

Geo-visualization of Sarawak COVID-19 Publicly Available Data Employing Open-source Geospatial Software

Piau Phang^{1,*}, Ming Yan Yap¹, Syerrina Zakaria², Jane Labadin¹

¹Faculty of Computer Science and Information Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

²Faculty of Ocean Engineering Technology and Informatics, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

Received September 11, 2022; Revised November 18, 2022; Accepted December 1, 2022

Cite This Paper in the Following Citation Styles

(a): [1] Piau Phang, Ming Yan Yap, Syerrina Zakaria, Jane Labadin, "Geo-visualization of Sarawak COVID-19 Publicly Available Data Employing Open-source Geospatial Software," *Universal Journal of Public Health*, Vol. 11, No. 1, pp. 34 - 49, 2023. DOI: 10.13189/ujph.2023.110105.

(b): Piau Phang, Ming Yan Yap, Syerrina Zakaria, Jane Labadin (2023). *Geo-visualization of Sarawak COVID-19 Publicly Available Data Employing Open-source Geospatial Software*. *Universal Journal of Public Health*, 11(1), 34 - 49. DOI: 10.13189/ujph.2023.110105.

Copyright©2023 by authors, all rights reserved. Authors agree that this article remains permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

Abstract The state government of Sarawak with the help of the Sarawak Disaster Management Committee (SDMC) has continuously made the updated information on the state COVID-19 situation and its ensuing control measures available to general public in the form of daily press statements. However, these statements are merely providing textual information on daily basis though the data are in fact rich in temporal and spatial properties. Since the onset of COVID-19 pandemic, spatiotemporal analysis becomes the key element to better understand the spread of COVID-19 in various spatial levels worldwide. Hence, there is an urgent need to convert this textual information into more valuable insights by applying geo-visualization techniques and geospatial statistics. The paper demonstrates the prospect of retrieving geospatial data from publicly available document to locate, map and analyze the spread of COVID-19 up to division level of Sarawak. Specifically, map visualization and geospatial statistical analysis are performed for the list of exposed locations, which are indeed locations visited by COVID-19 patients prior to being tested positive in Kuching division, using open-source geospatial software QGIS. It is found that these exposed locations concentrate on the build-up areas in the division and are in south-west to north-east direction of the center of Kuching in September and October 2021. Despite the number of exposed locations published is relatively small compared to the number of

confirmed cases reported, both are nearly strongly correlated. The insights gained from such geospatial analysis may assist the local public health authorities to impose applicable disease control interventions at division level.

Keywords Geo-visualisation, Geospatial Analysis, QGIS, Publicly Available Data, COVID-19, Exposed Location, Sarawak, Malaysia

1. Introduction

Sarawak, the largest state in Malaysia by land area and separated from Peninsular Malaysia by South China Sea, was unavoidably affected by COVID-19 pandemic. Sarawak recorded its first COVID-19 confirmed case on 13 March 2020 and Malaysia first COVID-attributable death on 17 March 2020 [1]. Having said that, the pandemic could be considered well controlled throughout 2020 since the total number of confirmed cases in whole Sarawak was just 1117 with 19 fatalities [2]. However, the cumulative confirmed cases and fatalities reached 252 300 and 1 619 in the end of year 2021 [3], which provisionally ranked Sarawak the second highest for the cumulative COVID-19 confirmed cases among 13 states and 3 federal territories in