

Undergraduate Thesis Prospectus

Footbridges: Building Safe Connections
(technical research project in Civil Engineering)

Social Media and Social Controversy:
Platforms' Responses to Their Critics
(sociotechnical research project)

By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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General research problem

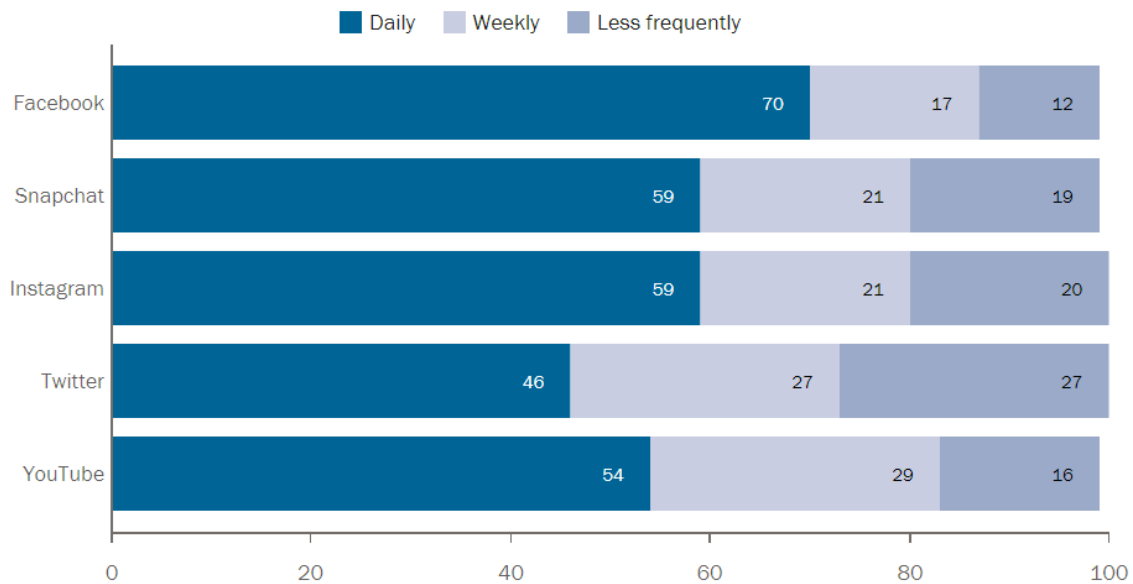
How may healthy interpersonal networks be promoted?

Interpersonal networks may require physical infrastructure, such as bridges, or digital connections, such as those that social media offers. In both cases, safe and reliable connections are not given but must be designed.

The conditions of both modes of connection, bridges, and social media affect most Americans as they are utilized daily. Roughly 600,000 bridges in the U.S. are crossed by motorists daily, and social media is used by 72.5% of the U.S. population (ARTBA, 2021; Kemp, 2023). Bridges have been used in the U.S. since the 19th century to connect areas (HBF, n.d.). These connections are essential for workers' access to jobs, products to stores, and consumers to services. Without this access, the economic system of the U.S. could not function. Motorists typically trust that the bridges they drive on are safe. However, the American Road and Transportation Builders Association (ARTBA) found that 42,400 bridges are structurally deficient (2021). It is important when designing bridges that longevity is prioritized because thousands of bridges in use are technically unsafe, but repair for all of them will take years. Like in the U.S., all over the world, some communities have barriers where a bridge is needed to allow for essential resources to be reached. Unfortunately, less technologically developed communities may not have the resources to build a safe bridge to make those connections themselves.

Digital connections are modern to society, but it has quickly become seemingly essential to many in the U.S. A 2021 study by the Pew Research Center concluded that popular apps such as Facebook, Instagram, and Snapchat are used daily by most social media users (fig. 1) (Pew, 2021).

Among U.S. adults who say they use ____, the % who use each site ...



Note: Respondents who did not give an answer are not shown.
Source: Survey of U.S. adults conducted Jan. 25-Feb. 8, 2021.

Fig. 1. Americans' social media use, by frequency and site (Pew 2021).

Social media is a way to meet like-minded individuals one would not meet otherwise due to distance or lack of opportunities. For many, social media is also a way to learn about social issues and spread awareness. Since its start, social media's goal, even if only for the creator of an application, was about making money. Now, users of applications can make a living as influencers and content creators. With social media becoming more engrained into daily life, the safety of the applications for users is more important than ever.

Footbridges: Building safe connections

How may reliable, year-round, cross-river connections over the K'ellu Mayu River in Bolivia best be established?

This is a Civil Engineering capstone project by Jessica Brown, Sacha Choubah, Ronald Orellana, Calvin Reeves, and Gabriel Witter. The academic advisor is Jose Gomez. The project aims to work with the Engineers in Action (EIA) organization to design a footbridge for the Pocona people over the K'ellu Mayu River (fig. 2).



Fig. 2. K'ellu Mayu River

A footbridge is a bridge that enables pedestrians to cross wetlands or rivers. The bridge design will include the design of timber, wire rope, reinforced concrete, geotechnical, and masonry systems. Typically, footbridges accommodate pedestrians only on foot, but we are tasked with the bridge, allowing bicyclists, motorcyclists, and animals to cross. As seen in Figure 1, the river is wide, so during the rainy season, which lasts around 150 days out of the year, the Pocona people cannot cross. On the other side of the river are the schools, a medical clinic, and resources. This bridge would allow the Pocona people to have safe access to their daily needs throughout the year. Because of the limited capacity of EIA, the team will be designing with sparse data on the existing conditions and contact from the region's people. This means that

assumptions will be made during the design process. Without this project, the Pocona people would have to continue to cross through the river during the rainy season, risking injury or death. An alternative solution to the project would be for the communities on the different sides of the river to become independent of each other during the rainy season so that crossing the river would no longer be essential. The people could store medical supplies and other resources and have schools for the children on both sides of the river. To complete the project, EIA has created modules for teams nationwide to learn the necessary skills. Our team has completed the module for a standard bridge and will watch the supplemental modules on advanced bridge design, construction schedules, and project management in the coming weeks. This project's result will be a design for a footbridge that could allow for safe crossing of the K'ellu Mayu River for years to come.

Likes or Love: Are top earners from social media acknowledging negative claims

In the US, how are social media companies responding to criticism that condemns social media platforms as divisive, isolating, or depressing for today's youth?

The first social media platform was created in 1997, called SixDegrees, based on the theory that everyone is connected through no more than six degrees of separation (Lile, 2023). People could create profiles and connect with other users. In the 26 years since its start, social media has grown rapidly. In a report by Hopelab on teens' (14-17 years old) and young adults' (18-22 years old) social media usage, 93% said they use social media, and 81% use social media daily (Rideout & Fox, 2018).

Studies are showing a positive correlation between the amount of screen time and social media usage and the diagnosis of depression and anxiety (fig. 3) (Twenge & Campbell, 2018). A cross-research study was done in 2017 to make conclusions based on previous studies in the U.S.

and other countries. They similarly concluded that higher social media usage is positively correlated with negative mental health results such as social anxiety, stress, suicidal ideation, and body shaming. With so many of today’s youth participating in social media, it is essential to consider if its effects on young people are being adequately accounted for.

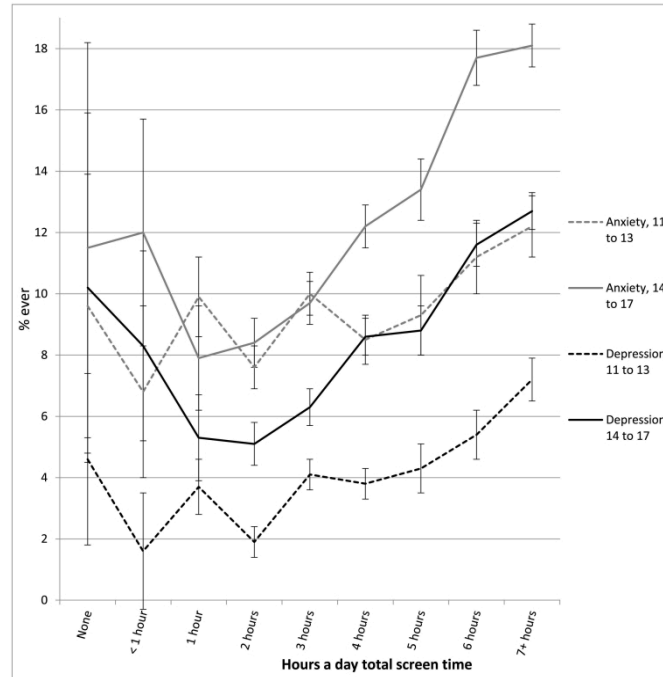


Fig 3. Percentage ever diagnosed with anxiety or depression, by age and level of screen time, with controls, U.S., 2016. Error bars are ± 1 SE.

Some parents of teens have seen how their children use social media and are actively working to make a change in their own families by enforcing rules for social media or going towards more legal methods to change the way social media is used (Joyce, 2023), (Alfonsi, 2023). Their agenda is to protect their children from harm that could stem from social media. Amy Joyce, a writer for the On Parenting column of the Washington Post, wrote, “Ask them to really think about how they feel when they, say, play their guitar vs. when they watch TikTok.

Many kids already understand that social media can create stress and anxiety in their lives.” Most parents are around their children every day, and they see the frequency of social media usage and worry about the effects it could have on their children’s future.

American psychologists are interested in protecting youth by advising on how social media affects young people. In May 2023, the American Psychological Association wrote ten recommendations for stakeholders on addressing teen social media usage to avoid adverse outcomes (American Psychological Association, 2023). Their report drew heavily on research from the U.S. Surgeons General Advisory on Social Media and Youth Mental Health. The advisory included that social media made 40% of adolescents feel worse about their body image.

Teens have their ideas about how social media has affected them. In a study conducted in 2022 by the Pew Research Center, 32% of teens said they felt social media harms their age group, and 9% said that it hurts their lives (Vogels & Gelles-Watnick, 2023). However, teens also have to work through the pressure of most of their peers using social media daily. They may see a harmful effect on themselves but will have difficulty giving up social media for fear of missing out on the next trend or meme.

Many politicians have decided that social media companies need to be held accountable for the health effects of social media. In October 2023, 33 states joined a federal lawsuit against Meta for its deceptive advertising of the harms of Facebook and Instagram. The state’s attorney generals argue that Meta ignored safety concerns to addict more young people to the platforms and earn more profit (Allen, 2023). Also, in April of 2022, two U.S. senators and two U.S. congress members wrote a letter to Mark Zuckerberg condemning Meta’s amplification of eating disordered content. The four authors called for Meta to respond to five questions in 30 days that would determine if Meta would take accountability for their findings and try to change. The first

question was as follows, “Will Meta commit to taking all necessary steps to stop the amplification of pro-eating disorder content, influencers, and accounts to children and teens? Please describe in detail the policy changes Meta will make in response to the increasing evidence showing the prevalence of this content among young users (Markey et al., 2022).” Meta has not responded.

Social media companies want to defend that their platforms are not responsible for adverse mental health effects in youth. When asked about data showing the negative impacts of Meta’s services, Antigone Davis, Facebook’s global head of safety, pointed to data that showed teens enjoyed the services (Kang, 2021). These companies also want to prove that they are actively ensuring that platforms are safe for children. In 2021, Mark Zuckerberg, CEO of Meta, responded to a congressional hearing that involved a past employee sharing an internal report showing that Instagram can have adverse effects on youth (Heath, 2021). His response was posted on Facebook, “The reality is that young people use technology. Think about how many school-age kids have phones. Rather than ignoring this, technology companies should build experiences that meet their needs while also keeping them safe. We’re deeply committed to doing industry-leading work in this area. A good example of this work is Messenger Kids, which is widely recognized as better and safer than alternatives(Zuckerburg, 2021).”

References

- Lile, S. (2023, August 4). Complete History of Social Media: Then And Now. Small Business Trends. https://smallbiztrends.com/2023/08/history-of-social-media.html?expand_article=1
- Rideout, V., & Fox, S. (2018). Digital Health Practices, Social Media Use, and Mental Well-Being among Teens and Young Adults in the U.S. <https://assets.hopelab.org/wp-content/uploads/2020/08/a-national-survey-by-hopelab-and-well-being-trust-2018.pdf>
- Joyce, A. (2023, May 25). Limiting teens' social media feels impossible. But we have to try. Washington Post. <https://www.washingtonpost.com/parenting/2023/05/25/social-media-mental-health-parenting/>
- Alfonsi, S. (2023, June 4). More than 2,000 families suing social media companies over kids' mental health. CBS News. <https://www.cbsnews.com/news/social-media-lawsuit-meta-tiktok-facebook-instagram-60-minutes-transcript-2023-06-04/>
- American Psychological Association. (2023, May). Health Advisory on Social Media Use in Adolescence. Apa.org. <https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use>
- Vogels, E. A., & Gelles-Watnick, R. (2023, April 24). Teens and social media: Key findings from Pew Research Center surveys. Pew Research Center. <https://www.pewresearch.org/short-reads/2023/04/24/teens-and-social-media-key-findings-from-pew-research-center-surveys/>
- Kang, C. (2021, September 30). Facebook Grilled by Senators Over Its Effect on Children. The New York Times. <https://www.nytimes.com/2021/09/30/technology/facebook-senate-hearing.html>
- Allen, B. (2023, October 24). States sue Meta, claiming Instagram, Facebook fueled youth mental health crisis. NPR. <https://www.npr.org/2023/10/24/1208219216/states-sue-meta-claiming-instagram-facebook-fueled-youth-mental-health-crisis>
- Pew Research Center. (2021, April 7). Social Media Fact Sheet. Pew Research Center; Pew Research Center. <https://www.pewresearch.org/internet/fact-sheet/social-media/>
- Kemp, S. (2023, February 9). Digital 2023: The United States of America. DataReportal – Global Digital Insights. <https://datareportal.com/reports/digital-2023-united-states-of-america>

Timeline: Bridges of the United States. (n.d.). Historicbridgefoundation.com.
<https://historicbridgefoundation.com/features/timeline/>

Monroe, J. (2022, July 14). The Effect of Social Media on Teenagers. Newport Academy.
<https://www.newportacademy.com/resources/well-being/effect-of-social-media-on-teenagers/>

American Road & Transportation Builders Association. (2021). Bridge Conditions Report 2021.
<https://artbabridgereport.org/reports/2021-ARTBA-Bridge-Report.pdf>

Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive medicine reports*, pp. 12, 271–283.
<https://doi.org/10.1016/j.pmedr.2018.10.003>

Mark Zuckerberg. (2021, October 5). AI wanted to share a note I wrote to everyone at our company. ---Hey everyone: it's been quite a week. Facebook.
<https://www.facebook.com/zuck/posts/10113961365418581>

Heath, A. (2021, October 5). Mark Zuckerberg breaks silence to say the Facebook whistleblower's claims "don't make any sense." *The Verge*.
<https://www.theverge.com/2021/10/5/22711837/mark-zuckerberg-responds-to-facebook-whistleblower>