

Chapter 6

Cell Phone Use with Social Ties During Crises: The Case of the Virginia Tech Tragedy

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ABSTRACT

Many proposed technological solutions to emergency response during disasters involve the use of cellular telephone technology. However, cell phone networks quickly become saturated during and/or immediately after a disaster and remain saturated for critical periods. This study investigated cell phone use by Virginia Tech students, faculty and staff during the shootings on April 16, 2007 to identify patterns of communication with social network ties. An online survey was administered to a random sample pool to capture communications behavior with social ties during the day of these tragic events. The results show that cell phones were the most heavily used communication technology by a majority of respondents (both voice and text messaging). While text messaging makes more efficient use of bandwidth than voice, most communication on 4/16 was with parents, since the majority of the sample is students, who are less likely to use text messaging. These findings should help in understanding how cell phone technologies may be utilized or modified for emergency situations in similar communities.

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INTRODUCTION

April 16, 2007 was a Monday. The weekend before had been Admitted Students days on the VT campus. Seung-Hui Cho shot two students early Monday morning (about 7:15) in a dormitory, and the police had taken someone into custody within an hour. During this time, Cho had gone by the post office and dropped off a package to NBC news with a videotape of himself telling his story of the killings he was yet to carry out. About 9:30 he barricaded the doors of Norris Hall on campus, and went from classroom to classroom, shooting 29 students and faculty, before shooting himself. A total of 32 people, including Cho, died that morning.

Cell phone networks were overwhelmed during the tragic shootings at Virginia Tech on April 16, just as they were during Katrina and 9/11 (May, 2006; Weiser, 2006). Many notification forms during emergencies overburden not only landlines, but also wireless (or ubiquitous) communication among individuals. We know from various studies that the first responders in an emergency are often the immediate individuals on site who can provide information to authorities (May, 2006). Just as authorities do, citizens need to be able to communicate effectively and reliably under such circumstances. Therefore, it is important that we understand communication patterns and system usage in emergency situations.

Many studies of emergency communication usage have examined public sector communication systems, such as those used by police, fire, and rescue workers (Mehrotra, 2007; National Research Council, 2007; Schooley, Marich & Horan, 2007; Weiser, 2006). A few studies have focused more recently on a combination of public sector agencies and lay persons' use of communication networks, including citizen use of government websites, and fixed and mobile telephone services (Owen, 2005; Steinberg, 2006; Palen & Liu, 2007; Palen &

Vieweg, 2008). We build on studies that focus on ordinary citizens' use of communication networks. Specifically, we examined fixed and wireless voice communications, text messaging, electronic mail notifications, and web-based information sources for Virginia Tech affiliates (students, faculty and staff) during the tragic events of April 16th. We focused our study primarily on cell phone use.

Mobile communication (particularly, cell phone usage) by citizens is of special interest given that it is the communication channel that ordinary people are most likely to have close at hand in the moment of an emergency (Horrigan, 2007). Moreover, in future crises, the cell phone is likely to be used increasingly for high bandwidth services, as some people caught in an emergency will also attempt to receive information over their mobile devices from the Internet and other networked sources (e.g., to obtain web-based news over their cell phone).

For these interrelated reasons, we think that the use of text messaging is an important component as we plan ahead for crisis management. Text messaging could play a vital role in emergency response for several reasons: 1) it is very low bandwidth; 2) it is asynchronous; and 3) it is currently underutilized by subscribers in the United States, because providers typically charge extra for text messaging services. In situations where the citizenry forms a vital cadre of "first informers" (which is increasingly more common owing to the ubiquitous presence of mobile communication devices), text messaging can be the most efficient form of communication over a given network. Moreover, cell phone penetration has reached deep into the socio-economically disadvantaged segments of the US population (Horrigan, 2007). Hence, cell phones (along with the digital services that come with them) represent a compelling medium for broad access to digital information and communication.

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