07

USE OF THE DARK WEB AND SOCIAL MEDIA FOR DRUG SUPPLY

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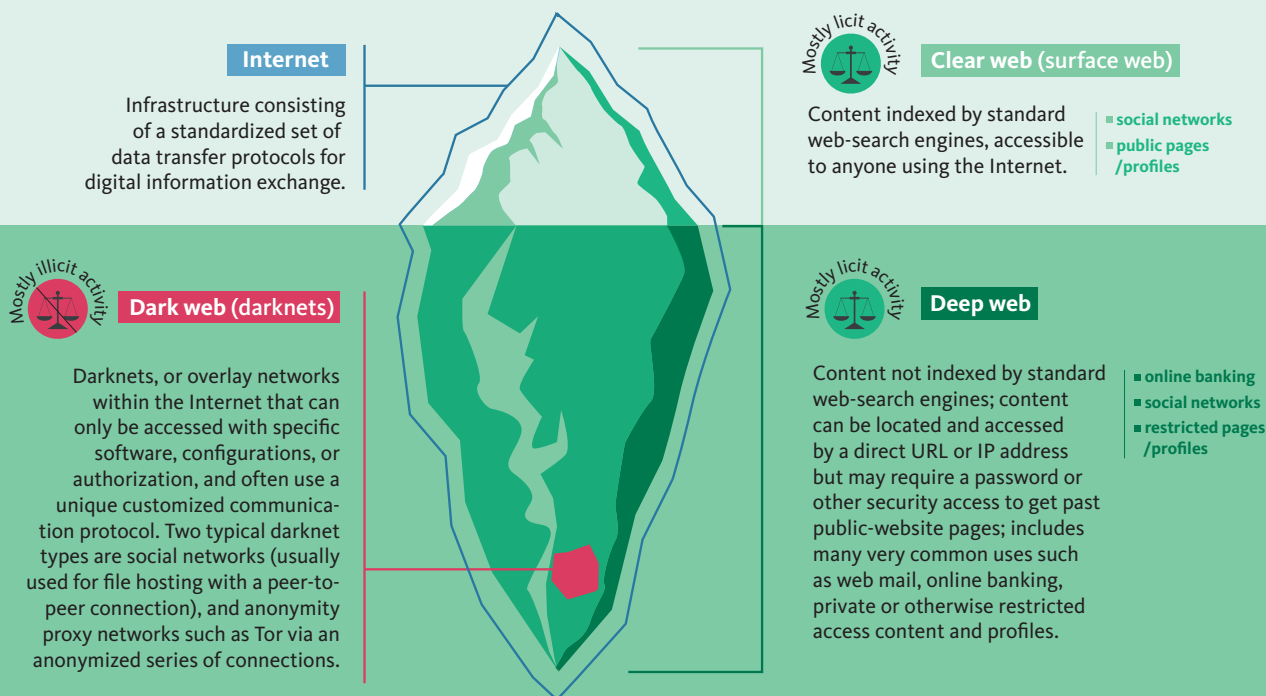## Online drug sales mirror the increase in Internet use

Use of the Internet and social media continues to spread across the globe, to the extent that two thirds of the global population now have access to the Internet (66 per cent)[1] and more than half use social media (59 per cent).[2]
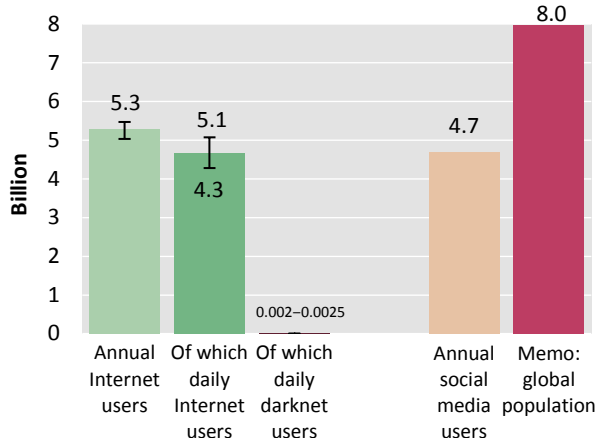
Increased digital interconnectivity has brought about innovations in how supply chains operate, but *t*he ongoing growth of online shopping is not limited to the purchase of licit goods. The increase in the use of the Internet among the general population is mirrored in the increase the use of the open Internet, also known as the clear web, as well as the deep web to procure drugs. Developments in digital communications platforms have added a new dimension to drug distribution. In principle, almost everyone can now order drugs online and have them delivered directly to their door, thereby cutting out intermediaries, reducing costs and shortening supply chains.

The marketing and sale of controlled drugs and NPS on the Internet can take place at different levels: on the clear web, sometimes using encrypted communications tools; on certain social media applications; and on darknet markets, which form part of the deep web. Measurements – such as the number of websites, terabytes stored on such websites or cryptocurrency

THE INTERNET: CLEAR WEB, DEEP WEB AND DARK WEB

Internet

Infrastructure consisting of a standardized set of data transfer protocols for digital information exchange.

Mostly licit activity

Clear web (surface web)

Content indexed by standard web-search engines, accessible to anyone using the Internet.

- social networks
- public pages /profiles

Mostly illicit activity

Dark web (darknets)

Darknets, or overlay networks within the Internet that can only be accessed with specific software, configurations, or authorization, and often use a unique customized communication protocol. Two typical darknet types are social networks (usually used for file hosting with a peer-to-peer connection), and anonymity proxy networks such as Tor via an anonymized series of connections.

Mostly licit activity

Deep web

Content not indexed by standard web-search engines; content can be located and accessed by a direct URL or IP address but may require a password or other security access to get past public-website pages; includes many very common uses such as web mail, online banking, private or otherwise restricted access content and profiles.

- online banking
- social networks
- restricted pages /profiles

FIG. 14 Estimates of the global number of Internet and social media users, 2022

Sources: International Telecommunication Union, Measuring digital development: Facts and Figures 2022, Statistics, Individuals using the Internet (29 July 2022); Simon Kemp, Digital 2022: Global Overview Report (26 January 2022); CEOP, The Dark Web: what is it and why do people use it? https://www.thinkuknow.co.uk/professionals/; Ema Bliznovska, How Many People Use the Dark Web? (12 April 2022) and Dave Chafffey, Global social media statistics research summary 2022, Smart Insights, (22 August 2022).

transactions – used to assess the relative importance and use of these Internet segments for licit or illicit purposes are complex and are noted here only to provide some likely orders of magnitude.

The vast majority of Internet connections take place on the deep web (accounting for an estimated 96 per cent of all websites indexed by search engines, versus 4 per cent on the clear web).[3, 4, 5] The deep web has a wide range of legitimate uses, but also hosts the dark web,[6] which – depending on the measurements used (addresses or terabytes) – is estimated to represent either 0.01 per cent,[7] or between 5 and 10 per cent, of the Internet.[8, 9, 10, 11] The dark web hosts a number of illegal activities, but it seems that a large proportion of the activities carried out on it, such as communications among dissidents and critical journalists, could, depending on the legal system, be considered to be legitimate or at least semi-legal.[12]

Most cryptocurrency transactions are not illegal. A blockchain analysis of cryptocurrencies suggests that only between 0.1 and 1.9 per cent of the volume of all cryptocurrency transactions in recent years

(2017–2022) involved transactions linked to illegal goods and services (0.24 per cent in 2022).[13] The proportions of illegal transactions are different if only transactions involving darknet markets are considered, however. Transactions involving darknet markets (mostly drug-related markets) accounted for 0.02 per cent of all cryptocurrency transactions in 2022, the majority of which can be considered to have been illegal.[14]

Following years of an upward trend, drug sales on the dark web seem to have declined in 2022

An Internet survey conducted simultaneously in 10 European Union countries in the period 2017–2018 among some 20,000 Internet-using drug consumers,[15] using various recruitment strategies,[16] found that 8 per cent of survey respondents had bought drugs on the dark web.[17] This was a far smaller proportion than those who had bought drugs from a drug dealer (59 per cent), but a significantly larger proportion than those who had bought drugs from an online shop (3 per cent) or a specialized NPS shop (1 per cent).[18]

Another online survey, based on a convenience sample of more than 100,000 participants in 35 countries worldwide**,** suggested that the proportion of Internet-using drug consumers who had purchased drugs on the dark web in the previous 12 months had more than doubled between 2014 and 2022, from 4.7 to 10.8 per cent.[19] Although plausible, these findings should

FIG. 15 Global number of Internet users, 2011–2022
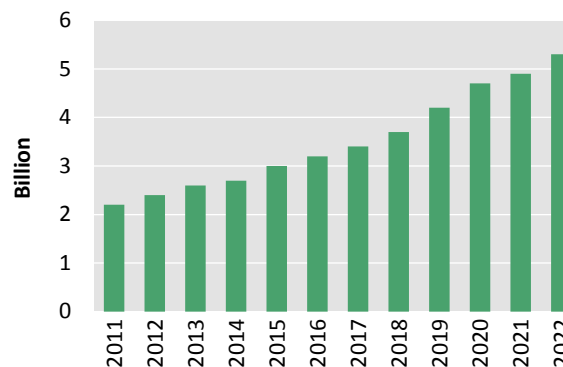
Source: ITU, Statistics – Individuals using the Internet.

FIG. 16   **Proportion of drug-consuming Internet users reporting drug purchases on the dark web, 2014–2022**
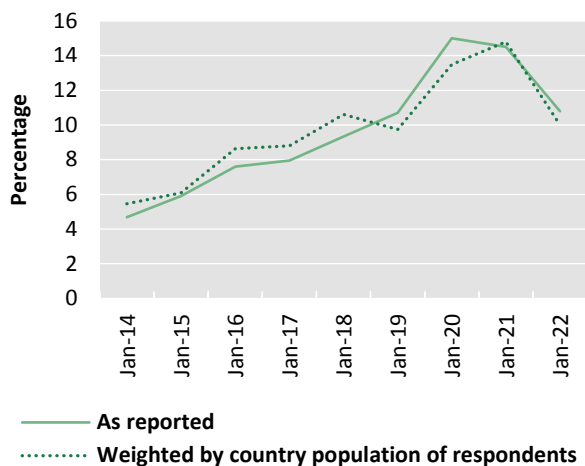
Source: UNODC calculations based on Global Drug Survey 2022 data (and previous years): detailed findings on drug cryptomarkets.

Note: The dotted line is the result of ex-post stratification whereby country data were weighted by the actual population of the respective countries. Missing data by country for specific years were also interpolated from adjacent years and that data was assumed to have remained stable since the last survey.

be interpreted with caution, because they are not based on representative global samples but on convenience samples that are characterized by an overrepresentation of Internet users in Europe, the Americas and Oceania.

Estimating the size of drug markets on the dark web is challenging. An analysis of major darknet markets using web-crawling techniques has shown that they are highly volatile and have a propensity to disappear at short notice as a result of both law enforcement successes in dismantling such markets and exit scams.[20]

Another approach has been to systematically investigate the existing blockchains of various cryptocurrencies for suspicious addresses involved in illegal transactions, and the resulting money flows between such addresses (cryptocurrency wallets). The analysis of various blockchains of cryptocurrencies suggests that darknet markets (mostly selling drugs) continued growing up until 2021, when their combined revenue reached a record high of an estimated $2.7 billion (equivalent to an estimated 1.5 per cent of retail drug sales in North America and Europe),[21] before declining by half, to around $1.3 billion in 2022, mostly
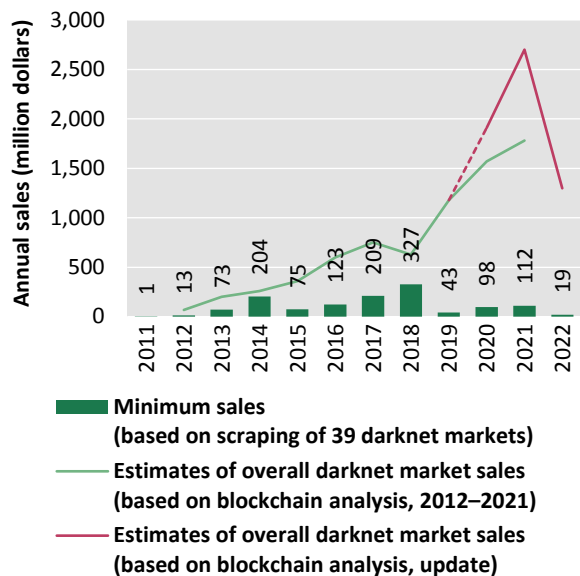
FIG. 17   **Daily minimum sales (mostly drug-related: ›90 per cent) on 39 major global darknet markets, 2011–2022**
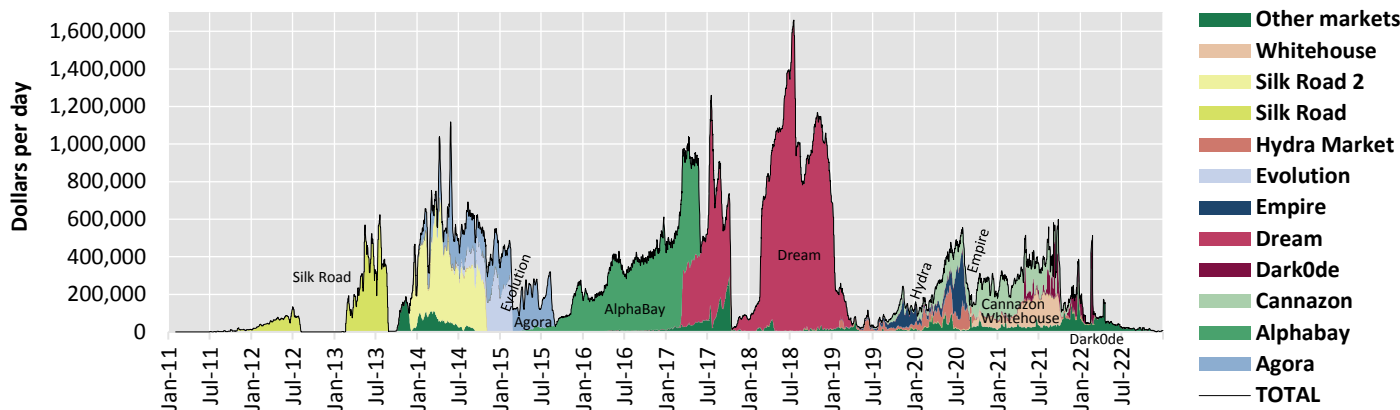
Source: UNODC analysis based on Hikari Labs data (see online Methodological Annex).

Note: Data refer to minimum stacked market sales of different products and services, of which drugs accounted for more than 90 per cent, and are presented as seven-day averages. All data shown reflect minimum sales, as the current web-crawler techniques do not cover all sites on a specific market and because not all customers leave feedback. The coverage ratios (sites actually scraped as a proportion of all sites found on the dark web) declined, however, from an average of 65 per cent for older darknet markets that ended their mid-life prior to 2018 to some 6 per cent for newer darknet markets. This is mainly a consequence of the very low coverage ratio of Hydra Market (less than 1 per cent). Such a decline in coverage results has led to major underestimates for more recent darknet sales.

FIG. 18 Observed minimum sales on 39 major darknet markets (mostly drug-related: >90 per cent) and estimates of overall darknet market sales (mostly drug-related) based on blockchain analysis, 2011–2022
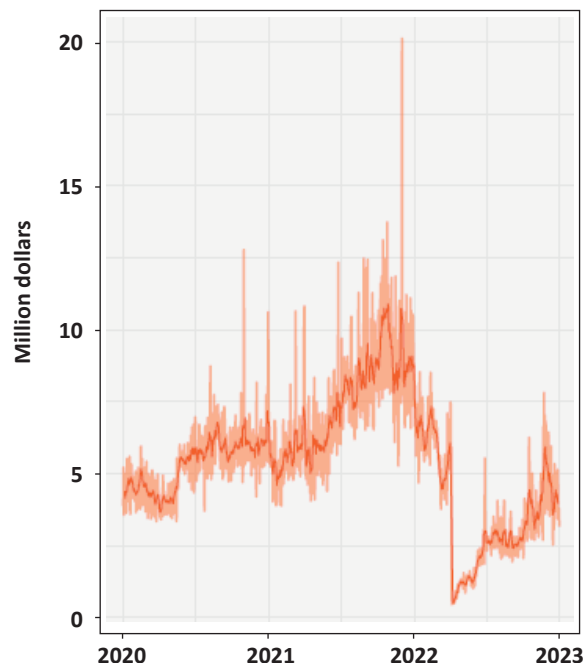

Minimum sales
(based on scraping of 39 darknet markets)

Estimates of overall darknet market sales
(based on blockchain analysis, 2012–2021)

Estimates of overall darknet market sales
(based on blockchain analysis, update)

Sources: UNODC calculations based on Hikari Labs data and Chainalysis; Crypto Crime Report 2023 (and previous years).

FIG. 19 Daily revenue for (mostly drug-related) darknet market sales, based on blockchain analysis, 2020–2022

Source: Chainalysis, Crypto Crime Report 2023 (and previous years).

as a result of the dismantling of the darknet platform Hydra Market in April 2022.[22] Nonetheless, darknet markets continue to show resilience and started to recover in the second half of 2022.
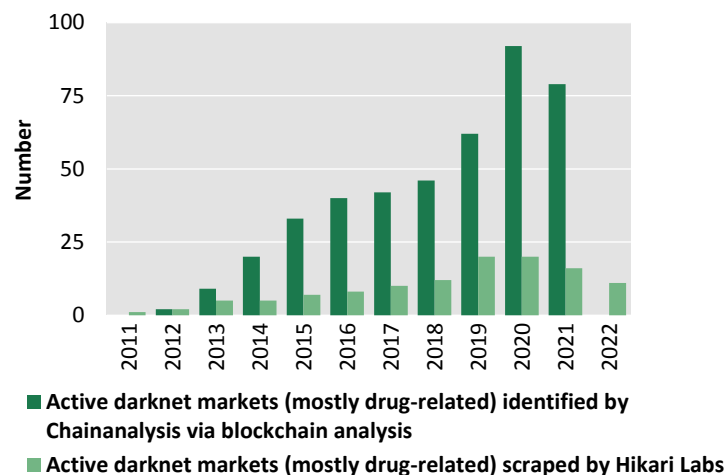
Darknet drug sales may be shifting towards wholesale

International experts, meeting in late 2022,[23] highlighted a possible shift in darknet markets, away from primarily retailing drugs to end users towards selling them wholesale as well – a trend that seems to have been confirmed by blockchain analysis[24] more recently. The recent decline in active darknet markets (mostly drug-related), their participants[25] and transactions[26] has occurred in a context where overall darknet sales nonetheless continued to rise until 2021, the consequence of a marked increase in average payments per transaction and an indication that some vendors may

FIG. 20 Number of active darknet markets (mostly drug-related), 2011–2022

■ Active darknet markets (mostly drug-related) identified by Chainanalysis via blockchain analysis

■ Active darknet markets (mostly drug-related) scraped by Hikari Labs

Sources: UNODC calculations based on Hikari Labs data and Chainalysis, Crypto Crime Report 2023 (and previous years).

FIG. 21   Number of active darknet market participants (mostly drug-related) and transactions (mostly drug-related) on darknet markets, 2019–2021

Number of participants

Number of transactions (mostly drug-related)
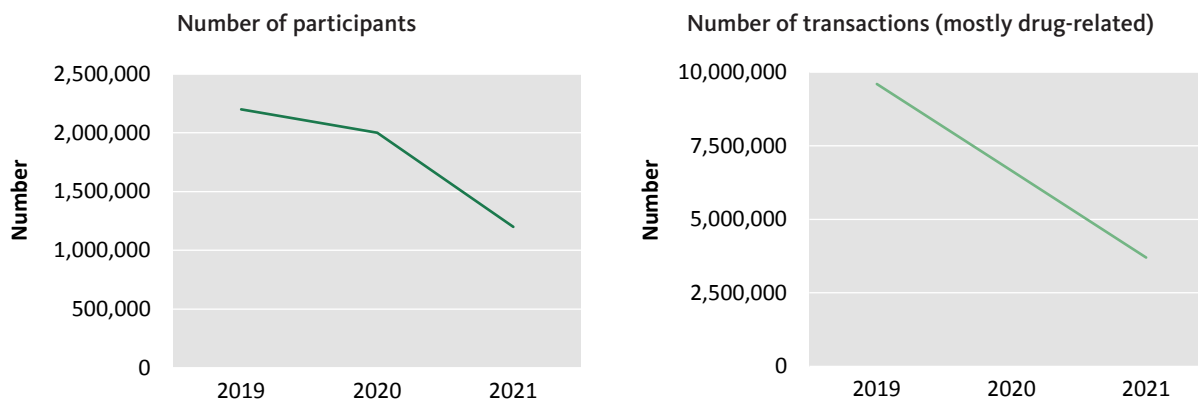
Source: Chainalysis, The 2022 Crypto Crime Report, February 2022

Note: Participants are "active users", which is defined as a wallet that has sent or received more than $5 worth of cryptocurrency to or from darknet markets over the course of a year.

FIG. 22   Average size of transactions (mostly drug-related) on the blockchain, 2016–2021
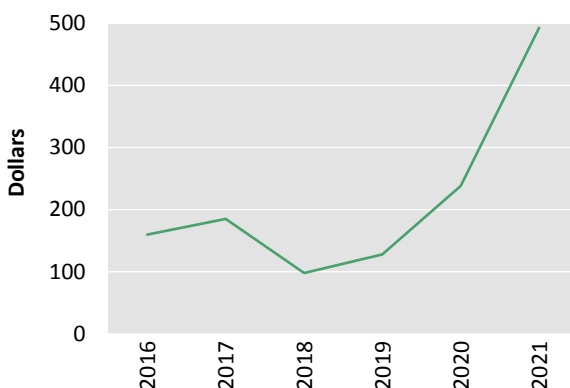
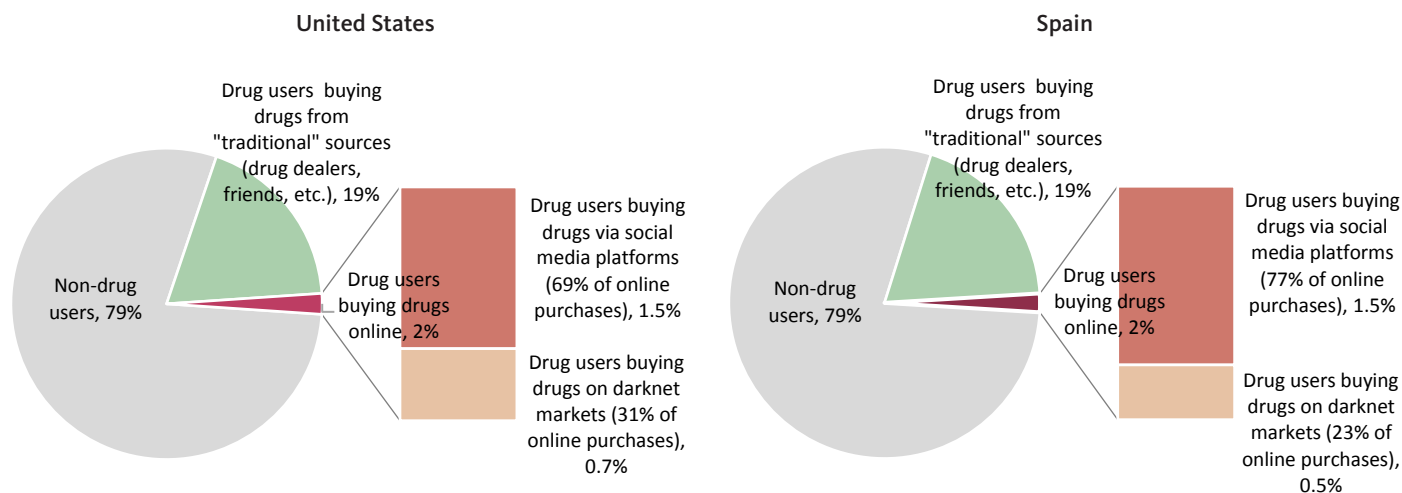Source: Chainalysis, The 2022 Crypto Crime Report, February 2022.

have started selling their drugs to drug distributors while others may have widened their portfolio to increasingly sell other products and services in addition to drugs.[27]

Use of social media for buying and selling drugs appears to be growing

End users seem to be buying their drugs on the dark web to a lesser extent than in previous years.[28] Qualitative information provided by people who use social media suggests that the use of such media for drug purchasing purposes has been increasing, especially at the retail level.[29] This is occurring in a context in which the use of social media, typically accessed via the clear web (although not exclusively) is increasing more rapidly than the use of the Internet in general.

In a study conducted in the United States (2018) and Spain (2019), in which about one tenth of all Internet-using drug consumers aged 15–25 bought drugs online, large proportions (69 per cent in the United States and 86 per cent in Spain) of online purchases were made via social media, and the remainder on darknet markets.[30] Another study, conducted in Ireland in 2021, suggested that around 64 per cent of online drug purchases among the general population were made using social media, 28 per cent occurred on darknet markets and 8 per cent were made via online shops.[31] That pattern applied to most drug types.[32] A previous comparison of social media and darknet markets in Denmark, carried out in 2017, had also suggested that

FIG. 23 Use of traditional sources versus online purchases of drugs among Internet-using drug users aged 15–25, the United States and Spain
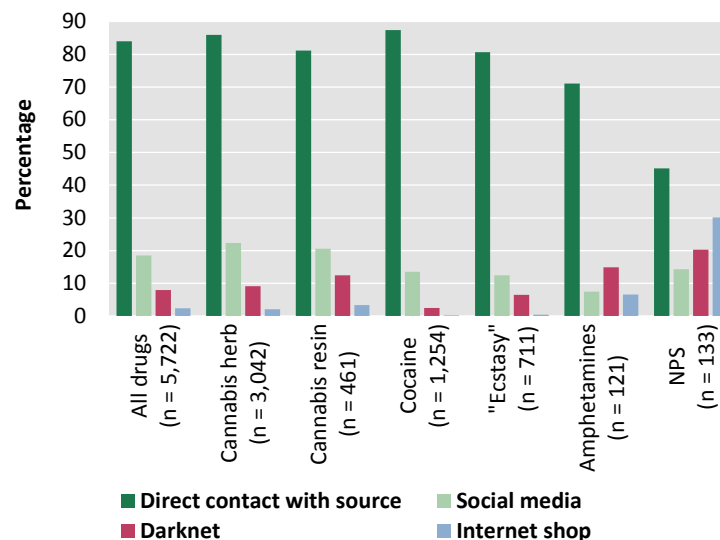
United States

Drug users buying drugs from "traditional" sources (drug dealers, friends, etc.), 19%

Non-drug users, 79%

Drug users buying drugs online, 2%

Drug users buying drugs via social media platforms (69% of online purchases), 1.5%

Drug users buying drugs on darknet markets (31% of online purchases), 0.7%

Spain

Drug users buying drugs from "traditional" sources (drug dealers, friends, etc.), 19%

Non-drug users, 79%

Drug users buying drugs online, 2%

Drug users buying drugs via social media platforms (77% of online purchases), 1.5%

Drug users buying drugs on darknet markets (23% of online purchases), 0.5%

Source: Atte Oksanen, Bryan L. Miller, Iina Savolainen, Anu Sirola, Jakob Demant, Markus Kaakinen and Izabela Zych, "Social Media and Access to Drugs Online: A Nationwide Study in the United States and Spain among Adolescents and Young Adults", *The European Journal of Psychology Applied to Legal Context (*9 December 2020).

most online drug purchases were made via social media (71 per cent).[33]

Drugs are sold on a number of social media platforms, including mainstream platforms such as Facebook, Instagram, Snapchat and WhatsApp.[34] Platforms that enable social networking between strangers, such as Tinder, Grindr, Instagram, Facebook and Discord, allow sellers to openly "advertise" their products to unknown buyers by constructing a public profile. Conversely, messaging platforms, both encrypted and unencrypted, facilitate more private drug transactions between people who already know one another, via direct message or within the confines of a group chat.[35]

The two main social media platforms identified for drug purchases in the above-mentioned study conducted in the United States and Spain in 2018/2019 were Facebook and Instagram.[36] Findings from a study in Nordic countries in the period September–December 2017 show that Facebook and Instagram were also the social media platforms most commonly used for drug dealing in Denmark, Iceland and Sweden. There were no indications of drug dealing on open social media platforms such as Facebook in Norway, however. The same was

FIG. 24 Use of traditional sources versus online purchases of drugs, by drug type, among Internet-using drug users aged 18 and older, Ireland, 2021

Percentage

All drugs (n = 5,722)
Cannabis herb (n = 3,042)
Cannabis resin (n = 461)
Cocaine (n = 1,254)
"Ecstasy" (n = 711)
Amphetamines (n = 121)
NPS (n = 133)

■ Direct contact with source   ■ Social media
■ Darknet   ■ Internet shop

Source: Deirdre Mongan, Nicki Killeen, David Evans, Seán R. Millar, Eamon Keenan and Brian Galvin, European Web Survey on Drugs 2021: Irish Results.
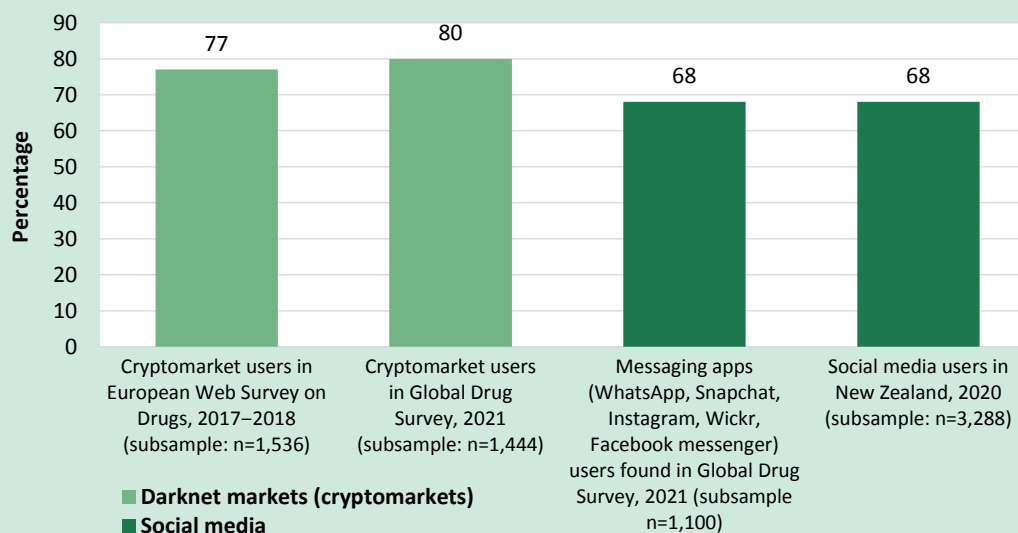
Note: There can be more than one source reported.

Drug users who purchase drugs online are predominantly men

Most drug users in the samples illustrated in the graph below who purchased drugs online were men: more than three quarters of respondents did so on darknet markets, and slightly fewer (two thirds) used social media.

Proportion of men among survey respondents who were Internet-using drug users purchasing drugs online: darknet markets (cryptomarkets) versus social media, 2017–2021

Legend:
- ■ Darknet markets (cryptomarkets)
- ■ Social media

Categories (x-axis):
- Cryptomarket users in European Web Survey on Drugs, 2017–2018 (subsample: n=1,536) — **77**
- Cryptomarket users in Global Drug Survey, 2021 (subsample: n=1,444) — **80**
- Messaging apps (WhatsApp, Snapchat, Instagram, Wickr, Facebook messenger) users found in Global Drug Survey, 2021 (subsample n=1,100) — **68**
- Social media users in New Zealand, 2020 (subsample: n=3,288) — **68**

Sources: Monica J. Barrat et al, "Exploring Televend, an Innovative Combination of Cryptomarket and Messaging App Technologies for Trading Prohibited Drugs", Drug and Alcohol Dependence 231 (2022); and UNODC calculations based on Alexandra Karden and Julian Strizek, Monitoring Drug Use in the Digital Age: Studies in Web Surveys – The potential for using web surveys to investigate drug sales through cryptomarkets on the darknet, EMCDDA Insights (Lisbon 2022).

true in Finland, where the majority of online drug purchases were made on darknet markets. One-on-one social media forums such as Reddit seem to be preferred in Norway.[37] However, different social media platforms may also be used for different drugs, as seen in Latin America and the Caribbean.[38]

User-friendliness of social media raises new challenges

Sales on the dark web (on darknet markets) are, in general, fully anonymous transactions between sellers and buyers that are dispatched by mail. Drug sales via social media, although initiated anonymously, tend to require hand-to-hand transactions, so end up in face-to-face meet-ups arranged via one-on-one social media apps such as Snapchat, Wickr or Facebook Messenger.[39]

The need for face-to-face transactions means that the use of social media for buying and selling drugs is more of a localized phenomenon,[40] in which different social media platforms dominate the scene in different countries and buyers and sellers often live in the same country. In contrast, the use of darknet markets for those purposes is more of a regional and, partly, global phenomenon.[41, 42, 43, 44, 45]

The growing popularity of social media platforms for purchasing drugs[46] reflects a certain reluctance among people to access the dark web, possibly because it is

often perceived as requiring sophisticated IT skills to use and as being increasingly targeted by law enforcement authorities. Social media and encrypted messaging apps are thus seen as faster, more convenient and more user-friendly local alternatives for purchasing drugs than the complex and volatile darknet drug markets.[47, 48] Moreover, social media users lean more towards the use of pictures, icons or emojis that resemble the products that consumers are looking for, thereby offering an alternative method of communicating and identifying illicit products – one that does not require the use of conventional text and which may be more difficult for law enforcement authorities to identify quickly.[49]

The proliferation and ubiquity of social media, coupled with its increasing use for buying and selling drugs,[50, 51, 52] suggest that the availability and accessibility of drugs are also on the increase for people with less access to traditional drug markets.[53] Sections of the population can now be reached who otherwise may not have had easy access to drug markets. In the United States – and probably in other countries as well – the growth of social media and access to smartphones have led to the emergence of new threats, as criminal drug networks have started using social media to create new illicit markets and target a new clientele.[54] Perhaps even more problematic is that, in addition to drugs becoming more accessible, as reported in some studies,[55, 56, 57] drug supply is now more varied in terms of the compounds and doses on offer.[58, 59]

This may be a particular issue for young people, as the use of social media correlates strongly with age;[60] the youngest age groups (those aged 16 to 24)[61] seem to show the strongest inclination towards using social media to purchase drugs,[62] while the use of the dark web for drug purchases seems to be more popular among young adults aged 25 to 34.[63, 64]

Even though the available data are still not sufficiently robust to arrive at final conclusions, published studies suggest that drug sales via social media have grown markedly and may already be more significant than drug sales via darknet markets on the dark web, notably at the retail level.[65, 66]

Sales on the dark web and on social media platforms are, at the same time, strongly interwoven. Reports claim that social media platforms are often used in parallel, sometimes in addition to purchases on the dark web.[67] There are a multitude of social media platforms that play a role in the drug-purchasing process: first of all in establishing contacts (such as Facebook groups or Instagram), then in offering the drugs using photos (such as Snapchat), while subsequent deals are often concluded on more secure social media apps (such as Telegram) or closed channels (such as Wickr or Facebook Messenger).[68] A single app might also fulfil more than one of the roles discussed above. On Telegram, for instance, there may be groups dedicated to the illicit supply of drugs. In other words, that social media platform is not only a means of concluding purchases but, simultaneously, may be also used as a platform where contacts are established and illicit drugs are offered (including photos of them).[69, 70, 71, 72, 73] Research also suggests that some sellers obtain their drugs from the dark web and then resell them on social media platforms.[74]

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