

Taking It to the Tweets—Statistical Analysis Proves Twitter a Powerful Tool in Forecasting Crime; Could Aid in Shaping Patrol Routes

BALTIMORE, Md. (August 1, 2017) – Although most people don't broadcast in advance their intention to engage in criminal activity, University of Virginia Assistant Professor of Systems and Engineering Information Matthew Gerber has discovered that the use of Twitter can help predict crime. Gerber's research and work developing statistical crime prediction methods will be presented on Tuesday, August 1, 2017, at the Joint Statistical Meetings in Baltimore, Md.

"My initial hypothesis was that there would be no correlation between Twitter use and crime. After all, people don't share with the world that they intend to or have just committed a crime," said Gerber. "What they do share are things like social events or outings that could lead to criminal activity." Gerber chose Twitter over other social media platforms for its openness and the fact that anyone can access GPS-tagged tweets generated in a given area.

His statistical method involved collecting more than 1.5 million public tweets tagged with Chicago-area GPS coordinates spanning January to March of 2013, as well as crime records covering the same period and geographic area. After dividing and mapping out tweets and crime records onto a grid and identifying common topics of discussion (e.g., sports, restaurants, and entertainment) appearing in tweets, Gerber combined conclusions from this analysis with older forecasting models to predict crimes over the next month. The result of his combined method was more precise, accurately predicting 19 out of 25 crime types.

"Some cities that utilize such methods as a basis for resource allocation have seen dramatic decreases in crime," said Gerber. As for the causal connection between tweets and crimes, Gerber admits his method cannot answer that. Even so, it's gaining attention from police departments all over the United States, including Chicago and New York City. His work could further assist departments in resource allocation, deciding where and when to deploy officers.

Gerber co-directs UVA's Predictive Technology Laboratory, which uses data to create predictive models with the goal of promoting better decision making. In addition to applying models to the field of policing, the lab is also conducting research in other important fields like health care and the military.

Media can attend JSM for FREE, but must pre-register by emailing Jill Talley, ASA public relations manager, at jill@amstat.org.

About JSM 2017

JSM 2017 is the largest gathering of statisticians and data scientists in the world, taking place July 29–August 3, 2017, in Baltimore. Occurring annually since 1974, JSM is a joint effort of the American Statistical Association, International Biometric Society (ENAR and WNAR), Institute of Mathematical Statistics, Statistical Society of Canada, International Chinese Statistical Association, International Indian Statistical Association, Korean International Statistical Society, International Society for Bayesian Analysis, Royal Statistical Society and International Statistical Institute. JSM activities include oral presentations, panel sessions, poster presentations, professional development courses, an exhibit hall, a career service, society and section business meetings, committee meetings, social activities and networking opportunities.

About the American Statistical Association

The ASA is the world's largest community of statisticians and the oldest continuously operating professional science society in the United States. Its members serve in industry, government and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare. For additional information, please visit the ASA website at www.amstat.org.

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