Weaknesses And Advantages of Using Official Statistics Models for Analyzing Population Data in Indragiri Hilir District in The Health Sector

Achmad Isya Alfassa[1], Sudrajat Sudrajat[1], and Djaka Marwasta[1]

[1]Doctoral Program of Population Study, Postgraduate School of Gadjah Mada University, Yogyakarta
achmadisya97@mail.ugm.ac.id

Abstract. Indragiri Hilir Regency is one of twelve districts/cities in Riau Province and is also one of the districts with the largest population. With a relatively large population, it makes its demographic unique, both in terms of fertility indicators, mortality indicators and migration indicators. One of the focuses in providing community welfare is in the health sector, this makes Indragiri Hilir Regency have three regional general hospitals whose task is to provide public services to the community, especially in the health sector. To support this, complete and up-to-date sectoral statistical data is needed to support the smooth running of public services. By using the official statistics model, regional officials will gain advantages in providing public services by using good and correct data so that they can reduce the risk of errors, both data errors and actions. There are eight advantages of using the official statistics model. The official statistics model is also will support regional officials in preparing population policy plans and can improve community welfare.

Keywords: Official Statistics, Population Data, Health Sector.

1 Introduction

Indragiri Hilir Regency is one of the regencies located in Riau Province which has a regional government entity in Indonesia, facing inevitable challenges and dynamics in efforts to realize the welfare of its people [1]. Indragiri Hilir Regency is a regency that has a unique and diverse demographic situation ranging from population conditions such as fertility, mortality, and migration. Geographically, Indragiri Hilir Regency is located in the coastal area of Riau Province and has very abundant natural resources ranging from plantation, agricultural, and fishery resources. Indragiri Hilir Regency has a capital city, namely Tembilahan.

As one of the districts with the largest population in Riau Province, Indragiri Hilir Regency has become a region or area with a very unique demographic situation starting from birth rates, death rates, and migration rates, both local and international migration. As one of the districts with a large population, this is also a concern for the government to deal with matters related to the population such as education, economy, welfare and

V. D. S. Handayani et al. (eds.), *Proceedings of the 6th International Conference on Bioinformatics, Biotechnology, and Biomedical Engineering (BIOMIC 2025)*, Advances in Health Sciences Research 94,
https://doi.org/10.2991/978-94-6239-762-0_9

especially in the health sector and is related to the demographic bonus. The demographic bonus is seen from 3 aspects, namely the Fertility Indicator, Mortality Indicator, and Migration Indicator. The preparations carried out include improving the Health Indicator, Education Indicator, Employment Indicator, and Social Welfare Indicator [2].

To improve the health level in Indragiri Hilir Regency, the local government has provided 3 (three) regional general hospitals, namely Puri Husada Tembilahan Regional General Hospital, Tengku Sulung Pulau Kijang Regional General Hospital, Raja Musa Sungai Guntung Regional General Hospital. These three regional general hospitals are equipped with very adequate and modern equipment and are assisted by the availability of sectoral statistical data according to indicators in the field of population statistics starting from concepts, definitions, to technical implementation of population data collection statistically. Population statistics aim to provide a breakthrough in population data into valid and good data [2]. One of the indicators that can be developed in official statistics is the population and demographic indicator. To support population development, there are five aspects that must be realized, including controlling population quantity, improving population quality, directing population mobility, family development, developing a population database (Population Administration), with the fulfillment of these things will provide accurate, precise and comprehensive information to ensure the effectiveness and efficiency of implementation so that it can provide an effect on the implementation of activities in a region, both in the form of positive and negative effects [3–4].

This study aims to examine official statistics data utilized by the Regional Public Hospital Institution of the Indragiri Hilir Regency Government in the analysis of sectoral statistical data in the Health sector. Reviewing the policy of the official statistics model and seeing the development of the official statistics model for the analysis of population sectoral data in Indragiri Hilir Regency

2 Introduction

This study uses an explanatory method where the explanatory method is a method that is intended to examine the validity of a particular theory, model, or hypothesis. This study is also supported by statistical methods using descriptive statistical analysis such as minimum and maximum values, range, and average values. Descriptive statistical analysis is an important step in research, both quantitative and qualitative, to understand data patterns and distributions, assisted by an empirical method approach which is a research approach used to describe conditions seen in the field as they are [5].

2.1 Population Data

Population data in general is a collection of data (information) obtained or obtained from observations of population data in the form of numbers. Population data is often used in population statistical analysis. Population statistics is a science that studies two branches of science, namely statistics and population science [6,7].

2.2 Official Statistics

Official Statistics is a branch of statistics that explains and describes statistical indicators both nationally and internationally. One of the indicators that can be developed in official statistics is the population and demographic indicator. So to clarify and explain these indicators, it is necessary to develop an official statistics model for population data, especially in the health sector [8].

2.3 Research Location

a. Puri Husada Tembilahan Regional General Hospital.
b. Tengku Sulung Regional General Hospital, Kijang Island.
c. Raja Musa Sungai Guntung Regional General Hospital.

3 Results and Discussion

Indragiri Hilir Regency is one of the regencies located in Riau Province which has a regional government entity in Indonesia, facing inevitable challenges and dynamics in efforts to realize the welfare of its people [1]. Indragiri Hilir Regency is a regency that has a unique and diverse demographic situation ranging from population conditions such as fertility, mortality, and migration. Geographically, Indragiri Hilir Regency is located in.

3.1 Official Statistics in Indragiri Hilir Regency in the Health Sector

In concept, Official Statistics is an explanation of statistical data indicators used in statistical analysis. Official Statistics is also indicator data obtained from the results of data collection using various methods so that it can be analyzed and disseminated by researchers or agencies. Based on the official statistics model for each hospital, there are similarities in several sectoral data needs that can support the running of official statistics, especially in the health sector.

Official statistics in the health sector contain sectoral data indicators in the health sector. These indicators have their own variables and metadata related to health data which can be used as a reference for preparing regional work plans to improve health services to support sustainable regional development

Draft regional health policies are used to provide answers and solutions to population policy problems in the health sector in order to improve community welfare and improve the quality of life of every human being evenly and consistently. Official statistics play a very active role in supporting the implementation of activity programs to achieve government targets in improving community welfare, especially in the health sector. Apart from that, there is a regional population policy plan (RK2D) which aims to support regional health policy design.

Table 1. Regional Health Policy Plan (Processed by Researchers)

No.	Policy Type	Policy Implementation Recommendations
1	Morbidity Health Policy	1. Reducing and suppressing morbidity rates, both incident and prevalent, from a disease. This is because the higher the morbidity rate, the worse the level of public health. 2. Make a work plan to prevent, reduce and avoid the spread of disease and infectious diseases. 3. Make a work plan to improve a healthy and clean environment. 4. Carrying out work programs that support community health levels such as improving community nutrition, drinking water, access, and social factors such as poverty and environmental cleanliness. 5. Improve health services down to the village level.
2	Fertility Health Policy	1. Increased use of contraceptives. 2. Access knowledge. 3. Increased family planning education. 4. Knowledge of the age of first sexual intercourse. 5. Knowledge of age at first marriage. 6. Marital status. 7. Knowledge of first birth interval. 8. Knowledge of age and birth distance 9. Infertility 10. Counseling on family planning decisions
3	Mortality Health Policy	1. Create a work plan to prevent and reduce the death rate in an area. 2. Reducing the Crude Death Rate (CDR) 3. Reducing the Death Rate According to Certain Age Groups (ASDR) 4. Reducing the Death Rate of the Elderly (Elderly) 5. Reducing Infant Mortality Rate (IMR) 6. Reducing Child Mortality Rate (CMR) 7. Reducing the Infant Mortality Rate (USMR) 8. Reducing Neonatal Mortality Rate (NMR) 9. Reducing Maternal Mortality Rate (MMR)

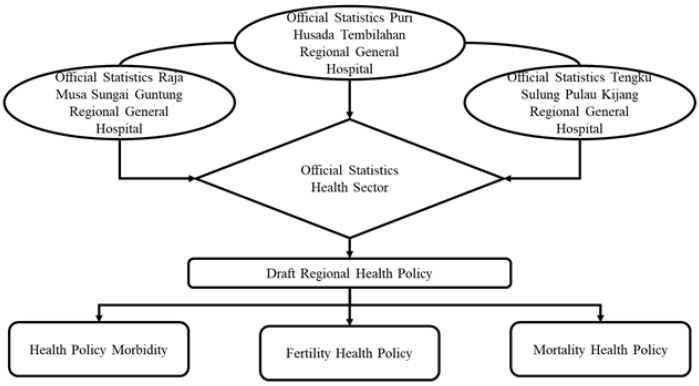

Fig 1. Flow of Official Statistics in Indragiri Hilir Regency.

3.2 General Overview of Population of Indragiri Hilir Regency

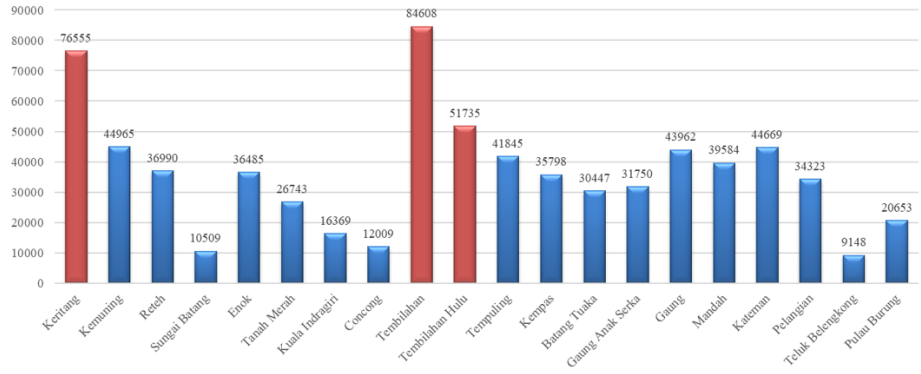

Fig 2. Population of Indragiri Hilir Regency in 2024 Based on Sub-districts in Indragiri Hilir Regency.

The population of Indragiri Hilir Regency in 2024 is 729.147 thousand people. In 2024, the demographic situation in Indragiri Hilir Regency has three sub-districts with the largest population, namely Tembilahan Sub-district, Keritang Sub-district, and Tembilahan Hulu Sub-district (Indragiri Hilir in Figures 2025). These three sub-districts in the previous year were also the sub-districts with the largest population in recent years. In Indragiri Hilir Regency, Tembilahan Sub-district is the sub-district with the largest population based on the population in 2024. This is because Tembilahan Sub-district is the capital of Indragiri Hilir Regency which is the center of government and the economic center of the Indragiri Hilir Regency community. Furthermore, Keritang Sub-district is the sub-district with the second largest population after Tembilahan Sub-district, this is because Keritang Sub-district is one of the sub-districts that is the gateway between 2 provinces, namely Riau Province and Jambi Province, making population mobility in the region relatively large due to the existence of pull

and push factors that make residents mobilize in the region. The third sub-district is Tembilahan Hulu Sub-district, this sub-district is a sub-district that directly borders Tembilahan District (the capital of Indragiri Hilir Regency). The population of Tembilahan Hulu Sub-district is mostly workers who work in the district capital area and live in Tembilahan Hulu Sub-district, easy road access and transportation in Tembilahan Hulu Sub-district with Tembilahan District is one of the factors that makes the mobility of residents in these two sub-districts very large and smooth and is supported by several other infrastructures that support the welfare of the community in the area.

3.3 Official Statistics of Puri Husada Tembilahan Regional General Hospital

On August 12, 2024, the researcher conducted a visit and interview with the Head of Planning and Control Sub-Division of Puri Husada Tembilahan Regional General Hospital. The results of the meeting with the respondents obtained the results of the interview conducted in-depth interviews. Respondents explained the importance of statistical data and official statistics in implementing organizational planning as conveyed by the following respondents:

"*Then, besides that, it is also very much needed in carrying out the duties and functions at Puri Husada Hospital for the design of health policies in the region, we need a morbidity health policy, then also a fertility health policy, and a mortality health policy, with these data we also expect an official flow specifically for statistical data so that it can facilitate every public health service besides that, the purpose of why this official data or flow is very necessary from statistical data is to determine a decision or take a policy on health services later because currently the hospital has sectoral data consisting of several data" The role of the official statistics performance model utilized by Puri Husada Tembilahan Hospital is in data analysis in the health sector. The performance model is based on the design, implementation, and management of sectoral statistical data at Puri Husada Tembilahan Hospital.*"

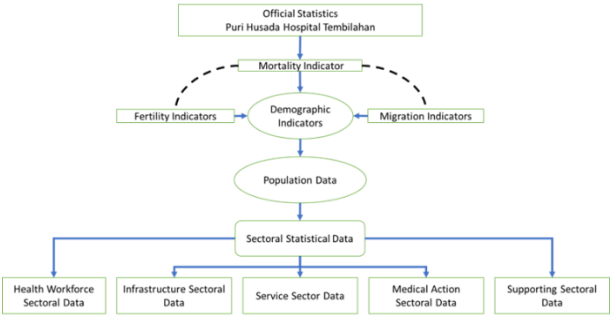

Fig 3. Official Statistics Performance Model of Puri Husada Tembilahan Hospital.

3.4 Official Statistics of Tengku Sulung Regional General Hospital, Kijang Island

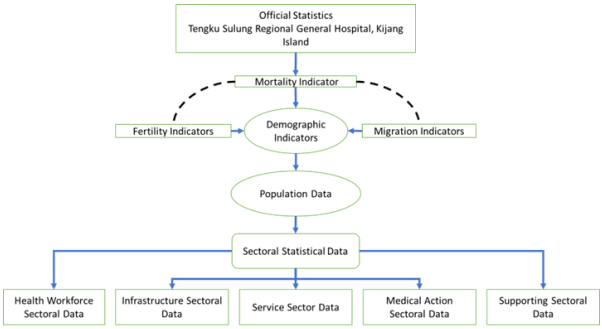

Fig 4. Official Statistics Performance Model of Tengku Sulung Hospital, Kijang Island.

On August 4, 2024, the researcher visited and conducted an interview with the Head of the Administration Sub-Division of the Tengku Sulung Regional General Hospital, Pulau Kijang. The results of the meeting with the respondents obtained the results of the interviews conducted in-depth interviews. Respondents explained the importance of statistical data and official statistics in implementing organizational planning as conveyed by the following respondents:

"*It's very helpful, right? So far in our hospital, there are departments related to data, so far if we need to ask for it from those departments. So if this data is collected in one place, it will make it easier for us to provide services later, one of which is HR data, HR data at Tengku Sulung Hospital is only located in the administration room, so the data for 10 diseases - 10 diseases are located in the medical records section, then the visit data is also in the medical records. So maybe with this research, it can be collected in one place, so if we, the hospital, are asked by other SKPDs or requested by the local government, maybe we can just ask in one place and don't need to ask the departments, so it really helps the hospital to support hospital services*."

3.5 Official Statistics of Raja Musa Regional General Hospital Sungai Guntung

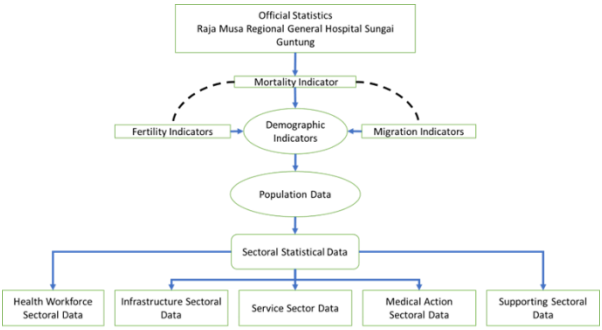

Fig 5. Official Statistics Performance Model of Raja Musa Hospital Sungai Guntung.

On August 13, 2024, the researcher visited and interviewed the Head of the Administration Sub-Division of the Raja Musa Sungai Guntung Regional General Hospital. The results of the meeting with the respondents obtained the results of the interviews conducted in-depth interviews. Respondents explained the importance of statistical data and official statistics in implementing organizational planning as conveyed by the following respondents:

"*The data is now in the service moved in the service at least not much related to human resources yes community service patients many our human resources are not sufficient there we have procurement in 2019 many civil servants but not long moved. If the problem of facilities and data we thank God safe according to type D yes. That data is also useful as a basis and sectoral implementation in Raja Musa is still running even though it requires stricter officials.*"

3.6 Weaknesses and Advantages of Using the Official Statistics Model in Population Data Analysis in the Health Sector

Table 2. Weaknesses and Advantages of Using the Official Statistics Model in Population Data Analysis in the Health Sector

No.	Policy Type	Policy Implementation Recommendations
1	Access is not easy to find sectoral statistical data	Easy access to obtain and find sectoral statistical data
2	It is not yet fully standardized, and does not yet have scientific principles.	Standardized data according to the type of data and in accordance with scientific principles
3	Not yet fully implementing accountability and transparency	Has implemented the principles of accountability and transparency

4	Prone to data misuse	Improve data security to avoid data misuse
5	The data source is still unclear	Have a clear and accountable data source
6	The level of vulnerability to confidentiality of data leaks is high	Improve risk management in maintaining data confidentiality
7	Not yet fully following regulations regarding data and national statistical systems	Has followed regulations and rules regarding data and national statistical systems
8	The level of coordination is still very minimal and there is a lack of cooperation in improving data standards.	Increase coordination both regionally and nationally in improving national statistical data and have high cooperation to improve data standards
9	The data source is still unclear	Have a clear and accountable data source

The advantage of using the official statistical performance model, especially in the health sector, is that it is made in the form of a tabulation table. This is done so that we can see a comparison of the use of official statistics performance models which will be used in planning the implementation of regional development, especially in making population policy decisions, especially in the field of population health to improve community welfare. In analyzing population data, especially in the health sector, there are differences between those who use the official statistics performance model and those who do not.

By using the utilization of the official statistics model in the implementation of data collection activities on sectoral statistical data, especially on data in the health sector, it will provide good data and can be accounted for starting from data standards, metadata, data interprobability, data reference codes, and even have a very high and meaningful level of trust and data quality. In addition, the official statistics model also increases the level of ease in data availability, data searches for data users in accordance with the terms and conditions of data use.

In addition to simplifying administration and complete data availability, official statistics will also play a role in the protection and security of data and information owned by data producers. The protection in question is preparedness in risk management of digital and virtual cyber attacks and maintaining data so that there are no data leaks that are detrimental to both data producers and data users. To support the implementation of the protection and security of the data in question, it will be regulated in the standard operating procedures for data protection and security.

In its implementation, the official statistics model will also help data producers in applying national and international statistical standard principles to maintain and improve data quality to become good and reliable data and can establish cooperation both nationally and internationally in order to develop innovations in the use of data that can be used as one of the variables in determining policy making, especially population policies that operate in the health sector to be able to implement programs in accordance with tasks and functions and on target.

3.7 Official Statistics Model for Sectoral Population Data Analysis for Health Analysis

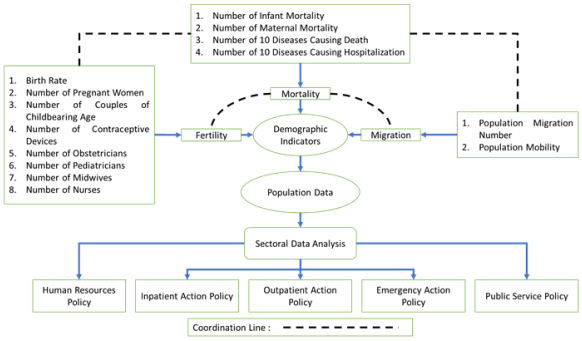

Fig 6. Novelty Model Official Statistics Population Data Analysis in the Health Sector.

The Official Statistics model can be used as a reference by government institutions, especially hospitals which directly have duties and functions in implementing public services in the health sector based on data. Sectoral data analysis aims to help the implementation of activity programs to be more structured and focused and to achieve the expected goals.

The development of the official statistics model that has been applied the analysis of population data, especially in the health sector, in addition to using three main indicators, namely Fertility, Mortality, and Migration, there are additional indicators that support the official statistics model that can support sectoral statistical data analysis. By using the official statistics model, there are eight advantages that can facilitate the implementation of public services by using good and structured data. The official statistics model is obtained from a combination of several official statistics models that are developed into a special official statistics model for population data analysis. This model can be developed if there are new sources of both pull and push variables in sectoral statistical data in the health sector. This model will produce better sectoral statistical data processing and can be a tool for sustainable development planning and can be a reference for making population policies in the health sector

References

1. Al Fassa, A. I., & Kesumawati, A. (2020). Segmentation of Karhutla Hotspot Point of Indragiri Hilir Regency 2015 and 2016 using Self Organizing Maps (Soms). In Proceedings Ofthe International Conference on Mathematics and Islam (ICMIs 2018). UIN Mataram Indonesia and ADMAPETA (Asosiasi dosen matematika dan pendidikan/Tadris Matematika), Mataram, Indonesia (pp. 336-341).
2. Alfassa, A. I. (2022). Statistika Kependudukan Untuk Rencana Kebijakan Kependudukan Daerah. DEMOS: Journal of Demography, Ethnography and Social Transformation, 2(2), 76-85.
3. Alfassa, A. I. (2024). Peran Grand Design Pembangunan Kependudukan (GDPK) Pada Fenomena Kependudukan di Indonesia Melalui 5 Pilar Kependudukan. DEMOS: Journal of Demography, Ethnography and Social Transformation, 4(1), 1-10.
4. Imani, N., Alfassa, A. I., & Yolanda, A. M. (2023). Analisis Cluster Terhadap Indikator Data Sosial Di Provinsi Nusa Tenggara Timur Menggunakan Metode Self Organizing Map (Som). Jurnal Gaussian, 11(3), 458-467.
5. Alfassa, A. I., & Dewi, A. (2024). Communication management on forest and land fires mitigation awareness based on community. In E3S Web of Conferences (Vol. 506, p. 04002). EDP Sciences.
6. Al Fassa, A. I. (2018). Aplikasi Self Organizing Maps dan Webgis dengan menggunakan R dan QGIS untuk Analisis Kependudukan 100 Negara di Dunia.
7. Alfassa, A. I. (2022). Statistika Kependudukan Untuk Rencana Kebijakan Kependudukan Daerah. *DEMOS: Journal of Demography, Ethnography and Social Transformation*, *2*(2), 76-85.
8. Alfassa, A. I., Sudrajat, S., & Marwasta, D. (2023). Development of official statistics models for analysis of population sectoral data in Indragiri Hilir Regency. In E3S Web of Conferences (Vol. 468, p. 06007). EDP Sciences.