Trends in the availability and types of drugs sold on the internet via cryptomarkets, June 2022 - May 2023

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17 cryptomarkets monitored

June 2022 → May 2023

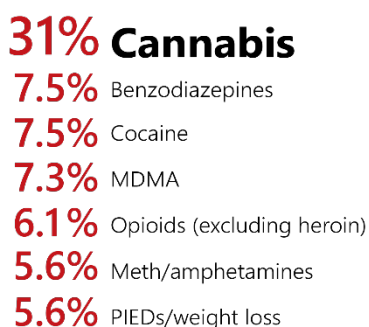In the period from 1st June 2022 to 31st May 2023, 17 cryptomarkets were monitored.

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3 markets closed and 3 new markets were monitored from June 2022 to May 2023.
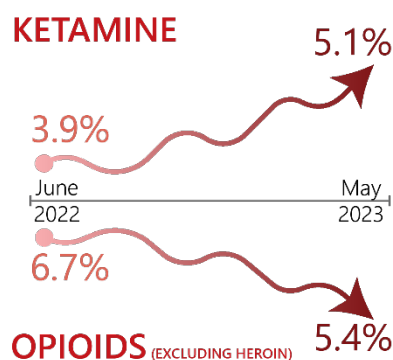
1. ASAP
2. Bohemia
3. Incognito
4. Nemesis

The largest cryptomarkets in the final month of monitoring (May 2023).

VICE CITY — ASAP

25 months of monitoring

Of the markets monitored, ASAP and Vice City have been monitored the longest for a duration of 25 months.

31% Cannabis
7.5% Benzodiazepines
7.5% Cocaine
7.3% MDMA
6.1% Opioids (excluding heroin)
5.6% Meth/amphetamines
5.6% PIEDs/weight loss

Top 7 drugs across cryptomarket listings from June 2022 to May 2023.

KETAMINE
3.9% → 5.1%
June 2022 — May 2023
6.7% → 5.4%
OPIOIDS (EXCLUDING HEROIN)

The market share of ketamine showed the highest rate of increase while the greatest rate of decrease was observed for opioids (excluding heroin).

Last update: 18 July 2023

Key Findings

- From 1st June 2022 to 31st May 2023, 17 cryptomarkets were monitored, of which 14 remained active at the end of the reporting period.

- The four markets reaching more than 10,000 listings in a snapshot during this period were DarkFox, AlphaBay, ASAP and Bohemia, of which DarkFox and AlphaBay closed before May 2023.

- In the final month of monitoring, ASAP, Bohemia, Incognito and Nemesis were the largest cryptomarkets.

- There was an average of 47,042 drug listings per snapshot in May 2023, representing a -1.9% decrease in listings as compared to June 2022 (n=58,315) but the change was not statistically significant (p=0.259). Note that due to scraping difficulties, we lacked data for Tor2Door, which is a relatively large market that was active in May 2023.

- Cannabis comprised the greatest percentage of drug listings from June 2022 to May 2023 (31%), followed by benzodiazepines (7.5%), cocaine (7.5%), MDMA (7.3%), opioids (excluding heroin) (6.1%), meth/amphetamine (illicit) (5.6%), and PIEDs/weight loss drugs (5.6%).

- The market share of ketamine showed the greatest rate of increase from 3.9% in June 2022 to 5.1% in May 2023. The greatest rate of decrease in market share was observed for opioids (excluding heroin) from 6.7% in June 2022 to 5.4% in May 2023.

Figure 1. Word cloud of cryptomarkets monitored from June 2022 to May 2023.

Note: The three cryptomarkets that closed before 31st May 2023 are in grey color font. The maximum size of the market (in the period from June 2022 to May 2023) is proportional to the font size of the cryptomarket.

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Background

This bulletin series reports on trends in the availability and types of drugs sold on the internet via cryptomarkets over the last 12 months (a new bulletin is released typically every 4 months). The current bulletin focuses on analysis of drug listings on cryptomarkets from 1st June 2022 to 31st May 2023.

Drug Trends have identified, crawled (or 'scraped'), extracted, categorised and analysed drug listings on cryptomarkets on a regular basis since 1st January 2014, formerly using VBA programming processes, and since 9th August 2018 using a range of programmed automated processes in Python that operate with minimal manual input. Following extraction of common text features across each listing (e.g., drug listing name, vendor name), individual listings are then categorised according to a pre-specified drug classification structure. Drug categorisation is carried out through rules-based text-matching in the first instance, followed by a long short-term memory (LSTM) artificial neural network (target predictive percentage 90%) that has been trained on historically categorised listings for those not matched through the former process. Further background and information regarding the methods are available for download.

Panel A. Terminology

- **Cryptomarkets** ('darknet markets') are online marketplaces that facilitate the purchasing of illicit goods and services via multiple sellers, and provide their users with anonymity via its location on the hidden web. This bulletin focuses on drug listings advertised on cryptomarkets. A large proportion of listings are of prohibited drugs though licit drugs (e.g., alcohol, paracetamol) may occasionally be advertised on these platforms (Christin and Thomas, 2019).

- A **snapshot** of the cryptomarkets is taken on a twice monthly basis, in the two weeks starting on the 1st and 15th of each month.

- **Number of listings** is the sum of listings per snapshot belonging to a specific market and/or drug class. For this measure, duplicate listings (defined as listings with identical names by a single vendor on a single market within the same snapshot) are removed. Listings are further deduplicated for quantity variants (see **section 5.2.1** in the Methods document).

- **Market size** is defined as the number of drug listings per snapshot, overall, by market or by drug class.

- **Market share** is defined as the percentage of total drug listings by drug class.

- **Average monthly percent change (AMPC)** is the relative percent change in number or percentage of listings per month estimated using the Joinpoint regression program (National Cancer Institute, 2022).

Our reporting focuses on identified cryptomarkets which comply with the following: presented in English; have an accessible Tor link for scraping; have >1 vendor; vendors ship to and/or from Australia, or ship to and/or from multiple countries; and have had >100 drug listings. For a historical record of marketplaces monitored by Drug Trends, we refer the reader to our interactive timeline.

An accompanying public online interactive data visualisation is available, allowing viewers to interact with data collected since February 2014. Data in the current bulletin and the accompanying interactive visualisation are presented as twice monthly snapshots in each of the two weeks starting on the 1st and 15th of each month. We present data on number of listings observed in a given snapshot in the bulletin (see **Panel A**). Please refer to this interactive visualisation and **this bulletin** for the weekly data up until 31st May 2022.

In this bulletin, we provide estimates of change over the 12-month reporting period by estimating average monthly percent change (AMPC) in number or proportion of listings per month. This is done using the Joinpoint regression program (National Cancer Institute, 2022) as detailed in the Methods document.

While these data can be considered reasonable estimates for trends in drug availability, we cannot guarantee exhaustive and/or immediate identification and capture of cryptomarkets once they emerge. As a result, there are some cryptomarkets which have existed for periods of time before our first scrape, resulting in a lack of data availability for these periods. In this bulletin, we show the date of the first post on a subDread[1] for each monitored market to give an indication of when that market may have started. There can also be challenges in certain periods of time (e.g., distributed denial of service (DDoS) attacks on sites) that prevent a routine scrape of an identified market.

Since our findings do not reflect the total of all cryptomarkets existing in the reporting period, the analysis and estimates in this bulletin should not be used to infer the number of drug listings across all cryptomarkets. Further, they should only be considered a proxy indicator of drug availability: we have not provided any metric that reflects sales or purchasing of drugs via cryptomarkets. See here for further discussion of caveats to interpretation.

There are various approaches to collecting, collating, categorising and analysing cryptomarket data, and inherent challenges in these processes. Our monitoring is an ongoing process. Refinements to our reporting processes in each bulletin are reported in the accompanying methods document. We welcome feedback and suggestions so that we can continue to improve utility of these data and our reporting on them (contact us at drugtrends@unsw.edu.au).

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[1] Dread is a forum on the darkweb that is analogous to Reddit. A subDread is a forum group on Dread. The administrators of a cryptomarket often open a subDread for their cryptomarket. However, the market may not yet be fully functional as there can be several months of web development, beta testing and onboarding of vendors before a market becomes fully operational. Thus, it is likely that monitored cryptomarkets reported on in this ulletin reached our eligibility criteria sometime between their first subDread post and our first scrape.

<div style="color:red">

Findings

Profile of Cryptomarkets from 1st June 2022 to 31st May 2023

Which markets were monitored during this period?

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The current bulletin reports findings for the period 1st June 2022 to 31st May 2023 for 17[2] cryptomarkets (**Figure 2**). See our interactive timeline for a historical record of the cryptomarkets monitored since February 2014. **Table 1** shows the characteristics of these cryptomarkets since the date of our first scrape, noting that some cryptomarkets may have existed for some time before we started scraping them. Abacus is also shown in **Table 1** because it was still active at the end of May 2023 even though we have ceased scraping it in April 2022. It is excluded from the rest of this bulletin because we do not have listings data for Abacus in the 12 months from June 2022 to May 2023. Please refer to footnotes of **Figure 2** for a description of other prolonged disruptions to data collection from other cryptomarkets.

Which markets closed during this period?

Of the 17 markets monitored, three markets were confirmed as closed during the reporting period for the following purported reasons (**Table 1**).

- Hermes was last scraped in the 2 weeks starting on 15th November 2022 and considered closed due to persistent DDoS or for unknown reason;

- AlphaBay was last scraped in the 2 weeks starting on 15th December 2022 and considered closed with a possible exit scam; and

- DarkFox was last scraped in the 2 weeks starting on 15th January 2023 and considered closed due to administrative failure or a possible exit scam.

Since around August 2022, 'Dread', the most widely used dark web discussion forum, has experienced persistent large-scale DDoS attacks alongside many of the cryptomarkets, culminating in the Dread administrators' decision to take the Dread server offline for restructuring in December 2022[3]. Many markets also could not be accessed from December 2022 to January 2023. Hermes, AlphaBay and DarkFox which were last scraped in the snapshot of 15th November 2022, 15th December 2022 and 15th January 2023, respectively, are considered closed either due to the persistent DDoS, a possible exit scam, administrative failure or for unknown reasons. There is a lack of reporting on Hermes given it is a relatively small cryptomarket.

We stopped scraping ColombiaConnection because of difficulty accessing the site due to its bot or DDoS detection; it is, however, a relatively small market with only 207 listings in its last snapshot in the second half of February 2023. The remaining 13 markets were active and still being monitored at the end of the reporting period. These comprised: ASAP, Vice City, Cypher, Bohemia, Tor2Door, Tor, Incognito, Kingdom, Archetyp, Ares, MGM Grand, Nemesis and Dark Market (**Table 1**). Note, however, that difficulties accessing Tor2Door

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[2] This excludes Abacus which we stopped scraping in April 2022 because the CAPTCHA was too challenging for regular scraping; it was, however, still active in May 2023.

[3] On February 25th 2023, Dread was online again for private testing by service admins and some sub-dread moderators on the production server. It reopened to all users on 6th March 2023 but is still constantly taken offline for upgrades and remained sporadically available.

and Cypher meant that these markets could not be scraped in the final month of this bulletin, making 11 markets with data in May 2023 (**Table 2**).

Figure 2. Markets monitored from June 2022 to May 2023.
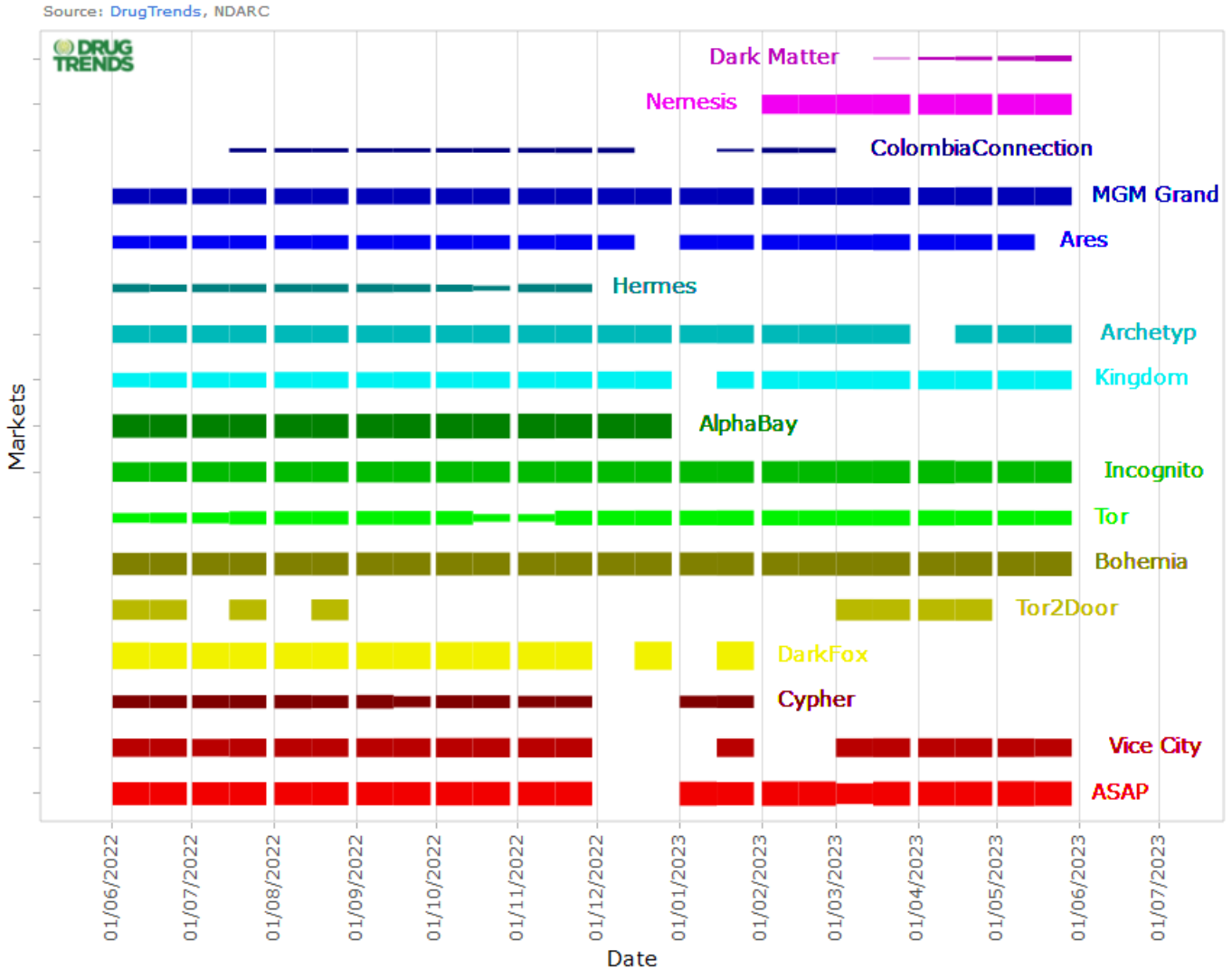
Note: There are short breaks at the end of each month because the twice-monthly snapshots are based on 2-week intervals starting on the 1st and 15th of each month, i.e. days of the month after the 28th are excluded from monitoring. Extended breaks indicate periods where market crawling was not achievable or incomplete. The width of the bar is proportional to the log of the number of drug listings observed in each snapshot for each market. We stopped scraping ColombiaConnection from March 2023 onwards because of difficulty accessing the site due to its anti-scraping/DDoS detection. We stopped scraping Tor2Door between September 2022 and February 2023 because an access link needed to be purchased. When a link did not need to be purchased for Tor2Door, we attempted scraping again; however, the scrapes could not be completed in May 2023 because of difficulties accessing the relatively large market for completion of a scrape. Data is missing for Cypher between February 2023 and May 2023 because of scripting error.

Table 1. Characteristics of markets identified in this bulletin (ordered by date of first snapshot).

Market	Status as at May 2023 (reported reason[a])	Earliest subDread post	First snapshot	Last snapshot	Duration in months[b]	Maximum number of listings[c]
ASAP	Open	9th Apr 2020	1st May 2021	15th May 2023[d]	25*	11,435
Vice City	Open	26th Aug 2020	1st May 2021	15th May 2023[d]	25*	3,801
Cypher	Open (scripting error)[e]	8th Feb 2020	1st Jun 2021	15th Jan 2023[d,e]	24*	1,199
DarkFox	Closed (possible exit scam)	24th Feb 2020	1st Jun 2021	15th Jan 2023	20	23,202
Bohemia	Open	23rd May 2021	15th Jul 2021	15th May 2023[d]	22.5*	10,278
Tor2Door	Open	3rd Jul 2020	15th Jul 2021	1st May 2023[d]	22.5*	5,936
Tor	Open	--[f]	15th Aug 2021	15th May 2023[d]	21.5*	1,672
Incognito	Open	19th Oct 2020	1st Oct 2021	15th May 2023[d]	20*	7,674
AlphaBay	Closed (possible exit scam)	8th Aug 2020	1st Jan 2022	15th Dec 2022	12	11,567
Kingdom	Open	3rd May 2021	1st Jan 2022	15th May 2023[d]	17*	3,335
Archetyp	Open	19th Apr 2020	15th Jan 2022	15th May 2023[d]	16.5*	3,642
Abacus	Ceased data collection	27th Sep 2020	15th Feb 2022	1st Apr 2022[g]	2	--[g]
Ares	Open	26th Aug 2021	15th May 2022	1st May 2023[d]	12.5*	1,843
Hermes	Closed (unknown)	15th Apr 2020	15th May 2022	15th Nov 2022	6.5	408
MGM Grand	Open	26th Apr 2021	15th May 2022	15th May 2023[d]	12.5*	2,907
Colombia Connection	Ceased data collection	3rd Nov 2020	15th Jul 2022	15th Feb 2023	7.5	216
Nemesis	Open	5th Jun 2021	1st Feb 2023	15th May 2023[d]	4*	5,101
Dark Matter	Open	22nd Sep 2022	15th Mar 2023	15th May 2023[d]	2.5*	251

Note: [a] Most probable reason for closure is given in brackets. [b] Duration of monitoring is the number of months between the start of the first snapshot and the end of the last snapshot, including when data could not be scraped from the cryptomarket. Where the cryptomarket was still active and monitored as of last snapshot during the 2 weeks starting 15th May 2023 (indicated by *), the duration has been computed as the number of months between the start of the first snapshot and the end of May 2023 (even if data were not scraped, e.g. Tor2Door, Ares and Cypher). [c] Maximum number of listings in a scrape is computed from the snapshots over the 12-month reporting period. [d] Market was still active and monitored as of the snapshot dated 15th May 2023. [e] Data is missing for Cypher between February 2023 and May 2023 because of scripting error. [f] Tor's subDread could not be found on Dread. [g] Abacus was not scraped in the current reporting period (1st June 2022 to 31st May 2023). However, it is noted here because it was still active at the end of May 2023.

What markets were monitored for the first time during this period?

Cryptomarkets are identified for monitoring if they are accessible for scraping, are displayed in English, have multiple sellers, have >100 drug listings and satisfy geographical criteria for shipping (see the Methods document for more details). We began monitoring three cryptomarkets in this period. These are (**Figure 2** and **Table 1**):

- ColombiaConnection with first snapshot from 15th July 2022;
- Nemesis with first snapshot from 1st February 2023; and
- Dark Matter with first snapshot from 15th March 2023.

These markets were still active and monitored at the end of May 2023 except for ColumbiaConnection which we stopped scraping from March 2023 onwards.

Which markets from this period have been monitored for the longest?

Of the 17 markets monitored, ASAP and Vice City had been monitored for the longest (25 months since 1st May 2021; **Table 1**), followed by Cypher for 24 months since 1st June 2021, Bohemia and Tor2Door for 22.5 months since 15th July 2021, and Tor for 21.5 months since 15th August 2021. All these markets were still active at the end of May 2023.

Which markets from this period were the largest in size based on number of drug listings?

The markets reaching more than 10,000 listings in a snapshot were (**Table 1**):

- DarkFox with maximum number of listings in a scrape of 23,202;

- AlphaBay with maximum number of listings in a scrape of 11,567;

- ASAP with maximum number of listings in a scrape of 11,435; and

- Bohemia with maximum number of listings in a scrape of 10,278.

Of these four markets, DarkFox and AlphaBay were considered closed with their last snaphots on 15th January 2023 and 15th December 2022, respectively. The smallest of the scraped cryptomarkets with a maximum of less than 1,000 listings were ColombiaConnection, Dark Matter and Hermes (**Table 1**).

In the final month (May 2023), 11 markets were scraped (**Table 2**). The markets whose mean number of listings per snapshot (including interpolated data for missing scrapes) was above the average of 4,359 listings in May 2023 were (**Table 2**):

- ASAP with an average of 10,837 listings per snapshot;

- Bohemia with an average of 10,100 listings per snapshot;

- Incognito with an average of 6,386 listings per snapshot; and

- Nemesis with an average of 5,035 listings per snapshot.

Did the total market size (based on number of drug listings in the 17 monitored markets) change over this period?

The average monthly percent change in market size (or number of listings) decreased over the reporting period (-1.9% per month; **Figure 3**; **Table 2**). However, this decrease was not statistically significant (p=0.259). The total number of listings reached a peak in the snapshot of 15th November 2022 after which many of the markets were affected by heavy DDoS attacks and resulted in a decrease in the number of listings. In particular, AlphaBay, which was a relatively big market with 11,484 listings in its last scrape on 15th December, could not be accessed and closed in January 2023. This is followed by the closure of DarkFox which was the biggest market in our current reporting period, with 23,202 listings in its last scrape on 15th January 2023. While Hermes also closed in December 2022, it was a relatively small market with only 408 listings in its last scrape on 15th November.

Figure 3. Number of drug listings by marketplace from June 2022 to May 2023.
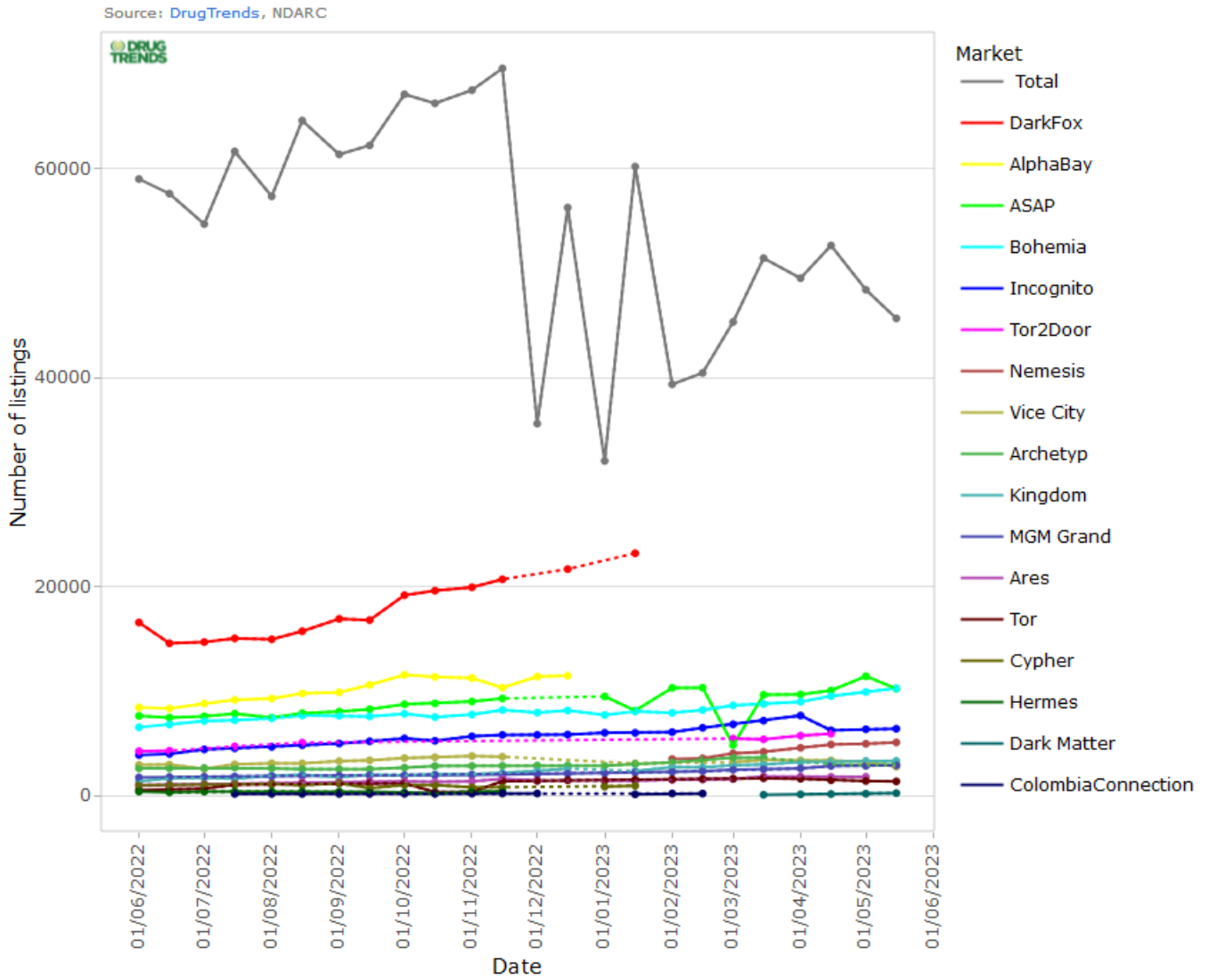
Note: Dashed lines indicate missing scrapes over periods where a market could not be monitored. The dark grey line shows the total number of drug listing across all markets (including interpolated data for missing scrapes within each market). The markets are ordered by maximum number of listings per snapshot over the 12-month period as shown in Table 1.

Table 2. Number of drug listings (including interpolated data for missing scrapes) and average monthly percent change (AMPC) on the markets monitored from June 2022 to May 2023.

Market (Number of months [a])	Market size (Number of listings)				Average monthly percent change	
	First snapshot	Last snapshot	Mean in [b]		AMPC [c]	p [d]
			Jun 2022	May 2023		
DarkFox (8)	16,572	23,202	15,579	–[f]	**5.0 (3.1, 6.9)**	**<0.001**
AlphaBay (7)	8,446	11,484	8,396	–[f]	**5.0 (3.0, 7.1)**	**<0.001**
Bohemia (12)	6,549	10,278	6,684	10,100	**3.9 (3.1, 4.7)**	**<0.001**
ASAP (12)	7,640	10,238	7,559	10,837	**2.4 (0.4, 4.3)**	**0.018**
Incognito (12)	3,893	6,410	3,947	6,386	**3.5 (2.1, 4.9)**	**<0.001**
Tor2Door (11)	4,261	5,936	4,282	–[f]	**3.4 (3.0, 3.8)**	**<0.001**
Nemesis (4)	3,508	5,101	–[e]	5,035	**11.8 (6.8, 17.0)**	**<0.001**
Kingdom (12)	1,376	3,335	1,524	3,331	**7.2 (6.5, 7.9)**	**<0.001**
Archetyp (12)	2,623	2,996	2,628	2,948	1.0 (-1.1, 3.1)	0.362
MGM Grand (12)	1,748	2,907	1,771	2,890	**4.6 (4.2, 4.9)**	**<0.001**
Vice City (12)	2,953	2,787	2,968	2,999	0.1 (-2.7, 3.0)	0.932
Ares (11.5)	1,007	1,813	1,033	1,813	**5.4 (3.8, 7.1)**	**<0.001**
Tor (12)	535	1,370	576	1,391	8.7 (-0.9, 19.1)	0.075
Cypher (8)	1,000	949	1,011	–[f]	**-3.4 (-6.2, -0.6)**	**0.022**
Hermes (6)	400	408	362	–[f]	3.3 (-9.4, 17.8)	0.625
Dark Matter (2.5)	93	251	–[e]	222	**59.9 (41.7, 80.4)**	**0.001**
ColombiaConnection (7.5)	175	207	–[e]	–[f]	4.2 (-1.2, 9.8)	0.128
Total[g] (12)	59,003	45,673	58,315	47,042	-1.9 (-5.1, 1.4)	0.259

Note: [a] Number of months is the number of months between the first and last snapshot in the 12-month period, including when data could not be scraped from the cryptomarket. [b] The mean in the first and last month are calculated as the mean of the number of listings including the interpolated number of listings where there were no data in the intervening data points. [c] Average monthly percent change (AMPC) in number of listings is the estimated percent change in number of listings on the cryptomarket (or market size) per month. Because regular data points are required, intervening data points with no data were interpolated for estimating AMPC. [d] P-value indicates the statistical significance of the estimated AMPC. The estimates that are statistically significant at $p<0.05$ are highlighted in bold. [e] ColombiaConnection, Nemesis and Dark Matter had not yet started in June 2022. [f] Hermes, AlphaBay and DarkFox closed before May 2023. While ColombiaConnection, Cypher and Tor2Door were still active in May 2023, data were not scraped as explained earlier. [g] Note that the estimates in the 'Total' row is derived from total number of listings in the overall market in the period. As such, the estimated mean in market size for individual markets do not add up to the 'Total' row in each column. The number of listings including those in the 'Total' row includes interpolated data; as such it is different from the 'Total' row data presented in Table 4 which excludes interpolated data.

Did the size of the individual markets change over the period?

Of the 17 markets, 11 markets had a significant rate of increase in number of listings (Table 2). The exceptions were Archetyp, Vice City, Tor, Cypher, Hermes and ColombiaConnection. Cypher showed a small but statistically significant rate of decrease in number of listings. Dark Matter had the greatest increase of 59.9% per month but it is one of the smallest markets with only 2.5 months of scrapes within the reporting period. This is followed by:

- Nemesis with an increase of 11.8% per month from 3,508 listings in the first snapshot to 5,101 in the last snapshot over 4 months;

- Kingdom with an increase of 7.2% per month from 1,376 listings in the first snapshot to 3,335 in the last snapshot over 12 months; and

- Ares with an increase of 5.4% per month from 1,007 listings in the first snapshot to 1,813 in the last snapshot over 11.5 months;

- DarkFox with an increase of 5.0% per month from 16,572 listings in the first snapshot to 23,202 in the last snapshot over 8 months; and

- AlphaBay with an increase of 5.0% per month from 8,446 listings in the first snapshot to 11,484 in the last snapshot over 7 months;

The other five markets with a significant rate of increase had <5% increase per month.

Main Drugs Sold via Cryptomarkets from 1st June 2022 to 31st May 2023

What were the main drugs sold via cryptomarkets during this period?

DRUGS

Cannabis comprised the bulk of the listings identified across all markets over the 12-month period (31%) (see Table 3, **Figure 4** and **Figure 5**). This was followed by:

- benzodiazepines with 7.5% of listings;

- cocaine with 7.5% of listings;

- MDMA with 7.3% of listings;

- opioids (excluding heroin) with 6.1% of listings;

- meth/amphetamine (illicit) with 5.6% of listings; and

- PIEDs/weight loss drugs with 5.6% of listings.

New psychoactive substances (NPS) comprised 4.6% of listings; however, it should be noted that new drugs may have appeared since we created our dictionary terms (see the methods document for our summary bulletin) that may not have been captured as NPS. We plan to update our dictionary terms for NPS and our machine learning model for drug listing categorisation in the future.

Did the market share of the main drugs sold via cryptomarkets change over this period?

Ketamine had the greatest rate of relative increase in market share (2.6% per month) from June 2022 to May 2023 (3.9% of all drug listings to 5.1%, respectively; Table 3 and **Figure 4**). This is followed by:

- other medicines increasing at 2.3% per month from 3.2% to 4.1%; and

- MDMA increasing at 1.5% per month from 7.1% to 8.2%.

Opioids (excluding heroin) had the greatest rate of relative decrease in market share (-2.3% per month) from June 2022 to May 2023 (6.7% of all drug listings to 5.4%, respectively; Table 3 and **Figure 4**). This is followed by:

- heroin with a decrease from 2.6% to 2.1%;

- benzodiazepines with a decrease from 8.1% to 7.0%;

- PIEDs/weight loss drugs with a decrease from 5.9% to 5.3%;

- other psychostimulants & nootropics with a decrease from 3.2% to 2.8%; and

- NPS with a decrease from 4.7% to 4.4%.

Some of these changes could be attributed to the closure of DarkFox and AlphaBay. For example, a high percentage of listings on DarkFox had comprised benzodiazepines and opioids (excluding heroin) relative to other cryptomarkets in the reporting period, and its closure might have led to their decline.

Table 3. Market share (percentage of listings) by drug class, and their average monthly percent change (AMPC) from June 2022 to May 2023.

Drug	Market share (percentage of listings)[a]			Average monthly percent change [b]	
	Overall	Jun 2022	May 2023	AMPC (%)	p [c]
Cannabis	31.1	29.4	30.4	0.1 (-0.5, 0.7)	0.621
Benzodiazepines	7.5	8.1	7.0	**-1.3 (-2.0, -0.5)**	**0.003**
Cocaine	7.5	7.5	7.4	-0.1 (-0.5, 0.3)	0.584
MDMA	7.3	7.1	8.2	**1.5 (0.8, 2.1)**	**<0.001**
Opioids (excluding heroin)	6.1	6.7	5.4	**-2.3 (-3.5, -1.2)**	**<0.001**
Meth/amphetamine (illicit)	5.6	5.6	5.8	0.4 (-0.1, 0.9)	0.130
PIEDs/weight loss drugs[d]	5.6	5.9	5.3	**-1.2 (-1.7, -0.7)**	**<0.001**
NPS	4.6	4.7	4.4	**-0.8 (-1.3, -0.3)**	**0.005**
Ketamine	4.3	3.9	5.1	**2.6 (1.8, 3.4)**	**<0.001**
Other medicines	3.5	3.2	4.1	**2.3 (1.2, 3.5)**	**<0.001**
Hallucinogenic mushroom	3.4	3.6	3.3	-0.5 (-2.4, 1.6)	0.650
LSD	3.3	3.5	3.5	-0.1 (-1.3, 1.0)	0.820
Other psychostimulants & nootropics	3.0	3.2	2.8	**-1.0 (-1.4, -0.6)**	**<0.001**
Heroin	2.3	2.6	2.1	**-1.7 (-2.6, -0.7)**	**0.001**
Other psychotropic medicines	1.5	1.4	1.7	-- [f]	-- [f]
DMT	1.4	1.6	1.5	-- [f]	-- [f]
Other drugs	1.2	1.1	1.3	-- [f]	-- [f]
GHB/GBL/1,4-BD	0.53	0.62	0.35	-- [f]	-- [f]
Overall[e]	**100**	**100**	**100**	--	--

Note: [a] Market share is the proportion of the number of listings of the drug as a percentage of the number of all drug listings per snapshot across all marketplaces observed in the stated period. [b] Average monthly percent change (AMPC) in market share is the estimated <u>relative</u> percent change in percentage of listings of the particular drug per month.[c] P-value indicates the statistical significance of the estimated AMPC. The estimates that are statistically significant at $p<0.05$ are highlighted in bold. [d] PIEDs: performance and image enhancing drugs. [e] The overall row includes all drug listings presented including those not shown in this table. Paraphernalia, MDA, PCP, tobacco, alcohol, e-cigarettes and inhalants are not shown in this table due to small values, with each comprising <0.5% of the overall market share. [f] Estimates of AMPC for market share are not shown where overall percentage of listings of the drug is <2% due to unreliability of estimates.

Figure 4. Percentage breakdown of listings by month and drug class over time from June 2022 to May 2023.
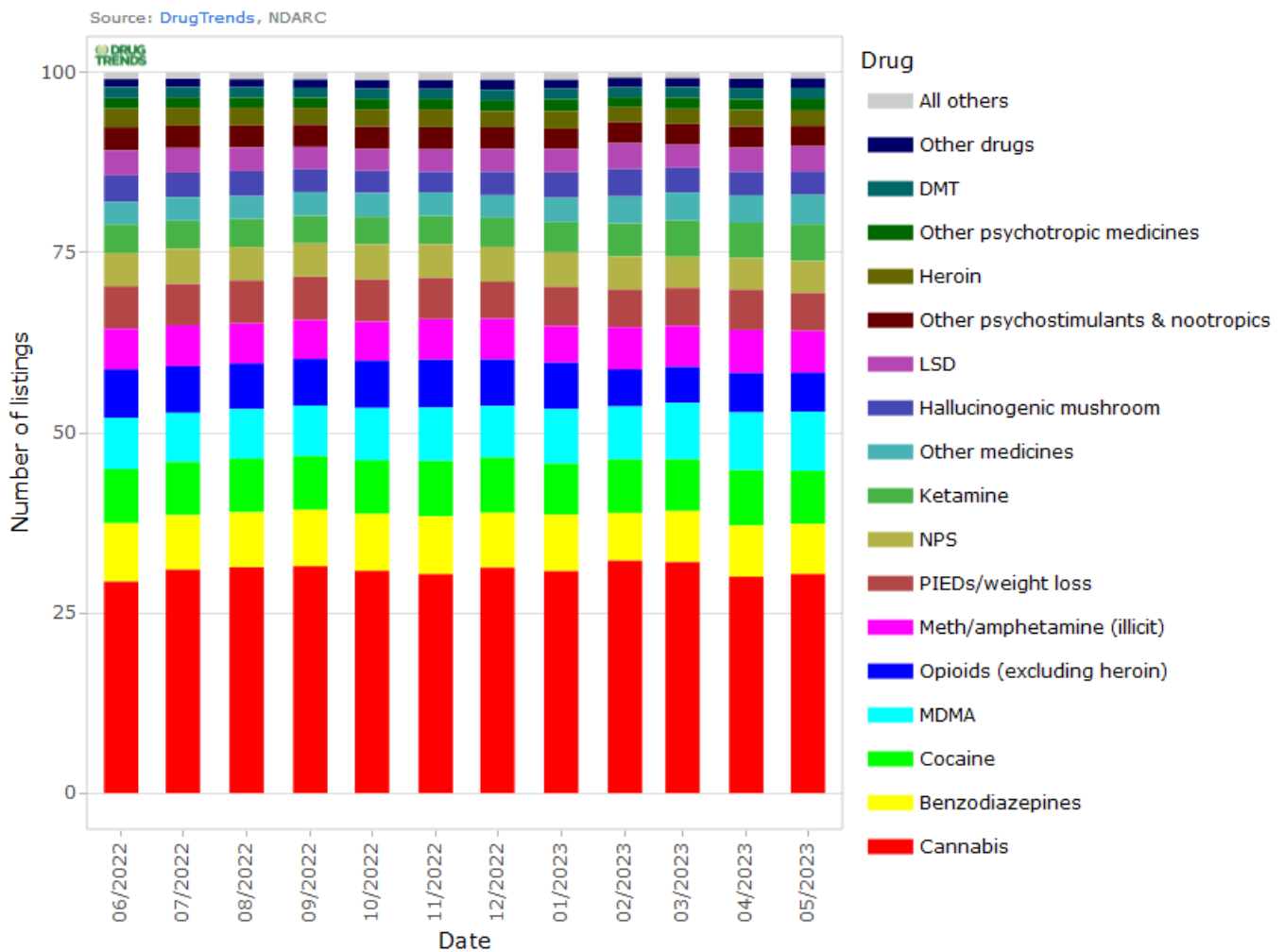
Note: "All others" comprise of drugs or related products that each make up <0.5% of listings over the reporting period. These are paraphernalia, MDA, PCP, tobacco, alcohol, e-cigarette and inhalants.

Did the market size (based on the number of listings) of the main drugs sold via cryptomarkets change over this period?

All the drugs shown in **Table 4** except other medicines showed decreases in number of listings. These declines were significant for all drug classes except cannabis, MDMA, ketamine, other psychotropic medicines and other drugs. GHB/GBL/1,4-BD showed the greatest rate of relative decrease (-7.8% per month) from June 2022 to May 2023 (363 to 166 listings, respectively). This is followed by:

- opioids (excluding heroin) with a decrease of -5.2% per month from 3,900 to 2,550 listings per snapshot;

- heroin with a decrease of -4.6% per month from 1,518 to 1,006 listings per snapshot;

- benzodiazepines with a decrease of -4.2% from 4,729 to 3,280 listings;

- PIEDs/weight loss drugs with a decrease of -4.1% from 3,435 to 2,475 listings;

- other psychostimulants & nootropics with a decrease of -3.9% from 1,872 to 1,328 listings;

- NPS with a decrease of -3.7% from 2,717 to 2,078 listings;

- hallucinogenic mushroom with a decrease of -3.1% from 2,118 to 1,534 listings;

- cocaine with a decrease of -3.1% from 4,376 to 3,464 listings.

While meth/amphetamine (illicit), LSD and DMT also showed a significant rate of decrease in number of listings, the decreases were of a smaller magnitude than the rate of decrease in overall number of listings.

Figure 5. Number of listings disaggregated by drug class for all markets from June 2022 to May 2023.
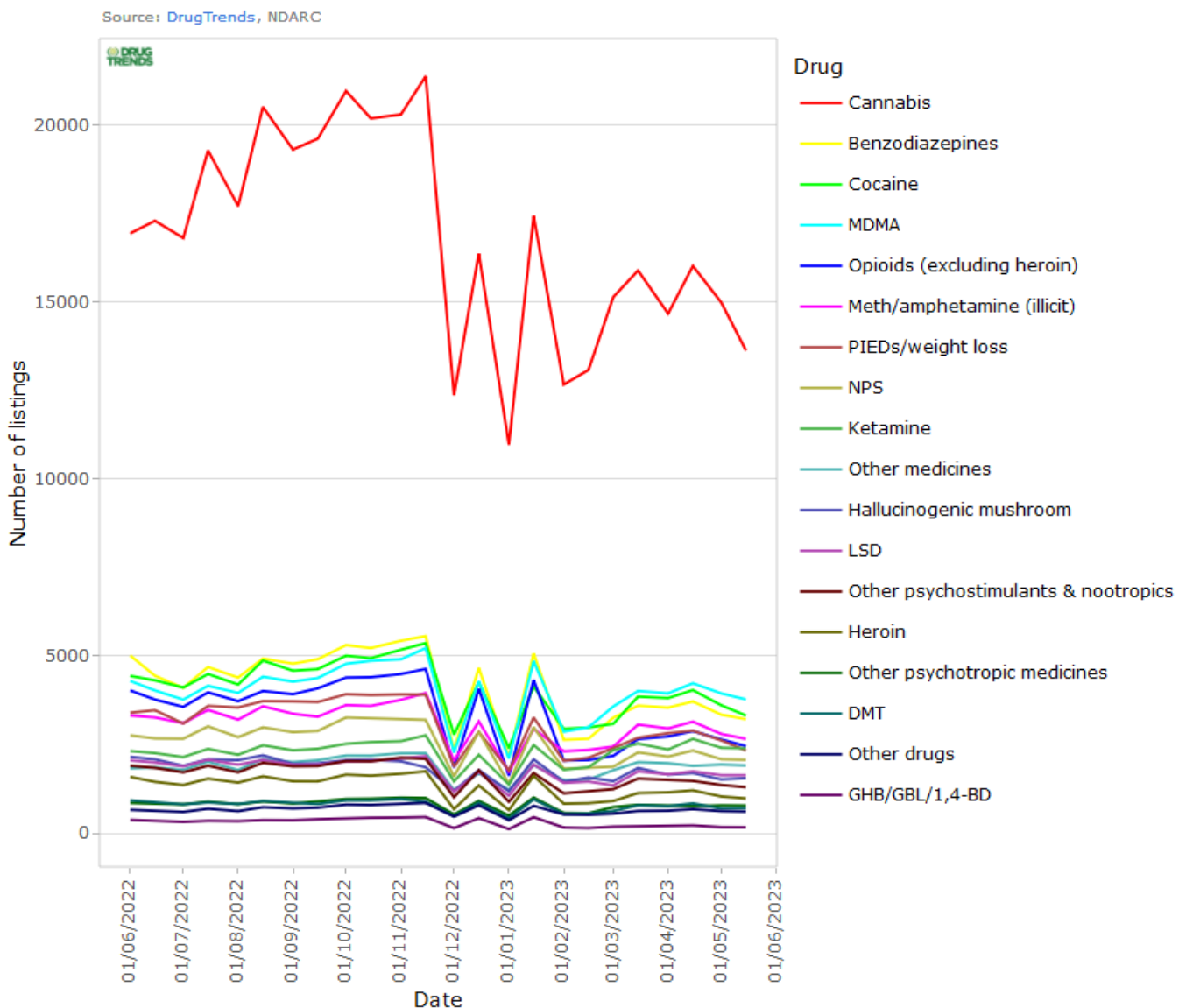
Note: Drug classes that each make up <0.5% of listings over the reporting period are excluded in this figure. These are paraphernalia, MDA, PCP, tobacco, alcohol, e-cigarette and inhalants.

Table 4. Market size (number of listings) by drug class and their average monthly percent change (AMPC) from June 2022 to May 2023.

Drug	Market size (Mean number of listings)[a]			Average monthly percent change [b]	
	Overall	Jun 2022	May 2023	AMPC (%)[a]	p [c]
Cannabis	16,811	17,114	14,308	-1.0 (-7.5, 6.0)	0.782
Benzodiazepines	4,126	4,729	3,280	**-4.2 (-7.0, -1.3)**	**0.006**
Cocaine	4,056	4,376	3,464	**-3.1 (-5.3, -0.8)**	**0.010**
MDMA	3,997	4,162	3,859	-1.5 (-4.2, 1.2)	0.259
Opioids (excluding heroin)	3,356	3,900	2,550	**-5.2 (-8.3, -2.1)**	**0.002**
PIEDs/weight loss[d]	3,066	3,435	2,475	**-4.1 (-6.5, -1.7)**	**0.002**
Meth/amphetamine (illicit)	3,048	3,294	2,730	**-2.6 (-4.7, -0.4)**	**0.025**
NPS	2,533	2,717	2,078	**-3.7 (-6.1, -1.2)**	**0.005**
Ketamine	2,285	2,288	2,402	-0.2 (-2.3, 2.0)	0.860
Other medicines	1,870	1,843	1,924	1.3 (-4.8, 7.8)	0.679
Hallucinogenic mushroom	1,808	2,118	1,534	**-3.1 (-4.8, -1.4)**	**0.001**
LSD	1,780	2,024	1,636	**-2.8 (-4.8, -0.8)**	**0.009**
Other psychostimulants & nootropics	1,635	1,872	1,328	**-3.9 (-6.3, -1.5)**	**0.003**
Heroin	1,290	1,518	1,006	**-4.6 (-7.5, -1.6)**	**0.005**
Other psychotropic medicines	809	842	779	-1.9 (-4.2, 0.4)	0.102
DMT	782	904	698	**-2.7 (-5.2, -0.1)**	**0.040**
Other drugs	657	650	614	-1.4 (-3.8, 1.0)	0.236
GHB/GBL/1,4-BD	298	363	166	**-7.8 (-11.8, -3.7)**	**<0.001**
Overall[e]	54,410	58,303	47,042	**-3.0 (-5.1, -0.7)**	**0.012**

Note: [a] This shows the mean number of listings per snapshot across all marketplaces observed in the stated period. [b] Average monthly percent change (AMPC) in market size is the estimated <u>relative</u> percent change in number of listings of the particular drug per month. [c] P-value indicates the statistical significance of the estimated AMPC. The estimates that are statistically significant at $p<0.05$ are highlighted in bold. [d] PIEDs: performance and image enhancing drugs. [d] The overall row includes all drug listings presented including those not shown in this table. Paraphernalia, MDA, PCP, tobacco, alcohol, e-cigarettes and inhalants are not shown in this table due to small values, with each comprising <0.5% of the overall market share.

What drugs did the different markets sell over this period?

Figure 6 shows the breakdown of listings by drug class per market during the 12-month reporting period. The analyses shows that most markets monitored listed an array of different drugs. The market share of cannabis varied between 12.4% for Dark Matter and 42.3% for Tor with a relative difference from the overall market of -57% and 43%, respectively (**Table 5**). While it is one of the smallest markets, Dark Matter had the highest percentage of meth/amphetamine (illicit) listings compared with the overall market (relative difference of 177%; $p<0.001$). Hermes is another relatively small market, but it has the highest percentage of heroin, ketamine and cocaine listings, compared with the overall market (relative difference of 303%, 76% and 72%, respectively). The following can also be noted from **Table 5**:

- Cypher had the highest percentage of PIEDs/weight loss drugs (relative difference of 117% from overall market);

- DarkFox, one of the biggest markets, had the highest percentage of benzodiazepine listings (relative difference of 42% from overall market);

- MGM Grand had the highest percentage of listings comprising opioid (excluding heroin) and other psychostimulants & nootropics (relative difference of 127% and 52%, respectively, from overall market);

- Nemesis and Tor had the highest percentage of other medicines listings (relative difference of 53% and 54%, respectively, from overall market); and

- Ares had the highest percentage of hallucinogenic mushrooms (relative difference of 43% from overall market).

ColombiaConnection also had a significantly higher percentage of its listings comprising opioids (excluding heroin) (relative difference of 80% compared with the overall market). While it also had a relatively high percentage of listings comprising of LSD and other psychostimulants & nootropics, they were not statistically significantly different from overall market percentages given ColombiaConnection is one of the smallest markets in the reporting period.

Figure 6. Drug composition of markets monitored from June 2022 to May 2023 (in ascending order by proportion of cannabis listings, and overall market in last column).
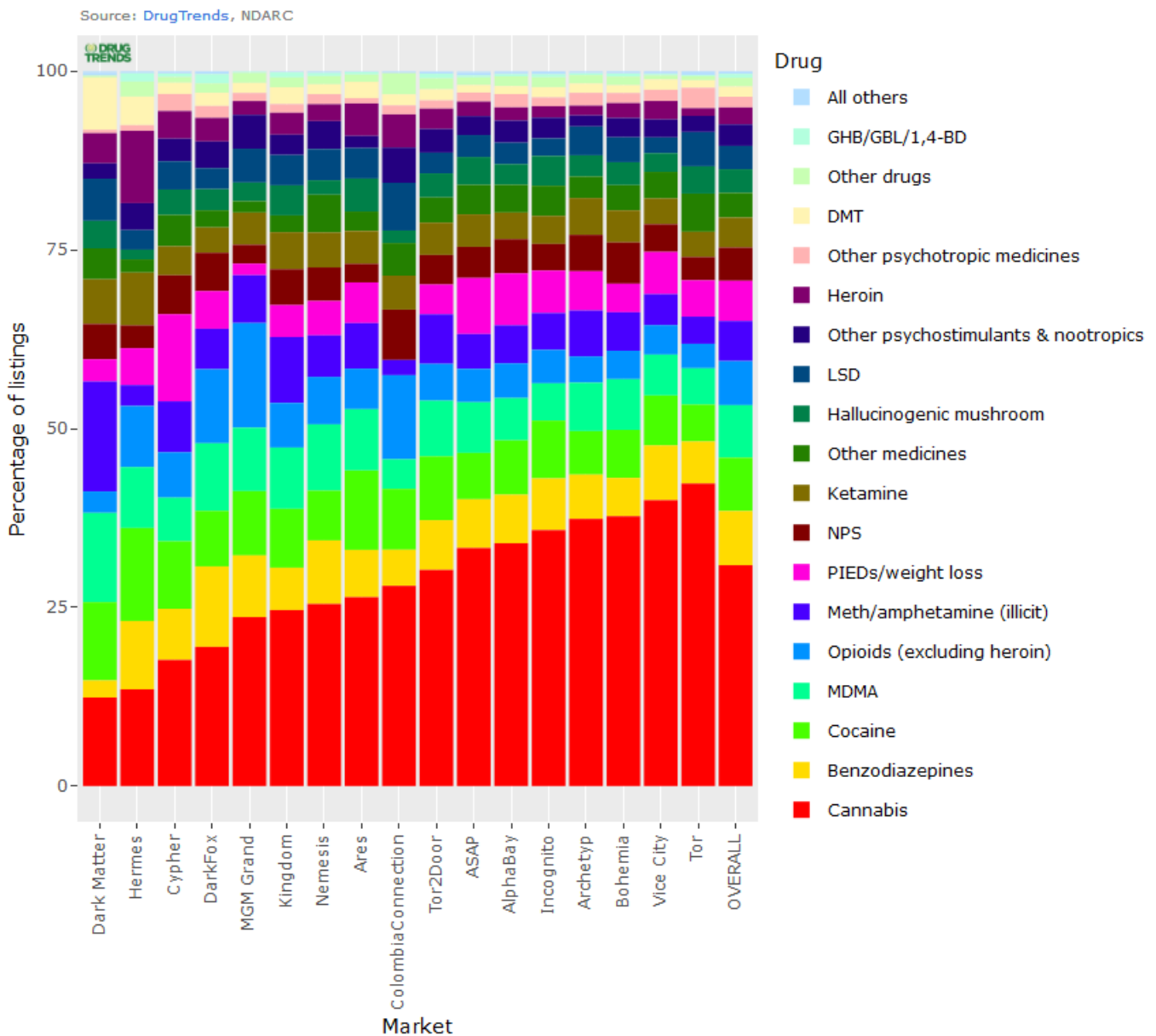
Note: This figure displays drug class percentage of all listings observed from 1st June 2022 to 31st May 2023 for each marketplace monitored. "All others" comprise of drugs or related products that each make up <0.5% of listings over the reporting period. These are paraphernalia, MDA, PCP, tobacco, alcohol, e-cigarette and inhalants.

Table 5. Relative percent difference in drug market share between each market and the overall market from 1st June 2022 to 31st May 2023.

Market	Cannabis	Benzodiazepines	Cocaine	MDMA	Opioids (excluding heroin)	Meth/ amphetamine (illicit)	PIEDs/ weight loss drugs	NPS	Ketamine	Other medicines	Hallucinogenic mushroom	LSD	Other psycho- stimulants & nootropics	Heroin
Dark Matter	**-57****	-70	43	67	-53	**177****	-47	3	45	22	13	85	-23	70
Hermes	**-54****	20	**72****	11	34	-47	-9	-31	**76***	-45	-58	-17	21	**303****
Cypher	**-41****	-10	25	-19	-2	26	**117****	15	-2	27	11	22	1	**56***
DarkFox	**-34****	**42****	3	**25****	**61****	0	-6	**14****	**-15****	**-31****	-8	-9	**20****	**33****
MGM Grand	**-20****	9	19	17	**127****	18	**-71****	**-44****	8	**-53****	-20	**46****	**52****	-22
Kingdom	**-17****	**-25****	9	13	-3	**63****	-20	7	24	**-32***	**31***	**31***	-9	23
Nemesis	**-14****	13	-8	**23****	3	2	-15	0	18	**53****	**-37****	**34****	**26***	-5
Ares	**-11***	-16	**47****	13	-12	12	1	**-45****	11	-21	**43***	31	**-46***	**82****
Colombia Connection	-5	-33	12	-44	**80***	-63	–	46	14	38	-51	111	52	91
Tor2Door	2	-12	**18****	3	**-20****	**22****	**-26****	-12	8	3	5	-11	6	14
ASAP	**12****	**-14****	**-14****	-6	**-28****	**-14***	**39****	-8	10	**20***	**21****	-5	-15	**-18***
AlphaBay	**15****	**-14****	0	**-21****	**-25****	-6	**29****	2	-11	13	-10	-8	-1	**-26****
Incognito	**21****	-8	7	**-31****	**-27****	-9	5	**-21****	-6	**23***	**30****	**-24***	-7	**-36****
Archetyp	**26****	**-21****	**-20***	-10	**-43****	13	-3	8	**24***	-13	-8	24	**-50****	**-46****
Bohemia	**27****	**-32****	**-11***	-6	**-39****	-5	**-29****	**23****	7	2	0	7	-13	-16
Vice City	**35****	-3	-8	**-24****	**-36****	**-23***	5	-18	-13	7	-19	**-32***	-19	4
Tor	**43****	-26	**-32***	**-32***	**-47****	**-33***	-9	-31	-15	**54****	18	**47***	-29	**-57***

Note: Each column is colour coded to highlight the lowest numbers in green, the mid-range numbers in yellow and highest numbers in purple, following the colour scale range. ** and bold underline indicate relative difference is statistically significant at $p<0.001$, and * in bold indicate relative difference is statistically significant at $p<0.01$.

Funding and Copyright

Recommended Citation

Acknowledgements

Related Links

- Data visualisations: https://drugtrends.shinyapps.io/cryptomarkets

- For more research from the Drug Trends program go to: https://ndarc.med.unsw.edu.au/program/drug-trends