

Health System Performance of Selected Local Government Unit Health Offices in Region 1, Philippines

Marlou R Savella*

Faculty of Health Sciences, University of Northern Philippines, Vigan City, Philippines. *Corresponding Author's Email: marlou.savella@unp.edu.ph

Abstract

This study investigated the performance of selected Local Government Unit (LGU) Health Offices in Region 1 from 2017 to 2021. It examined key dimensions of health system performance, particularly resource allocation, population, health personnel, programs and services and certain health indicators. The study utilized descriptive research design, with data drawn on secondary data from municipal and city health offices, as well as government reports and databases. To identify the LGU Health Offices from the provinces of region 1, purposive sampling was employed. Frequencies, percentages and trend analysis was used to assess health system performance in terms of National Tax Allotment (NTA), human resources for health, available programs and services and health outcome indicators. The results show substantial disparities in financial and human resources across municipalities that may affect service delivery. In contrast, highly populated areas receive higher National Tax Allotment allocations, contributing to greater service provision. San Fernando has more medical staff than the other towns, indicating differences in healthcare capacity, workforce distribution and health service availability across the region. Performance indicators from 2017 to 2021 show reductions in maternal morbidity, infant mortality and tuberculosis cases. Nevertheless, challenges with maternal mortality and the burden of non-communicable diseases (NCDs) persist. To address these issues, the study recommends revising resource allocation to be responsive to local needs and health burdens, providing stronger incentives for healthcare workers in underserved areas and strengthening health systems through improved access to critical services.

Keywords: Disparity, Morbidity, Mortality, Non-communicable Diseases, Resources, Services.

Introduction

Health is a key driver of human development and inclusive growth and a vital source of the country's competitiveness and happiness. The health of the citizens represents the country's wealth. The country's wealth is determined by the individual's capacity to function well in the workplace and society at large. Cognizant of the crucial role of people's health in national development, health becomes paramount in the global, national and local health agenda. The "Health for All" (HFA) envisioned that all people would live socially and economically productive by the year 2000 (1). Despite this, health services were under sourced and poorly maintained. The lack of health policy in many countries impeded progress in building sustainable health systems. The three health targets in the MDG include the reduction of child mortality; improvement of maternal health; and combat HIV/AIDS, malaria and other leading death-causing diseases. Worldwide, performance and outcomes varied; some countries were

successful, while others struggled, especially in developing countries (2). As the MDGs concluded in 2015, the 17 Sustainable Development Goals (SDGs) were adopted for 2016-2030. The aim of SDG #3 is to ensure health and well-being for all. As a corollary to the MDG health goals, it aims to reduce the number of deaths and illnesses. It also aims to curb, if not end, the epidemic of HIV/AIDS and other leading death-causing diseases like tuberculosis, malaria, hepatitis and other communicable and non-communicable diseases. Efficient municipal health offices are vital for quality grassroots healthcare. In Region 1, changes in resource allocation, decentralization and health policies have altered local health systems. The shift from MDGs to SDGs broadened health priorities, including well-being for all ages, disease prevention and reducing mortality. Inequities remain, especially among people with low incomes. The Philippine Health Agenda 2016–2022 targets these through stronger primary care,

This is an Open Access article distributed under the terms of the Creative Commons Attribution CC BY license (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted reuse, distribution and reproduction in any medium, provided the original work is properly cited.

(Received 17th March 2026; Accepted 15th July 2026; Published 27th July 2026)

financial protection and responsiveness to patient needs. The national vision "AmbisyonNatin 2040" outlines long-term goals for a safe, comfortable and healthy Filipino way of life. These obligations gained added importance during the COVID-19 pandemic, which also highlighted the advantages and disadvantages of municipal health offices. Although availability remains inconsistent across municipalities, the pandemic greatly increased service demand and expedited the deployment of digital technologies (3, 4). A qualitative study in East Africa examined the performance of health centers that relied solely on 17 key professionals, a limitation in generalizability; thus, there is a need for a more comprehensive study (5).

Performance is still largely determined by human resources. Municipal health offices face challenges from burnout, maldistribution and ongoing workforce shortages. In decentralized systems, healthcare personnel frequently assume additional duties, placing greater strain on local offices (6). Systemic vulnerabilities are further demonstrated by the global shortages of doctors, nurses and midwives (7-9). The extent of the worldwide healthcare labor shortage is evident in the estimated shortage of more than 121,000 physicians in the United States by 2030 (10).

Another crucial issue is financial sustainability. By raising the National Tax Allotment, the Mandanas-Garcia ruling greatly increased local budgetary capacity and enabled LGUs to assume greater responsibility for devolved services (11). However, unequal resource distribution and health consequences stem from differences in municipal wealth. Research indicates that while fiscal decentralization might increase autonomy, poor financial management techniques may exacerbate performance disparities (12). Health office effectiveness is also influenced by community engagement; significant involvement has been shown to improve cultural acceptability and the success of public health initiatives (13).

A study of Rural Health Units in Cagayan Valley Region focused on the seven domains of responsiveness and the core components of the health system (14). However, there is a dearth of comprehensive assessments of local health system performance that integrate population coverage, fiscal resources, human resources, service availability and health outcomes. Furthermore, the implementation of health reforms, including the

Mandanas-Garcia ruling, has significantly altered the operating environment of LGU health offices, yet the effects of these reforms on local health system performance remain inadequately documented. This gap in evidence limits the ability of policymakers and local government leaders to make data-driven decisions for strengthening primary healthcare services. By comparing municipalities and cities across the four provinces of Region I, the study provides a more comprehensive analysis of how variations in resources and service capacity influence health outcomes. The findings are expected to provide evidence to guide local health planning, resource allocation, workforce development and policy formulation to improve health system performance and achieve equitable healthcare delivery.

The purpose of this study was to evaluate the performance of specific Local Government Unit (LGU) Health Offices in Region 1 between the years 2017 and 2021. Specifically, this study aimed to

- (a) describe the profile of selected Local Government Units (LGUs) in Region I in terms of population and National Tax Allotment (NTA);
- (b) determine the profile of LGU Health Offices in terms of available programs and services and number of personnel; and
- (c) assess their performance using selected health indicators, including maternal morbidity, maternal mortality, infant mortality, communicable diseases and non-communicable diseases.

The study provides evidence on variations in health resources, service capacity and health outcomes across selected LGUs in Region I to inform local health planning and policy development.

Theoretical Framework

A helpful lens for evaluating the efficacy of healthcare systems is Systems Theory. To improve service delivery, research emphasizes the value of multilevel networks, integrated care models and context-sensitive evaluation frameworks (15, 16). Other applications that show how system structures affect quality and safety include SIPOKS (Suppliers, Input, Process, Output, Key Stakeholders) analysis (17). Strategies for interprofessional collaboration and global mental health have also been influenced by system thinking, which emphasizes organizational

behavior and dynamic interactions within health systems.

This analysis is further enhanced by Resource Dependency Theory (RDT), which explains how companies respond to external constraints on personnel, finances, rules and interorganizational power dynamics. Recent research shows how hospitals use strategic workforce initiatives, alliance development and restructuring to deal with resource scarcity (18,19). While performance-based funding modifies governance and strategic priorities, nonprofit hospitals also employ revenue diversification to lessen risk. RDT is a useful lens for understanding organizational behavior in region 1, as it offers a comprehensive framework for analyzing responses to external constraints when combined with institutional and stakeholder theories (20).

Methodology

Researchers can understand current situations, traits, or occurrences without changing variables through descriptive research, which aims to provide a clear, systematic portrait of the current situation. In public health and health systems research, where the objective is often to track trends, evaluate performance and examine factors influencing service delivery as they occur naturally, this method is highly useful. When assessing the functioning of organizations such as Local Government Unit Health Offices over several years amid changing policies and resources, descriptive research provides a structured way to capture the realities they face. The study utilized descriptive research design, with data drawn on secondary data from municipal and city health offices, as well as government reports and databases. To identify the LGU Health Offices from the provinces of region 1, purposive sampling was employed.

Data collection was conducted across selected local government health units within the Ilocos Region (Region I) of the Philippines, spanning four distinct provinces. Sampling and research sites within the province of Pangasinan included the municipalities of Lingayen (16.0206°N,

120.2325°E), Binmaley (16.0315°N, 120.2681°E) and Bugallon (15.9556°N, 120.2131°E). Within the province of La Union, research was localized to the municipalities of Bauang (16.5333°N, 120.3333°E) and San Juan (16.6667°N, 120.3333°E), alongside the city of San Fernando (16.6167°N, 120.3167°E). Further data gathering was executed in Ilocos Sur, specifically in the municipalities of Sugpon (16.8333°N, 120.4833°E), Sta. Catalina (17.5833°N, 120.3500°E) and Tagudin (16.9358°N, 120.4439°E). Finally, the northernmost study areas were situated in the province of Ilocos Norte, comprising the municipalities of Pagudpud (18.5594°N, 120.7869°E), Piddig (18.1017°N, 120.7303°E) and Marcos (18.0444°N, 120.6786°E). The geographic coordinates for each locality correspond to their respective administrative centers, reflecting the location of the participating LGU health offices. Frequencies, percentages and trend analysis was used to assess health system performance in terms of National Tax Allotment (NTA), human resources for health, available programs and services and health outcome indicators.

Results and Discussion

Population from 2017-2019 to 2020-2021

The population censuses conducted in 2015 and 2020 by the Philippine Statistics Authority show a consistent upward trend across all municipalities and cities from 2017 to 2019 and 2020 to 2021. San Fernando La Union remains the most populated municipality, increasing from 121,219 to 125,640, followed by Lingayen Pangasinan, which grew from 103,278 to 107,728. Binmaley Pangasinan also recorded a significant population, rising from 83,052 to 86,881. Notable growth was observed in Bugallon Pangasinan, which had one of the highest relative increases, from 67,348 to 74,962. Similarly, San Juan La Union expanded from 37,082 to 40,507. The population of the 12 municipalities and the city of San Fernando from 2017-2019 to 2020-2021 is shown in Figure 1.

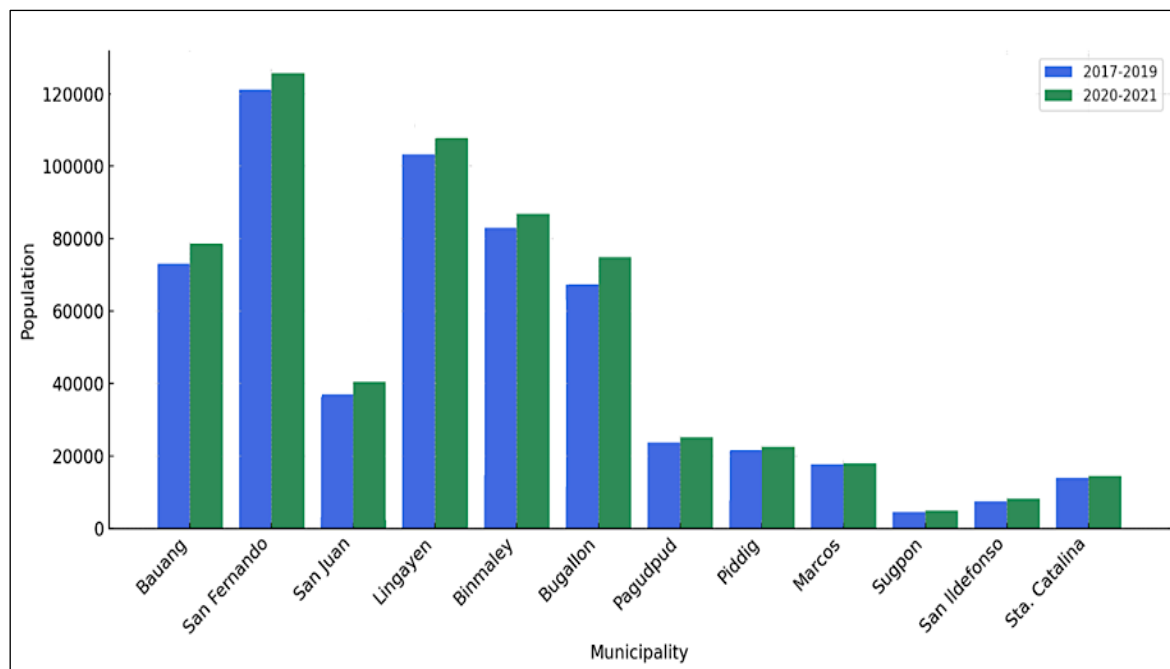


Figure 1: Comparative Demographic Growth Across the Selected Local Government Units in Region 1, Philippines from 2017-2019 and 2020-2021 Census

Slight increases were also observed in Pagudpud, Piddig and Marcos in Ilocos Norte. San Ildefonso and Sta. Catalina in Ilocos Sur also showed growth, while Sugpon, although with the smallest population, grew from 4,585 to 4,930. This increase in population may be due to immigration, urbanization, economic opportunities, fertility rates and/or improved health care services, which are contributing to a decline in the death rate. Overall, the data indicates that the population is steadily increasing in both larger towns and smaller municipalities.

On National Tax Allotment

Table 1 shows the National Tax Allotment (formerly Internal Revenue Allotment) from 2017 to 2021. The data indicate an increasing

distribution of national support to local government, with a steady climb for most provinces between Fiscal Year FY 2017 and FY 2021. La Union's NTA showed a significant increment in economic growth, rising steadily from ₱1,056.5 million in 2017 to ₱1,474.8 million in 2021. Between 2017 and 2021, both Ilocos Norte and Ilocos Sur saw a continuous increase in their NTA allocations. Ilocos Norte's NTA increased from ₱1,085.1 million in FY 2017 to ₱1,523.1 million in FY 2021, while Ilocos Sur's NTA rose from ₱1,096.2 million in FY 2017 to ₱1,510.0 million in FY 2021. This pattern demonstrates how these provinces' budgetary needs are changing as the government responds to local needs for services and development.

Table 1: National Tax Allotment by Province from 2017-2021 (in million PhP)

Province	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
La Union	1,056.5	1,132.6	1,220.4	1,376.0	1,474.8
Pangasinan	2,961.6	3,176.8	3,453.2	3,893.6	4,173.1
Ilocos Norte	1,085.1	1,163.7	1,260.4	1,421.1	1,523.1
Ilocos Sur	1,096.2	1,174.1	1,249.6	1,408.9	1,510.0

Note: FY- Financial Year.

The NTA data for Pangasinan likewise indicates a steady increase throughout the period, rising from ₱2,961.6 million in FY 2017 to ₱4,173.1 million in FY 2021. The province recorded consistent year-on-year growth, with allocations increasing from

₱3,893.6 million in FY 2020 to ₱4,173.1 million in FY 2021. Although the data generally indicate positive trends in NTA allocations, the differences in NTA figures across these provinces demonstrate the importance of consistent financing for local

governments to ensure continued growth and the provision of public services.

Table 2 shows the Programs and Services Always Available at the Facility of selected Local Government Health Offices of La Union, Pangasinan, Ilocos Norte and Ilocos Sur.

An analysis of the services and programs offered in several towns in La Union, Pangasinan, Ilocos Norte and Ilocos Sur in 2024 provides valuable insights into how health resources are distributed and the public health approaches used in these regions. According to the data, all local government health units provide vital health services, including

the Expanded Program on Immunization, Disease Surveillance, Control of Acute Respiratory Infection, Micronutrient Supplementation/Nutrition and Family Planning Program. The effectiveness of the government's health initiatives is reflected in the availability of basic health services to all people, regardless of geographic location. According to a study on the delivery of health services in rural regions, ensuring that rural populations have the same access to preventive care as their urban counterparts and minimizing health disparities depend heavily on the uniform supply of these services (21).

Table 2: Programs and Services Available at the Facility at All Times

Programs and Services	Bauang	San Fernando	San Juan	Lingayen	Binnamaley	Bugallon	Pagudpud	Piddig	Marcos	Sugpon	Sta. Catalina	Tagudin
Expanded Program on Immunization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Disease Surveillance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Control of Acute Respiratory Infection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Control of Diarrheal Disease	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Micronutrient Supplementation / Nutrition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Family Planning Program	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tuberculosis Control Program	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STD/AIDS Prevention and Control Program	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Environmental Sanitation Program	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cancer Control Program – Cervical Cancer Screening	X	✓	✓	✓	✓	X	✓	✓	X	✓	✓	✓
Maternal Care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dental Services	✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓	✓

However, specialized services, such as the Cancer Control Program and Dental Services, are unavailable at several health units. San Fernando, for instance, offers an extensive range of specialized services, such as a Mental Health Program, Primary Eye Care and Radiologic and Ultrasound services, which signify the Local Government Unit's prioritization of health. This

disparity reflects the broader trend identified that urban centers are more likely to provide specialized health services due to better infrastructure, higher demand and greater availability of trained healthcare professionals. Specialized service on some facilities is seen in Table 3.

Table 3: Other Programs and Services Available at the Facility at All Times

Place	Programs and Services
San Fernando	Leprosy Control, Laboratory Services, Population Control, Emergency Medical Services, Persons with Disability Services, PhilHealth Konsulta, Mental Health Program, Primary Eye Care, Radiologic and Ultrasound Services, Health Education, Senior Citizen Services.
Bauang	Newborn Care and Child Health and Nutrition, Malaria Prevention and Control, Leprosy Prevention, Adolescent Health and Development Program, Renal Control Program.
Lingayen	Epidemiology Surveillance (Enhanced Notifiable Diseases Monitoring).
Binmaley	Non-Communicable Disease Program, Adolescent and Youth Health Program, Animal Bite Treatment Logistics, Pneumonia/COVID Response.
Bugallon	Non-Communicable Disease Program, Deworming Program, HPV Vaccination, Anti-Pneumonia and Anti-Influenza Vaccination (Senior Citizens), Newborn Screening, Leprosy Control Program, Adolescent Health and Development Program.
Pagudpud/Piddig/Marcos/Sugpon/Sta. Catalina/Tagudin	No additional programs reported beyond the primary service list.

Rural health offices could only offer primary services, which may be due to constraints in financial resources, healthcare infrastructure and trained personnel. Further, rural areas often struggle to attract specialists, leading to a reliance on general health services and referrals to larger urban centers for more complex care (22).

The availability of additional services in some towns demonstrates how local health objectives affect resource distribution. As reflected in the data, Bugallon and Binmaley prioritize senior-citizen immunizations and non-communicable diseases, whereas Bauang focuses on adolescent health and the Renal Control Program. These initiatives support research showing that localized health interventions are essential in meeting a community's unique health needs and improving health outcomes (23).

Delivering full comprehensive health care is challenging in rural communities like Sugpon and Marcos. The lack of specialists may be due to the local government's capacity to attract talent, urban preferences, financial opportunities and infrastructure limitations. Access to specialized healthcare services is often more difficult in rural areas, which may exacerbate existing health disparities. This is also in line with research on the difficulties of providing rural health services in low- and middle-income nations, which highlights the need for improved financing and resource allocation, as well as strengthened local capacity and regulation to enhance rural healthcare infrastructure.

Given the notable differences in service provision across communities, policies that address health disparities are essential. Strategic resource allocation that prioritizes disadvantaged areas, frequently left behind in healthcare access, is necessary to achieve equitable healthcare. This can

be addressed by increasing funding for rural health infrastructure, offering higher incentives to medical professionals to work in remote areas and enabling rural health units to offer more comprehensive services, thereby narrowing the gap in health service availability between urban and rural areas.

In conclusion, while the studied localities' provision of basic health care is praiseworthy, the differences in the availability of specialized treatments underscore the substantial obstacles to attaining health parity. Targeted interventions are needed to address these inequities, such as policies that encourage the distribution of healthcare professionals to disadvantaged areas and increased investment in rural healthcare infrastructure. It is possible to ensure that every community, wherever it may be, has access to the full range of healthcare services by focusing on these areas.

Table 4 shows the Number of Personnel of selected Local Government Health Offices of La Union, Pangasinan, Ilocos Norte and Ilocos Sur.

The distribution of health personnel varies significantly among municipalities in La Union, Pangasinan, Ilocos Norte and Ilocos Sur. San Fernando is noteworthy for having the largest number of medical professionals, with seven municipal doctors, 32 nurses, 24 midwives and a range of specialty positions, including pharmacists and psychologists. Its role as a core health facility providing a wide range of health services is underscored by its well-staffed status. On the other hand, municipalities in Ilocos Sur have only one doctor, except for Piddig, which has two, suggesting a more constrained capacity to provide medical care. This distribution is consistent with findings that metropolitan centers have better infrastructure and higher service demands and

that health resource allocation affects the provision of healthcare (24).

Further, modern diagnosis and treatment are being delivered at the local government health office in San Fernando, with two radiologic technologists and two pharmacists on staff. On the other hand, Piddig and Pagudpud have an

unavailability of dentists and medical technologists, which may hinder access to essential services. This suggests that disparities in health personnel and resource allocation often lead to the concentration of specialized health services in more economically developed areas.

Table 4: Distribution of Healthcare Personnel across the Selected Local Government Health Offices in Region 1

Personnel	Bauang	San Fernando	San Juan	Lin gayen	Bin maley	Bu-gallon	Pagudpud	Piddig	Marcos	Sugpon	Sta. Catalina	Tagudin
Municipal Doctor	3	7	1	3	2	2	1	2	1	1	1	1
Nurse	15	32	2	6	2	7	12	3	5	5	1	2
Midwife	13	24	9	18	16	10	7	5	4	6	1	6
Dentist	1	2	1	1	1	1	1	0	0	1	1	1
Medical Technologist	4	7	1	2	1	1	1	1	1	1	1	1
Rural Sanitary Inspector	5	8	1	1	1	1	1	1	1	0	1	2
Others												
Psychologist		1										
Population Officer		1										
Nursing Attendant									1		1	
Assistant Pharmacist		1								1		
Dental Aide		2										
Pharmacist		2										
Rad Technologist	2	2										
Psych Assistant		1										
Laboratory Aide			1									
Ambulance driver	7		11			4			4			
Administrative Aide	9		3			12			1	2		
Utility			2			8						

Economically developed areas. In San Fernando and Bauang, there are more sanitary inspectors, which highlight their emphasis on environmental health. However, rural municipalities like Marcos and Tagudin have only one sanitary inspector. With a limited number of sanitary inspectors, regular inspections of food establishments, water sources and waste disposal sites are infrequent. This may result in poor compliance with sanitation standards and increased public health risks. This tendency aligns with the 2021 study by the Philippine Institute for Development Studies, which notes that a recurrent issue in resource-constrained towns is a shortage of environmental health specialists.

Moreover, the availability of ancillary health positions, such as administrative assistants and ambulance drivers, varies substantially. San Juan has a substantial number of ambulance drivers, thereby contributing to timely transport to

appropriate facilities, resulting in a significant increase in survival rates, particularly for trauma cases, maternal emergencies and severe illnesses. Further, Bugallon has a notable number of administrative aids, indicating a comprehensive support structure. This is consistent with the findings, which emphasize that workforce shortages in rural areas are often driven by financial constraints and logistical challenges (25). In conclusion, the unequal distribution of personnel highlights the need for strategic investments to close these gaps, even as the data shows a solid commitment to basic health services. Achieving comprehensive and equitable health service delivery requires ensuring that all municipalities, especially those in rural areas, have equitable access to an adequate and well-distributed health workforce. Table 5 presents the Maternal Morbidity, Mortality and Infant Mortality Rate, Communicable and Non-communicable

Disease Rate from 2017-2021 in La Union. The health data for Bauang, San Fernando and San Juan in La Union from 2017 to 2021 provide critical insights into maternal health, infant mortality and the prevalence of communicable and non-communicable diseases. In San Fernando, there is a significant decline in maternal morbidity rates, from 0.186 in 2017 to 0.06 in 2021, indicating improved maternal healthcare services. This trend is consistent with recent findings that emphasized

advancements in prenatal care, coupled with increased access to skilled birth attendants, are essential in reducing maternal mortality globally (26). However, there was one maternal mortality rate in San Fernando in 2017 and 2018, suggesting persistent risks associated with childbirth, particularly in emergencies. Similar patterns are observed in emergency obstetric care, where ongoing challenges still lead to maternal mortality despite improvements in service delivery (27).

Table 5: Health Indicator for the Calendar Year 2017- 2021 in La Union

Indicator	2017			2018			2019			2020			2021		
	Bauang	San Fernando	San Juan	Bauang	San Fernando	San Juan	Bauang	San Fernando	San Juan	Bauang	San Fernando	San Juan	Bauang	San Fernando	San Juan
Maternal Morbidity Rate	No Data	.186%	No data	No Data	.166%	No data	No Data	.07%	No data	.07%	No data	No data	.06%	No data	No data
Maternal Mortality Rate	No Data	.0077%	No data	0	0.0079 %	No data	.952 %	0	No data	0	0	No data	0	.0076%	No data
Infant Mortality Rate	No Data	3.6%	No data	3.770 %	9.15%	No data	0.952 %	6.7%	No data	0	5.1%	No data	1.153 %	6.6%	No data
Communicable Disease	TB 164	Leprosy 3	No data	TB 137	Leprosy 5	No data	TB 106	Leprosy 5	No data	TB 81	Leprosy 8	No data	TB 126	Leprosy 3	No data
Non-communicable Disease	HPN- 3243 DM- 755	HPN- 10833 DM- 866	No data	HPN- 1102 DM- 176	HPN- 7319 DM- 1030	No data	HPN- 1127 DM- 128	HPN- 4387 DM 302	No data	HPN- 811 DM- 83	HPN 4715 DM- 683	No data	HPN- 878 DM- 94	HPN- 638 DM- 230	No data

Further, infant mortality rates in San Fernando fluctuated, peaking at 13 per 1,000 live births in 2018 before declining to 8 per 1,000 in 2021. These data indicate that while improvements in neonatal care have been made, challenges remain. Variations in infant mortality are frequently associated with disparities in healthcare quality, accessibility and socioeconomic conditions (28). The decline in infant mortality by 2021 may be linked to improvements in neonatal care and immunization programs, highlighting the importance of comprehensive neonatal services and vaccination in reducing infant deaths (29). Communicable diseases, particularly tuberculosis (TB), showed a declining trend in San Fernando, with cases decreasing from 164 in 2017 to 126 in 2021. The decline suggests the positive impact of TB control initiatives, as evidenced by the effectiveness of integrated management approaches in reducing TB incidence across multiple settings. It is also worth noting that Leprosy remains a long-standing health concern in the community, as evidenced by consistently reported cases from 2017 to 2021. This highlights the need for sustained public health interventions (30). Non-communicable diseases (NCDs) such as hypertension and diabetes mellitus continue to be

significant public health concerns in the region. In San Fernando, hypertension cases were particularly high, peaking at 10,833 in 2017, before declining to 638 in 2021. This trend might be a result of improved public health interventions and greater awareness of lifestyle modifications, consistent with the findings which emphasized that public health campaigns focused on lifestyle changes are crucial for reducing the prevalence of hypertension and diabetes. However, the high initial prevalence of these diseases reflects a broader global trend, driven by urbanization and lifestyle changes (31). Further, the community's health services and facilities are readily available, but telemedicine services are not as readily available (32).

In summary, the La Union data shows both advancements and persistent difficulties in public health. The stability of maternal mortality and the ongoing burden of non-communicable diseases underscore areas that need ongoing attention, despite gains in maternal and infant health and a decline in infectious diseases like tuberculosis. The necessity of long-term, focused health treatments is highlighted by recent research, especially in controlling lifestyle-related health problems and providing emergency obstetric care (33). Additionally, it is challenging to evaluate the

overall health landscape across municipalities due to the lack of comprehensive data for Bauang and in San Juan.

Table 6: Health Indicator for the Calendar Year 2017- 2021 in Pangasinan

Indicator	2017			2018			2019			2020			2021		
	Lingayen	Binmaley	Bugallon	Lingayen	Binmaley	Bugallon	Lingayen	Binmaley	Bugallon	Lingayen	Binmaley	Bugallon	Lingayen	Binmaley	Bugallon
Maternal Morbidity Rate	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
Maternal Mortality Rate	0	No data	1.35%	0.9%	No data	1.47%	0	No data	0	0	No data	0	0	No data	0
Infant Mortality Rate	3	No data	2.7%	3	No data	0	6.45	No data	0	No data	No data	0	No data	No data	0
Communicable Disease	No data	No data	9102	No data	No data	1206	No data	No data	3817	No data	No data	241	No data	No data	230
Non-communicable Disease	No data	No data	1283	No data	No data	1165	No data	No data	325	No data	No data	2125	No data	No data	2589

The Maternal Morbidity and Mortality, Infant Mortality Rate and Communicable and Non-Communicable Disease Rates for 2017-2021 in Pangasinan are shown in Table 6. In terms of maternal mortality rates, Lingayen continuously recorded zero maternal fatalities during the period, while Bugallon reported a changing trend, culminating at 1.47 in 2018. This fluctuation points to differences in the availability and quality of healthcare among localities. Solid maternal health programs and solid healthcare systems may be responsible for Lingayen's zero maternal death rate, supporting research that highlights the critical significance of competent birth care in reducing maternal mortality (34).

Data on infant mortality also shows variations, especially in Bugallon, where there was a notable drop from 6.45 per 1,000 live births in 2019 to nil in 2020 and 2021. This pattern supports research showing that better maternal and newborn services are associated with lower infant mortality rates, demonstrating the efficacy of targeted neonatal care efforts (35). However, a thorough evaluation is hampered by inconsistent data from

other localities, such as Binmaley, underscoring the need for improved data-gathering procedures. Bugallon recorded a sharp decline in communicable disease cases, from 9,102 in 2017 to just 230 in 2021. This suggests that public health initiatives were successful due to improved immunization and more efficient disease control techniques. These patterns are consistent with GBD data showing significant declines in the burden of communicable diseases across numerous nations over the past three decades (36).

Conversely, the data on non-communicable diseases (NCDs) in Bugallon shows a significant upward trend, with cases rising from 325 in 2019 to 2,589 in 2021. The increase reflects worldwide trends of growing non-communicable disease burdens, particularly in low- and middle-income settings (37). The data underscores the urgent need for enhanced NCD prevention and management programs, as many rural residents may not be aware of risk factors and prevention strategies, thereby contributing to the increasing prevalence of chronic conditions such as cardiovascular disease and diabetes.

Table 7: Health Indicator for the Calendar Year 2017- 2021 in Ilocos Norte

Indicator	2017			2018			2019			2020			2021		
	Pagudpud	Piddig	Marcos	Pagudpud	Piddig	Marcos	Pagudpud	Piddig	Marcos	Pagudpud	Piddig	Marcos	Pagudpud	Piddig	Marcos
Maternal Morbidity Rate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maternal Mortality Rate	0	0	0	1	0	3.81%	0	0	0	0	0	0.4%	0	0	0
Infant Mortality Rate	10.33%	0	3.96%	0	0	0	0	0	0	11.67%	0	0	20.61%	0	1
Communicable Disease	No data	56	No data	No data	49	No data	No data	62	No data	No data	27	No data	No data	44	No data

Non-communicable Disease	No data	65	No data	No data	60	No data	No data	911	No data	No data	1563	No data	No data	95	No data
--------------------------	---------	----	---------	---------	----	---------	---------	-----	---------	---------	------	---------	---------	----	---------

Overall, the data from Pangasinan shows both advancements and continuing challenges in the health sector. The rising burden of NCDs emphasizes areas that need ongoing focus and better healthcare measures, although there have been accomplishments in lowering newborn mortality and maternal mortality. To effectively address both communicable and non-communicable diseases, this research emphasizes the significance of data-driven public health initiatives, equal access to healthcare and resource allocation. The health outcome for Ilocos Sur in terms of Maternal Morbidity and Mortality Rate, Infant Mortality Rate and Communicable and Non-Communicable Disease Rate from 2017-2021 in Ilocos Norte is shown in Table 7.

All the municipalities included in the study have not documented maternal morbidity between 2017 and 2021, which may indicate underreporting or the lack of pregnancy and delivery difficulties and effective maternal healthcare services. However, Pagudpud had reported one maternal death in 2017 and Marcos had maternal death rates of 3.81 and 0.4 per 1,000 live births in 2018 and 2020, respectively. This suggests that while maternal health outcomes are generally positive, isolated cases of maternal mortality highlight the need for continued vigilance and improved healthcare services. Regular prenatal care is crucial for the health of the mother and the unborn child.

An analysis of the reported infant mortality rates in Pagudpud showed notable numbers of infant deaths: four (10.33 per 100 live births) in 2017, three (11.67 per 1,000 live births) in 2020 and six

(20.61 per 1,000 live births) in 2021. Marcos had only one reported infant death in 2017 and another in 2021. Piddig, however, reported no newborn deaths for the five years, indicating that effective antenatal care, early postnatal follow-up, skilled birth attendance and timely referral systems may reduce preventable infant deaths.

Data from Piddig shows a varying number of cases over five years, with 56 in 2017 and a high of 62 in 2019. This suggests that communicable diseases remain a growing concern in Piddig, Ilocos Norte. The unavailability of recorded data for Pagudpud and Marcos may suggest gaps in disease surveillance capacity or reporting practices.

Regarding data on non-communicable diseases (NCDs) in Ilocos Norte, Piddig reported a marked increase in 2019 and 2020, peaking at 1,563 in 2020. The increase may be attributed to lifestyle and behavioral factors, socioeconomic and environmental factors, health-system-related factors, or an improved screening program. However, a comprehensive analysis of the incidence of non-communicable diseases in Ilocos Norte is limited by the absence of data from Pagudpud and Marcos.

The prevalence of communicable diseases in Ilocos Norte remains a persistent concern, where population and demographic changes, environmental factors and health system capacity issues are often associated with higher rates of communicable disease cases. In a similar vein, the increasing burden of non-communicable diseases in rural areas is concerning and is mostly caused by changes in lifestyle and rapid urbanization.

Table 8: Health Indicator for the Calendar Year 2017- 2021 in Ilocos Sur

Indicator	2017			2018			2019			2020			2021		
	Sugpon	Sta.Catalina	Tagudin	Sugpon	Sta.Catalina	Tagudin	Sugpon	Sta.Catalina	Tagudin	Sugpon	Sta.Catalina	Tagudin	Sugpon	Sta.Catalina	Tagudin
Maternal Morbidity Rate	No data	0	No data	No data	0	No data	No data	0	No data	No data	0	No data	No data	0	No data
Maternal Mortality Rate	0	0	0	0	0	1.44%	0	0	1.71	25.64%	0	0	0	0	4.36%
Infant Mortality Rate	74.63%	0	28.2%	20.83%	0	1.44	42.55%	0	0	25.64%	0	0	34.48%	0	0
Communicable Disease	0	80	642	0	61	889	0	58	1.274	0	38	618	0	40	949
Non-Communicable Disease	280	2564	2355	295	2982	1520	317	2875	1796	354	3549	2580	332	3730	6196

The health statistics for Ilocos Sur from 2017 to 2021 show notable differences in the prevalence of infectious and non-communicable diseases among its municipalities, as well as in maternal and child health indices as reflected in Table 8.

Maternal morbidity rates were not reported for any municipality during the period, suggesting a data-collection or reporting gap. There were no reported cases of maternal mortality in Sugpon and Sta. Catalina scored in all years. However, Tagudin recorded a notable increase in maternal mortality in 2021, with a rate of 4.36 per 1,000 live births. This may reflect data inconsistencies or potential shortcomings in maternal healthcare, underscoring the need for improved maternal health services and more precise reporting.

Further, the municipalities' infant mortality rates differed greatly. In Sugpon, the rate has remained high, peaking at 74.63% in 2017 and remaining elevated in subsequent years. The municipality of Tagudin also reported 282 per 1,000 live births in 2017 and 1.44% in 2028; conversely, for Sta. Catalina, there were no reported newborn deaths from 2017 to 20220. These disparities point to variations in healthcare quality and access, influenced by factors such as socioeconomic status and geographic location.

Regarding communicable diseases, no cases were reported in Sugpon each year. This may be attributed to successful disease management measures—conversely, Sta. Tagudin reported a peak of 1,274 occurrences in 2019, whereas Catalina had the highest number of cases in 2017, with 80. This variance suggests persistent difficulties in controlling infectious diseases, which may be related to environmental factors since Tagudin and Sta. Catalina is more populous and urbanized than Sugpon, a municipality in Ilocos Sur, which is considered an upland area.

Further, on non-communicable diseases, Tagudin and Sta. Catalina has the highest number of reported cases, with Tagudin reaching 6,196, while Sta. Catalina peaked at 3,730 in 2021. Sugpon, however, has the highest number, reaching 354 recorded cases in 2020. The rising trend in NCDs in these towns emphasizes the rising burden of chronic illnesses, which is probably caused by gaps in preventive treatment, an aging population and lifestyle factors.

Overall, the data show notable differences in Ilocos Sur's health outcomes, highlighting the need for

targeted medical interventions and upgrades to the healthcare system. Improving health outcomes in the area requires addressing these discrepancies through greater data accuracy, increased disease prevention initiatives and equitable access to healthcare.

Conclusion

The data show marked differences in population and National Tax Allotment across local government units, with more populous, densely settled areas generally receiving higher funding due to greater service demands. As a result, there are disparities in the distribution of health personnel, with better-resourced, more urbanized localities tending to have larger and more diverse health workforces. At the same time, smaller or less-resourced areas maintain fewer personnel, indicating a more limited-service capacity. Although reductions in maternal morbidity, infant mortality and communicable disease cases suggest positive outcomes in public health delivery, concerns remain regarding non-communicable diseases and maternal mortality. These patterns highlight the need for equitable resource distribution, sustained and targeted health interventions and strengthened capacity across all local government health systems.

Urban areas have the highest number of doctors, nurses, midwives and specialized personnel, thereby providing both basic and advanced specialized services. On the other hand, rural communities have significantly fewer physicians, nurses and midwives, which significantly restricts their ability to offer comprehensive healthcare. This unequal distribution of core and auxiliary workers, such as ambulance drivers, administrative assistants and rural sanitary inspectors, reflects national trends in which metropolitan areas naturally attract more healthcare resources due to improved infrastructure and increased demand. This staffing deficit can substantially limit the provision of health care and critical emergency response, especially for people in remote locations. Therefore, closing these staff distribution disparities through strategic hiring, offering incentives for rural positions and building capacity for specialized and support positions is essential to achieving equitable health service delivery.

Municipalities differ greatly in how specialist treatments are provided, even though fundamental health care is typically available. While rural municipalities like Sugpon and Marcos lack specialized services due to limited infrastructure, funding and human resources and often rely on referrals to urban areas, urban centers like San Fernando serve as regional health hubs due to superior infrastructure, higher service demand and a greater concentration of qualified healthcare professionals. Localized health strategies can more effectively address community-specific needs and improve health outcomes, as evidenced by municipalities implementing targeted programs such as non-communicable disease management, senior citizen immunization, adolescent health and kidney disease management. Additionally, variations in service availability reflect local health priorities. Health indicators from 2017 to 2021 show a complex pattern of improvement, contrasted with notable regional disparities. The success of improved prenatal care, skilled birth attendance and neonatal services is reflected in the general improvement in maternal and newborn health indices, including a considerable fall in maternal morbidity in some areas and an overall decrease in infant mortality rates.

Maternal mortality, however, stayed comparatively constant throughout the region, underscoring ongoing hazards in urgent obstetric circumstances. While some diseases, like leprosy, are still rare but persistent, communicable diseases, like tuberculosis (TB), generally show falling trends in terms of disease burden, suggesting effective vaccination and control efforts. On the other hand, the incidence of Non-Communicable Diseases (NCDs), such as diabetes and hypertension, is alarmingly increasing in rural areas. Further, infant mortality rates have been consistently reported in some rural communities, in contrast to others that reported minimal or zero deaths. The data highlight significant disparities among municipalities. While areas with strong maternal health programs reported zero or minimal maternal deaths, others showed concerns, suggesting localized risks and differences in the quality of emergency obstetric care. Due to lifestyle changes, limited numbers of health specialists and a lack of preventive interventions, the increase in NCDs is especially noticeable in some rural areas.

The result is that, even though basic health programs are effectively improving some outcomes, ongoing monitoring and targeted interventions are essential to address the community's needs. Overall, while the observed trends suggest improvements in selected health outcomes, the findings are descriptive in nature and should be interpreted as indicative patterns rather than statistically significant changes. Continued monitoring strengthened preventive programs, improved access to care and enhanced health information systems are necessary to better address emerging and persistent health challenges, particularly in rural and underserved areas. To address funding disparities between densely and sparsely populated municipalities, it is recommended that the National Tax Allocation be reviewed to account for not only population density but also specific local needs and service delivery challenges. It is recommended to implement targeted incentives such as allowances to attract essential personnel in underserved areas. Lastly, a mixed qualitative- quantitative research may be done to provide a better assessment of the health landscape in the Region.

Abbreviations

HFA: Health for All, LGU: Local Government Units, NTA: National Tax Allotment, RDT: Resource Dependency, SIPOKS: Suppliers, Input, Process, Output, Key Stakeholders.

Acknowledgment

The author expresses her gratitude to the University of Northern Philippines (UNP) for the academic guidance and funding. To the Mayors of the Selected Local Government Health Offices in Region 1 for allowing the researcher to gather pertinent data needed in the study. All those who have extended their assistance and collaboration during the data gathering by providing access to the required information. Their efforts were crucial to the integrity and completion of this study.

Author Contributions

The only author and contributor to this work is Marlou R. Savella. She did the literature review, produced the article, gathered and analyzed data and conceptualized the study. Additionally, she is the author of the related article.

Conflict of Interest

The author declares that there are no known competing financial interests or personal relationships that could have influenced the work in this paper.

Data Availability

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of Artificial Intelligence (AI) Assistance

The author declares that the generative Artificial Intelligence (AI) tool Grammarly was used exclusively for language editing and/or Grammarly improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the study. The author takes full responsibility for the content's originality, interpretation and accuracy.

Ethics Approval

The following ethical principles observed in the study include privacy and confidentiality, informed consent, vulnerability, recruitment, benefits and compensation. This study was reviewed by the Ethics Review Committee of the University of Northern Philippines, with Approval Number 510.

Funding

The University of Northern Philippines funded the research.

References

- Hall JJ, Taylor R. Health for all beyond 2000: the demise of the Alma-Ata Declaration and primary health care in developing countries. *Med J Aust.* 2003;178(1):17-20. doi:10.5694/j.1326-5377.2003.tb05033
- Kolčić I. Achieving Millennium Development Goals 4 and 5: Do every mother and child really count? *Croat Med J.* 2013;54(2):107-9. doi:10.3325/cmj.2013.54.107
- Alkema L, Chou D, Hogan D, *et al.* Global, regional and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *Lancet.* 2016;387(10017):462-74. [https://doi.org/10.1016/S0140-6736\(15\)00838-7](https://doi.org/10.1016/S0140-6736(15)00838-7)
- Ansmann L, Vennedey V, Hillen HA, *et al.* Resource dependency and strategy in healthcare organizations during a time of scarce resources: Evidence from the metropolitan area of Cologne. *J Health Organ Manag.* 2021;35(9):211-27. doi:10.1108/JHOM-12-2020-0478
- Bennett JE, Stevens GA, Mathers CD, *et al.* NCD Countdown 2030: worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goal target 3.4. *Lancet.* 2018;392(10152):1072-88. doi:10.1016/S0140-6736(18)31992-5
- Corazza I, Gebremichael NA, Belardi P, Manenti F, Vainieri M. Acceptability of a Healthcare Performance Evaluation System Among Professionals in Rural Areas of Ethiopia, Tanzania and Uganda Three Years After Its Implementation. *Int J Environ Res Public Health.* 2026;23(5):596. doi:10.3390/ijerph23050596
- Chawanpaiboon S, Vogel JP, Moller AB, *et al.* Global, regional and national estimates of levels of preterm birth in 2014: a systematic review and modeling analysis. *Lancet Glob Health.* 2019;7(1):e37-e46. doi:10.1016/S2214-109X(18)30451-0
- Chuang SW, Inder K. An effectiveness analysis of healthcare systems using a systems theoretic approach. *BMC Health Serv Res.* 2009;9(195). doi:10.1186/1472-6963-9-195
- Cresswell JA, Alexander M, Chong MYC, *et al.* Global and regional causes of maternal deaths 2009–20: a WHO systematic analysis. *Lancet Glob Health.* 2025;13(4):e626-34. doi:10.1016/S2214-109X(24)00560-6
- Liwanag HJ, Wyss K. Optimizing decentralization for the health sector by exploring the synergy of decision space, capacity and accountability: insights from the Philippines. *Health Res Policy Syst.* 2019;17(4). doi:10.1186/s12961-018-0402-1
- Serafica R, Reyes AT, Cacciata MC, *et al.* Bridging the gap: Reducing health inequities in access to preventive health care services in rural communities in the Philippines. *J Transcult Nurs.* 2025;36(1):24-33. doi:10.1177/10436596241271270
- Bjornestad L. Fiscal Decentralization, Fiscal Incentives and Pro-Poor Outcomes: Evidence from Viet Nam. SSRN. ADB Economics Working Paper Series. 2009. doi:10.2139/ssrn.1616968
- Maravilla J, Catiwa J, Guariño R, *et al.* Exploring indirect impacts of COVID-19 on local health systems from the perspectives of health workers and higher education stakeholders in the Philippines using a phenomenological approach. *Lancet Reg Health West Pac.* 2023;30:100585. doi:10.1016/j.lanwpc.2022.100585
- Pepito VCF, Loreche AM, Legaspi RS, *et al.* Health workforce issues and recommended practices in the implementation of Universal Health Coverage in the Philippines: a qualitative study. *Hum Resour Health.* 2025;23(21). doi:10.1186/s12960-025-00988-3
- Santos JP, Abad JC, Aldea AA, *et al.* Health system responsiveness of rural health units in the Cagayan Valley Region: a cross-sectional study. *Acta Med Philipp.* 2025;59(9):72-82. <https://doi.org/10.47895/amp.vi0.9808>

16. Dayrit MM, Lagrada LP, Picazo OF, Pons MC, Villaverde MC. The Philippines' health system review. *Health Systems in Transition*. 2018;8(2):1-312.
<https://iris.who.int/handle/10665/274579>
17. GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020;396(10258):1204-22.
[https://doi.org/10.1016/S0140-6736\(20\)30925-9](https://doi.org/10.1016/S0140-6736(20)30925-9)
18. Haldane V, Chuah FLH, Srivastava A, *et al*. Community participation in health services development, implementation and evaluation: a systematic review of empowerment, health, community and process outcomes. *PLoS One*. 2019;14(5):e0216112.
doi.org/10.1371/journal.pone.0216112
19. Harp JJ. The shortage of healthcare workers in the United States: a call to action. Assessing the need for a comprehensive national health system in the United States. Hershey (PA): IGI Global; 2023;123-38.
doi.org/10.4018/978-1-6684-4060-5.ch007
20. Johnson LJ, Schopp LH, Waggle F, Frantz JM. Challenges experienced by community health workers and their motivation to attend a self-management programme. *Afr J Prim Health Care Fam Med*. 2022;14(1):e1-e9.
doi.org/10.4102/phcfm.v14i1.2911
21. Loftus J, Allen EM, Call KT, Everson-Rose SA. Rural-Urban Differences in Access to Preventive Health Care Among Publicly Insured Minnesotans. *J Rural Health*. 2018;34(Suppl 1):s48-s55.
[doi:10.1111/jrh.12235](https://doi.org/10.1111/jrh.12235)
22. Jordans MJD. Applying systems theory to global mental health. *Glob Ment Health (Camb)*. 2025;12:e2.
doi.org/10.1017/gmh.2024.147
23. Juco MN, Maddawin RB, Palomar RHG, Ruiz MGC, Diokno-Sicat C. Baseline study on the state of devolution in the (pre-Mandanas) Philippines. Quezon City: Philippine Institute for Development Studies; 2023;DP 2023-09.
doi.org/10.62986/dp2023.09
24. Chen Y, Yin Z, Xie Q. Suggestions to ameliorate the inequity in urban/rural allocation of healthcare resources in China. *Int J Equity Health*. 2014;13:34.
[doi:10.1186/1475-9276-13-34](https://doi.org/10.1186/1475-9276-13-34)
25. Michaeli DT, Michaeli JC, Albers S, Michaeli T. The healthcare workforce shortage of nurses and physicians: practice, theory, evidence and ways forward. *Policy Polit Nurs Pract*. 2024;25(4):216-27.
[doi:10.1177/15271544241286083](https://doi.org/10.1177/15271544241286083)
26. Nelson JR, Ess RH, Dickerson TT, *et al*. Strategies to increase rural maternal utilization of skilled health personnel for childbirth delivery in low- and middle-income countries: a narrative review. *Glob Health Action*. 2022;15(1):2058170.
[doi:10.1080/16549716.2022.2058170](https://doi.org/10.1080/16549716.2022.2058170)
27. Kohtamäki V. Performance agreement through the lens of resource dependence theory. *J Educ Policy*. 2024;39(4):541-63.
doi.org/10.1080/02680939.2023.2245791
28. Perin J, Mulick A, Yeung D, *et al*. Global, regional and national causes of under-5 mortality in 2000–19: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet Child Adolesc Health*. 2022;6(2):106-15.
[https://doi.org/10.1016/S2352-4642\(21\)00311-4](https://doi.org/10.1016/S2352-4642(21)00311-4)
29. Piquer-Martinez C, Urionaguena A, Benrimoj SI, *et al*. Theories, models and frameworks for health systems integration: a scoping review. *Health Policy*. 2024;141:104997.
doi.org/10.1016/j.healthpol.2024.104997
30. Park YJ, Peng S. Advancing public health through tax-exempt hospitals: Nonprofits' revenue streams and provision of collective goods. *Nonprofit Volunt Sect Q*. 2020;49(2):357-79.
doi.org/10.1177/0899764019872007
31. Ojangba T, Boamah S, Miao Y, *et al*. Comprehensive effects of lifestyle reform, adherence and related factors on hypertension control: A review. *J Clin Hypertens (Greenwich)*. 2023;25(6):509-520.
[doi:10.1111/jch.14653](https://doi.org/10.1111/jch.14653)
32. Suter E, Goldman J, Martimianakis T, Chatalalsingh C, DeMatteo DJ, Reeves S. The use of systems and organizational theories in the interprofessional field: findings from a scoping review. *J Interprof Care*. 2013;27(1):57-64.
[doi:10.3109/13561820.2012.739670](https://doi.org/10.3109/13561820.2012.739670)
33. Syaddam MM. Universal health coverage in developing countries: barriers and strategic reforms. *J Health Lit Qual Res*. 2021;1(2):99-112.
[doi:10.61194/jhlqr.v1i2.533](https://doi.org/10.61194/jhlqr.v1i2.533)
34. Sharrow D, Hug L, You D, *et al*. Global, regional and national trends in under-5 mortality between 1990 and 2019 with scenario-based projections until 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation. *Lancet Glob Health*. 2022;10(2):e195-e206.
[doi.org/10.1016/S2214-109X\(21\)00515-5](https://doi.org/10.1016/S2214-109X(21)00515-5)
35. Weert GVD, Burzynska K, Knob J. An integrative perspective on interorganizational multilevel healthcare networks: a systematic literature review. *BMC Health Serv Res*. 2022;22(923).
[doi:10.1186/s12913-022-08314-6](https://doi.org/10.1186/s12913-022-08314-6)
36. GBD 2021 Causes of Death Collaborators. Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2024;403(10440):2100-32.
[doi.org/10.1016/S0140-6736\(24\)00367-2](https://doi.org/10.1016/S0140-6736(24)00367-2)
37. GBD 2019 Risk Factors Collaborators. Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*. 2020;396(10258):1223-49.
[doi.org/10.1016/S0140-6736\(20\)30752-2](https://doi.org/10.1016/S0140-6736(20)30752-2)

How to Cite: Savella MR. Health System Performance of Selected Local Government Unit Health Offices in Region 1, Philippines. Int Res J Multidiscip Scope. 2026;7(3):1606-1620.
DOI:10.47857/irjms.2026.v07i03.011235