

# Going Dark: Social Factors in Collective Action Against Platform Operators in the Reddit Blackout

**J. Nathan Matias**  
Microsoft Research  
1 Memorial Drive #1  
Cambridge, MA 02142  
natematias@gmail.com

## ABSTRACT

This paper describes how people who lead communities on online platforms join together in mass collective action to influence platform operators. I investigate this by analyzing a protest against the social news platform reddit by moderators of 2,278 subreddit communities in July 2015. These moderators collectively disabled their subreddits, preventing millions of readers from accessing major parts of reddit and convincing the company to negotiate over their demands. This paper offers a descriptive analysis of the protest, combining qualitative content analysis, interviews, and quantitative analysis with the population of 52,735 active subreddits. Through participatory hypotheses testing with moderators, this study reveals social factors including the grievances of moderators, relations with platform operators, relations among moderators, subreddit resources, subreddit isolation, and moderators' relations with their subreddits that can lead to participation in mass collective action against a platform.

## ACM Classification Keywords

H.5.3 Information Interfaces and Presentation (e.g., HCI): Group and Organization Interfaces—*Computer-supported cooperative work*

## Author Keywords

collective action; sabotage; online platforms; participatory hypothesis testing; reddit; blackout; social factors

## INTRODUCTION

The many volunteers who lead online communities exercise tremendous power and influence as they create, maintain, and govern social relations online. For that reason, research has highlighted their role in user activism aimed at online platform operators. In the late 1990s, America Online volunteer community leaders protested

their treatment by the company, resulting in a class action lawsuit that was settled in 2011 for \$15 million U.S. dollars[39]. Although community leaders have most famously responded to the tensions of unpaid and freely given labor in platform economies[71, 63], forum moderators have also played important roles in collective action by waged crowd workers[65] and political bloggers[68] attempting to change policies on the platforms they use.

What factors lead to collective action against platform operators by these leaders and their communities? In July 2015, moderators of 2,278 “subreddit” community groups on the social news site reddit joined a “blackout,” preventing millions of users from accessing major parts of the platform and demanding improved treatment by the company[35]. Within hours, the company promised to meet moderators' demands, and moderators reactivated the communities they had disabled. One week later, reddit CEO Ellen Pao left the company[36].

This paper describes how volunteer community leaders come to participate in collective action to protest and influence platform operators. Through qualitative content analysis, interviews, and quantitative analysis of 52,735 active subreddits, this paper describes the social factors leading to participation in the reddit blackout, testing explanations developed and evaluated together with reddit moderators on both sides of the blackout. This paper finds that participation in the reddit blackout was associated with factors including the grievances of moderators, resources available to subreddits, relations among groups of moderators, the isolation of a subreddit from the rest of the platform, and the internal relationship of moderators to their subreddits.

## BACKGROUND AND RELATED WORK

For at least 40 years, online platforms have relied on community leaders to facilitate and support social interactions. In the mid 1970s, the librarians and shopkeepers of Berkeley's Community Memory supported users to contribute, even as a 25 cent per-message fee was introduced to deter unacceptable participation[13]. In the 1980s, the WELL's *conference hosts*, BBS *SysOps*[64], and Usenet *moderators*[14] fostered conversations and maintained order. In the 1990s, tens of thousands of AOL volunteer *community leaders* managed its chatrooms[63]. Moderators remained fundamentally important to on-

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line social interactions in the Web 2.0 period, even as platforms attempted to use machine learning[21], voting systems [29, 43, 41], and flagging systems to distribute the work of moderators more widely and disclaim responsibility for governance activity[17]. These roles are played by Wikipedia’s *administrators*[1], Facebook’s *admins*[23], Slashdot’s *moderators*[42], Meetup’s *group organizers*[40] and XBOX’s *enforcement united*[28]. On platforms like Twitter with no official moderator role, users find the need to invent them[51, 37]. Although this work is often carried out informally[54], formally-defined community leaders are founders, designers, promoters, facilitators, recruiters, legislators, responders, and enforcers of online social interactions[15] for millions of people every day.

### Moderators and Community on reddit

The popular social news platform reddit hosts conversation threads across more than fifty thousand self-governed discussion groups called “subreddits.” Reddit users post and comment on content within these subreddits, voting on contributions to affect their visibility within the subreddit and across a series of public and personalized newsfeeds. Founded in 2006 with the goal of becoming “the front page of the internet,” reddit had over 200 million monthly visitors in August 2015, two thirds the number of active users on Twitter in the same period.<sup>1</sup> Practices and interests within these subreddits differ widely, while also sharing common qualities of participatory culture; in an ethnography, Massanari attempts to describe its many dimensions through the metaphors of carnival, performance, play, and community[50]. Subreddit conversations often unfold alongside emerging events; Leavitt and Clark have described participatory news creation on reddit during Hurricane Sandy and other crises[45].

The challenges of reaching diverse audiences and the problems of reddit’s combination of newsfeed algorithms with voting mechanisms [49] were present in the earliest versions of the site, motivating the creation of the first subreddit. This group, “NSFW,” was created to shift objectionable material away from the site’s front page[32]. Over the next two years, the company started dozens of new subreddits, mostly to distinguish conversations happening in different languages. Then in Jan 2008, a year and a half after its acquisition by Condé Nast and 10 months after introducing advertisements[33], the company launched “user-controlled subreddits”[34]. The creators of these subreddits were given special moderator privileges. By June 2008, the final element of reddit governance was in place, per-subreddit machine learning systems for automated filtering of submissions [38]. By July 2015, the platform relied on nearly one hundred fifty thousand moderator roles<sup>2</sup> for over fifty thousand monthly active subreddits.

<sup>1</sup><https://www.reddit.com/about/> and <https://about.twitter.com/company> accessed Sept 25, 2015.

<sup>2</sup>Since the number of people doing this work is not clear due to the prevalence of throwaway accounts and “alts”[44], this paper uses the term “moderators” to refer to moderator roles.

Subscribing to a subreddit does not always imply an idea of membership in a community. A subreddit’s default settings have no barriers to joining, and anyone with a reddit account may post to any subreddit. Furthermore, many users treat subreddits as newsfeeds. Reddit facilitates context collapse[12] at speed and scale, supported by popularity algorithms that tend to draw attention to upvoted content and “drama” alike. The default view for logged-in reddit users is a personalized news feed algorithm that creates “your front page” with “hot” posts from a user’s subreddits. In this view, users see only the most prominent posts from their subscriptions. Readers who are not logged in are shown a selection of popular posts from across the site[26].

### The reddit Blackout of July 2015

The decisions by moderators to collectively disable over two thousand subreddits occurred in a wider period of crisis for reddit. After a company decision in June to ban several subreddits for harassment[58, 57], some users responded with an influx of posts typical of the banned subreddits. Others manipulated the reddit algorithms to feature protests and insults of then-CEO Ellen Pao, starting a petition calling for her resignation[22].

On July 2, 2015, reddit dismissed an employee who routinely offered essential, ongoing support to moderators who hosted the site’s most popular feature: live Ask Me Anything (AMA) question-answer sessions with notable people[35]. Moderators of the /r/IamA subreddit, who heard the news while conducting a live Q&A, describe being caught off guard by this HR decision. They took their subreddit offline mid-conversation to decide how to respond[48]. Moderators of several large, default subreddits agreed to follow suit. They linked the company’s lack of a transition plan with reddit’s overall lack of communication with moderators and its neglect of moderation software. As more subreddits joined the blackout and the story was featured on international media, a separate group of anti-censorship campaigners who had been protesting reddit’s anti-harassment policies redoubled their efforts to remove the CEO and encourage defection to other platforms[35].

After several hours of negotiations with moderators, the company promised to address their concerns, and moderators made their subreddits public again over the next few days. In the following months, the company changed development priorities, established new lines of communications with moderators, and hired its first Chief Technical Officer to address moderator demands[59].

### Collective Action Against Platforms

To “black out” and “go dark,” moderators modified the configuration of their subreddits to admit participation only from approved submitters. Going dark effectively shut off a subreddit; anyone who was not a moderator or personally approved by one could not access the conversation. Social movement theorists describe such acts as *sabotage*, a common practice where political actors

halt the flow of resources, production, transportation, or information to make their demands visible, showcase the importance of their labor, and force powerful institutions to negotiate[7]. Strikes and sit-ins are common examples of this tactic. Notable online acts of political sabotage include a 2013 blackout by Internet platform operators (including reddit and the English language Wikipedia) to protest proposed U.S. intellectual property regulations[9] and the use of distributed denial of service attacks by activists[66].

Before the July blackout, the act of going dark was an isolated incident. In late 2014, a moderator of a popular gaming forum<sup>3</sup> took the subreddit private in an attempt to pressure a game company to release more beta versions of a special feature. Community participants objected strongly, forcing the moderator to restore the subreddit. When one subscriber retaliated by posting private details from the moderator's online dating account, the moderator disabled the subreddit again until reddit employees intervened to resolve the controversy.

### Collective Action and Social Movement Theories

The goal of this paper is to describe the factors that led to participation in the reddit blackout. While this paper does not test academic theories of collective action or social movements, it does gesture toward ways that its qualitative and quantitative findings can relate to these theories. A substantial quantitative research tradition has asked what factors come together for a collective action such as a decision or political action to occur or be successful [60, 16]. When explaining a protest or strike, political opportunity theories would focus on the nature of the grievances of movement actors, expecting that those with greater grievances would be more likely to take action [55]. Political opportunity theories would also emphasize network relations among movement actors as important factors in joining a social movement [52]. Resource mobilization theories would focus on group resources as important factors in social movement mobilization, as well as the relative isolation of a group from other participating social movement groups [53].

### Online Community Leadership

Although many subreddit participants supported the blackout, the demands made in the blackout were focused entirely on the distinct interests of subreddit moderators, leaders of the site's communities. For this reason, research on the development of distinct interests among online community leaders offers a backdrop for the inductive work of this paper. In studies on a class-action lawsuit by AOL community leaders, Postigo emphasizes poor company relations with community leaders, restrictively-designed moderation software, and coordination among community leaders as three important factors that led volunteers to see themselves as cheated employees rather

<sup>3</sup>Throughout this study, names, quotations, and subreddit details have been anonymized to protect the identities of participants, many of whom routinely receive threats to their emotional and physical wellbeing.

than freely-contributing volunteers[62, 63]. In a study of 683 wikis drawing from scholarship on union organizations [56, 47], Shaw and Hill test internal characteristics of peer communities that predict the what they term "goal transformation"—the development of interests distinct to a community's leaders. They find goal transformation more likely among older, more complex groups[69].

Approaches and findings from this prior work provide deep influences to the inductive, qualitative work of this paper, while also framing its quantitative methods.

## METHODS

To describe factors in collective action against platform operators, this paper carries out mixed methods participatory hypothesis testing, an approach to action research online that combines methods from virtual ethnography and quantitative analysis.

### Participatory Hypothesis Testing as Action Research

This study's methods are drawn from the *action research* tradition, which begin in the 1930s with studies by factory workers and university-based researchers in the early years of social psychology. Setting out to produce knowledge with and for workers rather than solely for factory operators, researchers and workers collaborated on studies to answer questions about leadership, cooperation, and management that were led by worker interests[4]. Within HCI, action research has been influential in participatory design[31] and in emancipatory action research, often supporting specific political interests[20][6].

As a study that sets out to describe and explain rather than create, this work of action research brings together virtual ethnography[11] with the emerging practice of "popular data," where researchers and participants create questions and interpretations together[10, 19]. Since participants on reddit commonly create, share, and discuss data about their social behavior[30], reddit is well suited to this approach. Finally, since reddit moderators do not primarily talk about themselves as a well-defined interest group, the researcher has taken a "friendly outsider" stance rather than explicit political objectives[31].

### Participatory Data Collection and Hypothesis Building

In practice, the data collection and question formation in this paper have taken three forms:

Firstly, among qualitative methods, the researcher carried out content analysis of 90 published interviews with moderators from before the blackout, over 250 articles outside reddit about the blackout, discussions in over 50 subreddits that declined to join the blackout, public statements by over 200 subreddits that joined the blackout, and over 150 discussions in blacked out subreddits after their communities were restored. The researcher also conducted 90 minute semi-structured interviews with 13 moderators of subreddits of all sizes, including those that joined and declined to join the blackout. These included moderators of communities accessible to anyone and "NSFW" subreddits only accessible to users 18 years

or older. Moderators of subreddits allegedly associated with hate speech declined to participate.

Secondly, the researcher collected trace data from the reddit API of the population of 52,735 non-corporate subreddits receiving at least one comment in June 2015.<sup>4</sup> Moderator roles were sampled on June 13, July 6, and September 11, 2015, with all roles more recent than the date of the blackout removed from the dataset. The definition of active subreddits was determined from a public archive of all reddit comments from June 2015[8]. A list of subreddits that participated in the blackout was obtained from a public archive created by a reddit user who wrote software to monitor the event[18]. These data sources were combined into a single table with one subreddit per record for analysis.

Finally, the researcher collaborated with reddit users, using a popular data approach to define hypotheses and interpret the results of logistic regression models predicting subreddits' participation in the reddit blackout. Hypotheses were based on reddit users' explanations for blackout participation in comment threads during the blackout, in interviews with moderators, and in a series of three reddit discussions about this research project. In the first discussion, the researcher posted network visualizations of the reddit blackout and recruited moderators for interviews. In the second discussion, the researcher posted a regression model motivated by the questions and comments of moderators. In this second discussion, several participants questioned the validity of the list of blackout-participating subreddits based on their experience of the event. They worked with the researcher to evaluate a higher quality dataset, validating automated and manual supplements to that dataset that had been made by its creator.<sup>5</sup>

In public discussions of statistical results and in private messages, reddit users and interviewees argued the importance of factors that could not be easily measured, convincing the researcher to report key qualitative findings that are not part of the statistical model. These findings are included in the discussion section.

## EXPLANATIONS FOR BLACKOUT PARTICIPATION

Rather than testing a central hypothesis motivated by a single academic puzzle[2], this paper tests folk hypotheses about what led moderators to participate in the reddit blackout—explanations offered by reddit users

<sup>4</sup>10 official subreddits that publish company announcements were removed

<sup>5</sup>In an interview, the creator of the blackout data explained that software monitoring the blackout was deployed several hours after the blackout began, missing several subreddits that were restored early in the protest. When several participants in the participatory hypothesis testing process noted that their blackout participation was not acknowledged in the dataset, the researcher updated the blackout list to include 80 additional subreddits added in subsequent queries by the blackout data creator. These additions were validated from multiple sources. All statistical findings are consistent across both datasets.

in comments, interviews, and the process of participatory hypothesis testing. For that reason, this section reports common explanations for participation in the reddit blackout by including qualitative findings, connections to relevant scholarly literature, and descriptions of the covariates developed to test each explanation. Although these explanations motivate covariates in a statistical model, each explanation constitutes a qualitative finding in its own right.

Explanations of blackout participation are grouped by categories common to collective action and social movement theories to highlight theory conversations relevant to these findings: *grievances*, *subreddit resources*, *relations among moderators*, *subreddit isolation*, and *goal transformation among moderators*.

### Moderator Grievances

Throughout this research, moderators consistently described the workload as a major motivation for joining the blackout and the primary reason they expected others to join. In interviews, moderators of the largest subreddits described spending several hours a day supporting their communities. Even moderators of less prominent subreddits showed the author sophisticated self-built systems for scheduling and coordinating the many hours of work to create content and respond to violations of their community rules. In response to perceived gaps in official moderation tools by reddit, moderator teams use custom bots and custom moderation tools to manage this complex work,<sup>6</sup> creating successor systems that augment reddit's core capabilities through the reddit API[25]. Many interviewees made statements similar to one moderator who claimed that "larger, more active subreddits [were more likely to join the blackout because they] had more of a need."

Even among subreddits that declined to join the blackout, many moderators described feeling obligated to make a decision one way or another. This surprised moderators of large subreddits, who described it as an issue for larger groups. Size was a key issue in the hundreds of smaller subreddits that discussed the possibility, with many wondering if they had much in common with larger groups, or whether blacking out their smaller group would make enough of an impact on reddit's advertising revenue to help the protest.

These explanations correspond to grievance models of social movement participation[55], which might expect that larger subreddits with more work and subreddits at greater risk of being banned by the company might have more cause to join the blackout.

*H1: More active subreddits with a greater need for moderator tools were more likely to join the blackout.*

To test moderators' explanations that subreddits with a greater workload were more likely to join the blackout, this paper includes a predictor for *activity*, represented

<sup>6</sup><https://www.reddit.com/r/toolbox>

by the total number of comments and posts per subreddit in June 2015. This measure ranged from 0 to 4,190,000 comments with a mean of 1,037.

#### *H2: NSFW subreddits were more likely to join the blackout*

In interviews, several moderators reported declining participation to avoid association with hate speech subreddits taken down by the company the prior month<sup>[57]</sup> or other parts of reddit they preferred not to be associated with. Default moderators denied that their action was associated with hate speech, describing the lengths they went to dissociate from hate speech communities and users that opposed then-CEO Ellen Pao. Nevertheless, moderators of default subreddits had no control over which subreddits chose to join the blackout.

It is possible that “NSFW” subreddits featuring 18+ content, which might have a history of stretching policy boundaries, would be more likely to join the blackout. Another possibility is that NSFW subreddits require more work to maintain high quality content without crossing lines set by reddit and the law. In interviews, one moderator of a moderately-sized NSFW subreddit with roughly 20-30 thousand subscribers reported over 3 million page views per month and 8-10 thousand unique daily visitors, numbers that far outstripped a comparably-sized non-NSFW subreddit that they also moderated. This extra work of moderating NSFW groups would be hidden from the measure of activity in this study, which includes all comments regardless of moderation. Perhaps with more work, NSFW subs were more likely to see the need for better tools and support from reddit.

The NSFW label may be a poor measure of these factors, but many participants emphasized this distinction. For that reason, it is included in the model. In the population, 3741 are labeled NSFW, 7% of active subreddits.

#### **Subreddit Resources**

Resource mobilization theories might expect that subreddits with greater capacities might be more likely to take action. Among explanations identified in the qualitative findings, these resources might involve a subreddit’s number of moderators, the prominence of the subreddit, or the subreddit’s access to employees.

#### *H3: Subreddits with more moderators were more likely to join the blackout*

In interviews, several moderators mentioned that a primary difficulty during the blackout involved simply knowing about the blackout and contacting enough moderators to agree on an action. In this situation, subreddits with more moderators had more capacity to take action. In this paper, the *moderator count* includes all moderators of a subreddit who started no later than July 1, 2015. Moderator roles for subreddits accessible to the public were sampled on June 13 and July 6, and moderator roles for NSFW subreddits were sampled on September 11, 2015. The number of moderators ranges from 0 to 908 with a mean of 2.815.

#### *H4: Default subreddits were more likely to join the blackout*

In interviews, some moderators pointed out that “most of the conversation about the blackout first took place in the default mod irc channel.” Many of these default subreddits, which are added to every new user’s subscriptions, receive at least a half million comments per month and have a history of offering extensive original content, including regular live interviews. Many of them were directly supported by the reddit employee whose dismissal prompted the blackout. Moderators of default subreddits also reportedly played a substantial role in negotiations with the company at the height of the protest. In interviews, several moderators described the blackout as an action by and for default subreddits; participation by thousands of smaller subreddits had been a surprise.

To test the hypothesis that *default* subreddits were more likely to participate, this paper uses the set of 49 default subreddits shared across the US, UK, Switzerland, Spain, and Japan at the time of the blackout.<sup>7</sup>

#### *H5: Subreddits with employees as moderators were more likely to join the blackout*

Users offered several theories about “admins,” their name for company employees. During the blackout, some redditors voiced suspicions that admins who held moderator positions were preventing subreddits from going private. In interviews, moderators tended to voice the opposite opinion. Some argued that subs with more admin contact were joining the blackout to send a message to the company, urging it to pay more attention to the employees who advocated for moderator interests. Moderators of smaller subreddits agreed, with one saying that “we felt 100% independent from admin assistance so it really wasn’t our fight.” The blackout appears to have succeeded at this goal: in their formal statement after the blackout, reddit announced the creation of a “Moderator Advocate” position for a current employee, promising that this employee’s representations would thereafter be given special attention in company decisions<sup>[61]</sup>.

To test the hypothesis that subreddits with more *employees as moderators* would be more likely to join the blackout, this paper uses the Internet Archive record of employee reddit accounts from June 2015 to identify moderators who were among 59 current employees or 34 former employees.<sup>8</sup> This predictor ranges from 0 to 8 with a mean of 0.004. Only 125 subreddits had any current employees as moderators at the time of the blackout.

<sup>7</sup>[https://www.reddit.com/r/defaults/comments/2ycn0x/list\\_of\\_default\\_subreddits\\_march\\_8\\_2015/](https://www.reddit.com/r/defaults/comments/2ycn0x/list_of_default_subreddits_march_8_2015/)

<sup>8</sup><https://web.archive.org/web/20150621223349/http://www.reddit.com/about/team/>

## Relations Among Moderators

In any collective action by a class of people advocating for change, it is to be expected that relationships among potential participants would be an important factor. This study does not include data from any private communications or coordination during the blackout and cannot directly estimate the role of moderator relationships in the blackout. Nonetheless, participants suggested predictors that may approximate those relationships. These predictors most closely correspond to discussions in political opportunity theory of the importance of social ties to social movement participation[52].

### *H6: Subreddits whose moderators also moderated other subreddits were more likely to join the blackout*

Subreddits are not isolated communities; many moderators have roles in more than one subreddit. For that reason, this paper includes a covariate for *the number of moderator roles in other subreddits* held by moderators of a given subreddit. The predictor ranges from 0 to 2,189 with a mean of 29.22.

Perhaps, for reasons of workload or connectedness to other moderators, subreddits with more overlapping roles with other subreddits might be more likely to join the blackout. The reverse might also be plausible, since self-defined *networks* of subreddits—groups that share common themes and a common governance structure—dissociated themselves from the blackout. These networks include the “ShitRedditSays fempire” of “social justice warriors,” the “Imaginary Network” of fictional illustration subreddits, and the “SFW Porn” network that shares beautiful images of landscapes, architecture, and other “safe for work” content[50]. None of these networks joined the blackout, so perhaps subreddits whose moderators participate in other subreddits were less likely to join the blackout.

### *H7: Subreddits whose moderators also moderated other blackout subreddits were more likely to join the blackout*

In studies of risky, costly activism, relationships with other social movement participants and exposure to their choice to participate have been important predictors of participation in activism[52, 3]. If a subreddit shares moderators with another subreddit that joined the blackout, it is plausible to hypothesize that the subreddit is also likely to join the blackout. Furthermore, any single moderator with adequate privileges can take a unilateral action to black out. In many cases, the decision to black out was not a group decision by all moderators. In one instance, a moderator held a vote and joined the blackout with subscriber support before asking other moderators. When the other moderators disagreed and restored the subreddit, this moderator announced voluntary resignation rather than accept punitive consequences.

While a subreddit’s *number of shared moderator roles with other subreddits that joined the blackout* cannot produce meaningful estimates of influence or selection[70],

these relational predictors offer a general estimate of relational factors among moderators, as well as a control for estimating other factors in the model. The measure ranges from 0 to 180 with a mean of 1.286.

## Subreddit Isolation from “The Rest of reddit”

In public statements and private interviews, many moderators distinguish their subreddits from the “rest of reddit.” Several moderators described their subreddits as established communities without any special tie to the platform. For these moderators, the blackout controversy and ongoing debates over hate speech had motivated them to test other platforms for migrating their communities. Other moderators who distanced their community from the rest of reddit remained committed to staying on the platform so they could critique and challenge what they described as its dominant culture. Those who moderate self-help subreddits or groups for marginalized people talked about reddit as an important context to offer support and community, even as they distanced themselves from behavior and attitudes elsewhere on the platform. One support subreddit moderator reported that “a lot of the users didn’t really identify with the rest of reddit.” When subscribers voted against the blackout, the moderator wasn’t surprised; it was “a movement we didn’t identify with.”

Discussion of “the rest of reddit” corresponds with research mobilization theories of social movements, which often expect that more isolated subreddits and constituents will be less likely to join a movement without advertising or incentives [53].

### *H8: Subreddits that are more isolated from the rest of reddit were less likely to join the blackout*

This paper includes a predictor for subreddit isolation. Within the group of all reddit comments made by anyone who commented within a given subreddit in June 2015, this measure is the percentage of those comments made within that subreddit. The measure of isolation ranges from 0 to 1.00 with a higher value representing more isolated subreddits; the mean is 0.08, the median is 0.03.

### *H9: Subreddits whose moderators participate in “metareddits” were more likely to join the blackout*

In interviews, several moderators described learning about the blackout from “meta-reddits” which cover major events on the site, and which mostly stayed active during the blackout. Just like we might expect more isolated subreddits to stay out of the blackout, we might expect moderators who get involved in reddit-wide meta-discussion to join the blackout. Based on a public list of metareddits compiled by reddit users,<sup>9</sup> this predictor includes the total number of metareddit comments made by a subreddit’s moderators, divided by the total number of moderators. The measure of metareddit participation per moderator ranges from 0 to 346 with a median of 0 and a mean of 1.28; it is log transformed in the model.

<sup>9</sup>[https://www.reddit.com/r/TheoryOfReddit/wiki/meta\\_subreddits](https://www.reddit.com/r/TheoryOfReddit/wiki/meta_subreddits)

### **Moderator's Relations With Their Subreddits**

The reddit blackout put strains on moderators' relationships with their communities, whatever decision they made on the blackout. In many subreddits, moderators and subreddit participants already had substantial disagreements. In interviews, many moderators reported that even everyday decisions commonly attract personal insults and threats from reddit users, a problem that became heightened during the blackout. Subscriber support for the blackout was not guaranteed, since moderators were the primary beneficiaries of blackout demands.

When deciding if they should join the protest, moderators differed in how much they included their communities in the decision. Many moderators held votes, asking subscribers to make the final decision. Many others posted threads explaining or defending their top-down decision to join the blackouts. In interviews, many moderators reported receiving large numbers of private messages urging them to join the blackout. In at least one case, a moderator stepped down after joining the blackout, facing a loss of legitimacy with the subreddit.

Ambiguity over who constitutes a subreddit member complicated the tension between moderators and subscribers during the blackout, which took many moderators by surprise. Moderators couldn't be sure that the people messaging them were genuine participants in their communities. When votes had occurred, some worried that voting mechanisms had been "brigaded" by outsiders advocating for the blackout. In an interview, one moderator reported posting a vote to appease blackout advocates who the moderator assumed were hate speech campaigners; "it really bought me time to try to get in contact with the other Mods" and coordinate a top-down decision.

Findings on these internal community tensions most closely correspond to "goal transformation" theories on the development of distinct interests by organization leaders[69], informing the following hypotheses:

#### *H10: Older subreddits were more likely to join the blackout*

To test expectations that older communities would be more likely to join the blackout, this paper includes an *age* predictor for the number of years since the earliest subreddit, ranging from January 19, 2006 to July 1, 2015.

#### *H11: Subreddits whose moderators participate in moderator-focused subreddits were more likely to join the blackout*

In public statements, many of the subreddits that joined the blackout used the language of "solidarity" to describe their choice to join the blackout. Moderator-focused subreddits offer important contexts for that solidarity to develop, as moderators seek technical help, discuss moderator tools, seek advice on difficult decisions, and discuss company policies. Other moderator-focused subreddits function as job boards where moderators can find "internships" and other opportunities to take on a moderator role. Some of these groups only admit moderators of large subreddits. Perhaps moderators who participate in mod-specific subreddits, who have helped and been

helped by other mods, would be more likely to join the blackout?

Although several moderator-only subreddits that reportedly played important roles in coordinating the blackout were private, it is still possible to test this hypothesis with public subreddits. Based on content analysis and interviews, this predictor includes the total number of moderator-sub comments made by a subreddit's moderators, divided by the total number of moderators. The measure ranges from 0 to 169.5 with a mean of 0.3.

#### *H12: Subreddits with moderators who participate more in their subreddit were less likely to join the blackout*

While the state of relations between leaders and a community or the decision-making processes of each subreddit are not easily quantifiable, redditors did suggest a measure of moderators' relations with their communities. One moderator suggested that "larger groups that didn't join the protest were the more hands-off type."

This paper includes a predictor for *the number of comments made by moderators* within each subreddit. This measure, similar to the measure used by Butler to stratify samples in a study of mailing list leadership[15] is the count of internal comments made by any of a subreddit's moderators in June 2015, including original content, reactions to the posts of others, procedural posts about the workings of the subreddit, and feedback to users whose content had been removed. The measure ranges from 0 to 18,000 with a mean of 21.45 and a median of 0.00.

### **QUANTITATIVE FINDINGS**

The above hypotheses are tested in a logistic regression model with Firth bias reduction[24].<sup>10</sup> Results are shown in Table 1.<sup>11</sup>

Interpretations of the results of this model cannot motivate judgments on the true-ness or false-ness of moderator explanations of the blackout. The predictors in this model are based on important qualitative evidence—very real things that moderators and others on reddit have said when making sense of an event they personally experienced. The regression model offers tests of whether the explanations offered by participants predict the probability of a subreddit to join the blackout, holding constant all the other factors, on average in the population of all active subreddits. In some cases, occurrences unique to a small number of communities may not explain the actions of other subreddits. In other cases, predictors with a p-value greater than 0.05 may still represent accurate observations about the blackout, even though the predictive power of that explanation is not distinguishable from chance. Put simply, the model in Table 1 tests whether participants' explanations of their experience was applicable on average across reddit, accounting for other factors in the model.

<sup>10</sup>Firth bias reduction offers better estimates for issues of linear separation with the *moderator count* predictor. In a sensitivity analysis with non-Firth models, results are robust

<sup>11</sup>Layout formatted with *texreg*[46]

Dependent variable: blackout participation	
(Intercept)	-4.41*** (0.14)
<b>Moderator Grievances</b>	
H1: ln comments	0.23*** (0.02)
H2: NSFW sub	0.41*** (0.10)
<b>Subreddit Resources</b>	
H3: ln moderators	0.58*** (0.06)
H4: default subreddit	0.36 (0.34)
H5: ln employee mod roles	-1.19 (0.79)
<b>Relations Among Moderators</b>	
H6: ln mod roles in other subs	-0.42*** (0.04)
H7: ln mod roles in blackout subs	2.07*** (0.10)
ln othersub roles:ln blackout sub roles	-0.24*** (0.02)
<b>Subreddit Isolation</b>	
H8: ln isolation %	-4.69*** (0.54)
H9: ln mod participation in metareddts	0.09* (0.04)
<b>Moderator's Relations Within Subreddits</b>	
H10: subreddit age in years	0.05*** (0.01)
H11: ln mod participation in mod-focused subs	0.03 (0.06)
H12: ln moderator participation in sub	-0.11** (0.04)
AIC	11541.59
BIC	11665.82
Log Likelihood	-5756.80
Deviance	11513.59
Num. obs.	52735

\*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Table 1. Logistic regression of social factors predicting subreddit participation in the reddit blackout, July 2015**

Estimates are reported with the direction and statistical significance of coefficients at  $p < 0.05$ , along with relative estimated probabilities for prototypical values, the approach taken when discussing and interpreting the results with participants.

### Results for Moderator Grievances

Grievance-focused hypotheses concern moderator workloads and the precarity of subreddits with reddit policies.

*H1 result: In a logistic regression model, more active subreddits were more likely to join the blackout, on average across reddit, holding all else constant. With all else at its mean, this relationship can be described for a variety of activity levels. In the 50th percentile, a non-default, non-NSFW subreddit with 6 comments per month had an estimated 1.2% chance of joining the blackout. In the 75th percentile, a subreddit with 46 comments a month had an estimated 1.8% chance of joining the blackout. A subreddit with 1,000 comments a month had an estimated 3.7% chance of joining; one with 100,000 comments per month had an estimated 10.8% chance of blacking out.*

*H2 result: In a logistic regression model, 18+ "NSFW" subreddits were more likely to join the blackout, on average across reddit, holding all else constant. With all else at its mean, a large, non-default, non-NSFW subreddit with 22,800 comments per month had an estimated 7% chance of joining the blackout, while an NSFW subreddit with the same qualities had a 10% chance of blacking out. At lower levels of activity, a non-NSFW subreddit with 1,000 comments per month had a 3.7% chance of joining the blackout, while an NSFW subreddit of the same size had an estimated 5.5% chance of joining the blackout.*

### Results for Subreddit Resources

Resource-focused hypotheses expect subreddits with greater resources to be more likely to black out.

*H3 result: In a logistic regression model, subreddits with more moderators were more likely to join the blackout, on average across reddit, holding all else constant. Holding all else at its mean, a non-default, non-NSFW subreddit with 1,000 comments per month and 3 moderators (the mean) had an estimated 3.8% chance of joining the blackout. A similar subreddit with 8 moderators had a 6% chance of joining the blackout on average across reddit.*

*H4 result: In a logistic regression model, default subreddits were no more or less likely to join the blackout, on average across reddit, holding all else constant. Although a single-covariate model shows a large, positive relationship between default status and blackout participation, this predictor is not significant in models that control for the number of moderators and the level of activity. While qualitative findings emphasize the importance of moderators of some default subreddits for organizing the blackout and negotiating terms with the company, these subreddits were quickly outnumbered by the thousands of others that joined. Consequently, even though visible participation by large, default subreddits may well have influenced others to participate and influenced the company to negotiate, is unsurprising that other predictors offer better explanations of any individual subreddit's blackout participation, on average across reddit.*

*H5 result: In a logistic regression model, there is no significant relationship between the number of employee moderators and blackout participation, on average across reddit, holding all else constant. Even a single-predictor model finds no statistically significant relationship between the number of employee moderators and blackout participation.*

### Results for Relations Among Moderators

Participants expected that relations among moderators were important to blackout participation.

*H6 & H7 results: In a logistic regression model, the number of roles held by a subreddit's moderators in other groups and other blackout subreddits were significant predictors of blackout participation, relationships that are mediated by each other, on average across reddit, holding all else constant. As stated previously, these predictors*



are included as controls, so estimates are excluded. Overall, these statistically significant predictors underscore the importance of shared moderation relationships to blackout participation.

### Results for Subreddit Isolation from “The rest of reddit”

Isolation-focused hypotheses expect that more isolated subreddits would be less likely to join the blackout.

*H8 result: Subreddits that are more isolated from the rest of reddit were less likely to join the blackout, on average across reddit, holding all else constant. Holding all else at its mean, a non-default, non-NSFW subreddit with 1,000 comments per month and an isolation rate of 5% had an estimated 4.2% chance of joining the blackout. A similar, more isolated subreddit with an isolation rate of 50% had an 0.8% chance of joining the blackout.*

*H9 result: Subreddits whose moderators participate more in “metareddits” were more likely to join the blackout, on average across reddit, holding all else constant. Holding all else at its mean, a non-default, non-NSFW subreddit with 1,000 comments per month and 1 metareddit comment by one of its moderators had an estimated 3.6% chance of joining the blackout, while a similar subreddit whose moderators made 25 comments in metareddits had a 4.5% chance of joining the blackout.*

### Results for Moderators’ Relations With Their Subreddits

*H10 result: In a logistic regression model, older subreddits were more likely to join the blackout, on average across reddit, holding all else constant. Holding all else at its mean, a non-default, non-NSFW subreddit with 1,000 comments per month and an age of 0.64 years (the 25th percentile) had an estimated 3.7% chance of joining the blackout, while a similar subreddit 3.8 years old (the 75th percentile) had a 3.9% chance of joining the blackout.*

*H11 result: In a logistic regression model, subreddits whose moderators comment in moderator-focused subreddits were no more or less likely to join the blackout, on average across reddit, holding all else constant. Although a single-covariate model shows a positive relationship between moderator comments in moderator-focused subreddits and blackout participation, this relationship is not significant in a model that accounts for other factors.*

*H12 result: In a logistic regression model, subreddits with greater internal participation by moderators were less likely to join the blackout, on average across reddit, holding all else constant. Holding all else at its mean, a non-default, non-NSFW subreddit with 1,000 comments a month and 1 monthly internal comment by moderators (50th percentile) had an estimated 4% chance of joining the blackout, while a similar subreddit with 20 monthly internal comments by moderators had only a 3% chance of joining the blackout.*

### LIMITATIONS

The chief limitation of the quantitative analysis is the applicability of the covariate measures to the hypotheses,

as discussed above. Furthermore, the datasets associated with moderator activity in NSFW subreddits do not include information about moderators who resigned between July 2nd and September 11, 2015. Qualitative content analysis of over one hundred blackout-related discussions within subreddits yielded two cases where moderators resigned after the blackout. While this paper offers connections to relevant theories of collective action and social movements, its inductive methods do not test these theories. Finally, the quantitative findings in this paper generalize only to the population of subreddits during the reddit blackout of July 2015.

### DISCUSSION

At a time when many online platforms and communities fundamentally rely on volunteer governance from large numbers of people, the reddit blackout is a powerful voice in favor of supporting those volunteers with meaningful communication and adequate software tools. Moderators do substantial work to create, promote, and maintain social relations online, often at a massive scale. Alongside the meaning they find in that work, many moderators also receive a stream of complaints and threats. Others find pleasure in fostering antagonism and hate, thriving on the drama of controversy and conflict. When these moderators believe that platforms are not supporting them adequately, they can and do organize for change.

What leads such a diverse collection of community leaders to join together in collective action against the platform they share—or to decline participation? On one remarkable moment on reddit in July 2015, more than two thousand community groups forced the company to take notice, negotiate, and change how the company worked. This paper describes how that happened, through qualitative methods and participatory hypothesis testing.

Across reddit, the greatest predictors of blackout participation were related to moderators’ grievances: *the work of moderators* and *the precariousness of their position with company policies*. Although some subreddits need limited tending, moderators can spend hours each day supporting their communities, creating elaborate systems to coordinate that work with large teams, and developing extended policies across the history of their group. NSFW communities at the edge of company policies were more likely to join the blackout, but it’s also possible that moderators of NSFW groups joined because staying within those policies requires more work.

Although default subreddits were no more likely than other subreddits to join the blackout, moderators from those groups started the blackout and conducted important negotiations with the company on behalf of participating subreddits. Reddit employees played a key role in these negotiations, but employee presence as moderators in subreddits was not associated with any significant difference in a subreddit’s probability to join the blackout. The blackout was *led by moderators*, who were the central resources in this social movement. Subreddits with

more moderators were more likely to join the blackout, controlling for all other factors.

Smaller subreddits also joined the blackout, sometimes using the language of “solidarity” to explain their support. Across subreddits of all sizes, *relations among moderators* were also associated with participation in the blackout. Subreddits who shared moderators tended to stick together in their decision either way, whether or not they participated in formalized networks of subreddits.

Community members also played an important role in action against the platform by pressuring moderators to join the blackout, discussing and voting in decisions, and sometimes even punishing moderators who disagreed. This role was not always explicit. Many moderators describe a sense of their community’s connection to the “rest of reddit” as one of the most important factors in their decision. On average across reddit, communities whose participants engaged more with the rest of the platform were more likely to take action against the company, while more isolated subreddits distinct from the rest of the site stayed out of reddit “politics.”

Although participants expected that subreddits with moderators who engaged more with their communities were more likely to take action against the platform, the opposite was true on average on reddit. Older communities and those with more detached leaders were more likely to join an action in support of moderator interests.

### **Implications for Social Movement Mobilization Theories and Collective Action Theories**

Insofar as these findings correspond to grievance-based theories of social movement mobilization, they are consistent with expectations that groups with greater grievances are more likely to mobilize[55]. Relations between moderators were also important social factors in the blackout, as expected by political opportunity theories [52]. Yet the nature of grievances among digital volunteerism and online labor are still questions of substantial scholarly discussion[67], at a time when the nature of platform policies towards users are also still being theorized[27].

Findings on relations among moderators are consistent with expectations from resource mobilization theories. These theories expect that movement organizations with greater resources and less isolation are more likely to take action[53]. This paper finds that subreddits with more moderators and less isolation from the rest of reddit were more likely to join the blackout. However, a deductive test of those theories, which often focus on the comparative resources of opposing parties, might require more covariates for the resources available to a greater variety of actors influencing blackout participation.

Finally, the quantitative findings of this paper do appear to correspond with theories on the development of distinct interests among organization leaders[69]. Older subreddits and those with less engaged moderators were more likely to join the blackout. Research that sets out to

test these theories could include further covariates related specifically to subreddit policies and the work of subreddit governance. Special care should be taken to account for overlapping leadership responsibilities across subreddits and wider leadership structures such as “networks” of subreddits[72].

### **Implications for Social Computing Research**

In pursuit of describing social factors in collective action during the reddit blackout, this paper demonstrates a method of “participatory hypothesis testing,” a way to involve platform users in the development, validation, and interpretation of quantitative models of their behavior. As social computing researchers seek methods for human-centered data science[5], the participatory hypothesis testing methods in this paper illustrate one human-centered approach to studying social behavior in online platforms.

### **Taking Action Against Platform Operators**

Quantitative models tell only part of the blackout story, as participants insistently and repeatedly reminded the author during the process of participatory hypothesis testing. Moderators described tense debates over IRC channels and negotiations in private subreddits as they worked to understand a complex situation rapidly unfolding on reddit and in the press. Participants lamented that it was impossible to include a covariate for voting activity in subreddits that made a democratic decision. Others wished it had been possible to identify subreddits that offer support for people in crisis, news on breaking events, and peer communities among marginalized groups. Many of these support subreddits stayed open rather than cut off their subscribers from needed support.

While the reddit controversies of June and July 2015 included notable employee turnover in the company, including the departure of CEO Ellen Pao, communities were also directly affected by changes the company made. Among subreddits that declined to black out, every moderator interviewed expressed gratitude for the groups that took action, or at least appreciation for changes that the company was forced to introduce.

As the role of online platforms grows in society, mediating our collective intelligence, economic transactions, and social interactions, we can expect that the operators of those platforms will continue to face questions, criticism, and opposition over their management of those societal goods. This paper describes that opposition in action, showing the factors that led community leaders on reddit to join a collective effort to successfully change how the platform and the company works.

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