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Finding the Edges of Problems: Social Media as an Exploratory Research Tool

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ABSTRACT

Social media use in public health and other health related research applications has seen a rapid increase in recent years. However, there has been very limited utilization of this growing digital sector in agricultural injury research. Social media offers immense potential in gathering informal data, both text and images, converting them into knowledge, which can open up avenues for research, policy, and practice. There are a number of ways social media data can be utilized in agricultural injury research. This paper touches on the adoption of these data sources in health research and discusses the use of social media as an exploratory research tool that can peer into and identify the edges of potential health and safety problems.

Introduction

Researchers can glimpse the edges of sentinel injury surveillance via user-generated content on social media platforms – virtual environments where people tend to post what they perceive as socially acceptable and socially valuable.[1] With lack of a national agricultural injury surveillance system, and limited up-to-date regional surveillance datasets, news media and social media are increasingly providing insights, ideas, and value to stakeholders across many disciplines.

As social media use by health researchers continues to evolve, [2] we expect this evolution will follow a similar growth pattern as the digital platforms themselves. Facebook alone reports more than 2.6 billion active monthly users as of the first quarter of 2020.[3] Organizations selling products from vacuums to vaccines have taken to these platforms to market and communicate with consumers. The complexity of these networks, the massive number of users, and the depth of content provide rich grounds for research across nearly every discipline.

Social media has become ubiquitous in today's life as people try to keep their social connections and make their opinions heard. There has also been an increase in social media use as more and more people are distancing themselves from in-person human contact, either due to CDC-recommended social-distancing policies, or self-imposed distancing. However, negative impacts on emotional and mental well-being due to high social media use is also well documented and has led to people opting out of certain social media platforms such as Facebook .[4]

Social media health research currently falls into several different categories. These categories arise from how, why, and what aspects of social media are being used for research. Some researchers use social media data to understand "the state of affairs" among a population subset to build a foundation on which assumptions and future research can be made. Some researchers use it as a tool for their research (e.g. data collection), some try to understand social media use and its impact on society, and others use it for implementation of a research concept. Some of these relevant categories include 1) social media as a venue for collecting and analyzing massive global data[5] and 2) social media as a tool for data collection, often referred to as social media mining–using surveys, observations, natural language processing and crowdsourcing .[6] These data collection categories provide fruitful research pipelines for identifying public health trends before they become noticeable in traditional health surveillance.

Using social media as a tool to explore novel areas of research is not a new concept and has been referred to as social media mining in other contexts .[6] Over these past few months of COVID-induced shutdowns and closures, our team has noticed a number of user-generated posts on Facebook and Twitter displaying many of the core complexities of the farm kid paradox – a balance of healthy farm living and the occupational and environmental hazards of production agriculture .[7] It is no surprise that parents are easily excited about children's accomplishments and adventures, especially during an unprecedented time of physical and social distancing and, therefore, stress. Many take to web-based platforms to connect and share these moments with their social networks, with Facebook reporting 1.2 million users with a work interest in farming, fishing, or forestry, about 60% of the US farming population.[8] While well-intentioned, some posts and imagery display activities and risky behaviors that can and do lead to injuries and fatalities across the agricultural industry.

There are limitations to using social media as a research tool as with any other methods, and should be used along with others. However, it is also important to note that given the number of people using social media and the rapidly growing user base, that it be considered as an important part of a researcher's toolkit. In addition, sophisticated social media crawlers, scrapers and data analytics tools have made it easier to download large amounts of user-generated data and analyze them.

We propose that social media could be leveraged as a way to triangulate a potential problem in society, especially given the volume of sharing during crises; i.e. there is simply more data being self-generated. These posts, storylines, likes, shares, tweets, and live feeds expose what are likely the edges of larger problems; i.e. they give us reasonable data that behaviors are changing if not being more well-documented. We focus on the example of children being photographed, recorded, and commented about as they engage in more activities in agricultural settings.

Agricultural injuries and children

Agriculture remains the only dangerous industry in the United States that allows young child workers, and there are nearly 900,000 children living on farms.[9] These same farms often operate as the family home, worksite, and play area. With the many aforementioned shutdowns and closures in place, particularly schools and childcare facilities in mid-March 2020, we expect an increase in children on the farm.[10] Currently, childcare closures vary state to state and even school district to school district with 2020–21 school year plans ranging from a full reopenings to strict remote/online attendance until further notice. Not only do children live and play on the farm, they are often employed to perform minor to moderate work tasks, and are often present when other family members are performing farm work. Agricultural injuries typically increase around spring planting and fall harvesting seasons, which may be exacerbated by school and childcare closures. This often leads to increases in child agricultural injuries, as many children are not yet capable of, physically or cognitively, performing these tasks safely.

News report data can be obtained through AgInjuryNews.org, a publicly available database that tracks agricultural injuries through online media reports .[11] AgInjuryNews is the only system of its kind offering publicly available, current data and news stories, used by agricultural safety and health stakeholders from around the globe .[11] Over this next year (or more) of increased risk and hazard exposures for youth in agricultural environments, this system, acknowledging its own limitations, may likely be the most current and complete system of agricultural injuries, particularly among working and non-working youth.

In addition to the traditional media sources, social media offers substantial potential in collecting and analyzing such data and providing useful insights. Furthermore, newer methods such as big data analytics, natural language processing, and machine learning could be used to convert this data into knowledge and pave paths to increased understanding of agricultural health, safety, and injuries, which could help in disseminating safety measures and public health messages to this population subset.

Many parents, including farm parents, take to social media platforms to proudly share moments of their children helping and working. For example, unsafe images were shared on a 12,000-member Facebook group, titled "homemade/modified tractor implements" (Figure 1). Someone had built and

Figure 1. Homemade child seat attached to tractor fender.

shared a seat mounted on a tractor fender that was designed for their 7-year-old to ride along when bush hogging; others joined in by posting their own contraptions. Many group members condemned these photos or pleaded for them to be safe and not give children "tractor rides" in this way, while many others supported the concept, with one even posting "you're a good dad". The youth pictured did have hearing protection on. So presumably, these parents' (and many parents') awareness of risk is present, perhaps just miscalculated at times.

Conclusions

COVID-19 has likely played some role in altering (or solidifying) many parents' own perception of risk, risk tolerance, and/or the reprioritization of risk calculations. These "calculations" are put to the test every day for parents, at home and through the public and extracurricular activities we choose for our children. This fall will challenge many when schools re-open in some fashion, but offer parents options to send their children or keep them home. Amidst this global pandemic, and before, parents have shared photos and videos of family and children involved in their agricultural operations. We fully expect this will continue through the seasons, particularly as children are more involved in family farms with less school and extracurricular commitments demanding time. As such, social media posts have allowed us to peer into the lives of real people and real agricultural operations. Albeit edited at times, these posts can provide insights and open the discussion on broader health and safety problems that may need intervention. Injury and illness do not currently have a manner to be rigorously reviewed through social media data. We do, however, gain a growing sense of many people's daily lives – insofar as what people want to show the world. These brief moments of risky behavior are likely the tip of the iceberg, as they reflect what are perceived as socially acceptable actions. If we can triangulate these data of social behavior and the accompanying narratives with increased emergency room visits, increased purchases of dangerous machines, etc., we can begin to feel the edges of a very real problem of which we may never get a clear view without a robust surveillance system. These incomplete or precarious groups of evidence, like social media content, can inform better methodologies, questions, and lenses for analysis if we pay close attention and keep asking questions. Therefore, we need to collaborate and plan together our "feeling" of the edges, pursue some validation of those efforts, and begin to trust ourselves when we sense something is changing, for better or for worse.

Author contributions

All authors participated in the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be submitted/published; and all agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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References

1. Eftekhar A, Fullwood C, Morris N. Capturing personality from Facebook photos and photo-related activities: how much exposure do you need? *Comput Human Behav*. 2014;37:162–170. doi:10.1016/j.chb.2014.04.048.h.
2. Dol J, Tutelman PR, Chambers CT, et al. Health Researchers' Use of Social Media: scoping Review. *J Med Internet Res*. 2019;21(11):e13687. Published 2019 Nov 13. doi:10.2196/13687.
3. statista. Number of monthly active Facebook users worldwide as of 1st quarter 2020. https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/#:~:text=With%20over%202.6%20billion%20monthly,network%20ever%20to%20do%20so. Accessed June 30, 2020.
4. Brooks S. Does personal social media usage affect efficiency and well-being? *Comput Human Behav*. 2015;46:26–37. doi:10.1016/j.chb.2014.12.053.
5. Nambisan P, Luo X, Kapoor A, Patrick T, Cisler R. Social media, big data and public health informatics: ruminating behavior of depression revealed through Twitter. Proceedings of the HICSS −48 (Hawaii International Conference on System Sciences) conference; 2015; Kauai, Hawaii.
6. Sarker A, O'Connor K, Ginn R, et al. Social media mining for toxicovigilance: automatic monitoring of prescription medication abuse from Twitter. *Drug Saf*. 2016;39(3):231–240. Bendixsen C. A Farm Kid Paradox. J Anthropol N Am. 2019;22: 139–142. doi:10.1007/s40264-015-0379-46.
7. CDC; The National institute for occupational safety and health. childhood agricultural injury prevention initiative. Childhood agricultural injury survey (CAIS) results. https://www.cdc.gov/niosh/topics/childag/cais/demotables.html. Accessed June 30, 2020.
8. FACEBOOK for Business. Ads manager; 2020. https://www.facebook.com/business/tools/ads-manager. Accessed Aug 13, 2020.
9. Cluver L, Lachman JM, Sherr L, et al. Parenting in a time of COVID-19 [published correction appears in Lancet. 2020 Apr 11;395(10231):1194]. *Lancet*. 2020;395(10231): e64. doi:10.1016/S0140-6736(20)30736-4.
10. Weichelt B, Salzwedel M, Heiberger S, Lee BC. Establishing a publicly available national database of US news articles reporting agriculture-related injuries and fatalities [published online ahead of print, 2018 May 22]. *Am J Ind Med*. 2018. doi:10.1002/ajim.22860.
11. Burke R, Pilz M, Redmond E, Gorucu S, Weichelt B. Stakeholders' usage of a publicly available collection of agricultural injury reports from news media: a five-year analysis of website usage and visitor analytics. *JMIR Prep*. 2019 Nov 12:17421. doi:10.2196/preprints.17421.