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**Understanding the spreading patterns of mobile phone viruses**

PU WANG, MARTA GONZALEZ, CESAR HIDALGO, ALBERT-LASZLO BARABASI — Mobile viruses are little more than a nuisance today, but given our increased reliance on wireless communication, in the near future they could pose more risk than their PC based counterparts. Despite of the more than three hundred mobile viruses known so far, little is known about their spreading pattern, partly due to a lack of data on the communication and travel patterns of mobile phone users. Starting from the traffic and the communication pattern of six million mobile phone users, we model the vulnerability of mobile communications against potential virus outbreaks. We show that viruses exploiting Bluetooth and multimedia messaging services (MMS) follow markedly different spreading patterns. The Bluetooth virus can reach all susceptible handsets, but spreads relatively slowly, as its spread is driven by human mobility. In contrast, an MMS virus can spread rapidly, but because the underlying social network is fragmented, it can reach only a small fraction of all susceptible users. This difference affects both their spreading rate, the number of infected users, as well as the defense measures one needs to take to protect the system against potential viral outbreak.

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