



Journal of Social and Political Sciences

Yogantari, M. V., & Despitasi, N. W. P. (2025). Visual Communication Strategies in Conveying Laboratory Data by the Klungkung District Public Health Laboratory, Bali Province, to Stakeholders. *Journal of Social and Political Sciences*, 8(3), 134-145.

ISSN 2615-3718

DOI: 10.31014/aor.1991.08.03.588

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Journal of Social and Political Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Social and Political Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Social and Political Sciences, which include, but are not limited to, Anthropology, Government Studies, Political Sciences, Sociology, International Relations, Public Administration, History, Philosophy, Arts, Education, Linguistics, and Cultural Studies. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Social and Political Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Social and Political Sciences.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

Visual Communication Strategies in Conveying Laboratory Data by the Klungkung District Public Health Laboratory, Bali Province, to Stakeholders

Made Vairagya Yogantari¹, Ni Wayan Putri Despitasi²

^{1,2} Department of Communication Studies, Faculty of Political and Social Science, Udayana University, Bali, Indonesia

Correspondence: Department of Communication Studies, Faculty of Political and Social Science, Udayana University, Bali, Indonesia. E-mail: madeyogantari@unud.ac.id

Abstract

Effective laboratory data presentation is crucial for public health decision-making, yet conventional methods employed by the Klungkung District Public Health Laboratory (Labkesmas) still face limitations in accessibility, clarity, and engagement for stakeholders. This research utilizes a qualitative descriptive approach, involving in-depth interviews, observations, and document analysis, to explore visual communication strategies that can overcome these challenges. Findings indicate that the Klungkung District Labkesmas, operating at Level 1, traditionally presents data using lengthy narrative descriptions, standard graphs, and charts, hindering rapid understanding and evidence-based decision-making by stakeholders across various governance levels. To address these limitations, this study proposes a visual communication strategy leveraging visual elements and design principles in infographics, implementable through readily accessible digital platforms like Canva. Infographics can simplify complex health information, making it more accessible to audiences with varying health literacy levels, and enhance the appeal of the conveyed information. Visualizations for case studies such as obstetric complications, tuberculosis prevalence, and safe drinking water quality testing demonstrate how integrated infographics with icons, illustrations, color coding, typography, and spatial layout can improve comprehension and facilitate more timely, evidence-based decisions. This strategy empowers the Klungkung District Public Health Laboratory to enhance the efficiency, clarity, and visual appeal of its public health data dissemination.

Keywords: Communication Strategy, Visual Communication, Laboratory Data, Public Health Laboratory, Klungkung District

1. Introduction

1.1 The Role of Public Health Laboratory in Klungkung

The Bali Province Public Health Laboratory (Labkesmas) plays a crucial role in disease prevention and control as well as in the improvement of public health. As an institution that conducts clinical specimen examinations and sample testing, the Bali Province Public Health Laboratory adheres to the standards established by the World Health Organization (WHO). This laboratory not only focuses on the microbiological, chemical, and physical analysis of biological samples, but it also contributes significantly to health surveillance and research on community health issues. With its multiple functions including disease diagnosis, health monitoring, and the development of evidence-based interventions the Bali Province Public Health Laboratory stands at the forefront of enhancing community health in the region. In line with the 14 core functions recognized by WHO, one key aspect of the laboratory's mandate is to collaboratively develop plans, programs, and budgets with local stakeholders such as regional governments, non-governmental organizations, and local communities (Minister of Health, 2023). The execution of health laboratory examinations is carried out in a participatory manner to ensure that the results are reliable and relevant to the needs of each regency, namely Badung, Bangli, Buleleng, Gianyar, Jembrana, Karangasem, Klungkung, Tabanan, and Denpasar. Among these, Klungkung Regency serves as a model for the Bali Province Public Health Laboratory due to several factors that support the enhancement of public health in the area.

Klungkung, renowned for its rich culture and history, faces unique public health challenges that make it an ideal location for implementing and testing various public health programs. The regency meets the Level 1 Public Health Laboratory (Labkesmas) standards, as evidenced by the readiness of human resources and the availability of adequate health equipment to perform laboratory functions in accordance with WHO guidelines. The human resources in Klungkung have been trained and possess the necessary competencies to conduct clinical specimen examinations and sample testing, including in the context of disease surveillance and emergency response. Moreover, the health equipment available in the regency meets the operational standards required to support laboratory activities, such as microbiological testing and health data analysis. With sufficient facilities and strong collaboration between the public health laboratory and related institutions, Klungkung has the potential to become a model for other regencies in Bali in terms of effective and sustainable public health program implementation. This not only enhances early disease detection capabilities but also strengthens the overall health system in the region.

The presentation of data generated by the functions of the Klungkung Regency Public Health Laboratory has traditionally been executed using conventional methods. The approach typically involves the distribution of data in the form of documents or spreadsheet files (e.g., Microsoft Excel). Although this method has become standard practice, its effectiveness is frequently questioned particularly regarding ease of access, the speed of information delivery, and its capacity to support data analysis. These limitations indicate the need for innovation in data presentation systems that are more efficient, transparent, and capable of meeting the data-based decision-making needs of stakeholders. Data visualization has become an integral part of the digitalization process. Digitally, data visualization can employ dashboards where text, patterns, and previously undetected correlations are visualized (Irfanullah et al., 2023). This approach enables complex data to be simplified and presented in a more comprehensible manner, thereby expediting faster and more accurate data-based decision-making. In addition to application-based dashboards, this study explores an alternative approach to communicating laboratory data through visual communication strategies that leverage widely accessible digital technologies. These tools can be utilized by technical health personnel working in public health laboratories (Labkesmas), enabling more effective and engaging data dissemination beyond conventional methods.

1.2 Importance of the Problem & Research Question

The urgency of this research lies in the need to develop a more effective communication strategy in the presentation of data by the Klungkung Regency Public Health Laboratory. Conventional methods, which involve the distribution of data in document or spreadsheet format, present significant limitations in facilitating rapid and in-depth stakeholder understanding. These limitations may impede timely and evidence-based decision-making. By designing an innovative communication strategy focused on data visualization and clear presentation, data dissemination can become more intuitive, engaging, and supportive of enhanced comprehension. This research is

vital for improving the efficiency and effectiveness of public health information communication, which, in turn, can contribute to elevating the quality of health services in Klungkung Regency.

Research Questions (RQ):

1. How does the conventional data presentation method employed by the Klungkung Regency Public Health Laboratory meet the needs of its stakeholders?
2. What challenges are faced and what impacts do these have on stakeholder understanding and the accessibility of laboratory data presented by the Klungkung Regency Public Health Laboratory?
3. What visual communication strategies can be developed to enhance the efficiency, clarity, and visual appeal of laboratory data presentation at the Klungkung Regency Public Health Laboratory?

1.3 Relevant Scholarship

Research related to the presentation of public health laboratory data and visual communication strategies has shown significant potential in enhancing the effectiveness of information delivery to stakeholders. The following is a review of three key studies that form the foundation of this research:

- a. *The Use of Infographics in Health Promotion* A study by Smith et al. (2020) demonstrated that infographics can simplify complex health information, making it more accessible to audiences with varying levels of health literacy. The research found that combining visual elements such as icons, charts, and strategically selected colors not only improved comprehension but also increased the appeal of the information being conveyed. However, this study was limited to the context of general health promotion and did not explore the application of infographics in the presentation of laboratory data in depth.
- b. *The Role of Visual Communication in Understanding Health Messages* by Yulius Y. (2016) explored how visual communication tools such as posters and short videos can enhance the understanding of health-related messages. The study showed that clearly designed visual elements focusing on key messages significantly improved communication effectiveness. Nevertheless, this research primarily focused on one-way communication through print and digital media and did not examine the data visualization targeted specifically at stakeholders.
- c. *Visual Narratives in the Digital Era for Health Communication* by Sabri S. and Adiprabowo V.D.A. (2023) emphasized the importance of carefully crafted visual narratives for the effective delivery of health information. Their study identified challenges, particularly in selecting visual narratives that align with local contexts, often due to limited knowledge among local health teams. However, the research did not address the application of visual elements or design principle for presenting medical data to stakeholders in the context of data-driven decision-making.

1.4 Problem-Solving Approach and Their Correspondence to Research Design

Although prior studies have highlighted the effectiveness of visual tools such as infographics and narratives in enhancing public understanding of health information, they have not sufficiently addressed how such methods can be adapted for laboratory data presentation within regional public health institutions. Furthermore, the existing literature reveals a limited exploration of how visual communication can overcome specific challenges related to stakeholder comprehension and data accessibility issues that are central to the current practices of the Klungkung Regency Public Health Laboratory. These gaps underscore the importance of investigating how conventional methods currently serve stakeholders (RQ1), identifying the associated limitations and their effects (RQ2), and ultimately developing a visual communication strategy that enhances the efficiency, clarity, and visual appeal of data dissemination in this context (RQ3).

To address the limitations of conventional data presentation methods used by the Klungkung District Public Health Laboratory (Labkesmas), a visual communication strategy utilizing digital technology based on visual elements and design principles in infographics can be implemented. Infographics serve as an effective tool for conveying critical public health information, enabling audiences with diverse educational backgrounds to understand consistent messages. They are widely utilized in health education and public outreach to simplify complex medical data into clear and accessible visual formats (Wilkerson, 2023). This approach enables the transformation of

complex information into a more structured, engaging, and easily understood format for stakeholders. Infographics employ a combination of visual elements such as icons, illustrations, color coding, typography (visual text), and space layout to simplify data, thereby accelerating information comprehension. As a result, this method improves the accessibility and timeliness of critical public health information delivery.

Furthermore, challenges related to data accessibility and comprehension among stakeholders can be mitigated through the use of iconography or illustrations that emphasize key points in laboratory data. Illustration and iconography are effective tools in graphic design that translate complex ideas into simple, easily recognizable visuals to enhance message delivery. By emphasizing simplification, clarity, and legibility, these visual elements help audiences quickly understand and interpret the intended information (Dewey, 2023). These visuals assist audiences with varying levels of data literacy in quickly grasping the core message without needing to delve into complex technical details. By offering intuitive visualizations, this method supports stakeholders in making timely and evidence-based decisions. As a complementary element of health media communication, illustrations are essential to enhance textual content, as the public generally finds information presented with images or visual aids more appealing and easier to understand (Yulius, 2016).

Health communication is a systematic approach aimed at creating a positive impact on health practices at the population level. Its primary goal is to improve public health status through behavioral change and better health outcomes (Paramasari & Nugroho, 2021). In this context, visual communication plays a significant role by simplifying complex health information, making it more accessible to diverse community groups. The use of image and data visualization platform such as Canva can support effective message delivery and enhance both the appeal and reception of information among heterogeneous audiences. Canva was selected as an example of a platform due to its ease of access, even for users without a background in design.

The visual communication strategy developed in this study integrates visual elements and design principles with digital technologies to enhance the efficiency, clarity, and visual appeal of data presentation. This allows stakeholders to directly engage with data through visuals such as infographics. The strategy is designed to promote greater clarity and efficiency, while also providing a more inclusive user experience. Through this innovation-based approach, the Klungkung District Public Health Laboratory can maximize the impact of data presentation on the effectiveness of public health programs.

2. Method

This study employs a qualitative descriptive approach to analyze the visual communication strategies used by the Klungkung Regency Public Health Laboratory (Labkesmas) in delivering laboratory data to health stakeholders. The method involves data collection through in-depth interviews, observations, and document analysis related to the types of visual communication implemented, such as charts, diagrams, and supplementary illustrations. The collected data are systematically analyzed to examine how laboratory information is presented to stakeholders. The challenges and gaps identified in the field serve as the foundation for the development of a visual communication strategy proposed by the author, utilizing digital platforms and implementing visual elements and design principles. This strategy is intended as a recommendation for technical personnel in the field to support the preparation of visually oriented laboratory reports.

In-depth interviews were conducted with four key informants: two from the Klungkung District Health Office, including senior officials responsible for public health policy and disease prevention, and two from the Bali Provincial Health Office, one of whom was the Head of the Public Health Governance Working Team at the Bali Provincial Health Office. These informants were selected due to their strategic roles in the communication and use of laboratory data within the health system, making them directly relevant to the study on visual communication strategies employed by the Klungkung District Public Health Laboratory in conveying laboratory data to stakeholders.

3. Results

3.1 Level and Functions of the Klungkung District Public Health Laboratory

The Klungkung District Public Health Laboratory (Labkesmas) operates at Level 1, corresponding to the community health center (puskesmas) level. As a Level 1 laboratory, it performs several essential functions: (1) conducting clinical specimen testing, environmental sample analysis, and laboratory-based disease surveillance within the puskesmas service area; (2) managing and analyzing laboratory data at the community health center level; (3) communicating laboratory findings with program managers and relevant stakeholders; and (4) serving as a Local Area Monitoring Unit for public health laboratories within its jurisdiction. These core functions ensure that the laboratory contributes directly to the operational needs of primary health services and facilitates evidence-based public health responses at the local level.

In addition to these technical functions, the Klungkung District Public Health Laboratory plays a supportive role in several key public health programs at the district level, particularly in the areas of family health, disease control, and environmental health. In family health, the laboratory provides testing services for pregnant women and children under five, including early detection of anemia, nutritional assessments, and reproductive health screenings, while also supporting community-based services such as Posyandu and maternal-child health programs. For disease control, it contributes to the diagnosis and surveillance of communicable diseases such as tuberculosis, dengue fever, malaria, hepatitis, and COVID-19, and facilitates timely reporting and response to confirmed cases. In the domain of environmental health, the laboratory conducts analysis of environmental samples to assess drinking water quality, monitor sanitation, and detect potential environmental contaminants. These contributions reinforce the laboratory's role in integrating laboratory evidence into public health planning and decision-making.

3.2 Laboratory Data Presentation and Stakeholder Roles

Based on the 2023 Klungkung District Health Profile published by the Klungkung District Health Office, data presentation was carried out in a conventional format, primarily using extended narrative descriptions, graphs, and charts. Referring to the previously described roles of the district public health laboratory (Labkesmas), three thematic areas can serve as examples of existing laboratory data that are currently in use: first, family health, represented by obstetric complications; second, disease control, illustrated by reported cases of pulmonary tuberculosis (TB); and third, environmental health, demonstrated through water quality testing for safe consumption.

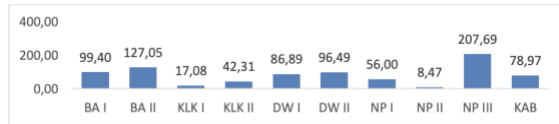
Table 1: Labkesmas Data Presentation

Thematic Area	Study Case	Data Presentation
Family Health	Obstetric complications	Bar chart, pie chart
Disease Control	Pulmonary tuberculosis (TB)	Line chart
Environmental Health	Water quality testing for safe consumption	Bar chart

Source: 2023 Klungkung District Health Profile

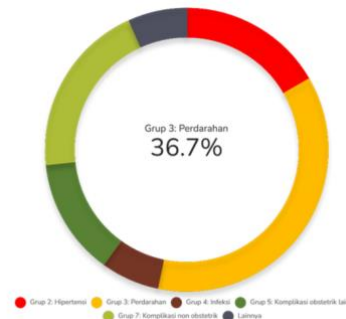
Table 1 shows that obstetric complications are used as a case study in presenting Labkesmas data, as these data highlight deviations from normal conditions that directly contribute to maternal and neonatal morbidity and mortality. Based on interview results, field data are typically processed manually using spreadsheets and then entered into an application called MPDN (Maternal Perinatal Death Notification), which is provided by the Ministry of Health of the Republic of Indonesia. However, access to this application is currently unavailable due to ongoing development and integration processes. Figure 1 illustrates how obstetric complications are presented in the form of a bar chart, while Figure 2 displays a pie chart of the suspected causes of maternal mortality, obtained from the MPDN application. In the MPDN application, the pie chart is generated automatically based on the inputted data.

Figure 1: Bar chart of Obstetric Complication Management Coverage in Klungkung Regency



Source: Public Health Division of the Klungkung Regency Health Office (2023)

Figure 2: Pie Chart of Suspected Causes of Maternal Mortality



Source: MPDN Ministry of Health of the Republic of Indonesia (2023)

The second case study presented in Table 1 is Tuberculosis (TB), which was selected because it is one of the top three priority programs aligned with the quick-win targets of the President of the Republic of Indonesia. This program aims to reduce TB incidence by up to 50%. Figure 3 presents a line chart illustrating the prevalence of tuberculosis (TB) per 100,000 population in Klungkung Regency from 2019 to 2023.

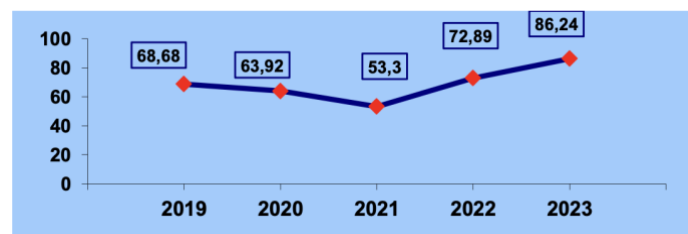


Figure 3: Line Chart of TB Prevalence per 100,000 Population in Klungkung Regency from 2019 to 2023

Source: P2P Division, Klungkung District Health Office (2023)

The third case study presented in Table 1 is water quality testing for safe consumption, which was selected because drinking water quality testing is critically important, as water consumed directly has an immediate impact on human health, particularly in public or communal settings such as restaurants, schools, hospitals, and other similar facilities. Figure 4 presents a bar chart showing the percentage of safe drinking water facilities that met the standards in Klungkung Regency in 2023.

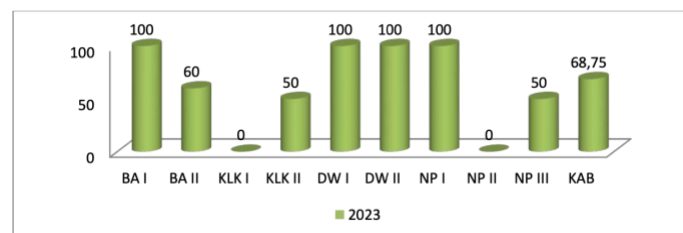


Figure 4: Bar Chart of Percentage of Safe Drinking Water Facilities Meeting Standards in Klungkung Regency in 2023

Source: Public Health Division, Klungkung District Health Office (2023)

The health data presented in the Klungkung District Health Report plays a critical role in shaping stakeholder decisions and guiding follow-up actions at the field level. Table 2 presents the hierarchical structure of stakeholders according to their administrative jurisdiction, the individuals involved in decision-making, and the specific functions or roles they perform within the health governance framework. The table below maps the roles of relevant stakeholders across the three selected case studies.

Table 2: Roles of Stakeholders

Governance Level	Key Actors	Case Studies	Roles
Village or sub-district (kelurahan/desa)	village heads, midwives, and kaders (community health volunteers)	- Obstetric Complication - Tuberculosis (TB) - Water quality testing for safe consumption	- Facilitate antenatal screening and laboratory examinations for pregnant women at the community level. - Refer suspected TB cases to primary health centers (Puskesmas) for laboratory confirmation. - Disseminate laboratory findings to the community with practical health advice.
Sub-district (kecamatan)	health center (puskesmas) managers, surveillance officers, and environmental health staff	- Obstetric Complication - Tuberculosis (TB) - Water quality testing for safe consumption	- Monitor and evaluate maternal health and obstetric complication programs. - Coordinate case finding and contact tracing across villages. - Organize systematic sampling and coordinate with villages for water testing.
District (kabupaten)	The Klungkung District Health Office	- Obstetric Complication - Tuberculosis (TB) - Water quality testing for safe consumption	- Allocate resources and logistics for laboratory services during antenatal care (ANC). - Allocate resources and logistics for diagnostics and treatment. - Conduct confirmatory testing and risk assessments on community water sources.
Province	The Bali Provincial Health Office	- Obstetric Complication - Tuberculosis (TB) - Water quality testing for safe consumption	- Formulate provincial policies for addressing obstetric complications based on lab data. - Develop provincial-level TB control strategies and allocate budget support. - Support development of regional water safety plans and emergency response protocols.

Source: Field data from interviews conducted by the authors (2025)

Based on data collected through in-depth interviews and a literature review, it can be concluded that the presentation of laboratory data by the Klungkung District Public Health Laboratory remains outdated. No significant innovations have been introduced to transform traditional data visualization formats into more creative or user-oriented designs. Enhancing the creativity of data presentation is considered essential to support stakeholders in responding more rapidly and effectively to specific public health cases, particularly within the thematic areas of family health, disease control, and environmental health. An analysis of stakeholder roles across

different levels of governance reveals the complexity of responsibilities assigned to each actor. Findings from interviews indicate that the lack of visually engaging data presentation hinders timely decision-making, as non-communicative visualizations obstruct effective data integration and cross-sectoral collaboration in case management.

4. Discussion

4.1 Limitations of Conventional Data Presentation

Field observations indicate that the laboratory data dissemination methods employed by the Public Health Laboratory (Labkesmas) in Klungkung Regency are still conventional in nature, predominantly utilizing static tabular formats (e.g., Excel printouts), narrative-heavy reporting structures, and standard chart types such as pie, line, and bar graphs. Due to its ongoing development, the application provided by the Ministry of Health of the Republic of Indonesia remains temporarily inaccessible. This has posed significant challenges for data integration across various levels of governance, thereby necessitating the continued use of manual methods for data processing and presentation. If this condition persists, it may hinder data accessibility for relevant stakeholders. Manual or conventional data presentation methods present several limitations in terms of access, as the data is often restricted to internal staff, primarily paper-based or in PDF format, and difficult to interpret for non-technical stakeholders. In terms of clarity and engagement, conventional data presentation tends to be dense and highly technical, with limited visual appeal due to the minimal use of color, icons, or visual hierarchy. As a result, it becomes difficult for users to quickly extract key messages or insights.

Limitations in terms of format, accessibility, clarity, and engagement significantly influence stakeholder reception. Conventionally presented data is often misunderstood or overlooked, requires extensive verbal explanation, and hinders timely decision-making. These shortcomings may lead to poor intersectoral coordination, delays in budget allocation or policy implementation, and the underestimation of critical public health risks. These conditions highlight three main challenges: the lack of user-oriented data presentation tools, limited interoperability between information systems, and insufficient capacity in data visualization at the local level. Without addressing these barriers, efforts to improve cross-sectoral decision-making will remain constrained. Strengthening digital infrastructure and stakeholder-specific data communication strategies is therefore imperative.

4.2 Visual Communication as a Strategic Response

The challenges associated with conventional data presentation such as limited accessibility, reduced clarity, and low engagement have demonstrated significant implications for health data interpretation and policy responsiveness. In the context of Klungkung Regency, where laboratory data is still predominantly disseminated through static tables, text-heavy reports, and basic charting, there is a pressing need for innovative approaches that can bridge the gap between data producers and decision-makers. Visual communication strategies offer a compelling and multidimensional solution to these constraints. By utilizing intuitive design elements such as color coding, iconography, and hierarchical structures, data can be translated into formats that are more readily understood by both technical and non-technical stakeholders. These formats include infographics with simple illustration, icons, and strategically selected color schemes to accelerate information comprehension.

Based on interview findings, the Ministry of Health of the Republic of Indonesia is currently developing an integrated application aimed at facilitating data processing and presentation, in which intuitive design elements are expected to be embedded automatically. However, healthcare workers including stakeholders at the local level, such as those in Klungkung Regency, the context of this study, cannot afford to wait for the completion of this development. Independently, key actors responsible for data communication to stakeholders must bridge this gap by leveraging accessible technologies. Tools such as Canva or other platforms that allow for the integration of data and visuals may serve as practical solutions to enhance both the aesthetic quality and effectiveness of data presentation. These applications are generally user friendly and can be operated by health officers or technical staff with minimal training. The following is an example of data presentation through infographics that implements fundamental design principles to create a more approachable form of visual communication. The visualization was

developed by the one of researchers in the capacity of a graphic designer using the Canva platform for three study cases discussed in previous section.

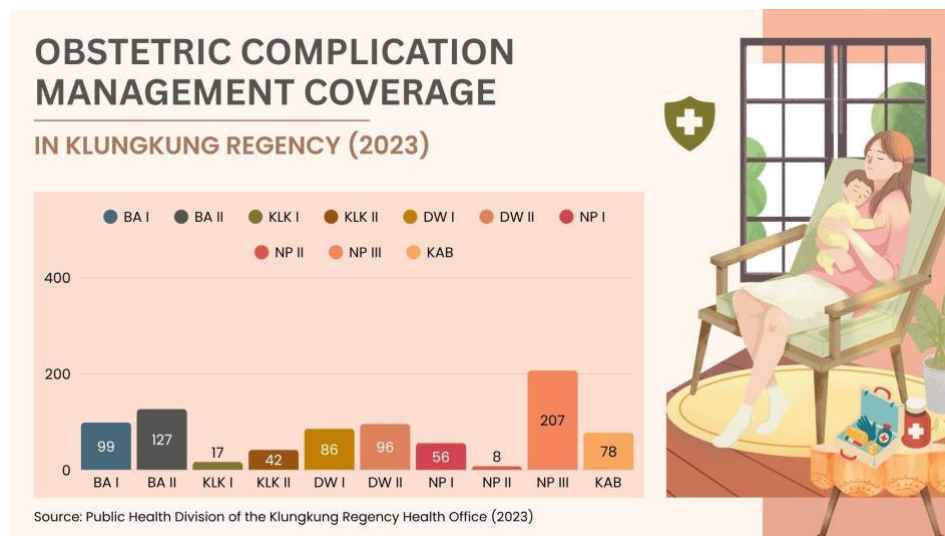


Figure 5: Infographics in The Presentation of Obstetric Complication Data in Klungkung Regency in 2023

Source: Created by the authors using Canva (2025)

Figure 5 presents data through infographics, where visual elements such as icons, illustrations, color coding, typography (visual text), and space layout are integrated with an existing bar chart. The researcher utilized Canva for its development, as the platform provides readily available visual elements that can be directly used. In addition, it offers a range of recommended templates that can be easily selected by technical staff with limited design experience. Five core design principles were implemented in the above data presentation, namely visual hierarchy, contrast, alignment, proximity, and simplicity. These principles are second nature to visual communication designers in the process of designing visual materials. However, with consistent and progressive practice, even individuals without a formal design background can gradually develop the ability to present data effectively using visual communication strategies.

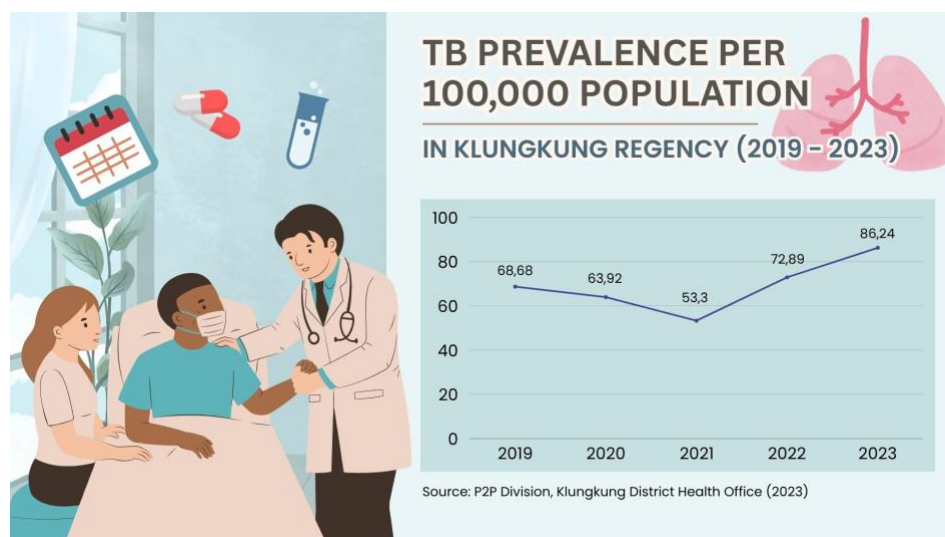


Figure 6: Infographics in The Presentation of TB Prevalence per 100,000 Population Data in Klungkung Regency from 2019 to 2023

Source: Created by the authors using Canva (2025)

Figure 6 is an infographics which implement visual communication strategy through the use of visual elements in data presentation for the tuberculosis (TB) case study in Klungkung. The visual icons used include a calendar to

represent the long term nature of TB treatment, a pill icon to indicate medication and therapeutic regimens, and a test tube icon to signify sputum testing or laboratory diagnosis. These icons were selected intentionally, with the understanding that data processors must comprehend the associative meaning of TB related keywords. This is essential, as icons function as visual representations to help stakeholders quickly form a conceptual understanding of the topic being presented. Likewise, the lung illustration in the title serves to guide the reader toward the idea that the data pertains to pulmonary health, in this context tuberculosis. The illustration of a patient wearing a mask conveys the communicable nature of the disease, while the doctor figure symbolizes the readiness of healthcare professionals to support the patient's recovery process.

The color coding applied utilizes repeated shades of blue, selected for its calming properties. Consistency in the use of color hues is critical, as an excessive variety may cause confusion for the reader. Therefore, variations in brightness and saturation within the same color range were employed to introduce diversity while maintaining visual harmony. Typography in Figure 6 is limited to two font styles, one for the title and another for the descriptive text, chosen for their high readability to facilitate fast information processing. The use of multiple font types is discouraged, as clarity takes precedence over decorative variety in data presentation. The layout of Figure 6 was designed with a deliberate emphasis on data, allocating more space to the data visualization components than to decorative or supplementary elements, reinforcing the principle that data remains the central focus of communication. End the Discussion section with a reasoned and justifiable commentary on the importance of your findings.

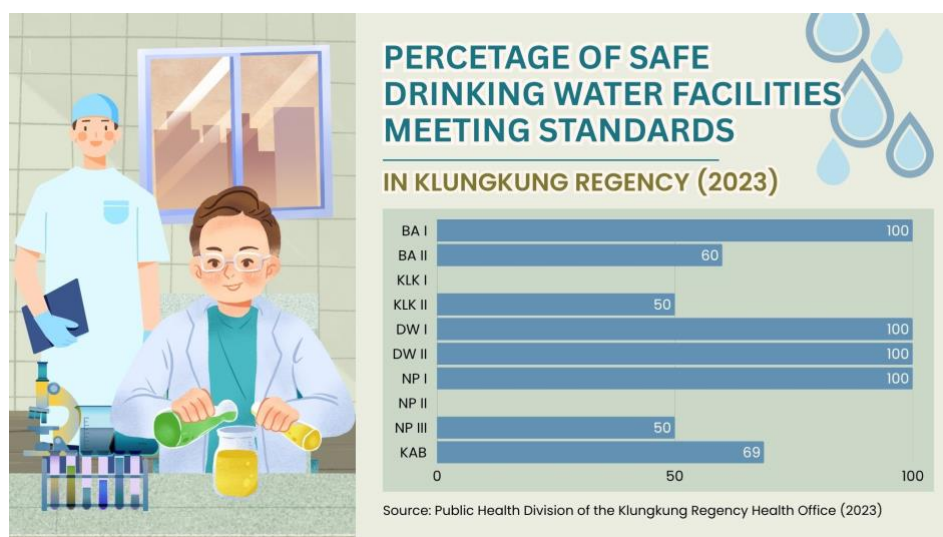


Figure 7: Infographics in the Presentation of Obstetric Complication Data in Klungkung Regency in 2023

Source: Created by the authors using Canva (2025)

Figure 7 presents data related to environmental health through infographics, specifically a case study on water quality testing for safe consumption. The visual strategy applied follows five core design principles: hierarchy, contrast, alignment, proximity, and simplicity. The hierarchy in this data presentation is structured to attract the attention of readers, particularly stakeholders. The illustration of a laboratory worker serves as the initial point of interest, followed sequentially by the bar chart, title, water icon, and data descriptions. This visual hierarchy is deliberately designed to guide readers, allowing the main topic to be communicated clearly and efficiently. The second principle, contrast, is achieved by the proportional balance between the illustration and the bar chart, as well as through the selected color coding. Effective contrast supports readers in visually categorizing information in a more structured manner. The alignment applied in Figure 7 uses a left justified layout for both the title and bar chart. Proper alignment enhances readability by allowing the eye to follow the structure of information more comfortably. In a design composition, the alignment of individual elements with one another plays a crucial role in establishing visual unity and coherence. This structural harmony enhances both the aesthetic appeal and the perceived stability of the overall design. Moreover, alignment serves as an effective visual guide, directing the viewer's attention through the layout in an intentional and organized manner (Lidwell et al., 2010). Proximity is

addressed by managing the spacing between visual elements. For example, there is a deliberate gap between the laboratory worker illustration and the bar chart, enabling readers to differentiate between each component. Simplicity is implemented by minimizing the use of visual elements. The only icon employed is a water droplet, which is directly associated with the topic of drinking water facilities meeting safety standards. Simplicity is further reinforced by the choice of color coding using green and blue tones symbolizing environmental themes, nature, and water.

Based on the preceding discussion, it can be concluded that visual communication strategies play a vital role in the presentation of laboratory data by the Public Health Laboratory Labkesmas in Klungkung Regency. Technical gaps such as the unavailability of a fully operational integrated application provided by the central government can be addressed independently through the use of digital tools such as Canva and other graphic data processing platforms. Limitations in design skills may be overcome by utilizing freely available templates, which can also be complemented through basic training sessions or continuous practice. Visual elements and design principles are integral to an effective visual communication strategy. Both aspects can be learned independently, as visual sensitivity is developed through repeated application and consistent refinement. Therefore it is essential for technical personnel responsible for data processing and presentation to remain updated on digital platforms that increasingly facilitate efficient workflows. Finally the presentation of public health laboratory data to stakeholders is crucial for field level case management, as key actors across different levels of governance carry distinct roles that are interdependent. In this context visual communication in data presentation emerges as a promising solution to enhance the clarity, accessibility, and effectiveness of health information delivery which ultimately contributes to the sustainability of inclusive public health quality.

Author Contributions: Conceptualization, M.V.Y. and N.W.P.D.; Methodology, M.V.Y. and N.W.P.D.; Software, M.V.Y.; Validation, M.V.Y. and N.W.P.D.; Formal Analysis, M.V.Y.; Investigation, M.V.Y. and N.W.P.D.; Resources, M.V.Y. and N.W.P.D.; Data Curation, M.V.Y.; Writing – Original Draft Preparation, M.V.Y.; Writing – Review & Editing, M.V.Y.; Visualization, M.V.Y.; Supervision, M.V.Y.; Project Administration, M.V.Y. and N.W.P.D.; Funding Acquisition, M.V.Y.

Funding: This research was funded by [Udayana University] grant number [B/229.559/UN14.4.A/PT.01.03/2025]” and “The APC was funded by [Udayana University]

Conflicts of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics approval: Not applicable.

Declaration of Generative AI and AI-assisted Technologies: This research utilized generative AI tools to support the writing and editing process. Specifically, ChatGPT and Gemini AI were used to translate content from Indonesian to English, and QuillBot was employed for citation support. All outputs generated by these tools were reviewed and edited by the author to ensure accuracy, clarity, and adherence to academic standards.

References

- Dewey, M. (2023). *Mastering Graphic Design: A Comprehensive Guide to Excellence*. Richards Education.
- Irfanullah, A., Sinay, L. J., & Palembang, C. F. (2023). Peran Analisis Data dalam Pengembangan Dashboard Visualisasi Data PRODAMAS Pemerintah Kota Kediri [The Role of Data Analysis in The Development of The PRODAMAS Data Visualization Dashboard for The Government of Kediri City]. *E-Dimas Jurnal Pengabdian Kepada Masyarakat*, 14(2), 323–330. <https://doi.org/10.26877/e-dimas.v14i2.12040>
- Klungkung District Health Office (2023). *Klungkung Regency Health Profile 2023*. Klungkung District Health Service Data Bank. <https://dinkes.klungkungkab.go.id/semua-pos/laporan/bank-data>
- Lidwell, W., Holden, K., & Butler, J. (2010). *Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach Through Design*. Rockport Pub.

- Minister of Health (2023). *Regulation of the Minister of Health Number 25 of 2023 Concerning The Organization and Work Procedures of Technical Implementation Units in The Public Health Laboratory Sector*. Database Peraturan Badan Pemerika Keuangan Republik Indonesia. <https://peraturan.bpk.go.id/Download/334039/Permenkes%20Nomor%2025%20Tahun%202023.pdf>
- Paramasari, S. N., & Nugroho, A. (2021). Strategi Komunikasi Kesehatan dalam Upaya Membangun Partisipasi Publik pada Masa Pandemi Covid-19 [Health Communication Strategies in Efforts to Build Public Participation During The Covid-19 Pandemic]. *Jurnal Lensa Mutiara Komunikasi*, 5(1), 123–132. <https://doi.org/10.51544/jlmk.v5i1.2036>
- Sabri S, Adiprabowo VDA (2023). *Visual Narrative of The Pandemic as a Form Of Health Communication In The Digital Age*. COMMICAST [Internet]. 2023 Mar 30;4(1):81–90. <https://doi.org/10.12928/commicast.v4i1.7670>
- Smith, J., & Doe, A. (2020). *The Impact of Instagram on Public Health Campaigns*. *Journal of Health Communication*, 15(2), 117-128.
- Wilkerson, S. B. (2023). *10 Steps to Creating an Infographic: A Practical Guide for Non-designers*. SAGE Publications.
- Yulius, Y. (2016). Peranan Desain Komunikasi Visual Sebagai Pendukung Media Promosi Kesehatan [The Role of Visual Communication Design as a Support for Health Promotion Media]. *Besaung Jurnal Seni Desain Dan Budaya*, 1(3). <https://doi.org/10.36982/jsdb.v1i2.132>