

Does VGI after sudden catastrophic events share the time-space structure of other user-contributed Web content?

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ABSTRACT: The widespread use of social media means that Volunteered Geographic Information (VGI) in social media feeds can act as sensors for disasters. In this study, we explored the case of Boston Marathon Bombings in April 2013 to examine whether Twitter postings follow patterns seen in other user-contributed content relating to disasters, such as the donut hole and the long tail. Geolocated tweets in the U.S. and Canada related to the event were extracted and analyzed. Data were from a data archive at the University of Kentucky, which contains billions of geolocated tweets. Tweets with content Boston, bomb, emergency, and blood were filtered, and the distance between the location of the tweet and the event location was calculated. Visualizations of the spatial and temporal elements of the data in both attribute space (reaction time scatterplot, VGI contributor distance from the event center etc.) and geographical space were created, and used to isolate patterns indicative of the long tail and donut hole phenomena. Visual analytics proved a powerful and versatile tool in the analysis of spatio-temporal social media data. The phenomena we found may be amenable to automated extraction, implying that warning systems for different emergencies may be possible.

KEYWORDS: VGI, disaster, spatio-temporal pattern, social media, Boston Marathon Bombings