UPDATING OF ATLAS FOR HOMECOMING MAPS
Case Study: Sumatera Island

(Perbaruan Atlas Peta Mudik, Studi Kasus Pulau Sumatera)

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ABSTRACT

Homecoming is an event that is carried out every year by most Indonesian people ahead of the Idul Fitri. According to data obtained the largest number of Lebaran travelers is using land routes. Because more and more travelers are using land routes, media that can provide information such as the shortest path search application that can help travelers to optimize their time and costs is needed. Judging from the increase in travelers each year by using land routes, it is necessary to update the atlas for homecoming maps 2019 to provide more updated information and in accordance with the actual conditions to support effective earth information that has undergone changes in both geographical elements and facilities. The purpose of this study is to identify what elements need to be updated on the homecoming map atlas, renew the cartographic design of homecoming maps according to the cartographic rules, and make a visualization of the cartographic maps of the homecoming map. The method used is qualitative research in the form of discussions with related parties, studio activities and digital map-making processes. The results of this study are in the form of visualization of cartographic designs of homecoming maps that are in accordance with the cartographic rules on the island of Sumatera and distributed digitally through the official website of National Institute of Technology. With the updating of Atlas maps going back and forth, it is expected to help travelers to determine the best land route.

Keywords: Homecoming, Homecoming Map, Updating, Visualization of Cartographic Design

INTRODUCTION

Homecoming is a phenomenon that occurs on Eid al-Fitr which is carried out by the people of Indonesia. The phenomenon of Eid homecoming is usually done to connect the ties of immigrants with relatives in their hometown. According to data obtained by the number of Eid travelers from Java to Sumatera on the H-5 Eid in 2019 reached 400,309 people. The figure is only 49.9% of the total number of travelers in the same period last year reaching 802,535 people. Two-wheeled motorists were transported as many as 38,261 units or had reached 49.7% of the total 76,959 units during the homecoming period last year, with 49,455 units of four-wheeled vehicles or more or
reaching 51.9% of the total 95,380 units during the homecoming period last year (Ira Puspadewi, 2019).

The majority of travelers use land routes, so a platform is needed to provide information about homecoming routes, such as dependent lane information, route-prone routes, good routes for travelers to travel, so that it can help tourists save time and money. Due to an increase in land travelers, it is necessary to update the homecoming atlas to provide the latest information and in accordance with the real situation, so that tourists can find the best way.

The work of updating homecoming map atlas is carried out in the Sumatera Island Region in this region as a land lane user, so it is necessary to update the homecoming map atlas. The work of updating homecoming map atlas was carried out to support effective earth information that had improved both non-geographical and non-facility. This renewal will produce homecoming map atlas with non-geographic and non-up-to-date information on the face of the earth which is expected to help travelers determine the best route to avoid accident-prone and congestion-prone traffic on transportation routes.

Previous studies related to homecoming map, such as that conducted by Adikusuma (2017) with the title Cartographic Design Homecoming Map, the data used in this study are using spatial data and data attributes, and in this study using qualitative research methods with any data factors which is needed in making homecoming maps and making homecoming maps designs that can be these factors. Subsequent research related to homecoming map, namely research by Anesya (2018) was applied to the "2017 Homecoming Map (1438 H) of the Java-Bali Region" issued by the National Institute of Technology and the Badan Informasi Geospasial (BIG). The data used in this study are using spatial data and attribute data, while spatial data are road network data, Point of Interest (POI) data, vulnerability data, regional administration data and topographic map data scale of 1: 25,000. The attribute data are complementary information data and topographic data namely Shuttle Radar Topography Mission (SRTM). This research is located on the island of Sumatera, with the updating of the homecoming map, it is hoped that homecomers can be assisted in choosing the best route when planning a travel route to be traveled by discussing information about homecoming activities in the map. In addition to the best route, the Homecoming map can provide information needed for visitors during the trip, provide fuel and others, and can be used at congestion-prone, disaster-prone and disaster-prone points, so that they can safely reach their destination Geospatial Information Agency (BIG) once issued a homecoming map atlas in the first version of the Sumatera Island Region. In the first version of the homecoming map the possibility of some changes to the location is not strategic because there is a change in information about the land route.

**METHOD**

In this study conducted several stages, namely the preparation stage which is the administration phase, tools and materials. Phase identification of aspects needed in the homecoming map design. Stage of data collection in the form of spatial and attribute data. Spatial data processing and attribute stages. The stage of making a homecoming cartographic map design is in accordance with the rules of cartography that produce homecoming map atlas. At the stage of making a cartography homecoming map design is also carried out the questionnaire collection stage containing the responses of homecomers atlas. The research methodology can be seen in Figure 1.

Data Processing

Data processing of the homecoming map includes data collection activities, identification of the factors needed in the homecoming map, homecoming data classification, editing and generalization of data, making homecoming cartography design in accordance with cartographic rules that produce homecoming map atlas. At the stage of cartography design homecoming map is also carried out the questionnaire collection stage containing the responses homecoming map users.

Identification of Updated Factors in the Homecoming Map

This stage is carried out identification of what factors are needed on the homecoming map. The stage of identifying homecoming maps refers to the "2018 homecoming map of the Java-Bali region"
where the elements are adjusted to the elements for updating homecoming map atlas on the island of Sumatera. The 2018 homecoming map was used as a reference because researchers assumed that the map was the most recent or updated map issued by BIG and Itenas. The elements considered in Updating Homecoming Atlas Map include road network elements, Point of Interest (POI) elements, elements of coastal and sea boundary administration, as well as supplementary information that supports homecoming maps. While the cartographic aspects to be updated are related to coloring, generalization, and map layout.

![Research Flowchart](image)

**Figure 1.** Research Flowchart

Data Collection

The data used in the form of spatial data and attributes. Where spatial data is road network data obtained from the Ministry of PUPR, Data Point of Interest (POI) obtained from the drafting team and Badan Informasi Geospasial (BIG), vulnerability data obtained from the Badan Nasional Penanggulangan Bencana (BNPB), Earth Visual Map scale 1: 25,000 and regional administration data obtained from the Badan Informasi Geospasial (BIG). Attributes data are supplementary information
data obtained from the Ministry of Public Works and Public Housing (PUPR) and Topographic data in the form of a 90-meter Shuttle Radar Topography Mission (SRTM) obtained from http://srtm.csi.cgiar.org/ presented in Table 1.

<table>
<thead>
<tr>
<th>No</th>
<th>Data</th>
<th>Bentuk Data</th>
<th>Sumber Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Road Network Data Year 2019</td>
<td>Spatial Data</td>
<td>Kementerian PUPR</td>
</tr>
<tr>
<td></td>
<td>- Highway</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Arterial Path</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Collector Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Local roads</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Rail Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>POI (Point of Interest) 2019:</td>
<td>Spatial data and attributes</td>
<td>Drafting team</td>
</tr>
<tr>
<td></td>
<td>- Airport</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Harbor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Tourist attraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Regional Administration Data for 2019</td>
<td>Spatial data and attributes</td>
<td>BIG (Badan Informasi Geospasial)</td>
</tr>
<tr>
<td></td>
<td>- Danau, Batas Pantai dan Laut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Supplementary Information for 2019</td>
<td>Attribute Data</td>
<td>Kementerian PUPR</td>
</tr>
<tr>
<td></td>
<td>- Toll Road Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Toll Tariff Information</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Classification

The purpose of data classification is to group or display data in the form of certain classes according to its type in order to facilitate the drawing of data into maps. Data classification is very necessary to display data in accordance with certain categories or classes so that information can be displayed in full. Data classification is performed on the road network data presented in Figure 2, topographic data presented in Figure 3, and sea depth data presented in Figure 4.
Data Editing and Generalization

Data editing includes checking and repairing activities by shifting or moving points that are deemed necessary by taking into account the density of data that is on the face of the map. Data generalization includes selection / selection, simplification, combination and enlargement. Data editing and generalization is very necessary to obtain simple data so that it can be displayed well looking at the size of the face of the map which is very dependent on limited paper media. Data generalization is carried out on road network data, Point of Interest (POI), vulnerability data, and administrative data of the sub-district capital, which can be seen in Figure 5 and Figure 6.
Complementary Information

Complementary information consists of details of toll roads and alternative routes, as well as descriptive information in the form of paragraphs relating to homecoming activities. The three supplementary information data were created using CorelDraw X7 with the file format (*.Cdr) based on data obtained from the Ministry of PUPR. Details of toll roads and alternative lanes are made to clarify to the user the information available on toll roads and alternative routes that require special space so that the information is presented in full. Details of the toll road can be seen in Figure 7. Details of the Sumatera alternative routes found in Padang City and Jambi City can be seen in Figure 8.

Figure 7. Toll Routes

![Toll Routes](image)

(a) (b)

Figure 8. Details of alternative routes at Padang City (a) and Jambi City (b).

Descriptive information is created with the aim of displaying supplementary information about going home, as well as clarifying and adding information on the face of the map. Descriptive information consists of toll road tariff information from the Ministry of PUPR presented in Figure 9,
tourist information presented in Figure 10, and Address Information, Web Address and Itenas Social Media Contact Information presented in Figure 11.

**Figure 9. Toll Road Tarif Information**

<table>
<thead>
<tr>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
<th>Objek Wisata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakauheni - Terbanggi Besar</td>
<td>Palembang - Indralaya</td>
<td>Medan (Veteran) - Binjai</td>
<td>Tanjung Morawa - Tebing Tinggi</td>
<td>Belawan - Tanjung Mowara</td>
<td>Belawan - Tebing Tinggi</td>
<td>Kualanamu - Tebing Tinggi</td>
</tr>
<tr>
<td><strong>Rp 112.500</strong></td>
<td><strong>Rp 20.000</strong></td>
<td><strong>Rp 13.000</strong></td>
<td><strong>Rp 53.500</strong></td>
<td><strong>Rp 8.000</strong></td>
<td><strong>Rp 61.500</strong></td>
<td><strong>Rp 50.000</strong></td>
</tr>
</tbody>
</table>

**Figure 10. Tourist Information on the Sumatera island**

Objek Wisata
1. Pantai Patek
2. Pantai Lokhnga
3. Goa Tujoh
4. Pantai Blanglancang
5. Benteng Portugis
6. Rumah Tonga
7. Ziarah Mahligai
8. Air Terjun Sipisopiso
9. Air Terjun Siguragura
10. Istana Maimun
11. Danau Toba
12. Istana Kotopinang
13. Pantai Corocok
14. Pantai Bungus
15. Jam Gadang
16. Pagaruyung
17. Candi Muara Takus
18. Istana Siak
19. Pusat Pelatihan Gajah
20. Candi Muaro Jambi
21. Pantai Mukomuko
22. Pusat Pelatihan Gajah
23. Pasir Panjang
24. Pantai Linau
25. Jembatan Ampera
26. Danau Ranau
27. Air Terjun Tenam
28. Tempat Pengasingan Bung Karno
29. Pantai Marina
30. Pantai Pasir Putih
31. Pusat Pelatihan Gajah
32. Air Terjun Sepapa
33. Pantai Trikora

**Figure 11. Address Information, Web Address, and ITENAS Social Media Contact list**

Cartographic Homecoming Map Design

The stages of cartographic map design going home in the implementation of this study consisted of determining the design of symbols for each data, color selection for each of these symbols, and the layout of the map. Soendjojo and Riqqi (2012) in their book entitled "Cartography" said that there is one part of the map sheet that can be distinguished on the
map face, map boundary information, and map edge information. Cartographic design results can be seen in Figure 12.

![Homecoming Map of Sumatera](image)

*Figure 12. Homecoming Map of Sumatera*

**RESULT AND ANALYSIS**

**Analysis of Results Updating Elements on the 2019 Homecoming Atlas Map**

The results of updating the elements that go through the processing stage in the Homecoming Atlas Map are found in the elements of attractions and toll roads. After obtaining data from the Ministry of PUPR, the road network that has been displayed on the homecoming map atlas last year is the most recent road network data owned by the Ministry of PUPR. So for road network data that experiences updating only on toll road network data. The tourism object can be seen in Figure 10 and the updated toll road network can be seen in Figure 13.
Analysis Result of Updating Cartographic Aspects on the Homecoming Atlas Map

The results of the cartographic aspects update made in the field carried out in aspects of the map layout and also the face of the map, in the homecoming map in 2018 the Sumatra region became the front of the map, Sulawesi and Kalimantan were used in one map sheet which was released on the back of the map of Sumatra. Editing data that includes checking and repairing activities by moving or moving points that are deemed necessary by considering the data in front of the map. Data generalization includes selection/selection, simplification, combination and
enlargement. Editing and generalizing data is very necessary to obtain simple data so that it can be well received seeing the size of the face which is very dependent on limited paper media.

The symbol used in Homecoming Map was added to the use of the symbol in the "Java-Bali Homecoming Map" made by BIG and Itenas previously. The color selection used for the collection process is the Cyan, Magenta, Yellow, Black (CMYK) Color System model.

Analysis of Results Updating 2019 Homecoming Atlas Map

The making of updating homecoming atlas that is applied to the "Updating Atlas of Homecoming Case Study of the Island of Sumatra" is the result of identifying the factors needed in the homecoming map and is a visualization of cartographic designs that are made properly so that it can be interesting and easily understood by homecoming map users in reading the information contained in the map that has fulfilled the aspect factors in accordance with the rules of cartography.

The process of cartography map design consists of the stages of preparation for going home, identification of the factors needed on the homecoming map, homecoming map data collection, validation of homecoming map data, data processing of homecoming maps, and homecoming cartographic map design. In addition to the results of Homecoming Atlas map, the results of Updating Homecoming Atlas Map of the Sumatra Island region are presented in softcopy and in the form of a digital map. The Atlas Map of Homecoming softcopy is available in the format (*.Pdf), and is a digital map issued by Itenas before the Eid homecoming on May 29, 2019 which can be accessed online on the official Itenas website (https://www.itenas.ac.id/). The information contained in the homecoming map is in the form of map boundary information, as well as map edge information. The scale of the map faces obtained in the Sumatra Homecoming Map is 1: 3,500,000. The results of Homecoming Map of Sumatra Island Region are presented in Figure 15.

Figure 15. Atlas of Homecoming Results
Analysis of Results Questionnaire

The results of the evaluation of the "Updating Atlas of Homecoming Map of Sumatra Island" through the creation of a questionnaire "Survey of Use of the Homecoming Map" in digital form distributed online to social networking users with 59 respondents with 38 questions. Of the 38 questions categorized into 4 namely aspects of cartography, elements, elements, and usefulness of maps for users.

Evaluation of the elements based on cartographic rules in Homecoming Atlas Map some of the information contained therein is very helpful to users in carrying out homecoming activities. Atlas Homecoming Map users are helped with information such as main lines, toll roads, alternative routes, toll tariff information, airports, and attractions.

Evaluation of cartographic aspects based on cartographic rules in Homecoming Atlas Map has been made according to cartographic rules. Aspects that are in it such as symbolization, color, and map layout.

Evaluation of cartographic elements based on cartographic rules in the Atlas Map has been made in accordance with cartographic rules. But from the results of the questionnaire elements - cartographic elements such as symbology and text selection are less informative, it could have happened due to the determination of the size of the symbols and the text used is not innovative.

Evaluation of the use of homecoming maps The results of the survey on the use of homecoming maps with a number of 59 respondents, found that the most widely used homecoming maps are the Java-Bali Homecoming Map and the Sumatra Homecoming Map, while the Kalimantan Island Homecoming Map users are very few, and the users of the Sulawesi Homecoming Map there is no. This happened because most of the respondents residing in Java, as many as 40.7% of respondents going home map form.

CONCLUSIONS

Based on research that has been done on Updating Homecoming Atlas Map, it can be concluded that homecoming maps are presented in softcopy and digital form while softcopy is in the form of file format (*.Pdf) and Digital which is accessed through the official website of Itenas (https://www.itenas.ac.id/) which can be easily updated if there is something related to going home. Based on the results obtained, it can be concluded that the elements updated in the Homecoming Atlas Update are: road network elements such as toll roads, main roads and alternative roads; Point of Interest (POI) elements such as information on the name of a tourist attraction, information on the name of the port, information on the name of the airport; Administrative boundaries such as provincial capitals, districts / cities capitals, sub-districts, provincial boundaries, mountains, seas, lakes, and coastal borders; Complementary information such as detailed information on toll roads and alternative lane information; Descriptive information such as toll tariff information, tourist information, Itenas address information, web address information and Itenas social media contact list.

The updated aspects of cartography for updating Homecoming Atlas Map are: Generalization which is the activity of selection / selection, simplification, combination, and enlargement. Data generalization is done on road network data, Points of Interest (POI), vulnerability data, and administrative data of the sub-district capital; Symbolization and color; The symbols in the Homecoming Atlas Map use the same symbols on the Java-Bali Homecoming Map made by BIG and Itenas before. While coloring uses the Cyan, Magenta, Yellow, Black (CMYK) Color System; The map layout is created on the face of the map, map boundary information, and map edge information. Evaluation of the results of homecoming map homecoming atlas obtained through a questionnaire with the following results: The homecoming map is in accordance with the needs of users, the appearance of the homecoming atlas map issued by Itenas Bandung is already interesting and the user is easily helped by the information on the homecoming map, and it is also necessary to update the homecoming atlas map for next year; Unlike alternative pathways, the main pathway and the point of vulnerability are the most helpful routes for the homecoming map atlas. However, the alternative pathways and the pathways of vulnerability are also the ones that do not match the actual flow; Symbolization is a less informative aspect of cartography in the presentation of homecoming maps. The visualization of the atlas of the homecoming map of Java and Bali and the...
Presentation of cartographic aspects are already interesting. Needs to be done improvements or improvements to the graphic design aspects atlas homecoming map; All cartographic elements of the homecoming atlas map (in this case title, subtitle, legend, map, angina eye direction, date of map making, maker, bar scale, and edge of the line) need to be installed in the homecoming map atlas next year.

From the results of this study there are several suggestions that can make making homecoming for further research nagar better. The author gives the following suggestions: Making homecoming map must pay more attention to each cartographic rules such as no, aspects, and elements so that the homecoming map issued does not include a problem; Homecoming map that will be made next needs field validation, so that the information on the map matches the actual situation; Homecoming map that is made must always be updated to match the actual conditions, where information can change over time; When making Homecoming maps then Homecoming maps are not only in the form of printed maps and digital maps, but also made Homecoming map applications such as GPS applications made by Google, so that people can use the Homecoming map.

REFERENCE