April 4, 2024

**Mapping the Impacts of Palm Oil Plantations in Indonesia**

**Ruthanne Ward**

**OBJECTIVES**

Assess the social, economic, and environmental impacts of Palm Oil Plantations in Indonesia by assessing the spatial characteristics of palm oil plantations in relation to deforestation between 2001 and 2019, settlement type and location and the economic status of different regions. The final output should be a comprehensive report that includes a methodology section, descriptions of the database schema and spatial queries used, and an analysis of the findings. Maps and visualizations created with QGIS should be used to illustrate how Indonesia’s social and environmental landscape has been impacted by the rapid increase in palm oil production.

**ASSIGNMENTS**

Complete the following assignments. Deliverables will include pushing to your public GitHub and updating the README at every step.

**Project Proposal**

1. **Fill in the highlighted portions of this prompt. Utilize the Group Prompts for inspiration.**
   * Propose at least 5 vector datasets and 2 raster images that will address your topic.
   * What relationships will you analyze? Propose at least 3 spatial queries.

**2. Create a new Final Project repository and invite Jon & Kunal to collaborate on GitHub.**

**Due Friday, April 5 @ 5 pm (10 Points)**

**Assignment 1 – Data Acquisition, Processing, & Database Setup**

1. **Find and Process Geospatial Data**
   * Acquire data for at least 5 vector layers & 2 rasters:
     + **Vector Data**
       1. Industrial Palm Oil Plantations 2019
       2. Smallholder Palm Oil Plantations 2019
       3. # of Households without Electricity
       4. # of 16 – 18 year olds not in school
       5. Purchasing power per capita
     + **Raster Data**
       1. Hansen Forest Loss 2001 – 2019
       2. Settlement type 2018
   * Be sure to provide sources, descriptions, and visualizations in your README.
2. **Set Up Database Schema**
   * Create schema for your chosen topic.
   * What attributes should you be mindful of?
3. **Pre-process the Data**
   * Process the data to align different datasets temporally and spatially.
   * Be sure to capture the details in your README.

**Due Friday, April 12 @ 5 pm (10 Points)**

**Assignment 2 – Import Spatial Data & Normalize Tables**

1. **Import your data into PostgreSQL tables/schema created in Assignment 1.**
2. **Normalize your tables (1NF up to possibly 4NF, depending on your data) and explain the logic in your README.**
   * Even if normalization is not required, explain why in your README.

**Due Friday, April 19 @ 5 pm (20 Points)**

**Assignment 3 - Spatial Queries & Presentation**

Perform spatial analyses to determine:

* How deforestation has developed over time and if there is a correlation between palm oil plantations and deforestation.
* The spatial pattern of settlements in relation to palm oil plantations.
* The spatial patterns of social welfare and economics in relation to the palm oil plantations.

**Spatial Analysis & Presentation are Due Thursday, April 25 @ 10:15 am (40 Points)**

**Final GitHub Repo & README are Due Friday, May 3 @ 5 pm (30 Points)**

**Total: 110 Points**

**NO LATE SUBMISSIONS ACCEPTED AFTER MAY 3 -- Plan accordingly.**