

Power users: Technology and Canadian sex workers during COVID-19

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Abstract

The transition from physical to online advertising by sex workers in Canada has been well documented. However, few studies use rigorous sampling methods. This study considers how a technically sophisticated group of advertisers from a large Canadian sex work classifieds site used multiple online resources to promote or provide services during the COVID-19 pandemic. Advertisers qualified for the study if they used a URL as part of their contact information and were actively advertising between August 23 and September 22, 2022. A random sample of 1000 qualifying advertisers were selected of which 783 had accessible contact URLs. Themes were identified in downloaded website texts using grounded theory analysis. Ad metadata was used to identify demographic and behavioral distinctions between the sample and other advertisers. Almost all sampled advertisers (99%) provided in person services and most (70%) provided online services. The sample advertised more frequently, were more affluent and were more likely to be Anglophone, White, trans-female, or provide BDSM services. Themes of *security*, *health*, *identity*, and *social networks* were identified. Advertisers emphasized physical, emotional, and financial security. Most workers did not work in isolation and many participated in extensive social networks.

Keywords: sex work, identity, health and safety, research methods, social media

Introduction

This study explores how sex workers use online resources in the context of marketing and providing their services. It considers how a select group of sex work advertisers, who might be considered “power users”, integrate multiple modes of promotion and service delivery.

Information and communication technologies (ICTs) have become an essential tool for sex workers in Canada (Agresti, 2009; Argento et al., 2018; Bernier et al., 2021, 2021; Castle & Lee, 2008; Jiao et al., 2021; Kennedy, 2022; Kille et al., 2017; Machat et al., 2022; Minichiello et al., 2013). Furthermore, online classified advertising is heavily used by Canadian sex workers and is an important resource for researchers trying to understand sex work demographics (Kennedy, 2022), migration patterns (Boecking et al., 2018), or health and safety messaging (Kille et al., 2017). However, even for a relatively small country such as Canada, getting a representative dataset from online advertising can result in collections containing millions of documents. It is a significant challenge for researchers using these materials to find practical strategies for working with large online datasets.

Online classified advertising can provide rich demographic metadata but, importantly, it localizes advertiser behavior in time. In an industry where it is likely that high turnover is the norm (Abel et al., 2007; Kennedy, 2022) this is an important consideration to avoid arriving at invalid conclusions (Cusick et al., 2009). Sex work is not legally recognized as work in Canada and it can be a challenge to find representative samples of participants as many workers do not want to be identified. There is an understandable belief among many researchers, (Weitzer, 2005) for example, that it is impossible to use more rigorous sampling techniques and randomization.

This study addresses these issues by using sex work advertisers identified from classified ads as a sampling frame. Advertisers selected for further study were characterized by a combination of metadata from classified ads and additional external web materials associated with the advertiser. Grounded theory analysis (Corbin & Strauss, 1990) of web materials created by advertisers is an important component of this study. The external web resources created by advertisers provide information that is difficult or impossible to gather from online classified ads

alone. For example, beyond in-person services, what other types of services do contact sex workers provide? How, and how much, are workers paid? How socially connected are they? As these source materials often represent a stable online identity it is possible to get a sense of how sex workers present themselves (or are presented) and what they expect from clients.

As the aim of the study is to better understand how sex workers use multiple ICTs, advertisers were included if they represented in-person or online sex workers who used external websites in their contact information. These websites, described in more detail below, could be profile pages, social media, personal websites, content delivery sites, or links pages where multiple sites can be accessed when an advertiser uses a combination of external resources.

In contrast to street based sex work, where interactions are typically brief (Krüsi et al., 2014), online advertisers often engage in extended interactions with prospective clients. This can result in improved occupational health and safety for many workers (Kruesi et al., 2012; Machat et al., 2022). However, managing privacy online can be risky (Jiao et al., 2021). Furthermore, differentiating oneself from the crowd can be a challenge and workers can go to great lengths to develop distinct sex work personae (R. Bowen & Bungay, 2016; R. R. Bowen, 2013, 2015; Nelson et al., 2020).

The timing of the data collection was during the COVID-19 pandemic when many sex workers reported significant reduction in income (Lam, 2020) and reduced access to services (McBride et al., 2023). While (Kennedy, 2022) showed that the likely number of workers during this period was comparable to that of 2015, the year following the introduction in Canada of the (Protection of Communities and Exploited Persons Act, 2014), how sex workers provided services may have changed to adapt to the ongoing pandemic.

The main research objectives of this study are to provide a larger scale characterization of a distinct group of sex work advertisers who promoted or provided a variety of services on multiple platforms. How important are online versus in-person interactions with clients? How does the concept of community manifest itself with these advertisers? Grounded theory techniques were used to explore these linked web materials to identify common themes expressed by these advertisers in their communications with clients. Advertising metadata provided further context identifying how these advertisers differed from other users of classified advertising.

This work follows up on earlier work on sex worker communications (Jiao et al., 2021; Kille et al., 2017) but the sampled advertisers represent a much larger and varied group of workers. Online advertising spaces are currently the most relevant place for researchers in industrialized democracies to start given their pervasive use by sex workers. The sampling methodology employed shows that it is feasible to use rigorous sampling strategies to identify relevant sub-populations of sex workers for qualitative study.

Materials and Methods

Sample selection

This study is a qualitative examination of web materials generated by Canadian sex work advertisers to better understand their attitudes, social connections and safety strategies.

Advertisers were identified by chat names used for an internal chat function from publicly visible ads gathered from a prominent Canadian sex work classifieds site employing methods described

in (Kennedy, 2022). Ads were downloaded between September 15, 2021 and September 22, 2022.

Not all advertisers identified from the downloaded ads represented contact or online sex workers who had contact metadata. To eliminate irrelevant advertisers the three most commonly posted ads for each advertiser were visually inspected and advertisers were included if they represented a sex worker with contact information. These advertisers represented the initial sample population for the study.

A standardized contact metadata field was used to identify advertisers who had used a URL as a contact. Advertisers qualified for the study if they had been active between August 23, 2022 and September 22 2022 and had used a URL as part of their contact details. An initial random sample of 1000 advertisers was identified.

Web material collection and coding

Ad urls for the sampled advertisers were identified and manual downloads of ads were attempted between the 24th and 30th of September, 2022 using a clean install of the Firefox web browser (Mozilla, 2022). Manual downloads were necessary to expose the contact metadata in the ads.

On Site 3, advertisers can activate and deactivate ads. For the minority of advertisers that did not have active ads, profile pages on the classified site were often available and were downloaded when no recent ads were available. These profile pages could also be used as contact URLs. Once ads had been downloaded and contact information exposed, URLs were extracted for further study. Data from the associated websites was manually downloaded and web page screenshots were taken between the 1st and 8th of October, 2022.

Text captures of all downloaded web pages were made for further coding and analysis. Text extraction for HTML pages used a custom regular expression filter (Supplemental materials S1 File) and Tesseract (*Tesseract*, 2019) was used for web page snapshots. All text captures for a given advertiser were combined into a single document. These combined documents were initially coded using QualCoder (Curtain, 2023). All coded texts were then integrated with the advertising database. A LibreOffice spreadsheet (The Document Foundation, 2020) was also created using the most relevant coded texts for more detailed grounded theory analysis. This spreadsheet is available in Supplemental materials S2 File. These initial codes were used to identify common themes which were then grouped into broad subject areas for inclusion. Downloaded pages were also examined for evidence of collective advertising, where the principal advertiser was an escort agency, collective, or massage parlor.

Statistical measures

Counts of advertisers associated with identified themes were tabulated. What advertisers charged per hour from both advertising data and external websites was calculated and compared. As payment options for sex workers have expanded in recent years, counts of workers mentioning different payment methods were tabulated. In addition, descriptive statistics regarding how advertisers were using social media were collected (posts, follower and following counts). LibreOffice calc (The Document Foundation, 2020) was used to calculate descriptive statistics (see Supplemental materials S3 File).

Advertisers were classified based on whether their associated contact URLs represented an individual or a collective. In addition, the number of workers represented by a given advertiser was estimated using combined counts of names from both the collected web materials

from contact URLs and classified ads. The number of names found in classified ads and names found in external web materials was compared to see if advertisers who appeared to be individuals were either using multiple names or represented collectives.

Statistics from online classified ads were generated for demographic and behavioral variables for all included advertisers and segmented for sampled advertisers and advertisers who did not use URLs as contacts. Counts of ads, days advertising, and average ad views were generated. Counts of advertisers were segmented based on the demographic variables of self-identified gender (based on ad URL), self-identified ethnicity (based on ad metadata), locale (*Incall*, *Outcall* or *Online* based on ad metadata) and geographic location (based on ad URL). The R *prop.test* function and R BSDA package *tsum.test* function were used to compare proportions and means respectively between segments (Arnholt & Evans, 2021; R Core Team, 2021). R version 4.2.2 was used to perform all tests using a 95% confidence level.

Ethics statement

All source data used in this study consisted of publicly available data at the time it was collected and was collected in accordance with the policies of the sites in effect at the time. The methods used are conformant with the ethical standards of the Canadian Sociology Association (section 4.10 II) and the American Sociology Association (section 10.5 c) (American Sociological Association, 2018; CSA-SCS Policy, Ethics, and Professional Concerns Subcommittee, 2018). As the replicability of the main results of this paper is important, a data set is provided as part of the supporting information along with the code used to process it. However, to protect the safety and privacy of advertisers and third parties, all identifying information has been removed including the names of the source websites.

Results

Sample selection

Between September 15, 2021 and September 22, 2022, 1217296 classified ads were downloaded from one classifieds site popular with sex workers in Canada. This website (“Site 3”) has been described previously (Kennedy, 2022). On Site 3, advertisers could be identified by chat names, part of the metadata available in every ad. The downloaded web pages contained 54558 chat names. From this original group, 39562 chat names were included as advertisers. The 14996 excluded chat names comprised 11962 who were clients seeking services, 1718 with no contact information, 845 who represented “hookup” sites, 457 representing other services (drivers, condo rentals etc.), and 14 who offered non-sexual therapeutic services. A large sample of classified ads (N=891695) associated with the included advertisers was used to identify advertisers who were using URLs as part of their contact information.

Advertisers active between August 23, 2022 and September 22, 2022 who had used a URL in their contact information were used as the sampling frame for inclusion in the study. There were 2452 active qualifying advertisers from which 1000 advertisers were randomly selected. Of the selected advertisers, 783 had accessible contact URLs. These advertisers comprised the sample used for the study.

Site 3 allowed advertisers to use multiple chat names. In practice this did not appear to be common. Based on similar web links, 12 advertisers appeared to be using 32 chatnames. Except as described below in the Social Networks section advertisers were reviewed “as is”.

Web material collection and coding

Website data from contact URLs was downloaded between October 1 and 9, 2022. When a contact URL was for a personal website all pages from the site were downloaded to provide context where feasible. A small number of advertisers had produced personal websites with dozens of individual pages, many of which were not directly related to sex work. For those advertiser sites, only those pages which pertained to sex work were downloaded. When a contact URL was for a links page, a service that allowed users to create simple pages with links to the user's social media, personal website, gift page, or content creator site, all links were downloaded. In total, 2334 HTML documents from 392 domains were downloaded for analysis. Advertisers provided links to different types of websites in their contact information including profile pages (48 advertisers), personal web pages (322 advertisers), social media sites (189 advertisers) and content creator sites (167 advertisers). There were 119 advertisers who had no active ads where their Site 3 profile page was used instead of a contact URL. Most advertisers were associated with one domain (mean 1.0, SD 0.4, median 1, IQR 1-1, max 6).

Grounded theory analysis of the website capture data revealed four overarching themes: *security*, *identity*, *health* and *social networks*. The *security* theme was the most common, associated with 336 advertisers (43%), followed by *identity* associated with 325 advertisers (42%), *social networks* associated with 313 advertisers (40%), and *health* associated with 276 advertisers (35%). These themes are explored in more detail in the following sections.

Security

The concept of security, defined as the mitigation of risk, is a large topic. In this context, it encompasses all risks apart from those pertaining to health or substance use, considered

separately in the Health section. The sampled advertisers used multiple strategies to implement security that broadly could be divided between physical, emotional and financial security. In many cases, such as the practice of screening prospective clients, multiple types of security were addressed by one strategy.

Work location

Based on advertising metadata, the majority of the sampled advertisers combined online and in person services (70%, N=546). This is significantly more than the proportion for all included advertisers (42%, N=16720, *prop.test* CI [0.24, 0.31], $p < 0.001$). Advertisers who advertised in person services exclusively were less common (30%, N=234) and only 3 advertisers were exclusively online.

Despite the fact that the majority of the sample advertised some form of online sex work, only a minority of advertisers (N=167, 21%) provided links to content creator sites. These sites allow advertisers to sell videos and still pictures on a per item or subscription basis. However, many online services were provided more informally via text, video, or voice calls. A small number of advertisers sold physical goods such as panties (N=21), lubricant (N=4), bodily fluids (N=2) or other goods and services.

While online work is far less risky than meeting clients in person it is likely to be far less profitable. Based on advertised subscription rates for online content (mean CAD \$21.51 per month, SD CAD \$14.32, N=214 based on an exchange rate of CAD \$1.37 for USD \$1.00) and online sex work (mean CAD \$152.37 per hour, SD CAD \$97.34, N=51) workers appear to earn substantially more doing in person sex work as the mean hourly rate based on advertising data was CAD \$276 per hour (SD CAD \$87, N=569).

Sampled advertisers were also significantly more likely to advertise outcall work, where the worker visits the client, with 83% (N=652) providing this service compared to 74% (N=29287) for all advertisers (*prop.test* CI [0.07, 0.12], $p < 0.001$). A small number (N=33) of the 652 providing outcall service mentioned some form of safety measure. The most common was restricting outcalls to hotels (N=14) and, less commonly, homes (N=8). Some advertisers explicitly prohibited outcalls to cars (N=7) and some would only provide outcalls to regular clients (N=6).

Consent, respect and privacy

Consent was discussed by 17 advertisers. It was particularly important for advertisers providing services that might involve pain or psychological distress on the part of the client or worker. As one advertiser described it: *“Safety and consent are always a top priority and non-negotiable. ... I always practice R.A.C.K – risk-aware consensual kink. Every session is discussed in advance, including any potential risks, and mutually consented to.”* [advertiser 501]

Respect was discussed by 145 advertisers. Most advertisers (N=101) prohibited negotiating rates followed by prohibitions on rude, verbally aggressive behavior, or wasting the advertiser’s time (N=72), and, finally, many prohibited explicit talk (N=20). Overall these practices help workers avoid bad actors who could potentially turn violent. As one advertiser explained: *“I take rudeness and aggression as a red flag and will not book, or will end a session immediately if either is demonstrated.”* [advertiser 287]

Privacy, explicitly mentioned by 92 sampled advertisers, was a potential source of conflict when clients felt the need to hide their identity. For example, there appeared to be a debate over the use of text apps, which hide the phone number of the sender. A client posting to a forum page linked by one advertiser explains it this way: *“the men that do this are in committed*

[sic] relationships. And do not want to use their real numbers as it could lead to issues."

[advertiser 155] However, the consensus among advertisers discussing this topic is that the benefits of a potentially broader clientele are outweighed by the risks of poor interactions: *"I've made a decision to avoid no-shows and game players to only allow gentleman [sic] who I've seen before to text me ... I know the voice interaction would make both parties feel much more comfortable"*. [advertiser 6]

Advertisers were divided regarding how they wished to be contacted. The convenience of text based communications was weighed against safer voice or video calls. Most of these advertisers, 112 out of a total of 157 expressing a preference, preferred text as the initial form of contact and 39 preferred email or web form contact with only 47 preferring voice calls.

Screening

Many advertisers often employed more formal screening processes (N=74). These advertisers tended to advertise higher hourly rates than other sampled advertisers (mean CAD \$326.39, SD CAD \$87.78, N=28, mean CAD \$274.12, SD CAD \$86.45, N=752, *tsum.test* $t = 3.0955$, $df = 28.984$, $p\text{-value} = 0.004$).

The most popular form of screening required prospective clients to send a copy of some form of government issued identification (N=31 advertisers). References from other workers were required by 30 advertisers followed by LinkedIn profiles required by 17 advertisers, forum or social media handles required by 9 advertisers, voice calls required by 3 advertisers, photos required by 2 advertisers.

Even when screening did not involve providing identification, prospective clients were often required to divulge personal information as part of the booking process. Examples included cell phone number, full legal name, age, occupation, or ethnic background. One or more of these

types of information was requested by 62 sampled advertisers. Age was by far the most commonly requested with 44 advertisers requiring this information. For these advertisers, the median minimum age was 21 years (IQR 19-29, mean 23.4, SD 6.7, N=43) and one advertiser restricted clients to 50 and older. Most advertisers did not mention a maximum age but two set this limit at 60.

Deposits

Deposits, a relatively new phenomenon, were mentioned by 154 sampled advertisers. Deposits could range from a small nominal fee to 100% of the agreed upon compensation for an appointment. Sampled advertisers who required deposits advertised significantly higher hourly rates than sampled advertisers who did not (mean CAD \$320.41, SD CAD \$85.31, N=153 versus mean CAD \$262.41, SD CAD \$82.93, N = 627, *tsum.test* $t = 7.5811$, $df = 227.24$, $p\text{-value} < 0.001$).

The practice of requiring deposits has only become possible as online forms of payment have become available. In addition to cash payments there were 9 other compensation methods mentioned by a total of 167 sampled advertisers. The most common, shared by both online and in-person workers, were wish lists used by 81 advertisers, where clients could buy the worker goods online, followed by email funds transfer (e-transfer) (N=53), gift cards (N=24), online payment processors (N=21), crypto currencies (N=21), credit cards (N=16), on site ATM machines (N=11), and debit cards (N=9). In no case did advertisers accept wish list items for deposits and in some cases some payment types such as e-transfer (N=8) and online payment processors (N=3) were forbidden either because the advertiser was banned by the financial service or felt that sex work related financial activity could identify them.

Health

COVID-19

Data collection was conducted in late 2022 while the COVID-19 pandemic was still considered a health emergency in Canada. COVID-19 protection measures were mentioned by 68 sampled advertisers (51 individuals and 17 collectives). These advertisers discussed vaccination (N=36), disinfection procedures (N=10), and restricting contact with clients who were currently or recently ill (N=20) or had recently traveled (N=5). One advertiser required proof of vaccination

Sexual practices

Many of the sampled advertisers discussed hygiene (N=112) or sexual practices in the context of health (N=131). The majority of advertisers discussed safe sexual practices (N=106). Condom use (N=71) was the most common safe sex practice discussed followed by restrictions on fluid exchange (N=70), and STI testing (N=15).

A minority of advertisers discussed unsafe practices (N=51). The most common risky practices described were uncovered oral sex on the client (N=42), anal sex with or without condoms (N=12), rimming (N=12) and oral sex on the worker (N=11). Some advertisers (N=27) discussed both safe and unsafe sexual practices.

Sobriety and substance use

The topic of substance use and sobriety was discussed by 152 of the sampled advertisers . Many advertisers (N=51) described their own sobriety or expected sobriety from clients. The

most commonly mentioned substance was alcohol (N=62) discussed mostly in the context of gifts, social encounters (often provided as an additional service) or descriptions of personal tastes. Other, less frequently discussed substances were tobacco (N=38) where the majority were non-smokers (N=26), cannabis (N=32) and other drugs (N=29).

Identity

Biographical information

“The modern Matryoshka doll...because I too am many women in one.” [advertiser 496]

How do advertisers describe themselves? Many of the sampled advertisers had a personal web page (41%, N=322) some of which were quite detailed. While most of these sites could be characterized as marketing materials, 132 sampled advertisers included information on their opinions, attitudes and interests including blog posts (N=41), links to podcasts or media interviews (N=6), and political views (N=10). Four advertisers discussed stigma: one noted that they could no longer pay for advertising with a credit card, one discussed the risks to clients in Canada, one discussed getting blocked by social media sites, and one stated:

“I had a meeting this past week with the Canadian Civil Liberties Association to discuss the digital surveillance technology (like facial recognition) that the Canadian government wants to force onto sex industry websites which will affect both sex workers and clients!”
[advertiser 279]

Of the 58 advertisers who discussed attitudes about working, the majority (N=36) expressed positive attitudes. For example, one described it this way: *“I absolutely adore what I do. I love the magic that happens when meeting someone for the first time”* [advertiser 76]. Other advertisers described work in terms of freedom (N=7), choice (N=3), pride (N=1) and

authenticity (N=13): *“It's important to me that our time together never feels transactional.”*
[advertiser 191]

Advertisers described sex work in the greater context of their lives. Eleven advertisers described sex work as being their main occupation. However, a larger number described other activities. The most common non sex work activity was being an artist or musician (N=16) followed by having an outside job (N=15) or having external responsibilities (N=12). Education or intelligence was mentioned in the self descriptions of 61 advertisers with 58 advertisers describing themselves as either having completed a degree or being in the process of completing one.

Gender and sexuality

The sampled advertisers differed on some demographic measures from advertisers who did not use contact URLs. Table 1 shows proportions of advertisers by gender. Sampled advertisers exclusively advertising as cis-males were significantly less likely to use contact URLs. In contrast, trans-female identified advertisers were significantly more likely to use contact URLs.

Table 1: Comparing gender(s) associated with sampled advertisers and advertisers without contact urls. Genders are identified by: *f* cis-female, *m* cis-male and *t* trans-female. Trans-female and cis-male were significantly different between the two groups. P-values and CI from the R *prop.test* function.

genders	sample (N=783)	no contact url (N=34683)	p	CI
<i>unknown</i>	12 (2%)	413 (1%)	n.s.	
<i>f</i>	655 (83%)	29614 (85%)	n.s.	
<i>f,m</i>	17 (2%)	861 (3%)	n.s.	
<i>f,m,t</i>	10 (1%)	71 (0%)	p < 0.001	[-0.02, -0.00]
<i>f,t</i>	20 (3%)	255 (1%)	p < 0.001	[-0.02, -0.00]
<i>m</i>	16 (2%)	2685 (8%)	p < 0.001	[0.05, 0.07]
<i>m,t</i>	6 (1%)	113 (0%)	n.s.	
<i>t</i>	50 (6%)	671 (2%)	p < 0.001	[-0.06, -0.03]

Most sampled advertisers did not explicitly discuss sexual orientation or identity (N=605). For the sampled advertisers who discussed sexual orientation (N=178), most indicated some form of queer identification (N=140). Workers who explicitly stated that they were straight (N=16) or would not work with couples (N=7) were relatively rare.

The number of fetish providers in the sampled advertisers was significantly higher than in the population of advertisers who did not use contact URLs (16%, N=123 versus 4%, N=1292, *prop.test* CI [0.09, 0.15], p < 0.001).

Ethnicity and geographic region

Table 2 shows the proportional differences of advertisers based on self-identified ethnicity from advertising metadata. Sampled advertisers identifying as *White* or using *Multiple* ethnicities were significantly more likely to use external URLs. Sampled advertisers using more than one ethnicity (*Multiple*) were a combination of 74% *White*, 62% *Mixed*, 36% *Asian*, 36% *Latino/Hispanic*, 25% *Black*, 13% *Middle Eastern*, 12% *Indo Canadian*, and 4% *Native*. Some advertisers were less likely to use external URLs as contacts: *Black* identified advertisers and advertisers with no ethnicity data (*Unknown*) were somewhat less prevalent in the sample.

Table 2: Comparing self-identified ethnicity of sampled advertisers with advertisers not using URLs. *Multiple* refers to advertisers associated with multiple ethnic identifiers whereas *Mixed* is a single self-identification used by advertisers of mixed heritage. P-value and CI from the R *prop.test* function.

ethnicity	sample (N=783)	no contact url (N=34683)	p	CI
<i>Asian</i>	50 (6%)	2193 (6%)	n.s.	
<i>Latino/Hispanic</i>	29 (4%)	1652 (5%)	n.s.	
<i>Mixed</i>	61 (8%)	2810 (8%)	n.s.	
<i>Multiple</i>	200 (26%)	5278 (15%)	p < 0.001	[0.08, 0.14]
<i>Native</i>	2 (0%)	194 (1%)	n.s.	
<i>Black</i>	40 (5%)	2412 (7%)	p < 0.05	[-0.03, -0.0]
<i>Unknown</i>	1 (0%)	6973 (20%)	p < 0.001	[-0.21, -0.19]
<i>Caucasian/White</i>	403 (51%)	13171 (38%)	p < 0.001	[0.08, 0.14]

Significantly more of the sampled advertisers were associated with multiple provinces (45%, N=350 versus 17%, N=6030, *prop.test* CI [-0.21, -0.18], $p < 0.001$) and, to a lesser degree, significantly more advertisers were from British Columbia (13%, N=100 versus 10%, N=3504, *prop.test* CI [-0.05, -0.03], $p < 0.001$). In contrast, advertisers from Quebec were less prevalent in the sample (8%, N=62 versus 33%, N=11404, *prop.test* CI [0.22, 0.24], $p < 0.001$).

Advertising behavior

Based on advertising metadata, the sampled advertisers were different from other advertisers on four behavioral measures: days advertising, number of ads, hourly rates, and views per ad. They tended to advertise for significantly more days (mean 336 days, SD 98, N=783 versus mean 204 days, SD 124, N=34683, *tsum.test* $t = 36.845$, $df = 842.84$, $p < 0.001$) and significantly more frequently (mean 98 ads, SD 431, N=783 versus mean 18 ads, SD 346, N=34683, *tsum.test* $t = 4.8998$, $df = 786.42$, $p < 0.001$). They also advertised significantly higher hourly rates (mean CAD \$275.51, SD CAD \$87.24, N=569 versus CAD \$231.38, SD CAD \$79.71, N=17018, *tsum.test* $t = 11.902$, $df = 600.14$, $p < 0.001$). Mean views per ad were also significantly higher for sampled advertisers (mean 30606 views per ad, SD 53293, N=783 versus mean 6734 views per ad, SD 21061, N=34677, *tsum.test* $t = 12.536$, $df = 790.57$, $p < 0.001$).

Social networks

Working collectively

While the majority of advertisers represented individuals, most workers were associated with collectives. Based on counts of unique names from both classified ads and contact URL data, it was estimated that 3190 workers were represented by the sample of 783 advertisers after

correcting for advertisers using multiple chat names. Of the workers identified, most were associated with collectives (282 advertisers associated with 2731 names). Overall, the classified ad data contained fewer names than the contact URL data (1976 versus 2320 names) but neither source was complete.

Based on contact URL data, many of the individual advertisers collaborated informally with other independent workers. Some worked as duo partners (N=77) and some shared resources with other workers (N=11) based on content analysis of 322 personal web pages. Of the 167 advertisers associated with content creation sites, 51 created content with partners.

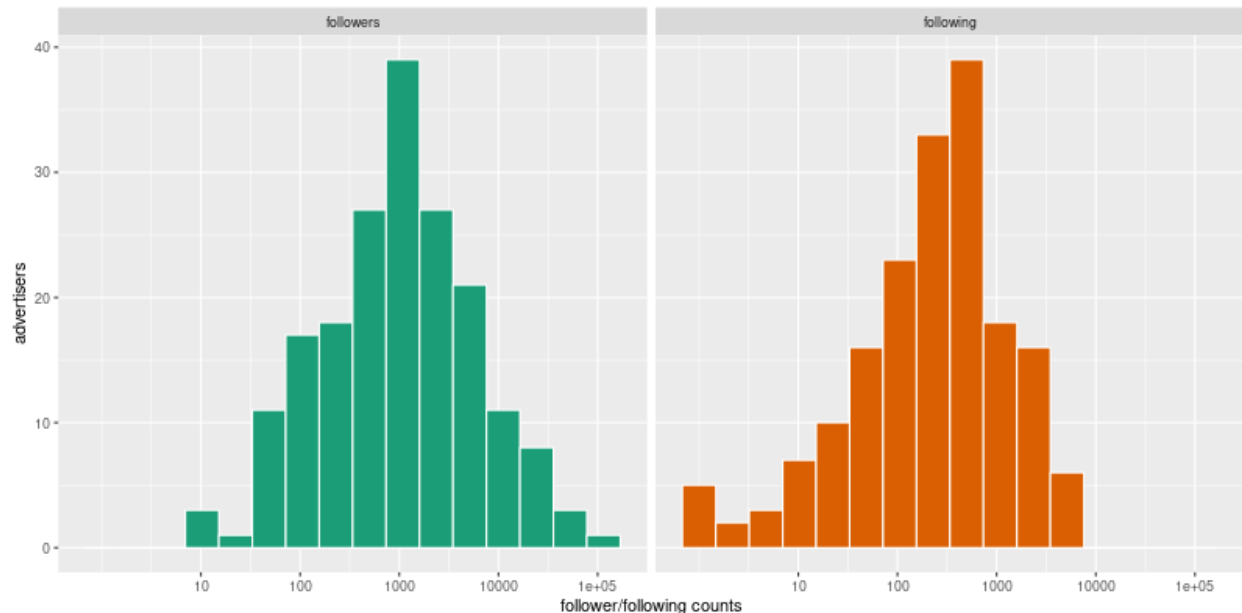
Social media use

Social media follower and following counts provided additional evidence for the size of social networks. Advertisers who used social media were associated with median 1 site (IQR 1-2, mean 1.7, SD 1). As part of the data gathering process 221 social media profiles from three major social media sites were downloaded for 189 advertisers (12 collective and 177 individual). Out of the original 221 profiles, 192 profiles used by 164 advertisers could be viewed. Of the pages that could not be viewed, 9 had been suspended, 4 required a login and 16 profiles were described as missing. Of the viewable profiles, 47 pages were private.

Figure 1 shows log scale distributions of followers and following counts. Advertisers typically had larger follower counts than following counts: median 959 followers (IQR 299.5-3039.5, mean 4361, SD 11407, N=187) and median 249 following (IQR 59-675, mean 621, SD 1008, N=187). The large difference between the mean and median values can be accounted for by a minority of advertisers who had very large followings on social media: 24 advertisers had over 10,000 social media followers with the largest social media presence exceeding 114800 followers. These counts may underestimate the number of social connections

for advertisers who had accounts that had been suspended and were in the process of rebuilding their networks.

Figure 1: Log scaled social media follower and following count distributions.



Discussion and conclusions

This study provides evidence for how sex work advertisers have diversified their use of the information and communications technologies during the later stages of the COVID-19 pandemic. The timing of data collection is significant as it was relatively late in the pandemic and advertisers would have had time to adjust to working in this new environment. Advertisers who used websites in their contact information advertised significantly longer and more frequently and charged more for their services than other advertisers. These advertisers are demographically distinct in that they tended to be either more Anglophone and White or more likely to be part of a sexual minority (provide fetish services or be trans-female). It was clear that a significant proportion of the sampled advertisers are part of a very socially connected, affluent

group with a long term commitment to the industry, a phenomenon seen in other research (Cunningham & Kendall, 2017; Nelson et al., 2020). It was notable that the majority of workers represented were associated with a relatively small number of collectives. The collective-associated workers and those advertising as individuals likely represent distinct subpopulations of indoor sex workers.

There are a few caveats to consider when reviewing the data. Not all advertisers who, for example, screen clients will mention this in ads or on a personal website and some variables such as sexual orientation might not be mentioned if the advertiser fits the societal norm. Secondly, for those advertisers that represented collectives, attitudes expressed in advertising may not reflect the attitudes of workers represented by the advertising. Some of the identified collectives, where the number of associated names were small, may be individual advertisers using multiple names.

Following more than two years of pandemic related health measures, sex workers had diversified how they market services and the types of services offered. Other than incall and outcall, offered services could include web camming, phone sex, sexting, “dick rating”, being a virtual “girlfriend”, and selling self-generated content or products. However, there was little evidence that online services had replaced in-person sex work. Workers, especially those who are independent advertisers, likely make far more money providing in-person services compared to online. Out of the online services, content generation, arguably the safest, appeared to be the least profitable.

If the frequency that safety strategies are mentioned is any indication, advertiser concern for safety goes well beyond risks to health or physical harm encompassing important financial

and emotional dimensions. Strategies to mitigate these risks overlapped as potentially dangerous clients were seen to identify themselves with inconsiderate, rude, or pushy behavior.

Individual advertisers often participated in large social networks, a phenomenon discussed elsewhere in the literature (Jiao et al., 2021; Kennedy, 2022; Strohmayr et al., 2019). These networks are important for sex workers both in terms of attracting clients, interacting with peers, and safety. For some workers, these networks may be considerably larger than those in their “straight” life.

Many independent advertisers who advertised in person services made a substantial effort to identify like-minded clients. More broadly, the debate over reasonable behavior, exemplified by these advertisers, addresses the urgent need for workable norms in the industry. Trust and the building of social capital (Claridge, 2004; Leenders, 2014) was an overarching theme embodied in sub-themes of privacy, consent, respect, health practices, and social networks. However, the hostile Canadian legal environment (PCEPA Protection of Communities and Exploited Persons Act, 2014) impedes this process as many clients may refuse to cooperate with safety strategies that could legally put them at risk. Frustration with public policy in Canada is reflected in (Jiao et al., 2021). The (Jiao et al., 2021) study, involving interviews with 35 industry participants, identified themes of screening; confidentiality, privacy, and disclosure; and malice all of which have direct correlates to themes identified in this study.

The building of social capital between workers and clients is likely pervasive in the online space. The socialization process of neophyte clients seen on sex work review sites (Horswill & Weitzer, 2016) reflects many of the concerns discussed by the sampled advertisers in this study. The view that sex workers and clients are fundamentally in conflict is not necessarily reflected in how workers and clients actually interact online.

It appears that financial technologies will disrupt the industry in the same way the adoption of ICTs and online advertising has over the last 25 years. Nevertheless, screening and deposits do not appear to have become universal. Given that deposits, and screening processes that require clients to send unadulterated copies of government issued ID, are likely the easiest and safest way for fraudulent advertisers to steal from prospective clients, clients are likely to be reluctant to cooperate with advertisers who require these unless the advertiser is well known. This concern was described by clients in (Horswill & Weitzer, 2016) where detecting safety and scams was an important topic of discussion among clients who were new to the industry. Use of review sites to identify fraudulent advertisers, for example, serves a similar function to the informal networks used by sex workers to identify bad clients (Strohmayer et al., 2019). The extent of fraud in classified advertising remains an open research question.

This study extends previous work on the occupational health and safety of Canadian sex workers. The data presented provides a snapshot of the state of the industry during the later stages of the COVID-19 pandemic and illustrates the creativity, resilience, and agency of sex workers in Canada in the face of significant structural obstacles. This study is unusual in that it employed random sampling to identify research subjects. These methods take advantage of commonly available metadata found in advertising that likely represents the majority of sex workers in Canada.

It is surprising that few researchers have taken advantage of the large body of publicly available advertising data to frame their research populations. The non-random sampling methods used in much sex work research can be easily enhanced by using this data as a starting point. This is important as sex workers comprise multiple distinct subpopulations. Ignoring the social context of population samples can lead to overgeneralization and inaccuracy which, when

applied to public policy, can have unexpected harmful consequences for industry participants, most of whom are unprepared to mitigate these ill effects.

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Declaration of interest statement

The authors have declared that no competing interests exist.

Supplemental Materials

All supplemental materials can be found at <https://osf.io/ba64d/>

S1 File. Regular expression for HTML text extraction. <https://osf.io/a5zmd>

S2 File. Spreadsheet containing coded texts. <https://osf.io/3tykh>

S3 File. Descriptive statistics. <https://osf.io/sbcpd>

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