BIDIM

USER MANUAL

WEST VISAYAS STATE UNIVERSITY

College of Information and Communications Technology

Barangay Infectious Diseases Information Management with GIS for Mapping and SIR Model for Prediction

An Undergraduate Thesis
Presented to the Faculty of the
College of Information and Communications Technology
West Visayas State University
La Paz, Iloilo City

In Partial Fulfillment
of the Requirements for the Degree
Information Systems
by

Luvin B. Lara
Leslie Ann Grapes S. Novales
Emillen Joy M. Pascual
Mark Levi L. Sequio

JUNE 2023

BIDIM

Disclaimer

This thesis is submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in information Systems in College of Information and Communications technology at West Visayas State University.

The research presented in this thesis was conducted in accordance with the ethical standards of the University and with the approval of the relevant ethics committee. The data and results presented in this thesis are the sole responsibility of the author and any errors or omissions are the author's own.

This thesis serves as an academic work and represents the culmination of the authors' research and analysis. It is presented for educational and informational purposes only. Every effort has been made to ensure the accuracy and completeness of the information presented in this thesis.

This thesis may include references, citations, or hyperlinks to external sources, such as books, articles, websites, or other publications. The inclusion of such external sources did imply endorsement or validation of their content by the authors. The authors take any responsibility for the accuracy, reliability, or legality of information provided by these external sources.

The intellectual property rights for all content, including text, images, graphs, charts, and other media, within this thesis are owned by the authors or are properly attributed to their respective owners. Unauthorized use, reproduction, or distribution of any part of this thesis is strictly prohibited without the explicit written permission of the author.

The authors have made every effort to adhere to ethical guidelines throughout the research and writing process. However, it is important to note that this thesis may discuss sensitive topics or include controversial viewpoints.

This thesis is subject to all applicable laws and regulations. The authors have made reasonable efforts to ensure compliance with copyright, intellectual property, and privacy laws. In the event that any part of this thesis is found to infringe upon these laws, please notify the author immediately for corrective action.

By accessing, reading, or using any part of this thesis, you acknowledge that you have read, understood, and agreed to the terms and conditions of this disclaimer. If you do not agree with any part of this disclaimer, you should refrain from accessing or using the content of this thesis.

For further clarification or inquiries, please contact the authors directly.

Table of Contents

Getting Started

Introduction

Barangay Infectious Diseases Information Management with GIS for Mapping and SIR Model for Prediction is a comprehensive web-based system that is an efficient and responsive tool that enables successful collection, management, and monitoring of patient's data affected by infectious diseases.

The system allows the Barangay Health Workers to have significant information on the current status of their barangay's public health, particularly on infectious diseases to timely react and come up with urgent preventive measures in reversing the outbreaks saving lives and resources.

Specifically, it allows the Barangay Health Workers to record the patient's data and infectious diseases data. It has a Geographic Information System that allows the Barangay Health Workers to map the occurrence of infectious diseases to evaluate their interaction and analyze their intensity using heat map and has a mechanism that predicts the spread of Covid19, Dengue, and Tuberculosis using the SIR model.

System Requirements

The system requirements for the web application can vary greatly depending on the specific needs of the application. However, here are some guidelines:

Software Requirements:

- Backend Language: This controls how your web app works.

  C# as our main programming language, ASP.NET Core as the API

- Web Front End: This is for the look and feel of your web app.

  This includes: Angular, HTML, CSS, Bootstrap v5

- DevOps Tools: These are used for deploying/hosting your web app.

  Includes: Github, MS Azure

Hardware Requirements: Hardware requirements can be quite variable and depend on factors such as the expected traffic, the complexity of the application, and the efficiency of the code. However, for our web application, a basic server configuration could be:

- CPU: A dual core processor and later is necessary.
- RAM: At least 4GB, but this could be higher depending on the application's needs.
- Storage: At least 100GB of SSD storage is recommended for faster data retrieval but if the budget is limited, we can go for the HDD.

Remember, these are just general guidelines. The specific requirements for your web application could be different based on the specifics of the application and its use case. We always conduct performance testing to determine the optimal configuration for the application.

User Specifications

The **Main User** of the proposed system is assigned to the Barangay Health Workers.

Rural Health Units, on the other hand, is the **Admin**. They must have a considerable amount of knowledge in handling computers and technological tools so that they can use the system effectively.

Also, users that do not have an account yet (**Guest**) can still view the dashboard for the updates and are limited to view other panels. To navigate on other panels of the system they need to request an account approval from the Rural Health Units.

For further clarification or inquiries, please contact the authors directly.

Installation

Below are the steps to setup BIDIM Web App on the LGUs web server:

Download

Download the latest version of BIDIM Web App (release build) from our repository.

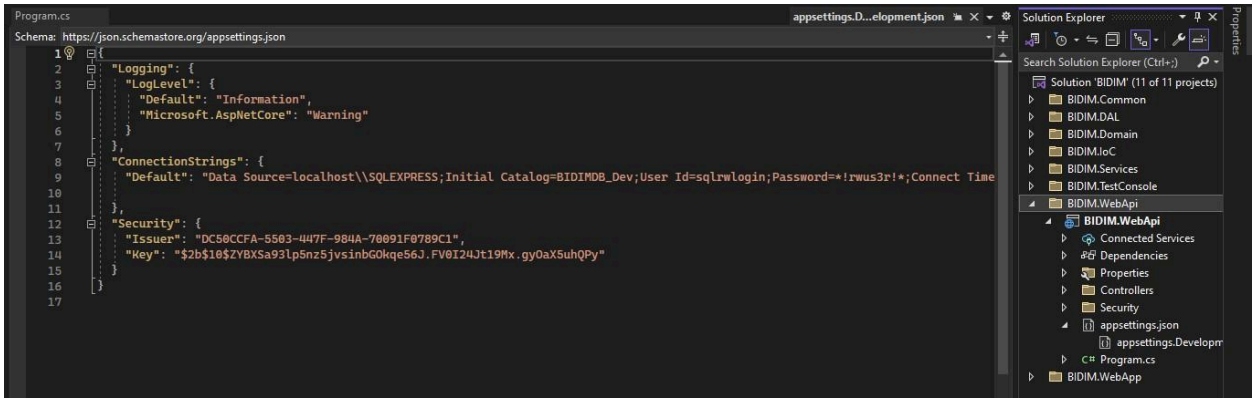
Dependencies

Install required dependencies. Refer to the list below:

- Docker
- IIS Express
- Azure Data Studio
- Node.js
- .NET 6.0
- Visual Studio
- Visual Studio Code

- **Backend Set-up**

Open the project solution file (**BIDIM.sln**) via Visual Studio app and edit the **appsettings.json** and **program.cs** in the BIDIM.WebApi project to set up basic configurations such as database connection details, API keys, etc.



Database Setup

-Launch Azure Data Studio
-Login as Admin
-Add new connection
    SQL server
    (credentials) localhost and password
    New query and make sure connected database is master
-Go back to project solution (.sln)
-Open BIDIM.Dal > scripts > DB permissions
-Copy lines from 5 to 10
-Go back to azure
-Dropdown and select master
-Paste and run command 5-10
-Erase and run another command
-Run this command CREATE DATABASE BIDIMDB_Prod;
-Erase, dropdown and select newly BIDIMDB_Prod

-Go back to Visual Studio
-Go back to DB permissions and copy line 15 - 26
-Go to azure data studio
-Dropdown (BIDIMDB_Prod)
-paste
-run

-Open package manager console (tools > nuget package manager > package manager)
-Dropdown default proj and select BIDIM.Dal
-Paste command $env:ASPNETCORE_ENVIRONMENT='PRODUCTION' and run (enter)
-Type (Update-Database -Verbose) and run

-You can now close db permission sql
-Close the tab

-BIDIM Dal
-Scripts
-AuditLogs_TBL.sql
-Copy contents
-Go back to azure studio
-Erase and paste
-And run

-Go back to visual studio
-Open the Triggers.sql
-Copy the contents
-Go back to azure
-Erase and paste then run

-Go back to visual studio

-Open package manager console
-$env:ASPNETCORE_ENVIRONMENT='PRODUCTION'
-Run

-Drop down (make sure you highlighted the Web.Api)
-Click the Play/Run button

-Seeding the Database
-Right click **BIDIMWeb.Api**
-Publish
-Click select Folder
-Browse (default directory)
-Edit existing files
-Under file options check the box
-Nvm the other options
-Save
-Publish

-Open the folder published
-Copy the publish folder
-Create folder LGU Server
-Paste the folder

-Open **IIS**
-Dropdown
-Right click Site folder
-Add website
-BIDIM
-Dropdown physical path
-Find the published folder

-Click connect as
-Select specific user (select the pc user)
-Login local creds
-Click check settings
-Change port 8001

-Nvm other options
-Click OK

- **Frontend Set-up**

-Open VS Code
-Open BIDIM.Webapp folder via VS Code
-On the src > environments > environment.ts > copy line 7-9
-Paste it on environment.prod.ts
-Make sure the APP and API url maps the correct host/ports
-Save

-Open angular.json file
-Scroll down to configurations > production > budget and set the maximum warning 9MB and
-maximum error 10MB

-Open New terminal
-Run this command (ng build --configuration=production)
-(this may take some time depending on your hardware speed)

-Open ***dist*** folder
-Reveal in file explorer
-Copy and paste on the same location with the backend

-Open **IIS**
-Dropdown
-Right click Site folder
-Add website
-BIDIM Webapp
-Dropdown physical path
-Find the published folder

-Click connect as
-Select specific user (select the pc user)
-Login local creds
-Click check settings
-Change port 8001

-Nvm other options
-Click OK

Usage (Per Main Feature)

Figure 1. *Log-in Page*

Includes log-in buttons prompting the user/admin to input their username and password to gain access. After clicking the log-in button, it will lead the user/admin in their respective interfaces.

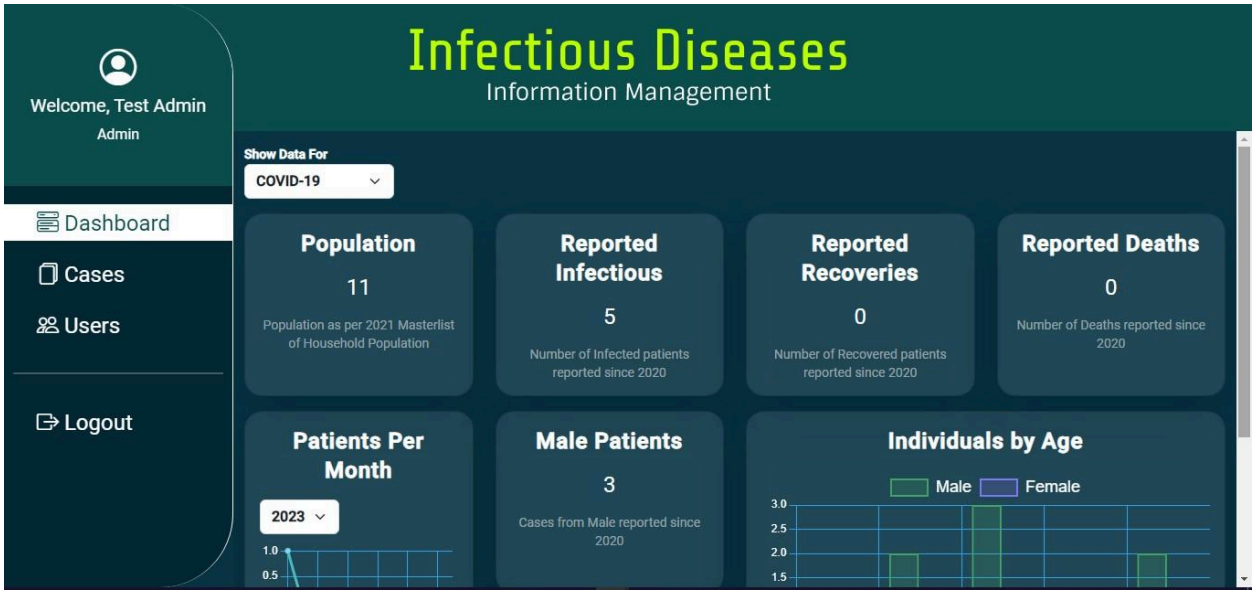


Figure 2. *Admin Dashboard Page*

This is the dashboard for admins to check the updates and/or changes of the status report. Also, they can check the report of new cases on the **Cases** page.

Figure 3. *Admin (Add User) Page*

This is where the Admin creates or registers new users of the barangay for them to use the system.

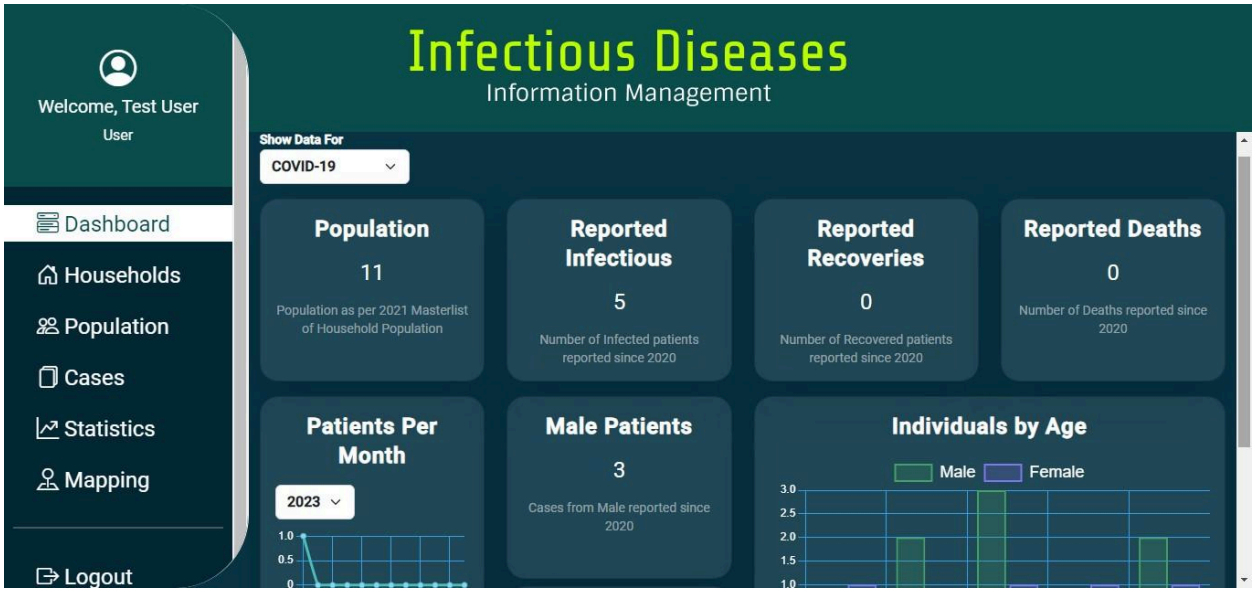


Figure 4. *User Dashboard Page*

This is the User dashboard but users have more panels to navigate and manipulate other than Admin. This is where the overall status report happens.

Figure 5. *User (Add Household) Page*

This is where the user inputs all households living in that barangay by inputting their address and mapping their locations.

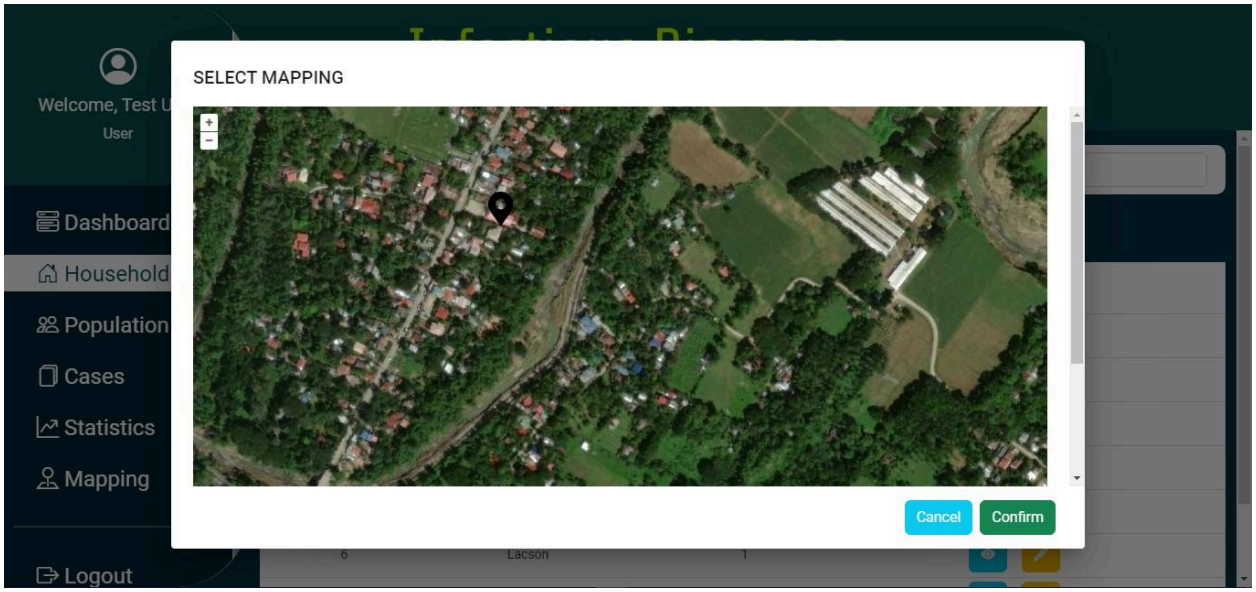


Figure 6. *Mapping Household*

After adding the household we locate and mark their location for faster tracing and/or tracking of an individual.

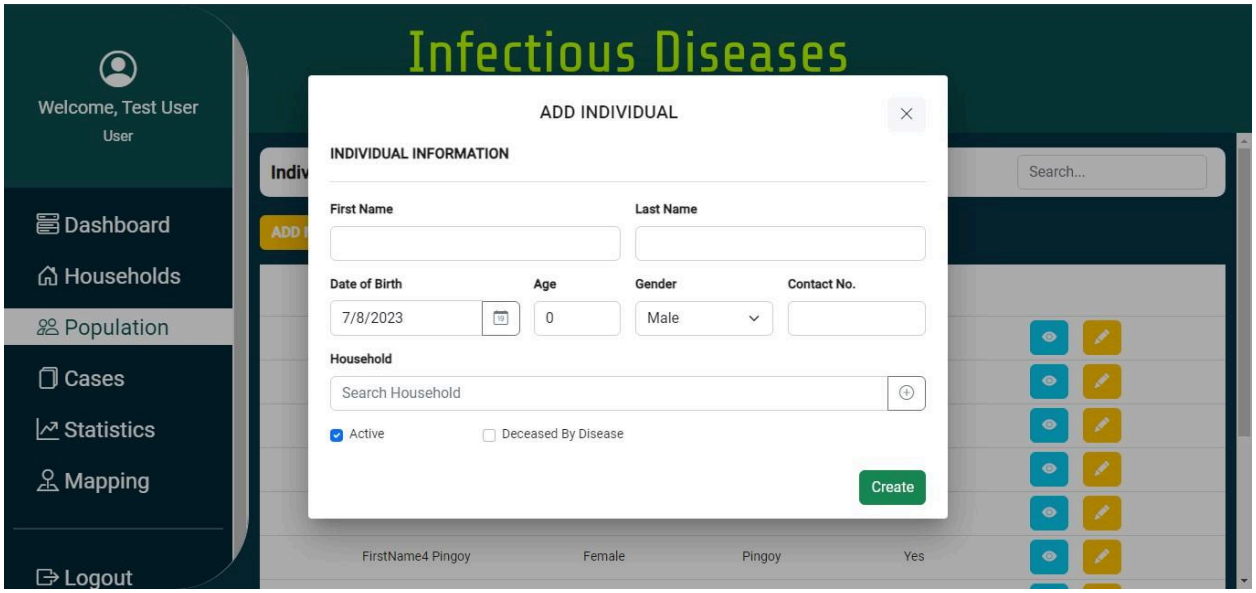


Figure 7. *User add Individual to Population Page*

This panel is where the user adds the individual to the population by entering their credentials. Users can mark an individual if they are active or deceased by disease.

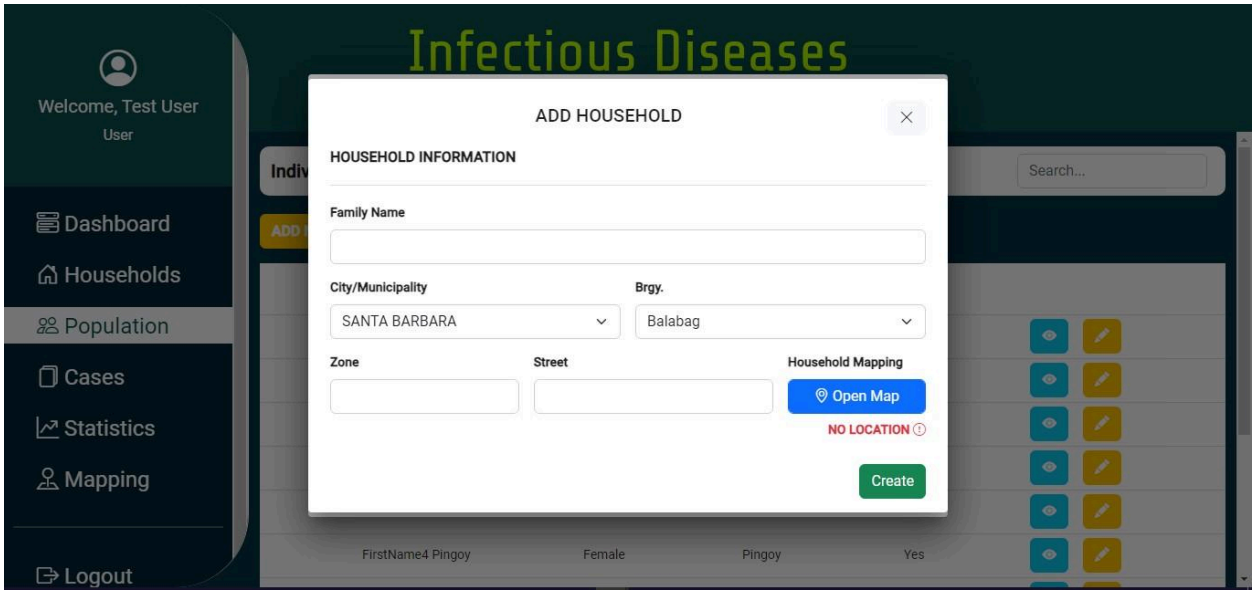


Figure 8. *Add Individual which Household*

After adding the individual to the population, we locate their household by entering the family name or adding a new household if not found.

Figure 9. *Cases Page*

This is where all individuals with a case of an infectious disease are recorded and monitored by the health workers.

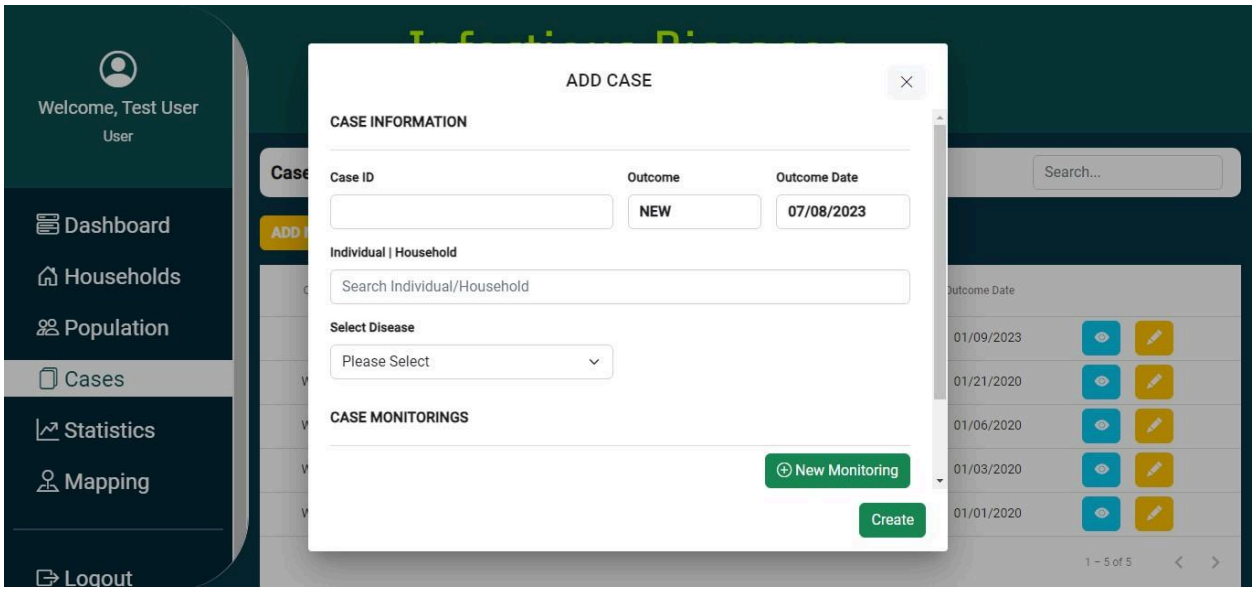


Figure 10. *Add Case Page*

This is the part where the users add new cases of infected individuals, what disease they bring, and when the disease started. This is also where the barangay health workers monitor the cases.

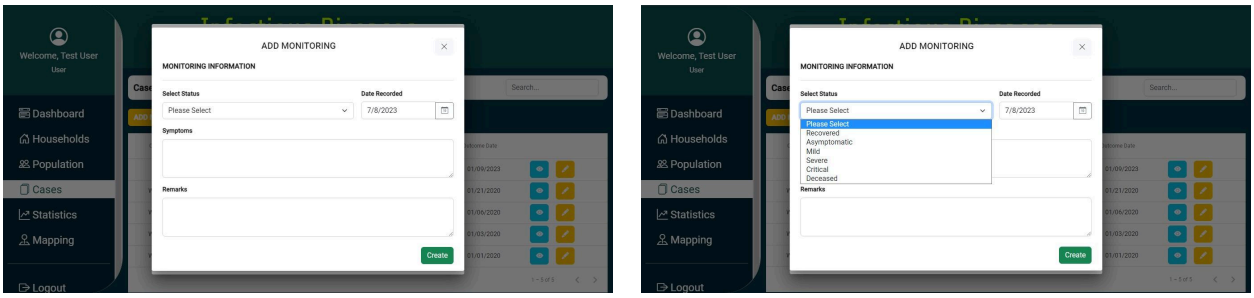


Figure 11. *Case Monitoring*

The user identifies the status of the individual by clicking the drop down arrow. Users can also input the date recorded, the symptoms experienced by the individual, and their remarks.

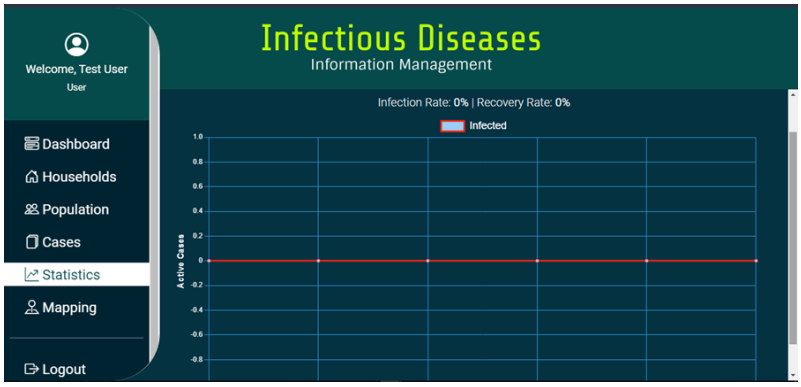


Figure 11. *Statistics Page*

The page exhibits the statistics that illustrate the prediction of infectious disease using the SIR Model.

Figure 12.

The barangay health workers, as the main user, can select any type of infectious disease to be displayed in the map to illustrate the location of the infectious disease occurrences that has been pinpointed upon creating case data.

Troubleshooting

- **Website keeps lagging and delay response**

- Refresh the page
- Relaunch the application
- Clear cache

- **Not proceeding to main dashboard after log in**

- Check your credentials
- Check localhost connection
- Contact support

- **Statistics reading is not working**

- Check data inputted
- Check the equation or formula (Contact Support)

- **Web app turns black when minimized**

- Reload the page
- Relaunch the application
- Contact support of the UI/UX design and framework

FAQs (Frequently Asked Questions)

About BIDIM

- Specifically, our system is a web-based system that allows the Barangay Health Workers to record the patient's data and infectious diseases data. It has a Geographic Information System that allows the Barangay Health Workers to map the occurrence of infectious diseases to evaluate their interaction and analyze their intensity using heat maps. Lastly, it has a mechanism that predicts the spread of Covid19, Dengue, and Tuberculosis using the SIR model.

How to request account registration/creation?

- Barangay Health Workers can request respectively to the Rural Health Units (**Admin**)

What if I forgot my password?

- You may request a password renewal/reset to the Rural Health Units (**Tech Suppor**t)

Why is my account blocked?

- Your account may be blocked due to spam/inappropriate or illegal use of the system.

How to change log-in credentials?

- You may request new log-in credentials to the Rural Health Units (**Tech Suppor**t) 30 days after the creation of the account.

Is my information safe?

- We protects the privacy of individuals while ensuring free flow of information to promote innovation and growth; regulates the collection, recording, organization, storage, updating or modification, retrieval, consultation, use, consolidation, blocking, erasure or destruction of personal data; and ensures that this project complies with standards set for data protection.

Contact Details

Luvin B. Lara
Number:09074561392
E-mail: luvin.lara@wvsu.edu.ph

Leslie Ann Grapes S. Novales
Number:
E-mail: leslieanngrapes.novales@wvsu.edu.ph

Emillen Joy M. Pascual
Number:
E-mail: emillenjoy.pascual@wvsu.edu.ph

Mark Levi L. Sequio
Number: 09473734344
E-mail: marklevi.sequio@wvsu.edu.ph

Barangay Infectious Disease Information Management
with GIS for Mapping and SIR Model for Prediction

BIDIM

West Visayas State University
College of Information and Communications Technology
Luna St., La Paz, Iloilo City 5000
http://cict.wvsu.edu.ph cict@wvsu.edu.ph