






Research Paper

What app? Demographic and drug use predictors of buying drugs via different social media and messaging apps

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ABSTRACT

Introduction: Improving our understanding of how demographic and drug use factors shape social media drug market engagement is integral to targeting harm reduction and prevention responses to high-risk drug use and digital harm.

Aim: To identify demographics and drug use patterns that correlate with using specific social media platforms to purchase drugs.

Methods: An anonymous online survey of New Zealanders who use drugs ($N = 10,781$) was used to explore social media drug purchasing. Logistic regression models were fitted to identify demographic and drug use correlates of using Facebook/Messenger, Snapchat, Instagram or high security apps (Telegram, Signal, Wickr) to purchase drugs.

Results: Sixteen percent reported purchasing drugs via social media ($n = 1731$). Facebook/Messenger was most used (54.2 %), followed by Snapchat (47.5), Instagram (24.7) and high security apps (17.6). Respondents aged under 30 were more likely to report using Snapchat and less likely to report using Facebook/Messenger or high security apps. Snapchat purchasers were more likely to be Asian, students, use MDMA/ecstasy and cocaine, and purchase via “friends/family”. High security app purchasers were more likely to identify as male, reside in urban areas, use methamphetamine, psychedelics and cocaine, and purchase from a “drug dealer”. Facebook/Messenger purchasers were more likely to report a low income, reside in small town/rural area; and purchase from “gang members”, “drug dealers” and “friends/family”. Instagram purchasers were more likely to report cocaine use and purchasing from “friends/family”.

Conclusions: Use of social media apps for drug buying are influenced by demographics (mainly age), drug market contexts, and drug type used.

Introduction

The use of social media and messaging apps to facilitate retail level drug transactions is increasing internationally (Fuller et al., 2023; UNODC, 2023). While research on this topic is growing, at the time of writing there are only two largescale quantitative analyses of survey data on social media drug purchasing (Oksanen et al., 2021; van der Sanden et al., 2021). This scarcity is notable given considerable potential for demographic variation in how social media and messaging apps may be used to purchase drugs. Improving our understanding of how demographic and drug use factors shape social media drug market engagement is integral to targeting harm reduction initiatives towards high-risk drug use and digital harm in general.

Use of other types of digital drug market like darknet markets has

been associated with specific demographic attributes (e.g., <25 years, male, IT-savvy, recreational users or “psychonauts”) (Barratt et al., 2016; Van Hout & Bingham, 2013). This niche customer base along with the darknet market infrastructure promoting anonymous selling and customer service norms is said to generate safer supply dynamics (e.g., reduced violence) (Barratt et al., 2016), as well as potential for broader changes to drug market norms (“gentrification”) (Martin, 2018). However, while darknet markets have been associated with a distinct demographic user base (Barratt et al., 2016), social media and messaging apps, by virtue of their multifaceted place in people’s daily lives (Madianou & Miller, 2012) and their proximity to local, physical social and drug market networks (Berger & Bakken, 2025; Korshøj & Søgaard, 2024), are characterized by demographic diversity. As such, multiple drug markets, and user groups may be encompassed under the phrase

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“social media-facilitated drug market”. To date research incorporating consideration of linkages between social media-facilitated drug markets and demographic attributes (Oksanen et al., 2021; van der Sanden et al., 2021), have not accounted for the potential for demographic variation across the use of different apps for drug purchasing. In turn, this highlights the importance of further exploration of these dynamics across different groups and demographic contexts.

From this perspective, a key question is whether some demographic groups are more likely to use specific apps for drug purchasing. Demographic variation in social media engagement for day-to-day activities is well established. Influential factors shaping engagement across social media apps include age, e.g., older age groups are more likely to use Facebook, while younger age groups gravitate towards Snapchat, Instagram and TikTok (Faverio & Sidoti, 2024; Gottfried, 2024; Grieve, 2022). In addition, ethnicity, gender, and education level also influence patterns of app engagement (Gambo & Özad, 2020; Koironen et al., 2020; Krogstad, 2015). Established literature documenting variation in social media-facilitated drug market dynamics across apps (Bakken & Demant, 2019; Demant et al., 2019; van der Sanden et al., 2022a) underscores the importance of understanding how demographic variation may influence the spread of different populations across apps, and in turn their engagement with different high and low risk drug market dynamics.

Existing theory on differences between apps for drug trading

The spread of different market dynamics across apps is a key element underpinning current perspectives on people’s engagement with multiple apps for drug trading (Bakken & Demant, 2019; van der Sanden et al., 2022a; Wanke et al., 2026). Most existing studies have considered the use of different apps or app combinations for drug trading via a criminological lens that emphasizes the matching of app features with the needs and priorities of drug sellers (Bakken & Demant, 2019; Bakken et al., 2022; Demant et al., 2019; Demant & Nexø, 2024; Korshøj & Søgaard, 2024; van der Sanden, Wilkins, Rychert & Barratt, 2023, van der Sanden Wilkins, Rychert, Romeo, 2023). These perspectives incorporate elements of drug market typology theory (Curtis et al., 2002; Hough & Natarajan, 2000; May & Hough, 2004), distinguishing ‘open’ markets comprised largely of strangers and ‘closed’ markets rooted in social networks to explore how sellers navigate the different features and accompanying drug market arrangements across apps. For example, apps incorporating a larger target user base of potential buyers (Haupt et al., 2022) and features that allow for greater public visibility and networking such as Facebook, Instagram and TikTok are selected to meet seller marketing needs and facilitate access to buyers (Bakken & Demant, 2019; van der Sanden et al., 2024). Conversely, apps incorporating security features such as end-to-end encryption, self-deleting messages and anonymous sign up are used to meet seller needs for greater security (Bakken & Demant, 2019; van der Sanden et al., 2024). This has led researchers to suggest the use of multiple apps reflects a seller’s contextually-dependent weighting of security and market visibility needs and their influence in dictating which apps buyers can contact them on (Bakken & Demant, 2019). While a social media app may facilitate multiple selling dynamics (e.g., group or one-to-one, between strangers, or trusted parties), apps may be more closely associated with a specific type of drug market interaction. For example, apps such as Facebook, Instagram and Discord, have largely been associated with more ‘open’ style drug market dynamics and risk arrangements. Reflecting this open market approach, researchers have documented participant experiences of being ripped off or robbed by unreliable sellers as part of transactions on these platforms (Bakken & Demant, 2019; van der Sanden et al., 2022b).

However, research has suggested established day-to-day social media practices and norms may also play an influential role in how buyers and sellers move between different apps for drug trading (van der Sanden et al., 2022a; Wanke et al., 2026). This perspective, drawn from

the communications theory of polymedia (Madianou & Miller, 2012), emphasizes the power of social context and dominant social media behavioural norms (Madianou & Miller, 2012) in shaping cross-app purchasing and selling behaviours. Emphasis is placed on how engagement with different apps for drug trading reflects the changing configurations of security and convenience priorities across different drug market contexts and social relationships. For example, social supply transactions often took place on mainstream apps owing to both lower security concerns and the influence of established, shared social media repertoires between friends which meant buyer preferences for convenient, familiar apps took on greater importance (van der Sanden et al., 2022a). Conversely, messaging apps incorporating multiple security features such as Wickr, Signal and Telegram that were less widely used in the general population were often vehicles for specific contact with commercial sellers regarding more serious drug types and purchase weights, leading to a perceptual understanding of these apps as so-called “dealer apps” (van der Sanden et al., 2022a).

What is missing from both literatures at the time of writing is consideration of demographic characteristics as additional factors shaping engagement with different apps for drug trading (van der Sanden et al., 2022a). Polymedia theory mentions demographic group membership and related identities (e.g., ethnicity, gender identity or sexual orientation) as additional factors shaping the social norms and practices of social media engagement (Madianou & Miller, 2012). However, this facet of the theory has yet to be considered in relation to app-facilitated drug trading. Criminological research has also noted differences in drug market experiences according to demographic factors, such as gender (e.g., Denton & O’Malley, 1999; Grundtjern & Sandberg, 2012), and ethnicity (e.g., Barendregt et al., 2006; Lalander, 2008) suggesting these factors may be important to understanding engagement with digitally facilitated drug markets. Demographic factors likely have considerable implications for how drug purchasing is channelled through different apps and influence associations between apps and drug markets. As such, this paper seeks to extend existing theoretical understandings of differences between apps in the context of social media-facilitated drug trading by considering how demographic factors may influence which apps, and their associated drug market dynamics are more or less likely to be used by which groups.

Social media-facilitated drug transactions in New Zealand

Analysis of the large sample of 2020 New Zealand Drug Trends Survey (NZDTS) data ($N = 23,500$) found younger age to be a strong predictor of social media purchasing for popular recreational drugs such as cannabis, MDMA and LSD/psychedelics (van der Sanden et al., 2021). Education level, employment status, and regional location were also predictive of social media purchasing for some drug types (van der Sanden et al., 2021). In New Zealand, rates of drug purchasing via social media have been increasing, particularly for cannabis and MDMA/ecstasy. In 2020, 24 % of New Zealand Drug Trends Survey (NZDTS) cannabis purchasers reported buying cannabis from social media, rising to 29 % in 2022/23. Among MDMA/ecstasy purchasers social media purchasing rose from 13 % in 2020 to 17 % in 2022/23 (van der Sanden, Wilkins, Rychert et al., 2023, van der Sanden Wilkins, Rychert, Romeo, 2023). Facebook/Messenger, Snapchat, and Instagram have consistently been the most widely used apps to purchase drugs with 55 % of social media purchasers reporting past 6-month use of Facebook/Messenger, 53 % using Snapchat, and 26 % using Instagram in 2022/23 NZDTS results. Meanwhile, use of high security messaging “dealer apps” was reported by smaller proportions of respondents (Wickr=9 %, Signal=5 % and Telegram=4 %) (van der Sanden, Wilkins, Rychert et al., 2023a).

From a harm reduction perspective, it is important to understand whether specific demographics and patterns of drug use are associated with the use of particular social media apps for drug trading and whether some groups are more likely to interact with ‘higher risk’ drug selling dynamics as a result. This knowledge can inform targeting of

harm reduction, public education and digital safety messaging more effectively. To address these questions, this paper explores whether there are specific demographic characteristics, drug use patterns, and seller types associated with the use of particular social media platforms and apps to purchase drugs.

Method

The New Zealand Drug Trends Survey (NZDTS) is an anonymous online convenience survey designed to capture annual snapshots of drug use and drug market trends in New Zealand (See for example, [van der Sanden et al., 2021](#); [Wilkins, Romeo et al., 2024](#)). It has been conducted annually since 2017 achieving 10,000+ respondents each year and covering all 16 regions of the country. The NZDTS uses a social media targeted promotional campaign across Meta platforms (Facebook and Instagram) to recruit people aged 16+ across New Zealand who have recent alcohol, tobacco/nicotine and drug use experience. The online promotional campaign targets social media users who have expressed interest in a range of entertainment options and activities associated with drug use, such as alcohol brands or beverages, music genres and participation in the nighttime economy. Targeted users were shown a promoted Facebook post advertising the study and containing a link to the survey on Qualtrics. The 2024 survey was promoted from 20 February to 3 July 2024 and was completed by 12,852 people (median completion time of 11.8 min).

To preserve respondent anonymity and survey confidentiality IP addresses were not stored. Instead, we developed a custom software solution to ensure unique responses that converts respondent IP addresses into non-reversible, hashed values. Survey responses with the same value were flagged as potential duplicates. Subsequent manual examination was used to identify whether flagged responses were duplicates (e.g., same demographics) or unique responses submitted using the same device. If duplicates were identified, the least complete response was discarded. In addition, surveys were excluded from the final sample if they were less than 15 % complete (i.e., only demographic questions answered) and where the age was unspecified or did not fall within a 16–90 age range. In total, 1964 responses were removed from the final sample due to insufficient completion (<15 %) or invalid specified age. A further 18 duplicates were identified and removed, leaving a final sample of 10,781.

Measures

Demographics

Respondents were asked a range of demographic questions including age, gender (i.e., “What is your gender?”; Female, male, non-binary), ethnicity (i.e., “Can you tell us what ethnic group(s) you belong to? (multiple choice)”; Māori – the indigenous people of NZ, European, Pasifika – Pacific Islander, Asian, other), education level (i.e., “What is your highest level of education?”; None, primary/intermediate, high school, Polytech/trade, university), employment status (i.e., “What is your main occupation?”; Student, part- or full time employed, unemployed, sickness benefit, retired/parenting/unpaid work), sexual orientation (i.e., “What is your sexual orientation?”; Heterosexual/straight, bisexual, gay or lesbian, pansexual, asexual or another sexual identity), income level (i.e., “Which of these income brackets best describes your personal income (before tax)”; \$30,000 or less, \$30,001–\$60,000, \$60,001–\$80,000, \$80,001–\$100,000, \$100,000 or more, no personal income (e.g., caregiving role, unpaid work), prefer not to say), urban or rural living area (i.e., “Do you live in a...”; City, small town, rural), and region of residence (i.e., “What region do you live in?”; Northland, Auckland, Waikato, Bay of Plenty, Gisborne, Hawke’s Bay, Taranaki, Manawatū-Wanganui, Wellington, Tasman, Nelson, Marlborough, Canterbury, Otago, Southland, and West Coast).

Drug use and purchasing

Participants were asked to indicate both lifetime (“Please tick all the drugs you have ever tried in your life (even just once) including alcohol and other drugs”) and more recent drug use (past 6 months; “Please tick all drugs you have used in the past 6 months”). Drug market questions, including types of sellers and locations were asked of respondents who used cannabis, methamphetamine, MDMA/ecstasy, LSD/psychedelics, and cocaine. For each drug type, respondents who indicated purchasing at least once in the previous 6 months were asked to specify purchasing ‘location’ (i.e., “In the past 6 months, have you purchased [drug x] from any of the following locations?”; Tinny house/street drug market, agreed public location, darknet, social media, pub/bar/club, work or educational institute, private house, dial up/text/home delivery) and ‘seller type’ (i.e., “In the past 6 months, have you purchased [drug x] from any of the following types of people?”; “gang member/associate”, “drug dealer”, “social acquaintance” and “friend/family/partner”). Those who reported purchasing from a social media ‘location’ were asked which apps they had used to do so (i.e., Facebook/Messenger, Snapchat, Instagram, Discord, Wickr, WhatsApp, Dating apps (Tinder/Grindr), Signal, Telegram, Reddit, TikTok, or other). Respondents could indicate multiple locations, seller types, and social media apps for each drug type.

Analysis

Models were restricted to respondents who reported purchasing either cannabis, methamphetamine, LSD, MDMA, or cocaine via any social media platform within the previous six months. This consisted of 1731 observations. Potentially relevant predictors were identified using a deductive strategy based on earlier literature review and the co-authors’ prior understanding of New Zealand’s drug market and drug use patterns. Demographic predictors included age (16–20, 21–29, 30–39, 40+ years (reference group/ref)), gender (male vs female/other (ref)), ethnicity (Māori (the indigenous people of NZ) vs non-Māori (ref), European vs non-European (ref), Pasifika (Pacific Islanders) vs non-Pasifika (ref), Asian vs non-Asian (ref)), sexual orientation (heterosexual/straight vs. other (ref)), employment status (employed vs unemployed/other (ref)), student vs unemployed/other (ref)), education level (low vs high (ref)), rural/urban residence (small town/rural vs city (ref)), and income (low income <\$60,000 vs high ≥\$60,001 (ref)). New Zealand regions were grouped as follows: Major ports (Northland, Bay of Plenty) (ref); Upper regional North Island (Waikato, Gisborne/Hawke’s Bay); Lower regional North Island (Taranaki, Manawatū-Wanganui); Regional South Island (Southland, West Coast, Tasman, Nelson, Marlborough) and main urban population centres (Auckland, Wellington, Canterbury, Otago). Drug market variables comprised drug types used (cannabis, methamphetamine, MDMA/ecstasy, LSD, cocaine) and seller type (gang member /gang associate, drug dealer, social acquaintance, friend/partner/family).

Statistical models were developed to predict whether respondents used Facebook/Messenger, Snapchat, Instagram, or a high-security app (Wickr, Telegram, Signal) to arrange drug transactions in the past six months. Descriptive analysis included frequency distributions for all predictors and cross-tabulations between the demographic and drug market variables against each social media platform outcome. Separate logistic regression models were fitted for each social media platform outcome in three stages. Firstly, only demographic predictors were included, and then drug-market variables were added. Finally, bidirectional stepwise variable selection guided by Akaike Information Criterion (AIC) was used, with the model retaining or removing predictors based on minimising AIC, the final model represented the combination of predictors with the lowest achievable AIC. With the large number of predictors under consideration, stepwise regression was employed as a data-driven approach to identify a parsimonious model. This approach also addresses potential multicollinearity among predictors. Variance

Inflation Factors (VIF) were calculated to assess multicollinearity, with all values falling below 5, indicating no concern. Influential observations were assessed using Cook's Distance and Standardised Residuals, with no influential cases or complete separation identified. All data management, descriptive tables, and regression analyses were performed in R (version 4.4.3) (R Core Team, 2025). A mathematical notation of the model is available as a supplemental file (SF1).

Results

Description of social media purchaser sample

Sixteen percent (16.1) of the final NZDTS sample reported purchasing a drug type (cannabis, MDMA/ecstasy, LSD/psychedelics, methamphetamine or cocaine) via a social media platform in the previous 6 months (n = 1720). Of this sample, 71.5 % reported purchasing cannabis, 38.7 % purchased MDMA/ecstasy, 14.1 % purchased LSD or another psychedelic, 8.5 % purchased cocaine and 4.2 % purchased methamphetamine.

Fifty-four percent (54.2) reported purchasing a drug via Facebook/Messenger, 47.5 % via Snapchat, 24.7 % via Instagram and 17.6 % used one of the high security apps (Signal=10.9 %, Telegram=8.3 % and Wickr=4.5 %).

There was a high degree of overlap between the four app purchaser groups, with most social media purchasers using more than one app to purchase drugs as shown in Table 1.

Descriptive data comparison of app purchasers

Table 2 compares the demographics of social media purchasers who used each of the 4 app categories. The table also shows differences in past-6-month drug use and purchasing from different seller types across apps. The data show pronounced age differences across the four samples with a greater proportions of app purchasers aged 16–20 reporting purchasing via Snapchat and Instagram while those aged over 30 more often purchased via Facebook/Messenger or a high security app. Notable differences in drug use across samples are also evident, with a greater proportion of Snapchat purchasers reporting past-6-month use of MDMA/ecstasy (72.1 %) compared to other app samples (Facebook/Messenger=55.4 %; Instagram=62.1 %; High security apps=65.6 %). Additionally, higher proportions of high security app purchasers reported past-6-month use of LSD/psychedelics (50.5 %) and cocaine (41.6 %) compared to Facebook/Messenger (LSD/psychedelics=37.0 %; cocaine=25.8 %), Snapchat (LSD/psychedelics=35.9 %; cocaine=31.4 %) and Instagram (LSD/psychedelics=37.1 %; cocaine=29.4 %) (Table 3).

Regression models

Facebook (Messenger)

Those reporting a lower annual income (<\$60,000) (OR=1.446, p =

Table 1

Number and proportion of purchasers by app that used each other app to purchase drugs in the previous 6 months.

	Facebook/Messenger		Snapchat		Instagram		High security apps	
	n	%	n	%	n	%	n	%
Facebook/Messenger	938		467	56.8	277	64.7	173	56.7
Snapchat	467	49.8			293	68.5	142	46.6
Instagram	277	29.5	293	35.6			99	32.5
High security apps	173	18.4	142	17.3	99	23.1		

0.007) and residing in a “small town/rural” area (OR = 1.263, p = 0.049) were more likely to report using Facebook (Messenger) to purchase drugs. Facebook/Messenger purchasers were more likely to report purchasing from the widest range of different seller types compared to other app purchaser groups (“Gang member/associate” OR=1.746, p = 0.0005; “Drug dealer” OR=1.502, p = 0.001; and “friend/family/partner” OR = 1.530, p = 0.0002). Students were less likely to purchase via Facebook (Messenger) compared to “unemployed/other” (OR = 0.541, p = 0.002). Facebook (Messenger) purchasers were also less likely to report past-6-month use of MDMA compared to other drug types (OR = 0.701, p = 0.002). Younger age groups were less likely to report using Facebook/Messenger to purchase drugs compared to the 40+ age group (Ages 16–20 OR = 0.464, p = 0.001; 21–39 OR = 0.608, p = 0.015).

Snapchat

Younger age was a strong predictor of using Snapchat to purchase drugs. Those aged 16–20 were six times more likely than those aged 40+ to report using Snapchat to purchase a drug type in the previous 6 months (OR = 6.03, p = 0.000). The odds ratios were also high for those aged 20–29 (OR = 3.83, p = 0.00000), and those aged 30–39 (OR = 2.04, p = 0.008). Snapchat purchasers were also more likely to report a heterosexual sexuality compared to other sexual identities (OR = 1.300, p = 0.028). Asian, European, and Māori ethnicities were all more likely to report Snapchat drug purchasing compared to non-Asian, non-European, and non-Māori respondents (Asian OR=2.058, p = 0.018, European OR = 1.429, p = 0.029, Māori OR = 1.362, p = 0.021). Snapchat purchasers were more likely to report a primary occupation of “student” (OR = 2.211, p = 0.0001) or “employed” (OR = 1.730, p = 0.002) compared to “unemployed/retired/caregiver”.

Those located in the regional South Island (Tasman, Nelson, Marlborough, West Coast, Southland) were three times more likely to report Snapchat drug purchasing (OR = 3.372, p = 0.0001) compared to major port regions (Northland and Bay of Plenty). Similarly, those in urban centres (Auckland, Wellington, Christchurch, and Otago) were more likely to buy from Snapchat (OR = 1.51, p = 0.039). Snapchat purchasers more likely to report past-6-month users of MDMA (OR = 1.72, p = 0.00002) and cocaine (OR = 1.38, p = 0.012) compared to other drug types. They were also more likely to report purchasing from a “friend/family/partner” compared to other seller types (OR = 1.247, p = 0.058). Snapchat purchasers were less likely to report Pasifika compared to non-Pasifika ethnicity (OR = 0.623, p = 0.074), and less likely to report past-6-month use of cannabis (OR = 0.615, p = 0.007) compared to other drug types.

Instagram

Respondents aged 16–20 were more likely to report using Instagram to purchase drugs compared to those aged 40+ (OR = 1.80, p = 0.012). Those reporting Asian ethnicity were also more likely to report Instagram purchasing (OR = 1.639, p = 0.092). Instagram drug purchasers were more likely to report past-6-month use of cocaine (OR = 1.400, p = 0.011). They were also more likely to report purchasing from a “friend/family/partner” (OR = 1.581, p = 0.001) or a “social acquaintance” (OR = 1.374, p = 0.017) compared to other seller types.

Instagram purchasers were less likely to report European ethnicity (OR = 0.758, p = 0.097) and reside in the Upper regional North Island (Waikato, Gisborne/Hawke’s Bay) compared to major port regions (Northland/Hawke’s Bay) (OR = 0.565, p = 0.057). This group was also less likely to report past-6-month use of methamphetamine (OR = 0.624, p = 0.053).

High security apps

High security app purchasers were twice as likely to report identifying as male compared to female/other (OR = 2.193, p = 0.00000). Those residing in urban centre areas (Auckland, Wellington, Canterbury, Otago) were also more likely to report purchasing from high security apps (OR = 1.650, p = 0.075). This group were also more likely to report

Table 2
Descriptive demographic and drug use patterns data across different app groups.

	Facebook/Messenger		Snapchat		Instagram		High security apps	
	N = 938		N = 822		N = 428		N = 305	
	n	%	n	%	n	%	n	%
Age								
16 to 20	239	25.5	305	37.1	168	39.3	54	17.7
21 to 29	429	45.7	404	49.1	179	41.8	134	43.9
30 to 39	160	17.1	87	10.6	48	11.2	77	25.2
40+	110	11.7	26	3.2	33	7.7	40	13.1
Gender								
Female/other gender	465	49.6	389	47.3	213	49.8	98	32.1
Male	473	50.4	433	52.7	215	50.2	207	67.9
Ethnicity								
Māori	239	25.5	194	23.6	102	23.8	47	15.4
European	791	84.3	719	87.5	353	82.5	250	82.0
Asian	38	4.1	36	4.4	24	5.6	13	4.3
Pasifika	45	4.8	27	3.3	25	5.8	12	3.9
Sexual orientation								
Heterosexual	632	67.4	606	73.7	300	70.1	199	65.0
Other sexual identity	303	32.3	215	26.2	128	29.9	106	34.8
Regional spread								
Major port areas	94	10.0	53	6.4	33	7.7	18	5.9
Regional North Island lower	68	7.2	51	6.2	22	5.1	6	2.0
Regional North Island Upper	116	12.4	72	8.8	28	6.5	19	6.2
Regional South Island	54	5.8	58	7.1	20	4.7	10	3.3
Urban centres	605	64.5	588	71.5	324	75.7	252	82.6
Urban/rural								
City	644	68.7	588	71.5	309	72.2	245	80.3
Small town/rural	294	31.3	233	28.3	119	27.8	60	19.7
Income								
High income (>\$60,001)	283	30.2	251	30.5	111	59.3	136	68.5
Low income (<\$60,000)	633	67.5	556	67.6	306	40.7	162	31.5
Education								
High (tertiary)	594	63.3	508	61.8	254	59.3	209	68.5
Low (no tertiary)	343	36.6	313	38.1	174	40.7	96	31.5
Main occupation								
Student	158	16.8	236	28.7	109	61.2	53	67.9
Employed	603	64.3	512	62.3	262	13.3	207	14.8
Unemployed or other	176	18.8	73	8.9	57	25.5	45	17.4
Drug use								
Cannabis	862	91.9	703	85.5	396	92.5	269	88.2
Methamphetamine	105	11.2	53	6.4	24	5.6	41	13.4
MDMA	520	55.4	593	72.1	266	62.1	200	65.6
LSD/psychedelics	347	37.0	295	35.9	159	37.1	154	50.5
Cocaine	242	25.8	258	31.4	126	29.4	127	41.6
Seller types								
Gang member/associate	255	27.2	173	21.0	110	25.7	67	22.0
Drug dealer	749	79.9	646	78.6	323	75.5	254	83.3
Social acquaintance	672	71.6	615	74.8	327	76.4	216	70.8
Friend/family/partner	696	74.2	598	72.7	337	78.7	201	65.9

past-6-month use of a range of drug types compared to respondents purchasing via the other apps, including past-6-month use of cocaine (OR=2.062, $p = 0.00001$), LSD/psychedelics (OR = 1.701, $p = 0.0002$), and methamphetamine (OR = 1.523, $p = 0.064$) compared to other drug types. They were also more than twice as likely to report purchasing from a “drug dealer” (OR = 2.078, $p = 0.00001$).

Younger age groups were less likely to report purchasing from a high security app compared to those aged 40+ (Ages 16–20 OR = 0.357, $p = 0.0001$; 21–29 OR = 0.502, $p = 0.003$). High security app purchasers were also less likely to report a heterosexual sexual identity compared to other sexual identities (OR = 0.584, $p = 0.001$). Māori respondents were less likely to report purchasing from a high security app compared to non-Māori (OR = 0.612, $p = 0.009$). “Small town/rural” residents were also less likely to report purchasing via a high security app (OR = 0.643, $p = 0.013$). Finally, high security app purchasers were less likely to report purchasing drugs from a “friend/family/partner” compared to purchasing from other seller types (OR = 0.735, $p = 0.037$).

Discussion

This paper has identified independent correlates of using select social media and messaging apps to purchase illegal drugs. We found notable demographic differences between those who reported purchasing via Facebook/Messenger, Snapchat, Instagram and/or a high security app (Wickr, Telegram or Signal), including age, drug use patterns and the types of drug sellers purchased from. The findings make two key contributions to current understandings of social media-facilitated drug purchasing. Firstly, our findings illustrate that demographic factors such as age, ethnicity, urbanicity, gender, sexuality and income level mediate which apps are more likely to be used for drug purchasing. Secondly, we also found varying associations between drug use patterns and seller types across the four app categories, suggesting that specific social media platforms may be more closely associated with commercial drug market dynamics compared to others. This finding builds on established understandings of diversity in social media-facilitated drug market dynamics, which range from network supply among social acquaintances to commercial sales to strangers (Bakken & Demant, 2019). Taken together, this paper extends previous understandings of engagement

Table 3
Results of logistic regression models predicting drug purchasing via each app group.

	Facebook/ Messenger	Snapchat	Instagram	High security apps
Age				
16–21	0.464*** (0.290, 0.721)	6.030*** (3.65, 9.961)	1.806** (1.143, 2.853)	0.357*** (0.213, 0.598)
21–30	0.608** (0.408, 0.906)	3.837*** (2.393, 6.151)	0.973 (0.625, 1.514)	0.502*** (0.318, 0.790)
30–40	1.572 (0.572, 1.279)	2.046*** (1.216, 3.443)	0.768 (0.458, 1.288)	0.943 (0.576, 1.545)
40+	REF	REF	REF	REF
Gender				
Male	n.s.	n.s.	n.s.	2.193*** (1.630, 2.952)
Female/gender non-binary	REF	REF	REF	REF
Sexual orientation				
Heterosexual/ straight	n.s.	1.300** (1.030, 1.641)	n.s.	0.584*** (0.430, 0.794)
Other sexual identity	REF	REF	REF	REF
Ethnicity				
Māori	n.s.	1.362** (1.049, 1.767)	n.s.	0.612*** (0.424, 0.883)
European	n.s.	1.429** (1.039, 1.966)	0.758* (0.546, 1.051)	n.s.
Pasifika	n.s.	0.623* (0.371, 1.046)	n.s.	n.s.
Asian	1.572 (0.879, 2.755)	2.058** (1.135, 3.731)	1.639* (0.932, 2.910)	n.s.
Income level				
Low income (<\$60,000)	1.446*** (1.106, 1.890)	n.s.	n.s.	n.s.
High income (>\$60,001)	REF	REF	REF	REF
Occupation				
Student	0.541*** (0.372, 0.787)	2.211*** (1.501, 3.256)	n.s.	n.s.
Employed	1.084 (0.770, 1.527)	1.730*** (1.234, 2.425)	n.s.	n.s.
Unemployed/ other	REF	REF	REF	REF
Urban/rural				
Small town/rural	1.263** (1.002, 1.592)	n.s.	n.s.	0.643** (0.455, 0.910)
City	REF	REF	REF	REF
Regions				
Regional South Island	n.s.	3.372*** (1.829, 6.216)	0.856 (0.446, 1.644)	1.235 (0.513, 2.972)
Regional North Island Upper	n.s.	1.053 (0.646, 1.718)	0.565* (0.314, 1.016)	0.972 (0.471, 2.008)
Regional North Island lower	n.s.	1.256 (0.722, 2.186)	0.797 (0.424, 1.500)	0.459 (0.170, 1.238)
Urban centres	n.s.	1.510** (1.022, 2.232)	1.224 (0.803, 1.866)	1.650* (0.952, 2.860)
Major ports	REF	REF	REF	REF
Drug types used in past 6m				

Table 3 (continued)

	Facebook/ Messenger	Snapchat	Instagram	High security apps
Cannabis	n.s.	0.615*** (0.443, 0.876)	n.s.	n.s.
MDMA	0.701*** (0.563, 0.875)	1.721*** (1.349, 2.195)	n.s.	n.s.
LSD/psychs	n.s.	0.836 (0.668, 1.047)	n.s.	1.701*** (1.293, 2.238)
Meth	n.s.	n.s.	0.624* (0.388, 1.006)	1.523* (0.977, 2.375)
Cocaine	n.s.	1.388** (1.076, 1.790)	1.400** (1.081, 1.814)	2.062*** (1.536, 2.768)
Seller type				
Gang member	1.746*** (1.280, 2.382)	n.s.	n.s.	n.s.
Drug dealer	1.502*** (1.192, 1.894)	n.s.	n.s.	2.078*** (1.518, 2.844)
Friend/family/ partner	1.530*** (1.232, 1.900)	1.247* (0.993, 1.565)	1.581*** (1.219, 2.050)	0.735** (0.550, 0.981)
Social acquaintance	n.s.	n.s.	1.374*** (1.060, 1.782)	n.s.

Notes on p-values: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$; No asterisk $p > 0.1$.

with different apps for drug trading emphasizing app selection as primarily a product of seller choices and priorities (Bakken & Demant, 2019) or a reflection of social context and existing social media practices (van der Sanden et al., 2022a). This analysis suggests that demographic variation may further demarcate different app-facilitated drug market dynamics and people’s engagement with them. In turn, drug trading via social media may be experienced differently across demographic and drug use groups by virtue of engagement with specific apps, and drug market contexts most closely associated with them. The findings presented in this paper can therefore be viewed as stepping stones into further exploration and theory development of social media-facilitated drug trading dynamics which foregrounds the importance of demographically mediated experiences.

The strongest associations presented in this paper relate to younger age and drug purchasing via Snapchat. While younger age has been shown to be a strong predictor of social media purchasing in general (van der Sanden et al., 2021), young people aged 16–21 were 6 times more likely than those aged 40+ to purchase drugs from Snapchat. Conversely, this age group was less likely to purchase from Facebook/Messenger or a high security app. These differences can be partly explained by broader population trends in social media engagement by age, with Facebook use declining among youth, who often predominantly use Snapchat, Instagram and TikTok (e.g., Gottfried, 2024). However, the lower likelihood of high security app purchasing among respondents aged 16–21 likely reflects the fact that younger age groups are less likely to have connections to the commercial drug sellers associated with this type of app. Instead, they often source drugs via their social networks, also termed “social supply” (e.g., Coomber & Turnbull, 2007). Notably, both Snapchat and Instagram purchasers were more likely to report younger age and purchasing from a “friend/partner/family member”, while high security app purchasers were less likely to report younger age and purchasing from a “friend/partner/family member”, and were twice as likely to report purchasing from a “drug dealer”. These findings suggest Snapchat and Instagram may play an important role in facilitating social supply dynamics among young people in New Zealand.

Notably, findings linking Snapchat and Instagram to social supply contrast with international research on drug purchasing via these apps in more densely populated countries with larger, more competitive drug markets, where both apps have been more dominantly associated with commercial drug selling (Aagesen & Demant, 2025; Aagesen et al., 2025; Bakken & Demant, 2019; Demant & Aagesen, 2022; McCulloch & Furlong, 2019). We have previously emphasized Snapchat as a “middle ground” social media app that balances “adequate” digital security features (e.g., username-based sign up, self-deleting messages) with the convenience of being a “mainstream” app (van der Sanden et al., 2022a). This unique balance likely makes it both well suited for commercial and less commercial drug selling dynamics. Particularly for young people there may be a sense of security associated with using a familiar app that blends in to day-to-day social media habits (Bakken et al., 2022; van der Sanden et al., 2024). However, it should be noted that Snapchat has been linked to particularly high rates of drug advertising exposure among youth (Fuller et al., 2025; McCulloch & Furlong, 2019), and a growing number of opioid overdose deaths internationally (Solotaroff, 2024). As such, strong linkages between Snapchat purchasing and younger age groups highlight this app as a crucial environment for targeting both harm reduction and drug prevention initiatives towards youth.

Facebook/Messenger purchasing was associated with purchasing from the widest range of seller types (i.e., “Gang member”; “drug dealer”; and “family/friend/partner”). This finding likely reflects Facebook/Messenger as New Zealand’s most widely used social media platform (Digital 2025: New Zealand, 2025) and the resulting demographic diversity of population groups who use these apps. For example, the demographic associations with Facebook/Messenger drug purchasing of low annual income and small town/rural residence were not found for other app groups. These associations are consistent with a broad range of seller types on Facebook/Messenger including regional, non-urban drug market contexts. Prior research and media reports have identified that Facebook/Messenger provides a platform for a range of drug purchasing dynamics in New Zealand, including selling groups (Morrah, 2025b), drug dealer profiles or marketplace listings (Morrah, 2025a), and network-based drug connections (van der Sanden et al., 2022a; van der Sanden, Wilkins, Rychert & Barratt, 2023a), all of which may streamline interactions across seller types.

In the present analysis we found that Facebook/Messenger was the only app associated with purchasing from a “gang member”. In New Zealand, gangs play a central role in methamphetamine and cannabis markets, including rural regions such as Northland, Bay of Plenty and Gisborne/Hawke’s Bay (Wilkins et al., 2018, 2020; Wilkins et al., 2025). Their association with Facebook/Messenger drug purchasing may reflect the greater visibility of personal information as part of personal Facebook profiles, such as visible back patches, gang insignia, and gang affiliation. This visible information may make it easier for Facebook/Messenger purchasers to identify gang-affiliated drug sellers in contrast to platforms such as Snapchat or high security apps, where fake, or multiple profiles can be more easily created (Korshøj & Søgaard, 2025), and verifiable personal information is often less visible. Previous research has suggested social media-facilitated drug trading may make it easier to collect information on potential drug connections (Korshøj & Søgaard, 2025), which can be a useful means of “anchoring” local sellers into their respective drug market contexts (van der Sanden, Wilkins, Rychert & Barratt, 2023a). Additionally, researchers have highlighted the importance of seller signalling to buyers across social media apps, using references to popular culture or drug use to appeal to different buyer groups (Bakken, 2020). In turn, these features of drug market dynamics enabled via Facebook/Messenger may lend themselves to an improved ability to identify gang-affiliated sellers and for aggressive drug sellers to identify rival sellers for robbery and intimidation (Korshøj & Søgaard, 2025).

Alongside differences in associations between app purchasing and seller types, we also found considerable variation in recent drug use

across four apps. High security app purchasing was associated with past-6-month use of the widest range of drug types. This finding likely reflects the associations between these apps and commercial sellers who stock a wider range of drug types and conversely, the greater likelihood that the people who use these apps for drug transactions may use a wider range of drugs, thereby having greater need for connections to a commercial drug seller. In the New Zealand context, correlations between recent cocaine use and both high security apps and Snapchat are notable. Cocaine has historically been difficult to source in New Zealand, though availability has increased in recent years (New Zealand Police, & National Drug Intelligence Bureau 2025; Wilkins, van der Sanden et al., 2024). Associations between Snapchat and Instagram purchasing and recent cocaine use may indicate an emergent digitally facilitated cocaine market in New Zealand. It may be that cocaine sourced via high security apps is channelled into social supply markets via Snapchat and Instagram given their associations with less commercial sellers, and that this proximity to different market levels is reflected in levels of recent cocaine use by app.

Snapchat purchasers were more likely to report recent use of MDMA, with 72 % of this group having used this drug type in the previous six months. Use of MDMA among younger age groups has increased in New Zealand over the last decade, with a population representative New Zealand Health Survey indicating that 10.5 % of New Zealanders aged 15–24 used MDMA in the past year, up from 5.2 % in 2011/12 (Ministry of Health, 2024). Additionally, according to New Zealand wastewater testing data the largest quantities of MDMA are consumed by New Zealand regions of Otago/Southland, Canterbury and Wellington, where several of New Zealand’s universities and large student populations are located (New Zealand Police & National Drug Intelligence Bureau, 2025). Our analysis found that Snapchat purchasing was associated with reporting a “student” status and regional residence in one of the four “urban centres” of Auckland, Wellington, Canterbury (Christchurch) and Otago (Dunedin). It is unclear why Snapchat may be linked to the sourcing and use of MDMA specifically, as opposed to other commonly used recreational drugs in NZ. For example, Snapchat purchasing was negatively associated with recent use of cannabis, which is New Zealand’s most widely used illegal drug with a past year population prevalence of 15.6 % (Ministry of Health, 2024). Similarly, Facebook/Messenger purchasing was negatively associated with MDMA use, and Instagram negatively associated with methamphetamine use. These findings point to the potential to adopt a drug-specific lens when considering social media-facilitated drug purchasing, with the risk perceptions, user groups, and apps associated with each drug type potentially indicating considerable variation in drug purchasing and selling dynamics.

Findings also point to additional demographic factors which may influence app engagement for drug trading. Firstly, high security app purchasers were over twice as likely to report a male gender compared to female or gender non-binary. The gender disparity in high security app purchasing may reflect a greater resistance to buying from so-called “dealer apps” among female/gender non-binary respondents. Female-identifying drug buyers have been found to more often purchase drugs via social intermediaries, such as friends or partners, and may lack access to commercial sellers, as well as reporting personal safety concerns as part of commercial drug trades with strangers (Kolar, 2021; Withanarachchie et al., 2025). These concerns may mean that although high security apps offer greater technological/privacy protection, those identifying as female or gender non-binary may view them as unsafe due to their associations with serious commercial sellers, higher-level drug market participation and personal safety issues. Snapchat purchasing was associated with a greater likelihood of reporting a heterosexual/straight sexual identity while high security app purchasers were less likely to report this sexual identity. It may be that high security apps are more frequently used among LGBTQIA+. This may reflect greater privacy concerns around identity disclosure (DeVito et al., 2018) in drug market settings and preferences for apps that have anonymity

preserving features such as username-based messaging, as opposed to phone numbers or real names. Higher rates of risky drug use behaviours such as polydrug use have been documented among LGBTQIA+ populations, such as men who have sex with men, making them important group for harm reduction initiatives and support workers (Bunting et al., 2025; Cascalheira et al., 2023). Our findings emphasize the importance of exploring gendered and sexual-minority experiences of social media drug buying in relation to specific apps.

Limitations

This paper has limitations that should be considered when interpreting the results. Firstly, the NZDTS is an online convenience survey where participation is self-selected rather than randomly selected as part of a probability representative sample of the wider population. It should be noted that the NZDTS is not intended to be a representative population survey but rather purposively aims to survey frequent drug users who are knowledgeable about recent drug trends and drug market indicators, such as price and availability. Consequently, the NZDTS survey sample reports much higher rates of drug use compared to the general NZ population. For example, 70 % of 2024 NZDTS respondents reported use of cannabis in the previous 6 months, compared to 15.6 % of the New Zealand adult population based on the representative household New Zealand Health Survey (NZHS) (Ministry of Health, 2024). Although the NZHS is conducted face-to-face at the respondents' place of residence which likely reduces respondent willingness to disclose illegal drug use, particularly among young people living with parents or disadvantaged populations subject to social welfare and other agency scrutiny. Population household surveys have their own well-known limitations when surveying illegal drug use, including engaging with hard-to-reach drug users who are seldom at home or do not have a permanent address or landline telephone, and issues of confidentiality when discussing stigmatised and illegal behaviour face-to-face at places of residence. Furthermore, researchers involved in general population health surveys often have limited interest in illegal drug use as a health issue as drug use is often confined to small hidden minorities of the population, compared to legal drug use, like alcohol and tobacco, and wider population health issues, like obesity and diabetes, and consequently, these surveys typically include only a small number of questions on illegal drug use and rarely any questions on drug purchasing. A representative survey of frequent illegal drug users is also likely to be prohibitively expensive due to the small numbers of users (e.g. only approximately 1 % of the population use methamphetamine according to the NZHS) and due to these high costs it is unlikely to be feasible to fund such a survey on an annual basis to track trends overtime.

Successive waves of the NZDTS survey have shown the sample generates a broad sample of drug users who in many ways resemble the wider NZ population with respect to regional population spread, gender, ethnicity, educational achievement and levels of unemployment, though the NZDTS sample typically has a younger median age, reflecting the purposeful recruitment of drug users who tend to be younger. For example, the 2023 New Zealand Census recorded a median population age of 38 years (Stats NZ, 2024a), compared to the NZDTS sample median of 26 years. Regarding ethnicity, in 2023 68 % of New Zealand's population reported a European ethnicity and 17 % Māori (Stats NZ, 2024a) compared to NZDTS sample proportions of 72 % European and 19 % Māori. The 2024 NZDTS has the identical proportion of unemployed compared to the national unemployment rate (both 5 %) (Stats, 2025).

The NZDTS is an online survey and thus it excludes those without internet access, while the social media promotional campaign may limit participation of those who do not use Meta platforms (i.e., Facebook, Instagram). However, rates of internet penetration in NZ are high by international standards, with 90.5 % of households in NZ reporting internet access in 2023 (Stats NZ, 2024b). Additionally, 83.2 % of NZ's population aged between 16 and 64 reported using Facebook, and 78.7

% used Messenger at least once a month as at February 2025 (Digital 2025: New Zealand, 2025). It is also important to note that the NZHS also has sampling limitations including excluding those without permanent residential housing and those seldom at home, who tend to disproportionately include young people.

The 2024 NZDTS survey included detailed question about drug purchasing for the most widely used drug types in NZ (i.e., cannabis, methamphetamine, MDMA, LSD/psychedelics, and cocaine) to reduce respondent burden and ensure the survey could be completed within the stated time limit. Consequently, in 2024, there was no equivalent data for ketamine and diverted prescription pharmaceuticals, drugs that have also been found to be purchased via social media, although the questionnaire is reviewed every year and this may be a topic of future interest.

Finally, the model presented does not model interaction terms (see SF 1). This may mean that some more complex relationships are not fully captured by the model. However, including pairwise interaction terms across these sociodemographic variables increases Type I error risk and would require correction that reduces statistical power. In addition, main effects provide a more directly comparable basis for inference. This paper presents the first exploratory analysis of relationships between demographic variables and the use of specific apps for drug trading. The findings from this paper make the case for future more detailed statistical analysis of demographic interactive terms, and this will be the focus of our future work.

Conclusion

This paper adds to a small existing body of research investigating social media-facilitated drug purchasing using large-scale survey data. We explored whether engagement with certain social media apps varies across demographic, drug use patterns, and drug seller types in New Zealand. Our findings show that a range of demographic factors, such as younger age, ethnicity, gender and sexual identity, urbanicity and employment influence what apps are used to purchase drugs. Additionally, we found diverse associations between apps and recent use of different drug types and seller types, indicating that some apps may be more closely associated with social supply (i.e., Snapchat, Instagram) or commercial drug market contexts (i.e., Facebook/Messenger, high-security apps) in New Zealand. Our findings underscore the importance of considering demographic and drug using behaviour when targeting digital harm reduction information and services towards specific high-risk groups of people who use drugs, such as youth and LGBTQIA+.

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CRedit authorship contribution statement

Robin van der Sanden: Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Chris Wilkins:** Writing – review & editing, Methodology, Funding acquisition, Formal analysis. **Karl Parker:** Formal analysis, Data curation. **Marta Rychert:** Writing – review & editing, Funding acquisition.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.drugpo.2026.105220](https://doi.org/10.1016/j.drugpo.2026.105220).

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