



UNIVERSITY OF LEEDS

This is a repository copy of *The use of non-traditional data for monitoring foodborne illness: methodological recommendations and considerations*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/142266/>

Version: Accepted Version

Proceedings Paper:

Oldroyd, R orcid.org/0000-0003-3422-7396, Birkin, M and Morris, MA (2017) The use of non-traditional data for monitoring foodborne illness: methodological recommendations and considerations. In: Birkin, M, Morris, M and Malleson, N, (eds.) ECTQG 2017 Conference Programme. The European Colloquium on Theoretical and Quantitative Geography, 07-11 Sep 2017, York, UK. University of Leeds .

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

The use of non-traditional data in monitoring foodborne illness: methodological recommendations and considerations

Rachel Oldroyd¹, Prof Mark Birkin¹, Dr Michelle Morris²

¹Consumer Data Research Centre, Leeds Institute for Data Analytics, Level 11 Worsley Building, University of Leeds

² School of Medicine, Leeds Institute for Data Analytics, Level 11 Worsley Building, University of Leeds

The Food Standards Agency (FSA) estimate that 1.7 million cases of foodborne illness are contracted each year in the UK, of which 22,000 cases result in hospitalisation and 700 result in fatality (Tam et al., 2014). The burden of foodborne illness on the population and economy remains unacceptably high and there are several problems associated with the way traditional data is used to monitor the problem. As many victims of food poisoning neither report their illness nor visit their GP, national surveillance data severely underestimate the incidence of foodborne illness. GP data publication takes approximately two weeks following an appointment. Subsequently the data is unsuitable for the timely identification of harmful pathogens (Achrekar et al., 2012).

In recent years, Twitter has emerged as a useful source of information for monitoring and mapping both disease and public health outbreaks. Available in near real time, Twitter data can be attributed to a specific location and can include a wealth of information not available in traditional data. Studies have ranged from mapping influenza outbreaks (Culotta, 2010) to monitoring dental pain (Heaivilin et al., 2011), however studies focusing on foodborne illness are limited.

This study used systematic scoping methods to retrieve and analyse all primary research concerned with monitoring public health and disease outbreaks using non-traditional data such as Twitter and restaurant reviews. Emerging from this study were methodological recommendations for using non-traditional data to calculate the incidence of a public health ailment or disease. This paper will discuss these recommendations, and consider the use of non-traditional data to more accurately quantify the incidence of disease and to further inform food establishment inspection procedures in the UK.

Acknowledgements: This research is supported by the Economic and Social Research Council [grant number ES/J500215/1].

References

- Achrekar, H. et al. 2012. Twitter Improves Seasonal Influenza Predictions. In: *International Conference on Health Informatics, Algarve, Portugal*. pp.61-70.
- Culotta, A. 2010. Towards Detecting Influenza Epidemics by Analyzing Twitter Messages. In: *1st Workshop on Social Media Analytics Washington DC, USA*. pp.115-122.
- Heaivilin, N. et al. 2011. Public Health Surveillance of Dental Pain via Twitter. *Journal of Dental Research*. **90**(9), pp.1047-1051.

Tam, C. et al. 2014. *The Second Study of Infectious Intestinal Disease in the Community (IID2 Study)*. University of Manchester.