## THE DENGUE MAP OF SELANGOR: TRACING THE OUTBREAKS

# KAISAH BARIZAH BINTI KAMAL BAHARIN SARAH BAHIRAH BINTI BAHARUDIN

## FINAL YEAR PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DIPLOMA IN GEOSPATIAL TECHNOLOGY IN THE COLLEGE OF BUILT ENVIRONMENT UNIVERSITI TEKNOLOGI MARA

**JULY 2024** 

#### ABSTRACT

The persistent challenge of infectious diseases, particularly dengue fever, poses a significant threat to public health in Malaysia. Our research, titled "THE DENGUE MAP OF SELANGOR: TRACING THE OUTBREAKS," aims to analyse the geographic patterns of dengue fever incidence across Selangor using advanced spatial analysis methods. By leveraging Geographic Information Systems (GIS) and ArcGIS Pro, we seek to map and understand the spatial and temporal distribution of dengue outbreaks. This project is inspired by the transformative potential of spatial analysis in public health research and is driven by the alarming prevalence of dengue fever in Selangor. We aim to create detailed spatial maps to illustrate the evolution and distribution of dengue fever, providing critical insights for targeted interventions and resource allocation. Our project involves obtaining relevant spatial data from authoritative sources and overcoming challenges related to data acquisition and communication. The study highlights the importance of spatial analysis in identifying high-risk areas and guiding public health interventions, emphasizing the need for ongoing efforts to monitor and control dengue fever in Malaysia.

**Keywords**: Dengue fever, spatial analysis, GIS, ArcGIS Pro, Selangor, public health, disease transmission, point density analysis, data acquisition, Malaysia, spatial analyst tools

### ACKNOWLEDGEMENT

Our project journey beyond usual data visualization techniques, embracing the innovative capabilities of the software that use to work immersive spatial stories of dengue fever. By creating the project, we not only look for the spread critical insights but also further public health awareness and engagement within the community. Through these flexible visualizations, we aimed to empower stakeholders with actionable insights, organized informed decision-making and proactive involvement in the ongoing battle against dengue fever.

First and foremost, in making this project, and completing it successfully, we had to get help and guidance from some respected people. We are grateful that was given the opportunity to make this project, which has enhanced my knowledge in so many aspects. we would like to express my deepest gratitude to our esteemed project supervisor, Sr. Gs. Haslina Binti Hashim, for her invaluable guidance, feedback, and constant encouragement throughout the duration of this project. Her expertise and dedication have been involved in shaping our understanding and approach towards this project.

Furthermore, we extend our heartfelt appreciation to our esteemed team members, whose

unwavering commitment, collaborative spirit, and intellectual curiosity have been involved in propelling our project forward. Their dedication to excellence, coupled with their various skill sets and perspectives, served as a source of inspiration and motivation throughout the project's duration. We are very grateful for the support, and shared vision, which enabled us to navigate through the difficulties of spatial data analysis with confidence and flexibility.

## **TABLE OF CONTENTS**

ABST	RACT		ii
ACKNOWLEDGEMENT			iii
TABLE OF CONTENTS			1
LIST	OF FIGU	JRES	3
CHAPTER 1 INTRODUCTION			7
1.2	Problem statement		
1.3	Significance of studies		14
1.4	Objectives		17
CHAI	PTER 2	LITERATURE REVIEW	18
2.1	The application of geographic information system for dengue epidem in Southeast Asia: A review on trends and opportunity		nic 18
	2.1.1	Introduction	18
	2.1.2	GIS application for Disease Mapping	22
2.2	Distribution and Spatial Pattern Analysis on Dengue Cases in Seremban District, Negeri Sembilan, Malaysia		23
	2.2.1	The use of Spatial Analysis Tools in analyse dengue cases	25
CHAI	PTER 3	METHODOLOGY	26
3.1	Data co	llection	30
	3.1.1	Analysis in ArcGIS pro	30
3.2	Data visualization		43
	3.2.1	Create a chatbot	43
	3.2.2	Story maps	85
CHAPTER 4 RESULT AND ANALYSIS		96	
4.1	Result f	for ArcGIS pro	96
4.2	Result for chatbot 115		
4.3	Result for story map 11		119

#### **CHAPTER 1**

#### **INTRODUCTION**

1.1 Background of study in recent years, the public health has been marked by the persistent challenge of infectious diseases, and Malaysia is no exception to this trend. Among the crowd of infectious diseases, dengue fever stands as a particularly haunting enemy, it shows the important warning for both the health of the population and healthcare system. Based on the essential of comprehending the spatial structure of infectious diseases, particularly dengue fever, the research strive titled "THE DENGUE MAP OF SELANGOR: TRACING THE OUTBREAKS" is bring about to the geographic patterns of dengue fever incidence across various states in Malaysia (Campos, N. B., Morais, M. H., Ceccato, V., & Longo, G. O. (2018). The application of show geographic analytic methods has become essential in the field of public health research to understand the structure of disease transmission and pinpoint the neighbourhood locations. With the use of those software with advanced features, the research set out on many investigations to examine the complex temporal and geographical patterns of dengue fever epidemics throughout Selangor, Malaysia (Dempsey, C. ,2014).