

THE EPIDEMIOLOGICAL MODELS FOR NEWS DISSEMINATION VIA TWITTER

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ABSTRACT

News is very essential in daily life as it is the main source of information. Nowadays, Twitter has become one of the tools used by people to update with current news. Twitter also helps the mainstream media such as newspaper to report and spread the news via online immediately. Some of the breaking news become viral as soon as they were posted. However, the duration of its virality is uncertain. Thus, this study was conducted to investigate the dynamic of news dissemination via Twitter using an epidemiological model known as Susceptible-Infected-Recovered (SIR). The variables of interest are the users who are exposed to the news (active Twitter user), the users who receive and share the news (transmission) and the users who stop sharing the news (immune Twitter user). The SIR models with constant population and dynamic population were considered. News regarding chemical pollution in Pasir Gudang, Johor and mosque attack in Christchurch, New Zealand were selected as case studies. The data was observed approximately 14 days after the news was reported from two newspapers' Twitter accounts which are @staronline and @bharianmy from The Star and Berita Harian, respectively. The number of the people retweets, the number of likes and replies of the tweets and the number of followers of the related account have been collected. The linear stability analysis has been performed and numerical experiments have been conducted. The result showed that the duration of the virality of the news is longer in the model with a dynamic population than in the model with the constant population. Furthermore, the model with the dynamic population is more realistic in describing the spreading of news.

Keywords: News dissemination, Epidemiological models, Constant population, Dynamic population, Twitter.