

Credibility and Crisis in Pseudonymous Communities

Candidate Number: 417636

St. Anne's College, University of Oxford

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Abstract

Information credibility is difficult to ascertain online, even more so when traditional markers of source identity are not present. Yet increasingly, individuals determine the credibility of emerging information in such contexts, both on a day-to-day basis and in the midst of crisis events. In this thesis, we examine the relative influence of credibility cues in a pseudonymous context, investigating not only general effects but whether the cues that affect credibility perception maintain their effects in the face of a crisis situation. Using data from reddit, we investigate the impact of commenter reputation, recency of posting, visibility, and use of persuasive appeals on the perceived credibility of comments in crisis and non-crisis events through both quantitative and qualitative content analysis. Findings include a positive relationship between commenter reputation and perceived credibility in non-crisis situations; a strong positive relationship between perceived credibility and the use of persuasive appeals relating to one's character or experiences in times of crisis; and a strong positive relationship between perceived credibility and the use of a link in a crisis scenario. We also find negative relationships between recency and perceived credibility and positive relationships between visibility and perceived credibility in both crisis and non-crisis scenarios, though with differing levels of effect. We explore how reddit's conversational structure impacts credibility perceptions, describe how persuasion is operationalized, and elaborate a typology of highly credible comments in both crisis and non-crisis events. Through this study, we not only pilot a methodologically innovative investigation of perceived credibility in crisis scenarios but also make substantial contributions to research on both credibility perception and crisis informatics.

Keywords: Online Credibility, Crisis Communications, Social Media, Pseudonymity, Heuristics
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1. Introduction

In times of uncertainty, it is critical for both individuals and organizations to be able to determine who—or what—to believe. Yet in the digital age, the matter of ascertaining credibility is growing increasingly complex. A combination of forces, ranging from proliferation of sources to muddying of content production and consumption roles, creates a paradoxical situation for those seeking to verify facts found online and challenges traditional strategies of assessing credibility (Flanagin & Metzger, 2000; Metzger, Flanagin, & Medders, 2010; Sundar, 2008). This is particularly pronounced in contexts where the notions of “author” and “source” are made obscure, such as social media sites. Rather than balk in the face of this credibility-assessment chaos, however, everyday users, media organizations, and government institutions frequently turn to the Internet as a source of information in emerging events, utilizing a mix of “officially vetted” information and information that surfaces in social networks to guide decision making and response.

The results of such efforts are often positive, enabling the rapid dissemination of accurate information and service coordination. But given the speed with which these assessments may take place, the risk of misinformation is substantial, generated by unintentional spread of false information or even the intentional dispersement of mistruths (Vedder, 2001). Social media has hosted many highly-publicized hoaxes and incidences of information mismatch, from Elan Gale’s headline-making fictional spat with a woman aboard a plane (Freeman, 2013) to a more recent incident in which a disfigured child was reportedly kicked out of Kentucky Fried Chicken for scaring customers (Sullivan 2014). Of course, consequences can be far more substantial. In crisis events, such as natural disasters or public shootings, social media platforms are

increasingly valuable, as they allow for speedy aggregation of emerging, highly critical information that is otherwise difficult to obtain (Huey, Nhan, & Broll, 2012; Sutton, Palen, & Shklovski, 2008). Yet these platforms are still home to rumor mongering and potential misinformation, occasionally sparking bonafide crises of their own. Famously, reddit was the site of the misidentification of the Boston Marathon bombing suspects in 2013, resulting in the public accusation of multiple innocent individuals including one deceased missing person (D’Orazio, 2013; Kang, 2013). In April of the same year, a fake tweet from the Associated Press’ hacked Twitter account claimed that Barack Obama had been injured in a White House explosion, rapidly spreading across the Internet and sparking an immediate dip in the U.S. stock market (Bradshaw, Massoudi, & Scannell 2013; Matthews, 2013). Clearly, mis-assessing credibility can have profound effects.

The practice of turning to social media during emerging news events is widespread among individuals and news organizations alike (Singer, 2014). Since credibility judgements occur across multiple platforms and involve materials that evolve on a situation by situation basis, the institution of a system- or network-level intervention to vet content credibility seems unlikely.¹ Addressing information verification and contemporary credibility assessment, however, is clearly necessary (Flanagin & Metzger, 2000; Singer, 2014). Consequently, we are obligated to unravel exactly what about this information inspires perceptions of credibility. What factors, exactly, lead us to believe the information we encounter in social media and online contexts?

¹ Some have tried on a platform-specific basis, with efforts like Indiana University’s “Truthy” and machine-learning programs aimed at detecting information or meme credibility on Twitter.

This paper investigates factors that impact credibility heuristics, examining whether various information characteristics are associated with perceived credibility in pseudonymous contexts and whether these associations change in times of crisis. We begin with a discussion of credibility and crisis informatics research, articulating a definition of credibility, exploring contemporary challenges including pseudonymity and the pressures of a crisis incident, and identifying factors popularly attributed to influencing credibility perceptions. Following this, we describe our methodology, highlighting the methodological contribution we make to the field. Using reddit as a primary data source, we analyze information generated in response to both crisis and non-crisis news events using qualitative and quantitative methods. Our results indicate that, while some factors appear to be associated with perceived credibility in both crisis and non-crisis conditions, important variations exist with substantial consequences for crisis responders, journalists, everyday citizens, and future research.

2. Background

2.1 Credibility Defined

Concerns about credibility date back to debates by rhetoricians in ancient Greece, though formal research within the social sciences originated in the 1930s (Fogg, Cuellar, & Danielson, 2002). Definitions of the concept vary; words like believability, accuracy, fairness, trustworthiness, completeness, reliability, and attractiveness all appear in past research (Melican & Dixon, 2008; Metzger et al., 2003). Some have defined categories of credibility, such as “presumed credibility” and “experienced credibility,” each of which is established through divergent techniques (Morris et al., 2012; Wathen & Burkell, 2002). For the sake of clarity, we adopt a definition of credibility derived from the Oxford English Dictionary, defining it simply as “the capacity to elicit belief” (Blank, 2007).

Credibility is a multidimensional construct that can be applied to sources, messages, and media themselves. “Source” generally refers to the origin of information, be it an individual or organization (Wathen & Burkell, 2002). “Messages” are the content of information, and “media” refers to the technologies and platforms through which a message is transmitted (Wathen & Burkell, 2002; Johnson & Kaye, 2004). Key components of source credibility are typically defined as trustworthiness and expertise, sometimes also including “perceived goodwill”; trustworthiness is usually ascribed to the good intentions of a source and its lack of bias, whereas expertise captures issues of knowledgeability, experience, and competence (Fogg, Cuellar, & Danielson, 2002). Put simply, sources that seem trustworthy and expert are perceived as credible. Message credibility, on the other hand, is generally thought to result from the interaction between source characteristics (such as experience or trustworthiness), message characteristics (from articulation to internal logic), and receiver characteristics (like cultural background or existing

beliefs), though the potential interactions between these components are broadly defined and as Wathen and Burkell state, “seemingly limitless” (Wathen & Burkell, 2002; also Melican & Dixon, 2008).

Conspicuously absent from lay conversation is the fact that credibility is a matter of perception as opposed to an inherent quality (Fogg, Cueller, & Danielson, 2002). The process of establishing credibility is inherently relational, requiring both a source and an audience whose perceptions are at stake (Blank, 2007). Perceptions can be manipulated, as characteristics like reputation, timing, and articulation can be strategically engineered even by those with little technical sophistication (Morris et al., 2012). Further, perceptions do not necessarily reflect the actual character of information; in other words, perceived credibility is not equivalent to accuracy or proximity to truth (Fallis, 2008; Morris et al., 2012; Westerman, Spence, & Heide, 2014).

2.2 Contemporary Challenges to Credibility Assessment

Before widespread Internet use, the comparative scarcity of media sources rendered credibility assessment primarily a matter of assessing source reputation (Metzger, Flanagin, & Medders, 2010; Sundar, 2008). Verification mechanisms were fairly well-established and widely understood; consumers relied on the editorial processes of media institutions, genre divides between informational sources (ie entertainment versus reference), and the advice of trusted others (Flanagin & Metzger, 2000). The Internet, specifically Web 2.0 and social computing, disrupted these processes and rendered these strategies both less effective and potentially more necessary (Flanagin & Metzger, 2000; also Fogg, Cuellar, & Danielson, 2002; Sundar, 2008;

Warnick, 2004). Traditional gatekeeping, editorial, and quality-control mechanisms may now be eschewed, and the origin of information, be it firsthand reports or purportedly well-documented claims, can be unclear (Fogg, Cuellar, & Danielson, 2002; Melican & Dixon 2008; Sundar 2008). These developments, among others, make it “next to impossible to for an average Internet user to have a well-defined sense of the credibility of various sources and message categories on the Web.” (Sundar, 2008, p. 74.)

Digital media “enable the uncoupling of credibility and authority on a scale never before thought possible” (Metzger, Flanagin, & Medders, 2010, p. 434) in making “source ambiguity... the rule rather than the exception in Web information seeking” (Fogg, Cuellar, & Danielson, 2002, p. 142). This is particularly true of anonymous and pseudonymous platforms, where the purpose and design of the environment itself may obscure users’ identities. Such environments “make the make the concept of ‘source’ difficult to understand and authenticate and, as such, users know little about the expertise, qualifications, and potential biases that may be infused into the information they obtain from these types of resources” (Metzger, Flanagin, & Medders, 2010, p 415). Such platforms abound, however, and are commonly relied on as a source of information, raising questions about how the tension between lack of source identity and information verification is effectively navigated.

We posit that crises may pose further challenges. The impact of crisis on credibility perceptions is under-researched (Westerman, Spence, & Heide, 2014), though the growing importance of social and digital media in times of crisis is undeniable and avidly studied (Heverin & Zach, 2010; Palen et al., 2007; Sutton, Palen, & Shklovski, 2007; Westerman, Spence, & Heide, 2014). Formal inquiry into the effect of crises on communication is partly

represented in the growing discipline of “crisis informatics,” a field considering social media crisis communications in the larger framework of information dissemination “within and between official and public channels and entities”(Palen et al., 2007, p. 469). Our definition of “crisis” adheres to the operative understanding of the concept within crisis informatics: “large-scale emergency activity by members of the public that includes disasters but also other unexpected events” (Palen et al., 2009, p. 476), encompassing incidences from wildfires and other natural disasters (Sutton, Palen, & Shklovski 2007) to shootings in public settings (Heverin & Zach 2010; Palen et al., 2007). Individuals and organizations both contribute to and seek information from social media during crises, resulting in rapid proliferation and spread of content as well as decentralized content regulation and verification (Heverin & Zach, 2010; Huey, Nhan, & Broll, 2012). Multiple studies highlight individuals’ resourcefulness in information-seeking during crises, often involving consulting multiple sources (Palen et al, 2007; Westerman, Spence, & Heide, 2014). Resourcefulness also is evident in information contribution, as individuals harness professionally-developed skills in distributed problem-solving efforts and fact-checking (Huey, Nhan, & Broll, 2012; Palen et al., 2007; Sutton, Palen, & Shklovski, 2007).

Though past work in crisis informatics acknowledges the risk of misinformation, insight into the actual verification processes that might occur is limited. Social media are a valuable tool in the face of a crisis incident, as real-time information that has yet to be broadcast by mainstream media might surface there, but “the quality of news posted to Twitter is not uniform—spam, surreptitious advertising, false rumors, and impostor accounts are common occurrences” (Morris et al., 2012, p. 422). Consequently, further investigation is required.

2.3 A Brief Introduction to Heuristics

In response to this plethora of challenges, both individuals and organizations increasingly rely on a series of judgement “shortcuts” when assessing credibility online. These shortcuts in judgement, called “heuristics,” rely on specific cues and an individual’s beliefs associated with these cues—for example, that recency of publishing denotes accuracy—which in turn shape overall perceptions (Morris et al., 2012; Sundar, 2008).² This notion was popularized by Petty and Cacioppo’s Elaboration Likelihood Model of Persuasion, which posits that attitudes may be formed either through a cognitively-effortful evaluation process involving attentive evaluation of content or through “peripheral” cues that shape perception based on existing associations (Petty & Cacioppo, 1986). Heuristics can enable both hasty judgements and biases in systematic processing of content, as reliance on heuristics does not necessarily entail automatic information processing. In fact, heuristics are often enacted subconsciously or reflexively, allowing information seekers to “minimize cognitive effort and mitigate time pressures” when seeking information online (Metzger, Flanagin, & Medders, 2010, p. 434; also Sundar, 2008).

Many cues—from source reputation to grammatical accuracy to website usability—may trigger heuristic judgements, though the criteria used as well as the effort to attentively evaluate information varies by context (Flanagin & Metzger, 2000; Sundar, 2008; Wathen & Burkell, 2002; Warnick, 2004). Technologies and media themselves may inspire heuristics given their specific affordances and capabilities (Sundar, 2008). Heuristics may not always yield desired outcomes in credibility assessment; Morris and associated researchers, for instance, found that users were poor judges of the truthfulness of content on Twitter when relying on heuristics like

² Note that the use of heuristics is not generated by the Internet. Instead, specific heuristics utilized in a pre-Internet age may be ineffective and cues endogenous to digital media may inspire or require new heuristics.

retweets or topically-related usernames (Morris et al., 2012). Nonetheless, attention to heuristics and associated cues has increased in prominence as sources of information proliferate, since individuals spend little time assessing information credibility (Morris et al., 2012; also Metzger, 2007; Metzger, Flanagin, & Medders, 2010; Walther & Burkell 2002).

2.4 Heuristic Cues Related to Credibility Assessment

Inferring information credibility from source reputation is a strategy from the traditional arsenal of credibility assessment. We judge reputation through assessing a source's history of reliability, perceived level of expertise, and presence or lack of "good will" (Fallis 2008; Metzger, Flanagin, & Medders, 2010). When dealing with information online, reputation assessment can rely on name recognition of websites, the source of content on a site, or a source's credentials (Metzger, Flanagin, & Medders, 2010). Of course, reputation is not infallible and does not always engender trust in information; for instance, Tormala, Briñol, and Petty (2006) find that a highly credible source presenting a weak argument will be less persuasive than a less credible source (Tormala, Briñol, & Petty, 2006; also Smith, Houwer, & Nosek, 2013). Additionally, the presentation of the message can lend to or detract from a source's credibility during information assessment (Walther & Burkell, 2002).

Reputation cues diminish in settings where source identity is obscured, especially those where anonymity or pseudonymity is the norm. Rains (2007), in a study of anonymity in computer-mediated communication, finds that anonymity can lead to diminished perceptions of a source's confidence and uncertainty regarding a source's motives, regardless of argument quality. Chesney and Su (2010) produce a contradictory finding in their study of blog credibility,

determining that anonymity has no negative effect on a blog's credibility and that, instead, identity is not considered in such assessments. Regardless of whether information about a source's reputation is available to a reader, users may only consult information that is immediately accessible (Fallis, 2008; Morris et al., 2012). Further, users with significant experience with a particular platform may confer credibility to its content writ large, bypassing evaluation of individual users (Morris et al., 2012). Consequently, some believe traditional reputation cues may be outdated in online settings (Metzger, Flanagin, & Medders, 2010; Sundar, 2008; Warnick, 2004).

Persuasive intent—or the feeling that information is intended to persuade—is an intuitive negative heuristic, as it implies manipulation or deception (Metzger, Flanagin, & Medders, 2010). Aristotle's famous tripartite concept of “persuasive appeals” is often used in contemporary studies of persuasion in computer-mediated communications (English, Sweetser, & Ancu, 2001; Hübler & Bell, 2003; Zappen, 2005; Otterbacher, 2011). There are three types of appeals, as defined in Aristotle's *Poetics*: ethos, or persuasion through invoking a speaker's character or reputation; pathos, or persuasion through appealing to the listener's emotions and sensibilities; and logos, or persuasion through use of logic and reasoning (Aristotle nd/1961). Some have criticized the use of this scheme as potentially limiting interpretation of “appealing” rhetorical strategies, and other frameworks for evaluating persuasion online have been proposed (Killingsworth, 2005; Warnick, 2005). Nonetheless, the notion of persuasive appeals remains a cornerstone in rhetorical analysis and a well-recognized framework for analyzing persuasion in practice.

In a qualitative study of perceived credibility of online content, Metzger, Flanagin, and Medders (2010) find that overtly persuasive messaging, like information from commercial sources, is viewed as suspect given “the implication that there is some sort of manipulation or ulterior motive on the part of the information provider” (Metzger, Flanagin, & Medders, 2010, p. 432). This said, individuals may not recognize all persuasive appeals. Multiple studies have indicated that the presentation of a message, a site’s usability, and a number of subtle design features may affect users’ perceptions without registering as being explicitly persuasive (Fogg, 2009; Fogg, Cuellar, & Danielson, 2002; Sundar 2008; Wathen & Burkell 2002).³ Message articulation, fundamental to crafting appealing content, also may not be recognized as being persuasive, thus generating no resistance. In a study of online reviews, Otterbacher (2011) finds that the most prominent and well received reviews were those that employed the greatest number of persuasive devices. Tan, Swee, Lim, Detenber, and Alsgoff (2008) similarly find in their analysis of computer-mediated conversations about politics that “how one ‘speaks’ or writes is more influential than the degree of competence ascribed to individuals by various structural features of the website” (Tan et al 2008, p 90). Though individuals may not perceive these message characteristics as being persuasive, they may consciously utilize such strategies; Shanahan (2010) finds that, in scientific discussions online, lay users employ scientific language and style to assert credibility and authority. One might even consider the act of communication itself inherently persuasive; indeed, some research has grouped cues that trigger multiple

³ Much of this research has immediate consequence for user experience designers and information architects, revolving around appropriate configuration of site elements to guide users through predetermined information experiences. These studies also illuminate subtle changes that users can make without re-architecting environments. For instance, changing a profile picture, choosing to tweet about a narrow set of subjects, or manipulating follower to following ratios are not necessarily thought of as attempts to persuade but nonetheless can dramatically increase credibility in the eyes of web users (Morris et al., 2012).

heuristics, treating content holistically as constituting a persuasive appeal (English, Sweetser, & Ancu, 2001; Fogg, 2009; Tormala & Clarkson, 2007).

The notion of endorsement may also play a role in establishing credibility online, particularly in social contexts. Endorsement is best summarized as faith in recommendations or the use of social contacts to prioritize, filter, and evaluate information (Anderson, 1996; Metzger, Flanagin, & Medders, 2010). The logic underpinning the utilization of this heuristic is that the people one affiliates with or admires have correct (or at least agreeable) opinions about the world (Metzger, Flanagin, & Medders, 2010; Sundar, 2008). Metzger, Flanagin, and Medders (2010) find that “social- and group-based means of credibility assessment” have grown increasingly important, enabling “bottom-up assessments of information quality” that bypass traditional authorities and sources (Metzger, Flanagin, & Medders, 2010, p. 433-434). This is seen in the shift from traditional media gatekeepers to the “vetting” of information passed through social networks, what Axel Bruns has termed “gatewatching” (Bruns, 2005; Singer, 2014; Westerman, Spence, & Heide, 2014). Though endorsement may be important in many contexts, it is particularly observable in social networking sites or review and ratings systems where the opinions of a large group can be surveyed in aggregate (Metzger, Flanagin, & Medders, 2010). Though one might assume that general opinions of large online social networks, particularly pseudonymous or anonymous ones, may have limited impact on users’ opinions, the common interests espoused by such groups (often the impetus of their existence) may be sufficient to form social ties that engender this type of trust (Ackland, 2013). Research by Muchnik, Aral, and Taylor (2013) suggests that endorsement in these environments may not be so straightforward to interpret; specifically, they find that social influence in collective intelligence environments may

create positive ratings bubbles, artificially inflating positive endorsement and encouraging a “group think” mentality. In such cases, endorsement would lead to a rich-get-richer scenario, generating difficulties for users in interpreting endorsement as it relates to information quality.

As mentioned earlier, the impact of crises on credibility assessments is critically under-researched. There is reason to believe that various heuristics may hold more or less weight, as different pressures on information producers and consumers are introduced in high impact events. The costs associated with an absence of information or potential misinformation are heightened and users may choose to rebroadcast information using different criteria (Gupta & Kumaraguru, 2012). What research has been done has acknowledged these differences, though consistent findings have yet to emerge. In a study of information diffusion on Twitter during the 2011 Egyptian uprising, researchers found that a large number of retweets may be an indicator of high-quality, on-the-ground information (Starbird & Palen, 2012), building upon previous work suggesting that retweets with topical keywords are more likely to be on-topic in a disaster incident than non-retweets (Starbird & Palen, 2010). Westerman, Spence, and Van Der Heide (2014), in another study of Twitter, find that “the recency of updates impact[s] cognitive elaboration, which in turn impact[s] perceived credibility,” hypothesizing that the characteristic immediacy of Twitter may render the platform a credible source itself in crisis events (Westerman, Spence, & Van Der Heide, 2014, p. 8-9). All of these are plausible heuristics which may be utilized in the event of a crisis, but the lack of comparative data or analysis of non-crisis data in tandem makes it challenging to understand how crisis plays a role.

A separate camp of researchers, rather than investigating how users perceive credibility post-hoc or experimentally, take a machine-learning approach and attempt to develop systems

which automatically classify information credibility in crisis events. These efforts, while impressive technically, focus on outcomes—surfacing credible tweets—at the expense of processes—what causes tweets to appear credible and the assumptions undergirding these judgements. For instance, Castillo, Mendoza, and Poblete (2012), in designing an automatic discovery system for evaluating tweets in the face of a crisis incident, elevate a number of features that they deem useful for establishing credibility, including the level of certainty authors espouse, the citation of external sources, the number of followers a user has, and the sentiment of responding tweets. Gupta and Kumaraguru (2012), in an unrelated but similar effort, build their system around judgements of human coders who are provided with the definition of credibility from the Oxford English Dictionary. By defining what cues will be accepted as credible up front, these research designs are incapable of critically assessing the evaluation processes of users themselves. Consequently, research that investigates heuristics and cues impacting the perceived credibility of information in a crisis event remains sorely needed.

2.5 Significance and Research Imperative

The impact of credibility assessments is certainly important on an individual level, but is quite literally exponential in social media environments where user activity governs what information is immediately accessible. Some platforms, like Twitter, bias toward more recent content and rely on hashtag and keyword use to promote visibility. Other platforms, like Facebook, use algorithms that pull data about user activity to determine what users see. Still others, like reddit—this study’s data source—determine visibility largely through crowdsourced evaluation and endorsement. While the specific gatekeeping mechanisms differ from site to site,

the de-professionalization of knowledge gatekeeping and expanded role of the user is noticeable throughout (Hinman, 2008; Singer, 2014; Westerman, Spence, & Heide, 2014). This deep involvement in information assessment and gatekeeping processes renders understanding how credibility is judged in social media a highly interesting task; that these platforms are governed by user assessments in life and death situations makes it a necessary one.

Given the above discussion, we arrive at an overarching research question: what cues and factors impact perceived credibility of content published in social media, and do the impact of these cues differ in the face of a crisis event? Developing a greater understanding of this is critical not only to furthering the state of credibility research, but also to aiding the ongoing efforts of crisis responders, journalists, and everyday citizens to intelligently react to information of unknown provenance. Knowledge of the heuristics we may subconsciously rely on might allow us to see through the latest viral hoax or may prompt us to seek a second opinion in quotidian circumstances. It may also provide a valuable toolset for those scouring the Internet for crisis updates to more critically assess what information is accurate versus what information merely seems like it might be true.

3. Methodology

3.1 A Departure from Commonly Utilized Methodologies

A common feature of contemporary studies of credibility is their "laboratory"-based approach to data collection and production. For instance, recent studies of credibility on Twitter have involved the development of materials presented under experimental conditions and subsequent quantitative evaluation of participant responses (Morris et al., 2012; Westerman, Spence, & Van Der Heide 2014). Miriam Metzger and Andrew Flanagin, together responsible for over a decade's worth of credibility research, have employed a variety of qualitative and quantitative methods, ranging from surveys to focus groups, which have been administered in controlled environments (Flanagin & Metzger, 2000; Flanagin & Metzger, 2007; Metzger, Flanagin, & Medders, 2010). As credibility has been the central focus of these studies, construct validity has been a chief concern, warranting the potential sacrifice of ecological validity.

This contrasts with popular approaches to crisis informatics, which typically rely on data generated by users in response to crisis events. This includes frequent usage of social data, distinct from other types of data in its natural occurrence (Procter, 2010). Palen, Vieweg, Liu, and Hughes (2009), in studying shootings at Virginia Tech, use qualitative methods to interpret Wikipedia entries, Facebook groups, Flickr, and additional social networking and news media generated in the wake of the crisis event; this approach enabled a more detailed depiction of reactions to the crisis to emerge from data produced within specific contexts. Heverin and Zach (2009), in a more quantitative vein, relied on structured content analysis to study online forum messages produced after the 2008 Sichuan, China earthquake. When not using social data directly, researchers have surveyed participants about their social media use while referring to specific crisis events (Sutton, Palen, & Shklovski, 2008). The use of naturally-occurring data

sources has resulted in exceptionally strong ecological validity, a quality obviously of concern to researchers focused on crisis events.

The use of naturally-produced social data in the study of credibility is novel yet warranted given our focus on crisis events. Our concern is with maintaining construct and ecological validity simultaneously, and thus we utilize methodologies common to both literatures in our study of credibility in pseudonymous environments.

3.2 Data Source and Sampling Strategy

Our data source is reddit, a popular social news website and frequent source of Internet memes, online scandals, and reactions to emergent events. We specifically analyze comments on submissions in r/news, a subsection of the site dedicated to breaking news stories with over 3 million subscribers.⁴ In r/news, users post links to emerging news stories from external sites, creating commenting areas where other users can elaborate and discuss.

On reddit, users are identified by pseudonyms. The more heavily trafficked parts of the site host message board-like group discussions, though one-on-one conversations are possible. Despite this, its users frequently evince evidence of "shared values, norms, and understandings," utilizing site-specific language and references frequently. Further, users may become familiar with one another in specific subsections of the site ("subreddits") or in offline gatherings, and reddit celebrities (ranging from novelty accounts like "shitty_watercolor" to frequent users and moderators like "karmanaut") emerge. Thus, we consider reddit a virtual community (Ackland, 2013).

⁴ The subreddit specifically forbids old stories (those more than a week old), articles about non-news events, and "slant, bias, editorial, opinion, or conjecture - whether it be left wing, right wing, green wing, or purple wing" (reddit, "/r/nNews").

We use both purposive and snowball sampling to construct two datasets, first selecting submissions within the six month period between November 2013 and April 2014 covering emerging crisis events. To ensure that these submissions had been sufficiently trafficked, we only evaluated comments in submissions with submission scores of over 2000.⁵ We then select complementary submissions covering non-crisis events with highly similar scores and times of posting.⁶ Our sampling methodology strategically isolates “crisis” as the primary difference between each condition, having accounted for time-frame, audience, and relative levels of exposure (Bryman, 2012). All submissions were downloaded off of the web to ensure the data would not change throughout our analysis (McMillan, 2000).

3.3 Credibility Proxy

We utilize a proxy for perceived credibility throughout this research. As we are interested in perceptions that defy direct measurement, we turn to an “expression in behavior” that represents credibility judgements (Rice, 1955). Across all types of analysis, “comment score,” or the aggregate of “upvotes” and “downvotes,” serves as this proxy. The upvoting and downvoting system is employed across reddit on both submissions to subreddits and comments, allowing for the crowdsourcing of content moderation. Each user may only give one upvote or one downvote per comment or story, resulting in a “comment score” reflecting overall activity. Upvotes and downvotes allow the community to elevate content due to the “value of the information in it,”

⁵ Submission scores are the difference between upvotes and downvotes. It should be noted that reddit obscures raw numbers for all karma differentials, rendering it impossible to determine the actual number of users who have upvoted or downvoted any given submission or comment.

⁶ These submissions fall within 500 points of the submission score of the complimentary crisis thread and were submitted within a 72-hour window of their corresponding crisis submission. In instances where multiple submissions fulfilled this criteria, proximity to publishing time was used to isolate the most “similar” submission.

dependent in part on the subreddit it is submitted within (reddit, “Frequently Asked Questions”). Consequently, the implications of upvoting and downvoting content differ across the site. In the case of r/news, upvotes are intended to elevate valuable and relevant information, analysis, and commentary and downvotes to “push down” irrelevant information, opinion, or poor-quality content; this is indicated in the subreddit rules and reinforced by a message that appears in r/news submissions when hovering over the downvote button that reads “This isn't a disagree button. Use selectively.” We believe that, in the context of r/news, upvotes and downvotes are strongly tethered to perceived quality and credibility of information, particularly in emerging news and crisis events.

3.4 Research Questions and Variables of Interest

Our research questions are as follows:

RQ1: Does commenter reputation affect perceived comment credibility in pseudonymous communities?

RQ2: Does commenter reputation affect perceived comment credibility in pseudonymous communities during a crisis event?

RQ3: What characterizes the most credible comments in non-crisis and crisis news discussions in pseudonymous communities?

RQ3a: What distinguishes credible comments in non-crisis discussions from credible comments in crisis discussions?

Our research addresses all four questions through divergent methodological techniques.

While “commenter reputation” has been elevated to our research questions, we are in fact interested in a number of variables which we track throughout utilizing a clearly defined coding scheme (Rose, 2007). Table 3.4.1 identifies these variables of interest; when direct measurement

is not available, we identify appropriate proxies.⁷ One set of codes—the use of persuasive appeals—requires human judgement. To enhance the reliability of this measurement, we use a coding schema put forth by Otterbacher (2011) in a study of the use of persuasive appeals in online reviews. In Otterbacher’s study, this coding schema generated high intercoder reliability—65 agreement—and we achieve slightly lower but none-the-less solid results in our study.⁸

Table 3.4.1: Variables and Proxies

<i>Variable</i>	<i>Proxy</i>	<i>Variable Type</i>
Credibility	Comment score	Continuous
Commenter reputation	Commenter karma score (link and comment)	Continuous
Recency	Hours between time of comment posting and time of submission posting (starting at 1)	Continuous
Use of persuasive appeals	Coded using scheme from Otterbacher 2011.	Categorical, Binary
Use of link (reputation cue)	<i>N/A</i>	Categorical, Binary
Visibility	Parent Comment or not	Categorical, Binary

3.5 Analysis Design

We conduct two types of content analysis. First, we conduct quantitative analysis of comments within r/news submissions to analyze associations between perceived credibility and a variety of cues. We utilize stratified random sampling, using a random number generator to select 200 random samples from each submission, and then code each comment for variables of interest

⁷ See Appendix A for full coding scheme.

⁸ Using two coders, we achieve between 71.6-86.4% agreement on all codes related to persuasive appeals with Cohen’s Kappas ranging from .432-.484, values that would typically be interpreted as “moderate agreement” (Viera & Garrett, 2005). We argue that the low number of coders and low number of codes utilized necessarily limits the score we might expect to achieve; unlike Otterbacher (2011), we measure agreement on each code separately rather than tying together multiple codes and questions. Further, we bolster our findings with significant qualitative analysis, providing enhanced confidence in the integrity of our findings.

(Bryman, 2012; McMillan, 2000; Rose, 2007). Table 3.5.1 contains descriptive statistics of our continuous variables, all of which are very right skewed in both conditions. Table 3.5.2 contains data on the frequencies of categorical variables within both data sets; the distributions of each categorical variable are fairly similar between conditions.

Table 4.1.1: Descriptive Statistics of Continuous Variables, Crisis and Non Crisis Conditions

	<i>Non-Crisis</i>	<i>Crisis</i>
Credibility (Comment Score)	Mean: 10.962 Standard Deviation: 65.449 Range: -24 - 1652	Mean: 19.027 Standard Deviation: 126.191 Range: -196 - 2474
Reputation (Link Karma)	Mean: 2548.8 Standard Deviation: 9043.08 Range: 1 - 102486	Mean: 4048.69 Standard Deviation: 37449.8 Range: 1 - 1136795
Reputation (Comment Karma)	Mean: 15625.4 Standard Deviation: 23956.2 Range: -146 - 245499	Mean: 17540.6 Standard Deviation: 34366.1 Range: -86 - 316750
Recency (by Hour)	Mean: 11.9983 Standard Deviation: 18.7239 Range: 1 - 347	Mean: 8.582 Standard Deviation: 24.669 Range: 1 - 724

N = 1200 in both Non-Crisis and Crisis Data Sets

Table 3.5.2: Frequencies of Categorical Variables, Crisis and Non Crisis Conditions

	<i>Non-Crisis</i>	<i>Crisis</i>
Parent Comment	Yes: 267 (23.06%) No: 891 (76.94%)	Yes: 253 (22.13%) No: 890 (77.87%)
Use of Link	Yes: 49 (4.24%) No: 1108 (95.76%)	Yes: 89 (7.79%) No: 1053 (92.21%)
Use of Logos Appeal	Yes: 371 (32.04%) No: 787 (67.96%)	Yes: 297 (25.98%) No: 846 (74.02%)
Use of Ethos Appeal	Yes: 162 (13.99%) No: 996 (86.01%)	Yes: 149 (13.04%) No: 994 (86.96%)
Use of Pathos Appeal	Yes: 528 (45.60%) No: 630 (54.40%)	Yes: 523 (45.76%) No: 620 (54.24%)
Use of Any Appeal	Yes: 843 (72.80%) No: 315 (27.20%)	Yes: 826 (72.33%) No: 316 (27.67%)

Non-Crisis Data: N = 1,158 except for use of link, where N = 1,157

Crisis Data: N = 1,143 except for use of link and any appeal, where N = 1142

To simplify our analysis, we conduct logarithmic transformations on our continuous variables that are strictly positive and heavily right skewed, Link Karma and Recency (Wilkinson, Blank, & Gruber, 1996). Despite their skewed distribution, we leave Comment Karma and Comment Score untransformed, believing the negative and zero values to be important to our analysis and acknowledging that any translation adding a constant to this data with the purpose of eliminating any negative or zero values would complicate interpretation, particularly in the case of our dependent variable (Osborne, 2002). Following the aforementioned transformations, we run multivariate regressions in Stata 13, building models that account for the use of individual types of appeals as well as controlling for the use of any appeal. In the cases where variables were transformed, we are careful to adjust our interpretation of our relationships and coefficients (Osborne, 2002).

We also conduct qualitative analysis, evaluating the 200 comments that are visible automatically using reddit's "best" algorithm⁹ in each submission. This captures the highest performing comments as well as the surrounding discussion and reflects what is most commonly immediately visible to site visitors. We conduct a "directed" content analysis, one guided by theory that uses codes both established prior to analysis and emerging throughout (Hsieh & Shannon, 2005; Potter & Levine-Donnerstein 1999). We first analyze our data solely using pre-established codes from our quantitative analysis; we then return to the data, searching for patterns in code manifestation or code combinations, developing descriptions of both typical cases and recurring themes. This re-evaluation relies on theoretical replication and cross-

⁹ The "best" algorithm sorts comments according to both comment score and sample size, calculating confidence intervals of post performance and adjusting as more feedback is received (reddit, "reddit's new comment sorting system"). The best algorithm is the default algorithm for users and the most likely option selected for those who are browsing the site.

submission analysis to establish the integrity of the emerging patterns and types (Cavaye, 1996; Creswell, 2007). By analyzing comments within their original context, we are able to expand upon initial observations and develop a wider appreciation of the use and potential interpretation of credibility cues (Fairclough, 1992; Potter & Levine-Donnerstein, 1999). Through attending to emerging patterns that can only be seen within each comment's original context as well as "manifest" content, or that which is easily observable (Potter & Levine-Donnerstein, 1999), we develop a more complex depiction of how heuristic cues are operationalized and whether additional community or site-structural factors may play a role in determining credibility perceptions (Diesing, 2008; Potter & Levine-Donnerstein, 1999).

3.6 Methodological Justification

We are able to conduct a fixed-design quantitative analysis given the wealth of past theory and our "substantial amount of conceptual understanding" about credibility (Robson, 2011, p. 82), utilizing this approach to "reveal empirical results that might otherwise be overwhelmed by the sheer bulk of material under analysis" (Rose, 2007, p. 55). Our qualitative methods address criticisms generally levied at quantitative content analysis, namely shortcomings in frequency-counting and subsequent statistical analysis given an inability to "discriminate between an aspect of an image that exemplifies a code perfectly and one that is only a weak example of it" (Rose, 2007, p. 66). By evaluating data within its natural environment—comments within submission threads—and allowing for the emergence of additional patterns and codes, we ensure ecological and construct validity while capturing the "subtleties

and complexities of human behavior” in a way that strictly-quantitative or fixed designs might not (Robson, 2011, p. 83; also Grabill & Pigg, 2012).

Across our study, we are careful to be precise about defining and interpreting variables of interest to ensure construct validity. We use multiple coders in our quantitative analysis, utilize a coding schema that has generated significant intercoder reliability, and check our own intercoder reliability to ensure validity of our coding process (Potter & Levine-Donnerstein, 1999). We use a single coder in our qualitative analysis and measure its validity in part through our ability to reveal patterns that “resonate with [the reader’s] experience” of the content (Potter & Levine-Donnerstein, 1999, p. 270; also Tracy, 2010). We further ensure research integrity through rigorous analysis process designed to avoid thin description and superficial analysis (Janetzko, 2008).

3.7 Ethical Considerations

Our use of nonreactive data has the potential to raise ethical questions, as we have not chosen to pursue formal informed consent (Enyon, Fry, & Schoeder, 2008; Janetzko, 2008). Using data that has been acquired in this manner generates the risk of violating contextually-assumed privacy (Nissenbaum, 2009). Given the nature of our data—group discussions on public forums—we believe that we do not violate expectations of privacy in our analysis and, further, might disturb or alter behavior should we attempt to achieve consent during an emerging news event. We protect the identities of commenters by password-protecting our data sets and, in the case of our qualitative analysis, eliminating usernames from our reporting. Our methodology was CUREC approved and designed using the ESRC Framework for Research Ethics.

4. Results

4.1 Quantitative Analysis

We construct two multivariate regression models for each condition. The first (Model A) controls for the effects of reputation, recency, visibility, the use of a link, and the use of different types of persuasive appeals within comments. The second (Model B), rather than measuring persuasive appeals separately, controls for the use of any appeal. The results of these regressions can be seen in Table 4.1.1 and Table 4.1.2. Worth noting is that the R-Squared values for all four models are fairly low (ranging from .0577 - .0718), indicating that our models explain only a fraction of the variance in comment score. This is further addressed in our discussion chapter.

As Table 4.1.1 indicates, several comment characteristics emerge as significant in our non-crisis data set. The estimated coefficient of author's comment karma has p-value of 0.000 in both models. Thus, we reject the hypothesis that there is no linear relationship between comment score and author comment karma when controlling for author's link karma, recency, visibility, the use of a link, and the use of persuasive appeals. We find that a one point increase in author comment karma results in, on average, between .0003-.0004 increase to comment score. Putting this in more tangible terms, an author comment karma equivalent to the mean of our dataset—15625, roughly—would be expected, on average, to be associated with a comment score of approximately 45 points in Model A and approximately 41 points in Model B, holding all other variables constant.

We also find evidence that recency is significant. In both models, the estimated coefficient of our variable tracking recency has a p-value of 0.000. We can therefore reject the hypothesis that there is no linear relationship between comment score and our logarithmically-transformed variable tracking recency when controlling for commenter reputation, visibility, the

use of the a link, and the use of persuasive appeals. We find that a one percent increase in recency is, on average, associated with an approximate 18 point decrease in comment score. Our recency variable assigns each comment a value corresponding to the number of hours between submission posting and comment posting; thus, what this means is that comments posted closer to the time of submission are more likely to have high comment scores and that, as time goes on, comments that are newly posted are likely to have lower scores.

Table 4.1.1: Regression Results for Comment Credibility, Non-Crisis Condition

	<i>Model A</i>	<i>Model B</i>
Constant	38.9505 (8.2104)	35.9197 (8.5173)
Reputation (Link Karma)	-.1134 (.696)	-.0861 (.6952)
Reputation (Comment Karma)	.0004*** (.0001)	.0003*** (.0001)
Recency (by Hour)	-17.7931*** (2.8542)	-17.621*** (2.8526)
Visibility (Parent Comment)	10.2935* (4.9124)	10.0737* (4.8143)
Use of Link	1.4862 (10.2423)	2.2176 (10.195)
Use of Logos Appeal	3.2909 (4.5710)	--
Use of Ethos Appeal	2.9066 (5.933)	--
Use of Pathos Appeal	3.195 (4.2329)	--
Use of Any Appeal	--	7.5904 (4.5751)
P > F	0.0000	0.0000
R-squared	0.0648	0.0661
Adjusted R-squared	0.0677	0.0608
No. Observations	1067	1067

Standard errors reported in parenthesis. *, **, and *** indicate alphas of .05, .01, and .001 respectively.

Finally, we find support for the significance of visibility. The p-value of the coefficient of our parent comment variable is low ($p = .036$ in Model A; $p = .037$ in Model B). Thus, we reject the hypothesis that there is no difference between parent and child comments in their average comment scores when controlling for commenter reputation, recency, the use of a link, and the use of persuasive appeals. Instead, it appears that, when a comment is a parent comment, its score will increase, on average, by 10 points.

We do not find support for the significance of using persuasive appeals or the use of a link in our non-crisis condition, nor the significance of an author's link karma.

A very different pattern emerges from our multivariate regressions utilizing comments generated in crisis events, detailed in Table 4.1.2. As with our non-crisis condition, recency appears to be a significant variable. The p-value of the coefficient for our variable for recency is 0.000 in both models. We therefore reject the hypothesis that there is no linear relationship between comment score and our logarithmically-transformed variable tracking recency when controlling for commenter reputation, visibility, the use of a link, and the use of persuasive appeals. The effect of recency, however, is substantially higher in our crisis data set. Here, we find that a one percent increase in recency is associated with an average decrease in comment score of approximately 23 points. Thus, as with our non-crisis data, we find evidence to suggest that as time goes on, new comments are likely to have lower scores, and that comments posted closer to the time of the submission are likely to have higher scores. In a crisis, however, these effects appear to be more pronounced.

Table 4.1.2: Regression Results for Comment Credibility, Crisis Condition

	<i>Model A</i>	<i>Model B</i>
Constant	24.9744 (11.4368)	28.2658 (12.1455)
Reputation (Link Karma)	2.799 (1.1791)	2.7651 (1.1862)
Reputation (Comment Karma)	-.0001 (.0001)	-.0001 (.0001)
Recency (by Hour)	-22.5925*** (4.2642)	-23.1186*** (4.2746)
Visibility (Parent Comment)	27.6864** (8.8972)	30.6653*** (8.7382)
Use of Link	48.7656*** (13.2543)	48.8655*** (13.3067)
Use of Logos Appeal	2.8636 (8.5034)	--
Use of Ethos Appeal	42.4023*** (10.7071)	--
Use of Pathos Appeal	7.255 (7.5446)	--
Use of Any Appeal	--	10.3977 (8.0681)
P > F	0.0000	0.0000
R-squared	0.0718	0.0597
Adjusted R-squared	0.065	0.0545
No. Observations	1092	1092

Standard errors reported in parenthesis. *, **, and *** indicate alphas of .05, .01, and .001 respectively.

Also aligning with our non-crisis data, visibility emerges as an important factor. The t-test of the proxy's coefficient yields a low p-value in both models ($p = .002$ in Model A; $p = .000$ in Model B), allowing us to reject the hypothesis that there is no difference between parent and child comments in their average comment scores when controlling for commenter reputation, recency, the use of a link, and the use of persuasive appeals. As occurs with recency, the relative

influence of this variable is greater than in our non-crisis data set. We find that comment scores are, on average, roughly 28 points higher for parent comments when controlling for the use of individual types of persuasive appeals. When controlling for the use of any appeal, parent comments have comment scores that are, on average, roughly 31 points higher than child comments.

Two additional variables emerge as significant within our crisis data set. In both models, the t-test for the coefficient associated with the use of a link produces a p-value of 0.000, allowing us to reject the hypothesis that there is no significant difference between comments that include links and comments that don't in their average comment score when controlling for commenter reputation, recency, visibility, and the use of persuasive appeals. Both models indicate that the use of a link is associated with a comment score increase of, on average, roughly 49 points.

We also find support for the significance ethos appeals, producing a p-value of 0.000 in the t-test of its coefficient. We reject the hypothesis that there is no difference between comments containing and lacking ethos appeals in their average comment score when controlling for commenter reputation, recency, visibility, the use of a link, and the use of other types of persuasive appeals. Instead, the use of ethos appeals is associated with an average increase in comment score of approximately 42 points.

Unlike our non-crisis condition, we do not find support for either measure of commenter reputation. We continue to find no support for the significance of logos or pathos appeals, as well as the use of appeals in general. The differences between our findings for crisis and non-crisis events are fully explored in our discussion section.

4.2 Qualitative Analysis

While our quantitative analysis reveals patterns occurring on a comment-by-comment basis, it is not well-suited for considering the role of reddit's structure and dynamics on credibility perceptions. Further, while many of our variables have a single manifestation, such as time of comment posting, others like persuasive appeals may appear in a variety of configurations. This diversity is masked in our quantitative analysis. Using the regimented directed content analysis process detailed in our methodology chapter, we remedy these limitations. We first discuss the structure of r/news submissions and the patterns that emerge between interacting comments. We then detail the typical presentations of persuasive appeals within r/news and how these vary in crisis and non-crisis events. Finally, we describe a typology of most credible comments, as measured by comment score, across both non-crisis and crisis submissions.

4.2.1 Visibility and Structure

As mentioned in our methodology chapter, comment visibility on reddit is for most users governed by the "best" algorithm.¹⁰ This ranks comments by taking into account not only the percentage of upvotes versus downvotes on a comment but also the total number of votes, correcting a bias towards displaying predominantly earlier comments in previous algorithms (reddit, "reddit's new comment sorting system"). Muchnik, Aral, and Taylor (2013) posit that, despite this, comments on reddit are subject to "social influence bias," in which "positive social

¹⁰ reddit's "best" algorithm is the default option for site visitors. Users may also choose to sort their comments by comment score, recency (either newest or oldest), or by controversy, elevating comments with high levels of both upvotes and downvotes. It is likely that most visitors use the "best" algorithm either because they are unaware of the other options or by preference.

influence accumulates, creating a tendency towards ratings bubbles, [and] negative social influence is neutralized by crowd correction” (Muchnik, Aral, & Taylor, 2013, p. 650). In other words, initially popular comments tend to become more popular, though a converse effect—initially unpopular comments becoming more unpopular—does not take place. This may be true to an extent; the substantial influence of comment visibility on comment score in both of our conditions, as measured by our variable “parent comment,” may reinforce Muchnik, Aral, and Taylor’s claims. Yet this analysis focuses on comment-specific features as opposed to the ecosystem created by multiple comments, potentially overlooking community factors that may be equally influential.

The fundamental structure of reddit’s comment sections is that of conversation. Parent comments provide starting points for discussion, fact-finding, and debate. As our quantitative analysis indicates, most comments reply not to the submission itself but, instead, to another commenter’s posting. It is tempting to take our quantitative findings to indicate that “parent” comments will, as a rule, outperform their “children,” but this is not the case. Several conditions can lead to a child comment having a higher score than the comment it responds to. This may occur, for instance, when child comments are elaborating on a parent comment. Consider the following exchange in a discussion about a chain-smoking 107-year-old veteran:

[Parent Comment], 105 points: Cigars don’t carry the same risks as cigarettes, since you don’t inhale the smoke.

[Elaborating Child Comment], 295 points: “Correct. They carry different risks. Namely, mouth and throat cancer. <http://www.cancer.gov/cancertopics/factsheet/Tobacco/cigars>.¹¹

¹¹ This links to a fact sheet on cigar smoking by the National Cancer Institute.

The responder refutes the initial comment, providing not only an argument but also linking to additional evidence; we can see that the child comment has a higher score than its parent. A link need not be present in a comment in order for this effect to occur. Take the conversation below, appearing in a thread about a Colorado school shooting:

[Parent Comment], 59 points: It's never good when the automated alert says "Mass Casualty Alert"...

[Elaborating Child Comment], 95 points: "Casualties" is also interchangeable with "injuries" or "wounded." Just an FYI. It doesn't necessarily mean that anyone has been killed. Keeping my fingers crossed.

While these effects are perhaps intuitive where a child comment corrects a parent comment, they can also be seen in exchanges where information is being provided that answers or supports the initial comment's claim. For instance, the following occurs in a thread discussing banks' unwillingness to take money from marijuana dispensaries:

[Parent Comment], 32 points: Being that Colorado does get federal monies to run their government, yes I think they would care. The Windfall over weed will not replace federal monies, not by a long shot.

[Elaborating Child Comment], 112 points: Interestingly enough, Colorado actually gets very little federal money compared to the rest of the nation. In fact, Colorado ranks as the third lowest state in the nation in how much money it gets from federal programs.¹²

The discrepancy in scores may partly be explained by users' abilities to juxtapose responding comments against the initial posts. As mentioned before, despite their presumptive status as "corrections," such comments frequently do not contain links to outside information or

¹² The user links to a report by the Tax Foundation, a Washington, DC nonprofit.

other forms of evidence. Further, replies to these elaborating comments, when providing additional information on the same topic, do not necessarily benefit from this effect. An exchange illustrating these points appears in a thread about a shooting at LAX. The parent comment (with a comment score of 293) links to an image from live news footage of responders arriving at the scene, asking “Can anybody explain the Red, Yellow and Green tarps ? is it some sort of triage system ?” The following comments, each replying to the one directly above it, are ranked highest out of the numerous replies:

[Elaborating Child Comment 1], 429 points: Red - serious/life-threatening injury Yellow - stable but will need medical attention Green - minor injuries that don't require immediate attention

[Elaborating Child Comment 2], 251 points: Yup. There is also a Black for deceased patients. (Which I'm glad to see isn't in this picture.)

[Elaborating Child comment 3], 185 points: Black is also for expectant casualties. As in people who aren't deceased yet but are not worth spending time trying to save. Sounds heartless but that's what you have to do during triage, if you spend time on a lost cause you might lose two reds that could have made it if they received that attention/care instead. They might not use the black tarp, but the tags usually still have that as an option.

We see not only that the first comment, which provides the first explanation to the question, receives the highest aggregate upvotes, but that it is not as grammatical or clearly written as the subsequent clarifying comments. Worth noting is that two separate responding comments to the initial question about the tarps link to the Wikipedia page that explains the system in question, though each receives substantially lower comment scores (49 and 39), suggesting that this process is merely about providing correct information.

A second, equally common phenomenon resulting in high comment scores for both parent and child comments is the use of humor, an integral component of reddit's discourse. The structure of reddit allows for community members to engage in cooperative joke-making, with users heightening familiar forms of humor in each reply. This is referred to colloquially as riding "the karma train" given the subsequent boost to comment karma that each user accrues. In such situations, it is common to see child comments have higher comment scores than parent comments, exhibiting an inverse trend of what occurs in other exchanges and increasing as the jokes continue. This behavior appears throughout r/news frequently, even in the face of crisis events. Take, for instance, this multi-user exchange occurring during a school shooting in Colorado, which includes participation from a user claiming to be hiding from the assailant (here marked "commenter in school"):

[Commenter 1], 87 points: Stay safe!

[Commenter 2], 65 points: Stay alert!

[Commenter 3], 193 points: Stay frosty!

[Commenter in school], 459 points: Its pretty warm, actually.

[Commenter 4], 225 points: Damn. Under threat of being shot and still making jokes. Confirmed Redditor.

This is not entirely unexpected; humor is often the "central appeal" of discourse within communities that form primarily through text-based computer-mediated communications (Baym, 1995; Hübler & Bell, 2003). These comments may constitute a type of ethos appeal, as effective production of contextually-appropriate humor entails demonstrating significant knowledge of group norms, values, and practices (Baym, 1995; Hübler & Bell, 2003). Such exchanges need

not be predicated by a humorous remark to take place. Consider the following jokes that appear within a conversation about a Colorado school shooting:

[Commenter 1], 141 points: The shooter told the teacher what he/she was going to do and the teacher ran off

[Commenter 2], 591 points: Caught him monologuing

[Commenter 3], 106 points: The greatest foil of any villain.

[Commenter 4], 292 points: bae caught me monologin¹³

Here, an informative statement about the event leads to comical replies, the first indicating specific pop culture knowledge (the trope of a villain revealing his evil schemes) and the subsequent comments demonstrating further savvy. During the same event, a student inside the school mentions that they're communicating with reddit on their phone from inside a closet (the first comment below), producing the following:

[Commenter in school], 579 points: I have it in my hand

[Commenter 1], 1056 points: In other news: Student suspended for using phone in school.

[Commenter 2], 1293 points: Student comes out of closet after traumatic ordeal.

[Commenter 3], 578 points: Tom cruise still inside. More at 10

In this case, knowledge of current events—specifically, the rise of in-school bans on mobile phone use—as well as popular culture—the last comment refers to an episode of South Park, a long-running cartoon—is required to make or fully appreciate the humorous remarks. Through participating in these exchanges, users combine “features of spontaneous joking with

¹³ Both commenter 3 and commenter 4, in this example, are responding to the remark made by commenter 2.

the confirming act of laughing,” helping to “constitute an online community when individuals come to share as a group the values and knowledge implicit in a joke” (Hübler & Bell, 2003, p. 280). That this is an exception to general trends we see with comment scores and visibility makes sense, then, given the mechanics of this social exchange.

4.2.2 Persuasive Appeals in Practice

Our qualitative analysis reveals that, within r/news, ethos appeals most frequently appear in two forms. The first is a brief note at the beginning or end of a comment contextualizing the overall remark. “I’ve worked disaster response for the PRC - National HQ and for the various local chapters,” begins one comment regarding Typhoon Haiyan describing the structure of the Red Cross’ accountability procedures. Another commenter, discussing banks refusing money from marijuana dispensaries, starts with, “I used to be an Electronic Banking Specialist,” before detailing the federal reporting obligations of US financial institutions. The second form embeds the appeal within a longer comment. One commenter on Typhoon Haiyan, for instance, begins with a more emotional description of what riding through the typhoon was purportedly like before relating their experience with tornados in Oklahoma. Another, in a submission regarding a shooting at LAX, begins, “Just for some context for those unfamiliar with Terminal 3 (it’s the terminal I fly out of the most because of Virgin America) - getting as far as the Burger King here is REALLY far.” The element of “character” within ethos appeals varies. In some cases, users report physical location or place of origin. In a thread regarding a mall shooting in Maryland, one commenter reports, “To me it sounded like a shotgun, I was on the other side of the mall though by the apple store.” A response to a chemical spill in West Virginia treats the same type of

qualification differently, beginning with “West Virginian here,” and ending by mentioning the commenter’s father’s position at Halliburton. Other situations cause commenters to invoke professional qualifications or acquired expertise, as in the case of the first two examples cited. The qualifications invoked, however, can involve experiences unattached to the present situation that merely provide the user knowledge of scenarios similar to the event. After a school shooting in Colorado, for instance, one commenter describes their experience of the aftermath of an unexpected public shooting in Portland, while another commenter, discussing Occupy Wall Street’s intention to purchase consumer debt, writes about Occupy’s efforts on unrelated social issues in Minneapolis.

Pathos appeals vary within r/news, attempting to elicit a range of emotions. Many present opinions without evidence. “There’s some straight bullshit going on in this country these days,” starts one such comment about raising the minimum wage. “There’s no feeling of living anymore. It’s all about work. No family times, no relaxation.” Another commenter, responding to a shooting at LAX, concludes “You want to kill yourself? That’s fine. Don’t kill innocent people in the process.” These types of comments often evoke mutually-held frustration or sadness. “Imagining working at \$9.19 makes me sick to my stomach,” begins another comment about the minimum wage. “There’s no way you could support yourself on that besides living in squalor.” Elsewhere in the same discussion, a user quotes a National Employment Law Project survey about paycheck theft by employers, stating, “It takes a special kind of evil to take from the weak like this.” This is not to say that all pathos appeals found in r/news are so melancholic; the type of humorous exchanges discussed earlier also constitute pathos appeals. In addition to participating in collaborative jokes, some users contribute stand-alone humor or sarcasm. One of

the highest scoring replies to a story on banks refusing money from marijuana dispensaries, for example, quotes the New York Times' detailed description of one dispensary owner's security practices, car, and driving route, writing, "Well, hell, why don't they just give his license plate number too. This guy now has a thousand times more reason to be paranoid. Nice work NYT." Another excellent example, in response to a report of Trader Joe's opening up of a store that sells food past its sell-by date, is a nearly 800-word parody of a fry cook written in the style of *Breaking Bad*.¹⁴

Logos appeals often appear in slightly longer comments that are attached to an ongoing discussion or debate. One example appears in a discussion of banks' decisions to not take money from marijuana dispensaries: "Pot is illegal at a Federal level, and they could still have assets seized and forfeited from the FBI or DEA, making it a risky move, and we all know banks don't like to take risks. Joking aside, until something changes at the Federal level, expect that Marijuana legalization efforts to be disjointed like this."¹⁵ Another comment, left in response to a question about using birdshot in a rifle, reads, in part, "serious answer, it would depend on how far away from the muzzle you are. The weight of the projectiles or "shot" in a load are pretty similar even in different sized shells. The issue is that bigger sized shot will travel farther, and have a lot more of an impact when it does hit... Source-been a hunter and outdoorsman for years."¹⁶ As is implied by these examples, logos appeals may be combined with ethos or pathos appeals. This is not, however, always the case. For instance, one response to a user bemoaning the frequency of publicized shootings reads, "There is some 10,000 + murders every year in a

¹⁴ See Appendix B1.

¹⁵ See Appendix B2 for full comment.

¹⁶ Again, see Appendix B2 for full comment.

country of 300,000,000 million people. Obviously, that means there are 27 or so a day that happen. One of them is bound to have preliminary reports of mass shootings.” Another, answering a question about whether a person could purchase their own debt, replies, “Unfortunately no. The debt is bundled together and sold in large quantities, there would be no way to find your own debt after it has been combined with others. Think of it like having a box of KD¹⁷ with your name written on it in the factory then trying to find that box at a costco, but you're only allowed to purchase KD by the crate. In the long run you'd spend more buying crates then you would paying your debt.” In non-crisis scenarios, comments featuring logos appeals may contain links, primarily connecting to news stories, Wikipedia pages, or reports referenced in the context of the discussion.¹⁸ In crisis events, logos comments do not usually contain links, instead typically analyzing the emerging event itself. For instance, one response to a point regarding a man waiting for his shoes at security during a shooting at LAX reads, “Most likely he wasn't thinking straight, given the circumstances, but it is a ridiculous order of operations to default to. I'll give him the benefit of the doubt that running barefoot in a panicked mob might get your feet injured, though.” In another discussion, stemming off one commenter’s objection to a student using reddit while hiding from a gunman in his school, a user argues, “He's probably already texted his family telling them he's all right. And it's a bad idea to call the authorities, since they're likely already there, and what if the shooter hears him? So, after texting everyone, Reddit's a natural place to go to; especially since there's usually someone posting up-to-the-minute updates in the comments.”

¹⁷ “KD” is shorthand for macaroni and cheese (ie “Kraft Dinner”).

¹⁸ See Appendix B2 for examples.

Many comments, of course, are absent of persuasive appeals, relaying information relatively impartially. Take a comment written during a school shooting in Colorado that simply reads, “Shooter is down as of 11 minutes ago.” Another in the same discussion also illustrates this point, reading, “Shooter appears to be a student. Scanner just said "Shooter's locker number is ####" (not sure I should list it here).” Such comments may contain links. As is mentioned in the preceding paragraph, comments utilizing logos appeals often link to Wikipedia pages, reference sites, and other resources to bolster their arguments; the same types of sources are used in comments that contain links but lack persuasive appeals (see Appendix B3 for selected examples). In crisis scenarios, links predominantly appear in persuasion-free commentary and direct to primary source materials, such as police scanners or live-feeds of the event. For examples, see the following comments generated during a mall shooting in New Jersey:

[Comment 1], 33 points: <http://www.myfoxny.com/category/237002/skyfoxhd>
live cam.
<http://www.broadcastify.com/listen/feed/14112/web>
related police radio scanner.

[Comment 2], 60 points: looks like FBI just arrived <http://www.myfoxny.com/category/237002/skyfoxhd>

Similar comments appear during a shooting at LAX:

[Comment 1], 39 points: Another good feed, with images: <http://nypost.com/2013/11/01/shooting-reported-at-lax/>
<http://www.broadcastify.com/listen/feed/14112/web>
related police radio scanner.

[Comment 2], 5 points: live video : <http://losangeles.cbslocal.com/live-video/2/>

Users may also link to social media profiles of perpetrators, victims, or witnesses.

Consider the following unrelated comments, left during a shooting at LAX:

[Comment 1], 48 points: Bill Reiter is live tweeting:

[@foxsportsreiter](#)

"I was at the Virgin terminal at LAX when gunfire broke out.

Many of us have run on the tarmac. I don't know what's happening but I'm fine."

"A witness saw shooting in ticketing area at LAX. Now hearing three or four gunman rushed area, but that's unsubstantiated."

"When gunfire broke out there was a stampede people, all of us hiding under seats we didn't fit under, we burst through the door to outside."

Hope everyone is safe - looking for more updates!!

[Comment 2], 5 points: Is this blood next to the gun?

<https://twitter.com/AlienGurudeva/status/396333506155929600/photo/1/large>

Further examples include a user's sharing of a video taken during Typhoon Haiyan or multiple commenters' discovery of the Instagram account of a victim in a shooting in Maryland.¹⁹

4.2.3 Highly Credible Comment Typology

Across our crisis and non-crisis data sets, a typology of highly-credible comments emerges. We have termed these the **common sense**, the **insider**, and the **news aggregator**. We describe these in full, though brief articulation of the similarities and differences between these comment types appears in Table 4.2.3.1.

¹⁹ See Appendix B3.

Table 4.2.3.1 High Credible Comment Typology

	<i>Crisis Data</i>	<i>Non-Crisis Data</i>	<i>Tone</i>	<i>Frequency (per submission)</i>	<i>Length</i>
Common Sense	✓	✓	Informal	Several	Short
Insider	✓	✓	Informal	Several	Short
News Aggregator	✓		Primarily formal	Typically 1-2	Long

The Common Sense

Common Sense comments are found in both crisis and non-crisis events. These encapsulate a popular viewpoint and are characterized both by their brevity and lack of additional or new evidence. Comments typically take the form of either logical retort or emotional response. One example of the former is a response to a story about a 107-year-old veteran who smokes cigars and drinks whiskey, which reads:

[Commenter 1], 1650 points: Genetics plays a huge role in longevity

Yet another instance of such a comment appeared when news of a school shooting in Colorado:

[Commenter 1], 1003 points: Just a reminder that [making these people famous](#)²⁰ does nothing to prevent a recurrence. Massive media coverage is often exactly what they want - and they get it every time.

²⁰ This links to a blog with a more detailed version of the argument.

When Common Sense comments take an emotional route, they often reflect feelings of shock, frustration, sadness, or outrage. For instance, a commenter responding to news of Typhoon Haiyan, states:

[Commenter 1], 157 points: I can not imagine 9.4 million of anything, let Alone 9.4 million people without water, housing, food, rx. Unfathomable.

One commenter's response to a story on banks refusing money from the legal marijuana trade takes a more sarcastic approach:

[Commenter 1], 2659 points: But terrorist money is just fine.

These comments are informal and grammatical errors do not prevent success. Take a comment quoting an interview following a school shooting in Colorado:

[Commenter 1], 2659 points: interview with a parent: "thank god my kid was suspended yesterday"
theres something you dont hear everyday

Another example can be found in responses to a chemical spill in West Virginia:

[Commenter 1], 400 points: Crazy that this can happen... these are chemicals that even in low doses can cause neuropathies, testicular infertility, myelodysplasia syndrome (MDS)-- suppression of all blood cell production from bone marrow-- as well as various types of hematological cancers and blindness... and they were going to try to say the water was ok?! Sadly people probably were drinking this before the spill was announced.

In each case, it seems that the content of the comment may compensate for punctuation or grammatical inaccuracies within it.

The Insider

Insider comments are also found in both crisis and non-crisis events and are purported to be from individuals directly involved in the situation. In non-crisis events, these comments typically come from individuals with subject matter expertise or a relevant past experience. A story about Trader Joe's opening stores selling products that are past their sell-by date, for instance, inspires comments from Trader Joe's employees, employees of competing grocery stores and fast food restaurants, and volunteers at food banks.²¹ In crisis scenarios, however, successful Insider comments virtually always come from people either at the scene of the event or otherwise intimately involved. One of the top scoring comments in the wake of a chemical spill in West Virginia, with 996 points, begins with "Resident here," before describing discovering the contamination and the concerns of other locals.²² During a mall shooting in New Jersey, one user adds the following:

[Commenter 1], 350 points: Fire alarm pulled. Was in the movie theater. The place is surrounded by cops. Dont have much confirmed information. One shooter so far. By the Nordstroms.

In a similar scenario, a shooting at a Maryland mall, one top scoring comment reads:

[Commenter 1], 1753 points: I work at the mall, we were hiding for almost an hour, swat team is clearing out the mall and helped us out. Edit: Thanks for the Gold although I wish it was under a different circumstance.

Comments that assert the writer's insider status due to having been relatively near an event or from the town of the event do not perform as well in crisis scenarios. A commenter in

²¹ See Appendix C1 for a sample of these comments.

²² See Appendix C1.

the same Maryland shooting who professes to be twenty miles from the incident, for instance, gains a score of 32, as opposed to other first person reports that score in the hundreds. This said, a comment providing second-hand information of a first person encounter will sometimes score quite high, as occurs in a comment reporting an acquaintance's experience at a shooting in LAX which scores 1728 points.²³

Insider commenters in both non-crisis and crisis scenarios rarely provide proof of identity, though there are exceptions. During a school shooting in Colorado, one particularly high-scoring Insider comment reads:

[Commenter 1], 2469 points: In the building right now as a student, it's scary as hell

[Proof](#) Sorry it's last year's ID, our bags are still at school along with my current ID

In this comment, the user links to a photo of his student ID. Of course, this is atypical.

Comments like the following, all left during a mall shooting in Maryland, are far more common:

[Commenter 1], 187 points: We were in the mall and by the time we realized what was going on, all the shops had locked up and my wife, 11 month old and I were forced to hustle through a deserted mall to go out the emergency exit.

[Commenter 2], 154 points: shit, i just got back from there not even 5 minutes ago. must have been right after I left.

[Commenter 3], 166 points: People are still calling PF Changs to see if we're open. Wow.

²³ See Appendix C1.

As may be clear from these examples, comments tend to offer anecdotal evidence. Though some contributions may attempt to analyze the overall event, Insider comments are characterized by these individualized accounts.

The News Aggregator

News Aggregator comments are characterized by their relative infrequency and extremely consistent format and tone. News Aggregator comments are continually updated with incoming information, often linking or referring to external sources. These do not appear in non-crisis comments within r/news. News Aggregator comments mimic the style of newswire reports or police scanner transmissions, though casual interjections of commentary, particularly qualifying the perceived quality of incoming information, occur. Updates are broken out chronologically, with the time of updates prominently displayed. This format remains remarkably consistent across different users and events. To demonstrate, here is an excerpt from one such entry, collecting news of a Maryland mall shooting:

[Commenter 1], 292 points: 12:51 police report a suspicious dark sedan with tinted windows fled the mall earlier and ran a few red lights.

12:57 a unit reports stopping a similar vehicle.. no additional information.

1:04 many news outlets are reporting that the 1/3 that is dead WAS the suspected killer (i still believe this is speculation and not 100% confirmed)

1:05 police are working on clearing out JC Penny (many stores have already been cleared)

1:06 police are waiting by Lord & Taylor (this will be the next store methodically cleared out)

The entry is emblematic of the News Aggregator style and format, as is further illustrated by an excerpt from a News Aggregator post from a shooting in New Jersey:

[Commenter 1], 1343 points:**10:46pm**: County officials have said that the shooter is **still inside the mall**. K-9 units are also there for the search, as they should be.

10:49pm: Various unconfirmed reports that police currently have the brother of the shooter on the phone at the moment. Again, it is *unconfirmed*.

10:50pm: "Bergen County Official: SWAT Officers doing a store by store sweep inside the Garden State Plaza Mall" - CNN

10:54pm: Still not many updates at the moment. Mostly just interviews with "witnesses". Apparently shooter shot into the air, not at anyone according to various witnesses.

10:57pm: According to witness the shooter said "Don't worry, I'm not here to hurt anyone." *Possibly* could've been a botched robbery, according to witness. Could be absolutely *anything* at this point.

The style and format used in both examples dominates the majority of each News Aggregator post; further examples of such comments and the complete versions of each of the above can be found in Appendix B2. Depending on the nature of the emerging event, News Aggregator comments can become quite lengthy, sometimes being officially continued in a subsequent child comment which is upvoted by the community to follow the original (as occurs in the Maryland mall shooting submission).

There are usually only one or two successful News Aggregator comments per submission, typically parent comments. There may be more than one comment that appears to fall within this category per submission, but excluding the most credible News Aggregator comment, these are characterized by a) "inappropriate" formatting or b) less detail than the more credible comment, thus netting lower scores. For instance, of the two comments aggregating

news in the midst of a school shooting in Colorado, the one with a higher comment score more closely mimics the style found in other submissions.²⁴

²⁴ See Appendix C2.

5. Discussion

5.1 Interpretation of Findings

Our research investigates which factors most impact perceived credibility of information in pseudonymous environments. Our analysis appears to indicate that a variety of cues are associated with perceived credibility within r/news, and that crisis may impact which cues are most influential on perceptions.

Our regressions indicate that in both conditions, parent comments have, on average, higher comment scores. We qualify this finding with our qualitative analysis of comment chain formations; comments that either clarify or negate the comment directly above it or else further a culturally-shared joke in a meaningful way will often receive higher scores than the comments they respond to. What our qualitative findings do not account for is the dramatic difference in coefficient size between our crisis and non-crisis data sets. A top-level parent comment will, on average, have a comment score that is approximately 10 points higher than a child comment in a non-crisis event, but will have a comment score that is, on average, between 28 and 31 points higher in a crisis scenario. This may be due to a reduction in user willingness to comb through additional comment in the face of a crisis or users posting new, credible information as an independent comment as opposed to as a reply. Our results suggest that users may want to look beyond parent comments in case these are artificially inflated.

Our quantitative analysis also indicates that recency is negatively associated with perceived credibility in both non-crisis and crisis events. Specifically, we find that a one percent increase in recency is associated, on average, with an 18 point decrease in comment score in an ordinary r/news discussion and an approximately 23 point decrease in comment score in a crisis. This seemingly contradicts research by Westerman, Spence, and Heide (2014) that claims that

recency positively impacts source credibility, though this may not be the case. As is mentioned in our quantitative analysis, our variable is heavily right skewed, with the bulk of comments being posted within 24 hours. Further, users are able to modify posts without altering the time of posting recorded, a practice that our qualitative analysis reveals is not uncommon. Some types of comments are even characterized by such updates, like News Aggregator posts. Interpreting this quantitative finding is therefore complex. This may be a reflection of both commenting and upvoting tapering off as submissions age, though our data does not specify when upvotes and downvotes occur. Our finding might also be interpreted as a reinforcement of Muchnick, Aral, and Taylor's (2013) notion of "social influence bias," suggesting that earlier posts that receive endorsement permanently outpace later ones as further endorsement accrues.

We find no evidence that commenter reputation is associated with perceived credibility in crisis scenarios, though we find some evidence that commenter reputation, as measured by comment karma, is positively associated with perceived credibility in non-crisis events. We interpret this in two ways. First, our qualitative analysis indicates that catering to the opinions and culture of reddit may positively impact perceived credibility. Engaging in humorous commentary or producing posts that resonate as being "common sense," for instance, both result in high scores. What we may interpret our finding of positive significance of commenter reputation only in non-crisis news stories to mean, then, is that the ability to broadcast popular sentiment and seem like "one of the crowd" may contribute to perceived credibility in non-crisis conditions. The lack of significance of commenter reputation in crisis events may be interpreted as reinforcing past research which suggests that the offline notion of "reputation" may be an outdated construct for online analysis at the user level. Specifically, our analysis confirms

findings by Chesney and Su (2010) that indicate that anonymity may not impact credibility as well as, potentially, findings by Tan, Swee, Lim, Detenber, and Alsgoff (2008) indicating that comment characteristics are more important to credibility than site-instituted measures of reputation. What our research additionally suggests, given how comment karma and link karma are accrued, is that past performance is not a reliable indicator of future performance in a crisis. This implies that commenter reputation may not be considered by users in crisis scenarios and is a particularly poor heuristic for evaluating the potential credibility of a comment.

Our analysis of persuasive appeals suggests further differences between non-crisis and crisis evaluations. Our quantitative analysis does not indicate that persuasive appeals affect credibility in non-crisis events, conflicting with findings by Otterbacher (2011) that suggest that the use of any persuasive appeal results in content being more positively received. We find, however, that ethos appeals significantly impact perceived credibility in crisis events, with comments containing ethos appeals scoring, on average, 42 points higher than other comments. This becomes especially compelling when combined with our qualitative analysis, which indicates that ethos appeals in crisis events usually take the form of individuals claiming to be involved with or affected by the event, our Insider comment type. Yet our qualitative analysis also reveals that Insider comments do not typically contain proof and often offer only anecdotal experiences as opposed to more general or verifiable information. This may suggest that users turn to reddit for a very specific type of content in crisis scenarios—firsthand reporting—and are willing to accept claims of involvement without substantial proof. Alternatively, as past research suggests that sites themselves may be the object of consideration when users assess reputation (Metzger, Flanagin, & Medders, 2010; Morris et al., 2012), this may suggest that users deem

reddit or r/news a trustworthy source and therefore are, alarmingly, more prone to simply accept claims made on the site. Whether or not this is the case, our finding that the use of ethos appeals significantly affects perceived credibility without necessarily entailing proof of involvement is troubling. Though we have no evidence of negative consequences in this data set, the preponderance of hoaxes perpetrated through social media suggests a need for enhanced vigilance when considering these sorts of claims.

This is not to say that all of our data indicates that proof is unimportant. Our quantitative analysis indicates that, in crisis events, comments including a link have comment scores that are, on average, higher by 49 points. We do not find evidence of an association between use of a link and comment score in non-crisis scenarios. Our qualitative analysis indicates that links are used differently in crisis and non-crisis events; whereas in the latter case links point to references that support logical arguments, the links used in crisis events predominantly point to news stories, live camera feeds, or other sources of primary data. These links occur both in isolated comments and in News Aggregator comments, a highly-stylized form of aggregated reporting that repeatedly appears as a highly credible comment across crisis events. We combine this with our previously discussed finding regarding the use of ethos appeals and consider the comment landscape of crisis submissions. We posit that different comments may satisfy different informational needs, and that the amount of verifiable information linked to in News Aggregator comments and other posts may compensate for the relative lack of evidence provided in more ethos-oriented Insider comments. Future research may test this theory through either interviews with social media users about their information-seeking habits in crisis events or else through experimental design in which multiple types of comment combinations are presented.

Factors outside of comment composition or author characteristics also appear to impact perceived credibility, something suggested by the low amount of overall variance explained by our multivariate regressions. As our qualitative analysis indicates, the comments surrounding a comment may influence its perception. A comment meaningfully clarifying the point of another, for instance, may appear to be more credible than the comment it clarifies. Adopting the communication style of an external type of authority, as occurs in News Aggregator comments, also appears associated with perceived credibility, reinforcing past findings by Shanahan (2010) regarding users adopting scientific language when trying to establish authority. While these observations do not point to a specific heuristics, they indicate that the overall process of information assessment is complex and that cues other than those which we measure in our quantitative analysis may have substantial effects.

Overall, our results suggest that very different heuristics may be relevant in crisis and non-crisis events within pseudonymous communities. In non-crisis events, visibility, endorsement, and the ability to produce comments that resonate culturally with the community are most strongly associated with perceived credibility. In a crisis, ethos appeals and the use of evidence through linking to outside sources becomes more influential, though visibility and endorsement remain significant factors. Our results suggest a recalibration of information processing when the consequences of misinformation are more dire; though these processes may not be perfect, as we have outlined above, they nonetheless imply different strategies and therefore different heuristics being enacted.

5.2 Limitations and Directions for Future Research

This study is subject to several limitations. Our methods raise questions regarding external validity, given the specificity of our proxy measures and our use of a single section of a single site. Our proxies themselves, particularly our choice to use comment and link karma as a stand in for reputation, may come into question. Our decision transform some of our variables (and to not transform others) in our quantitative analysis, as well as our choice to analyze linear relationships, may also be a matter for debate. More broadly, our methodological innovativeness—using actual data generated in crisis and non-crisis scenarios to consider the role of different credibility cues—generates only observational, as opposed to experimental, results; we are limited to analyzing manifest qualities of data, focusing our investigation on information characteristics instead of heuristics themselves. Our use of non-reactive data collected after an event also prevents observation of dynamic processes like in-the-moment upvote aggregation and content reordering. Future research might seek to challenge or validate our findings through experimental design to address questions of external validity or our specific proxies for various information characteristics. Alternatively, future research might attempt to capture the same type of data as it generates to fully monitor patterns of information interaction that may be invisible within our static, post-hoc data set.

6. Conclusion

The issue of credibility perception and misappraisal is increasingly visible in popular culture, news publications, and scholarly research. As we more regularly rely on digital resources for critical information, we must continue to investigate the mechanics of credibility, in general and in instances where mis-assessment has the harshest consequence. Our research investigates credibility within both scenarios simultaneously, contributing to the crisis informatics field as well as the broader credibility literature through our attention to credibility in pseudonymous contexts. Our use of non-reactive data and strategy for analyzing credibility cues could be considered a pilot for future research assessing other social media platforms; this is a highly flexible methodology with potentially broad applications. Of course, this is not the only means of researching credibility, and we encourage any research building upon or challenging this work.

Our findings have implications for users, journalists, and others browsing social media sites. The results of both our quantitative and qualitative analysis suggest that, in pseudonymous communities such as reddit, different heuristics may be operationalized when assessing information in crisis and non-crisis events. Specifically, the types of generalized insinuations of belonging that may be effective in ordinary circumstances do not hold as much weight in a crisis, when assertions of personal involvement and linking to outside sources become more important. Initially, this seems commendable; it appears that individuals may employ enhanced vigilance when the stakes of misinformation are higher. Yet surely we ought to be critical of all information, even that about quotidian affairs. Further, while our analysis indicates that claims of being “on the ground” receive extra attention in r/news, it also reveals that users rarely provide actual proof (though we have no indication of instances of fabrication). And when we look to the

actual content provided by such users—primarily anecdotal reporting—we must consider that unintentional misinformation even by those on the ground can still take place.

We do not intend to paint a picture of social media as murky, unnavigable informational terrain. We believe social media and other online resources dramatically expand information options and communication opportunities, providing unprecedented access to perspectives and resources and serving as a valuable tool in a crisis event. We merely advocate appropriate caution. This may entail, when available, taking advantage of the interactivity social media provides and engaging with individuals providing information to verify their claims. Simply being aware of some of the biases that affect credibility judgements may also go a long way. Journalists, news organizations, and other third parties who disseminate “official” information can contribute by publicly advocating for responsible information consumption and propagation at both the institutional and individual level; an excellent example of such an effort is *On The Media*’s 2013 Breaking News Consumer Handbook, which provides points of caution in a brief, approachable guide (Goldman, 2013). In general, our recommendation is to reflexively consume information, understanding that when it comes to why we believe what it is that we believe, there may be more than meets the eye.

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8.1 Appendix A: Full Coding Scheme

Table 3.4.1: Variables and Proxies

<i>Variable</i>	<i>Proxy</i>	<i>Coding Scheme/Notes</i>	<i>Variable Type</i>
Credibility	Comment score	N/A	Continuous
Commenter reputation	Commenter karma score (link and comment)	N/A	Continuous
Recency	Hours between time of comment posting and time of submission posting (starting at 1)	Coded as whole integers only	Continuous
Use of persuasive appeals	Coded using scheme from Otterbacher 2011; persuasive appeals concept from Aristotle's Poetics	<p><i>For each comment, coders answered yes or no to the following questions to determine whether any appeals were used and which ones to mark as in use. Appeals were not mutually exclusive; one comment could contain multiple appeals at a single time.</i></p> <p>Ethos: "Does the reviewer attempt to convince readers of her character, experience or qualifications?"</p> <p>Logos: "In presenting her view of the item, does the author try to appeal to readers' sense of reason?"</p> <p>Pathos: "Does the reviewer try to get readers emotionally involved, by appealing to their values or sensibilities?"</p>	Categorical, Binary
Use of link (reputation cue)	N/A	N/A	Categorical, Binary
Visibility	Parent Comment or not	N/A	Categorical, Binary

8.2 Appendix B1: Parody Pathos Comment

From Trader Joe's Story in January 2014

[redacted] 986 points 5 months ago [x2](#)

Let me explain.

The grill is hot. The burgers juicy, warm, seasoned with generic spices you won't even taste with the large glob of mayonnaise on the final product.

I'm make minimum wage. I don't give a fuck. I have enough patties cued for the foreseeable orders and plus one spare. I'm a high school freshman and just finished season 4 of breaking bad on netflix; I don't cook meth, I cook burgers, in fact I don't even know what meth looks like in real life. But now I want to do something cool, badass and science-y.

That spare burger, it's gonna get grilled. a. lot. My shift supervisor is in the office, he's on the phone with his wife talking about the balance of the food-stamps card. He hangs up. Dammit will he come over and check my grill temps? No. He pauses, leans back in his chair and stairs at the ceiling. He pops his head up and quickly sits forward while grabbing the phone. Buttons on the phone are smashed at break neck speed. I can't confirm who is but I know by the tone in his voice it's Veronica, she works day-time cashier and he supervises night. I don't know how they find time for their affair but they make it work. He's beating around the bush. Now he's doing it. He works into the conversation the rash on his dick. Should he be worried, he questions. A pause from his end. His forehead un-wrinkles in relief "You're right it's probably jock itch". They carry on. He can see me if he looks up through the office window but he's too occupied now. This is my chance.

I move the patty to it's own area on the grill. Separated from the herd. It lies motionless. Ready to embrace the torment that's to come. If it could tell me it's last words they would be "do your worse." I begin. The patty is small and I know my time is limited. I press the grill arm down, select the timer for larger patty, it will be quicker this way. The burger maker signals with her fingers to two doubles, in haste I fling them on the buns she has laid out. She looks at the grill farthest from her and the already cooked patties, says nothing and continues. Does she know what I'm up to? She might, I don't know, she doesn't speak our language, she hails from some third world country. She probably knows violence, maybe seen some genocide, maybe she did know what I was doing to the poor patty. It's helpless, defenseless as I mercilessly over grill it yet she said nothing and just carried on. That's the way things are patties no one's coming to your defense. That's the way of the jungle, patties on the bottoms of the food chain.

The timer comes up. The patty sizzles in it's own grease emitting a pop here and there. Defiant? I don't hesitate, another round. The grill arm goes down.

After the timer goes off the patty is revealed again. Lesser grease this time, it dripped into the grease trap. This patty has nothing left to give but I'm not done. I grill it again, again and again. I lose count. The patty is black and crisp. I'm satisfied with the results. It takes two spatulas to scrape it the off grill and was does come off does so in chunks. I toss it into the heat bin below the baked potatoes. It lies motionless with it's other perished brethren of the grill. Six more hours left today. There's more room in that bin.

I return the next day. The boss says we need chili made. I got this. I pull the overcooked patties out of the freezer, fill up the metal container with water and throw it on the specialty grill to boil. When it's time the meat is strained hosed off with the moveable sink nozzle. And who do I see? Our old friend. He is old. grizzled by his torture. Darker than my corporate supplied non-slip shoes. There is more to come. The meat is laid out in the prep area. I separate our old friend from the herd. He watches his mates as they ruthlessly minced into tiny little pieces. He's last, it does not end quickly.

An hour later I through all the meat into the chili crock. Ingredients are added. Chili is made.

At the end of my shift I take home a small cup of my work. I begin season 5 and enjoy my delicious chili. A crunch every few bites is my old friend saying hi. This is our way. This is the law of the Jungle.

8.2 Appendix B2 - Logos Comments

In-Text Examples

Example one

[commenter 1], 624 points: While I'm not advocating for this, it makes sense banks will turn it away. Pot is illegal at a Federal level, and they could still have assets seized and forfeited from the FBI or DEA, making it a risky move, and we all know banks don't like to take risks. Joking aside, until something changes at the Federal level, expect that Marijuana legalization efforts to be disjointed like this.

Example two

[commenter 1], 37 points: serious answer, it would depend on how far away from the muzzle you are. The weight of the projectiles or "shot" in a load are pretty similar even in different sized shells. The issue is that bigger sized shot will travel farther, and have a lot more of an impact when it does hit. Up until about 15 feet it would not make much of a difference if you were shot with birdshot or buckshot. It's still going to make a massive hole because it didn't have a chance to disperse. A shotgun up close is almost no different than a massive rifle. Source-been a hunter and outdoorsman for years.

Logos Comments Containing Links

From Minimum Wage Decrease Story in November 2013

[\[-\]](#)[name redacted] 60 points

Epitome of the issue.

[World's richest woman calls for Australians to take a pay cut - 'because African workers are willing to earn just \\$2 a day'](#)

She inherited her daddies mining business and in just 5 years became the worlds richest woman due to china needed resources and shit. SHE more than doubled her inheritance and yet she bitches about the cost of labor.

This is epitome of the problem.

It should also be noted, that if you look, the truly self made, tend to not act like this. The oprahs and gates and such(yes gates came from a wealthy family but deny he is self made) while the kochs, reihharts and waldens tend to be selfish dicks. Science thinks it is due to a fear of losing what they inherited, since they didnt build it, they dont think they could get it back, while the self made think they can do it again. SO they worry less.

[\[-\]](#)[name redacted] 40 points

Inevitably the same ignorant arguments come up from people who have taken an intro econ class and think real world scenarios play out like their oversimplified models (usually in a vacuum). Luckily we have real world data that we can rely on to easily do away with many of these common fallacies -

Of the 23 times minimum wage was raised, we have data on unemployment for 20 of those raises. Of those 20 raises, 2 have been accompanied by abnormal increases in unemployment, once in 1974 and once in 2008. Again, these are likely better explained by other factors. Overall, the average unemployment change accompanying minimum wage increases is 3.95%, which is less than 1/10 of a

standard deviation (22.3%) above the population average of 3.14%. Again, there is no evidence to suggest that minimum wage increases effect unemployment rates.

Sources:

<ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt>

<http://www.dol.gov/whd/minwage/chart.htm>

[http://data.bls.gov/timeseries/LNU04000000?
years_option=all_years&periods_option=specific_periods&periods=Annual+Data](http://data.bls.gov/timeseries/LNU04000000?years_option=all_years&periods_option=specific_periods&periods=Annual+Data)

From Trader Joe's Story in January 2014

[redacted] 33 points

no, you're wrong, unfortunately... there was actually a good comment about this that i read recently:
fast food is about *fast* food

it's not that the poor can't afford nutritious food, it's that after working hard all day and/ or little sleep, and the pressures of child rearing, they are exhausted and can't afford the *time* to cook: preparation time is the real cost, not money, and is why fast food is preferred

found it, thank's google:

[http://www.reddit.com/r/EatCheapAndHealthy/comments/1t0sw5/
very_interesting_healthiest_diets_cost_about/ce3763j](http://www.reddit.com/r/EatCheapAndHealthy/comments/1t0sw5/very_interesting_healthiest_diets_cost_about/ce3763j)

but what this really means is that there's an angle to make nutritious food available to the poor: if it can get to them with little time investment

8.2 Appendix B3 - Comments Without Persuasive Appeals

Non-Crisis Examples

From Occupy Wall Street Story in November 2013

[–][name redacted] 28 points

Yeah - there's an example letter linked in the announcement: <http://strikedebt.org/rjupdate3/>

Here's a direct link: <http://strikedebt.org/wp-content/uploads/2013/11/Sample-Letter-to-Debtors.pdf>

[–][name redacted] 10 points

References 1. <http://rollingjubilee.org/> 2. For an entertaining story from history about purchasing randomly profitable distressed debt at low prices, check out this: http://en.wikipedia.org/wiki/Timothy_Dexter 3. <http://research.stlouisfed.org/fred2/series/CMDEBT> 4. <http://research.stlouisfed.org/fred2/series/HDTGPDUSQ163N> 5. http://www.dawger.com/_doc_tax_implications.shtml 6. <http://wizbangblog.com/content/2004/09/22/oprahs-car-give.php> 7. If it's interest-free it gets treated like a dividend for tax purposes. Nevertheless, there is a low amount and interest rate such that both the employer and the employee prefer such payment to a higher salary. 8. <http://www.irs.gov/Individuals/The-Mortgage-Forgiveness-Debt-Relief-Act-and-Debt-Cancellation-9>. http://en.wikipedia.org/wiki/Nonrecourse_debt#Tax_consequences_of_disposition_of_property_encumbered_by_non-recourse_debt 10. <http://www.law.cornell.edu/uscode/text/26/6050P> 11. <http://www.thedailybeast.com/articles/2012/11/14/debt-and-taxes.html> 12. <http://blog.startfreshtoday.com/blog/bid/220069/6-Most-Common-Debts-That-Can-Be-Discharged-in-Bankruptcy> 13. http://www.slate.com/blogs/moneybox/2012/11/09/rolling_jubilee_occupy_wall_street_s_bailout_of_the_people_by_the_people.html

From Drug Bust Story in December 2013

[–][name redacted] 4 points

As someone else has said, methamphetamine can induce something called [stimulant psychosis](#). Whether or not this was the cause of their horrific actions, who knows. But it could definitely be a factor that will likely be examined.

[–][name redacted] 11 points

Tip - vitamin c degrades amphetamines, and will help make a high shorter. If someone is going crazy a few vit c pills will make it go away faster.

<http://www.drugs.com/drug-interactions/amphetamine-with-vitamin-c-2543-0-238-3823.html>

Crisis Examples

From Typhoon Haiyan Story in November 2013

[–][name redacted] 54 points

Here's a video:

http://video.sina.com.cn/vlist/news/zt/haiyan2013/?opsubject_id=top1#118918134

The water coming down the stairs was kind of surreal.

From Mall Shooting in Maryland in January 2014

[–][name redacted] 39 points 5 months ago

One of the victim's instagram

[http://web.stagram.com/n/\[end of url redacted\]](http://web.stagram.com/n/[end of url redacted])

8.3 Appendix B4: Sample Insider Comments

Comments from Trader Joe's Story in January 2014

[\[-\]](#)[name redacted] 338 points

I work at Trader Joe's, all of the food that is "unsellable" is donated to a local pantry. This is honestly great

[\[-\]](#)[name redacted] 119 points

I work at Trader Joes as well, and the people we donate it to bring us doughnuts every thursday and friday.

[\[-\]](#)[name redacted] 41 points

I used to volunteer at a food bank that got food from Trader Joes, they throw out so much food. Like an insane amount of food, mostly bread, but a lot of other things too. Perfectly good food that may be a couple days expired or slightly damaged packaging. I volunteered with a woman that would do pick ups 6 days a week and hand out food at a local church and send stuff over to a Mexico orphanage. She was a little crazy but dedicated to doing it for no pay.

[\[-\]](#)[name redacted] 191 points

I worked at Price Chopper and we threw out enough food each day to feed a small village.. I've always wondered why we don't donate it all to food banks or homeless shelters or something like that. I mean I basically lived off of eating the stuff we were throwing out, mainly fruits that were deemed not suitable for display but were still perfectly fine to eat.

[\[-\]](#)[name redacted] 327 points

I've always wondered why we don't donate it all to food banks or homeless shelters or something like that.

I used to be a manager for a fast food cookie restaurant. We donated all of our leftovers to a local charity. One day someone whom this charity helped claimed that they broke a tooth on a brownie and sued us. They lost the suit, but our corporate office adopted a policy prohibition further donations.

[\[-\]](#)[name redacted] 59 points

I can tell you how it worked in the 90s, was my first job when I was 15.

Wendy's made their burgers fresh so meat was constantly grilling. The job of the guy on the grill was to match the amount of meat on the grill to the demand.

Too little and customers had to wait, too much and you made chili meat (overcooked burgers) one of the metrics for performance was not making too much chili meat. So out of code is kind of not accurate, it was just any burger that was too overcooked to serve as a burger.

Comment from West Virginia Chemical Spill in January 2014

[\[-\]](#)[name redacted] 991 points

Resident here.

It's not only don't drink the water, it's don't do anything with the water - meaning don't use it to cook, clean, wash clothes, brush your teeth, take a shower. The only thing we are supposed to do is flush the toilet. It's a real pain in the ass.

Also recently the temperature dropped drastically here so people who did not take proper precautions had their pipes bursting left and right. Bottled water was already a bit on the scarce side.

I was out and about when I heard about it yesterday so I decided to swing by Wal-Mart and grab some water. Well, there were already hundreds of people inside who had bought up all the water. The employees kept telling people there was no more water yet there was still a line of roughly 100 standing around the door where they bring out the merchandise.

I'd be willing to bet that every sheriff and officer from the neighboring town was inside that place. God forbid that anything bad really ever happen.

Also yesterday about 2 pm I was leaving my place and my mom comes knocking on my door - which is odd. Her office is nearby and when I opened the door all she said is "I'm going to shit myself! I'm going to shit myself" and apparently she went in the bathroom and shit and puked at the same time. It was later she told me that she had a cup of coffee and downed an entire cup of water right before she came by my place.

It's not only worrisome for those who are financially unable to go out and buy tons of water for every day use, but you have to think about people with formula fed babies who were drinking the water all day yesterday, and the pets that were. The local shelters need water badly, not only for hydration but to clean the cages.

Hopefully they will remedy the situation soon but it doesn't look like it. I'm going to have to go to one of the relief stations to pick up water later, so that should be fun.

Edit: We are being told not to boil and drink it, let alone touch it.

Edit: Press conference just notified us that yesterday during the initial contamination the level of chemicals in the water were at a 2.0. Now, over 24 hours later they are at a 1.9. Considering that the chemicals have to dissipate on its own, sounds like its going to be a long one.

EDIT for those needing water:

I just got back home and most places downtown are completely out.

WV State has tanks and short lines, just make sure you bring your own jug.

Also WV Steel in Poca is selling 6 one gallon jugs of water for \$5. Of course there are other places, but those are off the top of my head.

Example of Insider Comment with Second-Hand Reporting, LAX Incident, November 2013

[\[-\]](#)[name redacted] 1728 points

Holy shit. My friend's dad was there when it happened. The shooter walked by him and asked "TSA?"

Here is his interview with Milwaukee TMJ4

They told everybody to run toward the gate, and I couldn't run because I had my shoes and my belt off. So I was trying to gather up my stuff and get going and a TSA worker walked up right behind me and started yetlling, 'get out of here get down' there so he grabbed my shoes and I just started running," Leon Saryan of Greenfield said. "And I got halfway down the hall, and I was in the hallway cowering when the guy came through. And he had a rifle in his hand and he looked at me and he said 'TSA?' and I shook my head and he just kept going."

8.2 Appendix B5: News Aggregator Posts

From Shooting at LAX in November 2013

[\[-\]](#)[name redacted] 1680 points

Updating in EDT in Real Time

Please visit [/u/Acrimony87's Summary](#)

I'd like to take a moment to thank Redditor's [/u/Acrimony87](#), [/u/StrictScrutiny](#), & [/u/Z3R0C001](#) for updating Reddit on this story as well. Thanks to those who gifted me gold & silver!

Would like to point out that I saw this story break via Twitter, thus no News Sources (even via Twitter) were available to post a link too at the time. This instance highlights how fast news breaks & how slow it takes news organizations to pick up breaking stories.

Both [Tory Belleci](#) & [Grant Imahara](#) are reporting shooters at LAX.

ToryBelleci - Heard gun shots then everyone starting running for the door. Not sure if anyone was@ hurt. #LAX

Photos: [Evacuating](#) & [Outside on tarmac](#)

[CBS Los Angeles](#) - LAPD Incident Reported in Terminal 3 @ LAX

Los Angeles Airport Police Friday morning confirmed an unknown incident prompted the evacuation of Terminal 3 at LAX.

Details surrounding the incident were not immediately made clear, however passengers reported being evacuated from the terminal sometime after 9 a.m.

Ariel shots from Sky2 showed buses were transporting passengers that had disembarked from planes onto the runway area.

[LAPD Radio](#)

[CNN Live Video](#)

[KCBS LOCAL Live Video](#)

UPDATE *Unconfirmed* - 3 Injured, One being TSA Agent. - Suspect in Custody, wound to leg.

[LAX Airport Twitter](#) - Airport officials confirm police incident began at 9:30 a.m. @ Terminal 3 at LAX. More info to come.

National Media picking up story now: [CNN FOX NBC](#)

LAX - Inbound & Outbound Traffic Shutdown

Via [NBC4 SoCal](#):

A gunman opened fire at a security checkpoint Friday morning at Los Angeles International Airport, injuring a Transportation Security Administration employee and prompting a terminal evacuation.

A TSA spokesperson told NBC4 the shooting occurred at a security checkpoint. A traveler told NBC4 she heard gunfire in Tom Bradley Terminal, where she was preparing to board a flight to Mexico aboard Virgin America.

Details regarding the status of the gunman were not immediately available.

"We were just standing there and someone started shooting," witness Nick Pugh said. "I heard a total of maybe eight or 10 shots fired."

1:11pm - *Unconfirmed* Second suspect in custody, with weapon. [NBC](#)

1:14pm - [NYPost News Feed](#)

1:16pm - Suspect entered Terminal 3 wearing camo BDU's & open fired. Seemed to be targeting TSA Agents. Via LEO Source. [NBC](#)

1:20pm - FBI Team's arriving on scene. [NBC](#)

1:21pm - **Unconfirmed - 3 Injured, One being TSA Agent. One TSA Dead. - Suspect in Custody, wound to leg.**

1:22pm - Passengers are being cleared, collected & bussed off tarmac.

1:23pm - **GRAPHIC: POSSIBLE KIA CASUALTY** [TSA Agent being wheeled away.](#) Credit: [/u/KazMux](#)

1:24pm - Mayor & Police Chief have arrived at T3.

1:25pm - Reports that shooter was not targeting passengers. Gunman: Early 20's, caucasian, crew cut, wearing leisure workout clothes, carrying rifle. Passenger Bay [NBC](#)

1:29pm - Full ground stop in effect at LAX. [via Don Lemon](#)

1:30pm - People are still being shuttled in to a secured location. Nerves are starting to settle. [Tory Belleci](#)

1:35pm - Via [/u/Eaaaaaagle](#) -

From scanner: One suspect down in terminal. Second suspect in custody at garage. Rifle was also recovered. Also it seems that security and TSA are not to blame. They entered ticketing area at Virgin Airlines then shot their way through the security checkpoint targeting the TSA employees.

1:37pm - LAX is **NOT** shutdown. All upper departure levels closed. Only media allowed to park on T 1 & 2 upper departure levels. [NBC](#)

1:40pm - [Via ABC](#) - Planes are now allowed to land at LAX.

1:40pm - Suspect which was injured is now being transported to hospital via 405.

1:42pm - Offramps shutdown off of 405 to LAX.

1:42pm - No more injured have been moved to triage area since the original incident. 2 suspects currently in custody.

1:47pm - Gus Villanueva of LAPD (sp?) - At 9:30am PST, shots fired at T3, LAPD responded. One suspect in custody. 2-3 people injured. LAFD on scene.

1:49pm - Reports that [a] suspect was an off duty TSA Agent. [NBC](#)

1:50pm - LAPD is requesting that people avoid LAX area if at all possible, if you need to pass by please use 405 but be prepared for horrible traffic.

1:52pm - Live on [NBC](#) - LAX Announcement to Secure Holding Area - LAX still being cleared, search is currently being conducted. No time frame on when the airport will be secure. Please hold tight, food & water will be provided to [passengers].

2:01pm - [Photo of Secure Holding Area for Passengers](#) via Tory Belleci

2:02pm - [There's an army of law enforcement from various agencies here.](#) via [Grant Imahara](#)

2:05pm - Grant Imahara just posted photo of an object (possibly weapon) being guarded on ground outside Virgin Lounge. [Look at this picture a little closer. Something on the ground.](#) via [Grant Imahara](#)

2:07pm - News conference with Mayor of LA & LAPD Chief forthcoming. [NBC](#)

2:08pm - Via [Bill Reiter: The scene on Tarmac. Fear, tears, prayers, confusion, worry.](#)

2:13pm - [Better photo of gun on ground in LAX.](#) via [AlienGurudeva](#) sent to me by [/u/suzistaxxx](#).

2:15pm - BREAKING. Source tells @CBSNews TSA agent who was shot at LAX has now died; the suspect is an off-duty TSA agent. [Via Charlie Kaye CBS,](#) sent to me by [/u/acrimony87](#).

2:23pm - Press Conference with the LAPD Chief & Mayor upcoming.

2:24pm - If you're flying today please check with your departing airports as delays begin to occur around the nation.

2:26pm - Via NBCLA - Press briefing expected on LAX Shooting at 11:30 a.m. Watch live here.

2:28pm - LAPD Official Statement: Today at 9:30 am a single shooter in LAX around terminal 3 area started shooting. Multiple victims were injured. LAX PD engaged the suspect. Suspect was taken into custody. For precautionary reasons terminal 3 and surrounding areas will be swept.

2:42pm - News Conference happening in 2 minutes. Mayor, Chief of LAPD, FBI, & Airport Police to speak.

2:44pm - NBCLA is reporting that all of those shot are TSA agents: one killed, one in critical, two in fair condition.

2:49pm - [LA Time's News Conference Coverage WITH Close Captioning](#), sent to me by [/u/acrimony87](#).

2:51pm - LAX gunman is NOT a current or former TSA employee, CBS reports after earlier reporting the contrary

2:51pm - One (if not two) being led away in handcuffs, walking under their own power. [NBC](#)

2:52pm - News Conference:

- 9:20am PST, shooter became actively involved in T3.
- Thanking LEO Community
- Believe to be static situation which is safe now.
- Working hard in ops of airport. Flights are continuing to take off, especially in Southside.
- If you have a flight this afternoon, please stay away due to ongoing investigation.
- Terminals 1 & 2 open for travelers on ground.
- Individual came into T3, pulled an "assault rifle" out of bag & opened fire in terminal. Proceeded into screening area, passed through screening area & moved into terminal.
- LEO tracked him through the terminal, & engaged him inside the terminal.
- At this time, the belief is that there was only one shooter involved.
- Tremendous amount of investigation to be done.
- Sweep has been completed in T3, it is safe.
- Multiple victims that have been shot & transported. Other injuries other than to the suspect himself.
- Flights are arriving in half of usual arrival rate to southside of airport.
- If you have flights out this afternoon, please check with your airlines and or @LAX_Official.
- **LAFD has treated 7 patients, 6 have been transported.**
- Natures of injuries & identity of suspect will not be released at this time.
- FBI is handling the investigation at this point.
- FBI is working hand in hand with all agencies at this time.
- Investigation is on-going at this time, little facts will be disseminated.
- Will not be talking about victims at this time.
- No additional threats have been identified at the airport at this time.
- Thanks given to first responders who were on the scene.
- Only **ONE SHOOTER** responsible at this time.
- Active shooter scenario was practiced three weeks ago with LAPD & other agencies.
- Suspect was able to penetrate Terminal 3 quite far, "towards Burger King".

3:11pm - Just announced, law enforcement has secured the area. Slowly letting people leave this terminal. via [Tory Balleci](#)

3:12pm - Several photos from inside T3 (most likely inside Virgin's Lounge) [here](#).

3:20pm - Upcoming news conference from UCLA Harborside Medical Center on injuries.

3:22pm -

Just for some context for those unfamiliar with Terminal 3 (it's the terminal I fly out of the most because of Virgin America) - getting as far as the Burger King here is REALLY far. It's like 100 yards in from the security checkpoints and right next to all the gates and holding areas.

via [/u/FreddieW](#)

I work at T3 for Virgin America, so I can corroborate this- when I heard Burger King mentioned and saw some of the pictures, it was chilling. Those locations are WELL beyond security and at a walking pace take 2-3 minutes to access from the checkpoint.

via [/u/AlexM5488](#)

3:24pm - LAPD just said the area is still under investigation & will not be letting us leave holding area. via [Tory Balleci](#)

3:33pm -

They told everybody to run toward the gate, and I couldn't run because I had my shoes and my belt off. So I was trying to gather up my stuff and get going and a TSA worker walked up right behind me and started yelling, 'get out of here get down' there so he grabbed my shoes and I just started running," Leon Saryan of Greenfield said. "And I got halfway down the hall, and I was in the hallway cowering when the guy came through. And he had a rifle in his hand and he looked at me and he said 'TSA?' and I shook my head and he just kept going."

via [/u/CorgiRawr](#)

3:43pm - Ronald Reagan UCLA Medical News Conference

- Level 1 Trauma Center
- 3 Male Victims
- 1 Patient - Critical Condition (GSW)
- 2 Patients - Fair Condition (1 Patient GSW, 1 Patient Other)
- Multiple Injuries, gunshots & other types.
- **NO DOA @ THIS HOSPITAL**
- All adults, no children.
- Generally fair patients are in hospital one or two days.

3:50pm - CNN has a large amount of photos & story updates [here](#).

3:59pm - LA Times - [Live News Feed, Including Video](#) sent to me by [/u/livingthegoodlife1](#)

4:07pm - KTLA Live is confirming that the fatality was a TSA Agent, a male in his forties. Another TSA Agent was wounded in the stomach.

4:10pm - [Almost 4 hrs since the shooting. Still here. 2000+ people. They're handing out waters & snacks.](#) via Tory Balleci

4:29pm - [NBC News is reporting shooter is 23 Year Old Paul Anthony Ciancia](#) via [/u/sgtpartydawg](#)

4:50pm - Via the Associated Press:

- BREAKING: Law enforcement officials identify LAX shooting suspect as 23-year-old Paul Ciancia. A law enforcement official tells The AP the shooting suspect wrote a rant about killing TSA workers. An official said the suspect, from NJ, was wearing fatigues and carrying a bag containing a note. [Story](#)

At this time I'm going to be taking a break, the only other news conference should be from UCLA Harborside. I'll try to update if & when I get time. Please feel free to cover & update it.

[\[-\]](#)[name redacted] 36 points

[Live audio from LAX air traffic control \(North/South Tower + Helo\)](#)

10:22am: All arrivals are being held at their destination. Aircraft that are arriving now were airborne before the ground stop went into effect.

10:25am: Currently 8 helicopters over the airport (1 Police, 7 News)

10:26am: Pilots of arriving aircraft unaware of the situation. Skywest 4480: "What's with all the helicopters?" ATC: "Shooting incident at Terminal 3."

10:30am: Departures seem to be unaffected at this time.

10:34am: PD18 (Police helicopter) is hovering between the north and south terminal complexes at 1,300ft.

10:42am: MEDEVAC helicopter inbound to LAX helipad. The MEDEVAC helicopter is in contact with emergency services on the ground.

11:00am: South complex traffic has resumed as normal. Helicopters and ground equipment still clogging up space on the north side.

11:03am: Still 7-8 helicopters over midfield and north of the complex (only 1 police helicopter, the rest are news).

11:07am: Two more news helicopters entering the area. I'm losing track of the number of helicopters. Currently 6 over midfield plus 2 on the north side.

11:09am: Ground stop has been extended until 12:00pm Pacific. Aircraft will be held at their origin airport.

[\[-\]](#)[name redacted] 136 points

UPDATES

[Early report - some kind of shooting.](#)

[LAPD is on tactical alert](#)

[Possible shooting in ticketing area; as many as 4 gunmen possible](#)

LA emergency response has set up a triage area; no victims in the area yet but reports of a blood-covered TSA agent. (Source: NBA live feed [located here](#))

[LAPD confirms multi-patient incident](#)

NBC live feed says "man with high powered rifle got past a checkpoint," conflicting with other reports, but also says they have very little information as of now.

3? victims - two shot, one sprained ankle. One shot TSA agent. (NBC live feed)

[Evacuation scene](#)

[Incident began at 9:30 AM local time.](#)

NBC confirms - 2 people shot.

NBC - no flights have taken off; all LAX appears to be shut down.

Witness said shooting occurred near checkpoint, **but not past the checkpoint.** NBC.

[Picture of some being evacuated across tarmac.](#)

Security at the evacuation location just said that they have caught the shooter (reports an evacuee on the phone); unconfirmed. NBC.

Four or five people have been wheeled out for treatment so far, no indication of severity. NBC

I have to go - someone pick it up for me for a bit?

From Mall Shooting in New Jersey in November 2013

[\[-\]](#)[name redacted] 1343 points

Might as well do this. Getting info from TV News sources (I know, not very reliable. I'll check some online sources as well.)

All time in EST

About 9:30PM: Reports of shots fired, man with a rifle and body armor inside the Garden State Plaza mall. Along with shots fired

10:13pm: Most police are around the Nordstrom entrance, *unconfirmed* reports that shooter escaped.

10:15pm: Worker from a bar says he "heard shots, mall security runs in screaming at top of lungs 'GET OUT GET OUT GET OUT' and they all ran out into the parking lot." Says shooting happened outside of Nordstrom. (unconfirmed, obviously).

10:20pm: Lights are apparently shut off in the west-side of the mall. All info is coming in slowly at the moment. All we know so far is that a shooter is in the mall (or may have escaped) in full body armor including helmet *with*a rifle.

10:23pm: Caller says he heard "Two loud booms, then two more following." Caller said gunman hit 4 people **UNCONFIRMED** quite obviously. First two shots we're quick spaced out a few seconds and after the second two shots he heard no more gunshots.

10:30pm: SWAT team currently moving into the mall, there have been police in the mall but the news stations are showing the SWAT teams moving towards the mall. Weapons are at ready, aimed towards the mall while moving up.

10:33pm: Massive amount of people being let out of the mall. Seems like police are just standing around casually inside the mall from what I saw. There are currently no reports of injuries.

10:38pm: Eyewitness says shooter was wearing biker helmet, leather jacket and carrying a long gun.

10:41pm: Unconfirmed reports of about 10-20 people still locked down in Nordstroms (courtesy of [/u/ReaganxSmash](#)).

10:42pm: No reports of injuries, no more reports of gunshots, SWAT and police have already swarmed the mall. I'll still update as I get any info whatsoever.

10:46pm: County officials have said that the shooter is **still inside the mall**. K-9 units are also there for the search, as they should be.

10:49pm: Various unconfirmed reports that police currently have the brother of the shooter on the phone at the moment. Again, it is *unconfirmed*.

10:50pm: "Bergen County Official: SWAT Officers doing a store by store sweep inside the Garden State Plaza Mall" - CNN

10:54pm: Still not many updates at the moment. Mostly just interviews with "witnesses". Apparently shooter shot into the air, not at anyone according to various witnesses.

10:57pm: According to witness the shooter said "Don't worry, I'm not here to hurt anyone." *Possibly* could've been a botched robbery, according to witness. Could be absolutely *anything* at this point.

10:59pm: [If anyone is curious, here's a layout of the mall](#). Shooting took place around Nordstroms around 9:20pm or so.

11:02pm: Vehicle by Riverside Square mall with bullet holes found, police are either there or on there way. Not confirmed if it is connected or not. *Unconfirmed*

11:07pm: 2 casings were apparently found inside the mall, will be matched with the Riverside Square mall casings, if there are any.

11:08pm: Confirmed no injuries at the mall, according to sources. Lets hope that is correct.

11:09pm: According to CNN (take it with a pinch of salt): "Mayor: No injuries at mall, believes the gunman has left the garden state plaza mall." But current caller just disputed that saying police still believe gunman is still inside the mall. So pretty much; no ones knows anything.

11:11pm: According to [/u/ceslek](#), "they're gathering people (that were in Nordstrom) at the cafe on the 2nd floor to count them and possibly evacuate them. [They're] not sure when they'll be allowed to leave. There are more than 10-20 people (employees + customers, children as well)."

11:14pm: As expected, the helicopters are doing a sweep of the roof. The police outside are very lax as of now, along with some police inside. Shows that they are not *too* worried.

11:16pm: Videos showing customers and employees still being evacuated.

11:17pm: User [/u/ceslek](#) says that "The people gathered and waiting at the Nordstrom cafe are only people that were/are in Nordstrom as far as I know. [They] said there are approximately 75 people."

11:19pm: Police have sent in a little robot with a camera attached to it. Helping with the search, cute little thing.

11:22pm: *Unconfirmed reports* of a bag and a leather jacket found in Lord and Taylor.

11:23pm: Jim Tedesco (Deputy Coordinator) says "Confirmed single shot, mall on lockdown. No one in or out without a police escort."

11:24pm: Mayor says that they "believe the **shooter has left the mall**, and is not apprehended at this time. It is no longer an active shooting scene. There has only been one shell casing found."

11:25pm: Mayor - "One shell casing is most likely from a long-arm rifle."

11:26pm: Various unconfirmed reports of additional shots from outside of the mall at around 11:20pm. From the police scanner. Not reports on any news sources yet. Police are also attempting to track the shooters cell phone.

11:28pm: Witness says "The man was wearing black suit with two... two balloon things on his face." Again, that is a witness. Take it with a grain of salt.

11:30pm: Police are currently treating the mall as a crime scene. Going through any evidence they can get their hands on (not much as of now, apparently). Going through any camera source they can get to as well. Surveillance, security, etc.

11:33pm: Witness says there was multiple shooters, heard shotgun shots and semi-auto shots. Witness says he is in the Navy. Apparently multiple shooters. One with shotgun one with rifle.
unconfirmed. This is completely unconfirmed, from an eyewitness.

11:35pm: Previous report does not make sense with what the police and mayor has said already. Not too sure about the validity of it.

11:36pm: [/u/ceslek](#) - "[They] just told me the group was brought to Joe's restaurant in the mall and frisked, the group gathered at Nordstroms, frisked by swat team."

11:39pm: Currently we still do not know where the suspect is, or if there is another suspect. Police are still trying to put together an actual picture of what actually occurred. Conflicting reports on whether or not the suspect is still in the mall or not.

11:45pm: An *amazing* amount of conflicting reports regarding the amount of shots fired. Many sources are saying one shot, some are saying four and some are saying five shots. We'll have to see when this all calms down.

11:46pm: Police are still conducting searches of the stores, along with watching surveillance cameras. Pictures shown on news station are showing a group of people hiding in a store... all on their phones and tablets...

11:48pm: Reports of people with the shooter before he started shooting. Person reporting this (witness) claims to be from the Navy. Not sure of the validity of it. *unconfirmed*

11:51pm: A suicide note was found, not sure where, stating or referring to the fact that he wants to commit suicide by cop.

11:52pm: Also, according to a source (**unconfirmed**), Verizon was able to ping the suspects cell phone to the area of Neiman Marcus in the mall. Again, this is *unconfirmed*.

11:54pm: According to the scanner, the suspects phone was located (not sure if pinged or physically found) in the mall about 6 or 7 minutes ago.

12:00am: Not much new info is coming out. There may be a briefing within the next hour or so by officials, as claimed by PIX11.

12:01am: "No details at this time on who the suspect is, only one shell casing found inside the mall so far, this is still a very, very active case." - Mayor

12:02am: [/u/ceslek](#) - "SWAT people frisked everyone - women were frisking women, and men frisked men. German shepherds were also there. They were continually being told they were safe. Everyone that was frisked was interviewed and allowed to leave. [They] said Oradell cops were there as well so [they're] assuming neighboring towns were there to help."

12:04am: Phone is being pinged again to see if it has been moved. (source - scanner)

12:07am: It seems like the only news station ATM with coverage is PIX11. Please don't trust this guy with the info as of yet. Not one knows anything and he is just another eye witness. Could be bluffing just to get his 15 minutes of fame.

12:10am: "The cellphone was pinged between neiman marcus and macy's slowly clearing 2nd floor of neiman- a man was reported w/ injures nothing serious but lacerations. **Unconfirmed** being taken out by helicopter."

12:12am: "FBI and SWAT are inside Neiman Marcus, clearing the building." (at about 12:06am - courtesy of [/u/karmapuhlease](#))

12:18am: Scanner - suspect is 21 years old, 5'11" 139lbs, a Teaneck resident (also works there), and drives either a blue 2001 Honda or a black/blue Nissan. (**Note:** This may not be the suspect for the shooting, it could be an unrelated suspect.)

12:20am: Suspect came in, shot several shots, weapon not recovered, wearing black helmet. People still in mall/being evacuated slowly but efficiently. - According to Paramus official.

12:22am: Unconfirmed reports of someone down, at scene, unresponsive but breathing by Neiman and maybe Macys.

12:25am: Maybe be getting an official update within the next 15 minutes or so.

12:26am: Police source text to PIX11 - Found a change of clothes, along with empty and live ammo casings inside the mall.

12:30am: From [/u/ceslek](#) - Pictures - <http://imgur.com/a/QAfEG>
When the Nordstrom group exited the cafe on the 1st floor (not the 2nd floor like I previously said) of Nordstrom, the SWAT team was standing "in rank" outside the cafe with their guns pointed at the group and told "hands in the air, don't put your hands down" and the group then went up the escalator to the 2nd floor and they were then frisked and told to go inside Joe's. Guns were not being pointed at the group while being frisked. The people with kids were escorted away before the guns were pointed at anyone. Police were asking for eye witnesses and anyone with knowledge was brought into rooms and interviewed. One woman said she was a witness and she was escorted to a room according to [my source]. People parked right outside Joe's were allowed to leave immediately. Others were told to stay until further notice.

12:30am: Hotels on rt 4 being checked for vehicles- this is all through the scanner and unconfirmed

12:31am: unconfirmed - Blue Nissan and a motorcycle tagged in relation with shooting- suspects possible armed.

12:35am: From a source - Seems like something is being staged by neiman marcus still- police setting up all around it on on roof not sure what really. But seems like they are not positive the mall is cleared. Makes sense since the cell phone pings were still going off there.

12:38am: Multiple police agencies are looking for an individual from Teaneck either driving a blue Honda or black motorcycle. Reports are this is the possible actor from the shooting, is possibly suicidal, and is to be regarded as dangerous. At 12:33am it was reported that the blue Honda was found and has been secured at the mall. (unconfirmed)

12:41am: Briefing should be within the next half hour or so.

12:43am: Still a sweep going on in the mall, according to the PIX11 police source.

12:52am: PIX11 Police Source - Close to 2000 officers sweeping the mall, police are still pinging the cell phone. (Which means that police *do* have a suspect.) The suspects family has given police his cellphone number.

12:56am: [Police have identified the shooter as a Richard Shoop who is 20 and lives in Teaneck. Shoop is employed at a restaurant in Teaneck and may possibly still be in or on the mall campus as of now.](#)

1:10am: It seems to have slowed down a bit as the police search for the suspect and get everyone out safe. I'm gonna end it here, if someone else wants to pick it up, by all means go ahead. Thank you all for the help (you know who you are) and I really appreciate the gold! First time getting it. My thoughts are with everyone effected tonight, hopefully this turd gets caught soon and doesn't hurt anyone.

Good night everyone!

From Typhoon Haiyan in November 2013

[\[-\]](#)[name redacted] 379 points

Edit: As of 6:00 am EST, the [situation report](#) has the following information:

- 2,055,630 families or 9,497,847 persons were affected
- The number of damaged houses is currently at 19,551 (13,191 have been totally destroyed)
- A state of calamity has been declared in the province of Antique, as well as in Janiuary and Dumangas in the province of Iloilo
- Flooding, landslides, and fallen trees blocked several roads, but most are now passable thanks to ongoing clearing operations

The Red Cross is reporting that an additional 6.5 million people in Vietnam could be affected. [source](#)

If you are trying to find someone in the Philippines in the aftermath of the typhoon, you can try using one of these sources:

- [PeopleLocator](#)
- [Google PersonFinder](#)
- [alternate source for Google PersonFinder](#)
- [Red Cross request for help restoring contact](#)

You can help disaster responders by working with MicroMappers and tagging tweets that are relevant to response efforts.

[MicroMappers](#)

If you would like to donate, here are some organizations that could use your help:

- [Red Cross Philippines](#) via Paypal
- Ayala Foundation's 'Laging Handa Fund' (Always Ready), overseas donors can use this [online portal](#) for donations
- [GlobalGiving.com](#). Credit and debit card donations accepted
- [The Catholic Relief Services](#) and [Caritas Filipinas Foundation](#)
- [Save the Children](#). Save the Children has a team on the ground in Tacloban working to respond to this emergency.
- [UNICEF](#)

note: I pulled the donation info from [/u/hitokiri_battousai's comment here](#). If you have another reputable organization that is helping out, let me know and I'll add it to the list.

From School Shooting in Colorado in December 2013

[\[-\]](#) [name redacted] 64 points

Shoutout to [/r/Colorado](#).

Update 1: Shooter is now dead. There is 1 victim in critical conditon.

Update 2: it is reported that the shooter killed himself (self-inflicted gunshot)

Update 3: Students being sent to list below -

Update 4: One student has been taken to Littleton Adventist Hospital with a gunshot would. No age, gender, or condition known.

Update 5: While there is no bomb suspected police are doing a bomb sweep of the school

Update 6: They are now looking for a subaru in the parking with the license plate 698YSW - School is slowly being cleared.

To all parents who may be affected by this police are ferrying students around to the following locations:

Nearby King Supers

Shephard of the hills church

Euclid middle school (This seems to be the primary location)

Unconfirmed The shooting started when a student entered school wanting to confront a teacher. Two students injured (one confirmed). Another student was reported injured with no reports so far on status. A second suspect was reported but it is a ongoing investigation.

[\[-\]](#)[name redacted] 38 points 7 months ago*

One injured unknown 15-16 year old at hospital with gun shot wound, suspect deceased self-inflicted gun shot wound.

Update: male shooter, student at school.

Saying a second student suffered minor wound not sure if it was a gun shot wound.

Only one weapon found so far.

Apparently news conference says shooter had an issue with a particular teacher who was able to leave building in time.

From Mall Shooting in Maryland in January 2014

[\[-\]](#)[name redacted] 558 points

[Howard County Fire and Police Scanner](#)

EDIT

12:02 K9 unit going to Macy's for a suspicious package

12:06 Sounds like everything happened in the Sears because that's where they're sending units. Sears is on the opposite side of the mall from the Macy's. Sears is also located right next to the food court, which is the most populated area of the mall.

12:08 Expect walking wounded who will move to the food court to receive treatment.

12:09 They're no longer sending any medical transport units to the mall, seems like they don't expect any more serious injuries.

12:15 Moving people out of the mall in groups

12:16 Having trouble keeping people warm in the staging area, bringing buses to keep people warm. Currently 26 but feels like 15.

12:25 Woman in Panera (near Macy's) just called into dispatch saying there is a suspicious man in a ski hat and black trenchcoat peeking in windows at the Macy's.

12:36 Still trying to get buses. Currently using Howard Transit buses.

Hey sorry I haven't kept up. After I contacted family and friends I turned off the scanner and got my day started. Hope everyone's family and friends are safe!

[\[-\]](#)[name redacted] 292 points

[Columbia Mall Shooting, Updated thread: 2:00pm EST](#)

Continuation from above.

12:51 police report a suspicious dark sedan with tinted windows fled the mall earlier and ran a few red lights.

12:57 a unit reports stopping a similar vehicle.. no additional information.

1:04 many news outlets are reporting that the 1/3 that is dead WAS the suspected killer (i still believe this is speculation and not 100% confirmed)

1:05 police are working on clearing out JC Penny (many stores have already been cleared)

1:06 police are waiting by Lord & Taylor (this will be the next store methodically cleared out)

1:10 police are investigating a suspicious package , what looks like a bag (no further information)

1:12 police report 80% of stores have been cleared.

1:20 police are now entering Lord and Taylor with a team. (a 4 man team has already entered)

1:21 police are about to enter Macy's (this will be the next store methodically cleared out)

1:26 JC Penny employees all clear. Good news if you have family/friends that work there.

1:30 Howard County police to hold a press conference any minute now... (will update)

1:31 police are reporting 99% of stores should be cleared out by now.

1:31 press conference has started.

1:32 County executive: confirms 3 dead.

1:33 County executive: blahblahblah, no new information...

1:33 Police Chief Bill McMahon: 11:15am, 911 received reports for shots fired. Officers identified 3 victims in the mall. "one of those victims appears to be the shooter"

1:35 Police Chief Bill McMahon: "we don't believe at this time, that there are any more shooters in the mall"

1:36 Police Chief Bill McMahon: "we don't think there are any additional injuries, we are actively searching the mall to clear out people."

1:36 Police Chief Bill McMahon: "we do not have a motive of the shooting yet. we are still trying to secure the mall."

1:37 police scanner: waiting on somebody to open Nordstroms for them so they can clear it out.

1:38 Police Chief Bill McMahon: "we are very confident that it was a single shooter"

1:40 Police Chief Bill McMahon: 'our detectives are talking to people as they leave the mall to see if we can clear them to leave'

1:55 CNN reports that the suspect may have shot himself as bullet wounds appear to be self inflicting.

2:23 Howard County twitter: HOCO General Hospital is treating a victim from the mall who suffered a gunshot wound to the foot.

2:47 Police confirmation: the shooting took place in a skate shop called 'Zumiez' on the mall's upper level.

== No new updates at this time ==- Press conference at 4pm EST

SPECULATION/RUMORS:

Twitter rumor: this was over a pair of Jordans??

Facebook user: asking for prayer for his friend that was shot (female) point blank with a shotgun at Columbia mall.