

From Posts to Progress: Associations Between Community Practices and Weight Loss Success

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Abstract

Online communities play a valuable role in providing social support and shaping health behaviors. In the context of personal health, social support, accountability, and consistency are key factors for success. Prior work has examined content and engagement in online health-related communities, but less is known about how moderation and community practices translate into measurable health outcomes. In this study, we investigate how moderation practices are related to user weight loss analyzing several thousands of users, over six years, in Reddit's largest weight loss community *r/loseit*. We find that user posting activity in specific moderator-created threads is associated with a stable and reliable weight loss. Particularly, structured and recurring moderating practices, especially those focused on progress updates are associated with greater weight loss compared to other threads. Our results demonstrate how moderation within online communities can actively support weight loss facilitating health behavioral change. Moreover, we illustrate how large-scale social media data can aid the design of digital health interventions.

Code

<https://github.com/gabrielaozegovic/loseit-analysis>

Introduction

Online platforms, in particular Reddit, host a wide range of support communities covering diverse topics such as mental health, addiction, or weight loss. In these communities, users predominantly vent or seek help and other users respond to offer support (Silveira Fraga, Couto da Silva, and Murai 2018). Receiving comments and reactions fosters higher user retention and future participation resulting in continuing support, highlighting the importance of community and its practices (Morini et al. 2025). For example, recent studies suggest that higher participation rates in online support groups for problem gambling are associated with lower risk of relapse (Hopfgartner, Rupprechter, and Helic 2022), or that individuals struggling with opioid use are more likely to pursue recovery when exposed to prolonged support in online communities (Balsamo et al. 2023). Similarly, users struggling with eating disorders or excessive weight turn often to online support communities (Cunha, Weber, and Pappa

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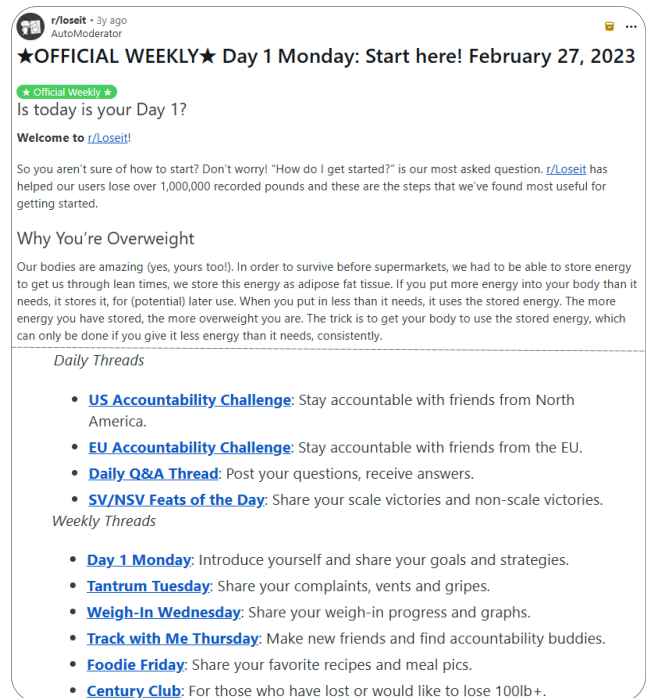


Figure 1: An example of a moderator thread (reoccurring *Day 1 Start* thread) on *r/loseit*. Other daily and weekly threads are listed in the body (below).

2017), typically achieving moderate weight losses (Tov and Hochberg 2022), conditioned on their tenures and content of their postings (Liu and Yin 2020).

Recently, some initial studies investigated the role of moderation (Jhaver et al. 2019) in health-related support communities suggesting that reactive moderation is linked to user churn (Syred et al. 2014), while absence of moderation is associated to diminished health benefits (Lindsay et al. 2009). On the other hand, moderated threads benefit users in their smoking cessation (Struik and Baskerville 2014), and on WebMD¹ (a large online platform about health and well-being) forums, moderators encourage participation and sustain user engagement (Huh, Marmor, and Jiang 2016).

¹<https://www.webmd.com/>

While these studies provide useful insights into the role of content, user engagement, or community reactions, in-depth research on the role of moderation practices remains limited. Hence, we build upon these initial studies of moderation and analyze the association of moderation with user success in online health-related communities. To that end, we concentrate on moderation in the Reddit's largest weight loss community, *r/loseit* (cf. an example of a moderator thread² in Figure 1). In particular, we investigate how moderator-created threads in *r/loseit* are associated with weight loss and ask the following research questions:

RQ1: Is participation in moderator threads associated with greater weight loss compared to user threads?

RQ2: How are different types of moderator threads associated with weight loss? In particular, how do accountability, progress, and goal-announcing threads compare to others?

To answer our research questions, we first collect all user contributions (posts and comments) from *r/loseit* over the period of six years (2017-2023). Second, we divide all contributions into user-initiated or moderated and assign them to a set of topics, extracted from text and titles of postings, e.g., accountability challenge, day one, or daily Q&A (cf. Figure 1). Third, for every contribution, we extract linguistic features such as tone, clout, or authenticity. Fourth, to capture user weight trajectories, we extract self-reported weights from user flairs.

Using this data, we estimate the relation between moderation and user short-term and long-term weight loss. In particular, to estimate the association of moderation and short-term weight loss, we aggregate user data over a 30-day period and adopt a two-way fixed-effects regression setup, whereas for long-term weight loss, we estimate this association by aggregating complete user data and fitting ordinary linear regression. We find that user posting activity in specific moderated threads is positively associated with weight loss in the short-term (RQ1). Specifically, progress updates exhibit the strongest positive association with weight loss in both short- as well as long-term, whereas posts announcing the start of a weight loss journey are associated with weight gain (RQ2). In addition, we also find that general control variables such as overall user activity in the community is positively associated with the weight loss, whereas the associations of other moderation practices are less consistent. Hence, our results indicate that specific moderated threads, especially those that promote consistency and steady progress, are associated with the greatest benefit for users on their weight loss journeys.

Our study offers valuable insights for researchers and practitioners interested in online support communities, particularly weight loss communities, and their connection with moderation practices. Beyond that, our results can inform the design of other health-related support communities, in which sustained engagement and accountability may be a crucial factor for users to achieve success, as we find that proactive moderation practices and recurring threads establishing routines positively influence user outcomes. In addition, we publish all our code.

²<https://www.reddit.com/r/loseit/comments/11dgqfr>

Related Work

Support communities. The power of social support is widely recognized as a valuable factor in improving well-being, mental health, and habits (Shalaby and Agyapong 2020). Peer support typically involves nonprofessionals or people with similar challenges as support providers, and have been shown to have positive effects (Fisher et al. 2012). Social support is also important for health-related behavior change. In the context of weight loss, peer support providing encouragement, motivation, and accountability, is a key predictor of success (Jøranli et al. 2023), while lack of social support makes weight loss significantly harder (Hammarström et al. 2014). Hence, prior research emphasizes the importance of incorporating peer support services into health platforms (O'Leary et al. 2017). Yet, most social media studies focus on user engagement and retention, rather than health outcomes. Moreover, less is known about whether these support practices translate to online communities when actively encouraged by moderators, and whether they lead to improved health outcomes such as weight loss.

Moderation practices. Moderation practices vary across online platforms, with some emphasizing content moderation to retaliate hate speech and misinformation, and others focus on social moderation to create a positive environment and prevent toxic behavior (Yu et al. 2020). Health and well-being communities, in particular, are more conscious of their moderation policies due to sensitive population they cater to. Online patient communities face different challenges. For instance, while passion can motivate recovery and peer support, it may also lead to conflict driven by strong beliefs. Additionally, users often share personal experiences to help others, yet such advice can be interpreted as medical advice, and large amount of non-medical advice may spread incorrect or even harmful information (Skousen et al. 2020). Mental health communities on Reddit are often moderated to maintain appropriate behavior and ensure credible and high-quality content. Here, moderation emphasizes emotional support and providing safe spaces rather than diagnosis or medical advice, and moderators are usually not medical professionals, reflecting the broader goal of facilitating peer support and interpersonal relationships (Saha et al. 2020). However, much of research on moderation relies on moderator interviews and descriptive analyzes of practices, leaving open questions about how specific moderation strategies influence user behavior and their health outcomes. Understanding this is crucial for designing more effective online spaces, where effective moderation can help with achievement of one's goal.

Moderation and support in weight loss communities. Obesity is a critical public health problem, affecting around 2.5 billion adults worldwide³, with projections that over half of the global population will be overweight or obese by 2030 (Lobstein et al. 2023). Despite health risks, sustained weight loss remains difficult due to physiological, psychological, and environmental barriers (Elfhag and Rössner 2005). Moderated Web interventions are associated with sig-

³<https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

nificant weight loss (Neve et al. 2010), and accountability is consistently defined as a key facilitator in online interventions (Cleo, Hersch, and Thomas 2018). However, most online intervention studies are limited to small samples and structured program designs, which may miss the subtleties present in naturally occurring communities. By conducting a large-scale observational study of large number of users, we extend this work by examining how community practices, specifically moderation, can function as “natural interventions” that aid weight loss.

Social media based weight loss communities, such as *r/loseit* on Reddit, provide spaces for support, advice, and sharing personal experiences. Prior work links factors such as gender, activity level, discussion engagement, upvotes, and discussed topics to greater weight loss (Pappa et al. 2017), and shows that positive feedback increases user return rates and is associated with greater weight loss (Cunha, Weber, and Pappa 2017). Attempts to model weight loss outcomes have also been made, but only on users’ first posts and reactions (scores and comments) to it (Tov and Hochberg 2022). Although some studies have investigated the relationship between topics and weight loss (Liu and Yin 2020), the effect of recurring moderated threads has not yet been explored. We aim to fill this gap by looking into relationship of user contributions and responses with weight changes, with particular focus on whether participation in moderated threads is associated with higher weight loss.

Descriptive Analysis

Dataset

Reddit. Reddit is an online platform comprising of various topic-specific communities called “subreddits”, in which users write posts starting new discussion threads, or write comments on posts in already existing threads. Typically, each subreddit comes with its own set of rules on how users should participate. For example, subreddit rules define what to include in the title and body of posts, the formatting instructions, or general instructions on how users are expected to behave. The rules are enforced by moderators, volunteers who create and oversee subreddits. In some subreddits, users create *user flairs*, which are visual flags that appear next to their usernames in their contributions. Depending on the subreddit, flairs are either predefined or freely created to convey additional information about users.

Weight loss subreddits and *r/loseit*. On Reddit, several subreddits focus on weight loss such as *r/loseit*, *r/Weight-LossAdvice*, *r/CICO*, or *r/progresspics*. The largest weight loss subreddit is *r/loseit*⁴, which hosts discussions on healthy and sustainable methods of weight loss such as diets or changing eating habits. As of December 2025, *r/loseit* was the 198th largest subreddit, with more than 4 million subscribers⁵. The *r/loseit* community offers basic information on weight loss and encourages users to share (via posts and user flairs) their weight loss journeys, achievements, progress, advice, stories, or questions in a series of recurring moderated threads. As other weight loss subreddits are

substantially smaller, do not have similar moderation practices, and do not promote user flairs for reporting weights, we focus our work on the *r/loseit* subreddit.

Specifically, moderation on *r/loseit* takes place in several recurring moderated threads. Those are daily or weekly threads encouraging regular participation and peer support. Each moderator thread is structured for a specific type of discussion such as accountability or sharing progress. For example, daily threads include “US & EU Accountability Challenges”, “Daily Q&A”, or “SV/NSV Feats of the Day”, where users share their progress through scale or non-scale victories. Weekly threads, scheduled on specific days, include “Day 1 Monday” (a fresh start), “Tantrum Tuesday” (space to vent), “Weigh-In Wednesday” (sharing progress), “Track with Me Thursday” (finding friends and accountability buddies), “The Century Club” (for users who have lost over 100 pounds), “Free Talk Friday” (no particular theme), or “Foodie Friday” (sharing recipes and meals, since 2022).

To further facilitate communication among users, *r/loseit* community adopts a range of common abbreviations used across contributions and flairs such as HW (Highest Weight), SW (Starting Weight), CW (Current Weight), GW (Goal Weight), UGW (Ultimate Goal Weight), SV (Scale Victory; e.g., reaching a new low weight), NSV (Non-Scale Victory; e.g., fitting into smaller clothes), or BF (Body Fat). In particular, users are encouraged to use flairs with these abbreviations and include their demographics such as age, gender, height, or weight (e.g., SW, CW, GW). This allows other users to provide a more personalized advice.

Data Exploration

In this work, we refer to any user-initiated contribution that starts a new discussion as a post. This includes standalone user threads as well as top-level comments in moderator threads. We refer to replies to these user-initiated contributions as comments.

Data collection. We collect all contributions (posts and comments) using Pushshift, a Reddit crawling service (Baumgartner et al. 2020), which provides complete Reddit data for each month, scraped on the 20th next month⁶. Hence, this monthly data might include changes made after the original contribution time. In particular, user flairs for all contributions in a given month are only set at the time of the next scrape (20th next month) and, therefore, they may be different than the user flairs at the time of posting. We omit deleted and duplicate contributions from January 2017 until the end of March 2023. This results in 136,431 posts and 2,964,931 comments. To reduce noise (e.g., spam), we only keep posts with three or more comments resulting in 117,310 posts and 2,486,819 comments for a total of 2,604,129 contributions made by 325,407 unique users.

Moderator threads. Moderator threads follow a consistent structure including a standardized naming scheme and body content. For example, the thread title contains the timestamp and the topic such as *Daily Q&A Post for Monday, 01 January 2018 - No question too small!*. The body provides ba-

⁴<https://www.reddit.com/r/loseit/>

⁵<https://www.reddit.com/best/communities/1/>

⁶https://www.reddit.com/r/pushshift/comments/bcxguf/new_to_pushshift_read_this_faqs/

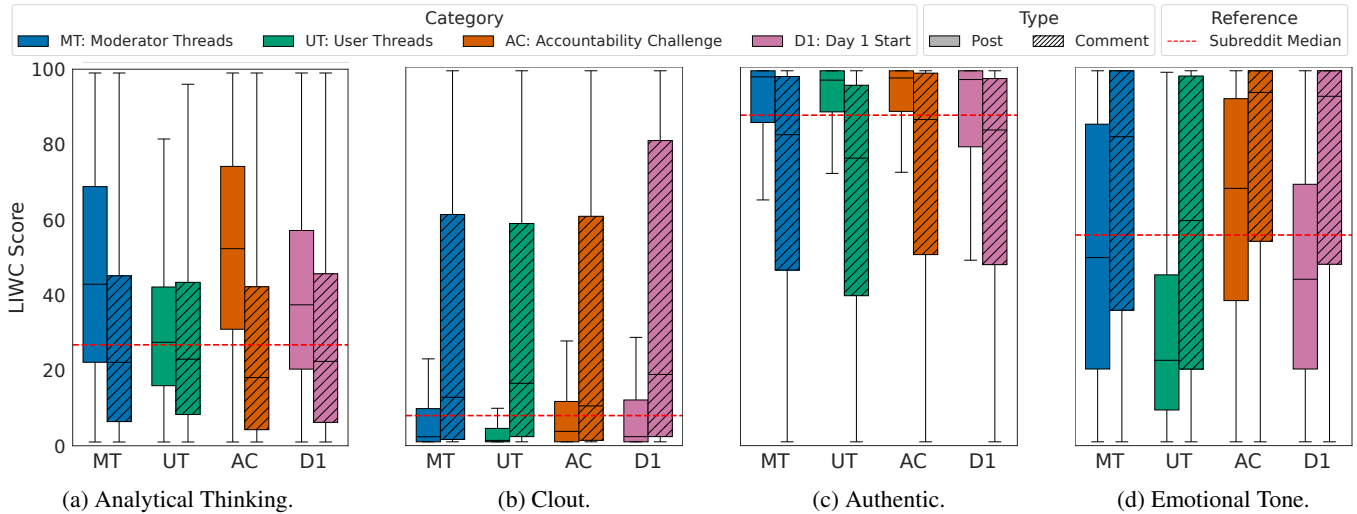


Figure 2: LIWC values for moderator and user threads. *Accountability Challenge* and *Day 1 Start* contributions (posts [left] vs comments [right]), compared to *r/loseit* baseline (dashed line).

sic information about the purpose of the thread and includes a list of references to other relevant threads (Fig. 1). The majority of the moderator threads are started by the *Auto-Moderator* user. However, in some cases (e.g., “Accountability Challenge” or “Century Club” threads), moderators start threads with their own usernames. Hence, we extract moderator threads as either threads started by *AutoModerator* user or threads matching one of the 13 moderation titles⁷. After extracting moderator threads, we categorize them into six topics according to their title. In particular, we combine “Motivation Monday”, “Tantrum Tuesday”, “Track Thursday”, “Free Talk Friday”, and “Foodie Friday” into a single topic called “Weekly Thread” and “SV/NSV Victory”, “Weigh-In Wednesday” and “Century Club” into “Moderator Progress Updates” while keeping “24-Hour Pledge”, “Accountability Challenge”, “Daily Q&A” and “Day 1 Start” as individual moderator topics. We also exclude “Directory”, containing just information about subreddit structure, from further analysis. Lastly, we assign comments and user posts to the topics of their threads (see Appendix, Table 1 for the descriptions with the statistics of moderator topics). **User threads.** *r/loseit* does not enforce strict rules on the content of user threads, they should only be strictly related to weight loss⁸. To gain more insight into the content of user threads, we use topic modeling. In particular, we extract user topics with BERTopic (Grootendorst 2022). We start by generating embeddings for the title and the body of each post with *GIST-small-Embedding-v0* model⁹, which is a zero-shot lightweight model with an excellent performance on

clustering tasks¹⁰. Next, we use UMAP dimensionality reduction for embeddings with 15 neighbors, minimal distance of zero, five components, and cosine similarity as the metric. Lastly, for clustering we utilize K-Means finding the optimal number of clusters by iterating over two to seven clusters and evaluating the clustering quality with the silhouette score. We obtain the highest score (0.355) with six clusters signaling a good clustering quality. To obtain the most representative words for individual topics we remove english stop words, most frequent words appearing in more than 75% of the posts, and words identified by the BERTopic custom TF-IDF model as the most frequent words. Lastly, we name topics by analyzing their representative words and sample contributions. We obtain six topics for user threads including “Motivation and Progress”, “Calories and Tracking”, “Nutrition and Diet Choices”, “Body Image and Appearance”, “Cravings and Eating Struggles”, and “Exercise and Fitness”. We merge “Calories and Tracking” and “Nutrition and Diet Choices” into single “Calories and Nutrition” topic. Similar to moderator threads, we assign user comments to their corresponding topics. We show the topic description and their basic statistics in Table 1 and their most representative words as bar charts in Figure 8 in Appendix.

Linguistic features. To learn more about the language and communication tone in *r/loseit*, we compute linguistic features from user contributions with Linguistic Inquiry and Word Count (LIWC-22), a dictionary-based tool for analyzing grammatical, linguistic, psychological, and social dimensions of language (Boyd et al. 2022). While LIWC-22 comprises over 100 dimensions, it also provides four summary variables: analytical thinking (logical and formal thinking), clout (language of leadership and status), authenticity (perceived honesty and genuineness), and emotional tone (degree of positive tone). We calculate these four sum-

⁷24-hour pledge, motivation monday, sv/nsv, q&a, day 1 start, tantrum tuesday, weigh-in wednesday, track with me thursday, directory, foodie friday, free talk friday, accountability challenge, century club

⁸<https://www.reddit.com/r/loseit/wiki/guidelines/>

⁹<https://huggingface.co/avsolatorio/GIST-small-Embedding-v0>

¹⁰<https://huggingface.co/spaces/mteb/leaderboard>

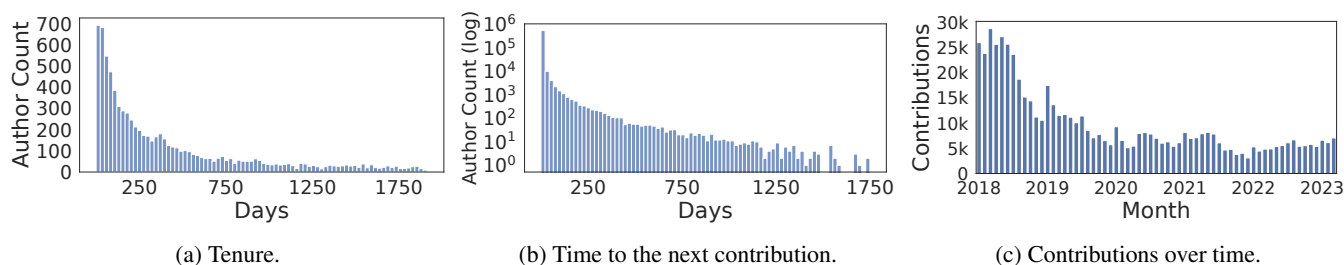


Figure 3: User tenure and activity. While majority of users are active for less than a year, some participate for more than four years (a). Vast majority of users post within a day from a previous posts (b), resulting in a skewed distribution. Over time, contributions decline, with yearly spike each January, most likely due to New Year resolutions (c).

mary variables for all user contributions, and show the results in Figure 2 for posts and comments in moderator and user threads, and separately for *Accountability Challenge* and *Day 1 Start* topics. We also show the community baseline (median) for all features as the dashed red line.

Posts exhibit higher analytical thinking than comments (Fig. 2a), particularly in moderator threads, likely reflecting a more formal structure. *Accountability Challenge* posts show slightly higher analytical levels than *Day 1 Start*, suggesting more structured goal tracking, while comments are lower. While all posts fall below the community baseline, posts in moderator threads show higher clout than those in user threads (Fig. 2b), particularly in *Day 1 Start* and *Accountability Challenge*, possibly due to users announcing new weight-loss journeys in these threads with a more confident tone. Comments exhibit a wider range of clout values. Next, all posts show higher level of authenticity than comments (Fig. 2c), though both are relatively high, suggesting generally sincere discussions. Finally, posts are less positive in tone than comments (Fig. 2d), indicating the community’s supportive responses. *Accountability Challenge* posts and comments are the most positive, potentially resulting from more successes due to accountability. Generally, posts in user threads are less positive than posts in moderator threads, likely reflecting struggles and challenges of weight loss.

Flair Extraction

In our dataset, 303,909 (93%) users have a flair, covering 2,473,086 (95%) contributions. A typical flair may look something like: “25M 5’9” SW:225 CW:200 GW:160 Desk Job with jogging habit”¹¹. Weights are reported in both pounds (lbs) and kilograms (kg). Despite the recommended format, some users also use flairs such as “New” or “20lbs lost”, omitting other information.

For our analysis, we automatically extract age, height, gender, SW, CW, and GW from user flairs. We start by randomly sampling 100 flairs and manually annotating them to obtain a ground truth dataset. Next, we use regular expressions (Regex) and a large language model (LLM) for automatic flair extraction. With Regex, we search for weight-related abbreviations (e.g., *SW*, *starting*, *CW*, *current*, *GW*,

goal, *UGW*), extract age and gender when both a numerical value and a gender marker (M or F) are present, and detect height by searching for numerical values alongside a recognized unit (metric or customary). For our LLM approach, we use *Mistral-7B-Instruct-v0.3* model¹² due to its instruction tuning. With a few-shot prompting approach, where we define several flair-output examples, we extract desired fields from each user flair. In both the Regex- and LLM-based approaches, when no weight unit is specified, we infer kilograms for values below 60 and pounds for values above 300.

Using our approaches, we extract SW, CW, and GW from 537,404 (Regex) and from 550,796 (LLM) contributions. As we only focus on CW in our regression analysis, we also extract this field only. In this case we are able to extract CW from 751,559 (Regex) and from 744,101 (LLM) contributions. To further reduce errors from unit conversion, typos, or misclassifications (e.g., pounds interpreted as kilograms), we keep only physiologically realistic adult body weights (40 to 300 kg). Using these initial results, we also create two ensemble approaches where we use either Regex or LLM approach as a primary approach and fallback to the other one if the primary extraction fails. Lastly, we also compute averages of Regex and LLM approaches, omitting gender if the approaches disagree. We measure the accuracy of each approach by comparing their results to the ground truth dataset (see Tab. 2 in Appendix). The ensemble with LLM as the primary approach performs best on the ground truth dataset, achieving 74% accuracy across all fields, 85% for weight fields, and 92% for CW. On these extraction results, we apply a 98% winsorization per user to remove potential outliers. In total, we extract CW field from 778,704 (31.5%) contributions posted by 24,907 users for further analysis.

Community Practices and Weight Loss

Data Preparation

We continue data preparation for regression analysis by first excluding users with duplicate posts to remove potential bots and indentifying and removing 17 community moderators. As we use a two-way fixed effects regression, we require users to have a tenure of at least two days, a minimum of 10 posts, and participation in at least two topics. Next, we

¹¹https://www.reddit.com/r/loseit/wiki/guidelines/wiki_including_your_stats

¹²<https://huggingface.co/mistralai/Mistral-7B-Instruct-v0.3>

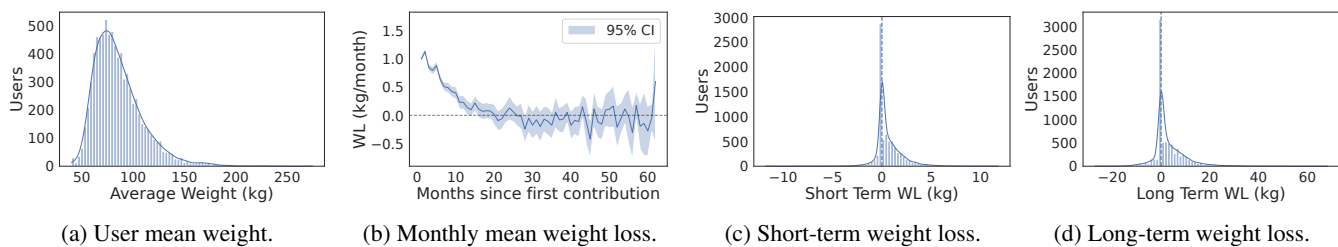


Figure 4: User weights. Majority of users weigh between 80 and 100 kg (a). The weight loss rate slows down with user tenure (b). Most of the users lose weight in the short-term, with majority of those losing around one kg. No change: 34.4% of users (c). Majority of users lose weight in the long-term, calculated as the difference between the user first and last weight. Some users lose up to 40kg. No change: 37% of users (d). Positive values indicate larger weight loss.

impute missing LIWC values using metric means. To identify implausible weight changes due to errors or long posting gaps by infrequent users, we exclude users with consecutive weight changes above the 99.9th or below the 0.1st quantile (approximately ± 12 kg). After these steps, 8,085 unique users remain, with 611,502 contributions.

Users. Most users engage with up to five of the 11 topics. Overall, 69% of users contribute to moderator threads at least once, with only 0.82% participating exclusively in moderator threads. Both user tenure and activity frequency (cf. Fig. 3) show positively (right) skewed distributions. Users have a median tenure of 232 days, indicating that most remain active for over seven months, while some users remain active for more than four years, potentially reflecting large starting weights, setbacks, or continued participation as supporters after weight loss. Posting frequency varies over time, yet 75% of users post multiple times within a single day at least once. On average, users make nine contributions per month, with the top quartile contributing ten or more. A total of 1,431 users (17.7%) participate more frequently in moderator threads than in user threads, calculated over individual months of user tenure. Additionally, we inspect retention and engagement intensity during the first year of activity (Appendix Tab. 3). Retention declines steadily over the first 12 months, with 13.8% (1,123) of users remaining active for a full year. Activity is the highest early on and then decreases, with the average number of total contributions decreasing from around 14 in the first two months, to 8.62 by the twelfth month. Participation in moderator threads also declines but more slowly, from 4.20 to 3.48 contributions on average. Overall, these results indicate a pronounced early churn but with a more stable user participation in moderator threads.

Contributions. On average, users have 71 contributions (standard deviation, $\sigma = 213.5$), mostly comments (523,434; 85.6%). Out of 88,068 posts, only 2.3% start user threads, showing that users typically write posts in moderator threads. However, most contributions are made in user threads (387,904; 63.4%), compared to 223,598 (36.6%) in moderator threads which comes from commenting behavior. Half of the users only comment without initiating discussions with their own posts. Contributions decline over the years but show a recurring spike each January, possibly due to New Year resolutions (Fig. 3c). On average, posts receive

5.1 comments ($\sigma = 20.7$), whereas comments receive only 0.95 replies ($\sigma = 2.5$). This difference partly reflects our data restriction: we keep only posts with at least three comments, while no such requirement applies to comments.

Weight characteristics. On average (we compute the macro average, i.e., user average over time and then average of the user averages), users weigh 85.6kg ($\sigma = 23.9$), and the distribution is lightly positively skewed (Fig. 4a). Still, 75% of users weigh up to 100kg. The rate of weight loss tends to slow down over time. In Figure 4b, we notice the decline in the monthly weight loss as the user spends more time in the community. There is an initial spike in weight loss when user joins the community, that after approximately one year of tenure declines with higher variance. This pattern may reflect users who require more time to lose weight, as well as users who re-engage with the community after unsuccessful attempts. Hence, we observe a difference in *short-term* and *long-term* weight loss of *r/loseit* users. To quantify this difference, we measure short-term weight loss as a weight change over a 30-day period and long-term weight loss as the difference between the user weight on their last and their first contribution.

In the short-term, 53.4% users lose weight, 12.2% gain weight, while 34.4% keep their starting weight. Of those users who lose weight, the micro average short-term weight loss is 1.46kg ($\sigma = 1.4$), with one fourth users losing around two kilos or more (cf. Figure 4c for the distribution of the short-term weight loss). While approximately one third of users do not achieve long-term weight loss, weight loss typically takes place early in user tenure (cf. Figure 4b). Among users who lose weight at least once in their tenure, 76% lose weight in the first month of activity. This indicates existence of “early achievers”, who lose weight quickly, and of “supporters”, who need more time to lose weight or who do not lose weight at all, but who provide support to others. Among users who lose weight at least once, half of the users lose weight in at least 33% of their active months. In the long-term, 51.4% users exhibit a modest weight loss, while 11.6% gain weight, and 37% do not change weight. On average, users lose 3.16kg ($\sigma = 6.5$), with 25% losing more than 5.5 kilos (cf. Figure 4d). Considering only users who lose weight, those users lose 7.16kg on average ($\sigma = 6.5$), with 25% losing more than 9.5 kilos.

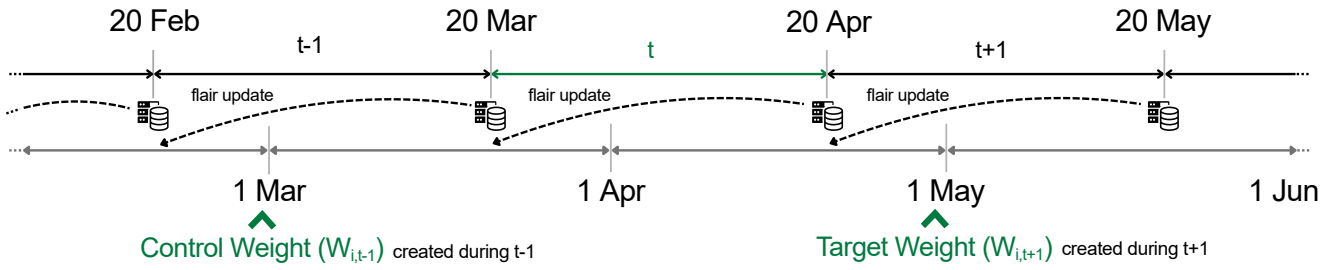


Figure 5: Study design. For time window t , we aggregate data from March 20 until April 20 (exclusive). For control weight we use the weight from the user’s last post in February, as February weights are scraped on March 20 and include all the changes made between February 20 and March 20 (exclusive) in the time period $t - 1$. Target weight is the last weight in April, as it was scraped on May 20 and includes all the flair changes made between April 20 and May 20 (exclusive) in the time period $t + 1$.

Study Design

To model short-term weight loss, we align our temporal units to the scraping schedule rather than calendar months (as the observed flair may reflect updates made after the original contribution date) and define observation windows spanning from the 20th of one month to the 19th of the next month. Specifically, to analyze the data from the time period t (e.g., March 20 to April 19), we work with (a) target weight collected at May 20 as this weight reflects all the changes in the time period $t + 1$ between April 20 and May 19, (b) control weight collected at March 20 as this is the final weight in the time period $t - 1$ between February 20 and March 19, and (c) all posting data collected in the time period t , which typically does not change with time (cf. Figure 5).

To understand the relation between community practices and the short-term weight loss, we further restrict our analysis only to users with the tenure of at least 12 months, resulting in 1,573 users. Our setup has several key advantages:

- **Comprehensive monthly engagement.** By aggregating activity over 30-day windows we capture user overall engagement patterns, including both posting and commenting behavior, rather than relying on isolated interactions.
- **Time-related measurement.** We calculate weight changes over fixed 30-day intervals, which ensures that sufficient time has passed for the weight loss to occur, while remaining sensitive to changes in engagement and participation in community practices.
- **Inclusion of infrequent posters.** We cover users with varying engagement levels within one month, including both active and sporadic users. In contrast, shorter time windows would potentially exclude low-frequency users, biasing the sample towards high-frequency posters.

In contrast to short-term weight loss model, where we relate community practices to temporally proximate weight outcomes, to model long-term weight loss we focus on lasting outcomes resulting from sustainable practices by removing temporary short-lived weight oscillations.

Regression Models for Short-Term Weight Loss

We aggregate various aspects of activity for each user i in every time window t of their tenure, and use their weight

$W_{i,t+1}$ from the CW flair from the next time window $t + 1$ as the target variable. With this setup, we mitigate reverse causality (e.g., a user loses weight and then posts about it), as we have a clear temporal sequence of events. To estimate the relationship between moderation and the weight outcome, we define two independent variables as $M_{i,t}^a$, counting the total number of contributions in moderator threads (including both posts and comments), and $M_{i,t}^p$, which counts the number of posts in moderator threads per user and time window. To examine how different types of moderation are associated with weight change, we additionally define granular categorical variable $T_{i,t}^p$, which encodes the number of posts in individual topics of both moderator and user threads. Also, we logarithmically transform the target variable and interpret the estimated coefficients as percentage changes in the user current body weight, allowing us to compare the regression results over users with different body weights.

Additionally, we account for fixed individual features (e.g., baseline weight independent of the flair, demographic factors, motivation) and fixed temporal features (e.g., seasonal changes, community trends), by estimating two-way fixed-effects regressions at the level of our time windows and individual user, which we model as user fixed effects (α_i) and time fixed effects (δ_t). Lastly, to isolate the relation between discussion topics and the short-term weight loss, and to account for effects not captured by the fixed effects, we include the following control variables:

- **Control weight ($W_{i,t-1}$):** captures the user’s current weight trajectory. We define it as the last observed weight in the month preceding the window.
- **Cumulative prior activity ($A_{i,t}$):** controls for the total number of contributions made up to month t , accounting for user experience and knowledge about community practices.
- **Activity in user threads ($U_{i,t}^a$):** counts the total number of contributions in user threads, controlling for engagement intensity other than moderated participation.
- **Posts in user threads ($U_{i,t}^p$):** controls for the total number of posts in user threads.
- **Community response:** models potential motivational effects from community responses, which are on average

more positive than posts (cf. Fig. 2d), by using total linguistic features of comments ($\mathbf{L}_{i,t}^c$) and number of received comments for contributions in moderator-created and user-created threads ($M_{i,t}^c, U_{i,t}^c$).

- **Linguistic features ($\mathbf{L}_{i,t}^a$):** Captures linguistic features modeling tone, authenticity, clout, and analytic aspects of user contributions.

Moderator vs. user threads. We test whether user contributions in moderator threads are associated with short-term weight loss.

$$\begin{aligned} \log(W_{i,t+1}) &= \beta_1 \log(W_{i,t-1}) + \beta_2 \log(A_{i,t}) \\ &+ \beta_3 \log(U_{i,t}^a) + \beta_4 \log(U_{i,t}^p) \\ &+ \beta_5 \log(M_{i,t}^c) + \beta_6 \log(U_{i,t}^c) \\ &+ \gamma_1 \mathbf{L}_{i,t}^c + \gamma_2 \mathbf{L}_{i,t} \\ &+ \theta_1 \log(M_{i,t}^a) + \theta_2 \log(M_{i,t}^p) \\ &+ \alpha_i + \delta_t + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

where γ_1 and γ_2 are vectors of coefficients for linguistic features, and θ_1 and θ_2 represent our coefficients of interest. **Topic-specific analysis.** We also estimate whether topics in moderator and user threads are associated with weight loss.

$$\begin{aligned} \log(W_{i,t+1}) &= \beta_1 \log(W_{i,t-1}) + \beta_2 \log(A_{i,t}) \\ &+ \beta_3 \log(U_{i,t}^a) + \beta_4 \log(M_{i,t}^a) \\ &+ \beta_5 \log(U_{i,t}^c) + \beta_6 \log(M_{i,t}^c) \\ &+ \gamma_1 \mathbf{L}_{i,t}^c + \gamma_2 \mathbf{L}_{i,t} \\ &+ \boldsymbol{\theta} \log(T_{i,t}^p) \\ &+ \alpha_i + \delta_t + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

where $\boldsymbol{\theta}$ is a vector of coefficients for individual topics, and γ_1 and γ_2 are as in Eq. 1.

Regression Models for Long-Term Weight Loss

To determine association of moderation with long-term weight loss, we fit a linear regression by aggregating all of our variables over time and users. Additionally, we add user tenure in days (logarithmically transformed) as another control variable. In these regressions, we use the first recorded weight of a user as control weight and utilize the final user weight as the target variable.

Results

We begin by estimating regression models that include all control variables (Appendix Tables 5, 7, 9 and 11). As linguistic variables are not significantly associated with weight loss in any of our models, we omit them from subsequent models to improve parsimony. We now report and discuss the results of these reduced models only (see Tables 6, 8, 10 and 12 in the Appendix for the full results).

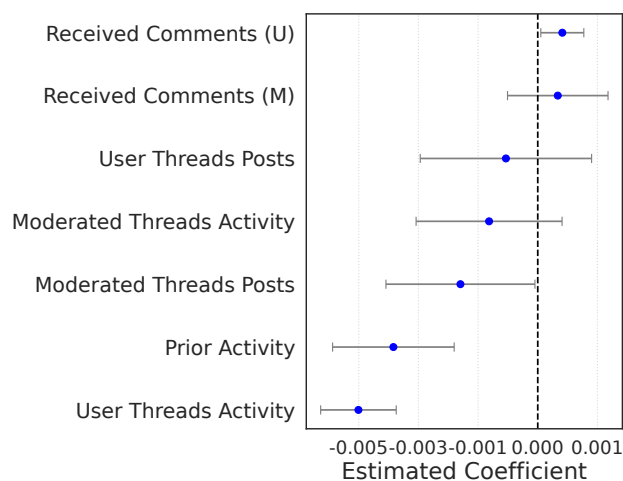
Participation in moderated threads. We find that posting in moderator threads is associated with smaller weight ($\beta = -0.0019$, $p = 0.042$) in the short-term, see Figure 6a. On the other hand, posting in user threads is not significantly associated with user weight. General activity in

moderator threads does not show a significant association with user weight ($\beta = -0.0012$, $p = 0.192$), while general activity in user-created threads shows the strongest association with weight loss ($\beta = -0.0045$, $p < 0.001$). However, the number of received comments in user-threads contributions is associated with higher user weight ($\beta = 0.0006$, $p = 0.025$). In the long-term, neither posting ($\beta = -0.0067$, $p = 0.115$), nor being otherwise active in moderated threads ($\beta = -0.0111$, $p = 0.066$) is significantly associated with the final weight, but both show a negative trend, see Figure 7a. Prior weight shows the strongest positive association with the weight loss (cf. Tables 6 and 10 in Appendix) for both short-term and long-term weight loss (we omit these coefficients from Figures 6 and 7 for presentation reasons).

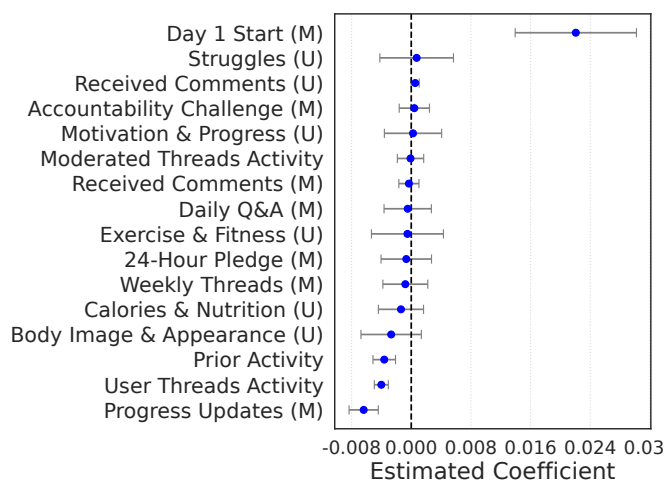
Moderation topics. *Moderator Progress Updates* show a significant negative association with weight in the succeeding month ($\beta = -0.0064$, $p < 0.001$), indicating weight loss (cf. Fig. 6b). By contrast, posting in *Day 1 Start* is associated with significantly larger weight in the following month ($\beta = 0.0221$, $p < 0.001$). User threads show no significant association with user weight, only *Body Image and Appearance* and *Calories and Nutrition* show a negative trend. The results are similar but amplified in the long-term. Posting in *Moderator Progress Updates* shows the highest association with a lower final weight ($\beta = -0.0253$, $p < 0.001$), followed by user thread *Body Image and Appearance* ($\beta = -0.0197$, $p = 0.014$). In the long-term, *Motivation and Progress* user threads exhibit a negative, but insignificant, trend with weight ($\beta = -0.0131$, $p = 0.051$). *Day 1 Start* remains associated with significantly larger weight ($\beta = 0.0309$, $p < 0.001$). Similarly, *24-Hour Pledge* is also associated with weight gain ($\beta = 0.0207$, $p < 0.001$), as opposed to short-term. Moreover, moderated *Weekly Threads* also show significant association with larger final body weight ($\beta = 0.0111$, $p = 0.026$). User threads *Exercise and Fitness* are also significantly associated with weight gain ($\beta = 0.0183$, $p = 0.02$), followed with, although insignificant, *Struggles* ($\beta = 0.0158$, $p = 0.076$). Prior weight shows the highest positive association with weight, and we omit it from Figures 6 and 7.

Predictive effect sizes. In our two-way fixed-effects regressions for short-term weight loss, we interpret the estimated coefficients as the predictive effects of their corresponding features relative to the individual and temporal baselines (fixed-effects-adjusted intercepts). On the other hand, for long-term weight loss we fit ordinary linear regressions at the user level and interpret the coefficients as average predictive effects across users.

Further, as we transform both the target and control weight, as well as activity variables logarithmically, the estimated coefficients can be interpreted as elasticities, i.e., approximate percentage changes in body weight for one percent change in the corresponding variable. For example, one percent increase in the number of posts in moderator threads is associated with an average weight reduction of about 0.0019%, while one percent increment in number of *Moderator Progress Updates* posts is associated with an average weight reduction of approximately 0.0064%, or one percent increase in number of *Day 1 Start* posts is associated



(a) Moderator vs. user threads.



(b) Topic specific analysis.

Figure 6: Estimated regression coefficients of selected variables for short-term weight loss. Posting in moderator threads is associated with lower body weight in the following month (left). On the right we present the association of individual moderation topics with weight loss. *Moderator Progress Updates* is associated with a greater weight loss, and *Day 1 Start* with weight gain. Letters next to the thread name indicate whether it is a moderator (M) or user (U) thread.

with an average weight increase of approximately 0.022%.

Although these effects might seem modest, when weight changes are computed over 30-day periods, the effect sizes are also practically relevant. For example, for a user weighing 100kg, a coefficient of -0.0064 corresponds to an average weight loss of approximately 6.4g for every 1% increase in posts in *Moderator Progress Updates*. If a user posts once per week in this topic, and then increases to posting twice per week (200% increase), this corresponds to a weight reduction of roughly 1.28kg over a month. Moreover, in the case of long-term weight loss, for a user weighing 100kg, a coefficient of -0.0253 corresponds to a weight loss of approximately 25.3g per 1% increase in the *Moderator Progress Updates* posts. Hence, posting two times more in this thread, results in a predicted decrease of approx. 5kg in weight.

Robustness check. Our short-term results are consistent across alternative minimum user tenures; six (1,645 users), nine (1,645 users), 15 (1,405 users) or 18 (1,251 users) months. In all these cases, posting in moderator threads is significantly associated with lower weight in the following month. In addition, *Moderator Progress Updates* remains significantly associated with weight loss. Similarly, *Day 1 Start* remains strongly associated with weight gain.

Discussion

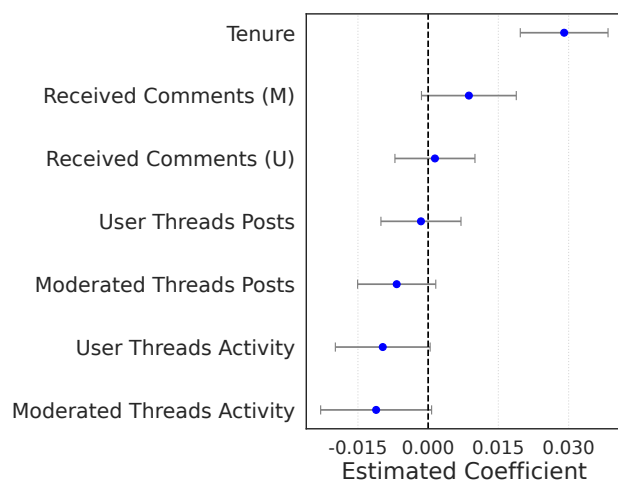
The relatively large positive coefficient on the prior (starting) weight reflects both baseline weight differences and the slow nature of weight loss. Users with higher body weights tend to also have higher weight next month, as weight loss typically occurs gradually rather than instantaneously. Additionally, users participating in the subreddit lose or gain weight independent of their community activity. However,

our results demonstrate that even after accounting for the current user weight momentum, participation in moderator threads, especially ones promoting progress updates, is associated with an increased weight loss in both short-term and long-term. This reinforces the interpretation that engaging in structured community practices, such as posting regular updates, asking questions, or joining a challenge, matters the most. The consistent associations observed across moderated threads suggest that public accountability mechanisms and community support play a central role in reinforcing and sustaining behavior change. Our analysis is conditional on user engagement and captures weight changes among users who actively and intentionally participate in community practices on a monthly basis, regardless of the exact timing of their contributions within the month.

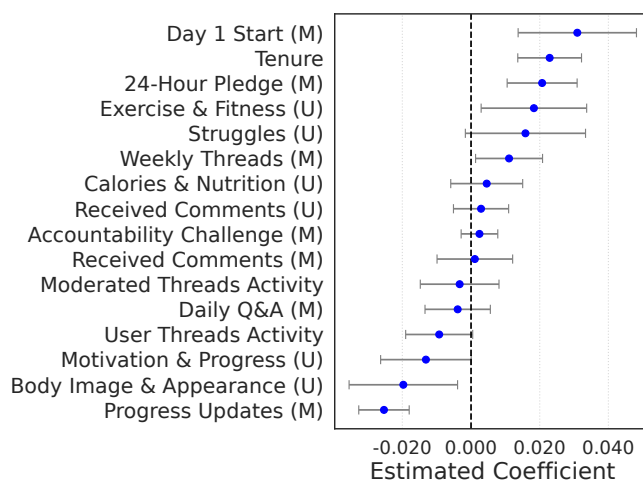
Starting less structured user threads by creating posts does not show a statistically significant association with weight loss. Yet, overall activity including both posts and comments in user threads is associated with lower weight. This suggests that creating unstructured user threads captures a wider range of motivations and states, which relates to more fluctuating weight outcomes. However, participating in already existing user threads might potentially appeal to users with good weight loss trajectories to share their advice.

Taken together, these findings indicate that while general activity is associated with weight loss, posting in specific moderated threads is related to more consistent weight change. Moderation appears to encourage users to have a structured plan, providing a framework that helps users stay on track, whereas posting in user threads is associated with greater variability in outcomes. Moderation encourages consistency, and provides a space for users to accomplish that.

For both moderated and user posts, the estimated effect sizes are relatively small, showing that weight loss is time-



(a) Moderator vs. user threads.



(b) Topic specific analysis.

Figure 7: Regressions coefficients for long-term weight loss. Posts in moderator threads show an insignificant trend with lower body weight (left). On the right we present the association of each individual thread with weight loss. Posting in *Moderator Progress Updates* is associated with lower weight, together with posting two user threads: *Body Image and Appearance* and *Motivation and Progress*. Letters next to the thread name indicate whether it is a moderator (M) or user (U) thread.

intensive process. Importantly, these effects are cumulative: an increase in the post volume within a month is associated with incremental percentage decrease in user body weight. However, different moderated thread topics exhibit opposing associations with weight outcomes, with some threads being associated with lower subsequent weight and others with higher weight. When aggregated into a single measure of moderated posting and activity, these opposing associations partially offset one another, yielding a small overall coefficient, marginally significant in the short-term and statistically insignificant in the long-term. Hence, topic-specific models therefore provide a more accurate representation of the relationship between moderation and weight change.

Participants in *Moderator Progress Updates* exhibit the largest weight losses. This is consistent with prior research supporting the idea that sharing one’s progress (e.g., journaling, weekly updates) improves adherence to weight loss programs and leads to greater long-term weight loss (Evans et al. 2016). Likewise, self-monitoring and recording both diet and exercise is consistently associated with more weight loss (Wang et al. 2012). *Moderator Progress Updates* threads function as structured self-monitoring and public progress reporting tools for dieters to stay on track.

Weekly Threads show a negative non-significant trend with weight in the short-term, but are positively associated with the decrease in weight in the long-term. This is in line with *Moderator Progress Updates*, as both promote regular and consistent activity within the community.

On the contrary, *Day 1 Start* threads are associated with subsequent weight gain. The idea of making a public commitment is well-supported by behavior change research. People who create a verbal or written commitment, witnessed by other people, without material incentive, lose more weight (Coupe et al. 2019). However, this relies on the

assumption that such announcements are made only once, which is the intended purpose of those moderated threads. Users who post in these threads only once may be more likely to follow their weight loss program, whereas repeated announcements may indicate challenges in sustaining initial motivation. In our dataset, 4.6% users posted in *Day 1 Start* more than once. Repeated posting in those threads likely shows users “starting over” multiple times and may capture difficulties in adhering to the weight loss process rather than progress itself. Consequently, increased number of “fresh start” posts is associated with increased body weight, suggesting delayed or hindered progress. This interpretation is further supported by prior work suggesting that public goal announcement can reduce the likelihood of achieving them, as the announcement itself may provide a premature sense of accomplishment (Gollwitzer et al. 2009). If motivation is extrinsic (e.g., social approval) rather than intrinsic (e.g., health), this approval can be gained immediately after the announcement, leading to a drop in motivation.

User threads focused on *Struggles* show a positive trend with future body weight. Users posting in these threads likely discuss a wide range of experiences. Some may write about setbacks in their weight loss journey, which may result in short-term weight gain. Others may use these threads to vent and seek emotional support, which in return help them overcome difficulties and resume weight loss. *Exercise and Fitness* threads show an association with long-term weight increase. Combining exercise and diet is generally the recommended weight loss strategy, and results in weight loss. However, the association with weigh gain may also reflect that exercise alone is less effective for weight loss than diet alone (Johns et al. 2014), or that users struggle to adhere to physical activity (Call et al. 2020).

In general, long-term weight loss persists as a challenge,

with many people struggling to maintain their weight loss even after achieving it. Individuals may regain around one third of the weight loss in the year after treatment, with many even returning to their starting weight by five years (Wadden, Butryn, and Byrne 2004). Continuing treatment, peer support and extended behavioral therapy following the successful weight loss make weight maintenance easier and achievable to more people (Lang and Froelicher 2006).

While most previous research aligns with our results, it is important to acknowledge that similar approaches can also produce negative outcomes. For example, “commitment overload” is a concept where already challenging health goals become demotivating due to commitment itself (Coupe et al. 2019). Furthermore, seeking knowledge can also backfire if the information is poor or incorrect, and online health content is often of low quality (Kabata et al. 2022). Excessive information may overwhelm users, making it harder to commit to a specific plan. In this community, moderators and experienced members might correct misinformation, though information overload may explain the weaker effects in information-focused threads.

In summary, we focus on a voluntary and supportive community with active moderation, which may be a suitable environment for these strategies to succeed. Taken together, the findings suggest that moderator threads provide a helpful and beneficial space for users to begin and sustain their goals.

Limitations and Future Work

While *r/loseit* is a large and active community, it represents only one subreddit on Reddit, and its practice and users may differ from those in other online weight loss, well-being, and goal-setting communities. Future research could examine additional communities to assess whether our findings generalize across platforms and practices, such as other weight loss communities, or fitness, addiction, and other health well-being related communities. Furthermore, all weight information is self-reported, requiring users to manually update their flairs. This introduces potential bias and inaccuracies, as users may misreport values or only report them when they are successful. Although we assume that users actively engaged in their weight loss journey regularly update flairs, and try to reduce extraction errors, errors remain plausible. Moreover, due to inability to precisely extract height for majority of users, we are unable to control for Body-Mass-Index of individual users. We also treat user entire tenure as a single weight loss journey. Although we try to mitigate the effects of potential breaks and inactivity, some unusual behavior might persist. In addition, some users might stop losing weight but continue contributing to community. Future work could incorporate “Goal Weight” from flairs or identify announcements of reaching target weight, or investigate how users switch to a “supporter” role. Moreover, we require at least 10 posts per user to ensure statistically sound regression inference, excluding users who drop out early, possibly due to lack of success. Hence, results reflect the experience of more engaged users. Although our monthly design relates the change in weight loss to total amount of activity per topic, it does not completely isolate the effect

of a single topic. Users are active in many topics throughout the month, and weight differences may also reflect the participation in multiple topics concurrently. Estimates should therefore be interpreted as average associations with participation in each topic rather than isolated causal effects. Finally, our models identify associations rather than causal effects. Unobserved offline behaviors, such as diet or exercise, likely contribute to weight loss and may influence participation in specific topics, creating potential reverse causality. While we attempt to mitigate these factors with fixed effects and a range of control variables, the study design remains limited.

Conclusion

In this work, we examine how participation in moderator threads in Reddit’s largest weight loss community, *r/loseit*, is associated with weight loss. We present one of the largest recent observational analysis of an online weight loss community, with data from 1,500 users over six years. Our results show that users participating in moderator threads consistently lose weight. Proactive moderation and community practices, centered around consistency, accountability and goal-setting, can shape health-related behaviors. Methodologically, we combine LLM- and Regex-based weight extraction, topic modeling, linguistic analysis, and two-way fixed-effects regressions, demonstrating how to utilize social media data to study health outcomes at scale. By conducting an observational study, we capture nuances that experimental designs often miss. Taken together, our findings suggest that online communities can actively support weight loss and behavioral change. Community designers and moderators may benefit from introducing structured threads that promote accountability, consistency, and goal-setting, while communities lacking moderation could introduce proactive moderators. Small design choices, such as recurring moderator posts, can improve user health outcomes, leading to a healthier society.

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Paper Checklist

1. For most authors...
 - (a) Would answering this research question advance science without violating social contracts, such as violating privacy norms, perpetuating unfair profiling, exacerbating the socio-economic divide, or implying disrespect to societies or cultures? **Yes.**
 - (b) Do your main claims in the abstract and introduction accurately reflect the paper’s contributions and scope? **Yes.**
 - (c) Do you clarify how the proposed methodological approach is appropriate for the claims made? **Yes.**
 - (d) Do you clarify what are possible artifacts in the data used, given population-specific distributions? **Yes.**
 - (e) Did you describe the limitations of your work? **Yes, see Discussion.**
 - (f) Did you discuss any potential negative societal impacts of your work? **We believe there are no foreseeable negative societal impacts in understanding support communities.**
 - (g) Did you discuss any potential misuse of your work? **No.**
 - (h) Did you describe steps taken to prevent or mitigate potential negative outcomes of the research, such as data and model documentation, data anonymization, responsible release, access control, and the reproducibility of findings? **Yes**
 - (i) Have you read the ethics review guidelines and ensured that your paper conforms to them? **Yes**
2. Additionally, if your study involves hypotheses testing...
 - (a) Did you clearly state the assumptions underlying all theoretical results? **NA**
 - (b) Have you provided justifications for all theoretical results? **NA**
 - (c) Did you discuss competing hypotheses or theories that might challenge or complement your theoretical results? **NA**
 - (d) Have you considered alternative mechanisms or explanations that might account for the same outcomes observed in your study? **NA**
 - (e) Did you address potential biases or limitations in your theoretical framework? **NA**
 - (f) Have you related your theoretical results to the existing literature in social science? **NA**
 - (g) Did you discuss the implications of your theoretical results for policy, practice, or further research in the social science domain? **NA**
3. Additionally, if you are including theoretical proofs...
 - (a) Did you state the full set of assumptions of all theoretical results? **NA**
 - (b) Did you include complete proofs of all theoretical results? **NA**
4. Additionally, if you ran machine learning experiments...
 - (a) Did you include the code, data, and instructions needed to reproduce the main experimental results (either in the supplemental material or as a URL)? **Yes, we include the link to code and provided methodology details to reproduce our results. We did not include the data, as Reddit changed their terms of service and no longer allows distribution of their data¹³.**
 - (b) Did you specify all the training details (e.g., data splits, hyperparameters, how they were chosen)? **Yes, we specify all used models and tools, and how we get the ground truth dataset.**
 - (c) Did you report error bars (e.g., with respect to the random seed after running experiments multiple times)? **NA**
 - (d) Did you include the total amount of compute and the type of resources used (e.g., type of GPUs, internal cluster, or cloud provider)? **No, our analysis can be run on any state-of-the-art CPU**
 - (e) Do you justify how the proposed evaluation is sufficient and appropriate to the claims made? **Yes, we explain evaluation of flair extraction method in Flair extraction subsection, and clearly explain the limitation of causal setup in Limitations subsection**
 - (f) Do you discuss what is “the cost” of misclassification and fault (in)tolerance? **Yes, in Limitations subsection**
5. Additionally, if you are using existing assets (e.g., code, data, models) or curating/releasing new assets, **without compromising anonymity...**
 - (a) If your work uses existing assets, did you cite the creators? **Yes**
 - (b) Did you mention the license of the assets? **NA**
 - (c) Did you include any new assets in the supplemental material or as a URL? **Yes, we include the URL to code.**
 - (d) Did you discuss whether and how consent was obtained from people whose data you’re using/curating? **NA. We use publicly accessible Reddit data, where users are by default anonymous. Also, users agreed to Reddit’s Privacy Policy when creating an account.**
 - (e) Did you discuss whether the data you are using/curating contains personally identifiable information or offensive content? **Yes, we explain Reddit is an online anonymous platform.**
 - (f) If you are curating or releasing new datasets, did you discuss how you intend to make your datasets FAIR (see ?)? **NA**
 - (g) If you are curating or releasing new datasets, did you create a Datasheet for the Dataset? **NA**
6. Additionally, if you used crowdsourcing or conducted research with human subjects, **without compromising anonymity...**
 - (a) Did you include the full text of instructions given to participants and screenshots? **NA**

¹³https://www.reddit.com/r/modnews/comments/134tjpe/reddit_data_api_update_changes_to_pushshift_access/

- (b) Did you describe any potential participant risks, with mentions of Institutional Review Board (IRB) approvals? *NA*
- (c) Did you include the estimated hourly wage paid to participants and the total amount spent on participant compensation? *NA*
- (d) Did you discuss how data is stored, shared, and de-identified? *NA*

A Appendix

Topics

We show all identified topics before merging, for all users, in Table 1, with number of posts and comments for each. Next, we show all topics before merging, for the subset of users user in regression analysis, in Table 4, with number of posts and comments for each. Moreover, for user threads, in Figure 8, we show the ten most important words for each.

Flair Extraction

After extracting user flairs, we compare the extraction results against the ground truth dataset. We report the accuracy of each approach in Table 2.

Data Exploration

We show first-year user retention and activity intensity of users for which we have weight information in Table 3

Results

We report full regression results for:

- Estimating association of participation in moderator threads with weight loss; short-term (Tab. 6)
- Estimating association of participation in specific topics with weight loss; short-term (Tab. 8)
- Estimating association of participation in moderator threads with weight loss; long-term (Tab. 10)
- Estimating association of participation in specific topics with weight loss; long-term (Tab. 12)

Topic and Description	Post Count	Comment Count
Moderator-created threads		
Accountability Challenge — Daily check-ins to stay consistent	36,980	51,902
Daily Q&A — Daily open thread for questions	8,388	55,704
SV/NSV Victory — Celebrating scale and non-scale wins	22,386	16,002
24-Hour Pledge — Short-term accountability commitments	4,831	1,127
Day 1 Start — Weekly first-day posts and joining announcements	2,937	3,366
Tantrum Tuesday — Venting frustrations and emotional releases	4,837	8,947
Weigh-In Wednesday — Weekly weigh-in reports	9,847	3,197
Track Thursday — Finding accountability buddies	67	2,575
Motivation Monday — Seeking motivation and motivating other users	1,300	2,080
Free Talk Friday — Open thread for general discussion	577	679
Century Club — For users who’ve lost or need to lose over 100 pounds	774	479
Foodie Friday — Sharing food ideas and recipes	19	8
User-created threads		
Motivation and Progress — Journey updates, reflections	4,337	120,293
Calories and Tracking — Calorie deficits, food tracking	2,536	70,307
Nutrition and Diet Choices — Diets, macros (especially protein)	2,741	93,252
Body Image and Appearance — Physical changes, self-perception	2,464	88,478
Cravings and Eating Struggles — Hunger, binge urges	2,024	54,452
Exercise and Fitness — Training, cardio and strength	1,501	47,773

Table 1: All identified topics in *r/loseit*, for all users, with topic descriptions, post counts, and comment counts, grouped by source (moderator or user).

Metric	Model Accuracy (%)				
	LLM	Regex	P. Regex	P. LLM	Avg
All	26	71	72	74	68
Weight	78	81	83	85	78
Age	86	94	94	94	94
Gender	93	95	96	96	96
Height	36	88	88	88	88
SW	86	95	91	92	88
CW	92	90	91	93	88
GW	90	86	90	92	88

Table 2: Flair extraction performances. We present accuracy (%) across selected prediction metrics for each extraction approach: LLM, Regex, Primary Regex, Primary LLM, Average. Due to its overall highest performance, we opt for primary LLM approach.

Month m	1	2	3	4	5	6	7	8	9	10	11	12
Number of active users	8,085	7,589	6,494	5,397	4,422	3,623	2,995	2,427	1,989	1,645	1,345	1,123
Posts	2.05	2.33	1.81	1.50	1.36	1.34	1.25	1.24	1.15	1.26	1.27	1.05
Contr.	13.60	14.86	11.75	10.32	9.49	9.08	9.12	8.80	8.16	8.41	9.39	8.62
Mod. posts	1.70	2.06	1.62	1.35	1.21	1.22	1.12	1.12	1.06	1.16	1.15	0.96
Mod. contr.	4.20	5.36	4.45	3.96	3.47	3.40	3.53	3.23	3.11	3.35	3.76	3.48

Table 3: First-year user retention and activity intensity. Columns represent m -th month of individual user tenures. We report how many users remain active for at least m months. Remaining rows show the average number of posts, contributions, posts, and contributions in moderated threads.

Topic and Description	Post Count	Comment Count
Moderator-created threads		
Accountability Challenge — Daily accountability check-ins	19,030	37,399
Daily Q&A — Open thread for questions and advice	2,226	34,525
SV/NSV Victory — Celebrating scale and non-scale wins	8,564	8,429
24-Hour Pledge — Short-term commitment and accountability	1,283	492
Day 1 Start — Announcing first day and restarting journeys	358	1,390
Tantrum Tuesday — Venting frustrations and emotional release	1,861	4,037
Weigh-In Wednesday — Regular weigh-in reporting	3,057	1,123
Track Thursday — Finding accountability partners	7	836
Motivation Monday — Motivation-focused discussion	409	675
Free Talk Friday — General off-topic discussion	286	377
Century Club — Users aiming to lose or having lost 100+ pounds	404	673
Foodie Friday — Sharing food ideas and recipes	5	2
User-created threads		
Motivation and Progress — Personal updates and reflections	767	44,159
Calories and Tracking — Calorie counting and food logging	491	31,491
Nutrition and Diet Choices — Diet strategies and macro discussions	660	40,535
Body Image and Appearance — Physical changes and self-perception	537	36,114
Cravings and Eating Struggles — Hunger, cravings, and binge urges	374	21,706
Exercise and Fitness — Cardio, strength training, and activity	351	19,257

Table 4: Identified discussion topics in *r/loseit*, for a subset of users in the regression analysis, grouped by moderator-created and user-created threads, with corresponding post and comment counts.

Topic Word Scores

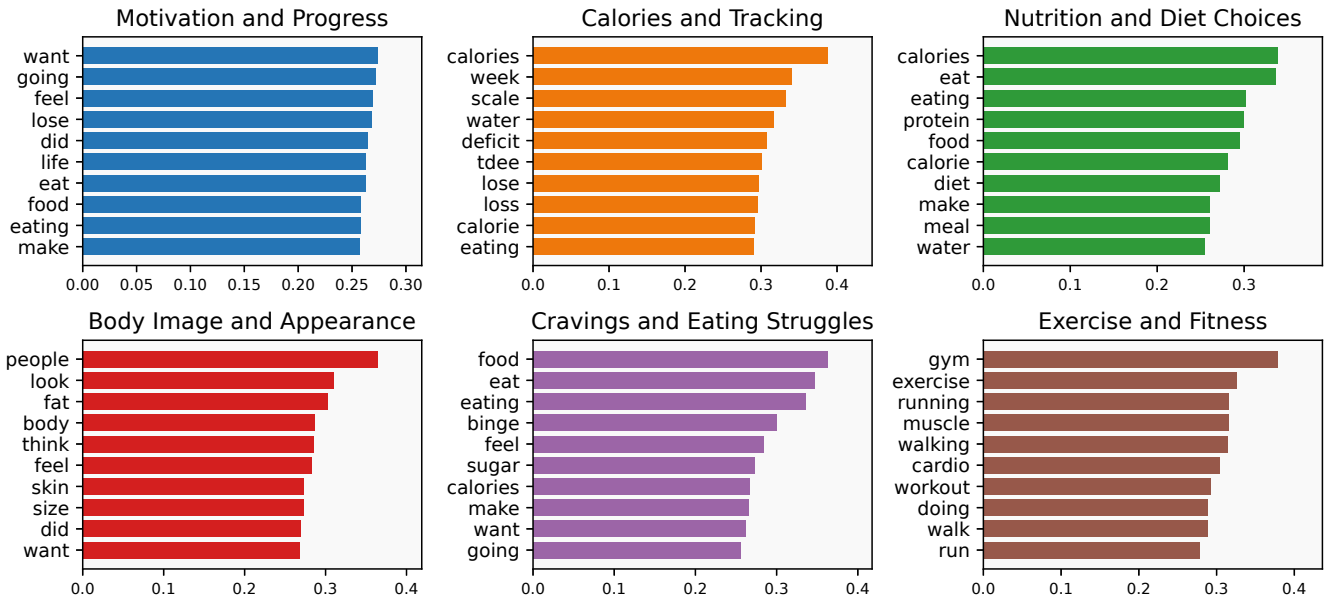


Figure 8: Top ten keywords for each identified topic among user-created posts. Bar lengths represent each word’s importance within the topic.

Feature	Parameter Estimates				
	β	Std. Error	Lower CI	Upper CI	p
<i>Activity features</i>					
log(Control weight)	0.7432***	0.0124	0.7188	0.7676	0.0000
log(User thread activity)	-0.0045***	0.0005	-0.0055	-0.0035	0.0000
log(Moderator thread activity)	-0.0016†	0.0010	-0.0035	0.0003	0.1003
log(Total prior activity)	-0.0037***	0.0008	-0.0053	-0.0022	0.0000
log(User posts in window)	-0.0005	0.0011	-0.0026	0.0017	0.6690
log(Moderator posts in window)	-0.0011	0.0010	-0.0031	0.0009	0.2684
<i>Linguistic features (LIWC)</i>					
Post Tone	-1.86e-8	8.26e-7	-1.64e-6	1.60e-6	0.9821
Post Analytic	7.24e-7	9.96e-7	-1.23e-6	2.68e-6	0.4674
Post Clout	4.77e-7	1.00e-6	-1.48e-6	2.44e-6	0.6335
Post Authentic	-2.32e-6†	1.38e-6	-5.03e-6	3.95e-7	0.0941
Comments Tone	-1.70e-6	2.18e-6	-5.97e-6	2.56e-6	0.4341
Comments Analytic	1.92e-6	2.26e-6	-2.51e-6	6.34e-6	0.3962
Comments Clout	1.11e-6	2.16e-6	-3.13e-6	5.34e-6	0.6080
Comments Authentic	1.70e-6	1.83e-6	-1.89e-6	5.28e-6	0.3532
<i>Engagement features</i>					
Number of moderator comments	0.0006	0.0006	-0.0007	0.0018	0.3702
Number of user comments	0.0006*	0.0003	3.23e-5	0.0011	0.0378

Within $R^2 = 0.693$, Overall $R^2 = 0.932$. User and time fixed effects included.

Table 5: Fixed-effects panel regression with all variables estimating associations with short-term weight loss. The dependent variable is $\log(\text{target weight})$. Reported are coefficients (β) with user-clustered standard errors, 95% confidence intervals, and p -values. All models include user (entity) and time fixed effects. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Feature	Parameter Estimates				
	β	Std. Error	Lower CI	Upper CI	p
<i>Activity features</i>					
log(Control weight)	0.7435***	0.0124	0.7191	0.7678	0.0000
log(User thread activity)	-0.0045***	0.0005	-0.0055	-0.0036	0.0000
log(Moderator thread activity)	-0.0012	0.0009	-0.0031	0.0006	0.1914
log(Total prior activity)	-0.0036***	0.0008	-0.0052	-0.0021	0.0000
log(User posts in window)	-0.0008	0.0011	-0.0030	0.0014	0.4666
log(Moderator posts in window)	-0.0019*	0.0010	-0.0038	-7.04e-5	0.0420
<i>Engagement features</i>					
Number of moderator comments	0.0005	0.0006	-0.0008	0.0018	0.4347
Number of user comments	0.0006*	0.0003	7.69e-5	0.0012	0.0252

Within $R^2 = 0.693$, Overall $R^2 = 0.932$. User and time fixed effects included.

Table 6: Fixed-effects panel regression estimating associations with short-term weight loss. The dependent variable is $\log(\text{target weight})$. Reported are coefficients (β) with user-clustered standard errors, 95% confidence intervals, and p -values. All models include user (entity) and time fixed effects. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Feature	Parameter Estimates				
	β	Std. Error	Lower CI	Upper CI	p
<i>Activity features</i>					
log(Control weight)	0.7457***	0.0123	0.7217	0.7698	0.0000
log(User thread activity)	-0.0040***	0.0005	-0.0050	-0.0030	0.0000
log(Moderator thread activity)	-0.0003	0.0009	-0.0021	0.0015	0.7591
log(Total prior activity)	-0.0037***	0.0008	-0.0053	-0.0022	0.0000
<i>Engagement features</i>					
Number of moderator comments	-0.0003	0.0007	-0.0017	0.0010	0.6568
Number of user comments	0.0005†	0.0003	-5.33e-5	0.0010	0.0773
<i>Topic-specific activity (posts in window)</i>					
24-Hour Pledge	-0.0003	0.0017	-0.0037	0.0031	0.8444
Accountability Challenge	0.0014	0.0011	-0.0008	0.0036	0.2241
Body Image and Appearance	-0.0022	0.0021	-0.0063	0.0018	0.2763
Calories and Nutrition	-0.0012	0.0016	-0.0042	0.0019	0.4508
Daily Q&A	-7.0e-5	0.0016	-0.0032	0.0031	0.9656
Day 1 Start	0.0222***	0.0042	0.0141	0.0304	0.0000
Exercise and Fitness	-0.0004	0.0025	-0.0053	0.0044	0.8576
Moderator Progress Updates	-0.0059***	0.0010	-0.0078	-0.0039	0.0000
Motivation and Progress	0.0007	0.0020	-0.0031	0.0046	0.7189
Struggles	0.0010	0.0025	-0.0039	0.0060	0.6819
Weekly Thread	-0.0005	0.0015	-0.0035	0.0025	0.7291
<i>Linguistic features (LIWC)</i>					
Post Tone	-4.75e-7	8.33e-7	-2.11e-6	1.16e-6	0.5684
Post Analytic	2.85e-7	9.74e-7	-1.63e-6	2.19e-6	0.7702
Post Clout	6.36e-7	9.78e-7	-1.28e-6	2.55e-6	0.5156
Post Authentic	-2.05e-6	1.37e-6	-4.73e-6	6.32e-7	0.1342
Comments Tone	-2.13e-6	2.15e-6	-6.35e-6	2.10e-6	0.3238
Comments Analytic	1.29e-6	2.22e-6	-3.06e-6	5.64e-6	0.5608
Comments Clout	1.68e-6	2.14e-6	-2.52e-6	5.88e-6	0.4333
Comments Authentic	2.34e-6	1.78e-6	-1.15e-6	5.82e-6	0.1887

Within $R^2 = 0.696$, Overall $R^2 = 0.933$. User and time fixed effects included.

Table 7: Fixed-effects panel regression with all variables estimating associations of specific topics with short-term weight loss. The dependent variable is $\log(\text{target weight})$. Reported are coefficients (β) with user-clustered standard errors, 95% confidence intervals, and p -values. All models include user (entity) and time fixed effects. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Estimates					
Feature	β	Std. Error	Lower CI	Upper CI	p
<i>Activity features</i>					
log(Control weight)	0.7460***	0.0123	0.7220	0.7700	0.0000
log(User thread activity)	-0.0040***	0.0005	-0.0050	-0.0031	0.0000
log(Moderator thread activity)	-9.63e-5	0.0009	-0.0019	0.0017	0.9149
log(Total prior activity)	-0.0036***	0.0008	-0.0051	-0.0021	0.0000
<i>Engagement features</i>					
Number of moderator comments	-0.0003	0.0007	-0.0017	0.0010	0.6497
Number of user comments	0.0005†	0.0003	-6.55e-6	0.0011	0.0528
<i>Topic-specific activity (posts in window)</i>					
24-Hour Pledge	-0.0007	0.0017	-0.0041	0.0027	0.6998
Accountability Challenge	0.0004	0.0010	-0.0016	0.0024	0.6897
Body Image and Appearance	-0.0027	0.0021	-0.0067	0.0014	0.1922
Calories and Nutrition	-0.0014	0.0015	-0.0044	0.0016	0.3723
Daily Q&A	-0.0005	0.0016	-0.0036	0.0027	0.7688
Day 1 Start	0.0221***	0.0041	0.0139	0.0302	0.0000
Exercise and Fitness	-0.0005	0.0025	-0.0053	0.0043	0.8355
Moderator Progress Updates	-0.0064***	0.0010	-0.0083	-0.0044	0.0000
Motivation and Progress	0.0002	0.0020	-0.0036	0.0041	0.9033
Struggles	0.0007	0.0025	-0.0042	0.0057	0.7734
Weekly Thread	-0.0008	0.0015	-0.0038	0.0022	0.6052

Within $R^2 = 0.696$, Overall $R^2 = 0.934$. User and time fixed effects included.

Table 8: Fixed-effects panel regression estimating associations of specific topics with short-term weight loss. The dependent variable is $\log(\text{target weight})$. Reported are coefficients (β) with user-clustered standard errors, 95% confidence intervals, and p -values. All models include user (entity) and time fixed effects. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Estimates (OLS)					
Feature	β	Std. Error	Lower CI	Upper CI	p
<i>Baseline controls</i>					
Intercept	0.4128***	0.0610	0.2940	0.5310	0.0000
log(Starting weight)	0.8632***	0.0110	0.8410	0.8860	0.0000
log(Tenure (days))	0.0289***	0.0050	0.0200	0.0380	0.0000
<i>Activity features</i>					
log(User posts)	-0.0014	0.0050	-0.0100	0.0070	0.7540
log(Moderator posts)	-0.0027	0.0050	-0.0120	0.0070	0.5880
log(Moderator activity)	-0.0132*	0.0060	-0.0260	-0.0010	0.0400
log(User activity)	-0.0140*	0.0060	-0.0250	-0.0030	0.0120
<i>Linguistic features (LIWC)</i>					
Post Tone	-6.26e-7	1.36e-6	-3.29e-6	2.04e-6	0.6450
Post Analytic	-1.35e-6	1.76e-6	-4.80e-6	2.10e-6	0.4440
Post Clout	7.78e-7	1.73e-6	-2.60e-6	4.16e-6	0.6520
Post Authentic	-1.37e-6	1.93e-6	-5.15e-6	2.42e-6	0.4790
Comments Tone	4.36e-6	4.10e-6	-3.68e-6	1.24e-5	0.2880
Comments Analytic	1.92e-6	7.09e-6	-1.20e-5	1.58e-5	0.7870
Comments Clout	-8.92e-7	4.30e-6	-9.32e-6	7.54e-6	0.8360
Comments Authentic	-2.12e-6	4.21e-6	-1.04e-5	6.14e-6	0.6150
<i>Engagement features</i>					
Number of moderator comments	0.0064	0.0050	-0.0040	0.0170	0.2280
Number of user comments	0.0026	0.0040	-0.0060	0.0110	0.5620

$R^2 = 0.809$, Adjusted $R^2 = 0.807$. HC3 robust standard errors reported.

Table 9: Ordinary least squares regression with all variables estimating associations with long-term weight loss. The dependent variable is $\log(\text{end weight})$. Reported are coefficients (β) with heteroscedasticity-robust (HC3) standard errors, 95% confidence intervals, and p -values. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Estimates (OLS)					
Feature	β	Std. Error	Lower CI	Upper CI	p
<i>Baseline controls</i>					
Intercept	0.4056***	0.0600	0.2880	0.5240	0.0000
log(Starting weight)	0.8617***	0.0120	0.8390	0.8840	0.0000
log(Tenure (days))	0.0291***	0.0050	0.0200	0.0380	0.0000
<i>Activity features</i>					
log(User posts)	-0.0015	0.0040	-0.0100	0.0070	0.7250
log(Moderator posts)	-0.0067	0.0040	-0.0150	0.0020	0.1150
log(Moderator activity)	-0.0111†	0.0060	-0.0230	0.0010	0.0660
log(User activity)	-0.0097†	0.0050	-0.0200	0.0000	0.0600
<i>Engagement features</i>					
Number of moderator comments	0.0087†	0.0050	-0.0010	0.0190	0.0920
Number of user comments	0.0015	0.0040	-0.0070	0.0100	0.7390
$R^2 = 0.808$, Adjusted $R^2 = 0.807$. HC3 robust standard errors reported.					

Table 10: Ordinary least squares regression estimating associations with long-term weight loss. The dependent variable is log(end weight). Reported are coefficients (β) with heteroscedasticity-robust (HC3) standard errors, 95% confidence intervals, and p -values. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Estimates (OLS)					
Feature	β	Std. Error	Lower CI	Upper CI	p
<i>Baseline controls</i>					
Intercept	0.3878***	0.0580	0.2740	0.5020	0.0000
log(Starting weight)	0.8751***	0.0110	0.8530	0.8970	0.0000
log(Tenure (days))	0.0232***	0.0050	0.0140	0.0330	0.0000
<i>Activity features</i>					
log(Moderator activity)	-0.0041	0.0060	-0.0160	0.0080	0.4980
log(User activity)	-0.0114*	0.0050	-0.0220	-0.0010	0.0320
<i>Linguistic features (LIWC)</i>					
Post Tone	-1.25e-6	1.23e-6	-3.66e-6	1.16e-6	0.3100
Post Analytic	-8.53e-7	1.54e-6	-3.87e-6	2.16e-6	0.5800
Post Clout	6.54e-7	1.55e-6	-2.38e-6	3.69e-6	0.6730
Post Authentic	-1.82e-6	1.78e-6	-5.31e-6	1.68e-6	0.3080
Comments Tone	3.99e-6	3.74e-6	-3.34e-6	1.13e-5	0.2860
Comments Analytic	-3.42e-6	5.89e-6	-1.50e-5	8.12e-6	0.5610
Comments Clout	-2.45e-6	3.20e-6	-8.72e-6	3.82e-6	0.4440
Comments Authentic	1.77e-6	3.88e-6	-5.82e-6	9.37e-6	0.6470
<i>Engagement features</i>					
Number of moderator comments	-0.0003	0.0060	-0.0120	0.0110	0.9580
Number of user comments	0.0030	0.0040	-0.0050	0.0110	0.4680
<i>Topic-specific activity</i>					
24-Hour Pledge	0.0210***	0.0050	0.0110	0.0310	0.0000
Accountability Challenge	0.0059†	0.0040	-0.0010	0.0130	0.1010
Body Image and Appearance	-0.0188*	0.0080	-0.0350	-0.0030	0.0230
Calories and Nutrition	0.0047	0.0060	-0.0070	0.0160	0.4180
Daily Q&A	-0.0019	0.0050	-0.0120	0.0080	0.7140
Day 1 Start	0.0305**	0.0090	0.0130	0.0480	0.0010
Exercise and Fitness	0.0204*	0.0090	0.0030	0.0370	0.0190
Moderator Progress Updates	-0.0229***	0.0040	-0.0310	-0.0150	0.0000
Motivation and Progress	-0.0117†	0.0070	-0.0250	0.0020	0.0830
Struggles	0.0155†	0.0090	-0.0020	0.0330	0.0900
Weekly Thread	0.0115*	0.0050	0.0020	0.0210	0.0230
$R^2 = 0.822$, Adjusted $R^2 = 0.819$. HC3 robust standard errors reported.					

Table 11: Ordinary least squares regression with all variables estimating associations of specific topics with long-term weight loss. The dependent variable is log(end weight). Reported are coefficients (β) with heteroscedasticity-robust (HC3) standard errors, 95% confidence intervals, and p -values. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Estimates (OLS)					
Feature	β	Std. Error	Lower CI	Upper CI	p
<i>Baseline controls</i>					
Intercept	0.3902***	0.0580	0.2770	0.5040	0.0000
log(Starting weight)	0.8733***	0.0110	0.8520	0.8950	0.0000
log(Tenure (days))	0.0229***	0.0050	0.0140	0.0320	0.0000
<i>Activity features</i>					
log(Moderator activity)	-0.0033	0.0060	-0.0150	0.0080	0.5700
log(User activity)	-0.0093†	0.0050	-0.0190	0.0000	0.0630
<i>Engagement features</i>					
Number of moderator comments	0.0011	0.0060	-0.0100	0.0120	0.8440
Number of user comments	0.0029	0.0040	-0.0050	0.0110	0.4770
<i>Topic-specific activity</i>					
24-Hour Pledge	0.0207***	0.0050	0.0110	0.0310	0.0000
Accountability Challenge	0.0025	0.0030	-0.0030	0.0080	0.3670
Body Image and Appearance	-0.0197*	0.0080	-0.0360	-0.0040	0.0140
Calories and Nutrition	0.0046	0.0050	-0.0060	0.0150	0.3930
Daily Q&A	-0.0039	0.0050	-0.0130	0.0060	0.4230
Day 1 Start	0.0309***	0.0090	0.0140	0.0480	0.0000
Exercise and Fitness	0.0183*	0.0080	0.0030	0.0340	0.0200
Moderator Progress Updates	-0.0253***	0.0040	-0.0330	-0.0180	0.0000
Motivation and Progress	-0.0131†	0.0070	-0.0260	4.46e-5	0.0510
Struggles	0.0158†	0.0090	-0.0020	0.0330	0.0760
Weekly Thread	0.0111*	0.0050	0.0010	0.0210	0.0260

$R^2 = 0.821$, Adjusted $R^2 = 0.819$. HC3 robust standard errors reported.

Table 12: Ordinary least squares regression estimating associations of specific topics with long-term weight loss. The dependent variable is log(end weight). Reported are coefficients (β) with heteroscedasticity-robust (HC3) standard errors, 95% confidence intervals, and p -values. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.