

Prediction of Outpatient Visits Using Trend Analysis Method at RSUD Titi Kabila Bone Bolango for 2024-2028

Ayudhita Cahyani Daud^{1*}, Basri Umar², Tri Amelia Ali³

¹ Department of Public Health, Faculty of Sports and Health, Universitas Negeri Gorontalo, Indonesia

² Department of Information Technology, Faculty of Engineering, Universitas Gorontalo, Indonesia

³ Department of Medical Records and Health Information, STIKES Bakti Nusantara Gorontalo, Indonesia

Article Info

Article history:

Received May 03, 2026

Revised Jun 22, 2026

Accepted Jul 14, 2026

Keywords:

Patient Visits;

Prediction;

Trend Analysis

ABSTRACT

Outpatient prediction using the trend method. A trend is an analysis that explains and measures various changes or developments in data during one period. From 2019 to 2023, outpatient visits totaled 17 polyclinics, with the highest number of patient visits in 2023, with a total of 40,630 patient visits and an increase in 2023, so it is necessary to predict outpatient visits, given the importance of outpatient visit. This study aims to determine the prediction of outpatient visits using the trend analysis method. The type of research used in this study is descriptive, using a prospective approach. The population in this study is a recapitulation of the number of outpatient visits at Toto Kabila Hospital in 2019–2023. The sample in this study used total sampling, where all members were 152,290, The research instrument used work tables, calculating tools, and stationery. The results of the calculation show that the prediction of outpatient visits in 2024–2028 at Toto Kabila Hospital has increased every year, with 52,977 visits in 2028, and the prediction of outpatient at internal polyclinics eyes, and nerves has increased by 109,923 visits, while the skin polyclinic has decreased by 4,330 visits.

Corresponding Author:

Ayudhita Cahyani Daud

Universitas Negeri Gorontalo

Email: ayudhita.cahyani@ung.ac.id

INTRODUCTION

Hospitals are advanced healthcare facilities that require sophisticated expertise and substantial financial resources. Hospital services encompass various levels of care and medical disciplines, involving a wide range of clinical, educational, and research activities. This complexity arises from hospitals' capacity to fulfill their professional roles in medical technology and healthcare administration. To maintain and continuously improve service quality, hospitals require policies that support comprehensive quality improvement. A hospital is an institution that provides continuous healthcare services, including medical care, disease diagnosis and treatment, and ongoing medical services through permanent healthcare infrastructure and professionally organized medical personnel. In addition to serving as a place where patients receive medical care, hospitals also function as clinical education facilities for nurses, physicians, and other healthcare professionals. Furthermore, hospitals serve as centers for medical research, education, and public health services (1).

In addition, hospitals are required to maintain medical records to facilitate patient information management, data processing, and the delivery of healthcare services (2). Hospitals function as clinical teaching facilities for nurses, doctors, and other health professionals. Hospitals are facilities used for medical

research, education, and public health services (1). In addition, hospitals need to keep medical records to allow the processing and provision of patient information (2). Therefore, one of the indicators of quality improvement in a hospital is the quality of its medical and administrative services, including medical records management (3).

Medical records involve more than just recording activities; they are also called medical record management systems, which start with recording while the patient receives healthcare services and continue with the management of medical record files, including filing, organizing storage, and transferring files for patient requests, loans, and other needs. Data from medical records can be used for various tasks in hospitals, including calculating hospital statistics (4).

Hospital statistics consist of numerical data that describe the performance and condition of a hospital, derived from information collected from emergency, inpatient, and outpatient services. Indicators of outpatient statistics include daily patient visits, new patient visits, and visits by older adults receiving treatment at each outpatient clinic. These outpatient visit data serve as an important basis for decision-making and can be analyzed using trend analysis to forecast future outpatient visits (5).

Trend analysis is a statistical technique used to project or predict future events. Initially, statistical trend analysis was developed to determine how data change over time. In general, data trends follow one of three patterns: increasing, stable, or decreasing. Because trend analysis is based on time-series data, it is also referred to as time-series analysis (6).

To estimate the number of outpatient visits in subsequent years, predictive calculations are required. Forecasting is a method used to estimate future demand for products or services, including the quantity, quality, timing, and location of those demands. In the context of outpatient services, forecasting is commonly performed using the trend method. Trend analysis is a technique used to measure and describe changes or developments in data over time (7).

Outpatient, inpatient, and emergency patient data are collected to create hospital statistics, which are numerical summaries of information about the hospital's condition. A trend analysis approach should then be used to make predictive calculations (5). Statistical analysis techniques called trends are used to project or predict future events. Initially, statistical trends were used to determine how often data changes over time. Data trends and developments often follow one of three tendencies: increasing, stable, or decreasing. Since trend analysis uses time series data, this analysis is also known as time series analysis (6).

Based on previous research by Putri (2015), there was an increase in patient visits at the general polyclinic by 0.06%, an increase at the obstetrics polyclinic by 19.15%, and an increase in internal medicine by 3.95%. Analysis needs to be done to increase the number of health professionals, especially nurses, and to provide more infrastructure to support services like queue numbers. This will help reduce the fatigue often complained about by nurses and the callers for polyclinic patient queues. On the other hand, there are often no visits, meaning no patients per year, to polyclinics that specifically handle neurosurgery, heart surgery, and rheumatology. Paying attention to each polyclinic doctor's schedule is the wisest course of action (8).

Based on initial observations, it was found that RSUD Toto Kabila Bone Bolango had outpatient visits from 2019 to 2023 across 17 clinics. In 2023, the number of outpatient visits reached its highest point, with 40,630 visitors. Forecasting outpatient visits from 2019–2023 is needed because there was a decline in 2020 and an increase in 2023. It's important to remember the value of outpatient visit data, which can be used to plan assessment steps to improve outpatient services and to determine how much patient services have developed.

RESEARCH METHODS

The type of analysis used in this study is descriptive with a prospective approach, meaning it uses observation to gather information based on data to support research findings and provide predictions about subjects' behavior in the future. It uses a time series research design to see the development over time of outpatient visits at RSUD Toto Kabila. This study employed a total sampling technique, whereby the entire study population was included as the sample to project outpatient visits for the period 2024–2028.

RESULTS

Calculation of the number of outpatient visits at Toto Kabila Hospital from 2019 to 2023

Table 1. Number of Outpatient Visits at Toto Kabila Regional Hospital from 2019 – 2023

Year	Amount
2019	30.898
2020	19.082
2021	29.884
2022	31.796
2023	40.630
Total	152.290

Source: Primary Data, 2024

Table 1 shows the number of outpatient visits to clinics across all departments from 2019 to 2023. The year 2023 will have the highest number of visitors, while 2020 will have the lowest. From 2019 to 2023, outpatient clinic service coverage is shown based on the number of patient visits. In 2023, there were 31,249 patients with an increase in outpatient visits, including both new and returning visits.

Average New Visits Per Day at Toto Kabila Hospital from 2019-2023

The average number of daily outpatient visits is stated as the average patient visits. The number of outpatient visits per clinic in table 3 and the clinic opening days table provide important information.

Table 2. Average number of new outpatient visits per day at RSUD Toto Kabila from 2019-2023

No	Year	Average New Visits
1	2019	29
2	2020	14
3	2021	22
4	2022	25
5	2023	16
Total		106

Source: Primary Data, 2024

The table above shows that the average number of new outpatient visits has increased each year, with the highest number of new visits in 2019 and the lowest in 2020. The trend of new visits indicates that public trust in health services is on the rise. This situation needs to be nurtured, developed, and balanced with good service quality. Patients willingness to use outpatient services is reflected in the occurrence of new visits.

New visit numbers compared to total visits at Toto Kabila Hospital from 2019-2023

The following table shows the total number of outpatient visits compared to the number of new outpatient visits from 2019 to 2023.

Table 3. Ratio of New Visits to Total Visits from 2019–2023

No	Year	Number of new visits
1	2019	34
2	2020	28
3	2021	27
4	2022	29
5	2023	15
Total		133

Source: Primary Data, 2024

Based on the table above, the proportion of new visits to total visits from 2019 to 2023 showed a declining trend each year. The highest number of new visits was recorded in 2019, while the lowest was recorded in 2023.

The new visit rate relative to total visits is calculated by dividing the number of new visits by the number of effective outpatient service days and then multiplying the result by 100. This rate is a measure of the frequency of specific events occurring within a population during a given period. It is used to estimate the probability of an event occurring.

Prediction of Outpatient Visits at Toto Kabila Hospital for 2024-2028

The following table shows the Prediction of Outpatient Visits at Toto Kabila Hospital for 2024-2028

Table 5. Projected Outpatient Visits at Toto Kabila Regional General Hospital, 2024–2028

No	Year	Number of Visits
1	2024	40.109
2	2025	43.326
3	2026	46.543
4	2027	49.760
5	2028	52.977
Total		232.715

Based on the table above, the number of outpatient visits is projected to increase steadily over the 2024–2028 period. The highest projected number of outpatient visits is expected in 2028, reaching 52,977 visits.

DISCUSSION

The projection of outpatient visits for the period 2024–2028 was calculated using a linear trend equation. The results indicate that the projected number of outpatient visits at Toto Kabila Regional General Hospital is expected to increase annually throughout the projection period.

As the projected number of outpatient visits continues to rise, the hospital must maintain the provision of high-quality healthcare services. This is closely related to the implementation of a quality control program. A quality control program is a continuous, systematic, objective, and integrated effort undertaken by a healthcare institution to identify quality-related problems and their underlying causes based on established standards, determine and implement appropriate corrective measures according to the organization's capacity, evaluate the outcomes achieved, and develop follow-up plans for continuous quality improvement of healthcare products and services (9). Such quality control initiatives are consistent with one of the primary objectives of hospitals, namely improving and maintaining the standards of hospital services (10).

Healthcare service quality can be considered satisfactory when it fulfills the needs and expectations of healthcare service users. Meeting these expectations contributes to patient satisfaction with the healthcare services provided (11). Patient satisfaction is one of the key determinants of hospital service quality and is closely associated with service comfort, staff friendliness, and the promptness of service delivery (12).

Based on the projection results, the increasing number of outpatient visits is expected to affect the workload of hospital staff. A higher average number of outpatient visits is associated with a greater workload for the hospital (13). In addition, the projected increase in outpatient visits will require additional supporting facilities and infrastructure, such as outpatient medical record forms and expanded patient waiting areas. Therefore, hospitals are expected to maintain the quality of healthcare services to ensure continued patient satisfaction (14). This can be achieved through courteous and efficient service, adequate provision of facilities and infrastructure, and an assessment of human resource requirements, including medical record filing personnel whose numbers have not increased, to ensure that service quality remains consistently high (9).

The projections of outpatient visits for individual outpatient clinics during 2024–2028 were also estimated using a linear trend equation. These projections were conducted to evaluate the development of services in each clinic, enabling the hospital to implement innovations and assess its overall performance. The results indicate that outpatient visits to the Internal Medicine, Dermatology, and Psychiatry clinics are projected to increase, whereas visits to some other clinics are expected to decline.

The higher the average number of outpatient visits, the greater the workload borne by the hospital (15). This finding suggests that an increase in projected patient visits may significantly affect staff workload. Therefore, hospital management is expected to evaluate human resource workload and the adequacy of supporting facilities, including the expansion of patient waiting areas. Furthermore, clinics projected to experience declining patient visits should be evaluated from a hospital marketing perspective. Hospital marketing plays an important role in identifying community perceptions and healthcare needs, enabling hospitals to determine which services should be offered and subsequently provided. Accordingly, hospitals are expected to strengthen their marketing activities to better understand community healthcare needs and align service provision with those needs (11).

CONCLUSION

The projection of outpatient visits at Toto Kabila Regional General Hospital, Bone Bolango, for the period 2024–2028 indicates a consistent annual increase, with the highest projected number of outpatient visits estimated at 52,977 in 2028.

SUGGESTION

Hospitals should evaluate and plan the quality of the services they provide in response to fluctuations in outpatient visits, ensuring that patients remain satisfied. In addition, staff workload tends to increase as the number of outpatient visits rises. Therefore, hospitals should assess whether the current staff workload is appropriate, conduct a workload analysis, and determine whether additional personnel are needed.

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