European Drug Checking Trends

2018-2024

Report Contributors

Title

European Drug Checking Trends 2018 - 2024

Authors

Jones, G.: Conceptualization; Methodology; Writing - Original Draft; Investigation; Formal analysis;
Ventura, M.: Conceptualization; Methodology; Writing - Review & Editing; **Rigoni, R.**: Conceptualization;
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Data provision, Validation.

Design

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Graphics

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Recommended citation

CONTENT

EXECUTIVE SUMMARY

This multi-year report contains data since 2018 and aims to show the changes in drug markets over time. Most drugs have fairly stable presentations over this time period, however there are some visible trends. Cocaine purity has increased until 2023, but in the first half of 2024 it started to decline, with a noticeable increase in detections of the local anaesthetic procaine.

MDMA mis-selling increased significantly during covid, from 95% of samples being only MDMA down to 80%. Dosage of MDMA tablets fell by about 30% on average. The MDMA market is showing a steady recovery to pre-covid levels with over 90% of samples containing only MDMA and tablet strengths increasing to 170mg. Variability of MDMA tablet strength remains extremely high with the difference between "weak" and "strong" tablets being several multiples of an adult dose.
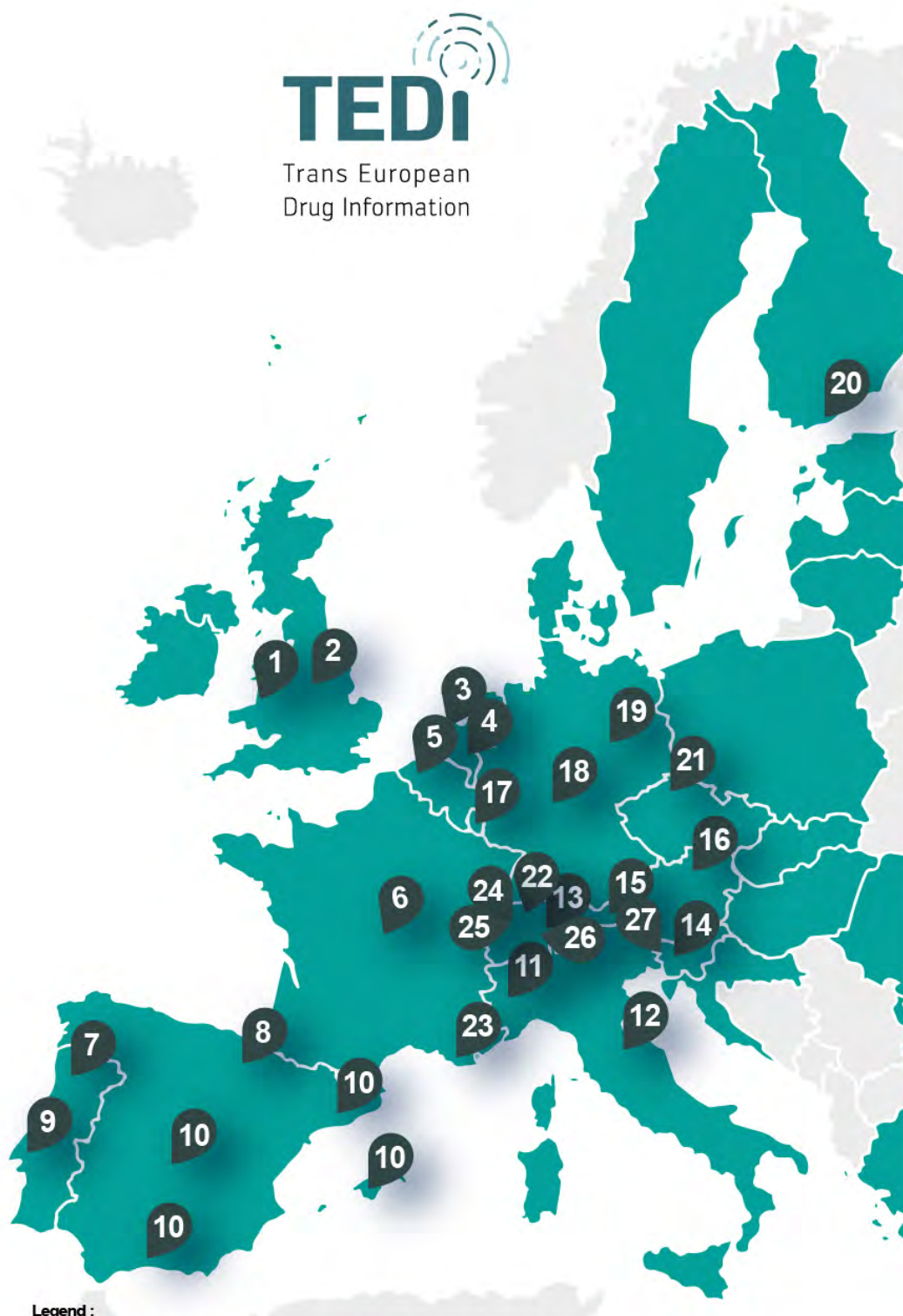
Cocaine showed an increase in average purity during 2023 as lower purity samples became less prevalent, but this trend has reversed, seemingly driven by increasing amounts of the non-psychoactive anaesthetic procaine.

While the novel "nitazene" opioids are of significant concern for people using heroin, they are largely confined to the benzodiazepine sedative market at present. This represents a huge concern to people using benzodiazepines, as unexpected strength and combinations of tablets increase risk significantly.

Drug checking remains inhomogenous throughout Europe, with just around half of all samples coming from two drug-checking services, in Spain and in the UK. The smallest contributors need more funding and resources if they are to play a role in market monitoring as well as harm reduction.

The names, countries and a brief description of each service can be found on the **"Locations" page of the TEDI website.**

TOP SAMPLE CONTRIBUTORS IN THE LAST YEAR

12 MONTH SNAPSHOT

REPORTING PERIOD

1st July 2023
Earliest Date

30th June 2024
Latest Date

Top Sample Contributors in the Last Year

Other • WEDINOS • Energy Control

- 58%
- 24%
- 18%
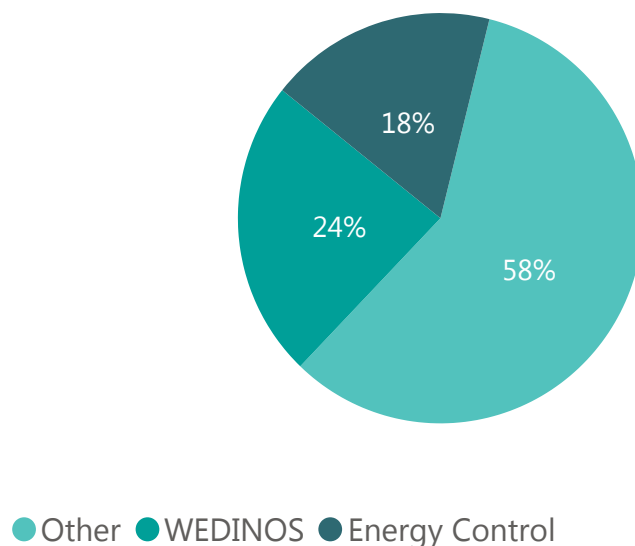
Some organisations have longer opening hours or higher testing capacity, which means they contribute a larger number of data points to the report.

The top 2 contributors make up around 50% of samples. The smallest contributors need more funding and resources if they are to play a role in market monitoring as well as harm reduction.

Currently the adulterants and risk trends in the European drug market are reasonably homogenous, even though the drug preferences vary between countries.

WHERE ARE SAMPLES TESTED?

HOW ARE SAMPLES SUBMITTED?

Sample submitted
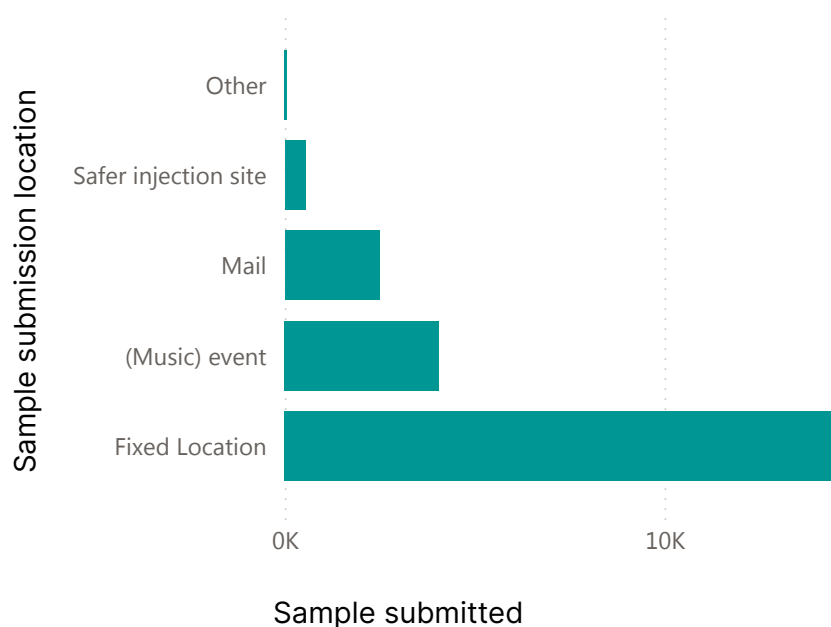
27.1K

Count of Sample UID

Most countries offer "Fixed Location" drug checking services, which have a permanently accessible address which service users must attend in person.

Temporary City testing services are similar but open very infrequently, such as mobile testing vans or "pop-up" testing services.

Music event based testing is conducted inside of music events and is only accessible to ticket-holders.

Safer injection sites (aka Overdose Prevention Centres) tend to access a slightly different demographic with higher-risk patterns of drug use.
Almost all samples of heroin and meth currently come from Safer Injection Sites.

WEDINOS, in the UK, is the largest testing service by number of samples, which are submitted by users through the mail.

Most other countries do not offer mail-in sample submission.

Service Type	Austria	Belgium	Finland	France	Germany	Italy	Luxembourg	Portugal	Slovenia	Spain	Switzerland	UK
(Music) event	701	79		619		621	23	1318		1152	45	
Cannabis Club										1		
Drug Consumption Room				8						614		
Fixed Location	2395	179	190	2935	152	154	123	875	859	2599	4411	3333
Mail				85						494		3063
Non-public						16						
Other				30						70		
Temporary City		1		2								

MDMA TABLET

Samples submitted in the report period: **10.23K**

Median number of samples per quarter: 289

Adulteration Likelihood - Change Over Time

Adulteration level ● Only intended ● Only other compound ● Substance plus other compound

Typical MDMA Content Per Tablet - Box Chart

Box shows middle 50% of samples. 25% of samples are have more per tablet and 25% of samples have less content than this.

MDMA

POWDER FORM (INCLUDING CRYSTALS AND ROCKS AND OTHER UNPROCESSED FORMS)

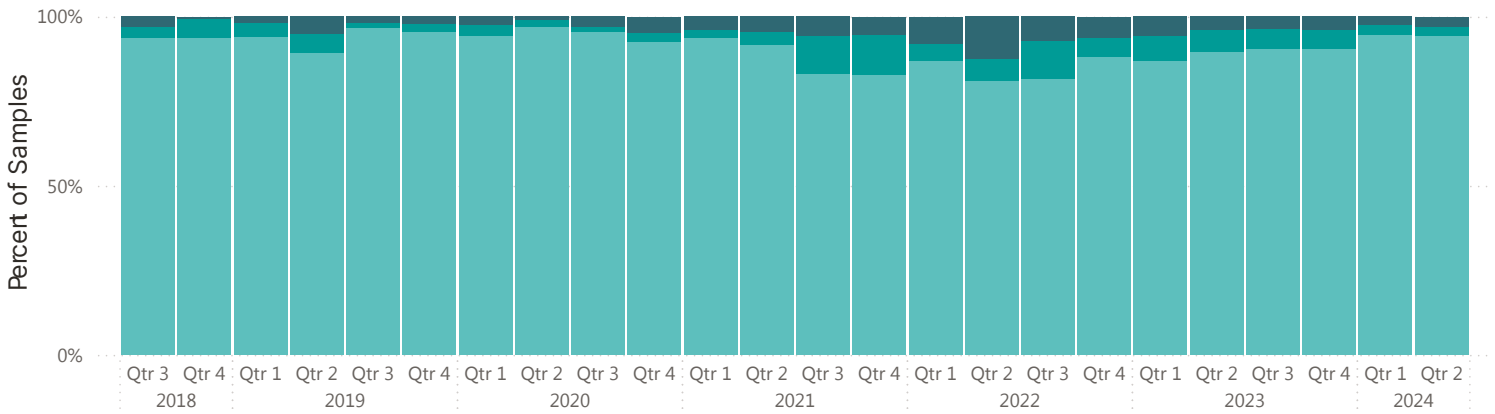**Samples submitted in the report period:** **19.60K**

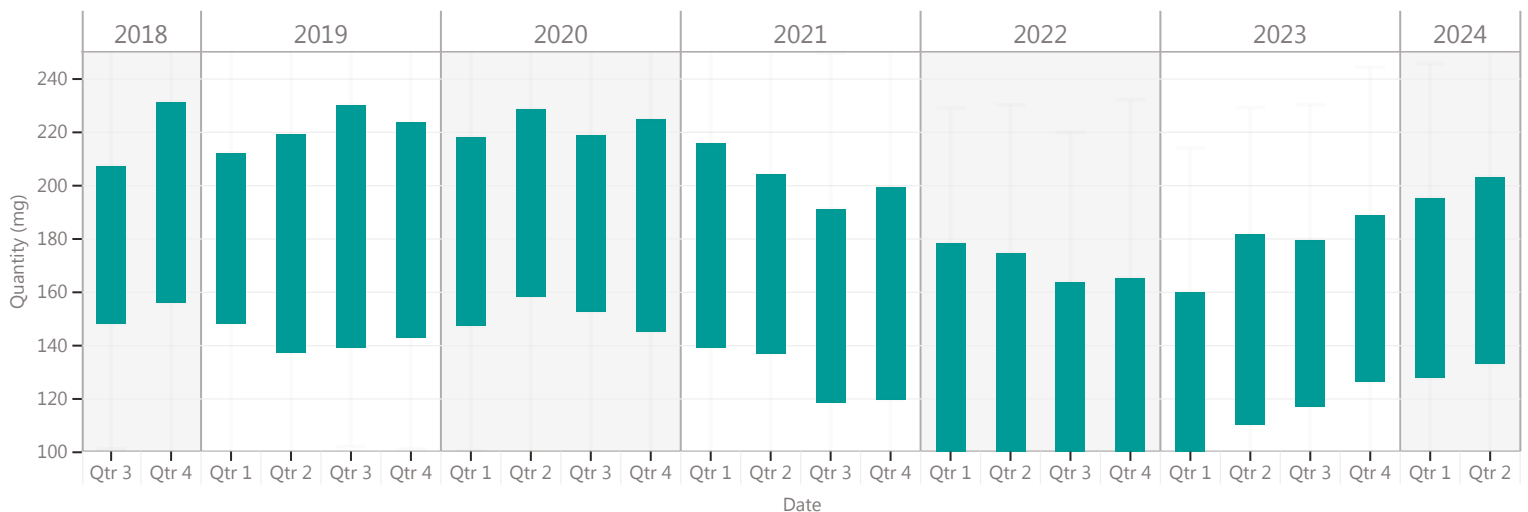Median number of samples per quarter: 289

Adulteration Likelihood - Change Over Time

Adulteration level ● Only intended ● Only other compound ● Substance plus other compound

Typical MDMA Content Per Tablet - Box Chart

Box shows middle 50% of samples. 25% of samples are have more per tablet and 25% of samples have less content than this.

MDMA
12 MONTH SNAPSHOT

Date: **01/07/2023 - 30/06/2024**

Total samples submitted: **6594**

Median MDMA content * : 84%

Number of samples by country of testing service

Sold-As ● MDMA
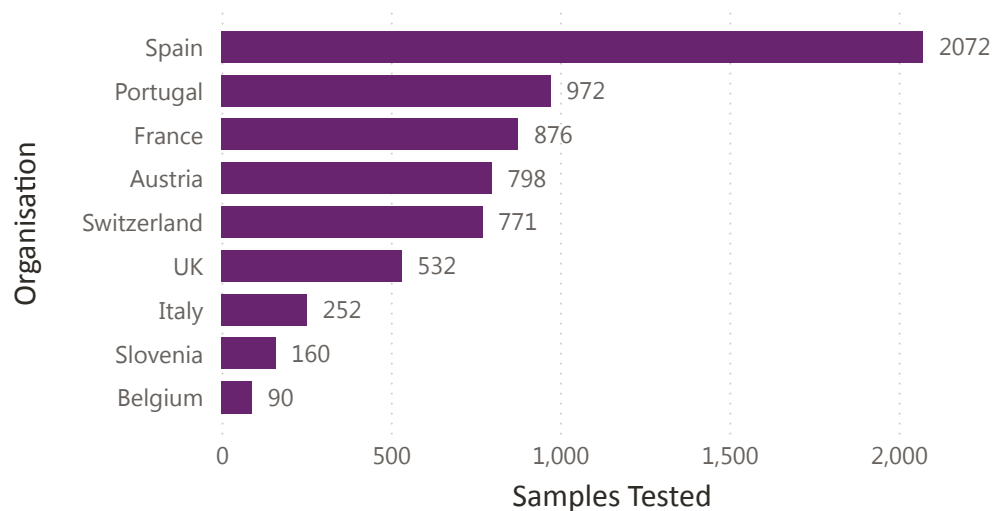
Organisation	Samples Tested
Spain	2072
Portugal	972
France	876
Austria	798
Switzerland	771
UK	532
Italy	252
Slovenia	160
Belgium	90

* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.

MDMA
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Only other compound
422 (6%)

Substance plus other
compound
188 (3%)

Only intended 5984 (91%)

Adulterants detected in samples sold as MDMA

Adulterant	Count
Caffeine	102
4-CMC	62
Amphetamine	40
Unknown	39
Ketamine	30
Methylone	21
Cocaine	20
Methamphetamine	19
3-CMC	18
Lidocaine	13
Paracetamol	13

AMPHETAMINE

Samples submitted in the report period: **8706**

Median number of samples per quarter: 309

Adulteration Likelihood - Change Over Time

Adulteration level ● Only intended ● Only other compound ● Substance plus other compound

Purity Over Time - Box Chart

Box shows middle 50% of samples. 25% of samples are more pure and 25% of samples are less pure than this.

AMPHETAMINE

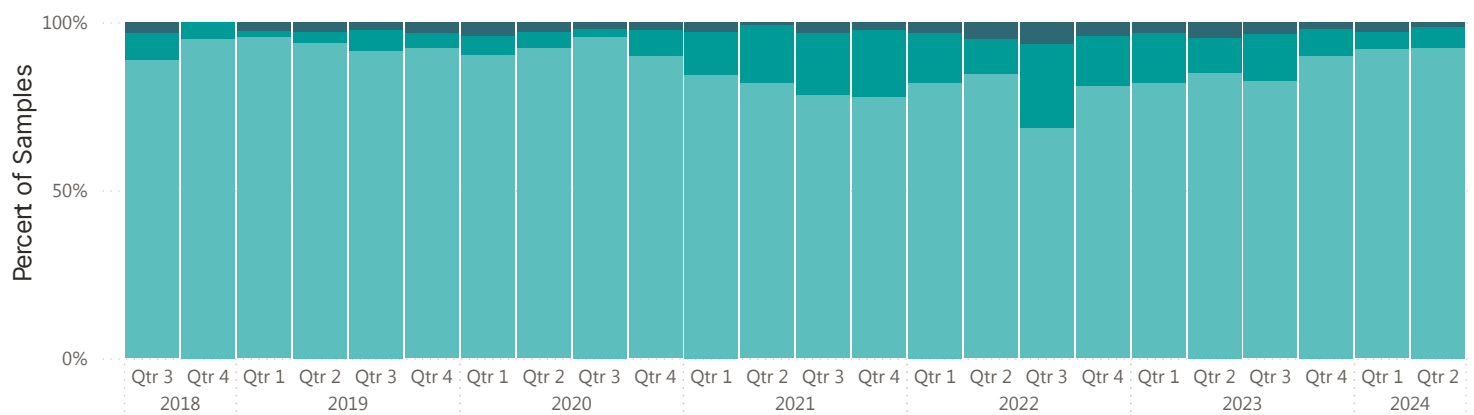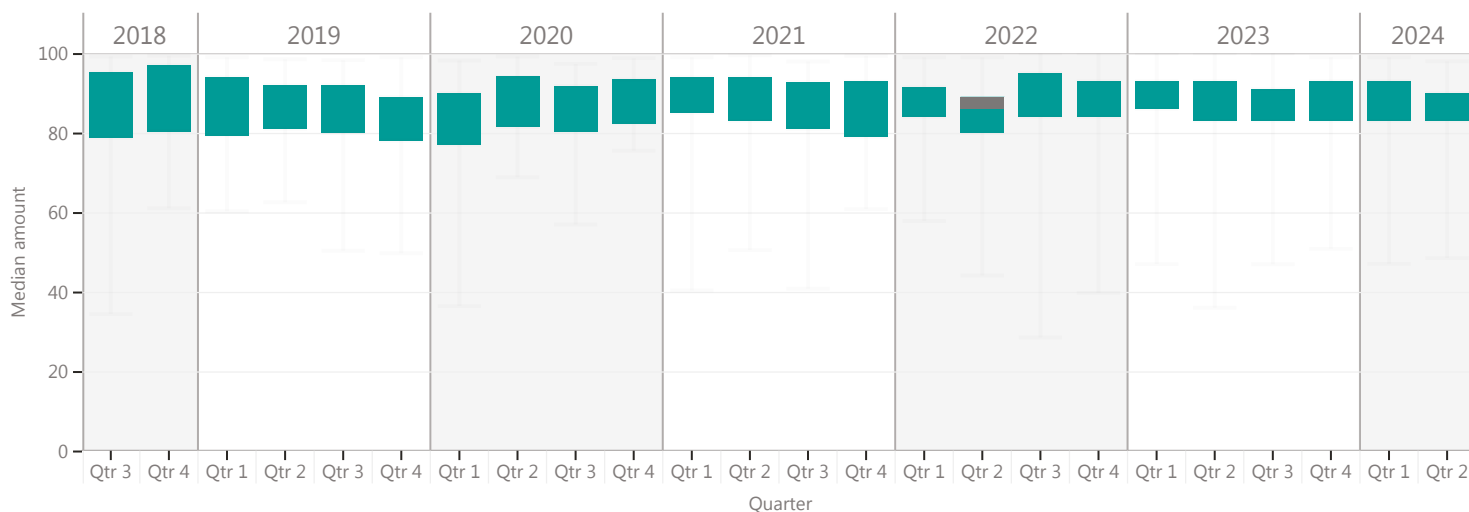**Date:** **01/07/2023 - 30/06/2024**

Total samples submitted: **2123**

Median Amphetamine content* : 42%

Number of samples by country of testing service
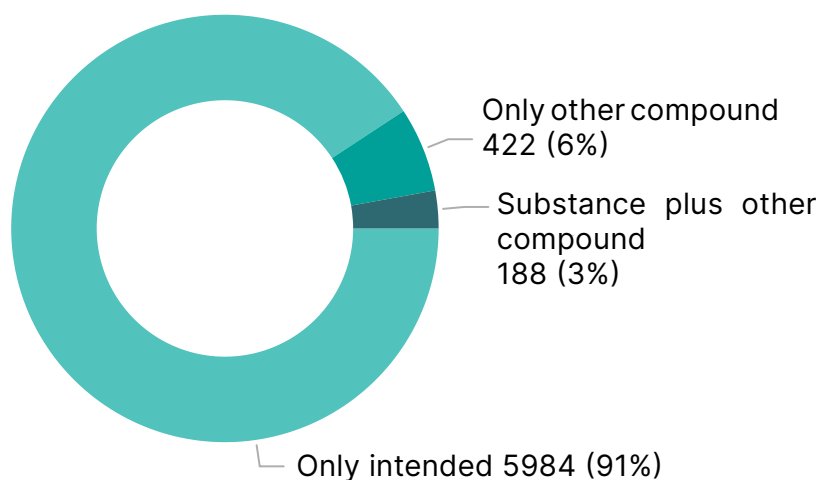
Sold-As ● Amphetamine
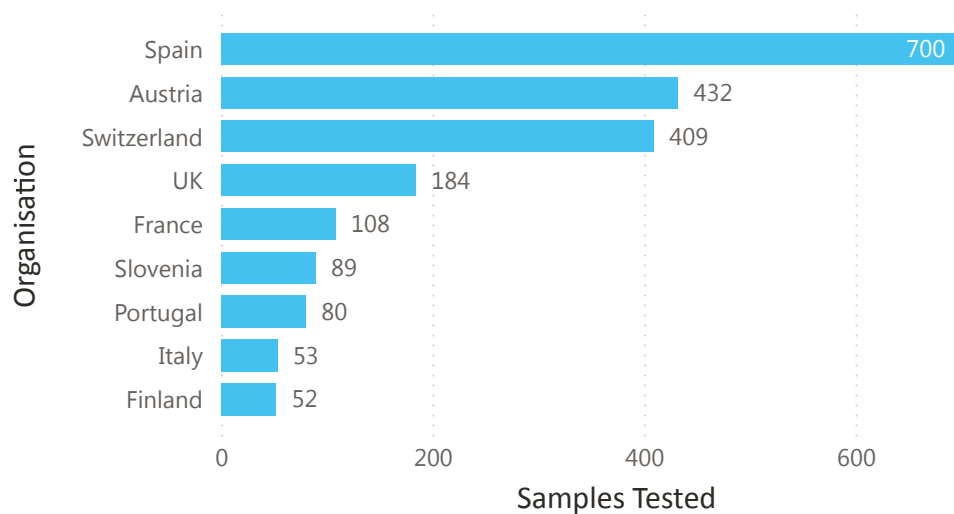
* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.
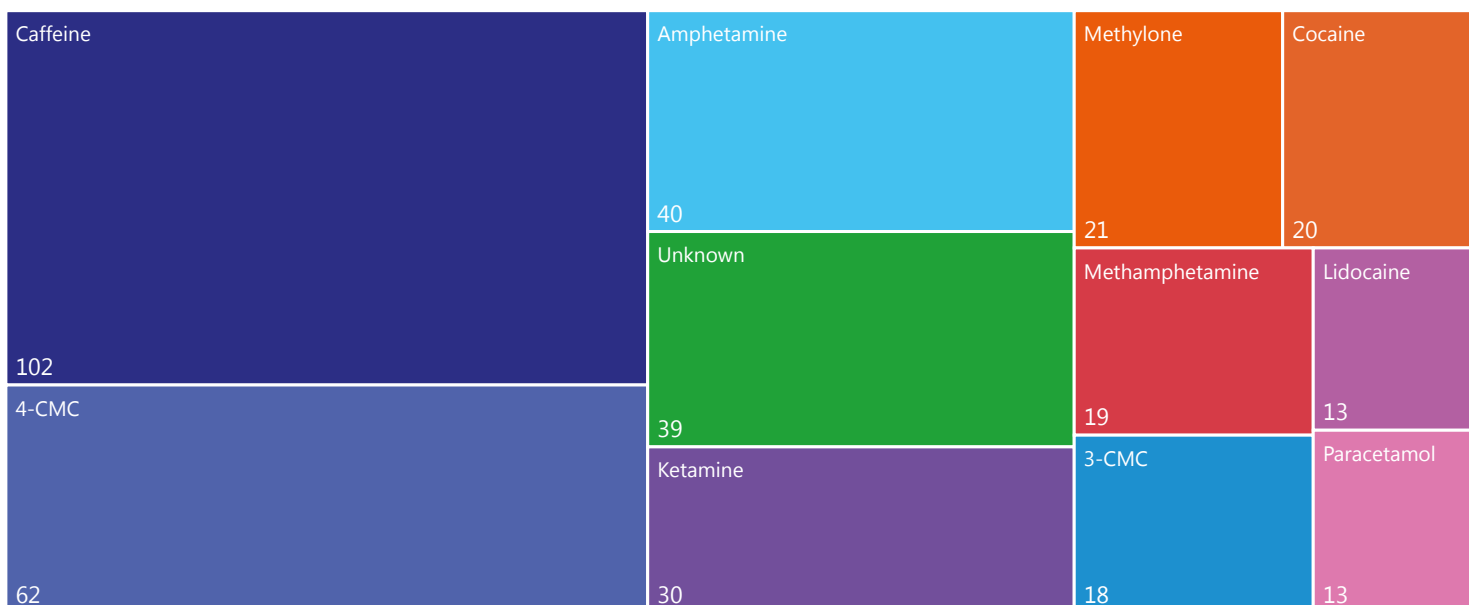
AMPHETAMINE
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Only intended 700 (33%)

Only other compound
168 (8%)

Substance plus other
compound
1253 (59%)

Adulterants detected in samples sold as amphetamine

Caffeine	2-Phenethylamine
	Phenethylamine

Caffeine 1224

2-Phenethylamine 114

Phenethylamine 45

Cocaine 32

MDMA 27

Creatine 25

Ketamine 24

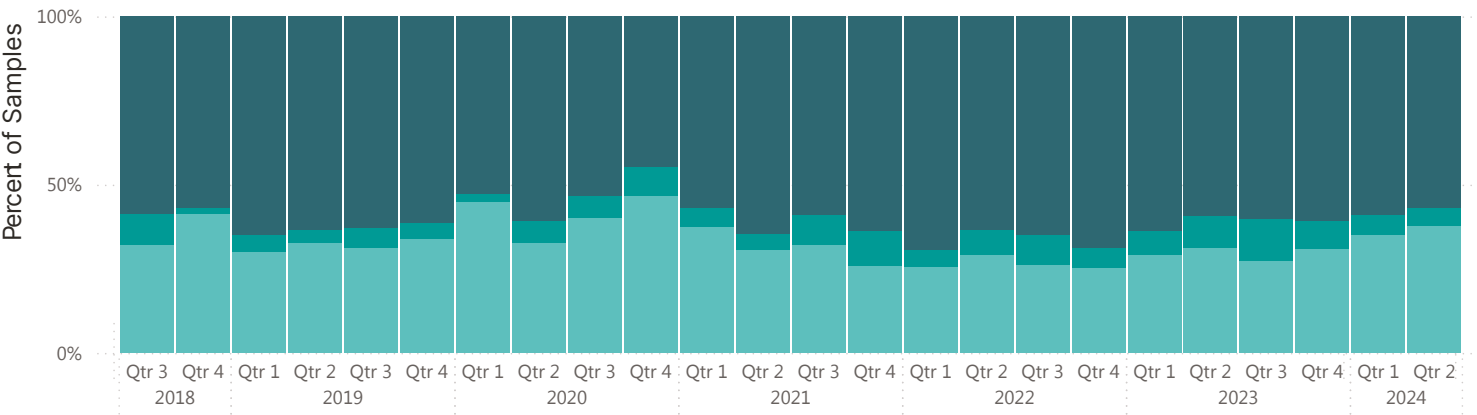Metham-phetamine 20

Cutting agent 12

Unknown 23

HEROIN

Samples submitted in the report period: **2092**

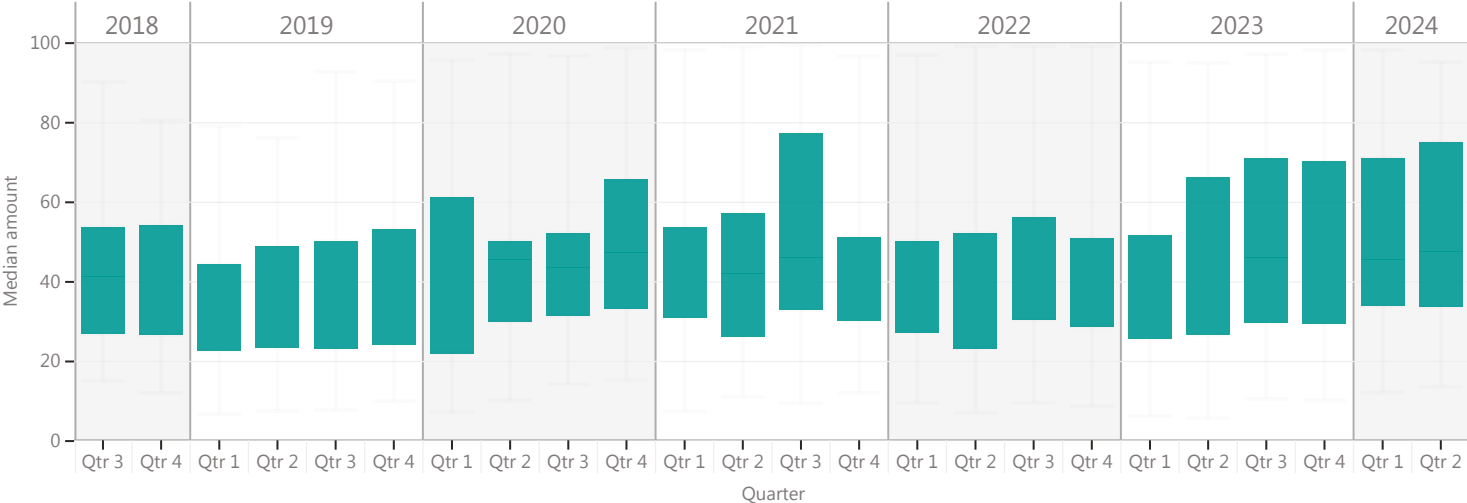Median number of samples per quarter: 66

Adulteration Likelihood - Change Over Time

Adulteration level ● Only intended ● Only other compound ● Substance plus other compound
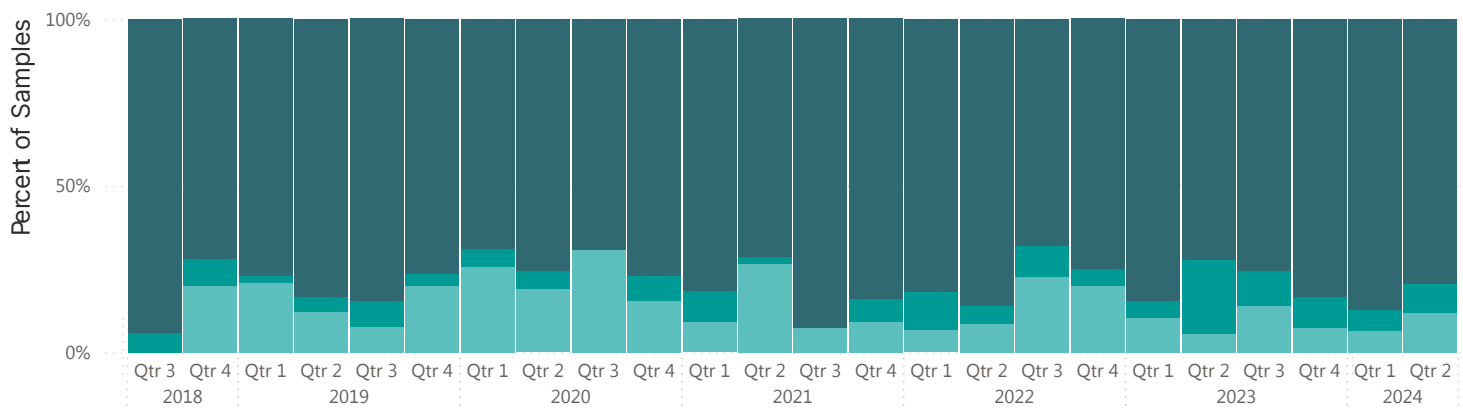
Purity Over Time - Box Chart
Box shows middle 50% of samples. 25% of samples are more pure and 25% of samples are less pure than this.

HEROIN
12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Total samples submitted: 619

Median Heroin content* : 11%

Number of samples by country of testing service
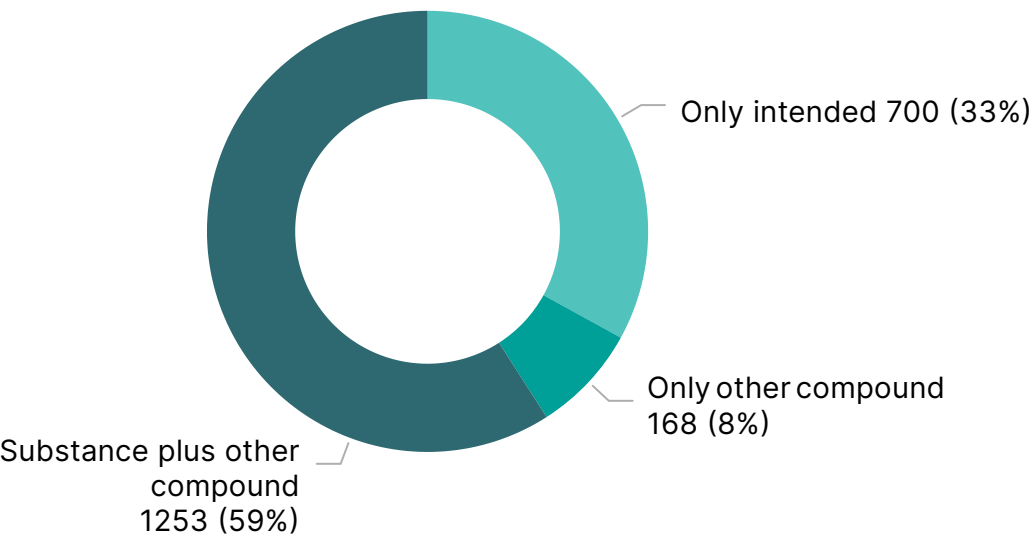
Sold-As ● Heroin
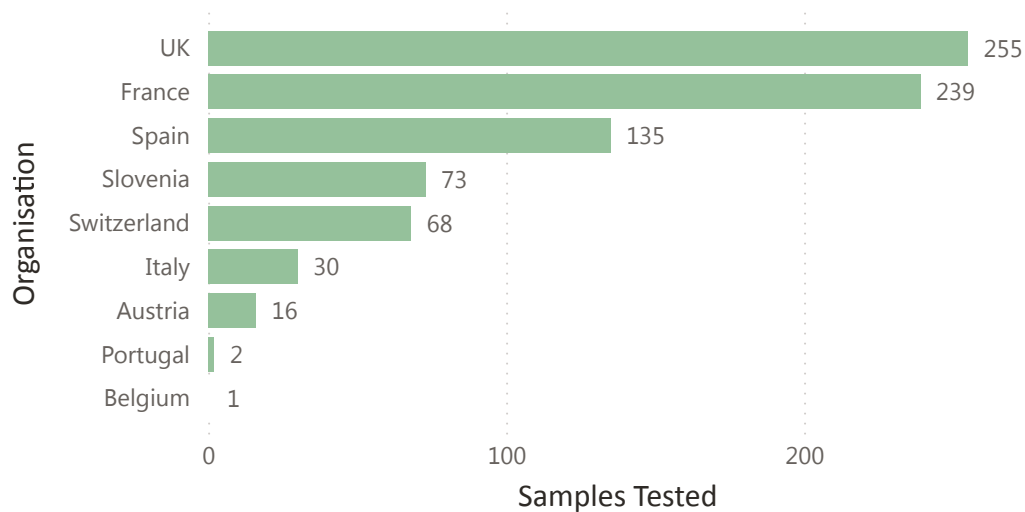
* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.

HEROIN
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Only intended 81 (10%)

Only other compound 71 (9%)

Substance plus other compound 667 (81%)

Adulterants detected in samples sold as heroin

| Caffeine 637 | Paracetamol (Acetaminophen) 512 | Dextromethorphan 131 | Morphine 125 |
		Piracetam 78	xylazine 36	Cocaine 29
		Meconine 46	Codeine	Phenacetin
			Chloroquine	17

METHAMPHETAMINE

Samples submitted in the report period: **911**

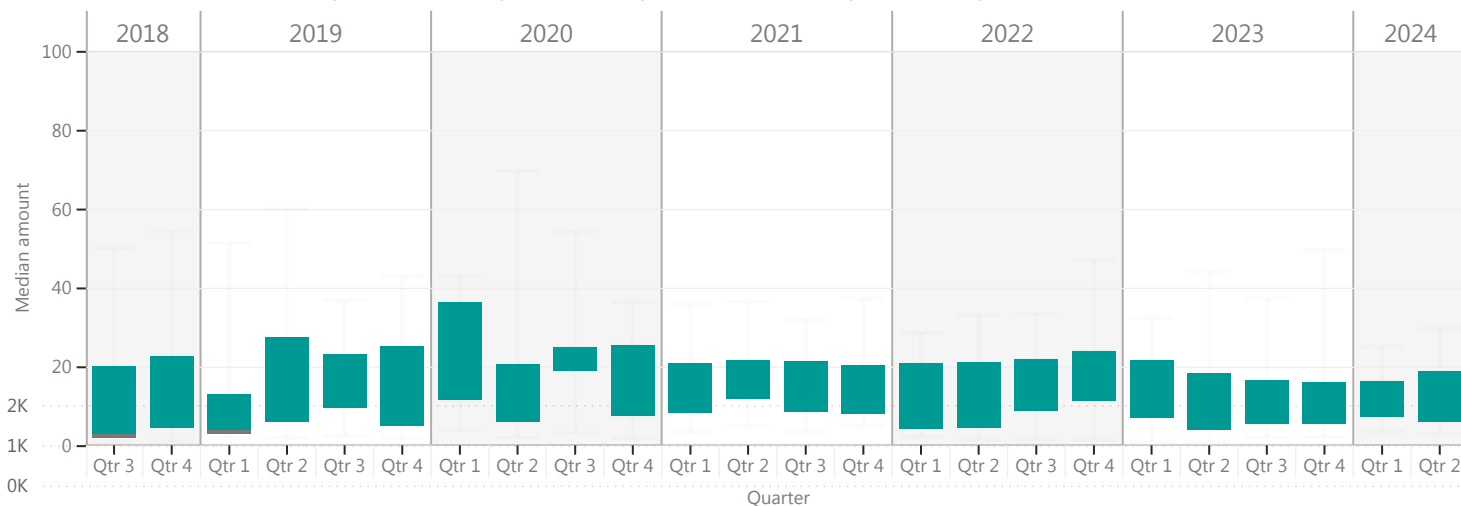Median number of samples per quarter: 32

Adulteration Likelihood - Change Over Time

Adulteration level ● Only intended ● Only other compound ● Substance plus other compound
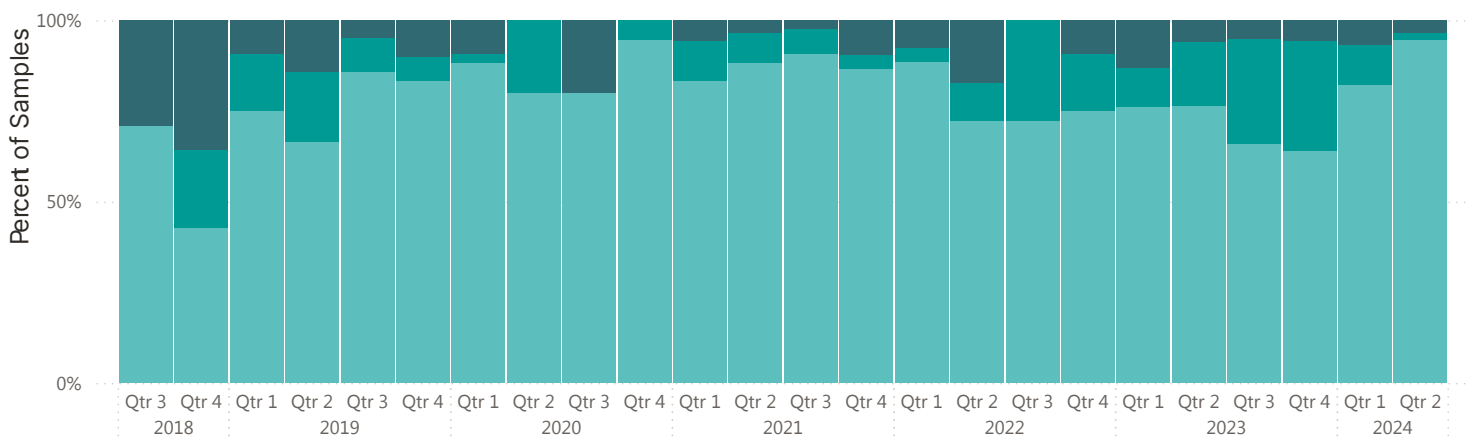
Purity Over Time - Box Chart

Box shows middle 50% of samples. 25% of samples are more pure and 25% of samples are less pure than this.
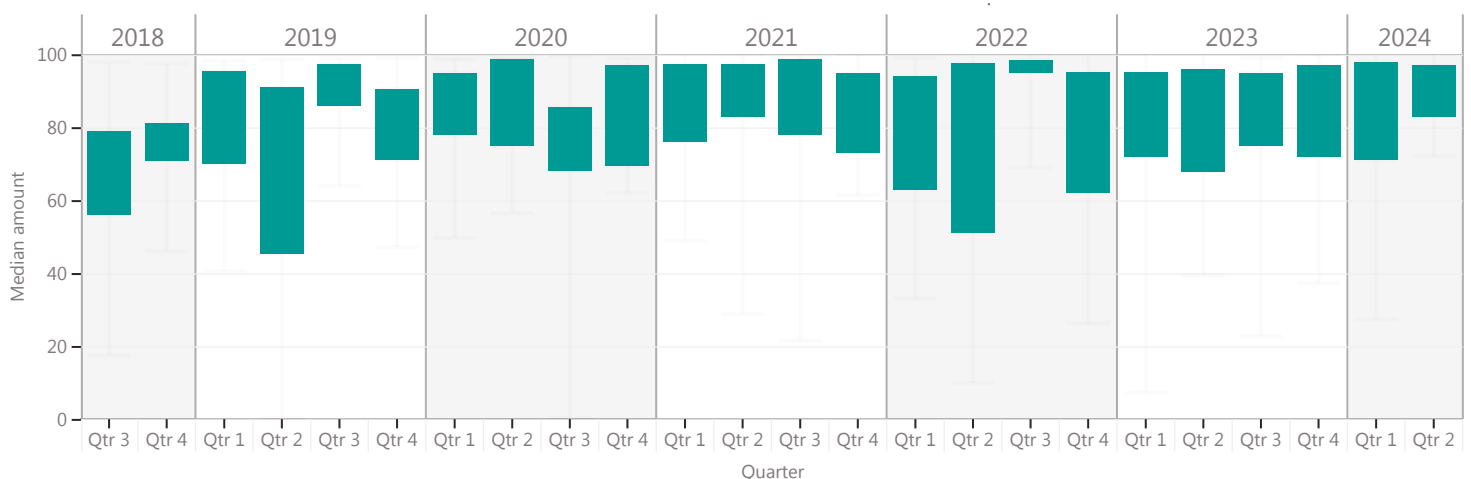
METHAMPHETAMINE
12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Total samples submitted: 242

Median methamphetamine content* : 84%

Number of samples by country of testing service

Sold-As ● Methamphetamine
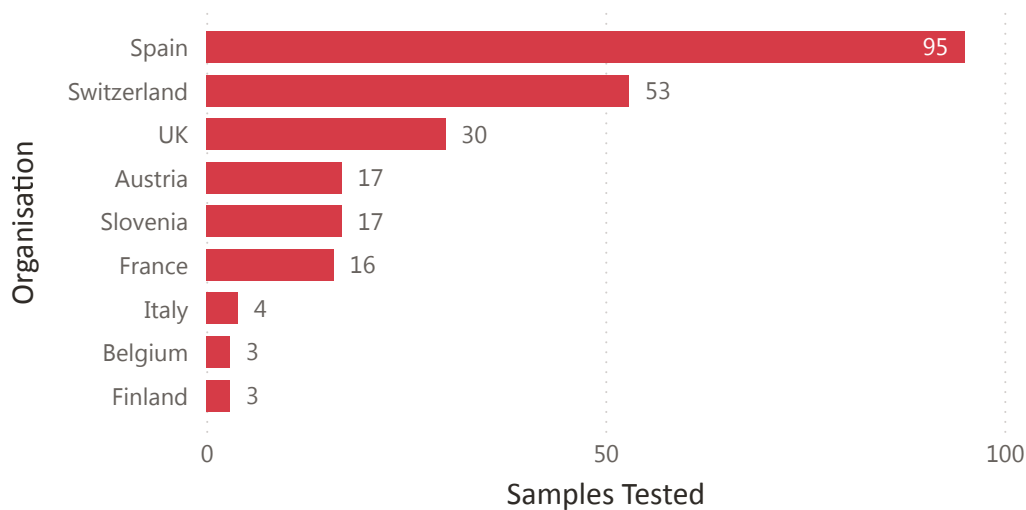
* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.

METHAMPHETAMINE
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Substance plus other compound 15 (6%)

Only other compound 30 (12%)

Only intended 197 (81%)

Adulterants detected in samples sold as methamphetamine

Ketamine
7

Amphetamine
6

3-CMC
5

Caffeine
3

Cocaine
3

MDMA
3

Unknown
3

2-MMC
2

Alpha-PHP
2

N-Isopropylbenzylamine
2

Methylsulfonylmethane
2

COCAINE

Samples Submitted in the report period: **17.6k**

Median number of samples per quarter: 632

Adulteration Likelihood - Change Over Time
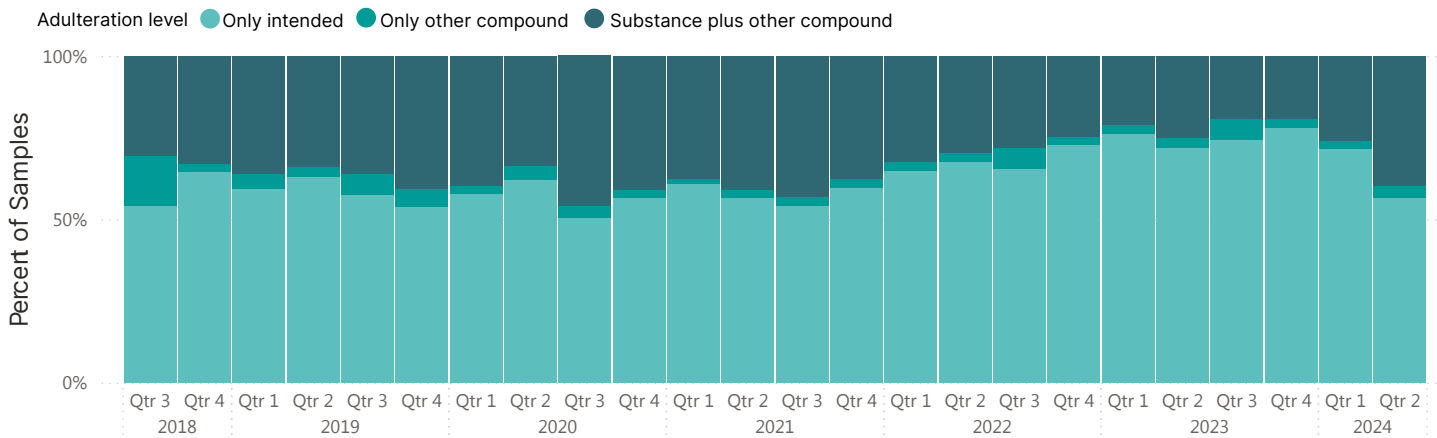
Adulteration level ● Only intended ● Only other compound ● Substance plus other compound

Purity Over Time - Box Chart

Box shows middle 50% of samples. 25% of samples are more pure and 25% of samples are less pure than this.
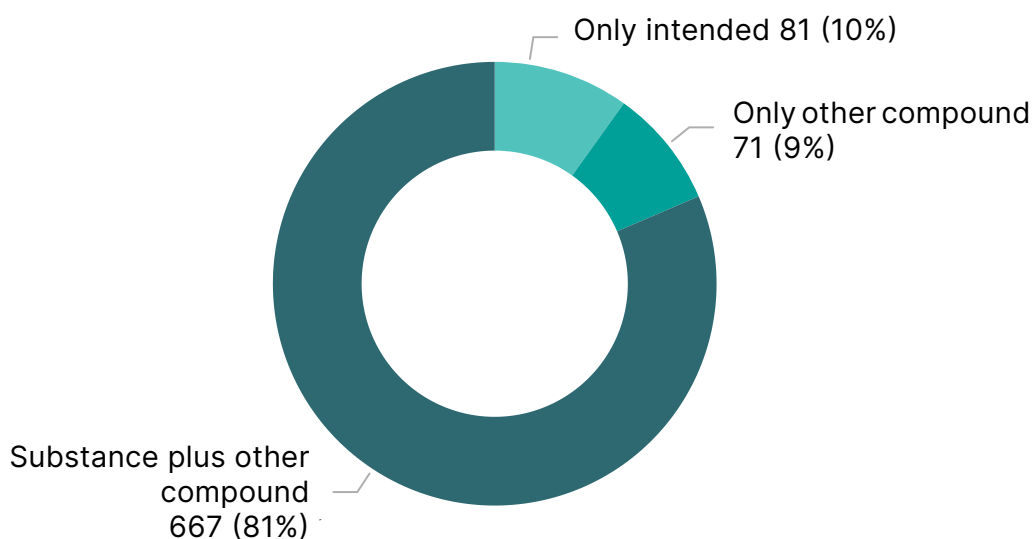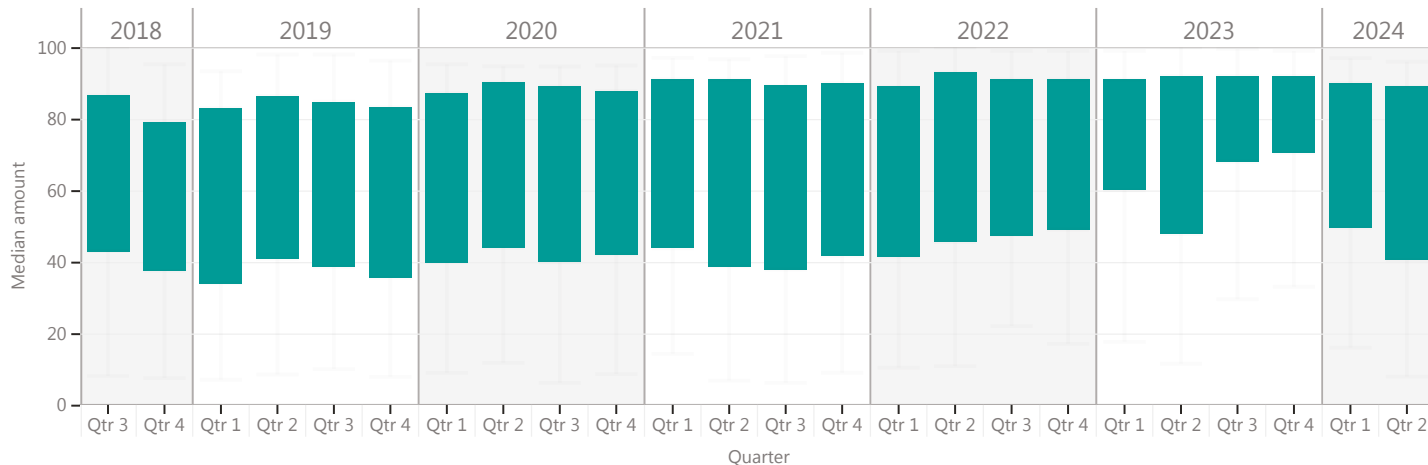
COCAINE
12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Total samples submitted: **4996**

Median Cocaine content* : 85%

Number of samples by country of testing service

Sold-As ●Cocaine
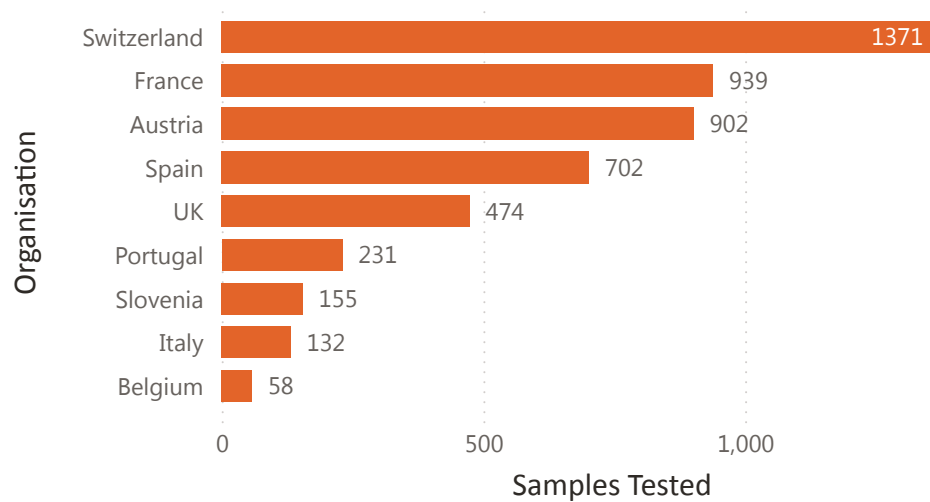
* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.
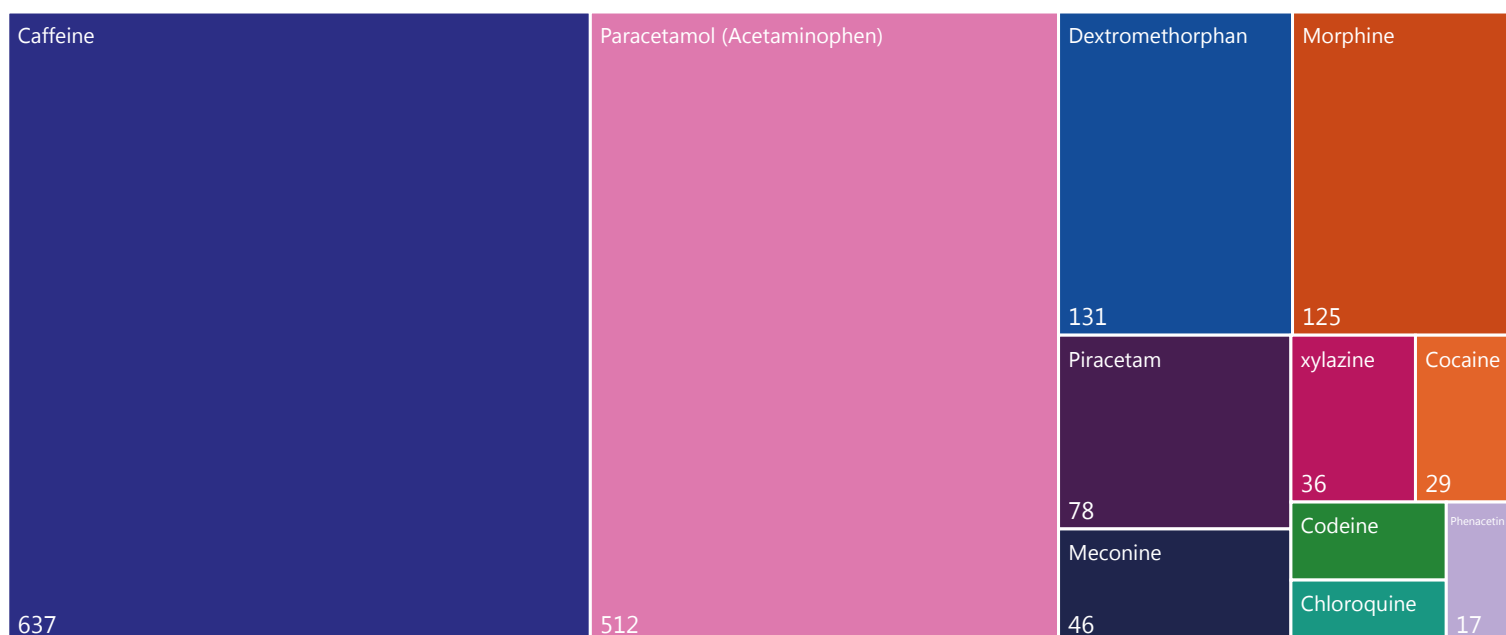
COCAINE
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Substance plus other compound 1344 (27%)

Only other compound 190 (4%)

Only intended 3450 (69%)
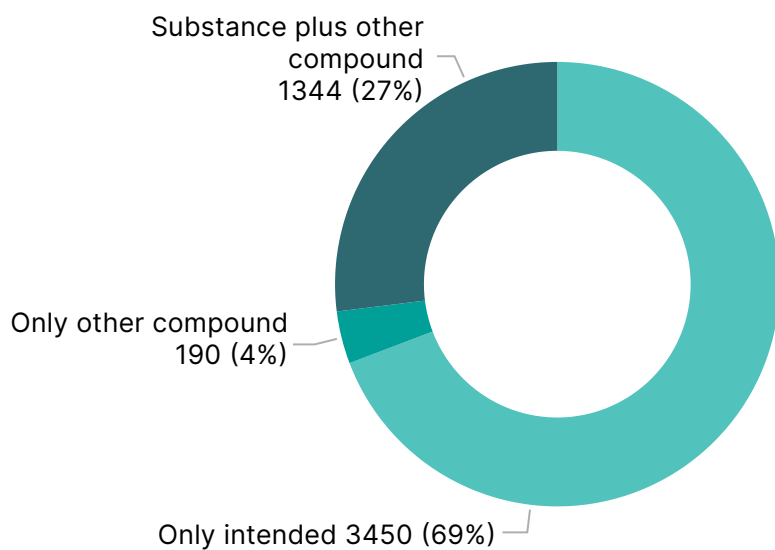
Adulterants detected in samples sold as cocaine

| Levamisole 451 | Procaine 375 | Lidocaine 103 | Paracetamol 97 |
| Phenacetin 407 | Caffeine 360 | Ketamine 35 / Amphetamine 34 | Creatine 32 / Benzocaine 27 |
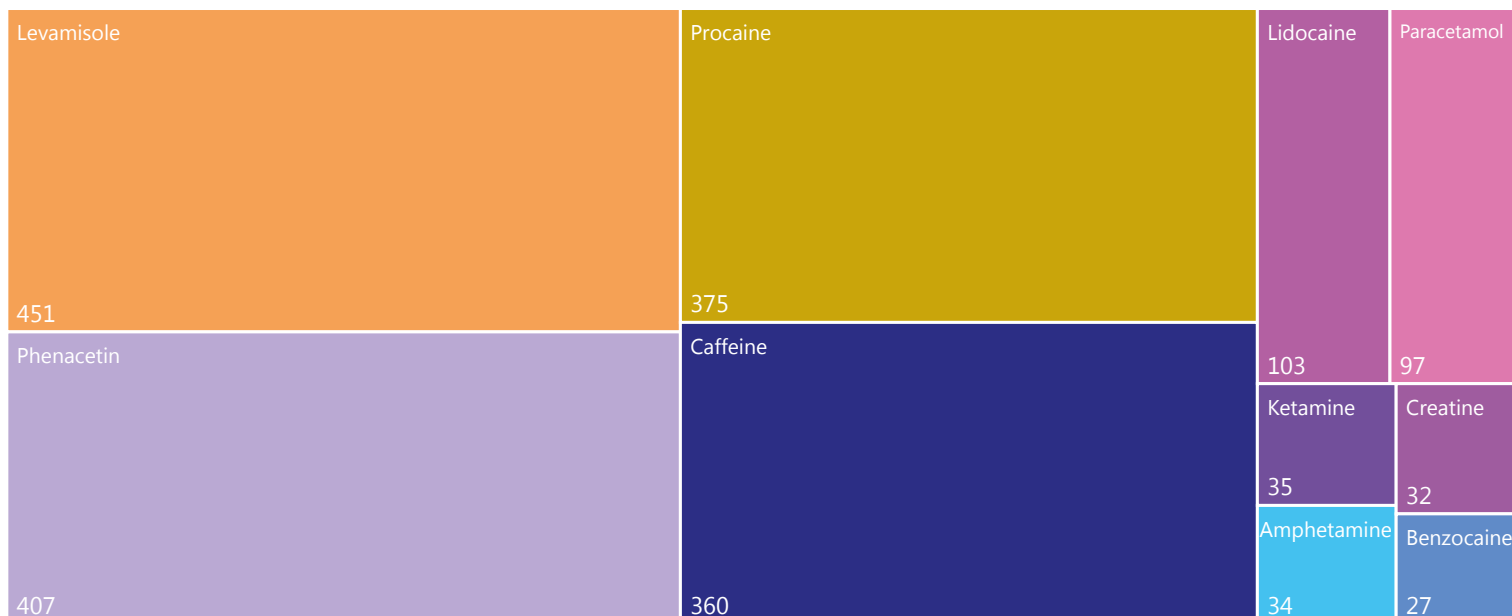
KETAMINE
12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Total samples submitted: 1786

Median ketamine content* : 93%

Number of samples by country of testing service
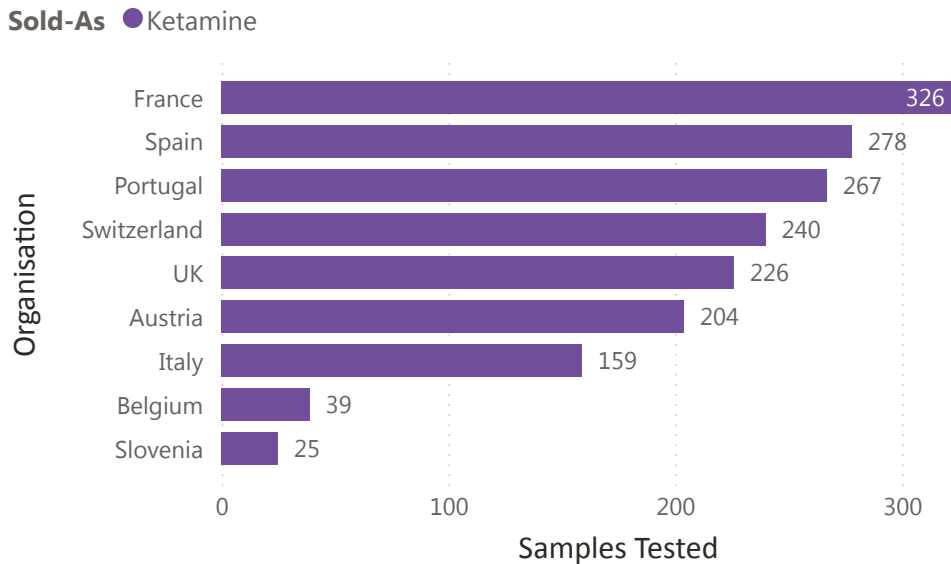
Sold-As ● Ketamine

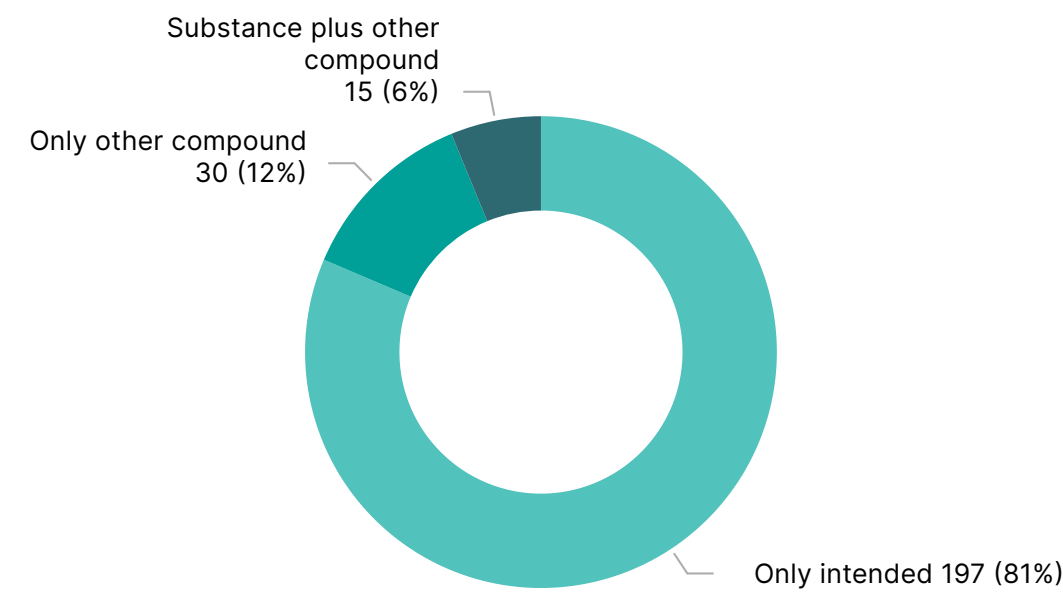| Organisation	Samples Tested
France	326
Spain	278
Portugal	267
Switzerland	240
UK	226
Austria	204
Italy	159
Belgium	39
Slovenia	25

Samples Tested

* The "median" means that half of samples will have less than this, half will have more. The rest of the content is impurities and added substances.
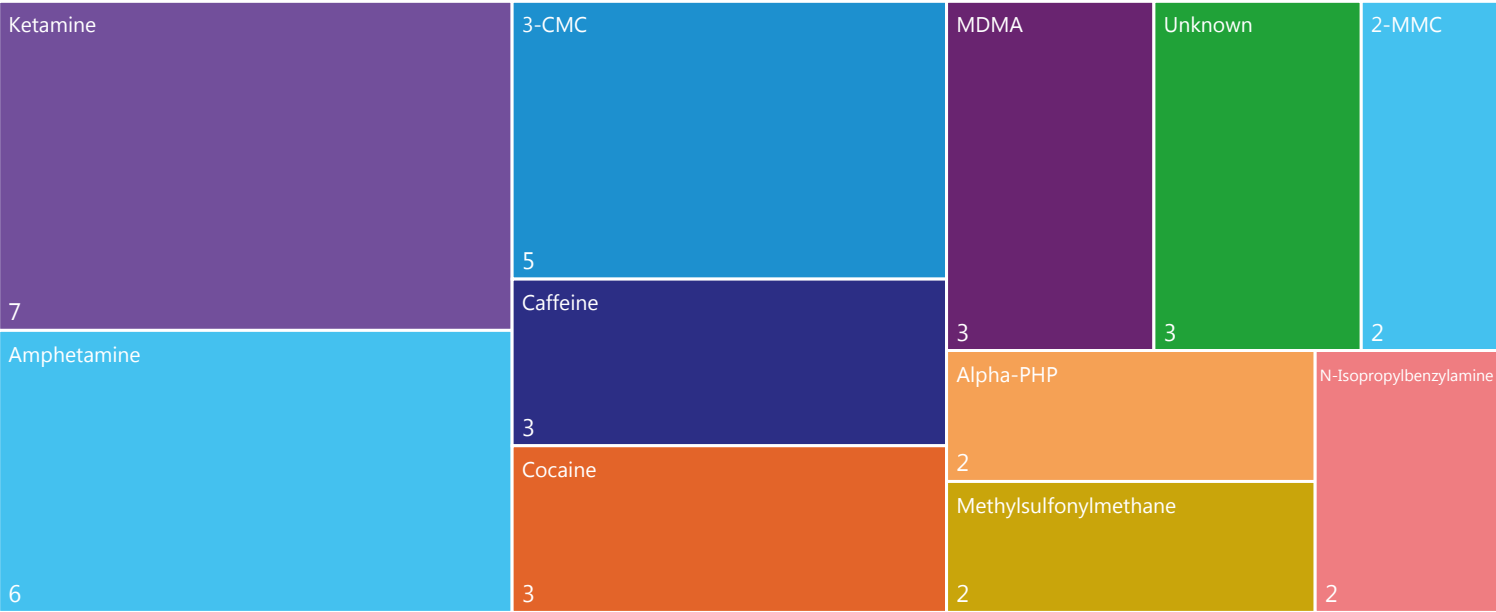
KETAMINE
12 MONTH SNAPSHOT

Sample Adulteration Likelihood

Only other compound
147 (8%)

Substance plus other
compound
71 (4%)

Only intended 1563 (88%)
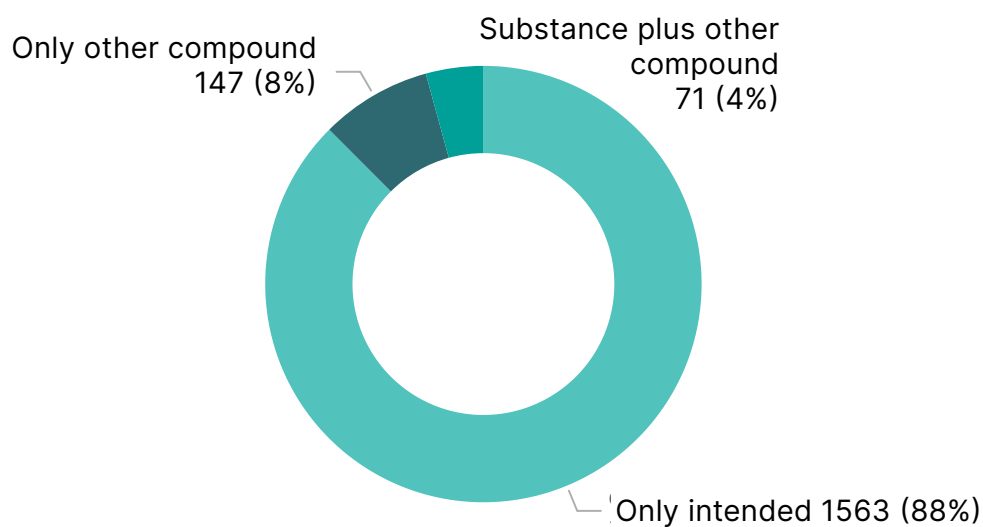
Adulterants detected in samples sold as ketamine

Lidocaine 27	Cocaine 20
Caffeine 23	MDMA 16

Paracetamol (Acetaminophen) 16
2-FDCK 14
Amphetamine 11

Unknown 11
Creatinine 8	Levamisole 7
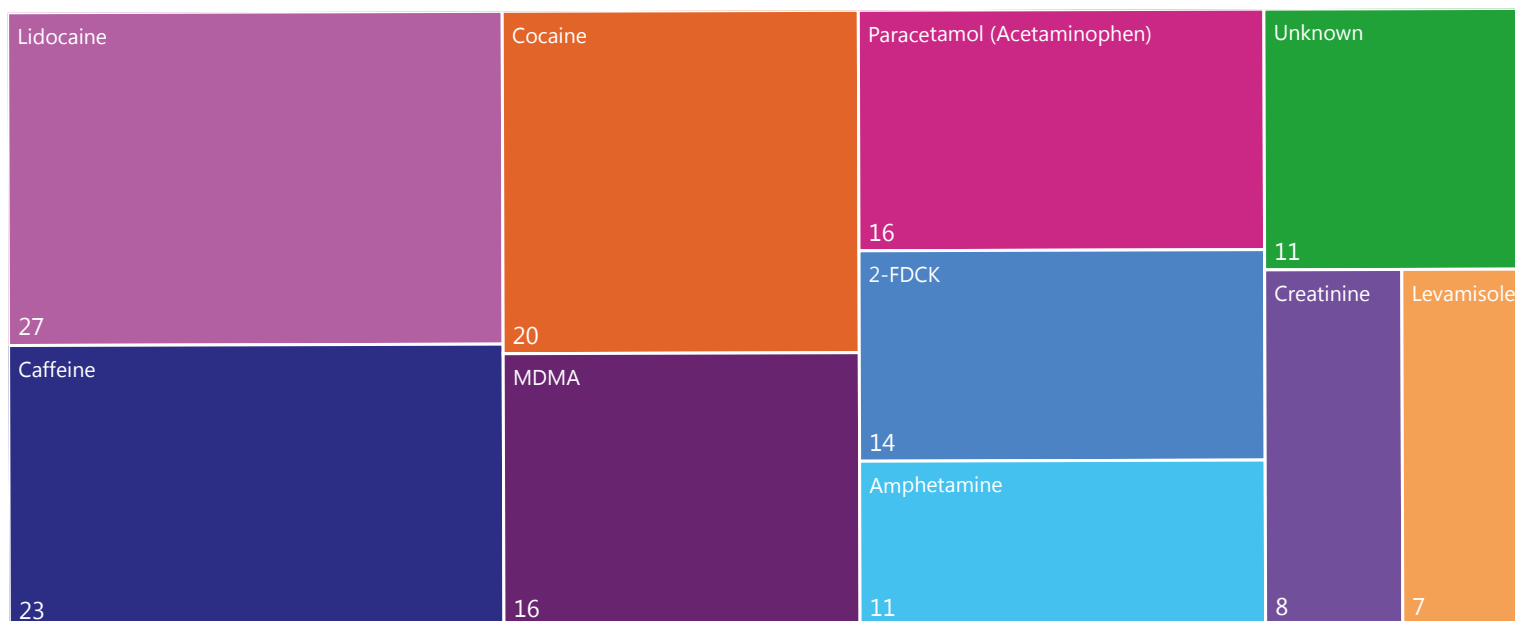
CATHINONES

12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

When people deliberately buy cathinones, what is the substance sold as?

Labelling of samples as submitted to services

Label	Value
3-MMC	787
Mephedrone	375
3-CMC	48
2-MMC	40
Other	
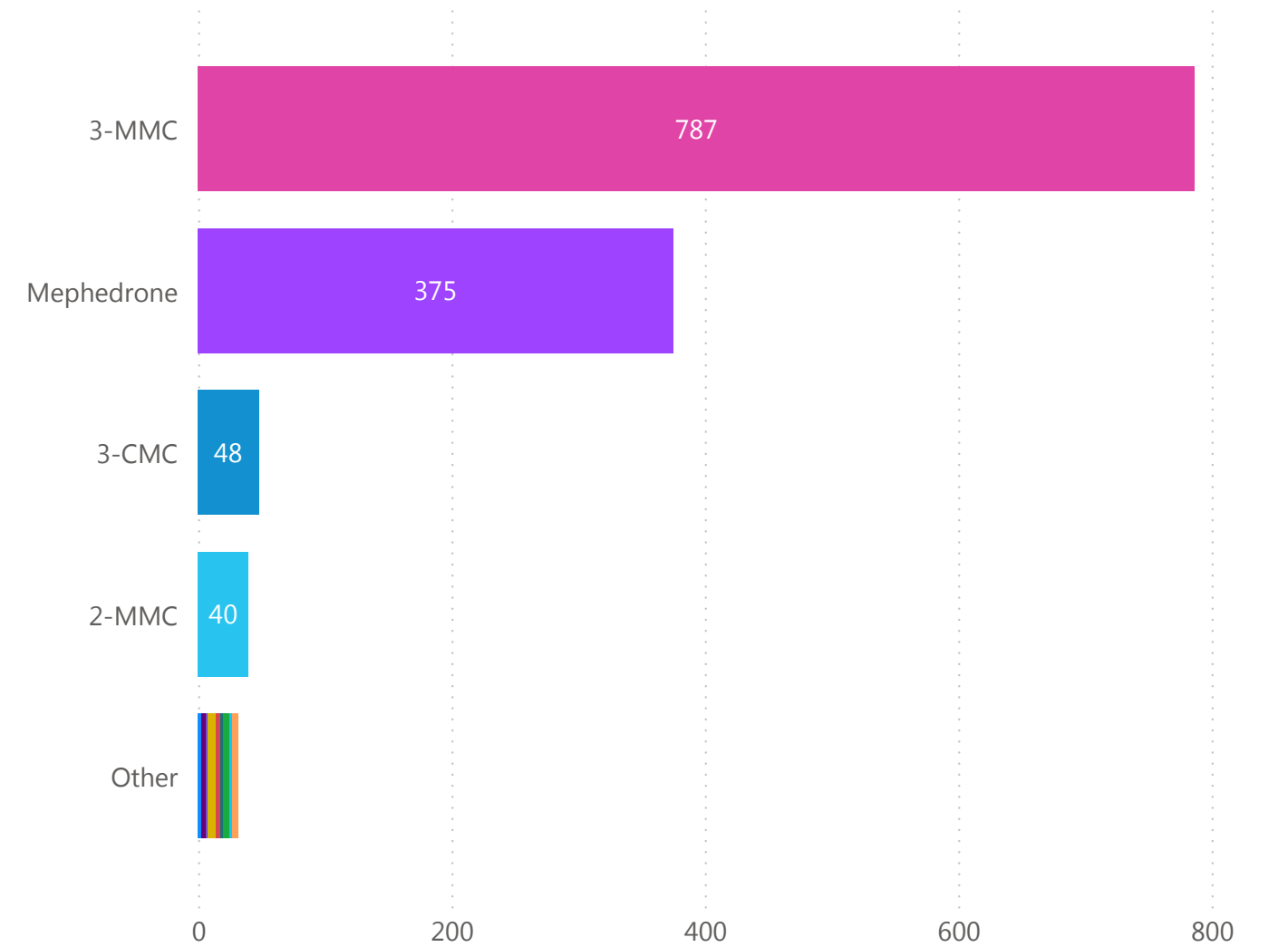
CATHINONES
12 MONTH SNAPSHOT

Most commonly detected chemicals in samples intentionally bought as cathinones

SubstanceDetected	Value
2-MMC	379
3-MMC	244
3-CMC	210
Mephedrone	178
N,N-dimethylpentylone	65
4-CMC	58
N-Ethyl-(nor)-Pentedrone	40
2-CMC	13
a-PiHP	11
Alpha-PHP	8
x-MMC	7
alpha-PVP	6
4F-3-methyl-alpha-pvp	4
4-BEC	3
MD-PHP	3

When people deliberately buy cathinones, which substances are detected?

Sample Adulteration Likelihood

- Substance plus other compound 33 (3%)
- Only intended 423 (33%)
- Only other compound 836 (65%)
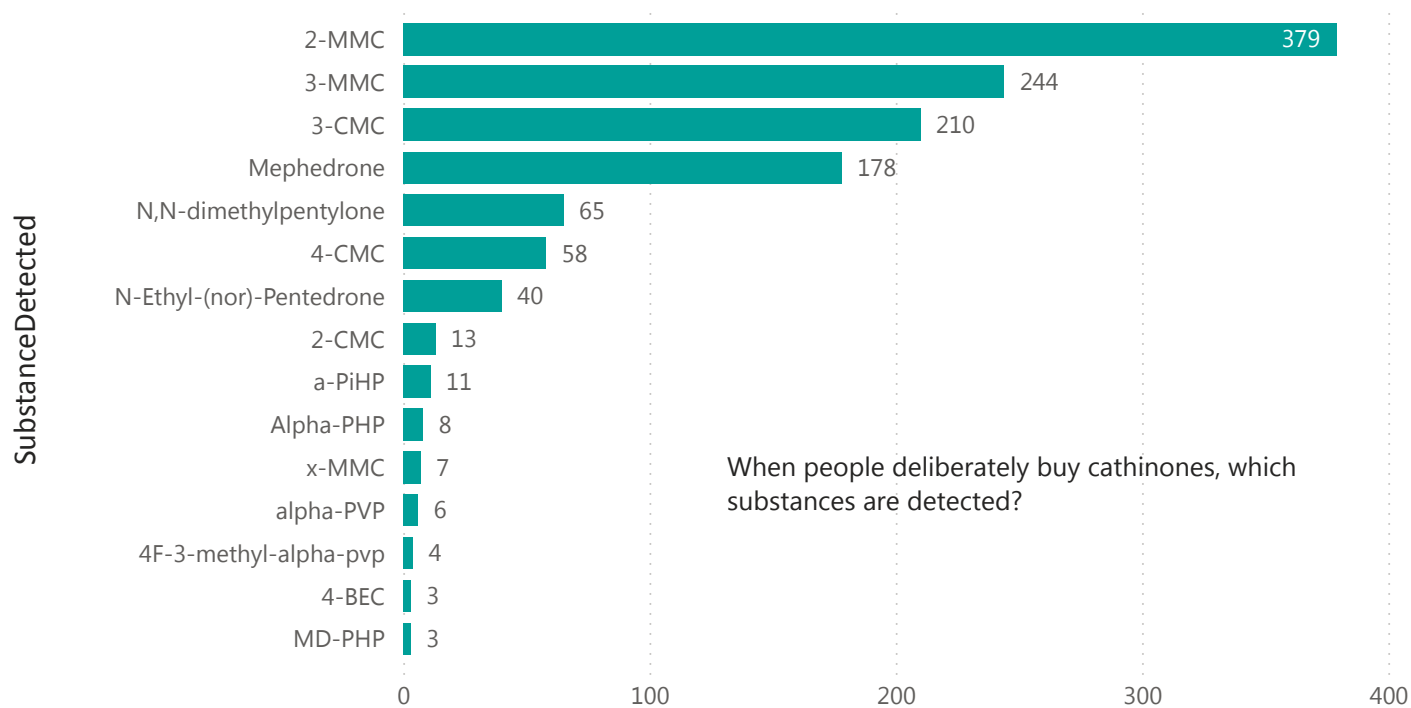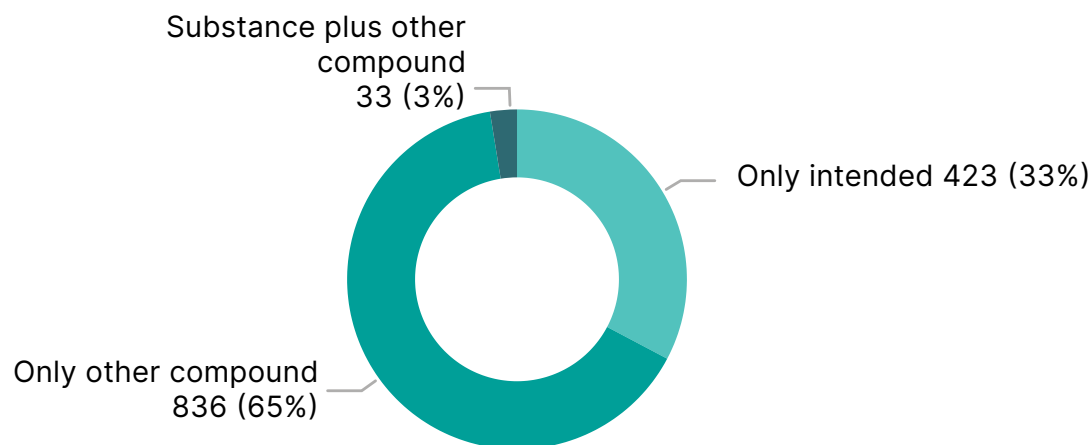
DETECTIONS OF NITAZENES

12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Notes:
- Number of samples analysed by drug checking services do not necessarily represent a representative sample of the drug market.
- 105 detections of nitazenes in 2079 submitted samples represents 5% of benzo samples analysed.
- 36 detections of nitazenes in 819 submitted samples represents 4.4% of heroin samples analysed.
- Samples from TEDI Network partners from 1 July 2023 to 30th June 2024
- 2 samples sold as nitazenes had "unidentified" contents only. No further data is provided for the actual contents of these two samples.

Mostly detected nitazenes

Headquarters ● Slovenia ● UK

SubstanceDetected	Count
Metonitazene	146
Isotonitazene	14
Protonitazene	8
Protonitazepyne	5
Etomethazene	
F-Etonitazepyne	
N-Desethylisotonitazene	
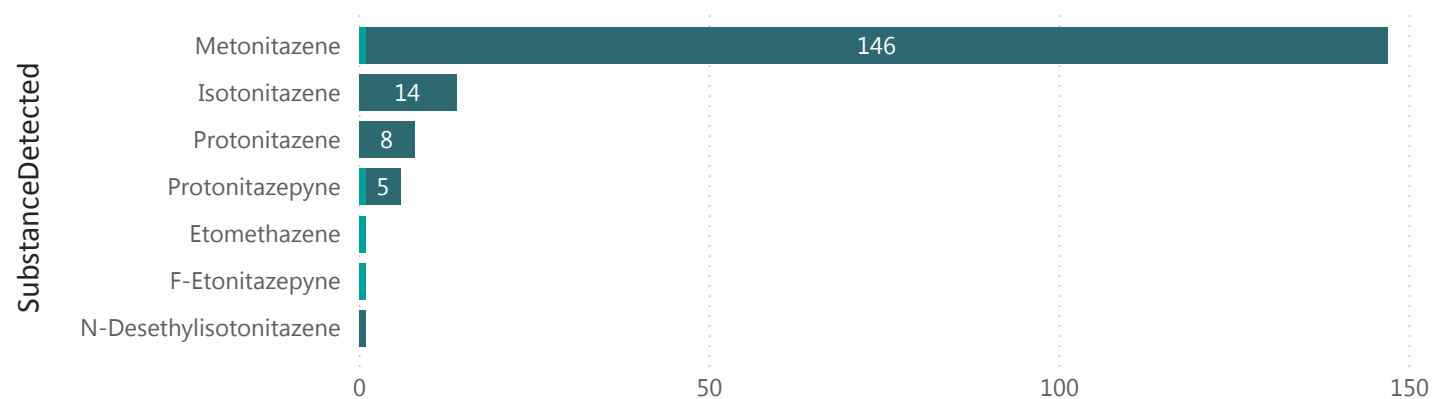
What are Nitazenes found in/sold as?

Sold-as category

Category	Value
Prescription Benzo	105
Heroin	36
Other Opioids	18
Nitazene	8
GABA Sedative	3
Unknown	3
Benzo NPS	2
Medication	2
SCRA	1

10 of 178

detections of nitazenes were expected by the submitter.
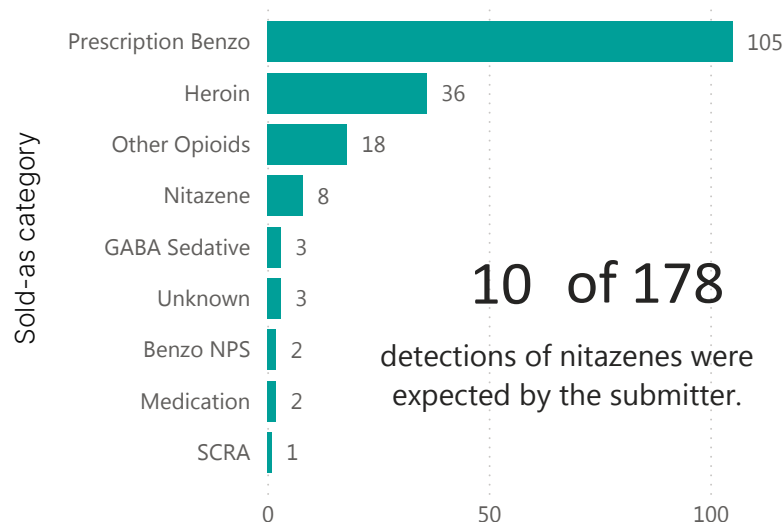
How many substances from each category are tested in total?

Sold-as category

Category	Value
Prescription Benzo	2079
Heroin	819
GABA Sedative	417
Other Opioids	278
Nitazene	10
Opioid NPS	7
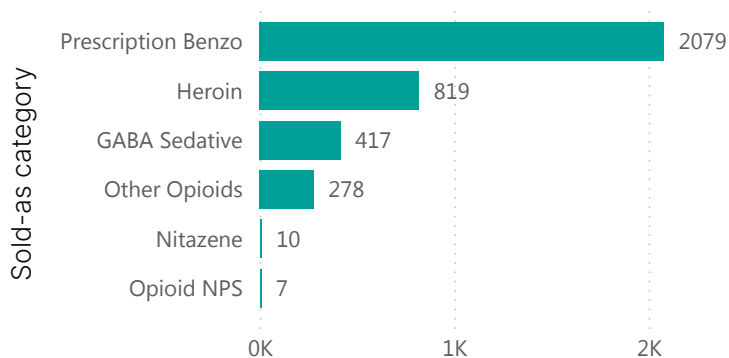
Because more benzos are tested than other types of drug, it is expected that more samples of nitazene would be found.

Sample Adulteration Likelihood

Only other compound 3 (30%)

Only intended 7 (70%)

When substances are presented to the testing service *as* nitazenes, do they match the presented substance identity?

PRESCRIPTION BENZOS

12 MONTH SNAPSHOT

Date: 01/07/2023 - 30/06/2024

Total samples submitted: 2079

Unexpected substances detected in samples sold as any prescription benzo

Substance	Count
Bromazolam	637
Metonitazene	104
Etizolam	56
Flualprazolan	24
Paracetamol (Acetaminophen)	23
Clonazolam	13
Flubromazolam	13
Caffeine	20
Ketamine	
Phenacetin	
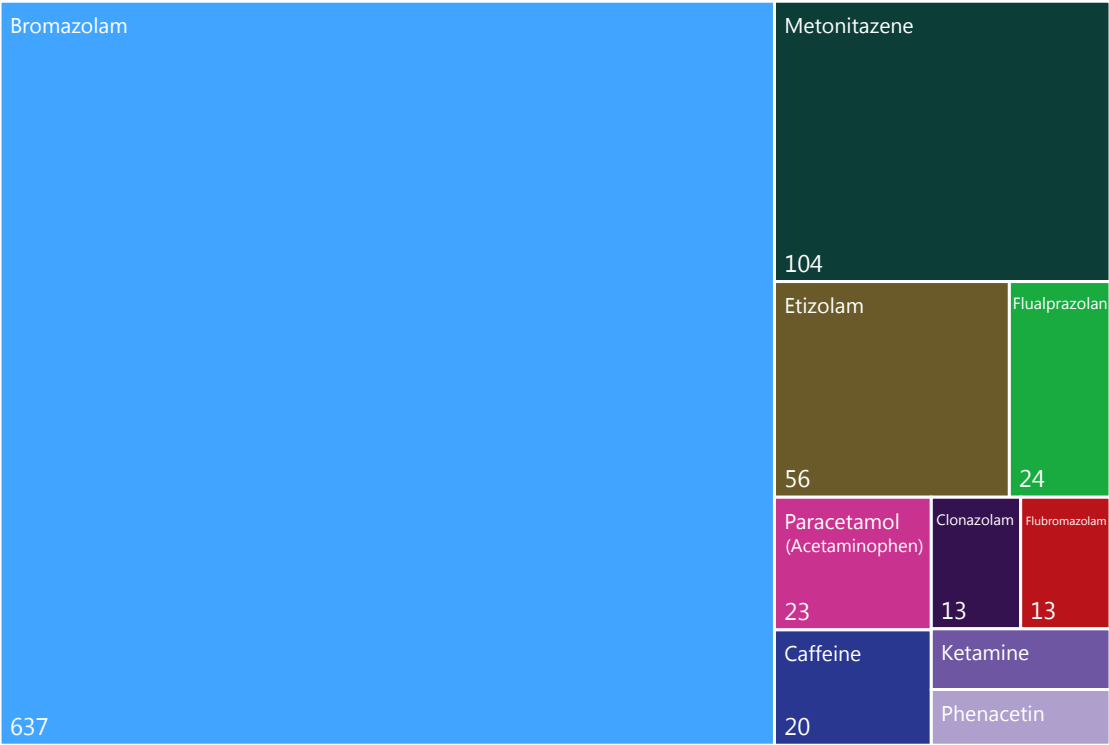
PRESCRIPTION BENZOS
12 MONTH SNAPSHOT

Number of samples by country of testing service

Popular prescription benzos ●Alprazolam ●Clonazepam ●Diazepam ●Other

Organisation	Samples Tested
UK	383 / 92 / 1461
Finland	
Switzerland	
Austria	
Slovenia	
France	
Spain	
Luxembourg	

WEDINOS tests a very large number of benzodiazepines. It is not clear why the proportions of benzos tested by WEDINOS are vastly higher than other services.

Sample Adulteration Likelihood

Substance plus other compound 28 (1%)

Only other compound 873 (42%)

Only intended 1178 (57%)
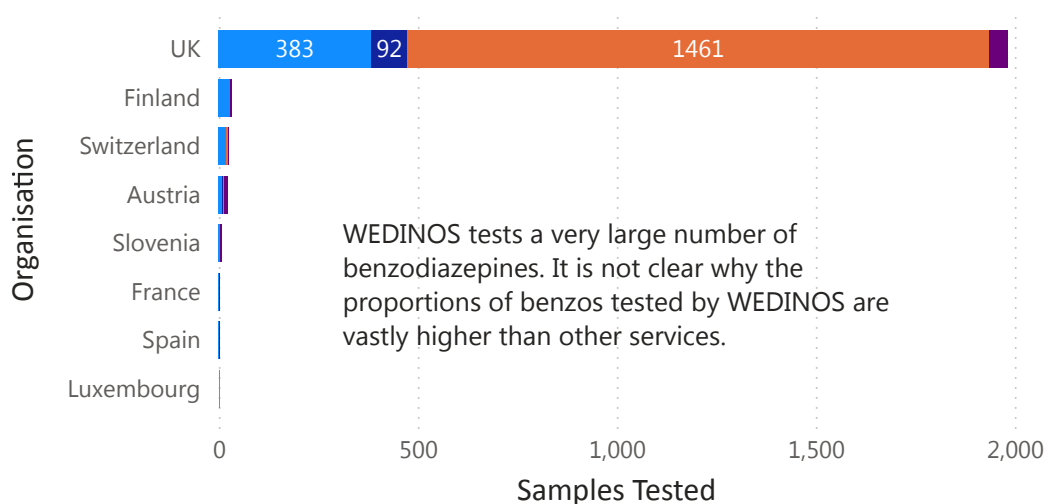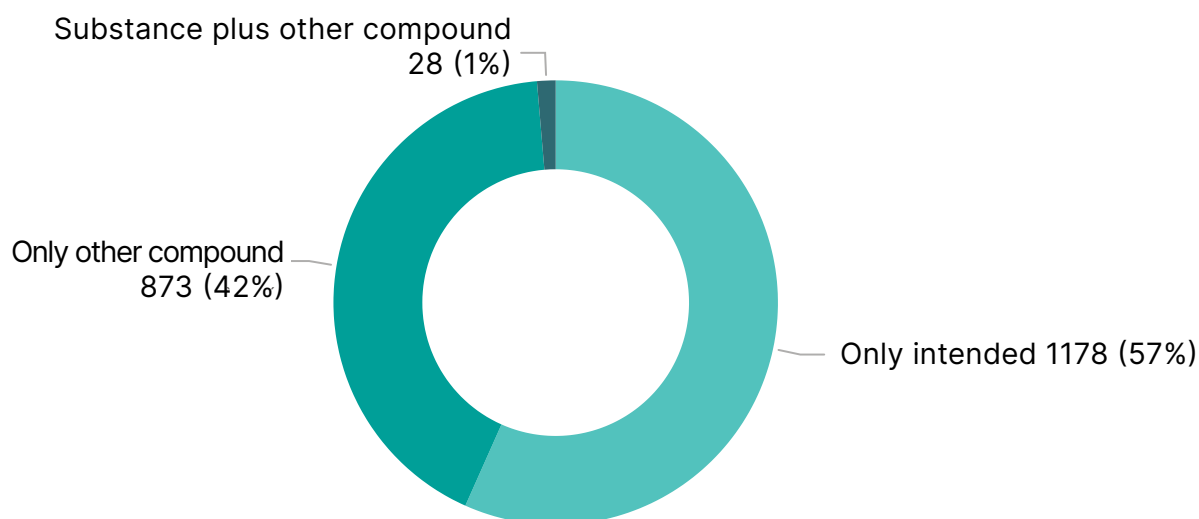
DRUG CHECKING IN DRUG CONSUMPTION

Samples submitted inside Drug Consumption Rooms vs other submission methods

Sample submission location/method ● Drug Consumption Room ● Other

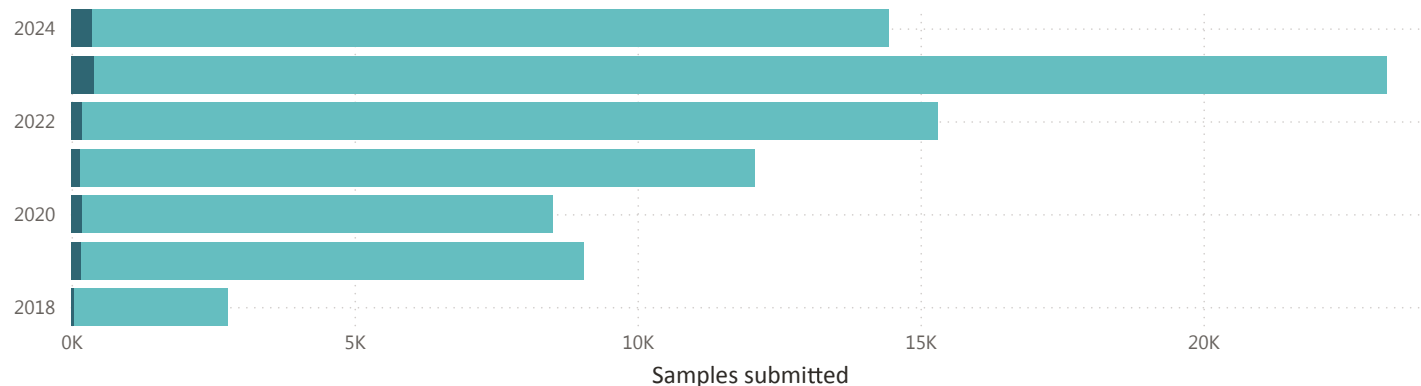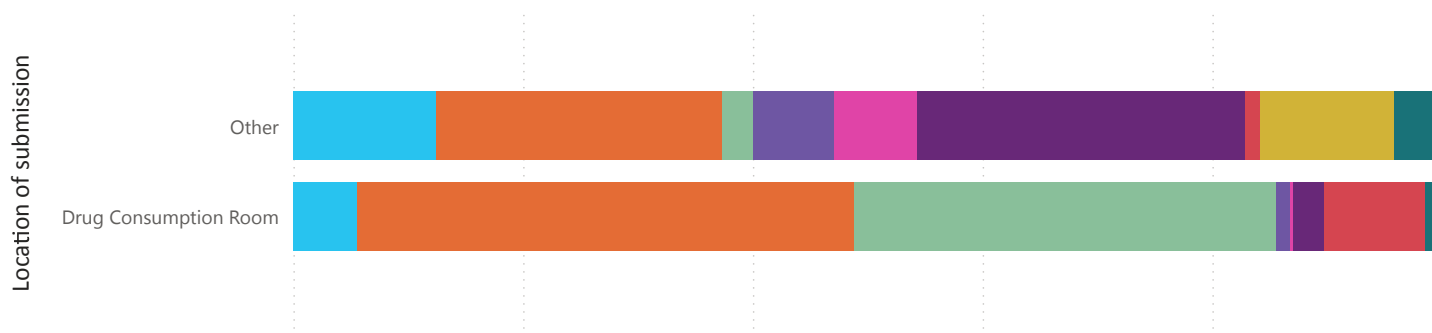## Types of drugs submitted to compared to other submission methods

Sold-as category ● Amphetamine ● Cocaine ● Heroin ● Ketamine ● LSD ● MDMA ● Methamphetamine ● Prescription Benzo ● Stimulant NPS

A drug consumption room (DCR) provides a safe and supportive environment where individuals facing substance use challenges can access harm reduction services and medical supervision, promoting health and reducing the risks associated with drug use.

Drug checking at DCRs empowers users by providing knowledge about substances, prompting thoughtful consideration, and facilitating informed decision-making. This approach encourages users to take precautions, fostering a more conscious and informed approach to drug use.

Currently, drug checking in DCRs is minimal, with only a small percentage of samples collected by TEDI members coming from DCRs. Consequently, the effects and impact of drug checking in DCRs remain largely unknown.

DCRs focus on a distinct target group, primarily individuals facing homelessness and other types of vulnerabilities, while other drug checking services tend to cater to those using drugs recreationally in nightlife settings. This means they collect different types of samples, increasing diversity for market monitoring.

APPENDIX

Interpreting Box and Whisker Charts

The box plots used in this report are a simplified form of a common data presentation format.

They use a "box" to show the range of results for a given time period. The box covers the middle 50% of results, allowing a chart to show the typical values *and* the variation that is typically seen.

Therefore, a highly variable dataset will have a larger "box" than a dataset where all values fall within a narrow range.

This is valuable for drug purity because purity values can vary significantly from a single "average" value.

Understanding purity and adulteration charts

Adulteration charts:
These show the number of samples that contain the expected drug or do *not* contain the expected drug. This considers **all** samples sold as [a drug].

Purpose:
This gives us information about the probability of a random sample of heroin actually containing any heroin at all. It does not tell us how strong the heroin may be when it is found.

Purity Level Graph:
Shows the concentration of the expected substance in the tested sample. The measurement is an average of all samples that **did** contain [a drug], any samples which contain *only* other drugs are excluded from the average, because they contain 0% of the [the drug].
For example, if someone submits a sample of heroin, the purity level chart would include the heroin concentration. If the sample only contained fentanyl and flour, it would be excluded from the chart.

Purpose:
This helps us understand the strength or potency of the

drugs on the market. A higher purity level means that a larger percentage of the substance is the expected drug, which could impact dosage and associated risks.

Assumptions and Considerations

- Values relying on quantitative data only consider samples where the named substance **was** detected. Therefore if a sample is sold as cocaine but no cocaine is detected, it is excluded from the calculation of averages and medians.

- Values relying on quantitative data only consider samples where the detected substance matches what the substance was presented as. Therefore a sample presented as "MDMA" containing only methamphetamine would not be included calculations of the average purity of methamphetamine.

- Crack cocaine is often produced by the user, by purchasing powder cocaine and converting it themselves. This means there is very little data specific to crack cocaine.