ASSESSMENT OF WAITING AND SERVICE TIMES IN PUBLIC AND PRIVATE HEALTH CARE FACILITIES IN GONDAR DISTRICT, NORTH WESTERN ETHIOPIA

By

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ABSTRACT

Assessment of waiting and service times in public and private health care facilities in Gondar district, north western Ethiopia

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The development and provision of equitable and acceptable standard of health services to all segments of the population has been the major objective of the 1993 Ethiopian National health policy. However, community based studies on satisfaction with public health care facilities reveal that the majority of the population are not satisfied with the services provided predominantly as a result of the long waiting times. Studies done on private health facilities on the contrary reveal that patients are satisfied with the service delivered within short waiting times in these clinics. Even though the speculated waiting time is thought to be long among the public health care facilities and short in private clinics, the actual waiting and service times have not been measured and compared.

Aim: To determine the waiting and service times among the public and private health care facilities and measure the perceptions of "acceptable" waiting time among the providers and clients.

Materials and methods: A cross sectional observational study using quantitative techniques was carried out amongst patients and staff at selected public and private health care facilities in Gondar District. Stratified sampling method was used to select facilities. All patients visiting the selected facilities and all staff who provided service to patients on the day of the study were included in the time-delimited sample. Data was collected by research assistants and health workers from all patients attending the health care facility by registering the arrival and departure time of each patient to the facility and to each service point on a patient flow card. Then data was cleaned and captured by a specific Waiting and Service Time database. Descriptive statistics was done on waiting and service times for each facility and this was summarized for each public and private health facility by using tables and graphs. Finally a comparison was made for private and public health facilities by using Wilcoxon-mann-whitney non parametric tests.

Result

A total of 458 patients attended the study facilities, and from these 56(12.2%) visited the private health care facilities and 402 (87.7%) the public health facilities.

There is no statistically significant difference among public and private attendants in terms of age and sex of patients. However, there was a statistically significant difference ($p<0.006$) by occupation of patients attending public and private facilities. The median one way travel time to the private and public facilities was 10 and 15 minutes respectively, this is not statistically significant ($p>0.09$). Nearly 90% of facility users were residents of Gondar district in both

public and private facilities. Five percent of patients who visited public facilities were turned away.

The median waiting times for public and private health facilities was 48 and 6 minutes respectively (statistically significant difference with Z of-9.01 and p value <0.001). Public and private health care facilities median service time of 8 and 10 minutes respectively is also significantly different (Z of -3.18 and p<0.001). Significantly longer waiting and shorter service times were observed among public facility consultation rooms, 'registry and cashier' office, laboratory and 'injection and dressing' rooms as compared to those of private facilities.

More patients in private facilities as compared to public facilities believed that their wait was 'short'. 'Long' waiting time was only reported by patients who attended public health facilities (p<0.005). Patients attending public health facilities were willing to wait 10 minutes longer than the patients attending private health care facilities (Z=-1.9, p<0.05). Staff's acceptable patient waiting times for their service point is statistically significant (Z -3.7, p<0.001) while a staff member in private facilities is willing to see a patient 7 minutes earlier than his counterpart in public facilities.

The majority of patients (80%) preferred to visit the facility before 8:00 am with their next visit.

Discussion and conclusion

Long waiting and short service times were observed among public facilities. Long waiting times at public health facilities was primarily due to mismatch of patient arrival (arrived too early) and service commencement, and staff inefficiencies in prioritizing attending to patients. Other common causes of high waiting times such as logistical problems, flow problems, queuing problems and a high workload, were surprisingly not causal factors at these facilities. Staff time usage efficiency (percentage of work time spent attending to patients) was low with typically less than 50% of staff time being used for patient care. Suggested actions to reduce waiting times included, opening facilities earlier, providing appropriately timed appointments for follow-up patients (the only patients for whom appointments were feasible) and interventions to encourage staff to prioritise attending to patients. Increasing service time where appropriate was encouraged as a means of improving quality of care. By considering the actual waiting times and patient and staff opinion about the duration of "acceptable" waiting times, a waiting times norm of 30 and 6 minutes is suggested for public and private facilities respectively.

This thesis provides evidence regarding how a low cost standardized Waiting Times survey can provide huge benefit by identifying the causes of high waiting times, identifying low quality care and assessing staff time usage efficiency. Practicable solutions to address these issues are then easy to devise. This methodology could routinely be used to evaluate and improve health services of all types of health facilities in virtually any location and could therefore become a globally useful standard evaluation tool.

DECLARATION

I declare that *Assessment of waiting and service times in public and private health care facilities in Gondar district, North western Ethiopia* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Dr. Desalegn Tegabu Zegeye

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
AM	ante meridiem
ANC	Antenatal Care
ART	Anti-retroviral therapy
CBR	Crude Birth Rate
CDR	Crude Death Rate
CSA	Central Statistical Authority
DM	Diabetes Mellitus
DOT's	Direct Observed Treatment Short course
DPT	Diphtheria ,Pertussis Tetanus
EPI	Expanded Program on Immunization
FMOH	Federal Ministry of Health
FP	Family planning
HC	Health Centre
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
HSDP	Health Sector Development Program
IQR	Inter Quartile Range
LAB	Laboratory
OPD	Out-patient Department
PHC	Primary Health Care

PM	post meridiem
PMTCT	Prevention of mother-to-child transmission
RHB	Regional Health Bureau
SPSS	Statistical Package for Social Sciences
SSA	Sub Saharan Africa
STI	Sexually Transmitted Infection
TB	Tuberculosis
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
URTI	Upper Respiratory Tract Infection
UTI	Urinary Tract Infection
VCT	Voluntary Counselling and Testing
WHO	World Health Organization
WSTS	Waiting and Service Time Survey
ZHD	Zonal Health Department

TABLE OF CONTENTS

Tables and Figures

Tables

Figures

CHAPTER ONE-INTRODUCTION

With this study, I attempted to determine the waiting and service times among public and private health facilities in Gondar District of Ethiopia.

In this chapter, I start by discussing what a waiting and service time survey (WSTS) is and why it is important.

This is followed by a profile of Ethiopia, in terms of geographic location, demography, economy, education and health status and thereafter a brief profile of the district of Gondar is provided.

Finally this chapter outlines the research problem and focus of the study.

1.1. Waiting and service times surveys (WSTS)

WSTS are time motion studies that document patient flow and personnel time utilization in the delivery of health services. WSTS have gained popularity among health care managers as a result of its critical role in the improvement of quality of care and efficiency in health care provision. The surveys allow clinic managers and workers to look at the way that the clients and patients move through the health facility. It gives information on waiting times, time spent in contact with different service providers (service times) and bottle-neck areas in service utilization patterns. It could also be used to improve efficiency, promote equity, transparency and accountability in health service provision (Reagon and Gouws, 2005).

Waiting times have different implications in different countries. In developed countries, waiting times have been well studied and several procedures have been designed to reduce it, such as an appointment system, waiting lists and a triage system (Backer, 2002). Despite implementing these interventions, waiting times of more than a year is common for elective surgery (Shortt,

2000; Siciliani and Hurst, 2004). In developing countries governments typically address long waiting times and overcrowding by assigning more staff rather than investigating the causes for long waiting times and possibly providing inexpensive and simple solutions to the long wait (Zein, 1978, Vogal *et al* 1976). Such solutions may include designing appointment systems, more efficient staff utilization, avoidance of 'traffic jams' and arrival of large batches (Addissie *et al*, 1998). For poor countries like Ethiopia waiting times have a large implication as people may either die of acute infectious diseases such as malaria or spread contagious disease to others while waiting for treatment. Waiting times also have a role in preventive services such as family planning and immunization [1] where, the long waiting times might be regarded as a barrier to accessing these services and thereby resulting in a high dropout rate (Dwyer, 1999).

Although, waiting times have been investigated in Ethiopia, the surveys mostly related to outpatient departments of hospitals (Addissie *et al*,1998; Zein,1978) and reproductive health clinics (Korra,1994), with little information being available on patient waiting times in primary health care facilities such as clinics and health centres. In addition, there is also a general perception that waiting time is long among public health facilities and short among private health facilities, but no study was conducted to actually measure waiting times and compare them amongst the public and private primary health care facilities.

1.2. BACKGROUND

1.2.1. Ethiopia

The study was conducted in Ethiopia, a country located in the North Eastern part of Africa, a stunning country of tall mountains, high tableland and arid deserts. Ethiopia has a diverse

[1] For a country like Ethiopia which is characterized by high rate of population growth (2.7% per year) high level of fertility (TFR

population of more than 80 distinct ethnic and linguistic groups. Known as Abyssinia until the 20th century, Ethiopia is the oldest independent nation in Africa.

With a total surface area of around 1.1 million square kilometres and a population of over 80 million, Ethiopia is the second most populous country in Africa (UNFPA, 2008). At an annual growth rate of 2.7%, it is expected that the population of Ethiopia will double in about 25 years. Nearly half of the population (49.7%) is female. The average household size is 4.8. Currently, about 84% of the population lives in rural areas with poor access to health care and other social services. The population is young, with 44 percent under the age of 15. Such a structure results in a high dependency ratio and will in future probably result in a rapid exponential population growth (UNFPA, 2008). This is expected to further compromise the already weak primary health care services.

1.2.1.1 Socio economy

Ethiopia is one of the least developed countries in the world, with a per capita gross national income (GNI) in 2006 of US$110. Livelihoods are predominantly based on agriculture, which accounts for 85% of employment, 45% of national income and over 60% of export earnings (UNDP, 2008). The Human Development Index (HDI)[2] rank of Ethiopia in 2007 was 169 out of a list of 177 countries and is estimated at 0.4 (UNDP, 2008). The country is characterized by severe poverty and food insecurity, where 47% of the populations live below the absolute poverty line (earn less than a dollar per day). The adult illiteracy rate in the country is very high; 55.5% of Ethiopians are considered to be illiterate (UNDP, 2008).

Politically the country is organized as a federal system, which has nine ethnically based administrative regions and two cities. Each region is further divided into zones, which are in

[2] The HDI measures, with one composite index, achievements in human development. It is calculated out of 1 and includes life expectancy at birth, adult literacy and school enrolment rates and adjusted per capita income in terms of purchasing power parity.

turn divided into woreda[3] while the capital city, Addis Ababa, is divided into sub-cities. Woredas and sub-cities are further divided into kebeles[4].

1.2.1.2. Health status

The health status of the Ethiopian population is extremely poor, even by sub-Saharan African standards (See table 1). The widespread poverty, low education, inadequate access to safe water and sanitation facilities, low health care resources, and consequently, limited access to and quality of health services, have all contributed to the prevailing poor health status in the country (FMOH, 2005).

Table 1- Comparison of Ethiopian Demographic data with that of the World, Africa and South Africa in year 2006/07.[5]

	Population (Millions)	*CBR	**CDR	***IMR	****TFR	% of Pop. of age <15	65+	**% of Pop. 15-49 with HIV/AIDS**
World	6,625	21	9	52	2.7	28	7	0.9
Africa	944	38	14	86	5	41	3	4.5
Sub-Saharan Africa	788	41	16	92	5.5	43	3	5.4
Ethiopia	77.4	40	15	77	5.4	43	3	1.4
South Africa	46.9	23	16	43	2.8	33	4	21.5

*CBR (Crude Birth Rate),**CDR(Crude Death Rate),***IMR(Infant Mortality Rate),****TFR(Total Fertility Rate).

A national health policy and health sector strategy has been developed in order to address the health problems of the population and guide the health system (FMOH, 1993). The Health Policy of the Transitional Government of Ethiopia (FMOH, 1993) aims at achieving access, for all segments of the population, to a basic package of primary health care services, through decentralized state system of governance. The service package includes basic curative services, disease prevention, and health promotion services.

[3] Woreda is a synonym for District in Amharic (the official language of Ethiopia).

[4] Kebele is the lowest administration unit.

[5] 2007 World population data sheet, Population and Reference Bureau

1.2.1.3. Health delivery

The organizational structure of the public health care system of Ethiopia comprises the Federal Ministry of Health, Regional Health Bureaus, Zonal Health Departments, and Woreda Health Offices (FMOH, 2005).

The health service referral system is organised in four tiers. The lower level is the Primary Health Care Unit (PHCU) which is a health centre with five satellite Health Posts, followed by the 1st referral level a District Hospital, then a Zonal hospital and specialized referral hospital. The health personnel distribution is one of the poorest in the world, where one physician is serving a population of 25,000-100,000 (FMOH 2008) which is way below the WHO standard of 1:10,000 for Sub Saharan Africa (SSA).

The health care system is largely underdeveloped and under resourced, and as a result can provide the basic services to only about 86% of the population (FMOH, 2008). Much of the rural population has no access to modern health care, leading to an inability of the health care delivery systems to respond both quantitatively and qualitatively to the health needs of the people.

1.3. Profile of Gondar District

The study was conducted in the Gondar District (Woreda). Gondar is the biggest town in Northern Ethiopia. It is located 750 Km away from the capital Addis Ababa. Gondar was founded by Emperor Fasilides around the year 1635 and became the country's first permanent capital. The modern Gondar is popular as a tourist attraction for its many picturesque ruins in the Royal Enclosure, from which the Emperors once reigned (Getahun, 2005). Based on figures

from the Central Statistical Agency in 2007, Gondar has an estimated total population of 204,001 of whom 102,253 were males and 101,748 were females. The District has an estimated area of 40.27 square kilometres, which gives Gondar a density of 4,836 people per square kilometre (CSA, 2007). The District is further divided into 21 kebeles. The majority of the population of the district are Amharic-speaking and followers of the Ethiopian Orthodox Church, but Gondar also has a large minority of Muslim residents (Getahun, 2005).

1.3.1 Health Service Delivery

As shown in Table 2, the health facilities found in the District (like any other urban centre) are mainly private owned clinics. There are 4 health centres, 16 health posts and one governmental teaching and referral hospital which provides a referral service to the district and region. According to the Ministry of Health standards of the country, Gondar should have at least 1 district hospital, 8 health centres and 40 health posts.

Table 2-Distribution of Health facilities and their ratio to population for the national, Amhara region and Gondar District.

	Population	District hospital.	District Hospital to population ratio	Health centre [6]	Health centre to population ratio	Health posts	Health post to population ratio	Private clinic	Private clinic to population ratio
National	77,467,000	143	561,355	671	121,995	9,914	64,234	1787	43,350
Amhara region	19,120,000	19	1,006,315	169	123,354	2,590	478,000	320	59,750
Gondar District	204,001	0	-	4	51,000	16	12,500	29	7,034

1.3.2 Burden of Disease in Gondar

[6] Health centre is a primary health care facility which provide curative and preventive care for 25, 000 population. Under it there are 5 health posts.

According to 1998 EC[7] (2005-2006) Gondar District Health Office report, Malaria was the leading cause of morbidity followed by intestinal parasitosis and infections of the respiratory system. These three diseases account for 41% of the reasons for public health facility visits.

1.4 Public health services

All government funded health services are regarded as public health facilities in this thesis. In 2008 there were 4 health centres, 16 health posts and one referral and teaching hospital in Gondar.

1.5. Private Health Services

The delivery of health services in Ethiopia was long dominated by the public sector. However, after being banned for 17 years under the Socialist 'Derg' regime, the private sector was legalized in the mid-1990s, and the number of private for-profit facilities, pharmaceutical retail outlets, and NGO and faith-based providers have flourished steadily. The government has now made the expansion of the private health care sector an explicit policy objective; nevertheless, the institutional framework remains weak (Afework, *et al*, 2003).

The Federal Ministry of health organized the private sector in four levels (BASICS, 1998). These are lower, medium, higher and specialty clinics. The maximum qualification requirement to establish a lower clinic is being a nurse and for a medium clinic is being either a health officer[8] or a general practitioner. These clinics are allowed to provide services equivalent to government health centres. Higher and Special Clinics are run by Specialists and provide advanced and specialty care.

1.6. Comparison of public and private health services

[7] EC (Ethiopian Calendar), there is 7 years and 8 months difference with Western Calendar

[8] Health officers attend 3 years of professional training and substitute the work of Medical doctors in health Centres.

Private health care facilities concentrate on providing curative care and are less likely to provide preventive services (like immunization, antenatal care, postnatal care, etc) claiming that these services are not profitable. Hence, the full ranges of primary healthcare programs (preventive, promotive, curative and rehabilitative) are mainly provided by the governmental health facilities (Hailemariam and Kloos, 2005).

The private clinics are usually run by a Doctor or health officer in the case of Medium clinics and by a nurse or health assistant in lower clinics, while in public health facilities either a Health officer or a nurse are the major providers of curative care. Thus, public health services are mostly run by less qualified professionals compared to private health services. The seriousness of this discrepancy was described as follows in the 2005 National Health Facility survey of Ethiopia,

> 'The number of health workers supposed to be present in the health facility to meet the existing client load (the 'staffing norm') was not met in many health facilities, as on average, health officers, nurses, pharmacists, and laboratory technicians were scanty in almost all the health facilities. In addition, disproportionately high numbers of medical specialists were found in private clinics while there are comparatively fewer at the other categories of health institutions'
>
> (Hailemariam, *et al*, 2007,xv)

Public health services are bigger, have many staff and provide a full range of primary health care services at a cost the community can afford. However private health services are usually run by few people, and provide highly profitable services such as curative care at high cost.

In private clinics patients can visit at any time of the day and the clerk may advise them to come in non busy hours. Cards are issued individually, laboratory investigations are done for

each patient and payment is done once. However, in public health facilities it is a tradition that patients have to come early in the morning to be booked in to see a health professional.

1.7.Problem statement

Long waiting times and overcrowding of public health facilities like health centres are anecdotally acknowledged as major problems of Gondar District and it results in dissatisfaction among communities. The waiting time in private health facilities is thought to be satisfactory. However the actual waiting and service times of both public and private facilities have not been measured and compared prior to this study. As a benchmark and to potentially improve the quality of health delivery system, this important factor requires investigation.

1.8. Purpose of the study

This study documented the waiting and service times among public and private health care facilities and compared them. The findings could be used to assist in making recommendations to adopt methods and procedures to alleviate the problem of facilities with long waiting times, if waiting times are indeed found to be long.

1.9. AIM OF THE STUDY

The aim of the study was to investigate and compare the waiting and service times in public and private primary health care facilities in Gondar District.

Objectives

1) To assess the waiting and service times in public and private health care facilities
2) To assess accessibility of public and private health facilities among patients who visited the facilities
3) To compare the waiting and service times of private and public health facilities.
4) To assess the percentage of patients turned away from health care facilities
5) To suggest acceptable waiting times norm for public and private facilities
6) To determine patients and staff opinion with regard to waiting times at the facilities
7) To make recommendation to the relevant authorities

CHAPTER TWO -LITERATURE REVIEW

This chapter provides a review of the literature concerning health delivery waiting and service times in and outside of Ethiopia. The rationale for waiting and service timees surveys will be presented in the first part. The burden, causes and impact of long waiting times will be discussed in the consecutive parts and later the attitude of patients and staff about waiting times will be described. Finally methods of studying waiting and service times will be discussed.

2.1. Why look at waiting and service times?

According to Dwyer (1999), health service organizations can use WSTS to measure the performance of individual clinic sessions, design new clinics, improve the clinic pattern, and review personnel needs to increase clinic efficiency. This results in reduced patient waiting time (and frustration) in the clinic, more equitable distribution of workload for each staff member within the facility, and greater staff satisfaction with the overall delivery of services to the patient. More patients may also be served for the same or even reduced costs. Reagon and Gowus (2005) summarized the potential advantages that may follow from conducting waiting and service times as follows:

- It helps to reduce waiting times
- It increases patient satisfaction
- It decreases anxiety expressed by patients
- It reduces stress on staff
- It increases efficiency
- And it reduces inequalities in staff allocation.

2.2. Magnitude of the problem

Extended waiting times have plagued health care systems for years and waiting times that exceed two hours among primary health care facilities are common and have been reported in Kenya (Vogal, *et al*, 1976) , South Africa (Bachmann and Barron, 1997), Jamaica (Desai, *et al*, 1989), Ethiopia (Addissie, *et al*, 1998) and many other countries around the world.

Not much studies have been conducted on waiting times among primary health care facilities in Ethiopia. However, a WSTS done in an Out-patient Department (OPD) of Jimma hospital in South Western Ethiopia found that, the average complete waiting and service time was 4.5 hours and 4.64 hours respectively (Addissie, *et al*, 1998). In this study, the partial mean waiting times for registration, Doctor (consultation), laboratory and for pharmacy were 79.3 minutes, 48 minutes, 43.2 minutes and 36.2 minutes respectively. The partial mean service times for registration, consultation, laboratory and pharmacy were 5.1 minutes, 8.5 minute 162.7 minutes and 3.2 minutes respectively. The study did not analyse services given in batches and this is the reason for the long service times at the laboratory and reception service points. Approximately half of the patients arrived before the opening of the service at 8:00 a.m. and about 2 working hours are lost per day as a result of prolonged coffee breaks and delays in initiation and early stoppage of services. Even though this study was able to give an impression of waiting times in a hospital setting, it has some limitations associated with its methods and operational definitions. In this study the 'mean' was used as a measure of central tendency despite the

known fact of the 'right skewness' of waiting times[9]. The appointment system in Ethiopian hospitals is that the patients' come to the facility, book one day prior for registration and then come for examination on the next day. In the study, waiting for previous day registration was neglected thereby underestimating the actual waiting times for registration at the facility.

A recent study of waiting times in Ethiopia was conducted by the Health Care Financing Secretariat of the Federal Ministry of Health in their national survey on 'estimating willingness to pay for health care in Ethiopia', which measured the average national waiting time at 6.4 hours (6 for rural and 7.88 hours for urban respondents) and the respondents on average walk for 2.2 hours to reach these facilities (FMOH, 2001). The study participants were willing to pay remarkably more money for services if the current waiting time was to be reduced by half. Even though this study tries to compare waiting times among the rural and urban population in Ethiopia, the results of the study were inconclusive as the method of data collection to measure waiting times was exit interviews which was totally dependant on a patient's estimate of how long he/she waited, rather than objectively measuring the waiting and service times from the time of arrival to the time of departure.

Another study on OPD patient satisfaction in Hospitals of Amhara Region by Mitike, Mekonnen and Osman, (2002) found that long waiting time during registration, visiting of doctors after registration, laboratory procedures, revisiting of the doctors for evaluation with laboratory results and obtaining drugs from pharmacies were unsatisfactory. But this study failed to measure the waiting and service times objectively and it depends only on patients/clients opinion.

[9] Since some patients will wait, for various reasons, an unusually long time and most patients are likely to wait varying but lesser lengths of time, the data produces a positively skewed frequency curve such that the majority of patients will have been seen prior to the average waiting time.

2.3. Comparison of waiting and service times among public and private facilities

From time to time interest in waiting times and service time's performance involves seeking to make comparisons between different types of hospitals, public and private health facilities in different geographical areas. However, there are also differences in the way waiting and service times are perceived and measured in different countries. In the meantime the statistics differ in both how they are measured and in how they are reported. These differences make it very difficult to produce a reliable comparison of waiting times between different countries at present. Albeit with these important caveats, it is possible to produce an indicative comparison by reviewing available developing country data to match the situation in Ethiopia.

Looking specifically at the issue of public versus private health facility, Pongsupap and Van Lerberghe (2006) studied the duration of the waiting and consultation time with health care facilities and hospitals in Thailand. Data was collected by using simulated patients. Total waiting time was considerably longer in public facilities than in private facilities: an average of 81 min (median 76) as opposed to an average of 20 min (median 14) in private clinics or hospitals. A significant difference was also observed on consultation time, consultations with private doctors lasted 6.2 min, with public doctors only 3.8 min. Patients also had more time to express themselves in private settings than in the public sector consultations. This study concluded that public sector waiting times are considerably longer, doctors are more abrupt, consultation times are shorter and less likely to be convenient to the patient. These findings are consistent with the micro-economic prediction that private practitioners have an incentive to be responsive.

A study by Bitran (1995) aimed at comparing efficiency and quality of care among public and private facilities in Senegal found that private facilities were efficient and offer better quality services. Though this study did not specifically measure waiting and service times, it shows that, private providers had the smallest clientele, with an average of 10 visits per day while government health centres delivered the highest volume of outpatient care, with an average of 109 per day per health centre.

Guldners and Rifkin (1993) compared quality of public and private health facilities in Vietnam and found that poor service in the public sector led to increased use of private providers. Similar findings were also reported from China (Meng et al, 2000), Bangladesh (Andaleeb, et al, 2007) and Turkey (Tengilimuglu, et al, 1999).

The Health care Financing Secretariat study (FOMH,2001) on 'willingness to pay' in Ethiopia, though did not specifically measure waiting and service times, showed that private providers were superior to public facilities for their promptness, shortness of waiting times and for being open during off hours and holidays.

2.4. Causes of long waiting time

The study in Jimma Hospital OPD revealed that the causes of long waiting times were large influxes of patients before 8:00 a.m., late initiation of registration, delay in starting services, giving services in groups (laboratory and X-ray collect and release results once) and stoppages before the closing time (Addissie, *et al*, 1998). Bachmann and Barron (1997) on their side mention inefficient organization as a cause of long waiting time such as lack of an appointment system, poor folder retrieval system and inability to track patients with appointments. Reagon and Gouws (2005) generalize the causes of long waiting times as follows;

- high proportion of patients compared to health workers (overworked)

- batching (many patients arrive in a large group at the same time)
- Mismatch of patient arrival with commencement of service provision
- poor logistics (supplies or equipment or examination facilities unavailable when required)
- Inefficiency e.g. long coffee and lunch breaks, attending to administrative matters or unexplained breaks while patients are waiting
- Poor management of the flow of patients within the facility causing bottlenecks
- Inappropriately long service time.
- Queuing problem.

2.5. Reducing long waiting times

Implementing measures to decrease over-all waiting time would be of benefit in facilitating consumer satisfaction in public and private health facilities. There are two ways to address long waiting times. The first one is a general measure which tries to make long waiting time unnoticeable. The second measure is a specific intervention to the specific cause of long waiting times.

The general measures include: (1) posting signs with the approximate waiting time that can be expected for emergency and other non-scheduled services; and, (2) making waiting rooms more conducive and comfortable for patients who require longer stays. (3) Using the waiting time to convey health education messages (Ajayi, 2002; Bamgboye and Jarallah, 1994).

Reagon et al (2007) suggest the following specific measures that can be implemented to address a specific cause of long waiting times.

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The Potential causes and solutions for a long waiting time at any service point are:

1. High Workload: if staff are overworked, then patients have to wait longer as staff have many patients to attend to. You can see if staff are overworked on the Detailed Service Point Table. The Percentage Patient Time will be high. You can solve this problem by decreasing service times (if they are too long) or by providing more staff if service times are appropriate or low.

2. Patients arriving in a Big Batch: if many patients arrive at the same time then most of these patients would have to wait a long time as the staff member would be busy seeing the patients who were first in the batch and the rest would be waiting. A Big Batch is defined as twice as many patients arriving in a time-period than can be seen in that time-period. You can see if there is a batch on the Arrival Time Graph. There will be many patients arriving at the same time. You can solve this problem by encouraging patients to come at other less busy times and by giving appointments for quieter times and quieter days in the week.

3. A lack of efficiency: patients are not effectively attended to while staff members are present at the service point but are busy with something else: such as administrative work, or preparation work. This means that the staff are not prioritising attending to the patients. You can see if there is a lack of efficiency on the Snapshot Graph. There will be patients waiting but no or few patients seen even though staff members are present. You can solve this problem by making patients the number one priority.

4. A mismatch: a mismatch occurs when patients arrive to be seen but staff are not yet at that service point. This typically happens before the opening time of the service point when patients arrive before the staff. However it could occur at any time if staff are away from their service point due to outreach activities, meetings, long breaks etc. You can see if there is a mismatch on the Snapshot Graph. There will be patients waiting but no staff to see them. You can solve this problem by encouraging patients to arrive later in the day and by staggering staff shifts. Meetings could be held at quiet times and breaks should be taken at quiet times whenever possible.

5. A logistical problem: patients are waiting to be seen and staff are available to see patients but due to a lack of equipment, rooms or other logistical needs, staff are unable to attend to the patients. You can see if there is a logistical problem by looking at the Snapshot Graph and the Facility assessment. There will be staff present but patients waiting because the facility assessment shows there is a shortage of equipment or rooms. You can solve this problem by providing equipment and rooms.

6. Flow problems: Staff are available to see patients and patients are at the facility but they are being delayed at some other service point. You can see flow problems on the Snapshot Graph. You will however have to look at 2 service point Snapshot Graphs. There will be staff present but no patients however patients are waiting long at a prior service point. This problem can be solved by solving the problem at the prior service point. You can temporarily solve this problem by getting the staff

to help at the prior service point since they in any case do not have any patients to see yet.

2.6. Impact of the problem

Studies indicate that long waits lead to delays in diagnosis and treatment and can prevent the timely delivery of recommended preventive services (Addissie, *et al*, 1998; FMOH, 2001) and it has also been mentioned that long waiting time is the main cause of client/ patient complaints that leads to seeking treatment in private or traditional health care facilities (Mitike,*et al*, 2002). Dwyer (1999) summarizes the effect of long waiting times and overcrowded waiting rooms as the cause of staff stress, hurried counselling sessions and the eventual fade- away of clients from coming for services. Besides being a leading cause of patient dissatisfaction with health service quality, it is often related to short doctor-patient contact times which in turn can seriously reduce the technical quality of care (Hermida, *et al*, 1996).

In the case of preventive and promotive activities, a long waiting time is less well tolerated and potential and continuing clients see long waits as an obstacle to accessing preventive services such as family planning. Although some waiting is to be expected, waits in excess of one or two hours result in high rates of contraception program and method discontinuation and may also discourage would-be acceptors from seeking contraception program services (Dwyer, 1999).

2.7. Client/patient perception of waiting time

Patients perceive long waiting times as a barrier to actually obtaining services. Moreover, dissatisfaction with care has been linked to long waiting times (Mackey and Cole, 1997). Users in Health Financing Secretariat study (FMOH, 2001) complained that long waiting promoted the practice of unofficial charges for getting rapid appointments and skipping queues. One of the study participants described it as '*Some people have to pay bribes in the public facility even to get registered'*. Many participants point out that long waiting is the result of health workers' 'carelessness' towards patients. One participant said:

> *'Usually patients have to wait long for physicians. And after examining 3 or 4 people, health workers say that it is tea break and patients have to wait until the staff return. This usually takes long. There is a lot of suffering during this time'.*
>
> (FMOH, 2001)

2.8. Providers' attitude towards changing waiting times

Murray and Tantau (2003) describe the perception of long waiting times by health workers as *'Long waits and delays in the office were seen as something of a status symbol. A physician who had a long wait list for appointments or a long delay in the waiting room must have been an awfully good physician to have such "demand"'.*

But currently, health services are moving away from clinical professionalism to clinical and managerial professionalism where patients' satisfaction gained the highest priority. Hence health services should conduct surveys to gauge the perception of clients and patients to stay in the market. One way of doing this is by conducting a patient waiting time and flow analysis.

According to Marshall (1986) many health professionals are concerned to avoid having patients wait unnecessarily and some of them, knowing that the waiting room is full, may rush consultations and give less than their full attention to patients. Hence staff do worry about the

long waiting times and are willing to reduce waiting times. However, according to Dwyer (1999) staff can become very defensive about a waiting time and client flow study. They may feel that they have to be especially quick and efficient when the time is being recorded. Therefore, how staff are involved in the study will be critical to the success and usefulness of the WSTS.

2.9. How to study the problem

Waiting and service time surveys can be conducted in different ways (Shortt, 2000).

Retrospectively- patients who receive services will be asked about the duration of their wait at each service point. Unfortunately this approach fails to correctly measure time as it is dependent on personal memory of the duration of each encounter.

Prospectively –this involves following patients from the time they enter the facility until the time that they leave the facility. The duration and type of each service contact will be recorded on a time sheet. This approach is believed to allow an accurate measurement of waiting time in a facility.

The prospective measurement is the most commonly used method. However, there is still a debate regarding the optimum duration over which to conduct it. Reagon and Gouws (2005) said it is enough if it is conducted on an 'average day' provided that the same services are provided by the same allotment of staff each day of the week. Addissie, *et al* (1998) recommends the study should be conducted throughout the week*, "The group of patients whose waiting times are observed should represent what typically happens in the practice. Including all patients seen during one week would allow for variations that might be associated with different times of the day and different days of the week".*

The researcher has not come across studies which compare and contrast ‘average day’ vs. ‘average week’ waiting time studies but since this study is a survey which tries to assess Waiting and Service times at a point in time, rather than investigating variations in waiting time throughout the week , an “average day” study will be implemented in this assessment.

CHAPTER THREE -METHODOLOGY

This chapter defines the main terms used in the study and the overall study design.

It also deals with the study population, sampling method and the method used in data collection. Finally it discusses validity, reliability, ethical considerations, data analysis and the strength and weaknesses of the method used.

3.1. Definition of terms

1. Arrival time: the time that the patient/client reaches the entrance door of the health facility.

2. Waiting time: the time the patient spends in the clinic before being attended to by a health worker. This is further subdivided as follows.

2.1 Partial waiting time: the time that a patient spends waiting at each service point in the health facility before being attended to by a health worker at that service point.

2.2 Complete waiting time: the total waiting time spent by a patient at the clinic from his/her time of arrival to the time of departure. This is the sum of all the partial waiting times.

3. Service time: the time spent receiving active services. This is further subdivide into

3.1 Partial service time: this is the time that the patient spent in consultation with a health worker at each section of the health facility.

3.2 Complete service time: the total time the patient spends in consultation with health workers within the health facility. This the sum of all the partial service times

4. Departure time: the time the patient leaves the health facility through the exit door (without any intention or need to return to the clinic on that day).

5. Dead time: the time elapsed from when the patient leaves the last service point to the time that the time sheet was collected at the exit point. This is neither a waiting time nor a Service time .It is not analyzed and is used only for accuracy checking. (e.g. if too long one might want to know if the patient went straight to the exit point or if the patient was seen at another service point but it was not recorded).

3.2. Study design

For the purpose of this study a cross sectional quantitative study design was used.

3.3. Study population

The study population included all patients / clients visiting the selected health facilities on the survey day and staff members (Doctors, Health Officers, Nurses, Pharmacy technicians, Laboratory technicians, Clerks) who were on duty and provided services on the survey day.

3.4. Sampling

3.4.1. Sample size

A two stage randomized time-delimited sampling technique was used. In the first stage facilities were randomly selected .In the second stage a sample consisting of all patients / clients visiting the clinics and all staff members who provide services were included in the study. Hence the sample size to each facility was proportional to clinic attendance and when assessing the waiting times the sample size per facility was self weighted.

3.4.2. Sampling procedure

As the aim of the study is to measure waiting and service times among private and public health facilities, all primary health care (PHC) facilities in Gondar were stratified into two: public and private. As is shown in the introduction, there are 4 public health centres and 31 private clinics (17 lower level and 14 mid level clinics). Due to financial and time constraints, this study included only 2 health centres and 4 private clinics. But since the private clinics are not the same in organisation and services (some are lower and some are medium level clinics) two were selected from each level by stratified random sampling method. Thus a total of six health facilities were included in the study.

3.5. Study procedure

Since it is known that there is high numbers of client attendance at health facilities during winter and low attendance during summer, these two seasons were excluded from the survey and autumn was chosen as an appropriate season. During autumn 2007 a typical week was selected based on the following criteria: There was no public holiday in that week, few members of staff were on leave, no major event that could change the attendance happened in that week. A typical day of the week was chosen after consulting monthly headcount reports. The researcher and facility managers also looked at the services provided on various days of the week and a day on which all or most of the services were provided, was selected as the day of the study. Wednesday fulfilled all these criteria and was selected as the day of the survey.

3.6. Data Collection

3.6.1 Data collection tool

A patient/client flow form comprising socio demographic variables, ease of access timesheet and opinion on waiting time acceptability was devised. Socio demographic variables included

the client/patient age, sex, kebele and occupation. Time taken to reach the facility, type and cost of transport were also included to assess accessibility. A time sheet with time of arrival, 'time in' (the time patient arrives at the service point) and 'time out' (the time patient leaves the service point) for each service point , reason for the visit/s and departure time were used to measure waiting and service times. Finally, patients were asked about their opinion of the wait, duration of an acceptable waiting time for that facility, what time of the day they would prefer to visit the facility in future and reasons for this choice. (See annex 1)

A staff form was also designed and used. The questions included age, sex, year of service in that particular facility, perceived maximum and minimum time he/she spends with a patient and acceptable waiting time for patients for his/her service point. A time sheet was also prepared and used to record the arrival time, time spent at different patient care service points worked at, time spent on activities unrelated to patient care, lunch and tea times and the departure time of the staff. (See annex 1).

3.6.2. Data collection logistics

- ***Preparation phase***

Prior to conducting the study at the various clinics, the heads of the health facilities were contacted to discuss how to implement the study and the following were the topics of the discussion.

- Introduction to the concept of the study and explanation of waiting and service times.

- assessing the layout of the clinic (service points, number of staff, flow of patients through the clinic, working procedures at the service points, entry and exit points, types of services rendered, ways in which services are rendered)

-organizing the time and place for training of staff and survey assistants on the procedures of recording waiting and service times and

- On customizing the flow sheet according to the structure and type of services provided by the facility.

- ***Implementation phase***

Two to six volunteers were assigned to each study facility. They arrived at 5:00 a.m. and were stationed at the entry to record arrival and departure times. For those few patients who came before the arrival of the volunteers the estimated time of arrival was requested and filled in on the form. As patients entered the health centre they were handed a timesheet on which their arrival time was recorded. The patients were also asked some survey questions, such as their age, whether they were employed and how they travelled to the health centre. Each of the staff members who saw the patient on that day, then filled in the time they started seeing the patient and the time they finished seeing the patient. When the patients left the health centre the departure time was recorded and they were asked questions about their opinion about the duration of the wait and how long they are willing to wait at the health centre for the services which they had just received.

A self administered questionnaire and a time sheet was handed over to the staff. On the time sheet staff recorded the time they began offering services at the service point and the time they completed their duty at that service point. The staff also filled in a short survey on the maximum and minimum amount of time they spent offering services for each patient and about the time that they think it is appropriate for patients to wait for the services which they provide. The form was later collected by volunteers when the staff left the facility.

3.7. Validity

The intention of the survey was to measure waiting and service times; hence the study had obvious face validity. In addition to ensure the validity of the study the following were accurately done:

- Adequate training was given to volunteers, staff and supervisors on carrying out a waiting and service time survey.
- The questionnaires and patient/client flow form was pre-tested and customized for each facility
- All watches and clocks were synchronized
- The study would not manipulate the real situation in the facilities by not helping clients/ patients unless there was an absolute emergency.
- The Researcher and the volunteers checked the patient/client flow forms throughout the day for accuracy and completeness and took corrective measures immediately.

3.8. Reliability

Waiting and service time measurements need to be reliable as it should be done iteratively to assess performance and improvements of service points and / or facilities. Due to financial and time constraints it was not possible to repeat the study on a similar day. The researcher believes that doing the following sufficiently helped to ensure reasonable study reliability.

- Giving adequate training to supervisors and data collectors
- Using clearly defined measurements and questionnaires
- Standardizing and Pre testing the questionnaire and patient flow form

3.9. Data Analysis

The questionnaires and patient flow forms were checked for completeness and accuracy first by data collectors and then by supervisors. Then the researcher captured the data using a Waiting Times database developed by the University of Western Cape, School of Public Health. Data was cleaned up and analysed using the Waiting Times database and SPSS (SPSS Inc, Chicago) for Windows, version 16.1.

The data was analyzed using the following framework

1) Descriptive summary for private and public health facilities

Socio demographic variables, access, service times, waiting times, case mix, staff load, perception of waiting time by staff and patients was analyzed by using descriptive methods and the results are shown in tables and graphs.

2) Comparison of private and public health facilities

Private and public health facility findings were compared using graphs, tables and nonparametric statistics. In data analysis, two non-parametric tests were used. In examining the difference among the six surveyed facilities, the Kruskal Wallis[10] test was performed. The difference among public and private facilities was evaluated using the nested Mann-Whitney U[11] test. For categorical type of data the chi-square test was performed.

[10] Kruskal Wallis test is a non-parametric method for testing equality of population medians among groups. It is an extension of the Mann-Whitney U test to 3 or more groups. It is based on assigning ranks to each observation and testing to see if mean ranks differ significantly.

[11] Mann-Whitney U test is a non-parametric test for assessing whether two independent samples of observations come from the same distribution.

3.10. Ethical consideration

Ethical approval was obtained from the ethics committee of University of the Western Cape. Permission to conduct the survey was also obtained from the Regional Health Bureau (RHB), the Zonal health Department (ZHD) and from the facility heads. The purpose of the study was also explained to patients and verbal consent was obtained from them as to whether they agree to participate in the study or not. The study subjects were informed that their participation was voluntary, and refusal to participate would not jeopardize the care and treatment they received. No names were recorded and confidentiality was assured.

The study was primarily organized by the researcher and the District Health Office. The selected facilities were requested to collaborate in the study by the District Health Office and as a result staff consent at facility level was obtained in groups. Facility heads were also supervising the data collection process hence individual staff members did not have the option to refuse without having to answer to their heads. However this situation did not happen as no staff member refused to participate.

CHAPTER FOUR - RESULTS

This chapter focuses on the findings of the study. The findings are interpreted following the interpretation scheme developed in the methodology section. It also gives a descriptive summary of private and public health facilities and finally compares private and public health facility findings using graphs, tables and nonparametric statistics.

4.1. Private health facilities

All the selected private facilities agreed and participated in the study. Description of each facility is shown in annex III.

4.1. Socio demographic characteristics of patients and staff in private facilities

A total of 56 patients/ clients attended the clinics on the day of the study. Twenty five (44.6%) were males. The median age of patients was 24 years (IQR 18-38.7). Twenty four (42.9%) were new visitors and the remaining had visited the facility at least once previously. Only 6 (10.7%) of them had an appointment. The socio demographic characteristics of patients attending the facility are summarized in Figure 1and 2.

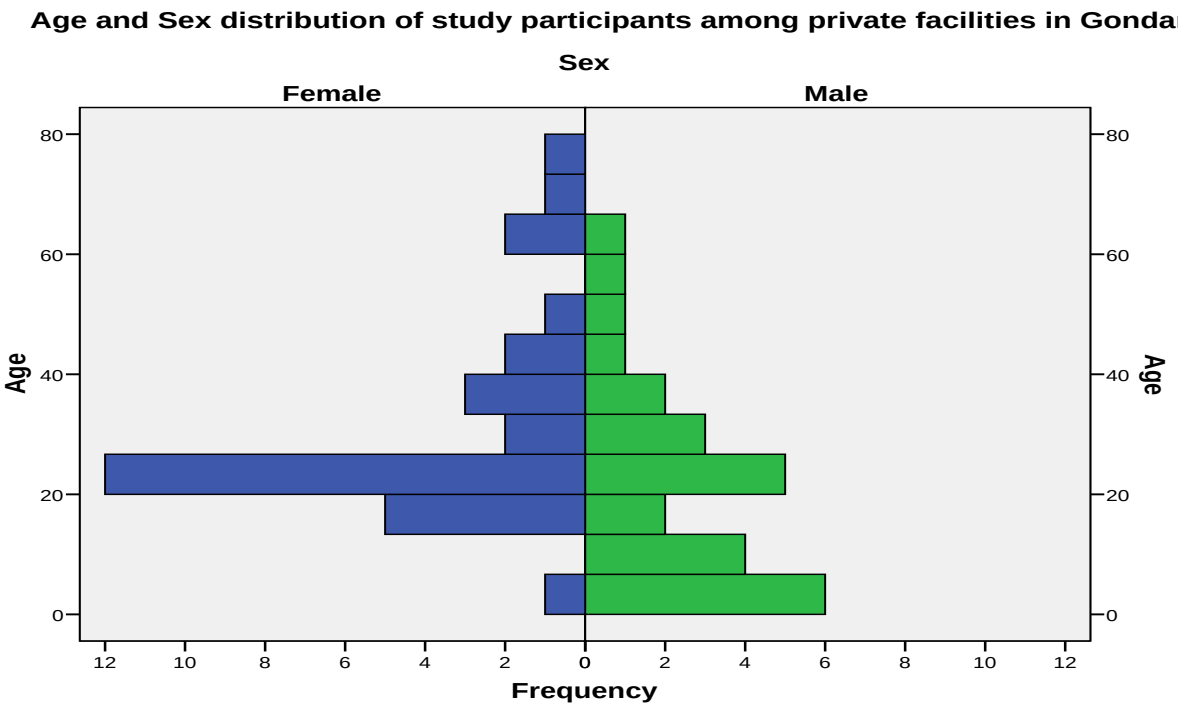

Figure 1-Age and Sex distribution of study participants who visited private facilities in Gondar.

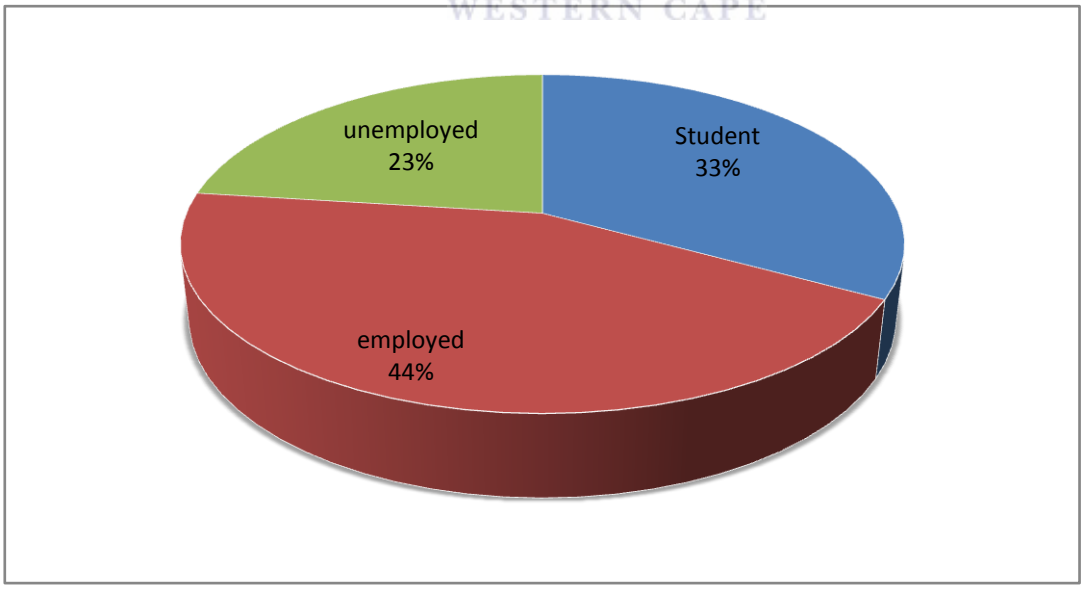

Figure 2-Occupation status of patients who visited private facilities (only for those above 18).

Twelve staff members were providing services to patients in the four selected facilities. The age, qualification and sex distribution of the staff is shown in table 3. Four of the staff were females and the majority were in the age group 18-30. There was one medical doctor in each of the two medium clinics.

Table 3*-Socio demographic characteristics of staff working in the surveyed private facilities in Gondar District, November 14, 2007.*

Socio demographic characteristics	**Frequency**
Sex	
Female	4
Male	8
Age	
18-30	10
31-45	1
46-65	1
Median (IQR)	27(4.2) years
Educational status	
Medical doctor	2
Diploma	5
Certificate	1
Secondary school completed	4
Year of service	
<1 year	6
2-5 years	6
Median	1.6(1.5) years

4.1.1. Accessibility of private health clinics to patients

Table 4*-Accessibility of surveyed private facilities in Gondar District, November 14, 2007.*

Issues of access	**Frequency**
One way travel time	
< 5 minutes	15 (26.8%)
6-10 minutes	16 (28.6%)
>10 minutes	25 (44.6%)
Median(IQR)	10 (5-17.5) minutes
Transport type	
Walked	45(80.4%)

Taxi	10(17.9%)
Other	1(1.8%)
Address	
Gondar District	51(91%)
Outside Gondar district	5(9%)

The lower level clinics open for 7 days a week and the medium clinics 6 days a week. Both open from 8:00 a.m. to 6:00 p.m. Staff may also be called by patients and give services either at the clinic or patient's home at anytime of the day.

The median (IQR) one way travel time of the patients was 10 (5-17.5) minutes. The majority (80.4%) of the patients arrived at the facilities by walking and 17.9% by a taxi. The median one way travel cost for those who used taxi was 0.75 Ethiopian Birr (ETB). Only 9% of the patients came from neighbouring districts.

4.1.2. Waiting and service times

Summary

No of Staff in Whole Survey
Present= 12 Absent = 0 Total= 12 [12]Equivalent staff =14.6
Patients Seen in Whole Survey
Total 56 Turned Away[13] 0 Left Voluntarily [14] 0 Median Travel Time 10 Minutes

Median Complete Service Time	10	Median Complete Waiting Time	6
5% Complete Service Time	2	5% Complete Waiting Time	1
75% Complete Service Time	19	75% Complete Waiting Time	10
95% Complete Service Time	66	95% Complete Waiting Time	73

Table 5- private clinics waiting and service times per service point.

Service Point	**Staff**	**Patients Seen**	**Work load**	**% Staff times Attending to patient**	**Service Times (min)**				**Waiting Times (min)**			
					Median	**5%**	**75%**	**95%**	**Median**	**5%**	**75%**	**95%**
Registry and casher	4.19	47	11.22	5.7	2	1	3	10	1	0	5	18
Consulting Room - Doctor	1.96	27	12.24	20	6	3	11	27	5	0	10	62
Injection Room	2.32	17	7.32	7.8	4	2	6	13	3	0	5	15
Laboratory	2.14	17	7.96	43	17	6	38	64	2	0	5	7
Consulting Room - Prof Nurse	1.72	17	9.89	14.2	7	1	9	13	3	0	6	126

4.1.2.1. Arrival pattern

Only 5(8.9%) of the patients arrived before the service points start attending to the patients (between 7:00 - 8:00 a.m.). Large influxes of patients (about 50%) arrived between 8:00 - 9:00 a.m. Only 26.7% of patients visited the facilities after 12:00 p.m. The arrival pattern of patients for each service point and with regard to waiting and service times is shown in Figure 4-3.

[12] Equivalent staff- one equivalent staff member is a staff member who worked for 8 hours.

[13] Turned away- Number of Patients turned away without receiving a service.

[14] Left voluntarily- number of patients who left the facility of their own accord without being attended to.

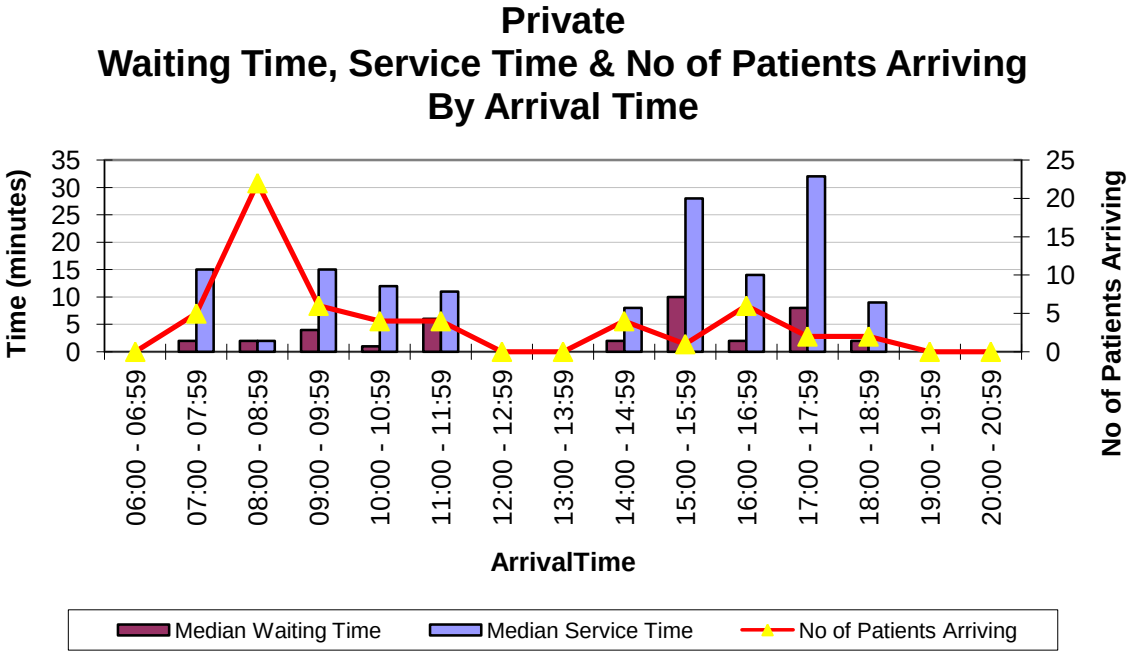

Figure 3- *Waiting and service time by arrival times. Gondar District, November 14, 2007.*

4.1.2.2. Waiting times

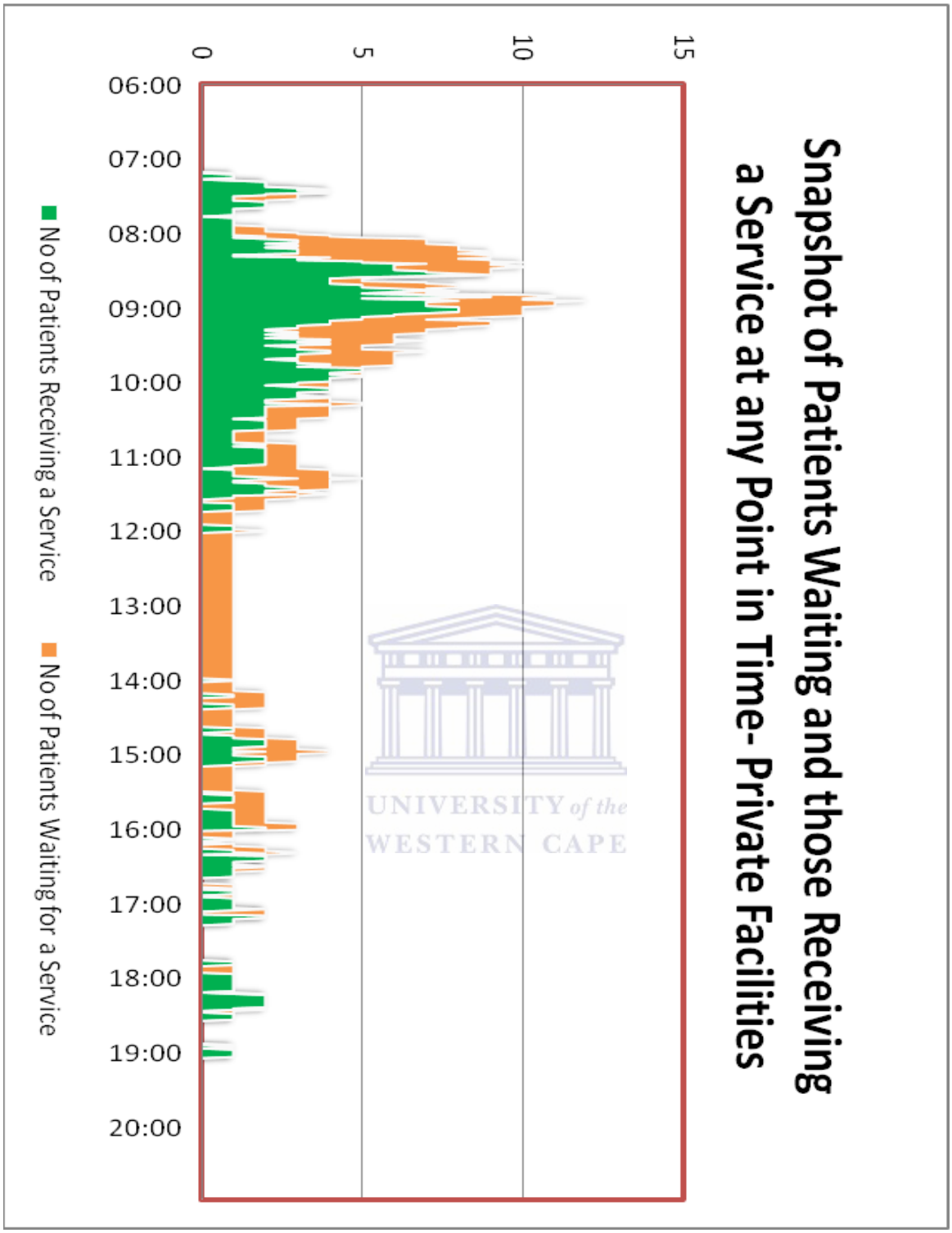

Figure 4- Snapshots of patients waiting and receiving services at a point in time among private health facilities. Gondar District, 14 November 2007.

The number of patients waiting for and receiving services at any point in time is shown in the 'snapshot' graph in Figure 5. The median complete waiting time for the facilities was 6 minutes. The median partial waiting times for the facility service points is shown in Table 5. Median partial waiting times of 1, 2 and 5 minutes were observed at 'Registry and Cash' Office, laboratory and 'consultation room -Doctor' service points respectively.

The waiting time is almost similar for those patients who arrived in the morning or afternoon sessions (Figure 4).

4.1.2.3. Service times

The median complete service time for the facility was 10 minutes with a 90% range of 2 - 66 minutes. The median partial service time for each service point is shown in Table 5. The highest median partial service time of 17 minutes was observed at the laboratory. A median of 2, 6 and 7 minutes service times were observed at the 'registry and casher', 'consulting room-Doctor' and 'consulting room –nurse' service points.

The workload per staff ranges between 7.32 patients seen per staff member per day in 'consulting room-nurse' to 12.24 patients 'consulting room doctor'. Between 5.7- 43 % of staff time was spent attending to patients. Staff working in 'Registry and casher' and 'consulting room –Doctor' spent 5.7 and 20 percent of their working hours attending patients.

4.1.3. CASE mix

As shown in table 5, 26 patients visited the 'consulting room –Doctor' and 17 visited 'consulting room-Nurse'. Eleven (19.6%) visited these service points for acute infectious diseases like malaria, pneumonia and other acute febrile illnesses. Three (5.3%) came for blood pressure check up, 2(3.77%) for family planning services .The majority 24(42.8%) visited the facilities for a multiple of other reasons.

4.1.4. Attitude of patients and staff about waiting and service times.

In response to the question which asks their opinion about how long they waited, fifty two (92.9%) believed that they had waited for a 'short time', 4 (7.1%) for an 'acceptable time' and none of them believed that they have waited for a 'long time' even though 2 (5%) waited for 73 minutes or more.

Patients were also asked about how much time is acceptable to wait in this facility. The median (IQR) acceptable waiting time was 15 (10-28.7) minutes.

All the staff working in the facility completed the staff questionnaire. The median (IQR) perceived maximum amount of time they spent giving service per patient was 15 (2-20) minutes. The median (IQR) minimum perceived amount of service time per patient was 3.5 (1-5) minutes.

Staffs believe that patients wait about a median (IQR) of 3 (2-5) minutes to receive services at their service point.

4.2. Public facilities

From a total of 4 health centres 2 were selected randomly and both participated in the study. These are Gondar and Azezo health centres. Gondar Health Centre (GHC) is the biggest and oldest health centre in the district and Azezo health centre (AHC) was upgraded from a health station to a health centre in 2007. GHC is located at the city centre and AHC in the southern suburb 12 km to the south of the city centre.

4.2.1. Socio demographic characteristics of patients and staffs in public health facilities

Four hundred and two patients visited the two facilities on the day of the survey. Two hundred thirty (57.4%) were females and the median (IQR) age of the patients was 23 (17-31.5) years. Of those who were above 18, 21(5.2%) were employed, 27.2% were self employed and 33.4% were unemployed. Eighty two percent had visited the facility before and 45.6% had an appointment. Socio demographic characteristics of the study participants is shown in figure 6 and 7.

Out of the 42 staff working in the two facilities 33 were present on the day of the survey. The median (IQR) age of the staff who were present was 40(36-45) years. Nineteen (57.6%) were females. The socio demographic characteristic of staff working in the two public health facilities is shown in Table 6.

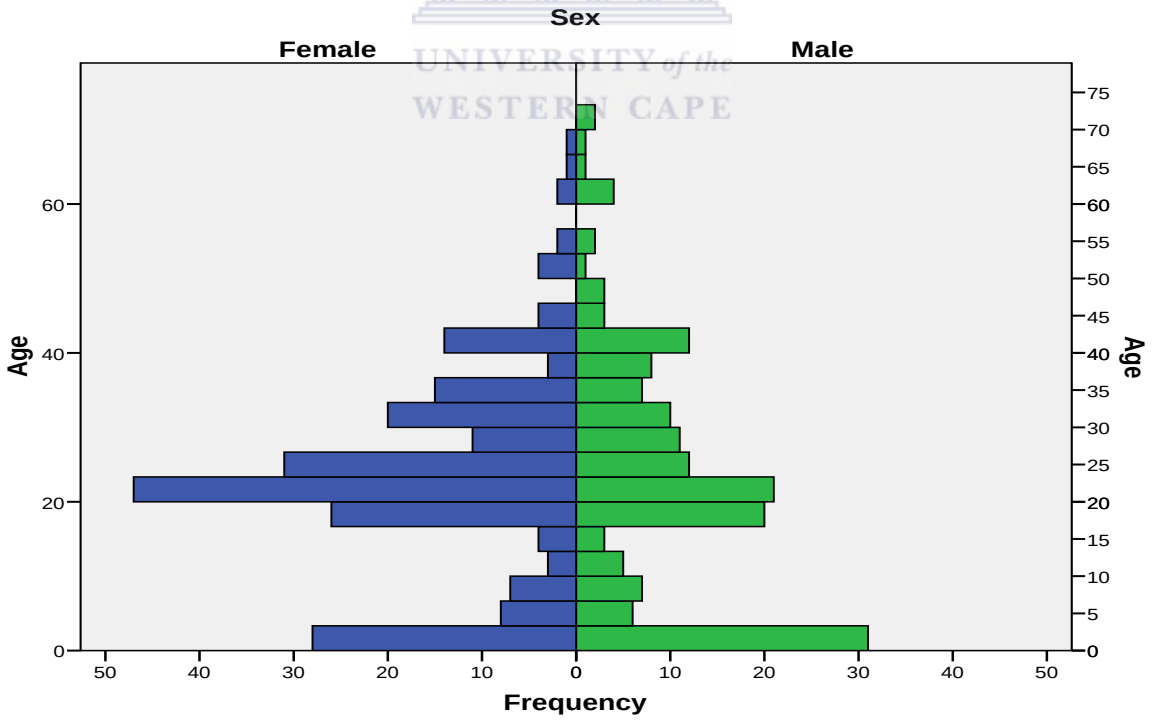

Figure 5- Age and Sex distribution of patients attending public health facilities in Gondar. November 2007.

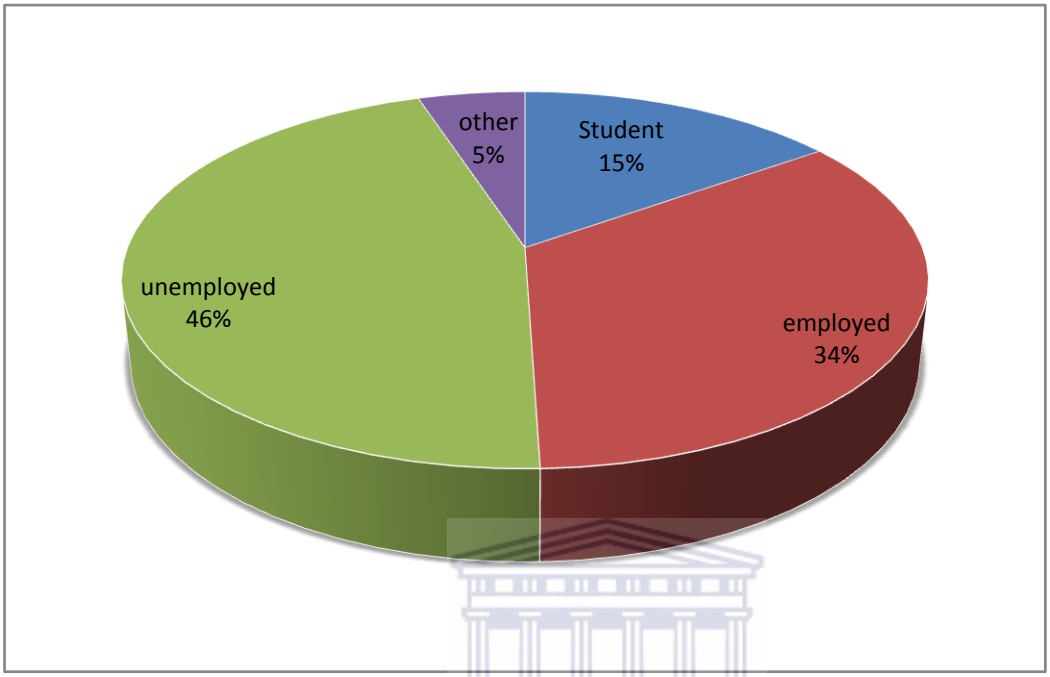

Figure 6- Distribution of study participants of public facilities by occupation.

Table 6- Socio demographic characteristics of staff working in public health facilities, November 14, 2007.

Socio demographic characteristics	Frequency (percent)
Sex	
Female	19(57.6%)
Male	14 (42.4)
Age	
18-30	4 (12.1%)
31-45	22 (66.6%)
46-65	7 (21.2%)
Median (IQR)	40 (36-45) years

Educational status	N=42 (9 were absent)
Medical doctor	0 (0%)
Bachelors degree	4(9.5%)
Diploma	23(54.7%)
Certificate	8(19%)
Secondary school completed	7(16.6%)
Year of service	N=33
<1 year	10 (30%)
2-5 years	6 (18.1%)
>6 years	17 (51.5%)
Median(IQR)	6(0.4-10) years

4.2.2. Accessibility of public health facilities

The outpatient departments of the two health centres open between 8:30a.m. - 5:30 p.m. for 5 days a week.

Table 7- *Accessibility of public health facilities in terms of time, type of transport and cost, November 14, 2007.*

Issues of access	**Frequency**
One way travel time	
< 5 minutes	71(17.7%)
6-10 minutes	101(25 %)
>10 minutes	229(57.1%)
Median	15 (10-30) minutes
Transport type	
Walked	297 (74.1%)
Taxi	71 (17.7%)
Private car	17 (4.2%)
Other	14 (3.5%)
Address	
Gondar District	359 (89.6%)
Outside Gondar district	42(10.4%)

The median one way travel time of the patients was 15 minutes (IQR 10-30 minutes). Seventy four percent of the patients arrived at the facilities by walking and 17.7% by a taxi. The median one way travel cost for those who used taxi was 1 Ethiopian Birr (ETB). The majority (89.6%) were residents of the district and only 10.4% came from neighbouring districts.

4.2.3. Waiting and service times

4.2.3.1. Arrival pattern

Patients started to arrive as early as 5:00 a.m. and 56.8% of patients arrived before 10:00 a.m. Only 25% of the patients visited the facility in the afternoon session (after 1:00 p.m.) and no patient arrived after 3:00 p.m. The arrival pattern of patients is shown in fig 8. The arrival pattern is bimodal in shape where the number of arriving patients peaks between 7:00 - 9:00 a.m. in the morning and 12:00 – 2:00 p.m. in the afternoon.

On the day of the survey, 18 (4.7%) patients were turned away and 1(0.25%) patients left voluntarily.

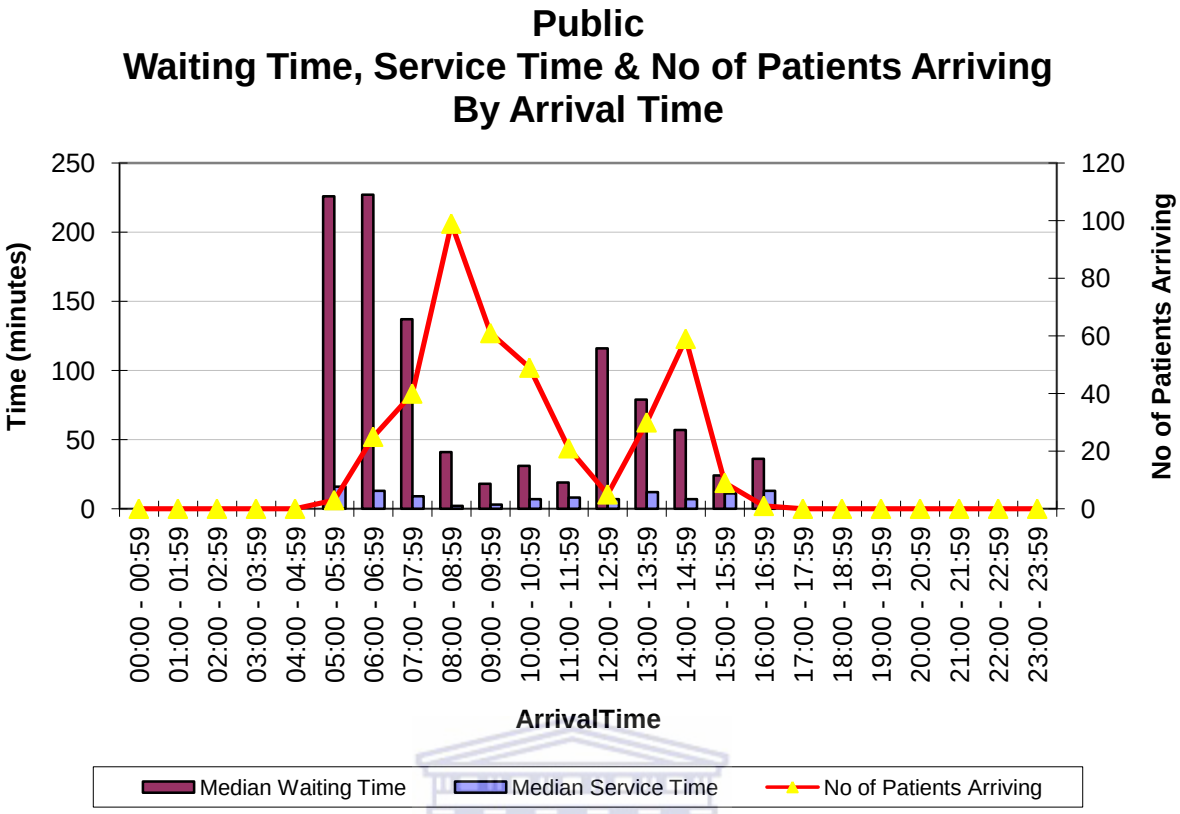

Figure 7- Waiting and service times by arrival time of patients. Gondar District, November, 2007.

4.2.3.2. Waiting times

The median (IQR) complete waiting time for public health facilities' was 48 (19-111.5) minutes and five percent of the patients waited for more than 5 hours. In general about 85.7 % of patents time in the facility was spent waiting for services.

At any point in time the number of patients waiting for services was far more than the number of patients receiving services (Figure 9). E.g. at 9:00 a.m. only 7 patients were receiving services and 88 patients were waiting for their turn.

Those patients who arrive before the opening hour (8:00 a.m.) and during lunch Break (12:00 a.m. -1:00 p.m.) waited longer as compared to those who arrive during the working hours (Fig 8).e.g. Median waiting time of 226 minutes was observed for those who arrived before 6:00 a.m. and 41 minutes for those who arrived between 8:00 and 9:00 a.m.

Higher median partial waiting times were observed among patients who visited VCT and adult OPD (297 and 67 minutes respectively). In all pharmacies and Dressing room a short median partial waiting time of 5 minutes was observed.

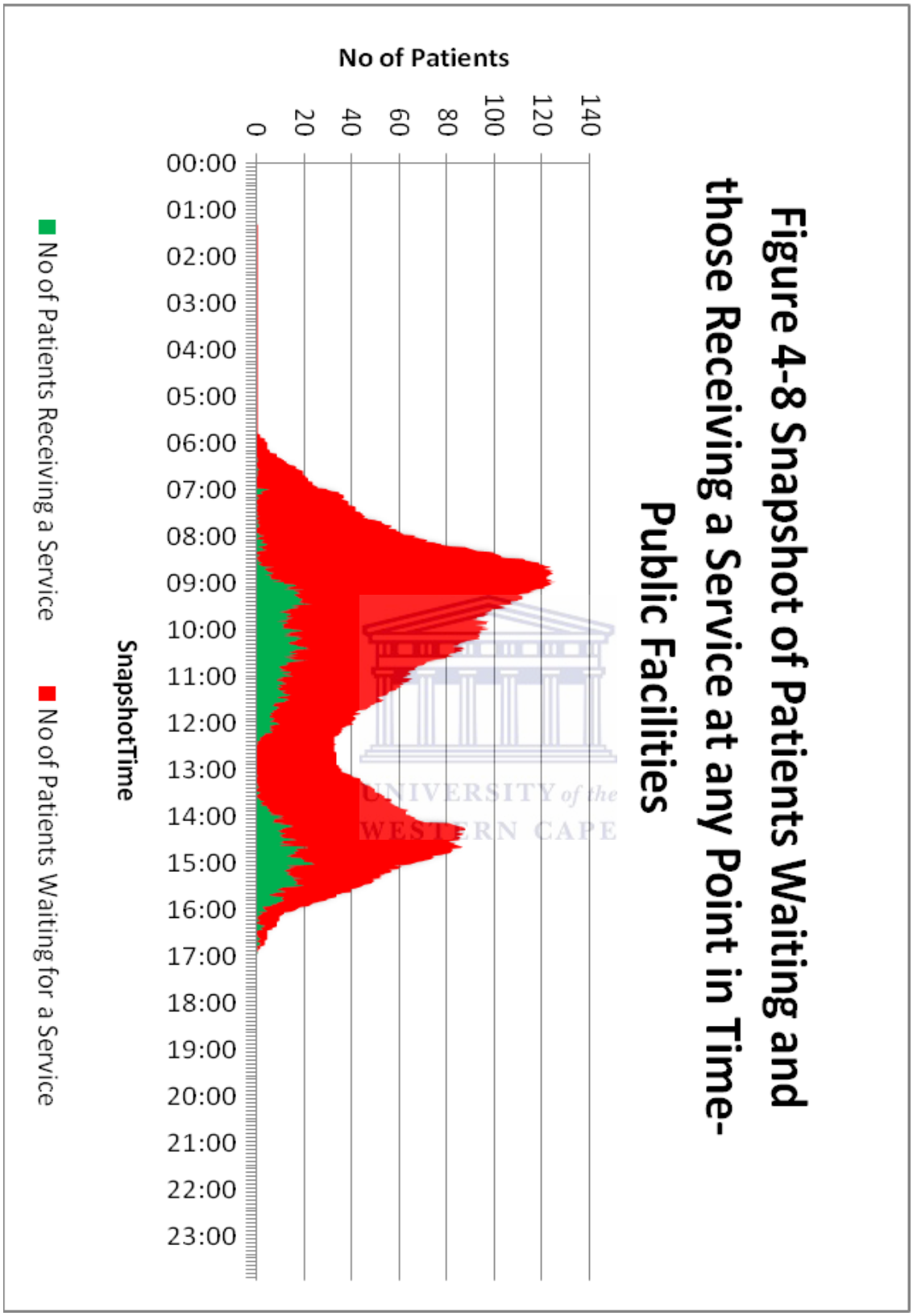

Figure 8-Snapshot of patients waiting and those receiving services at any point in time among public facilities.

Summary

No of Staff in Facility
Present 33 Absent 9 Total 42 Equivalent 27.94
Patients Seen in Facility
Total 402 Turned Away 19 (4.73%) Left Voluntarily 1 (0.25 %)
Median one way transport time 15 minutes

Median Complete ST (min)	8	Median Complete WT (min)	48
5% Complete ST	1	5% Complete WT	3
75% Complete ST	17	75% Complete WT	116
95% Complete ST	43	95% Complete WT	293

Table 8-_Waiting and service times per service point in the whole survey by facility type - public clinics

Service Point	**Staff**	**Patients Seen**	**Workload**	**% Staff times Attending to patient**	**Service Times**				**Waiting Times**			
					Median	**5 %**	**75 %**	**95 %**	**Median**	**5 %**	**75 %**	**95 %**
Adult OPD	5.99	133	22.19	34.86	7	2	10	15	67	15	157	256
Registry	2.6	130	49.92	20.16	2	1	2	4	12	1	28	119
Cash Office	1.89	120	63.51	25.36	2	1	2	4	3	0	9	31
[15]Dispensary _ Pharmacy	2.62	109	41.62	36.36	4	1	6	11	3	0	7	25
Laboratory	2.75	69	25.13	46.63	18	5	24	40	3	0	12	46
DOTS Room	1.66	68	40.95	10.04	1	1	1	2	27	4	36	64
Vaccination	1.87	45	24.03	15.68	2	1	5	7	27	3	71	125
Injection Room	4.65	43	9.25	6.54	2	1	4	8	9	2	38	75
Antenatal Clinic	1.79	30	16.76	27.94	7	2	10	22	27	4	44	60
Under 5 Clinic	1.22	27	22.12	37.54	8	4	10	15	32	5	39	150

[15] Dispensary pharmacy-these are USAID established special pharmacies in public health facilities.

Family Planning	0.9	26	28.82	14.55	2	1	3	6	13	1	35	70
VCT	1.25	18	14.35	41.03	15	2	18	22	297	7	358	512
PMTCT	0.51	17	33.17	59.35	5	2	7	38	26	1	46	91
[16]Main Pharmacy	0.9	10	11.16	6.28	3	1	3	5	2	0	5	6
Dressing Room	0.88	10	11.43	16.19	6	3	9	14	5	1	10	93
ART clinic	0.94	9	9.6	23.11	10	2	15	30	46	6	55	70
[17]ART Pharmacy	0.86	5	5.8	6.04	5	2	5	8	10	3	11	76

4.2.3.3. Service times

An equivalent of 33 staff served 402 patients with a median complete service time of 8 minutes (IQR 2-17 minutes).The median complete service times was 12 minutes without DOT's.

All staff members spent less than 60% of their time serving patients. Staff working in the ART clinic, ART pharmacy and main pharmacy spent less than 10 % of the working hours attending to patients.

Median partial service time of 2 minutes or less was observed in DOT's, family planning and injection room service points.

4.2.4. Case mix

Table 8 shows the number of patients who visited each service points. Tuberculosis patients on DOT's regimen account for 17% of the total patients. Preventive services were visited by 117(29.1%) clients. Of these sixteen (13.6%) visited the VCT clinic. Family planning, vaccination and Antenatal care clinics were visited by 26(22.2%), 45(38.4%), 30 (25.6%) clients respectively. Adult OPD and Under five clinic were visited by 156 (39%) of patients and the main reasons for the visit are shown in figure 10. Acute Febrile Illnesses, pneumonia, URTI

[16] Main Pharmacy-is state owned pharmacy in public health facilities.

[17] ART pharmacy- global fund established pharmacy for HIV/AIDS patients.

and Intestinal parasitosis were the leading causes of morbidity accounting about 36% of the reason for curative visit.

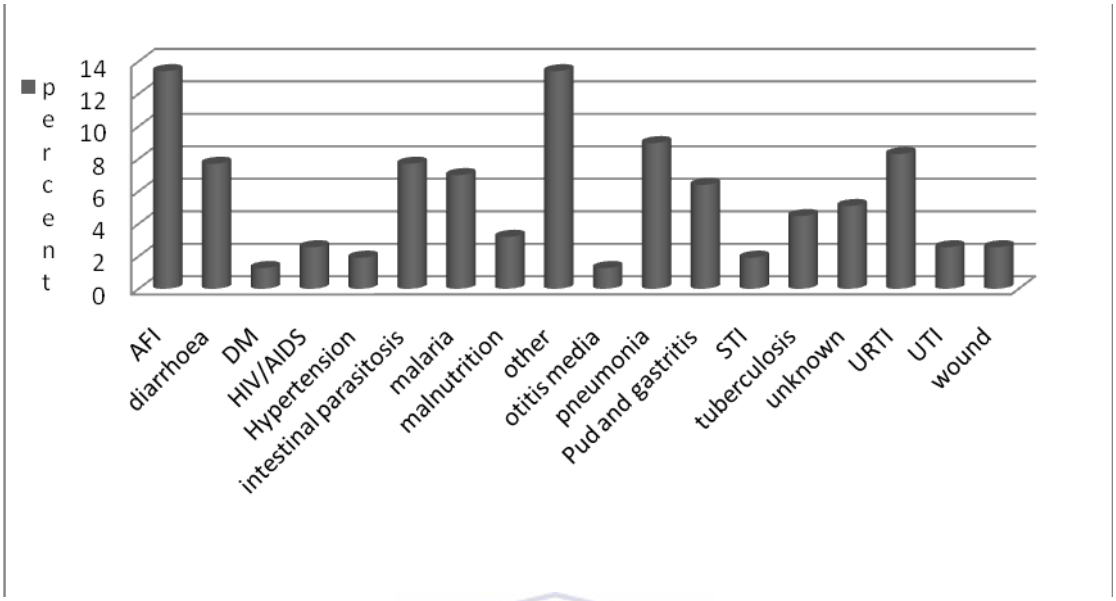

Figure 9-Visit reason of patients attending public facilities.

4.2.5. Attitude of staff and patients about waiting times

Two hundred and seventy two (62.1%) patients characterized their waiting time in the facility as 'short', 102(26.7%) as 'acceptable' and 57 (13%) as 'long'. The median (IQR) patients perceived acceptable waiting time for the facility was 30 (15-40) minutes.

Patients were asked about what time of the day they would like to visit the facility in their next visit. 319 (79.5%) preferred to visit before 8:00 a.m. and only 56(14%) were willing to visit after 1:00 p.m.

Nineteen staff members completed and returned the staff questionnaire. Staff perceived median maximum and minimum service time was 15 and 5 minutes respectively. Staff believe that patients wait for a median (IQR) of 10 (5-25) minutes to receive the services at their service point.

4.3. Comparison of waiting and service times among public and private health facilities

Table 9 compares age, sex and occupation distribution of patients who visited the surveyed facilities. There is no statistically significant difference among public and private attendants in terms of age and sex. However, there was a statistically significant difference by of occupation ($p<0.006$) among patients attending public hand private facilities. There were more unemployed and student categories among patients in public facilities as compared to private facilities (60% vs. 22%).

Table 9- Socio demographic characteristics of private and public health facility attendants, Gondar District, November 14, 2007.

Socio demographic characteristics	Frequency		
	Public	Private	P value*
Age Less than five years 6-15 years 16-25 years 26-55 years >55 Median (IQR)	 69(17.2%) 23(5.7%) 160(39.3%) 128(31.9) 21(5.2%) 23(17-32)	 3(5.3%) 7(12.5%) 23(41%9 15(26.7%) 8(14.3%) 24(18-37.5)	 *Z= -1.25,p=0.2
Sex Male Female	 171(42.6%) 230(57.4%)	 24 (44.6%) 31 (55.4%)	**X^2=0.02,p>0.8
Occupation Government employed Student Unemployed Other	n=294 101 (34.5%) 44 (15%) 134(45.5%) 15 (5.1%)	n=40 18(45%) 13 (32.5%) 9 (22.5%) 0(0%)	 ***X^2=13.8, p<0.006

*Mann-Whitney *U* test (for comparison of median age),** Chi-Square test ,*** Fisher exact test

The sex composition of staff working in private and public facilities was not significantly different. However staff working in private facilities were 13 years younger than their

counterparts (Z -3.9, p<0.001).The Educational status of the staff is also significantly different (x^2 10.3, p < 0.03) where more medium level professionals (Diploma holders) were found in public facilities as compared to the private (54.7% vs. 41.6%).To the contrary more qualified staff (Bsc or medical doctor) were found among private facilities as compared to public facilities (16.6% vs. 9.5%).Table 10 compares the socio demographic characteristics of staff among private and public facilities.

Table 10- socio demographic characteristics of staffs working in private and public health facilities, Gondar District, November 14, 2007.

Socio demographic characteristics	Frequency		
	Public	Private	p-value
Sex Female Male	19(57.6%) 14(42.4)	4(33.3%) 8(66.7%)	*X^2=2.7,p>0.15
Age 18-30 31-45 46-65 Median (IQR)	4 (12.1%) 22 (66.6%) 7 (21.2) 40 (36-45) years	10(83.3%) 1(4.4%) 1(4.4%) 27(25-29-7) years	**Z=-3.9 , p< 0.001
Educational status Medical doctor Bachelors degree Diploma Certificate Secondary school completed	n=42 (9 absent) 0 (0%) 4(9.5%) 23(54.7%) 8(19%) 7(16.6%)	n=12 2 (16.6%) 0 (0%) 5 (41.6%) 1 (8.8%) 4 (33.3%)	*X^2=10.37,p<0.03
Year of service <1 year 2-5 years >6 years Median(IQR)	n=33 10 (30%) 6 (18.1%) 17 (51.5%) 6(10) years	n=12 6 (50%) 6 (50%) 0(0%) 1.6(1.5) years	**Z=-1.67,p>0.9

4.3.1. Accessibility of facilities to patients

Private facility opening hours and days were greater than that of the public facilities. Staff's working in private facilities was also willing to give services at the clinic or patient's home when called by patients at night or during weekends.

For patients who visited private and public facilities four measures of access were compared (Table 11). Though the median one way travel time to the private and public facilities was 10 and 15 minutes respectively ,this is not statistically significant (p>0.09) . Type of transport used by patients among public and private facilities also did not show any statistically significant difference (p>0.2). The majority of public and private facility patients were from Gondar district and only less than 10 % of patients were from other districts (not significant difference by type of facility, p>0.7). The median cost of transport for those who used taxi or bus was 0.75 and one Ethiopian Birr for private and public facility patients respectively. This also did not show any significant difference (p>0.27).

Table 11- Accessibility of public and private health facilities, Gondar District, November 14, 2007.

	public	Private	P- value
One way travel time < 5 minutes 6-10 minutes >10 minutes Median(IQR)	 71(17.7%) 101(25 %) 229(57.1%) 15 (10-30) minutes	 15 (26.7%) 16 (28.5%) 25 (44.6%) 10(5-15) minutes	 *Z=-2.62 , p>0.09
Transport type Walked Taxi Private car Other	 297 (74.1%) 71 (17.7%) 17 (4.2%) 14 (3.5%)	 45(80.4%) 10(17.9%) 0(0%) 1(1.8%)	 **X^2=4.6, p > 0.2
Address Gondar town Outside Gondar town	 359 (89.6%) 42(10.4%)	 51(91%) 5(9%)	 **X^2=0.13,p>0.72
Median (IQR) One way Taxi or bus travel cost (Birr)	1(0.5-2) Birr	0.75(0.5-1.87) Birr	*Z=-1.09,p>0.27

*Mann Whitney U test, ** Chi Square test.

4.3.2. Waiting times

Patients who visited public facilities waited 42 minutes more than their counterparts in private facilities. Mann Whitney non-parametric test shows a statistically significant difference with Z of -9.01 and p value <0.001.The waiting times of the six facilities also shows a statistically

significant difference by kruskal Wallace test (X^2=63.5, df =1, p value <0.001) when compared to each other.

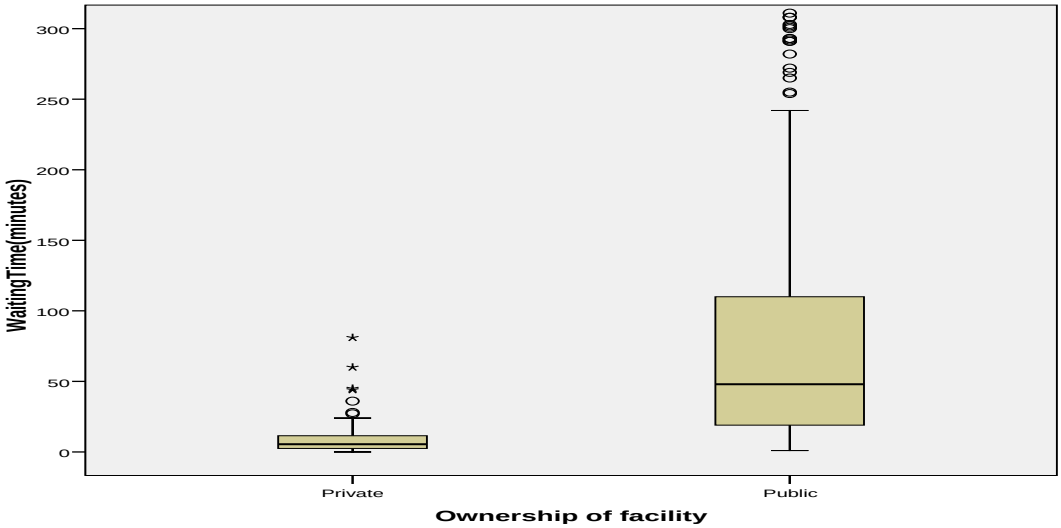

Figure 10- Box plot comparing the waiting times among private and public facilities in Gondar.

Figure 10 is a box plot which shows the difference in waiting times among patients who visited private and public facilities. This box plot shows that the minimum, first quartile, median, third quartile and maximum waiting times were quite high among patients attending public facilities.

Table 12 compares the partial median waiting times of selected service points of private and public facilities. The partial median waiting time of private facilities 'consultation room' was less by 40 minutes to that of public facilities (statistically significant with Z of -3.18 and p<0.001). Partial median waiting times for 'registry and casher' and 'injection and dressing room' of private facilities were also less by 5 and 7 minutes respectively from similar service points in public facilities. This was also statistically significant with p value less than 0.001. The partial median waiting time of the laboratory of public and private facilities did not show any statistically significant difference.

Table 12- Waiting and service times of selected service points among public and private facilities in Gondar District.

Service point	Type of facility		Mann Whitney statistics
	Public facility	Private facility	
consultation room - service time (min) - waiting time (min)	 4 43	 5 4	 *Z=-3.18, p<0.001 Z=-9 , p<0.001
Registry and cash office - service time (min) - waiting time (min)	 1 6	 2 1	 Z=-3.53, p<0.001 Z=-5.15, p<0.001
Laboratory - service time (min) - waiting time (min)	 9 3	 11 2	 Z=-3.44,p<0.001 Z=-1.4, p<0.15
Injection and dressing room - service time (min) -waiting time (min)	 3 9	 4 2	 Z=-1.44 ,p=0.14 Z=-3.67,p<0.001

*Mann Whitney U test.

4.3.3. Service times

The complete median service time of the surveyed facilities ranges between 6-15 minutes .This difference is statistically significant (Kruskal Wallace, X^2 of 14.9 and $p < 0.001$). Public and private health care facilities complete median service time (8 and 10 minutes respectively) was also statically different with Z of -3.18 and $p<0.001$.

The partial median service times of 'consultation' and 'registry and casher' rooms of private facilities was 1 minutes more than that of public facilities. This is statistically significant with $p < 0.001$. 'Injection and dressing' room's partial median service times of private and public facilities did not show any statistically significant difference (Table 12).

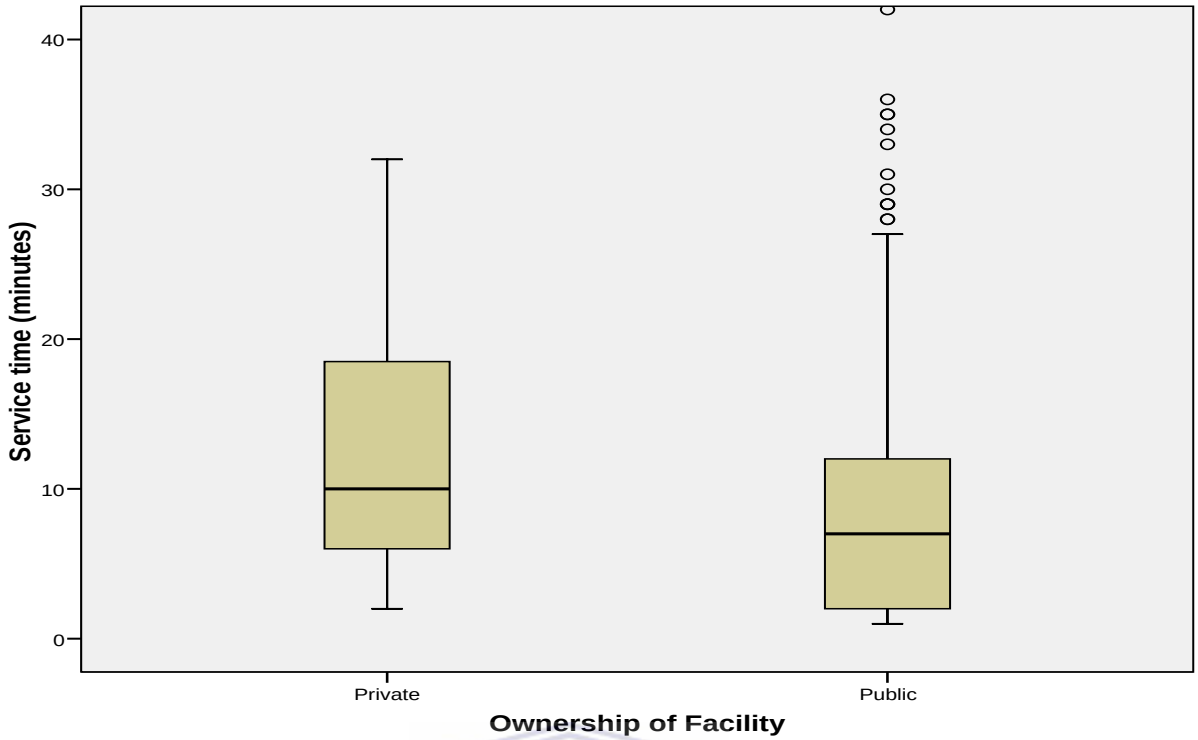

Figure 11- Box plot showing the service times among private and public facilities in Gondar.

Figure 11 show the complete median service time was significantly higher in private facilities as compared to that of public health facilities.

4.3.4. Attitude about the wait experience

The perceived waiting times among patients is shown in Figure 12.The majority of the patients who visited private facilities (87.5%) characterise their wait as ‘short’. To the contrary only 58.4% of patients who attended public facilities said they waited for ‘short’ time. ‘Long’ waiting time was only reported by patients who visited public health facilities. This is statistically significant with Pearson chi-square value of 25.3 (df 10) and $p<0.005$.

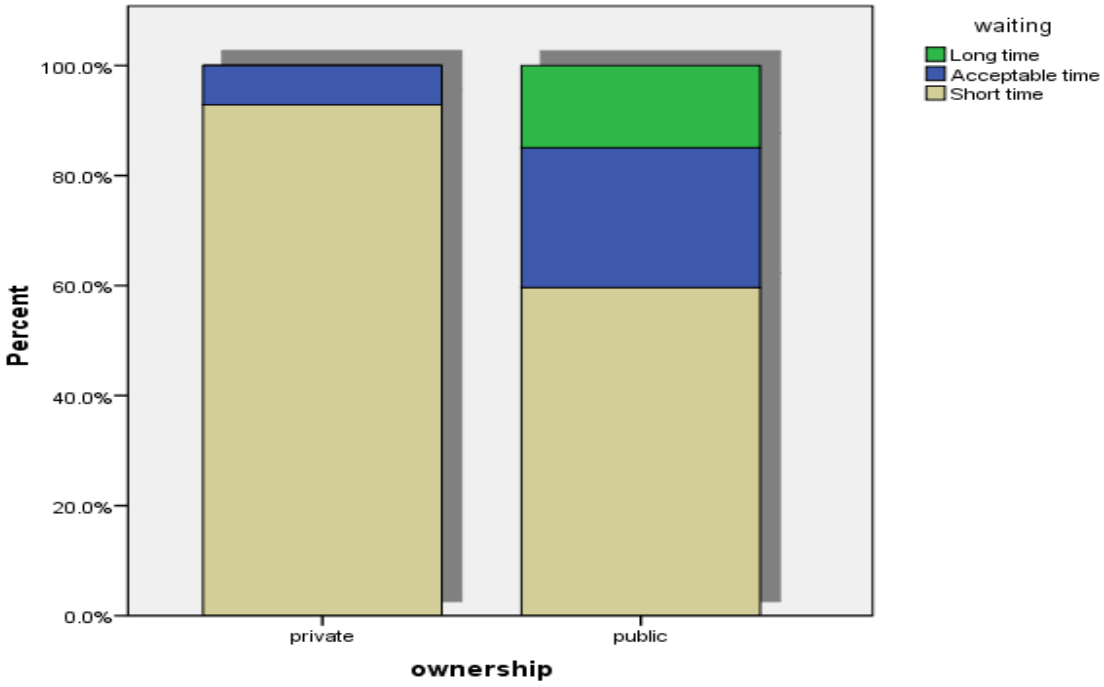

Figure 12-Opinion of patients about the duration of their wait by the type of facility.

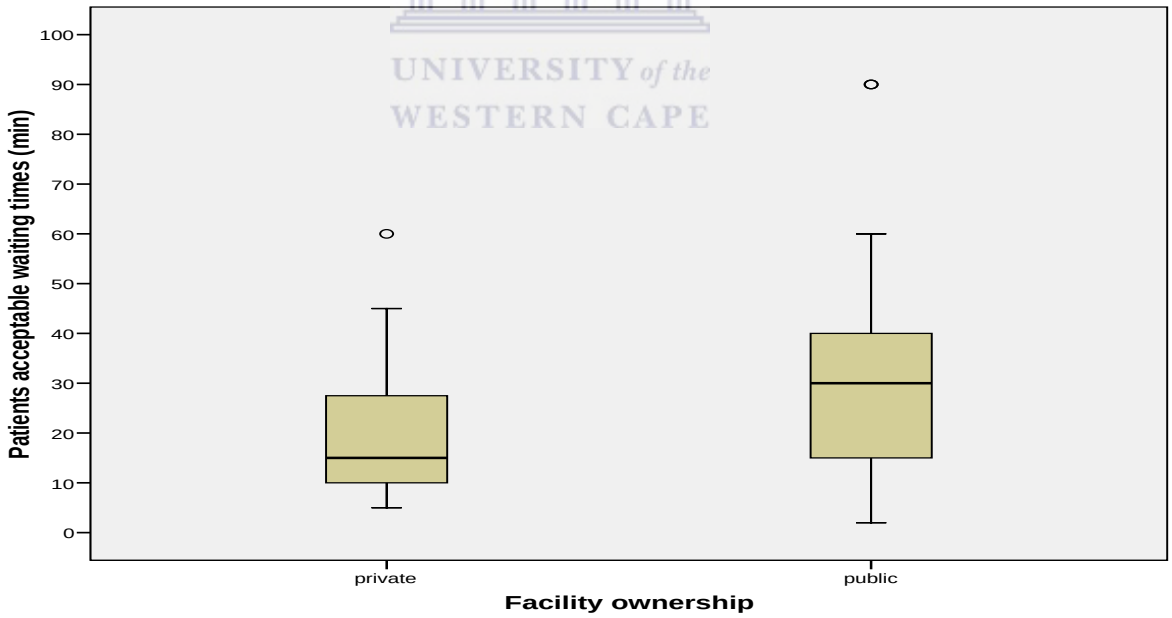

Figure 13- Patients acceptable waiting time by type of facility.

Patients attending public health facilities were willing to wait 10 minutes more than those attending private health facilities (Figure 13). This is also statistically significant (Z=-1.9, $p<0.05$)

Figure 14 and 15 shows patients preferred time of arrival in their next visit. The majority (80%) Public health facility visitor's preferred to visit before 8:00 a.m. to the contrary less than 20% of private patients were willing to visit before 8:00 a.m. The majority of private facility visitors were willing to visit the facilities during working hours.

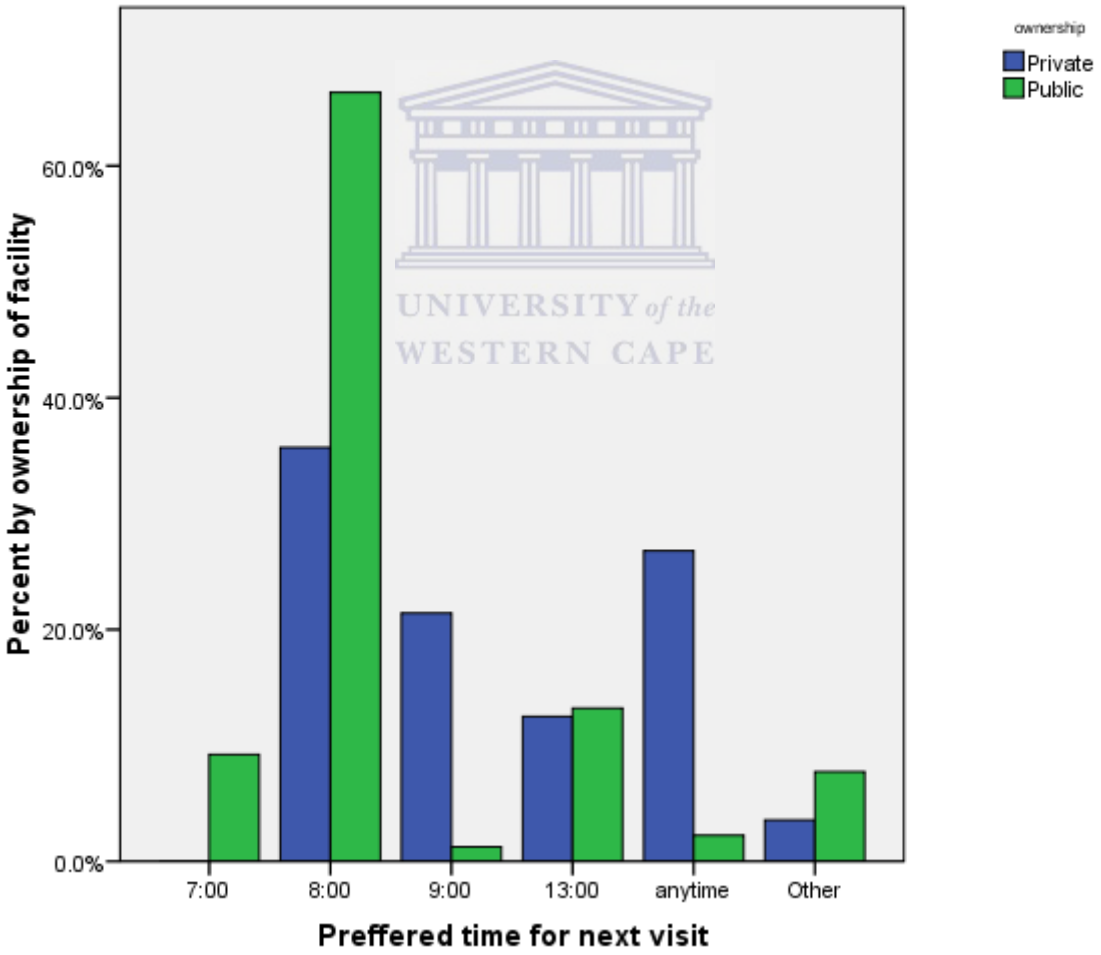

Figure 14- Bar graph showing Patients preferred time of arrival for their next visit by type of facility.

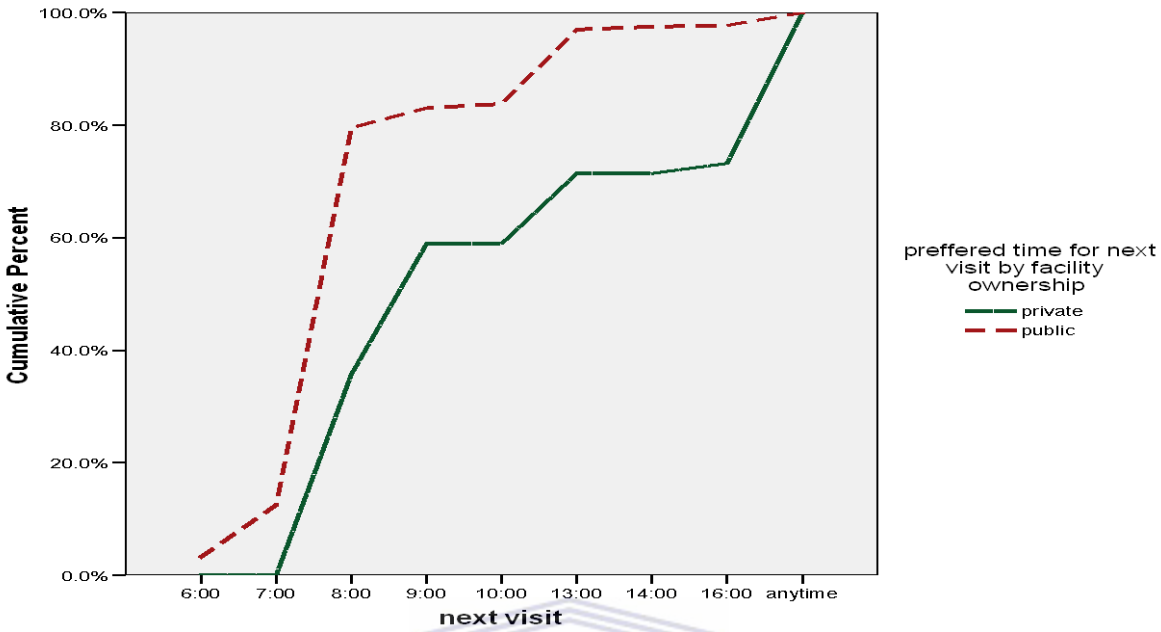

Figure 15- cumulative frequency polygon showing patients preferred time for next visit.

Staff opinion about the maximum and minimum perceived service times

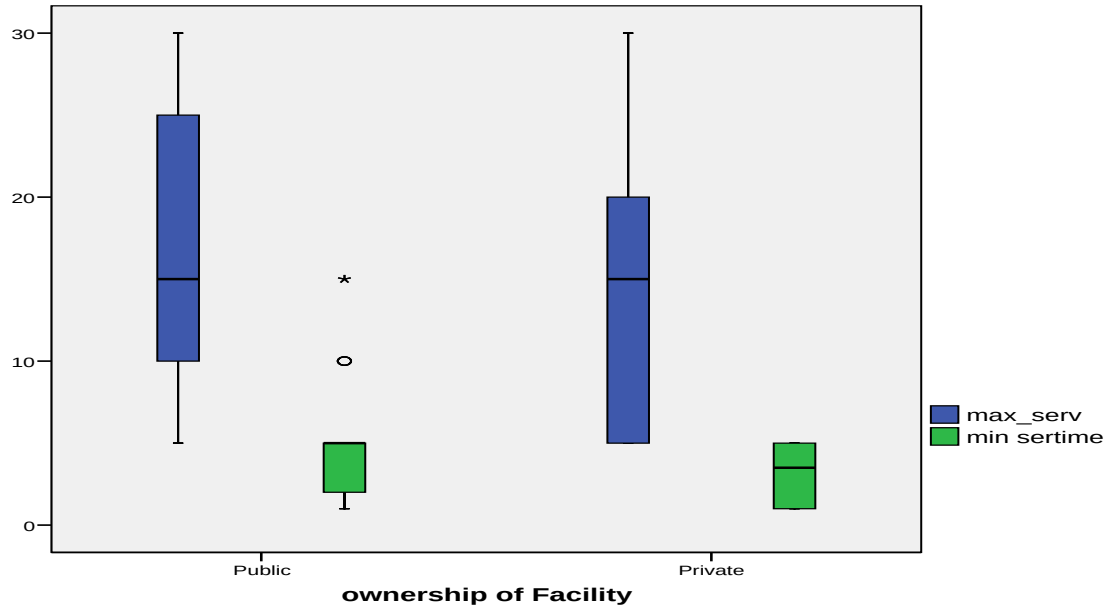

Figure 16- Box plot showing the maximum and minimum perceived service times of staffs working in private and public health facilities, Gondar District.

As shown in figure 16, public and private health facility staff maximum and minimum perceived service times were not statistically different (p >0.5 and 0.15 respectively)

However staff acceptable waiting time for a patient in his / her service point was significantly different (Z -3.7, p< 0.001) where a staff in private facility was willing to see his patient 7 minutes earlier than his counterpart in public facility (Figure 17).

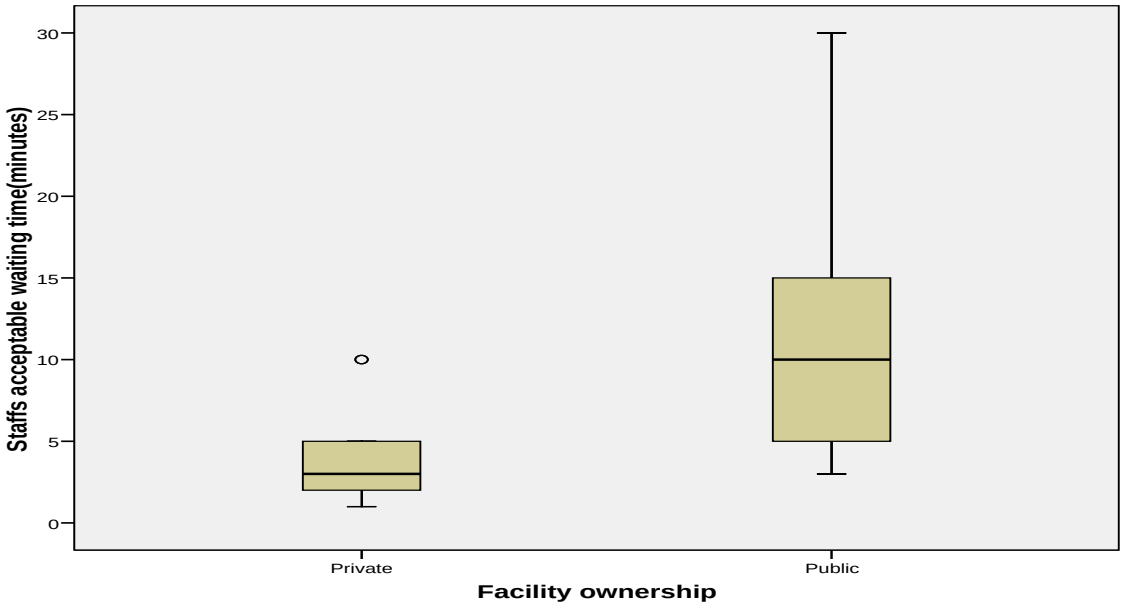

Figure 17- Box plot showing the staff's acceptable waiting time for patients among private and public health facilities.

4.4 Acceptable waiting times norm for public and private facilities

Setting norms by taking the district median is not rational as the majority of patients and staffs were not satisfied with it. There is also a significant difference in waiting times among public and private facilities which implies none of these facilities waiting time is representative of the district. Hence a norm which embraces the actual waiting time, staff acceptable waiting time for their patients and patients' acceptable waiting time is indispensable.

These three measurements cover different aspects of waiting times. The actual waiting time reflects the prevailing waiting time in the districts and facilities. The patients' acceptable waiting times reflects the readiness to tolerate that amount of waiting time and staffs acceptable waiting times shows willingness of the staff to implement such waiting times. However the acceptable waiting time preferred by patients in actual fact is not a waiting time. The question 'how much time is an acceptable amount of time to wait at this health facility?' was perceived by patients as the total duration of their stay in the facility. Hence we have to subtract the

median service time of the facility from the patients 'acceptable waiting time' in order to get the accurate acceptable median waiting time preferred by the patients.

Staffs acceptable patient waiting time also reflects the staff favoured patient waiting times at each service points. Hence in order to gets the average picture of staffs' acceptable patient waiting time for a facility, we must add the commonest service points in the facility. How many service points? Here it is reasonable to take the average number of service point visits of the district. In this survey a patient on average visits two service points. Hence the median of these service points will be added and will give us the median staff acceptable waiting time of patients.

Finally all these three measurements will be equally weighted and the average number we get will be the norm for that particular facility.

Table 13 shows the criteria used to set the acceptable waiting time norm for public and private facilities in the district. In this manner a waiting time norm of 30 minutes for public health facilities and 6 minutes for private facilities was obtained.

Table 13-Acceptable waiting times norm for public and private facilities in Gondar.

Criteria used to set norm	**Private facilities**	**Public facilities**
Actual median waiting time	6 minutes	48 minutes
Acceptable patient waiting times (acceptable median patients overall duration-median service times)	15-10= 5 minutes	30-8= 22 minutes
Acceptable patient waiting times by staff (consultation room and registry were the commonest service points visited by patients)	5+1.5 = 6.5 minutes	17.5+5= 22.5 minutes
Norm (average of the above three)	(6+5+6.5) / 3 = **5.83 minutes**	(48+22+22.5) / 3 = **30.8 minutes**

CHAPTER FIVE

DISCUSSION

This chapter discusses the findings of the study that was designed to determine and compare waiting and service times among public and private health facilities in Gondar District, Ethiopia. The study also attempted to assess the opinions of staff and patients about 'acceptable' waiting times. The findings are discussed following the order of the research questions of the study mentioned in the first chapter.

5.1. Accessibility

Appropriate access to health care is one of the components of Primary Health Care (PHC) and it can be a good quality indicator (Atting and Egwu, 1991). WSTS is one of the tools used to figure out accessibility of health facilities to the population (Reagon and Gouws, 2005). However, WSTS findings of accessibility should be interpreted cautiously as WSTS are facility based surveys which only reflect the level of access to those who visited the selected facilities. Hence it should be supplemented by population based surveys to ascertain the issue. In the absence of population based surveys it is safe to assume that the access of those who did not visit the facilities would be the same as those who did, or would be worse. Unfortunately it is impossible to predict how much worse it could be.

Accessibility of services depends on the geographic distribution of health facilities and the opening days of the facilities. Both Private and public facilities in the Gondar were open at least for 5 days a week. However, private facilities were more flexible in their opening hours as staff could be called by patients at any time.

This survey showed that both private and public health facilities were at a good access in terms of patients travel time and type and cost of transport. The data show that the majority of patients

seen in both public and private facilities were residents of Gondar. This shows low cross-border flows of patients, which is an indication of reasonably good access (World Bank, 2004).

The low population to health facility ratio of both public and private health facilities in Gondar (Table 2) as compared to the regional and the national levels might explain the short travel time to facilities and the majority being able to walk to the surveyed facilities.

5.2. Waiting and service times

5.2.1. Arrival pattern

The study demonstrates that more than three quarter of patients visited the facilities in the morning session. Half of them arrived before the service points start operating at 8:30 a.m. Early arrival of patients is known to cause prolonged waiting times among patients and stress among staff (Reagon and Gouws, 2005; Reagon *et al*, 2008).Those who arrived early waited the longest. The longest waiting time can be explained by the fact that as many patients arrive at the same time the staff can not attend to all of them at once; hence those who are at the front of the queue will wait a short time and those at the back of the queue will wait for a long time. Arrival before the opening hours of facilities was not observed in private health facilities which indicate that early arrival is characteristic of public funded health facilities. Similar early arrivals of patients among public primary health care facilities were also reported in South Africa (Mohamed and Bachmann 1998; Lowe, 2000, Reagon *et al*, 2005), Tanzania (Reagon *et al*, 2008) and Jordan (Khoury and Mawajdeh, 2004). A significant reduction in the number of patients who arrived early can be averted by institutionalizing an appointment system (Bosch and Dietz, 2000). This was shown in the South African study (Mohamed and Bachmann, 1998) where patients with appointments were significantly more likely to arrive after 8 a.m. than other patients.

However, establishing an appointment system in Ethiopian health centres is difficult as telephones are non-existent or if available not accessible by staff in the majority of the facilities. In addition access to telephones by patients is also very low. Nevertheless, a specific time for their next visit can be given to patients for their follow-up visit.

Though patients waited long because of their early arrival, still the majority (80%) preferred to visit the facilities before 8:00 a.m. in their next visit. The main reasons given were that they were afraid of the strong sun at noon, to return home early and anxious about not being attended to if they arrived later. Hence by avoiding the practice of turning away patients and by advising patients to come in less busy hours; the long waiting time due to early arrival may possibly be decreased. In addition starting services at 8:00 a.m. rather than 9:00 a.m. (staff usually start seeing patients at 9:00 a.m. though the official opening hour is 8:30 a.m.), and avoiding office work and outreach activities in the morning session could also further cut the long waiting times and increase patients satisfaction. Further qualitative studies on the reasons why patients prefer to come early in the morning than during the afternoon is suggested.

5.2.2. Waiting times

A median complete waiting time of 41 minutes is comparable to studies done on similar facilities in Tanzania (Reagon *et al* 2008) and South Africa (Lowe, 2000; and Reagon *et al*, 2005). On the other hand it is difficult to compare with other waiting time surveys done elsewhere because of the dissimilarity in the measurement of waiting and service times and the type of facilities under study. Though the complete median waiting time is acceptable there is room for improvement.

The median waiting time of 48 minutes in public health facilities was relatively long. Staff overwork or high utilization may result in long waiting times, however this was not the case in Gondar. Closer examination of the arrival time graph (Figure 8), snapshot graph (Figure 9) of

the facilities and the percentage time spent by staff working at each service point (Table 8) explains the long waiting times as being due to;

1. Early arrival of patients at the facilities.

2. Mismatch of patient arrival time and staff starts seeing patients. This is a situation where the patients are at the service point but there were no staffs to attend them. Mismatch was primarily seen between 8:00-9:00 a.m. and 1:00-2:00 p.m. and this corresponds to the time by which staffs arrive at the facilities and start seeing patients. It means that staff did not start seeing patients immediately after arrival. Hence by shifting the starting time to 8:00 a.m. rather than 8:30 a.m. in the morning and by making staff see patients immediately after their arrival, the long waiting times as the result of mismatch may possibly be decreased.

3. Staff inefficiencies. In this circumstance both patients and staff are at the service point but staff do not prioritise attending to the patients. This was the other major reason for the long waiting times in public health facilities. This problem was not observed among the private facilities. This might be due to staff doing some other activities or being busy with paper work when they should be prioritising seeing patients. Hence by making patients the number one priority and postponing other activities to less busy hours (example after 3:00 PM when there were almost no patients at the majority of the service points) the prevailing long waiting times could be decreased.

The partial median waiting times of public facilities were also significantly greater than that of the private facilities. For example, the median waiting times of 67 minutes and 25% of patients waiting more than 2 hours in the adult OPD of public facilities was unacceptably long. The percentage time spent attending to patients by the staff was also very low (34.8%) which tells us that staff overwork is not the reason for the long waiting times, as perceived by the facility staff.

The major reasons for the long waiting time at this service point are mismatch, early arrival of patients and staff inefficiencies around the clock. Hence by prioritising patients and by encouraging staff to arrive early and start seeing patients immediately after arrival, the long waiting times in this service point could be decreased.

The percentage of time spent by patients at the facilities with staff was low in public facilities (14.3%), with the rest of the time spent waiting. To the contrary only 37.5% of patient time among private facilities was spent waiting for services. This long waiting time could be used for other activities if it is impossible to decrease it. Ajayi (2002) and Bamgboye and Jarallah (1994) recommend using patients waiting time for provision of health education on specific health issues. Thus group health education, leaflet or video shows may be used to pass health messages to patients while waiting.

The study also re-affirms the issue of preventive services mainly provided by public health facilities. Preventive services were not provided by private facilities due to the unprofitability of the services. Such limited service provision by private facilities is also reported in China (Meng *et al*, 2000) and in a nationwide health facility assessment in Ethiopia (Hailemariam, *et al*, 2007).

In Gondar the majority of preventive services were provided by public health facilities. Nevertheless, partial median waiting times of 13, 27, 27 and 297 minutes observed for family planning, vaccination, antenatal clinic and VCT services were too high despite the fact that the staff spent less than 50% of their time attending patients. As pointed out by Lynam *et al* (1994) in Kenya and Bamisaiya *et al* (1986) in Zambia, this may discourage clients from returning for consecutive visits. The waiting time in these service points was long because of unavailability of full-time staff in some of the service points, mismatch and staff inefficiencies. Hence assigning full-time staff and if not possible combining service points (e.g. Family planning and

antenatal care or Antenatal care and vaccination) and by opening the service points throughout the day the long waiting times in these service points may be decreased.

With partial median waiting times of greater than 3 hours, VCT clinics were notorious for their long waiting times. Early arrival of clients and the late initiation of services by staff were the reasons for the long waiting time. Laboratory tests are performed only when a sufficiently large number of specimens have been collected and hence the results were usually not available before 2:00 p.m. Post- test counselling was always conducted after the arrival of the laboratory results and patients therefore had to wait for that. Clients also arrive early because of the limited quota for the service point (20 patients per day). Recognizant of the high burden of HIV/AIDS in Ethiopia and the potential of VCT in bringing about behavioural change a lot must be done to decrease the long waiting time. Increasing staff efficiency and relocating more staffs when many clients arrive could decrease the long waiting times and attract more clients to the service point. In addition doing the laboratory tests for small group of clients and conducting post test counselling immediately after the arrival lab result may further decrease the long waiting times in this service point. Finally, reassuring the community that nobody will be returned without being attended could also decrease the long waiting times and boost client confidence.

5.2.3. Service times

Short service times do not provide sufficient time to deal with complex patient issues, particularly psychosocial issues and preventive or health promotion activities. Hence, too short service time for the type of service being provided is a good proxy indicator of low quality of care and must be addressed promptly (Reagon and Gouws, 2005).

This study showed that the complete and partial median service times of public facilities were significantly lower than private facilities. The short service times among public health facility service points were not because of staff overworked which results in hurried counselling

sessions for patients. This is evident from the low percentage of staff time spent attending to patients (was less than 50%) in the majority of the service points.

The partial median service times of 1, 2, 2, 5 minutes for DOT's, vaccination, family planning and PMTCT service points were very inadequate as it is very difficult to complete the whole process of clerking, physical examination, prescription and counselling within this limited time. The service times could be increased and improved quality of care can be provided by advising staff to stick with the standard protocols of patient management.

5.3. Staff utilization pattern

There were more staff per facility among public health facilities (16.5 per facility) as compared to private facilities (3 staff per facility). General practitioners (Doctors) were found only in medium level private facilities. Qualification of the rest of the staff of private facilities was comparable to that of public facilities. This finding is contrary to the report from China (Meng *et al*, 2000, p-355) where 'private providers were usually less qualified for medical practice' and Vietnam (Tuan, *et al*, 2005) where the ratio of staff to facility of private clinics outnumber that of public facilities and private providers were found to be traditional healers or less qualified professionals.

Percentage time spent attending to patients is very low in both public and private facilities. This means staff have spare time to increase their service time and enhance the quality of care they provide to patients and to involve themselves in outreach activities. Some staff work for few hours in a certain service point (e.g. there was no full-time staff for family planning, PMTCT, and immunisation service points) hence by combining some service points (e.g. ANC and PMTCT, Vaccination and family planning) and by opening throughout the day the access of the

services could be increased. In addition experience in the private sector shows that combined 'Registry and cash office' service points in public health facilities would increase efficiency.

Contrary to the report of the national health facility survey (Hailemariam, *et al*, 2007) and World Bank country health status report (World Bank, 2004) both public and private facilities were not understaffed or over utilised. The reason for this difference could be the concentration of private facilities in urban areas and inflow of staff in public facilities due to the favourable civil service law (those who serve the government in remote areas and those who are sick are allowed to choose their work place-that is why staff at public health facilities were older than their counter parts in private facilities).The WSTS showed that with the existing number of staff a lot more patients could be served.

5.4. Patients who left the facility without being attended to

Despite the consensus that no patient will be turned away by facilities, 5% of patients who visited public health facilities were either turned away or left voluntarily. This never happened to patients who visited private facilities. This happened on an average day and the percentage might be higher in busy days. Those who arrived early, on time and late were the victims of not being attended to and hence further study is recommended as to why and how patients are being turned away among public facilities.

5.5. Staff and patient opinion about waiting times

The opinion of patients about the duration of their wait was significantly different among public and private health facilities. 'Long' waiting time was reported only by patients who visited public facilities. Willing to wait a median of 30 minutes by patients attending public health facilities is also comparable to studies done in a general practice in Australia (Jackson,1991) and among primary care facilities in South Africa (Lowe,2000). However public health facility

staff reported acceptable waiting times of 10 minutes at their service points is much lower than the patient's expectations and actual measurement of the partial median waiting time at most service points at the facilities. In this survey a patient on average visited two service points and hence if we multiply the median staff acceptable waiting time by two (giving 20 minutes) still it is far lower than the patient's expectation of 30 minutes complete waiting time. Hence further investigation is suggested as to how staff could achieve that amount of waiting times in their service points.

5.6. Developing an acceptable waiting time norm

Waiting and service times is not a one off activity and an end in itself. It should be done regularly to monitor progress. For this reason we need to have a norm to compare our results. Since this study is the first of its kind in Gondar it is essential to set a waiting and service time norm for future comparison.

Waiting time norms are evidence-based goals that each facility and district will strive to meet, while balancing other priorities aimed at providing quality care to the population (Health Council of Canada, 2005). Norms express the amount of time that is appropriate to wait for a particular service in a facility (Conner-Spady, 2005).

By considering the patients and staff acceptable waiting times and the actual waiting times, a waiting time norm of 32 minutes for public health facilities and 6 minutes for private facilities is suggested. That means the private facilities are functioning well according to actual waiting time measurements and opinions of staffs and patient. Public health facilities are recommended to decrease their median waiting time to 32 minutes in order to offer quality and satisfactory care to their patients. According to the survey findings doing this is not a big challenge. An appointment system for follow-up patients, avoidance of early arrival of patients by advising

them to come in non busy hours and avoiding staff inefficiencies could lead to the attainment of such waiting time without much investment.

These norms must be revisited and updated by the results of consecutive surveys since as the waiting time decrease, patients are likely to expect even further decreases and staff are likely to accept that further decreases in waiting time are possible. Hence, setting norms is dynamic and help to facilitate continual improvement.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1. Conclusion

One of the most significant findings to emerge from this study is that public facilities were characterised by long waiting times compared to private facilities. This happens as a result of early arrival of patients, mismatch of patient arrival and service commencement and staff inefficiencies.

The complete and partial median service times of public facilities were also shorter than that of private facilities which might be due to lower quality of service provision to patients in public facilities.

The result of the study shows that in most of the service points in both public and private facilities, less than 50% of staff time is used directly for patient care. The potential for improvement is thus great. More quality of care and more patients could be seen with the same staffing pattern.

Arrival at the facilities before opening of the facilities was characteristic of public facilities. In addition, the majority of patients from public facilities still preferred to visit the facilities early in the morning at their next visit, for a variety of reasons but including crucially the fear that the would not be attended to if they arrived alter.

Finally, this study has generated solid preliminary data which can be used to instigate significant service improvement and decrease in waiting time. WSTS should be administered on

an interval basis to monitor progress and to judge the relative performance by comparing with the norm and with previous results.

6.2. Recommendation

1. Early arrival of patients and mismatch of patient arrival and service commencement were the leading causes of long waiting times among public health facilities. Hence, shifting facility opening hour to 8:00 a.m., postponing paper and administration work to the afternoon session and less peak hours and educating patients on the fact that there is no quota limitation for consultation, is recommended to decrease the long waiting times.

2. Merging of service points and assigning full-time staff for some service points among public facilities (Registry and casher, ANC and PMTCT, family planning and Vaccination) is recommended in order to better utilise the human resource and establish a day long service point.

3. Development of an appointment system for follow-up patients so that the particular patient will only be seen at his/her particular time assigned during the last consultation will reduce waiting times.

4. WSTS should be carried out in all health facilities in Ethiopia, as it gives valuable information on waiting times, efficiency, staff utilisation patterns, case mix and access of health services, in addition to indicating solutions for long waiting times.

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Annex I

Data collection forms

Waiting and Service Time Survey

Facility name:	Gondar Health center			Date:	14/11/2007		Number:			
Arrival Time									Returning to	
Service Section	Staff Code	Time In	Time Out						Time in	Time out
Registry										
Casher										
Health Education				tick here if processed in batch						
Adult OPD				malaria	URTI	pneumonia	diarrhoea	PUD and gastritis		
				STI	diabetis	RVI	tuberculosis	other____		
VCT				precounselling	post councelling	other _____				
Family planning				new	repeat	other _____				
Immunization				under one	TT pregnanat	TT non pregnant				
PMTCT										
ANC				new	repeat	other _____				
under 5 clinic				pneumonia	malaria	tuberculosos	diarrhoea	URTI		
				otitis media	malnutrition	pediatric RVI	other			
Pharmacy				No Meds dispensed	Incompletely Dispensed	Fully Dispensed				
ART				new	repeat					
Injection Room										
Dressing Room										
laboratory				processed in batch						
Emergency				fructure	poisening	medical emergency	car accident	Other____ _		
opthalmic nurse										
dental therapist										
DOTs										
Other Services_____										
Departure Time				Turned Away		Left Voluntarily				
				If turned away was a Referral given or an Appointment made:				Referral given	Appointment made	None

Comments:

Patient Mini-Survey on Arrival

1	What type of transport did you use to get to the facility	Walked	Taxi	Bus	Ambulance	Private Transport	Bicycle	horse	Other
2	How long did it take you to reach the facility (one way)?	Min							
3	How much did your transport cost (one way)?	Birr							
4	What place were you at before you visited the facility?	Home	Work	School	Other				
5	Have you been to this Facility before	Yes	No						
6	If Repeat Visit to the Facility then, are you a Regular or Occasional attender?	Regular attender	Occasional: (Now and Then)						
7	Did you have a Appointment for your visit today?	Yes	No						
8	If yes then what time was the Appointment for?	Actual Time	No specific time given						
10	Age:								
11	Gender (observe):								
12	If the patient is Male and aged 18 to 65 years or Female and aged 18 to 60 years, then ask, are you currently Employed?	Employed	Self -employed	Unemployed	Student				
13	In what kebele do you live in:								

Patient Mini-Survey on Departure

14	What amount of time do you think you waited today?	Short time	Acceptable time	Long time
15	How much time is an acceptable amount of time to wait at this health facility?	min		
16	What time of the day would you prefer to come to the facility if you had to come here again?	_____H_____		
17	Why do you prefer this time?			

18 What is the longest time you think you should be expected to wait at this facility _____min

Staff Form for Staff Present during the Waiting and Service Time Survey

Facility name	Gondar health center			Date 14/11/20	Staff Code:	
Gender		Age		Staff Category		
Arrival Time						

Service Section	Time In	Time Out		Time In	Time Out		Time In	Time Out		Time In	Time Out		Time In	Time Out		Time In	Time Out		Time In	Time Out		Time In	Time Out
Morning session																							
Health Education																							
Adult OPD																							
Paediatrics clinic																							
Antenatal clinic																							
Immunization																							
Family planning																							
Dot's																							
ART clinic																							
VCT																							
Laboratory																							
injection																							
registry																							
Dental therapist																							
Opthalmic nurse																							
Pharmacy																							
Tea break																							
Lunch break																							
Casher																							
Managerial work																							
Other																							
Other																							
Other																							
departure																							

Staff Mini-Survey Data Form

1	How long have you worked at this facility	years	months
2	Do you have sufficient space to attend to patients properly?	Yes	No
3	If No, then what do you require?		
4	Do you have adequate equipment to attend to patients properly?	Yes	No
5	If No, then what do you require?		
6	What is the **Maximum** amount of time you are likely to use to provide a service to patients?	minutes	
7	What is the ***Minimum*** amount of time you are likely to use to provide a service to patients?	minutes	
8	What amount of time do you think is an acceptable waiting time for your services?	minutes	

Annex II

Interpreting the Results of a Waiting Time and Service Efficiency Survey (Adopted from Reagon and Gouws, 2005)

The main results of the survey are presented in one composite table and 2 graphs. A description of the table and graphs are shown below.

The table is called the "**Detailed Service Point Table".**

The graphs are called the:
"Arrival Time Graph"
"Snapshot Graph"

A list of the potential causes of a long waiting time, are then provided. Using the data from the table and the graphs in conjunction with the list of potential causes, the actual cause of a long waiting time can be established.

1. How to Interpret the Detailed Service Point Table

1.A. For every service point of the facility, this table shows the following:

- Total Number of staff (equivalent staff) who worked at the service point
- Total Number of patients seen at the service point
- Workload: Calculated as patients seen per staff member per day
- Percentage Patient Time: This is the percentage of the total time that staff have to spend on patients, which is actually spent attending to patients. So if staff have 8 hours to spend on patients, but actually spend 6 hours seeing patients then they spent 75% of their time seeing patients.
- Service Point Specific (Partial) Waiting and Service times: This is the waiting time or service time for the patient at a particular service point e.g. reception, or doctor consultation.

- The Waiting Times: This is the amount of time that the patients wait. They are grouped as: 5% cut-off; median (50%) cut-off; 75% cut-off and 95% cut-off points.
- The Service Time:; This is the amount of time that the staff spend on each patient. They are grouped as: 5% cut-off; median (50%) cut-off; 75% cut-off and 95% cut-off points.

1.B. The Meanings of the Waiting Time cut-off points are as follows:

- the median waiting time = 50% of the patients waited for that amount of time or less than that amount of time; this is similar to the average waiting time
- 5% waiting time = 5% of the patients waited for that amount of time or less than that amount of time
- 75% waiting time = 75% of the patients waited for that amount of time or less than that amount of time; or saying it slightly differently 25% of the patients waited for that amount of time or more than that amount of time
- 95% waiting time = 95% of the patients waited for that amount of time or less than that amount of time; or saying it slightly differently 5% of the patients waited for that amount of time or more than that amount of time

1.C. The same principles apply to the Service Time cut-off points

- the median service time = 50% of the patients received that amount of service time or less than that amount of service time; this is similar to the average service time
- 5% service time = 5% of the patients received that amount of service time or less than that amount of service time
- 75% service time = 75% of the patients received that amount of service time or less than that amount of service time; or saying it slightly differently 25% of the patients waited for that amount of time or more than that amount of time
- 95% service time = 95% of the patients received that amount of service time or less than that amount of service time; or saying it slightly differently 5% of the patients waited for that amount of time or more than that amount of time

2. Interpreting the Arrival Time Graph

This graph shows the number of patients who arrive within each hour. It also shows the waiting and services times for these patients. From the graph you can see if you arrive at the health centre at a particular time then how long will you wait to be seen and how much service time will you receive. From the graph you can see how long you will wait if you arrive at various times during the day. Therefore it is easy to see when is the best time to visit the health centre. That time would be the time of the day where one would wait the shortest time.

The things one could determine from this graph are:

1. The arrival time patterns of patients
2. The relationship between arrival time and the degree of waiting and service time
3. Whether there are Big Batches and the effect of the Big Batches
4. How to shift towards the most efficient arrival time patterns
5. When the best time to visit the facility would be if you were a patient

3. Interpreting the Snapshot Graph

This graph shows the number of patients waiting to be seen and those receiving a service at any point in time throughout the day.

If you were at the clinic the whole day and you were watching every patient and every staff member all the time, then this graph shows you what you would see. So this graph allows you to have many eyes and to see everything that was happening at the facility throughout the day.

The things one could determine from this graph are:

1. If there is a mismatch of patients and staff
2. If there are inefficiencies in service provision
3. How rapidly staff can clear the waiting crowd
4. Flow problems
5. Suspected Logistical problems

6. How crowded the facility is at different times of the day

Guidelines for Waiting Times, Service Times and % Staff Clinical time usage

In interpreting the results of this survey, the following range of values are suggested for the **MEDIAN** times.

(A) Median Waiting Times:

For Median Complete Waiting Times:

If value ranges from:	then interpret as:
< 15 minutes	Excellent
15-30 minutes	Good
31-60 minutes	Acceptable
>60 minutes	Too high

For Median Waiting Times per Service Point:

If value ranges from:	then interpret as:
<7 minutes	Excellent
7-15 minutes	Good
16-30 minutes	Acceptable
>30 minutes	Too High

(B) Percentage Staff Clinical Time Usage:

If value ranges from:	then interpret as:
<50 %	Too low
51-64 %	Inadequate
65-75 %	Adequate
76-90 %	Excellent
>90 %	Too High

(C) Median Service Times:

For Median Complete Service Times:

If value ranges from:	then interpret as:
< 5 minutes	Too low
6-30 minutes	Appropriate
31+	Too much

*Set as the SUM of the median service time at the two most common service points

For Median Service Times per Service Point

TOO LOW: (Low Quality of Care)

APPROPRIATE: (Possibility exists for high Quality of Care)

TOO HIGH: (Knock on effect of increasing WT)

	Low	Appropriate	Too High
Reception		1-8	9 +
Doctor_Clinician	≤ 4	5 - 20	21+
Antenatal Clinic	≤ 4	5 - 15	16 +
Laboratory		1 - 30	31 +
Pharmacy	≤ 2	3 – 12	13 +
Cash Office		1-8	9 +
TB DOT	≤ 1	2 – 8	9 +
Vaccination	≤ 2	3 – 8	9 +
Reception VCT		1-8	9 +
Injection Room	≤ 2	3 – 6	7 +
HIV Pre-Counselling	≤ 10	11 – 30	31 +
HIV Post-Counselling	≤ 10	11 – 30	31 +
VCT Group Counselling	≤ 10	11 – 30	31 +
Eye Clinic	≤ 5	6 – 20	21 +
Dentist	≤ 5	6 – 30	31 +
VCT Screening	≤ 5	6-10	11 +
Dental Therapist	≤ 5	6 – 30	31 +
Weighing	≤ 2	3– 10	11+
Dressings	≤ 5	6 – 15	16 +
Family Planning	≤ 5	6 – 20	21+
Psychiatry/Mental Clinic	≤ 10	11 – 40	41 +
ARV Pharmacy	≤ 2	3 – 12	13 +
Minor Theatre	≤ 10	11– 20	21+
PMTCT	≤ 5	6– 15	16 +
STI Clinic	≤ 5	6 – 15	16 +

(D) Service Times to use when assessing whether Patients are arriving in "Too Big a Batch":

Formula: Equivalent Staff X 60 / Service Time used to calculate batch*

*Service Time Values used to calculate excessive size "Arrival Batches"

Reception	2 minutes
Doctor	10 minutes
Nurse	7 minutes
Pharmacy	4 minutes
ANC	7 minutes
Laboratory	6 minutes
Cash Office	2 minutes
TB Dots	2 minute

ANNEX III

AZEZO HEALTH CENTRE

This government owned facility is found in the southern suburb called Azezo which is 12 kms from the city center. The facility has a staff of 18 and serves 125-150 patients per day. A total of 167 patients/ clients attended the health center on the day of the study. 35.3% were males, 23% were infants and the median age of patients was 20 years. Forty two (25 %) were new visitors and the remaining 75% had visited the facility previously. The socio demographic characteristics of patients attending the facility are summarized in table 1.

Table 1. Socio demographic characteristics of patients attending Azezo Health Center, November 14, 2007.

Socio demographic characteristics	Frequency
Age	
Less than five years	52 (31.1%)
6-15 years	11 (6.5%)
>16 years	104 (62.3%)
Median	20 years
Sex	
Male	59 (33.3%)
Female	108 (64.7%)
Occupation	
Government employed	4 (4.3%)
Self employed	15 (16.1%)
Student	15 (16.1%)

Unemployed	59 (63.4%)
One way travel time < 5 minutes 6-10 minutes >10 minutes Mean (standard deviation) Median	 50 (30%) 43 (25.7%) 74 (44.3%) 21.7 minutes (27 minutes) 10 minutes
Transport type Walked Taxi Other	 151 (90.4%) 14 (8.4%) 2 (1.2%)
Address Azezo sub city Outside Azezo sub city	 153 (91.6%) 14 (8.4%)

The results of the WSTS can be summarized as follows:

Summery

No of Staff in Facility	**Present**	**Absent**	**Total**	**Equivalent**
	14	4 (22.22%)	18	13.36

Patients Seen in Facility	**Total**	**Turned Away**	**Left Voluntarily**	**Med Transport**

				Time (mins)
	167	1 (0.60%)	0 (0.00 %)	10

Median Complete ST	7	**Median Complete WT**	45
5% Complete ST	1	**5% Complete WT**	3
75% Complete ST	14	**75% Complete WT**	80
95% Complete ST	26	**95% Complete WT**	202

Table 1: Detailed service point report for the whole facility

Service Point	**Staff**	**Patients seen**	**Work load**	**% Staff times Attending to patient**	**Service Times**				**Waiting Times**			
					Median	**5 %**	**75 %**	**95 %**	**Median**	**5 %**	**75 %**	**95 %**
Dispensary _ Pharmacy	0.84	55	65.35	71.04	5	1	7	12	4	0	12	29
Cash Office	0.95	48	50.42	22.76	2	1	3	5	1	0	3	12
Adult	1.3	47	34.5	50.54	6	4	10	11	43	15	67	93

OPD	6		5									
Registry	1.33	43	32.25	12.5	1	1	3	3	4	1	15	107
Vaccination	0.95	38	39.91	21.66	2	1	4	6	38	1	75	129
Injection Room	3.39	25	7.37	6.14	2	1	5	9	17	2	44	78
Antenatal Clinic	0.91	24	26.24	42.37	8	2	10	14	26	4	38	58
Laboratory	0.86	21	24.35	46.86	9	7	9	14	7	0	16	25
PMTCT	0.51	17	33.17	59.35	5	2	7	38	26	1	46	91
Under 5 Clinic	0.48	16	33.54	44.1	5	3	7	12	20	3	35	65
Family Planning	0.46	16	35.07	15.98	2	1	2	7	16	1	35	116
DOTS Room	0.75	6	7.96	3.04	2	1	2	4	22	1	32	41
VCT	0.3	4	12.8	28.86	12	2	13	18	20	8	24	37

	1		9									

Overall

The median complete waiting time for the facility was 45 minutes. Although the median complete waiting time is acceptable it can be reduced further by reducing the long waiting times at Adult OPD and vaccination service points. The waiting time could be reduced by a combination of the following:

1. Improving the efficiency with which staff provide services
2. Discouraging patients from arriving in batches
3. Avoiding mismatches in the morning

Median complete service time of 7 minutes for the facility is with in the acceptable range. However there is an opportunity to increase the service time and deliver high quality of care with the existing staff and resources. This can be done by advising patients to come after 8:00 a.m. and during less busy hours of the day, staff avoiding doing some other activities while patients are waiting and giving specific appointments to follow-up patients.

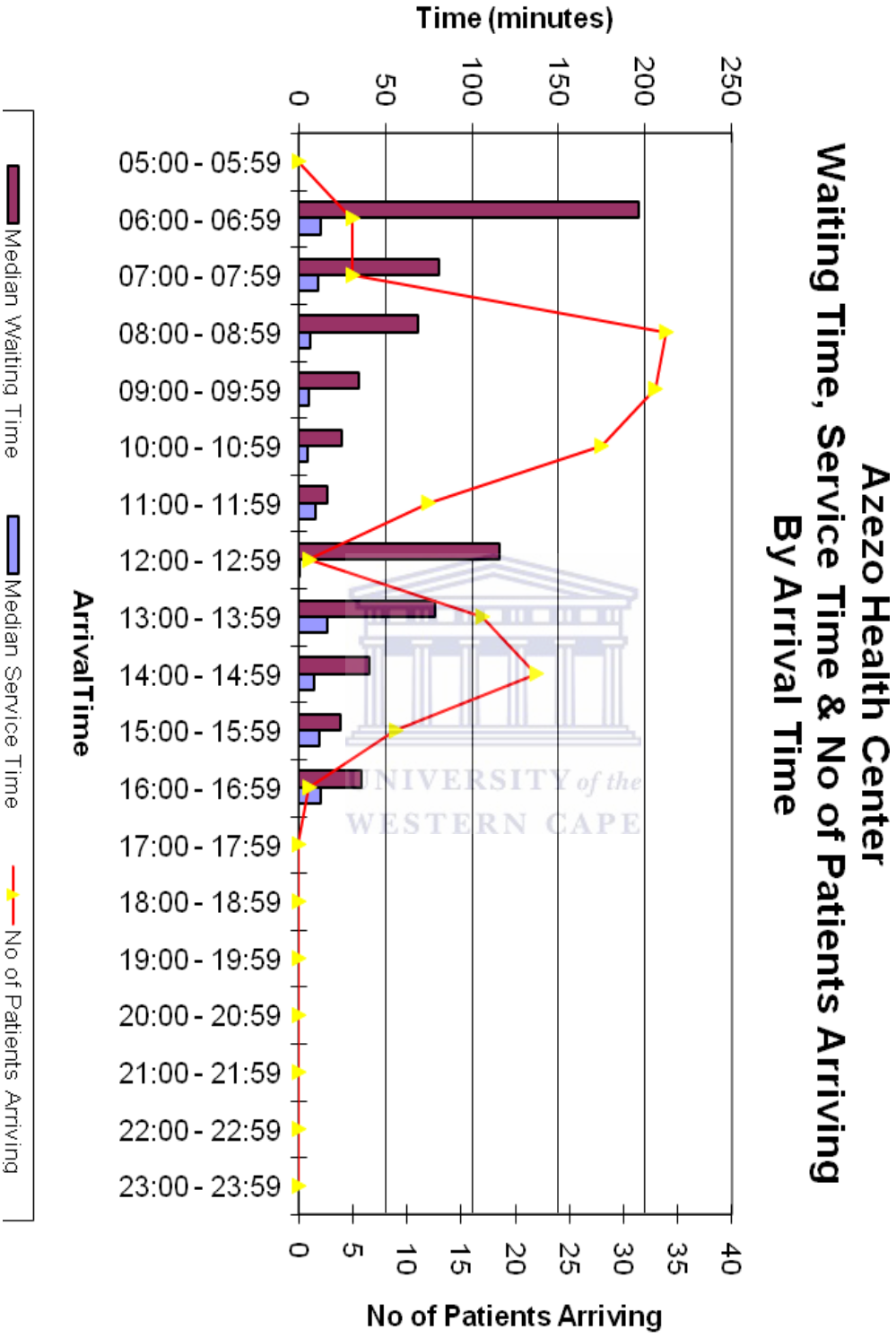


Figure 1: Detailed arrival time report for the whole facility.

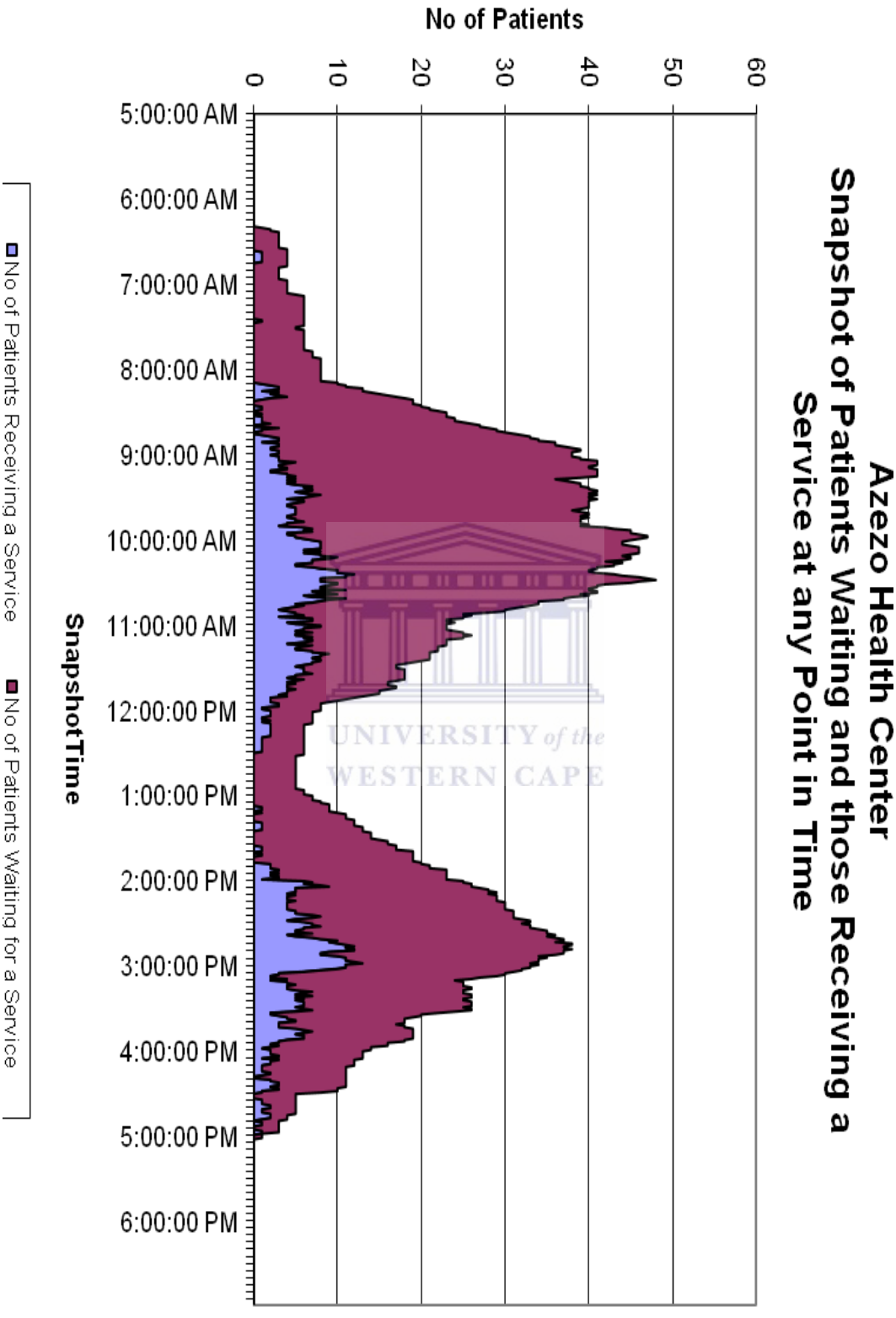


Figure 2: Detailed snapshot report of the whole facility

ADULT OPD

A median service time of 8 minutes is appropriate for this service point considering the case mix of patients. However partial median waiting time of 45 minutes is too long. This long waiting time is not because of staff shortage or overworked (which is 62.4%).The reasons for this long waiting time were early and batch arrival of patients especially in the morning session. There is also a mismatch of patient arrival and staff starting seeing patients. There were also occasions where the staff and patients were there at the service point but staff not seeing them. A combination of the following could help to reduce the long waiting time at this service point

1. Advising patients that they can come and visit the facility at any time of the day,
2. staff giving number one priority to serving patients

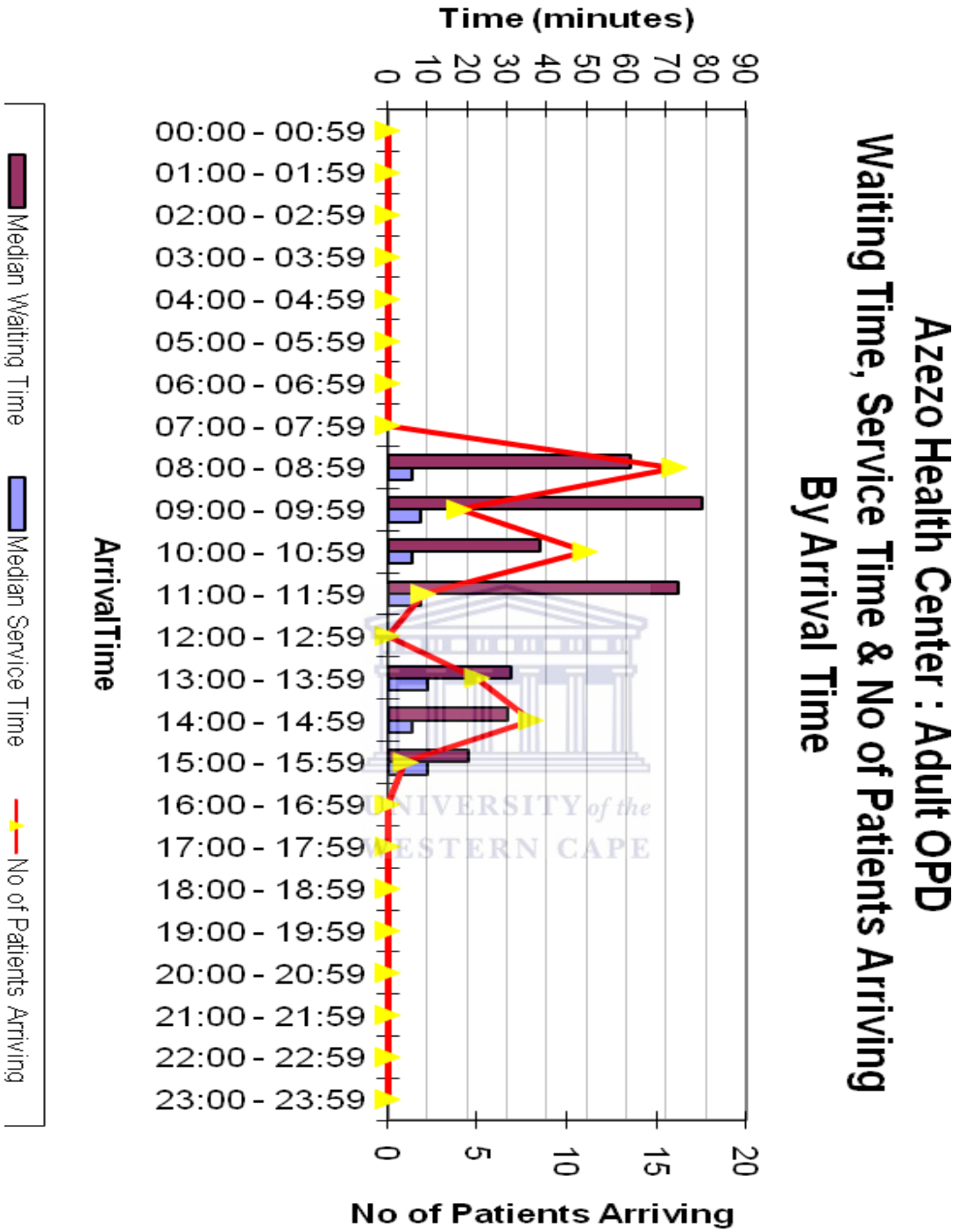


Figure 3: Detailed arrival time report for Adult OPD

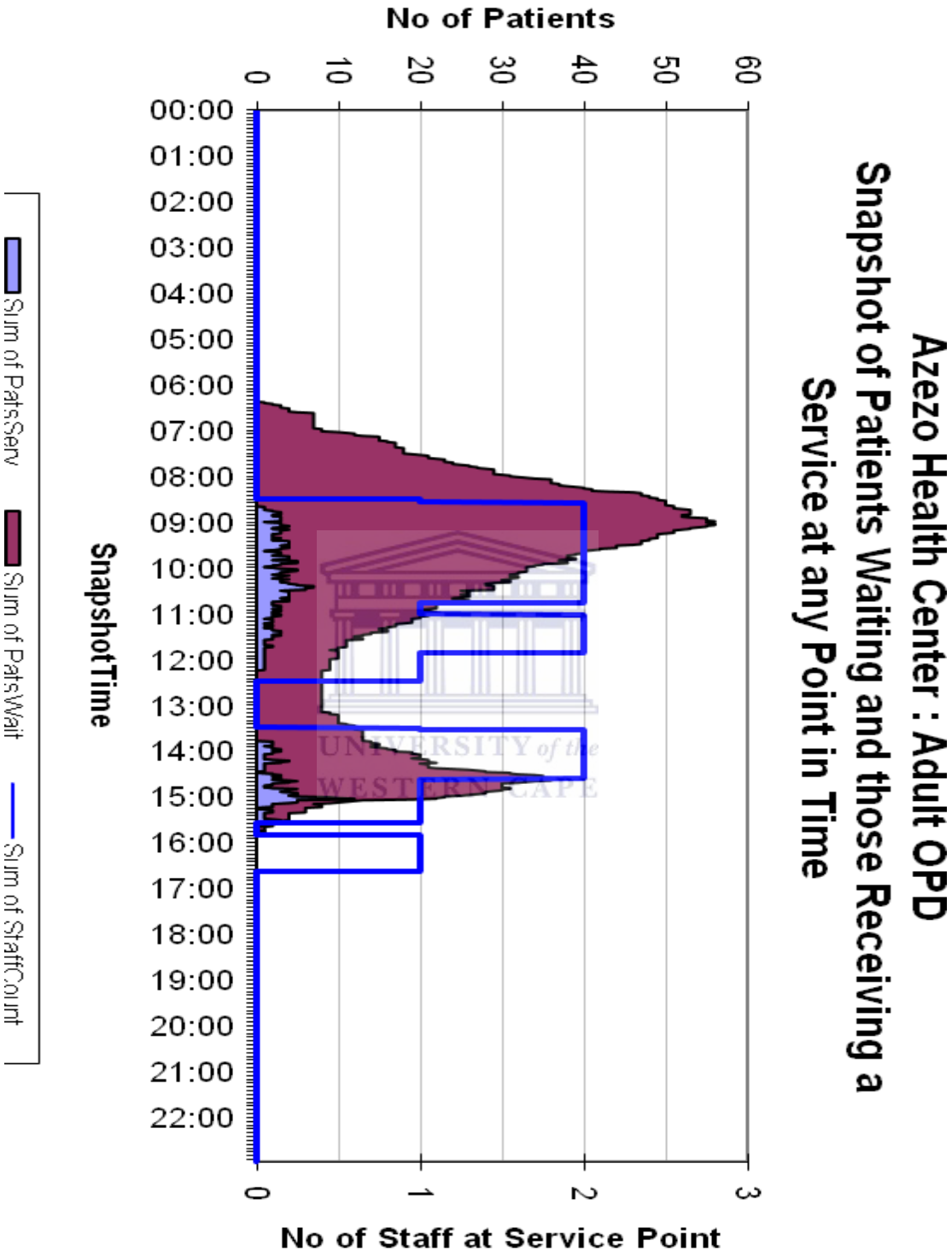


Figure 4: Detailed snapshot report for adult OPD

ANC

A median partial waiting time of 26 minutes is long for this service point when we consider the number of clients visiting this service point (24) and percentage of staff time spent attending patients (42%). Mismatch and staff inefficiency were the reasons for the long waiting time. The median service time of 8 minutes is acceptable and could be increased with the available resources. The 5% of clients who were served for less than 2 minutes should concern managers as it is difficult to go through the entire procedure of history taking, physical examination and counselling with in this time interval.

Hence giving specific appointments to the clients in their next visit could help to avoid mismatch. Informing clients that they can visit the service point at any time of the day could also help to decrease the waiting time. In addition by giving priority to clients the waiting time could decrease further.

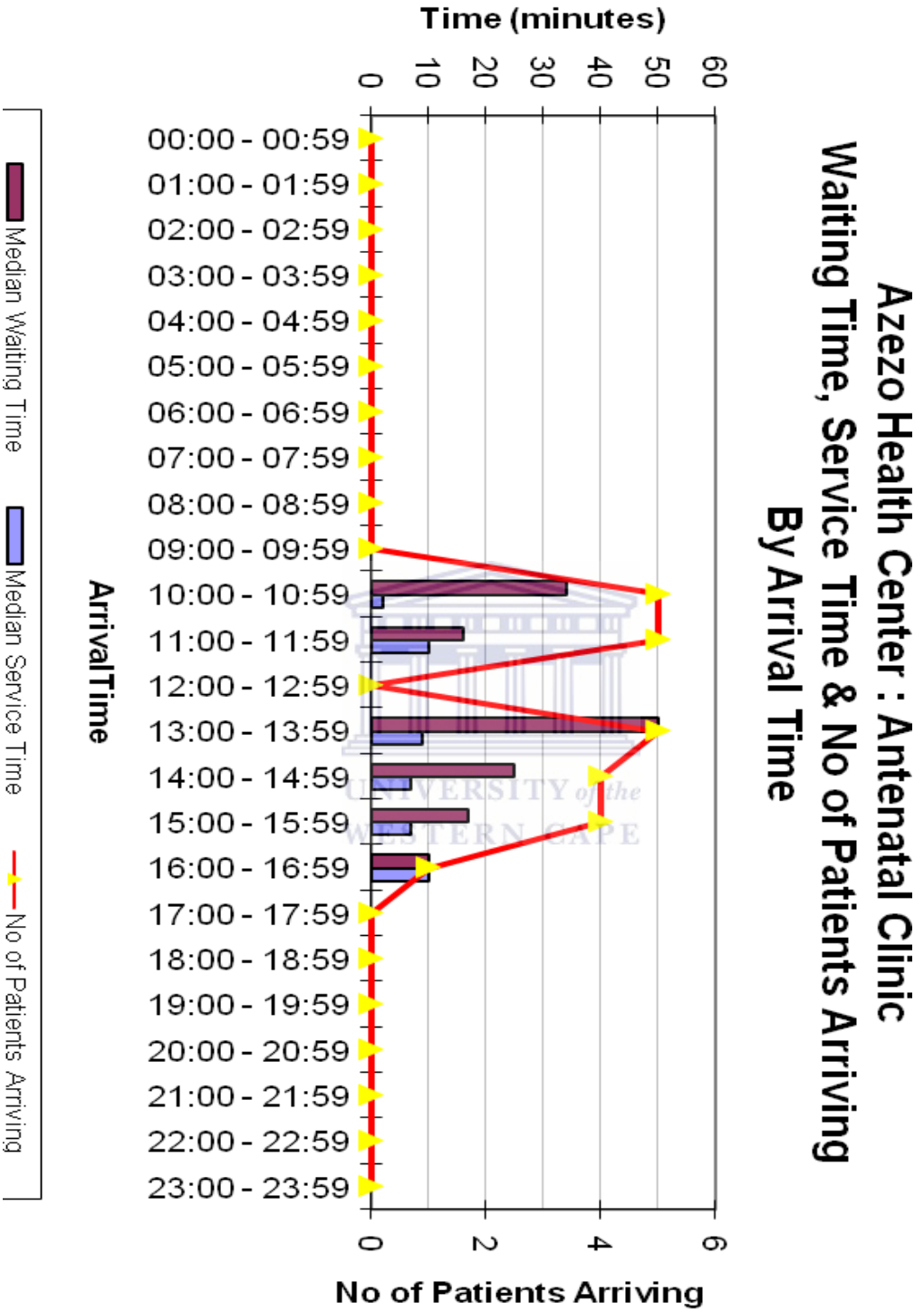


Figure 5: Detailed arrival time report for antenatal clinic

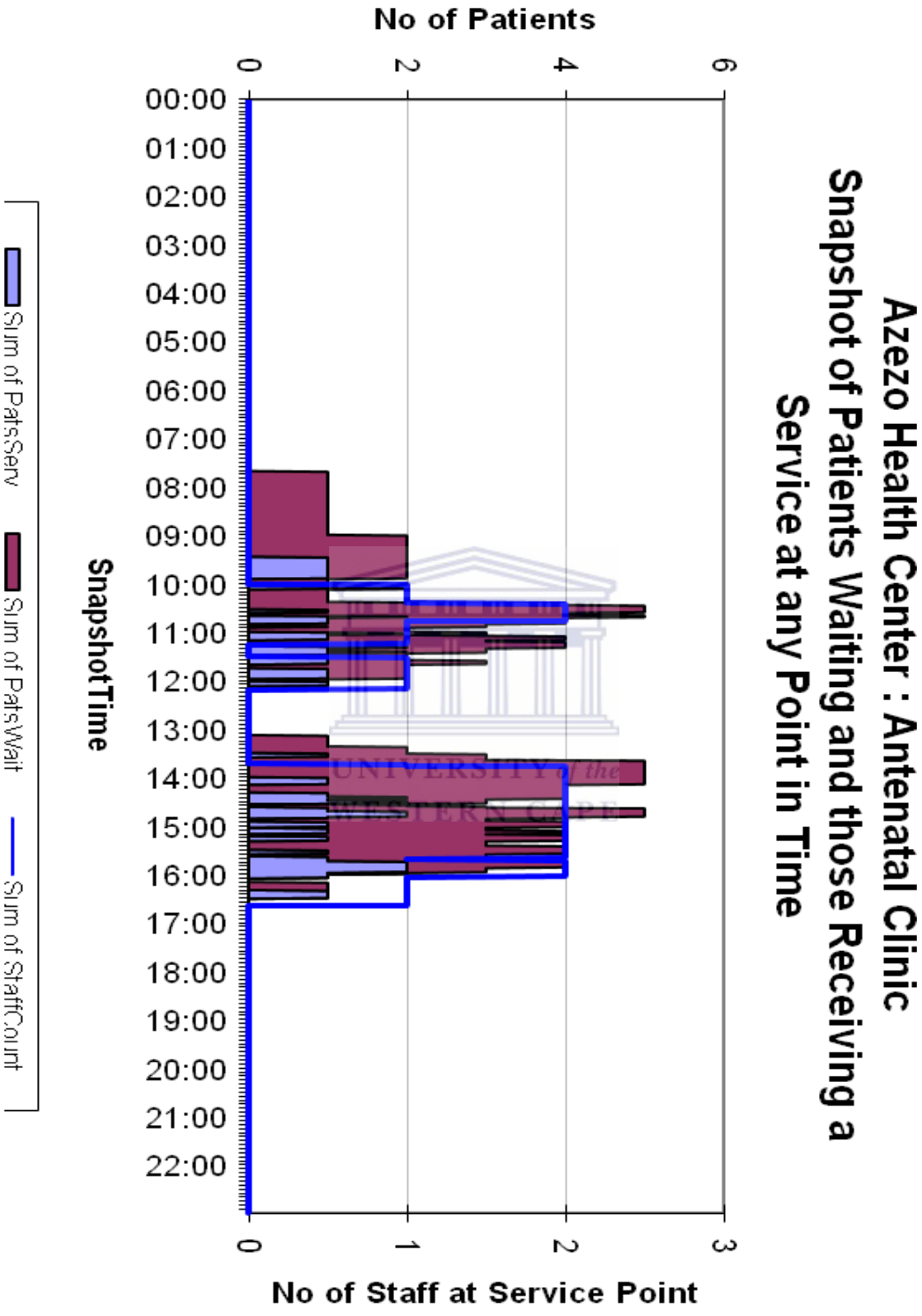


Figure 6: Detailed snapshot report for antenatal clinic

CASH OFFICE

Median partial waiting and service times of 1 and 2 minutes respectively are excellent for this service point. However, the percentage staff time spent attending patient is very low (23%) indicating that they have time available to assist with any other tasks potentially required of them.

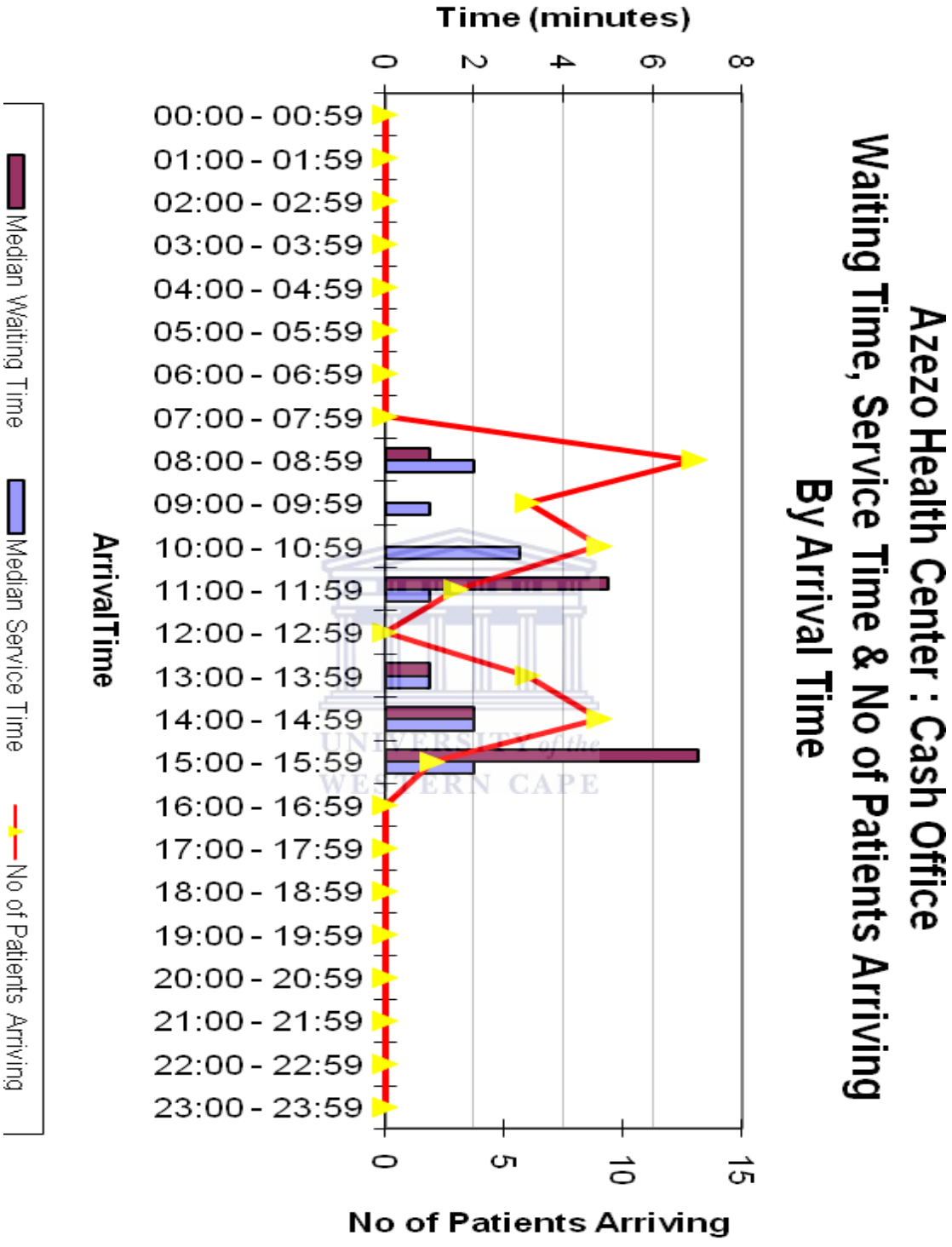


Figure 7: Detailed arrival time report for cash office.

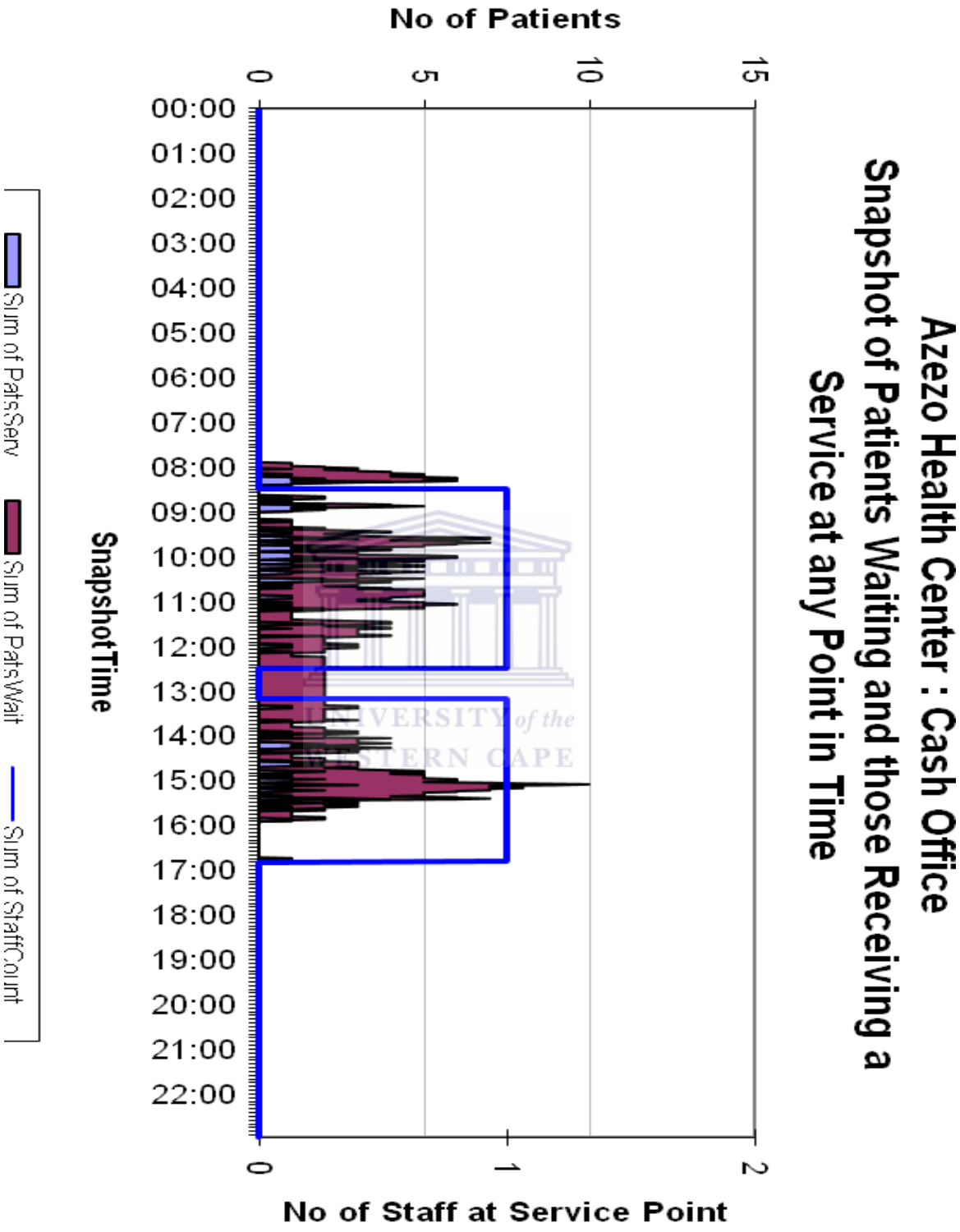


Figure 8: Detailed snapshot report for Cash Office

DISPENSARY PHARMACY

The median partial waiting and service times of 4 and 5 minutes respectively are good enough for this service point. Percentage of staff time spent attending patients (71%) is excellent. There were some occasions where the staff was at the service point, patients were also there but the staff did not attend them, hence if such inefficiencies are avoided and patients visit the facility evenly throughout the day there is a strong possibility that the waiting time at this service point decreased markedly.

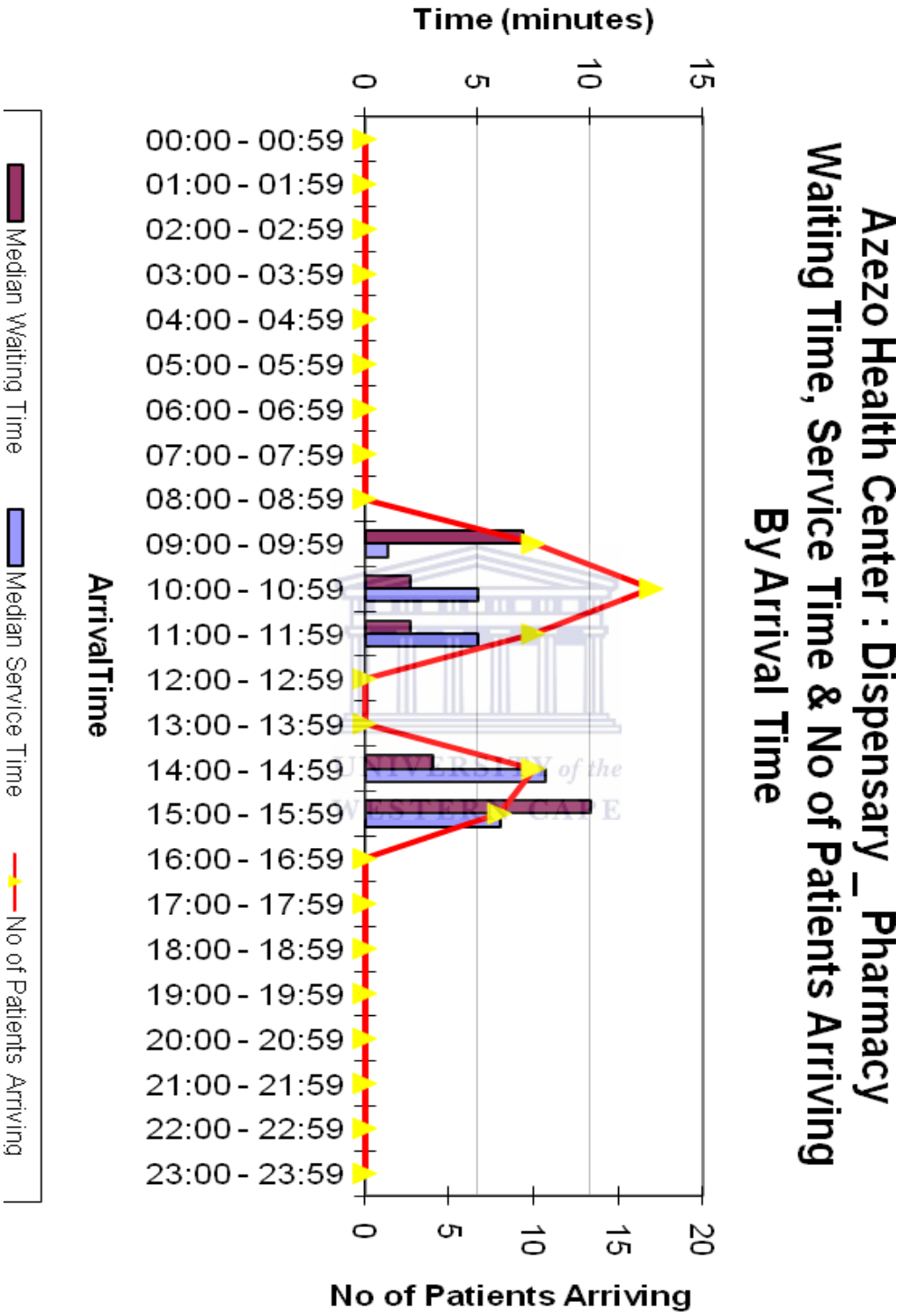


Figure 9:Detailed arrival time report for Dispensary-Pharmacy.

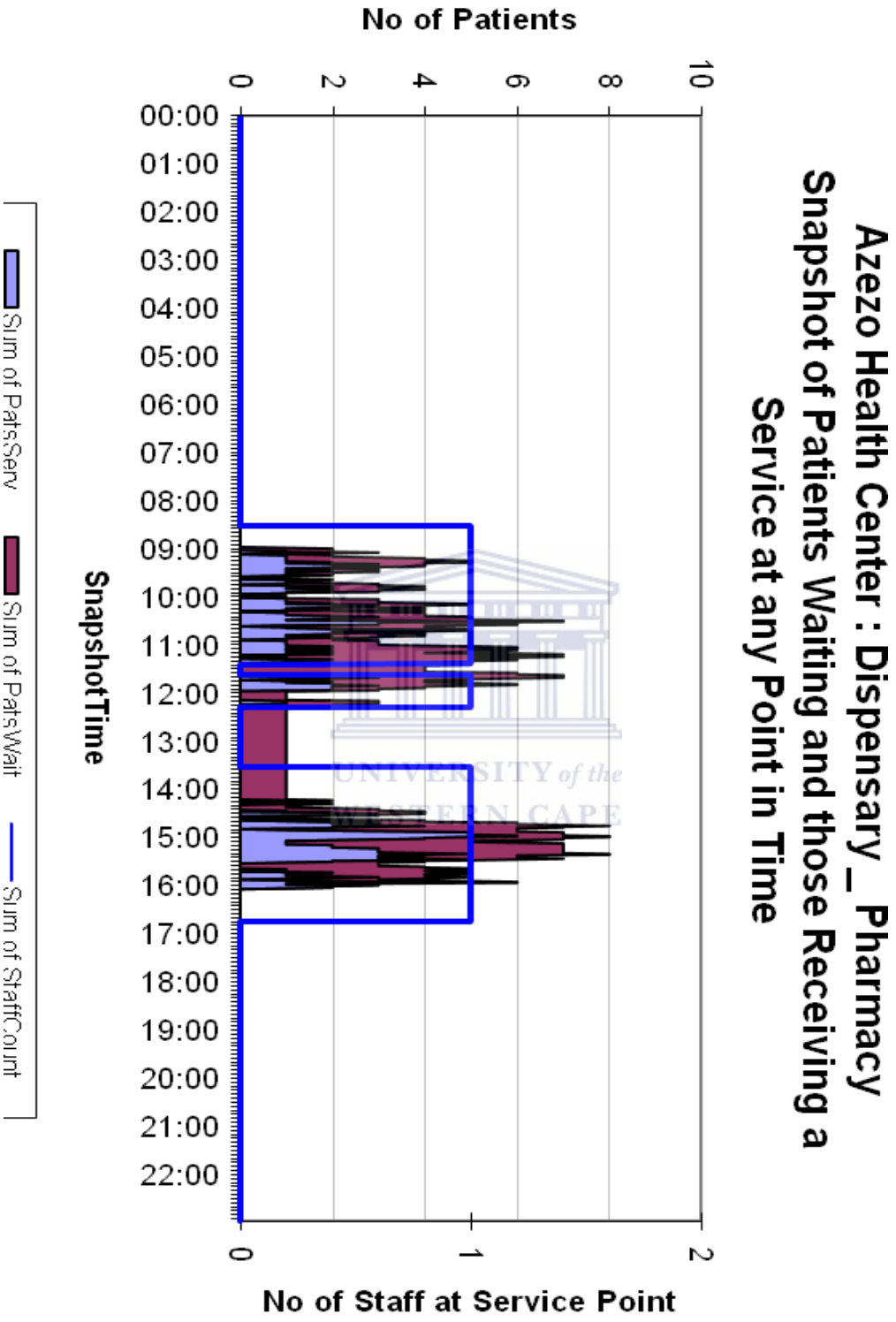


Figure 10: Detailed snapshot report for dispensary- pharmacy.

DOT's

Median partial waiting time of 22 minutes is too high for this service point despite only 6 patients were attended. The percentage time spent attending patients by the staff is very low (3%) because the service time is low and the service point was almost empty after 10 am.

The reason for the long waiting time was mismatch in the morning (patients arrive early). Since these patients visit the service point daily for their anti tuberculosis drugs, specific appointment times can be given in order to decrease the long waiting time.

Median partial service time of 2 minutes is also inadequate and patients are likely to benefit from an increased service time which allows providing ongoing education and health promotion.

The staff working at this service point has time available to assist with any other tasks potentially required of him/her.

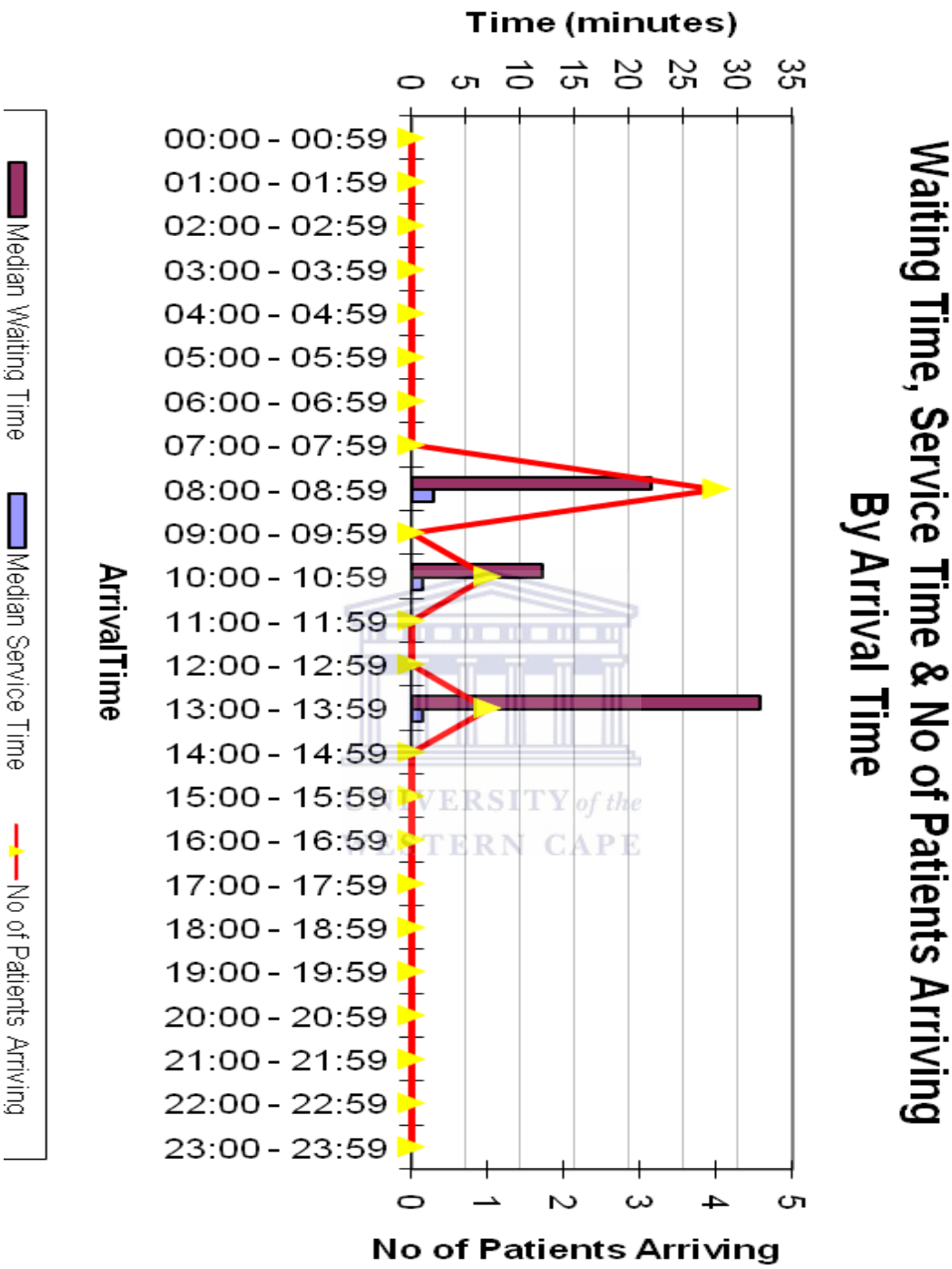


Figure 11: Detailed arrival time report for DOTS room.

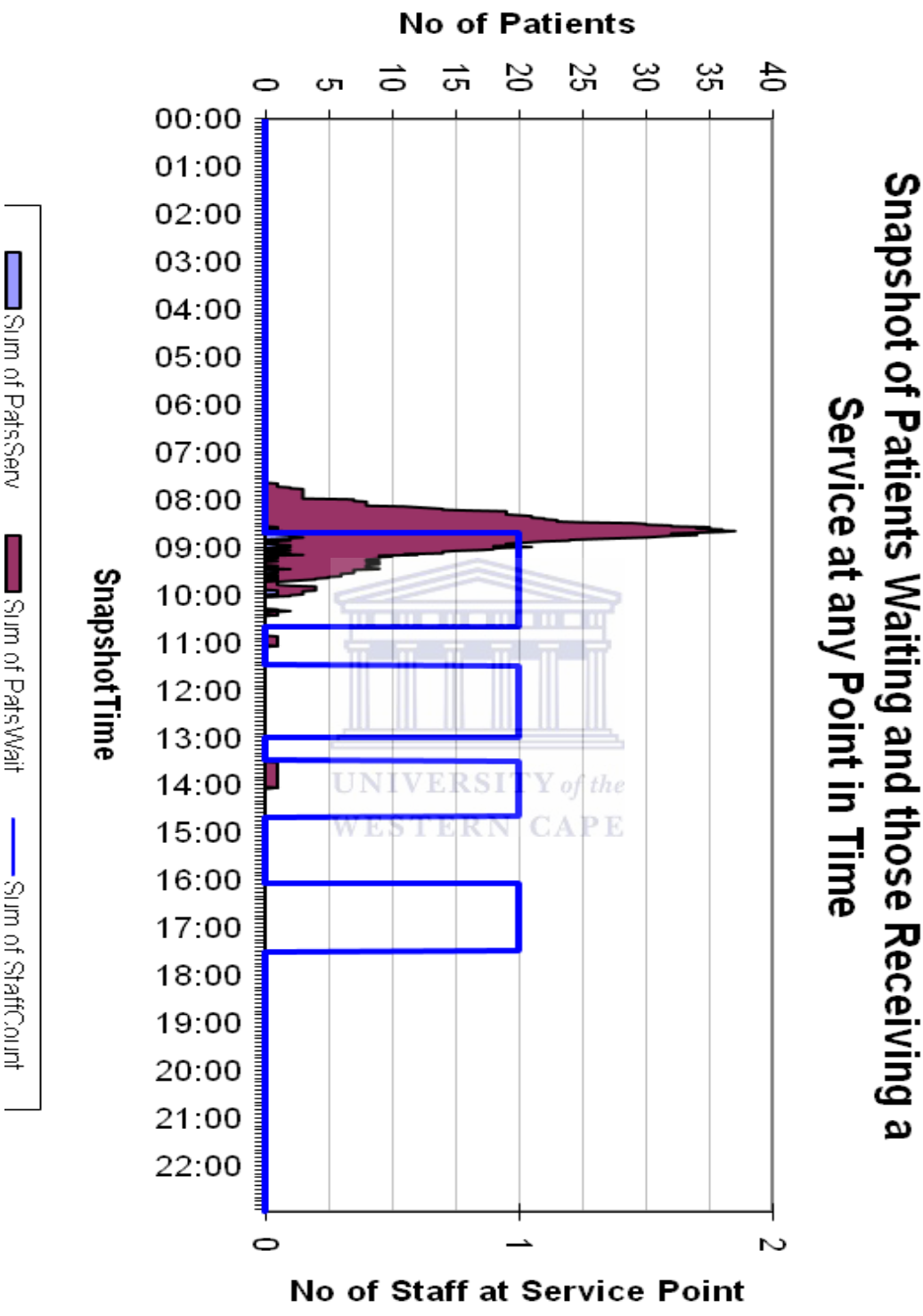


Figure 12: Detailed snapshot report for DOT's room.

FAMILY PLANNING

16 clients visited this service point with a median partial waiting and service times of 16 and 2 minutes respectively. Taking into account the number of clients visiting and the percentage staff time spent attending patients (only 16%of the staff time was spent attending to clients) the waiting time can be considered long.

Median service time of 2 minutes is also inadequate as the staff is expected to take proper history, do meticulous physical examination, and help the client to choose the appropriate method of contraception. The service time can be increased without additional resources.

Combining this service point with another service point (for example ANC) could help to decrease the waiting time and to form around the clock service point.

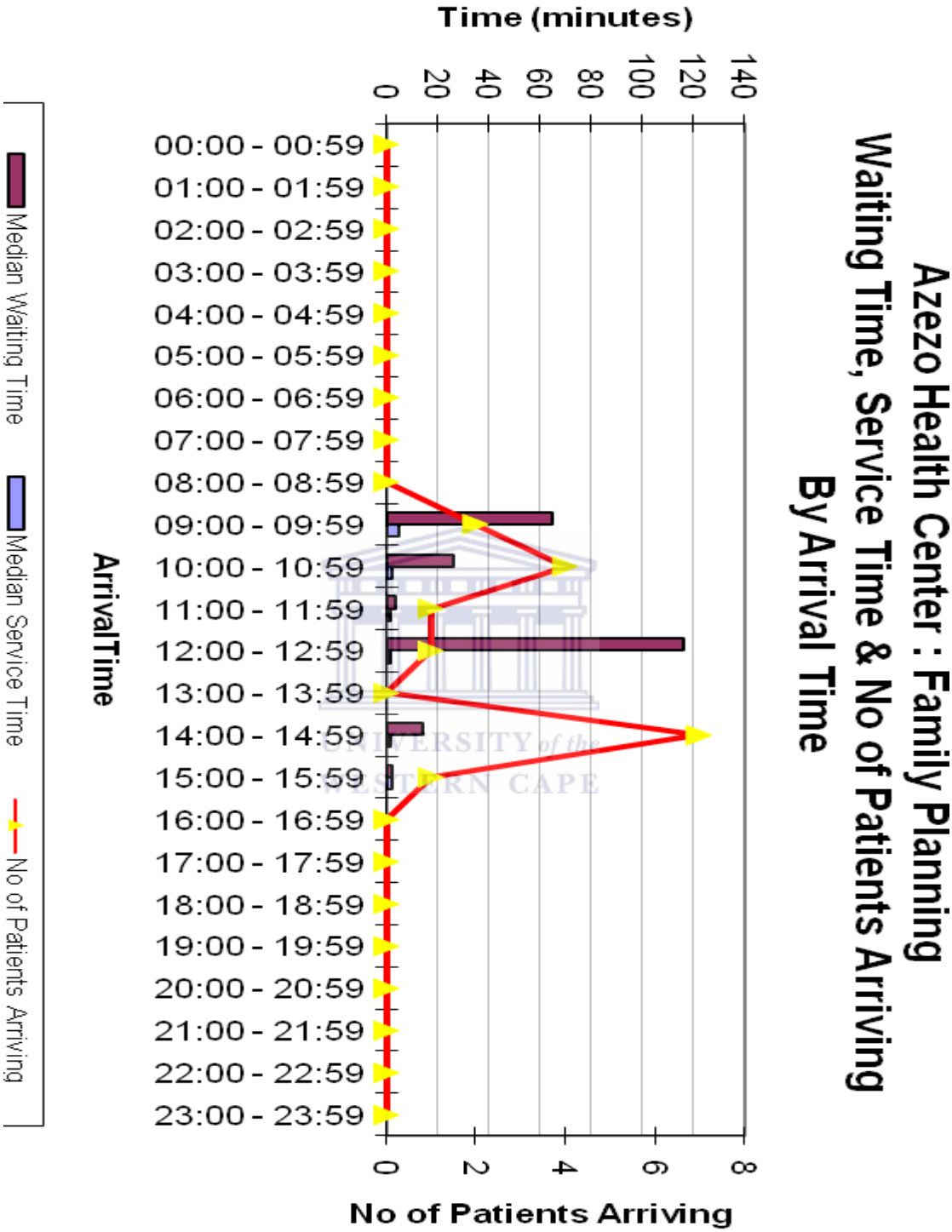


Figure 13: Detailed arrival time report for Family Planning

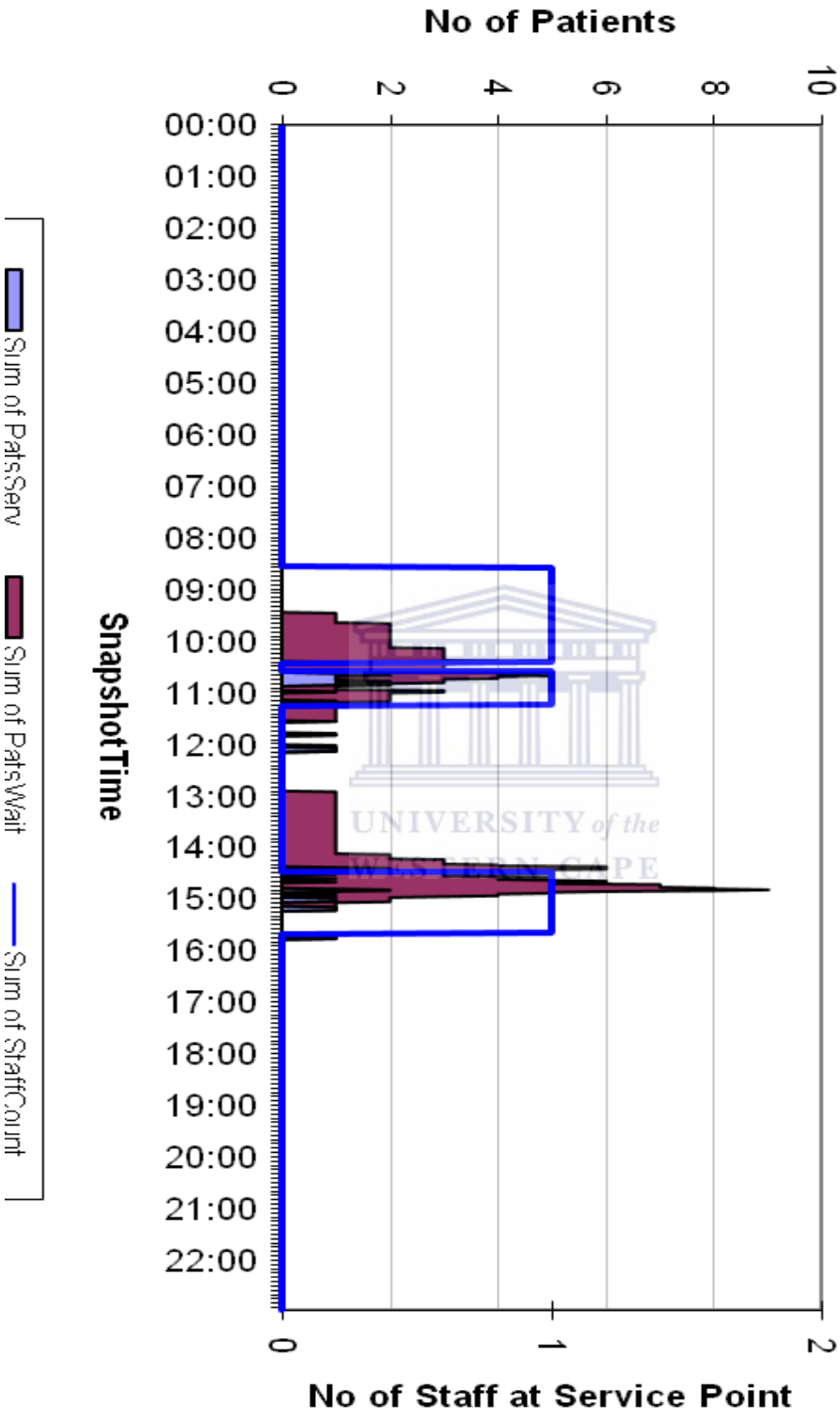


Figure 14: Detailed snapshot report for Family planning

LABORATORY

Median partial waiting and service time of 14 and 9 minutes are satisfactory for this service point. However, the percentages staff spent attending patients is inadequate (46%).

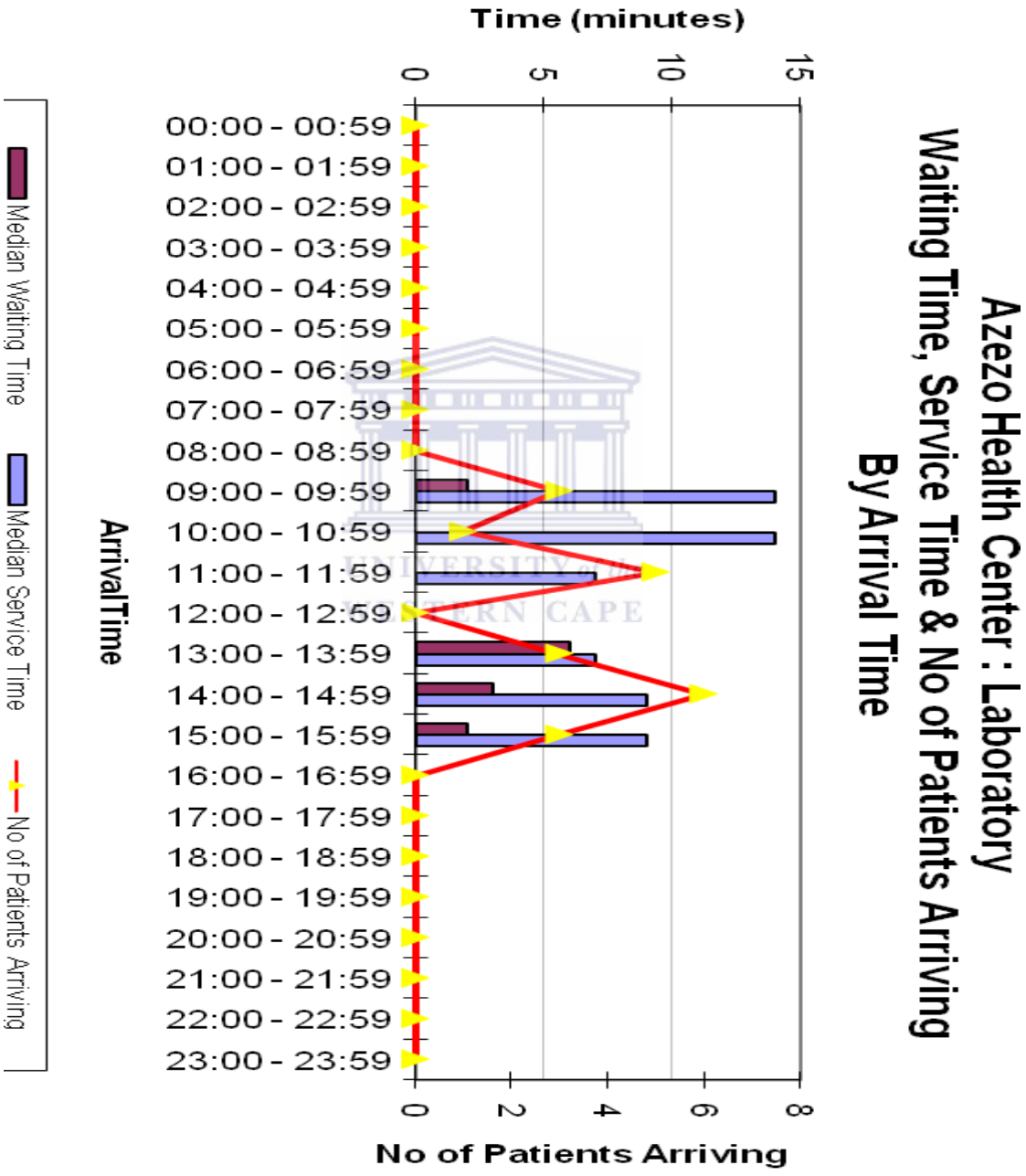


Figure 15: Detailed arrival time report for Laboratory.

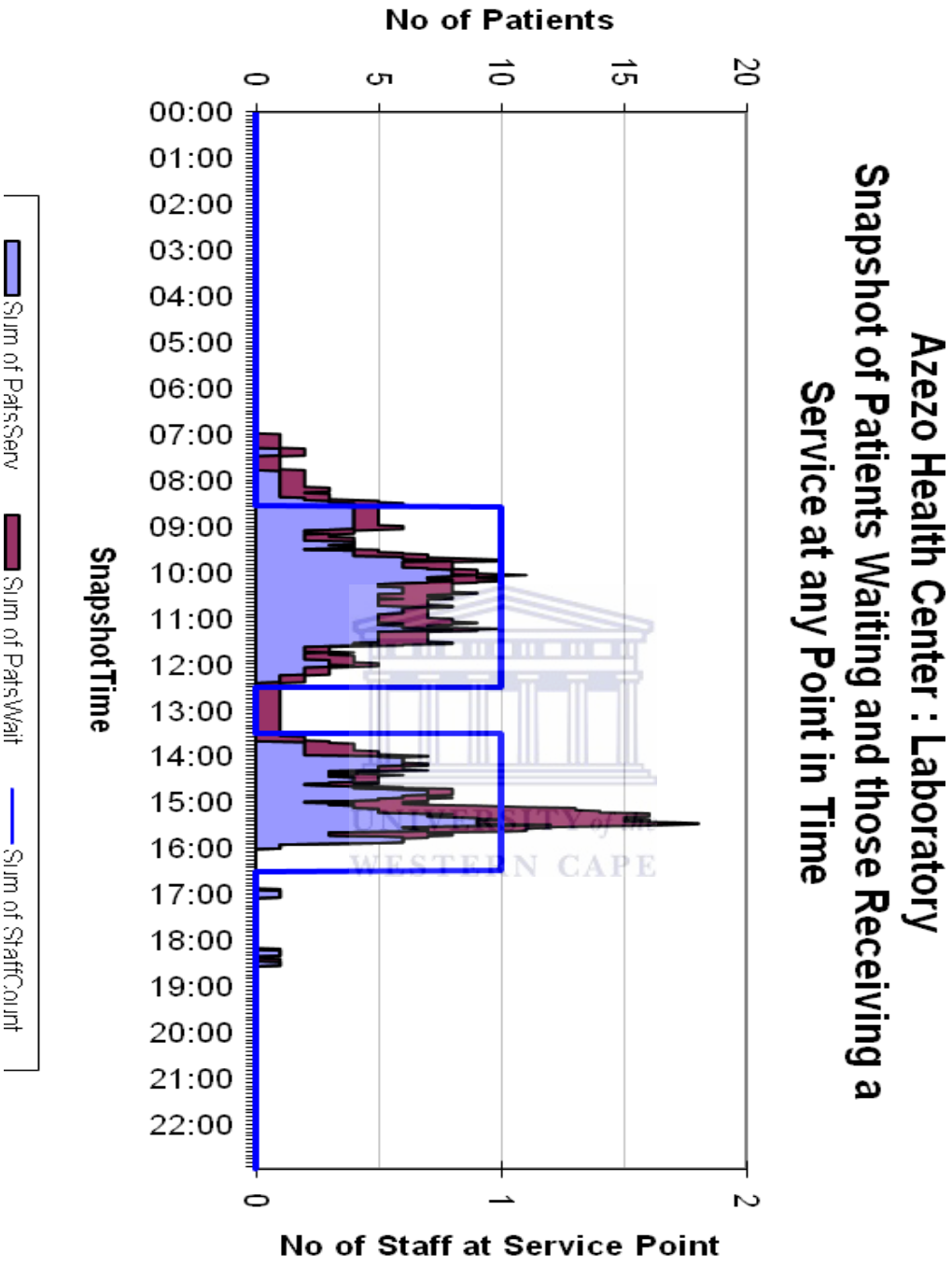


Figure 16: Detailed snapshot graph for Laboratory.

PMTCT

Median partial waiting time of 26 minutes at this service point is high. Median partial service time of 5 minutes is also inadequate. A quarter of patients waited for more than 46 minutes and this is too long for a service point visited only by 17 patients .Percentage staff time spent attending patients of 60% is also inadequate.

The reason for the long waiting times is not because of staff overworked or arrival of a significant batch, it was because of a strange occurrence where the staff and patients were there at the service point but the staff did not attended to patients. By prioritizing clients the waiting time could be decreased.

A staff at PMTCT is expected to educate the patient about the transmission of HIV, importance of PMTCT and counselling for the test. The median partial service time of 2 minutes would not allow doing all these and hence staff must be encouraged to adhere to the standard protocol of PMTCT care and increase the service time.

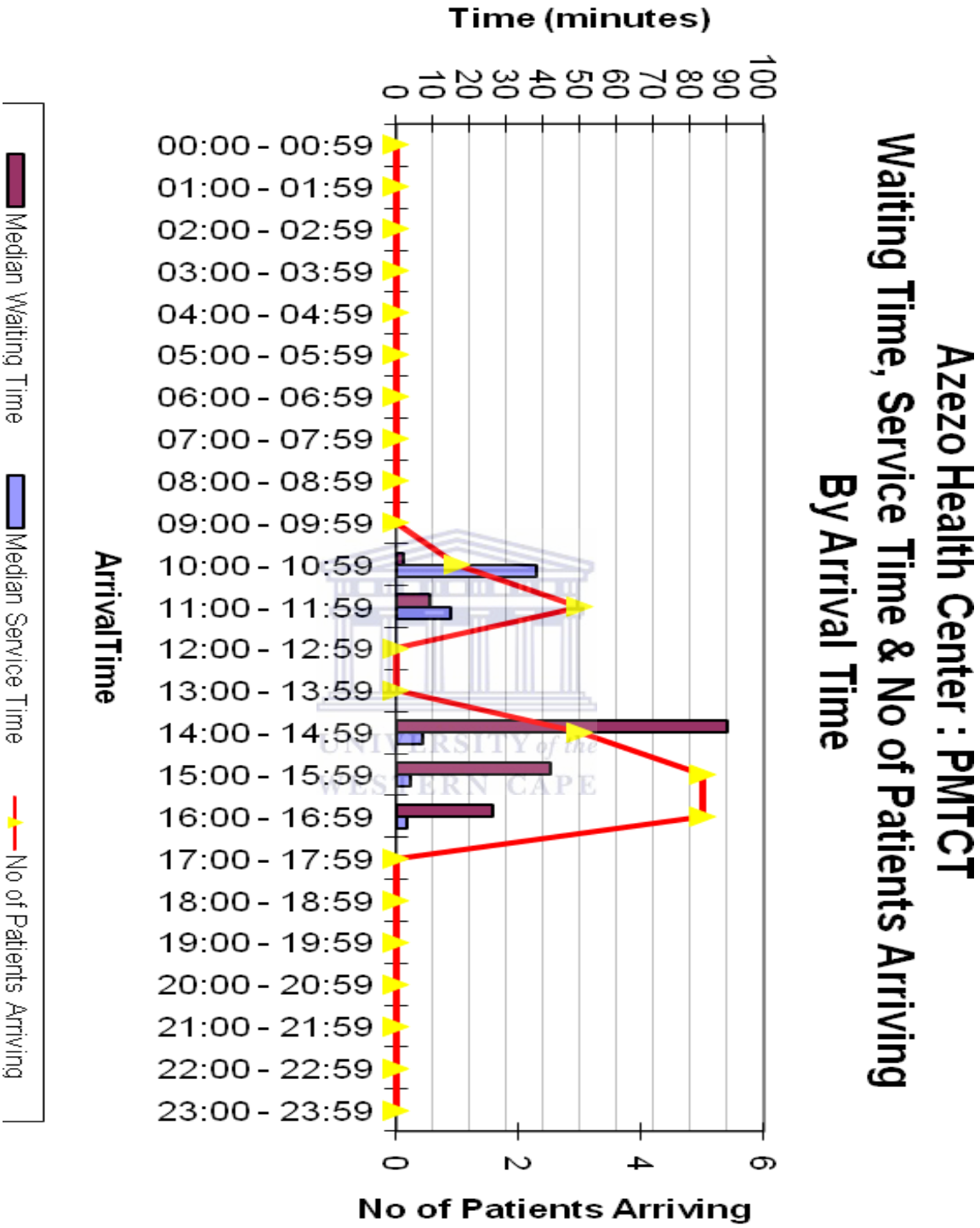


Figure 17: Detailed arrival time report for PMTCT.

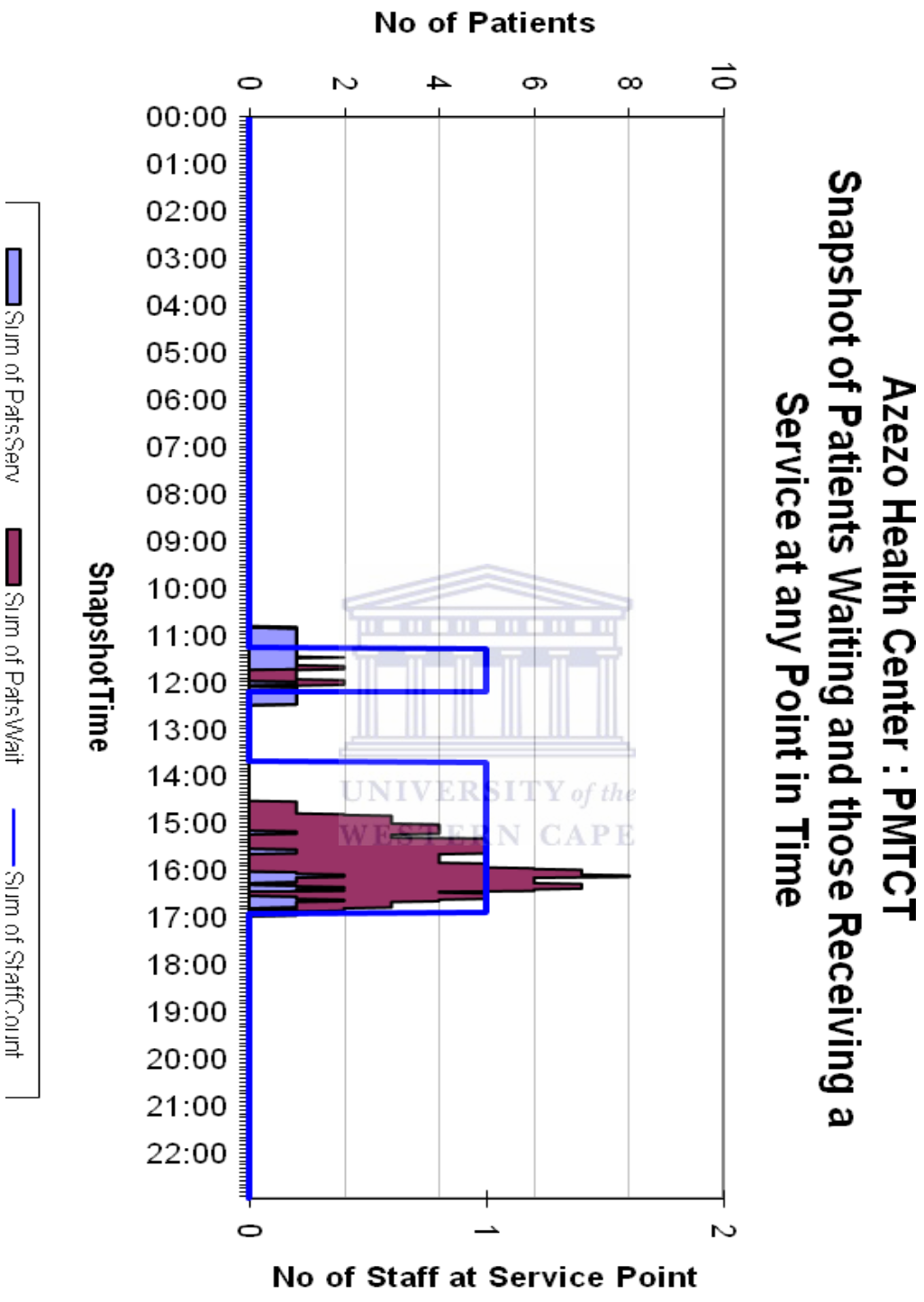


Figure 18: Detailed snapshot graph for PMTCT.

REGISTRY

Median partial waiting and service times of 4 and 1 minute are excellent for this service point. The waiting times could decrease further by avoiding mismatch (patients were present but there was no staff to attend patients between 6.8:00 a.m.).

However only 12% of staff time was used to serve patients, hence the staff member could help other clerks in peak hours or the service point can be combined with cash office for better efficiency.

The registry is the entry point for most of the patients and there was early arrival and batching of patients and hence this is the proper service point to inform patients that they can visit the facility at anytime of the day and they would not be returned if they came during the working hours.

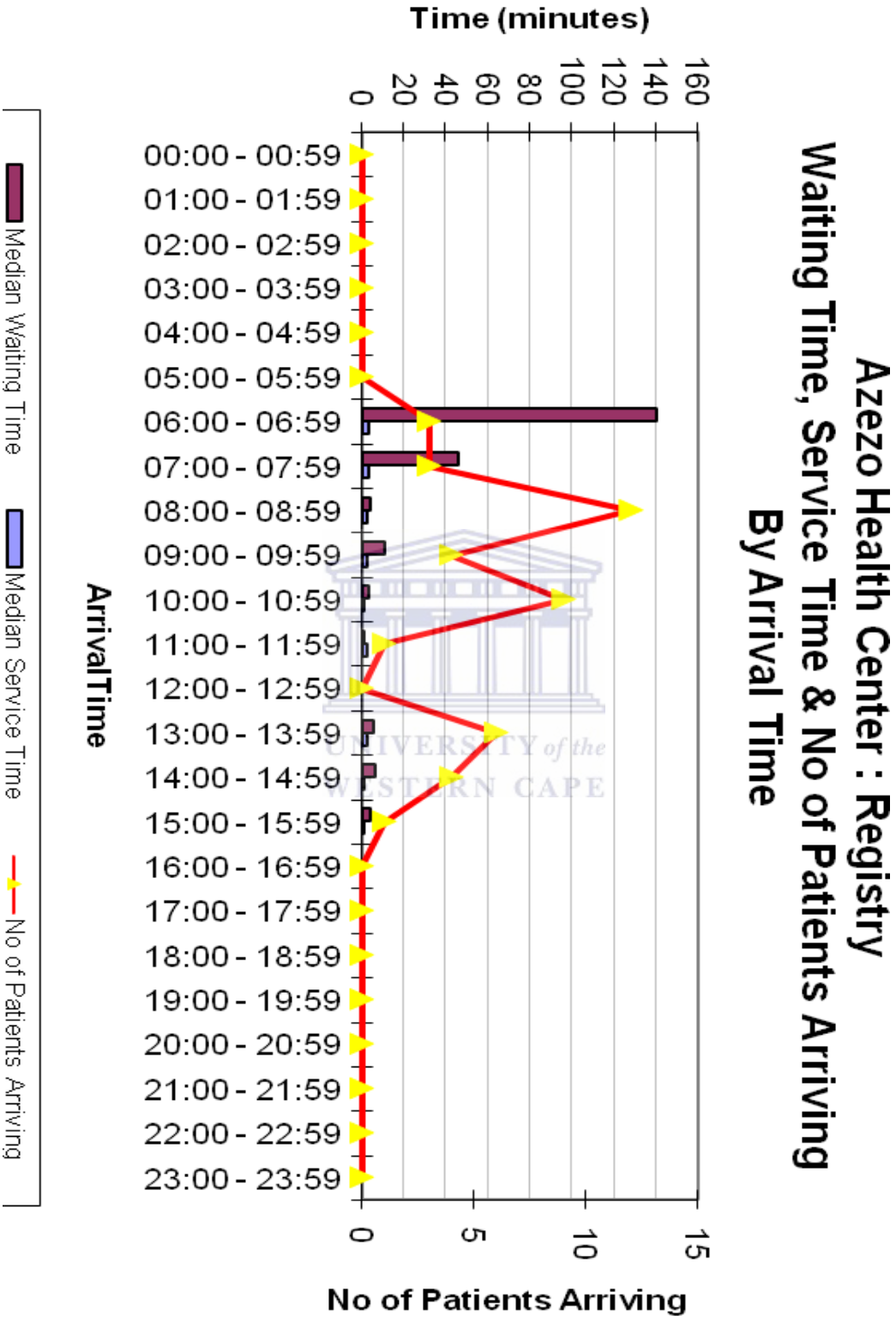


Figure 19: Detailed arrival time report for Registry

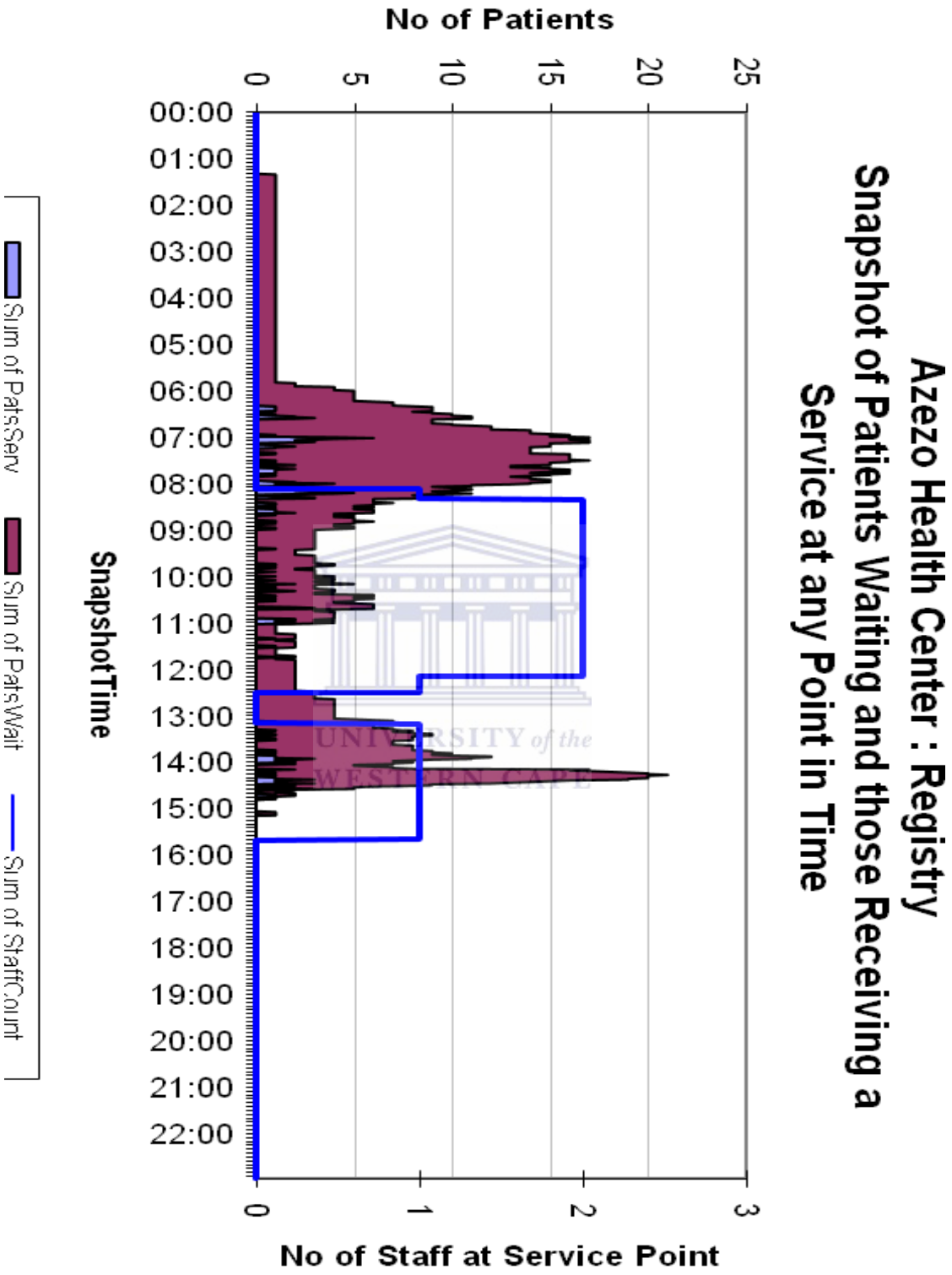


Figure 20: Detailed snapshot report for Registry

UNDERFIVE CLINIC

A median waiting time of 20 minutes and 5% of patients waiting for more than an hour is totally unacceptable at this service point. The reason for the long waiting times is not staff over load as only 44% of staff time was used to serve patients .There was no full time staff working there. Hence considering the urgency of child health problems and number of cases it would be good if there is one full time staff member at this service point. This staff member can also manage vaccination services with out strain.

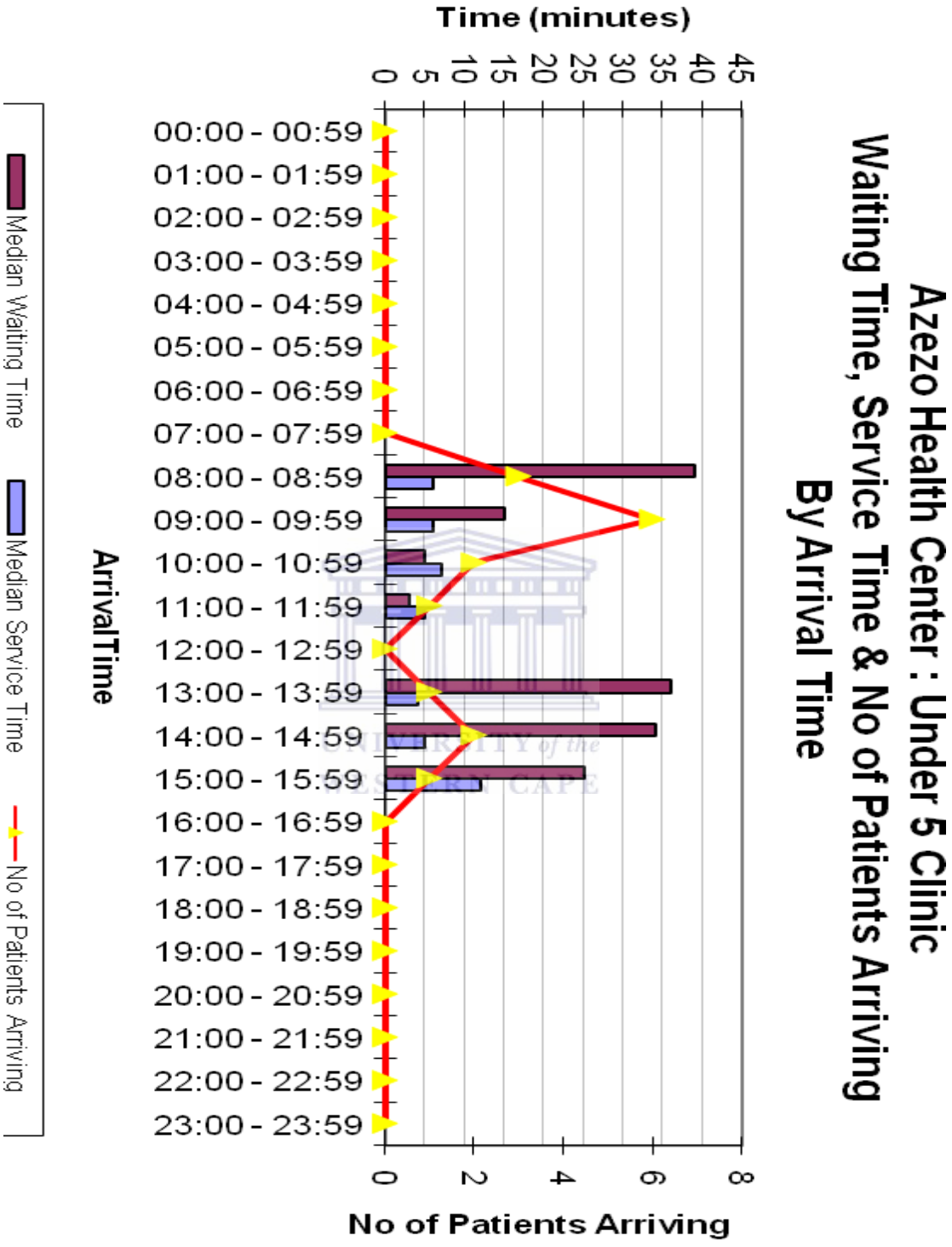


Figure 21: Detailed arrival time report for Under 5 Clinic

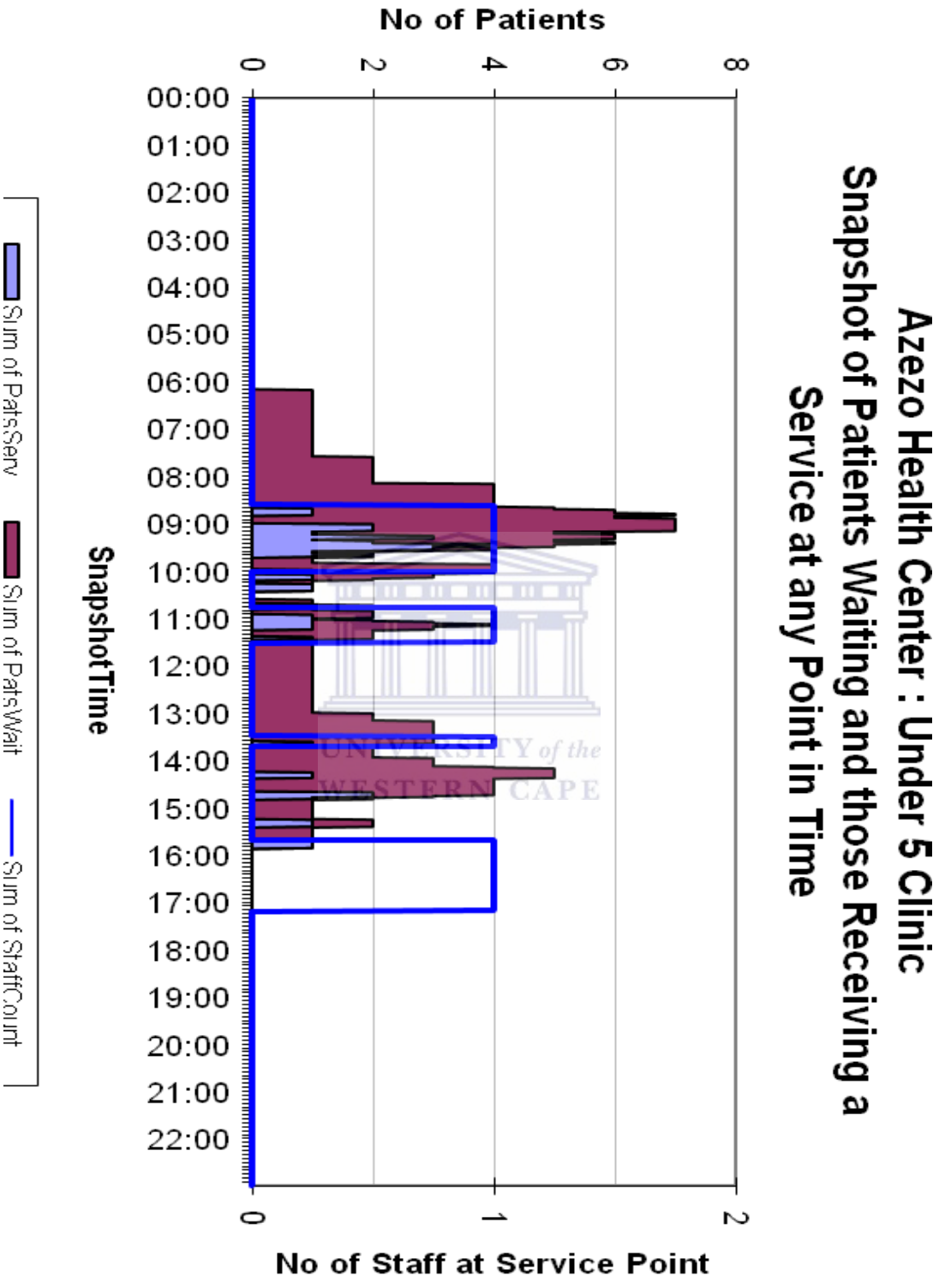


Figure 22: Detailed snapshot report for Under five Clinic.

VACCINATION

Median partial waiting time of 38 minutes is very long for this service point. The median partial service time is also very low for a staff to stabilize a child, administer the vaccine and convey appropriate health message to the mother. As the percentage time spent attending patients is very low (21%) the long waiting time and short service time could be improved markedly with no additional resources.

In addition by avoiding client arrival in batches and by advising to come in non peak hours and by avoiding staff inefficiencies by giving priority to patients marked improvement in waiting and service time could be gained.

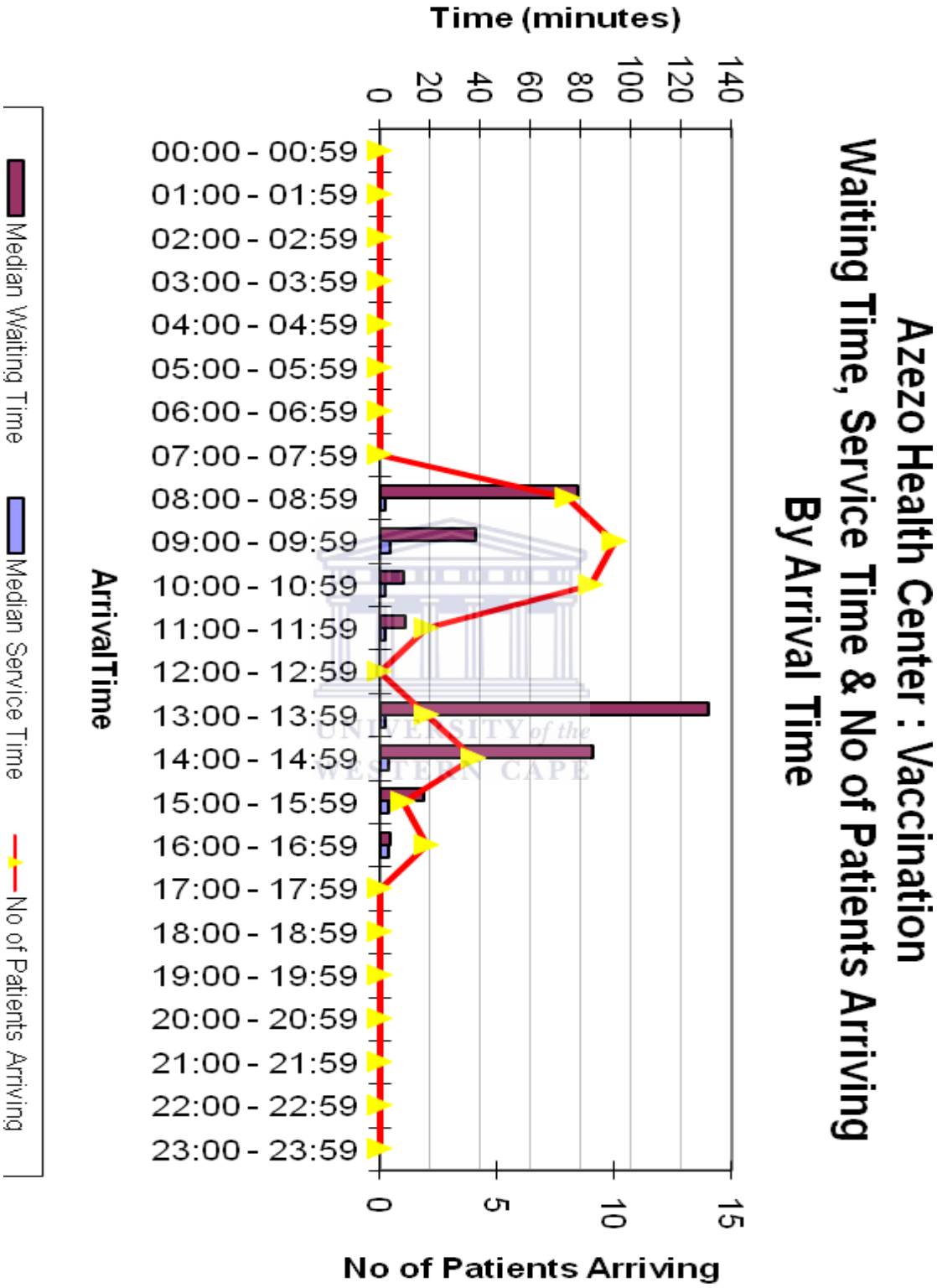


Figure 23: Detailed arrival time report for Vaccination.

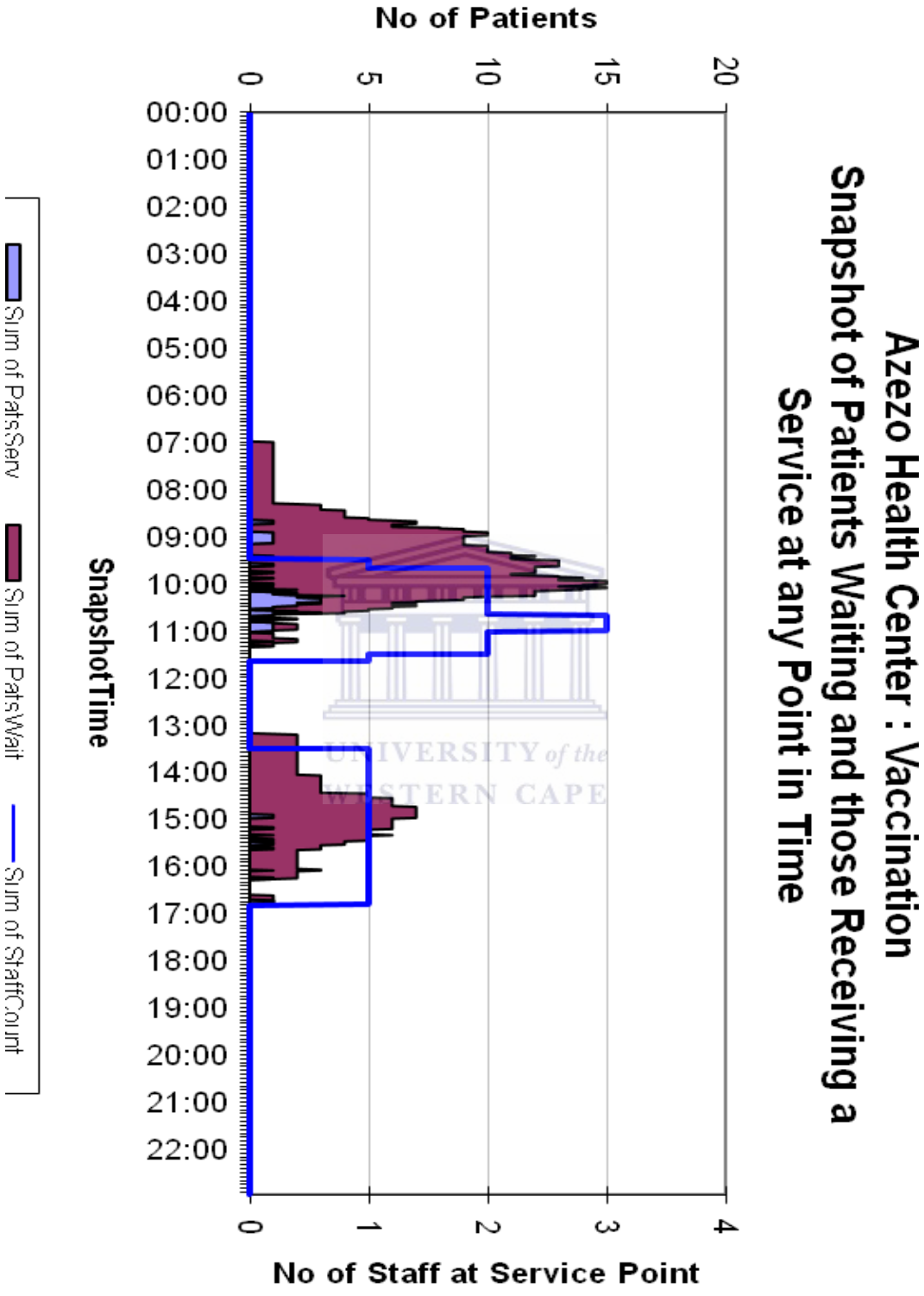


Figure 24: Detailed snapshot report for Vaccination.

VCT

Median waiting times of 20 minutes is too long for this service point considering the number of clients who visited this service point (4 clients) and percentage of time spent attending patients (28.8%).The major reason for the long waiting time was the early arrival of patients. Hence by advising patients to come anytime of the day and reassuring that they would not be returned the waiting time could decrease markedly.

The median service time of 12 minutes is less than the national standard of 15 minutes and even some of them were counselled only for 2 minutes and hence sticking to the national standard is recommended to provide quality care to the clients.

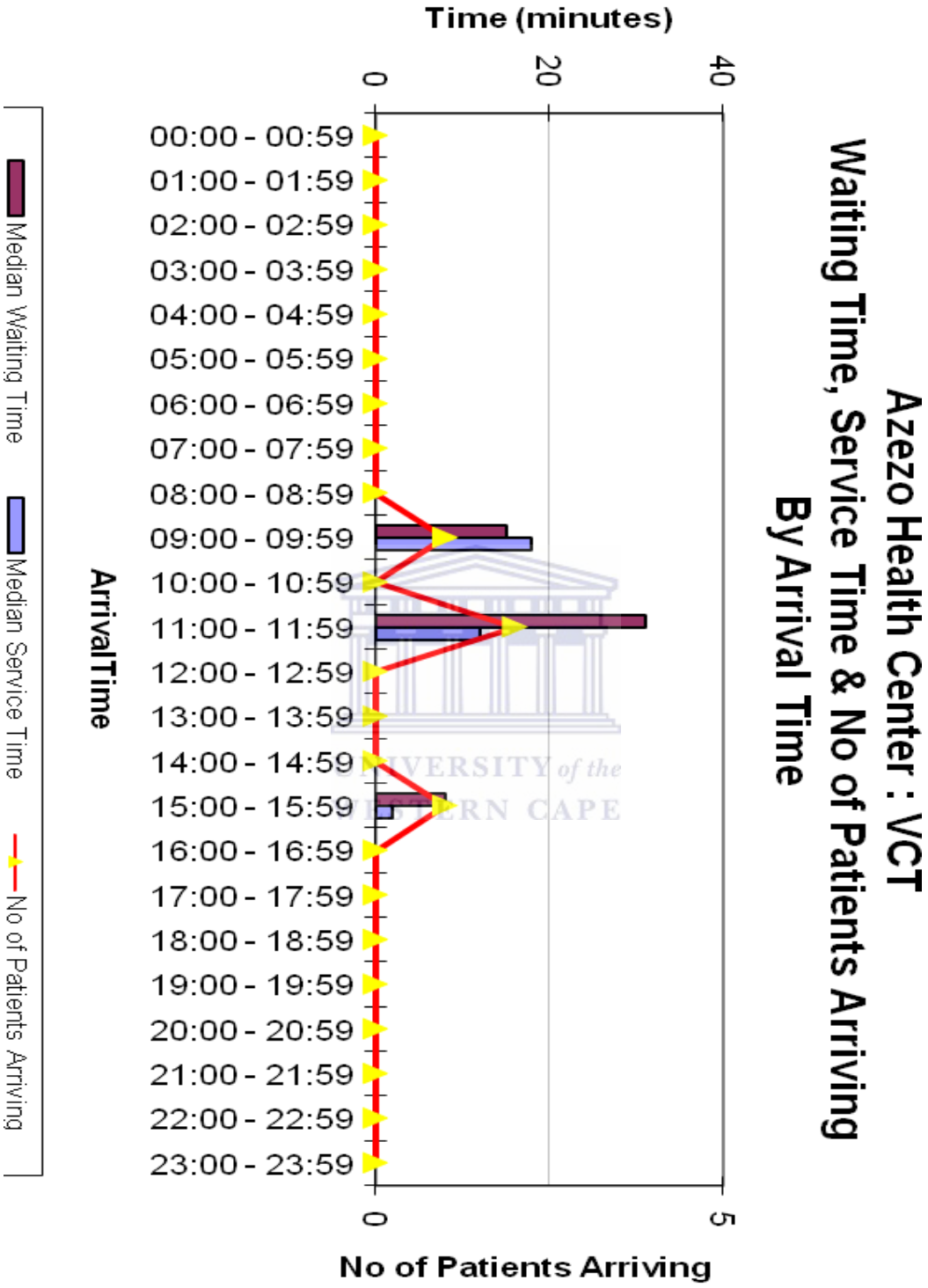


Figure 25: Detailed arrival time report for VCT.

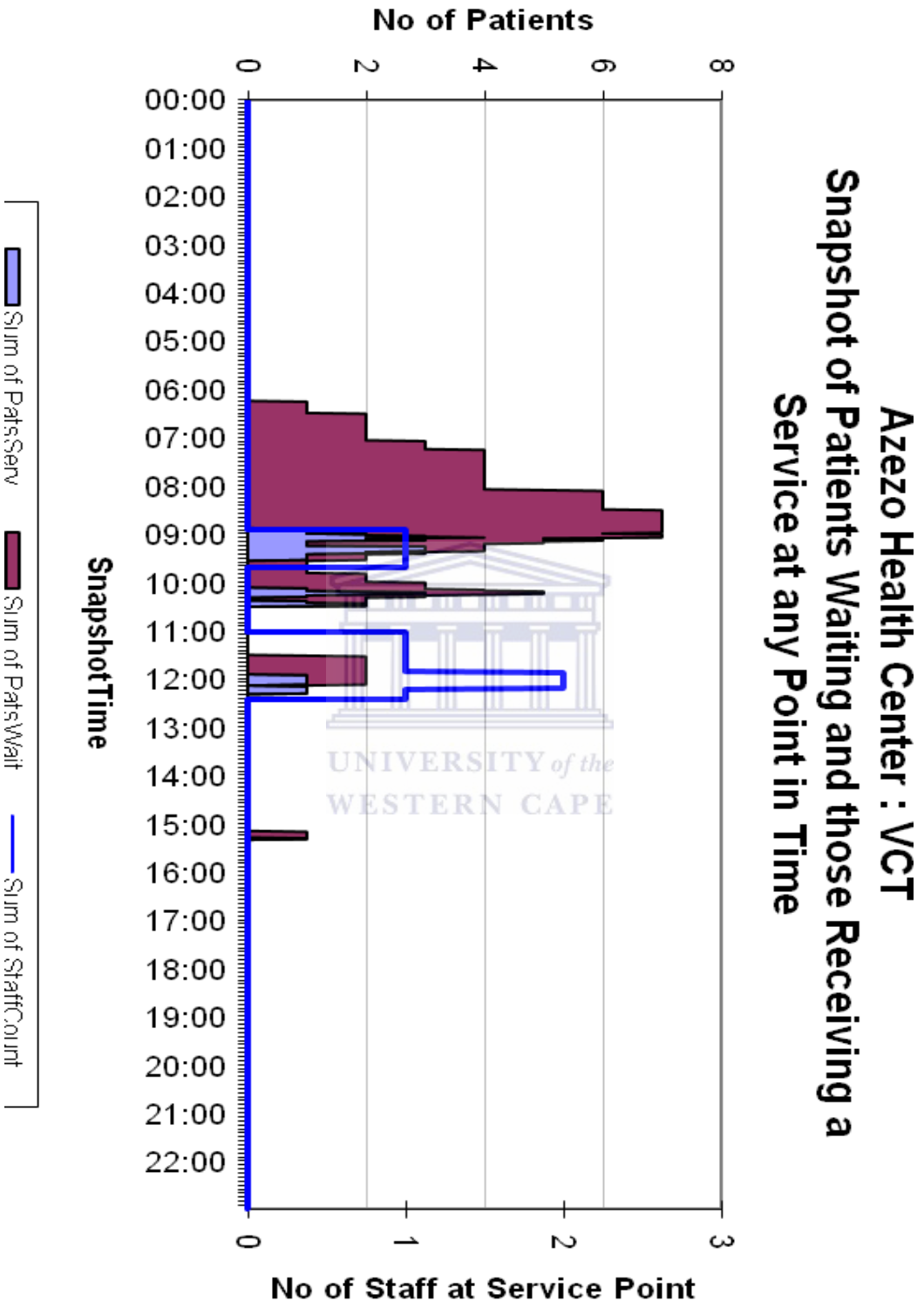


Figure 26: Detailed snapshot report for VCT.

Injection room

Median partial waiting and service times of 17 and 2 minute were unacceptable at this service point. The waiting times could decrease further by prioritizing patients. The service time could also be increased as the percentage staff time usage is very low. The percentage staff time is very low because the service point is open for 24 hours. (The injection room also serves as first aid clinic)

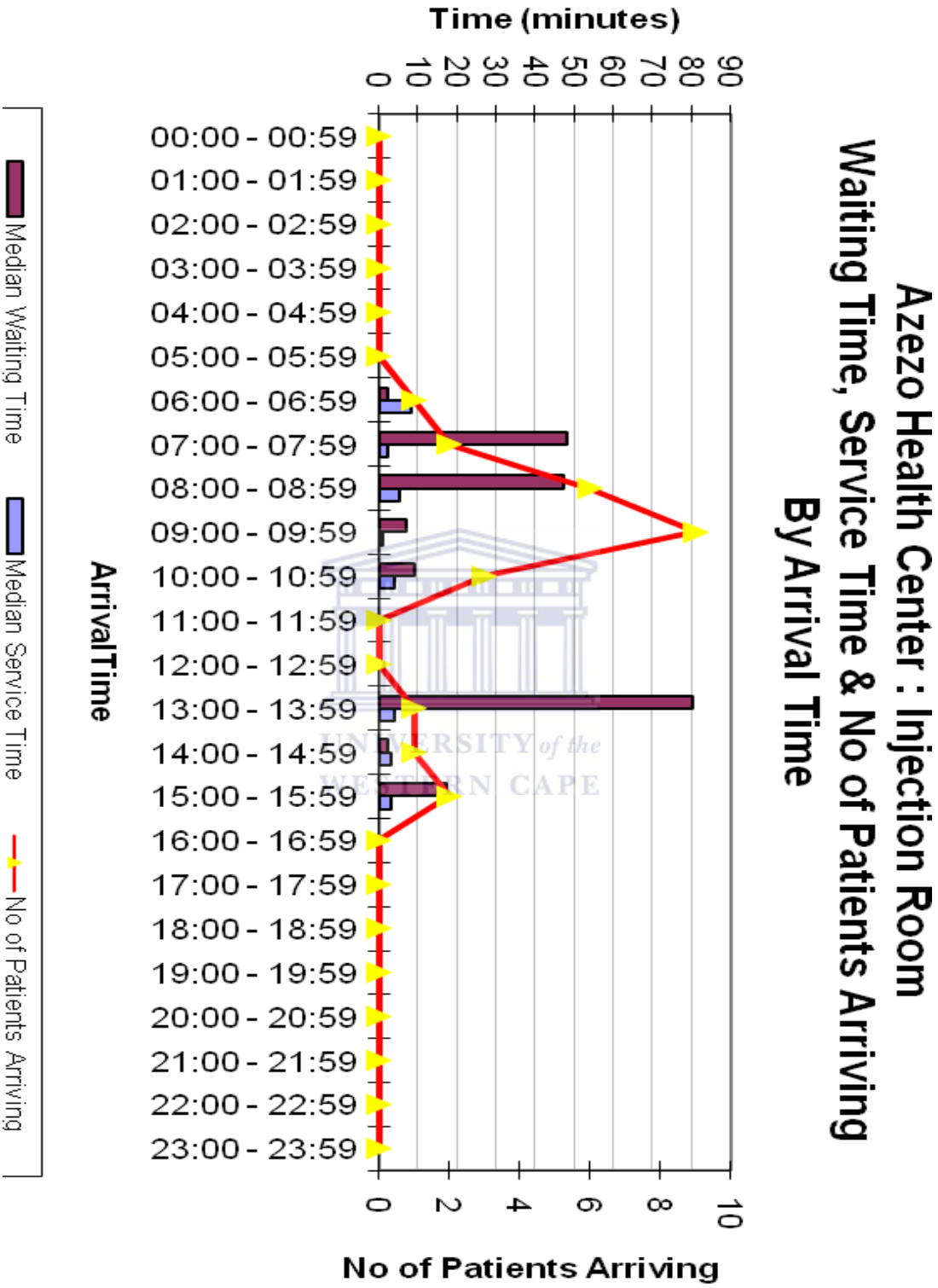


Figure 27: Detailed arrival time report for Injection room.

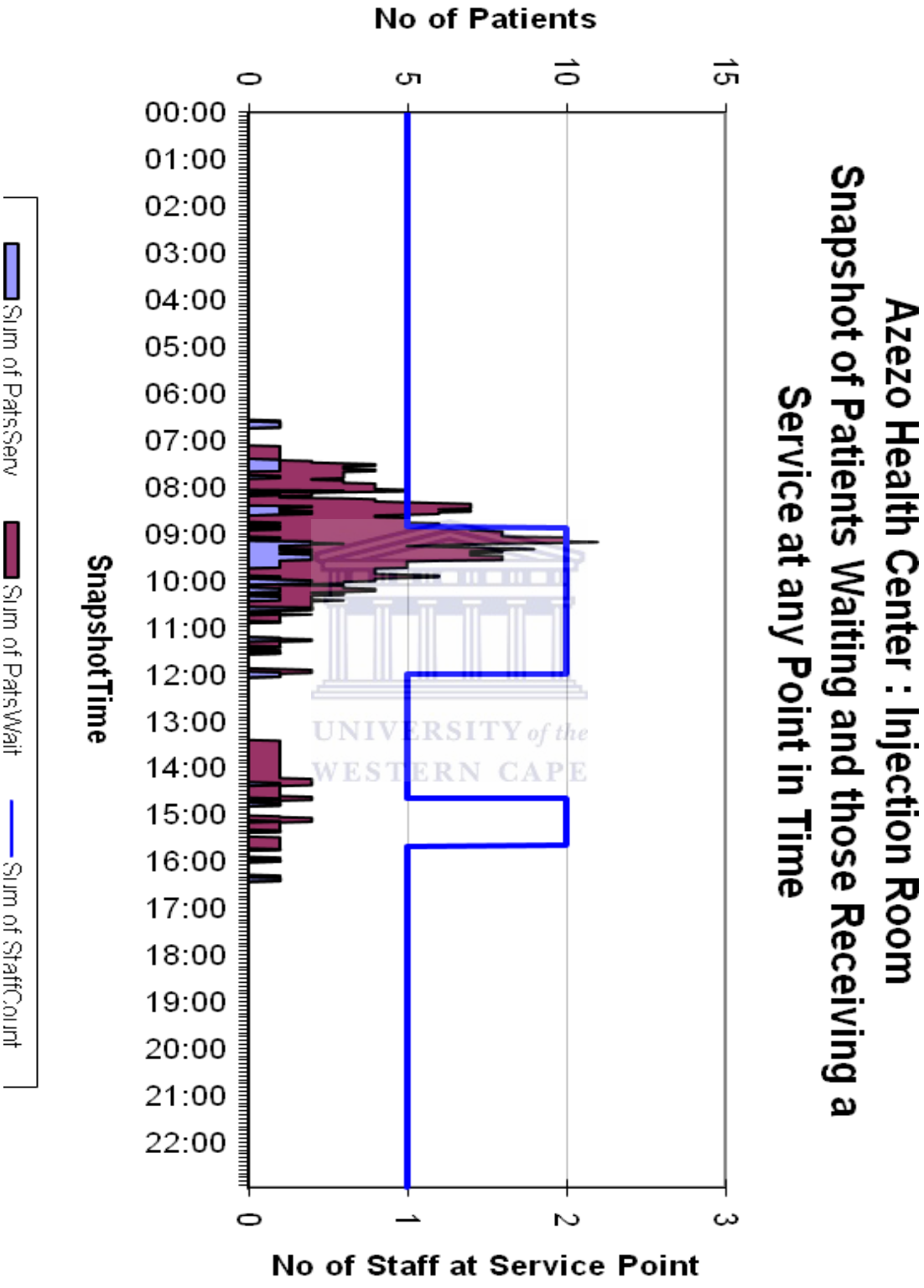


Figure 28: Detailed snapshot report for Injection.

GEBRIEL LOWER CLINIC

GEBRIEL LOWER CLINIC

This lower clinic was established in 2003 by a nurse who abandoned practicing in governmental facilities. It is found in a residence area 10 km to the south east of the city center. The clinic is an isolated building with 3 rooms and furnished with tables and chairs. The bigger room serves as waiting area and office for 'Registry and Casher'. The remaining two rooms are Consultation and Injection/Dressing rooms. A staff of two (one nurse and clerk) serve 7-10 patients per day.

Eight patients visited the facility on the day of the survey. Seven of them were females. The median age of the patients was 32.3 years. Only 3 of the patients were new visitors. None of them were having appointment. Six of them arrived by walking.

The WSTS results of the facility can be summarized as follows.

Summary

Gebriel Lower Clinic

No of Staff in Facility	Present	Absent	Total	Equivalent
	2	0 (0.00%)	2	1.88

Patients Seen in Facility	Total	Turned Away	Left Voluntarily	Med Transport Time (mins)
	8	0 (0.00%)	0 (0.00 %)	10

Median Complete ST	8	**Median Complete WT**	6
5% Complete ST	4	**5% Complete WT**	3
75% Complete ST	9	**75% Complete WT**	7
95% Complete ST	15	**95% Complete WT**	13

Table 1: Detailed Service point report-Gebriel lower Clinic

Service Point	Staff	Patients seen	Workload	% Staff times attending to patients	Service Times				Waiting Times			
					Median	5%	75%	95%	Median	5%	75%	95%
Consulting Room - Prof Nurse	0.94	8	8.53	11.33	6	2	7	13	5	1	7	27
Registry and casher	0.94	8	8.53	3.33	2	1	2	3	1	0	2	13

None of the patients visited this facility arrived before 8:00 a.m. Five of them arrived in the morning session (before 12:00 a.m.).Arrival pattern of patient's in relation to waiting and service times is shown in Figure 1.

Waiting times

The median complete waiting time for the facility was 6 minutes. The median partial waiting times ranges between 1 and 5 minutes. The median partial waiting times for the clerk and nurse were 1 and 5 minutes respectively (Table 1).

Both the complete and partial waiting times were excellent.

Service times

The median complete service time for the facility was 8 minutes. The median partial service times for the consultation room, 'Registry and Cash' office and Injection room were 7, 2 and 4 minutes respectively (Table 1).

Though the complete and partial median service times were excellent the percentage staff clinical time usages were very low.

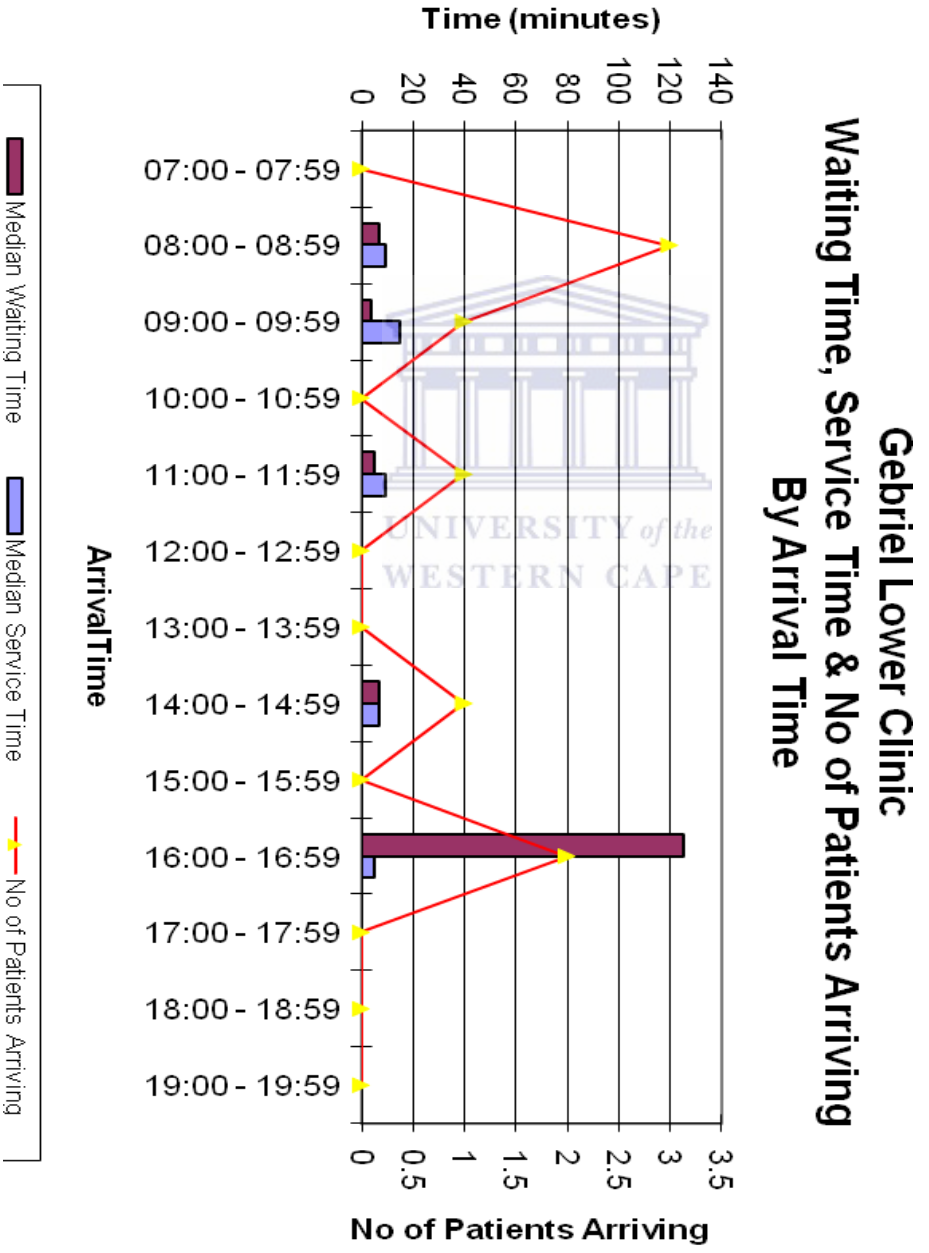


Figure 1- Detailed Arrival Time Report for the Whole Facility

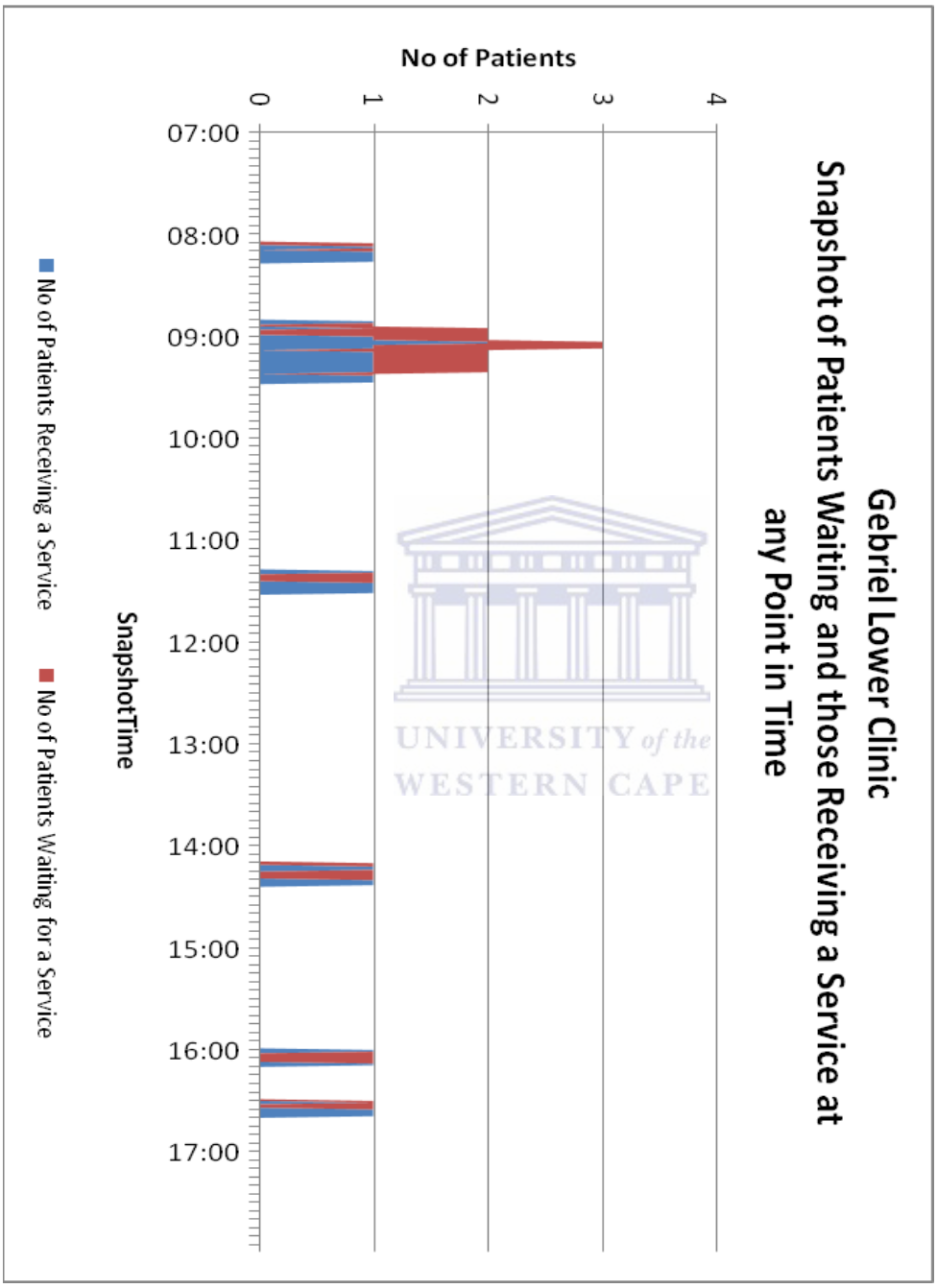


Figure 2- Detailed Snapshot Report for the Whole Facility

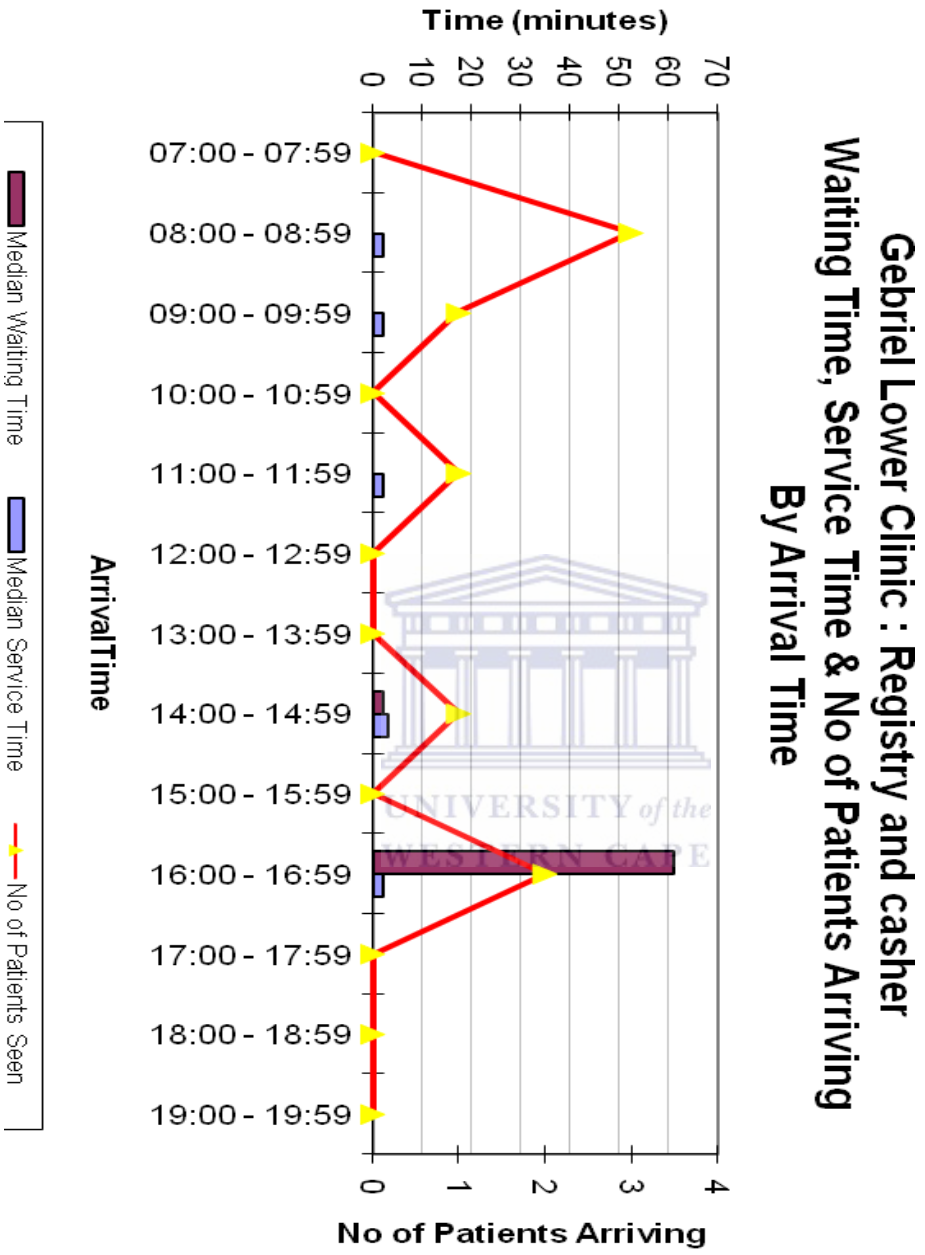


Figure 3-Detailed Arrival Time Report for Registry and Casher

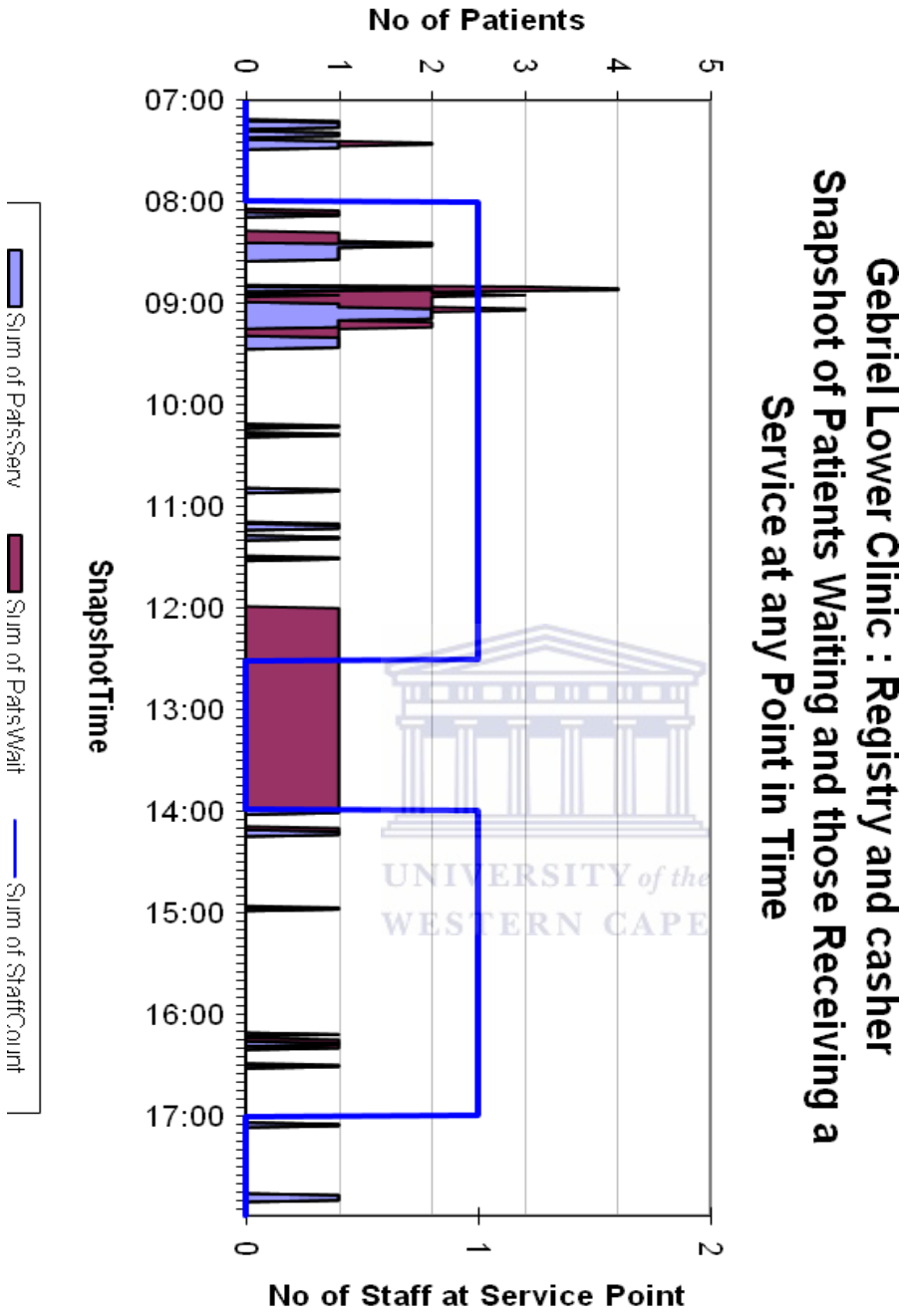


Figure 4: Detailed Snapshot Report for Registry and Casher

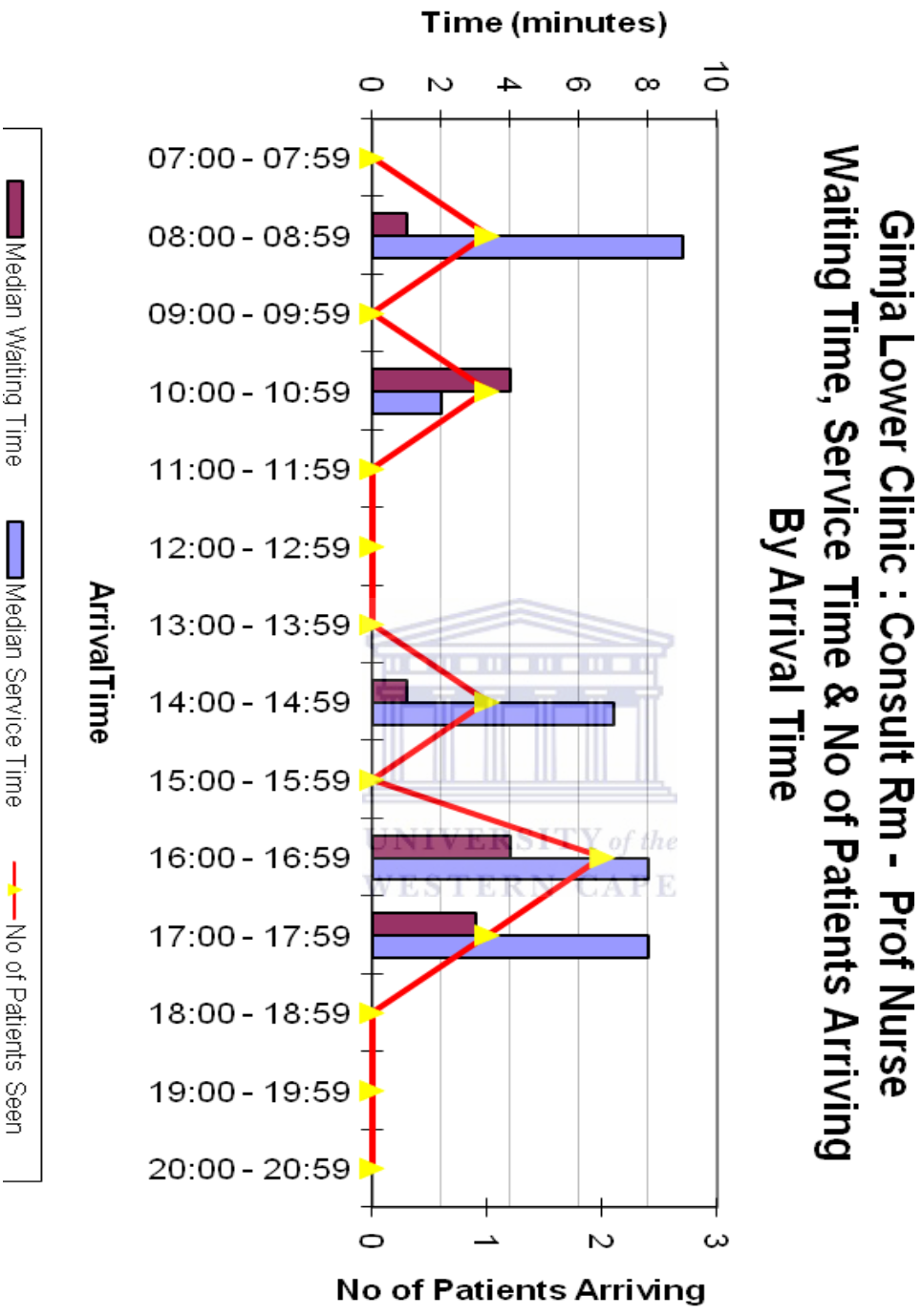


Figure 5-Detailed Arrival Time Report for Prof Nurse

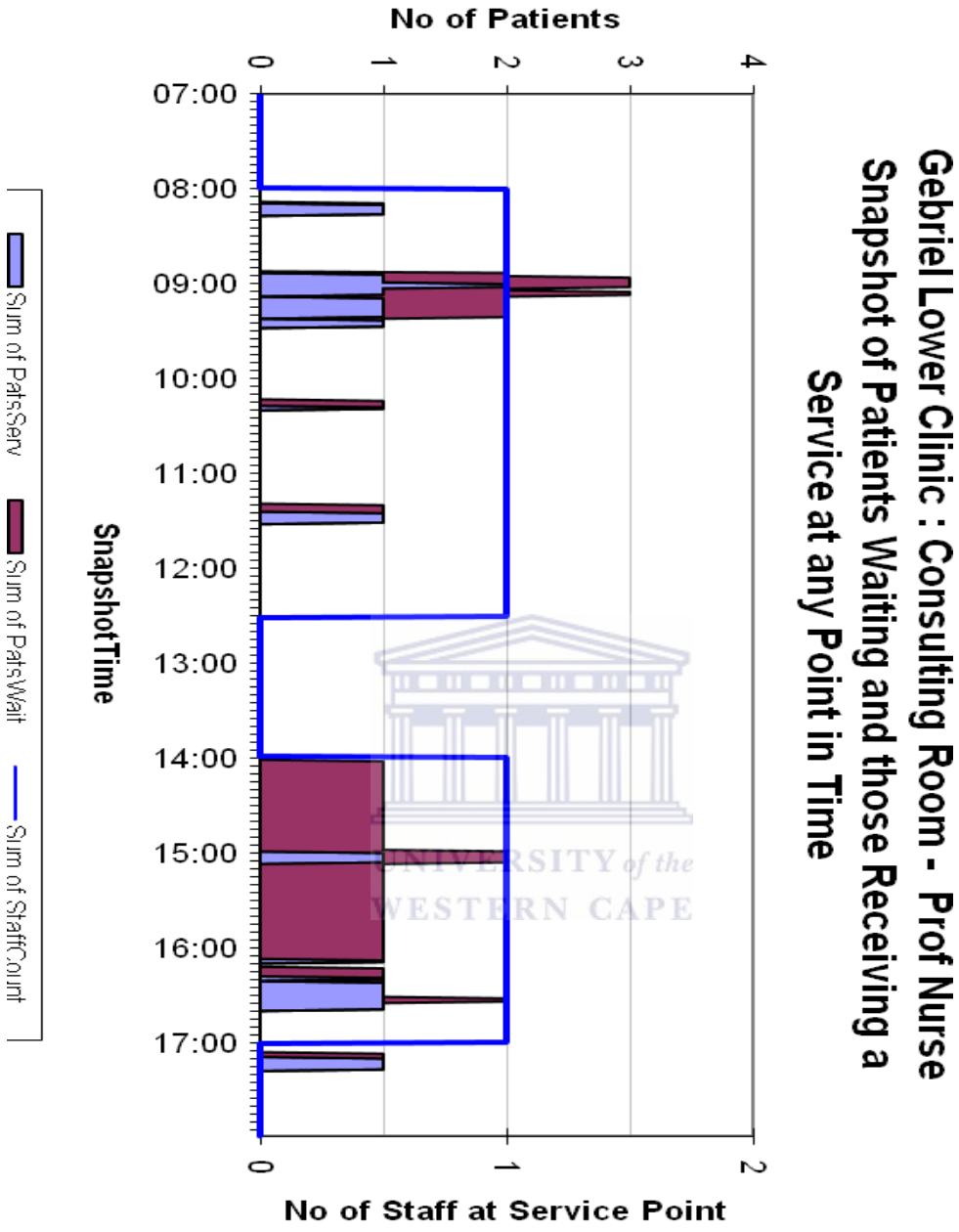


Figure 6: Detailed Snapshot Report for Prof Nurse

Case mix

Two patients were diagnosed as having acute febrile illness, 2 upper respiratory tract infections and the remaining patients visited for diarrhoea, PUD and blood pressure check-up.

Patient and staff attitude about waiting and service times

Six of the eight patients characterized their wait as short and two of them as acceptable. They were also willing to wait for an average of 21.8 minutes with median of 30 minutes in such facilities.

The staffs perceived that they use 10 and 3 minutes as the maximum and minimum service time's .staffs perceived that patients on average waited for 4 minutes to receive their services.

GIMJA LOWER CLINIC

GIMJA LOWER CLINIC

This lower clinic was established in 2003 by a Health Assistant who formerly was a member of the military. It is found in a residence area which is 2 km the East of the city centre. A house made of wood and corrugated iron with 3 class rooms is rented and furnished as per the standard of the Ministry of Health. The bigger room serves as waiting area and office for 'Registry and Casher'. The remaining two rooms on the left side are Consultation and Injection/Dressing offices. A staff of two (one health assistant and clerk) serve 7-10 patients per day.

Nine patients visited the facility on the day of the survey. Four of them were females. The median age of the patients was 29.5 years (with median of 25). All of them were not new for the facility. Three of them were having appointment. All of them arrived by walking. All of them were residents of Gondar.

The WSTS results of the facility can be summarized as follows.

Gimja Lower Clinic

No of Staff in Facility	Present	Absent	Total	Equivalent
	1	1 (50.00%)	2	1.83
Patients Seen in Facility	**Total**	**Turned Away**	**Left Voluntarily**	**Med Transport Time (mins)**
	9	0 (0.00%)	0 (0.00 %)	10
Median Complete ST		8	**Median Complete**	3

		WT	
5% Complete ST	2	**5% Complete WT**	2
75% Complete ST	11	**75% Complete WT**	5
95% Complete ST	14	**95% Complete WT**	6

Table 1: Detailed Service point report-Gimja Lower Clinic

Service Point	**staff**	**Patients seen**	**Workload**	**% Staff times attending to patients**	**Service Times**				**Waiting Times**			
					Median	**5%**	**75%**	**95%**	**Median**	**5%**	**75%**	**95%**
Consulting Room - Prof Nurse	0.88	9	10.29	13.33	7	2	9	13	2	1	4	6
Registry and casher	0.95	7	7.35	2.19	1	1	2	2	1	0	1	1

Waiting times

The median complete waiting time of the facility (3 minutes) was excellent. The median partial waiting times of 1and 2 minutes for ‘Registry and Casher’ and Consultation room respectively were also excellent (Table-1).

Service times

The median complete service time for the facility (8 minutes) was efficient. Median partial service times for ‘Registry and Casher’ and consultation room of 1and 8 minutes respectively were also excellent (Table-1).However the percentage staff clinical time usage was too low.

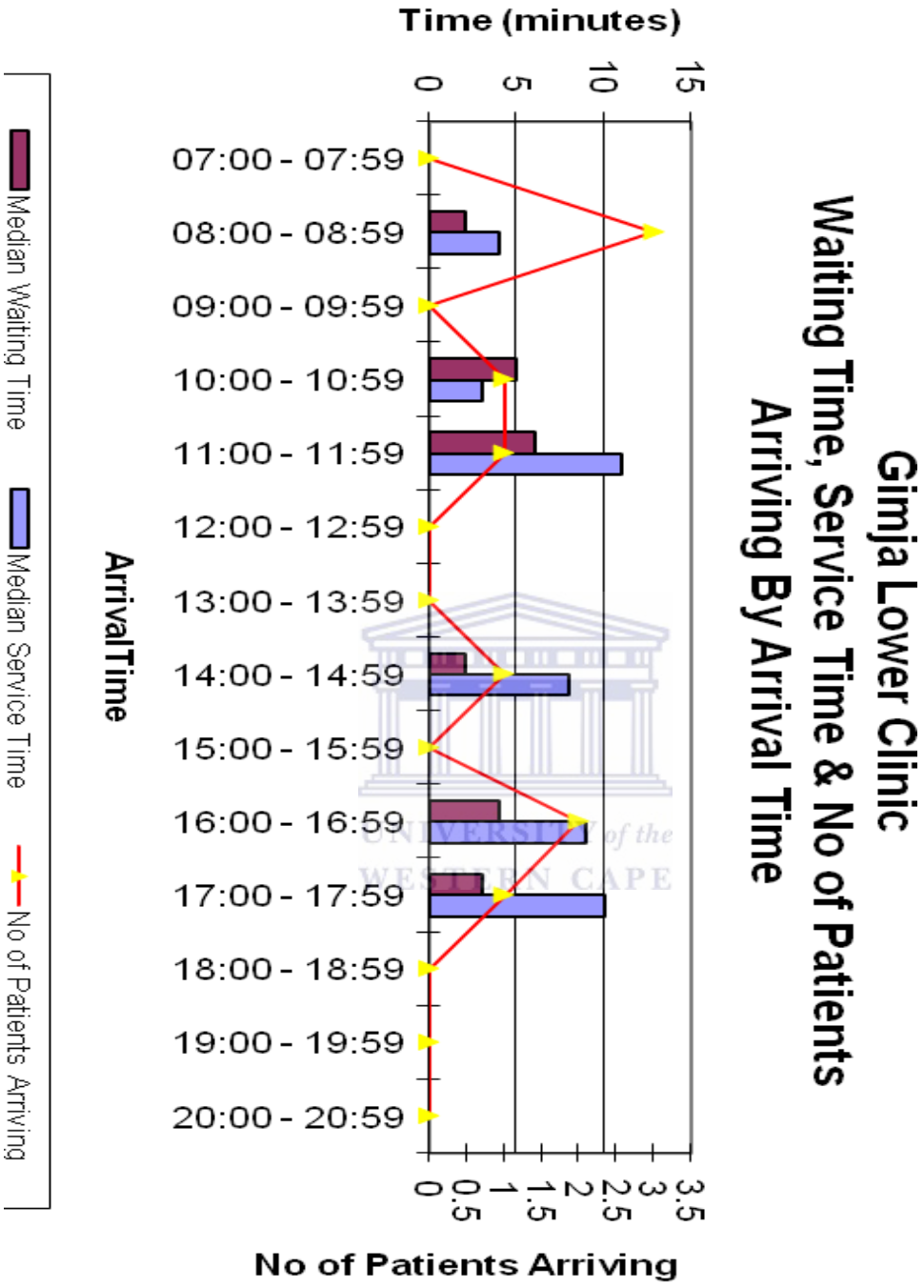


Figure 1: Detailed arrival time report for the whole facility

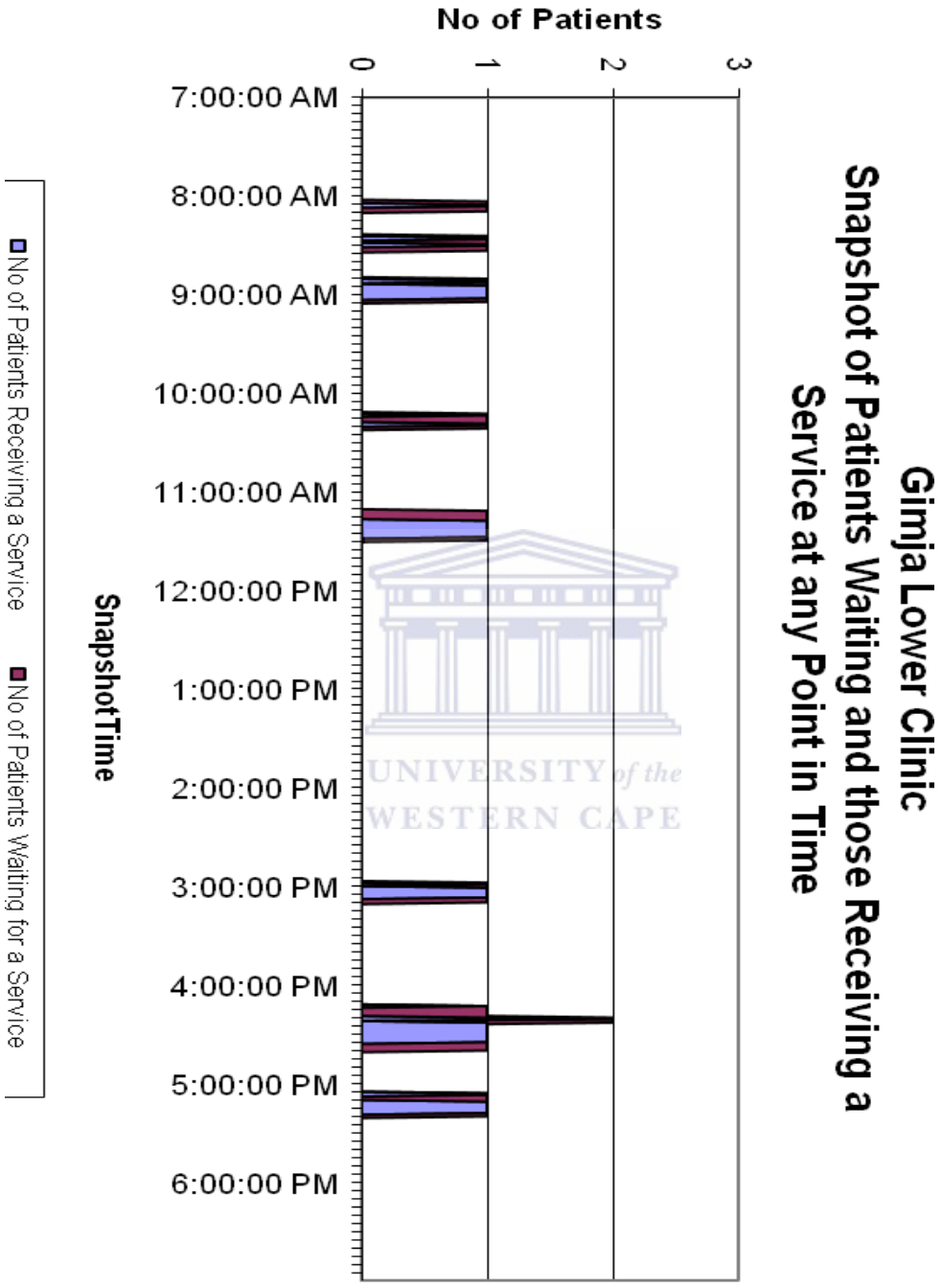


Figure 2: Detailed snapshot report for the whole facility.

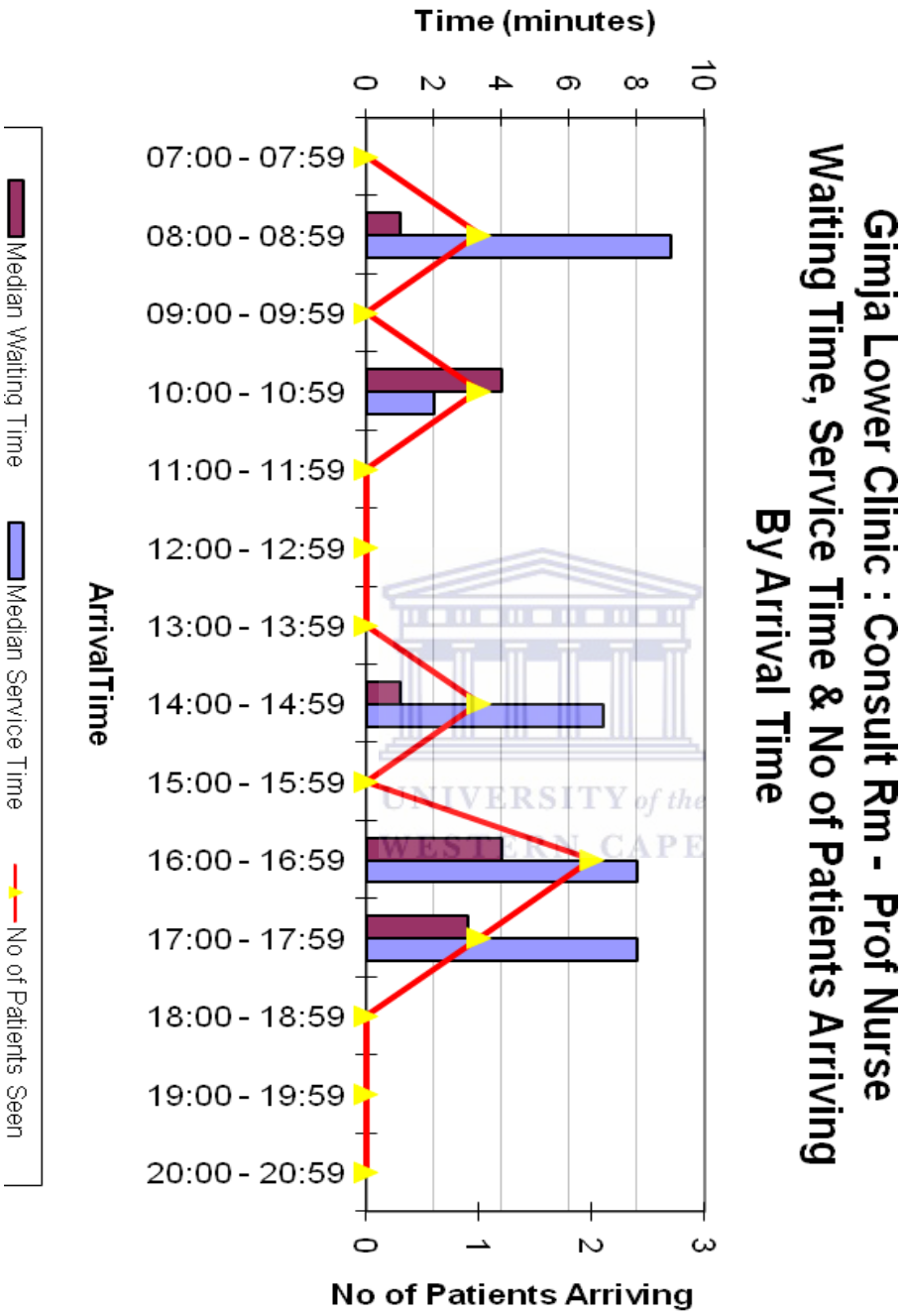


Figure 3: Detailed arrival time report for Professional Nurse.

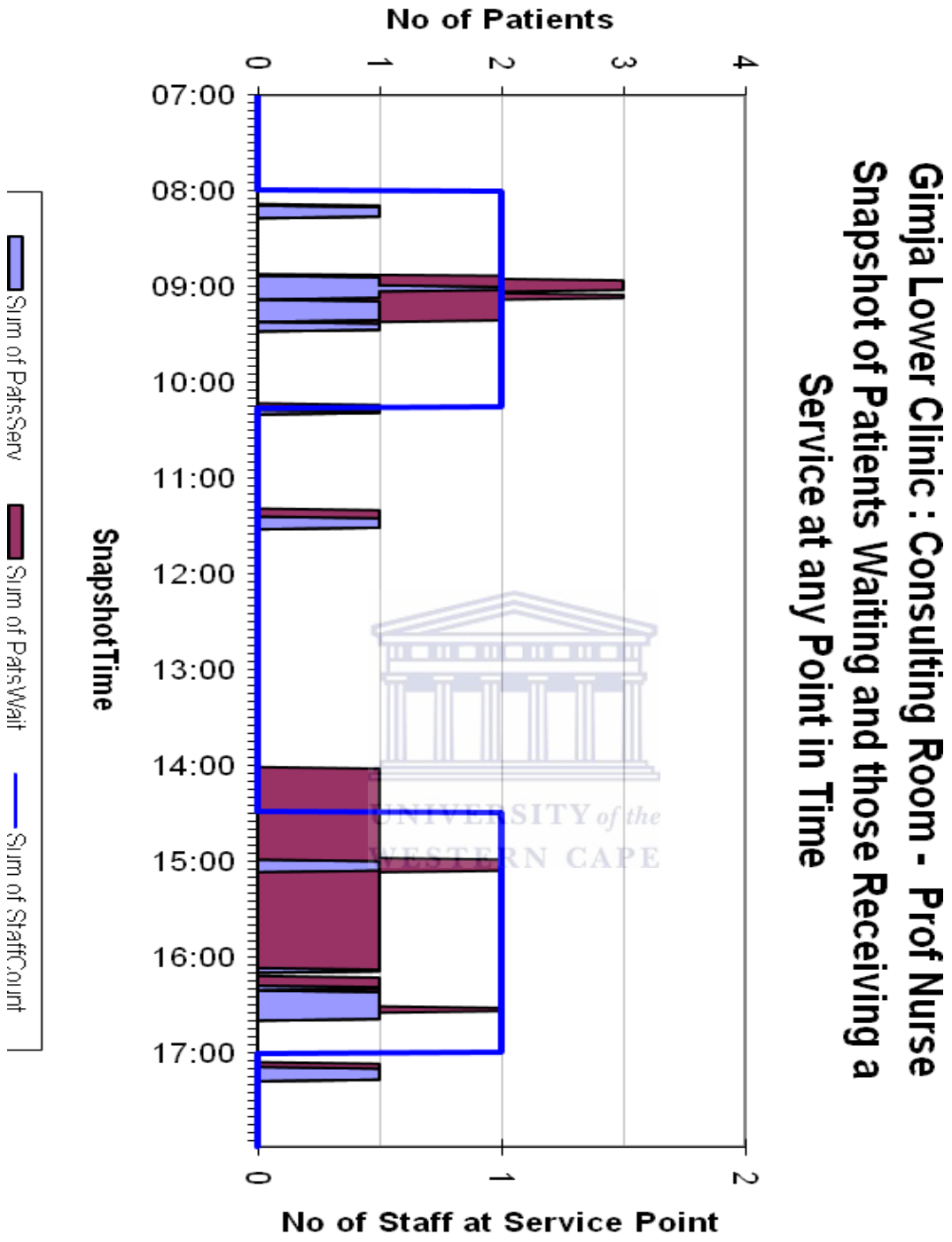


Figure 4: Detailed snapshot report for Professional Nurse.

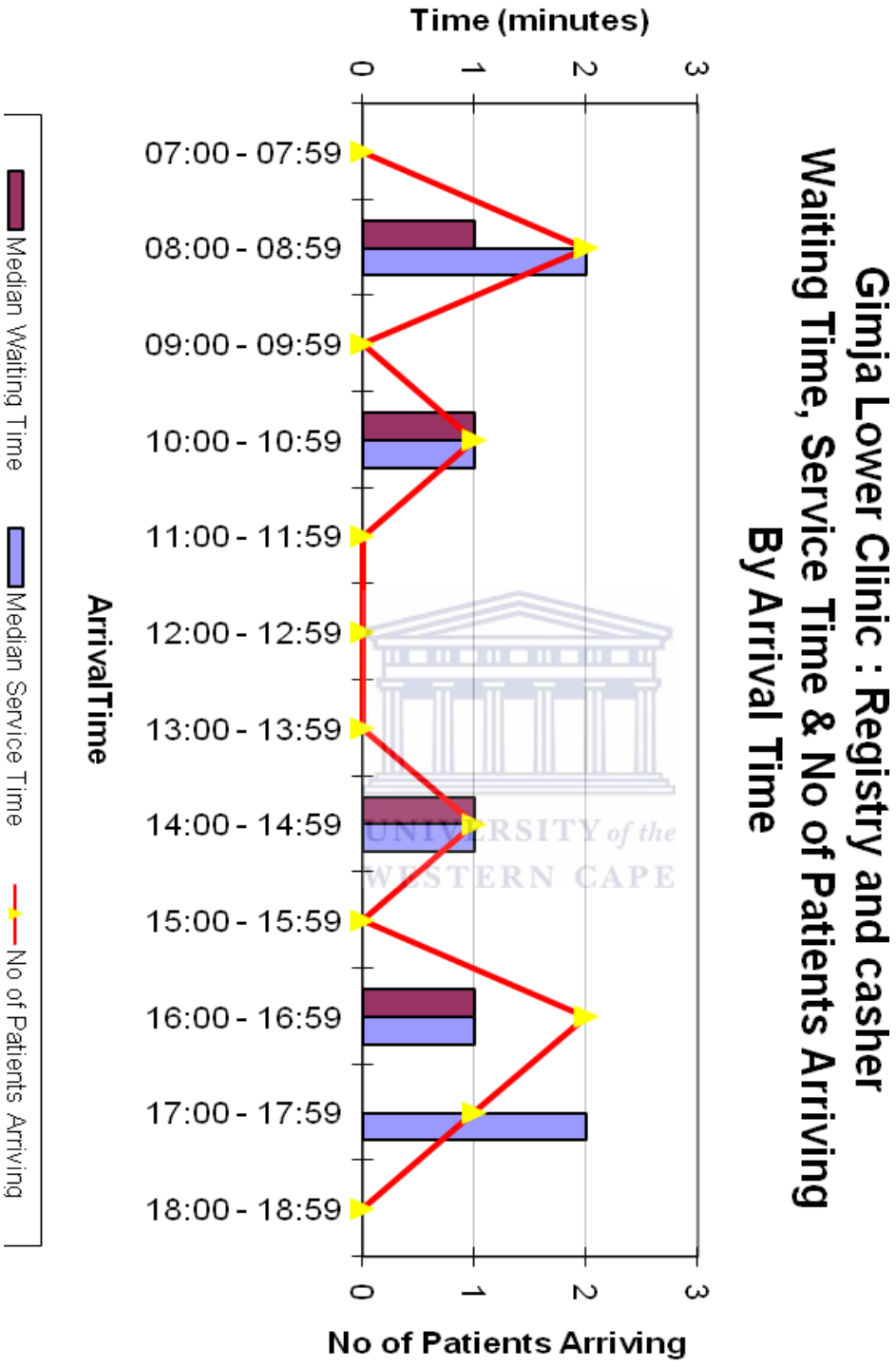


Figure 5: Detailed arrival time report for Registry and Casher.

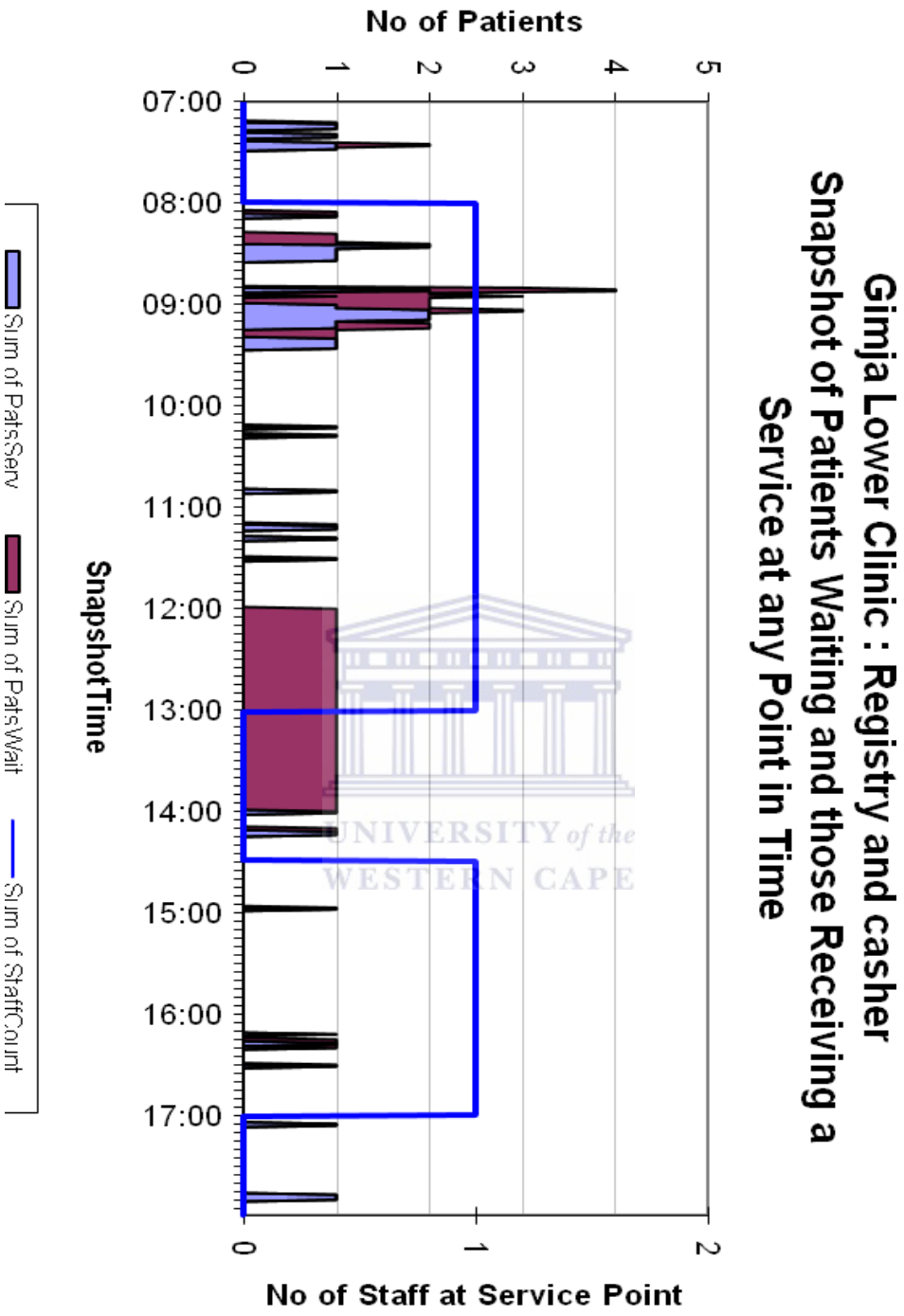


Figure 6: Detailed snapshot report for Registry and Casher

Case mix

Two of the clients visited the facility for blood pressure checkup. One visited because of sustaining trauma.

Attitude of staff and patients about waiting times

All patients characterized their wait as short and they are willing to wait for an average of 10.5 minutes (median 10 minutes).

Staffs perceived maximum and minimum service times were 10 and 3 minutes respectively. Staffs believe that patients on average wait for 10 minutes to receive services in their facility.

GONDAR HEALTH CENTRE

GONDAR HEALTH CENTRE

This is the biggest and the oldest public health centre in Gondar which was established in 1950's. It has undergone many modifications since its establishment. It is found 1.2 km to the east of the city centre. The main bus station and the main market area are at a walking distance from the facility. It lies on less than 200 square meter area and the buildings are overcrowded. There is a waiting area with a capacity of 50 people in front of the Registry and Cash Office. The remaining buildings are made of small equal sized rooms on either side of the entrance hall. There were few interspersed long seats on the corridor. There was no indicator which show somebody the way to the service points although the name of each service point was posted on the door.

Recognizing the prevailing long waiting times the facility has applied some modifications since 2005 which includes start issuing cards at least an hour before the opening hour of the facility and through out the day. This was done in order to abandon the practice of booking one day before the visit.

Socio demographic characteristics of the study participants is shown in table 1.Two hundred thirty five patients attended the facility on the day of the survey. Fifty two percent (123) were females and only 11.6% are under the age of fifteen. Sixty two percent of the patients arrived at the facilities by walking, 24% came by a taxi, 87.2% had visited the facility before and 46.8% has an appointment.

Table 1. Socio demographic characteristics of patients attending Gondar Health Centre. November 14, 2007.

Socio demographic characteristics	Frequency
Age	
Less than five years	15 (6.4%)
6-15 years	12 (5.2%)
>16 years	207(88.4%)
Median	25 years
Sex	
Male	112(47.9%)
Female	122(52.1%)
Occupation	
Government employed	17 (7.3%)
Self employed	65 (27.8%)
Student	29 (12.4%)
Unemployed	75(32.1%)
Other	15 (6.4%)
One way travel time	
< 5 minutes	21(9%)
6-10 minutes	58(24.8%)
>10 minutes	155(66.2%)
Mean (standard deviation)	26.7 (34.2) minutes
Median	15.5 minutes

Transport type	
Walked	146 (62.4%)
Taxi	57 (24.4%)
Private car	17 (7.2%)
Other	14 (6%)
Address	
Gondar town	210 (89.7%)
Outside Gondar town	24(10.3%)

The findings of the waiting and service times are summarized below.

Overall waiting and service times

Arrival pattern

Patients started to arrive as early as 5:00 a.m. and more than a quarter of patients arrive before the opening of the facility (8:00 a.m.). Only 25% of the patients visited the facility in the afternoon session (after 1:00 p.m.) and no patient arrives after 3:00 p.m. The arrival pattern is shown in fig 1. The arrival pattern is bimodal in shape where the number of arriving patients peaks between 7 and 9 a.m. in the morning and 12 a.m. and 2 p.m. in the afternoon.

Eighteen patients were turned away on the day of the study.

SUMMARY

No of Staff in Facility	Present	Absent	Total	Equivalent
	18	6 (25.00%)	24	20.81

Patients Seen in Facility	Total	Turned Away	Left Voluntarily	Med Transport Time (mins)
	235	18 (7.66%)	1 (0.43 %)	15

Median Complete ST	7	**Median Complete WT**	65
5% Complete ST	1	**5% Complete WT**	3
75% Complete ST	11	**75% Complete WT**	180
95% Complete ST	27	**95% Complete WT**	379

Table 2- Detailed service point report Gondar Health Centre- waiting and service times per service point in facility

Service Point	staff	Patients seen	Workload	% Staff times attending to patients	Service Times				Waiting Times			
					Median	5%	75%	95%	Median	5%	75%	95%
Registry	1.27	87	68.46	29.67	2	1	3	5	15	2	30	90
Adult OPD	4.63	82	17.7	26.75	6	2	10	15	116	26	189	256
Cash Office	0.94	72	76.8	28	2	1	2	3	6	1	11	36
DOTS Room	0.91	62	68.41	15.86	1	1	1	1	27	5	37	64
Dispensary _ Pharmacy	1.78	54	30.39	19.93	2	1	4	9	3	0	5	14
Laboratory	1.88	48	25.49	46.57	10	3	11	18	22	3	35	139
Injection Room	1.26	18	14.3	7.62	2	1	3	5	8	1	10	55
VCT	0.94	14	14.83	45.03	15	7	18	22	305	7	377	512
Under 5 Clinic	0.93	11	11.84	26.68	10	8	11	17	33	5	147	253

Family Planning	0.9	10	11.09	6.47	2	1	5	6	4	1	12	35
Main Pharmacy	0.9	10	11.16	6.28	3	1	3	5	2	0	5	6
Dressing Room	0.88	10	11.43	16.19	6	3	9	14	5	1	10	93
ART clinic	0.94	9	9.6	23.11	10	2	15	30	46	6	55	70
Vaccination	0.92	7	7.6	9.5	5	2	10	10	11	3	20	115
Antenatal Clinic	0.88	6	6.86	12.86	6	4	7	27	39	7	60	106
ART Pharmacy	0.86	5	5.8	6.04	5	2	5	8	10	3	11	76

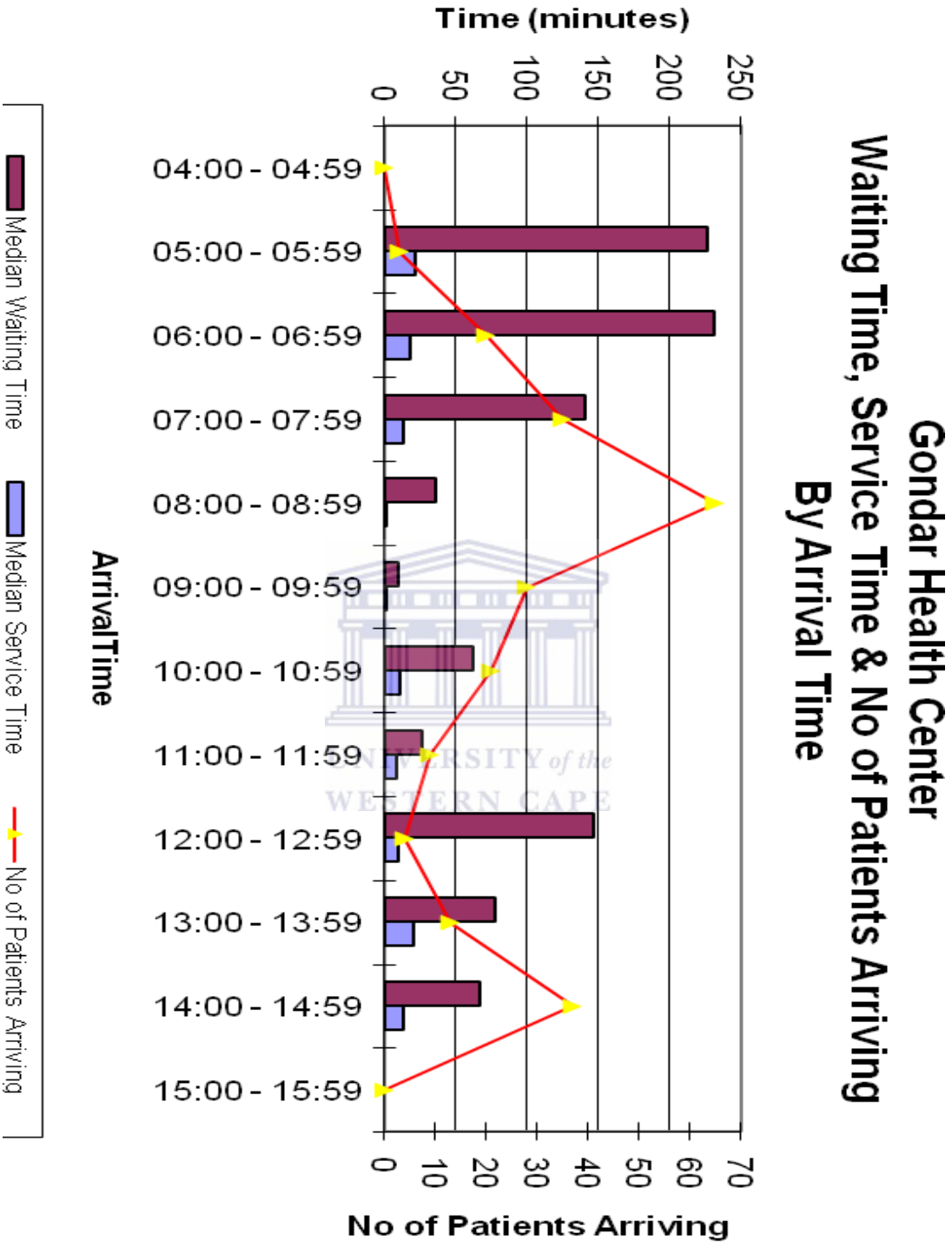


Figure 1- Detailed Arrival Time Report for the Whole Facility

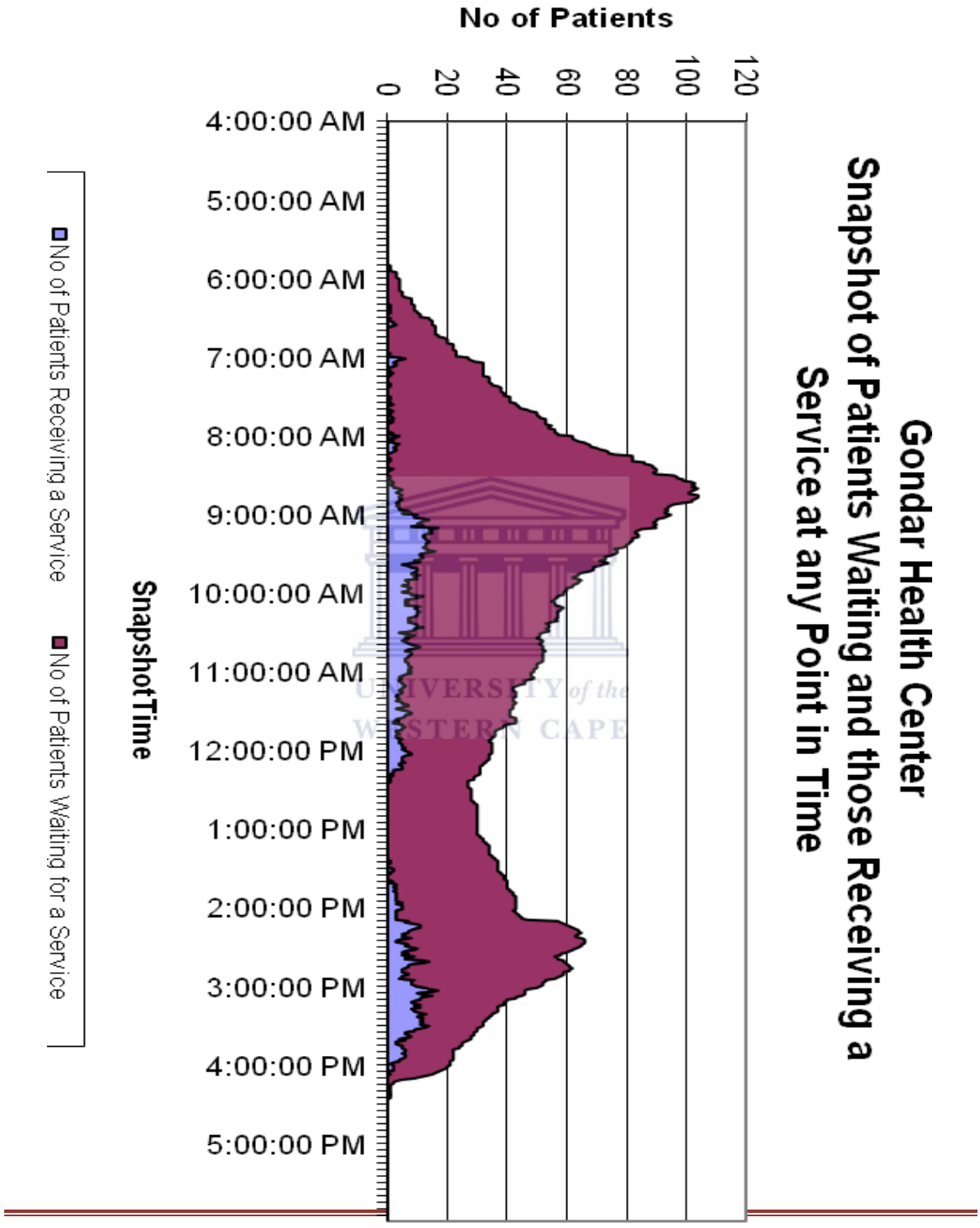


Figure 2- Detailed Snapshot Report for the Whole Facility

There were many patients waiting for services for a single patient receiving service. (Figure 2) E.g. at 9 a.m. only 7 patients were receiving services and 88 patients were waiting for services.

Those patients who arrive before the opening hour (8:00 a.m.) and during lunch Break (12:00 a.m. to 1:00 p.m. waited more as compared to those who arrive during working hours (Fig 1).e.g. those who came between 5:00 and 7:00 a.m. wait for more than 200 minutes as compared to those who arrive between 8-10 a.m. which was less than 40 minutes.

Higher median partial waiting times were observed among patients who return to collect their VCT results and those who visited adult OPD (304 and 103 minutes respectively).In all pharmacies and Dressing room a short median partial waiting times of 5 minutes was observed.

Service times

An equivalent of 20 staffs served 235 patients with a median complete service times of 7 minutes (the 5 and 95 percentile are 1 and 24 minutes).the median complete service times is 9 minutes with out DOT's.

The median service times are high (more than 10 minutes) for those patients who arrive before 8 a.m. as compared to those arriving between 8 -10 a.m. (1minute).

More than 65 patients per staff were served in the registry, cash office and DOT's room and fewer than 10 patients per staff member were seen in the ART clinic, vaccination, and ART pharmacy. All staff members spent less than 50% of their time serving patients. Staffs working in the vaccination, ART clinic, ART pharmacy and main pharmacy spent less than 10 % of the working hours attending patients.

The median partial waiting times ranges between 1 and 8 minutes. The median partial service times are 2 minutes or less in DOT's, family planning and injection room. The median partial service times in the adult OPD, VCT and ANC were 3, 4, and 6 minutes respectively

Case mix

Figure 4-12 shows the number of patients visited each service points. Tuberculosis patients who were put on DOT's regimen account 26.4% of the total patients. Thirteen visited the facility for Voluntary Counselling and Testing. Family planning, vaccination and Antenatal care clinics were visited by 10, 7, 6 clients respectively. Adult OPD and under five clinic (curative) were visited by 93(39.7%) of patients and the main reasons for the visited are shown in figure -3.

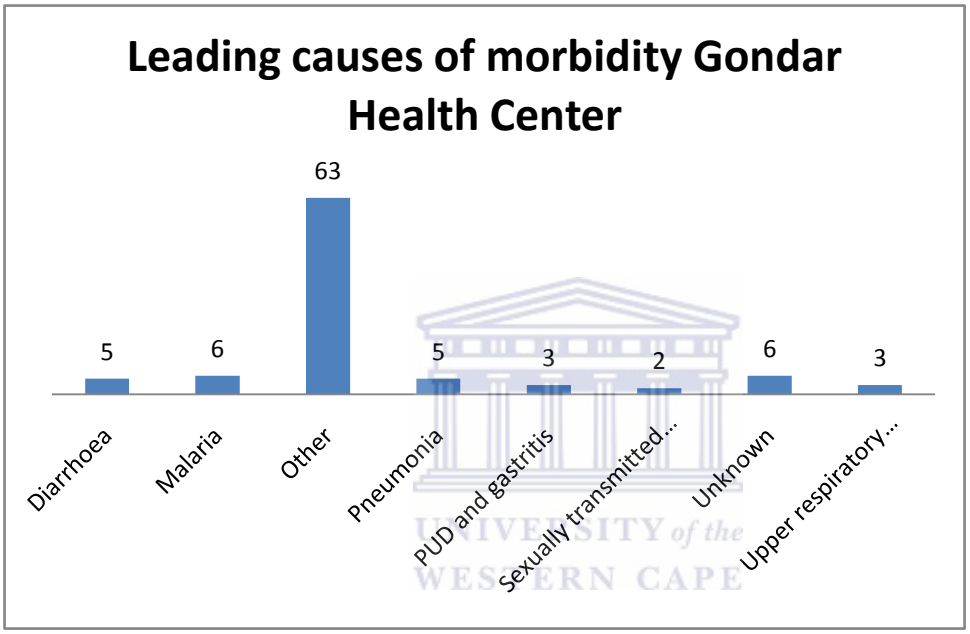


Figure -3.causes of morbidity at Gondar health centre

Attitude of staff and patients about waiting times

One hundred forty seven (62.8%) of the patients characterized their waiting time in the facility as 'short', 50(21.4%) as 'acceptable' and 37 (15.8%) as 'long'. The average and median patients perceived acceptable waiting time for the facility was 51±60 minutes and 30 minutes respectively.

When patients asked on what time of the day they will visit the facility in their next visit,179 (76.4%) preferred to visit before 8:00 a.m. and only 41(17.5%) were willing to visit after 1:00 p.m..

Nineteen staff members completed and returned the staff questionnaire. Staffs perceived median maximum and minimum service time were 10 and 3 minutes respectively. Staffs believe that the mean and median patients waiting times to receive their services were 16 and 10 minutes respectively.

RECOMMENDATION

The complete median waiting time is too high. Mismatch of patient arrival and service commencement and staff inefficiencies were the major reasons for the long waiting times. The waiting time could be reduced by a combination of the following

1. Discourage patients from arriving early in the morning and inform them that they can visit the facility anytime of the day.

2. Improve the efficiency with which staff provide services. This include prioritizing patient service and by being punctual.

3. Combining service points of similar nature. E.g.- PMTCT and VCT ,ANC and vaccination could be combined and it will create a service point open through out the day.

The complete median service time is appropriate. However, the service time could in almost all instances be improved as the percentage of staff clinical time usage was low at most service points. Doing this would help to improve the quality of the care and increase patients satisfaction.

PARTIAL WAITING AND SERVICE TIMES

ADULT OPD

Partial median waiting time of 119 minutes at this service point is too high.However,the percentage staff clinical time usage was very low (26%) which informs us that the long waiting time was not because of shortage of staff or staff overwork.Mismatch in the

morning and lunch time and staff inefficiences throught out the day were the causes for the long waiting times.

The partial median service time of 6 minutes is acceptable and it could be improved as the percentage staff clinical time usage was low.

Hence by encouraging patients to visit in less busy hours and by prioritising patients the long waiting times at this service point could be reduced.

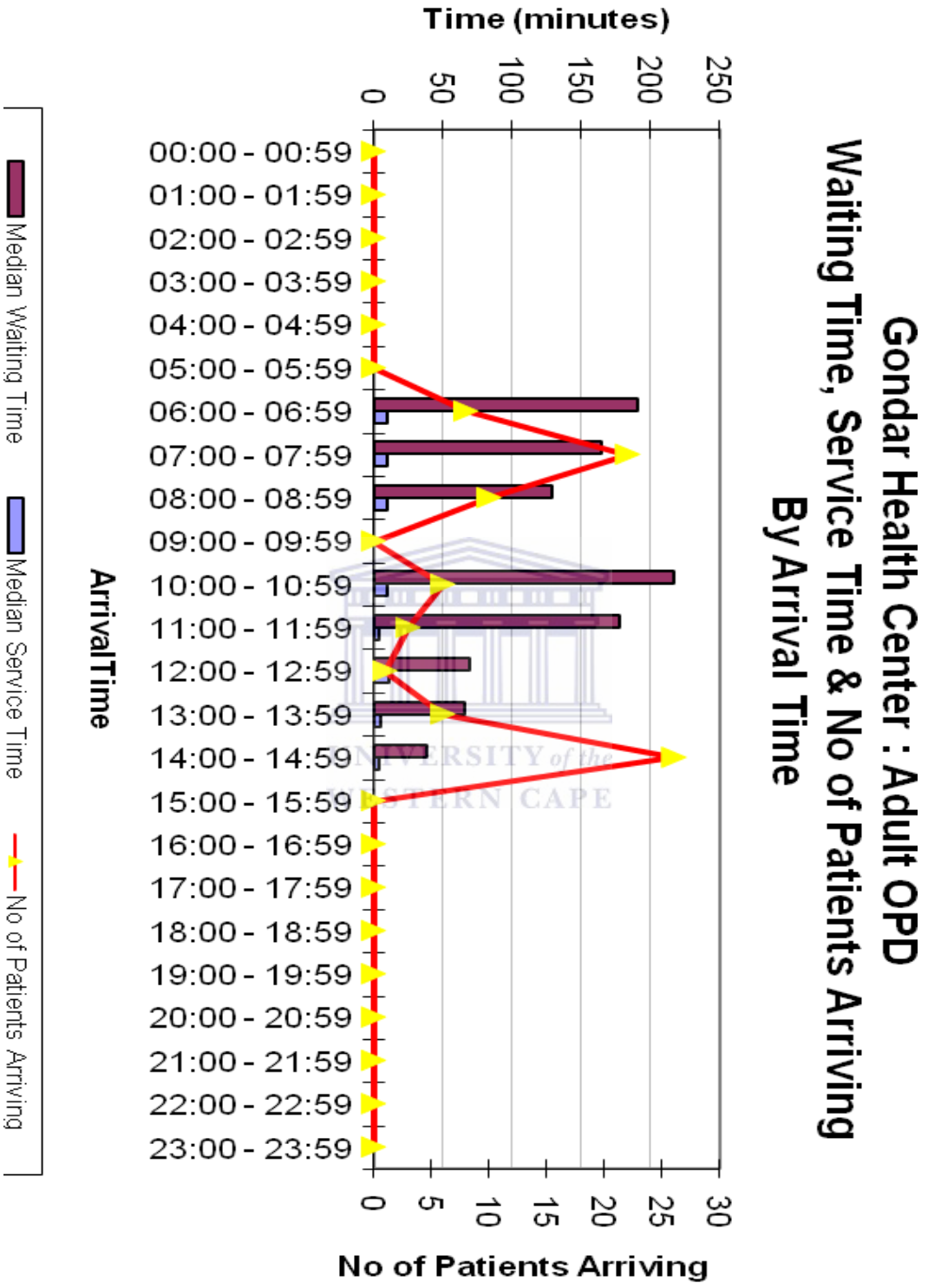


Figure 4-Detailed Arrival Time Report for Adult OPD

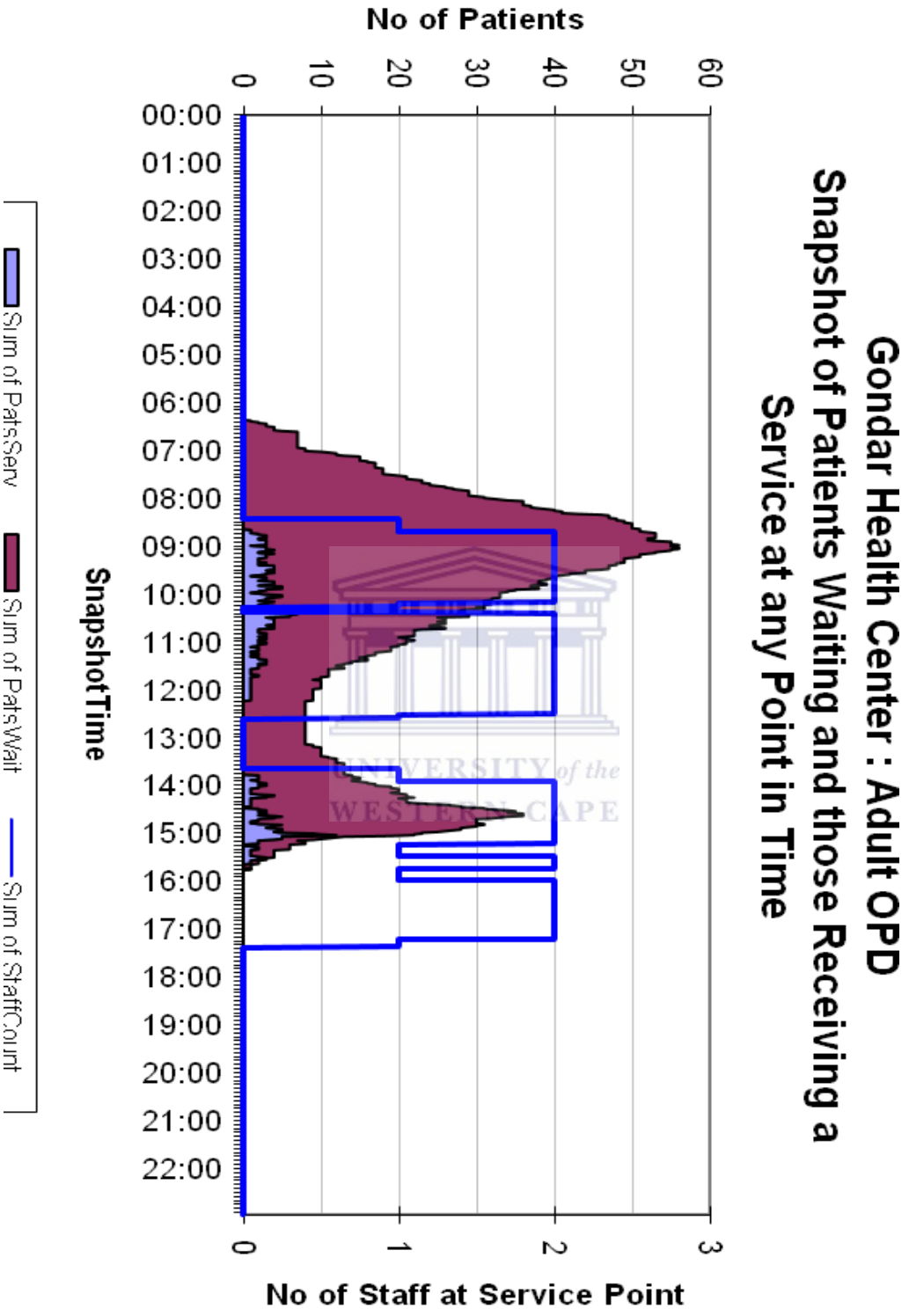


Figure 5: Detailed Snapshot Report for Adult OPD

Median partial waiting time of 39 minutes was too high. However, median partial service time of 6 minutes is appropriate. The percentage staff clinical time usage was quite low (12.8%) indicating that the staff has time available to assist with any other activity required of him/her.

The reasons for the long waiting time were mismatch of patient arrival early in the morning and inefficiencies through out the day where both staff and client were at the service point but staff strangely didn't attend clients.

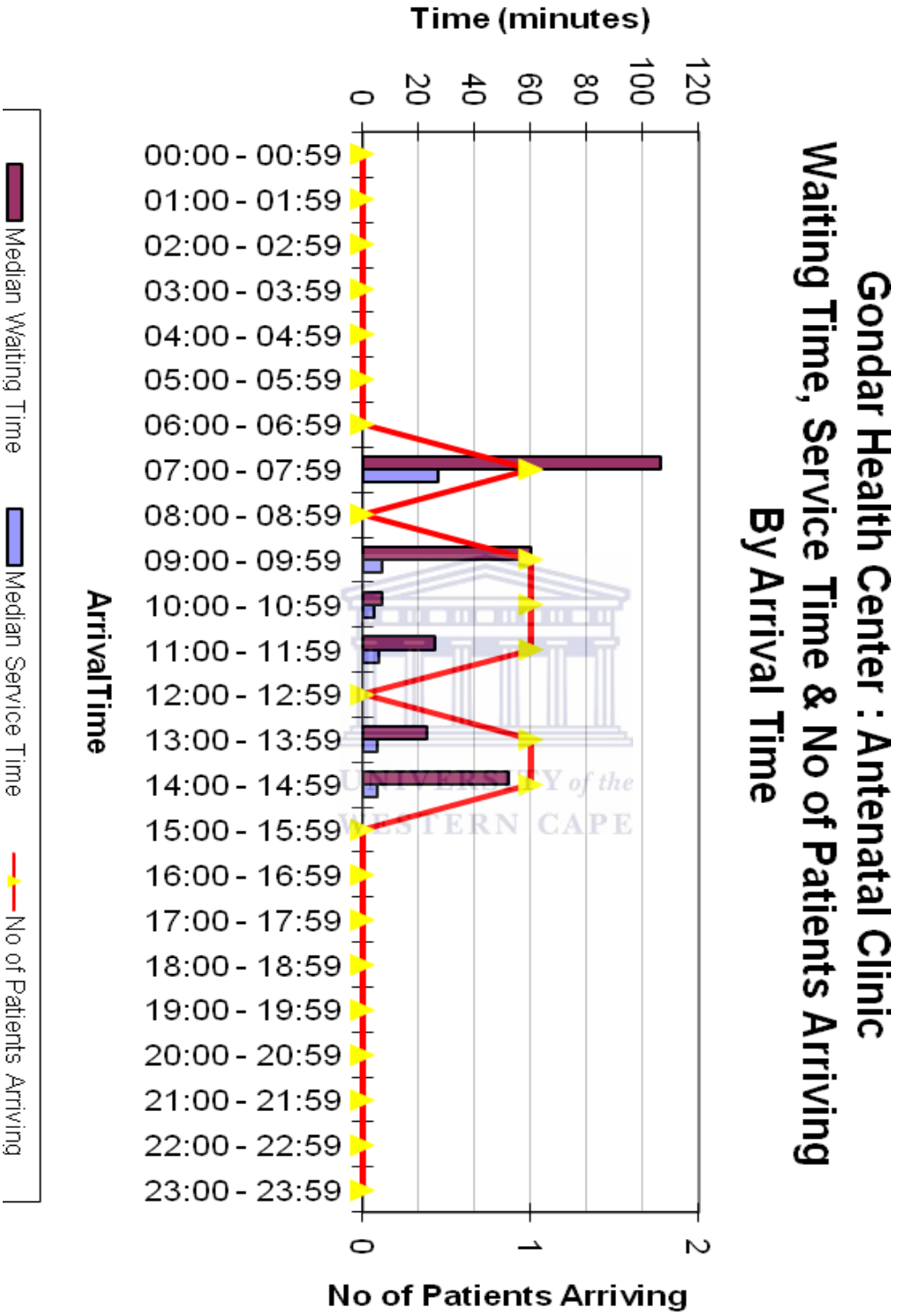


Figure 6-Detailed Arrival Time Report for Antenatal Clinic

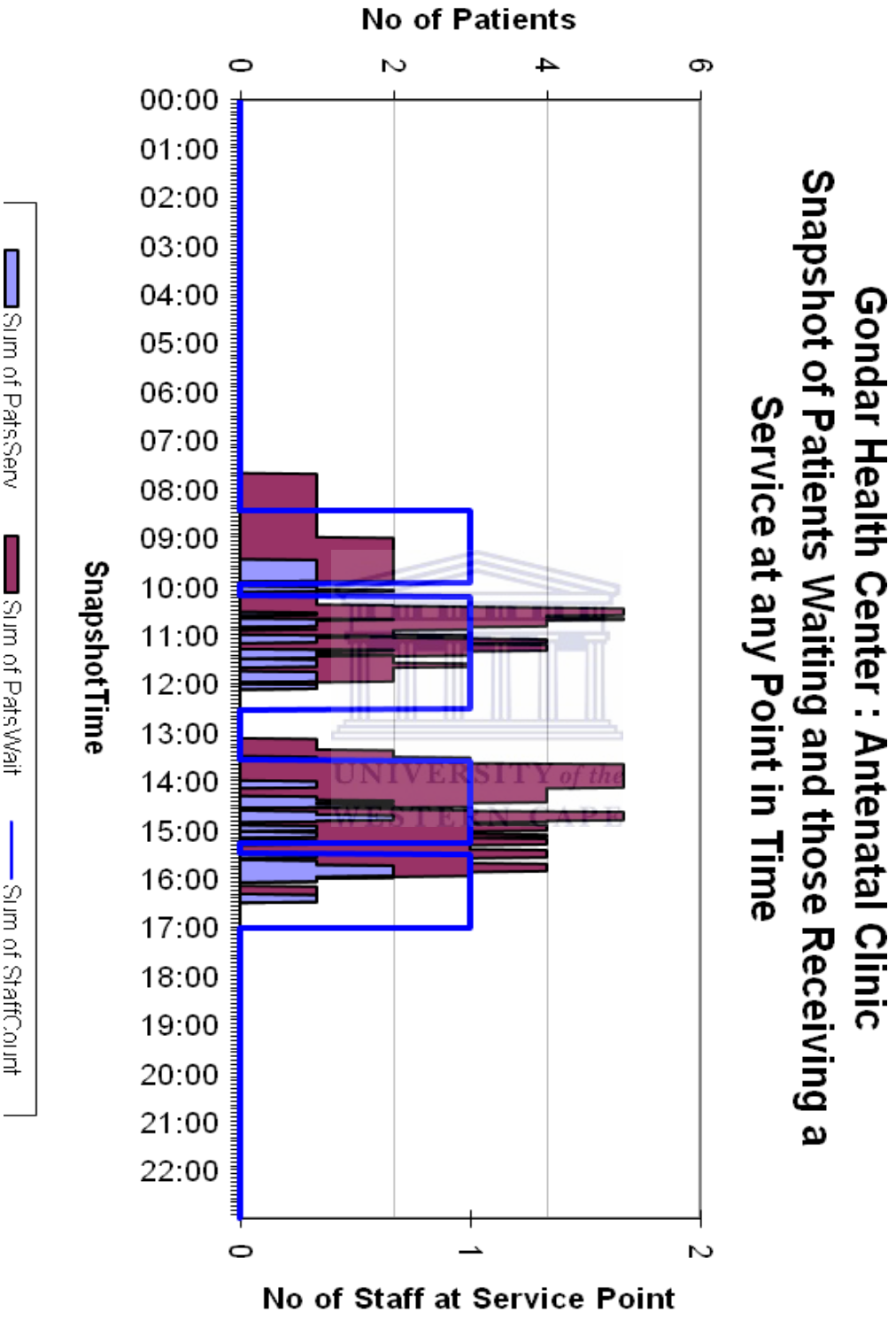


Figure 7: Detailed Snapshot Report for Antenatal clinic

Though the partial median service time (10 minutes) was appropriate, the median waiting time was unacceptably too high. (46 minutes).The percentage staff clinical time usage was also low (23%) because the service point was visited by few patients and was almost empty in the afternoon. Since most of the patients at this service point are follow-up patients a specific appointment could be given for their next visit in order to decrease the long waiting time. In addition the staff can assist others during their peak hours.

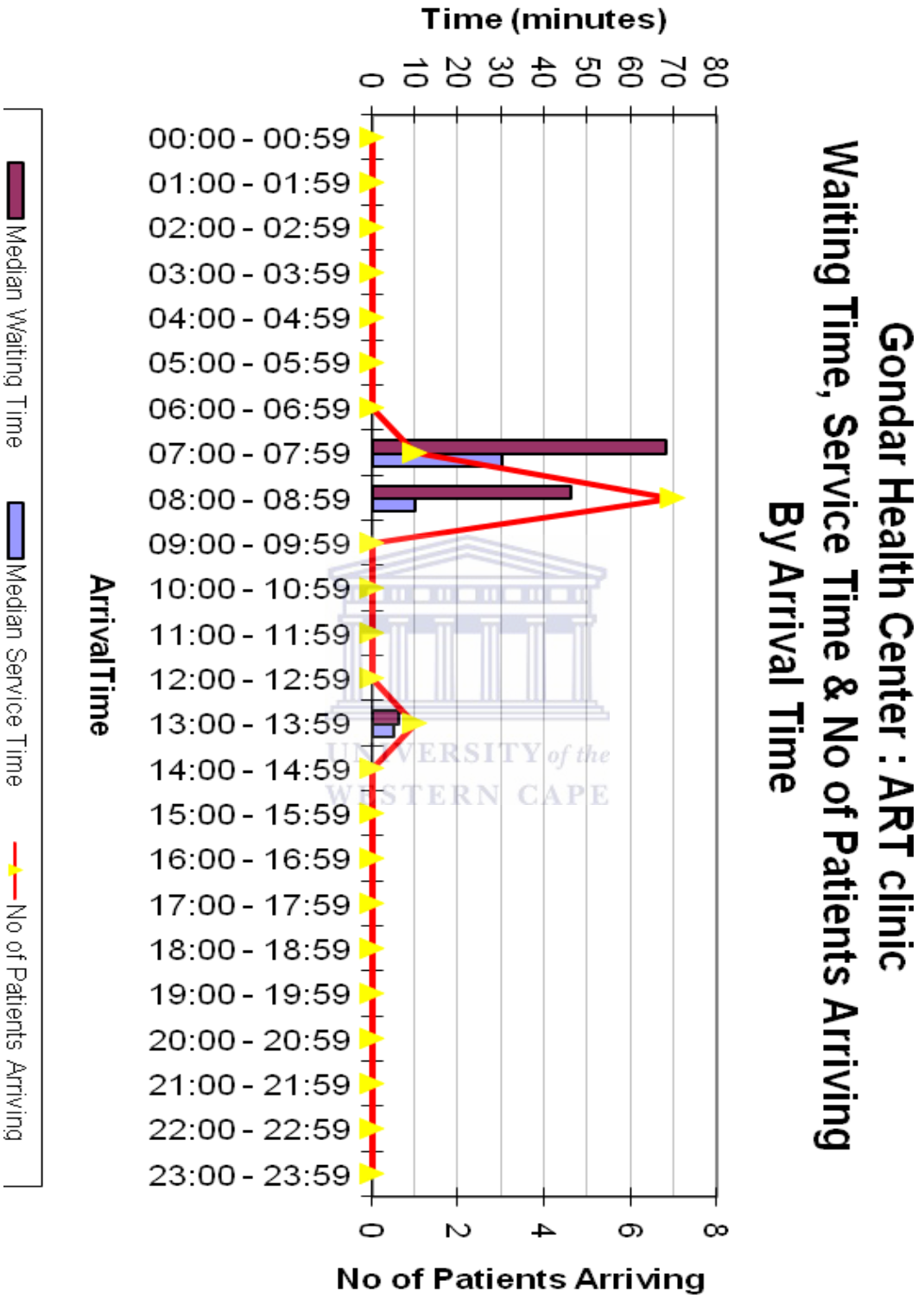


Figure 8-Detailed Arrival Time Report for ART Clinic

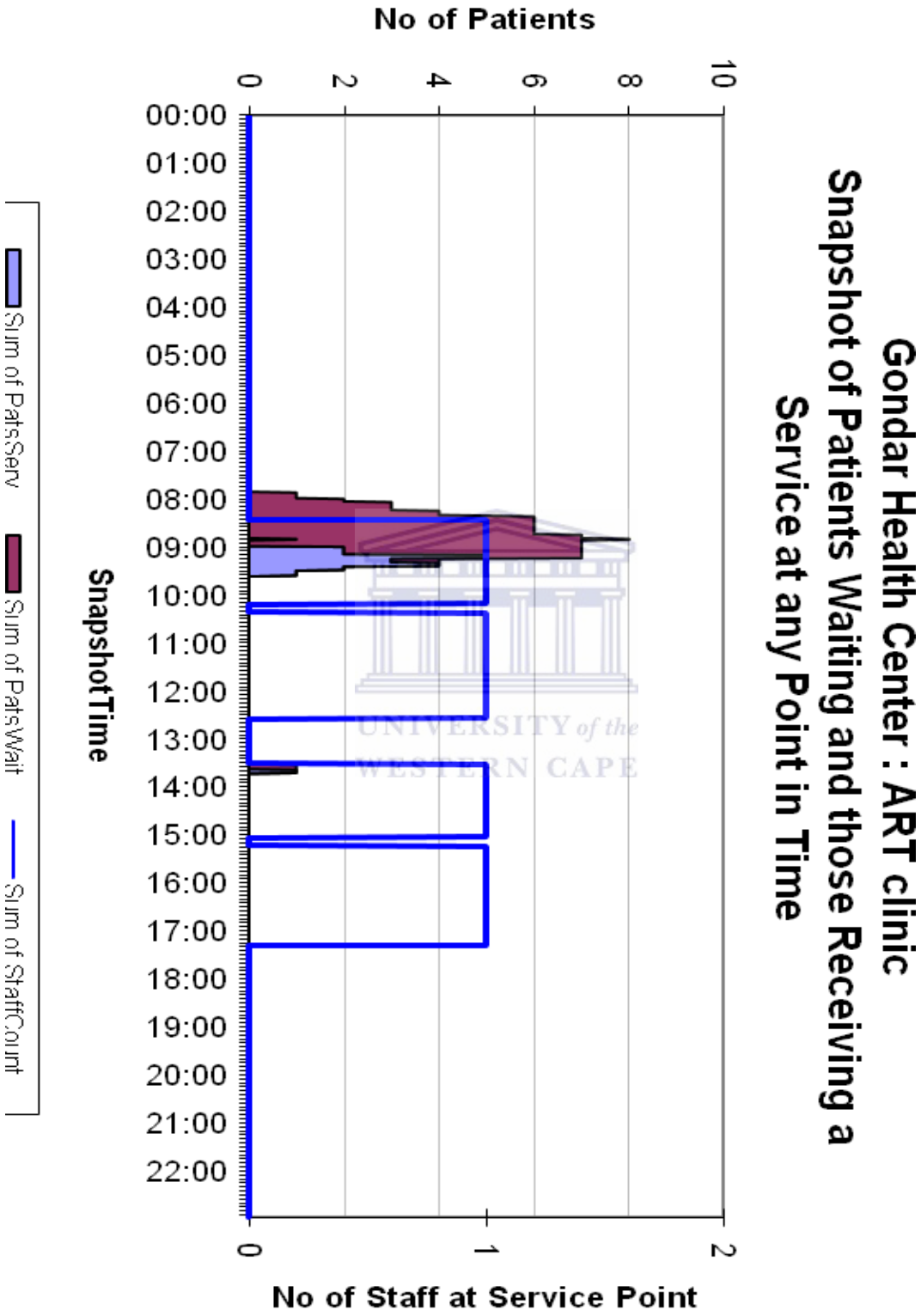


Figure 9: Detailed Snapshot Report for ART clinic

ART PHARMACY

The Art clinic, ART pharmacy and PMTCT are newly established service points with the support of the PEPFAR and 3x5 initiatives of WHO. These service pints are autonomous and accountable for the international NGO supporting them.

The median partial waiting (10 minutes) and service times (5 minutes) were appropriate. The percentage staff clinical time usage was very low (6%) because it was visited only by 5 patients. Combining with other pharmacies is recommended.

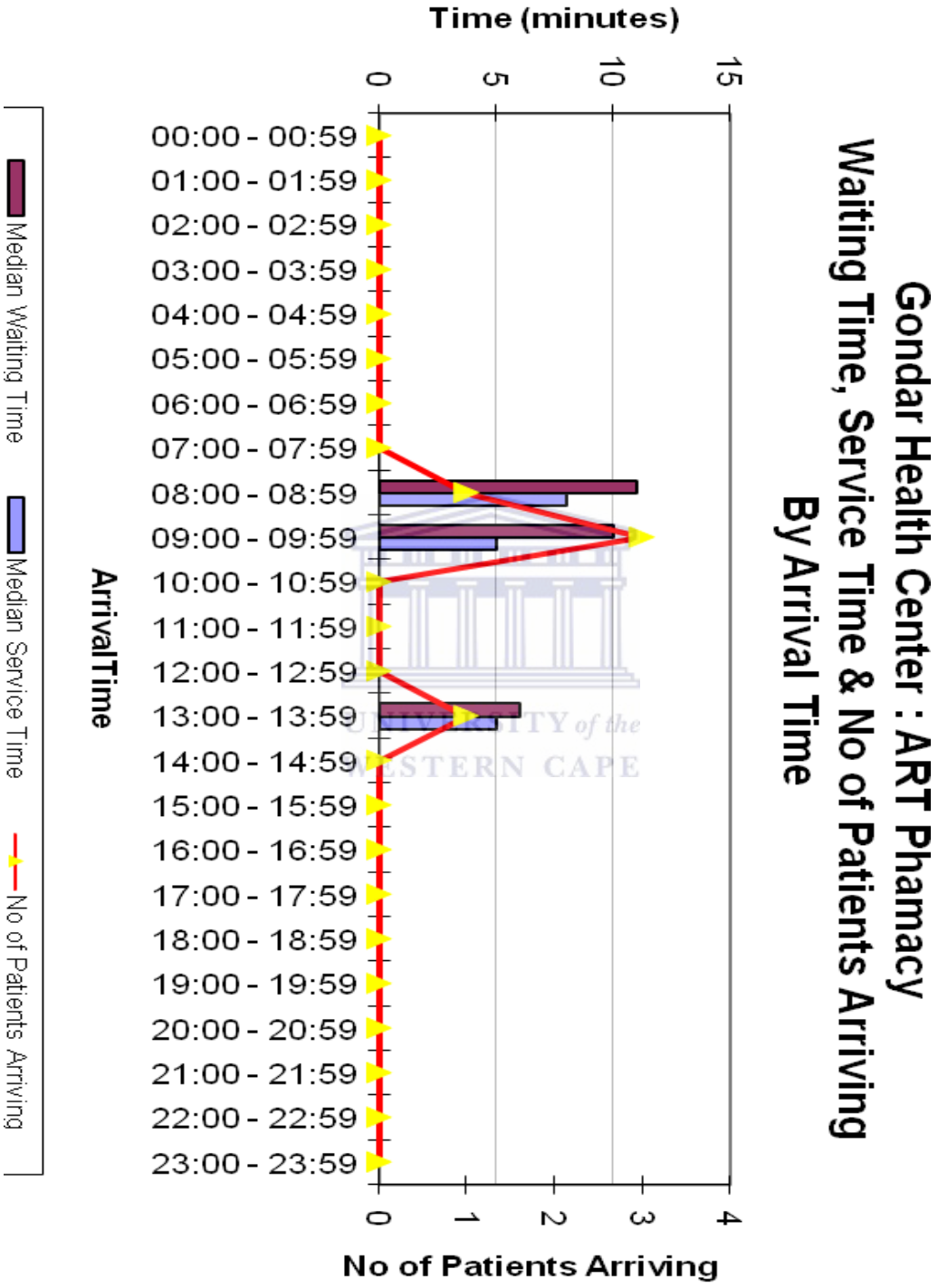
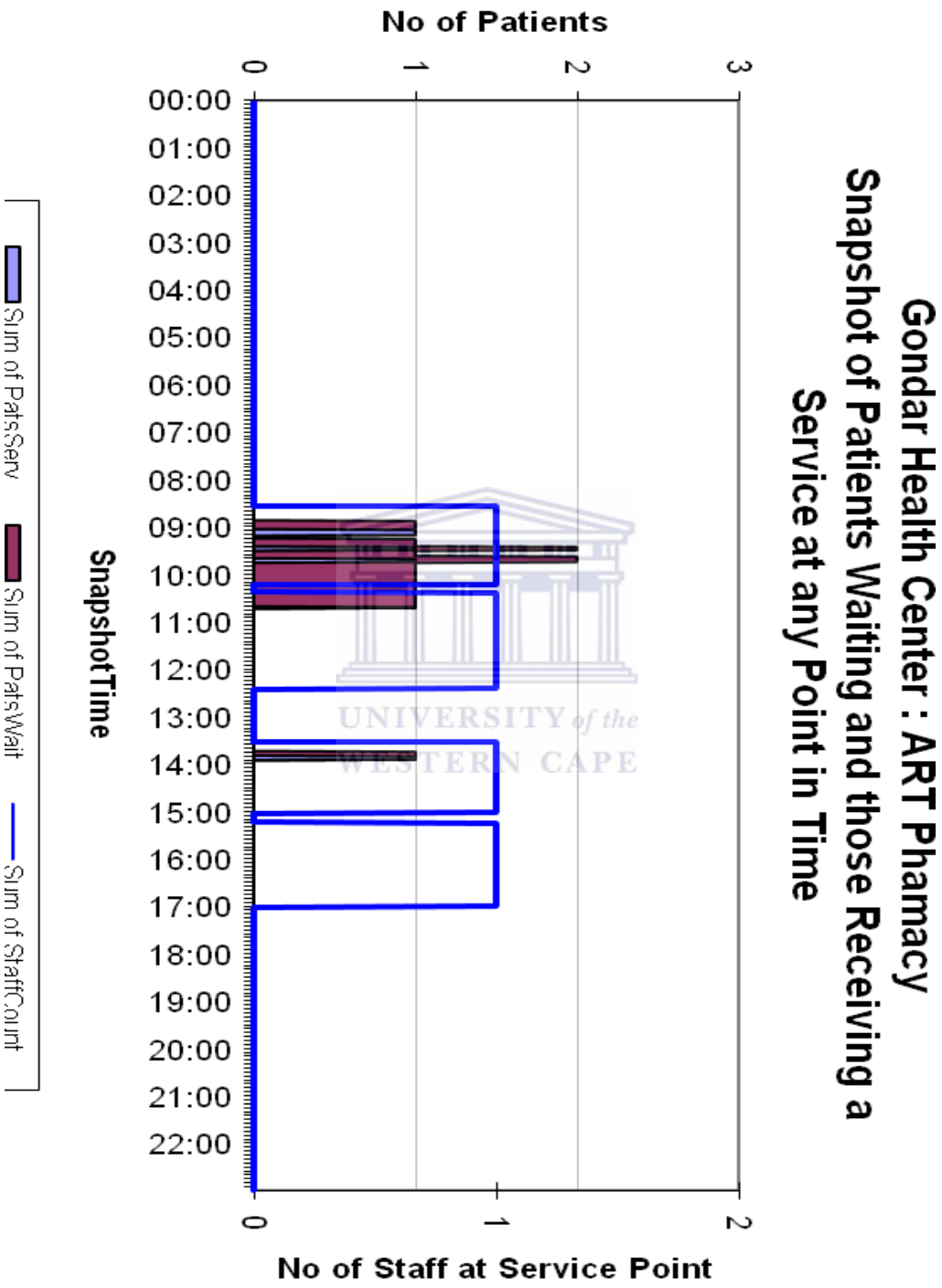


Figure 10-Detailed Arrival Time Report for ART Pharmacy

Figure 11: Detailed snapshot report for ART pharmacy



CASH OFFICE

The partial median waiting and service times of 6 and 2 minutes respectively were appropriate for this service point. However, the percentage staff time usage was very low (28%) indicating that they have time available to assist with any other tasks potentially required of them. Combining this service point with cash office is the other experience learned from the private facilities.

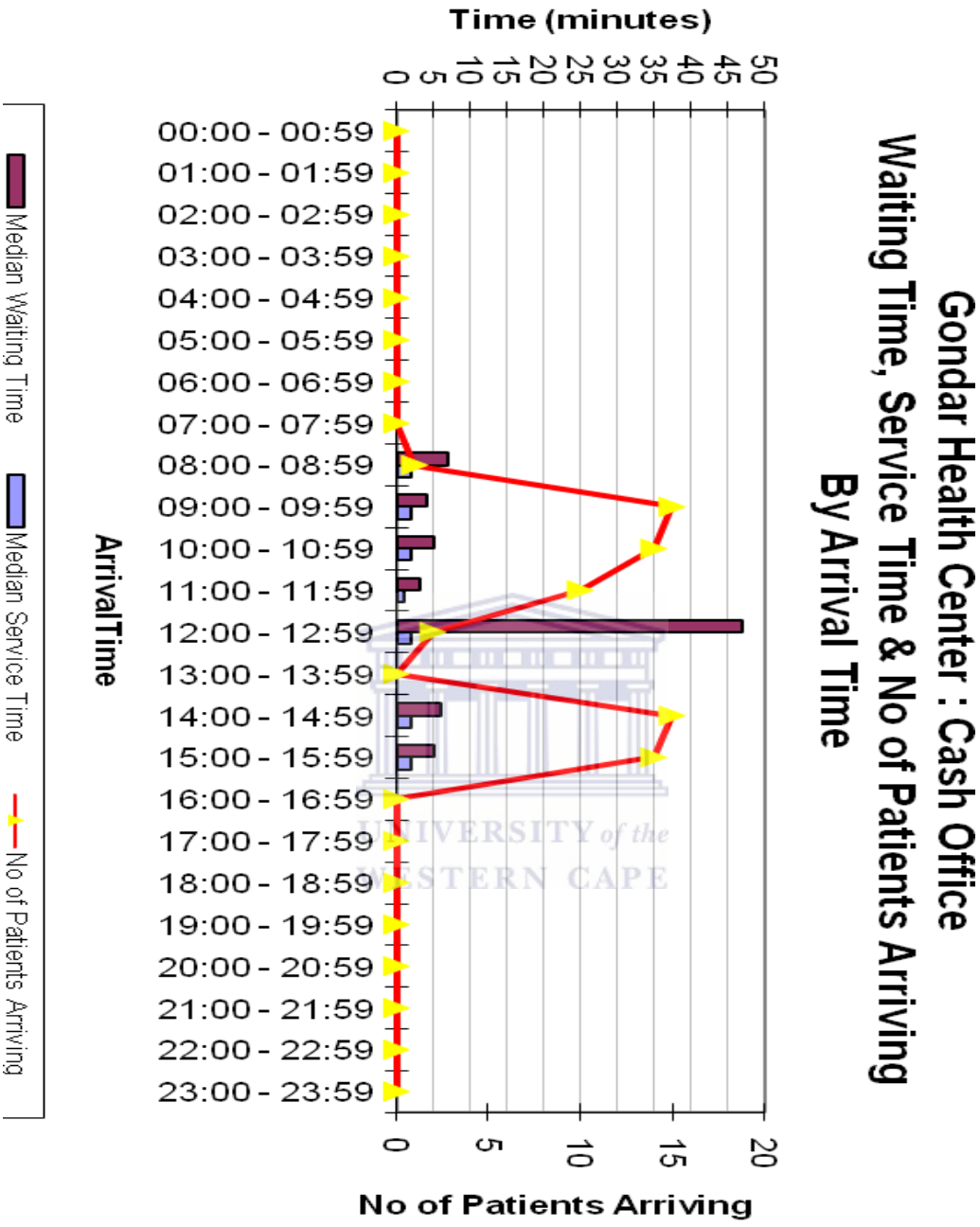


Figure 12-Detailed Arrival Time Report for Cash Office

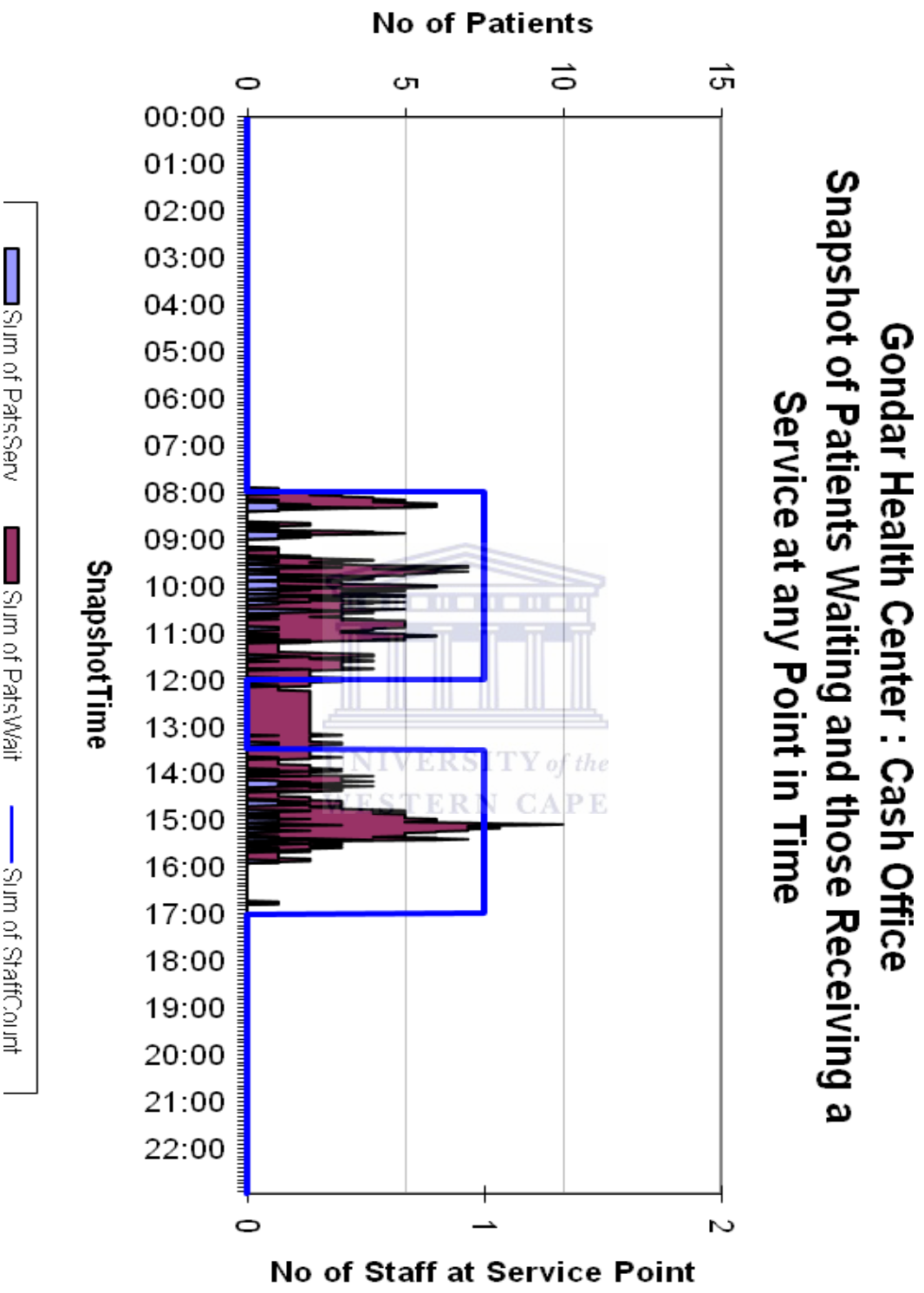


Figure 13: Detailed Snapshot Report for Cash Office

The partial median waiting time (3 minutes) was excellent. The median partial service time of 2 minutes is low as it is difficult to dispense and convey appropriate health mesaage in this short time. Percentage of staff clinical time usage was also low (20%) because of low service time and no patient arrive after 04:00 PM.

There are three pharmacies in this facility (Main, dispensary and ART) and all of them were inefficient. Combining these pharmacies is recommended.

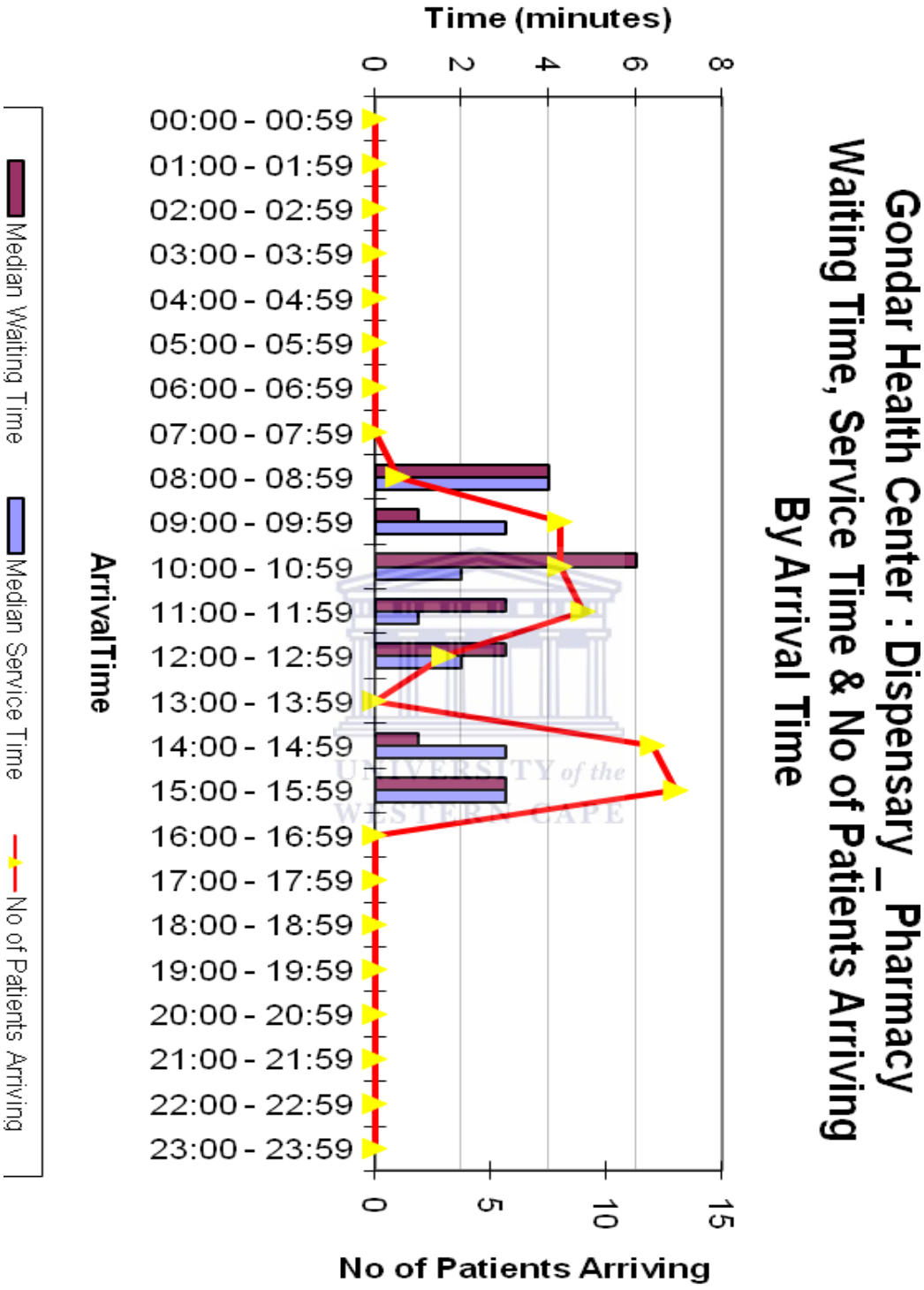


Figure 14: Detailed Arrival time Report for Dispensary-Pharmacy

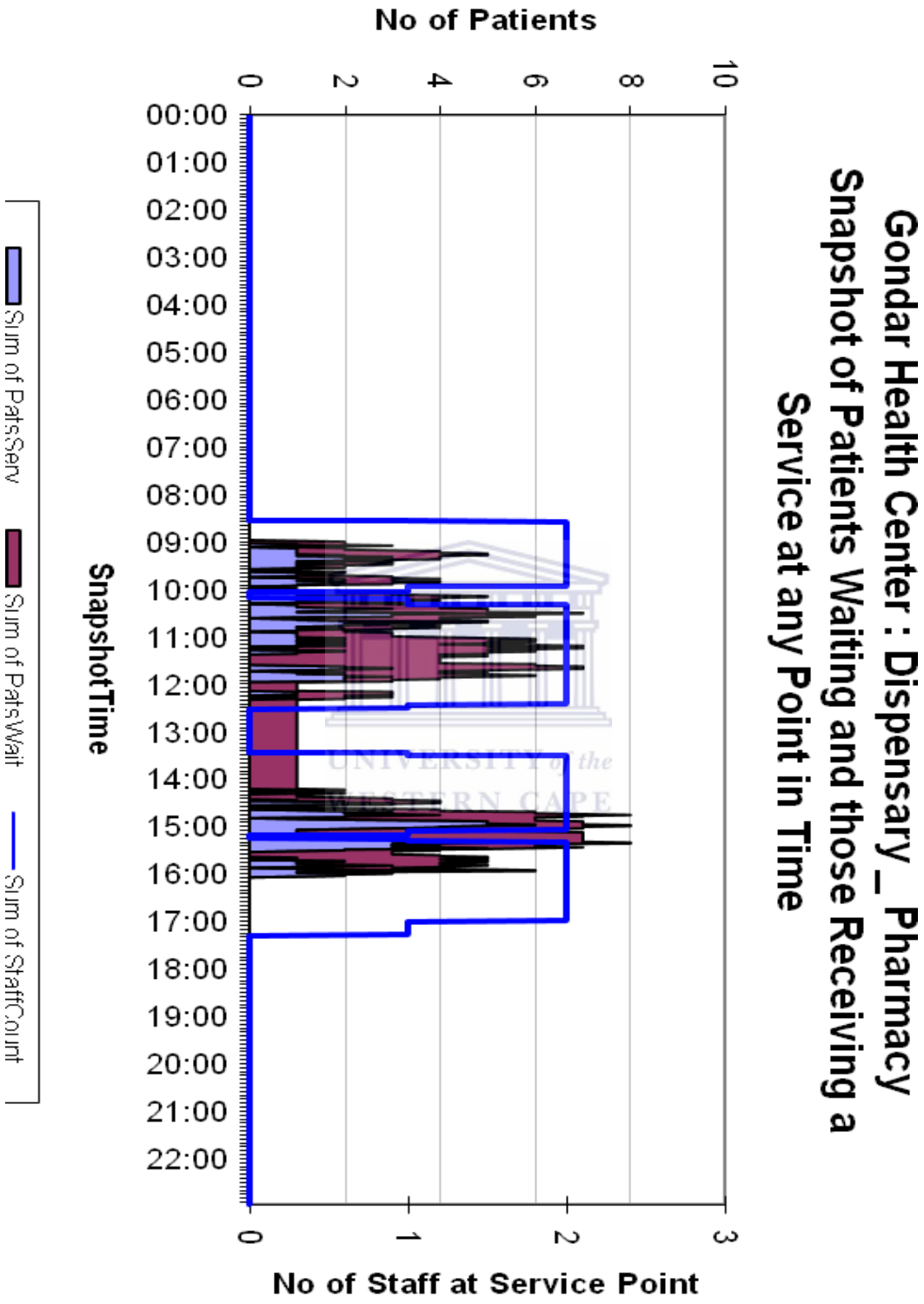


Figure 15: Detailed Snapshot Report for Dispensary-Pharmacy

Median partial waiting time (27 minutes)was too high and the median partial service time was too low (1 minutes).The percentage staff clinical time usage was also very low (16%) because of low service time and non arrival of patients in the afternoon.

The long waiting time was because of mismatch in the morning where most of the patients arrived at the service point before the opening hour. Since these patients who are expected to come daily for their ant tuberculosis drugs, specific appointment for their next visit could be given to decrease the long waiting time. Staff has also time to assist others in tasks required of him.

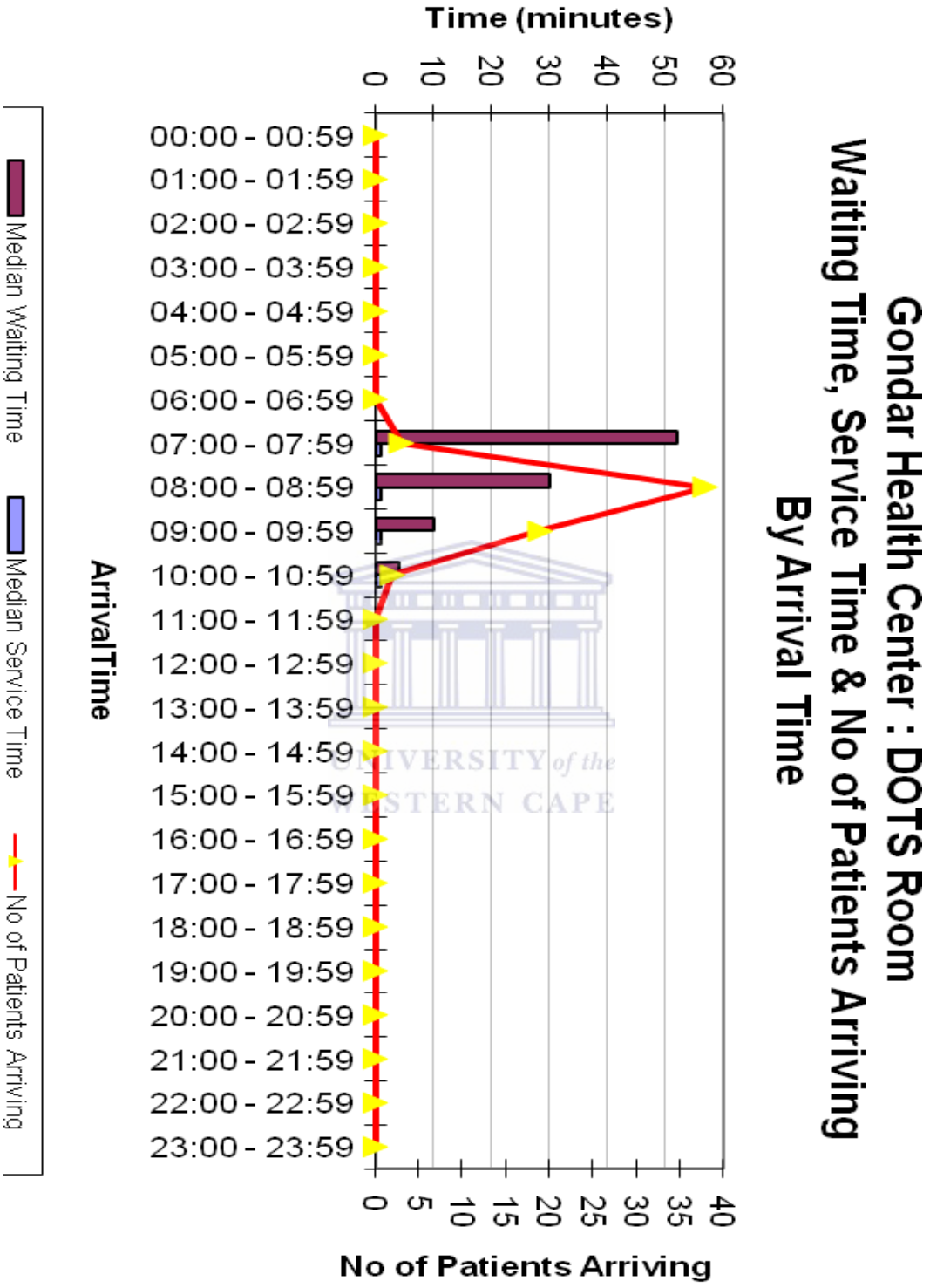


Figure 16-Detailed Arrival Time Report for DOTS Room

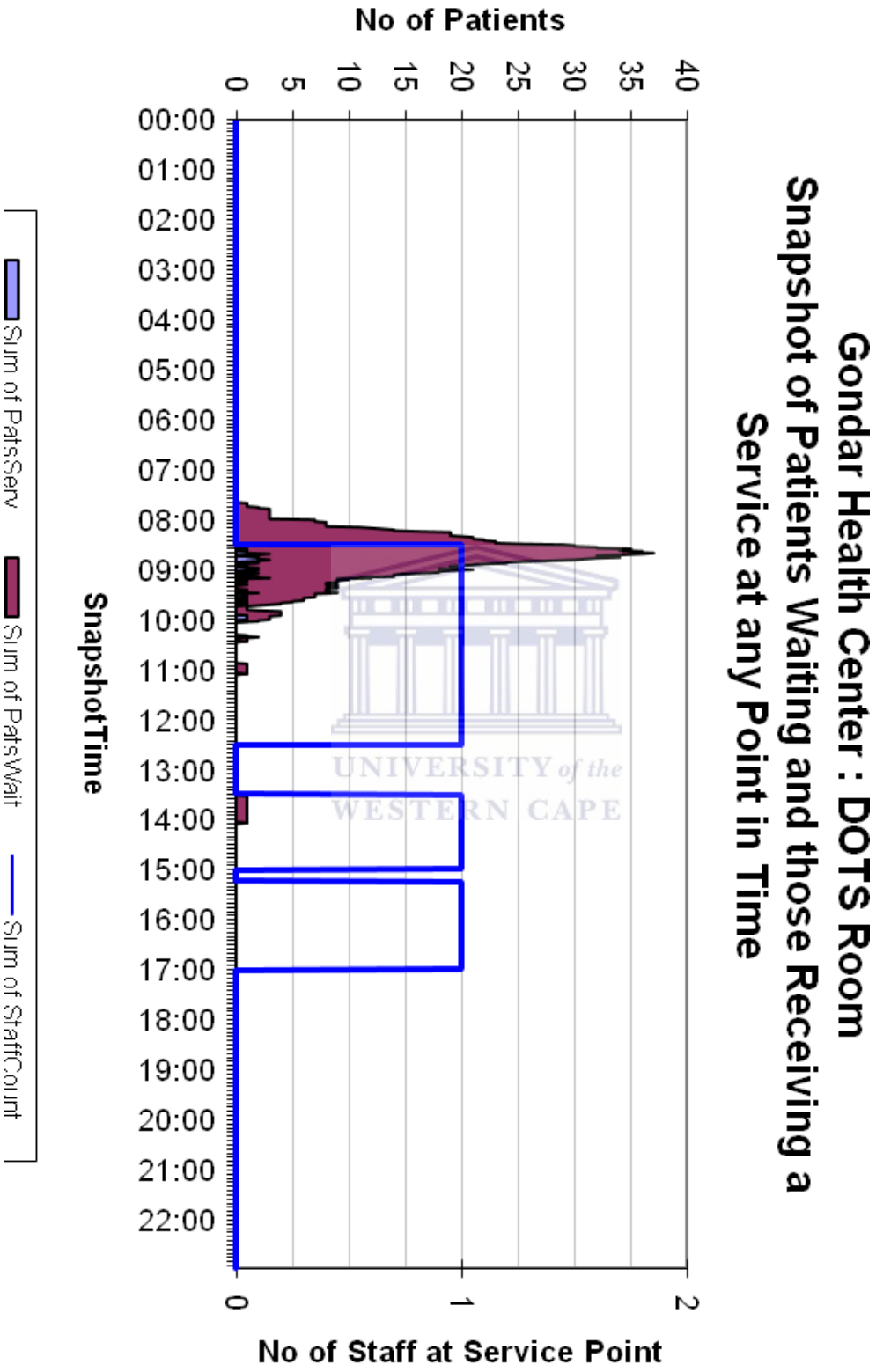


Figure 17: Detailed Snapshot Report for DOTS Room

Partial median waiting and service times of 5 and 6 minutes at this service points were excellent. However, the percentage staff clinical time usage was very low (16%) hence combining this service point with injection is recommended.

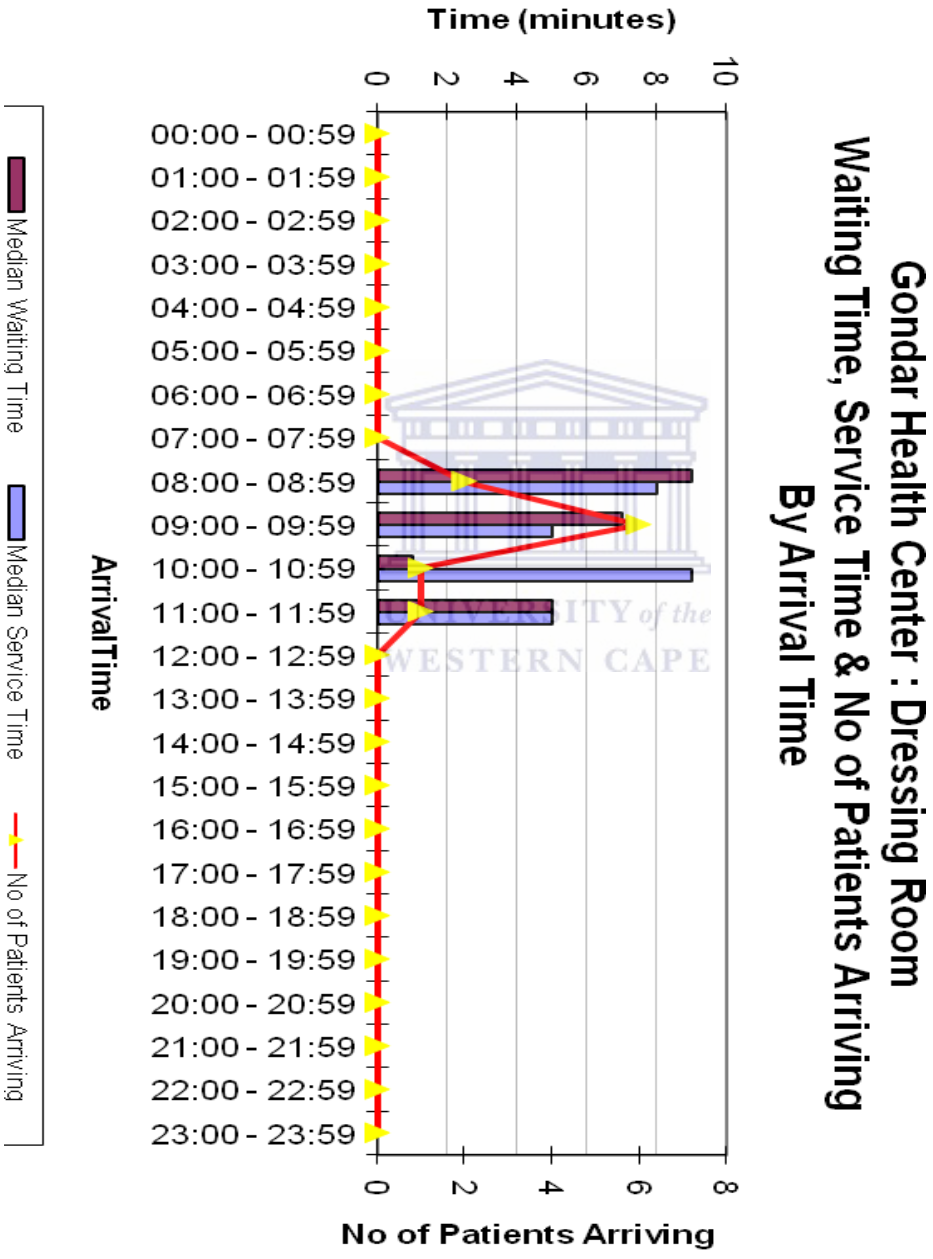


Figure 18-Detailed Arrival Time Report for Dressing Room

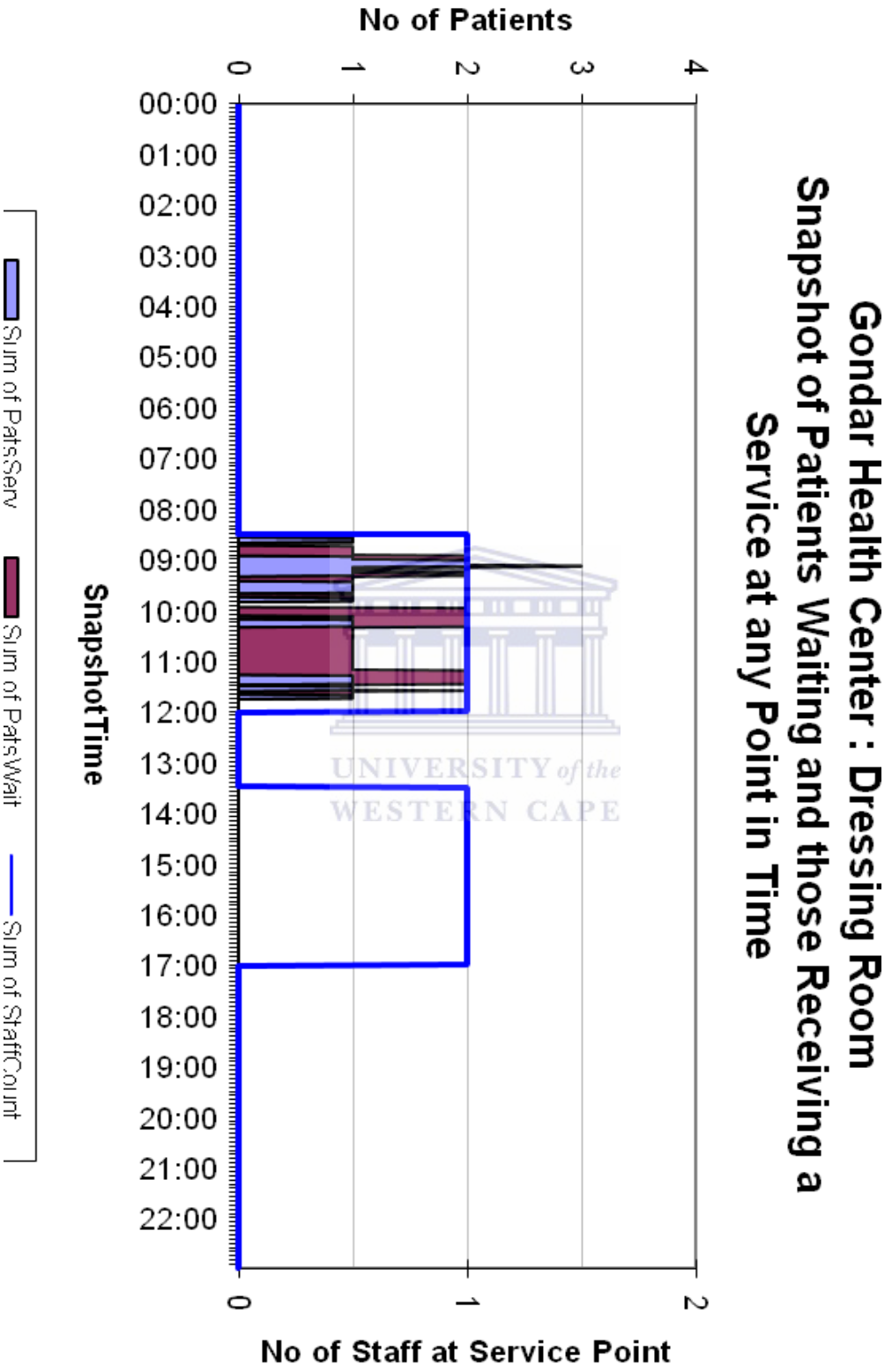


Figure 19: Detailed Snapshot Report for Dressing Room

The partial median waiting time of 4 minutes was excellent. Partial median service time of 2 minutes is too low to provide appropriate service to clients. The percentage staff clinical time usage is also very low because of low service time and being visited by very few clients. Increasing the service time and combining with other service points recommended.

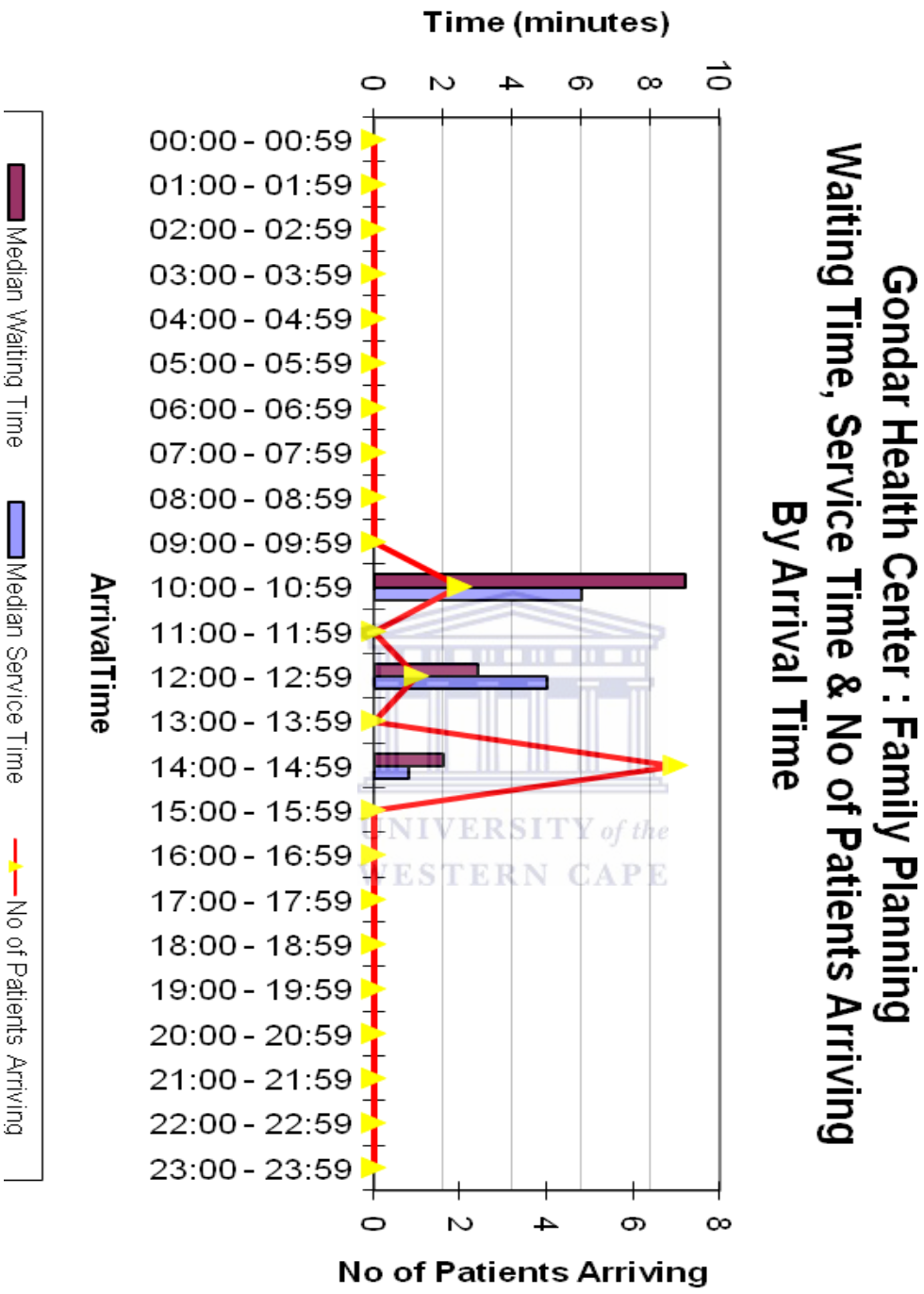


Figure 20: Detailed Arrival time Report for Family Planning

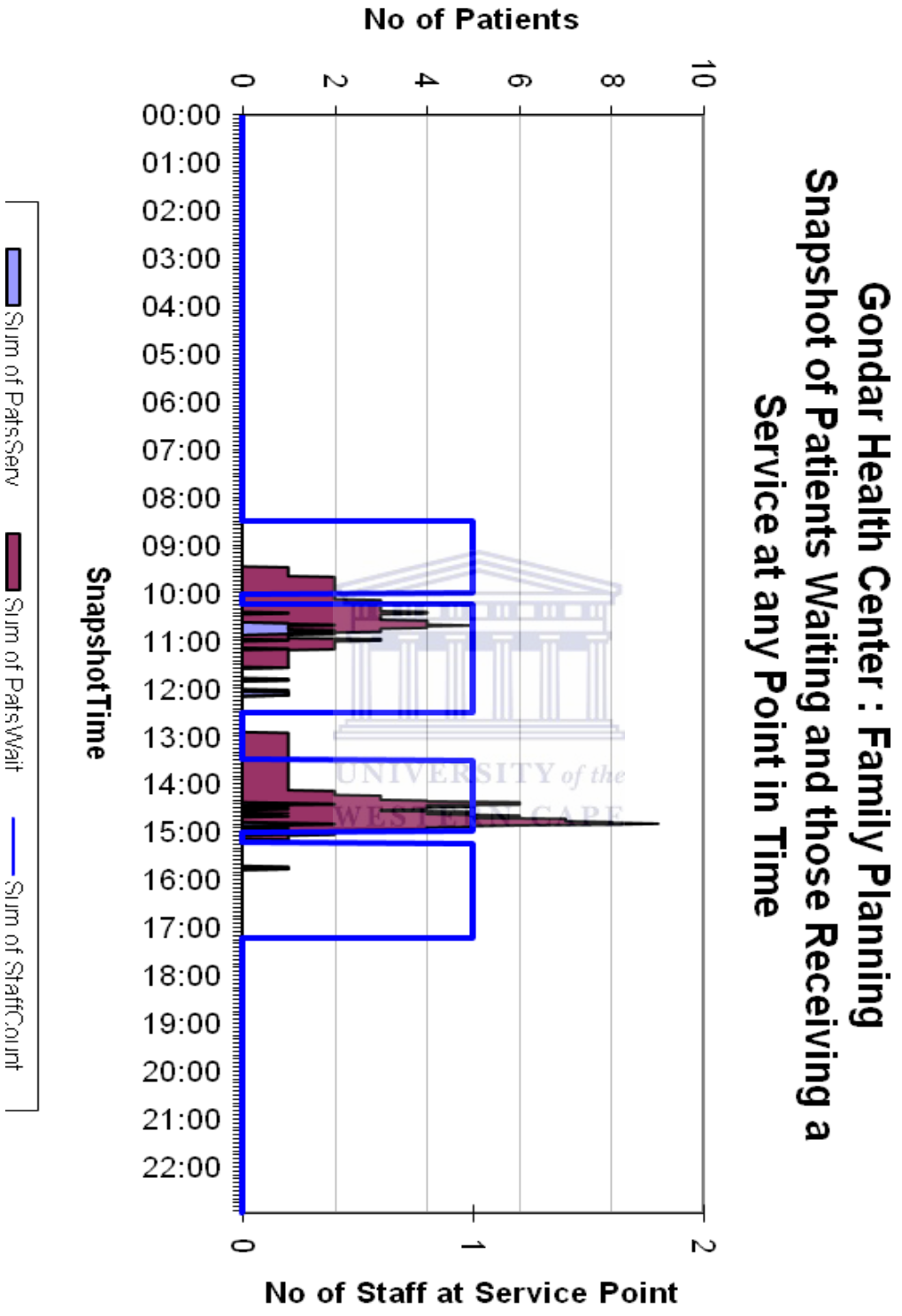


Figure 21: Detailed Snapshot Report for Family Planning

INJECTION ROOM

Although the partial median waiting time (8 minutes) is excellent, the partial median service time (2 minutes) was too low. The percentage staff clinical time usage was also too low because of low service point and the service point visited by few patients (18).Hence there is an opportunity to increase the service time to provide quality care. Combining this service point with dressing room recommended.

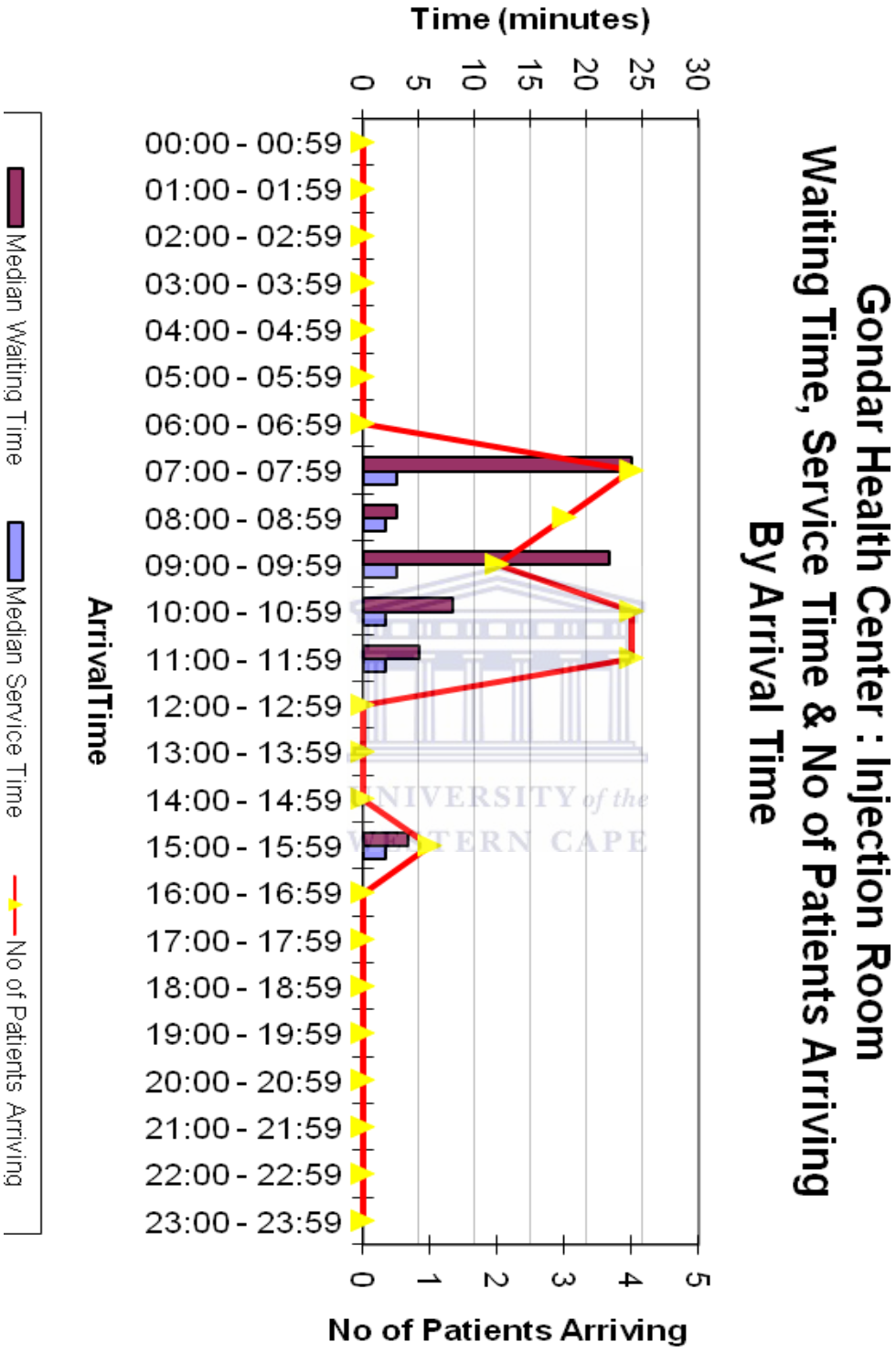


Figure 22: Detailed Arrival Time Report for Injection Room

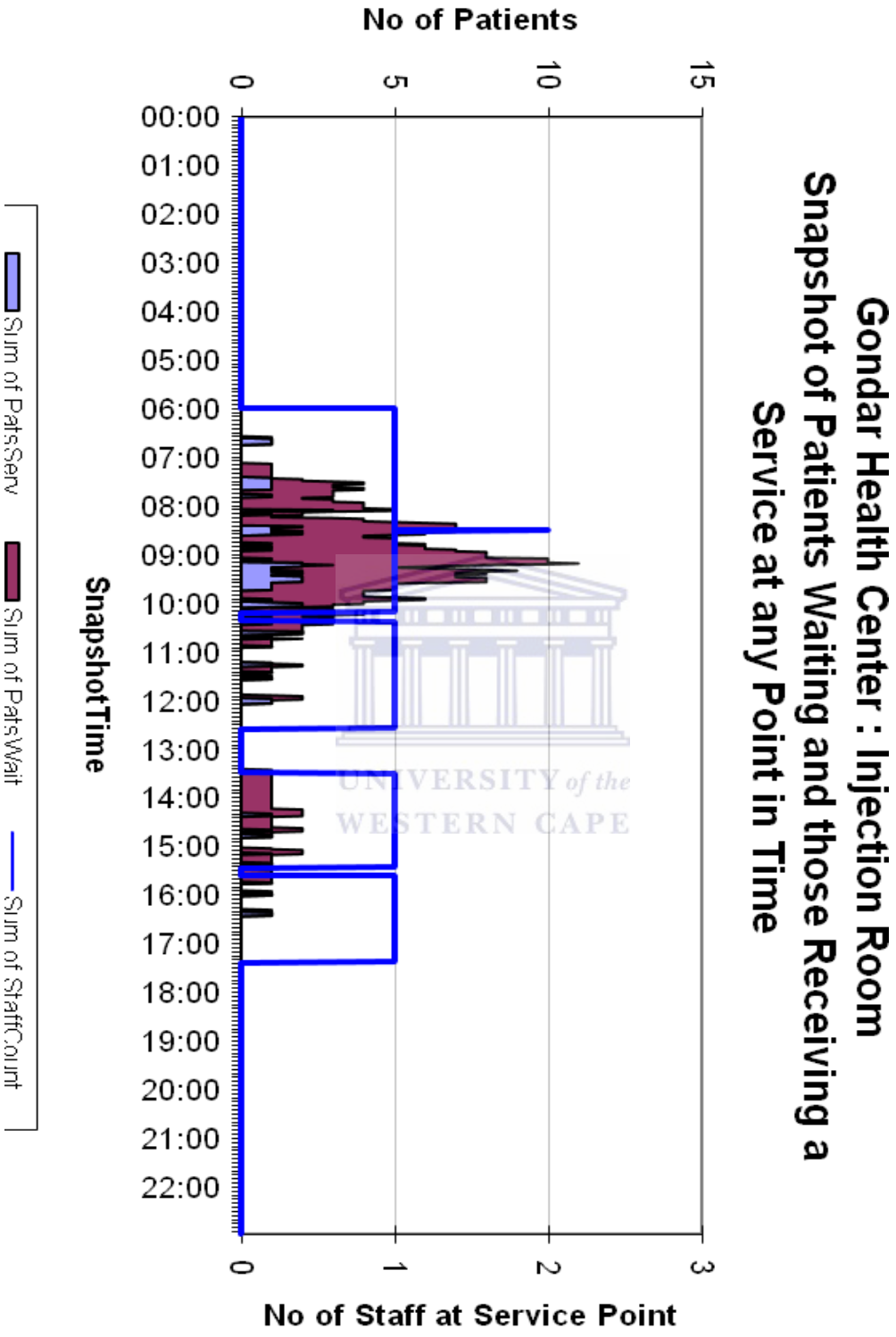


Figure 23: Detailed Snapshot Report for Injection Room

The partial median waiting time was long and the partial median service time of 10 minutes is excellent. The percentage staff clinical time usage is borderline adequate. Mismatch was the reason for the long waiting times and hence advising patients to visit the facility after the opening hours could reduce the waiting time.

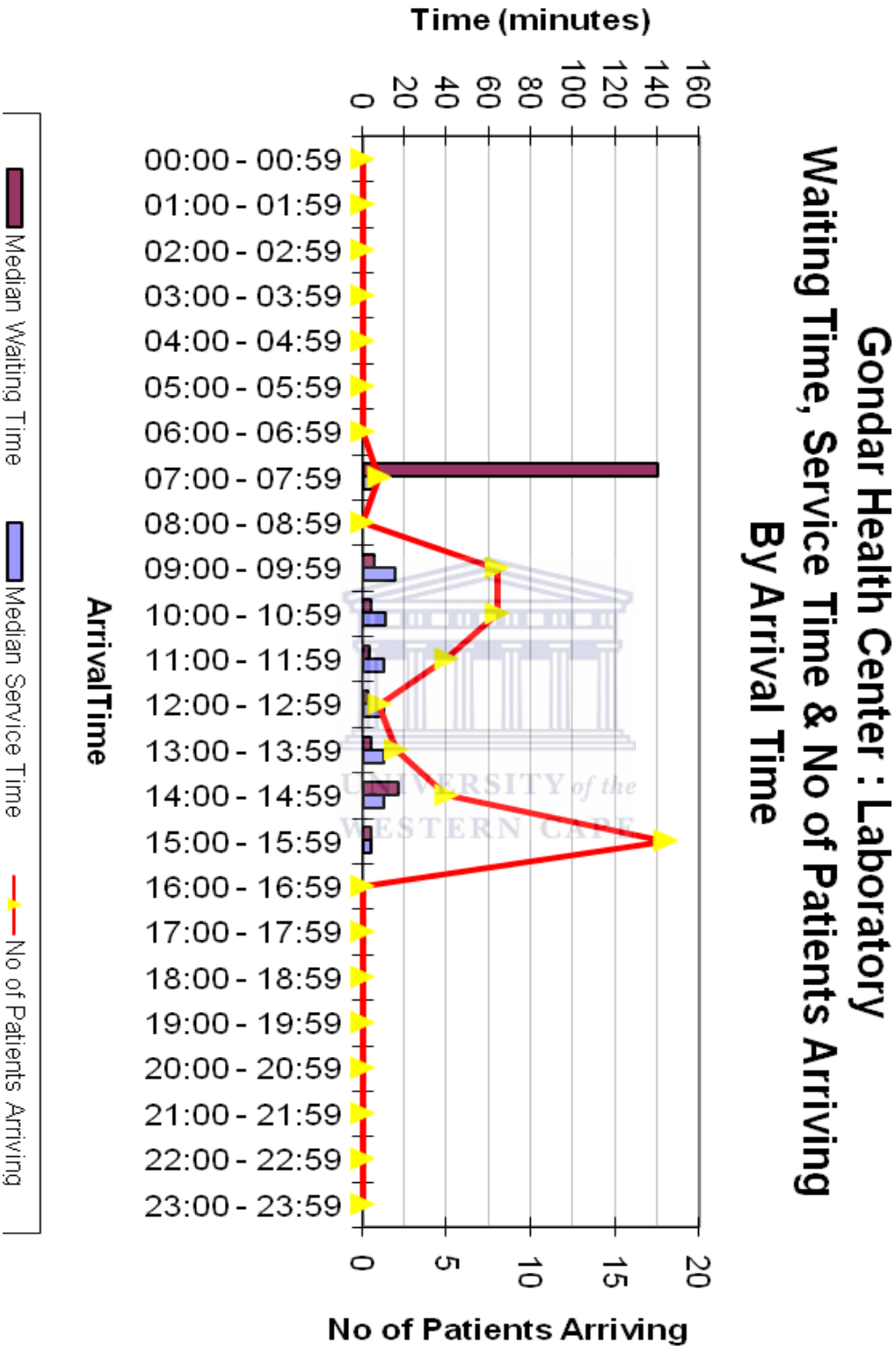


Figure 24: Detailed Arrival Time Report for Laboratory

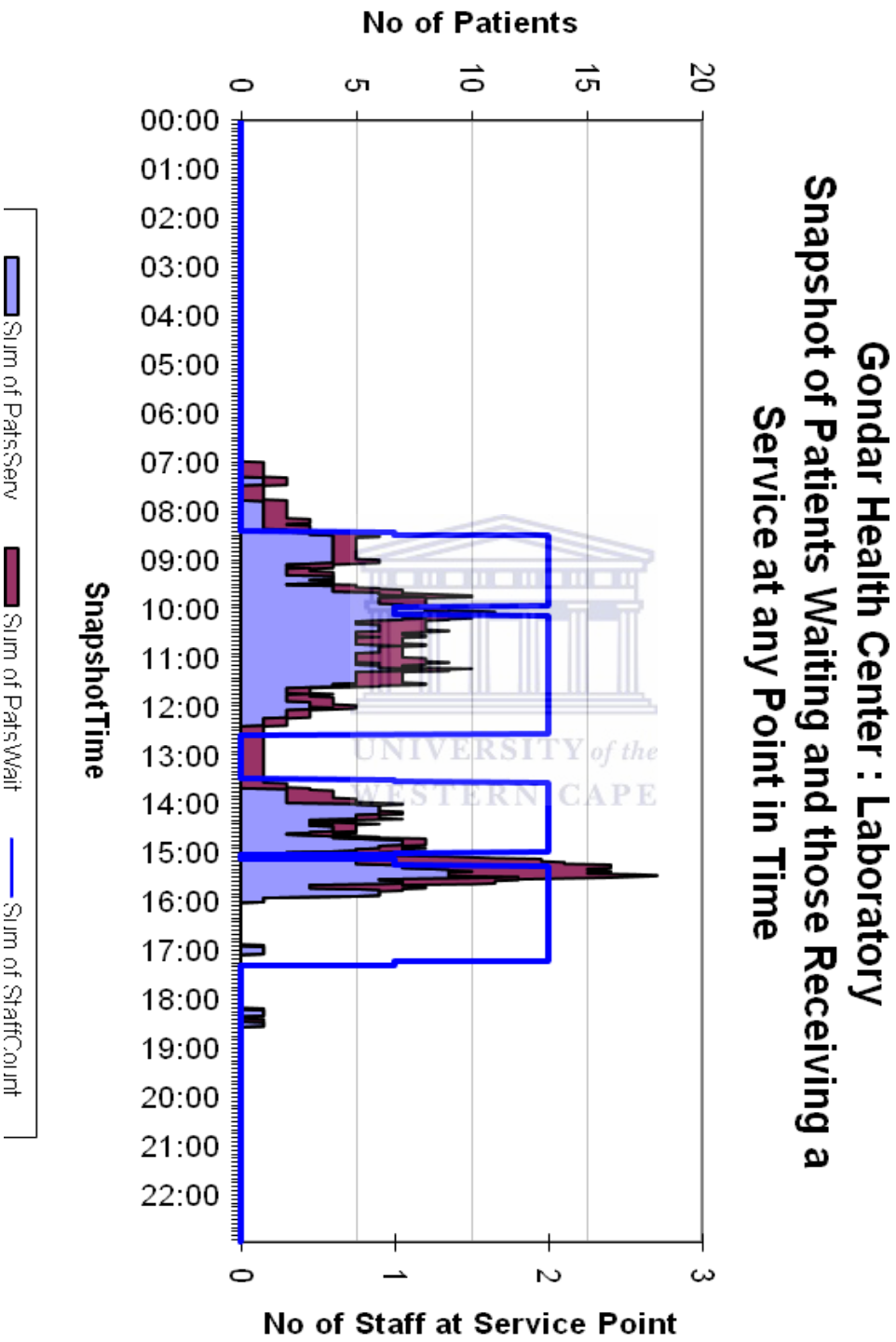


Figure 25: Detailed Snapshot Report for Laboratory

Median partial waiting time of 2 minutes is excellent and the median partial service time of 3 minutes is low. The percentage staff clinical time usage is also very low. Combining with other pharmacies recommended.

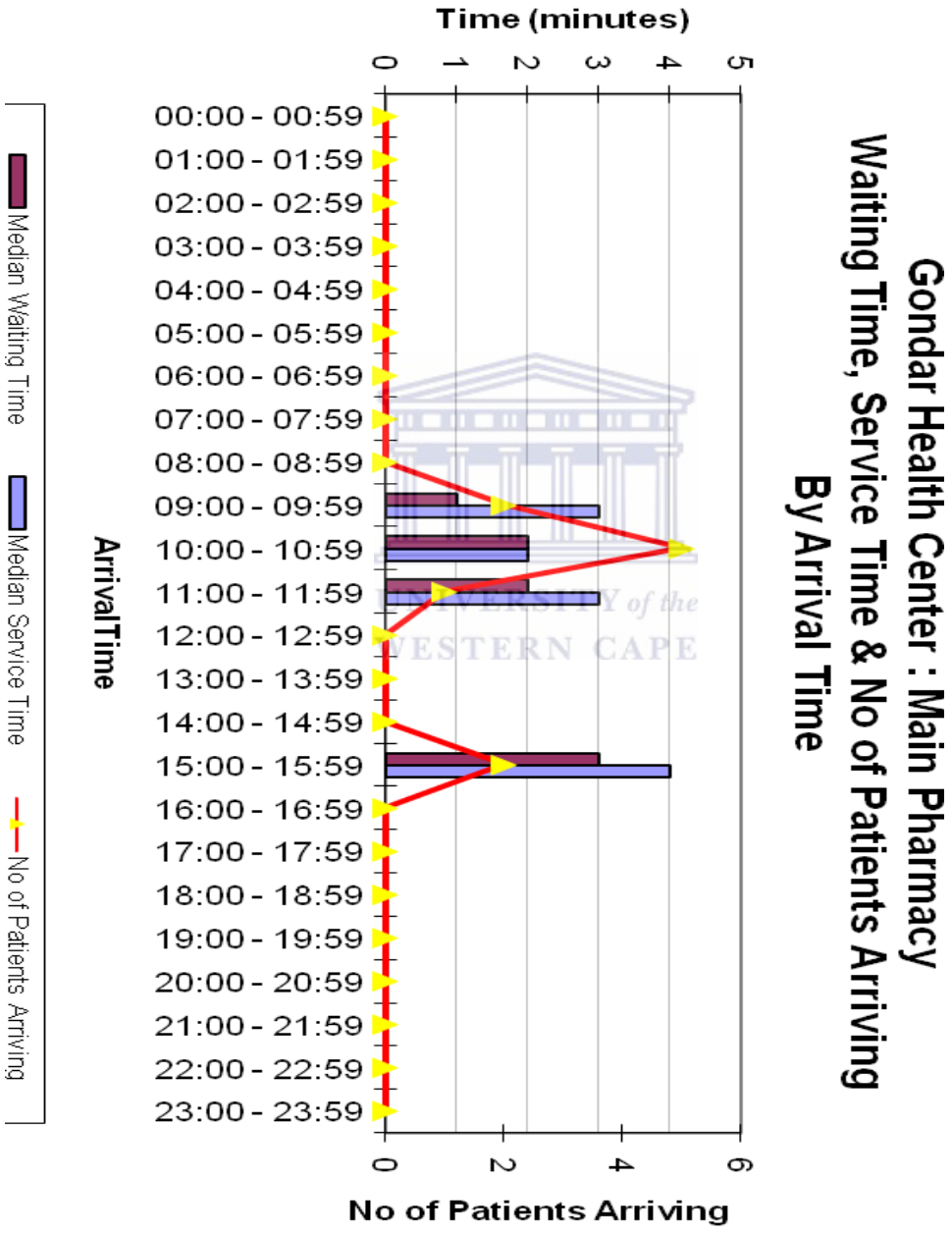


Figure 26: Detailed Arrival Time Report for Main Pharmacy

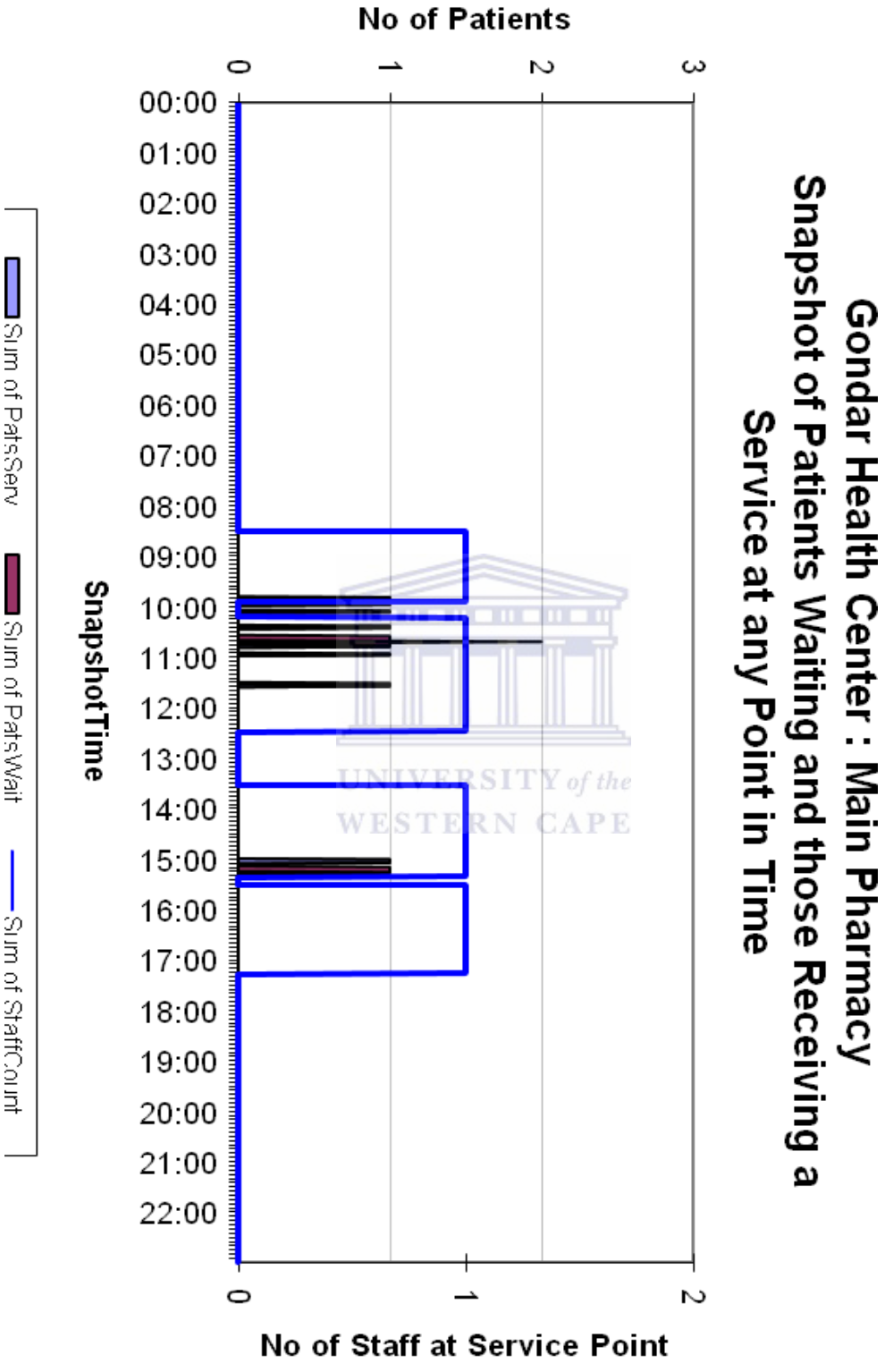


Figure 27: Detailed Snapshot Report for Main Pharmacy

The median partial waiting time (16 minutes) and service times of 2 minutes were good for this service point. However the percentage staff time usage was too low and hence combing this service point with cash office is recommended.

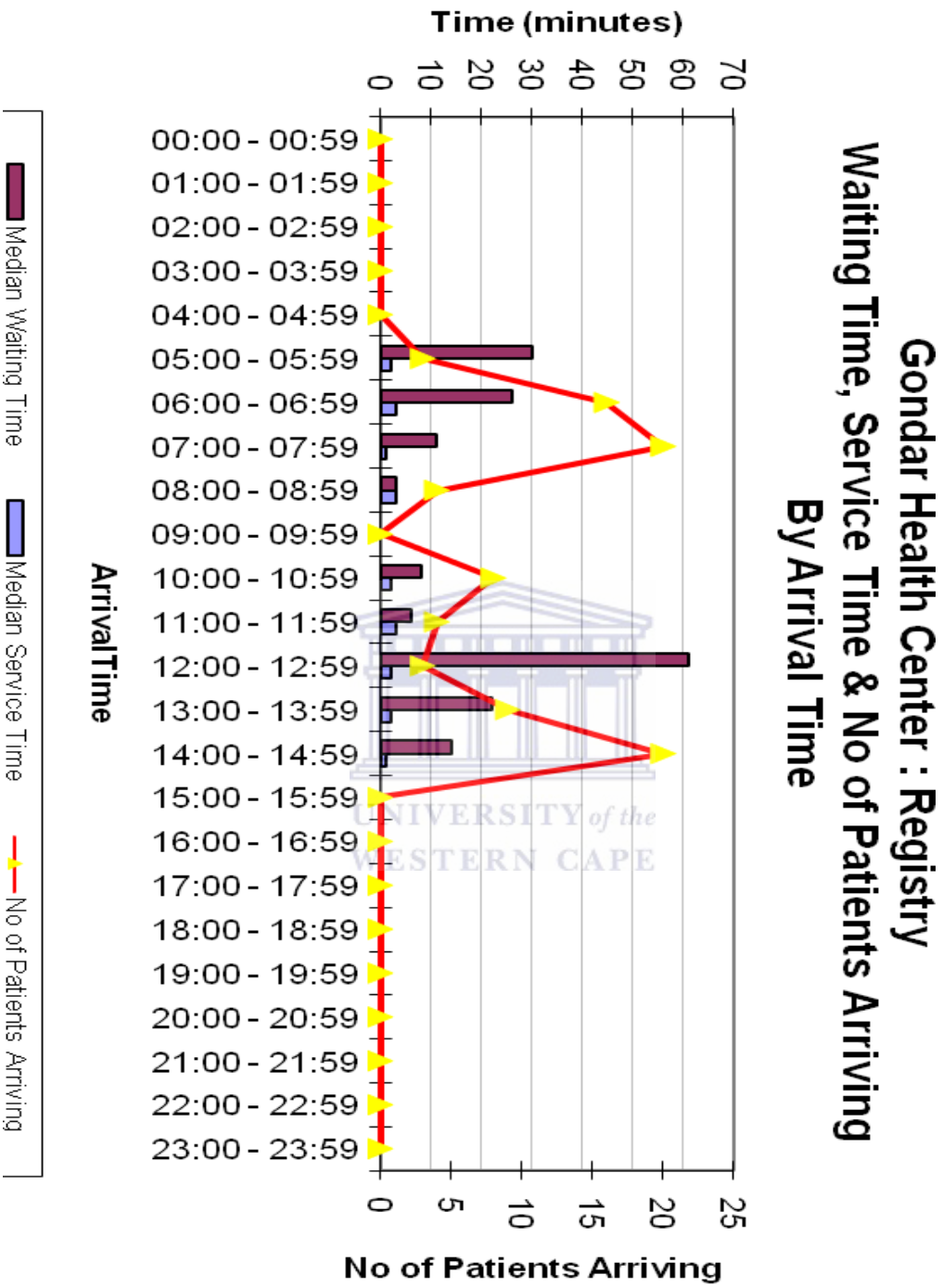


Figure 28: Detailed Arrival Time Report for Registry

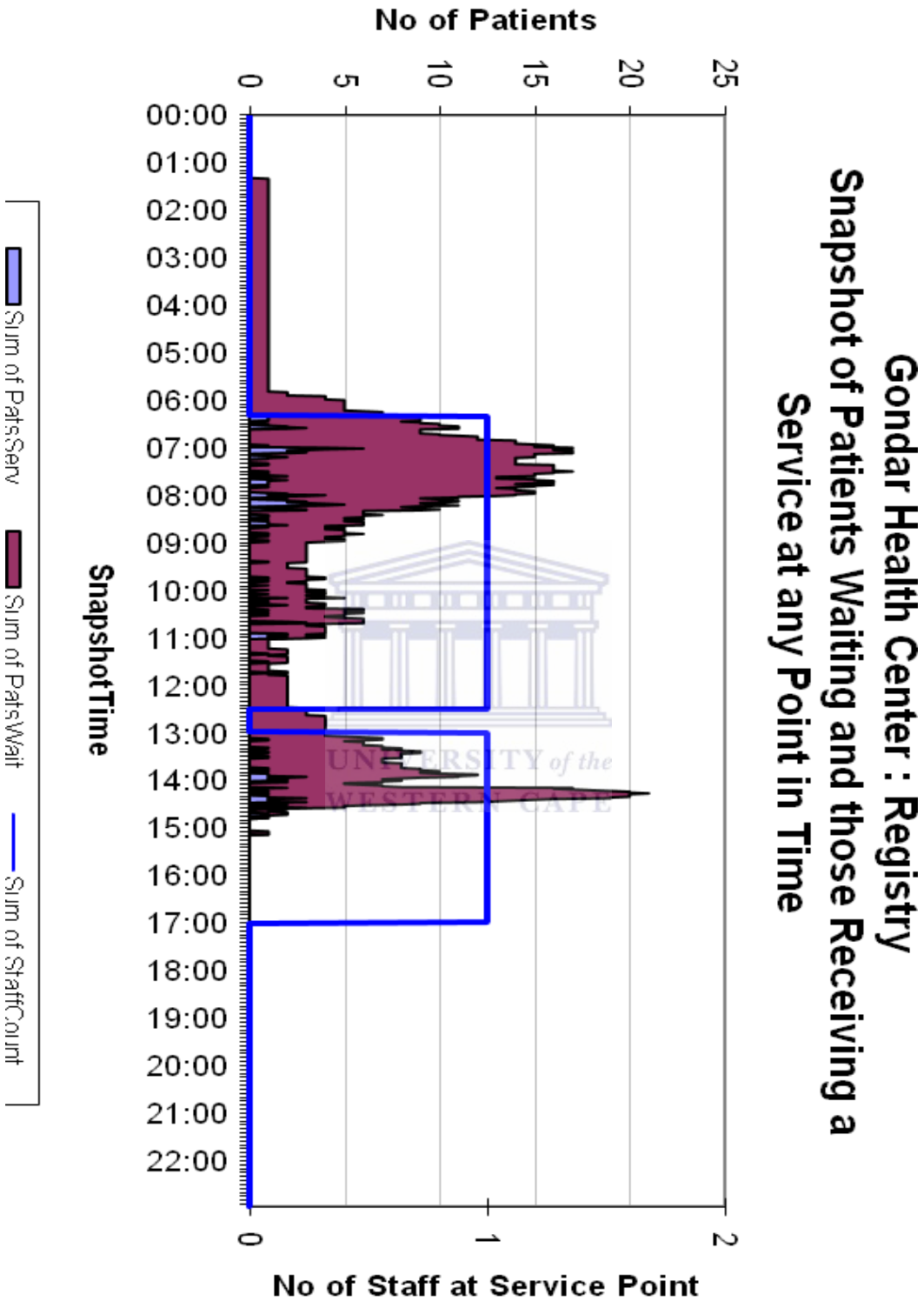


Figure 29: Detailed Snapshot Report for Registry

Partial median waiting time of 33 minutes was too long and the causes were mismatch early in the morning and staff inefficiencies where the patient and staff were at the service point but staff did not attend them. The median partial service time of 10 minutes is good. The percentage staff clinical time usage was very low (26%) hence staff can assist others in their peak hours.

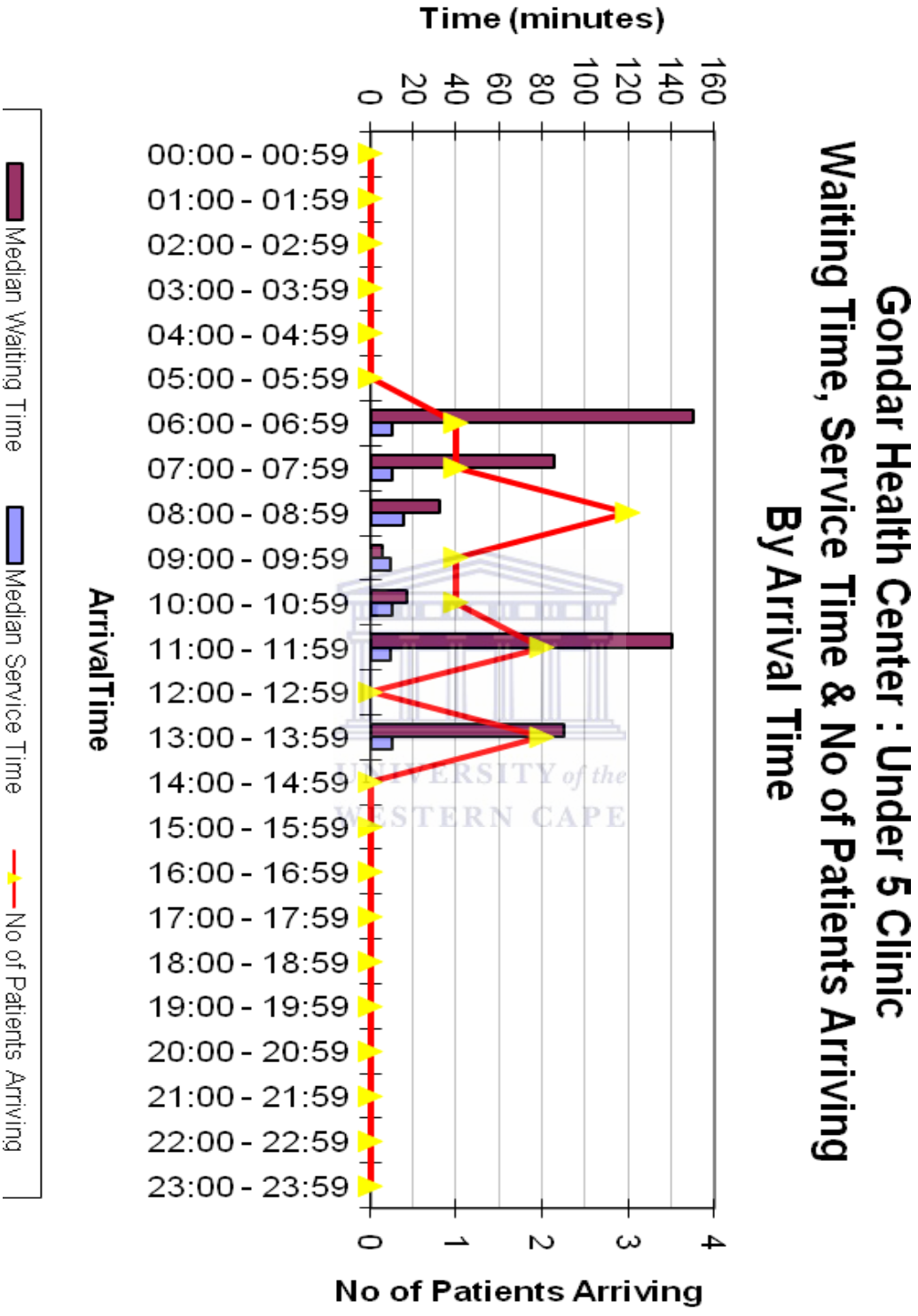


Figure 30: Detailed Arrival Time Report for Under 5 Clinic

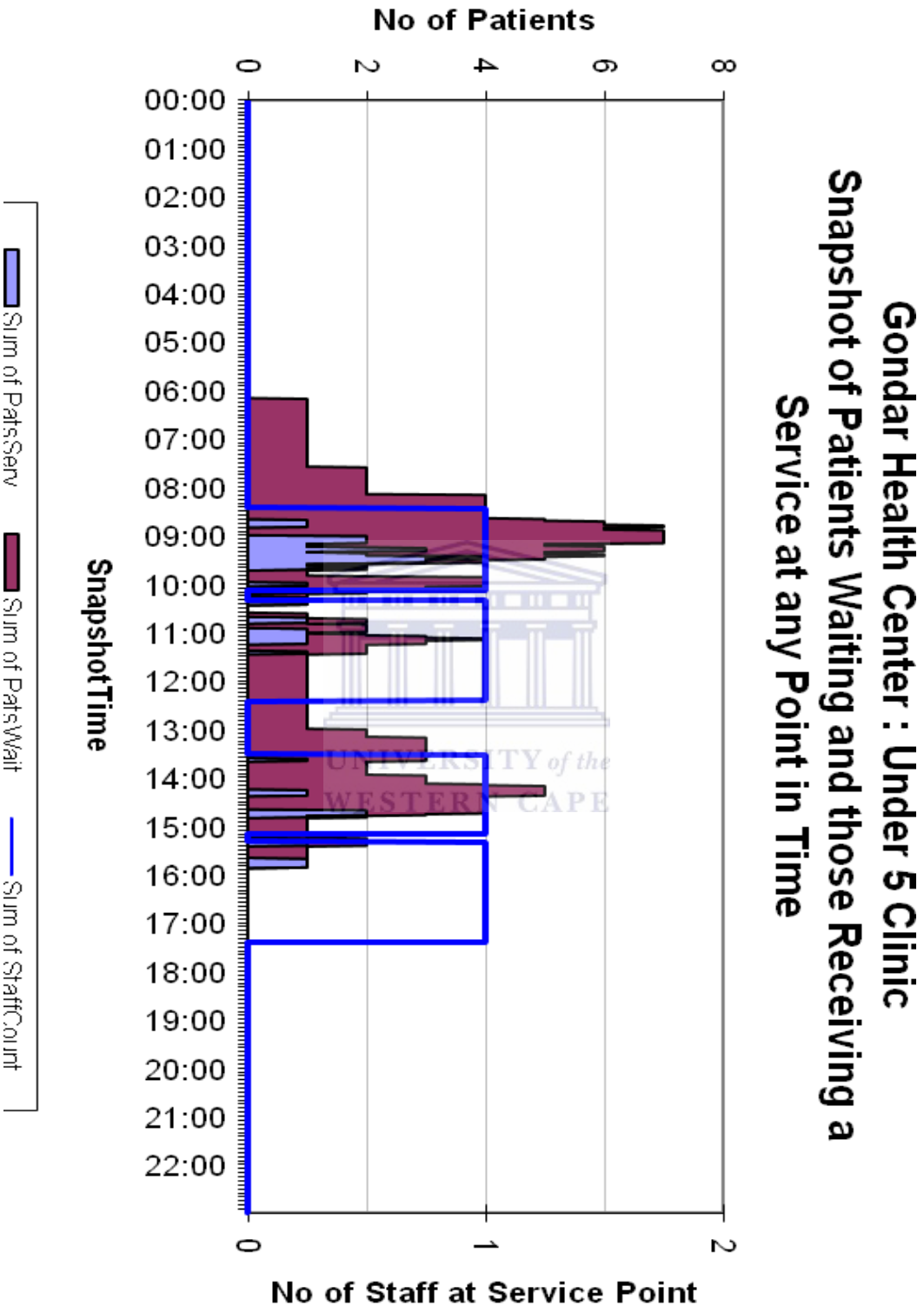


Figure 31: Detailed Snapshot Report for Under five clinic

VACCINATION

Partial median waiting time of 11 minutes and service time of 5 minute were appropriate for this service point. However the percentage staff clinical time usage was very low (9.5%) and hence combining this service point with either ANC or under five clinic is recommended.

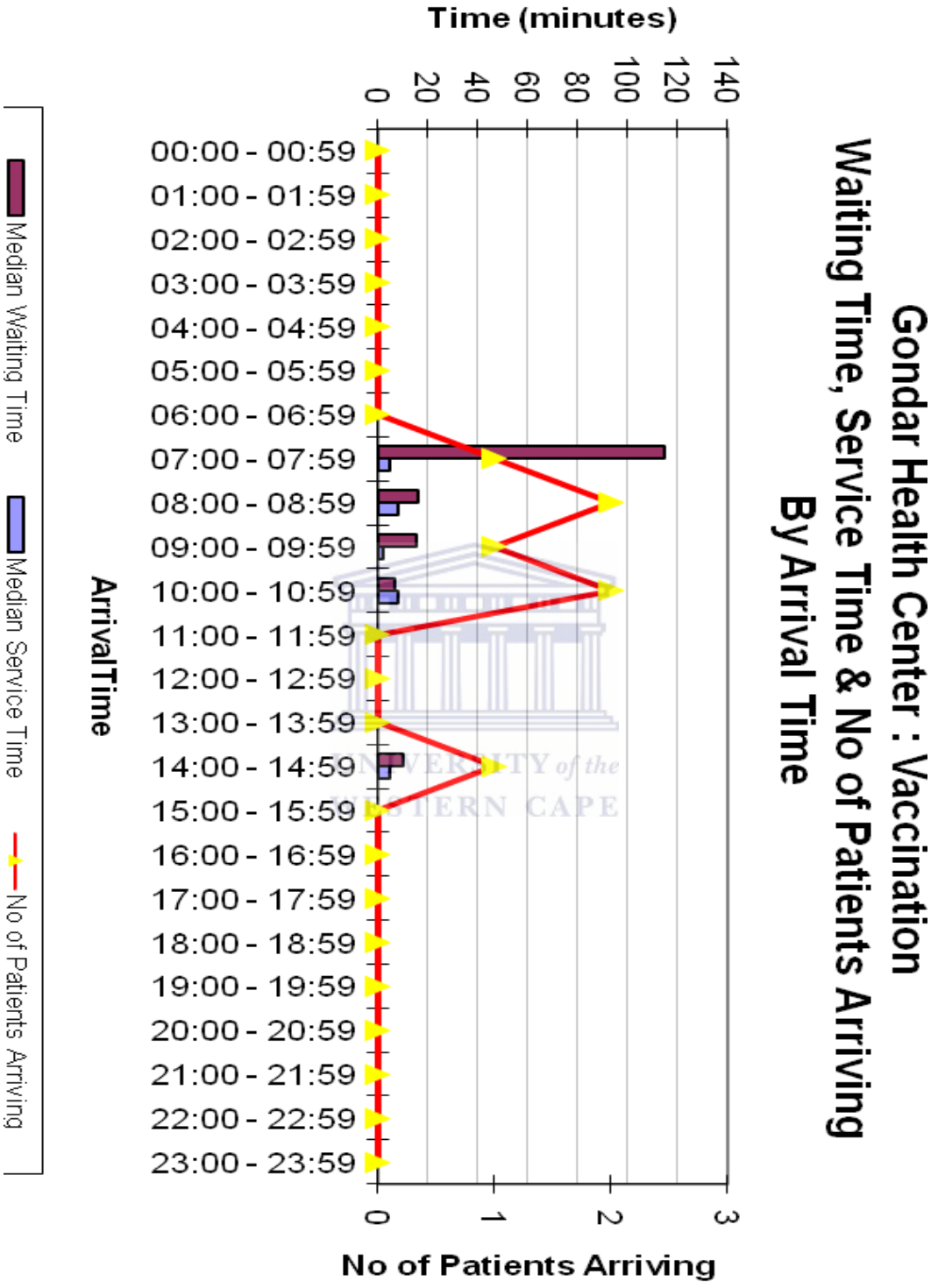


Figure 32-Detailed Arrival Time Report for Vaccination

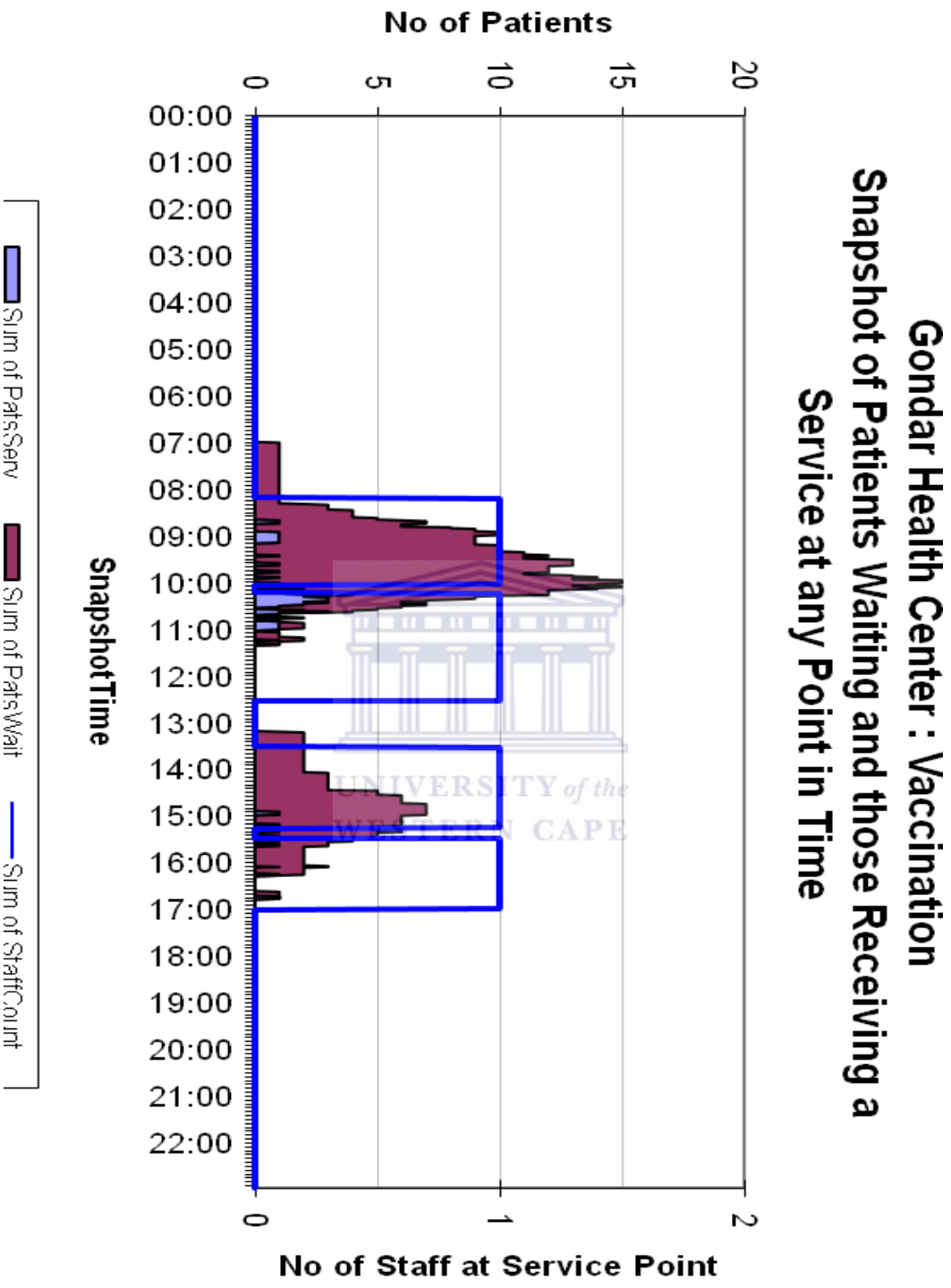


Figure 33: Detailed Snapshot Report for Vaccination

Partial median waiting time of 305 minutes was unacceptable very long for this service point. The cause for the long waiting time were early arrival of patients to the facility and the long waiting for post test and laboratory results., the partial median waiting time is appropriate it is less than the national VCT guidelines which instructs to provide pre-test and post testing for at least 15 minutes each.

Encouraging clients to visit the facility in non busy hours and increasing the daily quota may eliminate their fear of not attended to.

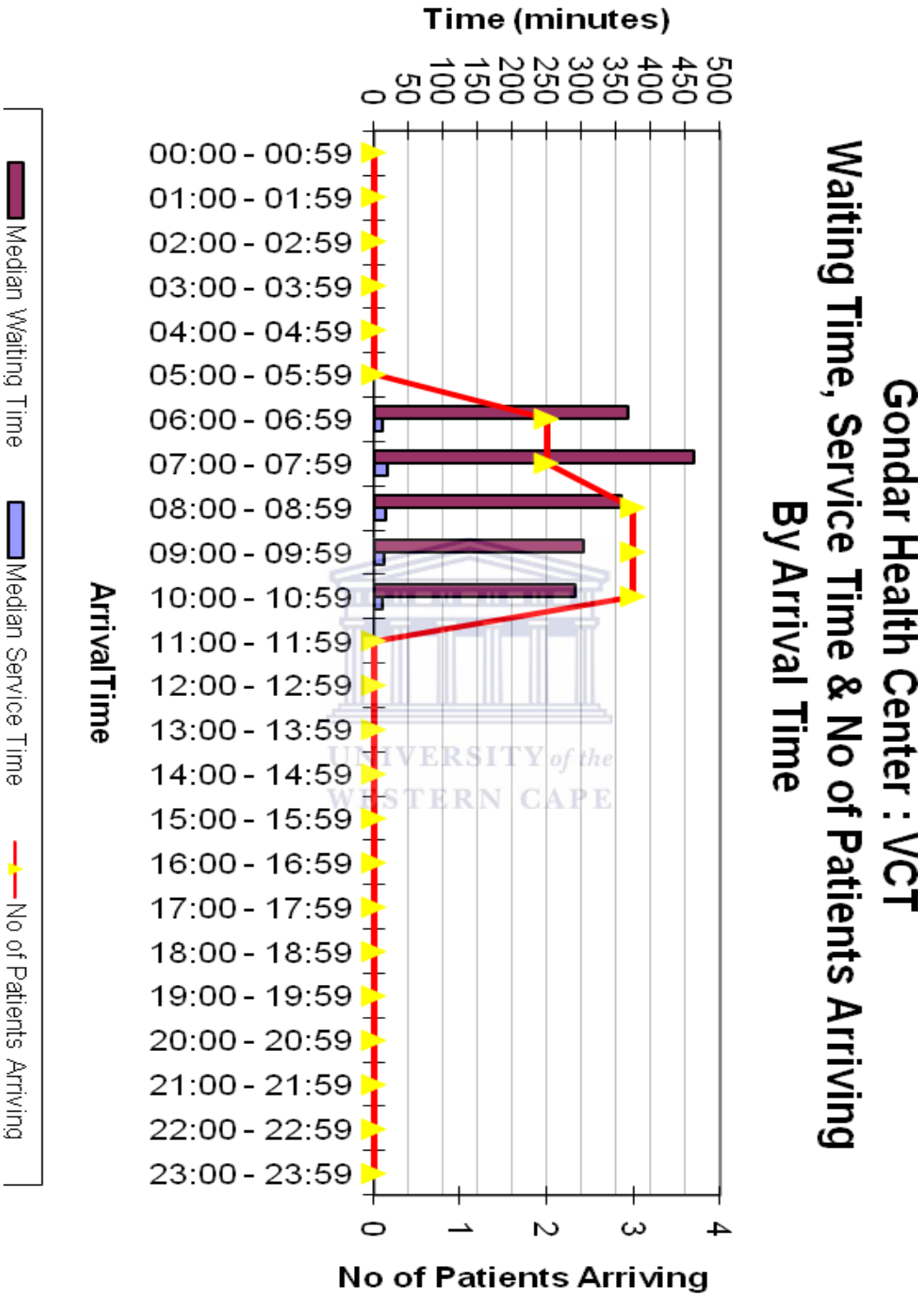


Figure 34: Detailed Arrival Time Report for VCT

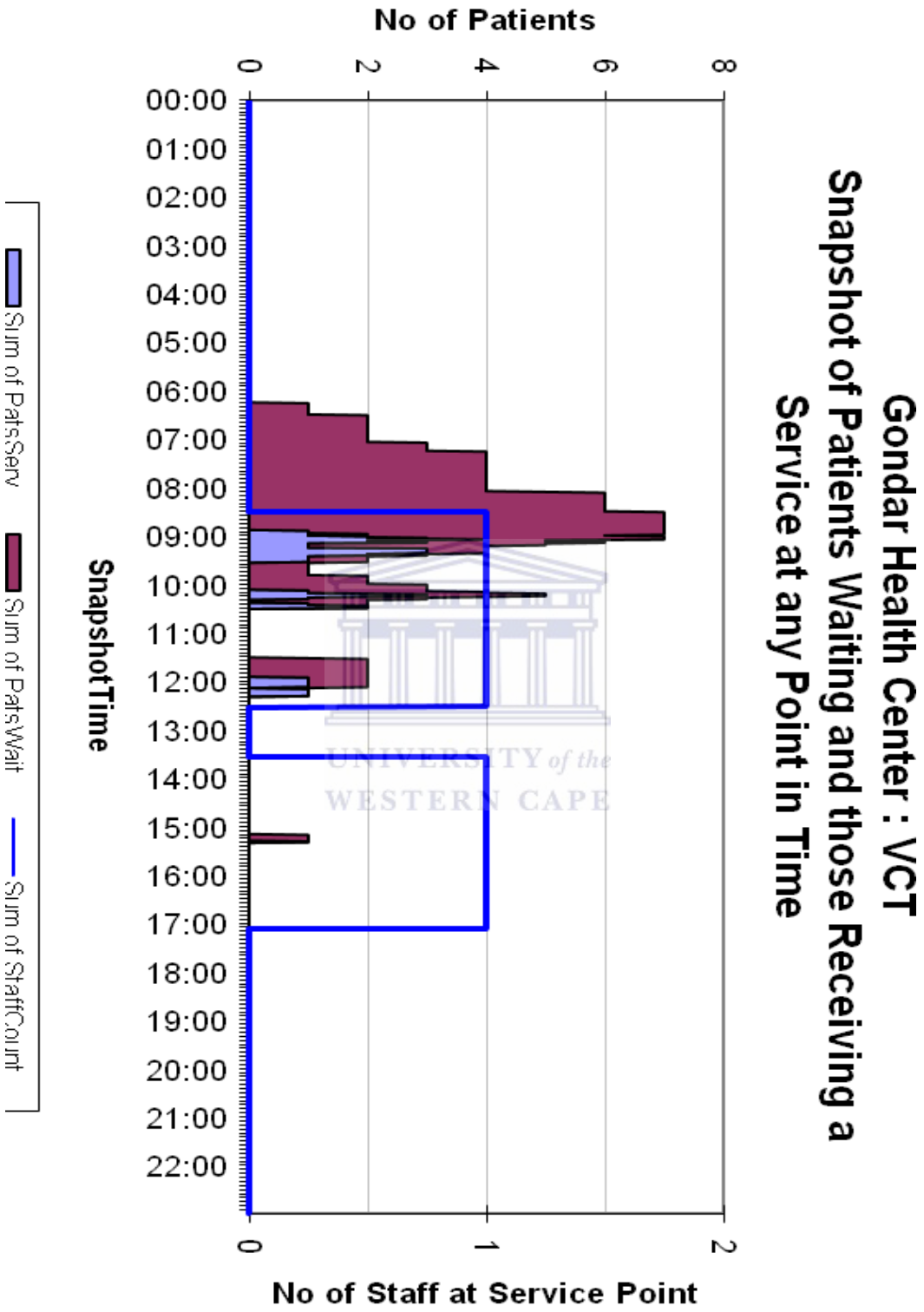


Figure 35: Detailed Snapshot Report for VCT

SELAMA MEDIUM CLINIC

SELAMA MEDIUM CLINIC

This is a newly established medium clinic which is owned and managed by a general practitioner. It is found 6 km to the south of the city centre. A rented private villa with 4 rooms is modified to fulfil the requirements of Ministry of Health standard. The big saloon serves as 'Registry and Casher' office and waiting area. The remaining 3 rooms connected to the saloon are rooms for consultation, injection and dressing and Laboratory. The waiting area is enough for about 10 people and there is TV set with DVD player in the room.

Four staff members (a general practitioner, a nurse, a laboratory technician and a registry clerk) serve 15-20 patients' per day.

A total of 16 patients visited the clinic on the day of the study. Seven (43.7%) were females. The median age of the patients was 20 years. Seven of them (43.8) were new visitors. Only one patient had had an appointment. The majority (87.5%) came by walking.

The results of the WSTS are summarized as follows

Summary

No of Staff in Facility	**Present= 4**	**Absent=0**	**Total=0**	**Equivalent=5.14**
Patients Seen in Facility	**Total= 16**	**Turned Away= 0**	**Left Voluntarily= 0**	**Med Transport Time (mins)=15**
Median Complete ST		19	**Median Complete WT**	5
5% Complete ST		7	**5% Complete WT**	0

75% Complete ST	32	**75% Complete WT**	17
95% Complete ST	73	**95% Complete WT**	107

Table 1: Detailed service point report -Selama Medium Clinic

Service Point	staff	Patients seen	Work load	% Staff times attending to patients	Service Times				Waiting Times			
					Median	5%	75%	95%	Median	5%	75%	95%
Registry and casher	1.38	16	11.64	10.15	3	1	4	10	1	0	2	15
Consulting Room - Doctor	1.17	9	7.67	27.35	17	7	20	28	6	0	10	70
Laboratory	1.22	7	5.74	28.38	28	6	38	38	4	0	77	143
Injection Room	1.19	5	4.21	5.26	6	5	7	7	3	0	3	15
Consulting Room Enrolled Nurse	0.19	4	21.33	32.22	8	1	9	12	1	0	1	6

Overall waiting and service times

The median complete waiting times for the facility was 7 minutes with the 5th and 95th percentiles being 1 and 107 minutes. This was excellent and the very high 95% of 107 minutes is because of the client gone home after giving laboratory specimen.

The median partial waiting times were 1, 2 and 4 minutes respectively for registry, laboratory and consultation rooms were also excellent.

The median complete service time for the facility (16 minutes) was excellent and may suggest good quality of care. The partial median service times of the laboratory (28 minutes) and Doctor (15 minutes) were also excellent.

However, percentage time spent attending patients was too low because of the very low client load.

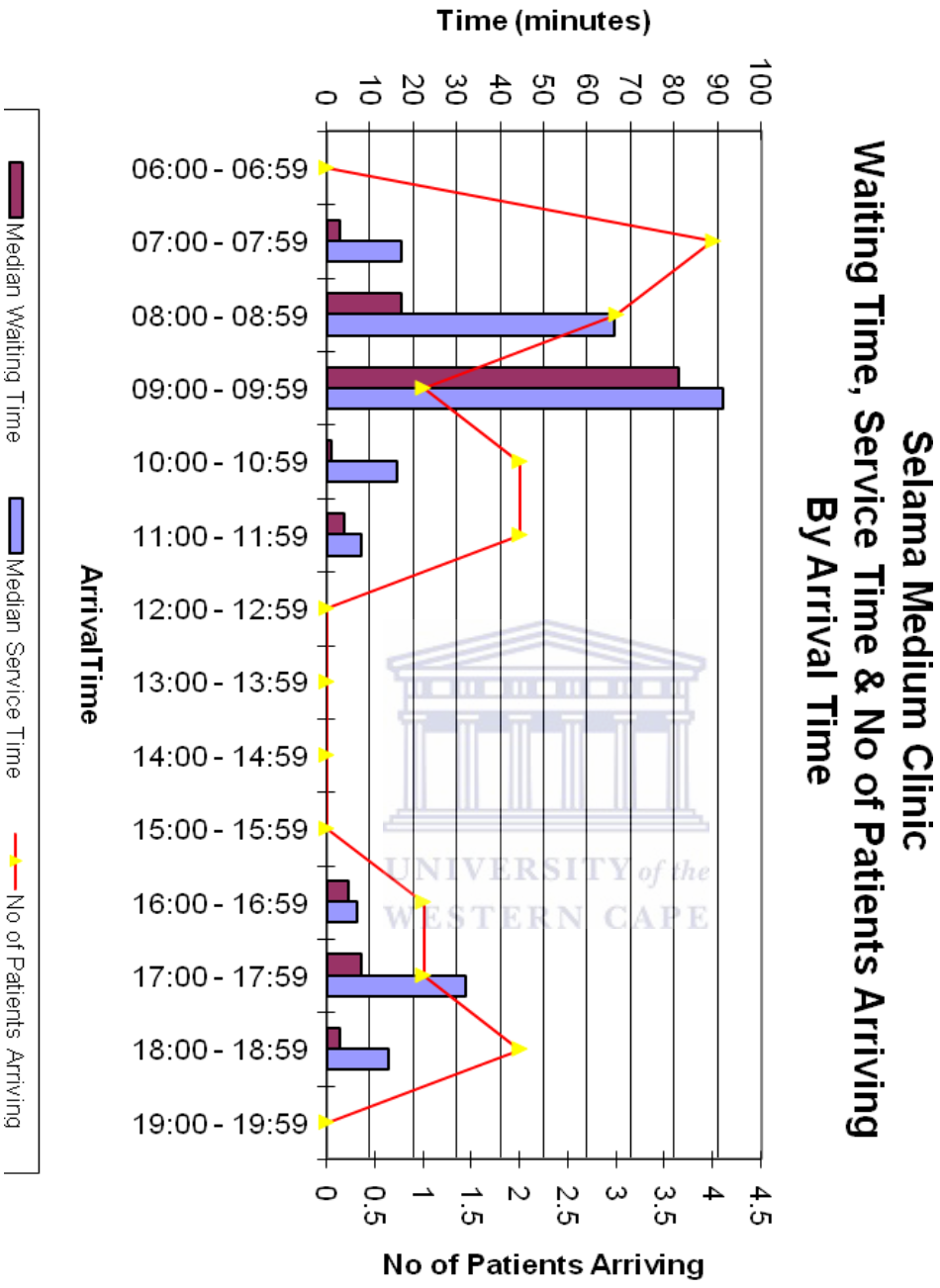


Figure 1: Detailed arrival time report for the whole facility

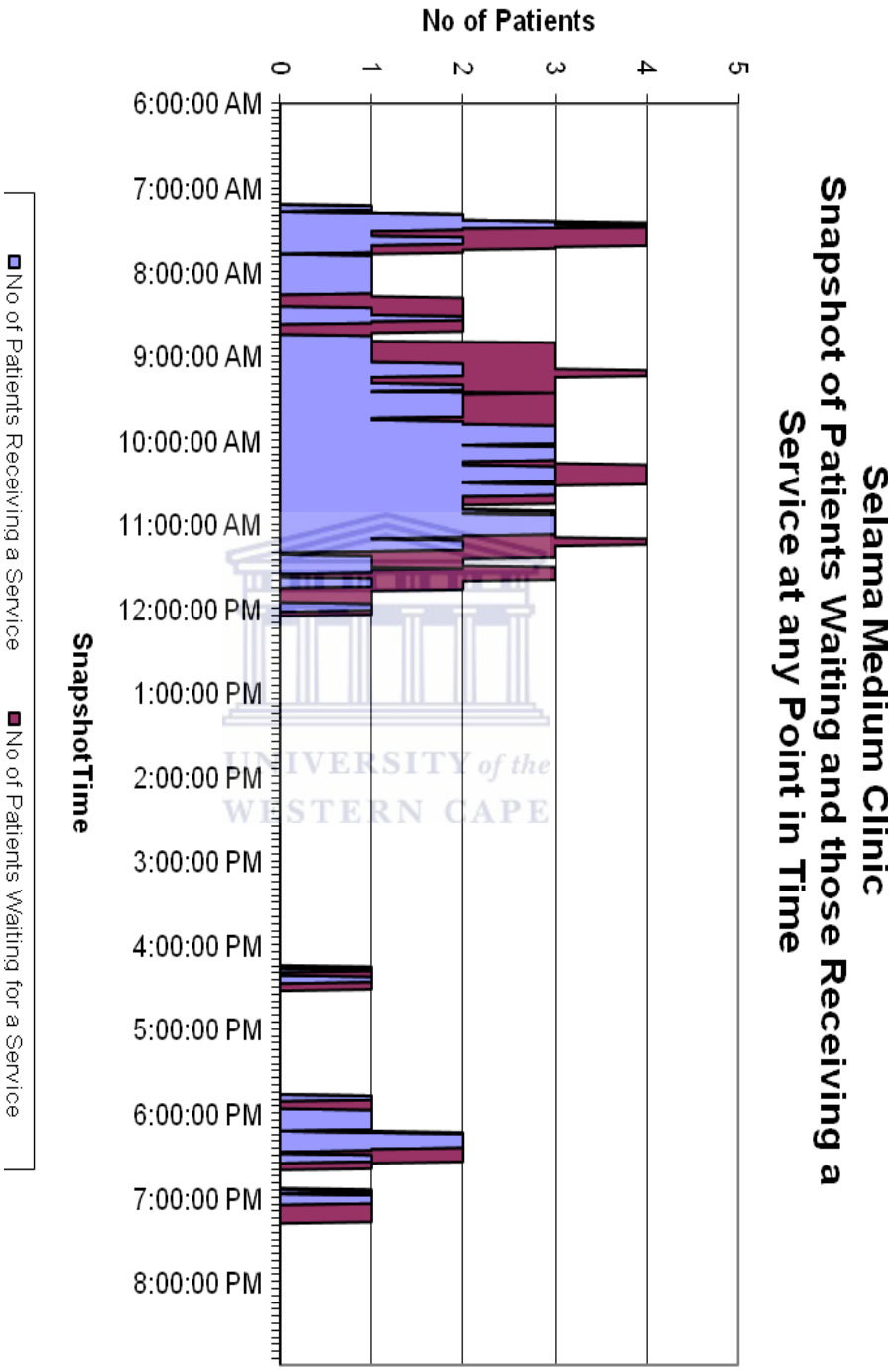


Figure 2: Detailed snapshot report for the whole facility

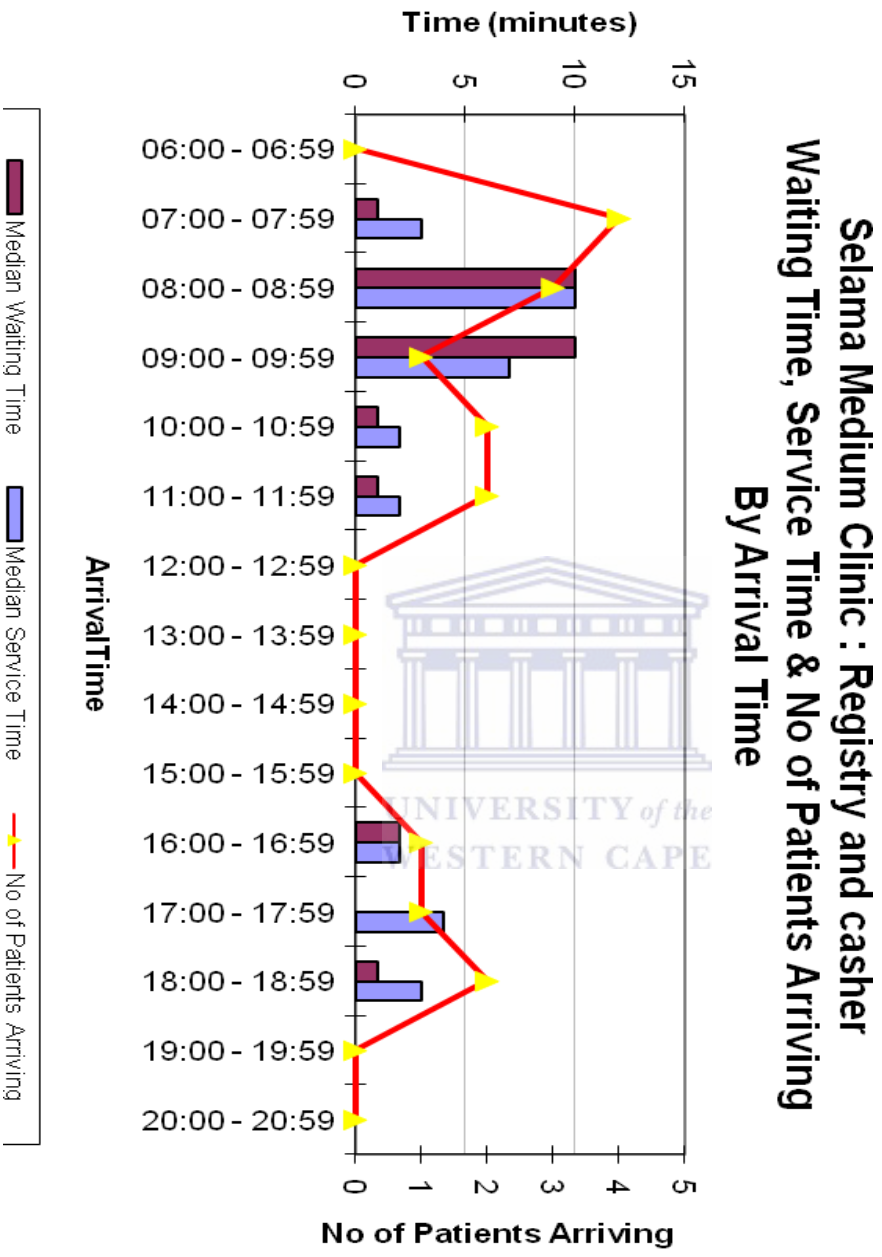


Figure 3: Detailed arrival time report for Registry and casher.

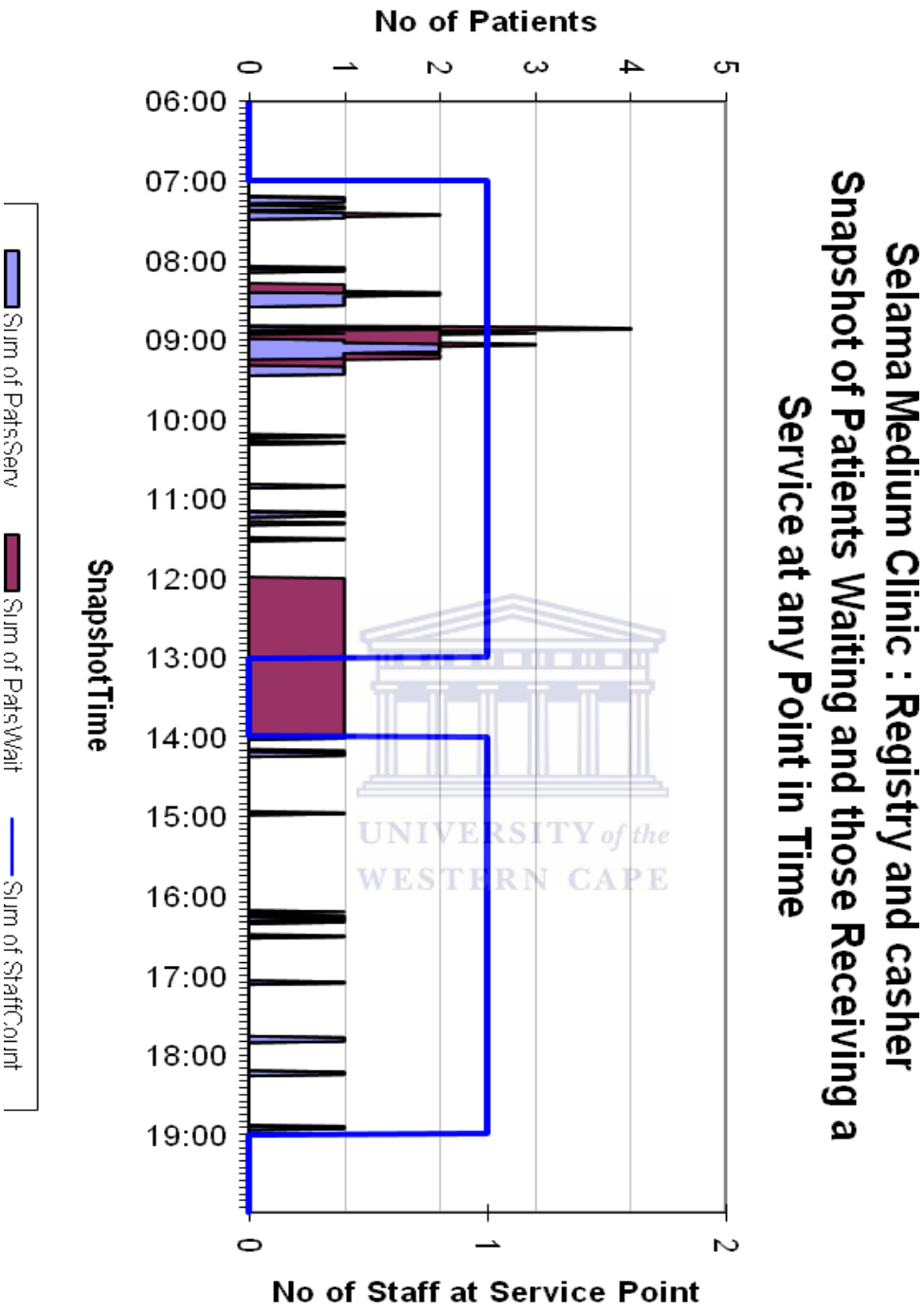


Figure 4: Detailed snapshot report for Registry and Casher

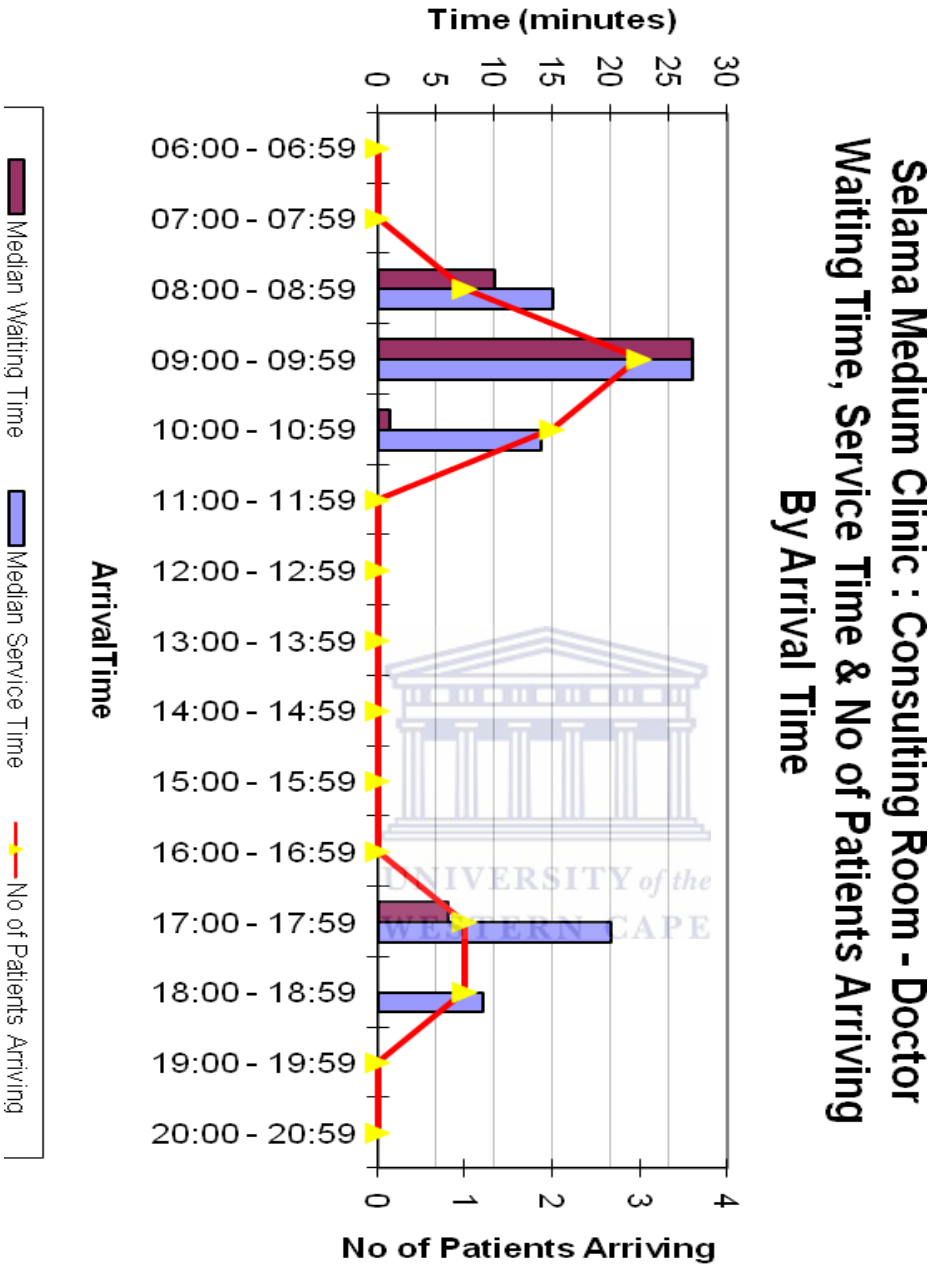


Figure 5: Detailed arrival time report for consulting room- Doctor

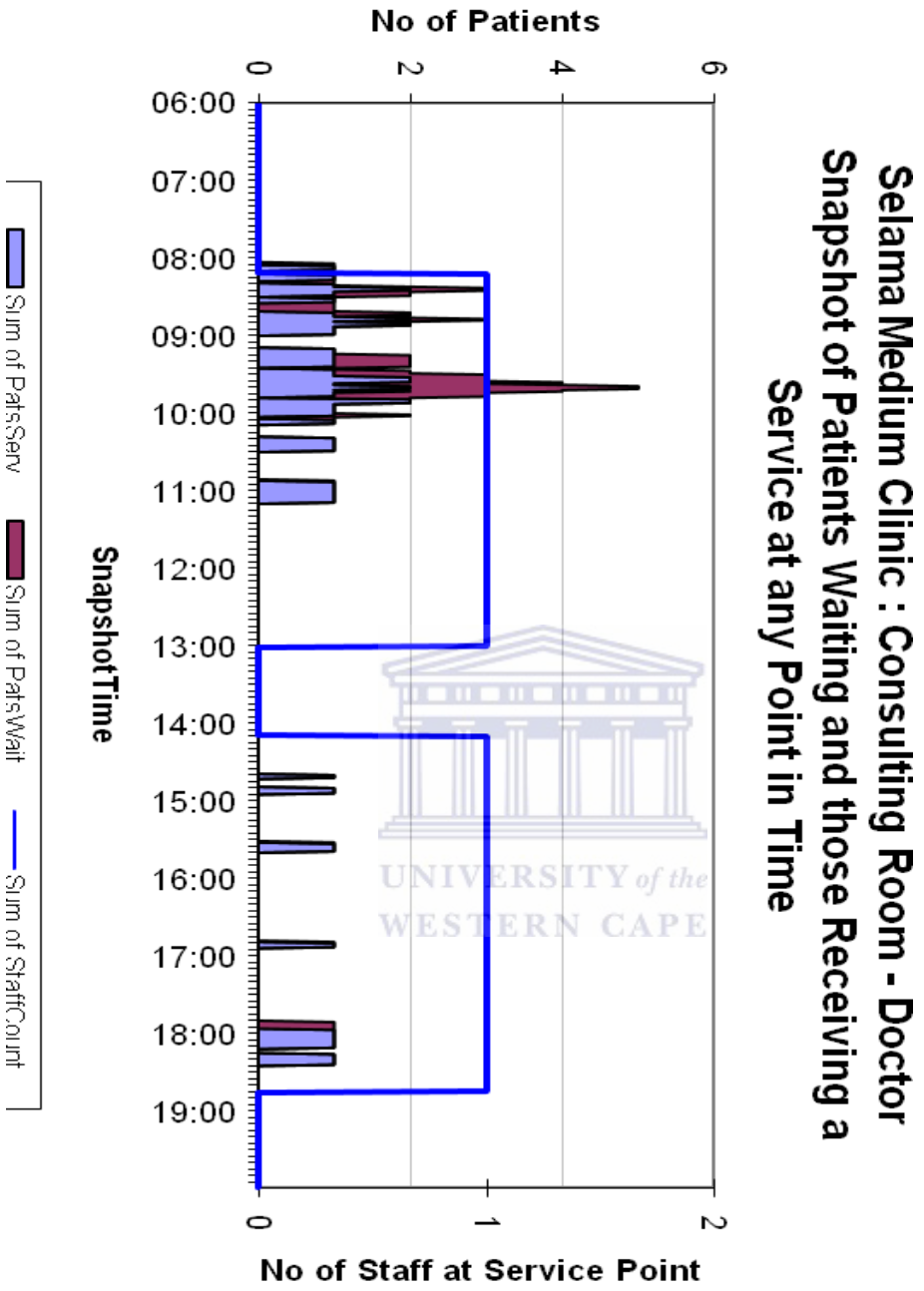


Figure 6: Detailed snapshot report for consulting room-Doctor

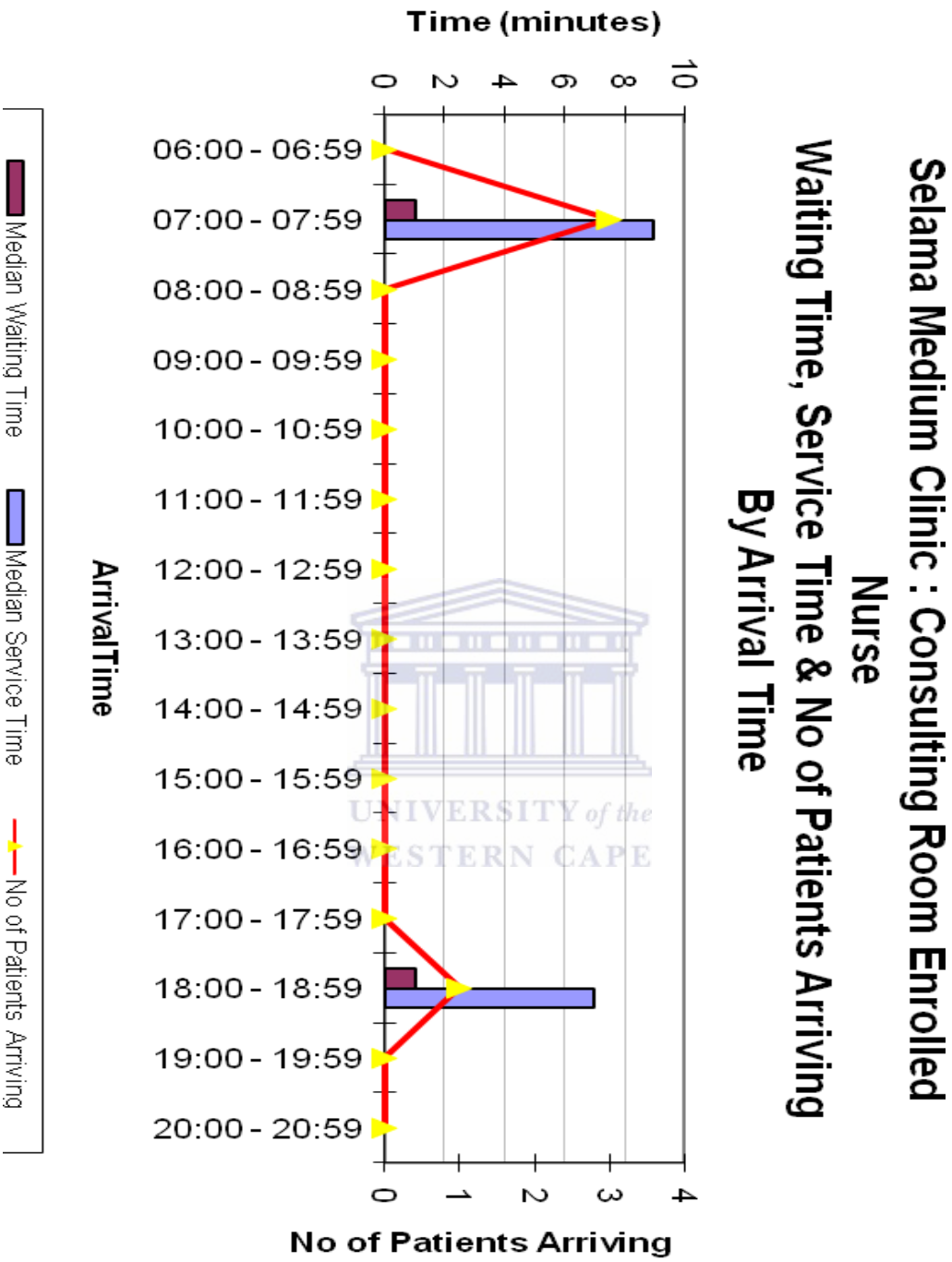


Figure 7: Detailed arrival time report for consulting room-Nurse

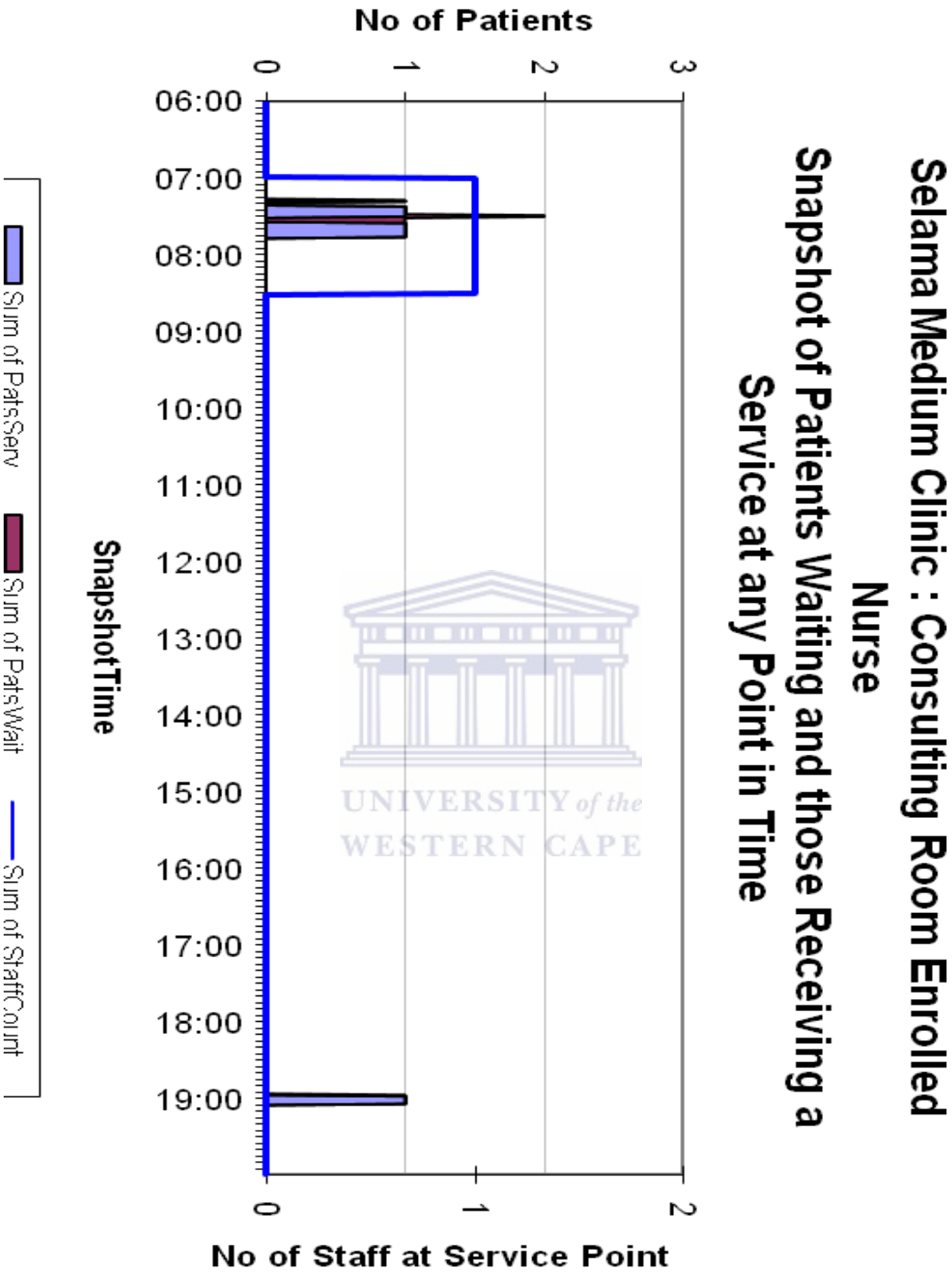


Figure 8-Detailed snapshot report for consulting room -Nurse

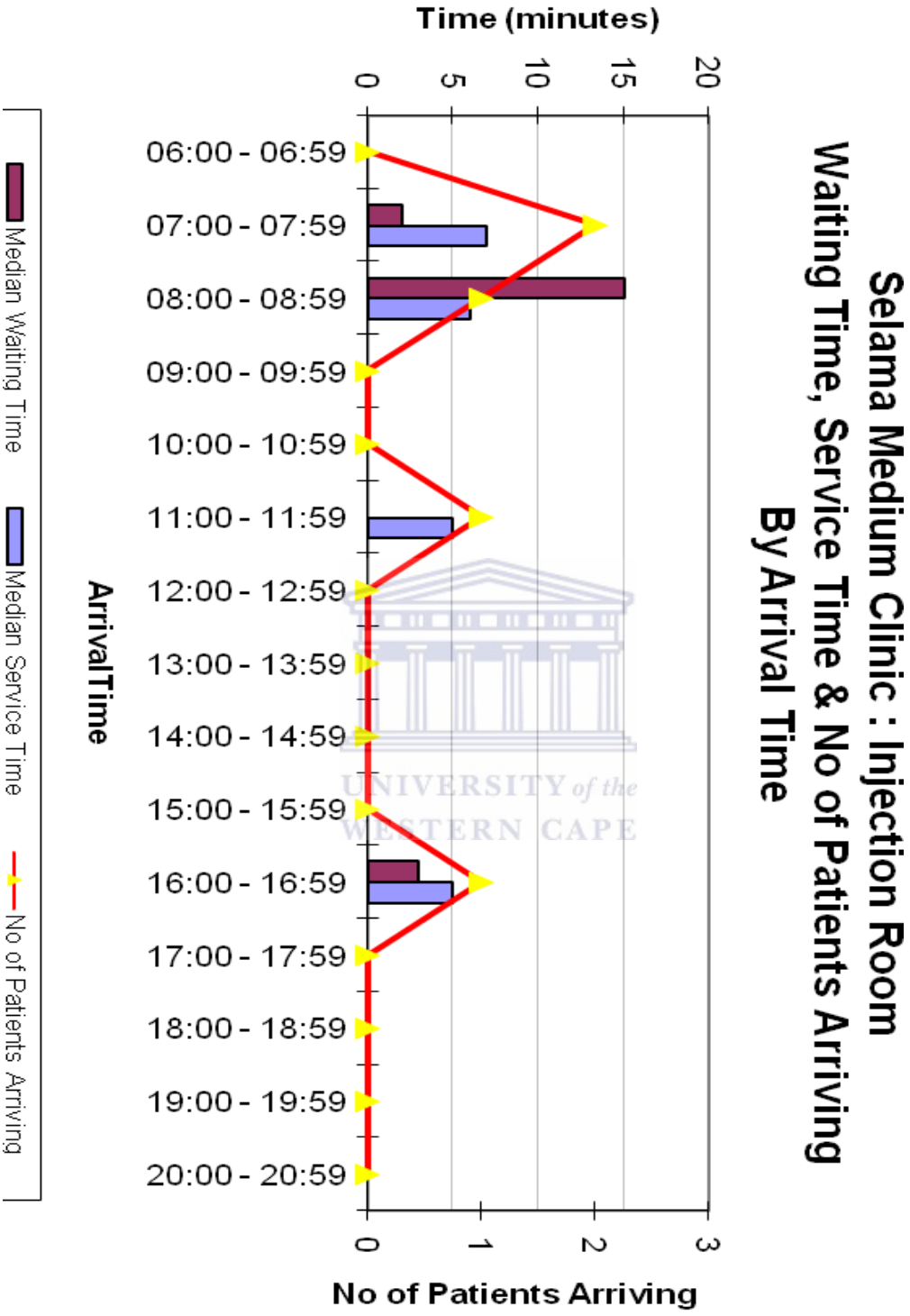


Figure 9: Detailed arrival time report for Injection room

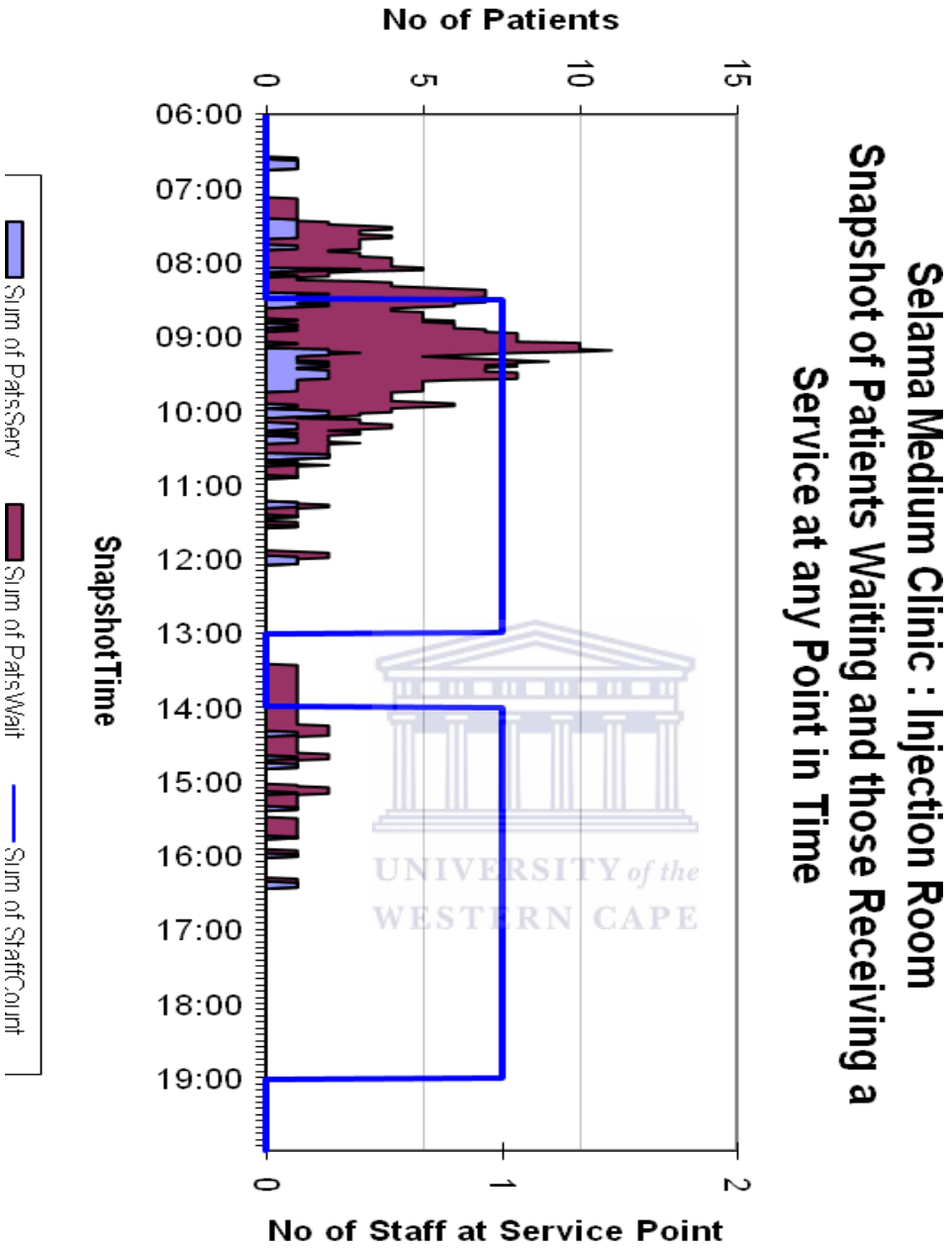


Figure 10: Detailed snapshot report for Injection room.

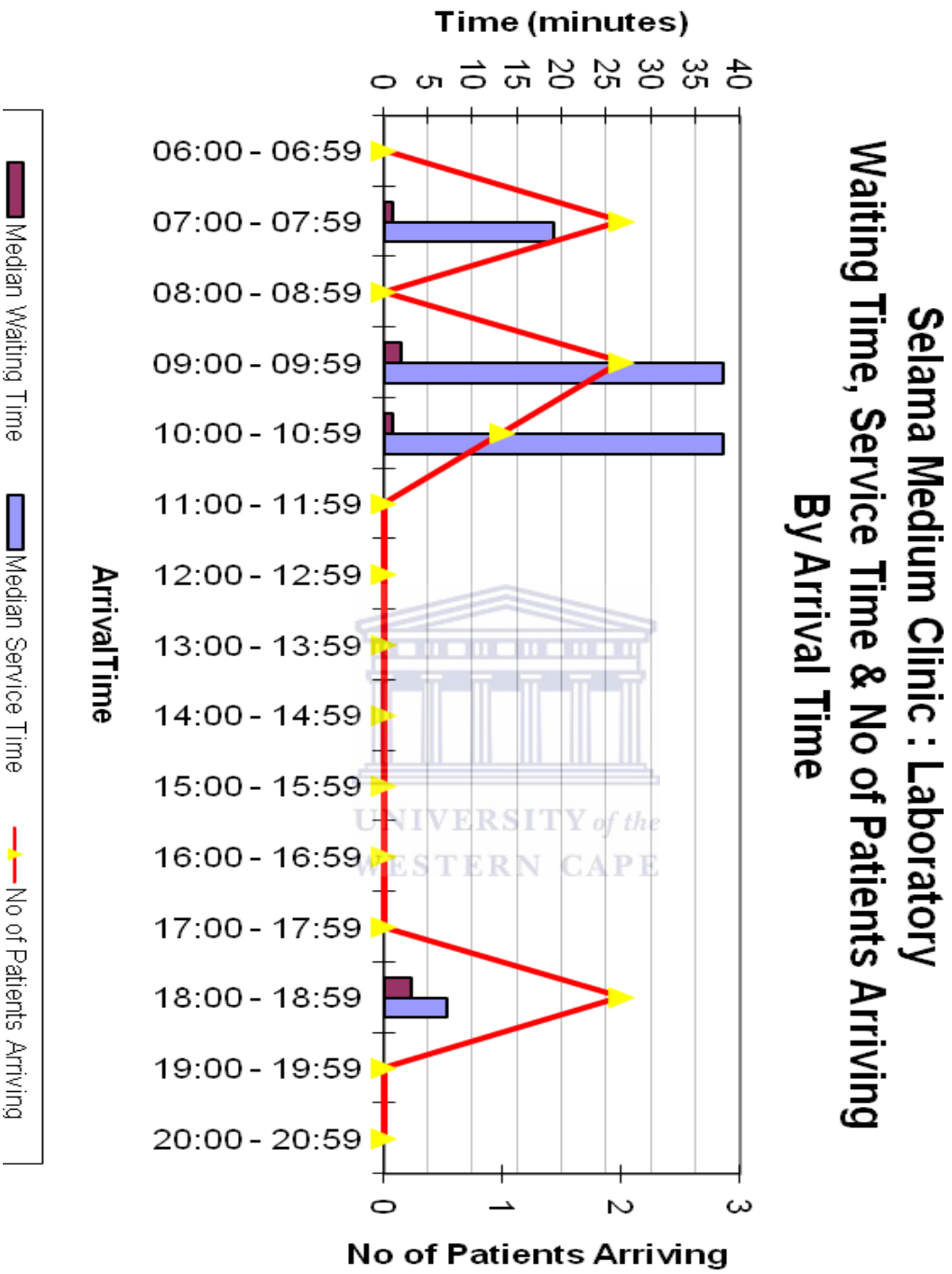


Figure 11: Detailed arrival time report for Laboratory.

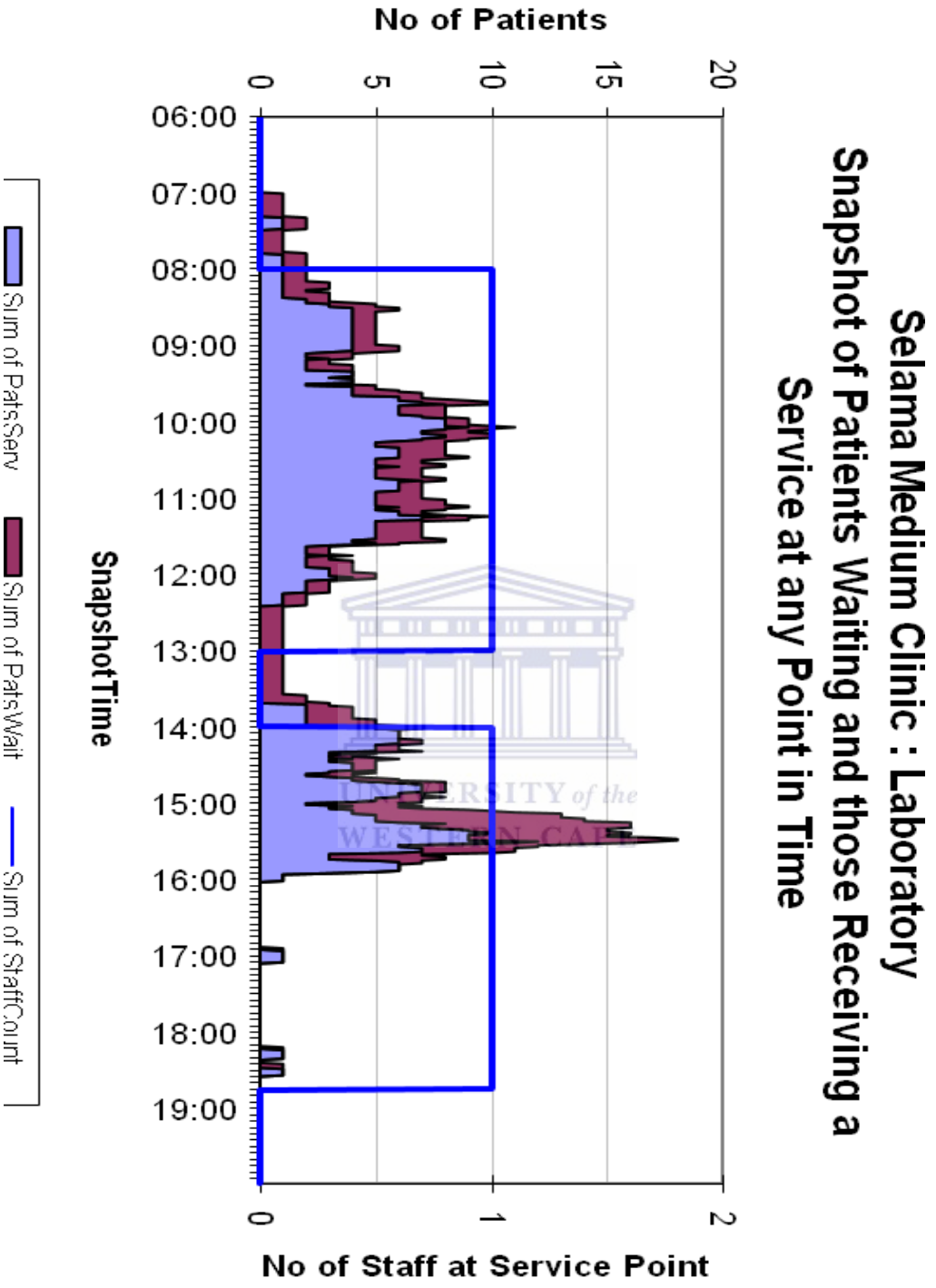


Figure 12: Detailed snapshot report for laboratory

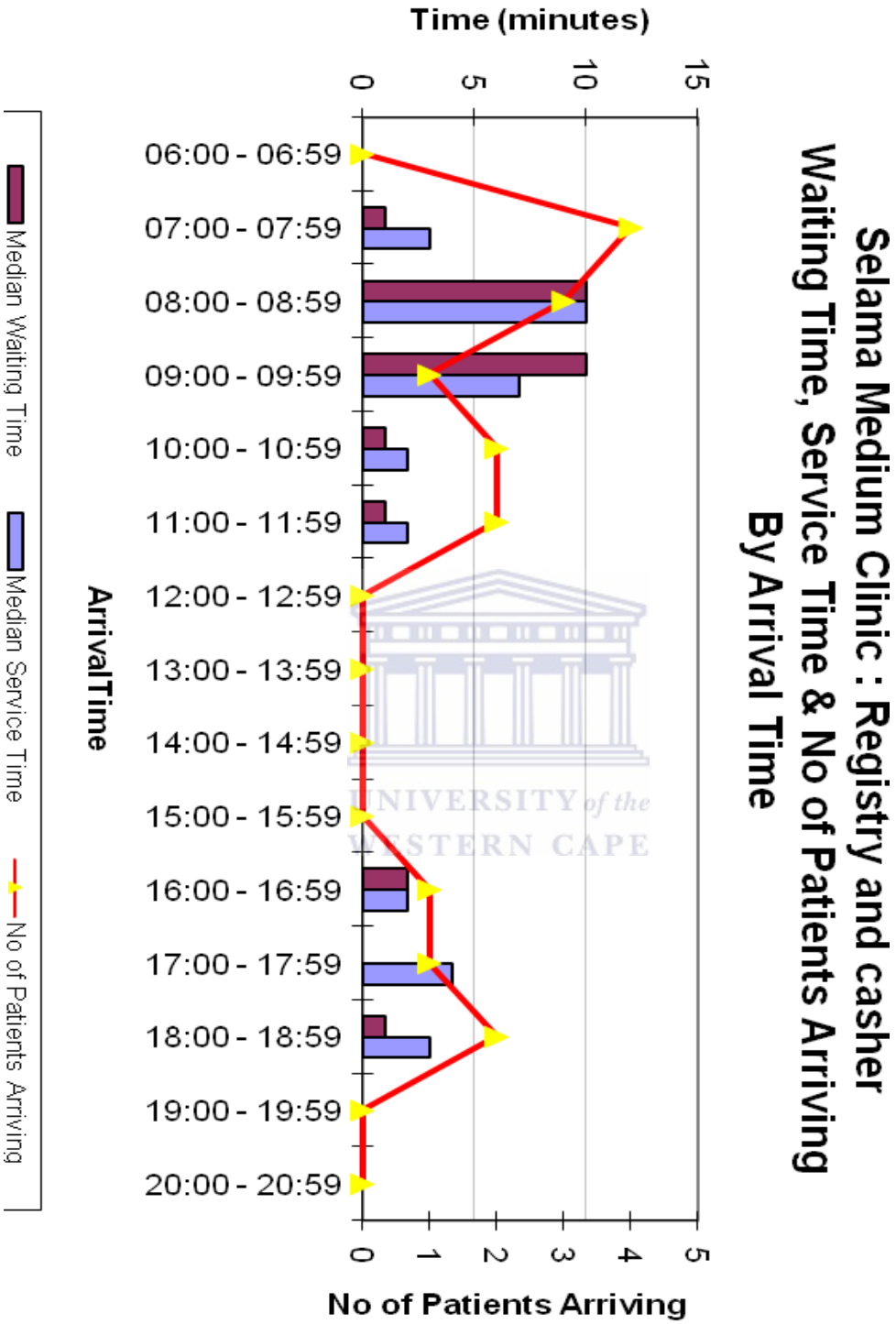


Figure 13: Detailed arrival time report for registry and casher

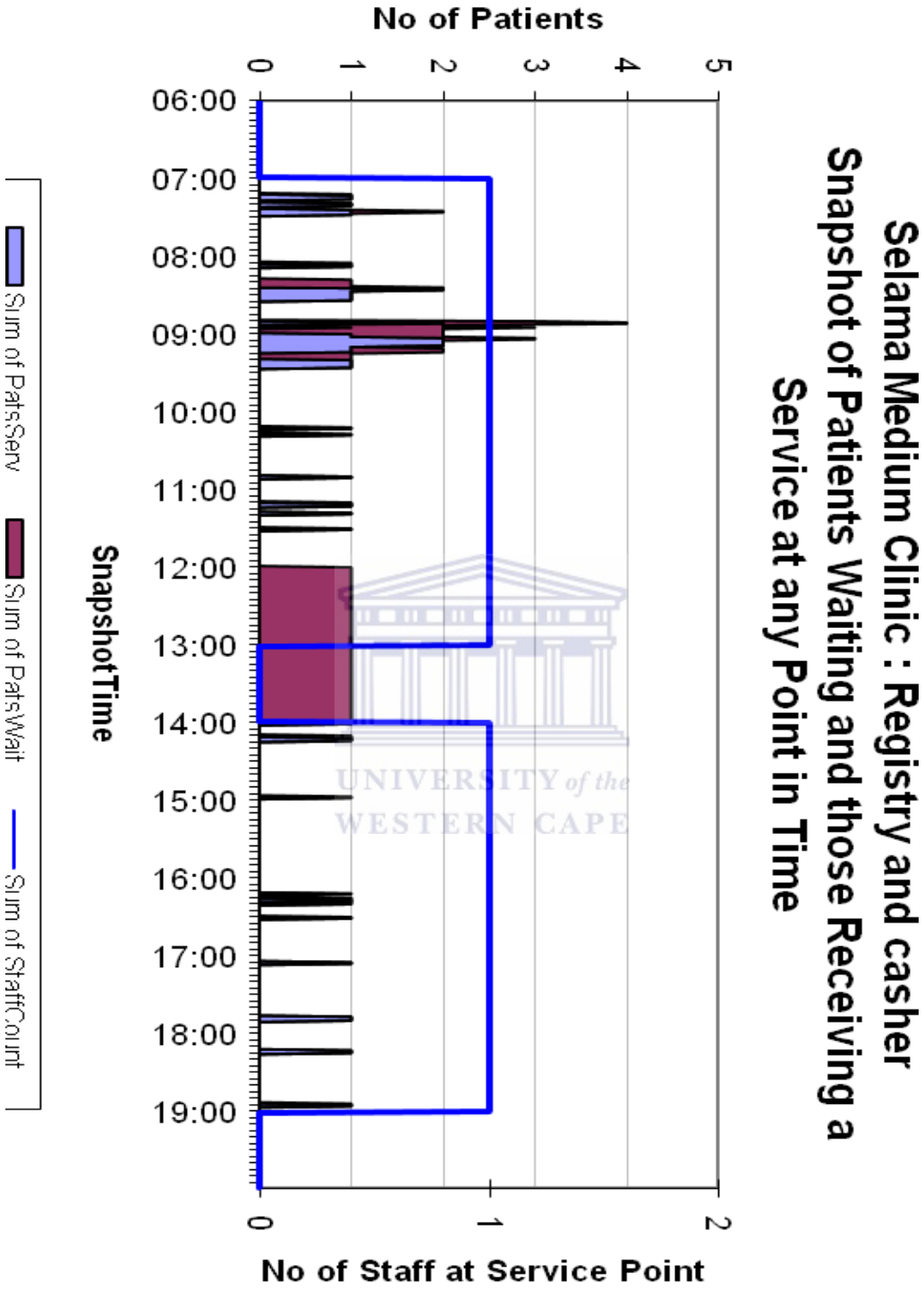


Figure 14: Detailed snapshot report for Registry and casher

Thirteen of the patients (81.3%) characterize their waiting times in the facility as ‘short’ and 3 (18.8%) as ‘acceptable’. The mean and median perceived acceptable waiting time for the facility by the patients was 31 and 20 minutes respectively.

When asked on what time they will prefer to visit the facility, 9 (56.3%) of them said at 8:00 a.m.

Four staff members completed and returned the staff questionnaire. The perceived median maximum and minimum service time per patient was 25 and 2 minutes respectively. Staffs believe that the median patient waiting times to receive their services was 5 minutes (mean 11.25 minutes)

TENSIE MEDIUM CLINIC

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This medium clinic was established in 2005 by a general practitioner. It is found 12 kms south of the city centre in a suburb called Azezo. The facility is a one room rented building which later partitioned to make 4 rooms. There is a waiting area in front of the building which is enough for 6 people. A total of 4 staff served 20-25 patients per day.

On the day of the survey the facility was visited by 23 patients. Thirteen (59%) were females and the median age of the patients was 15 years. Nine (41%) of the patients visited the facility previously and only two of them had appointment. Fifteen of them walked to the facility and 27.3% used taxi.

The WSTS can be summarized as follows

Summary

No of Staff in Facility	Present	Absent	Total	Equivalent
	3	1 (25.00%)	4	6.50
Patients Seen in Facility	**Total**	**Turned Away**	**Left Voluntarily**	**Med Transport Time (mins)**
	23	0 (0.00%)	0 (0.00 %)	15

Median Complete ST	8	**Median Complete WT**	7
5% Complete ST	2	**5% Complete WT**	1
75% Complete ST	19	**75% Complete WT**	28
95% Complete ST	24	**95% Complete WT**	74

Table 1: Detailed service point report for Tensie Medium Clinic

Service Point	Staff	Patients Seen	Workload	% Staff times Attending to patient	Service Times				Waiting Times			
					Median	5%	75%	95%	Median	5%	75%	95%
Consulting Room - Doctor	3.79	18	4.75	5.16	5	3	6	11	4	0	8	24
Registry and casher	0.94	16	17.07	5.11	1	1	2	3	3	0	7	23
Laboratory	0.92	10	10.91	55	17	6	38	54	4	1	5	7
Injection Room	0.85	7	8.2	4.39	2	2	3	4	2	0	6	10
Dressing Room	0	1	0	0	13	13	13	13	1	1	1	1

The complete median waiting time for the facility was 7 minutes (With 5th and 95th percentile of 1 and 6 minutes respectively). Contact with the Doctor, Cash and Registry office and Injection room has median partial waiting times of less than 3 minutes (Figure 4-19). In general patients spent only 31.4% of their time in the facility waiting. Both complete and partial waiting times are excellent.

Service times

Staff spent less than 30% of their working time attending patients.

The complete median service time for the facility was 8 minutes (5^{th} and 95^{th} percentile being 2 and 24 minutes respectively. As shown in Table 1 more of patient time is spent providing services.

Though the complete and partial service times were excellent there is a chance to increase the service time especially with the Doctor as the percentage staff clinical time usage was very low.

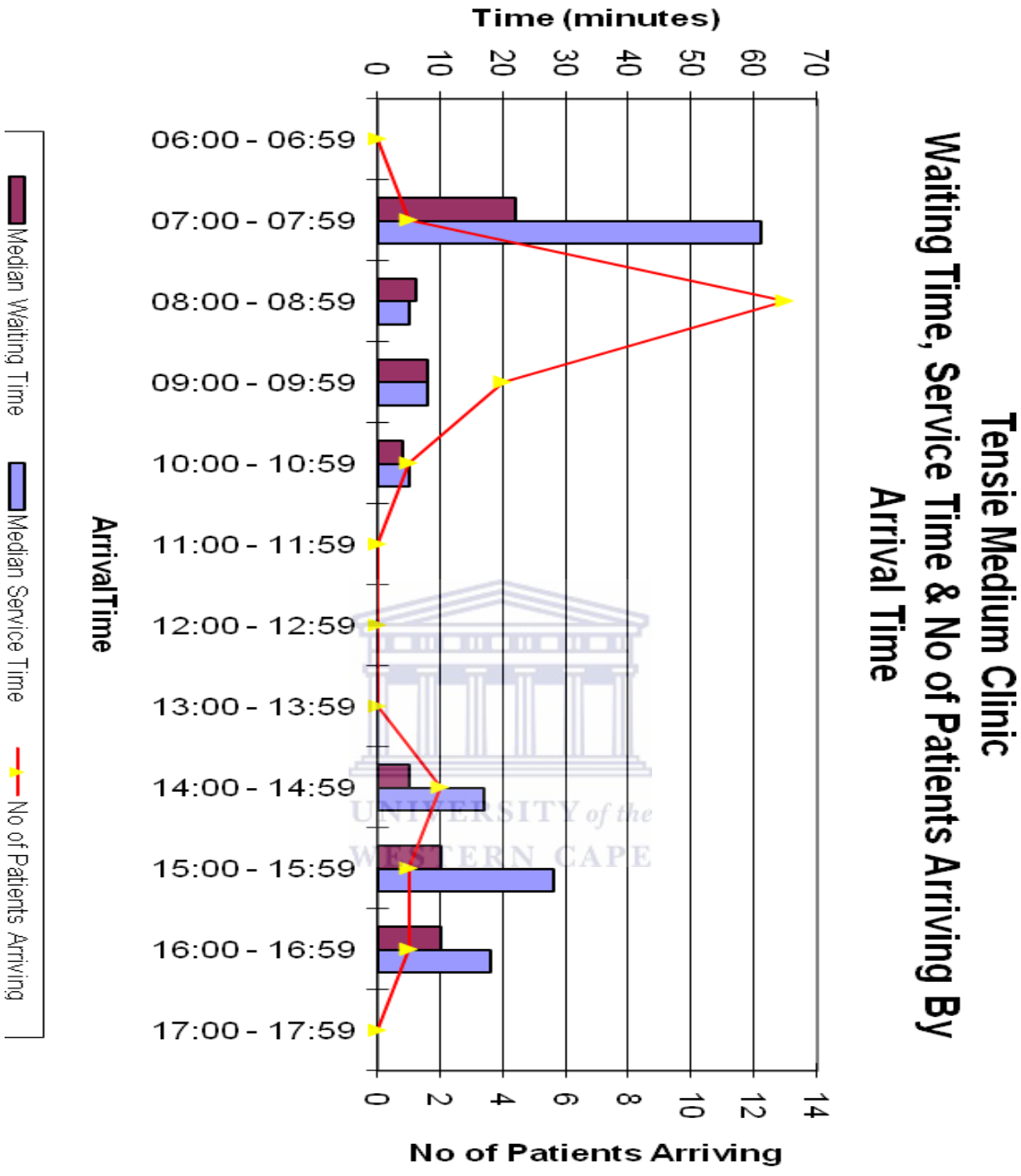

Figure 1: Detailed arrival time report for the whole survey

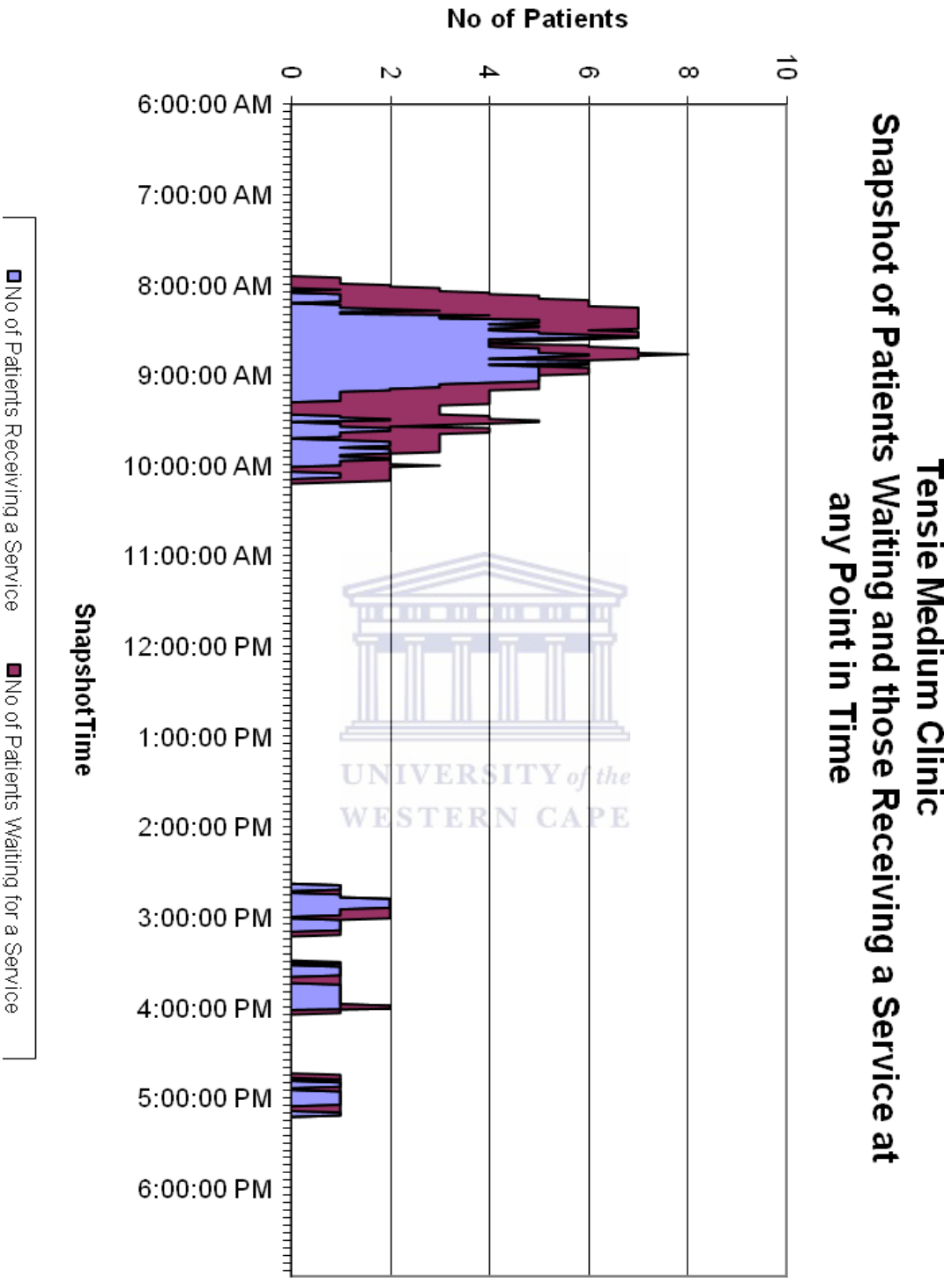

Figure 2: Detailed snapshot report for the whole survey

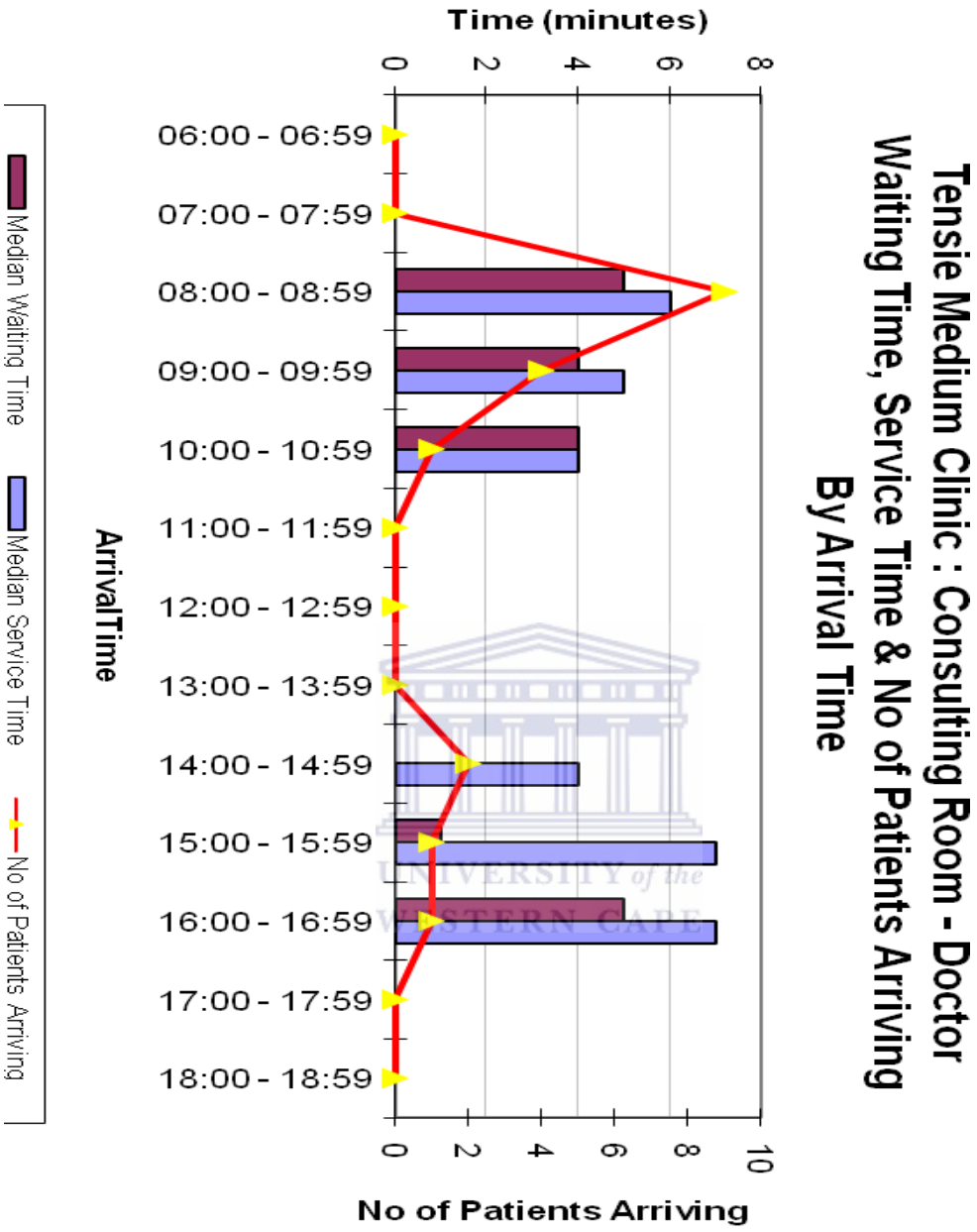

Figure 3: Detailed arrival time report for consulting room-Doctor

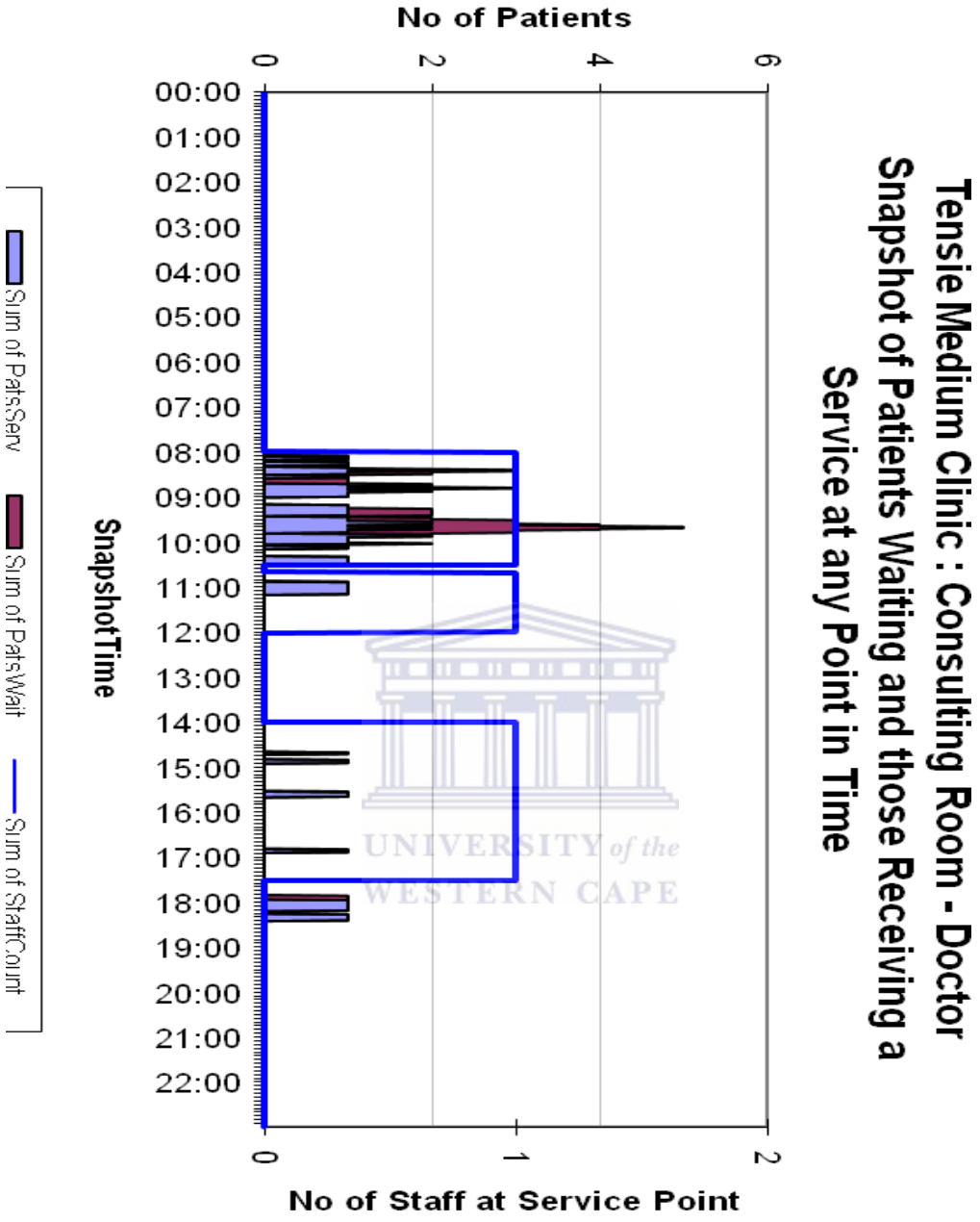

Figure 4: Detailed snapshot report for Consulting room- Doctor.

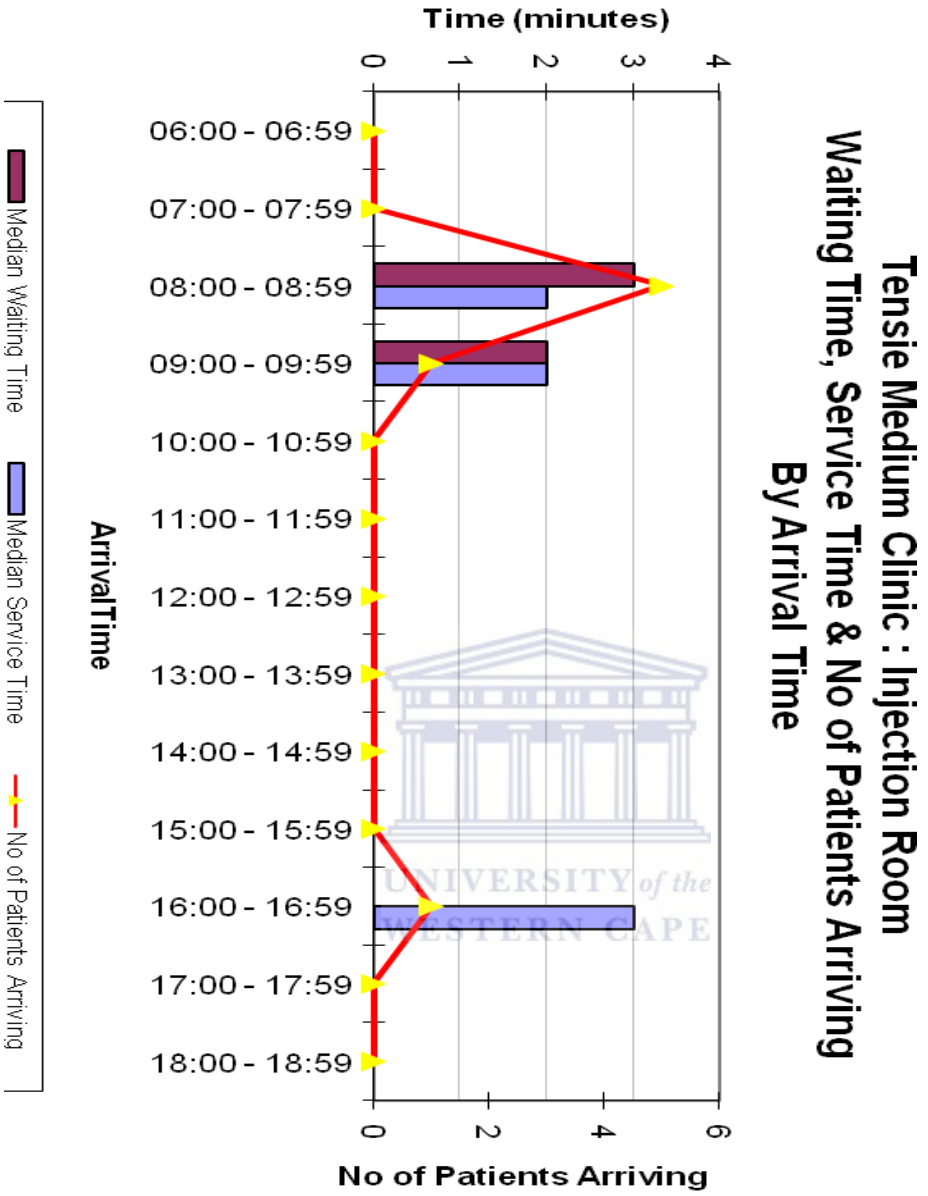

Figure 5: Detailed arrival time report for Injection Room.

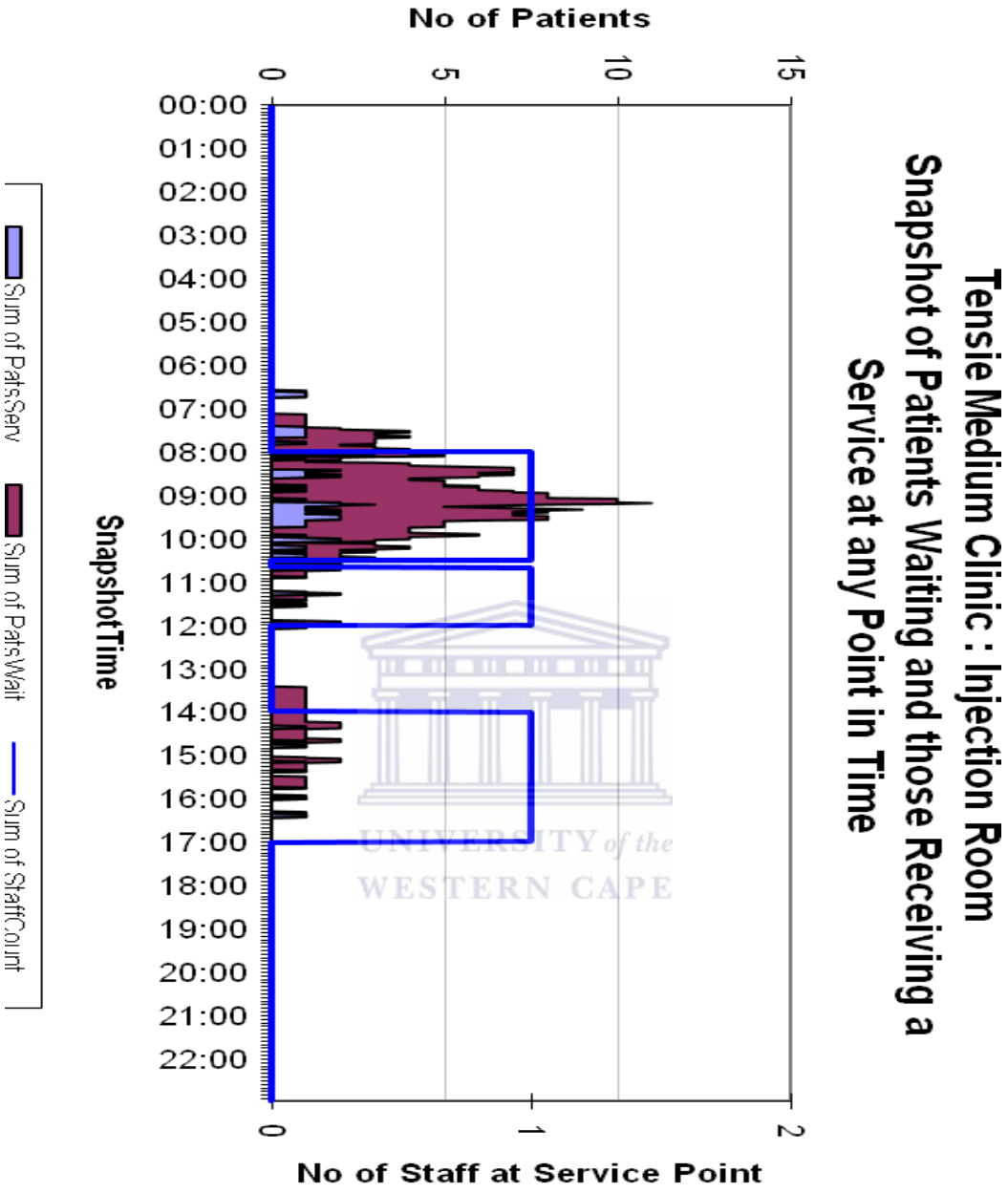

Figure 6: Detailed Snapshot report for injection room.

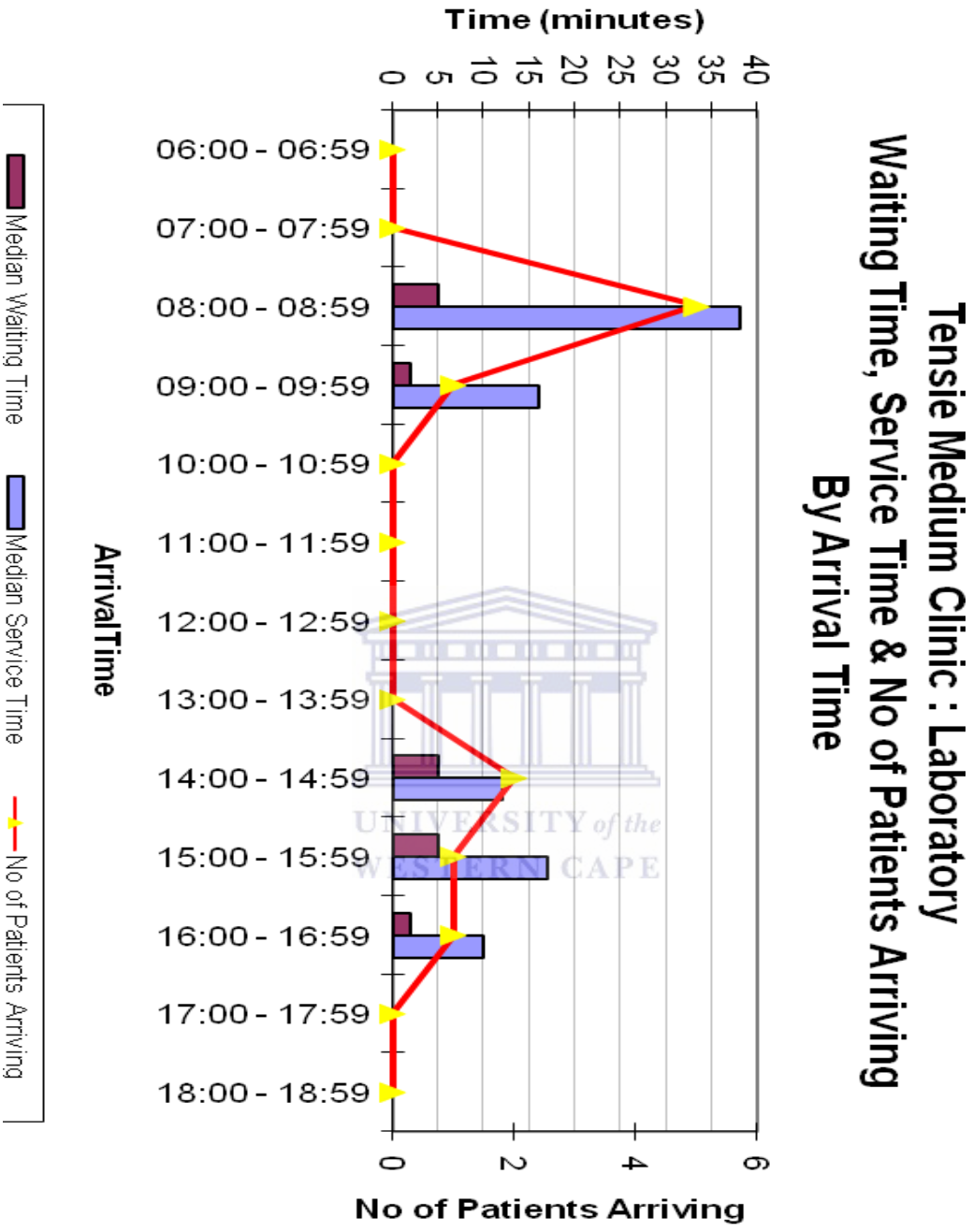

Figure 7: Detailed arrival time report for laboratory.

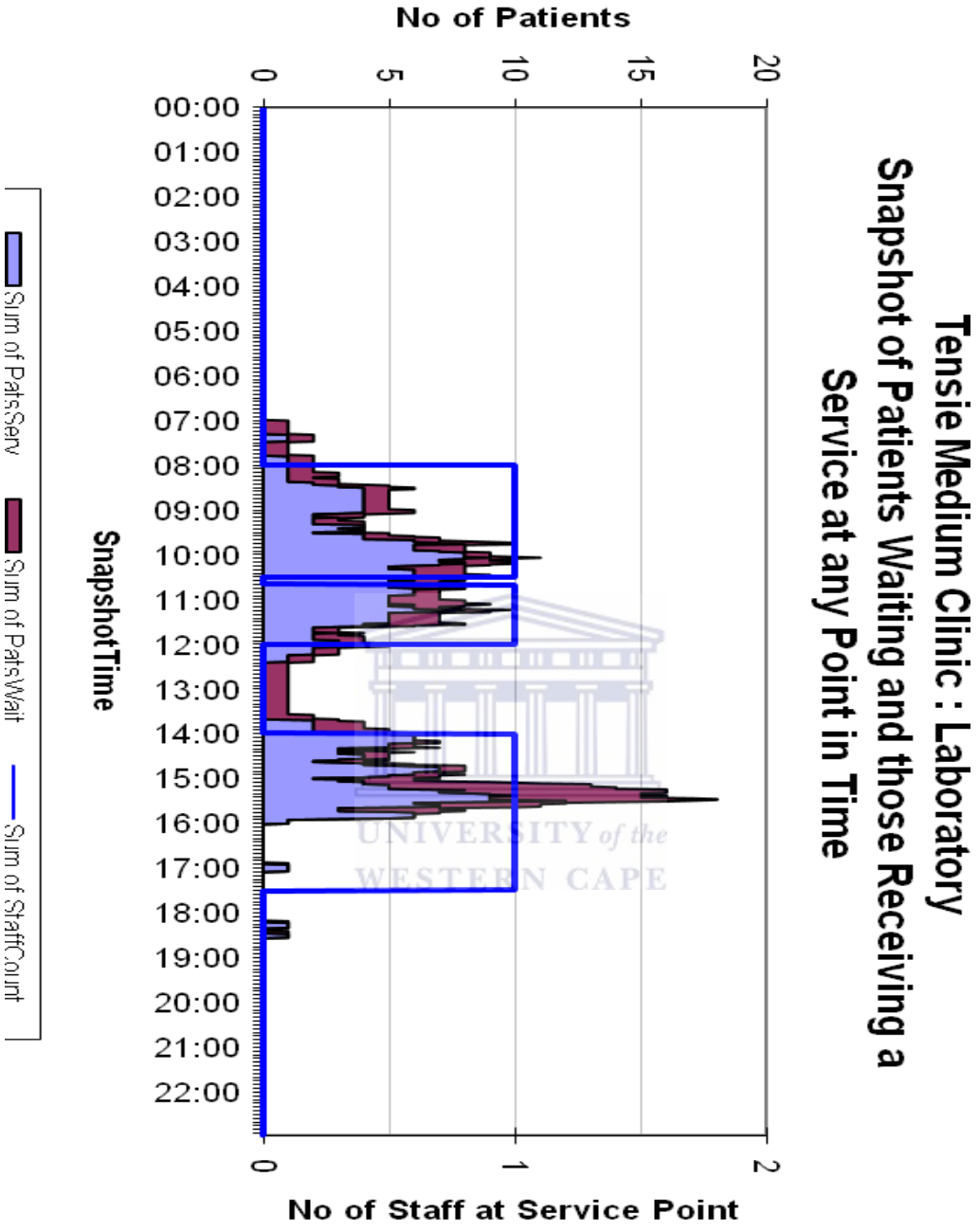

Figure 8: Detailed Snapshot report for laboratory.