

A thematic analysis of mental health, addiction and gambling discussion on Reddit during the recent cryptocurrency market downturn

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Research Article

Keywords: Cryptocurrency, cryptocurrency-trading, mental health, gambling, reddit

Posted Date: July 8th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1814512/v1>

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Abstract

Purpose

Considering the volatility of the cryptocurrency market, it is important to investigate the impact that market participation has on mental health. Therefore, we analyzed Reddit discussions regarding mental health, gambling, and addiction from members of the cryptocurrency discussion board, r/cryptocurrency, during a recent downturn in the cryptocurrency market.

Methods

We collected 1315 threads submitted to the subreddit r/cryptocurrency between January 3rd to February 4th. A thematic analysis was employed, which included threads that discussed psychological wellbeing, mental health or gambling.

Results

We thematically analyzed the content of 130 threads, which contained 7635 comments. Our analysis identified three main themes present in user discussion. Theme 1 (emotional state and mental health) captured users' discussion on their wellbeing, mental health and emotional responses to the market downturn. Theme 2 (strategies for coping) examined coping strategies recommended by users to combat distress to the market conditions or trading urges. Theme 3 (likeness to gambling) captured discussion on the relationship between cryptocurrency and gambling based on its fixating properties and risk profile.

Conclusions

Reddit is a valuable resource for examining the experiences and attitudes of the cryptocurrency community. Accounts of Reddit users' experiences provided insight into the mental distress market downturns can cause and strategies to combat problems due to trading. Our findings offer qualitative insights into the problems experienced by individuals who cryptocurrency trade and encourage further investigation into its relationship with mental health.

Introduction

In recent years, the crypto-asset market has grown exponentially, surpassing a two trillion USD market capitalisation in April 2021 [1]. This enormous growth has attracted the attention and investment of retail investors who readily trade cryptocurrency using mobile trading apps. However, it has also attracted a variety of concerns regarding the risks and potential for harm. The lack of regulation leaves investors at risk of financial crime and market manipulation, exposing investors to the risk of sizeable financial loss [2]. Furthermore, the massive volatility of the market and the availability of cryptocurrency borrowing

services allow cryptocurrency traders to engage in highly speculative trading patterns that have been likened to gambling [3].

The potential for harm and economic loss of cryptocurrency trading and investment justifies further investigation into its relationship with mental health. While research on this relationship is limited, research on stock markets indicate that market performance significantly impacts mental health [4–5]. This relationship is most salient following stock market crashes, with increased depressive feelings and suicide risk following the stock market crash in 2008 [6–7]. Therefore, the recent cryptocurrency downturn in January 2022, where the total market capitalisation dropped by 22% in one month [1] provides a timely opportunity to investigate its effect on mental health.

Social media provides a unique avenue to observe the discourse surrounding topics and provide unique and valuable insights into the individuals of these communities and their behaviours and attitudes. A central hub for cryptocurrency discussion is the social media platform Reddit, a discussion forum containing over 430 million monthly users [8]. Reddit is comprised of thousands of content-specific digital communities known as subreddits. The cryptocurrency subreddit boasts over 4.5 million members as of April 2022 [9] making it the largest English cryptocurrency forum. Users routinely share news, analysis, and subjective experiences, such as mental wellbeing and affective impacts, relating to cryptocurrency and cryptocurrency trading.

To date, no research has analysed social media content related to cryptocurrency trading and mental health. Employing a qualitative approach would help complement existing and future quantitative research by providing in-depth insights into the experiences of cryptocurrency traders and investors. Therefore, our study examined and categorised discussion on the cryptocurrency subreddit during this market downturn. Our focus was user discussion regarding personal wellbeing and mental health. Due to its relationship with problem gambling, we also examined user discussion related to gambling and addiction.

Methods

This study conducted a qualitative exploratory study of online discussion from the popular forum subreddit r/cryptocurrency.

Data Collection

To compile our dataset, we scraped threads from the subreddit r/cryptocurrency using the Python API Wrapper [10]. We collected 1,315 threads containing 35,000 comments posted between January 3rd to February 4th, 2022, a period when the cryptocurrency market capitalization fell by 25%.

This study received ethics exemption from the University of Queensland as it did not include human participants and used publicly available data. All information was accessed via the Reddit API

(<https://www.reddit.com/dev/api/>), and no personal information from the forum participants was collected. The data collected was non-identifiable and from public domain.

Data Screening

As r/cryptocurrency posts are on a broad range of topics, we developed a list of keywords to filter for relevant discussions. This keyword list contained terms related to psychological wellbeing, mental health or gambling and can be seen in Appendix A. We filtered 1,315 threads for keywords in either the post title or body text. This left us with 225 threads, which we reduced to 201 after removing threads that were deleted or contained no replies. After removing duplicates, our dataset contained 194 threads.

Titles and body text were then screened for relevance. We included text posts that were related to mental health, psychological well-being and gambling. Threads discussing addiction, risky financing and subjective experiences during the downturn were also included. We excluded threads on market analysis, threads seeking technical support for software/apps, or news stories. Comments under these threads were collected. For highly replied threads, we only collected the top 100 comments as sorted by 'Best'. This formed our final dataset of 130 threads with 7,635 replies. The full screening process can be seen in Fig. 1.

Data Analysis

We conducted a qualitative analysis to generate themes present in user discussion. This process was informed by the thematic analysis frameworks outlined by Clarke & Braun [11] and recommendations from McKenna and colleagues [12].

The initial stages of the analysis were conducted by a single reviewer (B.J.). First, the reviewer read through the entire dataset, recording any notes or observations. These posts were read in conjunction with the comments to provide appropriate context. After familiarising themselves with the dataset, the reviewer developed a comprehensive list of thematic codes based on recurring content in the posts and comments. These codes were sorted into thematic categories based on their overarching themes. Collaboratively with a second researcher (D.S.), these preliminary themes were discussed and reviewed to ensure they accurately reflected the dataset. In this stage, themes were collapsed into subthemes and separated to ensure they were distinct. The themes were then named and defined. To gain a rough idea of frequency, we coded the threads into themes and subthemes based on what the post content and replies best aligned with. In this process, we also extracted representative examples for each theme.

Findings

Our thematic analysis produced three themes. These were separated into sub-themes and are detailed in Table 1.

Findings

Table 1. Summary of qualitative themes based on subreddit discussion content

Theme (Number of threads related to theme)	Description	Sub-theme (Number of threads related to subtheme)	Recurring Codes
Emotional state and mental health (n = 73)	Discussion describing users well-being, mental health and moods as well as their emotional responses to the current or previous downturns in the cryptocurrency market.	Negative sentiment (n = 18)	<ul style="list-style-type: none"> -Emotional distress over recent downturns -Lamenting on economic losses or not selling earlier -Negative impacts on other parts of life. -No money to buy crash
		Positive sentiment (n = 23)	<ul style="list-style-type: none"> -Glee over discounted prices -Expressions of conviction -Personal intentions to buy - Encouragements to buy the dip and stay convicted
		Lack of emotional reaction (n = 32)	<ul style="list-style-type: none"> -Current or past reports of numbness due to shock -Desensitization to market fluctuations -Desensitization to economic loss or gain -Unfazed due to long-term conviction in cryptocurrency -Unfazed due to responsible

			investment
Strategies for coping (n = 26)	Discussion on coping strategies for combating mental distress caused by market performance or trading urges.	Reduce distress (n = 19)	<ul style="list-style-type: none"> -Limit or eliminate price-checking -Be active or go outside -Focus on life outside of cryptocurrency -Mental health break from trading -Responsible investment & take profits
		Combat Trading Urges (n = 7)	<ul style="list-style-type: none"> -Exercise -Put timed lock on apps -Use separate wallet for risky trading
Likeness to gambling (n = 31)	User discussion about cryptocurrency's relationship to gambling based on its fixating properties and risk profile.	Fixation or addiction (n = 9)	<ul style="list-style-type: none"> -Awareness posts about gambling addiction -Warnings to people with addictive personalities -Anecdotes of fixation or feeling rush like gambling -Self-identification as gambler
		Risk perceptions of cryptocurrency trading (n = 22)	<ul style="list-style-type: none"> -Cryptocurrency is a big casino -Life in general is a gamble -Cryptocurrency is gambling if you day-trade or use leverage

Emotional State and Mental Health

In over half of the threads the main topic of discussion was users' emotional response to the market downturn (73/130, 56%). In one quarter of threads, users expressed mainly negative sentiment (18/73, 25%). Many users expressed emotional distress over the recent downturns:

"Unfortunately many of us are suffering from this lately because of this huge crash. Makes us miserable, upset, sad...all the negative emotions that drain us."; "I barely slept last few days and I am literally sweating due to anxiety"

A few users reflected on their change in mood and how it impacted other aspects of their life:

"On weeks like this, where everything seems to be in a downward trend, I find my mood following suit. It can affect my productivity at work, and my relationships."

Some lamented their economic losses or expressed regret at not selling earlier:

Almost down 100k (close to 2x my yearly salary) from a peak of 150k, not gonna sell now. I hate myself for not seiling [sic] at the peak but now it's to late."

However, users varied considerably in their feelings over the market conditions, with one third of the threads containing mostly positive sentiments (23/73, 31%). Many users expressed delight they could accumulate at lower prices:

"While people are screaming and crying, I'm smiling and buying"; "I feel like a kid in a candy store with all these discounts, can't decide what to FOMO in though".

Some users hoped that the downturn would continue to allow them more time to buy. Many of these users encouraged others to buy the dip, often referencing previously missed opportunities:

"Believe me - the pain of experiencing losses now is minor compared to the regret of looking at what you could have had if you just held on through the crash."; "If you sell for money you will 100% regret it in the near future."

Most commonly, however, sentiment was neutral, with users frequently reporting a lack of emotional response to the market downturn (32/73, 44%). Users often attributed this to their experience with the dramatic volatility of the cryptocurrency market. One user reported a noticeable difference in their emotional response from the previous market downturn:

"Ever since last May when I experienced shock I don't think a single dip has caused me to truly panic. Last May was one of the few times in my life I have ever felt so numb to the world due to shock. It's only money but watching it feel like it was worth nothing and disappearing was insane".

Many users reported feeling desensitized to economic loss. One user reported feeling desensitized to economic gain as well:

"I more than doubled in the past 72 hours and am sitting here waiting to feel something. Objectively I recognize how fortunate I am to be in this position, but the emotion, joy, sorrow, fear is gone... I'm genuinely wondering if the addiction wore off or if I just broke the dopamine button in my brain."

However, this concern wasn't mirrored by other users who saw their own lack of emotional response as beneficial for remaining objective:

"When you become emotionless about losing money you are half way to get rich."

Some users reported feeling unbothered by the volatility due to their long-term conviction in cryptocurrency overall:

"I honestly couldn't care about this dip cause I am bullish in crypto for the long term. It was never my intention to cash out in the short term."

These users frequently expressed confidence in their own investments, due to belief in the fundamentals of the project. Similarly, some users described feeling relaxed due to taking out their initial investment and not investing more than they felt able to lose.

Strategies for Coping

In many posts, users provided shared recommendations for dealing with problems associated with cryptocurrency trading (26/130, 20%). Whilst, these were mainly posted as independent threads, some were in reply to distressed users. These recommendations were typically well-received, with some users expressing their appreciation for the advice and support of other users on the subreddit. These coping strategies were predominately to help deal with the emotional distress caused by the market crash (19/26, 73%). Advice frequently pertained to reducing the time spent checking coin prices and the value of your portfolio. To reduce checking, users shared strategies that worked for them, such as putting a timed lock on their applications or uninstalling them to limit or remove access. Users regularly encouraged others to be active outdoors to reduce screen time overall and emphasised the importance of engaging with activities unrelated from cryptocurrency:

"Get out into nature, if you can, get away from technology for a minute, see how everything is connected in the most perfect and beautiful way." ; My suggestion would be to get additional hobbies an interests. I am EXACTLY like you, so I split my obsessive attention between investing, my job, my family, gaming and fishing."

Some users encouraged profit taking when possible, in order to reduce stress. A few users encouraged others to sell when down in their investment if it meant improvements to their mental health:

"If the current dip has you feeling worried or anxious then you've invested too much into crypto. Sell some of it to put your mind at ease".

Whilst, these suggestions were generally well received, they were occasionally met with hostility:

"Advising people to sell in red, I see. If you are thinking of selling in red, then you deserve all that emotional distress".

Users also shared strategies they used to combat gambling urges (7/26, 27%). These strategies were similar to ones for protecting mental health. Users commonly suggested to limit time exposed to cryptocurrency by putting timed-locks on trading and chart-checking apps. Additionally, heavy emphasis was placed on exercise and active living. One user wrote:

"I try to follow this advice myself when I am craving a rush- I'll try to do at least 30 minutes of cardio before making a trade... While it's not a dopamine hit, the endorphins help me clear my mind and reflect on if I'm making a good decision or FOMOing."

Another strategy was using a separate cryptocurrency wallet, used exclusively for risky trading:

"As a former addict I completely agree either you. I had to create a separate trading wallet just so I could trade without risking my whole portfolio" ; "I have that gambling fund to scratch the itch that says "hey maybe you can get in on this too!" while the boring as fuck investments mean I don't lose the house."

Likeness to Gambling

In numerous threads users discussed cryptocurrency's relationship to gambling (31/130, 24%). Most of these threads compared cryptocurrency investing or trading to gambling based on its risk profile (22/31, 71%). Users varied considerably on what their criteria for gambling was. Some users believed it depended on the quality of the projects invested or the time-horizon of investment. Others believed it depended on the investment behaviour, with some users considering it gambling only if you were day-trading or trading with borrowed money. However, many users considered all forms of cryptocurrency investment gambling:

"It's all a gamble. Every single crypto 'investment' is a gamble, not matter if it's shitcoins or altcoins or Bitcoin, or whatever"; "It is still a gamble, even with research. Anything can happen"

Others disagreed with this logic, noting that all activities involve risk:

"with that thinking, you can say driving is a gambling , you gamble [sic] on reaching a destination faster, you gamble that other drivers on the road don't mess up, you gamble that your car won't break down and by that living itself becomes gambling."

Some users felt others held this mindset due to their investment approach or lack of knowledge:

"most people see crypto like gambling and they don't treat it as an investment! To try their luck, they might as well buy lottery tickets...they need to start treating crypto as a serious investment and have an investment plan and an investor mindset" ; "Anyone who says crypto is a gamble should read a book on finance and maybe get some online economy classes because in no way it can be compared to betting or a casino."

Some threads discussed cryptocurrency in relation to gambling in terms of a potentially addictive behaviour (9/31, 29%). A large portion of these were awareness posts which warned of the potential damages addiction can cause and encouraged seeking help if needed:

"Gambling addiction is a huge problem, and has led to the financial ruin of so many families. Crypto addiction works the same way, if you feel like you are at risk, reach out for help before it's too late." ; In these uncertain times the danger of developing full gambling addiction is bigger than ever. Please check yourself."

Caution was especially advised for people with addictive personalities or with previous addiction problems. This was extended to people who felt strong impulses to buy and sell cryptocurrencies after dramatic market movements. In these threads, users would often share their experience with cryptocurrency and their increasing attention to it and described how their fixation adversely impacted them:

"Since i started with investing into crypto currencies, i find that more and more my thoughts turn around it. I check my portfolio like 25 times per day" ; "It was such a stressful period of my life. I felt like I was going to have a heart attack. Tried a lot of times to stop looking the charts, but I couldn't. Became an obsession, a very unhealthy one."

Some users discussed the addictive properties of cryptocurrency with some comparing the rush to gambling:

"I think it's the rush of seeing your value go up...or down. I used to check a lot more" ; "Does anyone else get that dangerous "rush" like they would gambling?"

These threads contained mainly positive content, with some users expressing appreciation for these posts and advocating for further awareness. One user wrote:

"This is not nearlyyy [nearly] scratching the surface of how much this should be talked about. There should even be a "self care" part in this sub... It's, all jokes aside, tragic that we don't have enough awareness that this can turn into a gambling addiction in a blink."

Discussion

We examined user threads (each thread including the post and the corresponding comments) on Reddit between January 3rd to February 4th, 2022, a period when the cryptocurrency market capitalization fell by 25% [1]. Following this period, the market capitalization of cryptocurrency has continued to fall, reducing another 25% from February to June 1st, 2022. This period also saw the collapse of large-cap coins TerraUSD and Luna, which dropped 85% and 99% respectively between May 10th and May 14th, 2022 [1]. These projects had multibillion-dollar market capitalizations, demonstrating the risk of economic loss even amongst established cryptocurrency projects. This further underscored the need for investigation into the relationship between cryptocurrency and mental health.

Our study explored this relationship, providing insight into users' emotional reactions to the downturn. User anecdotes detailed how users were negatively affected by the market conditions. Descriptions of distress appeared from investors over the performance of their investments rather than from excessive or risky traders. Price checking was a central fixation for users, with most strategies recommended by users aiming to reduce this behaviour. Frequent checking appears to be reinforced through different mechanisms depending on the market conditions. When reflecting on upward swings in the market, users referenced the rush they felt when their portfolio went up. However, in downtrends, users reported frequently checking their portfolios due to anxiety.

Our findings indicate that long-term conviction might protect against mental distress caused by fluctuating cryptocurrency prices. Many users cited their long-term commitment to cryptocurrency as a reason for their indifference to the current downturn. Additionally, expressions of enthusiasm and intention to buy by users may further reflect their long-term conviction in cryptocurrency and its role in sustained participation in the market. However, without knowledge of users' investment behaviour, the motivations behind these posts are unclear and may be attempts by users to improve community sentiment to motivate further buying to support the price of their holdings. This may explain why posts recommending profit-taking were met with occasional hostility. Additionally, as investment in cryptocurrency is not a requirement for posting, users excited to buy at lower prices may not currently be invested or invested heavily.

Experience in market crashes may also play a protective role in emotional distress, with some users referring to previous crashes as evidence they could endure such downturns. Additionally, users' descriptions of apathy and indifference indicate that prolonged exposure may desensitize participants from the dramatic fluctuations of the market. Considering the significant role emotions play in trading and investment decisions [13], muted emotional responses may allow participants to make more rational decisions in stressful market conditions. However, future research should investigate whether this emotional blunting impacts other aspects of life. Additionally, future research should also investigate the coping mechanisms and protective responses of cryptocurrency investors to provide insight into their role in investor resilience.

In general, users rarely expressed interest or intention to engage in risky trading activities, such as margin trading. In contrast, users regularly suggested responsible and risk-averse investment strategies such as

profit-taking. This may be due to the state of the market at the time of this study. Existing work in traditional financial markets has found that participants typically become risk-averse following market crashes [14]. Risky behaviour is most prevalent in the period preceding a market crash, often due to overconfidence [15]. Whilst recommendations to responsibly invest may be helpful to some investors, the amount of financial advice provided on the subreddit could be a cause for concern, especially during periods in the market where engagement in risky or gambling-like trading is likely to be higher.

There was a lack of consensus amongst community members over what constitutes problematic trading behaviour in cryptocurrency. Users' distinction between responsible investing and gambling-like trading varied considerably based on their perceptions of risk. Without a clear definition of what constitutes responsible investing in the cryptocurrency space, it is hard to assess what qualifies as harmful behaviour at a community and treatment level. Therefore, the development of criteria for problematic cryptocurrency trading is highly important.

Although there has been ample messaging about the risks of cryptocurrency as an investment, there has been little public messaging on its potential effect on mental health. Our study indicates that r/cryptocurrency may fill this gap, with users regularly discussing and spreading awareness of the effects cryptocurrency trading and investing has on mental health and wellbeing. The subreddit provided a valuable avenue for users to share their experiences and receive social support from others. Online forums have been useful for providing social support to individuals suffering from mental health problems [16] and behavioural addictions [17]. This social support may allow cryptocurrency investors to remain resilient from the mental stress of participating in a highly volatile market [18]. The regular sharing of strategies emphasises the importance of involving community members in developing harm reduction and intervention strategies for problematic cryptocurrency behaviours. Users also regularly discussed the risks of cryptocurrency developing into a fixation, often referencing their own experiences. This reveals an awareness of cryptocurrency as a potentially addictive behaviour amongst the cryptocurrency community and may demonstrate the usefulness of online discussion boards in reducing stigma and spreading knowledge of risks and harms.

Limitations

Our search was limited to 32 days and may not capture users' experiences throughout the entirety of the downturn. Discussions were also limited to one social media site and may not represent the overall attitudes and experiences of all cryptocurrency investors and traders. However, Reddit is one of the largest open online discussion forums and the anonymity of comments allows people to be more honest, vulnerable and authentic with their experiences, particularly stigmatised issues [19]. Additionally, our use of search words means relevant discussion posts may have been missed from our thematic analysis. Most of the discussion on the subreddit is regarding price discussion, news or analysis, which may indicate the need for a dedicated support forum for cryptocurrency problem behaviours. As users were pseudonymous, demographic information is limited to site-based data and their investment behaviours

cannot be captured. Whilst pseudo-anonymity may encourage user discussion, certain topics or opinions may have been removed or discouraged due to the presence of moderation.

Lastly, thematic analyses are inherently biased due to the various backgrounds and viewpoints of researchers coding the data. However, we mitigated this limitation by having a second individual to review the codes and discussions. Our study highlighted the importance of qualitative studies in investigating the viewpoints and experiences of cryptocurrency traders and investors. Studies with qualitative designs should be conducted to elucidate the symptoms of problematic cryptocurrency behaviour and factors that protect from harm.

Conclusions

With large fluctuations in the cryptocurrency market being common, it is important to investigate the impact market downturns have on mental health. To achieve this, we categorised user discussions from the popular r/cryptocurrency subreddit during the recent downturn in the cryptocurrency market. Users' descriptions of anxiety, distress and low mood over the performance of their investments revealed the negative impacts these market downturns can have on mental wellbeing. Results also revealed the significant role that price-checking plays in emotional distress. However, many users expressed optimism or indifference, revealing potential protective factors against mental distress such as market experience and responsible investment. Our results indicate that the subreddit may function as a social network for many individuals. With limited formal therapeutic services available, online communities may act as the primary source of support and consult for many cryptocurrency investors. The subreddit may also play a valuable role in spreading awareness of problematic cryptocurrency trading behaviour, with users regularly discussing their experiences with cryptocurrency fixation and warning of potential dangers. The development of informative criteria for problematic cryptocurrency trading would aid judgements over what constitutes gambling and sensible investment behaviour in cryptocurrency.

These findings encourage further investigation into the impacts of market performance on the mental health of cryptocurrency traders and investors. Additionally, the regular sharing of coping and mental health strategies from community members encourages clinicians, researchers and health professionals to consult input from community members in the development of harm reduction strategies.

Declarations

Conflict of Interest: The authors have no competing interests to declare that are relevant to the content of this article.

Funding Sources: The authors have no relevant financial or non-financial interests to disclose

Ethics Approval and Informed consent: This study received ethics exemption from the University of Queensland Human Resources Ethical Committee as it did not include human participants and used

publicly available data. As data was collected from public domain on already existing data, no consent was gathered.

Authors' contribution: All authors contributed to read and approved the final manuscript. Study conception and design was performed by Benjamin Johnson, Janni Leung, Gary Chan. Data screening and interpretation was done by Benjamin Johnson and Daniel Stjepanović. Janni Leung, Tianze Sun, Daniel Stjepanović, and Gary Chan were responsible for supervision. The first draft was written by Benjamin Johnson and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Figures

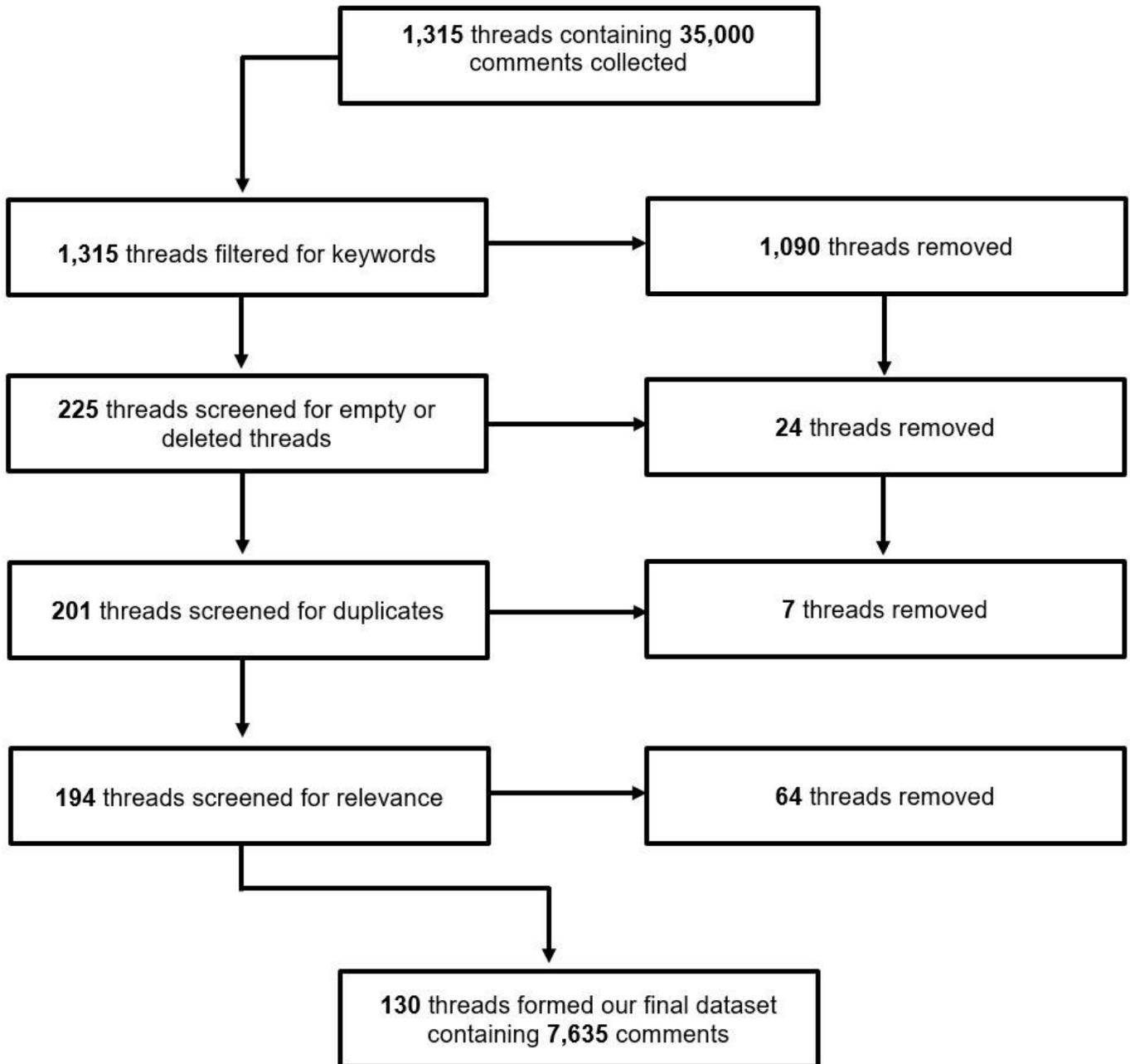


Figure 1

Data screening flowchart presenting the number of threads collected, included, and excluded.

Supplementary Files

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- [SupplementaryMaterialsQual.docx](#)