Published in final edited form as:

Science. 2015 April 10; 348(6231): 194–195. doi:10.1126/science.348.6231.194-b.

Assessing data intrusion threats

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Y.-A. DE MONTEJOYE *et al.*'s Report "Unique in the shopping mall: On the reidentifiability of credit card data" (special section on The End of Privacy, 30 January, p. 536) led to a widespread media sensation proclaiming that reidentification is easy with only a few pieces of credit card data (1–3). Although we agree with de Montejoye *et al.* that data disclosure practices must be responsibly balanced with data privacy and utility, we are concerned that the study's findings reflect unrealistic data intrusion threats. Making policy decisions based on the conclusions from this work would thus be hasty and could lead to the abandonment of modern data protection standards, with negative consequences to privacy, research, and society.

Some media confusion stems from the paper's use of the term "reidentify"; credit card metadata were not actually linked to any personal identities. Instead, it was assumed that an intruder could obtain data about identity, geography, time, and price to reidentify all targeted consumers. Yet this scenario requires some very strong assumptions about the attacker that are unlikely to be realized in practice. First, the study did not demonstrate the extent to which the necessary identifying information could be obtained reliably for any consumer. Second, the study neglects to acknowledge that when the data come from a fraction of the general population, unique purchase data in the sample will often not be unique in the larger population. Given that the undisclosed country's population was likely much larger than 1.1 million, the paper's data uniqueness measure is likely a substantial overestimate of risk. Third, the study's risk estimates are further inflated because they did not include cash or other banks' credit card purchases.

The research communicated in this paper is critical to moving forward privacy discussions about data sharing. However, we stress that claims about reidentification must be based on

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models that realistically and correctly account for the probability, as well as the possibility, of attacks.

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OUTSIDE THE TOWER

Xiangqian Li and Jiaqi Liu demonstrate a physical exam during the opening skit at Healthcare Day.

Acting to build trust

My 5-foot 9-inch, 160-pound frame hunches over in pain. “I am Macho Man,” I declare to the crowd “but because of my back pain, I can’t even pick up a strawberry!” Suddenly, a white-coated angel appears beside me. I look up in awe. “Can you relieve my pain?” Thus begins the opening sketch at Healthcare Day in Shanghai, China.

Since 2012, I and others from Zhongshan Hospital at Fudan University have been holding Healthcare Day in Community, a quarterly event in which medical scientists from different departments provide health counseling and services for local residents.

As the skit continues, the white-coated angel explains the physiology behind back pain and shows me, Macho Man, how to prevent muscle strain. He models the correct way to lift a heavy load and demonstrates how a physical exam would diagnose the problem. Then he leaves the stage and walks through the audience, looking for other people in need.

During Healthcare Day, community members have the opportunity to ask scientists about genes, tissue engineering, cancer, and cutting-edge medical research. We advocate a healthy lifestyle and give relevant advice about exercise habits, weight control, and proper diet. This event builds trust between the community and medical scientists. We hope more medical scientists and doctors in China will join us in stepping out of the hospital and sharing health science with the public.

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