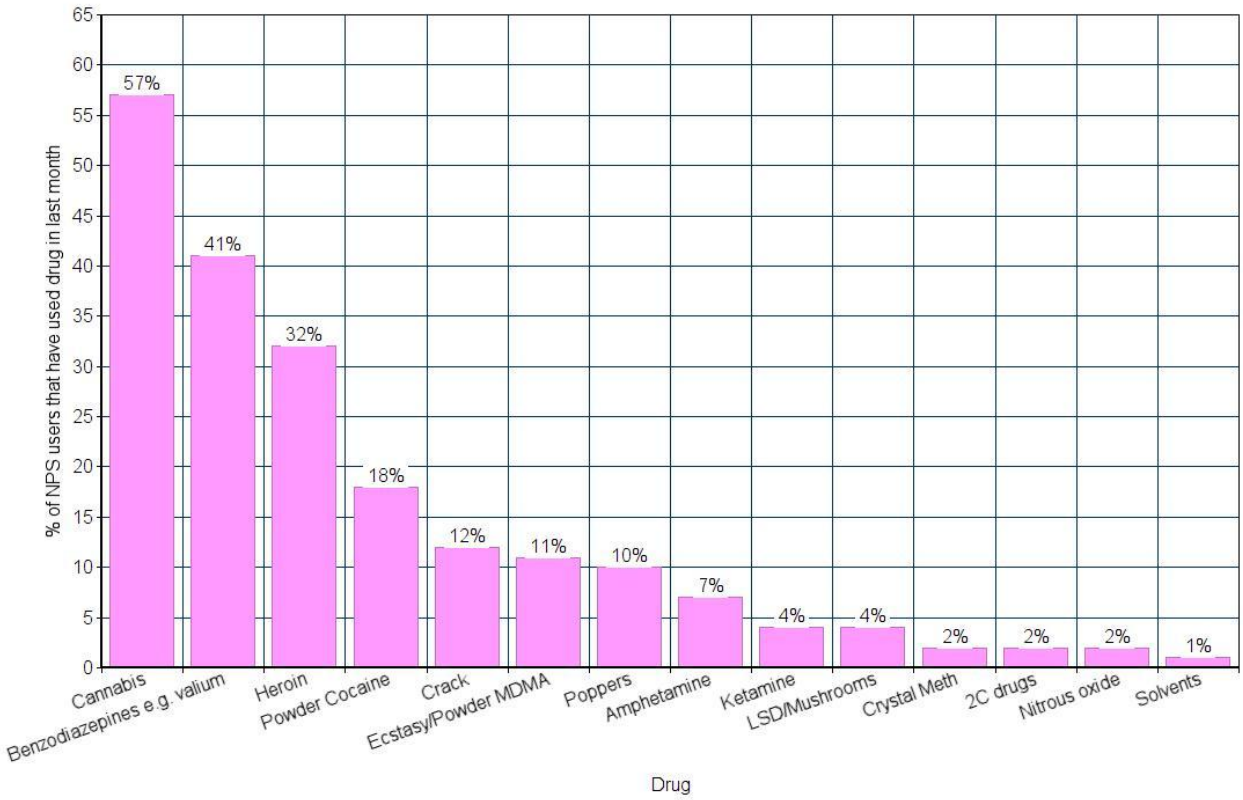
As described above, the NPS survey was completed by 424 people, 59% (n=251) in treatment or service settings and 41% (n=173) online.[43]

- **59% (n=252) of respondents reported having ever taken NPS**. 74% (n=184) of those who had taken NPS reported use in the last six months.
- The majority of those using NPS in the last six months reported having taken **synthetic cannabinoids** (41%, n=104) and **benzo-type NPS** (41%, n=102), while approximately one fifth reported taking **stimulant-type NPS** (21%, n=53) and **mephedrone** (19%, n=48).
- Poly-substance use was very high. Only one person reported being a sole NPS user, with 99% (n=251) of NPS users also reporting traditional drug use.
- 86% (n=364) of all respondents to the NPS survey reported ever using traditional illicit drugs. Use of illicit substances within the last 6 months included: cannabis (40%, n=148), benzodiazepines (29%, n=105), heroin (23%, n=83) and powder cocaine (13%, n=46).

Traditional drug use within the last month amongst NPS users is laid out in Figure 3.1 overleaf. Over half had used cannabis (57%, n=143), two fifths had used benzodiazepines (41%, n=103) and almost a third (32%, n=82) had used heroin within the last month.

[43] Participants for the survey were recruited primarily through services including homeless drop ins. To increase reach, participants were also recruited online. The majority of surveys were by clients of services, however a small proportion were completed online by individuals not necessarily in contact with services.

Figure 3.1. *Last month traditional drug use among NPS users*



Base: 252 respondents who reported ever taking NPS

3.1.2 Routes of Administration

Preferred route of administration varied by substance (detailed in figure 3.2). For people who had used NPS in the last 6 months:

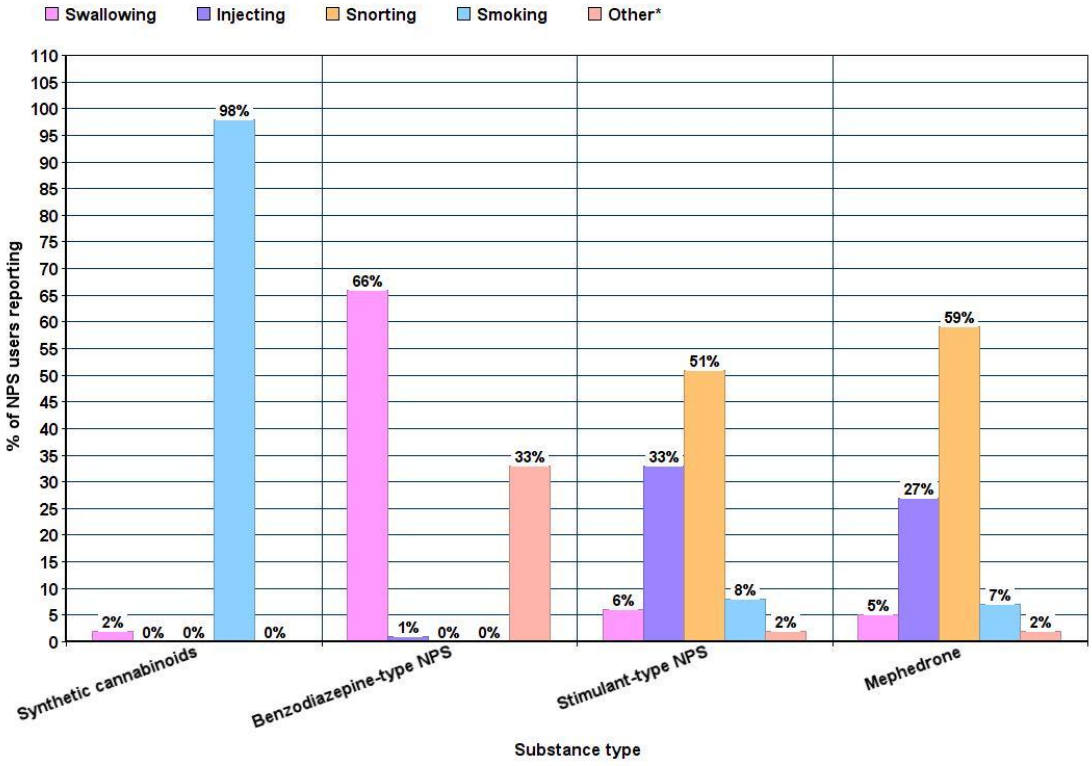
- Of the 93 people who answered the question on routes of administration for **synthetic cannabinoids**, 91 respondents (98%) reported smoking.
- Of the 87 people who answered the question on routes of administration for **benzodiazepine-type NPS**, 57 respondents (66%) reported taking it orally and 24 respondents (28%) reported taking it sublingually.[44]

Both stimulant-type NPS and mephedrone were taken in more diverse ways:

- Of the 49 people who answered the question on routes of administration for **stimulant-type NPS**, 25 respondents (51%) reported snorting and 16 respondents (33%) reported injecting. Smaller numbers reported swallowing and smoking.
- Of the 44 people who answered the question on routes of administration for **mephedrone**, 26 respondents (59%) reported snorting and 12 respondents (27%) reported injecting. Smaller numbers reporting swallowing and smoking.

[44] Sublingual is under the tongue administration

Fig 3.2: *Reported NPS use and preferred route of administration*[45]



Base[46]*: (synthetic cannabinoid users n=93, benzodiazepine-type NPS n=87, stimulant-type NPS n=49, mephedrone n=44)*

3.2 People who inject drugs

Based on the analysis of needle exchange data for NHS GGC and NHS Lothian, we estimate that there are 190 (confidence interval 114-265)[47] injecting NPS users in NHS GGC and a further 673 (confidence interval 562-784)[47] NPS injectors in the NHS Lothian area[48].

The NPS survey provides information on 141 people who inject drugs. The levels of NPS use recorded were high. 96% (n=136) of this group reported ever using NPS. The most frequently reported NPS used by this group in the last six months were:

- Benzodiazepine-type NPS (58%, n=82), and
- Synthetic cannabnoids (68%, n=48).

[45] For benzodiazepine-type NPS, sublingual (under the tongue) was the most common 'other' selection, 24 out of 29 responses
[46] Number of respondents varied by drug type question which is indicated by n=
[47] A confidence interval gives an estimated range of values which is likely to include the true value
[48] The method used to produce population estimates from a single data set is known as truncated Poisson. Details on this method can be found in the technical appendix to this report (Appendix A).

Amongst all PWID, 33% (n=47) reported injecting NPS in the last six months. This was almost exclusively stimulant-type NPS including mephedrone, ethylphenidate and cocaine-type NPS:

- Of the 30 injecting NPS users who had used **mephedrone** in the last six months, half (n=15) had injected it
- Of the 33 injecting NPS users who had used **cocaine-type NPS** in the last six months, nearly two thirds (n=20) had injected it
- Of the 14 injecting NPS users who had used **ethylphenidate** in the last six months, 12 had injected it.

Nine people reported currently injecting NPS. For those that did, the average frequency for injecting was 5 times per day and people reported incidences of equipment sharing and poor injecting technique such as not filtering[49],'missed hits'[50] or using citric acid[51] which is not required for the majority of NPS.

PWID were most likely to source NPS from:

- Shops (48% n=67)
- Dealer (47%, n=66)
- Friends or family (34%, n=47)

Small numbers of PWID sourced online (8% n=11) or selected 'other' (5%, n=7). Some respondents sourced from multiple sources.

3.3 Mental health service users

The NPS survey gained information from 99 people currently in contact with mental health services. It found that 95% (n=94) of respondents to the survey, who were currently in contact with mental health services, had ever used NPS. The most frequently reported NPS used by this group in the last six months were:

- Synthetic cannabinoids (55%, n=52)
- Benzodiazepine-type NPS (49%, n=46)
- Stimulant-type NPS (not including ethylphenidate) (31%, n=29), and
- Mephedrone (22%, n=21)

[49] Substances prepared for injection should be filtered to remove impurities from the substance
[50] Missed hits is a term used for missing the vein in an intravenous injecting episode and can be a factor in developing infections and swelling
[51] Citric acid is one method for breaking down drugs such as heroin in to an injectable form. As stimulant-type NPS are generally water soluble, they do not require use of an acid to prepare for injection. Using citric acid when it is not required can contribute to irritation at the injecting site.

All respondents used NPS with other drugs.

Mental health service users sourced NPS from:

- Shops (47%, n=44)
- Dealer (40%, n=38)
- Friends or family (35%, n=33)

Small numbers reported sourcing online (11%, n=10) or selected ‘other’ (6%, n=6). Some respondents sourced from multiple sources.

3.4 Vulnerable young people

The NPS survey gained information from 69 vulnerable young people. It found that 56% (n=39) of vulnerable young people who responded to the survey had ever used NPS. The most frequently reported NPS used by this group in the last six months were:

- Synthetic cannabinoids (48%, n=19)
- Benzodiazepine-type NPS (31%, n=12)
- Mephedrone (23%, n=9), and
- Stimulant-type NPS (not including ethylphenidate) (21%, n=8)

One respondent reported using NPS only, with the rest combining NPS use with traditional drugs.

Vulnerable young people sourced NPS from:

- Shops (51%, n=20)
- Friends or family (31%, n=12)
- Dealer (26%, n=10)

Small numbers reported sourcing online (15%, n=6) or selected ‘other’ (5%, n=2). Some respondents sourced from multiple sources.

3.5 Homeless people

The NPS survey gained information from 92 people currently affected by homelessness, this included people in homelessness projects and rough sleepers. It found that 87% (n=76) had ever used NPS. The most frequently reported NPS used by this group in the last six months were:

- Synthetic cannabinoids (63%, n=48)

- Benzodiazepine-type NPS (59%, n=45)
- Stimulant-type NPS (not including ethylphenidate) (21%, n=16), and
- Mephedrone (17%, n=13)

All respondents used NPS with other drugs.

People affected by homelessness sourced NPS from:

- Dealer (54%, n=41)
- Shops (49%, n=37)
- Friends or family (35%, n=27)

Small numbers reported sourcing online (7%, n=5) or selected 'other' (4%, n=3). Some respondents sourced from multiple sources.

3.6 Men that have sex with men (MSM)

The NPS survey gained information from 70 men who identified as MSM. It found that 54% (n=38) had ever used NPS. The most frequently reported NPS used by this group in the last six months were:

- Mephedrone (37%, n=14), and
- GHB/GBL (32%, n=12)

There were small numbers using other types of NPS including benzodiaepine-type NPS (13%, n=5) and synthetic cannabinoids (10%, n=4). All respondents used NPS with other drugs.

From the 30 MSM who answered where they sourced NPS from, respondents said they got NPS from:

- Dealers (43%, n=13)
- Shops (43%, n=13)
- Friends or family (40%, n=12)

Small numbers reported sourcing online (7%, n=2) or selected 'other' (7%, n=2). Some respondents sourced from multiple sources.

3.7 Service Provider Survey Results

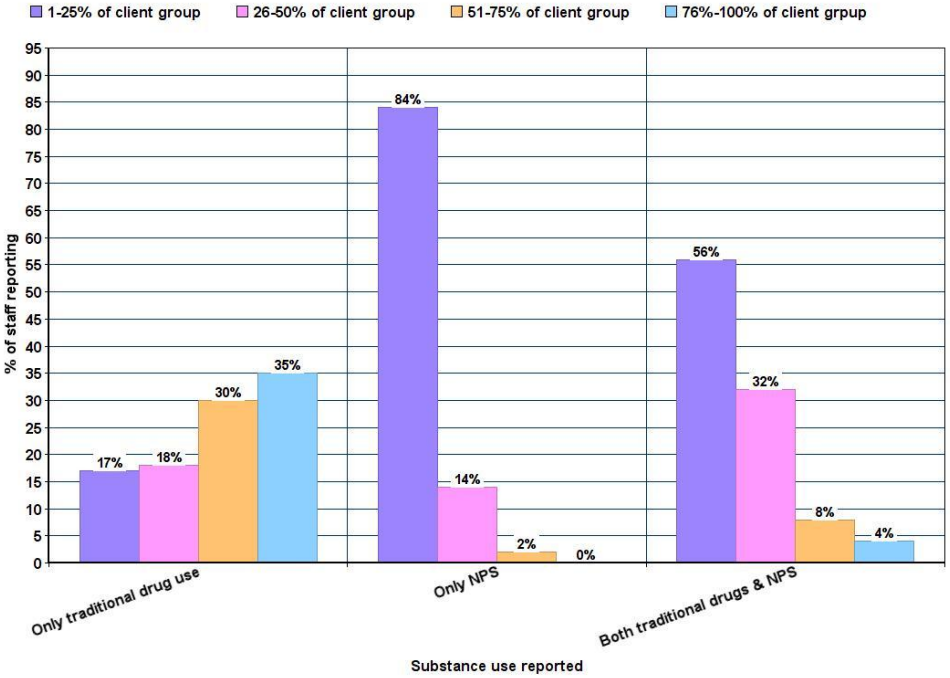
The staff survey addressed staff perceptions of prevalence and trends in presentation. The majority of staff surveyed were from Tayside (21%, n=38), Lothian (20%, n=37) and Greater Glasgow & Clyde (GGC) (17%, n=32) NHS

regions. The majority worked with people with mental health issues (84%, n=154), homeless people (74%, n=136) and PWID (72%, n=132). 70% (n=128) worked in drug and alcohol support services.

3.7.1 Service Provider Perception of Client Drug Use

In most services, staff perceived that the bulk of clients took only traditional drugs, with 65% (n=114)[52] of staff perceiving that more than half of their clients *only* used traditional drugs. In comparison to this, 84% (n=101) of staff responding to this survey felt that less than a quarter of their clients *only* used NPS. 12%[53] (n=19) of staff thought that more than half of their clients used both traditional drugs and NPS. Further detail is laid out in Figure 3.3.

Fig. 3.3: ***Staff perception of client drug use by percentage of client group presenting for NPS, traditional drugs or both***



Base[54] (respondents to question on only traditional drug use n=175, only NPS n=120, both traditional drugs & NPS n=158)

3.7.2 Staff Perceptions of Client Presentation over Time

When asked about how patterns of presentation in relation to NPS use and traditional drug use had changed over the previous six months, overall staff felt that things had remained largely the same. This is described in Fig. 3.4 overleaf.

[52] Combining only traditional drug use figures from 51-75% and 76-100% as described in Fig.4.2 to total 65%

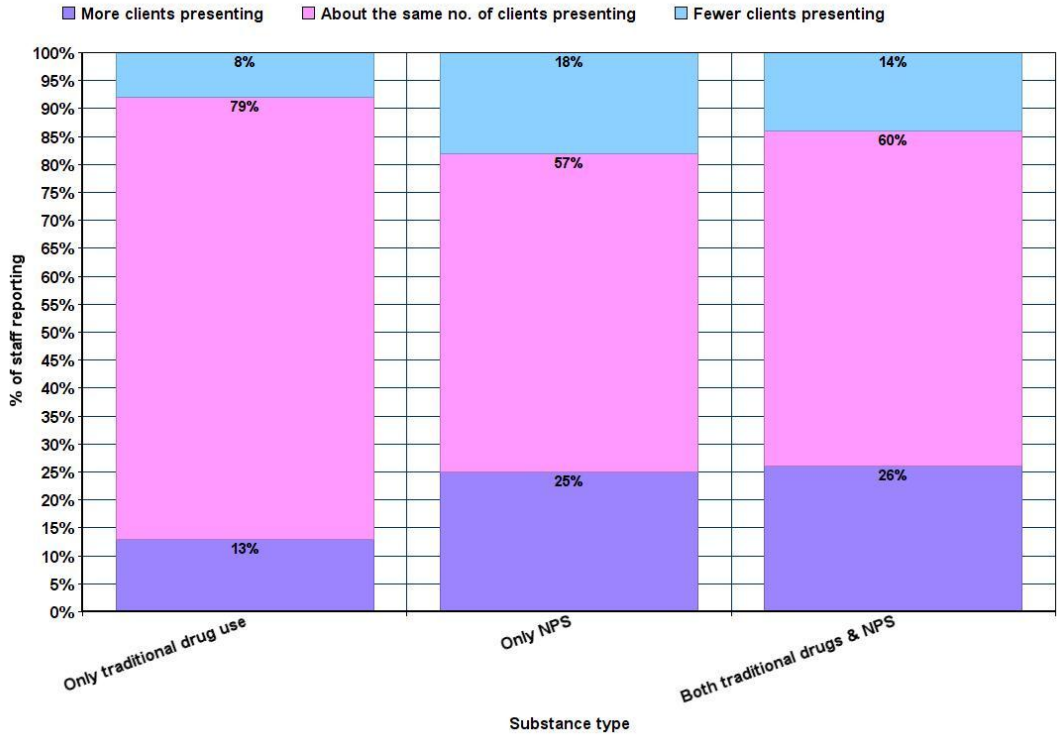
[53] Combining figures from only NPS use figures from 51-75% and 76-100% as described in Fig.4.2 to total 12%

[54] Numbers of respondents varied by question which is indicated by n=

- Fewer staff (18%, n=33) felt that they had seen a decrease in 'NPS only' presentations since autumn 2015, compared to those that had seen an increase (25%, n=46) in NPS only presentations.
- A lower proportion of staff (14%, n=26) felt that they had seen a decrease in combined NPS and traditional drug presentations since autumn 2015 than had seen an increase (26%, n=47).

This suggests that trends are not consistent across all regions and all services, but that there has potentially been a slight upward trend in presentations related to NPS use to services since the autumn of 2015.

Fig. 3.4: *Staff Perception on Patterns of Presentation: Spring 2016 compared to Autumn 2015*



Base (n=183)

Service providers were also asked which NPS were of particular concern. 57% of staff reported concern about benzodiazepine-type NPS, and 53% reported concern about mephedrone use. All NPS that cause staff concern are described in Table 3.2.

Table 3.2: *NPS staff worry about*

Service Type	N	%
Benzodiazepine-type NPS	105	57
Mephedrone	97	53
GHB/GBL	50	27
Ethylphenidate	35	19
Salvia	31	17
None of the above	20	11

3.8 Discussion

The prevalence of NPS use among vulnerable populations in Scotland remains a challenge to measure. The under reporting of NPS use by vulnerable populations to services highlighted in the survey combined with limited existing data within services and availability of national data sets meant that developing a complete estimate of prevalence was not possible.

Nonetheless, this chapter has begun to develop our knowledge of patterns of NPS use amongst key vulnerable groups in Scotland. Of those completing the NPS survey, over half reported having ever used NPS, although the last six month use rate was lower. This could suggest a downward trend in NPS use, or a high rate of NPS experimentation compared to continued use. Staff perceptions of trends were of an overall slight upward trend in NPS-related presentation, although these varied geographically and by type of service.

4. Motives for NPS Use

4.1 Introduction

This chapter examines the motivations for initially trying NPS, stopping use after trying, and continuing to use. It also draws on staff explanations from the focus groups as to why some clients do not try NPS at all. This data is supplemented by quotes from the qualitative analysis of interviews with people who had used NPS and from focus groups with frontline staff.

The analysis focuses primarily on the use of synthetic cannabinoids, benzodiazepine-type NPS, stimulant-type NPS, and mephedrone as these were the most popular NPS across all populations. The exception to this was amongst MSM who reported low rates of synthetic cannabinoid use and high rates of GHB/GBL use. Where relevant, the analysis is broken down by groups.

The four most frequently reported reasons given for trying NPS were ease of access, curiosity, the socially embedded nature of substance use, and price. In addition, substitution for other drugs (both deliberate and accidental), improving sex, and health-related reasons were key motivations associated with specific substances.

4.2 Trying NPS

4.2.1 Ease of Access

Of those who reported using a substance within the last 6 months, '**It was easy to get**' was given as one of the most common reasons for trying NPS. This was the case for:

- 38% (n=40) of the 104 people who reported **synthetic cannabinoid** use
- 43% (n=23) of the 53 people who reported **stimulant-type NPS** use, and
- 40% (n=41) of the 102 people who reported **benzodiazepine-type NPS** use.

This also emerged in the interviews, with participants discussing ease of access:

- **online** ("*It was just easier to get them [NPS] online)*"[55]
- via **shops** ("*I found out where to get it [synthetic cannabinoid] during the day)*"[56], and

[55] Peter, Young Person, Homeless
[56] Colin, Mental Health Service User

- from **dealers**: *"It's easier to get a hold of than hash or grass and stuff. Everyone is buying from down the street [i.e. from a street dealer] because it's £6 bags"* [57].

4.2.2 Curiosity and Friendship

Amongst those who reported using a substance within the last six months, the statement **'Because I wanted to try it'** was given as another main reason for trying NPS. This was the case for:

- 44% (n=21) of the 48 people who reported **mephedrone** use
- 34% (n=18) of the 53 people who reported **stimulant-type NPS** use, and
- 17% (n=17) of the 102 people who reported **benzodiazepine-type NPS** use.

This was supported by data from the staff survey, with 66% (n=122) of those working in services reporting that they believed their clients experimented with NPS because they had wanted to try it.

The statement **'My friend had it'** was another common reason for trying NPS amongst those who reported using NPS in the last six months. This was the case for:

- 42% (n=44) of the 104 people who reported **synthetic cannabinoids** use, and
- 42% (n=20) of the 48 people who reported **mephedrone** use.

This was similarly supported by data from the staff survey, with 56% (n=103) of those working in services reporting that they believed their clients experimented with NPS because they were offered it by a friend.

In the qualitative interviews, participants often linked curiosity and sociality. When discussing trying mephedrone for the first time, various reasons were given. The common themes were:

- **meeting new people** (*"It was a new crowd of people that I started going about with"*)[58]
- **hearing friends enthuse about NPS** (*"Everybody was raving about it [mephedrone], so why not, eh?"*)[59], and
- **seeing a given substance's effects on others**: *"My pal looked like she was having a ball and I thought I want to try this [Ching – a stimulant]"* [60].

[57] Nick, Homeless
[58] Moira, PWID
[59] Jessica, PWID and Mental Health Service User
[60] Claire, PWID, homeless, and mental health service user

4.2.3 Price and Potency

While price and potency was not the primary motive for the use of any specific substance, the statement **'it was cheap'** was amongst common reasons given by those who had used NPS in the last 6 months. This was the case for:

- 28% (n=29) of the 102 people who reported **benzodiazepine-type NPS**
- 30% (n=31) of the 104 people who reported **synthetic cannabinoids** use, and
- 30% (n=16) of the 53 people who reported **stimulant-type NPS** use.

This was supported by data from the staff survey, with 58% (n=106) of those working in services reporting that they believed their clients experimented with NPS because they were cheap.

Price emerged as a common theme in the interviews and focus groups, although it was often linked to potency in discussion, as illustrated in the following quote:

> *"I think that's why I liked it [synthetic cannabinoids] so much when I started smoking it because it was £10 for a gram. You would literally roll it, you would take one draw, and that was all my thoughts and fears blocked out and that was me wasted instantly*."[61]

4.2.4 Substitution for other substances

Almost a quarter of synthetic cannabinoid users (22%, n=23) reported first using synthetic cannabinoids thinking they were something else.

As illustrated below, this was rarely welcomed by those who discussed such experiences in the interviews:

> *"I didn't know what it was. I was just thinking that it was a normal joint, and then I had a weird taste in my mouth. Then, all the effects started happening…. I don't think I would have tried it [had I known what it was] because when I was in [prison] there was people dropping dead, obviously*.[62] [63]

[61] Luke, Vulnerable Young Person
[62] Daniel, Vulnerable Young Person
[63] Note on prison deaths: *any death in prison custody may lead to a Fatal Accident Inquiry (FAI) under the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976 however the decision to hold an FAI is a matter for the Lord Advocate/Procurator Fiscal. No cause of death is recorded where a death has not yet been determined following FAI. No determination has been made that has recorded NPS as having contributed to or been the cause of a death in a Scottish prison.*

A slightly higher proportion of people who had used **benzodiazepine-type NPS** in the last 6 months (29%, n=30) reported they tried them because '**I thought it was something else**'. However, not all substitution was accidental. 26 people reported that they did so for 'other' reasons (including for example, that they '**couldn't get a Valium prescription**'). Over a quarter (28% of reported benzodiazepine use, n=29) did so for **health-related reasons**:

> *"They [benzodiazepine-type NPS] were advertised as benzos and I knew – I'd taken Valium, benzos – so I knew that they worked [for managing sickness]. So these legal highs were not only cheaper but I was getting a lot more for my money… I was able to keep it going, maintain it instead of buying street Valium where I wouldn't be able to maintain it. So it was only about the sickness*." [64]

Others specified the kinds of mental health problems they felt benzodiazepine-type NPS could help with, captured in the statement below:

> *"I was prescribed diazepam for anxiety and I no longer had any of that so it was to kind of go on with that*." [65]

These references to prior benzodiazepine-use (prescribed or otherwise) and the emphasis on managing health rather than curiosity or pleasure-driven motives suggests that substitution (either deliberate or accidental) may play a much greater part in motives for trying benzodiazepine-type NPS than other types of NPS.

4.2.5 Improving Sex

15% (n=7) of the 48 respondents who ticked the 'other' box as a motivation for trying mephedrone stated they had used it to enhance sex. Six of these seven respondents were MSM. Similarly, in interviews the use of mephedrone and other NPS to enhance sex was discussed primarily, but not exclusively, by MSM:

> *[You] get a buzz from it [mephedrone] but it's also part of a sexual experience as well.... It just makes the contact with, and normally there's one or two others at the same time so it just makes it much more sort of, yes, I mean, it is a more enjoyable experience I think."* [66]

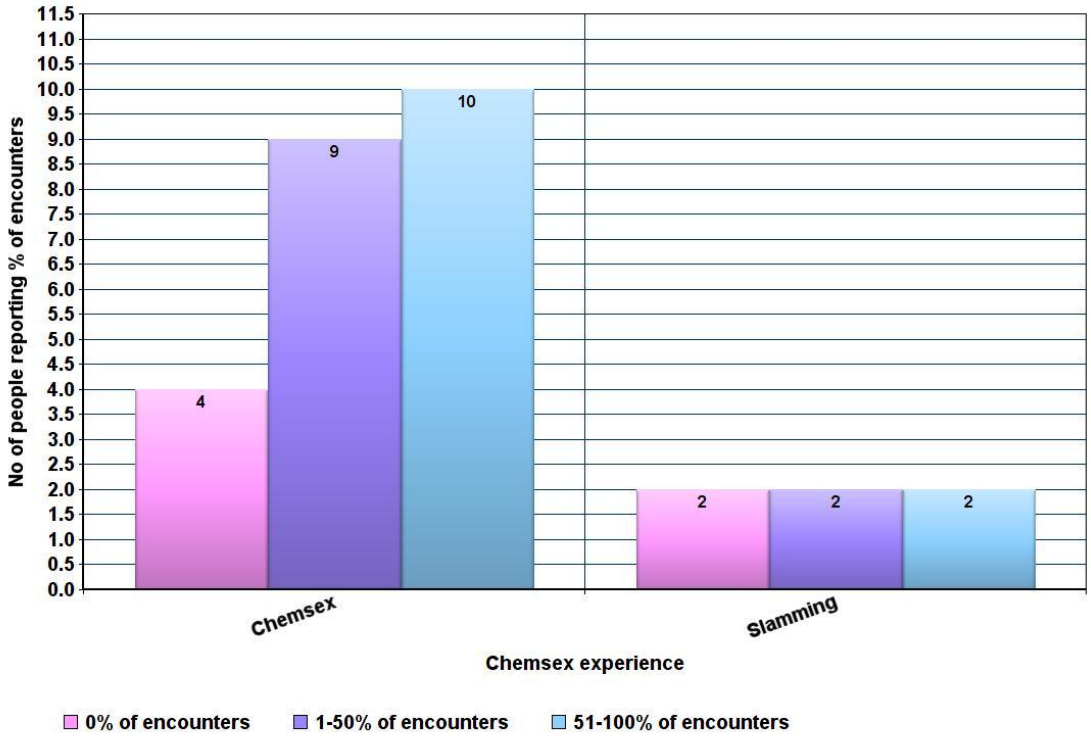
[64] Tiffany, mental health service user
[65] Michael, mental health service user
[66] Hugh, MSM

During the interviews, four participants who did not identify themselves as MSM also described the use of NPS to enhance sex:

> *"It ['Burst' – ethylphenidate] makes you f***ing sex daft. Total sex daft. You think you're a porn star, it's f***ing mad."* [67]

Male service users who identified as homosexual or bisexual were invited to complete an additional section of the NPS survey on chemsex. This was completed by twenty-nine of the 38 (76%) MSM who completed the main survey. Fig.4.1 illustrates that just under half (n=10) of the 23 individuals who identified as engaging in chemsex reported that over half of their sexual encounters involved the use of chems.

Figure 4.1: *MSM reporting experiences of chemsex and slamming*



Base (respondents to question on chemsex n=23, slamming n=6)

Twenty-six MSM responded to a question asking what led them to use chems during their last chemsex encounter, the main reasons given were to enhance sensation (n=13), followed by being drunk or high (n=9) and because their partner/s were doing it (n=8[68]).

[67] Kevin, PWID

[68] As described in Chapter 3, the most extensively used substances during last chemsex encounter were reported as alcohol, followed by GHB/GBL, mephedrone, cannabis and cocaine at much lower rates. Two participants reporting using ecstasy-type NPS and two using ketamine-type NPS.

Enhanced sensation also emerged as a theme in the interviews and focus group discussions with staff, as illustrated below:

> *"When they [MSM] inject mephedrone it really heightens the sensitivity of the whole body."* [69]

MSM also reported increased confidence (n=14) and increased sexual function e.g. maintaining an erection (n=13) whilst under the influence of NPS.

4.2.6 'Legal' Highs

Survey and interview participants were also asked about the importance of legality for trying NPS. However, this motive appeared to be less influential than those described earlier.

'**It was legal**' was descibed as a reason for trying NPS by less than one in eight (11%, n=21) NPS survey respondents. This suggests that legality was not a strong motivator for choosing NPS over 'traditional' drugs, although the fact that some NPS were legal at time of use may have increased the ease of access.

Legality did feature more prominently in focus group discussions with staff in services, as illustrated:

> *"For our young women it's the cost, it's about cost. And it being legal as far as they're concerned as well, they're not going to end up in court for it."* [70]

Legality was also discussed by staff in relation to avoiding detection in drug tests and not risking arrest for possession.

Links between legality and perceived safety were explored in the survey. Only a very small number of participants who had used NPS equivalents to 'traditional' drugs in the last 6 months did so **because they thought they would be safer**. This was the case for:

- 4% (n=4) of the 104 people who reported **synthetic cannabinoid** use
- 3% (n=3) of the 102 people who reported **benzodiazepine-type NPS** use, and
- 6% (n=3) of the 53 people who reported **stimulant-type NPS** use.

[69] Lothian Focus Group
[70] GGC Focus Group

Nonetheless, the prospect that the description of substances as 'legal' could lead people to the mistaken view that they were also safe was raised during the interviews:

> *"Like the way like it's put out, like as in, they say legal highs, it makes you think it's safe because it's legal*". [71]

However, Samuel, went on to reflect that:

> *"The first time folk take it, they take it because they think it's safer, cheaper and better. But, it isn't safer, it's cheaper and like the strength, the intention to it obviously gets stronger, but it doesn't mean it's better*." [71]

Interviews also revealed that while apparent legality was not a motivator, the language of legality did shape how NPS were talked about. The most commonly used terminology to describe NPS was 'legal highs', or 'legals'. This extended to some participants describing being under the influence of particular NPS, particularly synthetic cannabinoids, as being 'legalled' (for example, *"I just wanted to be high and legalled the whole time").*[72]

It was clear from the interviews that knowledge about the legal status of various substances was inconsistent and could be confused:

> *"I mean, they're all legal as far as I understand it. To be honest I never have paid much attention, but when it's something like that, yes, it's [mephedrone] not illegal, definitely not*." [73] [74]

For some participants the legal status of substances when trying them for the first time was irrelevant ("*I did not know and I did not care"*).[75]

Although the language of legality pervaded the ways in which some people who had taken, or continued to take, NPS talked about these substances – as both a category of drugs (*'legals'*) and an effect (*'being legalled'*) – knowledge about legal status was limited and had minimal impact on informing decisions to try NPS.

[71] Samuel, vulnerable young person
[72] Luke, vulnerable young person
[73] Hugh, MSM
[74] Note: mephedrone has been classified under the Misuse of Drugs Act 1971 since April 2010.
[75] Graeme, MSM

4.3 Not Trying and Stopping Use

While interviewees and participants who completed the NPS survey beyond the demographics section had all used NPS, focus group participants and people completing the staff survey worked in services which also support people who have not used NPS but who have used traditional drugs. These participants were able to give an insight into some of the reasons for not experimenting with NPS. The primary motives given by staff focused on relationships, perceptions of effects and effects on health. These are further discussed below.

4.3.1 Information and Effects on Others

The key reason for not using NPS identified by staff in the survey was that their clients had seen the effects of NPS in others. This was stated by over half of participants (56%, n=103). In the focus groups it was suggested that this may have been influenced by both seeing others, and information gathered from other sources:

> *"A couple of young men that I work with I think it's just about information, that they've read about it or they've heard about it and have all said, "No I'm not going to touch that s**t, no way".... They'd rather do whatever else it is they're doing than take a legal high*." [76]

These reasons also featured in interviewee accounts of stopping:

> *"[I stopped because of] all the different stuff that I've seen with other people that took it, like obviously ma pal jumping into the [River] and stuff like that. I've heard of other people who have just stopped breathing on them so aye never touched them again*." [77]

> *"I did see on the Internet and stuff like that, and I have heard that just, because obviously I researched it myself, you know, and I do look at the documentaries and they've scared me a bit so then that was another reason to stop, you know?"* [78]

Just as effects on others could operate as a positive inducement to experimentation, they could also act as a deterrent to initial experimentation and continued use. Similarly, while information was understood by many to be difficult

[76] GGC Focus Group Participant
[77] Daniel, Vulnerable Young Person, Homeless
[78] Colin, Mental Health Service User

to access[79], what information they did access could discourage some people from using or continuing to use NPS.

4.3.2 'I didn't like it'

When asked why they had stopped using NPS, the main reason offered by people who had tried NPS in the NPS survey was **'I didn't like it'**. This was the primary reason given by:

- 76% (n=42) of the 55 people who reported **stopping synthetic cannabinoid use** in the last 6 months
- 63% (n=19) of the 30 people who reported **stopping stimulant-type NPS** use in the last 6 months, and
- 60% (n=18) of the 30 people who reported **stopping mephedrone** use in the last 6 months.

This was supported by data from the staff survey, with 38% (n=73) of those working in services reporting that they thought their clients stopped using NPS because they did not like the effects.

In contrast, '**I didn't like it**' was a reason offered by less than a quarter of those who had **stopped using benzodiazepine-type NPS**. This was cited by five of the 23 respondents who answered this question. Instead, these participants were more likely to cite reasons around damage to physical health (n=8 respondents) and mental health (n=7 respondents).

Importantly, interview participants distinguished between disliking immediate, intoxication effects, (*"I wouldn't even try it [synthetic cannabinoid] again.... That really, really scared me"*)[80] and longer-term effects:

> *"It was just [ethylphenidate] before they sort of got banned… I was destroyed, I was a corpse… I was like having nervous breakdowns, like proper breakdowns*." [81]

The theme of disliking intoxication effects and quickly stopping use featured most prominently in relation to synthetic cannabinoids, which is reflected in the very high rates of trying and stopping due to dislike of effects in relation to this class of substance.

[79] See Chapter 6: Treatment and Legislative Responses
[80] Daniel, Young Person, Homeless.
[81] Kimberley, PWID, Mental Health Service User

4.3.3 Damage to Mental Health, Physical Health, and Relationships

Amongst those who had reported using NPS in the survey, the statement **'It was damaging to my mental health'** was one of the main reasons given for stopping use. This was the case for:

- 44% (n=24) of the 55 people who reported **stopping synthetic cannabinoid use** in the last 6 months
- 43% (n=13) of the 30 people who reported stopping **stimulant-type NPS** use in the last 6 months
- 33% (n=10) of the 30 people who reported stopping **mephedrone** use in the last 6 months, and
- 30% (n=7) of the 23 people who reported stopping **benzodiazepine-type NPS** use in the last 6 months.

This was supported by data from the staff survey, with 69% (n=127) of those working in services reporting that they felt damage to mental health was a reason for their clients stopping NPS use.

This also featured in the interviews as illustrated in the following:

> Interviewer: Tell me what made you stop [using mephedrone].
>
> *"I think hearing the voices and ending up in [a secure mental health unit]*." [82]

Another main reason for stopping using NPS reported in the NPS survey was that **'It was damaging to my physical heath'.** This was the case for:

- 47% (n=14) of the 30 people who reported stopping **stimulant-type NPS** use in the last 6 months, and
- 35% (n=8) of the 23 people who reported stopping **benzodiazepine-type NPS** use in the last 6 months.

This was supported by data from the staff survey, with 39% (n=72) of those working in services reporting that they thought their clients stopped using because it was damaging to their physical health.

Physical health damage was seen to be less significant by some:

- 20% (n=11) of the 55 people who reported stopping **synthetic cannabinoid** use reported they stopped using because it was damaging to their physical health, and

[82] Andrea, Mental Health Service User, PWID

- 17% (n=5) of the 30 people who reported stopping **mephedrone** use reported doing so because it was damaging to their physical health

Nonetheless, damage to physical health was discussed by interview participants:

> Interviewer: And the main reason you stopped [Ching – a stimulant]?
>
> *"Was because I nearly lost my arm".*[83]

Among survey respondents, **damage to relationships** was not a significant driver towards stopping. However in the interviews, participants reflected much more extensively on the damage their NPS use had done to their relationships, discussing this as a more important driver for stopping than damage to their physical and mental health[84]. This often related to damaged relations with family members:

> *"And then the family found out about it [synthetic cannabinoid use] and obviously they know about what it does… So I eventually just opened my eyes and realised what I was doing and stopped it again".* [85]

Staff were asked to identify the key difficulties they saw clients experience when trying to stop use of NPS. Identified barriers included:

- **anxiety** (58%, n=106)
- **sleeping difficulties** (54%, n=100), and
- **irritability** (50%, n=92).

This highlights a particularly challenging context for recovery and barriers for service users engaging with services.

4.4 Continuing to Use NPS

Rates of current use varied by substance, as illustrated in Table 4.1 overleaf. The table illustrates use in the last 6 months and current use (although due to a significant proportion of the sample being recruited through treatment services, it should be noted that active use could be under-reported by clients who may have been concerned about disclosure of current drug use).

[83] Claire, Mental Health Service User, Homeless, PWID
[84] See Chapter 6: Consequences of Use
[85] Colin, Mental Health Service User

Benzodiazepine-type NPS had the highest rates of current use reported with 67% (n=58) reporting they currently used them.

Table 4.1: *NPS Use: Reported six month and current use*

NPS type	Taken in last 6 months		Currently take	
	N	%	N	%
Synthetic cannabinoids	104	41	33	36
Benzodiazepine-type	102	41	58	67
Stimulant-type	53	21	13	28
Mephedrone	48	19	10	24

Those who reported using NPS in the survey gave various reasons for continuing to use their chosen NPS. These overlapped substantially with their reasons for trying. Ease of access was a main reason for continuing to use synthetic cannabinoids, benzodiazepine-type NPS and stimulant-type NPS. This was supported by the staff survey, where ease of access was the primary reason cited (54%, n=100).

Price was also reported as an important reason for continued synthetic cannabinoid and stimulant-type NPS use in the NPS survey. This was further reflected in the staff survey, with over half of respondents citing this as a reason for continued use amongst clients (51%, n=93).

Similarly consistent with reasons for trying, the two other main reasons for continuing to use given by users of benzodiazepine-type NPS were that they couldn't access Valium, and for 'health reasons'. One interviewee in the qualititative interviews described continued use of benzodiazpeine-type NPS connected to dependency issues and to managing mental health:

"Etizolam is something that I would say was more…like you know the other substances I would use them and then I would put them down but Etizolam I couldn't put that down. You know I had to have that every day, maybe like two or three times a day….. it took the edge off, it took the edge off just existing at this point" [86]

Where reasons for continued use did differ from reasons for trying was in relation to pleasure and compulsion:

[86]Paula, Mental Health Service User, Homeless

- Of the 10 people who reported continuting to use **mephedrone**, 5 respondents (50%) reported continuing to use because they liked it, and
- Of the 13 people who reported continuing to use **stimulant-type NPS**, 6 respondents (46%) reported continuing to use because they liked it.

This was also supported by findings from the staff survey, where 47% (n=86) of respondents cited this reason for continued NPS use among their client group.

Reflecting on their continued use of mephedrone one interviewee in the qualititative interviews captured this sense of pleasure when he explained:

> *"It's [mephedrone] a pleasurable thing. I think that's why anybody does anything, whether it's drugs or alcohol or get high on gambling or whatever. It's a pleasurable thing. Like most things probably that are pleasurable it's a) either illegal or b) expensive or c) you can only do so much of it*." [87]

However, 41% (n=13) of people reporting continued synthetic cannabinoid use stated that they continued to use '**Because I can't stop**', and this reason was also suggested by 39% (n=71) of staff. The interviews highlighted that some synthetic cannabinoids users found that while it was initially pleasurable, stopping proved to be difficult, and the withdrawal effects were challenging to manage. This could prompt continued use, as illustrated below:

> *"Like some people do enjoy it [synthetic cannabinoids], but like when they're trying to get off it they realise completely that they are addicted and that's when the withdrawals start coming in, and most people can't handle the withdrawals because like you get sweats, cramps, sickness, headaches, migraines, fucking, just, oh it's bad like. It really is*." [88]

Overall the qualitative interview extracts suggested that pleasure and difficulty stopping were not necessarily straightforward to disentangle as motives.

Of note is the low proportion of people who use benzodiazepine-type NPS who described their reasons for continued use in terms of difficulty stopping (19% of reported benzodiazepine-type use, n=11). 14 respondents stated that they used benzodiazepine-type NPS because they could not get Valium as a free-text 'Other' response.

[87] Hugh, MSM
[88] Samuel, Vulnerable Young Person, Mental Health Service User

The difficulties reported in ensuring a continuous supply of benzodiazepines was illustrated in the qualitative interviews:

> *"Actually I have bought pills out a shop. D something. Because I ran out of my pink pills, I ran out of them and that's the ones I bought from the shop. And it was going to take a couple of days, a day or two, for my pink pills to arrive. So I went into the shop and asked them, "I need to get something like vallies [Valium], benzos [benzodiazepines]", and he said, "Try these"."* [89]

4.5 Discussion

Motivations for trying, stopping and continuing NPS use varied. While the language used by interviewees to describe NPS emphasised legality (*"legals"*), few of the NPS survey participants or interviewees reported either trying or continuing use because they thought a given substance was legal. Similarly, safety did not emerge as a motivation for continued use. The shift in perception between substances being 'safer' because they were legal before trying, then going on to identify them as unsafe, after use, is mirrored in the work of Sheridan and Butler on BZP-party pills during the period in which they were legally available in New Zealand.[90]

Instead, reasons for experimenting with and continuing to use focused for many on price and ease of access, as is noted noted by other research**.**[91] In addition, curiosity, social relationships and pleasure were all important factors informing decisions to start, and stop use. Seeing effects in others could be an important draw to experimentation or an effective deterrent, highlighting the importance of social circles in normalising different types of drug use practices.[92]

Participants reported increased pleasure, confidence and happiness as reasons for use of specific substances during chemsex. This is supported by existing qualitative research**,** which has identified better sex (in which pleasure is increased and inhibitions decreased) as a key motivation for engaging in chemsex.[93] Enhanced sensation was also a key factor for those using NPS for chemsex. Research has identified sustained arousal, aided by the use of 'chems', and heightened sensation as important motivators for use[94]. In addition, existing research has also identified that the use of chems can be used in response to

[89] Tiffany (PWID),
[90] Sheridan & Butler (2010) ''They're Legal so They're Safe, Right?': What did the Legal Status of BZP-Party Pills mean to Young People in New Zealand?'
[91] Winstock & Ramsey (2010) 'Legal Highs and the Challenges for Policy Makers'.
[92] See, for example, Bourgois (2010) *Righteous Dopefiend*; Hopwood et al (2015) 'Drugs, Sex and Sociality: Factors Associated with the Recent Sharing of Injecting Equipment among Gay and Bisexual Men in Australia'; Latkin et al (2010) 'Social Norms, Social Networks, and HIV Risk Behavior among Injecting Drug Users'
[93] Bourne et al (2014) The Chemsex Study
[94] Ibid.

negative emotions such as low confidence or self-esteem, internalised homophobia and stigma around HIV status. This suggests that 'better sex' is complex to define, particularly in relation to MSM who engage in chemsex. Low rates of chem-free sex among MSM has been reported elsewhere[95], highlighting the importance of use for sex among some MSM. This suggests that chemsex is a potentially important public health issue, which will require responses that take account of the roles of pleasure and disinhibition, and chemsex social norms.

The two main reasons for trying and continuing to use benzodiazepine-type NPS given by users were that they couldn't access Valium, and for 'health reasons'. This may simply reflect that dependency on these pharmaceuticals can be predicted after fairly short periods of regular use.[96] Health reasons may include self-medication but may also be associated with managing unpleasant and potentially dangerous withdrawals as is reported in other literature.[97]

Given that use of benzodiazepine-type NPS due to difficulty accessing diazepam was identified among the NPS survey respondents and taking account of the known issues of dependency and withdrawal with benzodiazepines[98], this likely suggests this group did not report difficulties stopping because they were not seeking to stop their use. Rather, the difficulties people who took benzodiazepine-type NPS reported were around ensuring a continuous supply.

There is an extensive literature base which suggests that withdrawal from benzodiazepines involves potentially challenging symptoms. In some clients, withdrawal effects such as rebound anxiety and rebound insomnia, can have physical manifestations such as sweating and tremors[99]. Less well documented are the withdrawal effects of synthetic cannabinoid use, although respondents in the NPS survey identified similarly difficult withdrawal effects. Just as benzodiazepine withdrawal is ideally carefully clinically managed, clinical management may be beneficial to people who use synthetic cannabinoids and wish to reduce or cease their use. This is an area in need of further research with a view to the development of good practice guidelines.

[95] Stuart, D et al (2016) 'ChemSex: Data on Recreational Drug Use and Sexual Behaviour in MSM from a Busy Sexual Health Clinic in London'
[96] SDF, UK Drugwatch (2014) Etizolam briefing
[97] Pétursson,H. (1994) The benzodiazepine withdrawal syndrome
[98] Clinical Knowledge Summaries (2015) NICE guidelines 'Benzodiazepine and Z-Drug Withdrawal; Nielsen (2013) 'Benzodiazepine Withdrawal after Long-Term Use'; Silverman (2016) 'Controlled Substance Management: Exit Strategies for the Pain Practitioner'.
[99] Clinical Knowledge Summaries (2015) NICE guidelines 'Benzodiazepine and Z-Drug Withdrawal; Nielsen (2013) 'Benzodiazepine Withdrawal after Long-Term Use'; Silverman (2016) 'Controlled Substance Management: Exit Strategies for the Pain Practitioner'.

5. Consequences of Use

5.1 Introduction

The consequences of NPS use were reported in the NPS survey and in interviews, as well as being described by staff through the staff survey and focus groups.

5.2 Positive Effects

Given that pleasure was reported as one of the motivators for use it is important to understand the positive effects of use as reported by NPS users. Positive effects were noted across all key NPS groups, although there were specific effects associated with different types of NPS.

5.2.1 Stimulant-type NPS and mephedrone

23 people reported on the health effects of stimulant-type NPS and mephedrone, which shared the same positive effects:

- 9 respondents reported that they made them more **alert**
- 8 respondents reported that they gave them more **energy**
- 6 respondents reported an **improvement in mood**

Around half of people who have taken stimulant-type NPS or mephedrone (48%, n=11) stated that they continued to take these substances because they liked taking them, suggesting that the effects of alertness and energy were experienced as positive.

5.2.2 Benzodiazepine-type NPS

Fifty-eight respondents reported on the health effects of benzodiazepine-type NPS. Of these:

- 47 respondents (81%) felt their use reduced their **anxiety**
- 40 respondents (69%) felt that use made them more **relaxed**
- 22 respondents (38%) associated their use with **improvements in mood**

This reflects the views reported in the previous chapter about health related motivations for starting and continuing benzodiazepine-type NPS.

5.2.3 Synthetic cannabinoids

31 respondents reported on the physical health effects of synthetic cannabinoid use. A key positive effect noted by one quarter (26%, n=8) of those who had taken

synthetic cannabinoids was sleep promotion. This was also described in the interviews:

> Interviewer: And what would you say you enjoyed about it the first time you used it [Bombay Blue – synthetic cannabinoid]?
>
> *"The sleeping. I loved it."*
>
> Interviewer: And is sleeping difficult for you?
>
> *"Yes. I don't sleep very good."* [100]

However, the sleep-promoting effects of synthetic cannabinoids were not always experienced as unequivocally positive. This is discussed in more detail in the section below. Around one fifth (21%, n=7) reported that use made them more relaxed.

5.3 Negative Effects

Negative effects were identified by interviewees in relation to intoxication and 'comedowns' and by NPS and staff survey respondents in relation to mental health, physical health, social and relationship effects. These are discussed below.

Intoxication Effects and 'Comedowns'

Interviewees in the qualitative interviews sometimes described positive intoxication effects of NPS use, however they were frequently understood to have negative effects subsequent to use. These two phases of intoxication – positive and then negative – were integrated experiences for some:

> *"MCAT [mephedrone] – at the time I felt banging – the next day I felt like a total junkie. The come down off it was a fucking horrible, man – horrible. It was the worst comedown I've ever had in my life.... I felt so disgusting."* [101]

In addition, unwelcome intoxication effects were noted by interviewees, particularly, but not exclusively, in relation to synthetic cannabinoids. These included nausea ("*I spewed everywhere [after taking a synthetic cannabinoid]*")[102] in one case loss of bladder control (*"A pished myself [after taking 'Burst' –*

[100] Debbie, Homeless
[101] Peter, Vulnerable Young Person.
[102] Luke, Vulnerable Young Person

ethylphenidate]")[103] and general feelings of being unwell (*"I actually thought I was going to die on that thing [Sensate – a synthetic cannabinoid]"*)[104].

5.4 Mental Health Harms

Staff and those who reported using NPS often differed in their views on the mental health effects of NPS in both the quantitative and qualitative elements of this study.

When asked in the survey about the effects of taking NPS on their mental health, small numbers of respondents across all groups reported positive effects as a result of use, however larger numbers reported negative mental health effects, in particular anxiety and paranoia, mood swings, depression and psychosis.

5.4.1 Anxiety and Paranoia

Across current NPS users overall, 25% (n=47) described use as increasing anxiety and 12% (n=22) reported experiencing paranoia as a result of use.

33 respondents who had used within the last 6 months provided information on mental health impacts of **synthetic cannabinoids**. Increased anxiety was identified by:

- Two in three (67%, n=22) people who had used synthetic cannabinoids within last 6 months
- Increased anxiety was also identified by over half (54%, n=99) of staff working with synthetic cannabinoid users.

23 respondents provided information on mental health impacts of **stimulant-type NPS and mephedrone**. An increase in anxiety was identified by:

- 43% (n=10) of people who had used within the last 6 months
- This was also the most frequently cited mental health effect noted by staff for mephedrone (34%, n=62) and stimulant-type NPS use (31%, n=57).

There was therefore a strong correlation between the perception of staff and those who reported using NPS about the role of synthetic cannabinoids, stimulant-type NPS and mephedrone in increasing anxiety. However, there was a noticeable difference in perceptions of the anxiety-producing effects of **benzodiazepine-type NPS** between those who took them and staff.

[103] Kevin, PWID
[104] Alistair, Mental Health Service User

- Four in five of benzodiazepine-type NPS users (81%, n=47) said that use **reduced their anxiety**.

- 42% (n=77) of staff felt that the use of benzodiazepine-type NPS **increased anxiety** in those who took it.

Anxiety was also discussed by a number of interviewees in the qualitative interviews who reported use of these substances, particularly among those whose use was sustained. In particular, feelings of anxiety were often experientially bound up in feelings of paranoia, and to a lesser extent depression:

> *"It can cause like quite a lot of anxiety obviously because if you're fearful of like whether you're going to die on it [synthetic cannabinoids] or not, but like depression can be quite a big one off it too. Paranoia, because you can think people are talking about you behind your back, stuff like that, folk are looking at you."* [105]

Overall, 17% (n=32) reported experiencing both anxiety and paranoia.

This overlap between anxiety and paranoia came out particularly strongly in survey results with people who had taken synthetic cannabinoids:

- almost as many synthetic cannabinoid users reported **paranoia** as a mental health effect (64%, n=21) as **anxiety** (67%, n=22), and 29% (n=10) reported both.

Similarly, as many stimulant type NPS users cited **paranoia** as a mental health effect (38%, n=5) as **anxiety** (38%, n=5), and 23% (n=3) reported both.

5.4.2 Mood Swings

Across those who had used NPS in the last six months, 15% (n=28) described mood swings as an effect of use. Mood swings were a main effect of use reported by almost half of the 13 respondents who reported on health effects of taking stimulant-type NPS (46%, n=6). This finding was supported by results for the staff survey, where it was the primary mental health effect identified in relation to stimulant use, cited by 32% (n=58) of staff working with people who use stimulant-type NPS.

Although not a main effect reported by those who took benzodiazepine-type NPS or mephedrone, mood swings were nonetheless a main mental health effect noted by 36% (n=67) of staff in relation to the use of benzodiazepine-type NPS and 30% (n=55) of staff in relation to mephedrone use.

[105] Samuel, Vulnerable Young Person, Mental Health Service User

Mood swings were discussed infrequently in interviews, and tended to be in relation to withdrawal rather than being under the influence:

> *"Mood swings, you know, in a state of anxiety at times when I couldn't get any gear [mephedrone]."* [106]

5.4.3 Depression

Across those who had used NPS in last six months, 20% (n=38) described depression as an effect of use. Apart from mood swings, depression specifically was not reported as a main mental health effect in the NPS survey for any substance.

However, depression was noted by 25% (n=45) of staff in relation to any NPS. It was the second most common mental health effect of benzodiazepine-type NPS use, cited by 39% (n=71) of staff. It was also the third most commonly cited mental health effect of synthetic cannabinoids noted by staff (48%, n=88). GHB/GBL, which was taken almost exclusively by MSM, similarly produced concerns about depression among 16% (n=30) of staff working with people who used these substances.

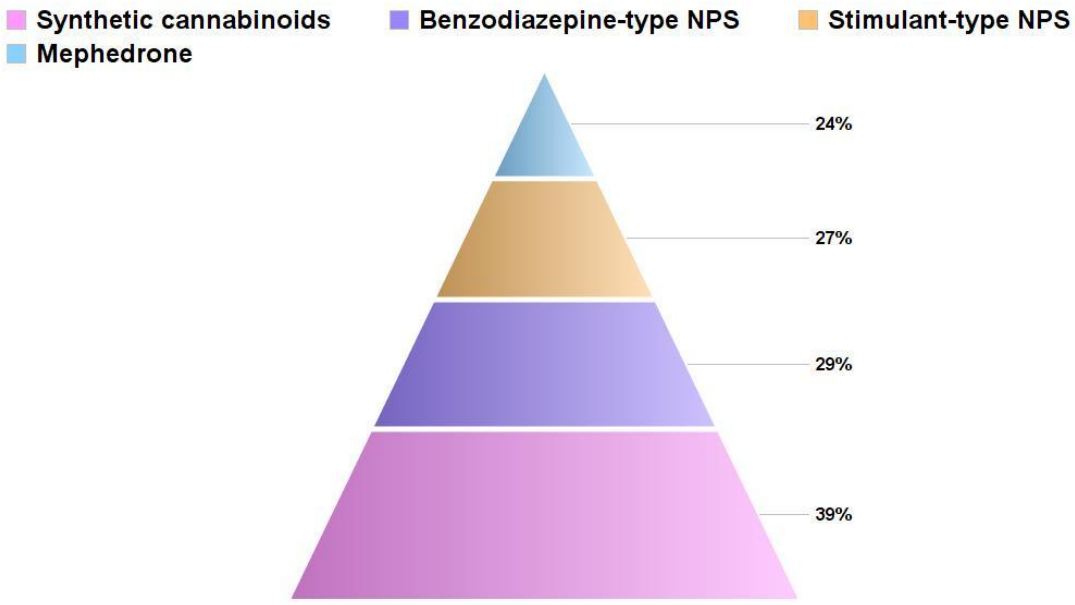
5.4.4 NPS and Underlying Mental Health Conditions

37% (n=94) of those who reported NPS use in the NPS survey were or had previously been in contact with mental health services. 52% (n=96) of staff identified exacerbating underlying mental health conditions as an effect of NPS overall. Of the four key NPS, this was highest for synthetic cannabinoids, and lowest for mephedrone.

Figure 5.1 gives an overview of staff perceptions on exacerbation of mental health by substance type.

[106] Alexander, MSM

Fig. 5.1 *Percentage of staff identifying exacerbation of underlying mental health conditions as an effect of NPS use by NPS- type.*[107]



Base (n=184)

The interviews highlighted a range of different views, with some interviewees suggesting that their use of NPS had exacerbated their underlying mental health conditions:

> *"Aye but I've got the paranoia with the schizophrenia and that any way, so obviously that [ethylphenidate] made it worse."* [108]

Others, however, felt that their mental health conditions were due entirely to their NPS use:

> *"My anxiety is bad, very bad and it's due to legal highs because I wasn't like that before I'd taken legal highs."*
>
> Interviewer: Had you had any mental health problems before you used legal highs?
>
> *"No."* [109]

[107] Staff could select more than one NPS therefore percentages do not equal one hundred.
[108] Kimberley, PWID, Mental Health Service User
[109] Claire, Homeless, Mental Health Service User, PWID

Others still, felt that their mental health conditions were entirely unrelated to their NPS use:

> *"Although I do suffer from depression, I don't link that to legal highs."* [110]

This range of views was not consistent by either NPS of choice or type of mental health condition.

In focus group discussions with staff, NPS was seen to exacerbate underlying mental health conditions. It is important to note that very few survey or interview participants had used NPS exclusively and had other risk factors which could contribute to mental health issues including homelessness, adverse childhood events and family health histories. Therefore, although some participants attributed their mental health problems to their NPS use, it is not possible from this data to determine causality.

5.4.5 Psychosis

Psychosis was not specifically asked about in the NPS survey apart from the chemsex section as it did not emerge as a key theme in the qualitative interviews outside of MSM interviews. Very small numbers of MSM (n=3) reported psychosis as a mental health effect. It was not reported as a key mental health effect in the NPS survey for any substance. However, psychosis was the third most common mental health effect of stimulant-type NPS noted by staff, identified by 30% (n=55) of staff working with people who use stimulant-type NPS. Ethylphenidate, which was taken primarily by PWID, similarly produced concerns about psychosis among 19% (n=34) of staff working with ethylphenidate users.

Psychosis was discussed in focus groups, and one staff respondent felt that it was the move from heroin use to ethylphenidate use by their clients that had triggered an increase in psychosis across the population.

> *"All our clients, previous heroin users, had mental health problems but no mental illness, you know, working for years with no mental illness and then they start taking these legal highs and then they were displaying symptoms of psychosis, and some who will never recover from it and will be on medication for the rest of their lives".* [111]

[110] Gary, Homeless, Mental Health Service User
[111] Lothian Focus Group

Another staff respondent highlighted the role of additional factors in psychotic symptoms including other drug use and sleep deprivation.

> *"It's difficult to sort of disentangle sometimes whether it's people stopping their heroin use as well, a lot of people sort of managing their behaviours with a lot of heroin and then when they stop using that and also not quite sure how much, we're attributing a lot to the drug, but just not sleeping for five days is very bad for you and I wonder, it would be interesting to sort of see how much of it is about sleep deprivation, the strain of psychosis that goes on. We're attributing a lot to this drug I think, but I don't know, but I do wonder how much, because people who drop their heroin use, sort of managing their behaviours sometimes."* [111]

5.5 Physical Health Harms

There was more consensus in terms of staff and NPS users' perceptions of effects in relation to physical health than there was for mental health effects. When asked in the NPS survey about the effects of taking NPS on their physical health, across NPS users who had used in the last 6 months the main harms identified were problems with co-ordination (20%, n=38), difficulty sleeping (20%, n=37), and increased or decreased heart rate (14%, n=26).

The main physical health effects reported by those who had taken synthetic cannabinoids were exclusively negative. The main physical health effects reported in relation to benzodiazepine-type NPS, stimulant-type NPS and mephedrone were more ambivalent, with respondents including improvements to physical health as well as harms among their main effects.

5.5.1 Sleep Difficulties

Amongst those who reported currently using NPS in the NPS survey, 20% (n=37) reported difficulties sleeping. This was given as one of the main physical health effects by people who had used synthetic cannabinoids, stimulant-type NPS or mephedrone in the last six months.

- Of the 13 people who currently use **stimulant-type NPS**, 9 respondents (69%) reported that their use made sleeping more difficult for them.

- Of the 10 people who currently use **mephedrone**, 6 respondents (60%) reported that their use made sleeping more difficult for them.

This was supported by data from the staff survey. Staff identified sleeping difficulties amongst their clients in relation to stimulant-type NPS (36%, n=67) and mephedrone (30%, n=56).

In relation to **benzodiazepine-type NPS**, there were conflicting views amongst NPS users and staff:

- 91% (n=52) of benzodiazepine-type NPS users reported improved sleep
- 11% (n=6) of benzodiazepine-type NPS users reported sleeping difficulties, and
- 16% (n=30) of staff linked sleeping difficulties to benzodiazepine-type NPS use amongst their clients.

Difficulty sleeping as a result of **synthetic cannabinoid** use was also reported by both NPS users and staff:

- 36% (n=11) of synthetic cannabinoid users who had used in the last six months reported difficulty sleeping in relation to synthetic cannabinoids
- 26% (n=8) reported improved sleep, and
- 29% (n=53) of staff linked synthetic cannabinoid to sleeping difficulties amongst their clients.

Interview data revealed that taking synthetic cannabinoids often promoted sleep. Whereas this was viewed positively by some, such as Debbie (Section 5.2.3), others saw this sleep-promoting property as having a negative effect on their wellbeing (*"I was constantly tired, I was never sitting up, I was always lying down"*)[112].

It is important to note that NPS survey respondents did not describe what they regarded as a sleeping difficulty or improved sleep e.g. the quality of their sleep, duration, ease of getting to sleep or whether it was uninterrupted.

5.5.2 Problems with Co-ordination

Problems with co-ordination were reported by 20% (n=38) of the currently using NPS survey respondents. This was:

- the primary physical health effect noted by people who have taken **synthetic cannabinoids** (42%, n=13)
- the secondary physical health effect reported by people who have taken **benzodiazepine-type NPS** (46%, n=26)
- not reported to be a health problem by any participants in relation to **stimulant-type NPS** or **mephedrone** use.

[112] Luke, Vulnerable Young Person

This is supported by findings from the staff survey. Problems with co-ordination were seen as:

- the main physical health consequence of **benzodiazepine-type NPS** use reported by 36% (n=66) of staff, and

- a key consequence of **synthetic cannabinoid** use reported by 33% (n=60) of staff.

By contrast, only 11% (n=20) of staff reported difficulties with co-ordination for either stimulant type NPS or mephedrone.

5.5.3 Seizures

Seizures were reported by 10% (n=18) of the currently using NPS survey respondents. Seizures were reported particularly by people who had used synthetic cannabinoids (39%, n=12). Seizures were not identified in the NPS survey as a main physical health effect of benzodiazepine-type NPS or stimulant-type NPS and none of the 10 current mephedrone users who responded to the questions on the physical health effects of mephedrone identified seizures as being associated with its use.

In contrast to this, only three staff respondents associated seizures with synthetic cannabinoid use. However, five staff did identify seizures as a main physical health effect of taking mephedrone.

Seizures (commonly called 'fits' or 'fitting') were a fairly commonly physical health effect noted during the qualitative interviews, impacting on those who have taken synthetic cannabinoids, mephedrone, and ethylphenidate. However, interviews revealed an ambivalence among some towards the perceived risks of 'fitting'. Most who discussed seizures during interviews looked upon this as a negative consequence:

> *"We had a joint out of it [Exodus – a synthetic cannabinoid], then I went all funny and all that on it and then I took a fit.... My sister saved my life from it, she found me after I'd had that Exodus in a joint."* [113]

[113] Alistair, Mental Health Service User

However the experiences of fitting did not always act as a deterrent to continued use:

> *"I remember of fitting, I remember of taking it [mephedrone] and then being in my bedroom and seeing my daughter, actually fitting, and seeing my daughter in her wedding dress. And I would see Jane, my mother-in-law, and then I would open my eyes to see an ambulance being there, eh. And I got took into the hospital, and then I'd come back out, and I'd still have four or five grams in my bra, and then I would do it again, eh. It was bad".* [114]

One respondent saw fitting as a positive marker of efficacy:

> *"Most of the time [combining mephedrone with MDMA] was alright, but you would get the one person that would, or most of the time somebody was fitting or, most of the time me. If I didn't get a fit, I didn't think it was a good bit"* [115]

While seizures were reported as a physical health effect by people who had used synthetic cannabinoids, and staff working with people who have used mephedrone, this does not necessarily mean that they were regarded as an unequivocally negative health experience, or a deterrent to future use.

5.5.4 Hunger and Weight Change

Decreased hunger was not a main physical health effect for people taking any of the four key NPS, and was reported by only 7% (n=14) of NPS survey respondents currently using NPS. Due to restrictions on the survey software, we were unable to give weight-loss as an option, so were required to phrase as decreased hunger.

However, unplanned weight loss emerged as a key theme in interviews. Realisation of unplanned weight change was often presented in the context of relationships with others. Nick described how it was only after seeing his mother after a six-month gap that he realised the severity of his weight loss:

> *"I didn't notice it was as bad as that at that point, but then it deteriorated until my mum came up, she hadn't seen me for six months, she said I looked like a junkie seeing how much weight I'd lost. That's when I decided to wean myself off it [Exodus – synthetic cannabinoid]."* [116]

[114] Moira, PWID
[115] Andrea, Mental Health Service User, PWID
[116] Nick, Homeless

5.6 Social Effects

174 NPS survey respondents reported on social harms of NPS use. The main social effects reported by NPS survey participants across all groups and all key NPS types were spending more money than planned or selling something to pay for NPS, and missed appointments. Staff survey respondents identified debt, loss of employment and education, loss of tenancy and anti-social behavior as the main social effects of NPS use, common across all key NPS types.

5.6.1 Money and Debt

Of the 174 NPS survey respondents who reported on social harms, 60% (n=105) reported spending more money than planned or selling something to pay for NPS. This was highest among people in contact with mental health services (67%, n=49).[117]

Table 5.1 illustrates the borrowing and repaying data from NPS survey participants by risk group.

Table 5.1: *Borrowing & repaying debt*

	Total respondents	**Have ever borrowed money to pay for NPS**		**Always been able to repay**		**Never been able to repay**	
	N	**N**	**%**	**N**	**%**	**N**	**%**
Homeless	75	44	58	22	49	3	7
PWID	131	69	53	37	58	7	11
Mental Health Service Users	92	43	46	29	64	1	2
Young People	35	15	43	8	56	2	13
MSM	33	6	18	5	16	1	3
Overall[118]		*89*	*39*	*51*	*50*	*9*	9

In interviews, participants discussed borrowing (and stealing) from friends and family members, often resulting in damage to those relationships, selling possessions and pawning items to pay for NPS:

[117] $p<0.05$
[118] Overall figure from whole sample taking account of the cross over between different risk groups

"Just borrowing off my dad, selling my hoose, selling my whole hoose. All I've got left is my washing machine and my couch". [119]

5.6.2 Missed appointments

Use of NPS also correlated strongly with missed appointments. Of the 174 NPS NPS survey respondents who reported on social harms, 60% (n=104) reported missing appointments such as with the Job Centre, GP or treatment as a result of their NPS use.

This was lowest among MSM (44%, n=10) and vulnerable young people (54%, n=14) and highest among homeless people (72%, n=41), people with in contact with mental health services (71%, n=52) and people who inject drugs (66%, n=67).[120] Even among the groups with lower rates of missed appointments, almost half of these groups had missed an appointment due to NPS use.

5.6.3 Education and Employment

Loss of education and employment was the second most frequently identified social harm associated with NPS use in the staff survey after debt. Overall, it was identified by 49% (n=91) of staff, and specifically as:

- the primary social harm associated with **mephedrone** use, identified by 23% (n=43) of staff
- a main social harm identified in relation to **synthetic cannabinoids**, identified by 32% (n=58) of staff, and
- a main social harm identified in relation to **benzodiazepine-type NPS**, identified by 25% (n=46) of staff.

Problems with work or employment did not appear as one of the three main harms identified by any group within the NPS survey except MSM, just over half of whom (52%, n=12) identified it as consequence of NPS use. 46% (n=12) of vulnerable young people and 32% (n=23) of people in contact with mental health services who answered the question on social effects of NPS use cited problems with work or employment as a consequence of NPS use. This suggests that while not among the most important effects identified by NPS survey respondents outside the MSM group, problems with work or employment nonetheless affected a notable minority of NPS survey respondents.

[119] Alistair, Mental Health Service User
[120] Statistically significant for all groups

5.6.4 Loss of Tenancy

Loss of tenancy was also frequently identified as a social harm associated with NPS use in the staff survey. It was identified by 49% (n=90) of staff overall, and specifically by:

- 29% (n=54) of staff in relation to the use of synthetic cannabinoids
- 23% (n=43) of staff in relation to benzodiazepine-type NPS, and
- 21% (n=39) of staff in relation to stimulant-type NPS.

Loss of home or tenancy did not appear as one of the top three main harms amongst any group in the NPS survey, being reported by 20% (n=35) of respondents who answered a question on problems caused by NPS overall.

Other social harms mentioned by front line workers in the staff survey were anti-social behavior (particularly in relation to the use of benzodiazepine-type NPS and stimulant-type NPS), for which it was identified as a main harm. In addition, increased aggression, involvement in sex work, the carrying of knives and other weapons due to paranoia and increased involvement in crimes such as shoplifting to fund NPS use were also other reported social harms by respondents to the staff survey.

5.7 NPS Use and Relationships

Taking NPS was seen by both NPS survey and staff survey respondents to affect relationships, particularly damaging relations with family and impacting on ability to fulfill caring commitments. Gender-based and intimate partner harms also emerged as a theme in qualitative data collection.

5.7.1 Relations with Family, Partners and Friends

Respondents to the NPS survey were asked to identify whether they thought the effect of their NPS use had a positive, no effect or a negative effect on key relationships. Across all groups the majority of respondents (47%, n=117) felt that taking NPS had had an overall negative effect on family relationships. Considering responses from each of the five population groups, MSM were the only group where this was not the top negative relationship impact. Qualitative data illustrates that this damage to relationships could extend from minor conflict to being disowned by family:

"My full family disowned me a couple of weeks ago due to legal highs [synthetic cannabinoids], going to prison because I'm stealing things, like stealing £6 out her [mum's] purse, tenners and that – wasn't thinking about that at the time, was just like that's another £6 man and that was a gram.... They've just all disowned me." [121]

Over a third of all respondents to the NPS survey reported experiencing a negative impact on their relationships with partners (37%, n=93). Interviews revealed that damage to relationships with partners often resulted in relationships ending, as John, quoted above, goes on to say:

"My missus is trying to break it up, know what I mean. We did split up there for a while because obviously of legal highs and I almost lost my girlfriend through legal highs." [121]

Across all groups, the third most impacted relationship was friendship, although 63% (n=159) of respondents to the NPS survey reported that taking NPS had had no effect on friendship. Again, the interviews provided an insight into the nature of this type of harm, by highlighting damage to friendships due to either losing interest in friendship:

"You basically just seclude yourself when you've got these [synthetic cannabinoids]. I mean friends and family that I've known for 20 years, I disowned them." [122]

Or becoming isolated from non-NPS taking friends:

"When I started smoking legal highs [synthetic cannabinoids], none of my friends wanted to be with me because I would be at a party and they would all be drunk and I would be sitting there rolling a legal joint and just sparking it up. Everybody would be like, "What's that smell? Is somebody smoking legals in this house?" I'd be like, "Yeah, it's me, what the fuck's your problem?" [123]

5.7.2 Fulfilling Caring Commitments

Struggling to fulfill caring commitments was reported by 26% (n=45) of NPS users who answered the question on social harms of NPS.

[121] John, Mental Health Service User, PWID
[122] Nick, Homeless Person
[123] Luke, Vulnerable Young Person

- Of the 73 **people in contact with mental health services** who provided information on social harms, (33%, n=24) reported struggling to fulfill caring responsibilities
- Of the 102 **PWID** who provided information on social harms, (26%, n=27) reported struggling to fulfill caring responsibilities
- Of the 57 **homeless** people who provided information on social harms, (21%, n=12) reported struggling to fulfill caring responsibilities
- Of the 26 **vulnerable young people** who provided information on social harms, (19%, n=5) reported struggling to fulfill caring responsibilities, and
- Of the 23 **MSM** who provided information on social harms, (17%, n=4) reported struggling to fulfill caring responsibilities.

Staff working with these populations also reported on whether they thought NPS had an impact on their clients' caring commitments. Over half of staff that worked with any group thought that NPS had an impact on fulfilling caring responsibilities (57%, n=105). This ranged from 63% (n=83) of staff working with PWID to 55% (n=45) of staff working with vulnerable young people.

Broken down by substance, difficulties with their clients managing caring responsibilities were reported by:

- 37% (n=68) of staff working with **benzodiazepine-type NPS** users
- 34% (n=63) of staff working with **synthetic cannabinoid** users
- 26% (n=47) of staff working with **mephedrone** users, and
- 23% (n=42) of staff working with **stimulant-type** NPS users.

Where participants discussed children in interviews, they did not talk about difficulties they had managing childcare, but rather the role that parenthood played in decisions to reduce or stop their NPS use:

> Interviewer: What do you think the main things were that got you to stop [using mephedrone]?
>
> *"Losing my son. They were gonna take him off me. And I just couldn't, I wouldn't have been able to live with myself."* [124]

[124] Moira, PWID

5.7.3 Gender-Based and Intimate Partner Harms

For ethical reasons, gender-based and intimate partner harms were not asked about in the NPS survey, however they did emerge as a relationship theme in focus group discussion with front line workers. Concerns raised by staff focused primarily on concerns about consent in the context of chemsex (both among MSM and heterosexual couples), and concerns about the vulnerability of young women in public places due to intoxication, and sex-for-drugs relationships with vendors, particularly in shops were also highlighted.

In addition to these harms which cut across all populations, a number of population-specific harms emerged.

5.8 Population-Specific Harms

Population-specific harms were identified in relation to chemsex among MSM, injecting NPS among PWID and unsupervised opiate detoxification among opiate users. These groups represent small sub-groups of total NPS survey respondents. However, considering them separately provides an opportunity to explore reported consequences of NPS use in more depth.

5.8.1 Chemsex

All MSM who had ever used NPS (n=38) were invited to complete an additional survey section on chemsex. This section of the report focuses on the 29 respondents who completed this part of the survey, which addressed the physical and mental health effects of NPS use during their last chemsex experience.

Of the 29 MSM who answered survey questions on chemsex, 15 reported no change to their mental health either during or after their last chemsex experience:

- Just over half (n=15) reported feeling **happier**
- Just under half (n=14) reported feeling **more confident** during their last chemsex experience, and
- Just under one third reported feeling **regret** (n=9) and **shame** (n=8) after their last chemsex experience.

Physical effects reported were increased sexual function during (n=13) and after (n=1) their last chemsex experience. Under one quarter reported decreased sexual function during (n=7) and after (n=1) their last chemsex experience. Just under half (n=14) reported disturbed sleep after their last chemsex experience. Five reported blackouts during their last chemsex experience, one afterwards, and two both during and after their last chemsex experience.

Disinhibition following NPS use during sex emerged as a theme in interviews with MSM and some heterosexual participants.[125] Interviewees discussed disinhibition leading to unsafe sexual practices. Disinhibition was also described as having an effect on drug choices, and routes of administration, including being injected by others.

> *"At the end when I'm trying to inject myself, so I'm saying 'Can you inject me now?'".* [126]

The feelings of shame and regret noted above were also linked to disinhibition.

> *"I even found myself doing things like, sexually, that I would just not entertain either, you know. Just 'cause I was like, away with it on this drug [mephedrone], you know.... Your inhibitions are just totally gone, and so I did, I found myself in situations that, you know, when I think back, like it does, it makes me cringe."* [127]

Twenty-four MSM answered questions about the social consequences of their last chemsex experience. Over half (n=15) reported no social consequences to their most recent chemsex experience. Slightly under one third (n=7) did identify having spent more money than they intended to. Three participants said that their last chemsex experience had resulted in damage to their relationship with their partner, and one said it had improved it. Two participants stated that they lost friends as a result of their last chemsex experience, in contrast to one participant who made new friends.

5.8.2 Injecting NPS

All PWID who completed the survey (n=141) reported taking traditional drugs, and of these, 97% also used NPS. Of those who used both traditional drugs and NPS, only 35% injected NPS (the remainder used other routes of administration). This section focuses on the 47 respondents who had ever injected NPS and the nine respondents who reported current injecting of NPS at the time of the survey.

Among the nine current injectors, the majority (n=6) did so on a daily basis, an average of five times a day. Arms were the most popular injection site (n=8), but five reported they used multiple sites. All nine current injectors did so intravenously. Two always and four occasionally used vitamin C or citric acid to prepare their NPS.

[125] With the exception of interviews with MSM, this was spontaneously raised by participants.
[126] Thomas MSM
[127] Jessica, Mental Health Service User, PWID

Five out of nine reported sharing their needles and seven reported sharing injecting equipment. Six reported occasionally using without a filter and therefore not removing the impurities from the substance, increasing the risk of injecting related complications.

When asked about their injecting experience, five said they often felt a burning sensation while injecting, and seven reported occasionally having irritation at the injecting site. Six occasionally experienced redness at the injecting site. Seven occasionally missed hits, four occasionally got infections. Seven of the nine never got abscesses and none reported collapsed veins. One of the nine had been hospitalised for their wounds.

5.8.3 Unsupervised Opiate Detoxification

Finally, a theme which emerged in the qualitative data was in connection to unsupervised opiate detoxification. This was most commonly associated with use of ethylphenidate and mephedrone.

Some opiate users described the role of mephedrone or ethylphenidate in their reduced opiate consumption in positive terms, as illustrated below:

> *"Psychologically, you'd forget to take your script and the next minute we were all clean."* [128]

However, staff working with these populations expressed concerns about medically unsupervised withdrawal from opiates and opiate replacement treatment (ORT) with NPS, with one noting a reverse trend back towards opiate use:

> *"Yes a few of our guys after the ethylphenidate ban started using mephedrone and.... it was more expensive and they were also finding it heavy on their chest I think as well. I had reports of them feeling like they were going to have heart attacks and stuff with the mephedrone. So it's kind of gone back to heroin."* [129]

[128] Kimberley, PWID
[129] Lothians Focus Group

5.9 Discussion

There are a wide range of harms that span the use of different NPS. It is difficult to attribute specific harms to specific substances definitively as harms experienced may be in part due to factors such as poly-use or pre-existing health issues. Harms are also interpreted differently (some 'harms' aren't seen as such by some users).

The NPS and staff surveys reveal important differences in perception of the mental health effects of NPS between those who have taken NPS and staff in services. Benzodiazepine-type NPS users identified use with reduced anxiety and increased relaxation. In contrast, staff identified use of benzodiazepine-type NPS with increased anxiety. In line with discussion on motives for use, this can most likely be explained in terms of a concern of experiencing rebound anxiety[130] and other withdrawal effects.[131] This suggests a need to continue developing our knowledge of the consequences of NPS use and the impact of NPS on mental health and wellbeing in order to develop effective treatment responses.

The vast majority of people who have taken benzodiazepine-type NPS and a minority of people who have taken synthetic cannabinoids reported improved sleep. In contrast, improvements in sleep were not recognised as a physical health effect for either substance by staff. In addition, a number of respondents reported that synthetic cannabinoid use led to sleeping difficulties. Qualitative data suggest that these difficulties included both excessive sleep and being unable to sleep. Current research on cannabis use shows that withdrawal from sustained cannabis use can lead to sleeping difficulties[132], suggesting a possible parallel with effects of synthetic cannabinoid withdrawal on sleep.

The risk of overdose with benzodiazepine-type NPS is high, especially when used in conjunction with other substances. This is evidenced by the role of benzodiazepine-type NPS in drug related deaths in Scotland.[133] There are also clear risks in relation to potential patterns for overdose when someone returns to opiate use with a reduced tolerance. These risks are clearly documented with increased rates of overdose following liberation from prison.[134] Both these issues highlight the need for improved information and treatment responses.

There are also specific harms associated with patterns of use and route of administration. This highlights an information need for both NPS users and staff

[130] The emergence or re-emergence of anxiety
[131] NICE guidelines 'Benzodiazepine and Z-Drug Withdrawal; Nielsen (2013) 'Benzodiazepine Withdrawal after Long-Term Use'; Silverman (2016) 'Controlled Substance Management: Exit Strategies for the Pain Practitioner'.
[132] See Vandrey, Smith, McCann, Budney & Curran (2011) 'Sleep Disturbance and the Effects of Extended-Release Zolpidem during Cannabis Withdrawal' on sleep disruption in cannabis withdrawal. See also Bonn-Miller, Babson & Vandrey (2014) 'Using Cannabis to Help you Sleep: Heightened Frequency of Medical Cannabis Use among those with PTSD' on the use of cannabis to promote sleep, and elevated use of cannabis among individuals experiencing post-traumatic stress disorder.
[133] NRS Scotland (2016) *Drug Related Deaths in Scotland - 2015*.
[134] Merrall, E. L. et al. (2010), 'Meta-analysis of drug-related deaths soon after release from prison.'

who support them. Patterns of behaviours such as frequent injecting or equipment sharing can lead to injecting related injuries including abbesses[135] or risk of contracting blood borne viruses such as HIV and Hepatitis C.[136]

Finally, this chapter has also shown that there are specific harms associated with population-specific groups such as chemsex amongst MSM, which impact on people who use NPS. This poses a challenge for services to engage with populations not in treatment but whose NPS use and associated behaviours are likely to result in significant risks to those who use NPS and wider public health.

[135] Lafferty, C. et al. (2016) The experience of an increase in the injection of ethylphenidate in Lothian April 2014–March 2015

[136] Roy, K.M. et al. (2007) Hepatitis C virus infection among injecting drug users in Scotland: a review of prevalence and incidence data and the methods used to generate them. *Epidemiology and Infection*

6. Treatment and Legislative Responses

6.1 Introduction

This final findings chapter addresses the views of people who have used NPS and staff who support NPS users in treatment. It explores how people who have taken NPS utilise available treatment services, where they currently get information on NPS and what changes they would like to see in available treatment. It finishes with a brief discussion of views on the Psychoactive Substances Act 2016.

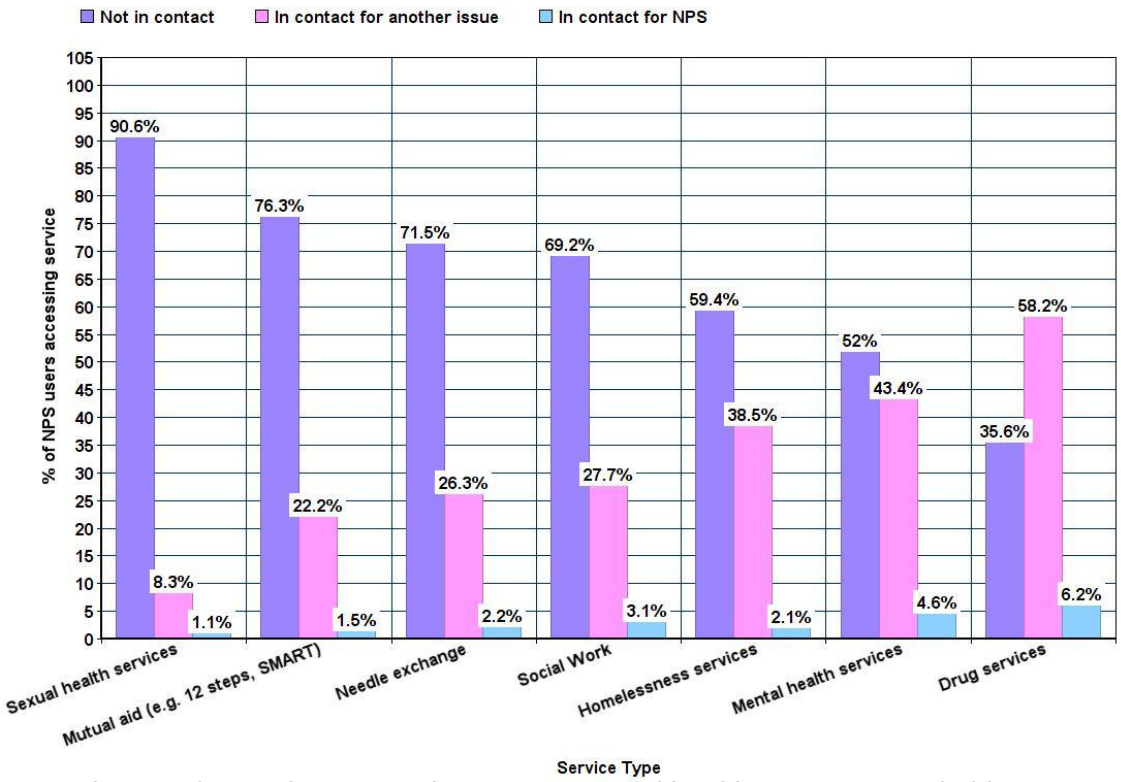
6.2 Contact with Services

Reflecting the fact that over half of the data collection was carried out through services (59%, n=251) current contact with services was high across all groups. However, contact specifically related to NPS use was low. Only 11% (n=26) of participants were in contact with one or more services relating to their NPS use.

6.2.1 Contact with services: service type

Fig. 6.1 displays the services that people who had used NPS were most in contact with. The most commonly accessed were: drug services (58%, n=113), mental health services (43%, n=85) and homelessness services (39%, n=74). The least utilised services were sexual health services (8%, n=15), mutual aid (22%, n=44), needle exchange (26%, n=47) and social work (28%, n=54).

Fig. 6.1: ***Service use by people who have taken NPS by service type***



Base (respondents who reported NPS use: sexual health n=180, mutual aid n=198, needle exchange n=179, social work n=195, homelessness n=192, mental health n=196, drug n=194)[137]

6.2.2 Contact with Services: by group

Rates of service use also varied by group. This section outlines service use in relation to each of the key groups who participated in the NPS survey.[138] Table 6.1 displays service contact data by group.

[137] Number of respondents varied per question which is indicated as n=

[138] Some of the target groups have cross over with other groups e.g. homeless and in contact with mental health services and so are therefore reported under both groups

Table. 6.1: *Service use by people who have taken NPS by service type*

Group	NPS related service contact	Type of service accessed for NPS	Not in contact with service regarding NPS use	Type of services accessed (not NPS related)	p-value
MSM (n=32)	6% (n=2)	Mutual Aid (6%, n=2) Drug Services (4%, n=1) Sexual Health (4%, n=1)	94% (n=30)	Mutual Aid (10%, n=3) Drug Services (25%, n=7) Sexual Health (30%, n=8)	(p<0.05) (p<0.001) (p<0.001)
Homeless (n=74)	11% (n=8)	Drug Services (11%, n=8) Homelessness (3%, n=2)	89% (n=66)	Drug Services (69%, n=50) Homelessness (68%, n=49)	(p<0.001) (p<0.001)
PWID (n=127)	13% (n=16)	Drug Services (7%, n=8) IEP (3%, n=4) Homelessness (1%, n=1) Social Work (0%, n=0)	87% (n=111)	Drug Services (82%, n=98) IEP (42%, n=47) Homelessness (50%, n= 58) Social Work (34%, n=40)	(p<0.001) (p<0.001) (p<0.005) (p<0.05)
PWID (NPS-injectors) (n=42)	19% (n=8)	IEP (11%, n=4) Drug Service (5%, n=2) Homelessness (0%, n=0)	81% (n=34)	IEP (51%, n=19) Drug Services (79%, n=30) Homelessness (67%, n=24)	(p<0.001) (p<0.05) (p<0.01)
Vulnerable Young People (n=35)	14% (n=5)	Drug Services (7%, n=2) Other (10%, n=1)	86% (n=30)	Drug Services (30%, n=8) Other (30%, n=3)	(p<0.01) (p<0.05)
Mental Health Service Users (n=90)	20% (n=18)	Mental Health (10%, n=9) Social Work (6%, n=5) Drug Services (6%, n=5)	80% (n=72)	Mental Health (90%, n=85) Social Work (41%, n=36) Drug Services (74%, n=67)	(p<0.001) (p<0.001) (p<0.001)

6.2.3 Contact with Services: Reasons for not accessing support

Of the 204 NPS survey respondents who reported that they were not currently in touch with services about their NPS use, 34 provided further information on their reasons for not accessing support.

The most common reasons, which were consistent across all groups, were:

- I don't have a problem (n=18)
- I don't need help (n=9)
- I am in recovery (n=9)
- I don't know where to go for support (n=3)
- There is nothing available for people who use legal highs (n=3)
- I don't want to be seen there (n=3)

6.2.4 Use of emergency services

The survey data suggest that in the main, people who have taken NPS did not consider their NPS use as a reason to contact services. However, considerable numbers across all groups did rely on emergency services such as Accident & Emergency (A&E) and ambulances as a result of their use as described below in Table 6.2. Across all respondents:

- 32% (n=77) had called an ambulance for another person who had taken NPS, and

- 23% (n=55) had had an ambulance called for themselves.

Table 6.2*: use of emergency services in relation to NPS use*

	Total	**YP**	**MH**	**Homeless**	**PWID**	**MSM**
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Had an ambulance called for themselves as a result of NPS use	55 (23%)	12 (35%)	28 (30%)	23 (31%)	34 (25%)	6 (19%)
Called an ambulance for another person affected by NPS use	77 (32%)	12 (35%)	40 (45%)	29 (39%)	51 (38%)	6 (19%)
Attended A&E as a result of NPS use	63 (26%)	14 (41%)	34 (38%)	23 (31%)	38 (30%)	8 (26%)
Been admitted to hospital for more than one night as a result of NPS use	44 (18%)	5 (15%)	21 (23%)	14 (19%)	29 (22%)	7 (22%)

Considering emergency service use by group (also shown in Table 6.2), mental health service users[139] were most likely to call an ambulance for someone else (45% vs., group average of 32%), and MSM the least likely (19%).[140]

Looking specifically at PWID, and comparing those who inject NPS and PWID as a group more widely, some differences emerged. Table 6.3 highlights that NPS injectors were more likely than the wider PWID group to have had an ambulance called for themselves (40% vs. 25%)[139] and for another person (48% vs. 38%).[140]

Table 6.3: *comparison of PWID respondents' use of emergency services for NPS use*

	PWID – NPS injectors		**PWID – all injectors**	
	N	**%**	**N**	**%**
Had an ambulance called for themselves as a result of NPS use	18	40	34	25
Called an ambulance for another person affected by NPS use	21	48	51	38
Attended A&E as a result of NPS use	20	48	38	30
Been admitted to hospital for more than one night as a result of NPS use	15	35	29	22

Looking at figures from both tables here, overall, rates for visiting A&E in relation to NPS use were high amongst respondents considered as vulnerable young people (41% vs. wider rate of 26%)[140] and respondents who utilise mental health services (38%)[140]. A&E attendance was also higher for NPS injectors (48%)[139] than injectors more generally (30%), as was hospital admission for more than one night (35% of NPS injectors vs. 22% of general injectors, and a wider rate of 18%)[140].

6.3 Providing Information and Support

6.3.1 Sources of information used by people who use NPS

216 NPS survey respondents answered a question on their sources of information about NPS.

- 31% (n=67) had not tried to find out about NPS at all
- 32% (n=70) spoke to friends, family and people they used with

[139] p<0.01
[140] p<0.05

- 19% (n=41) sourced information from online forums
- 16% (n=35) had accessed information leaflets
- 16% (n=34) had talked to a drug service
- 16% (n=34) had obtained information on NPS from TV documentaries, and
- 12% (n=27) had sourced information from online social media.

As many participants cited documentaries as a source of information (16%, n=34) as speaking to drug service staff (16%, n=34) or sourcing information from leaflets accessed in drug services (16%, n=35).

These figures reflect findings from the interviews, where participants stated that the main sources of information about NPS were friends or people that participants used with (*"I had asked him what sort of, you know, what would I feel etc"*)[141], and online forums *("I do a lot of reading online if I was ever going to get something"*)[142].

Leaflets from drug services were also identified in qualitative interviews, although this tended to be where people were already engaged with services:

> *"When I'm along at the needle exchange I'll pick up the leaflets that they've got sitting [there]."* [141]

Watching documentaries as a source of information and awareness of NPS harms was a theme that also came up in qualitative interviews:

> *"I watched a documentary on it on [TV programme], I don't know if you've ever watched it, but like about four or five times a night paramedics were getting called out for folk that were like having a legal high."*[143]

When discussing documentaries, interviewees often focused on the emotional impact the stories presented had on them, and the way they prompted them to assess their own practice in relation to what they had seen on the screen:

> *"I watched this legal highs documentary that was really insightful and I really believe that had a lot to do with helping me because there was this couple… I was like that girl, and I was watching it with him and he looked like him as well, he really looked like him."* [144]

[141] Alexander, MSM
[142] Michael, Mental Health Service User
[143] Samuel, homeless, vulnerable young person
[144] Paula, homeless, mental health service user

Documentaries on television were a popular source of information, and one which appeared to resonate emotionally with survey participants in a way that other forms of information sharing did not.

6.3.2 Providing Information: Service provider knowledge of NPS

The interviews and focus groups also gave an insight into the views of staff and those who had taken NPS about levels of NPS-specific knowledge within drug services. Interviews with participants who had taken NPS revealed a strong sense that drug services lacked sufficient knowledge of NPS to provide adequate information and support.

A typical response was:

> *"They [drug service] didn't know enough about the synthetics [synthetic cannabinoids]. They knew bits and pieces maybe about powders and pills and they didn't know enough about synthetics to help me."* [145]

Both staff participating in focus groups and interviewees felt that drug services overall had less of an understanding of NPS than other, more traditional drugs:

> *"Traditionally we'll say 'Heroin: this is the side effects, this is this, this is that, this is the withdrawal symptoms…' but because there's such a plethora of different chemicals and changing chemicals, what are you going to do?"* [146]

> *"It's just recently everybody seems to [be] taking them [NPS] so they [services] probably don't ken much about them. The likes of kit [heroin] and all that, they sort of know the stages, like what you're going to be like if you never had the stuff, but with that [NPS] they don't really ken [know]"* [147]

This was understood by staff members as stemming from a lack of access to up-to-date information and training, but, critically, also from the continuously evolving nature of NPS:

> *"The type of NPSs out there, it's forever evolving, forever changing and it's being able to access up to date information".* [148]

[145] Kieran, Mental Health Service User
[146] GGC Focus Group
[147] Nicola, PWID
[148] GGC Focus Group

Focus group participants expressed concerns about their own lack of knowledge, and consequent difficulties in providing reliable information to service users. At the same time, NPS survey participants did not see drug services as the only (or indeed primary) source of information on NPS.

6.3.3 Providing Support: Client disclosure of NPS Use

Three quarters of surveyed staff across all services reported that they always or often asked clients about NPS use when they first presented (75%, n=131). An even higher proportion probed for NPS use when asking clients about their drug and alcohol use more generally (85%, n=149). Building on this initial contact with clients, respondents to the staff survey reported that they were always or often likely to enquire about NPS use at routine appointments (60%, n=100), and at review meetings (63%, n=105). Within the survey it was not possible to identify exactly how workers asked about NPS and it is important to bear in mind that there is some confusion among people who use NPS about what is considered a NPS[149]. This should be considered when drawing conclusions about disclosure of NPS use.

In focus group discussion, service providers described a reluctance from clients to disclose NPS use, and discussed a range of challenges faced in developing and delivering services to support people who are experiencing problems related to NPS use. Most focus group participants described asking about NPS use directly, although some, while doing outreach work, opted for more indirect approaches. The key theme that emerged from focus group discussion was the importance of asking directly. A shared perception across focus groups was that users rarely disclosed their NPS use without being asked:

> *"We've actually got to ask that extra question to say do you use NPS or legal highs as they would know it? Because if we don't they don't tell us".*[150]

This is significant given NPS users' responses that they did not disclose NPS use at drug services.

For staff within most services (social work being a notable exception), direct questions provided positive results, with participants across a range of services explaining that *"I usually just ask them directly and they will just say yes"* [151] or that *"Mine will tell you".*[152] When asked directly, outside of social work contexts, many people who use NPS appeared happy to disclose their use, but did not routinely volunteer that information. The context in which this most frequently occurred was as part of a discussion about drug and alcohol use more generally.

[149] SCJS (2016) *Scottish Crime and Justice Survey 2014/15: Drug Use*.
[150] Lothian Focus Group
[151] GGC Focus Group
[152] Highlands Focus Group

6.3.4 Providing support: Client-service user relationships

Again, the interviews and focus group data provided a more detailed insight into the views of staff and people who had taken NPS. This suggested that services sometimes struggled to support their clients in the context of NPS' fast-moving nature and consequent lack of easily accessible, up-to-date information for staff. Some focus group contributors found that this led to difficulties providing services either directly or through signposting. However, others described strategies which focused on playing to organisational strengths:

> *"We've certainly had to adapt our service because of the prevalence of NPS and the approach we take is we'll use Motivational Interviewing then we'll look at building a relapse prevention strategy with them, look at other supports you can put in place…. With other drugs there is treatment pathways that you can go down, whereas for us we've got to rely on the skills within the team to try and manage that and get them to take control of it*." [153]

However, in common with the popularity of documentaries as a source of information which resonated in particularly emotional (rather than safety) terms, interviewees who made suggestions about how to improve services emphasised not particular treatment approaches, but rather the importance of meaningful relationships between staff and service users, and spoke highly of individual workers (*"My worker, she really takes her time and she'll get to the bottom of a problem"*)[154] and the importance of ongoing relationships:

> *"Keeping the same support worker because there's nothing worse telling your story to one person and getting it changed and having to say it again"* [155]

> *"[Support service] was a safe place to go. But they didn't…they couldn't educate me on the legal highs. But the people in there were great. They saved my life."*[156]

This is consistent with other research which shows that 'alliance' (the bond between client and therapist) is an important factor in successful therapeutic encounters[157].

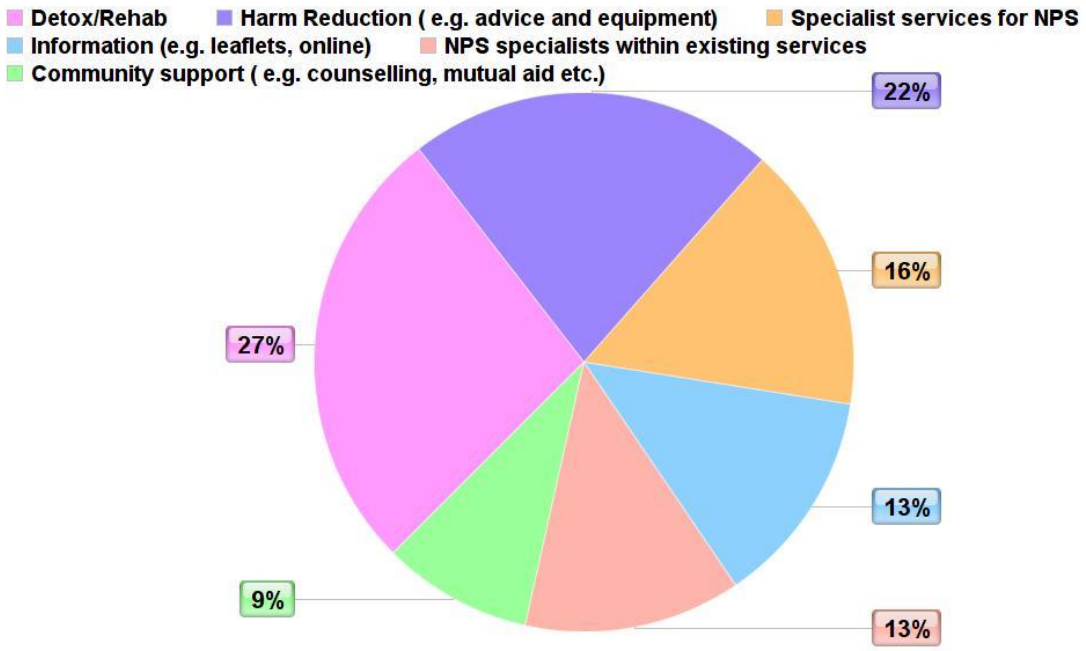
[153] Lothian Focus Group
[154] Andrea, Mental Health Service User, PWID
[155] Claire, homeless, Mental Health Service User, PWID
[156] Keiran, mental health service user
[157] Wampold (2015) 'How Important are the Common Factors in Psychotherapy? An Update'; Zilcha-Mano (2016) 'New Analytic Strategies Help Answer the Controversial Question of Whether Alliance is Therapeutic in Itself'.

6.4 Improving Services

6.4.1 Service Development: NPS Survey respondent perceptions

246 of NPS users responded to the question **'Which one of the following do you think is the most important to be offered to NPS users'** (Figure 6.2).

Fig. 6.2: *NPS survey respondent opinion on the key area for service development*



Base: n=246

As illustrated in Figure 6.2 the most popular suggestion for improving services was greater provision of detox and rehabilitation services (27%, n=66). This was the number one priority across all groups except MSM, who prioritised harm reduction:

- Of the 137 **PWID** who replied 53 (39%) felt detox/rehabilitation was the most important
- Of the 94 **people in contact with mental health services** who replied 32 (34%) felt detox/rehabilitation was the most important
- Of the 75 people **homeless** people who replied 28 (37%) felt detox/rehabilitation was the most important
- Of the 38 **vulnerable young people** who replied 10 (26%) felt detox/rehabilitation was the most important, and

- Of the 38 **MSM** who replied 6 (16%) felt detox/rehabilitation was the most important.

Dedicated NPS specialist services were welcomed by many:

- Of the 94 **people in contact with mental health services** who replied, 19 (20%) felt NPS specialist services were the most important, and

- Of the 75 people **homeless** people who replied, 14 (19%) felt NPS specialist services were the most important.

Harm reduction (e.g. advice and equipment) was popular amongst respondents who reported **injecting drugs** and **MSM**. This was the case for 27 (20%) of the 137 PWID who responded to this question and 8 of the 38 (21%) MSM group.

Specialist staff within existing services was also popular amongst some respondents who reported injecting drugs and amongst vulnerable young people:

- Of the 137 **PWID** who replied 14 (10%) felt a specialist within the existing service was the most important, and

- Of the 38 **vulnerable young people** who replied 8 (21%) felt a specialist within the existing service was the most important.

The least popular suggestion for improving services was community support (such as counselling and mutual aid), with less than 10% of all NPS survey respondents identifying it as an effective means to support people affected by NPS use.

6.4.2 Service Development: Staff perceptions

Respondents to the staff survey reported a range of resources in their services[158]. These included:

- staff who had basic training in NPS (63%, n=115)
- one-to-one counselling (48%, n=89), and
- leaflets (48%, n=88).

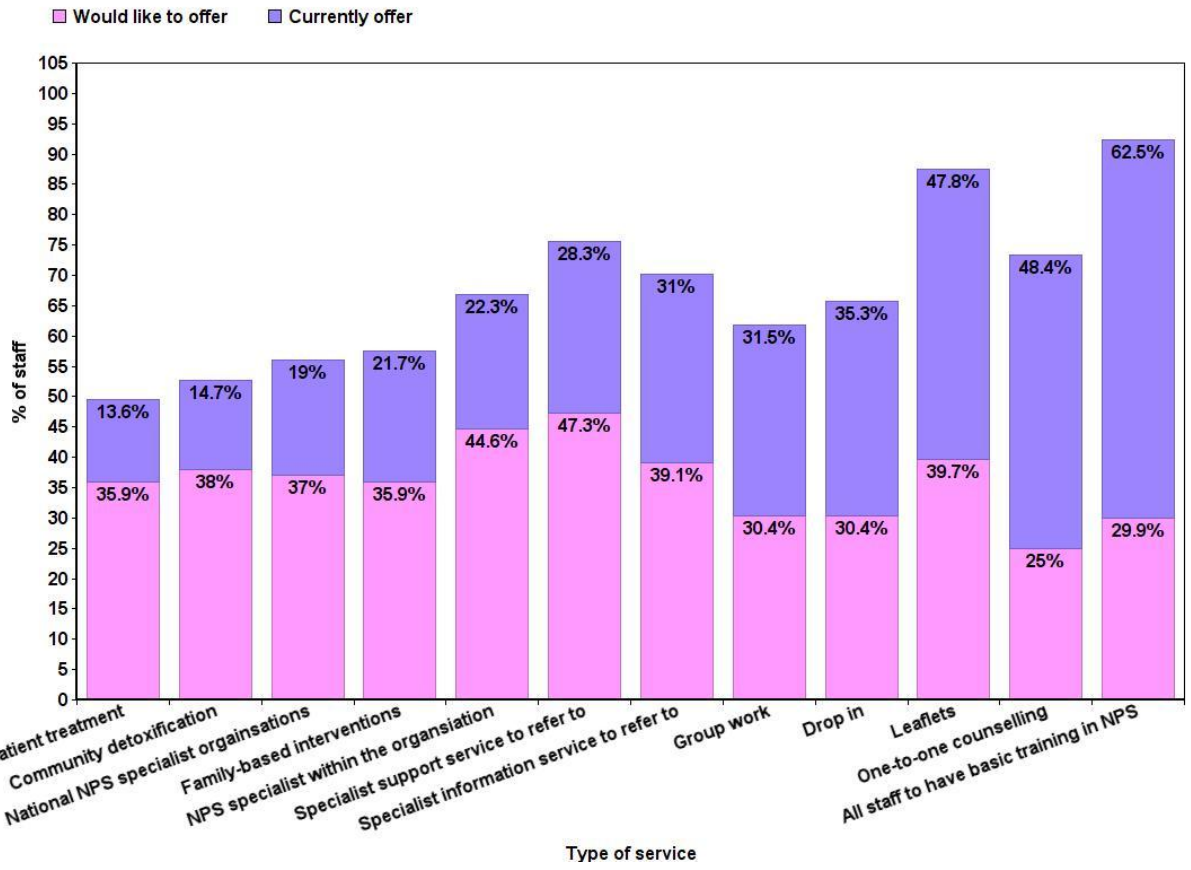
This suggests there are some potential areas of mismatch between what people who use NPS want and what is currently available or accessible to them. Staff reported that in their service, they would like to be able to:

- refer their clients to a local specialist service (47%, n=87)
- offer an NPS specialist within the service (45%, n=82)
- offer leaflets (40%, n=73).

[158] Staff could select numerous options therefore the percentages will not total 100%

This suggests a much stronger overlap between what NPS survey respondents consider to be important, notably dedicated specialist services and specialists within existing services, and what staff would like to be able to offer. Figure 6.3. gives a breakdown of what staff currently offer and would like to offer.

Fig. 6.3: *Types of services: staff reports of services currently provided and would like to provide*



Base: (n=184)

The barriers staff identified to delivering optimal services were primarily:

- Lack of specialist NPS detoxification services (45%, n=83) (overlapping strongly with NPS survey suggestions for improving treatment)
- Lack of specialist NPS treatment services (42%, n=78) (again overlapping strongly with suggestions made by NPS survey respondents for improving treatment), and
- Funding cuts (44%, n=81).

Overstretched resources led one interview respondent feeling under-supported in his primary service of choice:

"Here at [Sexual health charity] they're very stretched. They might have time to see me once a week but with bipolar, I'm sorry with BPD, you're all over the place and it might strike you in the middle of the night" [159]

6.4.3 Improving Services: access to information

Access to up-to-date information emerged as a key theme in both interviews and focus groups. One solution proposed by the GGC focus group was the development of an app for use by both services and users, which could be easily updated:

"Participant 1: I think if people are reluctant to come forward and use addiction services then they need to focus online for support. Most people have got a PC or a tablet or a phone and if it's not a traditional kind of group of people that would want to access services face-to-face then they need to put online resources, whether that's education, information, whether it's forums where people can share their personal experience or a variety of that.

Participant 2: Or an App.

Participant 1: That's the way forward.

Participant 2: I think that's brilliant, get an App and just do that and they're in it. That's what they need." [160]

Suggestions such as this would not only provide a resource for staff and the large majority of NPS survey respondents who are not accessing services for their NPS use, but also provide information in an easily accessible way. As one young person noted in relation to poster campaigns:

"The bulk of people I knew that take it [synthetic cannabinoids] were mostly always hanging about the town and the only places you see stuff for drugs and that are hospitals and community centers and stuff like that, but places we hang about like McDonalds and that… there's no really that much about there that they can get drug advice". [161]

These views suggest a need to continue and potentially expand outreach work, as well as to explore other new technologies and mediums to engage such as 'apps', and other online resources. However, the NPS survey illustrated that uptake of

[159] Graeme, MSM
[160] GCC Focus Group
[161] James, vulnerable young person

government-funded online resources such as FRANK and Know the Score was low amongst people who had taken NPS. Only 6% (n=13) reported utilising these resources, compared to 19% (n=41) who obtained information from online peer-led forums. Thus while the development of an app or online resource would likely be of interest to some people who use NPS, and may be of value to staff working with this specific population, it may not attract the numbers that peer-led resources do.

6.5 The Psychoactive Substances Act

The Psychoactive Substances Act (PSA) scheduled for implementation in April 2016 came into force on 26 May 2016, after all interviews and focus groups had been conducted and the survey period was nearly complete. Therefore, the qualitative data and majority of survey responses are from a perspective of anticipated change.

6.5.1 Introduction of PSA: NPS Survey Respondent Perspectives

As outlined in Chapter 4, knowledge of the legal status of specific substances was not consistent, and 6% (n=26) of NPS survey participants stated that they did not know if they took NPS or not. Similarly, many interviewees appeared unaware of the then-forthcoming PSA:

> Interviewer: There's a ban coming in, in April.
>
> "*Peter: Ooft, I don't believe that man, it only took them about 4 year…. I think that's an amazing idea."* [162]

Or unclear about what it would mean:

> Interviewer: Do you know much about the ban that's coming in?
>
> *"Tiffany: All I know is that there's a blanket ban on all legal highs, whatever that means, I don't know"* [163].

Any discussion of views on the impact of the legislation must therefore be caveated with an acknowledgement that not all participants were fully aware of issues surrounding legality of NPS.

249 NPS users provided information on how the PSA might impact on their personal NPS use. Over half of NPS survey participants (57%, n=141) reported that the legislation would have no impact. This opinion was consistent across all

[162] Peter, vulnerable young person
[163] Tiffany, Mental Health Service User

groups but was highest amongst MSM respondents, with three quarters expecting the PSA to have no impact (74%, n=28)[164].

However of the 249 people who responded to the question on possible impact, others anticipated that in terms of their personal use they would:

- move or return to using traditional drugs (29%, n=73)
- buy from a dealer (21%, n=52).

A further 7% (n=17) thought that they would try something else. Only 6% (n=15) thought that they would stop using NPS altogether[165].

Despite low levels of people reporting their expectations of stopping NPS use, the ban was eagerly anticipated by some in the interviews (*"I'm just hanging on 'til April [2016, then expected start of the ban]. Once that's out the shops, I don't know anybody I can go to"*)[166].

Other anticipated effects of the PSA related to availability (see Fig.6.4).

248 NPS users responded to a question on where they sourced NPS:

- 45% (n=112) reported purchasing from **shops**
- 37% (n=91) reported purchasing from **dealers**
- 34% (n=83) reported purchasing from **friends or family**, and
- 14% (n=34) purchased NPS **online.**

The primacy of shops as a source of NPS was consistent across groups, with MSM buying from shops at a slightly lower rate (43%, n=13), compared with people who inject drugs buying from shops at a slightly higher rate (48%, n=67, compared to the average of 45%).[167]

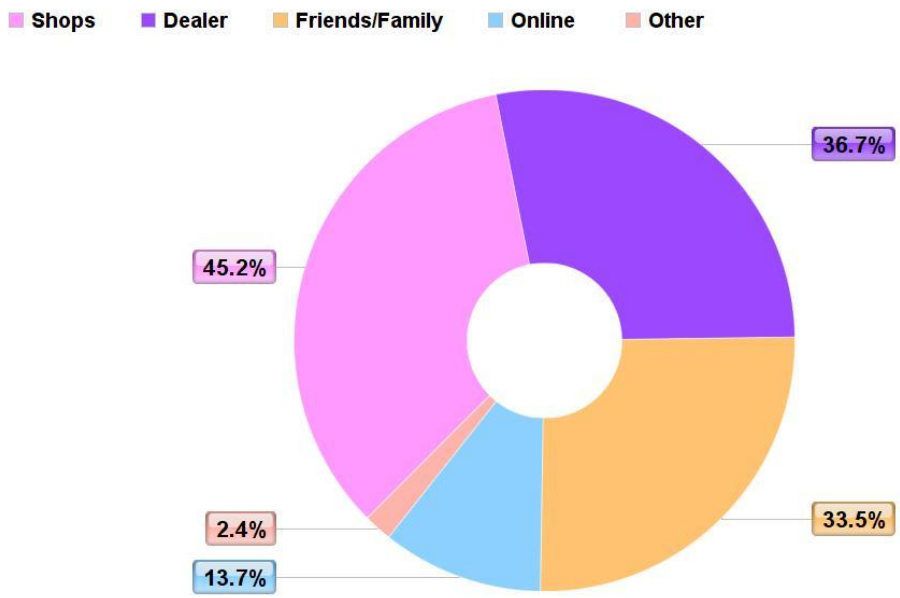
[164] $p<0.05$

[165] This totals 127% as participants were invited to tick multiple boxes.

[166] Kieran, Mental Health Service User

[167] $p<0.05$

Fig.6.4: *Source of NPS*



Base (n=248)

One consequence of the PSA having now come into effect is that it is an offence for shops to sell NPS[168]. Many areas of Scotland had already instigated headshop closures locally through Trading Standards action at the time of data collection. 41% (n=75) of staff surveyed reported that this had already occurred in their area, but a further 37% (n=68) did not know the current status of headshops locally.

When asked about the impact of the PSA on sourcing NPS, 21% (n=52) thought they would buy NPS from a dealer, and 7% (n=18) thought they would buy NPS online. Buying from a dealer was highest among homeless people (33%, n=25)[169] A potential risk of this was highlighted in interviews with regards to purity:

> *"When the ban comes in, I mean people are going to sell you anything and tell you it's legal highs and you're not going to know any difference"* [170]

This suggests that based on anticipated future behaviour, vulnerable groups who take NPS are more likely to continue to use NPS and source either from dealers or directly online than stop use. This entails some risks for people who use NPS:

[168] Home Office (2016) *Psychoactive Substances Act 2016: Guidance for Retailers*; BBC (2016) 'Legal Highs Ban Comes into Force across UK';
[169] $p<0.01$

[170] Tiffany, Mental Health Service

"How would you regulate that…? Well it will just go underground then. It's got to. Prohibition, know what I mean? Come on. Then it would be dangerous. Think about it. I'm saying this to the Scottish Government, here and now, if you're going to ban these then it's going to go underground and it's going to get even more dangerous than it is the now." [171]

6.5.2 Introduction of PSA: Staff views

The staff responses shared some similar themes with NPS survey responses. Around half of staff who responded to the survey anticipated that their clients would continue to take NPS (56%, n=103), but would shift to sourcing via dealers (35%, n=64), and online (49%, n=91). However, a much higher proportion (46%, n=84), thought clients would return to using traditional drugs.

A final consequence of the PSA coming into effect, and potentially driving NPS use underground, was raised:

"It's hard enough now to get a disclosure, you know, and to maybe put some support in place is going to be worse, people will not disclose, you know and it could become more problematic by the time it comes to that. I don't think it's going to work." [172]

As discussed earlier disclosure was already felt by many staff to be a challenge to service delivery and one which some felt risked becoming even more difficult after the PSA came into effect.

6.6 Discussion

Rates of contact regarding NPS use were particularly low, indicating that people who are using drug treatment and other services, are not talking to these services about their NPS use.

Low levels of contact with social work, mutual aid, and drug, homeless, mental and sexual health services were reported. Use of ambulance and A&E services related to NPS use was considerably higher, particularly among people who inject drugs. It should also be noted that 36% (n=69) of NPS users who answered treatment related questions were not in contact with drug services at all.

The low levels of contact with services for NPS suggests that there is a need not only to raise the profile of available NPS support within services, and to work to develop that support, but also to ensure that staff are adequately trained to ask

[171] Gary, Homeless, Mental Health Service User
[172] GGC Focus Group

about and respond to NPS use. This should include staff working in emergency care given the rates of NPS users that reported presenting at emergency departments. As identified in the staff focus groups, asking directly about NPS use was important, and may involve reviewing standard assessment paperwork and procedures, which often ask about NPS use as part of a drug history. A desire for specialist treatment responses was highlighted by both NPS and staff survey respondents. What those services could look like and what adaptions could be made to existing services may be useful to explore.

Sources of information and the fast-changing nature of NPS highlighted information needs for both staff and NPS users. There is already a cohort of people who use NPS who derive significant value from providing clear, detailed accounts of use to facilitate safe use among others[173]. Such a population of users represent a potential resource for others and demonstrate a peer education model that could be applied for other groups. Leaflets were as popular a source of information as talking to staff, and also popular were documentaries, which highlighted that a range of information forms could be useful for different groups. Research conducted by drug charity Lifeline into awareness campaigns, found that use of film in the form of cartoons was highlighted by service users as a potential way of reaching people including vulnerable young people and those with literacy barriers.[174]

Some services struggled around providing effective NPS specific treatment options, and focused on existing approaches such as Motivational Interviewing. Interviewees who had taken NPS, by contrast, did not express views on this but rather emphasised the importance of continuity of care between service user and service provider and the impact of individual key workers. This is confirmed by other studies, which find appropriate treatment, and finding staff motivating, are a key element in satisfaction with treatment by service users.[175]

Finally, NPS and staff survey respondents articulated broadly similar views on the impact of the Psychoactive Substances Act. Both groups saw NPS users shifting back to or towards traditional drug use, and among those who maintained NPS use, a shift from purchasing via shop to purchasing via dealers. Few NPS survey respondents anticipated moving to buying online, which is in contrast to what might be expected from recent research into drug purchases on the dark net[176] or staff expectations. Many of the participants here were unstably accommodated and therefore most likely lacking Internet access to successfully navigate online drug purchases.

[173] Soussan & Kjellgren (2016) 'The Use of Novel Psychoactive Substances: Online Survey about their Characteristics, Attitudes and Motivations'.
[174] Newcombe, R (2010) 'Wobbled Up' The illicit use of diazepam in Redcar.
[175] Zoe Slote Morris & Maria Gannon (2008) Drug misuse treatment services in Scotland: predicting outcomes
[176] Dolliver (2015) 'Evaluating Drug Trafficking on the Tor Network: Silk Road 2, the Sequel'; Martin (2014) *Drugs on the Dark Net: How Cryptomarkets are Transforming the Global Trade in Illicit Drugs*.

Online drug markets often rely on buyer feedback to rate vendors, ensuring an overall emphasis on quality and purity[177] to maintain good vendor reputation. This eBay-like approach is not adopted in street sales, where buyers are much more vulnerable to the inclusion of impurities in or 'cutting' of the substances purchased, and even the substance purchased not being what they expected to buy[178]. This could be a significant consequence of the shift from purchasing primarily via shops to dealers amongst the populations discussed here.

[177] Martin (2014) notes that where vendors do sell less pure substances, they often state this explicitly, and clearly distinguish between 'high-grade' and 'sociable' standard drugs, with this distinction reflected in the price.

[178] Leffler, Smith, de Armas & Dorman (2014) 'The Analytical Investigation of Synthetic Street Drugs containing Cathinone Analogs'; Miserez, Ayrton & Ramsey (2014) 'Analysis of Purity and Cutting Agents in Street Mephedrone Samples from South Wales'.

7. Discussions and conclusions

This study builds our understanding of the use of NPS amongst key vulnerable groups in Scotland. Based on the findings in this study, this section outlines a number of key learning points for further discussion and consideration.

7.1 Prevalence

Key learning point 1:

- *Database tools such as DAISy should be adapted and in the case of needle exchange data collection, standardised, to include specific questions relating to NPS use, this may include individual NPS names or categories. Training for frontline workers in how best to apply these tools should be incorporated in this process.*

The findings from this research suggest use amongst vulnerable populations is likely to be far higher than in the general population, where NPS use is relatively low, although somewhat higher amongst young people.[179,180] However, vulnerable young people and MSM were the more challenging groups to engage in this study. Additionally, access to some rural areas was limited. In order to develop a more detailed picture of NPS use in Scotland, more focused exploration of specific issues within these target groups and regions may be required.

In order to develop robust estimates of NPS use there needs to be an improvement in data collection within services. The new database for drug and alcohol services currently being developed (Drug and Alcohol Integrated System – DAISy) provides an opportunity to collect reliable data provided staff are enabled to undertake thorough initial assessments. Similarly needle exchange data has the potential to provide useful prevalence data, again provided staff are appropriately equipped to encourage accurate disclosure of NPS use.

Any training on data collection tools should focus on how accurate and reliable information can be collected either at initial assessment or subsequently. Part of this will involve reassuring services users that honest responses will not hinder their access to certain services and that honest answers will help ensure the appropriate care package is put together.

[179] SCJS (2016) *Scottish Crime and Justice Survey 2014/15: Drug Use*.
[180] SALSUS (2016) *Drug use Report 2015*

7.2 Motives for use

Key learning point 2:

- *Motives for use should be identified in assessments and reviews with service users and used to inform care plans undertaken by support services and frontline staff.*

This research highlighted that the motives for NPS use varied across the different types of NPS, although it was clear that ease of access, price, curiosity and pleasure were common drivers. This is similar to findings from other literature such as Global Drug Survey.[181]

A better understanding of these motives for NPS use and how they may vary based on population groups and NPS type can help to inform interventions by services. In particular, there may be benefits to targeted interventions for people who intend to continue using, reduce use and for those who wish to stop using. Approaches such as Motivational Interviewing already include offering clients a menu of options, which would take account of the different goals NPS users may have.[182]

Perception of harms and health benefits and how these related to motives for using are also useful to consider. For example, use of benzodiazepine-type NPS and experiencing sleep benefits may suggest a particular need to address possible motives such as self-medication.

It was also notable that legal status did not appear to be a key motive for use within this study; this is again in line with findings by the Global Drug Survey.[183] Taken alongside the findings from Chapter 6, which showed that the majority of respondents to the NPS survey did not anticipate the Act impacting on their NPS use, this suggests that NPS are likely to continue to be a feature of substance use patterns amongst these vulnerable groups.

7.3 Consequences of use

Although some positive consequences for use were identified, harms for NPS use shared similar themes to other existing literature, which identifies a range of mental health, physical health and social harms.[184]

[181] Winstock, A (2012) Global Drug Survey 2012
[182] David B. Rosengren (2009) Building Motivational Interviewing Skills: A Practitioner Workbook
[183] Winstock, A (2012) Global Drug Survey 2012
[184] Home Office (2014) New Psychoactive Substances Review, report of the expert panel

Mental health harms

Key learning point 3:

- *Greater partnership working between substance use and mental health services and a review of care pathways for those with substance use and mental health difficulties should be considered.*

Harms to mental health were the most commonly reported consequences of NPS use, and have been the subject of recent research on acute hospital admissions.[185] With a high proportion of NPS survey respondents in contact with mental health services either currently or in the past, the risks of further exacerbating mental health problems are high and need to be considered within any treatment settings where people are likely to be presenting with both substance use and mental health difficulties. Better collaboration and partnership working between mental health services and drug services will assist in better care of this population.

Furthermore, use of NPS to manage mental health, particularly anxiety, emerged in relation to those using benzodiazepines-type NPS, which may suggest escape coping, or long-term, non-medically supervised use. This highlights the need to better understand the relationship between NPS use and mental health and a potential need for a dedicated treatment response to sustained self-prescribed benzodiazepine use and anxiety. All these areas present a need to develop the care pathways for people with substance use and mental health difficulties.

Physical health harms

Key learning point 4:

- *Assessments within key services should ensure they cover a range of physical health areas including sleep management.*

Sleep problems were one of the most commonly reported physical harms across all NPS. However, people who had taken synthetic cannabinoids and benzodiazepine-type NPS also reported positive, sleep-promoting effects of use. This outlines a challenge for treatment providers in motivating service users to address substance use where it is used to facilitate sleep. Other studies have shown the correlation between sleep and drug use in that sleep problems can be a trigger for drug use and vice versa.[186] Many treatment services offer support and

[185] Stanley et al (2016) 'Use of novel psychoactive substances by inpatients on general adult psychiatric wards'; see also, Martinotti, Lupi, Acciavatti, Cinosi, Santacroce, Signorelli, Bandini, Lisi, Quattrone, Ciambrone, Aguglia, Pinna, Calo, Janiri& di Giannantonio (2014) 'Novel Psychoactive Substances in Young Adults with and without Psychiatric Comorbidities'.

[186] Bootzin, R., Stevens, S. (2005) 'Adolescents, substance abuse, and the treatment of insomnia and daytime sleepiness'

advice around sleep hygiene as part of a treatment plan, however services often report that there are limited resources and in-house expertise in this area. Whilst specialist clinics exist for sleep, these are rarely available to people who use NPS or indeed other drugs generally unless they meet specific criteria for sleep problems which is separate to their drug use. Accessing dedicated sleep clinics would generally be restricted to people further into recovery given the likelihood that drug use is affecting the sleep problem. The findings in this study suggest that there could be benefits to offering sleep management support earlier to those currently using NPS as a way of trying to deal with their sleep problems which may in turn allow them to stop or reduce substance use. Training for support staff and dedicated group work or clinics and drug specific literature for people who use NPS and are experiencing sleep problems may be of benefit to both educate and guide treatment options for service users.

Loss of co-ordination was another commonly reported physical harm for some types of NPS and highlights a possible greater risk of accidents when under the influence. Seizures and effects on heart rate as identified by some NPS users in this study are also identified in other literature with additional physical harms including cardiovascular, lung and kidney problems.[187] Given that a substantial proportion of NPS users report not disclosing NPS use, assessments within key services which cover a range of health areas could assist in opening up a dialogue regarding NPS use and related harms and encourage better disclosure of NPS use.

Social harms

Key learning point 5:

- *Multi-agency and flexible working approaches such as assertive outreach should be continued and developed to support people with the range of social harms experienced.*

Debt, loss of tenancy and anti-social behavior (which could lead to loss of tenancy) were key harms identified by people who use NPS in this sample, with 22% (n=92) of the NPS survey respondents identifying as already homeless. This highlights the need to include financial and housing support for people who use NPS in the range of services offered.

Given the issue of missed appointments identified in this sample, it is perhaps not surprising that over one third of people who used NPS reported not being in contact with drug services (although this could also be a consequence of the way the sample was recruited). Non-engagement is often a key issue faced by services, and services which are able to provide flexibility in supporting clients

[187] Fraser, F. (2014) *New Psychoactive Substances – Evidence Review*

such as assertive outreach, longer opening hours, appointment reminder systems or drop in sessions often report higher rates of engagement from vulnerable populations.[188] Equally, with regards to benefit sanctions, greater awareness of the complexities of problem drug use and the impact of sanctions on these vulnerable groups would be advantageous. Research has identified hardship caused by benefit sanctions in Glasgow including rent arrears, sometimes leading to eviction.[189]

This constellation of harms – loss of tenancies, missed appointments and benefit sanctions – will undoubtedly lead to a proportion of the population studied being particularly vulnerable. How this group is protected from further harm should be considered by local planners and services. As identified in more detail in treatment responses and improving practice, multi-agency responses and training for staff required to work with a range of complex issues would be beneficial in ensuring people get the interventions required to reduce harms.

7.4 Improving practice

Key learning point 6:

- *Provision of basic NPS training for all staff and training in a variety of health based topics and assessment for support staff should be considered by frontline services.*

The low levels of NPS users reporting NPS use to the existing treatment providers they are in contact with, and the challenges outlined by frontline staff in keeping up to date, highlights a need for staff to have current knowledge of NPS. Workforce development may benefit from a systems approach, which could involve not only training, but also addressing and embedding NPS in existing workforce development strategies and ensuring adequate support and supervision is provided for staff working with NPS. A minimum requirement in terms of improving practice is the provision of basic NPS training for all staff, and updates on new NPS trends. As this study identified, NPS are most often used in combination with traditional drugs, and up-to-date training on general drug awareness and poly-substance use is likely to be beneficial for front line services. Given that staff identified lack of specialist treatment as a barrier to service utilisation for people who use NPS, more comprehensive training on NPS would be recommended for more specialist services, especially for those services currently or hoping to offer treatment to people who use NPS.

With significant crossover within the vulnerable populations, in particular homeless people, injecting drug users and people in contact with mental health services, and

[188] Mental health network (2014) *The future's digital mental health and technology*
[189] Tennant, R. (2015) *No Light at the End of the Tunnel: Tracking the impact of Welfare Reform across Glasgow*

the range of issues articulated by people who use NPS in this sample, training in complementary topics such as mental health, sexual health, chemsex, homelessness, and sleep hygiene in addition to drug awareness would contribute to the development of holistic NPS services. Training in assessment would also assist in being able to identify NPS use and related harms.

7.5 Service developments

Key learning point 7:

- *Health board and ADP areas should review possibilities for service developments or adaptations to existing services to respond to NPS users.*

People who use NPS and frontline staff both identified the provision of specialist treatment for NPS as an important area for improving services. In particular, residential detoxification and rehabilitation were desired services among people who use NPS. This was stated particularly by people who inject drugs, homeless people and people in contact with mental health services, over one third of whom identified residential detox and rehabilitation as an important treatment option. Over a quarter of vulnerable young people identified residential detox and rehabilitation as a treatment need. This suggests a role for Child and Adolescent Mental Health Services (CAMHS) and youth addiction services to explore how best to provide more targeted services for this population.

Although provision of NPS specialist residential detox and rehabilitation is likely to be unrealistic in the current funding climate, existing treatment centers could be utilised to provide NPS detox options. The most likely NPS to require inpatient detox would be with benzodiazepine-type NPS. Although the expertise for offering general benzodiazepine treatment already exists there are challenges in accessing this level of treatment due to reduced funding for residential services. Clinical guidelines have recently been developed which outline how to respond to acute harms and advise on detoxification.[190]

NPS specialist staff, whether in existing services or specialist services were seen by both people who use NPS and staff to be a valuable asset to be developed. With limited resource for specialist services, the development and expansion of the remit of established treatment services including dedicated workers within existing services could be useful to explore. Adapting current treatment services to offer residential detox and rehabilitation for NPS users as outlined above would be a cost effective response to NPS use in Scotland.

MSM had low levels of contact, and did not present with the same level of multiple vulnerabilities as other groups. They also favoured harm reduction over other

[190] Novel Psychoactive Treatment UK Network (2015) NEPTUNE *Guidance on the Clinical Management of Acute and Chronic Harms of Club Drugs and Novel Psychoactive Substances*

treatments. This highlights merit in considering the rebranding of services to appeal to 'new' service users, perhaps considering moving away from the more traditional branding of drug services such as addiction services or drug problem services and utilising targeted resources and adverts to reach out to particular populations e.g. MSM- and vulnerable young person-specific. Opening hours could be a further consideration with certain aspects of the NPS treatment populations perhaps struggling to access services within the working day hours often offered by services. Evenings and weekends opening could be attractive to vulnerable young people and MSM in particular. Guidance on substance use services responding to MSM recommends the importance of services being available outside normal working hours and highlights example service models including, satellite services or outreach services operating in targeted areas. [191] Local scoping exercises gaining the views of people who use services and people who would potentially use services would be useful in establishing evidence for these options and would also take account of likely regional varieties.

The findings from this research also suggest that services should consider developing the skills and expertise of one member of staff who can keep up to date with new developments and provide advice and assistance to other staff. Services have utilised a dedicated worker model for other aspects of treatment often in combination with utilising people with lived experience[192] such as in the mental health or recovery specific services, therefore it would be possible to build on this to develop a similar system of named NPS workers hosted within services. It would be crucial to ensure such workers had the appropriate skills, knowledge and training for these roles, and that the services had appropriate resources to maintain and develop this knowledge. As outlined in this study there is still an information gap in some areas when it comes to NPS resources and basic NPS training. In order for staff to take on a specialist worker role, a higher level of NPS training would also be beneficial to ensure service quality.

7.6 Engaging vulnerable populations

Key learning point 8:

- *Multi agency and targeted responses should be explored for the different populations using NPS.*

There was considerable cross over between the populations of homeless people, mental health service users and people who inject drugs. This highlights that NPS users often face a range of issues including ill health, homelessness and financial problems. Multi-agency responses are effective for those groups experiencing

[191] Public Health England (2015) Substance misuse services for men who have sex with men involved in chemsex

[192] Peer worker research team, St George's University of London (2015) Introducing peer workers in to mental health services: An organisational toolkit

multiple disadvantages and have been recommended by services responding to 'club drugs' and NPS.[193] The population-specific harms identified in Chapter 5, and the low levels of engagement with services amongst MSM who responded to the NPS survey suggest that there is a need for specific service developments within key services that MSM are likely to use. This may include sexual health services and targeted gay men's health provision where it exists. Similarly, services for vulnerable young people should explore how best to address NPS and wider substance use among their young people.

Hosting dedicated drug workers within partner organisations including sexual health, mental health and/or emergency care could effectively capture those people who are not in regular drug treatment and may be at greater likelihood of using other services and/or emergency care. This model has been utilised to great success in other parts of the UK such as 56 Dean Street in London which houses sexual health and drugs workers within the service aimed at MSM.

With the majority of NPS survey respondents sourcing information from peers combined with low levels of service contact for NPS use, this may suggest assertive outreach combined with use of peer support could be worthy of exploration. There are various existing models which couple peer support with harm reduction such as the stepped care model used by Crew in Edinburgh or with abstinence based treatment as underpins the therapeutic community model offered by Phoenix Futures Scotland.

Tailored care and relationships with support staff were both identified by NPS users as important, which is confirmed by other studies.[194] Findings from specialist services suggest treatment is more likely to be accessed by people who would not otherwise seek treatment if it is appropriate to their needs.[195]

7.7 Information on NPS to people who use NPS

Key learning point 9:

- *Information resources in a variety of formats are required to reach the different populations who use NPS.*

Both NPS and staff survey respondents highlighted information needs. With around a third of NPS survey respondents sourcing information from peers, and 40% of staff identifying dedicated NPS resources such as leaflets as being something they would like to offer, there is potential to look at leaflet resources for

[193] Bowden Jones. O. *(2014)* One new drug a week *'Why novel psychoactive substances and club drugs need a different response from UK treatment providers'*

[194] Slote Morris, Z & Gannon. G. (2008). 'Drug misuse treatment services in Scotland: predicting outcomes'.

[195] NEPTUNE (2016) Club Drug Use Among Lesbian, Gay, Bisexual and Trans (LGBT) People.

the different target populations. Additional and targeted resources could build on the Know the Score resource aimed at young people, which would be more accessible and marketable to vulnerable populations.

Consideration of new formats for sharing information including 'apps' may also be of benefit for certain populations in order to make information more accessible. NHS Tayside currently provide the Cool2talk service which utilises an online portal to inform young people about a range of health issues including drugs. Equally, film resources specific to NPS may be of benefit for populations who may not be able to access traditional mediums such as leaflets and where demonstration elements would be useful in preventing BBV harms such as safer injecting. With people who use NPS citing documentaries as a source of information, and use of resources such as cartoons[196] piloted by other treatment providers such as Lifeline, there is an opportunity to explore use of film media as a resource to reach NPS using groups. Use of film has been piloted in the prison population for NPS in Scotland but a more formal pilot with evaluation of effectiveness would be required to gauge the usefulness of this approach.[197]

7.8 Psychoactive Substances Act

Key learning point 10:

- *Monitoring of the impact of the PSA on vulnerable populations should be undertaken by ADPs, health boards and services with a particular focus on increased overdose risk.*

The Psychoactive Substances Act (PSA) came into effect during survey data collection on 26th May 2016. Unintended consequences of the PSA were anticipated by study participants to include diverted modes of purchase to more underground means, and returning or transitioning to traditional drug use. Therefore there is potential for increased harms for some people who use NPS related to adulterants in street purchases and a possible need for greater resources and funding in both treatment and criminal justice settings to respond to emerging developments, such as around access and criminality, following on from enforcement of the Psychoactive Substances Act.

It will be important to track the impact of the PSA particularly regarding the impact of changes in supply routes of NPS that might have particular impacts on vulnerable populations who use NPS.

[196] Newcombe, R (2010) 'Wobbled Up' The illicit use of diazepam in Redcar.
[197] A prison resource was created in partnership with Polmont YOI, SDF and Crew which is utlised in some prisons via groupwork or prison TV/Radio system.

Transitioning back to traditional drug use was flagged up by respondents in both surveys as an anticipated outcome of the PSA coming into force. It was further flagged up in focus groups in relation to opiate users moving back from NPS use (in particular mephedrone and ethylphenidate) to heroin use. For those people who use both NPS and heroin and other opioids, the risks of transitioning back to use or heavier use of heroin is high, especially where access to NPS may be more difficult either through availability or increased price. With overdose risk increasing significantly where people may have a reduced tolerance for opioids, provision of Naloxone is a crucial part of the treatment response. Alcohol and Drug Partnerships and Naloxone co-ordinators should be alerted to the potential for increased overdose risk so that appropriate action can be taken, including supply of Naloxone to vulnerable populations. In addition to Naloxone provision, an effective response may involve an element of staff training in order to raise awareness in non-drug specialist settings.

7.9 Study limitations

This study builds our understanding of the use of NPS amongst key vulnerable groups. The size of the sample is not large enough to draw final conclusions about NPS use in Scotland. Vulnerable young people and MSM were the more challenging groups to engage in this study and had the smallest sample sizes, additionally access to some rural areas was limited so the findings of this study may not be representative. In terms of use in the general population, this study cannot give an indication of this as it focused solely on vulnerable groups.

Estimating prevalence of NPS use amongst vulnerable populations was not possible, due to the under-reporting of NPS use by vulnerable populations to services, combined with limited existing data within services and availability of national data sets effectively capturing NPS use. What the study does provide is an insight into patterns of use amongst vulnerable groups, including motives and consequences of use in the Scottish context.

Given the challenges of gathering robust data on the prevalence of ‘traditional’ drug use, a focus on harms and motivations amongst specific populations would likely be the most useful focus for further research in developing more effective prevention and treatment responses.

Similarly to other data sets in Scotland, this study relied on self-reported data. Given the confusion of what constitutes an NPS, this may have affected who opted in or out of the study.

This study extends our knowledge of some of the potential harms experienced from NPS use, although it should be acknowledged that given the high rates of poly-drug use within this sample, exact causation of harms cannot be determined.

With the implementation of the Psychoactive Substances Act coming in during the study, responses on the forthcoming ban were anticipatory rather than experiential.

7.10 Closing remarks

NPS use amongst these groups is complex and results in a number of harms and specific treatment needs. This research is important because but it provides a tentative first understanding of patterns of NPS use, alongside motives and consequences of use amongst vulnerable groups in Scotland.

With many factors likely to influence trends within NPS in Scotland, including the PSA, which came into force during data collection, more information is needed to gather a fuller picture of the emerging NPS landscape in Scotland.

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Appendices

A. Technical Appendix 1: NEO Data

Estimating the number of injecting NPS takers by applying statistical models for incomplete count data to needle exchange data

As part of this study possible sources of administrative data relating to NPS use that could be used to estimate the prevalence of NPS use in Scotland were examined. When estimating the prevalence of opiate use mark re-capture methods have been used with some success in Scotland and England but these require data from a number of different sources and detailed information at the individual level. Sufficient numbers of NPS takers are not currently appearing in these data sources to make this multi-source method an option but researchers have met with some success using single source estimation methods for areas with sparse data or only one available data set (Hay & Smit, 2003). With this in mind the research team approached NHS Greater Glasgow and Clyde and NHS Lothian with a view to obtaining data from their Neo 360^0 database and assessing the feasibility of using this data to produce estimates of injecting NPS use for these two areas. The following section describes the needle exchange data used in the analysis and gives the resultant estimates of injecting NPS use for NHS Greater Glasgow and Clyde and NHS Lothian areas.

Methods

The method used to produce population estimates from a single data set is known as truncated Poisson. In our case we will be examining the number of visitors to needle exchange services over a 12-month period. When applying this method, we note the frequency for visits for every individual over the duration of the study. The frequency pattern follows a Poisson distribution but our data is incomplete as we cannot observe individuals that appear zero times, therefore the distribution is truncated below one. An estimate of the total population is given by adding all observed individuals to an estimate of those that appear zero times, the hidden population. As part of our analysis we have used two different estimators, the Zelterman (1988) and Chao estimators (1998). Both estimators can be calculated using the total number of individuals along with the lower case frequencies and given their simplicity the formulae are given below.

Zelterman's estimator of the unknown population size est(N) is given by:

$$\text{est}(N) = n/ [1 - \text{Probability}(f_0)]$$

Where the Probability (f_0) is e^{λ}

$$\lambda = 2 * (f_2/f_1)$$

Chao's estimator is given by:

$$est(N) = n + \frac{(f_1)^2}{2(f_2)}$$

where,

f_1	=	the number of individuals appearing just once in the data set
f_2	=	the number of individuals appearing twice in the data set
n	=	all individuals appearing in the data set

Both estimators are based on the lower frequencies, as it is thought that those that are observed only once or twice in a data set resemble closely those that do not appear in the data set at all. This dependence on the lower frequencies is also helpful when addressing some possible heterogeneity in the data set as those that appear a huge number of times may not reflect the 'typical' service user so a greater reliance on the earlier frequency classes lessens the impact of these groups. It should be borne in mind that if the frequency patterns for NPS users differ greatly from this description then this could impact on the estimates. Another positive aspect of the method is its ability to cope with sparse data. As with all estimation methods there are certain assumptions that must be met. These are:

1. the population is 'closed'
2. the population is homogeneous (no heterogeneity across individuals)
3. the individual probabilities of observation and re-observation are stable over time.

Closed population

The closed population assumption stresses that the true population is unaffected by births, deaths or migrations over the study period. In order to minimise the potential for this assumption to be violated we have chosen to use a slice of data covering a 12 month period.

Homogeneous population

This assumption asserts that the probability of observation should not differ greatly across groups of individuals. Both estimators used are robust in relation to heterogeneity and are known to underestimate the true population. In order to assess any heterogeneity we have attempted to stratify the estimates by gender and/or age group where the data was available. This will help us to model any heterogeneity in relation to these characteristics.

Stable (re)capture probability

This assumption would mean that attending the needle exchange on one occasion wouldn't necessarily impact the probability of future attendance. In order to lessen

the impact of violating this assumption we have confined the data slice to a short 12-month period.

Data

Data is routinely collected from pharmacies/needle exchange services and entered into Neo 360^0 database. Although the data is collated from a number of different sources around both health board areas, as it is collated to health board level in this database, we treat it as a single source. Every service user is assigned a unique identifier composed of initials and date of birth, given the sensitive nature of this data the reference code was 'blurred' before passing to research team so that we could identify unique individuals without having access to these identifiers.

Data and estimates for NHS Greater Glasgow and Clyde area

There were 1,896 transactions by NPS takers at NHS Greater Glasgow & Clyde needle exchange services between 01/01/15 and 31/12/15. This data corresponds to 148 individuals. Twelve individuals were from outside the NHS GGC area and so were removed from the analysis. The remaining sample were overwhelming male (88%) and ranging in age from 18 to 61 with a mean age of 38. Over half (56%) of the NPS takers accessing needle exchange services in the NHS GGC area are poly drug users with 43% reporting using heroin. When asked if they were in structured treatment for their drug use only 131 individuals responded with twenty-one (6%) confirming that they were in structured treatment. Table 1 shows the frequency data required to produce estimates of the hidden population of injecting NPS takers.

Table 1: *Frequency of contact at Greater Glasgow & Clyde needle exchange services by gender*

	All individuals in data set	**Individuals appearing once**	**Individuals appearing twice**
Male	120	22	14
Female	16	5	3
Total	136	27	17

Table 2 lists the estimates of injecting NPS takers. There are two estimates relating to each estimator, the unstratified estimate and an estimate stratified by gender. The Zelterman estimator produces a figure of 190 injecting NPS takers. The direct, unstratified estimate is the same as the sum of the stratified gender estimates. We can see that the stratified estimates have a slightly wider confidence interval running from 114-265. The lower bound of this confidence interval is lower than the total number of observed individuals which indicates that the observed number of women was too small for the asymptotic estimation of the

95% confidence intervals. As we would anticipate the Zelterman estimates are slightly higher than those produced by the Chao estimator which gives an estimate of 157 injecting NPS users. Again the sum of the stratified or pooled gender estimate is the same as the unstratified estimate but for the Chao estimator the confident intervals are narrower than those for the Zelterman estimates. It should be noted that the 95% confidence intervals overlap for both sets of estimates.

Table 2: *Population size estimates for injecting NPS takers in NHS Greater Glasgow & Clyde area using Zelterman's (1988) and Chao's (1989) estimators*

	n	Est (N)	95% CI	Hidden population	Known/ Hidden
Zelterman's unstratified estimate	136	190	130-250	54	2.52
Zelterman's stratified estimate (gender)	136	190	114-265	54	2.52
Chao's unstratified estimate	136	157	144-190	21	6.48
Chao's stratified estimate (gender)	136	157	143-210	21	6.48

Data and estimates for NHS Lothian area

There were 7,717 visits by injecting NPS takers to needle exchange services in the NHS Lothian area between 01/01/15 and 31/12/15. These visits were made by 447 individuals. Seven users were from outside the NHS Lothian area and were removed from the analysis to leave a final sample of 440 individuals. The majority of users visiting needle exchanges during this period were male (79%) and aged between 18 and 60, with a mean age of 35. Housing status was recorded for 320 of the sample and just over half owned or rented their accommodation, 41% were in temporary accommodation, the remainder were sleeping rough (6%). When asked about accessing structured treatment only 194 (44%) responded with 25% indicating they attend a specialist drug treatment service and a further 21% receive support from their GP.

Table 3: *Frequency of contact at Lothian needle exchange services by gender & age group*

	All individuals in data set	Individuals appearing once	Individuals appearing twice
Male	349	77	37
Female	91	14	13
18 – 24	14	7	2
25 – 34	202	38	26
35 – 64	224	46	22
Total	440	91	50

Table 3 lists the number of individuals visiting NHS Lothian needle exchanges by gender and age group. As stated previously the majority of users are male. There are few injecting NPS takers under the age of 25 attending needle exchanges. Table 4 lists the estimates of injecting NPS takers for both the Zelterman and Chao estimators with corresponding confidence intervals. There are three estimates given for each method, the unstratified estimate plus gender and age stratifications.

Table 4: *Population size estimates for injecting NPS takers in NHS Lothian area using Zelterman's (1988) and Chao's (1989) estimators*

	n	Est (N)	95% CI	Hidden population	Known/ Hidden
Zelterman's unstratified estimate	440	660	572-748	220	2.00
Zelterman's stratified estimate (gender)	440	673	562-784	233	1.89
Zelterman's stratified estimate (age group)	440	667	527-807	227	1.94
Chao's unstratified estimate	440	523	457-842	83	5.30
Chao's stratified estimate (gender)	440	528	454-994	88	5.00
Chao's stratified estimate (age group)	440	528	450-1357	84	5.24

The unstratified Zelterman estimate gives a similar if slightly lower result than both the stratified gender and age estimates. This would be expected as the unstratified estimate is considered an underestimate and the stratified estimates attempt to model any heterogeneity in the sample resulting in a larger estimate. As anticipated the Chao estimates are lower than those produced by the Zelterman estimator, however the age group estimate has a wider confidence interval indicating some uncertainty in the model. When the separate stratified estimates are examined this occurs in the older age group (35-64).

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B. Technical Appendix 2: Prevalence estimate

Estimating the prevalence of NPS use in Scotland using a treatment multiplier

The multiplier method is a simple way of estimating unknown populations such as prevalence of drug use. The method uses the available information on the population in question as a benchmark, e.g. number of drug users in treatment, and applies a multiplier that is related to the population and has normally been derived from a small scale study.

Construction of the treatment multiplier

From our survey we know that 125 NPS users are in contact with drug treatment services. Only 194 NPS survey participants answered this question giving us a treatment rate of 64.43%. Therefore we can say that for every 1 NPS user in treatment there are 1.56 users (100/64.43).

Using the treatment multiplier to produce an estimate for the number of NPS users in Scotland

We sought data on the numbers of NPS users in treatment from the Scottish Drug Misuse Database. The data dashboard's latest available update in May 2016 gives treatment numbers for 2014/15. This data set does not currently provide detailed information on NPS use. For the year 2014/15, they reported 191 people in Scotland receiving treatment for Mephedrone use and a further 636 receiving treatment for use of 'other' drugs. This gives us a total of 827 users in treatment. Using the multiplier, this would generate an estimate of 1284 NPS users in Scotland (827 * 1.56).

However, given the limited nature of the treatment data referring to NPS users, and comparing this estimate with the two injecting estimates calculated using the Neo data, we would question the robustness of this Scottish estimate as an under-estimate. As a result, this figure is not reported as a finding in the main report.

C. Interview Participant Demographics

	Pseudonym	Location (based on NHS board)	Gender	Age	MSM	PWID	Young Person	MH Service User	Homeless Person
1	Michael	Ayrshire & Arran	M	26				X	
2	Gary	Greater Glasgow & Clyde	M	39				X	X
3	Kieran	Lothian	M	46				X	
4	Steven	Ayrshire & Arran	M	39				X	X
5	Debbie	Ayrshire & Arran	F	22					X
6	Alistair	Ayrshire & Arran	M	28				X	
7	Nick	Ayrshire & Arran	M	36					X
8	Tracey	Ayrshire & Arran	F	26		X		X	
9	John	Ayrshire & Arran	M	26		X		X	
10	James	Greater Glasgow & Clyde	M	19		X			X
11	Daniel	Greater Glasgow & Clyde	M	17		X			X
12	Peter	Greater Glasgow & Clyde	M	17		X			X
13	Jacob	Lanarkshire	M	49				X	
14	Paula	Greater Glasgow & Clyde	F	32				X	X
15	Andrea	Fife	F	34		X		X	
16	Moira	Fife	F	39		X			
17	Jessica	Fife	F	35		X		X	
18	Tiffany	Tayside	F	28				X	
19	Nicola	Tayside	F	32		X			
20	Claire	Tayside	F	30		X		X	X
21	Christina	Tayside	F	39		X			
22	Luke	Grampian	M	20			X		
23	Samuel	Dumfries & Galloway	M	19			X		X
24	William	Lothian	M	55	X			X	
25	Hugh	Greater Glasgow & Clyde	M	61	X	X			
26	Thomas	Lothian	M	45	X	X			
27	Graeme	Lothian	M	44	X	X		X	
28	Kevin	Lothian	M	35		X			
29	Kimberly	Lothian	F	32		X		X	
30	Alexander	Greater Glasgow & Clyde	M	42	X				
31	Michelle	Highland	F	16			X		
32	Chloe	Highland	F	17			X		
33	Colin	Lanarkshire	M	27				X	

D. Qualitative Data Collection: Topic guides

Interview Topic Guide

Background Information

Age: Ethnicity:
Gender: Location:

What I want to do now is focus on the first time you used a legal high...

- What was it?
  - PROMPT: powder, name on packet, effects told it would have
- What did you know about it before taking it?
  - PROMPT: source, e.g. online, friends
  - PROMPT: What effects were you expecting from it?
  - PROMPT: did you know what was an active dose?
- Where did you get it from?
  - Why that source?
- How did you take it?
  - PROMPT: swallowed, snorted, dabbed, smoked, injected?
  - Why that method?
- How much did you take?
  - PROMPT: all/portion? Why?
- Where were you and who were you with?
- What happened?
  - PROMPT: Using anything else (inc. alcohol) before/during/after?
  - PROMPT: Effects of drug on body (ability to distinguish effects?)
  - PROMPT: Effects of drug on behaviour (ability to distinguish effects?)
- What led up to you trying it that first time?
  - PROMPT: peers, trauma, curiosity, legality e.t.c.
  - PROMPT: motives about *a* legal high, or *that* legal high
- Had you tried any illegal drugs before you tried it?
  - If yes, was it like any other drug you have tried?
  - If no, did it prompt you to try any illegal drugs? If so, what?
- What did you particularly enjoy about it that first time?
- Was there anything you didn't like?
  - PROMPT: During
  - PROMPT: After
- What did you do to help you manage that?
- Have you been to see anyone for any help with the effects?
  - PROMPTS: A&E, GP, CAT, NSP, friends, family, dealer, internet
- Have you tried it since then?
  - Why/not?
- Have you tried any other legal highs since then?
  - GENERATE LIST OF LEGAL HIGHS TRIED
  - How often would you say you take legal highs?
  - Do you take with other substances (inc. alcohol)?

And now I want to focus on the last time you tried a legal high

- What was it?
- Why did you take it?
- What did you know about it before taking it?
    - PROMPT: source, e.g. friends, internet
    - PROMPT: did you know what was an active dose?
- Where did you get it from?
- How did you take it?
    - PROMPT: swallowed, snorted, dabbed, smoked, injected?
- How much did you take?
- Where were you and who were you with?
- What happened?
    - PROMPT: Using another substances before/during/after?
    - PROMPT: Effects of drug body/behaviour (ability to distinguish effects?)

- What did you particularly enjoy about it this last time?
- Was there anything you didn't like?
    - PROMPT: During
    - PROMPT: After
    - PROMPT: longer term
    - PROMPT FOR ALL: physical, mental, relationships, hobbies, job, £
- What did you do to help you manage that?
- Have you been to see anyone for any help with the effects?
    - PROMPT: A&E, GP, CAT, NSP, friends, family, dealer, internet

Ending Questions

- What help would you have liked to have been available to you that wasn't?
- If you could give one piece of advice to someone about to try a legal high for the first time, what would it be?

Focus Group Topic Guide

Background Information

Role: Type of service:

Time in Role: Geographical location:

Prevalence

- How common do you think NPS use is among your service users?
  - PROMPT: particular groups?
  - PROMPT: age ranges? Gender?
  - PROMPT: changes over time?
  - PROMPT: specific substances/drug categories? How related to certain groups? where use?

Motives

- How do you know service users use NPS?
  - PROMPT: deliberate disclosure? Accidental?
- What reasons do they give for use?
  - PROMPT: story of a recent client (anonymised)
- Have any tried NPS and then not carried on?
  - Why not?
- Have any active drug users you are working with never tried NPS?
  - Why not?
- Have any transitioned on to NPS and moved away from traditional drugs?
  - Why?
- In general terms, how have your service users' patterns of use changed over the last few years?
  - PROMPT: quantity, route of admin, type of NPS used, polydrug use
- What is different about motivations for NPS compared to controlled drugs?

Harms

- What, if any, negative effects have you seen as a result of NPS use?
  - PROMPT: harm to self, close others (fam/friends), wider community?
  - PROMPT: What do you think has caused this?
  - PROMPT: legal harms (e.g. using a substance that was legal but that has since been controlled?)
  - PROMPT: have you had experience of users becoming dependent on NPS?
  - PROMPT: quantity, route of admin, type of NPS used, polydrug use
- Has NPS use had an impact on reducing the harms caused by illegal drugs?
  - If yes, what ways?
- How do you support NPS-using service users?
- What resources would make supporting NPS-using service users easier?

Ending

- If you could give one piece of advice to someone (e.g. friend, rather than service user) contemplating NPS use, what would it be?

E. Focus Group demographics

NHS Board	N	%
Ayrshire & Arran	1	2%
Borders	1	2%
Dumfries & Galloway	0	-
Fife	1	2%
Forth Valley	1	2%
Grampian	9	21%
Greater Glasgow & Clyde	11	26%
Highland	4	10%
Lanarkshire	2	5%
Lothian	8	19%
Orkney	0	-
Shetland	0	-
Tayside	2	5%
Western Isles	0	-
National Role	2	5%
Total of participants	*42*	100%

F. Online Surveys

Links to PDF versions of the surveys used in this study are below.

It should be noted that question logic was built in to survey questions, so certain questions would only be displayed if participants answered yes to an initial question e.g. Have you injected NPS, would then bring up a set of NPS injecting questions.

NPS Survey

Online at: https://issuu.com/scottishdrugsforum/docs/nps_user_survey

NPS Survey Draw

Online at: https://issuu.com/scottishdrugsforum/docs/nps_prize_draw

Staff survey

Online at: https://issuu.com/scottishdrugsforum/docs/nps_survey_staff

How to access background or source data

The data collected for this social research publication may be made available on request, subject to consideration of legal and ethical factors. Please contact Isla.Wallace@gov.scot for further information.

social research

The views expressed in this report are those of the researcher and do not necessarily represent those of the Scottish Government or Scottish Ministers.

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