

CAUSALITY ANALYSIS OF DENGUE TRANSMISSION IN BANDUNG, INDONESIA

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Investigation of dengue incidence data from the Borromeus Hospital in Bandung from the years 2008-2017 is done. This hospital is serving as one of the primary preferences of dengue patients, and we assume the data represent half of the total dengue incidences in Bandung. The data contains the address, age, gender, and length of stay in hospital of each patient. It is interesting to observe that the average stay in hospital decreases from 4.1 days in 2008 to 4.1 days in 2016. From the normalized distribution data in each district, it is shown that Coblong and Bandung Wetan are two most endemic districts with much higher incidences than the rest of the districts. Causality analysis indicates that the neighboring districts granger-caused the incidences in Coblong and Bandung Wetan districts, but not the other way.

References

- [1] M. Fakhruddin, P. S. Putra, K. P. Wijaya, A. Sopaheluwakan, R. Satyaningsih, K. E. Komalasari, S. W. Indratno, N. Nuraini, T. Götz, E. Soewono, et al., Assessing the interplay between dengue incidence and weather in Jakarta via a clustering integrated multiple regression model, *Ecological Complexity* 39 (2019) 100768.
- [2] K.P. Wijaya, Sutimin, E. Soewono, T. Go'tz, On the existence of a nontrivial equilibrium in relation to the basic reproductive number, *Int. J. Appl. Math. Comput. Sci.* 27, 3, 623-636, 2017
- [3] Gotz, T., et al., Modeling dengue data from Semarang, Indonesia. *Ecol. Complex.* (2016), <http://dx.doi.org/10.1016/j.ecocom.2016.12.010>
- [4] Filipe Rocha, Lus Mateus, Urszula Skwara, Mara Aguiar & Nico Stollenwerk (2015): Understanding dengue fever dynamics: a study of seasonality in vector-borne disease models, *International Journal of Computer Mathematics*, DOI: 10.1080/00207160.2015.1050961
- [5] I. S. Fauzi, M. Fakhruddin, N. Nuraini and K. P. Wijaya, Comparison of Dengue Transmission in Lowland and Highland Area: Case Study in Semarang and Malang, Indonesia, *COMMUN. BIOMATH. SCI.*, VOL. 2, NO. 1, PP. 23-37, 2019