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CS499

Group Project Final Report

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Introduction, Background, and Significance:

In the digital age, social media platforms have become powerful tools for grassroots activism and large-scale mobilization. Movements that once relied on traditional forms of outreach now harness the speed and reach of platforms like Twitter to spread awareness, organize events, and demand change. This project investigates the relationship between online engagement–specifically, spikes in hashtag activity–and offline social and political actions. By focusing on two of the most prominent digital activist movements of the last decade, Black Lives Matter (BLM) and the Me Too movement, this study seeks to understand whether online momentum leads to tangible outcomes such as protests, policy reforms, or the creation of support networks.

The central objective of this project is to analyze spikes in online engagement surrounding social justice movements using publicly available Twitter hashtag data. Specifically, we aim to assess whether increases in digital activity correspond with real-world actions such as public demonstrations, legislative responses, or organized fundraisers. This inquiry is guided by three primary research questions: (1) What real-world events, if any, tend to follow spikes in hashtag activity related to a movement? (2) How long does offline engagement persist after an online peak? and (3) What defines a "successful" movement in terms of achieving lasting real-world impact?

To answer these questions, we conducted a longitudinal analysis of two case studies. The Black Lives Matter movement, which addresses systemic racism and police violence primarily in the United States, was examined using tweet volume data from 2013 to 2021 tagged with #BLM. The Me Too movement, a global initiative against sexual harassment and assault, was studied beginning with its viral emergence in October 2017 through public tweet metadata associated with the #MeToo hashtag. By analyzing the dynamics of their online and offline trajectories, this project contributes to a deeper understanding of how social computing shapes civic engagement and policy discourse in the modern era.

Related Work:

Our project advances prior art by offering a systemic, quantitative comparison of the BLM and Me Too movements, focusing on sentiment-turnout linkages and using publicly available tweet analysis, filling gaps in Innis & Crawford's qualitative work and single-movement studies. It validates prior findings on activism spikes, mobilization, and polarization differences, confirming Pew, Mundth et al., and others. It partially replicates hashtag, sentiment, and mobilization analyses but extends them with a comparative, protest-specific focus. By emphasizing novel findings(e.g., differential impacts of polarization or sustainability), we draw meaningful comparisons between the BLM and Me Too movements.

Several reputable sources have explored how social media influences the Black Lives Matter (BLM) and Me Too movements, with a focus on online sentiment, activism, and protest turnout. While direct comparisons between the two movements seem limited, there are quite a few articles that provide insights into their dynamics.

One of the first papers to study how social media impacted an activist movement was in 2016 called *Social Media Participation in an Activist Movement for Racial Equality* written by Munmun De Choudhury, Shagun Jhaver, Benjamin Sugar, and Ingmar Weber. It focuses on a specific social activist movement that is also one of the two targets that we examine, BLM. It also specifically targets Twitter as a platform to see how people reacted to events pertaining to BLM.

A 2018 study by Marcie Mundt, Karen Ross and Charla M. Burnett is *Social Media + Society* examined how twitter and other platforms helped BLM expand, analyzing over 40 million tweets and interviews with activists. A 2023 paper in the *Journal of Information Technology & Politics* explored how social media's new use impacts BLM protest participation, suggesting it may amplify gaps between engaged and disengaged citizens.

While most studies focus on each movement separately, a notable exception is the 2024 book *Social Movements and the Law: Talking About Black Lives Matter and #MeToo* by Lolity Bucknet Inniss

and Bridget J. Crawford, published by the University of California Press. This book brings together twelve scholars to explore how BLM and Me Too unfolded, comparing their goals, methods, and interactions, with a focus on social media and legal reform. Pew Research Center also provides data on hashtag usage, showing #MeToo had higher daily averages (61,911 from Oct 16, 2017, to May 1, 2018) compared to Black Lives Matter's (17,002 between July 2013 and May 2018), reflecting different patterns of online engagement.

The BLM movement, originating in 2013 after Trayvon Martin's death and gaining global traction in 2020 following George Floyd's murder, focuses on racial justice, police reform, and systemic racism. It is decentralized, with chapters across the U.S. and heavily relies on social media for mobilization. While Me Too, founded by Tarana Burke in 2006 and amplified in 2017 via Alyssa Milano's viral twitter post, addresses sexual harassment and assault, emphasizing survivor stories and institutional change.

These studies collectively suggest BLM's online activism is protest-driven, with sustained engagement tied to decentralized structure, but faces polarization and repression risks. These studies also indicated Me Too's online activism is narrative-driven, with viral moments like 2017's surge leading to broad initial support, but less sustained protest activity compared to BLM.

Objectives, Goals, and Outcomes:

The central objective of our project is to investigate the relationship between online engagement and real-world outcomes in the context of social justice movements, specifically for BLM and Me Too. Using publicly available Twitter hashtag data, we aimed to determine whether spikes in online activity correspond with tangible offline actions such as protests, changes in legislation, or fundraising campaigns. Goals:

- Collect and process hashtag data related to the BLM and Me Too Movements.
- Identify periods of heightened online activity through temporal analysis.
- Mapping spikes to real-world events using sources such as public records and news archives.

- Evaluating how long offline engagement persists after each spike.

- Propose a definition for "success" for a social movement in terms of sustained real-world impact.

We accomplished these goals. Through our analysis, we identified that both movements experienced distinct waves of online engagement that coincided with real-world responses, but the nature of those responses varied. For instance, #BlackLivesMatter spikes were more often tied to mass mobilizations and protests, while #MeToo spikes tended to lead to public accountability and longer cultural conversations. This comparative approach revealed how different forms of digital activism can produce different kinds of real-world outcomes.

Description of Work Accomplished: Data

To conduct our analysis of online engagement around social justice movements, we utilized publicly available datasets sourced from GitHub and Kaggle. These platforms were selected due to their reputations for hosting high-quality, credible datasets that are widely used in academic and industry research. GitHub is frequently relied upon for open-source research data and collaborative projects, while Kaggle is known for its extensive repository of cleaned, curated datasets across a range of domains, including social media and public opinion data.

The primary data used in this project consisted of daily tweet count records for two major movements: Black Lives Matter (BLM) and Me Too. For the BLM movement, we accessed a dataset detailing tweet volumes tagged with #BLM from 2013 through 2022. This provided a longitudinal view of the movement's digital footprint over nearly a decade. The Me Too movement was analyzed using a dataset from GitHub containing tweet metadata beginning in October 2017, when the hashtag first went viral. Our focus was on tweet frequency over time, enabling us to identify periods of significant online engagement and compare those peaks to real-world events.

Description of Work Accomplished: Approach

This project adopted a computational and mixed-methods approach to analyze the relationship between online activism and offline impact. Our primary technique involved time-series analysis of tweet volume data associated with two prominent social movements: Black Lives Matter and Me Too. Using Python and its data analysis libraries–particularly Pandas for data manipulation and Matplotlib for visualizations–we created detailed graphs of daily tweet frequencies over extended time periods. We then manually annotated these plots with key real-world events such as protests, policy changes, and major news stories. This overlay allowed us to visually assess patterns of alignment between digital engagement and offline action.

This approach was chosen because it allowed for scalable, data-driven insights into long-term trends while preserving the flexibility needed for contextual interpretation. Computational tools provided efficiency and accuracy in handling large volumes of data, while the manual annotation of real-world events ensured relevance and narrative clarity. The use of tweet volume as a metric enabled us to bypass the challenges of working with raw tweet content–such as access restrictions, natural language complexity, and the risk of misinterpreting sarcasm or tone–while still capturing a reliable measure of public engagement.

Throughout the data gathering and analysis process, one of the primary challenges we encountered was ensuring that the tweet data was both comprehensive and representative of broader engagement trends. While the datasets provided useful quantitative insights, they did not include tweet content or sentiment, which limited our ability to assess the tone or intent behind the posts. To mitigate this, we focused strictly on tweet volume as a proxy for engagement, aligning it with verified offline events to evaluate potential correlations. Overall, the data provided a solid foundation for examining the temporal dynamics of digital activism and its potential offline impact.

This method had several strengths, including its ability to highlight large-scale engagement trends over time and its simplicity in presenting results that are visually intuitive. However, it also came with limitations. The most significant was the inability to determine causation–correlation between tweet spikes and real-world events does not confirm one led to the other. Additionally, without sentiment or

content analysis, we could not assess the nature of the online discourse. These limitations suggest that while our findings are compelling, they are best interpreted as indicative rather than definitive, and point toward the value of incorporating more nuanced analyses in future work.
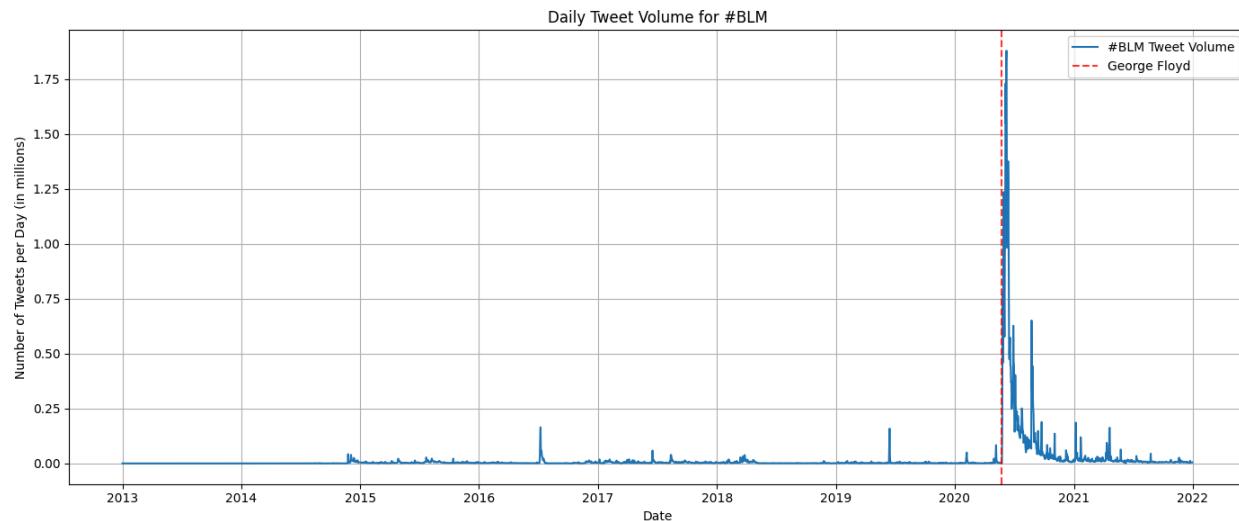
Results:

The results of this study reveal meaningful connections between spikes in online activism and real-world events, validating our approach of using tweet volume as a proxy for public engagement. By visualizing time-series data and annotating it with key offline events, we were able to observe how digital momentum corresponded with social and political action in both the Black Lives Matter and Me Too movements.

For the Black Lives Matter movement, the most prominent finding was a dramatic spike in tweet activity between late May and early June 2020. During this period, daily tweet volume tagged with #BLM peaked at over 1.8 million tweets per day–the highest point in the dataset spanning from 2013 to 2022. This digital surge closely followed the murder of George Floyd on May 25, 2020, and aligned directly with one of the largest waves of protests in U.S. history, involving an estimated 15 to 26 million participants across all 50 states. This correlation between viral online activity and mass real-world mobilization strongly supports our first research question: significant real-world events did, in fact, follow peaks in digital engagement.
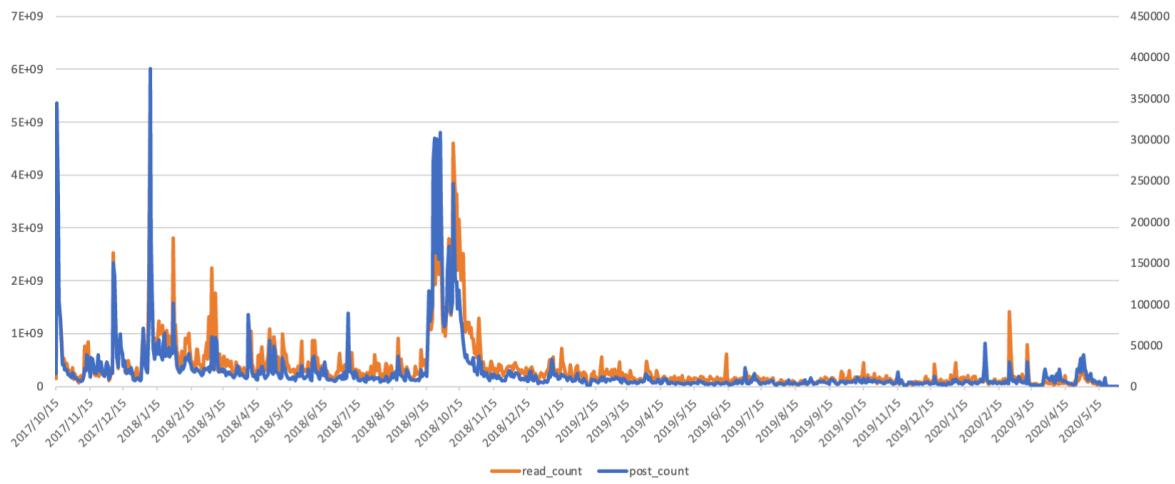
Furthermore, the sustained tweet activity that followed the initial spike indicated a persistence of online engagement beyond the triggering event, addressing our second research question about the longevity of offline responses. Notably, policy responses emerged in the wake of the protests. The Minneapolis City Council announced plans to dismantle its police department (though this was later reversed), and numerous U.S. cities and states introduced reforms such as banning chokeholds, mandating the use of body cameras, and enhancing police accountability. Additionally, New York State repealed Section 50-a, enabling public access to police disciplinary records. The global resonance of the movement was also evident, with BLM protests and demonstrations taking place in the UK, Germany, Australia, and

Canada. This breadth and endurance of real-world response illustrate what may define a "successful"

movement, as posed in our third research question–namely, one that generates not only widespread

awareness but also policy impact and international solidarity.

The Me Too movement displayed a similarly strong correlation between online engagement and

offline outcomes. Sharp spikes in tweet volume were recorded in October and December 2017, and again

in January 2018, reflecting the viral spread of the movement after the publicized allegations against

Harvey Weinstein. Alyssa Milano's viral tweet urging survivors to share their stories using the hashtag

#MeToo triggered a wave of public disclosures, garnering millions of responses worldwide. This initial

digital surge was closely followed by the launch of the Time's Up Legal Defense Fund in January 2018,

designed to support survivors pursuing legal action. This sequence of events demonstrates another

instance in which heightened digital activity quickly transitioned into meaningful offline initiatives.

Further evidence of impact emerged in 2018, as several states–such as California, New York, Illinois, and

Washington–passed or updated workplace harassment laws in response to the Me Too movement. These

policies expanded legal definitions of harassment, mandated anti-harassment training, and restricted the

use of non-disclosure agreements (NDAs). A second major spike in Me Too activity occurred during

September and October 2018, coinciding with the Brett Kavanaugh Supreme Court hearings, in which

Christine Blasey Ford testified about her experiences of sexual assault. This event reignited national

conversations on sexual misconduct and catalyzed global waves of #MeToo activism, particularly in countries like India and France. Although overall tweet volume gradually declined after these peaks, smaller, periodic resurgences in activity suggest that the movement remained socially and politically relevant.
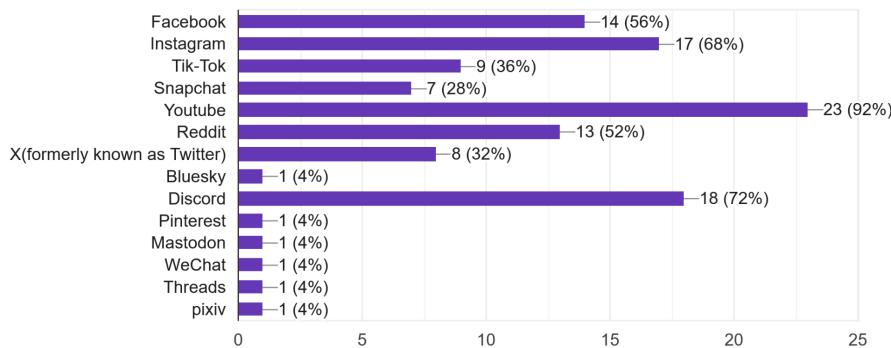

In addition to the time-series analysis, we conducted an anonymous survey to better understand how social media users interact with activism-related content. Respondents were asked about their age, race, and gender, as well as their country of origin as well as their education, and work status. They were then asked about the platforms they use, how they discover protest information, and the extent of their engagement. Results indicated that most participants learned about protests and activism through news articles or videos shared on social media platforms. A significant number of users identified as "lurkers"–those who frequently view protest content but rarely engage or interact with it directly. Rather than taking firm stances, most respondents reported that they consume activism content primarily to stay informed. Importantly, an overwhelming majority agreed that social media plays a successful role in supporting protest movements by amplifying awareness and enabling fast information dissemination. However, a recurring concern voiced in the open-ended survey responses was the fear of misinformation. Participants expressed hesitation about sharing activist content due to uncertainty about its accuracy or origins, underscoring a key challenge in digital activism: the tension between viral momentum and

information reliability. The survey findings reinforced the broader narrative of our results–online activism is both influential and complex, shaped by user behavior, platform design, and societal trust in digital information.
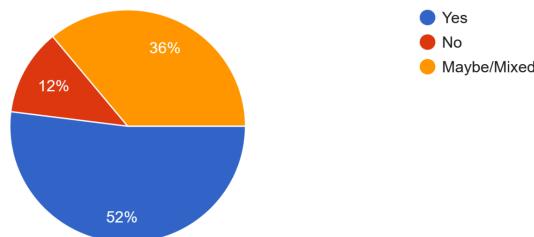
**What Social Media Services do you use?**
25 responses

Platform	Responses
Facebook	14 (56%)
Instagram	17 (68%)
Tik-Tok	9 (36%)
Snapchat	7 (28%)
Youtube	23 (92%)
Reddit	13 (52%)
X(formerly known as Twitter)	8 (32%)
Bluesky	1 (4%)
Discord	18 (72%)
Pinterest	1 (4%)
Mastodon	1 (4%)
WeChat	1 (4%)
Threads	1 (4%)
pixiv	1 (4%)
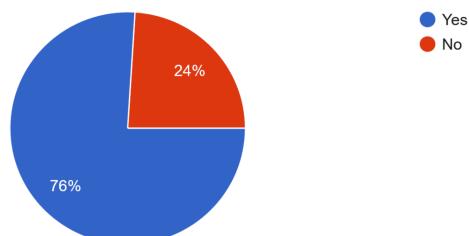
Do you use social media as a source for news?
25 responses

- Yes — 52%
- No — 12%
- Maybe/Mixed — 36%
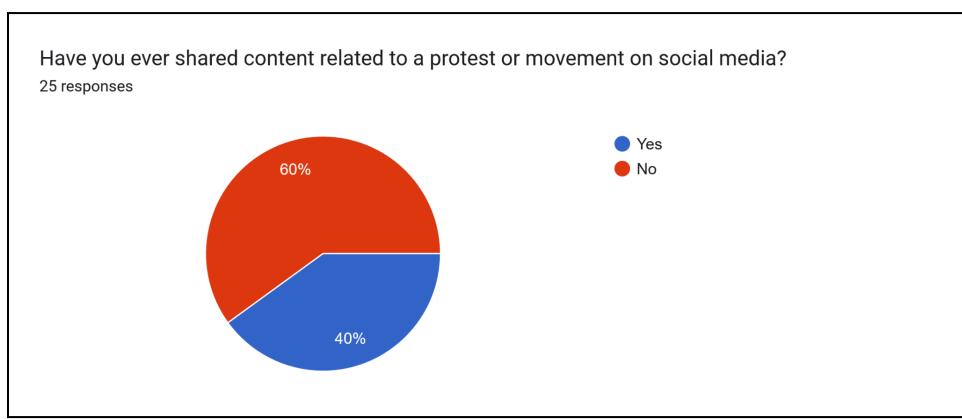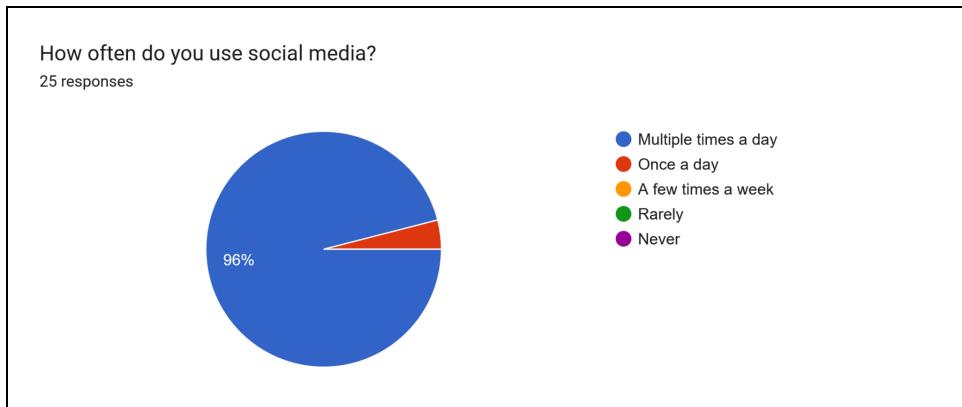
Have you ever used social media to learn about a protest or movement?
25 responses

- Yes — 76%
- No — 24%

How often do you use social media?
25 responses

- Multiple times a day
- Once a day
- A few times a week
- Rarely
- Never

96%

Have you ever shared content related to a protest or movement on social media?
25 responses

- Yes
- No

60%

40%

Demographics:

There were 25 responses to the survey; the majority of those who took the survey were between the ages of 18-24 (16/25 responses), and the rest were between the ages of 25-34. Most respondents were male (15/25), with 10/25 identifying as female. All respondents live in the U.S. The racial and ethnic groups represented in the survey were White (11/25), Asian (8/25), Black or African American (3/25) and Hispanic or Latino (3/25).

Discussion, Implications, and Conclusion:

Our analysis confirms that spikes in online engagement often precede meaningful real-world events. In both the Black Lives Matter and Me Too movements, tweet volume surges closely aligned with

major protests, policy proposals, and legal reforms. This supports our first research question: viral digital activity can be a strong indicator of forthcoming offline mobilization.

We also found that offline engagement can persist for weeks, especially when supported by clear calls to action and sustained public attention. For example, the BLM protests in 2020 led to weeks of ongoing demonstrations and political debate, while the Me Too movement maintained momentum through legal initiatives and global adaptations. These cases address our second research question, showing that movements can maintain offline impact well beyond the initial digital peak.

As for what defines a "successful" movement, our findings suggest that long-term impact–such as policy change and continued discourse–is key. Both case studies demonstrate how digital activism can translate into sustained influence when public interest is met with actionable goals and institutional response.

Based on these insights, we identified several best practices for activists: launch campaigns during moments of public focus, use emotionally resonant content to drive engagement, pair digital messaging with concrete offline actions, and maintain momentum through consistent follow-up. These tactics help bridge the gap between online visibility and real-world outcomes.

Limitations:

When conducting the survey, there is the possibility of social desirability bias, where respondents may overreport socially favorable opinions (supporting social justice) and underreport less socially favorable opinions (inaction or skepticism towards protests). This bias can influence the reliability of self-reported data, especially in a university setting where social justice engagement may be culturally encouraged.

To reduce or account for this bias, we could emphasize more on the anonymity of the survey and encourage honesty, reinforce that there are no right or wrong answers, which can help respondents feel safer in being honest. We could also improve our survey by asking more indirect and behavior-based questions, such as: "In the last year, how often have you interacted with protest-related posts?" or "Have

you ever unfollowed or muted someone for posting protest content?". And finally, we could have cross-validated survey responses with external data, like comparing trends in the survey response with actual social media trends or protest attendance data. This would help validate the self-reported data. To help mitigate the limitations of self-reported data, we incorporated open-ended questions, so respondents can express nuance in their opinions, and can help identify if responses feel performative or inconsistent with the rest of the data. An example of this in our sample size is that about half of the respondents left one-word replies to our open-ended questions, while the other half wrote entire paragraphs.

Conclusion:

Looking ahead, future work could expand analysis to other platforms like TikTok or Instagram, and incorporate sentiment analysis to better understand tone and emotion. Additionally, exploring causal relationships–not just correlations–could deepen our understanding of how digital activism influences offline behavior.

Overall, this study highlights the potential of social media as a powerful tool for organizing and sustaining activist movements. While online engagement alone doesn't guarantee change, it clearly plays a crucial role in amplifying causes and enabling collective action.

Team Member Roles:

Mohnish Bakshani: Survey design, Related Works, Objectives/Goals/Outcomes, Limitations

Sabria Linton: Introduction/Background/Significance, Description of Work Accomplished: Data/Approach, Results, Discussion/Implications/Conclusion, Conclusion

Devin He: N/A

Zhe Tan: N/A

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