Effect of Daytime on the Efficiency of Population Alerts via Short Messages and E-Mails

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ABSTRACT

Alerting the population in time of crises and disasters can be challenging depending on the situational context. One key factor for success is to attract people's attention to the fact that an alert has been issued. Attracting attention is affected by the alerting channel and its wake-up effect, but also by the time when an alert is being issued. While the reach as a function of daytime has been studied in-depth for some traditional media like TV (see, for example, Held 2001 for data from Germany), little is known about the impact of time on the efficiency of more recently established alerting channels like short messages (SMS) and e-mail. Furthermore, most existing studies rather focus on sending the alert to the recipient, rather than analyzing whether the recipient actually read the incoming message, or do not take into account the effect of time on the alert's impact. However, this information is helpful for practitioners like security and safety planners to better prepare for future incidents, and to optimize their communication strategies. In order to close this gap, a field test to analyze how quickly ordinary people actually notice alerts via SMS and e-mail was conducted in the German county of Lippe. In total, 250 participants were acquired for the test through personal contacts, with the help of regional emergency management officials, and via snowballing. The latter was important to reduce potential participant bias. People interested in joining the test registered through a website, where they could also select the alert channel(s) of their preference. The actual field test was then conducted during fourteen days, in which three test alerts were sent to registered participants. Participants did not have any prior knowledge about the timing of the alerts. To cover a broad range of situations, the alerts were issued as follows:

- one alert at a working day, at about 11:30 (during a time when most people are "at work")
- one alert during the evening of a working day, at about 18:30 (typical evening time after work)
- one alert in the middle of the night, at 2 a.m. (typical nighttime alert)

Selected alert scenarios included a road accident involving a lorry carrying hazardous substances, a heavy rain scenario, and a hailstorm. All messages were clearly labeled as test alerts at their beginning. At the end of the alert text, a reminder for the recipients was included that they should confirm having read the alert immediately. We then recorded how many and when confirmations of receipt were sent by the test participants. SMS performed consistently and significantly better than e-mails, which was expected due to the better wake-up effect and the larger reach (as SMS can be read almost anywhere on any mobile phone, whereas only some users can read e-mails on their mobiles and have synchronized them with their e-mail accounts). As also expected, alerting performance was poor in the middle of the night, when only about 13% of SMS and only 2% of e-mails were read within an acceptable time frame (10 minutes), and these numbers did not change substantially until breakfast time when people started reading their communication after waking up. The amount of people reading SMS at night also roughly corresponds to the share of people working at this time. Although being generally inferior to SMS, e-mails did perform surprisingly well during the alert issued at working time, with approx. 36% of e-mails being noticed within 10 minutes, compared to 52% of SMS. This is likely due to the fact that many people are in front of their computers at work, with their mail software running, and thus being able to notice e-mail alerts in a timely manner.

REFERENCES

1. Held, V. (2001) Technology Options for an Early Alert of the Population, Zivilschutzforschung 45, 1.