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MORALITY BEFORE KNOWLEDGE

Utilization webGIS to map the distribution of health facilities in Tanjung Senang subdistrict Bandar Lampung City

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ABSTRACT

Background: Obstacles and problems in a developing health a facilities in the city of Bandar Lampung still occur in the Tanjung Senang subdistrict. Currently, there is no mapping of the distribution of health facilities in the area that is made spatially, attractively, and can be easily accessed by the wider community. **Methods:** This research aims to solve this problem by mapping the distribution of health facilities based on WebGIS, where all information on each health facility will be displayed spatially using QGIS, QGIS2Web plugin, leaflet, and webhosting. This research method is quantitative descriptive. **Findings:** The resulting product is WebGIS for the distribution of health facilities in Tanjung Senang District. The WebGIS that has been created is then validated by GIS experts, grammar experts, pragmatic experts, and users. **Conclusion:** The result of this research is the creation of a WebGIS which contains information on the distribution of health facilities (geographical conditions, accessibility, infrastructure, health workers, non-health workers, health services, and other supporting facilities). The score from the usability test was 86.05%. So that the WebGIS that has been created is very feasible, effective, and provides sufficient satisfaction for its users.

KEYWORDS: mapping; medical facility; QGIS; webGIS

1. Introduction

The development of health facilities in the a Indonesia is a carried out of comprehensively and continuously to achieve the goal of increasing people's ability to live healthily to achieve the highest level of health (Kenre and Fitriani, 2022). Lampung Province is one of the provinces that has a fairly high number of health complaints. One of them is Bandar Lampung City which is ranked 4th out of 15 districts/cities in Lampung Province with a relatively large number of health facility units (BPS Lampung Province in Figures 2023). The sub-district with the lowest number of health facilities is Tanjung Senang Sub-district, namely 103 units (Bandar Lampung City Health Service , 2023). Seeing this data, further research is needed by developing health facilities, which is the aim of this research. Then an initial survey was conducted on the results of the initial survey is a prove that what the people of Tanjung Senang District complain about is information about health facilities.

Information is the collection or processing of data to provide knowledge or information (O'brien, 1974). This theory is a definition of information in the use of information systems. This is in line with other ideas which state that an information system is an organized combination of people, hardware, software and databases that collects, changes and disseminates information within an organizational form (Bruch & Strater, 2011). Tanjung Senang District currently does not use Geographic Information System technology for the distribution of health facility mapping, so this has become one of the obstacles for the community to find a good health facility.

A map is a reduced view of the earth's surface, outlined on a piece of paper or other media in two-dimensional form. Through a map we can easily observe the vast surface of the earth, especially in terms of time and costs (Dedy Miswar, 2013). One effective way to provide information about a health facility is by using a page in the form of WebGIS mapping software using Quantum GIS. Quantum GIS was chosen because this software is lighter to run on the device and is one of the open source software that is good for processing GIS data which can visualize spatial data, process, analyze data and create map layouts. This page will provide accurate and relevant information regarding the location of health facilities, so that it is the best way to encourage and increase the number of public visits to the available health facilities.

The use of the internet is an important key to providing information using pages, so that disseminating information using page-based maps (WebGIS) using Quantum GIS can be the answer to the problem of incomplete information regarding health facilities in Tanjung Senang District. The use of page-based digital maps has several advantages, namely making it easy to present geospatial data using internet media without having to use GIS software.

Fig 1. Map of research locations in Tanjung Senang District

Fig 2. Map of the distribution of health facilities in Tanjung Senang Sub-District

After conducting the initial survey, there were several obstacles that the people of Tanjung Senang District complained about, including 37 respondents (49%) complained about location information, 23 respondents (31%) complained about affordability, 9 respondents (12%) complained about facility information, and 6 respondents (8%) did not complain about any problems related to health facilities in Tanjung Senang District. Data from the results of this initial survey can be concluded that the main problem or obstacle encountered by the people of Tanjung Senang District is information on the location and affordability of each health facility in Tanjung Senang District.

Looking at the results of the initial survey, it is very clear that the people of Tanjung Senang District still lack information about health facilities around where they live, and it is even difficult for them to reach them. Therefore, in this research a field survey will be carried out at the location of the distribution of existing health facilities, whether they are evenly distributed or not in each sub-district.

Tanjung Senang District has a total of 103 health facilities. This research has limitations on the health facility variables, namely that research will only be carried out at Inpatient Health Centers, Assistant Health Centers, Primary Clinics, Beauty Clinics, Joint Doctor Independent Practices (PMDB), Midwife Independent Practices (PMB), and Pharmacies. This was done due to limited facilities, infrastructure and research time.

An inpatient health center is a health center that is given additional resources to provide inpatient services according to health service needs. Apart from that, there are also auxiliary community health centers which are an integral part of the community health center which must be maintained periodically by the community health center. Meanwhile, each sub-district must have at least one unit of community health center and supporting community health center.

Pratama clinics are clinics that provide basic medical services, led by general practitioners or dentists and owned by business entities or individuals. Apart from that, there is also a beauty clinic which is a place that provides professional services related to skin care and beauty and involves medical procedures with sophisticated equipment and is handled directly by a dermatologist.

Joint Doctor Independent Practice (PMDB) is a form of economic activity created by joint efforts. Where in a doctor's practice there are various types of doctors who have different specialties in the same place. Meanwhile, Independent Midwife Practice (PMB) is a place where a series of midwifery service activities are carried out by individual midwives.

A pharmacy is a place to sell and sometimes also make or mix medicine. A pharmacy is also a place where pharmacists practice their pharmaceutical profession as well as being a retailer.

Based on the results of a field survey of the designated distribution points for health facilities in Tanjung Senang District, 15 distribution locations were obtained in this study, including:

a. Way Kandis Inpatient Health Center
b. Labuhan Dalam Sub-Puskesmas
c. Way Kandis II Sub-district Health Center
d. Pratama Raffasya Sentra Medika Clinic
e. Nayaka Husada Way Kandis Clinic
f. Anindita Skincare Beauty Clinic
g. Suri Beauty Beauty Clinic
h. Independent Practice of Midwives (PMB) Usmalanah Saddam
i. Joint Doctor Independent Practice (PMDB) Amongs Medika
j. Griya Sehat Pharmacy
k. Main Pharmacy
l. Arrafarma Way Kandis Pharmacy
m. Sena Pharmacy
n. Happy Pharmacy
o. Hanari Pharmacy

WebGIS can also help people from distant areas to explore the region as a whole and plan trips according to their interests by conducting GIS searches online and can obtain all the information needed for their interests.

Tanjung Senang District currently does not use Geographic Information System technology for the distribution of health facility mapping, so this has become one of the obstacles for the community to find a good health facility. One effective way to provide information about a health facility is by using a page in the form of WebGIS mapping software using Quantum GIS. Quantum GIS was chosen because this software is lighter to run on the device and is one of the open source software that is good for processing GIS data by being able to visualize spatial data, process, analyze data and create map layouts.

This page will provide accurate and relevant information regarding the location of health facilities, so that it is the best way to encourage and increase the number of public visits to the available health facilities. The use of the internet is an important key to providing information using pages, so that disseminating information using page-based maps (WebGIS) using Quantum GIS can be the answer to the problem of incomplete location and accessibility information regarding a health facility that has been determined in Tanjung Senang District.

Information is the collection or processing of data to provide knowledge or information (Burch and Strater, 1974). This theory is a definition of information in the use of information systems. This is in line with the thoughts of O'brien (2011), stating that an information system is an organized combination of people, hardware, software and databases that collects, changes and disseminates information within an organizational form.

Using page-based digital maps also has several advantages. One of the advantages of WebGIS is that it makes it easy to present geospatial data using internet media without having to use GIS software, so it can be accessed by many users widely. Apart from that, with WebGIS, the public can easily access health data and also location information about health facilities. WebGIS can also help people from distant areas to explore the region as a whole and plan trips according to their interests by conducting GIS searches online and being able to obtain all the necessary information and making it easier to reach an area and find out whether or not the health facilities are evenly distributed.

2. Methods

The tools and materials used in this research are hardware (GPS Essentials, a computer with the Quantum GIS 3.32.2 application installed and a cellphone for documentation), software (Windows 10 as the operating system and 000webhost as webhosting), materials (SHP Administrative Map Tanjung Senang District, SHP Earth Map of Tanjung Senang District, results of coordinate measurements, photos of buildings for each health facility in Tanjung Senang District and results of field observations regarding the distribution of health facilities in Tanjung Senang District).

In this study, there is one research variable, namely health facilities in Tanjung Senang District with seven indicators, namely geographical conditions, accessibility, infrastructure, health workers, non-health workers, health services and other supporting facilities. Data collection techniques in this research are observation, interviews and documentation. The data analysis technique in this research uses descriptive analysis techniques. The system testing technique used in this research is by conducting assessment validation tests on GIS experts, grammar experts, pragmatic experts (representatives of the Bandar Lampung City Health Service) and users (local communities).

WebGIS testing is created by creating a WebGIS Validation Instrument Table that has been created. In the validation instrument there are assessment classes from several aspects, including appearance aspects and ease of use aspects. The assessment weights can be seen in Table 1 below.

Table 1. WebGIS Achievement Level

Mark	Qualification	Information
1	Very Not Good	It cannot be used yet and still requires consultation
2	Not Good	Can be used with many revisions
3	Good	Can be used with minor revisions
4	Vert Good	Can be used without revision

(Source: Satya Wijayantara, 2022)

After carrying out validation tests, WebGIS will also undergo a usability test on 40 respondents. Testing was carried out to determine assessments and responses regarding the functions and benefits of this WebGIS application. What was asked of respondents was regarding the effectiveness of the application, ease of use and user satisfaction. The formula used to calculate the usefulness percentage value is:

$$Eligibility\ Percentage = \frac{\text{Observed Score}}{200}\ X\ 100$$

After finding the results of the total number of respondents' assessments of all aspects of the usability quality measurement components, the appropriate categories can be seen in Table 2 below.

Table 2. Eligibility WebGIS

Category	Score
Very Worthy	81%-100%
Worthy	61%-80%
Enough	41%-60%
Not Worthy	21%-40%
Very Unworthy	<21%

(Source: Satya Wijayantara, 2022)

The data analysis technique in this research uses descriptive analysis techniques. Descriptive analysis is a statistical data analysis technique that is used to describe, simplify and present sample data in a form that is easier to understand. How descriptive analysis works, namely describing the distribution of data by providing an overview of what information can be obtained from a collection of data used in the analysis. By presenting data in the form of tables, graphs, diagrams or maps, it will be more interesting and easier to understand. Data collection techniques in this research include:

a. Observation
   According to Tika (2005) observation is a method and technique for collecting data by systematically observing and recording symptoms or phenomena that exist in the research object. This research uses direct observation. Then plotting (coordinate measurement) will be carried out using GPS Essentials. Apart from plotting, we will also observe each health facility in every distribution found, starting from parking lots, toilets, information rooms and others.

b. Interview
   According to Tika (2005), interviews are a data collection technique through a one-way verbal question and answer process, meaning that the questions come from the person interviewing and the answers are given by the interviewee.

c. Documentation
   According to Arikunto (2010), the documentation method is a method that seeks data regarding things or variables in the form of notes, transcripts, books, newspapers, magazines, inscriptions, minutes, meetings, agendas and so on. In this research, documentation data comes from agencies that are asked for data regarding health, such as data on the distribution of health facilities, data on

medical personnel, and other data. Apart from this data, documentation was carried out by taking pictures of health facility buildings in Tanjung Senang District, Bandar Lampung City.

There are several data that will be input in the process of creating this WebGIS, including:
  a. Data Plotting
     The data that has been plotted is the data resulting from measuring the coordinates of a location. In this research, we will plot several distributions of health facilities that have been determined. The data obtained from the results of this plotting are the X and Y coordinates for each predetermined distribution of health facilities.
  b. Data for Each Health Facility
     This facility data was obtained by observing in the field at each predetermined distribution of health facilities.
  c. Building Drawings
     In this study, images will be displayed for each distribution of health facilities that have been determined.
  d. Landform Data
     In this research, several landform data will be included, in the form of SHP of arterial roads, SHP of sub-district boundaries, and SHP of sub-district boundaries.

The next step is to create a map of the distribution of health facilities that have been determined and will display information about the distribution of these facilities in it. The coordinate data that has been obtained is then entered into Microsoft Excel to convert the data into KML form so that the coordinate points for each distribution of health facilities that have been mapped will appear.

Next is to fill in the attributes for each existing coordinate. Each coordinate in the form of a point will contain several data in the form of name, location, point coordinates, accessibility, infrastructure, health workers, non-health workers, health services, supporting facilities, building images and other required data. After all the attributes have been formed, then start creating a distribution map of the health facilities that have been determined.

The creation of this base map was carried out using the SHP Rupa Bumi Bandar Lampung City in the form of administration of sub-district and sub-district boundaries as well as SHP of arterial roads, then using symbology tools to give each sub-district a different name and color. After that, plugins are used to convert the map that has been created into JavaScript or WebGIS form.

3. Result and Discussion

Geographically, Tanjung Senang District is located at 5º 21' 29" South Latitude and 105º 16' 56" East Latitude. Topographically, most of the area is lowland at an altitude of less than 200 meters above sea level. Based on Bandar Lampung City Regional Regulation Number 4 of 2012 concerning the Arrangement and Formation of Villages and Districts, the geographical location and administrative area of Tanjung Senang District originates from some of the geographical and administrative areas of Tanjung Senang District and Rajabasa District with boundaries, among others, namely To the north it borders South Lampung Regency. To the south it borders Sukarame District and Way Halim District. To the east it borders Sukarame District and South Lampung Regency. To the west it borders Labuhan Ratu District.

The Tanjung Senang District Government was formed based on Regional Regulation Number 4 of 2002 dated 16 December 2000 concerning Changes in the Bandar Lampung Regional Boundaries. To realize orderly government and regional development, now the City of Bandar Lampung, which originally consisted of 9 sub- districts, has been organized

into 13 sub-districts, and now in 2023 it has experienced expansion and will become 20 sub-districts. Since the formation of Tanjung Senang District in 2002 until now, Tanjung Senang District has experienced the change of sub-district head as regional head 10 times until now in 2023.

The sub-district capital is Tanjung Senang which administratively based on Bandar Lampung City Regional Regulation Number 4 of 2012 concerning the Arrangement and Formation of Villages and Districts, the Tanjung Senang District area has an area of 10.63 km². With this area, Tanjung Senang District is divided into 5 sub-districts, namely as follows:

   a. Labuhan Dalam Subdistrict consists of 2 Neighborhoods
   b. Tanjung Senang Village consists of 2 Neighborhoods
   c. Way Kandis Village consists of 2 Neighborhoods
   d. Way Kandis Perumnas Village consists of 3 Neighborhoods
   e. Pematang Wangi Village consists of 2 Neighborhoods

To determine the type of climate in Tanjung Senang District, you can use Jughuhn's theory by determining the climate based on the altitude of a place and the type of vegetation that grows. The grouping is divided into 4 types, including:

   a. Hot (altitude 0-600 meters)
   b. Medium (altitude 650-1,500 meters)
   c. Cool (altitude 1,500-2,500 meters)
   d. Cold (altitude above 2,500 meters)

Based on the grouping above, Tanjung Senang District can be categorized as a hot climate. This is because topographically most of the Tanjung Senang District is lowland. Lowland or alluvial plain is a stretch of land with a relatively low altitude and is usually close to the coast and downstream rivers. Due to its position close to the coast and downstream of the river, flooding is often a natural disaster that often occurs in the lowlands, this is also the case with Tanjung Senang District which often experiences flooding during the heavy rainy season and its location is also close to the downstream river.

Tanjung Senang District has an area of 10.63 km2 consisting of 5 sub-districts with a population growth rate that continues to increase every year. Based on Table 12, the highest population is in Tanjung Senang Village. This is because Tanjung Senang Village is the largest sub-district in Tanjung Senang District. The population of Tanjung Senang District as shown in Table 12 is based on population projections for 2022 of 60,906 people with a sex ratio of 101.40. This means that the male population is more than the female population. Meanwhile, the highest population density is in Tanjung Senang Village, namely 13,115 people/km2.

The results obtained from this research are products in the form of WebGIS Distribution of Inpatient Health Centers, Assistant Health Centers, Primary Clinics, Beauty Clinics, Midwife Independent Practices (PMB), Joint Doctor Independent Practices (PMDB), and Pharmacies in Tanjung Senang District, Bandar Lampung City. WebGIS can be accessed via the following link: https://ardillaayuu.000webhostapp.com/#12/-5.4226/105.2661. The following is what WebGIS looks like when it is successfully opened (via laptop or computer).
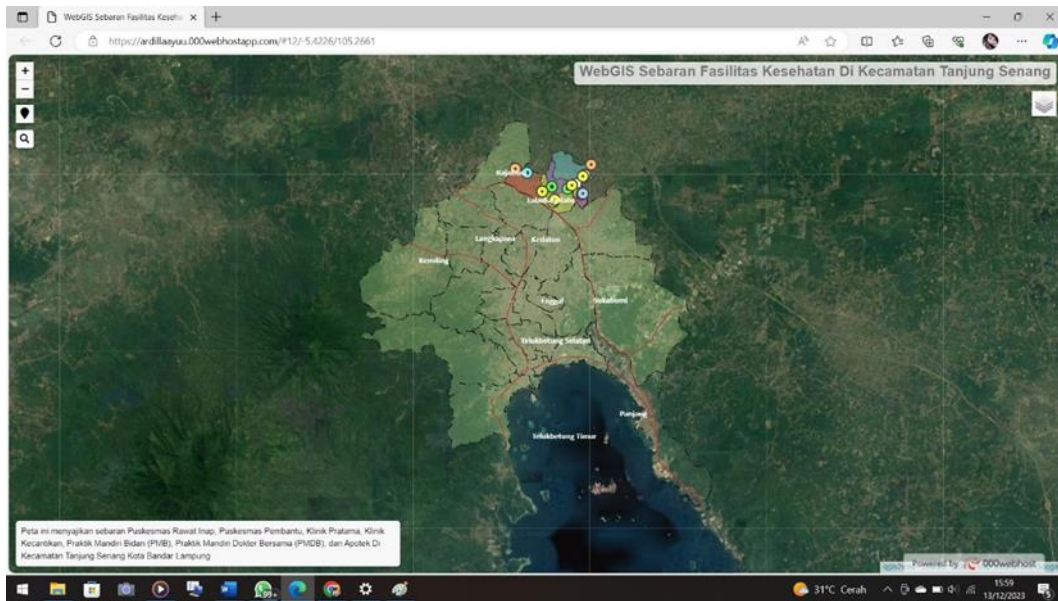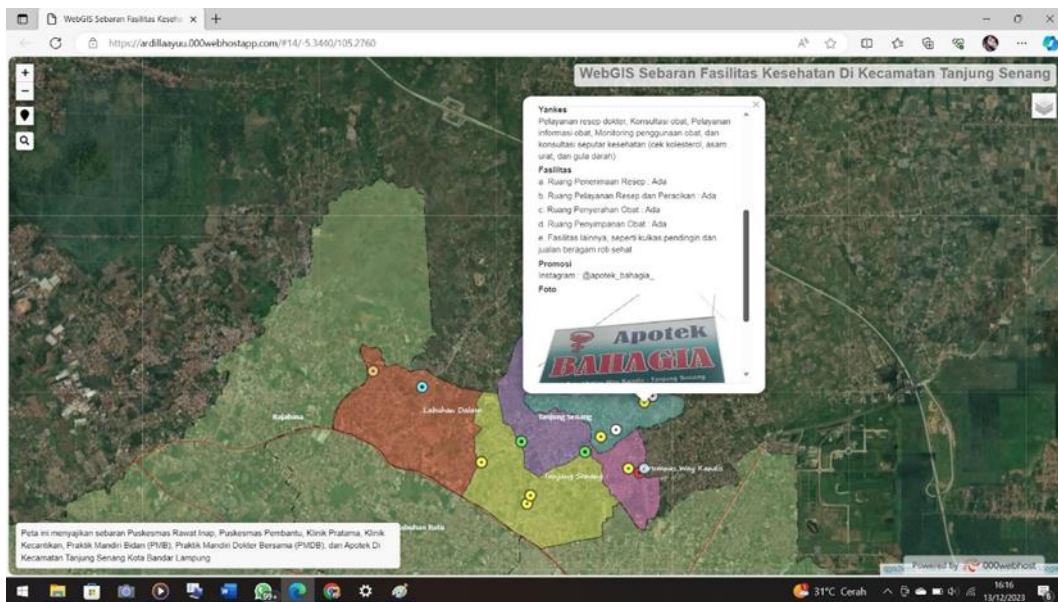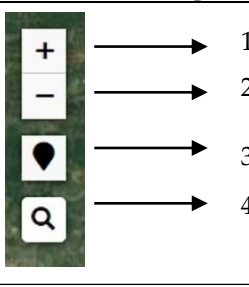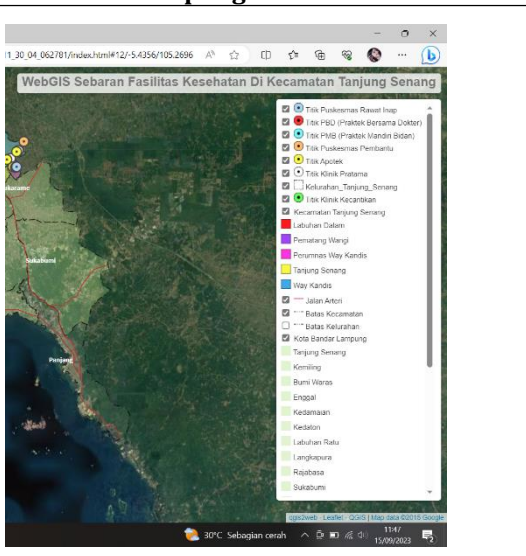
Fig 3. WebGIS display when successfully opened

Fig 4. WebGIS display when opening health facility information

Apart from the main display which displays information on health facilities in Tanjung Senang District, there are also several tools that function to operate WebGIS, namely the toolbar at the top left and top right. For more details, see Table 3 below.

Table 3. Toolbar Function in WebGIS

Top Left Toolbar	Function
	1. Zoom in button for increase the size of the map. 2. Tombol *zoom out* untuk memperkecil ukuran peta. 3. *Geolocation* untuk mengetahui titik lokasi saat ini. 4. *Search* berfungsi untuk mencari lokasi dengan mengetikkan nama tempat pada fitur tersebut.
Top Right Toolbar	**Function**
	1. Title functions as a title or informs the contents of the map. 2. The legend functions to explain the symbols contained in WebGIS. As for the legend on the side, if we don't want to use one of the available legends, then we can uncheck it. Vice versa, if we want to display it, we can check the legend that we want to display in WebGIS. 3. Basemap functions to display and replace the default map according to needs.
Top Left Toolbar	**Fungsi**
	1. Abstract functions to explain what information is contained in this WebGIS.

Apart from that, WebGIS can also be accessed via cellphone or other gadget. The URL address used is the same as that used on a laptop or computer. The following is what WebGIS looks like when opened via a cellphone or gadget.
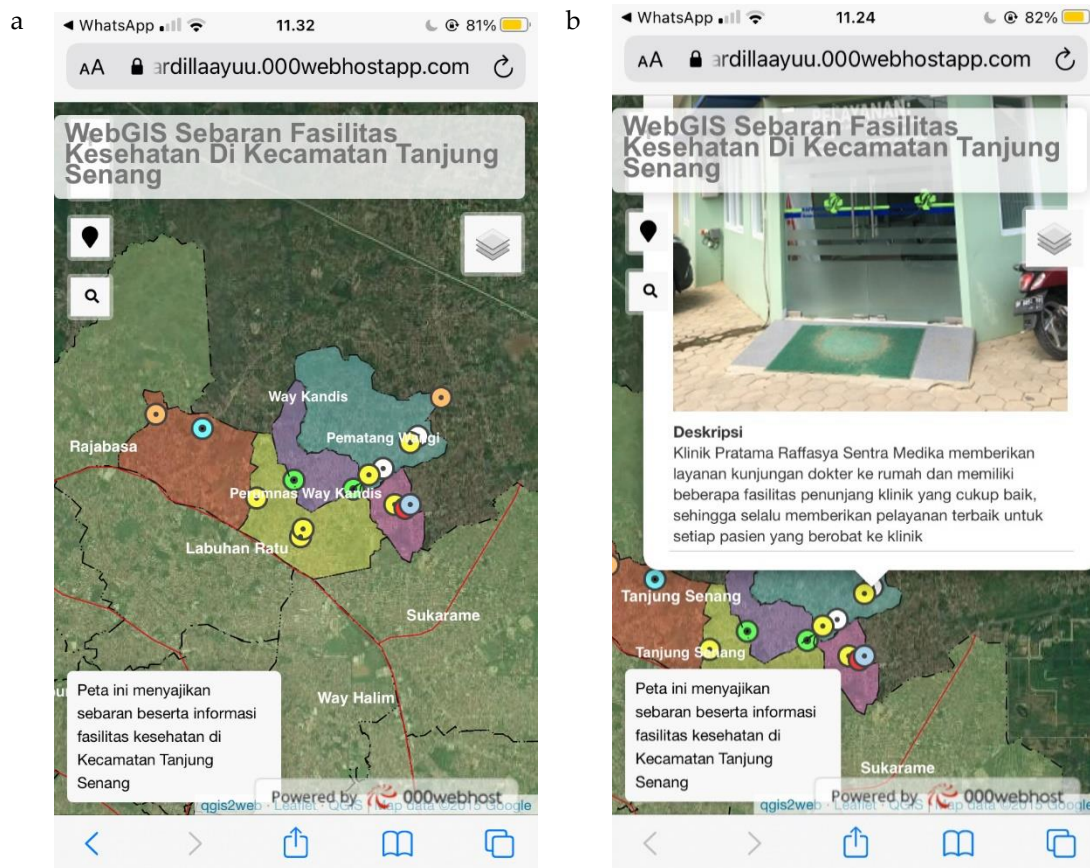
Fig 5. (a-b) WebGIS display when successfully opened on a cellphone or gadget

The pop-up display of health facility information can be seen more clearly by using a laptop or computer, and vice versa, if you use a cellphone or gadget, the pop-up display of health facility information can still be read, but the size is not as large. The stages of creating WebGIS using the QGIS2Web plugin have been completed. This stage produces a leaflet (containing 7 folders and 1 file (html index).

At this stage, WebGIS cannot be accessed online (many parties), but only creators can access it. Therefore, it is necessary to create a WebGIS that can be accessed by other users. In the next stage, WebGIS data will be uploaded to web hosting so that WebGIS can be accessed by other users. The webhosting used is 000webhosting. To gain access, you need to register first. After registering, you need to fill in a domain name for the web. Then, upload the html data that has been created to the internet network. Then, highlight the dashboard menu until the file manager menu appears.

The next step is to select the file manager menu > upload files. After that a new window will open. Select the upload files menu > upload files from Quantum GIS that have been exported (QGIS2Web plugin). Then a new window will appear and click public_html > then immediately upload all the files that have been exported from the QGIS2Web plugin which has a leaflet display containing 7 folders and 1 file (html index) then drag it to public_html and place the file there.
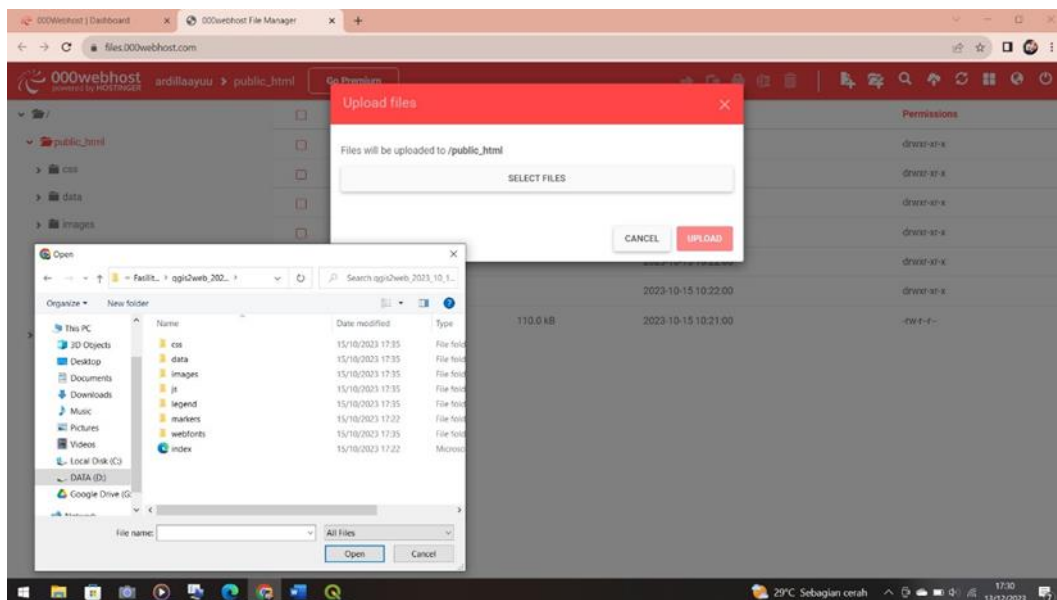
Fig 6. File manager menu display

Data that has gone through the upload process will form a web. The WebGIS that has been created can be accessed online by anyone. The URL address can be seen at the top of the address/URL.

Fig 7. Address/URL WebGIS

After the upload process has been carried out to web hosting, WebGIS can be accessed by a wide range of users. Then, to test the feasibility level of WebGIS, a usability test was carried out on 40 respondents using a questionnaire in which there were 3 assessment aspects, namely the effectiveness aspect, user ease aspect and user satisfaction aspect. From these three aspects after being calculated using the formula presented above, the score test results obtained are effectiveness (85.25), user ease aspect (85.3), and user satisfaction aspect (87.6) if on average it will be produces a value of 86.05%.

This value shows that WebGIS mapping the distribution of health facilities in Tanjung Senang District has met the usability testing criteria. This means that WebGIS can be used effectively, reliably, and provide satisfaction to users who use it.

Then, to find out whether the distribution of health facilities in Tanjung Senang District, Bandar Lampung City is evenly distributed or not, we will measure the distribution of health facilities by measuring the distribution pattern using the Nearest Neighbor Analysis pattern method.

The Nearest Neighbor Analysis pattern is a tool in ArcGIS software which functions to analyze the distribution pattern of a point in an area. This classification analysis technique is the simplest analysis technique for classifying an object when viewed from its distribution. This distribution pattern has 3 types, namely clustered (grouped), random (random) and regular (uniform) patterns. A pattern is said to be clustered if the value of T = 0 – 0.7, a random pattern with a value of T = 0.8 – 1.4, and a uniform pattern with a value of T = 1.4 – 2.15.

The results of this research show that the distribution pattern of health facilities in Tanjung Senang District, Bandar Lampung City, which originates from research results in the field by plotting directly at the location, is random with a ratio value of 0.844347 or in

the range of 0.8 - 1. 4. This random pattern was obtained from the observed mean distance value of 327.5421 meters and the expected mean distance value of 387.9112 meters. The results of statistical calculations from this distribution pattern show that the z-score is -1.153079 and the p-value is 0.248878.
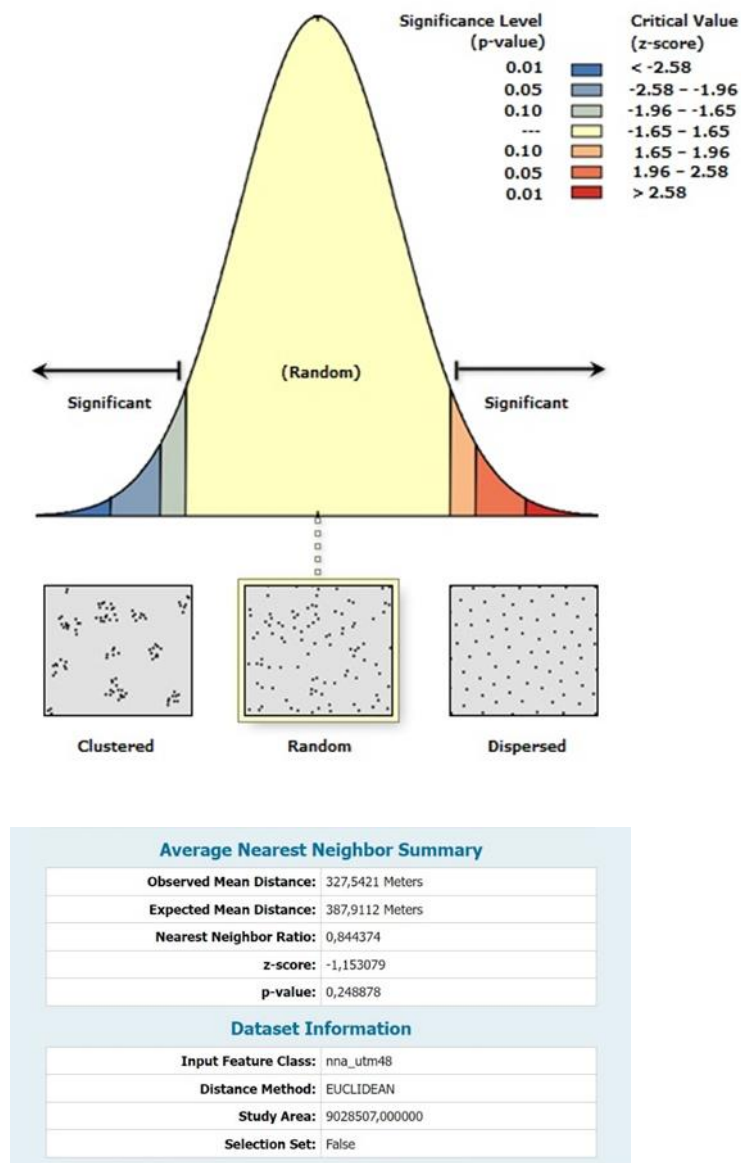
Fig 8. Nearest neighbor analysis results distribution of health facilities in Tanjung Senang District, Bandar Lampung City

The distribution pattern is a series that has been established regarding a phenomenon itself. The distribution pattern shows the distribution of a point in a certain location which depicts or describes an industrial distribution process. There are three distribution patterns, namely:

a. Uniform distribution pattern. It is said to be uniform if the distance between one location and another is relatively the same.
b. Clustered distribution pattern. It is said to be clustered if one location is close to another location and tends to form a group in certain places.
c. Random distribution pattern. It is said to be random if the distance between one location and another is irregular.

The distribution pattern of health facilities in Tanjung Senang District, Bandar Lampung City is random. Where the random distribution pattern shows that health facilities are randomly distributed with the distance between one location and another being irregular or evenly distributed in each sub-district in Tanjung Senang District, Bandar Lampung City.

This shows that the proposal to provide efforts for the location points for the distribution of health facilities can be determined based on several Law Regulations Concerning Health Facilities which refer to the previous discussion. Where the government should make efforts towards this so that health facilities are distributed evenly and not randomly like this and should check the location first, for example, the Government Regulation of the Republic of Indonesia Number 284 of 2007 concerning People's Pharmacies, states that there are actually no number of pharmacies minimum or maximum units, but it would be better if there are several pharmacies in Tanjung Senang District, because this will make it easier for people to meet their health needs.

Even though 6 pharmacies are considered sufficient, it would be even better if they were added in other sub-districts, so that they are evenly distributed because basically if you look at the applicable provisions, there are regulations regarding the radius distance between pharmacies, but in this research we will look at the NNA (Nearest Neighbor Analysis) it is clear that the distribution of pharmacies in Tanjung Senang District is not evenly distributed and most of them are in Tanjung Senang Village, even in the other 2 sub-districts, namely:

Labuhan Dalam Village and Pematang Wangi Village in Tanjung Senang District, there are no pharmacies so that the distribution pattern of health facilities in Tanjung Senang District, Bandar Lampung City, the pattern is random or not evenly distributed in each sub-district.

Apart from that, with this random pattern, the people of Tanjung Senang District cannot freely know the accessibility of their location or the distance between one location and another, because this pattern is an irregular pattern.

Then, this random distribution pattern is also closely related to the existence of facilities and infrastructure around the Tanjung Senang District area which provide easy access and affordability within their home area, so this random pattern will also influence the picture of affordability between the distribution locations of health facilities. with regional characteristics. In conducting research, there are several advantages, including the following:

a. You can easily carry out research regarding information on the distribution of health facilities that have been determined by plotting each area or distribution location point using sophisticated GPS Essentials.
b. Utilize Quantum GIS as software to create maps of the distribution of health facilities that have been determined because this software is light to run on devices and is open source.
c. Utilize webhosting as a place to upload data on the distribution of health facilities that have been determined using the 000webhost page because it is free and can be accessed by users widely via a link (web).
d. Through the distribution map that has been created, we can see clearly in detail that the distribution is not evenly distributed in each sub-district in Tanjung Senang District, Bandar Lampung City so that this can help the government to carry out efforts to address this case in order to improve the welfare of its people to obtain the highest level of health.
e. To access the link (web), you don't need to use GIS software, but you can access it directly via your personal smartphone or via laptop/computer.

Then, in conducting research, there are also several weaknesses, including the following.

a. Only use 1 software, namely Quantum GIS.

b. The webhosting used is 000webhost. According to previous research, web hosting could experience errors at uncertain times because web hosting is free and we as account holders who have uploaded data must be careful and alert when we suddenly experience an error. However, if there is an error, we can re-upload it and the (web) link can be easily accessed again by users who have the (web) link.
c. Users must have a link (web) to be able to access it.
d. Must be connected to the internet when accessing the link (web).

4. Conclusion

WebGIS-based health facility distribution map, contains information: (geographical conditions, accessibility, infrastructure, health workers, non-health workers, health services and other supporting facilities) and can be easily accessed by a wide range of users using QGIS, QGIS2Web plugins, leaflets and webhosting. The usability result score was 86.05%. This means that WebGIS is very feasible, effective, efficient, provides satisfaction for its users, and has succeeded in utilizing WebGIS as a page (web).

Tanjung Senang District has 7 health facilities spread across several sub-districts, including 1 Inpatient Health Center, 2 Assistant Health Centers, 2 Primary Clinics, 2 Beauty Clinics, 1 PMB (Midwife Independent Practice), 1 PBD (Practice with Doctors) as many as 1 unit, and pharmacies as many as 6 units so that the total number of health facilities that have been determined is 15 units.

The map of the distribution of health facilities in Tanjung Senang District shows a random pattern resulting from calculations using the Nearest Neighbor Analysis method. This means that health facilities in each sub-district in Tanjung Senang District, Bandar Lampung City are not evenly distributed and the distance between one location and another is irregular.

Ethical Review Board Statement
Not applicable.

Informed Consent Statement
Not applicable.

Data Availability Statement
Not applicable.

Conflicts of Interest
The author declare no conflict of interest.

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