



Ketamine Trends in Scotland: Analysis of Police Seizure Data and Review of Early Identification Methods

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Abbreviations

CMC	Chlormethcathinone
GHB	Gamma-hydroxybutyrate
LSD	Lysergic acid diethylamide
MDMA	3,4-methylenedioxymethamphetamine
MMC	Methylmethcathinone
NCA	National Crime Agency
PCP	Phencyclohexyl piperidine
SPA	Scottish Police Authority

Executive summary

Ketamine is a substance of interest within the illicit drug market with applications in both human and veterinary medicine. There has been an increase in ketamine seizures in the United Kingdom (UK) in recent years. Greater availability has contributed to a general rise in use and associated harm and in turn raising public awareness. However, a complete picture of where ketamine is widely found in Scotland is lacking, and ways for people who use drugs to identify the presence of ketamine remains unknown. By exploring Police Scotland ketamine seizure data and a rapid literature review of ketamine testing methods, this report: i) identifies trends in seizures to raise awareness of where ketamine is generally present ii) describes drug checking technologies intended for point-of-need versus laboratory testing.

Key findings

Ketamine seizures increased year-on-year in Scotland from 2018 to 2024; the number of seizures was six times higher in 2024 compared to 2018 and concentrated within Greater Glasgow, Edinburgh, and the North East regions. Seizures in Greater Glasgow continue to rise rapidly with indications that this is a key area for ketamine supply and distribution. On average, 70% of seized ketamine samples contained only ketamine, while 30% were mixed with other substances. These mixtures can increase the risk of unexpected or harmful effects, making it important to know that the ketamine is pure rather than mixed with other drugs. Most seized ketamine was white or crystalline powder, which may look like and be confused with substances such as medetomidine or xylazine. For people who use drugs, a major challenge in identifying ketamine is the lack of reliable, easy-to-use tests for drug checking. Colour-changing tests remain the most viable commercial option, though several new test strip designs may be effective drug checking tools in the future.

Recommendations

Addressing the challenges associated with ketamine supply and testing requires continued policing efforts, education, research, and coordination among law enforcement and health sectors, specifically:

- **Strengthen enforcement efforts:** Routinely evaluate data to identify how high-risk areas and supply patterns change over time and encourage information sharing between police and health services to promote harm reduction efforts.
- **Improved research:** Invest in research to develop new drug checking methods for ketamine to inform public health response and support frontline detection.
- **Community engagement:** Work with schools, youth services, and community groups to raise awareness of ketamine trends as they evolve.

Introduction

Ketamine is a synthetic substance that has long been used in both veterinary and human medicine. Structurally derived from phenylcyclohexyl piperidine (PCP), ketamine was first synthesised and tested in the 1960s as a ‘safer’, alternative recreational drug due to its dissociative properties without the severe side effects of PCP (1, 2). Ketamine was adopted into mainstream medical use as a short-acting anaesthetic and pain management medication by the 1970s (3). Additionally, beyond its established use as an anaesthetic, low-dose ketamine has been found to act effectively as an antidepressant for patients who have not responded to traditional therapies (1). These multiple applications have heightened ketamine’s medicinal importance and visibility in the illicit drug market.

Over the past decade the ketamine consumer base has expanded across Europe, in part due to a perception that its hallucinogenic effects carry less risk than other, more established, illicit drugs such as lysergic acid diethylamide (LSD) or PCP (4). Despite this, long-term and substantial ketamine use has been linked with irreversible kidney, bladder, and other urological problems alongside acute effects such as altered perception and dissociation. The burden of ketamine use on healthcare systems is still largely being uncovered (5).

Illicit ketamine markets

As an essential medicine, pharmaceutical ketamine shipments are not subject to international control and are supplied to standard, regulated markets. However, evidence points to a rise in non-medical use of ketamine in Europe and particularly within the UK. A recent report estimated that recreational ketamine use tripled in the UK between 2006 to 2023, with a rising prevalence among younger age groups (6). An updated review of use and harms of ketamine in England and Wales cited a 12-fold increase in the number of people seeking treatment for ketamine use disorders between 2015-2025, according to the Advisory Council on the Misuse of Drugs (7). The review further highlighted a survey for self-reported drug use among people aged 16-24 years, finding that ketamine was preferable over MDMA, nitrous oxide, and magic mushrooms – though slightly less common than the reported use of powdered cocaine (7). Over 3300 ketamine seizures were made by law enforcement in England and Wales in 2025, corresponding to 237 kilograms, which marks the highest on record and a 50% increase over the previous year (8).

Despite ketamine’s implication in 21 drug related deaths in Scotland in 2024 – an increase compared to 2023 (9) – the prevalence, distribution, and methods for point-of-need testing of ketamine remain unclear. Motivations for ketamine use in the UK appear to be its easy accessibility and relatively cheap cost compared to alcohol; it can be

delivered via an app and has rapid recovery with fewer hangover effects (7). Concerningly, and despite the increase in ketamine use, there remain few reliable ways for people who use ketamine to test products before consumption. Reasons for testing may include confirming ketamine as the identity, to detect potential contaminants, or estimate potency, all of which are critical in making informed decisions to reduce accidental overdose or poisoning risks. In Scotland's drug landscape where polydrug mixtures contributed to over 80% of drug misuse deaths in 2024, as reported by the National Records of Scotland (9), this means recreational ketamine users have limited options for drug checking and are at risk of consuming unintended substances.

Given the various unknowns surrounding ketamine availability and testing in Scotland, this briefing aims to support public health initiatives by highlighting current knowledge surrounding ketamine appearances, seizures, and available tests for drug checking. The report aims to provide a broader understanding of the ketamine landscape within Scotland, providing critical information to address knowledge gaps in ketamine supply and harm reduction.

Report methods

This report combines information from two data sources; national police data and subsequent forensic analysis on drug seizures involving ketamine and a rapid literature of published peer reviewed articles on available methods of drug testing available to people who use drugs.

Seizure data

Ketamine seizure and analysis data was supplied by Scottish Police Authority (SPA) Forensic Services for incidents spanning 2018-2024. This data contained information that was documented as part of the laboratory analysis of the seized material, such as the seizure date, location based on police jurisdiction, weight or volume, appearance (i.e. liquid or powder), colour and texture, and any additional substances identified within a mixture. The dataset was rigorously evaluated using Microsoft Excel to specifically explore trends in seizure locations, physical appearances, weights, and any other drugs reported. No changes in reporting were made during the 2018-2024 period that might have altered the data or its interpretation.

Rapid literature review

A rapid literature review was conducted on 13 April 2026 to summarise the current state of knowledge surrounding ketamine and methods available on the consumer market for drug checking. Clarivate Web of Science Core Collection, a compilation of peer-reviewed scientific research articles, was searched using the following search terms, with papers restricted to the past five years: [ketamine AND presumptive] (returned 2 results),

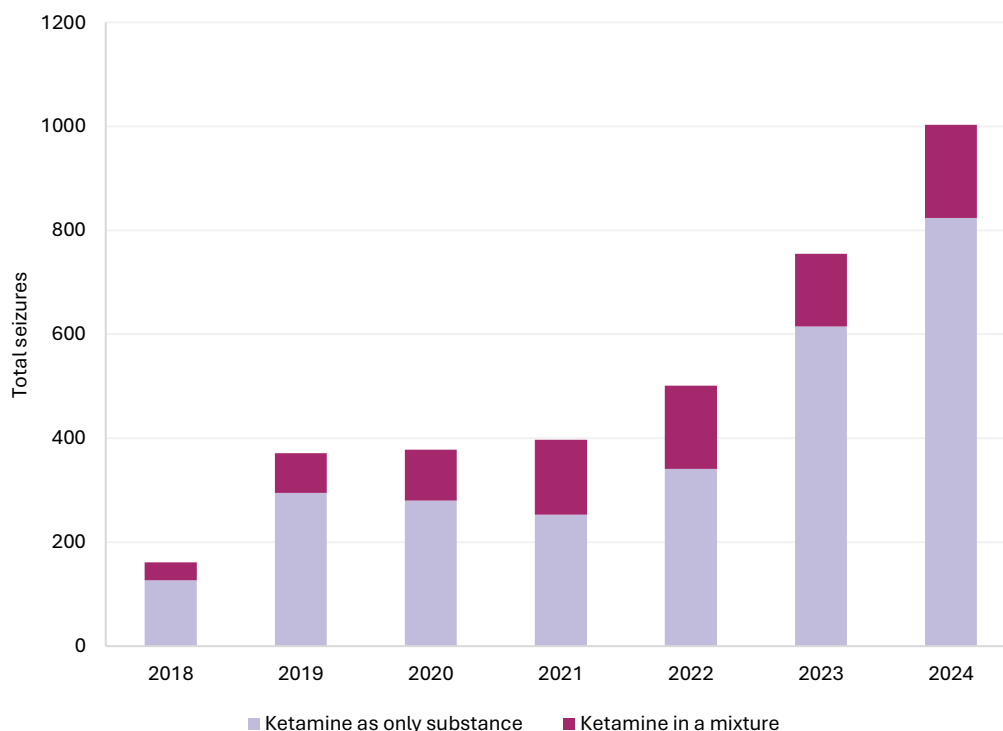
[ketamine AND test AND identification] (returned 40 results), [ketamine AND illicit AND test] (returned 45 results). The search resulted in 87 total papers. All abstracts were screened and papers related to environmental transformation, method development, self-reporting surveys of drug use, atmospheric studies, and medical complications were excluded. The remaining 22 papers were fully reviewed in-depth for established and/or novel ketamine testing techniques that have been applied in a forensic context, for routine identification, and/or specifically for point-of-need care.

Results

Ketamine prevalence and composition in Scotland

From 2018 to 2024, Police Scotland made 3582 seizures which contained ketamine. There was a generally moderate increase in ketamine seizures from 2018 to 2022, followed by a spike in volume in 2023-2024 (Figure 1). By comparison, police forces and Border Force in England and Wales reported 2252 seizures of ketamine in the year ending in 2024, which represented a 51% increase on the previous year (1487 seizures) (10).

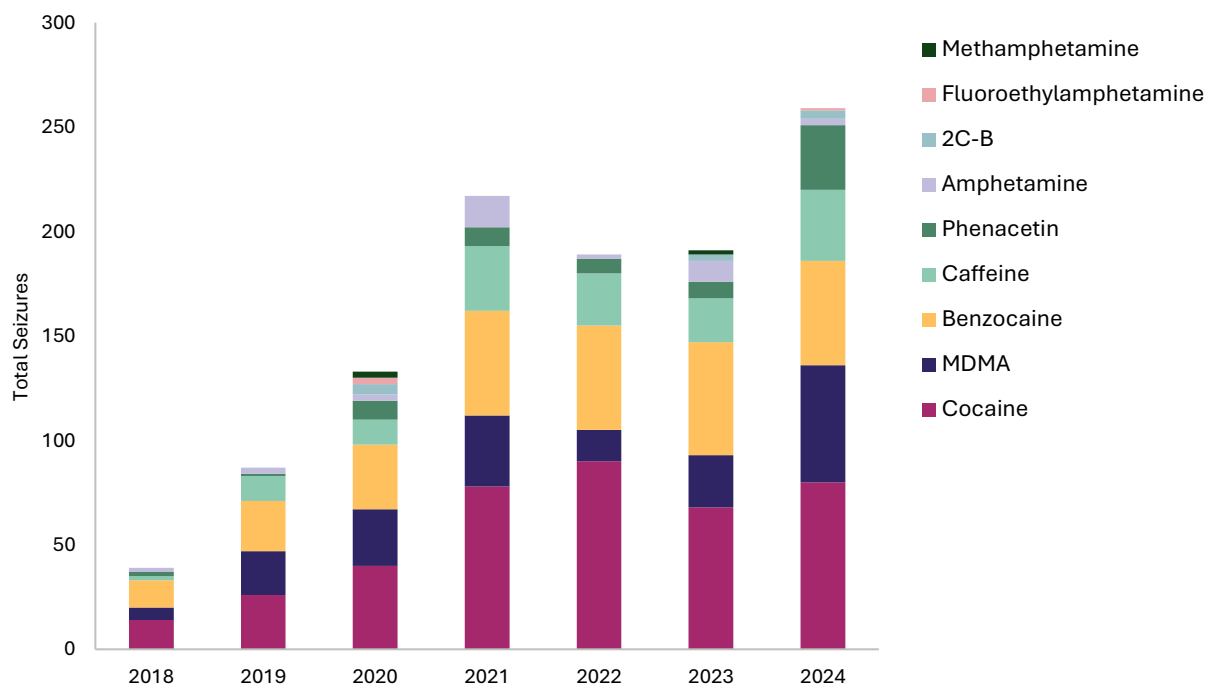
Figure 1. Ketamine seizures in Scotland, by year



Ketamine was reported as the dominant drug found in 3077 of these seizures, meaning it was present in a larger amount compared to any other substance(s) identified. It was also reported as the only substance in 2735 seizures. These findings indicate that approximately 27% of all seizures contained a mixture of ketamine plus at least one

additional substance during the time frame analysed (Figure 1). Seizures of pure ketamine have risen over time, whereas the number of mixtures has remained relatively constant. Cocaine, MDMA, and benzocaine were three two additional substances most commonly identified in ketamine mixtures, though several other substances were frequently found alongside ketamine as noted in Figure 3.

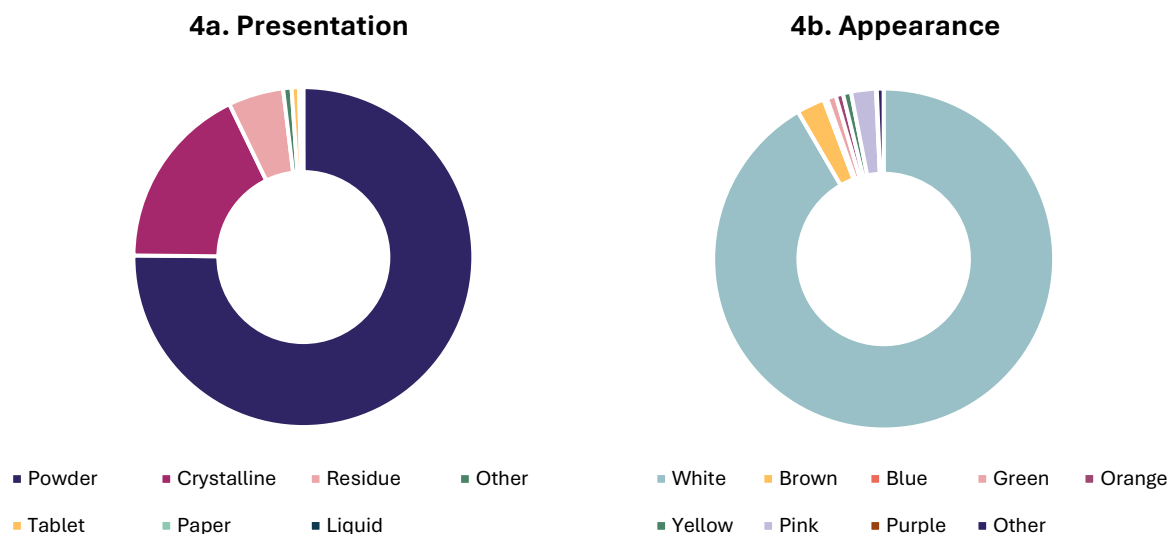
Figure 3. Adulterations of ketamine with other drugs



Ketamine appearance

Prescription ketamine for human and veterinary use is typically administered as a liquid, nasal spray, or oral tablet. However, over 90% of SPA seizures involved a crystalline or non-crystalline white powder, with liquid preparations and tablets accounting for very few samples by comparison (Figure 4a). Other colours, including brown, blue, green, orange, yellow, purple, or pink, were only identified in a minority of samples (Figure 4b). One particularly interesting trend that has been observed, not just in Scotland but throughout Europe, is a rise in ‘pink cocaine’ – a vividly pink powder that often contains very little cocaine at all but rather ketamine, MDMA, 2C-B, MMC, caffeine, or other mixture (11). Twenty-eight ‘pink cocaine’ samples were seized in Scotland in 2024 compared with only eight in 2023. With such unusual variations in powder composition, it marks a potentially alarming concern that may warrant more attention as the drug landscape continues to change.

Figures 4a and 4b. Physical presentation and appearance of seized ketamine



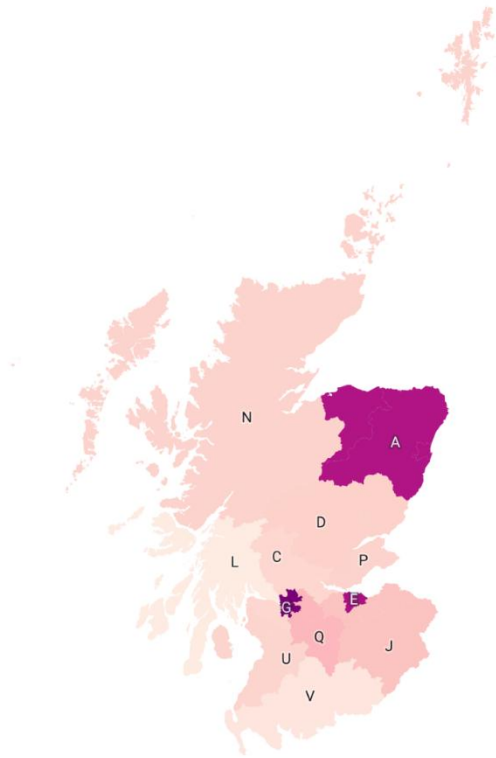
Ketamine seizure patterns across Scotland

The SPA jurisdictions divide Scotland into divisions that roughly translate to council areas. Additional samples are also seized and submitted to these jurisdictions from the National Crime Agency (NCA), Border Force, or via specialist routes as the result of international intelligence. Ketamine seizures between 2018 and 2024 were highly concentrated in Greater Glasgow, Edinburgh, and North East regions (which include Dundee and Aberdeen), with moderate amounts seen across central Scotland and the Lothians and Scottish Borders (Figure 5).

Notably, the North East division reported steady growth peaking in 2024 and represents an area of high sustained volumes of ketamine over time (Figure 6). Edinburgh division observed a large spike from 2022 onward that continues to trend upward. Most alarmingly, Glasgow division accounted for the highest seizures amounts in 2024 and seizures there continue to consistently rise sharply. These three geographical regions likely represent the highest risk and activity areas for ketamine supply and distribution, making them key targeted priorities with respect to policy focus, resource allocation, and ketamine performance metrics moving forward. The rise in ketamine seizures within these three regions may be attributed to various external factors such as overall drug supply availability or easier movement and access. While still significant, other divisions demonstrate comparatively low to minimal change over time and therefore a smaller ketamine presence with no extreme spikes.

Figure 5. Seizure locations for ketamine, by regional police division

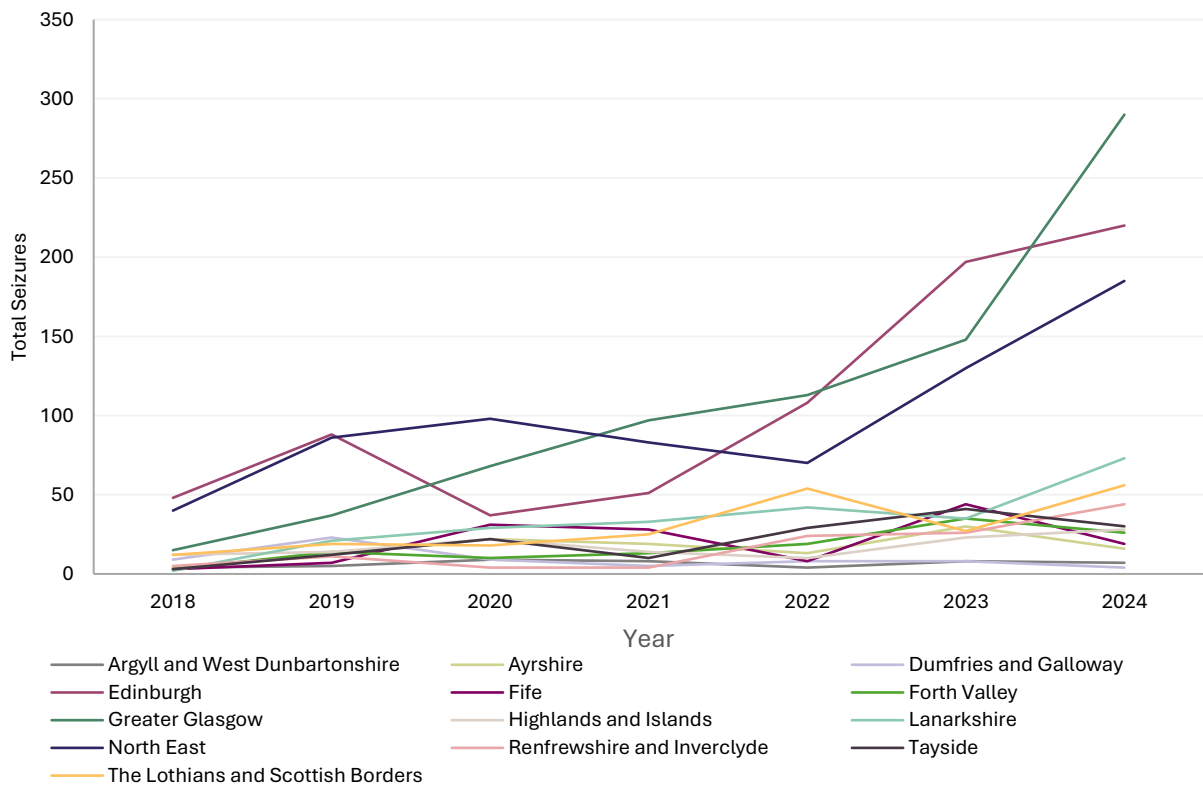
lowest highest



Region	Division
North East	A
Tayside	D
Forth Valley	C
Edinburgh	E
Greater Glasgow	G
The Lothians and Scottish Borders	J
Renfrewshire and Inverclyde	K
Argyll and West Dunbartonshire	L
Highlands and Islands	N
Fife	P
Lanarkshire	Q
Ayrshire	U
Dumfries and Galloway	V

Map data: © Crown copyright and database right 2019 • Created with Datawrapper

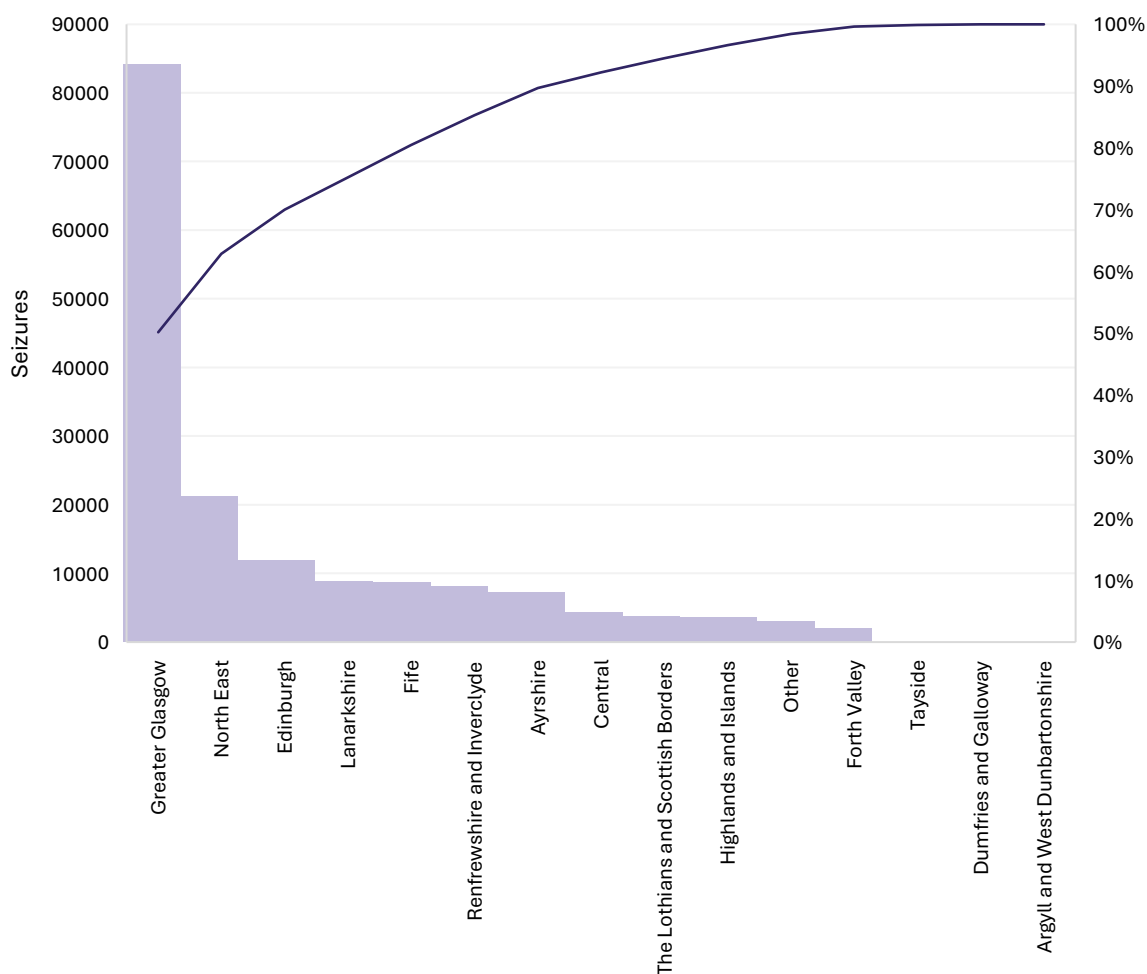
Figure 6. Total number of samples seized, by police jurisdiction



Seizures over 100mg are less likely to be personal ketamine possession, and more likely to indicate ketamine possession intended for dealing. An evaluation of seizures over 100 mg was undertaken to indicate potential import or distribution regions. These seizures represented 2005 of the 3582 total. Individual seizure weights ranged from 100 mg to just under 25 kg with an average of 79g. Comparatively, the majority of ketamine seizures in England and Wales in the year ending March 2024 were small quantities, with 52% of ketamine seizures weighing less than 1g and 40% weighing 1g to <500g (10).

Figure 7 illustrates the total weight of ketamine seized by jurisdiction. The column labelled “Other” indicates weighed ketamine seizures that were not assigned to a particular jurisdiction. Glasgow far and away accounts for the majority of ketamine supply, with over 84 kg seized from 2018 – 2024 and representing 50% of the total ketamine. North East (over 21 kg seized) and Edinburgh (nearly 12 kg seized) accounted for the next-largest quantities, with all other jurisdictions falling below 10 kg. The data confirms that while several jurisdictions account for the biggest proportion of ketamine seizures, Glasgow region offers the largest supply.

Figure 7. Total ketamine seized by weight and police jurisdiction, 2018-2024



Ketamine identification through testing

The rapid literature review identified twenty-two peer-reviewed studies evaluating ketamine detection methods. These broadly fell into two categories: drug checking technologies intended for point-of-need or harm reduction efforts (n=6), and analytical or forensic testing methods designed for laboratory use (n=16). Although both approaches aim to identify ketamine, their intended use differs substantially as does their performance and availability to the wider public. Overall, the literature review demonstrated that ketamine detection can be achieved using a range of techniques; however, those that have been specifically designed with harm reduction in mind remain in early development stages.

Studies evaluating testing in a harm reduction setting

Six studies evaluated technologies specifically intended for use in point-of-need or other drug checking settings (12-17). These studies mostly emphasised tests that were rapid and portable, yet still sensitive and require minimal training.

Two studies investigated test strip-based technologies. Li *et al* (12) developed a fluorescent test strip to simultaneously detect multiple substances including ketamine. Another study by An *et al* (13) trialled a modified test strip specifically for ketamine in beverages, although performance strongly depended on the type of liquid itself. The study found that ketamine could be detected with the strips at concentrations as low as 0.2 mg/mL in water, red wine, milk, and Pepsi, but not in beer, rice wine, or orange juice due to the liquid's interfering effects (13).

Three other studies focused on simplified Raman and mass spectrometry for on-site rapid ketamine identification and routinely identified 100% of pure ketamine powders correctly; however, the instruments are limited in widespread use due to their technical complexity (14-16). They require specialist instrumentation, technical expertise, and reference libraries, which limit their suitability for widespread public use outside established drug checking services.

Finally, Suleman *et al* (17) developed an electrochemical sensor that works by binding ketamine to the surface of small graphite sheets which are environmentally friendly and disposable. The study successfully detected ketamine as low as 0.01 µg/mL in soft drinks and represents a potential product that can be translatable to point-of-need if it successfully works with ketamine dissolved in other types of liquids (17).

Collectively, these studies highlight the expanding research into ketamine testing that may have real-world application for people who use drugs, at drug-checking facilities, or on-site at festivals and events. However, these testing methods are not currently available on the commercial market and are largely only prototypes or for use by trained

technicians at drug checking facilities or in forensic laboratories. As a result, there is insufficient evidence available to recommend implementation at this time.

Forensic or analytical laboratory studies

Sixteen papers identified from the literature review predominantly focused on ketamine identification in a forensic, toxicological, or other laboratory context rather than drug checking (18-33). These generally included mass spectrometry, voltammetry, electrochemical sensors, infrared spectroscopy, immunoassays, biosensors, gas sensors, and colourimetric methods.

Overall, the techniques demonstrated that ketamine can be identified with high sensitivity and accuracy under controlled conditions. Portable infrared spectroscopy successfully identified ketamine through packaging with few false positives, although its performance declined with unusual sample compositions and coloured materials such as tablets (21,27,32). Several studies highlighted advances in portable mass spectrometry that may enable rapid field screening without sacrificing laboratory-level analytical performance (25,28-30). Electrochemical sensing approaches are also a lower-cost alternative to conventional laboratory instrumentation but still require further testing for complex drug mixtures and biological compositions (18,22,33).

Although these technologies provide highly accurate ketamine identification, their complex workflow, plus reliance on trained personnel and laboratory quality assurance, limits their application for direct consumer use. These studies are briefly summarised in Table 1.

Table 1. Summary of articles included in the rapid review

Reference	Forensic testing technique	Key findings
Aouichi <i>et al</i> (18)	Mass spectrometry	Ketamine was detected in the oral fluid of 2.5% of drivers confirmed positive for drugs. Approximately 26% of ketamine-positive drivers had oral-fluid concentrations associated with potential driving impairment, supporting inclusion of ketamine in roadside testing panels.
Ceto <i>et al</i> (19)	Voltammetry	The study developed a portable electrochemical sensing platform to detect and differentiate multiple drugs in seized samples. The sensors offer an alternative to complex laboratory instrumentation that retains sensitivity and selectivity.
Han <i>et al</i> (20)	Mass spectrometry	A rapid screening method for dried blood or urine spots was combined with mass spectrometry; the approach allowed for sensitive and rapid detection of drugs in biological fluids with minimal sample preparation, which may be helpful for field-based toxicological screening.
Khandakar <i>et al</i> (21)	Biosensor	The study developed a sensor that can identify drugs through their optical response. However, results were based on computational modelling rather than experimental forensic samples, so their real-world performance remains unknown.
Kranenburg <i>et al</i> (22)	Infrared spectroscopy	A portable analyser successfully identified ketamine in seized drugs samples that were scanned through plastic packaging. False positives occurred with unusual sample compositions or coloured appearances.
Lima <i>et al</i> (23)	Voltammetry	The study developed an electrochemical screening method for forensic screening; the approach proved that the electrodes worked quickly with low-cost instrumentation, but did not yet evaluate interference from other compounds.
Martin <i>et al</i> (24)	Gas sensor	The study demonstrated that gas-sensing approaches can differentiate drug types based on their chemical odour profiles. The findings potentially support real-time forensic drug detection systems.
Morris (15)	Colourimetric	The Morris Reagent represents a presumptive colour test that allows for visual detection of ketamine. While it is routinely employed for forensic analysis, the reagent is

Reference	Forensic testing technique	Key findings
		commonly incorporated into other harm-reduction tools but suffers from subjective interpretation of colour change and false positives.
Musile <i>et al</i> (26)	Immunoassay	This review concluded that microfluidic devices offer low-cost, portable, and rapid platforms to detect ketamine that may have potential for point-of-need forensic and clinical toxicology applications. However, most applications remain at the concept stage and are not ready for real-world evaluation.
Van Beek <i>et al</i> (27)	Infrared spectroscopy	The study demonstrated that spectroscopy can effectively replace presumptive colour tests for forensic drug identification, although performance depends on the quality of reference libraries and complex mixtures may be difficult to detect.
Wu <i>et al</i> (28)	Mass spectrometry	This study developed a fluorescent strip coupled to mass spectrometry to detect ketamine simultaneously with morphine and methamphetamine in hair. It has potential use as a screening tool that works similarly to traditional toxicological workflows.
Stelmaszczyk <i>et al</i> (29)	Mass spectrometry	Ketamine can be successfully extracted and quantified from urine using paper-based membranes under controlled laboratory conditions, reducing solvent use and waste compared with traditional extraction techniques.
Tang <i>et al</i> (30)	Mass spectrometry	This study optimised instrument sensitivity of portable mass spectrometers that may be used in the field for on-site screening.
Wu <i>et al</i> (31)	Immunoassay	This study served as an early development model for the author's similar study published in 2025 using a fluorescent strip (28).
Zhu <i>et al</i> (32)	Infrared spectroscopy	The study showed that the detection of ketamine in forensic samples through chemometric modelling is highly dependent on the datasets, but may support non-destructive field based drug identification with minimal sample preparation.
Zou <i>et al</i> (33)	Voltammetry	The study developed a sensor that may potentially be utilised for wastewater-based epidemiology and forensic intelligence. However, its reproducibility in complex biological specimens compared to environmental sewage has not yet been explored.

Discussion

Ketamine seizures in Scotland have increased remarkably in recent years with no significant slow-down in sight, and its recreational use continues to present a challenge due to the several medical consequences associated with its long-term use. The ketamine market has evolved to target a younger population, utilising vibrant colours and dosages appearing in varied forms. This report highlights data collected by Police Scotland to suggest several regions that dominate the ketamine market, with Glasgow, Edinburgh, and the North East representing jurisdictions that may benefit from targeted response. The trend of increasing ketamine seizures is consistent with the general overall rise in drug consumption in the UK during similar periods. A comparison of wastewater data for Scotland and England in 2024 versus 2025 found that cocaine and heroin consumption was estimated to have decreased by 19% each, and amphetamine consumption by 40%. MDMA and methamphetamine consumption was estimated to have increased by 40% and 25%, respectively (7). However, ketamine consumption saw the largest increase at 54% between 2024 and 2025 – aligning with similar trends seen here. Beyond policing, there is scope for the findings outlined in this report to strengthen public awareness of ketamine, namely its appearance and the testing techniques that are available for drug checking versus laboratory analysis.

Current commercially available ketamine drug checking products differ substantially from the technologies described in the peer-reviewed literature. In the UK and internationally, consumer products are largely limited to colour-changing tests based on the Morris reagent (28), marketed by companies such as Drink Angel (34), DanceSafe (35), NIK Test T (36), and PRO Test (37). These products produce a colour change in the presence of ketamine but do not provide a definitive identification or quantified amount. They also may test for multiple substances simultaneously such as cocaine and GHB (34).

The limitations of colour tests are well known. While they are significantly lower-cost and easy to use compared to laboratory-grade equipment, they are primarily designed for powders and have limited efficacy for substances dissolved in beverages such as alcohol or soda (38). They cannot reliably identify ketamine within complex mixtures, and the interpretation of the colour change may be subjective. In contrast, the emerging technologies identified in the peer-reviewed literature demonstrate substantially greater accuracy, performance, and sensitivity. However, these technologies, including fluorescent strips, sensors, and portable spectroscopic devices, are largely experimental and not yet commercially available.

Consequently, there is an important evidence gap between products currently marketed to consumers and the technologies supported by peer-reviewed research. Most

commercially available drug checking products rely on long-established presumptive colour detection rather than validated evidence. While this report does not recommend a particular vendor for reagent tests, it does recognise that continued use of these reagents remains the dominant choice for ketamine drug checking at this time. The report also recommends exercising caution when using these tests for drug checking due to their liability for false positives or negatives in the case of mixtures, coloured samples, tablets, or ketamine dissolved in liquid. However, improved harm reduction advice and messaging surrounding ketamine and its associated risks could help individuals better understand changes in ketamine trends, associated dangers, and availability of drug checking test kits as markets change.

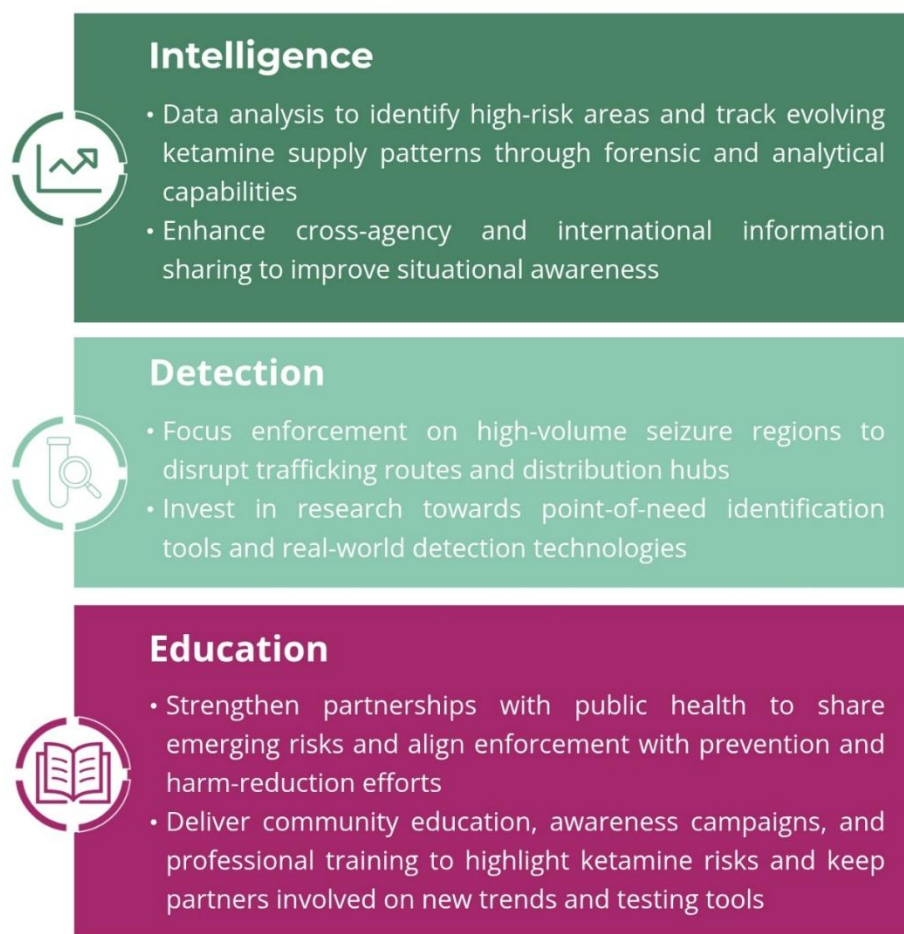
This report also supports a need for further research and innovation in drug checking technologies. While ketamine colour tests offer a strong starting point, they remain limited in their ability to identify a variety of sample types. This is a limitation which must be overcome to support effective harm reduction. Expanding access to accurate drug checking services by integrating colour tests and spectroscopic field technology, a process that is already in the works for Glasgow and Dundee, could play an important role in reducing accidental harm and improving public health responses.

Conclusions and recommendations

This report evaluates ketamine seizures and forensic analysis in Scotland over the past eight years to identify patterns in distribution and appearance. It also provides a rapid literature review highlighting advances in drug checking research versus commercially available products, thereby offering a starting point for further education and awareness surrounding ketamine in Scotland. Ketamine seizures have increased over time, geographically clustered in Glasgow, Edinburgh, and North East regions. While ketamine predominantly appeared as a white or crystalline powder, it has also been identified in coloured powder, tablet, and liquid form.

A rapid literature review of ketamine testing methods identified several promising new analytical techniques that are largely useful in a forensic or laboratory context, although there are several modifications to test strips that may prove useful for future point-of-need care. Several companies currently market ketamine colour test reagent kits that for both powdered ketamine and ketamine in beverages, though they are not always specific to ketamine and may detect multiple substances simultaneously. Several key findings were identified in this report as elements that will contribute to an effective ketamine response as outlined in Figure 8.

Figure 8. Key recommendations for effective ketamine response in Scotland



Moving forward, intelligence gathering through data should be a priority to identify high-risk areas where ketamine is concentrated. While data such as that outlined in this report is recorded contemporaneously, it is not routinely monitored for potential changes. Sharing this data among police, health services, international partners, and forensic analysts will strengthen the ability to rapidly detect changes in the ketamine market and allow for continuous monitoring of trafficking, supply patterns, and emerging trends.

Efforts to disrupt ketamine supply networks should focus on regions where the largest quantities of ketamine are seized. Research and innovation, focusing on the development of ketamine-specific rapid identification tools, will allow teams to monitor evolving markets and invest in technologies that are effective in real-world operational settings. This coupled with ongoing professional training will allow practitioners to remain informed about new developments and advances in ketamine testing methods. A coordinated and continued partnership between enforcement and public health organisations is essential. Information sharing with health services, drug checking

facilities, and safe consumption services can help communicate emerging risks quickly. It will also align enforcement with prevention, treatment, and harm reduction initiatives.

Finally, supporting research beyond colour tests that can be translated into practical, point-of-need application will further improve responses to ketamine-related harms. Community education and prevention campaigns should engage schools, young people, and community organisations to raise awareness of ketamine risks, reduce early involvement, and help prepare communities for changing market conditions.

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