THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

Maternal and Perinatal Death Surveillance and Response (MPDSR) Report for Six Years (2018–2023)

Unlocking the Stories Behind the Numbers

March 2025

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Foreword

Tanzania has committed to the Sustainable Development Goals (SDG) of reducing the global maternal mortality ratio (MMR) to less than 70 per 100,000 livebirths, neonatal mortality rate (NMR) to less than 12 per 1,000 livebirths and the under five mortality rate to less than 25 per 1,000 livebirths. The SDG commitments are reflected in the Tanzania Development Vision 2025, Health Sector Strategic Plan (HSSP V 2021–2025) and National Plan for Reproductive, Maternal, Newborn, Child and Adolescent Health and Nutrition, 2021–2026 (One Plan III).

The Tanzania Demographic Health Survey (TDHS) has reported a declining trend in maternal mortality from 556 per 100,000 livebirths in 2015/2016 to 104 per 100,000 livebirths in 2022 and in child mortality from 67 per 1,000 livebirths in 2015/2016 to 43 per 1000 livebirths in 2022. A slight decline has been observed in the Neonatal Mortality, from 25 per 1,000 livebirths in 2015/2016 to 24 per 1,000 livebirths in 2022, and in the perinatal mortality rate (PMR), from 39 per 1,000 livebirths in 2015/16 to 38 per 1,000 livebirths in 2022.

This MPDSR report for Six Years (2018–2023) describes the burden of maternal and perinatal deaths in Tanzania and the implementation of the maternal and perinatal death surveillance and response (MPDSR) system and makes recommendations for improving the quality of maternal and newborn care services. As we present this report to our esteemed stakeholders, we are steadfast in our conviction that its findings will serve as a beacon guiding evidence based decision making processes. It is our unwavering belief that this comprehensive assessment will play an instrumental role in shaping policy formulation, facilitating programme implementation and fostering a culture of continual review and refinement.

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Acknowledgements

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Acronyms

AGOTA	Association of Gynecologists and Obstetricians of Tanzania
BEmONC	Basic Emergency Obstetric and Newborn Care
ANC	Antenatal Care
CEmONC	Comprehensive Emergency Obstetric and Newborn Care services
DHIS2	District Health Information Software 2
DNMS	Directorate of Nursing and Midwifery Services
DRCHCo	District Reproductive and Child Health Coordinator
DRMCH	Directorate of Reproductive, Maternal and Child Health
ESAR	Eastern and Southern African Regions
ENND	Early Neo-Natal Death
FSB	Fresh Stillbirth
GIS	Geospatial Information System
HFR	Health Facility Register
HMIS	Health Management Information System
ICD	International Classification of Diseases
ICD-MM	International Classification of Disease-Maternal Mortality
ICD-PM	perinatal mortality
iMMR	Institutional Maternal Mortality Ratio
KII	Key Informant Interviews
MC	Municipal Council
MERL	Monitoring, Evaluation, Research and Learning
MSB	Macerated stillbirth
MMR	Maternal Mortality Ratio
MoH	Ministry of Health
MPDSR	Maternal and Perinatal Death Surveillance and Response
NCH	Newborn and Child Health

NMR	Neonatal Mortality Rate
PAT	Pediatric Association of Tanzania
PIH	Pregnancy Induced Hypertension
PMR	Perinatal Mortality rate
PNC	Post Natal Care
PORALG	President's Office Regional Authority & Local Government
PPH	Post Partum Haemorrhage
RCH	Reproductive and Child Health
RMNACH	Reproductive, Maternal, Newborn, Adolescent & Child Health
RRCHCo	Regional Reproductive and Child Health Coordinator
SBR	Stillbirth Rate
SATA	Surgical Association of Tanzania
SMI	Safe Motherhood Initiative
SSA	Sub-Saharan Africa
TAMA	Tanzania Midwives Association
TC	Town Council
TDHS	Tanzania Demographic Health Survey
UNFPA	United Nations Population Fund
UNICEF	The United Nations Children's Fund
UN-IGME	United Nations Inter-agency Group for Child Mortality Estimation
UN-MMEG	United Nations Maternal Mortality Estimation Inter-Agency Group
WHO	World Health Organization

Introduction

Maternal and newborn mortality is a significant public health challenge worldwide. Each year, there are more than 287,000 maternal deaths – a woman dies every two minutes from pregnancy-related complications – and most of these deaths are preventable when proper care is provided at the right time (1). Every year, more than 2.6 million newborn deaths and 1.9 million stillbirths take place worldwide. The 2023 report of the United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME) estimated that a single neonatal death occurs every 14 seconds (2).

The sub-Saharan Africa (SSA) region accounts for up to 77 per cent of all maternal deaths and 20 per cent of stillbirths. Maternal mortality ratio (MMR) is the total number of deaths per 100,000 livebirths in a specified period while institutional Maternal Mortality Ratio (iMMR) refers to the number of maternal deaths that occur in healthcare facilities per 100,000 livebirths within those institutions. In the year 2020, the SSA region had the highest MMR, at 545, and the lifetime risk of maternal mortality is a staggering 1 in 40 women (1). Moreover, currently, newborn deaths account for 34 per cent of global neonatal mortality and the majority of deaths occur largely from preventable causes such as perinatal asphyxia (2). Unless these outcomes improve, 42 out of 47 countries in the SSA region will not achieve the 2030 Sustainable Development Goals (SDG) targets (1).

Tanzania is one of the countries in the Eastern and Southern African region (ESAR) with challenges in maternal and newborn health outcomes (1,2). The Ministry of Health (MoH) has been making efforts over the past decade to improve these outcomes by addressing the three delays: delay in seeking care (first level delay), delay reaching health facilities (second level delay) and delay in receiving appropriate care at health facilities (third level delay). These efforts – constructing and upgrading facilities to provide comprehensive emergency obstetric and newborn care services (CEmONC), recruiting and deploying more health care providers, increasing budget allocation to the MoH and enhancing capacity building at all levels of service provision – have reduced maternal mortality significantly.

In 2023, the United Nations Maternal Mortality Estimation Inter Agency Group (MMEIG) reported that the MMR in Tanzania fell from 760 in 2000 to 238 in 2020 (1).The Tanzania Demographic Health Survey (TDHS) estimated in 2022 that the MMR fell 80 per cent from 556 in 2015/16 (4) to 104 in 2022 (3); 203 stillbirths were recorded, however, equivalent to 18 stillbirths per 1,000 pregnancies, and nearly the same stillbirth rate (SBR) as in the 2015/16 TDHS. The neonatal mortality rate (NMR) represents the number of deaths (in the first 28 completed days of a newborn's life) per 1,000 livebirths while institutional Neonatal Mortality Ratio (iNMR) refers to the

number of neonatal deaths that occur in healthcare facilities per 100,000 livebirths within those institutions; the NMR has remained stagnant at 24 (3). The perinatal mortality rate (PMR) is the total number of perinatal deaths (stillbirths and early neonatal deaths) reported during a certain period institutional Perinatal Mortality Ratio (iPMR) refers to the number of perinatal deaths that occur in healthcare facilities per 100,000 livebirths within those institutions (3). Additionally, in 2022, UN IGME estimated that its number of stillbirths (43,000) and neonatal deaths (46,000) places Tanzania among the top 10 countries globally (5,6).

To effectively reduce maternal and newborn deaths, the World Health Organization (WHO) has approved a variety of high impact interventions: provision of quality and timely antenatal care (ANC), skilled birth attendance, emergency obstetric and newborn care (EmoNC) and essential newborn care. Maternal and perinatal death surveillance and response (MPDSR) is a key quality improvement tool; if implemented effectively, MPDSR has the potential to prevent up to 35 per cent of maternal deaths and 30 per cent of perinatal deaths (7).

1.1 The process of implementing maternal and perinatal death surveillance and response (MPDSR) in Tanzania

The MPDSR process is a continual action cycle of identification and notification, review and analysis of maternal and perinatal deaths; it is followed by taking action to prevent deaths (8) (*see Figure 1*). Tanzania is among the early adopters of the MPDSR process in the WHO AFRO Region.

Figure 1: The maternal and perinatal death surveillance and response (MPDSR) cycle
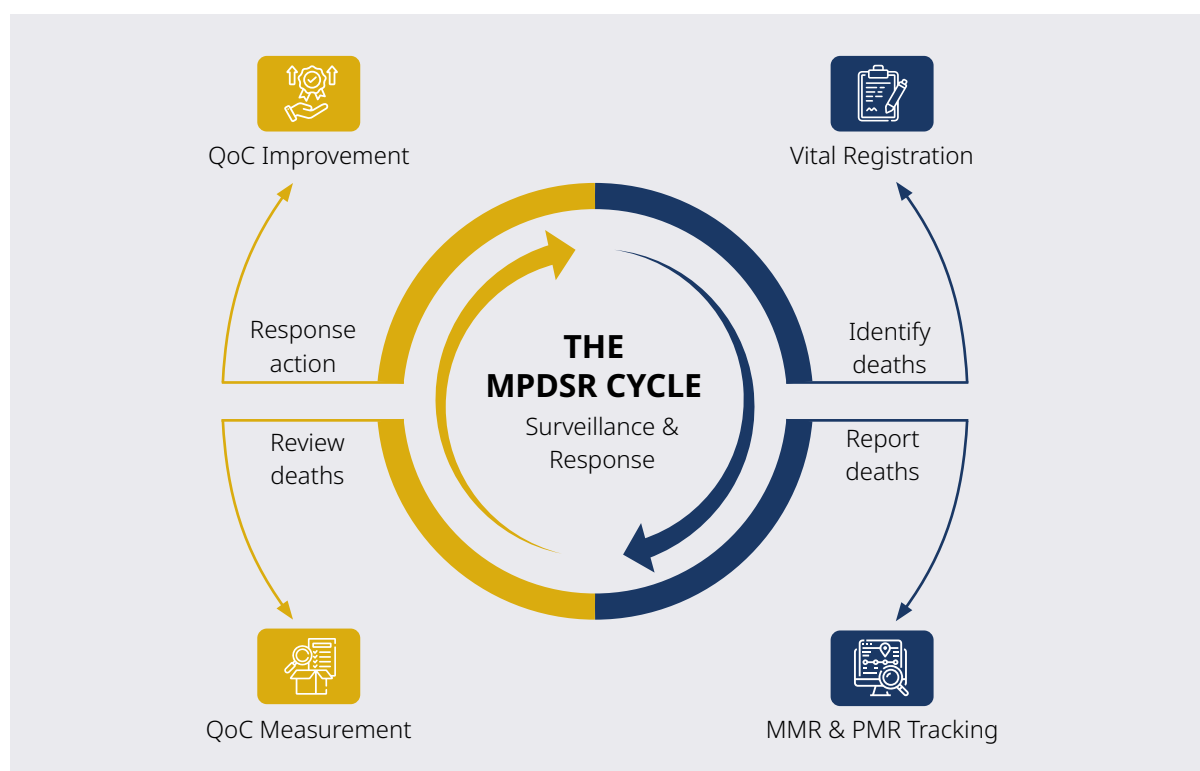
The efforts made to review maternal and perinatal deaths in Tanzania date to 1984, when death reviews focused solely on maternal death surveillance and response (MDSR) (9). From 2006 to 2015, the country expanded its death audits to include perinatal deaths as well, leading to the adoption of the WHO nomenclature, MPDSR. This change coincided with the release of the National Plan For Reproductive, Maternal, Newborn, Child And Adolescent Health & Nutrition (2021/2022 - 2025/2026) (10). This plan highlighted the importance of adopting a systematic, integrated approach to monitoring, and responding to, maternal and perinatal deaths. Between 2015 and 2021, the MPDSR evolved, and it embraced the use of innovative approaches such as the establishment of maternity WhatsApp groups and Zoom meetings to improve notification and case reviews (11). All the health facilities in Tanzania that offer maternal and child health services – as well as the district, regional and national health authorities – currently implement MPDSR.

1.2 Rationale

Having made significant progress in reducing maternal mortality, Tanzania is now focusing on sustaining the gains and reducing newborn and perinatal mortality. The implementation of MPDSR is on track, as demonstrated by various studies, including those conducted in the Kagera, Mara, Morogoro and Lindi regions (12,13,14). However, despite the improvements in maternal mortality and the successful implementation of MPDSR, the national-level information on the implementation and performance of MPDSR using routinely collected data is limited.

To address this gap, the MoH has developed a six-year MPDSR report covering the period from 2018 to 2023. This report highlights the progress, opportunities and barriers related to the components of MPDSR, including system performance and challenges, maternal and perinatal death burden, programmatic response and recommendations for improvement.

This report will provide valuable information to the Government, relevant stakeholders, development partners, civil society organizations (CSO), the private sector and the community. It will shed light on the country's progress in addressing maternal and perinatal death, including geographical coverage, sociodemographic characteristics, causes and contributing factors. Furthermore, this report will emphasize the performance of MPDSR and identify challenges in preventing future deaths and opportunities for improvement.

1.3 Objectives

The overall objective is to describe the implementation status of the MPDSR process, the six-year burden of maternal and perinatal deaths and the recommendations for improving the quality of maternal and newborn care services in Tanzania.

The specific objectives are to:

◆ Describe the implementation of the MPDSR system in Tanzania.

◆ Describe the six-year (2018–2023) burden of maternal and perinatal deaths, including geospatial mapping.

◆ Identify the factors that contribute to maternal and perinatal deaths and develop actionable recommendations to prevent deaths in the future.

Methodology

To develop this six-year MPDSR report, the MoH collected and analysed data; this chapter outlines how and presents the ethical considerations.

2.1 Data collection and initial processing

The data was obtained from six-year maternal and perinatal notification data, maternal and perinatal death review data for 2022 and interviews with MPDSR stakeholders.

2.1.1 Six-year maternal and perinatal notification data

Deaths at the facility or community level were reported using the maternal or perinatal death notification form at the facility and then to the relevant council.

The Regional Reproductive and Child Health Coordinator (RRCHCo) summarized the weekly maternal and perinatal deaths in the region in an Excel file and submitted it to the MoH. Information shared with the MoH include individual records of maternal death cases – with details such as council, age, gravidity, parity, place of death, cause of death – and the aggregated number of perinatal deaths, alongside the category of death – macerated stillbirth (MSB), fresh stillbirth (FSB) or early neonatal death (END).

The MoH merged the weekly aggregated maternal and perinatal death notification data from 1 January 2018 to 31 December 2023 into two separate data sets: one for data on maternal deaths, with eight variables, and the other for perinatal data, with five variables. Additional data points, such as the number of livebirths and total deliveries, were obtained from DHIS2, a platform where all functional and reporting health facilities submit their data.

2.1.2 Maternal and perinatal death review data for 2022

Maternal and perinatal deaths at a facility or community were reviewed at the health facility and review forms were filled in. Copies of completed review forms were then submitted to the respective districts and regions and, ultimately, to the MoH. The MoH does not routinely analyse the submitted maternal and perinatal review forms.

To supplement this report, we also presented findings from a complete analysis of the reviewed maternal and perinatal deaths. Trained data clerks entered conveniently sampled forms of maternal and perinatal deaths in 2022 – the most recently available and retrievable forms – into

Excel. Task force members who know the MPDSR process and are experienced in it checked the quality of the data by verifying a random sample of entered data against the original source.

2.1.3 Interviews with MPDSR Stakeholders

Qualitative data was collected through key informant interviews (KII) with a subset of stakeholders to explore the implementation and functionality of MPDSR at each level. The key informants included MPDSR experts at the MoH and PO RALG and among development and implementing partners, professional and academic associations, RRCHCos, District Reproductive and Child Health Coordinators (DRCHCo), MPDSR and health management information system (HMIS) focal persons and health care providers across health facilities at all levels. The KIIs were conducted in five purposefully selected regions – Dar es Salaam, Dodoma, Mwanza, Mbeya and Songwe. A structured interview guide that was pre tested before data collection, was used.

2.2 Data analysis

We used Excel and Stata (version 14) to clean and analyse the data. We used Q GIS (version 3.34) to visualize the data. The task force team held consultative meetings to clean the data sets, align the indicators and agree on the framework for the final analysis report.

During data cleaning, the MoH, UNICEF and WHO classified and grouped the causes of maternal and perinatal death guided by the WHO application of the tenth revision of the International Classification of Diseases (ICD 10) to deaths during pregnancy, childbirth and the puerperium (ICD maternal mortality (ICD MM) and during the perinatal period (ICD perinatal mortality (ICD PM).

First, the specified underlying causes of maternal and perinatal deaths were coded as per ICD 10. The causes of maternal death during pregnancy, childbirth and the puerperium were classified into nine groups as per ICD MM. Last, the nine groups were categorized into direct or indirect causes of maternal death. For perinatal deaths, the causes of death were assigned into six groups for antepartum related causes, seven groups for intrapartum and eleven groups for neonatal causes of deaths as per ICD PM. Descriptive statistics were summarized using frequency and proportions, means and relevant standard deviation.

The institutional MMR was computed as the number of maternal deaths that occur in healthcare facilities per 100,000 livebirths within those institutions in a specified period. The institutional PMR was computed as the total number of perinatal deaths that occur in healthcare facilities per 100,000 livebirths within those institutions. The annual average rate of reduction (AARR) for MMR was computed in percentage terms as the average relative decrease per year.

Audio recordings were transcribed and translated into English. Qualitative data analysis deployed the Framework Method, a systematic process for deriving insights from qualitative data. The qualitative analysis started with an open ended initial coding to encompass diverse perspectives. Subsequently, the perspectives were refined into codes, then into categories, forming a working analytical framework. Each code was assigned a unique identifier for easy reference. Consistent

application of the analytical framework was done by indexing subsequent transcripts to enable systematic data comparison. Data was charted into a matrix for effective summarization and management. Final data interpretation involved identifying recurring themes, patterns and key concepts related to the functionality of the MPDSR.

2.3 Ethical considerations

All maternal and perinatal data were de identified. Only the authorized personnel could access the data. Data clerks were trained on the basic principles of human subject research and signed a data confidentiality agreement. Verbal informed consent was sought from stakeholders before the interview was conducted. To ensure confidentiality, personal identifiers were not collected. The interviews were conducted with the utmost privacy, and only the MoH could access the anonymized data.

CHAPTER 03

Findings

This chapter presents the results corresponding to the major objectives of the report: the implementation and functionality of the MPDSR process; results from the six-year analysis; and the results 'beyond the numbers', i.e., the results from a deep dive analysis of the 2022 maternal and perinatal review data.

Table 1: Interviews of key informants

Region	Profile	Respondents (number)
Dar es Salaam	RRCHCo DRCHCo District MPDSR focal person HMIS focal person Health care provider	8
Mwanza	DRCHCo District MPDSR focal person Facility MPDSR focal person HMIS focal person Health care provider	8
Mbeya	RRCHCo DRCHCo District MPDSR focal person HMIS focal person Health care provider	6
Songwe	DRCHCo District MPDSR focal person Health care provider	3

Region	Profile	Respondents (number)
MoH and other stakeholders	MPDSR focal person (DRMCH SMI coordinator (DRMCH) MERL coordinator (DRMCH) NCH coordinator (DRMCH) MPDSR focal person (DNMS)	12
	RMNCH coordinator (PO-RALG)	
	Representative (UNFPA)	
	Representative (USAID, JHPIEGO)	
	Representative (MUHAS)	
	Representative (AGOTA)	
	Representative (PAT)	
	Representative (TAMA)	

3.1 Implementation and functionality of MPDSR

A total of 37 key informant interviews were done with stakeholders involved in MPDSR at different levels (*see Table 1*). All the respondents reported that they were aware of the MPDSR guideline and implementing it at their institution or health facility, though a few were unaware of the version currently in use.

> *We have the MPDSR guideline, I am not sure if it is the latest one, but we are using the 2018 version.*
>
> Respondent 1, **Dar es Salaam**

> *Yes, we have an MPDSR guideline, I don't remember exactly which year it was published, but we have it.*
>
> Respondent 2, **Mbeya**

At each level, the respondents reported having a dedicated MPDSR focal person and MPDSR committee; however, some were not sure that the appointed members had an official appointment letter:

> *I am not sure if they have or were given appointment letters, because even me, I didn't get that letter when I was appointed.*
>
> Respondent 1, **Dar es Salaam**

Most respondents reported that at their level of operation a specific schedule was being implemented: weekly at the health facility level and monthly at the district level. Some, however, said:

> *According to the MPDSR guideline we are supposed to do maternal reviews monthly, but sometimes we do it quarterly, because we need other stakeholders from private institutions, who will also need to be paid but, due to lack of fund, this delays the review process.*
>
> Respondent 2, **Dar es Salaam**

> *We don't have a specific schedule for maternal reviews, but we review maternal and perinatal deaths within seven days of their occurrence.*
>
> Respondent 1, **Mbeya**

> *The member composition in MPDSR committee meetings has not been as stipulated in the guideline, mostly missing subject matter specialists (ob gyn, paediatricians) at primary health care facilities ... and this has impacted the quality of reviews, failure to deep dive/dissect into cases and establish the root causes.*
>
> Respondent 5, **MoH and others**

3.1.1 MPDSR capacity

Most interviewees reported that their team members and they had received formal training on MPDSR; some, however, had received on the job orientation:

> *I didn't receive any formal training, but I was oriented on how MPDSR operates.*
>
> Respondent 1, **Mwanza**

Some respondents said that managers, too, should be trained in MPDSR:

> *We also need to train the health managers (District Medical Officers and Regional Medical Officers) so that they can oversee MPDSR in their authorities rather than just leaving it to the Regional Reproductive Child Health Coordinator and District Reproductive and Child Health Coordinator.*
>
> Respondent 1, **MoH and others**

> *Capacity building in assigning cause of death as per ICD MM and ICD PM should be conducted among facility level health care providers to improve the quality of review and notification.*
>
> Respondent 5, **MoH and others**

3.1.2 MPDSR reviews

During interviews, most of the respondents reported that during reviews of maternal and perinatal death they observe the 'no name, no blame, no shame' rule; however, some staff members do get careless and use their names.

> *To be frank, we normally observe the 'no name, no shame, no blame' rule, but there are times where people are careless and do not observe this rule.*
>
> Respondent 1, **Dar es Salaam**

One respondent felt that the 'no name, no blame, no shame' rule should be omitted from the guideline so that staff members can be held responsible for acts of negligence resulting in maternal or perinatal death and punished and, therefore, act more responsibly.

> *It's high time we instill strict measures against anyone who acts negligently because such acts may result in maternal and perinatal deaths. The no name, no shame no blame rule should be revisited in the coming guideline.*
>
> Respondent 2, **MoH and others**

Other participants expressed their concerns around the review of perinatal deaths.

> *The current MPDSR review does not allow [have a clear mechanism] to determine the specific causes of perinatal deaths. For instance, we can have a number of children who had an Apgar score of less than seven, or those who were assisted in breathing, but the system does not further allow one to know how many of those died or survived.*
>
> Respondent 1, **MoH and others**

> *The MPDSR process is well institutionalized, and meetings are happening at all levels; however, there is a challenge on the review rate, especially for maternal deaths in tertiary care facilities and perinatal death at the primary and tertiary care levels.*
>
> Respondent 4, **MoH and others**

3.1.3 Identification of dysfunctions and development of action plans

Most of the respondents reported that they usually draft action plans depending on existing gaps or facility needs – shortage of staff, or lack of drugs and some necessary equipment – elicited during maternal and perinatal death reviews. The drafted action plans are tasked to specific people and the results are measured against the drafts. Participants also mentioned that they normally set a time frame for implementation. Evaluation is conducted monthly during facility supportive supervision.

> *We normally set action plans depending on facility gaps. For example, If the gape is partograph filling, then we assign labour ward in charge to work on it. The time frame for evaluating action plan achievement is one month.*
>
> Respondent 3, **Mbeya**

In implementing the drafted action plans, the respondents mentioned several barriers: inadequate equipment, lack of skilled personnel, high number of referrals, shortage of funds and poor attendance at the MPDSR meeting for the maternity ward staff that were involved in the management of the deceased mother.

> *Currently, we don't have any challenges but, previously, we faced financial problems in covering costs or expenses needed for action plan implementation.*
>
> Respondent 3, **Dar es Salaam**

One respondent pointed out that implementers lack the willingness to develop actionable plans and hence difficult to make response.

> *I can say at times the implementers are just not willing! For example if an agreed action plan is to conduct mentorship for staff on the management of post partum hemorrhage (PPH); this can take up to three months without any implementation.*
>
> Respondent 3, **MoH and others**

Whenever they wanted to implement an action plan, most of the respondents reported, the administration supported them fully, but a few reported challenges with the procurement chain, and others were apprehensive of potential legal action in the case of maternal death.

> *Apparently there are no any challenges related to administration when it comes to implementation, but some MPDSR staff members do not attend meetings because they fear being sued.*
>
> Respondent 1, **Dar es Salaam**

3.1.4   Maternal and perinatal deaths notification and reporting channels from facility/community to the national level

When a maternal death occurs, the head of the department or health facility matron reports it within 24 hours to the DRCHCo, who reports to the RRCHCo; when a perinatal death takes place, it is reported within 7 days (*see Figure 2*). However, some respondents reported that the person in charge of the on site team reports it to the hospital matron, who reports it to the medical officer in charge, who reports it to the DRCHCo, who finally reports it to the RRCHCo. Perinatal deaths are reported in the aggregate, not individually.

> *Notification of maternal or perinatal deaths starts from the on site team in charge to the head of the department and then to the hospital medical officer in charge. The matron or hospital medical officer in charge will report to the CRHCo. This flow of information will start within 24 hours of the occurrence of death.*
>
> Respondent 1, **Mbeya**

> *We always receive perinatal death data aggregated at the council level. I suggest that perinatal deaths be reported by case to enable the regional and national level teams to identify and address issues that need immediate intervention.*
>
> Respondent 5, **MoH and others**

> *The council level reporting personnel and the MPDSR focal person need to be trained to monitor MPDSR review and notification data quality.*
>
> Respondent 4, **MoH and others**

Figure 2: The flow of data on maternal and perinatal deaths from facilities to the national level
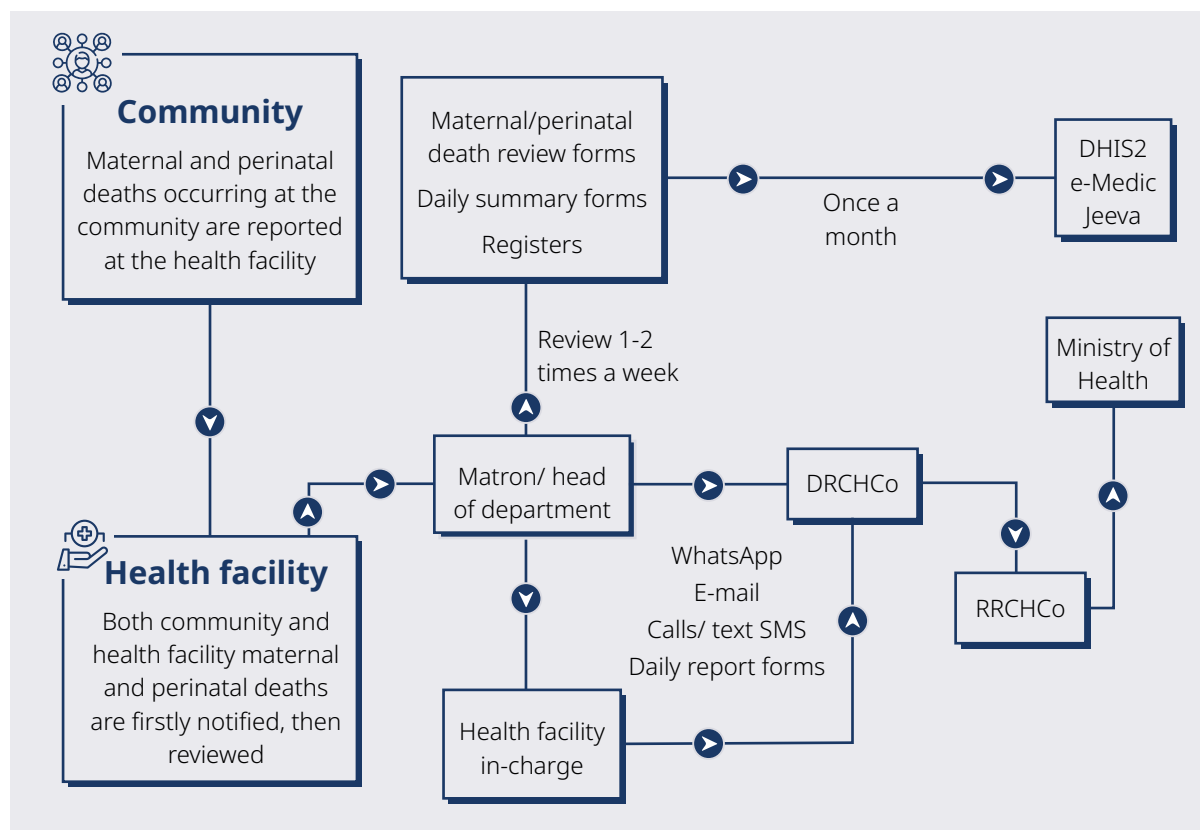
Some participants said that usually information from the site of occurrence is reported to the DRCHCo via WhatsApp.

> *We have our WhatsApp group for on-site staff so that members can shout for emergency help but, if death occurs, the head of department or matron will communicate it to the DRCHCo through WhatsApp soon as possible. The information will continue to flow from the DRCHCo to the RRCHCo until it reaches the national level.*
>
> Respondent 4, **Dar es Salaam**

> *We use the DHIS2 system to enter cases of maternal and perinatal death with reference to other documents like summary book, register book and daily report form.*
>
> Respondent 5, **Dar es Salaam**

Some staff members prefer to use WhatsApp and daily report forms and enter the information later into the DHIS2 system because they lack the credentials or competence to use the system. Inconsistencies occur as a result: the numbers recorded at the facilities exceed those in the DHIS2.

3.1.5   MPDSR documentation and data use

Most of the respondents reported having a dedicated MPDSR file at their regional, district or health facility, but some reported not having one or not being sure of having one.

> *In the labour ward we don't have an MPDSR file but I think the MPDSR focal person may be having it.*
>
> Respondent 2, **Mbeya**

> *In our district we don't have a specific MPDSR file.*
>
> Respondent 1, **Mbeya**

Only few DRCHCos reported that, they normally analyse near miss cases during the district MPDSR committee meetings. Other districts do not review the near miss cases.

> *The response part still needs improvement. The problem starts with the action plans developed during the reviews. In some cases, action plans have not captured the actual dysfunctions ... and therefore the response may have targeted the wrong issues ... and accountability to follow up on the implementation of agreed actions still need improvement.*
>
> Respondent 5, **MoH and others**

> *The MPDSR system has been well established at the facility, council and regional level. It is about time now the reporting be shifted from a paper based system to an electronic system for record keeping and quick transmission of information from the council to the national level.*
>
> Respondent 5, **MoH and others**

3.1.6   Usefulness of MPDSR

Participants acknowledged that the MPDSR system has helped in lowering maternal and perinatal deaths.

> *MPDSR has been very usefulness in reducing maternal and perinatal deaths.*
>
> Respondent 2, **Mwanza**

> *I am happy with MPDSR, because it brought many changes, especially when it was transformed to Zoom meetings, where we meet with different medical specialists.*
>
> Respondent 3, **Mwanza**

Moreover, they reported that, MPDSR helped service providers to make self-evaluation and rank their performance. They further reported that, the MPDSR system also simplified the coordination of many reproductive and child health (RCH) activities; the follow up of tasks assigned to staff; and the aiding of the quick flow of information from one level to another.

3.1.7 MPDSR implementation challenges

In using MPDSR, the respondents reported challenges: mismatch of data between MPDSR forms, data collection registers and DHIS2; many tasks are assigned to some members of the MPDSR committee lack of dedicated time among team due to; and some staff members are alleged to knowingly not report information timely.

> *I think the only challenge is staff attitude because sometimes they deliberately don't report information.*
>
> Respondent 4, **Mbeya**

3.1.8 Suggestions to improve MPDSR

Respondents suggested that training staff, especially the newly recruited, can make MPDSR use more efficient. One participant suggested that medical doctors should enter data. Another suggested that electronic data forms (soft copy), rather than hard copy, be used.

> *Data officers who are doing data entry should be medical experts because most of them are not aware of medical terminology.*
>
> Respondent 3, **Mwanza**

Gynaecologists and paediatricians should be recruited, especially at health centres with high volume (> 500 deliveries per month). Referral and zonal hospitals should report maternal and perinatal deaths separately and dedicate efforts to avoid misinformation. The capacity of peripheral facilities should be improved so as to reduce referral cases. A budget should be allocated to fund MPDSR meetings and the on the job training. One participant requested to maintain the 'no name, no blame, no shame rule' as MPDSR is intended for learning, not judgment. Another suggestion was to extend the data collection time frame for community maternal and perinatal deaths, from the current 14 days to at least 28 days – since the relatives of the deceased are still mourning and may have bitter feelings.

> *We should expand the time frame for data collection from 14 days to 28 days.*
>
> Respondent 1, **Songwe**

> *There is a challenge in collecting information from a dead mother's relatives because some questions raise bitter feelings.*
>
> Respondent 1, **Songwe**

3.1.9 Integration of MPDSR and quality improvement (QI) initiatives

All the participants reported that they have a quality improvement (QI) team or a designated QI focal person at their regional, district or health facility. Usually, the teams conduct meetings independently. The QI focal person and some members of the QI team are also part of the MPDSR committee and, depending on the facility and district level schedules, they participate in meetings. Thus, the goals of the MPDSR and QI teams are aligned, and both assess the quality of services, identify gaps, monitor maternal and perinatal indicators and supervise standard operating procedures (SOP).

> *We have a QI team focal person who deals with assessing the quality of services provided and identifying the gaps in services provision. They meet once per quarter.*
>
> Respondent 3, **Mbeya**

Some MPDSR committees comprise QI team members, enabling the quick identification of maternal and perinatal gaps and the formulation of action plans. The quality team focuses on quality issues such as monitoring maternal and perinatal indicators. Mainly, the MPDSR focal person facilitates this linkage between the MPDSR and QI teams. In some areas, the district/ municipal medical officer or the quality assurance head was responsible for linking MPDSR and QI.

3.2 Maternal and perinatal deaths (2018–2023)

3.2.1 Livebirths

Mwanza, Dar es Salaam and Tabora regions reported the highest number of livebirths as shown in Table 2.

Table 2: Livebirths by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023	Overall, 2018–2023
Arusha	61,793	67,023	67,462	68,107	68,258	68,813	401,456
Dar es Salaam	125,602	132,220	146,066	137,102	144,023	158,170	843,183
Dodoma	72,260	84,894	86,323	94,999	93,696	102,593	534,765
Geita	94,695	99,356	100,089	99,915	105,523	115,978	615,556
Iringa	34,907	35,537	35,929	36,994	37,070	36,580	217,017
Kagera	95,742	101,811	102,943	102,150	107,085	115,437	625,168
Katavi	29,705	33,556	36,037	36,485	39,707	46,970	222,460
Kigoma	106,281	107,844	113,076	107,777	107,875	110,299	653,152
Kilimanjaro	43,634	44,258	45,293	46,272	51,536	72,427	303,420
Lindi	27,628	27,819	30,256	31,890	31,612	36,253	185,458
Manyara	39,841	45,682	48,813	53,705	56,046	56,566	300,653
Mara	68,372	79,285	89,507	89,919	94,327	103,058	524,468
Mbeya	70,440	71,453	71,932	72,857	75,384	78,831	440,897
Morogoro	79,179	82,833	86,553	87,984	89,034	100,753	526,336
Mtwara	41,613	41,647	41,288	42,287	39,209	41,114	247,158
Mwanza	140,388	147,793	149,237	143,519	152,928	163,294	897,159
Njombe	25,261	25,239	25,490	25,677	25,284	25,633	152,584
Pwani	54,416	55,677	59,618	58,805	56,984	65,899	351,399
Rukwa	54,430	54,715	57,679	56,786	54,534	57,915	336,059
Ruvuma	53,458	54,454	56,450	58,592	58,629	63,956	345,539
Shinyanga	82,948	79,530	79,172	73,617	79,036	89,476	483,779
Simiyu	61,033	79,122	87,313	86,427	100,879	110,277	525,051
Singida	50,044	59,704	58,466	63,482	62,565	70,185	364,446
Songwe	38,706	42,254	44,872	45,076	48,256	48,388	267,552
Tabora	118,886	129,554	137,063	121,730	119,470	129,881	756,584
Tanga	59,431	62,104	65,773	71,471	71,788	75,742	406,309
Total	**1,730,693**	**1,845,364**	**1,922,700**	**1,913,625**	**1,970,738**	**2,144,488**	**11,527,608**

3.2.2 Maternal deaths by age

A total of 9,668 maternal deaths were reported over six years (2018–2023); information on age was captured for 7,898 of these, and among them, most of the deaths (40 per cent) were reported in women 25–35 years of age (*see Figure 3*). The youngest age at death reported was 14 years and the oldest 57 years; the mean (±SD) was 30 (±8.7) years.

3.2.3 Maternal death by gravidity

Nearly 20 per cent of the 7,804 women with a history of gravidity were in their first pregnancy (*see Figure 4*) and nearly 50 per cent were multigravidas, having between one and four pregnancies. The highest gravidity was 16; the median is 3.

3.2.4 Maternal death by parity

Parity was recorded in only 7,862 out of the 9,668 reported maternal deaths (*see Figure 5*). More than 75 per cent of the 7,862 mothers who died during the assessment period were multiparous (1–4) and only 7 per cent were primiparous. The highest parity recorded was 15; the median was 3.

Figure 3: Maternal deaths by age (2018–2023)
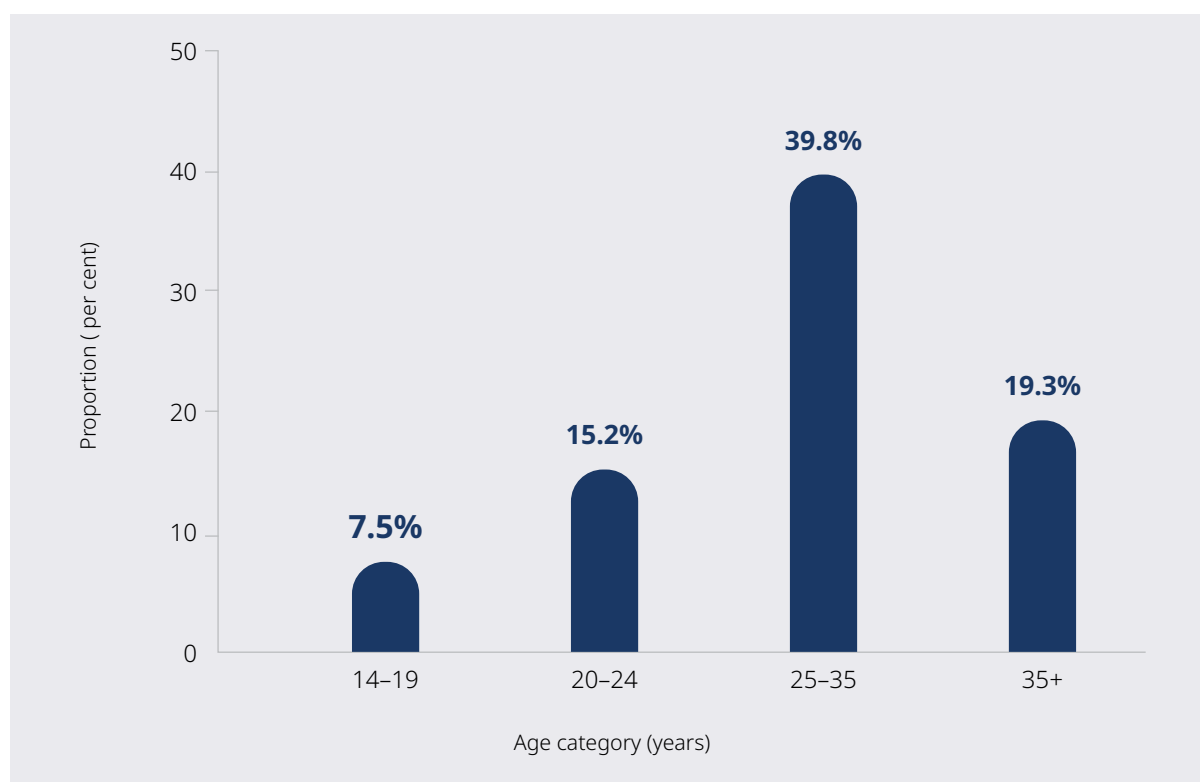
Figure 4: Maternal death distribution by gravidity (2018–2023)

- Prime
- Multigravida (1-4)
- Grand Multigravida (1-4)

20%

48%

32%
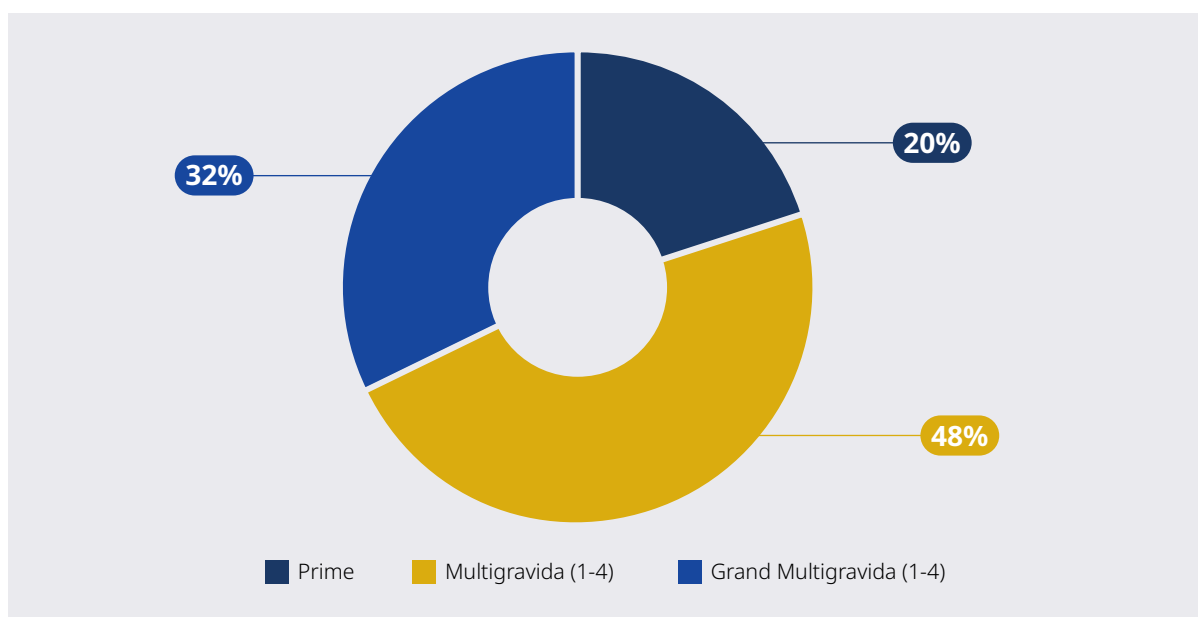
Figure 5: Maternal death distribution by parity (2018–2023)

- Prime
- Multi-para (1-4)
- Grand MultiPara (5+)

7%

77%

16%
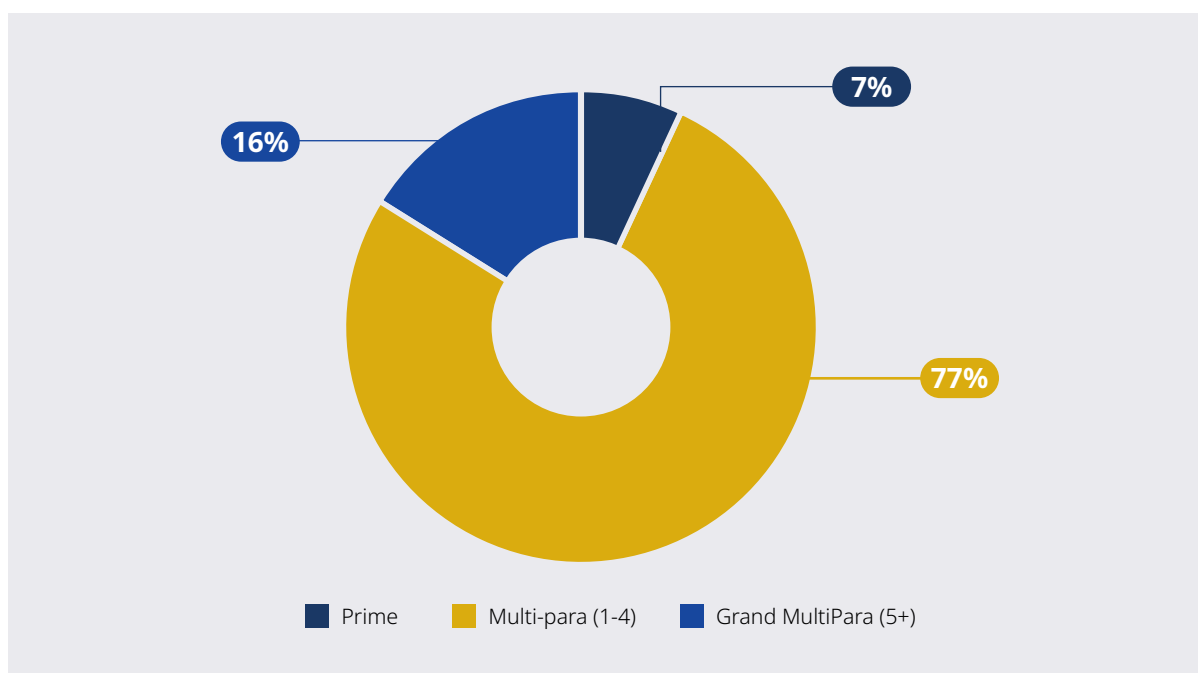
Table 3: Maternal death count by region (2018–2023)

Region	2018 N (%)	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)	2023 N (%)	Overall, 2018–2023 N (%)
Arusha	65 (3.7)	65 (3.9)	46 (2.8)	46 (2.9)	61 (4.0)	40 (2.7)	323 (3.3)
Dar es Salaam	186 (10.7)	143 (8.6)	130 (7.9)	202 (12.7)	163 (10.6)	219 (14.6)	1043 (10.8)
Dodoma	67 (3.8)	79 (4.8)	88 (5.4)	67 (4.2)	51 (3.3)	72 (4.8)	424 (4.4)
Geita	80 (4.6)	72 (4.3)	63 (3.8)	51 (3.2)	57 (3.7)	55 (3.7)	378 (3.9)
Iringa	45 (2.6)	40 (2.4)	48 (2.9)	36 (2.3)	39 (2.5)	29 (1.9)	237 (2.5)
Kagera	65 (3.7)	53 (3.2)	55 (3.4)	37 (2.3)	42 (2.7)	56 (3.7)	308 (3.2)
Katavi	53 (3.0)	44 (2.7)	55 (3.4)	40 (2.5)	36 (2.3)	33 (2.2)	261 (2.7)
Kigoma	79 (4.5)	91 (5.5)	119 (7.3)	72 (4.5)	102 (6.6)	76 (5.1)	539 (5.6)
Kilimanjaro	45 (2.6)	52 (3.1)	51 (3.1)	65 (4.1)	39 (2.5)	37 (2.5)	289 (3.0)
Lindi	48 (2.8)	46 (2.8)	54 (3.3)	45 (2.8)	32 (2.1)	38 (2.5)	263 (2.7)
Manyara	27 (1.5)	29 (1.8)	39 (2.4)	36 (2.3)	49 (3.2)	34 (2.3)	214 (2.2)
Mara	45 (2.6)	46 (2.8)	56 (3.4)	37 (2.3)	46 (3.0)	49 (3.3)	279 (2.9)
Mbeya	75 (4.3)	76 (4.6)	67 (4.1)	71 (4.5)	65 (4.2)	75 (5.0)	429 (4.4)
Morogoro	125 (7.2)	94 (5.7)	115 (7.0)	114 (7.2)	115 (7.5)	86 (5.7)	649 (6.7)
Mtwara	76 (4.4)	74 (4.5)	68 (4.1)	71 (4.5)	84 (5.5)	67 (4.5)	440 (4.6)
Mwanza	151 (8.7)	174 (10.5)	157 (9.6)	171 (10.8)	165 (10.7)	144 (9.6)	962 (10.0)
Njombe	25 (1.4)	23 (1.4)	21 (1.3)	23 (1.4)	24 (1.6)	21 (1.4)	137 (1.4)
Pwani	66 (3.8)	67 (4.0)	44 (2.7)	49 (3.1)	35 (2.3)	37 (2.5)	298 (3.1)
Rukwa	54 (3.1)	45 (2.7)	74 (4.5)	74 (4.7)	47 (3.0)	41 (2.7)	335 (3.5)
Ruvuma	58 (3.3)	34 (2.1)	31 (1.9)	22 (1.4)	22 (1.4)	27 (1.8)	194 (2.0)
Shinyanga	56 (3.2)	50 (3.0)	46 (2.8)	49 (3.1)	45 (2.9)	49 (3.3)	295 (3.1)
Simiyu	40 (2.3)	49 (3.0)	33 (2.0)	28 (1.8)	29 (1.9)	33 (2.2)	212 (2.2)
Singida	58 (3.3)	59 (3.6)	46 (2.8)	44 (2.8)	52 (3.4)	59 (3.9)	318 (3.3)
Songwe	32 (1.8)	31 (1.9)	23 (1.4)	28 (1.8)	38 (2.5)	33 (2.2)	185 (1.9)
Tabora	69 (4.0)	64 (3.9)	58 (3.5)	55 (3.5)	68 (4.4)	64 (4.3)	378 (3.9)
Tanga	54 (3.1)	57 (3.4)	53 (3.2)	55 (3.5)	35 (2.3)	24 (1.6)	278 (2.9)
Total	**1744**	**1657**	**1640**	**1588**	**1541**	**1498**	**9,668**

3.2.5 Magnitude and distribution of maternal deaths and trends by region (2018–2023)

Nearly 25 per cent of the maternal deaths reported took place in Dar es Salaam, Mwanza and Morogoro; these three regions consistently reported the highest maternal deaths (817–1043) (*see Table 3*). The fewest maternal deaths were reported in the Njombe region (except in 2022, by Ruvuma) (*see Figure 6*).

Figure 6: Maternal deaths by region (2018–2023)
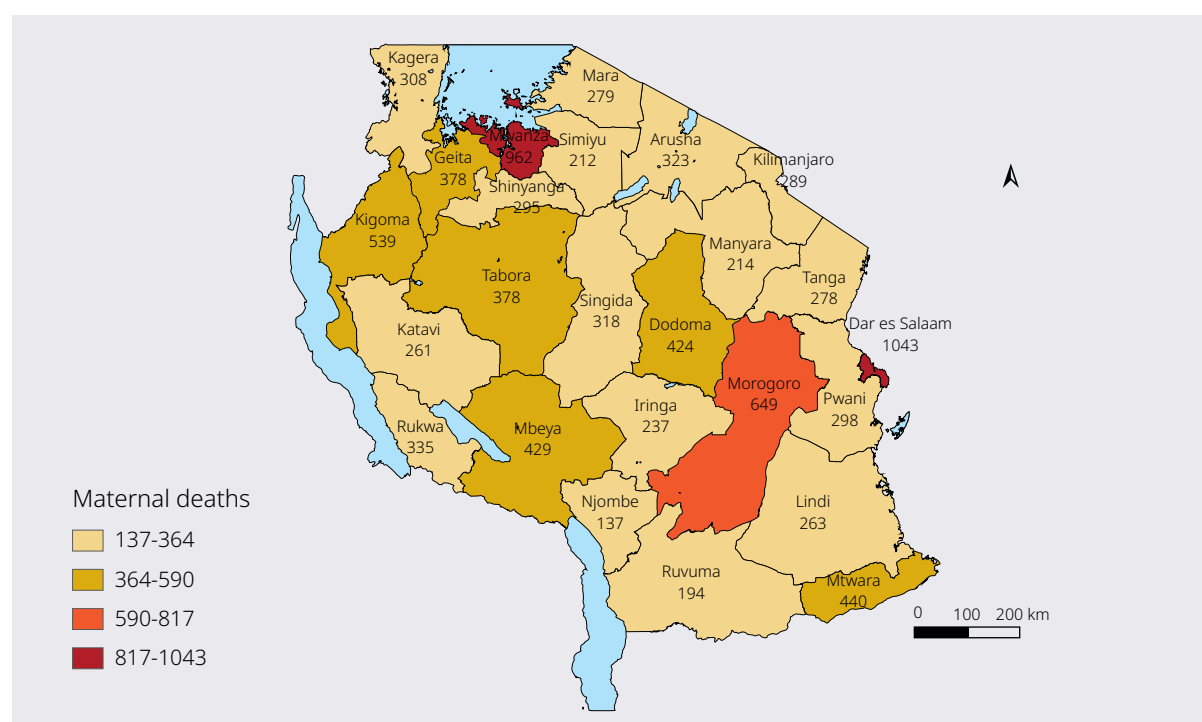
3.2.6 Maternal death count by councils (2018-2023)

Tanzania mainland has 26 regions and 186 councils; 31 of these reported more than 50 per cent of all maternal deaths (for the yearly ranking of each council across the six years, see Table 27 in the annex). The Dar es Salaam City Council (CC) and Mwanza CC reported the most maternal deaths. Nachingwea District Council (DC) and Madaba DC reported only two maternal deaths (the least) (*see Table 4*).

Table 4: Maternal deaths by council (2018–2023)

Ranking	Council	Region	N	%
1	Dar CC	Dar es Salaam	650	6.7
2	Mwanza CC	Mwanza	511	5.3
3	Mbeya CC	Mbeya	249	2.6
4	Dodoma CC	Dodoma	242	2.5
5	Morogoro MC	Morogoro	226	2.3
6	Moshi MC	Kilimanjaro	206	2.1
7	Arusha CC	Arusha	167	1.7
8	Kigoma MC	Kigoma	164	1.7
9	Geita TC	Geita	163	1.7
10	Sumbawanga MC	Rukwa	142	1.5
11	Tabora MC	Tabora	142	1.5
12	Temeke MC	Dar es Salaam	130	1.3
13	Masasi DC	Mtwara	126	1.3
14	Ubungo MC	Dar es Salaam	126	1.3
15	Sengerema DC	Mwanza	123	1.3
16	Mpanda MC	Katavi	117	1.2
17	Tanga CC	Tanga	117	1.2
18	Shinyanga MC	Shinyanga	112	1.2
19	Iringa MC	Iringa	108	1.1
20	Ifakara TC	Morogoro	98	1.0
21	Kinondoni MC	Dar es Salaam	98	1.0
22	Singida MC	Singida	95	1.0
23	Mtwara MC	Mtwara	93	1.0
24	Mbozi DC	Songwe	87	0.9
25	Songea MC	Ruvuma	83	0.9
26	Musoma MC	Mara	82	0.8
27	Kibaha TC	Pwani	81	0.8
28	Kasulu TC	Kigoma	80	0.8
29	Nkasi DC	Rukwa	80	0.8
30	Bukoba MC	Kagera	79	0.8
31	Uvinza DC	Kigoma	78	0.8

3.2.7 Distribution of maternal deaths by health facility level (2018–2023)

Most of the maternal deaths (93.1 per cent) reported (n = 8,998) occurred at health facilities, and most of those at the regional referral level (30.1 per cent) and at the district (28.8 per cent) (*see Figure 7*). About 6.9 per cent (n = 667) of the deaths occurred within the community; and information was missing on the place for three deaths.

Figure 7: Maternal death by health facility level (2018–2023)
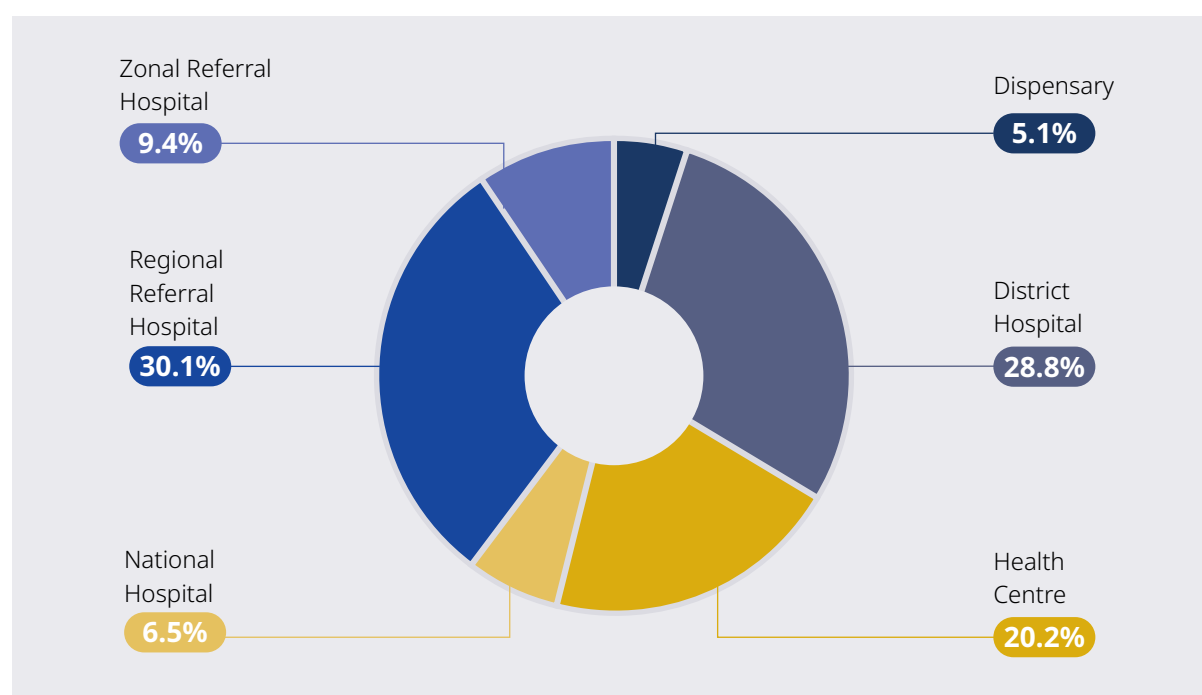
3.2.8 Distribution of maternal deaths by ICD MM (2018–2023)

Direct obstetric causes – complications of the pregnancy state (pregnancy, labour and the puerperium) from interventions, omissions, incorrect treatment or from a chain of events resulting from any of the above – caused 85 per cent of all maternal deaths reported (*see Figure 8*). Obstetric haemorrhage (Group 3) caused nearly 50 per cent of the deaths reported; hypertensive disorders of pregnancy (Group 2) 14 per cent; and non obstetric complications (Group 7) 12 per cent (*see Figure 9*).

Figure 8: Maternal deaths by ICD MM (2018–2023)

Legend:
- Direct causes
- Indirect causes
- Unspecified causes

Values: 85%, 12%, 3%
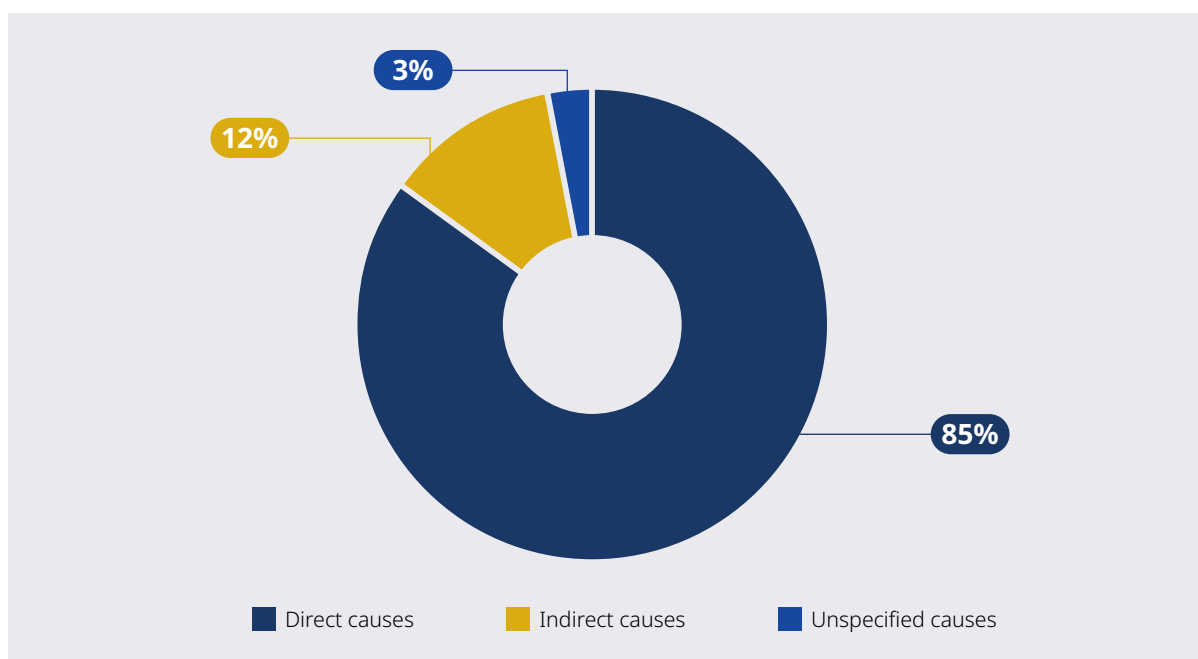
Figure 9: Maternal deaths by ICD MM groups (2018–2023)

Group 1: Pregnancy with abortive outcomes — 2.2%

Group 2: Hypertensive disorders in pregnancy — 14.1%

Group 3: Obstetric haemorrhage — 47.4%

Group 4: Pregnancy-related infection — 6.8%

Group 5: Other obstetric complications — 9.3%

Group 6: Unanticipated complications of management — 5.0%

Group 7: Non-obstetric complications — 12.0%

Group 8: Unknown/undetermined — 3.3%
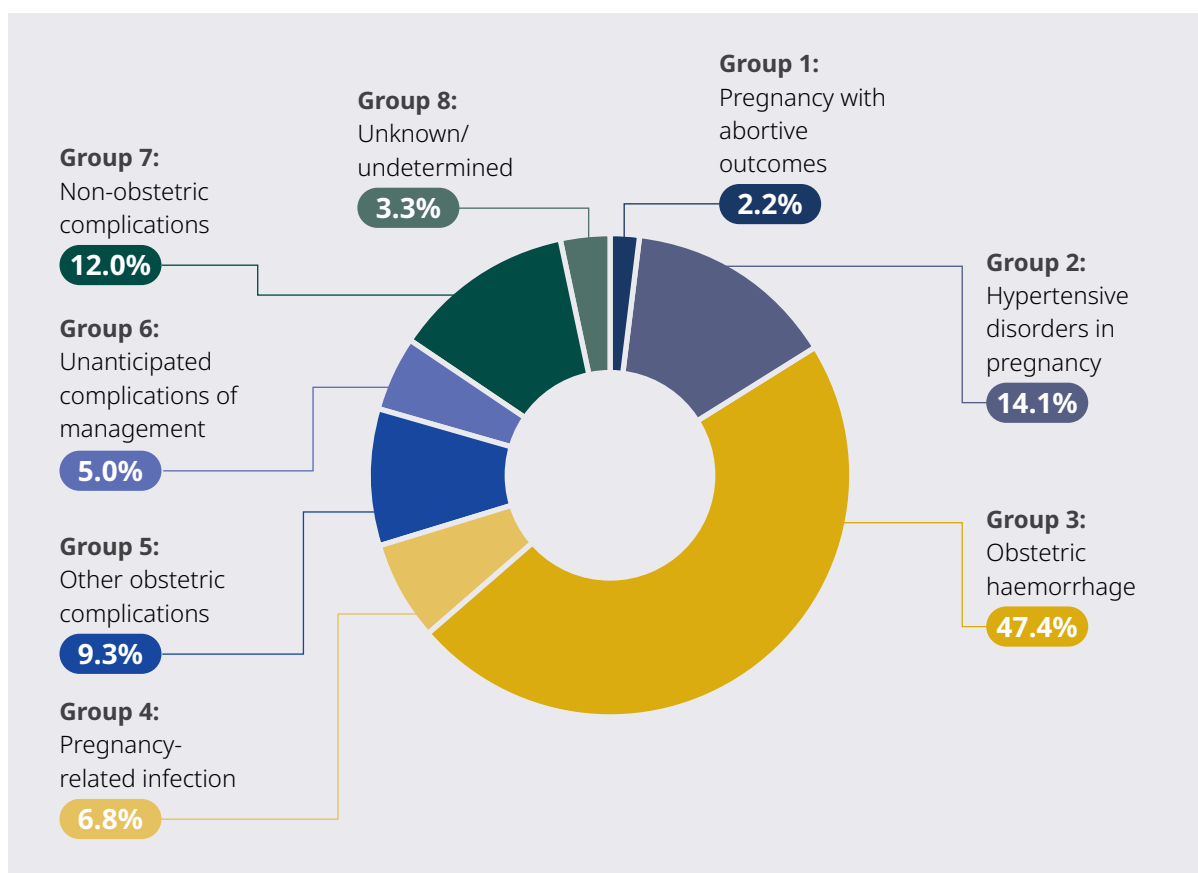
3.2.9 ICD 10 coded causes of maternal deaths (2018–2023)

Post partum haemorrhage (PPH) caused more than 33 per cent of maternal deaths (*see Figure 10*).

Figure 10: ICD-10 coded causes of maternal deaths (2018–2023)
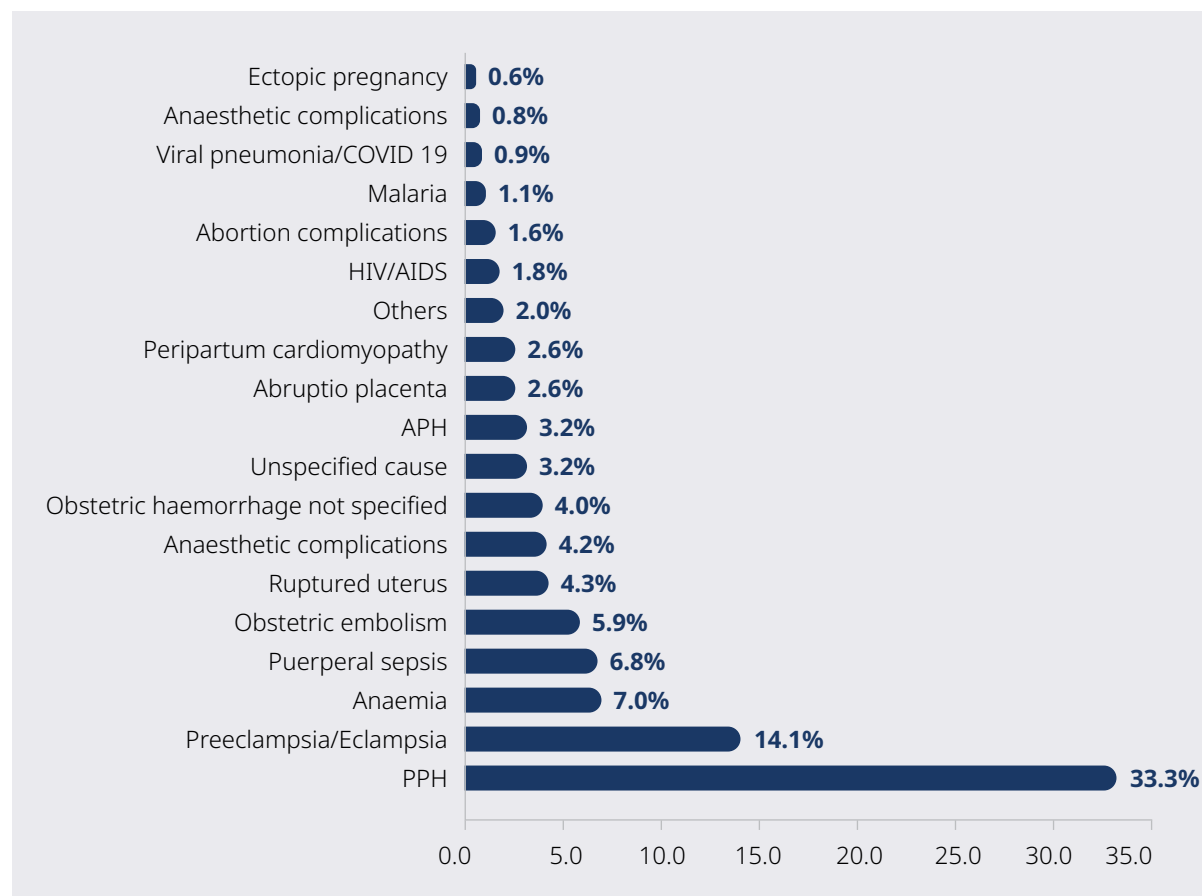
3.2.10 Main causes of death at health facilities

Obstetric haemorrhage (Group 3) has been the leading contributing cause of maternal deaths at all levels of health facilities, including of 298 of the 420 maternal deaths at the dispensary level (71 per cent).

3.2.11 National and regional trend of institutional MMR (iMMR) (2018–2023)

From January 2018 to December 2023, the MoH recorded a total of 9,668 maternal deaths – 93 per cent (n = 8998) in health facilities – and 11,527,608 livebirths, resulting in an institutional MMR (iMMR) of 78 per 100,000 livebirths. The number of livebirths increased consistently throughout these years – from 1,730,693 in 2018 to 2,114,488 in 2023 – and the count of maternal deaths declined, from 1,744 in 2018 to 1,498 in 2023. The iMMR declined from 94 per 100,000 livebirths in 2018 to 65 per 100,000 livebirths in 2023 (*see Figure 11*), at an AARR of 7 per cent.

Figure 11: National trends in livebirths, maternal deaths and institutional MMR (iMMR) 2018–2023)
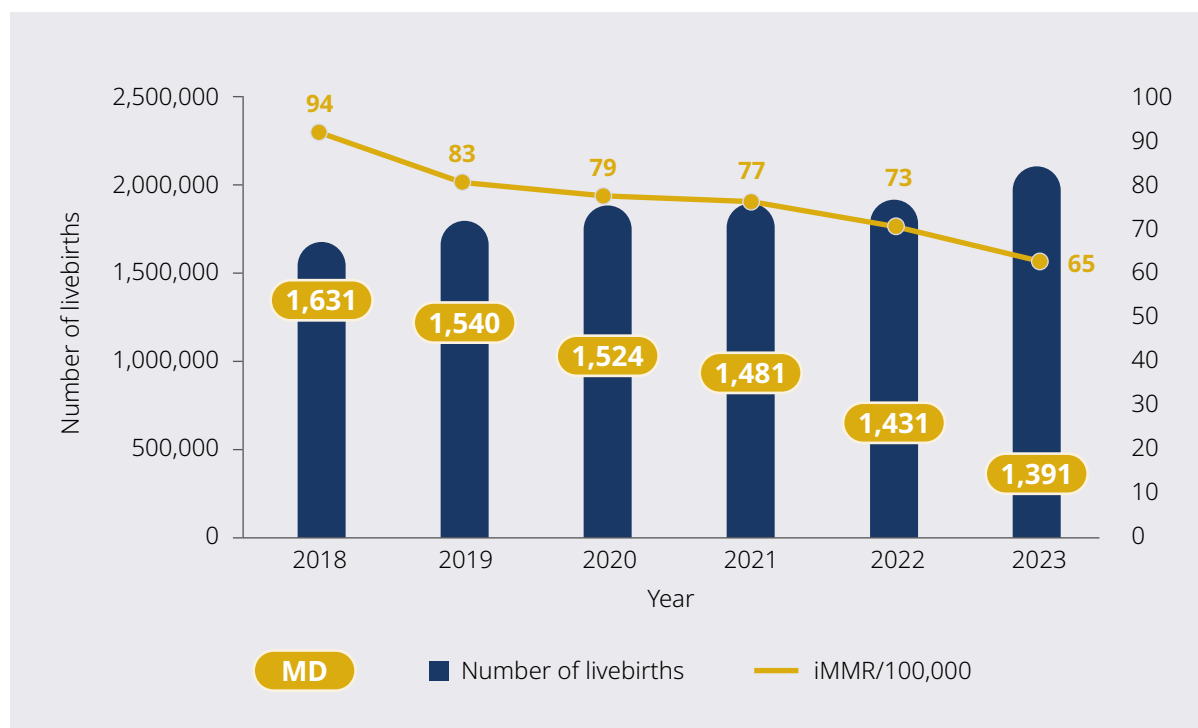
The decline in iMMR varied by region (*see Table 5*): Mtwara region reported 162 deaths (the highest), followed by Lindi (129), Dar es Salaam (123) and Morogoro (117). Low iMMRs were registered in Simiyu (35), Kagera (45), Tabora (47) and Mara (48) regions. More than 50 per cent of all the maternal deaths reported took place in only 66 health facilities (*see Figure 12*). Most of these facilities are located in the Mwanza, Mtwara, Morogoro, Dar es Salaam, Singida and Tabora regions. Muhimbili National Hospital (Upanga and Mloganzila) reported more than 6 per cent of all maternal deaths. Bugando Medical Centre (4.2 per cent) and Morogoro Regional Referral Hospital (2.3 per cent) led all the Regional Referral Hospitals. Sengerema Designated District Hospital in Mwanza region ranked tenth, leading among all district level hospitals in the country (*see Table 6*).

Table 5: Institutional maternal mortality ratio (iMMR) by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023	Overall; 2018–2023
Arusha	97	90	62	59	82	55	74
Dar es Salaam	146	108	88	147	112	138	123
Dodoma	90	85	97	65	52	67	75
Geita	79	64	56	50	48	45	57
Iringa	120	96	125	87	103	74	100
Kagera	65	47	45	35	35	44	45
Katavi	151	110	133	90	71	66	100
Kigoma	67	76	96	65	82	59	74
Kilimanjaro	103	106	104	140	74	48	91
Lindi	166	162	162	116	92	94	129
Manyara	68	55	68	65	73	49	63
Mara	57	54	58	37	43	41	48
Mbeya	106	106	92	93	85	93	96
Morogoro	147	111	122	125	124	83	117
Mtwara	173	156	150	149	201	146	162
Mwanza	98	108	101	108	107	80	100
Njombe	99	87	82	82	91	82	87
Pwani	119	117	70	80	56	55	82
Rukwa	86	73	120	114	73	64	89
Ruvuma	105	59	46	32	38	41	52
Shinyanga	65	59	57	64	56	55	59
Simiyu	57	57	33	30	24	24	35
Singida	90	87	62	57	67	70	71
Songwe	75	69	47	55	70	54	61
Tabora	52	46	42	43	52	49	47
Tanga	87	90	81	73	47	26	66
Overall	**94**	**83**	**79**	**77**	**73**	**65**	**78**

Table 6: Maternal deaths by facility (2018–2023)

Ranking	Facility	Region	Maternal deaths (number)	%
1	MNH Upanga	Dar es Salaam	500	5.2
2	Bugando Medical Centre	Mwanza	382	4.0
3	Morogoro RRH	Morogoro	219	2.3
4	KCMC Hospital	Kilimanjaro	189	2.0
5	META Hospital	Mbeya	178	1.8
6	Dodoma RRH	Dodoma	175	1.8
7	Geita RRH	Geita	147	1.5
8	Kitete RRH	Tabora	131	1.4
9	Mount Meru RRH	Arusha	128	1.3
10	Sengerema DDH	Mwanza	118	1.2
11	Tanga RRH	Tanga	103	1.1
12	Ndanda RRH	Mtwara	100	1.0
13	Shinyanga RRH	Shinyanga	98	1.0
14	Sumbawanga RRH	Rukwa	96	1.0
15	Maweni RRH	Kigoma	93	1.0
16	Amana RRH	Dar es Salaam	92	1.0
17	MNH Mloganzila	Dar es Salaam	87	0.9
18	Iringa RRH	Iringa	85	0.9
19	Singida RRH	Singida	83	0.9
20	St. Francis Hospital	Morogoro	83	0.9
21	Bukoba RRH	Kagera	76	0.8
22	Katavi RRH	Katavi	70	0.7
23	Sekotoure RRH	Mwanza	68	0.7
24	Musoma RRH	Mara	64	0.7
25	Ligula RRH	Mtwara	61	0.6
26	Songea RRH	Songea	61	0.6
27	Mwananyamala RRH	Dar es Salaam	59	0.6
28	Temeke RRH	Dar es Salaam	59	0.6
29	Kahama Hospital	Shinyanga	56	0.6
30	Tumbi RRH	Pwani	55	0.6
31	Sokoine RRH	Lindi	51	0.5
32	Bariadi RRH	Shinyanga	50	0.5
33	Hydom Hospital	Manyara	50	0.5

Ranking	Facility	Region	Maternal deaths (number)	%
34	Misungwi Hospital	Mwanza	49	0.5
35	Mbagala Rangitatu Hospital	Dar es Salaam	48	0.5
36	Mbeya RRH	Mbeya	48	0.5
37	Nkinga RRH	Tabora	44	0.5
38	Nzega DH	Tabora	43	0.4
39	Kasulu TC Hospital	Kigoma	42	0.4
40	Songwe RRH	Songwe	40	0.4
41	Mkomaindo DH	Mtwara	39	0.4
42	Manyara RRH	Manyara	37	0.4
43	Nansio District Hospital	Mwanza	36	0.4
44	Gairo HC	Morogoro	35	0.4
45	Kibondo DH	Kigoma	34	0.4
46	Tandahimba DH	Mtwara	34	0.4
47	Mkuranga DH	Pwani	33	0.3
48	Turiani Hospital	Morogoro	33	0.3
49	Bukombe DH	Geita	32	0.3
50	Kilosa DH	Morogoro	32	0.3
51	Katoro HC	Geita	31	0.3
52	Newala DH	Mtwara	31	0.3
53	Lugala Hospital	Morogoro	30	0.3
54	Manyoni DH	Singida	30	0.3
55	Benjamini Mkapa Hospital	Dodoma	29	0.3
56	Kondoa DH	Dodoma	29	0.3
57	Nyakahanga Hospital	Kagera	29	0.3
58	Bagamoyo DH	Pwani	28	0.3
59	Handeni DH	Tanga	28	0.3
60	Ngudu DH	Mwanza	28	0.3
61	Kinyonga Hospital	Lindi	27	0.3
62	Liwale DH	Lindi	27	0.3
63	Nyamagana DH	Mwanza	27	0.3
64	Sikonge DH	Tabora	27	0.3
65	Makiungu Hospital	Singida	26	0.3
66	St. Gasper	Singida	26	0.3

Figure 12: Institutional maternal mortality ratio (iMMR) in Tanzania (2018–2023)
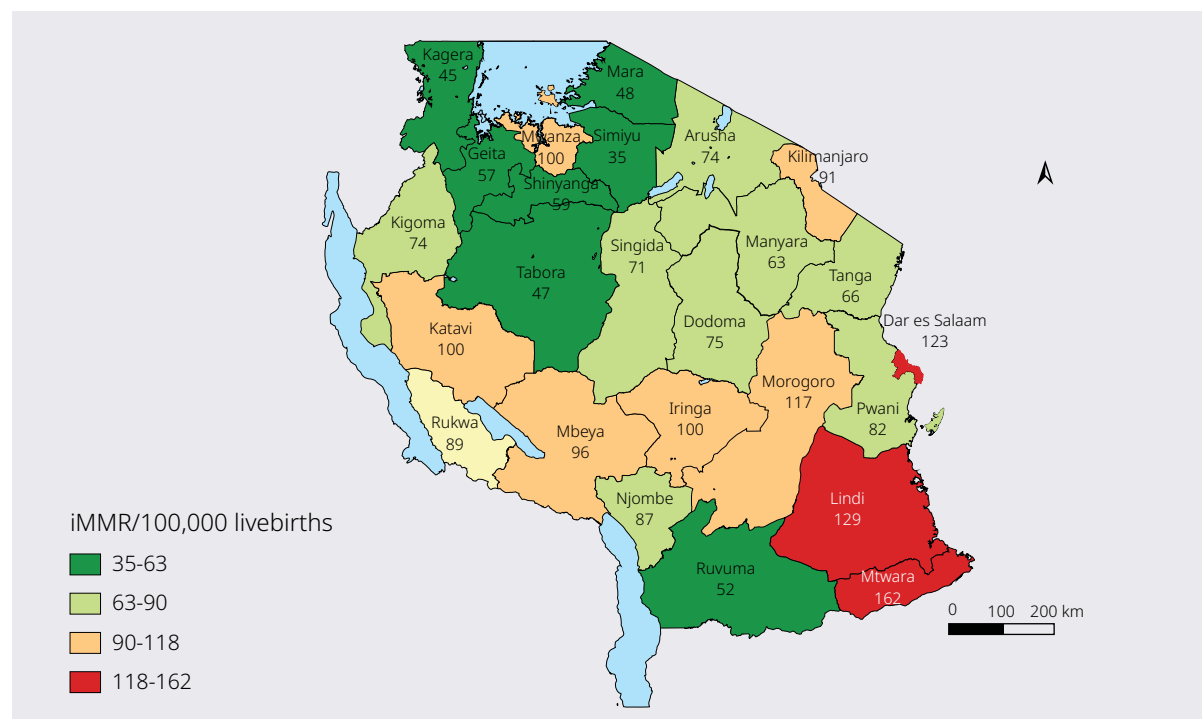
3.2.12 Perinatal deaths

3.2.12.1 Macerated stillbirth

Between 2018 and 2023, the macerated stillbirth rate (MSBR) declined in most regions but it increased slightly in Geita, Iringa and Shinyanga. Dar es Salaam, Morogoro, Arusha, Mwanza, Tanga and Tabora reported the most macerated stillbirths (*see Table 7* and *Figure 13*). Dar es Salaam, Lindi, Katavi and Arusha had the highest MSBR (6.5–8.1 per 1,000 livebirths) (*see Figure 14*).

Table 7: Macerated still deaths (2018–2023)

Region	2018 N (%)	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)	2023 N (%)	Overall; 2018–2023
Arusha	533 (5.5)	327 (3.7)	1215 (18.2)	498 (7.5)	320 (5.2)	364 (4.6)	3257 (7.1)
Dar es Salaam	1267 (13.1)	991 (11.2)	366 (5.5)	1257(19.0)	1135 (18.4)	1277 (16.2)	6293 (13.7)
Dodoma	351 (3.6)	275 (3.1)	254 (3.8)	178 (2.7)	143 (2.3)	116 (1.5)	1317 (2.9)
Geita	281 (2.9)	253 (2.9)	150 (2.3)	203 (3.1)	323 (5.2)	433 (5.5)	1643 (3.6)
Iringa	173 (1.8)	203 (2.3)	269 (4.0)	170 (2.6)	120 (1.9)	195 (2.5)	1130 (2.5)
Kagera	312 (3.2)	184 (2.1)	196 (2.9)	127 (1.9)	86 (1.4)	169 (2.1)	1074 (2.3)
Katavi	257 (2.7)	526 (6.0)	138 (2.1)	201 (3.0)	163 (2.6)	334 (4.2)	1619 (3.5)
Kigoma	452 (4.7)	350 (4.0)	256 (3.8)	269 (4.1)	251 (4.1)	365 (4.6)	1943 (4.2)
Kilimanjaro	147 (1.5)	130 (1.5)	186 (2.8)	94 (1.4)	95 (1.5)	92 (1.2)	744 (1.6)
Lindi	283 (2.9)	349 (4.0)	186 (2.8)	85 (1.3)	150 (2.4)	170 (2.2)	1223 (2.7)
Manyara	186 (1.9)	251 (2.8)	153 (2.3)	276 (4.2)	208 (3.4)	244 (3.1)	1318 (2.9)
Mara	410 (4.3)	316 (3.6)	168 (2.5)	81 (1.2)	245 (4.0)	283 (3.6)	1503 (3.3)
Mbeya	256 (2.7)	295 (3.3)	211 (3.2)	287 (4.3)	289 (4.7)	284 (3.6)	1622 (3.5)
Morogoro	709 (7.4)	847 (9.6)	269 (4.0)	340 (5.1)	231 (3.7)	509 (6.5)	2905 (6.3)
Mtwara	203 (2.1)	215 (2.4)	239 (3.6)	256 (3.9)	203 (3.3)	181 (2.3)	1297 (2.8)
Mwanza	774 (8.0)	666 (7.6)	426 (6.4)	466 (7.0)	557 (9.0)	578 (7.3)	3467 (7.6)
Njombe	126 (1.3)	168 (1.9)	138 (2.1)	57 (0.9)	45 (0.7)	79 (1.0)	613 (1.3)
Pwani	231 (2.4)	199 (2.3)	237 (3.6)	155 (2.3)	144 (2.3)	150 (1.9)	1116 (2.4)
Rukwa	228 (2.4)	266 (3.0)	156 (2.3)	120 (1.8)	90 (1.5)	99 (1.3)	959 (2.1)
Ruvuma	249 (2.6)	158 (1.8)	144 (2.2)	75 (1.1)	107 (1.7)	106 (1.3)	839 (1.8)
Shinyanga	288 (3.0)	209 (2.4)	162 (2.4)	218 (3.3)	233 (3.8)	341 (4.3)	1451 (3.2)
Simiyu	317 (3.3)	409 (4.6)	171 (2.6)	131 (2.0)	107 (1.7)	202 (2.6)	1337 (2.9)
Singida	242 (2.5)	318 (3.6)	102 (1.5)	201 (3.0)	165 (2.7)	162 (2.1)	1190 (2.6)
Songwe	159 (1.6)	152 (1.7)	195 (2.9)	177 (2.7)	80 (1.3)	56 (0.7)	819 (1.8)
Tabora	505 (5.2)	512 (5.8)	379 (5.7)	468 (7.1)	428 (6.9)	578 (7.3)	2870 (6.3)
Tanga	699 (7.3)	243 (2.8)	294 (4.4)	233 (3.5)	253 (4.1)	520 (6.6)	2242 (4.9)
Total	**9,638**	**8,812**	**6,660**	**6,623**	**6,171**	**7,771**	**45,675**

Figure 13: Macerated stillbirths (2018–2023)

Macerated stillbirth count
- 613-2033
- 2033-3453
- 3453-4873
- 4873-6293
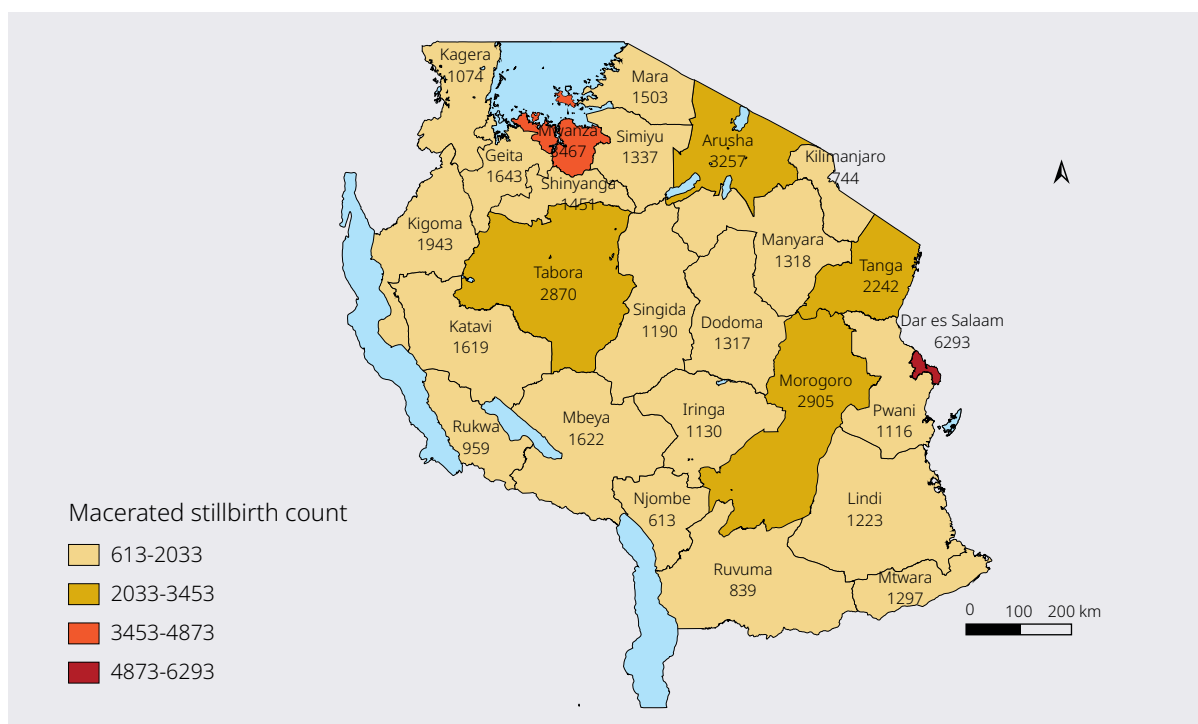
Figure 14: Macerated stillbirth rates per 1,000 livebirths (2018–2023)

Macerated stillbirth rate/1,000 livebirths
- 1.7-3.3
- 3.3-4.9
- 4.9-6.5
- 6.5-8.1
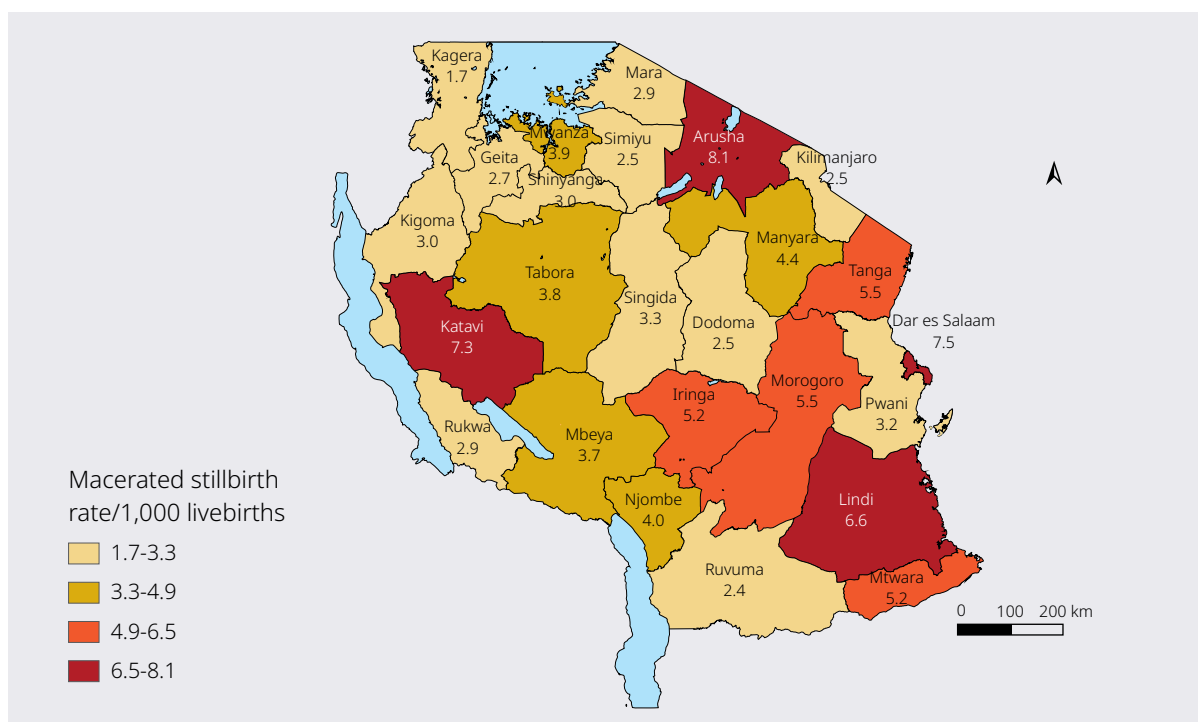
Table 8: Macerated stillbirth rate per 1000 total births by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023
Arusha	8.4	4.8	17.4	7.1	4.6	5.3
Dar es Salaam	10.0	7.5	2.4	9.2	7.9	8.1
Dodoma	4.7	3.2	2.9	1.9	1.5	1.1
Geita	3.0	2.5	1.5	2.0	3.0	3.7
Iringa	4.9	5.7	7.4	4.5	3.2	5.3
Kagera	3.3	1.8	1.9	1.2	0.8	1.5
Katavi	8.6	15.3	3.8	5.4	4.0	7.1
Kigoma	4.2	3.2	2.3	2.5	2.3	3.3
Kilimanjaro	3.4	2.9	4.1	2.0	1.9	1.3
Lindi	10.0	12.3	6.0	2.7	4.8	4.6
Manyara	4.3	5.3	3.0	4.9	3.6	4.2
Mara	5.9	3.9	1.9	0.9	2.6	2.7
Mbeya	3.6	4.1	2.9	3.9	3.8	3.6
Morogoro	8.9	10.2	3.1	3.8	2.6	5.1
Mtwara	4.8	5.1	5.7	6.0	5.1	4.3
Mwanza	5.4	4.4	2.8	3.2	3.6	3.5
Njombe	5.0	6.6	5.4	2.2	1.8	3.1
Pwani	4.2	3.5	3.9	2.6	2.5	2.3
Rukwa	4.2	4.9	2.7	2.1	1.6	1.7
Ruvuma	4.7	2.9	2.6	1.3	1.8	1.7
Shinyanga	3.4	2.6	2.0	3.0	3.0	3.8
Simiyu	5.1	5.1	1.9	1.5	1.1	1.8
Singida	4.8	5.3	1.7	3.2	2.6	2.3
Songwe	4.0	3.6	4.3	3.9	1.7	1.2
Tabora	4.2	3.9	2.7	3.7	3.6	4.4
Tanga	11.4	3.8	4.4	3.2	3.5	6.9
Overall	**5.5**	**4.7**	**3.4**	**3.4**	**3.1**	**3.6**

3.2.12.2 Fresh stillbirths

Dar es Salaam and Mwanza reported the highest number of fresh stillbirths; Morogoro and Tabora regions had a high number as well (*see Table 9* and *Figure 15*).

Table 9: Stillbirths (2018–2023)

Region	2018 N (%)	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)	2023 N (%)	Overall; 2018–2023
Arusha	350 (4.4)	194 (2.7)	360 (6.5)	300 (5.3)	258 (5.2)	258 (4.4)	1720 (4.6)
Dar es Salaam	876 (11.0)	511 (7.0)	184 (3.3)	651 (11.6)	555 (11.1)	593 (10.2)	3370 (9.1)
Dodoma	196 (2.5)	153 (2.1)	189 (3.4)	178 (3.2)	154 (3.1)	118 (2.0)	988 (2.7)
Geita	397 (5.0)	256 (3.5)	144 (2.6)	245 (4.4)	234 (4.7)	321 (5.5)	1597 (4.3h)
Iringa	191 (2.4)	161 (2.2)	185 (3.4)	185 (3.3)	140 (2.8)	113 (1.9)	975 (2.6)
Kagera	296 (3.7)	256 (3.5)	264 (4.8)	164 (2.9)	133 (2.7)	154 (2.6)	1267 (3.4)
Katavi	276 (3.5)	300 (4.1)	165 (3.0)	179 (3.2)	166 (3.3)	272 (4.7)	1358 (3.7)
Kigoma	407 (5.1)	229 (3.1)	247 (4.5)	223 (4.0)	201 (4.0)	231 (4.0)	1538 (4.1)
Kilimanjaro	61 (0.8)	71 (1.0)	161 (2.9)	54 (1.0)	54 (1.1)	63 (1.1)	464 (1.2)
Lindi	173 (2.2)	265 (3.6)	166 (3.0)	117 (2.1)	141 (2.8)	160 (2.7)	1022 (2.7)
Manyara	118 (1.5)	205 (2.8)	169 (3.1)	207 (3.7)	168 (3.4)	169 (2.9)	1036 (2.8)
Mara	39 (0.5)	342 (4.7)	188 (3.4)	90 (1.6)	148 (3.0)	240 (4.1)	1047 (2.8)
Mbeya	429 (5.4)	275 (3.8)	197 (3.6)	298 (5.3)	228 (4.6)	231 (4.0)	1658 (4.5)
Morogoro	519 (6.5)	680 (9.3)	253 (4.6)	299 (5.3)	231 (4.6)	436 (7.5)	2418 (6.5)
Mtwara	210 (2.6)	242 (3.3)	227 (4.1)	256 (4.6)	153 (3.1)	191 (3.3)	1279 (3.4)
Mwanza	616 (7.7)	629 (8.6)	341 (6.2)	375 (6.7)	446 (8.9)	424 (7.3)	2831 (7.6)
Njombe	98 (1.2)	150 (2.1)	121 (2.2)	50 (0.9)	48 (1.0)	53 (0.9)	520 (1.4)
Pwani	187 (2.3)	197 (2.7)	296 (5.4)	188 (3.3)	101 (2.0)	154 (2.6)	1123 (3.0)
Rukwa	258 (3.2)	400 (5.5)	151 (2.7)	191 (3.4)	95 (1.9)	136 (2.3)	1231 (3.3)
Ruvuma	276 (3.5)	188 (2.6)	159 (2.9)	86 (1.5)	88 (1.8)	88 (1.5)	885 (2.4)
Shinyanga	292 (3.7)	236 (3.2)	216 (3.9)	262 (4.7)	273 (5.5)	368 (6.3)	1647 (4.4)
Simiyu	196 (2.5)	396 (5.4)	224 (4.1)	107 (1.9)	161 (3.2)	176 (3.0)	1260 (3.4)
Singida	199 (2.5)	289 (4.0)	118 (2.1)	227 (4.0)	170 (3.4)	206 (3.5)	1209 (3.2)
Songwe	296 (3.7)	177 (2.4)	205 (3.7)	190 (3.4)	120 (2.4)	68 (1.2)	1056 (2.8)
Tabora	580 (7.3)	358 (4.9)	328 (5.9)	315 (5.6)	339 (6.8)	372 (6.4)	2292 (6.2)
Tanga	430 (5.4)	126 (1.7)	258 (4.7)	188 (3.3)	180 (3.6)	232 (4.0)	1414 (3.8)
Total	**7,966**	**7,286**	**5,516**	**5,625**	**4,985**	**5,709**	**37,087**

Figure 15: Fresh stillbirths (2018–2023)

Fresh stillbirths
- 464-1191
- 1191-1917
- 1917-2644
- 2644-3370
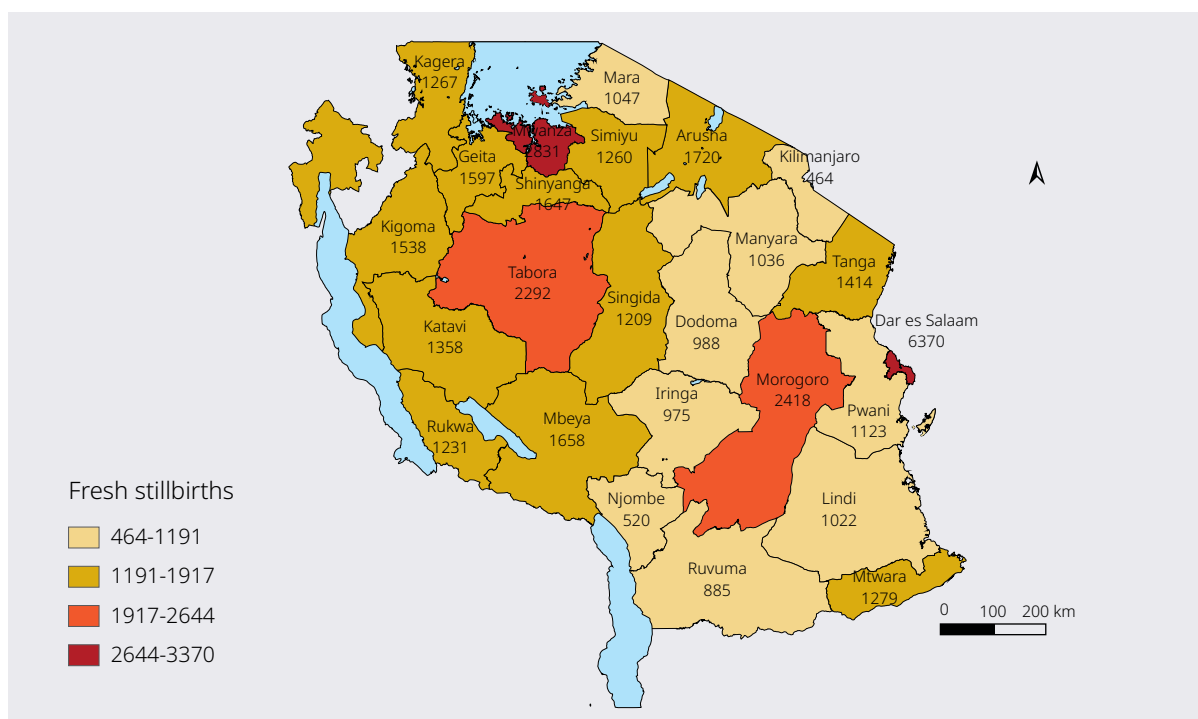
Figure 16: Fresh stillbirth rates per 1,000 livebirths (2018–2023)

Fresh stillbirth rate/1,000 livebirths
- 1.5-2.6
- 2.6-3.8
- 3.8-4.9
- 4.9-6.1
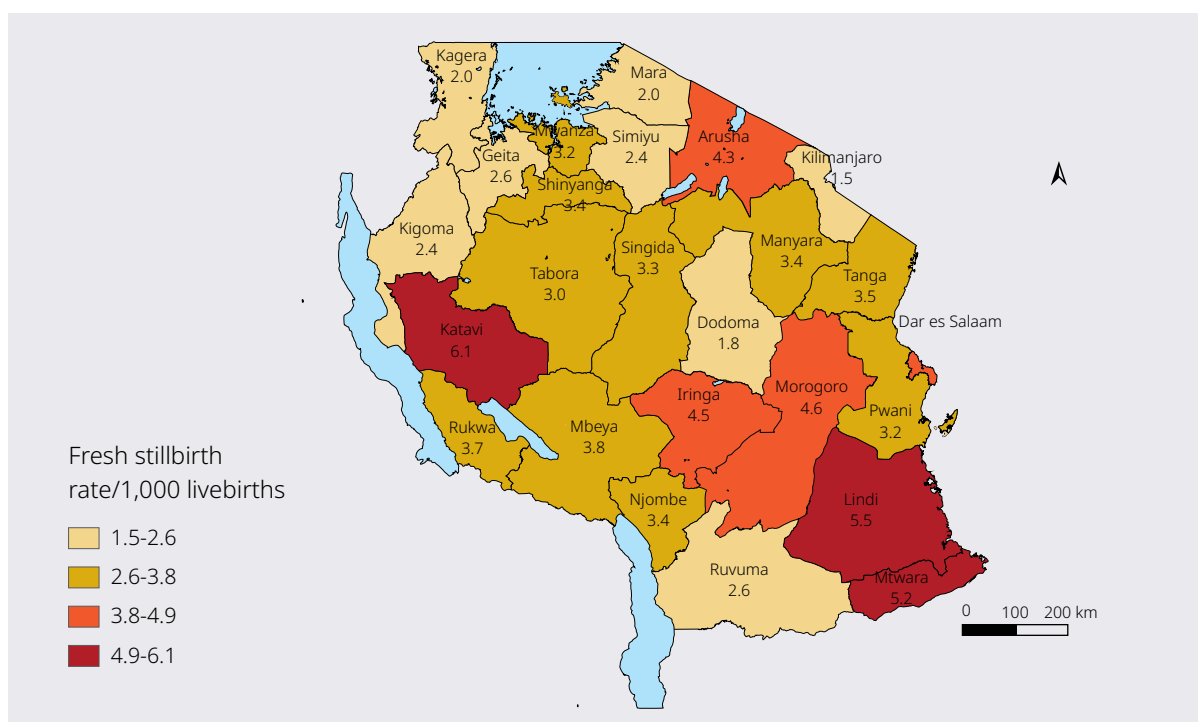
The fresh stillbirth rate (FSBR) per 1,000 total deliveries has varied significantly by region – comparing the 2018 and the most recent 2023 mortality data, we found that the FSBR has declined in all the regions except in Manyara, Mara, and Shinyanga (*see Table 10*), and Katavi, Lindi and Mtwara reported the highest FSBR in six years (*see Figure 16*).

Table 10: Fresh stillbirth rates per 1,000 total births by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023
Arusha	5.5	2.8	5.2	4.3	3.7	3.7
Dar es Salaam	6.9	3.9	1.2	4.8	3.9	3.8
Dodoma	2.6	1.8	2.2	1.9	1.6	1.2
Geita	4.2	2.6	1.4	2.4	2.2	2.7
Iringa	5.4	4.5	5.1	4.9	3.8	3.1
Kagera	3.1	2.5	2.6	1.6	1.2	1.3
Katavi	9.2	8.7	4.5	4.8	4.1	5.7
Kigoma	3.8	2.1	2.2	2.1	1.9	2.1
Kilimanjaro	1.4	1.6	3.6	1.2	1.1	0.9
Lindi	6.1	9.3	5.4	3.7	4.5	4.4
Manyara	2.7	4.4	3.3	3.6	2.9	2.9
Mara	0.6	4.3	2.1	1.0	1.6	2.3
Mbeya	6.0	3.8	2.7	4.0	3.0	2.9
Morogoro	6.5	8.2	2.9	3.3	2.6	4.3
Mtwara	4.9	5.8	5.4	6.0	3.8	4.6
Mwanza	4.3	4.2	2.3	2.6	2.9	2.6
Njombe	3.9	5.9	4.7	2.0	1.9	2.1
Pwani	3.4	3.4	4.9	3.2	1.8	2.3
Rukwa	4.7	7.3	2.6	3.4	1.7	2.4
Ruvuma	5.2	3.5	2.8	1.5	1.5	1.4
Shinyanga	3.5	3.0	2.7	3.6	3.5	4.1
Simiyu	3.1	5.0	2.5	1.2	1.7	1.6
Singida	4.0	4.8	2.0	3.6	2.7	2.9
Songwe	7.5	4.2	4.5	4.2	2.5	1.4
Tabora	4.8	2.7	2.4	2.5	2.8	2.9
Tanga	7.0	2.0	3.9	2.6	2.5	3.1
Overall	**4.5**	**3.9**	**2.8**	**2.9**	**2.5**	**2.7**

3.2.12.3 Regional trend of stillbirths (2018–2023)

A total of 82,945 stillbirths were reported in six years of this assessment, of these more than half (55 per cent; n=45,791) were macerated stillbirths. Across the regions, Dar es Salaam Mwanza, Tabora and Arusha had the highest number of stillbirths reported. Furthermore, all regions recorded more macerated stillbirths compared to fresh stillbirths (*see Figure 17*). The low number of stillbirths were reported in Njombe, Kilimanjaro and Ruvuma regions.

Figure 17: Fresh and macerated stillbirth counts by region (2018–2023)
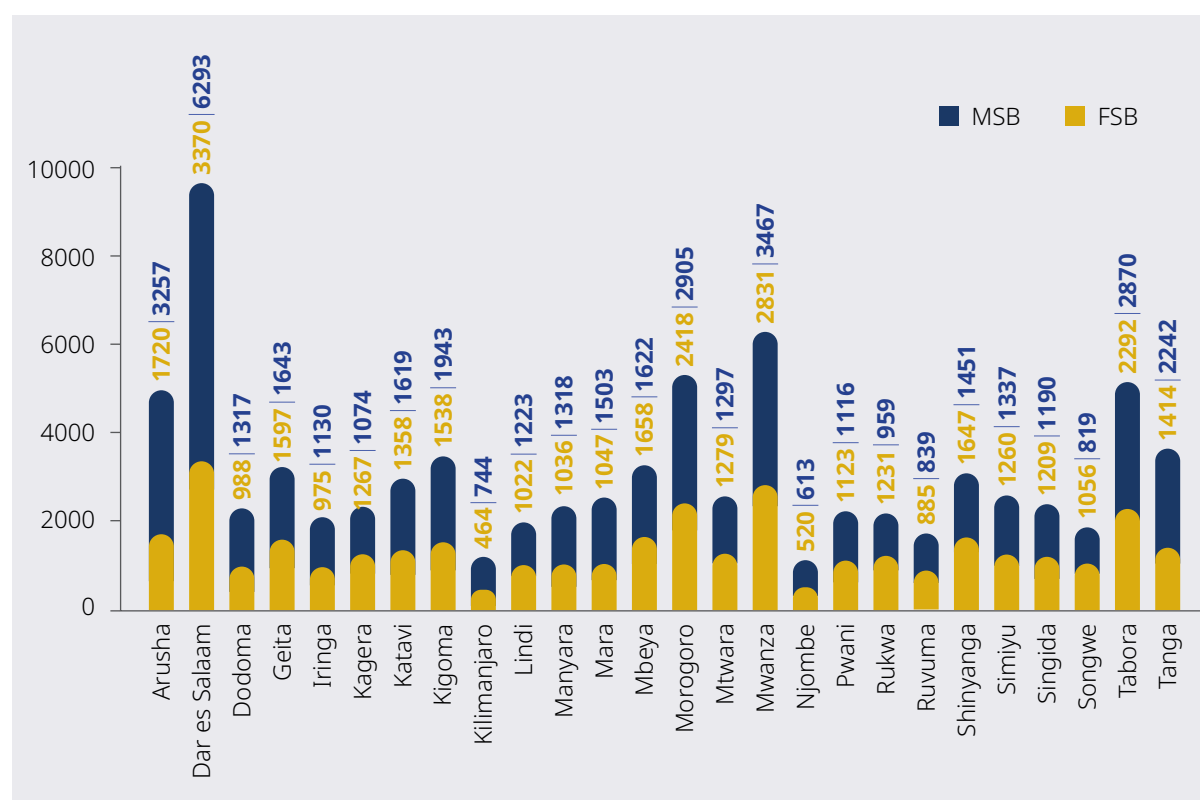
3.2.12.4 Early neonatal mortality

Early neonatal death is the death of a baby within the first seven days of life. Each year, Dar es Salaam and Mwanza reported the highest number of early neonatal deaths (*see Table 11*). Arusha, Morogoro and Mbeya also reported high numbers (*see Figure 18*). From 2018 to 2023, the ENMR declined in most regions; in Manyara, however, the rate in 2023 had increased since 2018 (*see Table 12*). Dar es Salaam, Lindi, Mtwara and Arusha recorded the highest ENMR in the six-year period (*see Figure 19*).

Table 11: Early neonatal deaths (2018–2023)

Region	2018 N (%)	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)	2023 N (%)	Overall; 2018–2023
Arusha	542 (4.7)	350 (3.9)	1259 (15.4)	441 (6.6)	355 (5.2)	415 (5.8)	3362 (6.8)
Dar es Salaam	1916 (16.6)	1274 (14.2)	502 (6.1)	1659 (24.7)	1736 (25.4)	1256 (17.5)	8343 (16.9)
Dodoma	253 (2.2)	251 (2.8)	318 (3.9)	219 (3.3)	340 (5.0)	276 (3.9)	1657 (3.4)
Geita	247 (2.1)	149 (1.7)	203 (2.5)	105 (1.6)	149 (2.2)	69 (1.0)	922 (1.9)
Iringa	211 (1.8)	137 (1.5)	417 (5.1)	139 (2.1)	133 (1.9)	169 (2.4)	1206 (2.4)
Kagera	298 (2.6)	234 (2.6)	194 (2.4)	156 (2.3)	167 (2.4)	203 (2.8)	1252 (2.5)
Katavi	119 (1.0)	147 (1.6)	140 (1.7)	140 (2.1)	82 (1.2)	110 (1.5)	738 (1.5)
Kigoma	238 (2.1)	307 (3.4)	261 (3.2)	250 (3.7)	155 (2.3)	87 (1.2)	1298 (2.6)
Kilimanjaro	443 (3.8)	413 (4.6)	293 (3.6)	415 (6.2)	358 (5.2)	290 (4.0)	2212 (4.5)
Lindi	318 (2.8)	362 (4.0)	192 (2.3)	166 (2.5)	203 (3.0)	244 (3.4)	1485 (3.0)
Manyara	136 (1.2)	196 (2.2)	172 (2.1)	220 (3.3)	224 (3.3)	339 (4.7)	1287 (2.6)
Mara	713 (6.2)	164 (1.8)	221 (2.7)	59 (0.9)	106 (1.6)	241 (3.4)	1504 (3.0)
Mbeya	733 (6.4)	556 (6.2)	328 (4.0)	290 (4.3)	358 (5.2)	364 (5.1)	2629 (5.3)
Morogoro	759 (6.6)	911 (10.2)	246 (3.0)	357 (5.3)	314 (4.6)	555 (7.7)	3142 (6.4)
Mtwara	357 (3.1)	232 (2.6)	318 (3.9)	222 (3.3)	155 (2.3)	249 (3.5)	1533 (3.1)
Mwanza	986 (8.6)	1094 (12.2)	500 (6.1)	677 (10.1)	734 (10.8)	757 (10.6)	4748 (9.6)
Njombe	248 (2.2)	215 (2.4)	173 (2.1)	77 (1.1)	72 (1.1)	66 (0.9)	851 (1.7)
Pwani	134 (1.2)	94 (1.0)	419 (5.1)	26 (0.4)	59 (0.9)	58 (0.8)	790 (1.6)
Rukwa	281 (2.4)	350 (3.9)	232 (2.8)	163 (2.4)	135 (2.0)	161 (2.2)	1322 (2.7)
Ruvuma	369 (3.2)	206 (2.3)	173 (2.1)	88 (1.3)	126 (1.8)	95 (1.3)	1057 (2.1)
Shinyanga	285 (2.5)	185 (2.1)	205 (2.5)	152 (2.3)	156 (2.3)	286 (4.0)	1269 (2.6)
Simiyu	168 (1.5)	108 (1.2)	221 (2.7)	34 (0.5)	52 (0.8)	103 (1.4)	686 (1.4)
Singida	226 (2.0)	430 (4.8)	185 (2.3)	271 (4.0)	181 (2.7)	261 (3.6)	1554 (3.1)
Songwe	200 (1.7)	122 (1.4)	275 (3.4)	101 (1.5)	78 (1.1)	63 (0.9)	839 (1.7)
Tabora	1078 (9.4)	331 (3.7)	371 (4.5)	114 (1.7)	203 (3.0)	246 (3.4)	2343 (4.7)
Tanga	266 (2.3)	155 (1.7)	372 (4.5)	166 (2.5)	192 (2.8)	201 (2.8)	1352 (2.7)
Total	**11,524**	**8,973**	**8,190**	**6,707**	**6,823**	**6,888**	**49,381**

Table 12: Early neonatal mortality rates (ENMR) per 1000 total births by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023
Arusha	8.8	5.2	18.7	6.5	5.2	6.0
Dar es Salaam	15.3	9.6	3.4	12.1	12.1	7.9
Dodoma	3.5	3.0	3.7	2.3	3.6	2.7
Geita	2.6	1.5	2.0	1.1	1.4	0.6
Iringa	6.0	3.9	11.6	3.8	3.6	4.6
Kagera	3.1	2.3	1.9	1.5	1.6	1.8
Katavi	4.0	4.4	3.9	3.8	2.1	2.3
Kigoma	2.2	2.8	2.3	2.3	1.4	0.8
Kilimanjaro	10.2	9.3	6.5	9.0	6.9	4.0
Lindi	11.5	13.0	6.3	5.2	6.4	6.7
Manyara	3.4	4.3	3.5	4.1	4.0	6.0
Mara	10.4	2.1	2.5	0.7	1.1	2.3
Mbeya	10.4	7.8	4.6	4.0	4.7	4.6
Morogoro	9.6	11.0	2.8	4.1	3.5	5.5
Mtwara	8.6	5.6	7.7	5.2	4.0	6.1
Mwanza	7.0	7.4	3.4	4.7	4.8	4.6
Njombe	9.8	8.5	6.8	3.0	2.8	2.6
Pwani	2.5	1.7	7.0	0.4	1.0	0.9
Rukwa	5.2	6.4	4.0	2.9	2.5	2.8
Ruvuma	6.9	3.8	3.1	1.5	2.1	1.5
Shinyanga	3.4	2.3	2.6	2.1	2.0	3.2
Simiyu	2.8	1.4	2.5	0.4	0.5	0.9
Singida	4.5	7.2	3.2	4.3	2.9	3.7
Songwe	5.2	2.9	6.1	2.2	1.6	1.3
Tabora	9.1	2.6	2.7	0.9	1.7	1.9
Tanga	4.5	2.5	5.7	2.3	2.7	2.7
Overall	**6.7**	**4.9**	**4.3**	**3.5**	**3.5**	**3.2**

Figure 18: Early neonatal deaths reported in Tanzania (2018–2023)
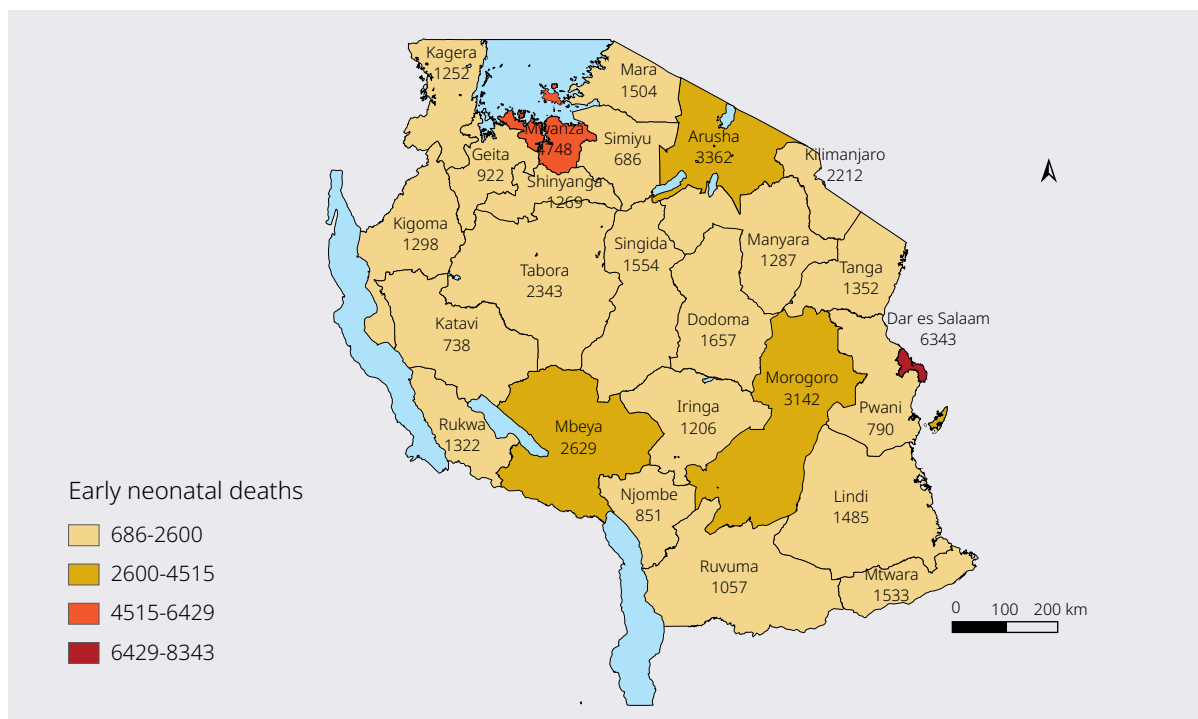
Figure 19: Early neonatal mortality rate (ENMR) reported in Tanzania (2018–2023)
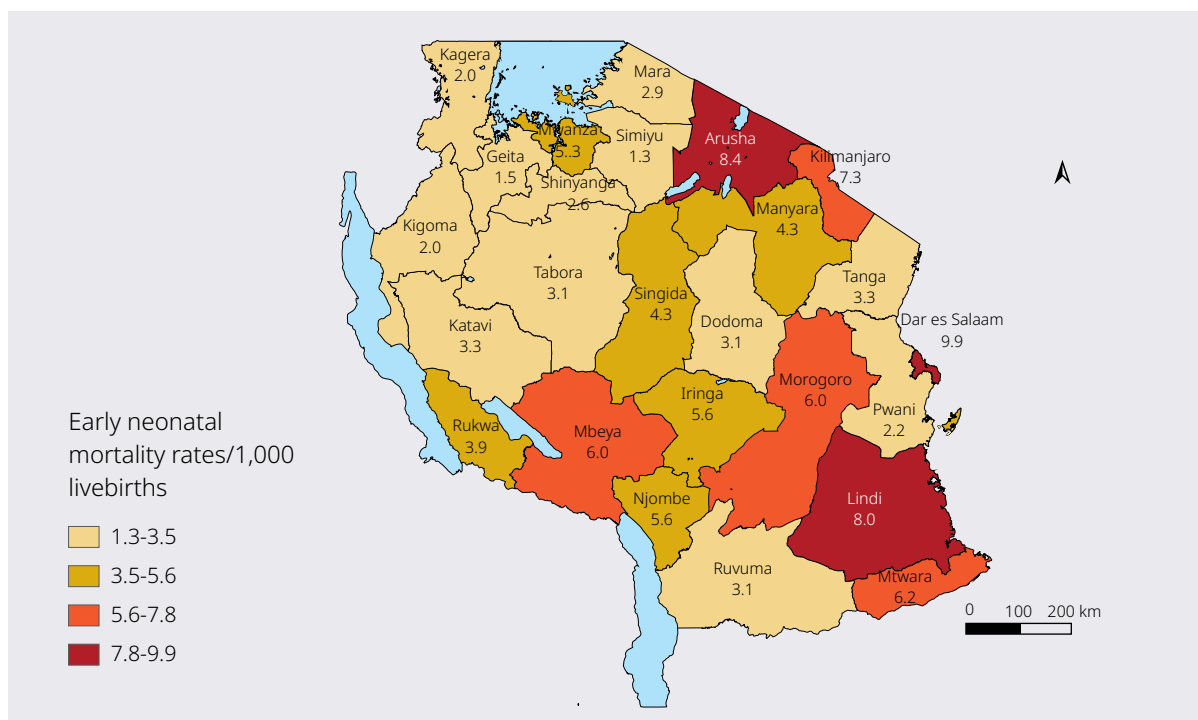
3.2.12.5 Perinatal mortality rate

The PMR declined sharply from 2018 to 2020, and steadily to 2022, then surged slightly in 2023 (*see Figure 20*).

Figure 20: Perinatal mortality rates (PMR) 2018–2023
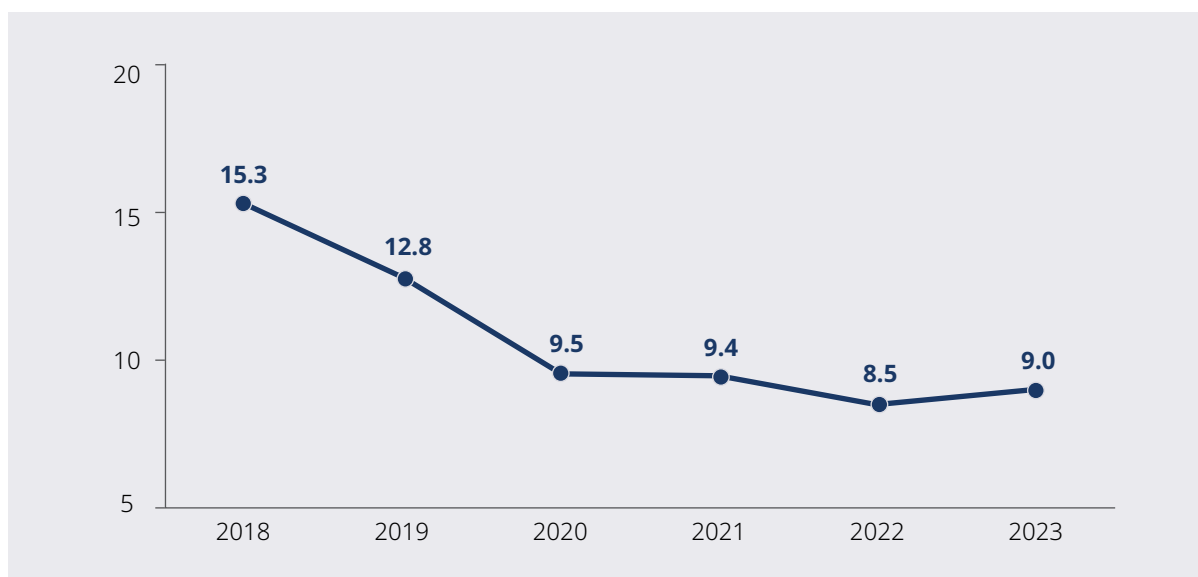
3.2.12.6 Perinatal mortality

Perinatal mortality is the total number of perinatal deaths (stillbirths and early neonatal deaths) reported during a certain period. More than 33 per cent of yearly perinatal deaths were reported from Dar es Salaam, Mwanza, Morogoro, and Tabora (*see Table 13*). Dar es Salaam and Mwanza reported the highest number of perinatal deaths (*see Figure 21*). Arusha, Tabora and Morogoro also reported a high number of perinatal deaths.

Table 13: Perinatal death by region (2018–2023)

Region	2018 N (%)	2019 N (%)	2020 N (%)	2021 N (%)	2022 N (%)	2023 N (%)	Overall; 2018–2023
Arusha	1322 (5.0)	813 (3.4)	2668 (14.6)	1145 (6.4)	859 (5.1)	978 (5.0)	7785 (6.3)
Dar es Salaam	3539 (13.3)	2559 (10.8)	978 (5.4)	3218 (18.0)	3020 (18.0)	2864 (14.5)	16178 (13.2)
Dodoma	584 (2.2)	637 (2.7)	687 (3.8)	544 (3.0)	591 (3.5)	467 (2.4)	3510 (2.9)
Geita	830 (3.1)	638 (2.7)	457 (2.5)	538 (3.0)	685 (4.1)	813 (4.1)	3961 (3.2)
Iringa	499 (1.9)	472 (2.0)	771 (4.2)	478 (2.7)	381 (2.3)	458 (2.3)	3059 (2.5)
Kagera	884 (3.3)	653 (2.8)	588 (3.2)	377 (2.1)	360 (2.1)	493 (2.5)	3355 (2.7)
Katavi	612 (2.3)	943 (4.0)	399 (2.2)	511 (2.9)	404 (2.4)	686 (3.5)	3555 (2.9)
Kigoma	1042 (3.9)	819 (3.5)	681 (3.7)	710 (4.0)	595 (3.5)	670 (3.4)	4517 (3.7)
Kilimanjaro	561 (2.1)	530 (2.2)	537 (2.9)	489 (2.7)	427 (2.5)	435 (2.2)	2979 (2.4)
Lindi	737 (2.8)	948 (4.0)	495 (2.7)	351 (2.0)	468 (2.8)	557 (2.8)	3556 (2.9)
Manyara	401 (1.5)	629 (2.7)	432 (2.4)	664 (3.7)	568 (3.4)	714 (3.6)	3408 (2.8)
Mara	866 (3.3)	795 (3.4)	490 (2.7)	210 (1.2)	489 (2.9)	748 (3.8)	3598 (2.9)
Mbeya	1093 (4.1)	1032 (4.4)	664 (3.6)	870 (4.9)	818 (4.9)	810 (4.1)	5287 (4.3)
Morogoro	1890 (7.1)	2283 (9.7)	683 (3.7)	946 (5.3)	700 (4.2)	1419 (7.2)	7921 (6.4)
Mtwara	748 (2.8)	661 (2.8)	697 (3.8)	725 (4.0)	492 (2.9)	599 (3.0)	3922 (3.2)
Mwanza	2257 (8.5)	2248 (9.5)	1114 (6.1)	1446 (8.1)	1638 (9.8)	1627 (8.2)	10330 (8.4)
Njombe	422 (1.6)	501 (2.1)	378 (2.1)	172 (1.0)	142 (0.8)	171 (0.9)	1786 (1.5)
Pwani	528 (2.0)	461 (1.9)	853 (4.7)	366 (2.0)	290 (1.7)	359 (1.8)	2857 (2.3)
Rukwa	719 (2.7)	977 (4.1)	462 (2.5)	456 (2.5)	287 (1.7)	370 (1.9)	3271 (2.7)
Ruvuma	825 (3.1)	517 (2.2)	425 (2.3)	230 (1.3)	297 (1.8)	254 (1.3)	2548 (2.1)
Shinyanga	834 (3.1)	600 (2.5)	520 (2.8)	624 (3.5)	653 (3.9)	920 (4.7)	4151 (3.4)
Simiyu	666 (2.5)	889 (3.8)	575 (3.1)	260 (1.5)	303 (1.8)	443 (2.2)	3136 (2.6)
Singida	626 (2.4)	996 (4.2)	362 (2.0)	670 (3.7)	493 (2.9)	593 (3.0)	3740 (3.0)
Songwe	628 (2.4)	429 (1.8)	579 (3.2)	457 (2.6)	266 (1.6)	173 (0.9)	2532 (2.1)
Tabora	2064 (7.8)	1119 (4.7)	982 (5.4)	880 (4.9)	948 (5.7)	1184 (6.0)	7177 (5.8)
Tanga	1382 (5.2)	507 (2.1)	803 (4.4)	566 (3.2)	596 (3.6)	928 (4.7)	4782 (3.9)
Total	**26,559**	**23,656**	**18,280**	**17,903**	**16,770**	**19,266**	**122,901**

Figure 21: Perinatal deaths in Tanzania (2018–2023)
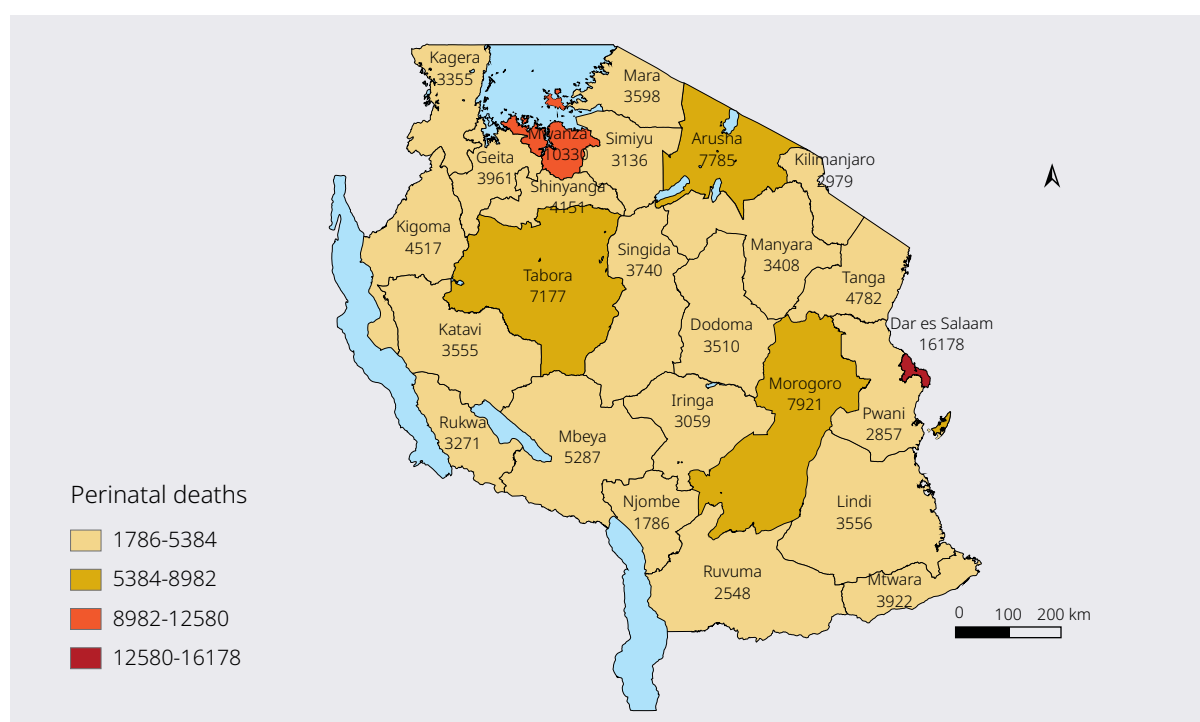
Overall, from 2018 to 2023, the PMR declined in all regions (except Shinyanga), and by more than 50 per cent in Simiyu, Songwe, Njombe, and Ruvuma (*see Table 14*). Arusha, Katavi, Lindi and Dar es Salaam reported a PMR of more than 15 per 1,000 total deliveries (*see Figure 22*).

Table 14: Perinatal mortality rate (PMR) by region (2018–2023)

Region	2018	2019	2020	2021	2022	2023
Arusha	21.4	12.1	39.5	16.8	12.6	14.2
Dar es Salaam	28.2	19.4	6.7	23.5	21.0	18.1
Dodoma	8.1	7.5	8.0	5.7	6.3	4.6
Geita	8.8	6.4	4.6	5.4	6.5	7.0
Iringa	14.3	13.3	21.5	12.9	10.3	12.5
Kagera	9.2	6.4	5.7	3.7	3.4	4.3
Katavi	20.6	28.1	11.1	14.0	10.2	14.6
Kigoma	9.8	7.6	6.0	6.6	5.5	6.1
Kilimanjaro	12.9	12.0	11.9	10.6	8.3	6.0
Lindi	26.7	34.1	16.4	11.0	14.8	15.4
Manyara	10.1	13.8	8.9	12.4	10.1	12.6
Mara	12.7	10.0	5.5	2.3	5.2	7.3

Region	2018	2019	2020	2021	2022	2023
Mbeya	15.5	14.4	9.2	11.9	10.9	10.3
Morogoro	23.9	27.6	7.9	10.8	7.9	14.1
Mtwara	18.0	15.9	16.9	17.1	12.5	14.6
Mwanza	16.1	15.2	7.5	10.1	10.7	10.0
Njombe	16.7	19.9	14.8	6.7	5.6	6.7
Pwani	9.7	8.3	14.3	6.2	5.1	5.4
Rukwa	13.2	17.9	8.0	8.0	5.3	6.4
Ruvuma	15.4	9.5	7.5	3.9	5.1	4.0
Shinyanga	10.1	7.5	6.6	8.5	8.3	10.3
Simiyu	10.9	11.2	6.6	3.0	3.0	4.0
Singida	12.5	16.7	6.2	10.6	7.9	8.4
Songwe	16.2	10.2	12.9	10.1	5.5	3.6
Tabora	17.4	8.6	7.2	7.2	7.9	9.1
Tanga	23.3	8.2	12.2	7.9	8.3	12.3
Overall	15.3	12.8	9.5	9.4	8.5	9.0

Figure 22: Perinatal mortality rate (PMR) in Tanzania (2018–2023)
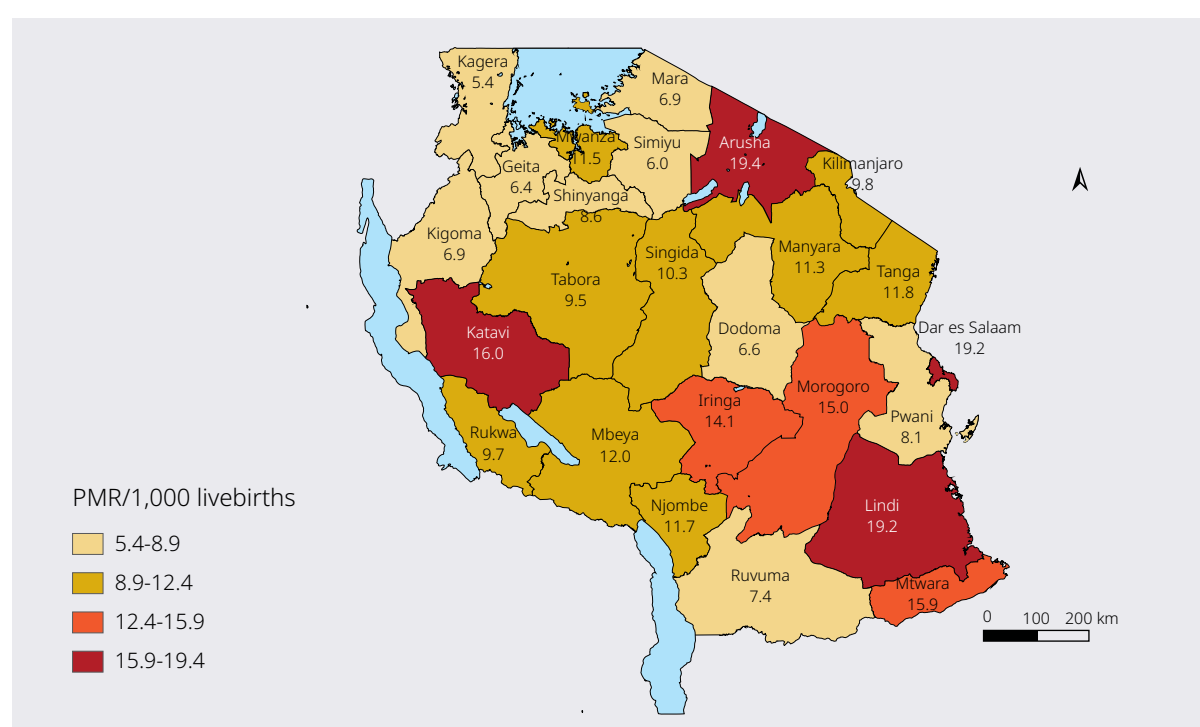
3.3 Beyond the numbers: analysis of the 2022 maternal and perinatal review

A total of 1,541 maternal deaths were reported at the MoH in 2022 and most were reviewed at the respective facility.

3.3.1 Maternal deaths

Of all the maternal deaths reviewed, 1,034 review forms were conveniently retrieved, entered into Excel and analysed.

3.3.1.1 Sociodemographic characteristics of the deceased mothers

Most of the mothers deceased in 2022 were married or cohabiting (89 per cent); they had attained primary level of education (61.6 per cent) and were they peasants or farmers (69.1 per cent) (*see Table 15*).

Table 15: Sociodemographic characteristics of the 2022 deceased mothers (n = 1,034)

Attribute	Category	Freq	Per cent
Marital status	Single	69	6.7
	Married/cohabiting	921	89.1
	Widowed/divorced/separated	14	1.3
	Unknown marital status	30	2.9
Education level	None	74	7.2
	Primary	637	61.6
	Secondary	117	11.3
	Higher education	30	2.9
	Unknown	176	17.0
Occupation	Businesswoman/Entrepreneur	94	9.1
	Formal employed	26	2.5
	Peasant/farmer	715	69.1
	Student	3	0.3
	Unemployed/Housewife	72	7.0
	Unknown	124	12.0

3.3.1.2   ANC attendance

The records show that 235 of the 1,034 deceased mothers (23 per cent) did not visit the antenatal clinic (ANC).

3.3.1.3   Number of ANC visits made

The number of ANC visits ranged between one and eight. Most mothers (41 per cent) visited the ANC more than two times; only 6 per cent made a single visit (*see Figure 23*).

Figure 23:   Number of ANC visits made during the index pregnancy (maternal deaths in 2022)

6%

53%

41%

■ One   ■ Two to three   ■ Four and above
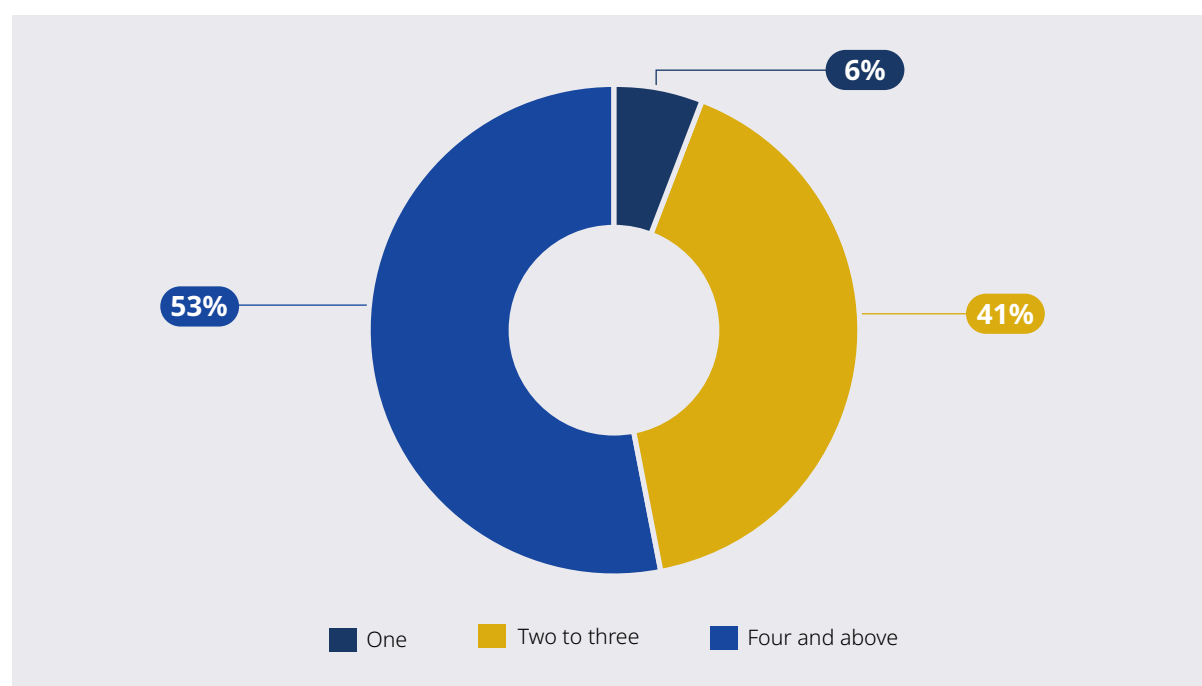
3.3.1.4   ANC location

Most (63 per cent) of the 2022 deceased mothers made ANC visits at dispensaries; the level of the health facility was not captured for 6 per cent (*see Figure 24*).

Figure 24: Level of health facility attended for ANC (maternal deaths in 2022)

6%
10%
21%
63%

■ Dispensary ■ Health centre ■ Hospital ■ Not documented
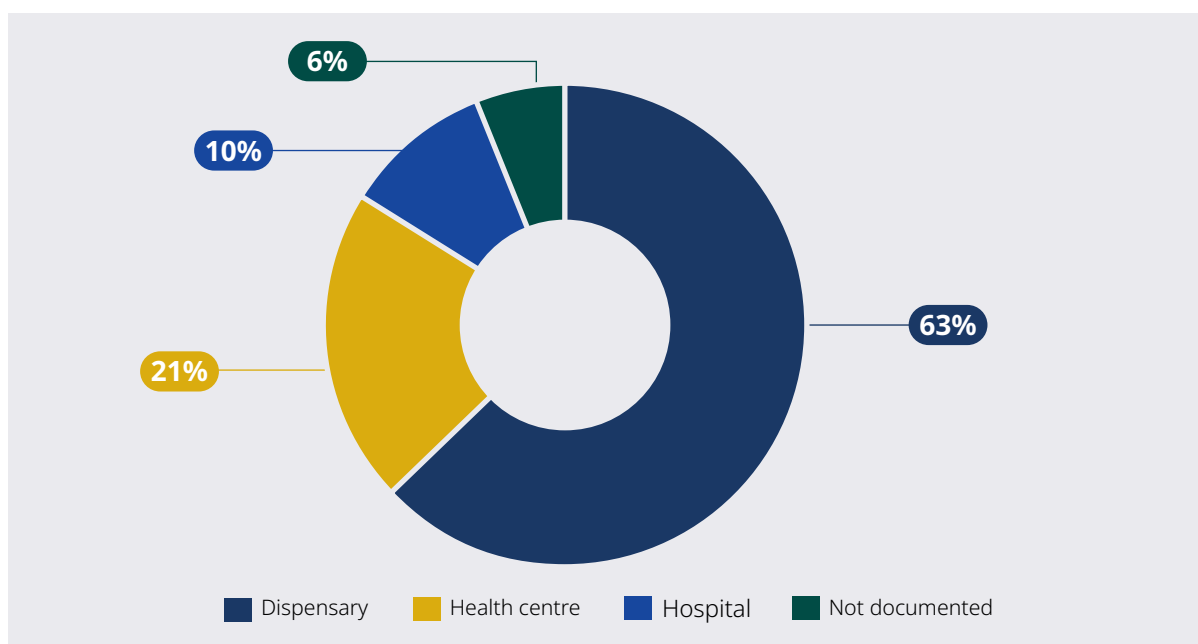
3.3.1.5 The basic package of services provided at ANC

Of the 799 maternal deaths reported with information on ANC, more than 90 per cent had an HIV test done and the tetanus toxoid vaccine offered during their ANC visit; however, only 32 per cent had received a complete package of services (*see Figure 25*).

Figure 25: Basic package of services offered during ANC visit (maternal deaths in 2022)

31.9% 59.8% 71.6% 51.3% 95.0% 49.2% 86.4% 87.5% 90.6%

Complete package | Syphilis test | Haemo-globin | Blood grouping | HIV | Urinalysis | Blood pressure | Ferous/ folic | Tetanus toxoid
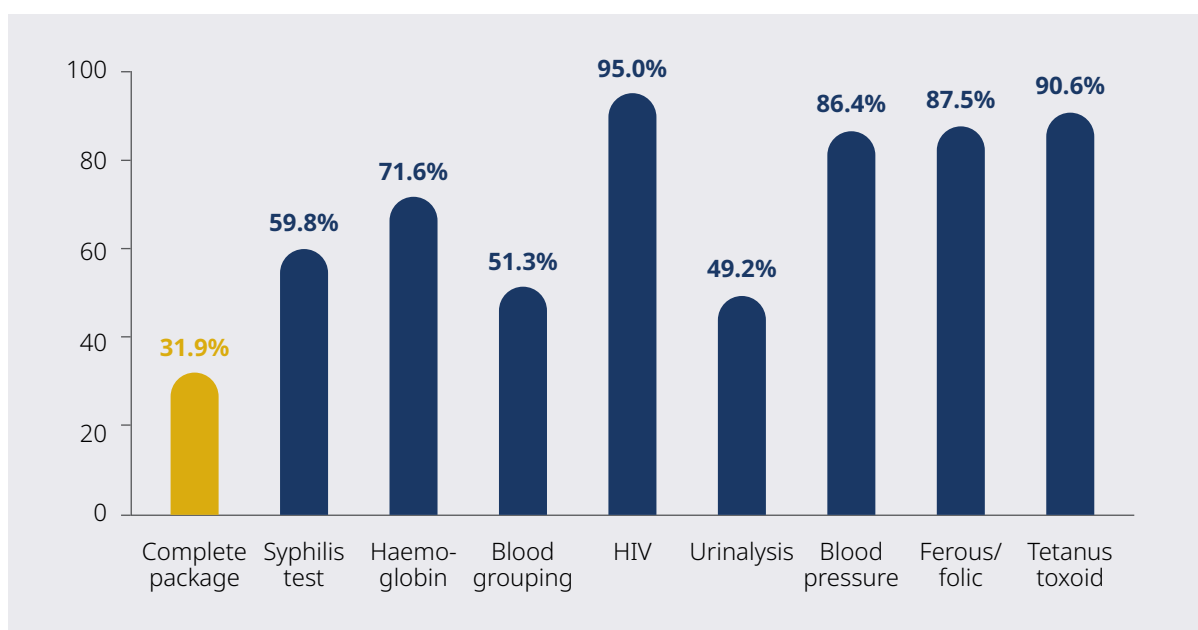
3.3.1.6 Diagnosis on admission

A total of 523 (50.6 per cent) women had filled information on the diagnosis on admission; the most frequent (of the 498 individual) diagnoses were eclampsia (16.5 per cent) and anaemia (10.9 per cent) (*see Figure 26*). The diagnosis was unknown in 8.5 per cent of the cases.

Figure 26: Diagnosis at admission (maternal deaths in 2022)
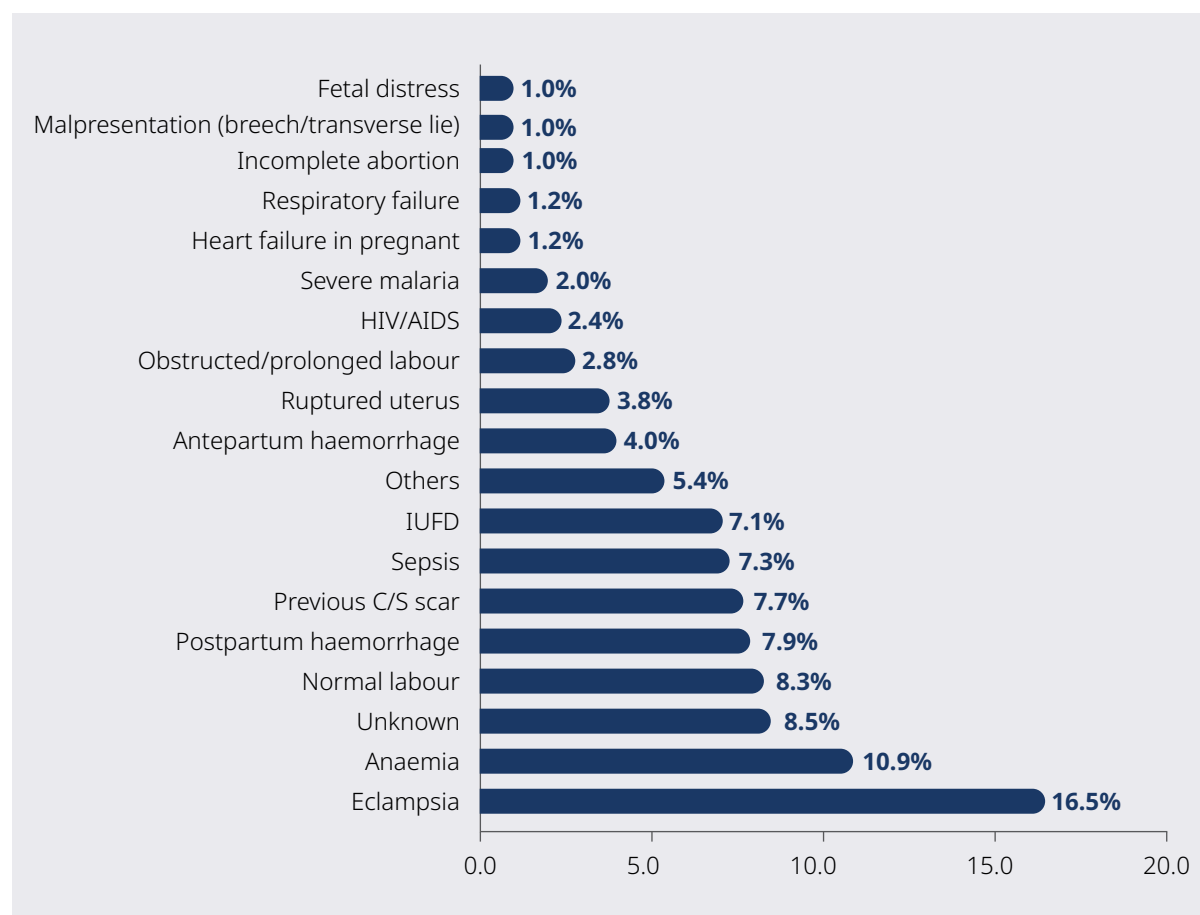
Figure 27: Duration of hospital stay (2022 maternal deaths)
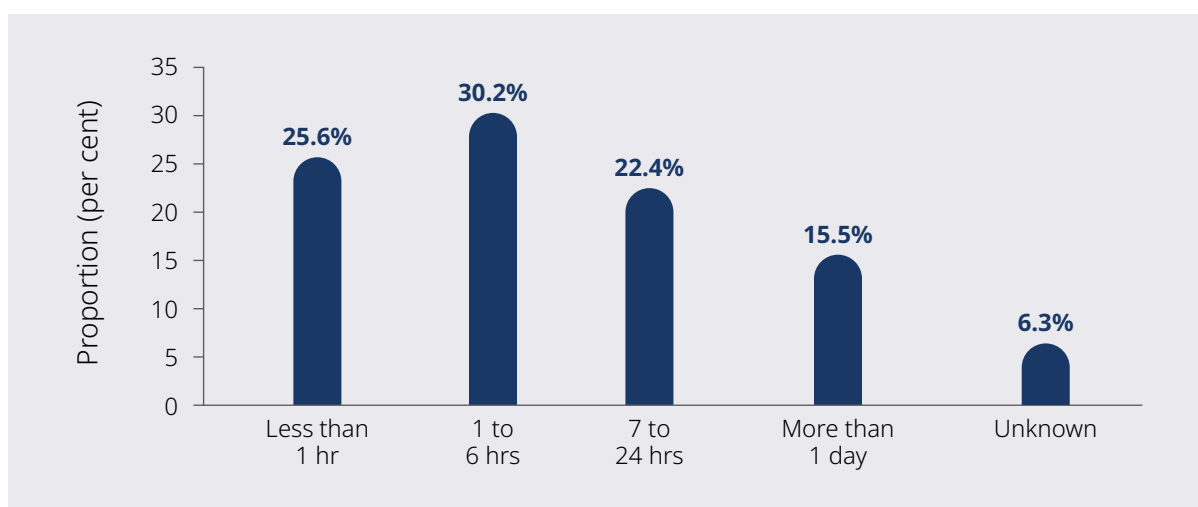
3.3.1.7 Duration of stay at final health facility where death occurred

Records of 785/1,034 women had filled information on the duration of stay at the final facility where death occurred. Most of the 2022 maternal deaths occurred either within an hour of the time of admission or between one hour and six hours (*see Figure 27*).

3.3.1.8 Timing of death

Of the 799 maternal deaths whose records had filled information on the timing of death, majority (97 per cent) occurred during the intervention (when the deceased was receiving care while at health facility). In terms of timing in relation to childbirth period, most of maternal deaths occurred during the post partum period (*see Figure 28*).

3.3.1.9 Mode of delivery

Among 807 deceased pregnant women with delivery information, majority (53 per cent) had delivered by caesarean section (*see Figure 29*).

3.3.1.10 Delivery attendant

All the 1,034 records reviewed had filled in information on the delivery attendant. Clinicians (medical officers, assistant medical officers, clinical officers) delivered almost 50 per cent of the maternal deaths in 2022; traditional birth attendants or medical attendants delivered very few deaths (*see Figure 30*).

Figure 28: Timing of death in terms of childbirth (maternal deaths in 2022)

12%
11%
15%
62%

■ Antepartum　　■ Intrapartum　　■ Postpartum　　■ Unknown
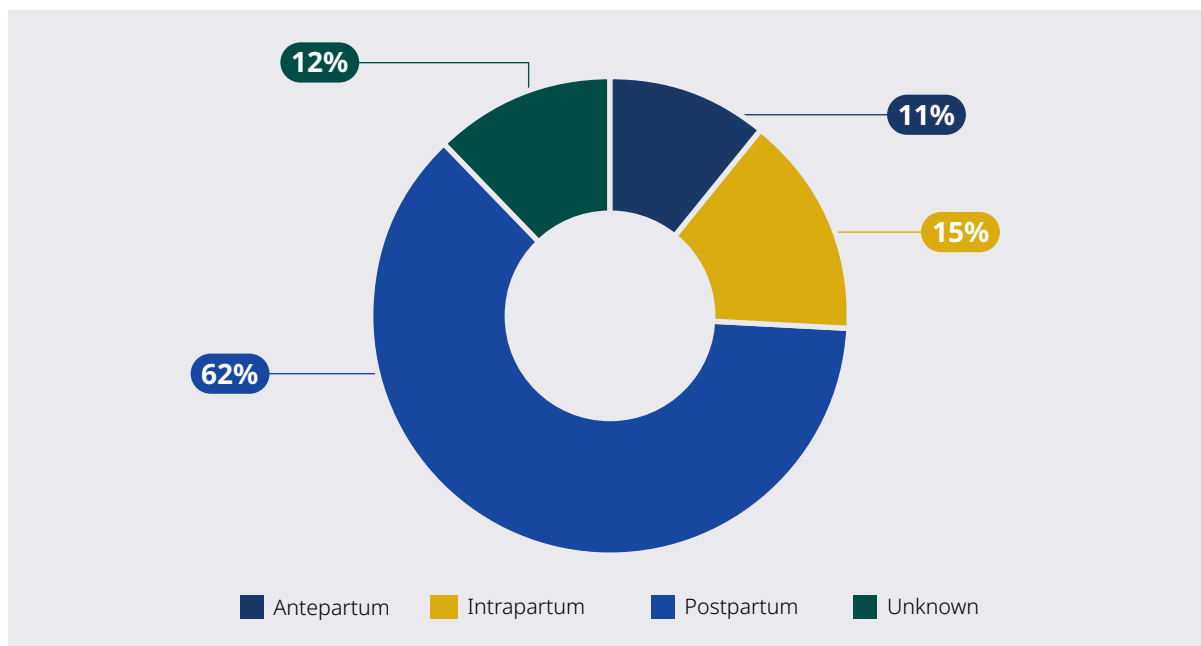
Figure 29: Mode of delivery (maternal deaths in 2022)

47%
53%

■ Caesarean section　　■ Vaginal delivery
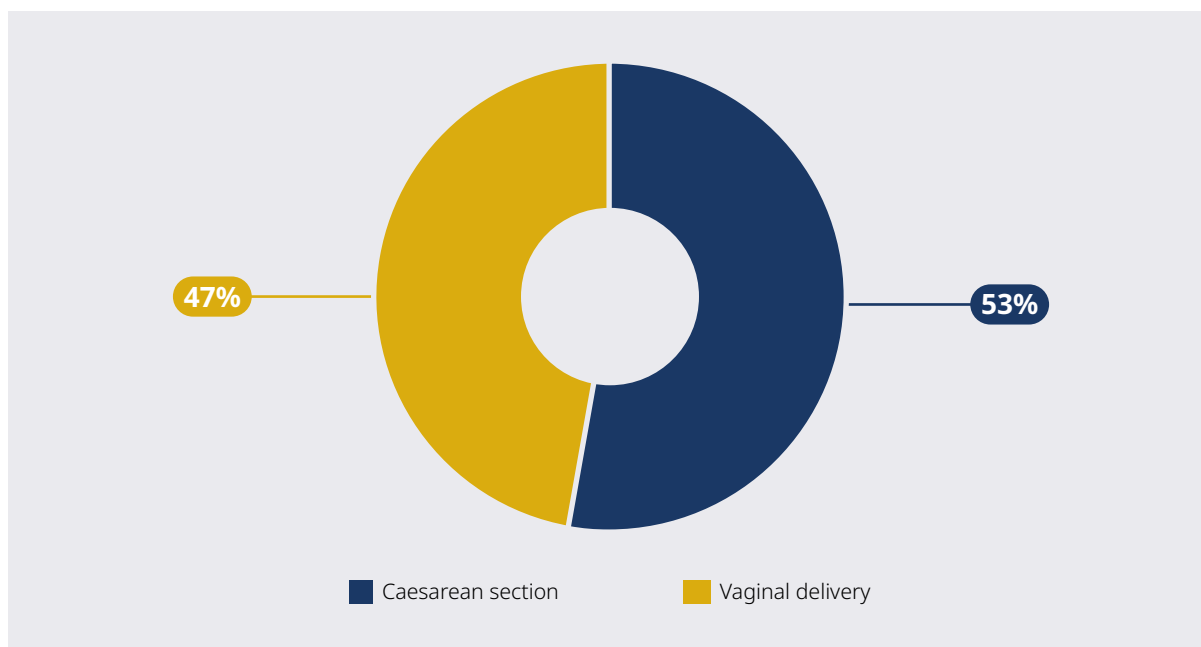
Figure 30: Delivery attendant (maternal deaths in 2022)

Medical attendant	0.8%
Traditional birth attendant	1.7%
Other	5.1%
Obstetrician	5.4%
Unknown	10.0%
Nurse/Midwife	27.3%
Clinician (CO/AMO/MO)	49.8%
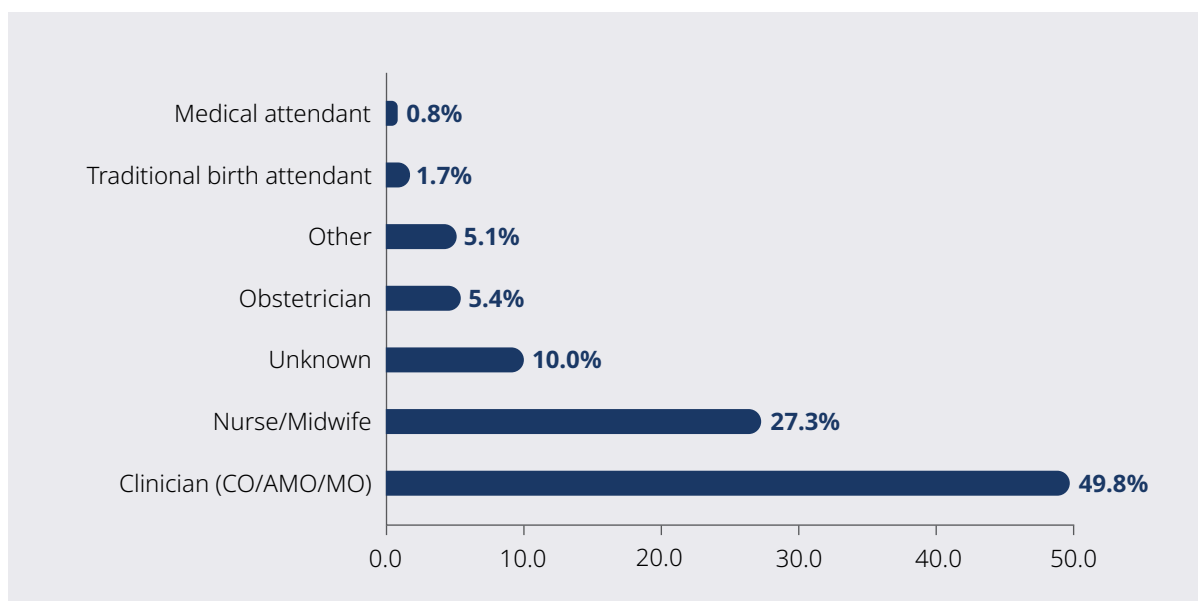
Figure 31: Outcome of pregnancy (maternal deaths in 2022)

Abortion · Fresh stillbirth · Livebirth · Macerated stillbirth · Unknown

3% · 20% · 50% · 8% · 19%
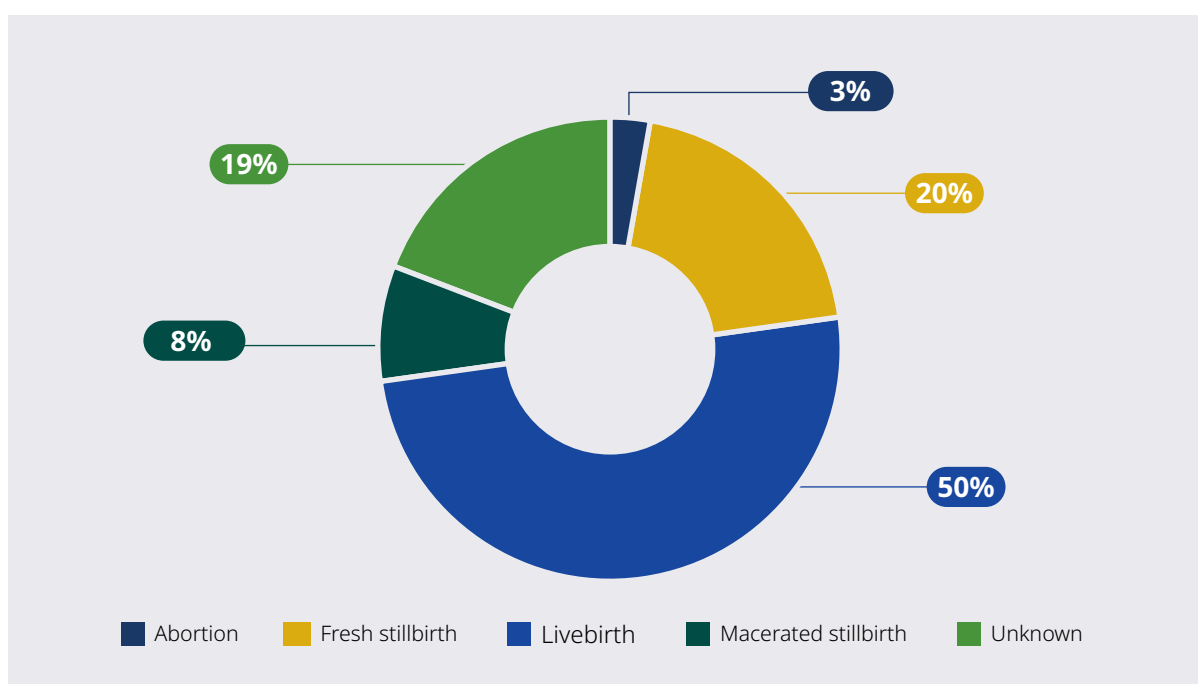
Figure 32: Level of delay contributing to maternal death

- One-level delay
- Two-level delay
- Delay at all three levels
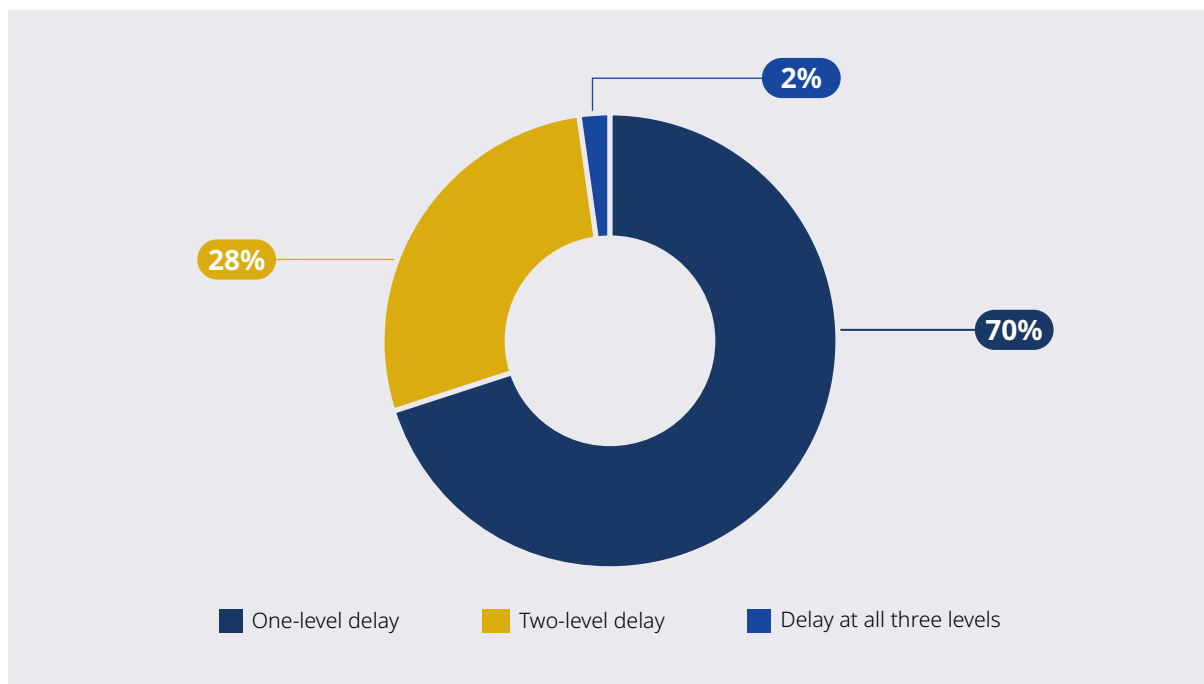
Figure 33: Number of deaths by level of delay (maternal deaths in 2022)
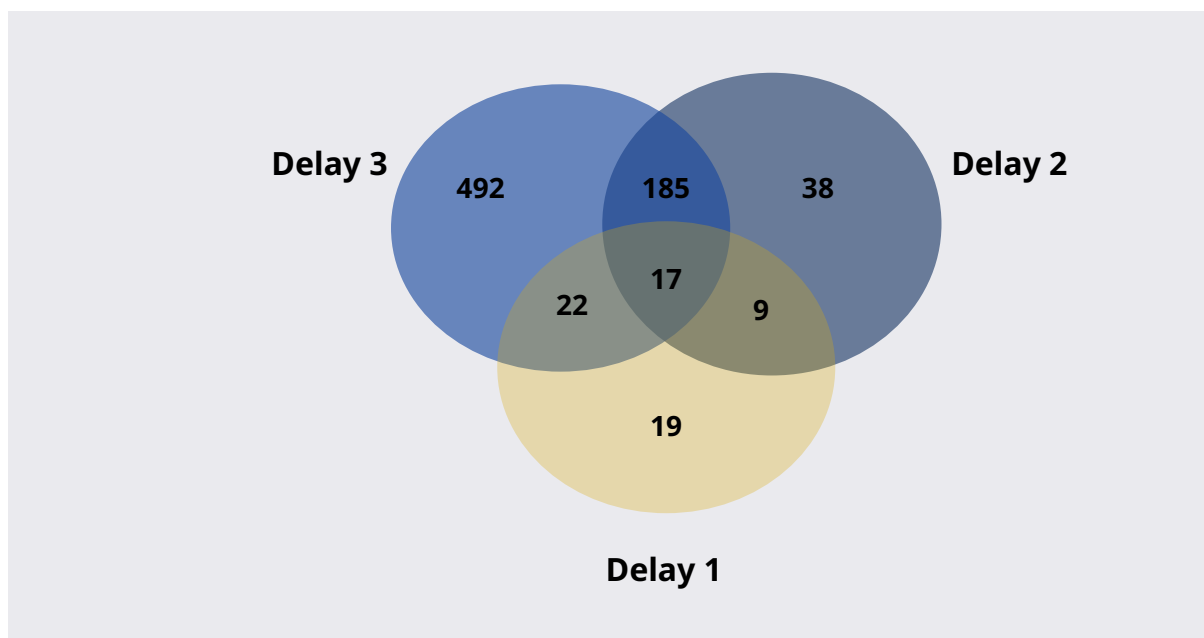
3.3.1.11 Outcome of pregnancy

About 50 per cent of all the maternal deaths in 2022 analysed (n = 1,034) ended in a livebirth and 20 per cent in a fresh stillbirth; the outcome of pregnancy was not documented pregnant in about 19 per cent of cases (*see Figure 31*).

3.3.1.12 Factors contributing to maternal death

The 'three delays' model proposes that, overwhelmingly, pregnancy related mortality is caused by delays in (1) seeking medical help for an obstetric emergency; (2) reaching the appropriate obstetric facility; and (3) receiving adequate care at the facility. The review showed that in 91 per cent of the case, death could have been prevented if the cause had been identified and addressed.

The 'three delays' model was documented in 782 cases; 70 per cent of deaths was caused by the first level of delay; 2 per cent (17 deaths) by all three levels of delay (*see Figure 32* and *Figure 33*). The most frequent delay events were reported within the third level delay (*see Table 16*): suboptimal ANC (33.1 per cent), inadequate skills of providers (18 per cent) and the absence of equipment or delays in acquiring supplies (12.1 per cent).

Table 16: Factors contributing to maternal death (2022)

Contributing factor	Events	n (%)
Delay 1 (n = 126)	Delay in starting ANC	21 (16.7)
	Delayed referral from home	35 (27.8)
	Failure to recognize danger signs	35 (27.8)
	Lack of accompaniment to health facility	10 (7.9)
	Unwillingness to seek medical help	18 (14.3)
	Lack of support from family/community members	7 (5.6)
Delay 2 (n = 261)	Delayed arrival to the referred facility	202 (77.4)
	Distance from home to health facility	13 (5.0)
	Lack of money for transport	12 (4.6)
	Lack of roads	6 (2.3)
	Lack of transport	25 (9.6)
	No facility within reasonable distance	3 (1.1)
Delay 3 (n = 738)	Delayed arrival to next facility from another facility on referral	127 (17.2)
	Delayed management after admission	60 (8.1)
	The absence of equipment and supplies (blood and blood products, oxygen and monitors) or delay in procuring them	89 (12.1)

Contributing factor	Events	n (%)
	Human error or mismanagement (inappropriate management protocols, delayed diagnosis)	79 (10.7)
	Inadequate skills of provider in the management of obstetric and anaesthetic complications	137 (18.6)
	Lack of health care provider at health facility	2 (0.3)
	Suboptimal ANC	244 (3.1)

3.3.2 Perinatal deaths

Most of the total 11,156 perinatal deaths reported to the MoH in 2022 were reviewed at the respective notifying facility; 5,542 of these were analysed.

3.3.1.13 Perinatal death categories (n = 5,542)

About 35 per cent of the perinatal deaths reviewed were early neonatal deaths, 33 per cent fresh stillbirths and 25 per cent macerated stillbirths (*see Figure 34*).

Figure 34: Perinatal death categories

Legend: Unknown/Not documented, Early neonatal death, Fresh stillbirth, Macerated stillbirth
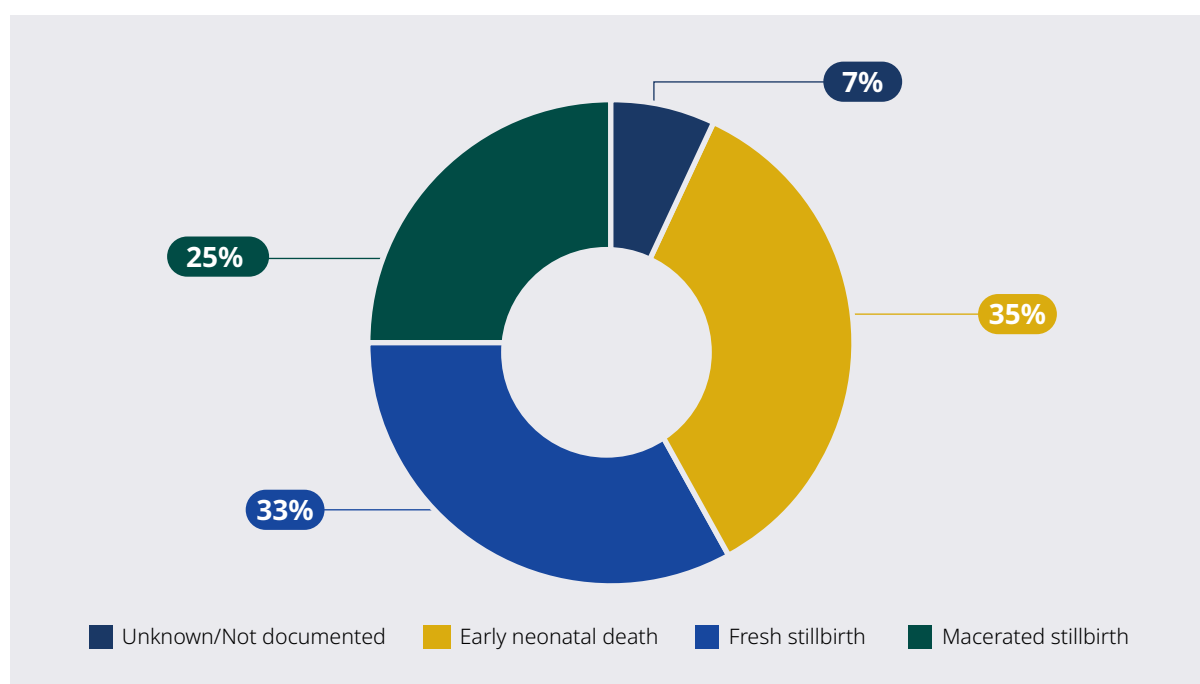
Figure 35: Place of death (2022 perinatal deaths)
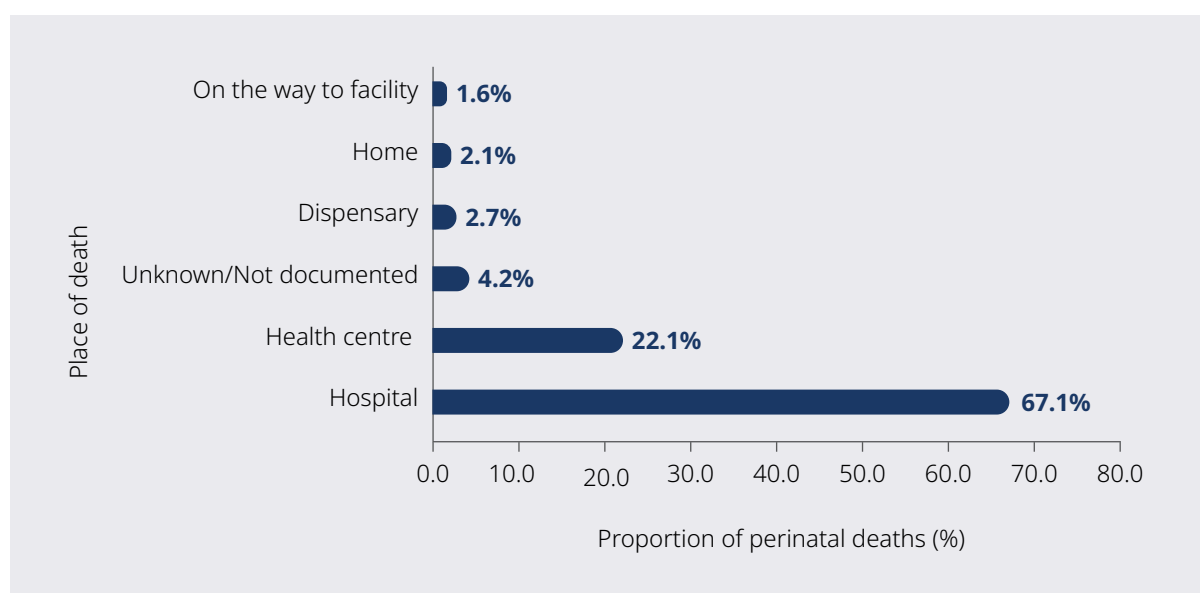
3.3.1.14 Place of death (n = 5,542)

Most of the perinatal deaths in 2022 occurred at the health facilities of hospitals and health centres (*see Figure 35*).

3.3.1.15 Characteristics of the mothers of deceased perinates (n=5,542)

More than nine tenths of the mothers were married or cohabiting, more than two thirds had completed the primary level of education, and three quarters were peasants/farmers (*see Table 17*).

Table 17: Characteristics of the deceased perinate's mother (n = 5,542)

Attribute	Categories	N	Per cent
Marital status	Single	188	3.4
	Married/cohabiting	5133	92.6
	Divorced/widowed/separated	16	0.3
	Unknown/Not Documented	205	3.7
Education level	None	480	8.7
	Primary	3800	68.6
	Secondary	512	9.2
	Post secondary	127	2.3
	Unknown/Not Documented	623	11.2

Attribute	Categories	N	Per cent
Occupation	Businesswoman/Entrepreneur	385	6.9
	Formally employed	125	2.3
	Peasant/Farmer	4172	75.3
	Student	22	0.4
	Unemployed/Housewife	261	4.7
	Unemployed/refugee	50	0.9
	Unknown/Not documented	527	9.5
Parity history	Prime	41	0.7
	Multi para (1–4)	3536	63.8
	Grand multi para (≥5)	1,109	20.0
	Unknown/Not documented	856	15.4
	Parity range 0–17; median =3		

3.3.1.16 ANC history (n = 5,542)

In the case of 98 per cent of deceased perinates, the mother had attended ANC in the index pregnancy; more than 50 per cent had attended dispensary level health facilities and had made more than four ANC visits (*see Table 18*).

Table 18:   History of the ANC of the deceased perinate's mother

Attribute	Categories	N	Per cent
Attended ANC	Yes	5424	97.9
	No	113	2.0
	Unknown	5	0.1
Number of ANC visits made*	1	270	5.0
	2–3	1910	35.2
	4 and above	3171	58.5
	Unknown/not documented	73	1.3
	Range of visits 1–9; mean=4		
Where was ANC done*	Dispensary	3066	56.5
	Health centre	1157	21.3
	Hospital	763	14.1
	Not documented	438	8.1

*Out of those who attended ANC (n = 5,424)

Figure 36: Basic package of ANC services received by a deceased perinate's mother
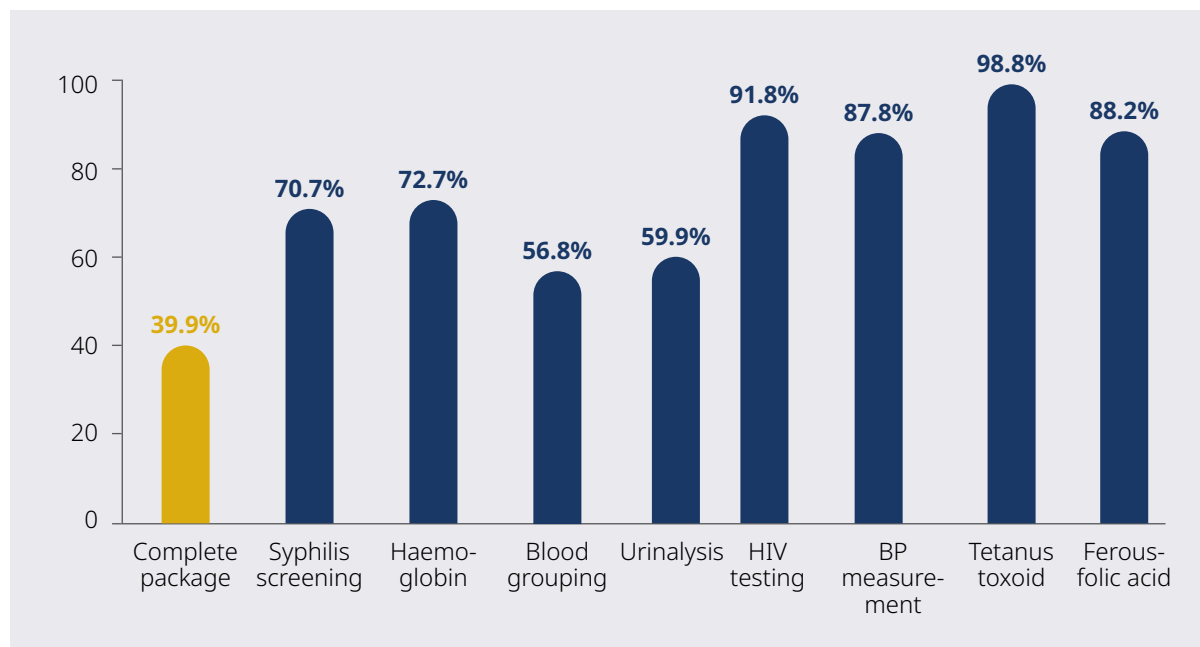
Figure 37: Mode of delivery of deceased perinate
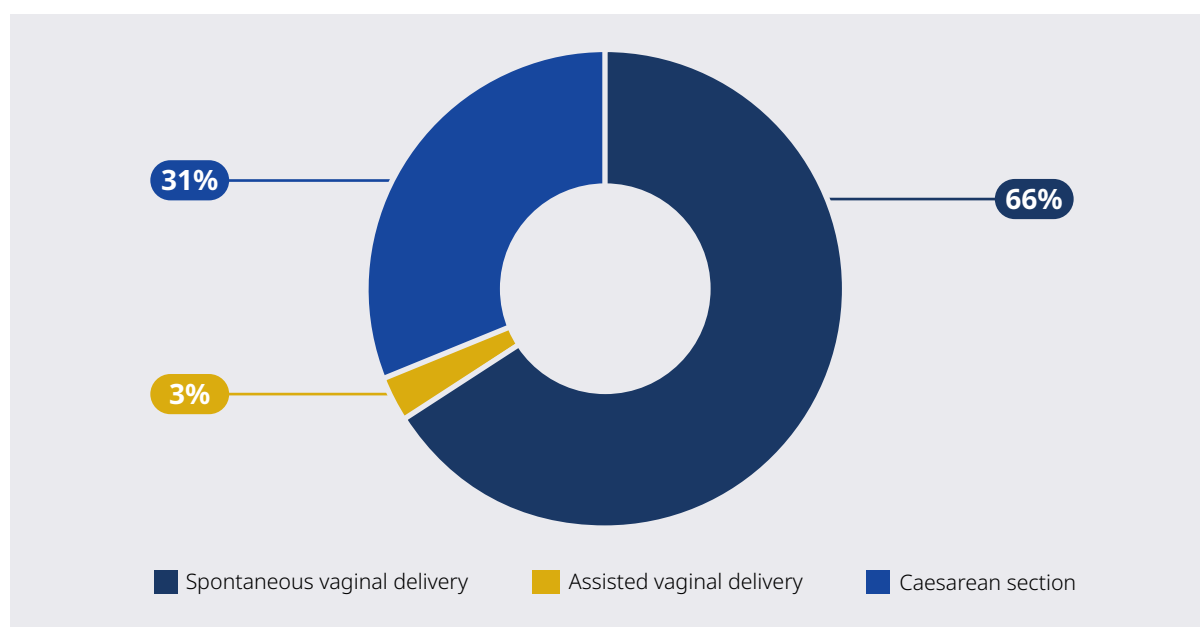
Figure 38: Attendant during delivery of deceased perinate (2022)
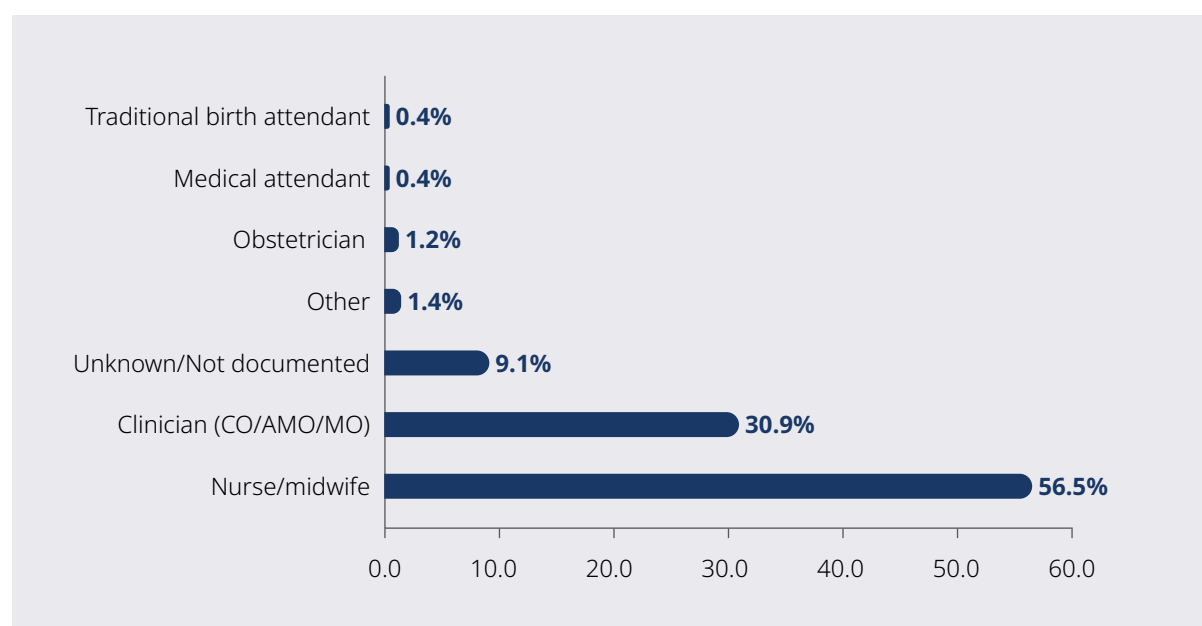
3.3.1.17 Basic package of services received at ANC

More than 90 per cent of the mothers of the 5,424 deceased perinates had received the tetanus toxoid vaccine during an ANC visit, but only 40 per cent received the complete package of ANC services (*see Figure 36*).

3.3.1.18 Labour and delivery history

3.3.1.18.1 Mode of delivery

The labour and delivery information on 5,150 records (95 per cent) was complete; most deliveries were spontaneous and about 67 per cent of the deliveries vaginal (*see Figure 37*).

3.3.1.18.2 Delivery attendant (n = 5,542)

A nurse or midwife attended most of the deliveries; traditional birth attendants attended very few (*see Figure 38*).

3.3.1.18.3 Characteristics of the deceased perinate (n = 5,542)

Most of the perinates deceased in 2022 were male (43.2 per cent). Their birth weight ranged between 2.5 kg and 4.0 kg; the mean was 2.5 kg. The mother lived in 78 per cent of the cases (*see Table 19*).

Table 19: Characteristics of the deceased perinate (2022 perinatal deaths) (n = 5,542)

Attribute	Category	N	Per cent
Sex	Male	2,393	43.2
	Female	1,966	35.5
	Unknown/not documented	1,183	21.3
Birth weight (kg)	<2.5	2,164	39.0
	2.5–4.0	2,875	51.9
	>4.0	156	2.8
	Unknown	347	6.3
	Mean	2.5	
Gestation age (weeks)	Below 36 (pre term)	1,933	34.9
	37 42 (Term)	2,428	43.8
	>42 (post term)	85	1.5
	Unknown/not documented	1,096	19.8
	Mean	29.4	
Mother alive	Yes	4,369	78.8
	No	71	1.3
	Unknown/not documented	1,102	19.9

3.3.1.18.4 ICD PM group causes of perinatal deaths

The leading group cause of macerated stillbirth was antepartum hypoxia (49.3 per cent). Most of the fresh stillbirths were caused by acute intrapartum events (17.8 per cent). The most common causes of early neonatal deaths were low birth weight and prematurity (14.2 per cent) and complications of intrapartum events (12.3 per cent) (*see Table 20*).

Table 20: ICP PM grouping of causes of death (n = 5,146)

Category	ICD PM groups of causes of deaths	N	%
Macerated (n = 1404)	Congenital anomalies	162	11.5
	Infections	134	9.5
	Antepartum hypoxia	692	49.3
	Other antepartum disorder	196	14.0
	Intrauterine fetal growth restriction	77	5.5
	Unspecified cause	22	1.6
	Undocumented cause	121	8.6
Fresh (n = 1833)	Congenital anomalies	81	4.4
	Birth trauma	83	4.5
	Acute intrapartum event	326	17.8
	Infections	88	4.8
	Unspecified intrapartum disorder	105	5.7
	Disorders related to fetal growth	60	3.3
	Unspecified cause	136	7.4
	Undocumented cause	954	52.0
Early neonatal deaths (n = 1909)	Congenital anomalies	119	6.2
	Disorders related to fetal growth	72	3.8
	Birth trauma	83	4.3
	Complications of intrapartum events	235	12.3
	Convulsion and disorders of cerebral status	90	4.7
	Infections	131	6.9
	Respiratory and cardiovascular disorders	152	8.0
	Other neonatal conditions	117	6.1
	Low birth weight and prematurity	271	14.2
	Miscellaneous	56	2.9
	Unspecified cause	72	3.8
	Undocumented cause	511	26.8

3.3.1.18.5 Maternal conditions contributing to perinatal death

Of the 5,542 reviewed perinatal death records, 770 (13.9 per cent) had documentation on maternal conditions contributing to perinatal deaths. More than a quarter of these were due to Pre eclampsia/Eclampsia followed by anaemia (11.7 per cent) (*see Figure 39*). The "others" group comprised conditions such as multiple pregnancies, malpresentation, teenage pregnancy, Intrauterine fetal deaths and mental disorders.

Figure 39: Maternal conditions contributing to perinatal death

Condition	Proportion (%)
Fetal distress	0.8%
Congenital malformation	0.8%
PPH	0.8%
RH incompatibility	0.8%
Post-date	1.0%
Diabetes	1.2%
Local herbs intoxication	1.6%
UTI	1.7%
Previous scar	1.9%
Cord prolapse/nuchal cord	1.9%
Pre-term	2.2%
PROM	2.2%
Syphilis	2.3%
Sepsis	2.7%
Ruptured uterus	3.0%
APH	3.2%
Abruptio placenta	3.4%
HIV/AIDS	3.9%
ANC related factors	5.7%
Others	5.8%
Malaria	7.9%
Obstructed/prolonged labour	8.2%
Anaemia	11.7%
Preeclampsia/eclampsia	25.2%

Proportion (%)

3.3.1.18.6 Factors contributing to perinatal death

The review of perinatal death records showed that 77 per cent (n = 4,260) of the deaths could have been avoided if the dysfunctions identified had been addressed; delay was documented to have contributed to 3,428 (61.8 per cent) of all perinatal deaths. Of the 3,428 deaths where delay was documented, 43 per cent had only one level delay and 28 per cent sustained all three levels of delay (*see Figure 40*). A total of 945 perinatal deaths were linked with all three levels of delay (*see Figure 41*).

Figure 40: Delays contributing to perinatal death

- One level delay
- Two levels delay
- All three levels delay
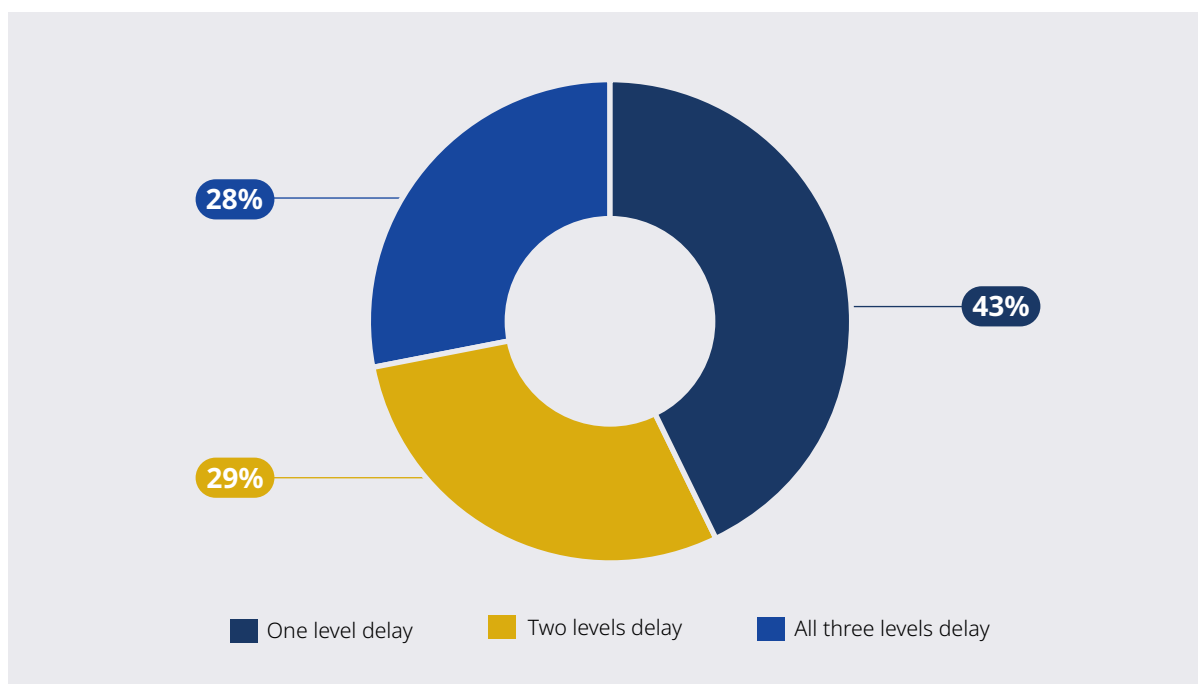
Figure 41: Levels of delay contributing to perinatal death

Delay 3
Delay 2
Delay 1

515
144
116
672
945
196
840
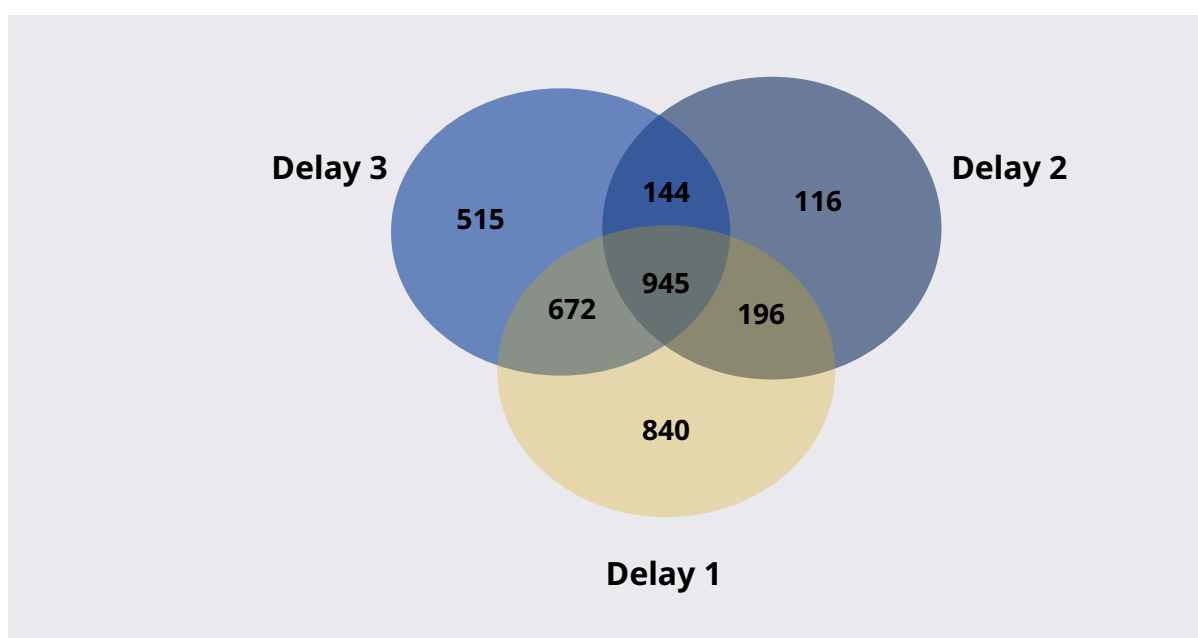
3.4 Assessment of MPDSR implementation and process measurement

At the regional, council and facility levels in four regions, a total of 24 MPDSR teams were assessed, including four regional MPDSR teams, eight council MPDSR teams and 12 health facility MPDSR teams (four each at the regional referral hospital level, council hospital level and CEmONC designed health centre level) (*see Table 21*).

Table 21: Regional, council and facility level MPDSR teams assessed

S/N	Regional level	Council level		Facility level
1	Arusha	Arusha City	1	Arusha RRH
			2	Levolosi HC
		Meru DC	3	Meru DH
2	Morogoro	Morogoro MC	1	Morogoro RRH
			2	Sabasaba HC
		Kilosa DC	3	Kilosa DH
3	Singida	Singida MC	1	Singida RRH
			2	Sokoine HC
		Manyoni DC	3	Manyoni DH
4	Iringa	Iringa MC	1	Iringa RRH
			2	Frelimo DH
		Iringa DC	3	Idodi HC

3.4.1 MPDSR review process, documentation and dissemination of findings at facility, council and regional levels

Performance of the MPDSR process requires teams to have the MPDSR guidelines and the review notification and review forms. The guideline stipulates that members at all levels be appointed by letters and that participation in regular MPDSR meetings being mandatory (*see Table 22*).

The assessment team observed that all the teams assessed had the MPDSR guideline and the forms for maternal and perinatal death notification and review forms were available at all levels. Nearly all regional, council and facility teams (96 per cent) were observed to prepare periodic MPDSR reports and archive them in paper (87.5 per cent) or electronic (8 per cent) format.

Most of the teams assessed (83 per cent) assessed compiled the minutes of meetings, although as per the MPDSR guideline the minutes were complete in only 29 per cent of cases. Most teams (87.5 per cent) developed actionable recommendations, mostly at facility levels (91.6 per cent).

3.4.2 MPDSR performance through notification, review, action plan development and implementation for the reported deaths

The MPDSR guideline requires all maternal and perinatal deaths to be notified and reviewed; action plans developed; and follow up conducted for the action plans developed. The assessment examined the process that was used by facilities to conduct review and develop action plan for maternal and neonatal deaths that occurred during the year 2023 in the sampled region.

Table 22: MPDSR performance status of key implementation variables

S/N	Levels	Regional (n = 4)	Council (n = 8)	Facility (n = 12)	All levels (n = 24)
1.	Variables	Number (%)	Number (%)	Number (%)	Number (%)
2.	MPSDR guideline and forms	4 (100)	8 (100)	12 (100)	24 (100)
3.	MPDSR reports	4 (100)	8 (100)	11 (91.6)	23 (95.8)
4.	MPDSR data display	2(50)	2(25)	4(33)	11(45.8)
5.	MPDSR regular meetings	4 (100)	8 (100)	10 (83)	22 (91.6)
6.	MPDSR focal person	4 (100)	8 (100)	12 (100)	24 (100)
7.	Letter of appointment to MPDSR committee	3 (75)	7 (87.5)	11 (91.6)	21 (87.5)
8.	Member attendance mandatory	4 (100)	8 (100)	11 (91.6)	23 (95.8)
9.	RMO/DMO/MOIc regularly attend meeting	4 (100)	8 (100)	11 (91.6)	23 (95.8)
10.	MDSR meeting minutes available	4 (100)	7 (87.5)	10 (83)	20 (83.3)
11.	Quality of meeting minutes per guideline	4 (100)	4 (50)	6 (50)	14 (58)
12.	MPDSR teams received training	3 (75)	6 (75)	8 (66.7)	17 (70.1)
13.	Regular MPDSR supervision	0 (0)	1 (12.5)	4 (33.3)	5 (21)
14.	Recommendations are actionable	3 (75)	7 (87.5)	11 (91.6)	21 (87.5)
15.	Implementation status discussed in subsequent meeting	3 (75)	5 (62.5)	8 (66.7)	16 (66.7)
16.	Regular feedback to community on maternal death	2 (50)	2 (25)	3 (25)	7 (29)

Table 23: Facility maternal death notification and review process

	Notified	Reviewed	Action plans developed	Evidence of follow up
Total Regional Referral Hospital	45	45	44	41
RRH rate	100%	100%	98%	91%
Total District Hospital	7	7	6	2
DH rate	100%	100%	86%	29%
Total	6	6	4	2
DH rate	100%	100%	67%	33%
Grand total	**58**	**58**	**54**	**45**
Overall rate	**100%**	**100%**	**93%**	**78%**

Table 24: Facility neonatal death notification and review process

	Notified	Reviewed	Action plans developed	Evidence of follow up
Total RRH	344	165	86	28
RRH rate	100%	48%	25%	8%
Total DH	23	21	16	10
DH rate	100%	91%	70%	43%
Total Health Centre	1	1	1	1
HC rate	100%	100%	100%	100%
Total	**368**	**187**	**103**	**39**
Overall rate	**100%**	**51%**	**28%**	**11%**

3.4.3 Facility maternal death notification and review process

The assessment found the maternal death notification and review rate at all facility levels to be 100 per cent. The overall development of action plans to address the dysfunction found at facilities was 93 per cent; however, action plans were developed for only 67 per cent of the maternal deaths at health centres. The follow up on the implementation of action plans was 78 per cent overall and 91 per cent at regional referral hospitals but 29 per cent at district hospitals and 33 per cent at health centres (*see Table 23*).

3.4.4 Facility neonatal deaths notification and review process

The overall facility neonatal deaths notification was found to be 100 per cent; however, all the other process measurements had low scores, such as death reviews (51 per cent), development of action plans (28 per cent) and follow up of action plan implementation (11 per cent) (*see Table 24*).

3.4.5 Perceived output, facilitating factors and barriers of MPDSR implementation

The MPDSR process has key barriers, facilitators and recommendations for improving performance and, ultimately, reducing maternal and perinatal deaths. The MPDSR team members need to understand these.

3.4.6 The usefulness of MPDSR at all levels

All the teams assessed at all levels reported that MPDSR is useful in improving training and mentorship of health care providers (33 per cent); reducing maternal and perinatal deaths (18 per cent); building commitment among health care service providers (18 per cent); increasing the accountability of managers and health care providers (15 per cent); facilitating improvements in the quality of care (13 per cent); and providing mechanisms for feedback (3 per cent).

3.4.7 Documented output of MPDSR process

A properly performed MPDSR process is expected to contribute to system changes that will subsequently improve the quality of care. Interviews, focus group discussions and assessment team observations found that the major outputs of the MPDSR process were improved quality of care, especially patient monitoring (32 per cent); reduction of maternal and perinatal deaths (18 per cent); improved number of skilled health care workers at facilities (14 per cent); purchase of missing medical and non medical equipment (generators, for example) and supplies (9 per cent); improved consultation between junior and senior staff (9 per cent); improved accountability of health care providers and managers (9 per cent); and increased mentorship sessions for health care providers (9 per cent).

3.4.8 Enablers

Institutionalization is possible, and MPDSR practices can be made sustainable, if the key stakeholders are engaged and committed to a transparent, standardized system. The assessed MPDSR teams reported that the major enablers of a successful, sustainable MPDSR process are leadership commitment (26 per cent); flexibility and commitment to change among health care providers (18 per cent); engagement of specialists in the MPDSR process (13 per cent); consistency of MPDSR meetings (13 per cent); teamwork and staff commitment (11 per cent); facility financial budget support to MPDSR related activities (8 per cent) and follow up by Regional and Council Health Management Teams (R/CHMT) (*see Table 25*).

Table 25: Identified enablers of a successful MPDSR process at all levels

	MPDSR enablers	Frequency	%
1	Leadership commitment	10	26
2	Flexibility and commitment of health care providers	7	18
3	Specialist engagement	5	13
4	Consistency of MPDSR meeting	5	13
5	Teamwork and staff commitment	4	11
6	Facility financial support to MPDSR related activities	3	8
7	RHMT and CHMT follow up	2	5
8	On job training	1	3
9	Availability of Unified Community System (UCS) data base	1	3

3.4.9 Barriers

For the MPDSR process to be successful, teams need to identify and address major barriers to implementation by engaging key stakeholders within and outside the health sector. The most reported barriers to MPDSR implementation are inadequate budget for MPDSR budget (32 per cent); lack of commitment among facility managers (17 per cent); lack of standard maternal and newborn care infrastructure/equipment in some facilities (17 per cent); critical shortage of health care service providers (15 per cent); and the lack of commitment among health care providers and managers (12 per cent).
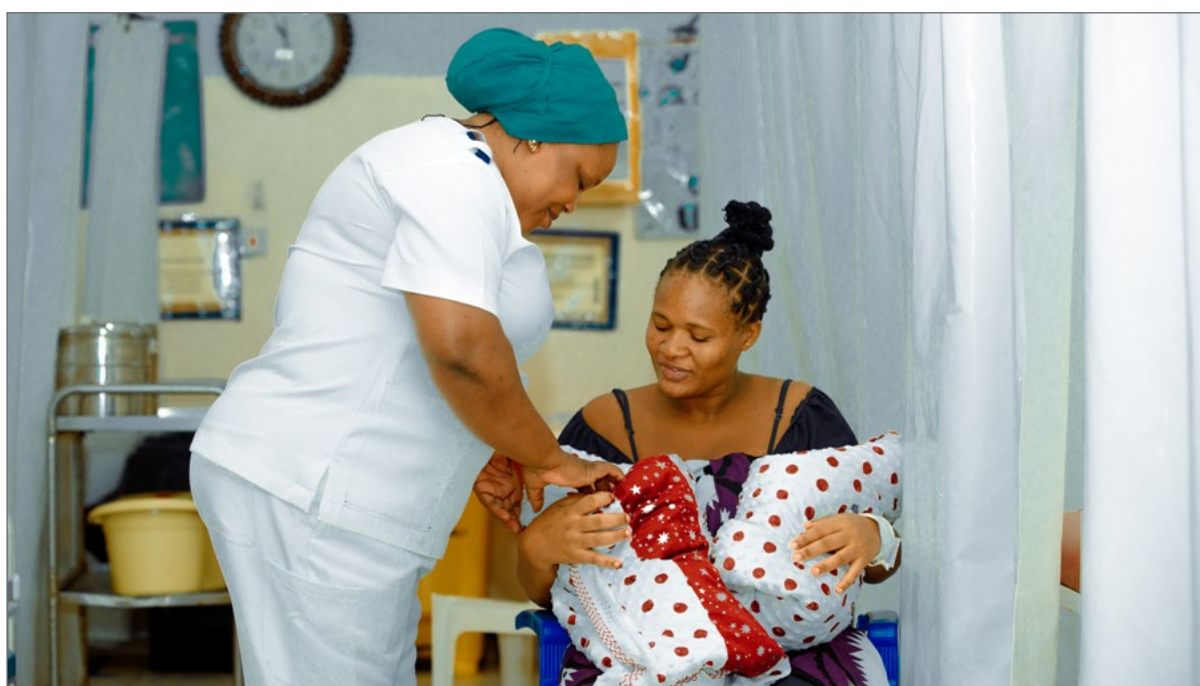
Limitations, discussion and recommendations

This is the first comprehensive report on the functionality of MPDSR and the burden and distribution of maternal and perinatal deaths at the council and regional level using routinely collected data in Tanzania over six years (2018–2023). The report should be interpreted considering several limitations.

4.1 Limitations

The data used in this report represents maternal and perinatal deaths mainly at specific delivery points – maternity and neonatal wards – due to the limited knowledge of MPDSR. Some deaths – abortion or molar pregnancy – at other points (gynaecology ward, outpatient department, surgical/medical ward or emergency unit) may not have been reported. The number of maternal deaths in the community noted in this report is low; no perinatal death is noted. This is due to the community MPDSR being partially functional.

Most of the fields in the maternal and perinatal review files were not correctly filled, or they were filled partially; therefore, the delays and recommendations relied on a proxy estimation of the completed fields. Currently, the MPDSR system at the MoH collects aggregated, not individual, perinatal death notifications; the information aggregated data for policymaking is limited.

4.2 Discussion

In stakeholder consultations, it was noted that the MPDSR process was available and implemented at all levels, as evidenced by the presence of the respective focal person, committees, designated files, review schedules and action plans. Moreover, MPDSR has been reported to be very functional because it delivered what was intended to – deaths were reported and reviewed as per set guidelines – and the stakeholders testified that maternal and perinatal deaths were reduced through MPDSR. This finding echoes the efforts and commitment of the MoH in ensuring that maternal and newborn deaths are prevented by scaling up MPDSR and implementing it at all levels.

Some challenges around MPDSR implementation were highlighted, such as funding, staffing and supply of commodities. Notwithstanding, the report noted the presence of multiple non aligned channels for data reporting – WhatsApp groups, email, DHIS2 and from facilities to the national level (MoH). It was noted further that the MoH is aware of the existing challenges,

and plans are under way to address these, including a plan to revise the guideline and clearly document the reporting and notification channels at each level.

A total of 9,668 maternal deaths and 11,527,608 livebirths were reported in a period of six years (2018–2023). Considering only the deaths that occurred in health facilities, this corresponds to an iMMR of 78/100,000 livebirths. This estimate is within the range (104/100,000 livebirths) of the most recent MMR reported by the 2022 TDHS (3). Moreover, the declining MMR signifies the various interventions currently in place, including a successful implementation and scale up of MPDSR, to prevent maternal deaths.

This report shows the only about 33 per cent of the deceased mothers who attended ANC had received a complete package of basic services. The coverage of basic ANC services (urinalysis, blood pressure, haemoglobin levels, syphilis test) – except for HIV testing and tetanus toxoid vaccination – was disproportionately low. This may be because test kits, reagents and supplies were not available.

Contrary to the country's routine data on child delivery, which shows that clinicians attend less than 20 per cent of all deliveries, the 2022 maternal death review data reveals that clinicians delivered nearly 50 per cent of the maternal deaths. This may suggest that these deaths occurred during the intervention and they were associated with complications that necessitated a clinician's intervention especially caesarean section.

A comparison of the data from 2018 and 2023 shows that early neonatal deaths have been declining in most regions. This may signify the effect of ongoing Government efforts and interventions to reduce newborn mortality. The perinatal mortality (macerated, fresh stillbirth and early neonatal death rates) counts and rates were found to vary within regions and across the six years. This may be due to under or over reporting by facilities at different times.

The perinatal mortality trend almost stagnated for four years (2020–2023) while the MMR declined significantly. This can be because most of the interventions implemented targeted pregnancy and childbirth and the focus on addressing issues contributing to stillbirths and neonatal mortality was limited. This low coverage of basic ANC services reflects missed opportunities, which indirectly contributes to the stagnated decline in newborn mortality.

By level of facilities, the data reveals that most maternal deaths occurred at district hospitals, health centres and dispensaries, accounting for 54.1 per cent. This could be due to challenges in the quality of care at these facilities, mostly because the skills of the attending health care providers were inadequate, and to the increase in the number of late and complicated referrals from lower level health facilities to tertiary level facilities.

In these six years, largely, direct causes contributed to maternal deaths, and obstetric haemorrhage remained their leading cause, especially at the dispensary level. This finding is similar to other studies in Tanzania (15,16), and it echoes the global efforts to address direct, largely preventable causes.

The documentation – on the three delays model that contributes to maternal and perinatal deaths – is low. The most frequent delay events that contribute to maternal deaths – sub optimal antenatal care (33.1 per cent), inadequate skills of providers (18 per cent) and the absence of supplies and equipment or delay in acquiring them (12.1 per cent) – were reported within the third level delay.

Table 26: Assessment teams' recommendations for improving MPDSR performance

S/N	Issue	Recommendation
1.	Team capacity in MPDSR process is limited	Conduct comprehensive training on MPDSR
2.	Regular, supportive supervision is lacking	Management teams at the national, regional, council and facility level should integrate MPDSR into regular/routine support and supervision
3.	Some managers and facility members lack leadership, governance, accountability and commitment to MPDSR by some managers and facility members	The next MPDSR guideline should define and emphasize MPDSR as a mandatory, routinely measured key performance indicator in the job description of all managers and health care providers
4.	Limited budget/funds in organizing MPDSR meetings and responding to dysfunctions identified in the reviews	1. The next MPDSR guideline to emphasize assigning specific budgetary lines for MPDSR process at national, regional, council and facility levels 2. Institutional/organization accounting officers (permanent secretary, District Executive Director, Regional Administrative Secretary, Medical Officer Incharge) to be directly involved in MPDSR process
5.	Meetings are not organized consistently, the review rates of perinatal deaths low, action plans are inappropriate and responses weak	1. Train MPDSR teams at all levels and continually mentor and supervise them 2. Including MPDSR as key performance indicator
6.	All the stakeholders are not comprehensively engaged in MPDSR	Teams to be emphasize to extensively disseminate MPDSR findings, especially to multi sectoral stakeholders to improve responses to major dysfunctions

4.3 Recommendations

These recommendations have been drawn from stakeholder consultations and data analysis findings (*see Table 26*).

4.3.1 Recommendations on MPDSR functionality

There should be emphasis at all levels of implementation to ensure that the MPDSR committee members who attend review meetings conform to MPDSR guidelines, especially the expert (specialist) review.

At all levels of implementation, the MPDSR committee members, including the MPDSR focal person, should be informed on notification, reviews and cause assignment as per ICD 10, ICD PM and ICD MM.

The MPDSR system is paper based and it uses several channels to collect data; the MoH should set a plan to evolve MPDSR into a harmonized electronic system and ensure that quality data is being collected timely.

In order to improve newborn survival and reduce neonatal mortality, it is important to improve ANC services by ensuring the availability of basic ANC tests.

The MoH and PO RALG should ensure that the MPDSR system is operationalized to report case based perinatal death notification at all levels of implementation.

Health managers (RMO, DMO and health facility in charge) at all levels should ensure that the implementation of the action plans – developed to address the issues identified during the review of maternal and perinatal deaths – is monitored actively and the stakeholders held accountable.

Councils and facilities should allocate a larger budget and ensure a reliable source of funding, such as a basket fund, for MPDSR activities.

The MPDSR guideline should be revised to ensure that MPDSR and QI teams are set up at all levels and that the MPDSR team members must also be members of the QI team and take the responsibility to implement the action plans agreed to.

The MoH should integrate non obstetric/midwifery cadres (physicians) into the MPDSR process, consider introducing a stipend or allowance for MPDSR members, strengthen community engagement in MPDSR, improve participation in virtual (Zoom) meetings), support the secretarial team with stationery and organize a national MPDSR symposium.

4.3.2   Recommendations for improving maternal and perinatal health care

The MoH and its partners should improve the coverage of high impact interventions – family planning, CEmONC and essential newborn care – and the quality of services in health facilities and regions that report a high burden of maternal and perinatal deaths (Dar es Salaam, Mwanza and Morogoro).

Health managers at the council level should ensure hands on capacity building for staff in managing maternal and newborn complications Post Partum Haemorrhage (PPH), prematurity asphyxia, sepsis and pre eclampsia/eclampsia. On the other hand, health care providers of junior cadres should be oriented on timely consultation. When required, health managers should ensure that seniors provide correct and timely responses.

The MoH should update and disseminate relevant the guidelines, standard operating procedures and protocols, and the job aids, related to the management of obstetric and newborn complications and ensure their availability at all levels. Health managers at the regional, council

and health facility level should supervise and ensure that health care providers adhere to the guidelines, standard operating procedures and protocols in managing obstetric, anaesthetic and newborn complications.

The MoH should formulate a guideline ensuring the availability of an obstetrician/gynaecologist and paediatrician at all district level hospitals and all high volume health centres (500 or more deliveries per month). Moreover, the National Blood Transfusion Services should work with key stakeholders at all levels to ensure adequate collection, distribution, storage and timely availability of safe blood and blood products.

Before commencement of CEmONC – and continued operationalization – at the council and facility level, health managers should ensure the availability of the appropriate and adequate infrastructure, functional equipment and supplies (anaesthesia machine, monitors, oxygen, operating beds) and equipment and supplies for newborn and premature care (neonatal care units, continuous positive airway pressure (cPAPs) machines, baby warmers, phototherapy machines, surfactants and oxygen). Councils should make use of community health care workers to sensitize pregnant women and their partners within their geographical localities on birth preparedness, awareness of danger signs and timely care seeking. Health managers at the facility level should always supervise health care providers to ensure appropriate labour monitoring and timely intervention.

Health managers at all levels should supervise and ensure timely and appropriate (communication, escort and transport) referrals of obstetric and newborn complications to ensure the continuum of care. Health managers at all levels should ensure the availability of tests and reagents required for the provision basic package of ANC services such as Hb level, Blood pressure measurement, urinalysis, blood grouping and syphilis test. The MoH and health managers at all levels should ensure the availability of adequate numbers and skillsets of human resources for health at their levels of operation.
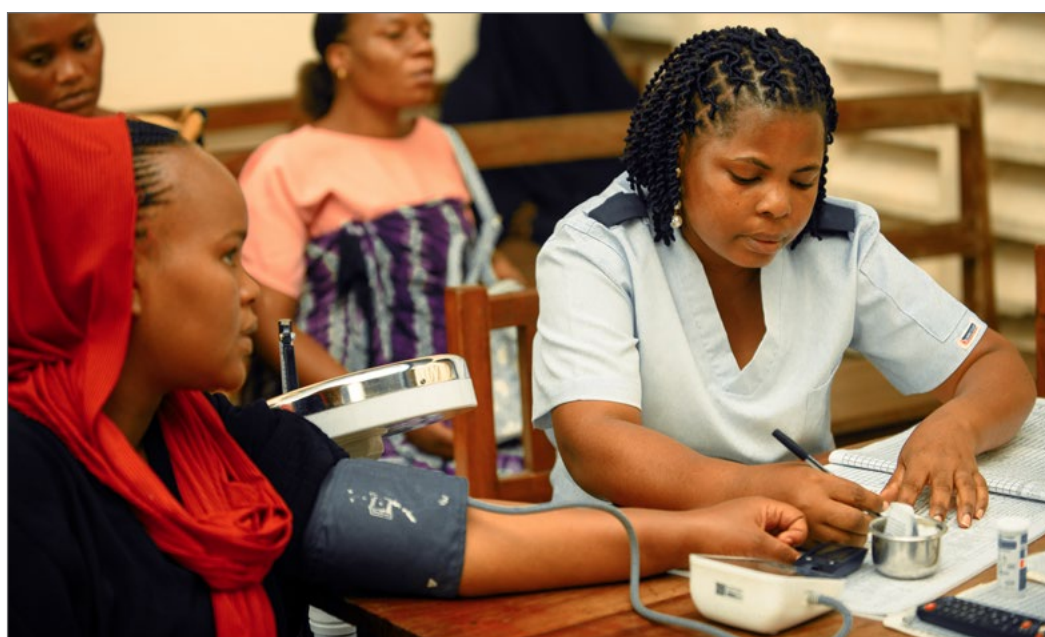
Annex

Table 27: Maternal deaths across councils (2018–2023) (with ranking using the overall 2018–2023 data)

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Dar es Salaam CC	127 (7.3)	86 (5.2)	71 (4.3)	136 (8.6)	104 (6.7)	126 (8.4)	650 (6.7)	1
Mwanza CC	68 (3.9)	95 (5.7)	75 (4.6)	78 (4.9)	114 (7.4)	81 (5.4)	511 (5.3)	2
Mbeya CC	47 (2.7)	38 (2.3)	33 (2.0)	47 (3.0)	40 (2.6)	44 (2.9)	249 (2.6)	3
Dodoma CC	40 (2.3)	33 (2.0)	50 (3.0)	39 (2.5)	33 (2.1)	47 (3.1)	242 (2.5)	4
Morogoro MC	42 (2.4)	34 (2.1)	32 (2.0)	35 (2.2)	40 (2.6)	43 (2.9)	226 (2.3)	5
Moshi MC	36 (2.1)	25 (1.5)	31 (1.9)	54 (3.4)	33 (2.1)	27 (1.8)	206 (2.1)	6
Arusha CC	24 (1.4)	33 (2.0)	21 (1.3)	23 (1.4)	38 (2.5)	28 (1.9)	167 (1.7)	7
Kigoma MC	22 (1.3)	13 (0.8)	38 (2.3)	24 (1.5)	39 (2.5)	28 (1.9)	164 (1.7)	8
Geita TC	39 (2.2)	22 (1.3)	31 (1.9)	26 (1.6)	22 (1.4)	23 (1.5)	163 (1.7)	9
Sumbawanga MC	23 (1.3)	20 (1.2)	33 (2.0)	28 (1.8)	21 (1.4)	17 (1.1)	142 (1.5)	10
Tabora MC	25 (1.4)	16 (1.0)	18 (1.1)	22 (1.4)	33 (2.1)	28 (1.9)	142 (1.5)	11
Temeke MC	26 (1.5)	22 (1.3)	25 (1.5)	17 (1.1)	16 (1.0)	24 (1.6)	130 (1.3)	12
Masasi DC	27 (1.5)	16 (1.0)	19 (1.2)	22 (1.4)	25 (1.6)	17 (1.1)	126 (1.3)	13
Ubungo MC	8 (0.5)	10 (0.6)	15 (0.9)	25 (1.6)	22 (1.4)	46 (3.1)	126 (1.3)	14
Sengerema DC	26 (1.5)	22 (1.3)	21 (1.3)	24 (1.5)	16 (1.0)	14 (0.9)	123 (1.3)	15
Mpanda MC	23 (1.3)	18 (1.1)	33 (2.0)	11 (0.7)	17 (1.1)	15 (1.0)	117 (1.2)	16
Tanga CC	20 (1.1)	22 (1.3)	25 (1.5)	23 (1.4)	20 (1.3)	7 (0.5)	117 (1.2)	17
Shinyanga MC	22 (1.3)	21 (1.3)	24 (1.5)	11 (0.7)	16 (1.0)	18 (1.2)	112 (1.2)	18
Iringa MC	32 (1.8)	17 (1.0)	16 (1.0)	18 (1.1)	15 (1.0)	10 (0.7)	108 (1.1)	19
Ifakara TC	20 (1.1)	21 (1.3)	20 (1.2)	11 (0.7)	15 (1.0)	11 (0.7)	98 (1.0)	20
Kinondoni MC	18 (1.0)	21 (1.3)	14 (0.9)	18 (1.1)	16 (1.0)	11 (0.7)	98 (1.0)	21
Singida MC	24 (1.4)	26 (1.6)	11 (0.7)	13 (0.8)	13 (0.8)	8 (0.5)	95 (1.0)	22
Mtwara MC	9 (0.5)	11 (0.7)	14 (0.9)	14 (0.9)	26 (1.7)	19 (1.3)	93 (1.0)	23
Mbozi DC	10 (0.6)	15 (0.9)	10 (0.6)	15 (0.9)	21 (1.4)	16 (1.1)	87 (0.9)	24

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Songea MC	26 (1.5)	11 (0.7)	16 (1.0)	12 (0.8)	7 (0.5)	11 (0.7)	83 (0.9)	25
Musoma MC	8 (0.5)	15 (0.9)	19 (1.2)	13 (0.8)	13 (0.8)	14 (0.9)	82 (0.8)	26
Kibaha TC	20 (1.1)	26 (1.6)	11 (0.7)	9 (0.6)	10 (0.6)	5 (0.3)	81 (0.8)	27
Kasulu TC	15 (0.9)	15 (0.9)	18 (1.1)	13 (0.8)	10 (0.6)	9 (0.6)	80 (0.8)	28
Nkasi DC	14 (0.8)	10 (0.6)	16 (1.0)	25 (1.6)	6 (0.4)	9 (0.6)	80 (0.8)	29
Bukoba MC	16 (0.9)	12 (0.7)	16 (1.0)	5 (0.3)	11 (0.7)	19 (1.3)	79 (0.8)	30
Uvinza DC	15 (0.9)	15 (0.9)	16 (1.0)	8 (0.5)	13 (0.8)	11 (0.7)	78 (0.8)	31
Igunga DC	15 (0.9)	19 (1.1)	10 (0.6)	9 (0.6)	8 (0.5)	12 (0.8)	73 (0.8)	32
Kilosa DC	15 (0.9)	9 (0.5)	18 (1.1)	7 (0.4)	14 (0.9)	5 (0.3)	68 (0.7)	33
Lindi MC	17 (1.0)	7 (0.4)	11 (0.7)	11 (0.7)	11 (0.7)	11 (0.7)	68 (0.7)	34
Kwimba DC	13 (0.7)	10 (0.6)	13 (0.8)	14 (0.9)	7 (0.5)	10 (0.7)	67 (0.7)	35
Ukerewe DC	9 (0.5)	9 (0.5)	13 (0.8)	18 (1.1)	7 (0.5)	11 (0.7)	67 (0.7)	36
Buchosa DC	13 (0.7)	11 (0.7)	13 (0.8)	12 (0.8)	5 (0.3)	12 (0.8)	66 (0.7)	37
Geita DC	9 (0.5)	11 (0.7)	13 (0.8)	14 (0.9)	10 (0.6)	8 (0.5)	65 (0.7)	38
Kahama MC	16 (0.9)	8 (0.5)	6 (0.4)	9 (0.6)	15 (1.0)	11 (0.7)	65 (0.7)	39
Bariadi TC	14 (0.8)	17 (1.0)	13 (0.8)	6 (0.4)	7 (0.5)	5 (0.3)	62 (0.6)	40
Kibondo DC	9 (0.5)	13 (0.8)	10 (0.6)	7 (0.4)	15 (1.0)	7 (0.5)	61 (0.6)	41
Kalambo DC	10 (0.6)	9 (0.5)	13 (0.8)	10 (0.6)	11 (0.7)	8 (0.5)	61 (0.6)	42
Mbulu DC	6 (0.3)	8 (0.5)	8 (0.5)	13 (0.8)	18 (1.2)	8 (0.5)	61 (0.6)	43
Mvomero DC	10 (0.6)	7 (0.4)	11 (0.7)	14 (0.9)	14 (0.9)	5 (0.3)	61 (0.6)	44
Malinyi DC	10 (0.6)	5 (0.3)	8 (0.5)	15 (0.9)	12 (0.8)	9 (0.6)	59 (0.6)	45
Manyoni DC	13 (0.7)	9 (0.5)	10 (0.6)	7 (0.4)	8 (0.5)	11 (0.7)	58 (0.6)	46
Ikungi DC	10 (0.6)	6 (0.4)	9 (0.5)	9 (0.6)	12 (0.8)	10 (0.7)	56 (0.6)	47
Bukombe DC	16 (0.9)	17 (1.0)	7 (0.4)	2 (0.1)	7 (0.5)	5 (0.3)	54 (0.6)	48
Kasulu DC	2 (0.1)	14 (0.8)	13 (0.8)	8 (0.5)	8 (0.5)	9 (0.6)	54 (0.6)	49
Sikonge DC	5 (0.3)	6 (0.4)	13 (0.8)	3 (0.2)	15 (1.0)	10 (0.7)	52 (0.5)	50
Sumbawanga DC	7 (0.4)	6 (0.4)	12 (0.7)	11 (0.7)	9 (0.6)	7 (0.5)	52 (0.5)	51
Tandahimba DC	8 (0.5)	10 (0.6)	8 (0.5)	8 (0.5)	8 (0.5)	9 (0.6)	51 (0.5)	52
Kilwa DC	12 (0.7)	9 (0.5)	8 (0.5)	8 (0.5)	7 (0.5)	6 (0.4)	50 (0.5)	53
Njombe TC	6 (0.3)	5 (0.3)	6 (0.4)	9 (0.6)	11 (0.7)	12 (0.8)	49 (0.5)	54

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Babati TC	5 (0.3)	8 (0.5)	8 (0.5)	5 (0.3)	12 (0.8)	10 (0.7)	48 (0.5)	55
Ilemela DC	2 (0.1)	12 (0.7)	8 (0.5)	13 (0.8)	6 (0.4)	7 (0.5)	48 (0.5)	56
Nzega TC	10 (0.6)	7 (0.4)	8 (0.5)	14 (0.9)	6 (0.4)	3 (0.2)	48 (0.5)	57
Gairo DC	11 (0.6)	6 (0.4)	6 (0.4)	12 (0.8)	8 (0.5)	4 (0.3)	47 (0.5)	58
Iringa DC	2 (0.1)	7 (0.4)	12 (0.7)	7 (0.4)	8 (0.5)	11 (0.7)	47 (0.5)	59
Masasi TC	6 (0.3)	12 (0.7)	7 (0.4)	6 (0.4)	9 (0.6)	7 (0.5)	47 (0.5)	60
Missenyi DC	4 (0.2)	8 (0.5)	10 (0.6)	9 (0.6)	8 (0.5)	8 (0.5)	47 (0.5)	61
Chato DC	7 (0.4)	5 (0.3)	5 (0.3)	2 (0.1)	12 (0.8)	13 (0.9)	44 (0.5)	62
Tanganyika DC	8 (0.5)	8 (0.5)	9 (0.5)	7 (0.4)	6 (0.4)	6 (0.4)	44 (0.5)	63
Ngorongoro	15 (0.9)	8 (0.5)	5 (0.3)	4 (0.3)	7 (0.5)	4 (0.3)	43 (0.4)	64
Singida DC	6 (0.3)	7 (0.4)	6 (0.4)	6 (0.4)	7 (0.5)	10 (0.7)	42 (0.4)	65
Kigoma DC	4 (0.2)	7 (0.4)	11 (0.7)	5 (0.3)	8 (0.5)	6 (0.4)	41 (0.4)	66
Meatu DC	9 (0.5)	6 (0.4)	8 (0.5)	6 (0.4)	3 (0.2)	9 (0.6)	41 (0.4)	67
Magu DC	15 (0.9)	6 (0.4)	7 (0.4)	3 (0.2)	5 (0.3)	4 (0.3)	40 (0.4)	68
Mtama DC	3 (0.2)	10 (0.6)	10 (0.6)	7 (0.4)	5 (0.3)	5 (0.3)	40 (0.4)	69
Misungwi DC	5 (0.3)	9 (0.5)	7 (0.4)	9 (0.6)	5 (0.3)	5 (0.3)	40 (0.4)	70
Chamwino	6 (0.3)	13 (0.8)	11 (0.7)	2 (0.1)	5 (0.3)	2 (0.1)	39 (0.4)	71
Kigamboni MC	7 (0.4)	4 (0.2)	5 (0.3)	6 (0.4)	5 (0.3)	12 (0.8)	39 (0.4)	72
Mpwapwa DC	6 (0.3)	8 (0.5)	11 (0.7)	5 (0.3)	4 (0.3)	5 (0.3)	39 (0.4)	73
Itigi DC	3 (0.2)	8 (0.5)	7 (0.4)	4 (0.3)	7 (0.5)	9 (0.6)	38 (0.4)	74
Mkuranga DC	7 (0.4)	4 (0.2)	6 (0.4)	5 (0.3)	7 (0.5)	9 (0.6)	38 (0.4)	75
Morogoro DC	5 (0.3)	5 (0.3)	6 (0.4)	12 (0.8)	7 (0.5)	3 (0.2)	38 (0.4)	76
Muleba DC	8 (0.5)	6 (0.4)	3 (0.2)	5 (0.3)	5 (0.3)	11 (0.7)	38 (0.4)	77
Ushetu DC	7 (0.4)	4 (0.2)	3 (0.2)	12 (0.8)	2 (0.1)	10 (0.7)	38 (0.4)	78
Liwale DC	7 (0.4)	6 (0.4)	8 (0.5)	5 (0.3)	5 (0.3)	6 (0.4)	37 (0.4)	79
Karagwe DC	10 (0.6)	7 (0.4)	8 (0.5)	4 (0.3)	2 (0.1)	5 (0.3)	36 (0.4)	80
Mbarali DC	6 (0.3)	4 (0.2)	5 (0.3)	3 (0.2)	6 (0.4)	12 (0.8)	36 (0.4)	81
Mlele DC	9 (0.5)	7 (0.4)	5 (0.3)	7 (0.4)	3 (0.2)	5 (0.3)	36 (0.4)	82
Kondoa TC	7 (0.4)	6 (0.4)	6 (0.4)	7 (0.4)	3 (0.2)	6 (0.4)	35 (0.4)	83
Ngara DC	16 (0.9)	4 (0.2)	5 (0.3)	5 (0.3)	2 (0.1)	3 (0.2)	35 (0.4)	84

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Nsimbo DC	8 (0.5)	7 (0.4)	3 (0.2)	9 (0.6)	6 (0.4)	2 (0.1)	35 (0.4)	85
Rungwe DC	6 (0.3)	6 (0.4)	7 (0.4)	5 (0.3)	4 (0.3)	7 (0.5)	35 (0.4)	86
Shinyanga DC	5 (0.3)	14 (0.8)	2 (0.1)	6 (0.4)	5 (0.3)	3 (0.2)	35 (0.4)	87
Tarime DC	6 (0.3)	6 (0.4)	10 (0.6)	3 (0.2)	5 (0.3)	5 (0.3)	35 (0.4)	88
Chunya DC	5 (0.3)	10 (0.6)	8 (0.5)	5 (0.3)	3 (0.2)	2 (0.1)	33 (0.3)	89
Mbeya DC	4 (0.2)	7 (0.4)	4 (0.2)	5 (0.3)	10 (0.6)	3 (0.2)	33 (0.3)	90
Nachingwea DC	6 (0.3)	6 (0.4)	9 (0.5)	5 (0.3)	2 (0.1)	5 (0.3)	33 (0.3)	91
Nanyumbu DC	8 (0.5)	7 (0.4)	7 (0.4)	4 (0.3)	2 (0.1)	5 (0.3)	33 (0.3)	92
Ruangwa DC	3 (0.2)	8 (0.5)	8 (0.5)	7 (0.4)	2 (0.1)	5 (0.3)	33 (0.3)	93
Bagamoyo DC	7 (0.4)	4 (0.2)	6 (0.4)	9 (0.6)	3 (0.2)	3 (0.2)	32 (0.3)	94
Buhigwe DC	6 (0.3)	7 (0.4)	6 (0.4)	5 (0.3)	5 (0.3)	3 (0.2)	32 (0.3)	95
Bunda TC	2 (0.1)	6 (0.4)	5 (0.3)	3 (0.2)	10 (0.6)	6 (0.4)	32 (0.3)	96
Biharamuro DC	7 (0.4)	8 (0.5)	5 (0.3)	5 (0.3)	2 (0.1)	4 (0.3)	31 (0.3)	97
Itilima DC	6 (0.3)	6 (0.4)	5 (0.3)	4 (0.3)	6 (0.4)	4 (0.3)	31 (0.3)	98
Mufindi DC	6 (0.3)	3 (0.2)	7 (0.4)	4 (0.3)	7 (0.5)	4 (0.3)	31 (0.3)	99
Bariadi DC	1 (0.1)	8 (0.5)	3 (0.2)	6 (0.4)	7 (0.5)	5 (0.3)	30 (0.3)	100
Bunda DC	7 (0.4)	6 (0.4)	7 (0.4)	4 (0.3)	3 (0.2)	3 (0.2)	30 (0.3)	101
Handeni TC	5 (0.3)	11 (0.7)	6 (0.4)	4 (0.3)	2 (0.1)	2 (0.1)	30 (0.3)	102
Maswa DC	6 (0.3)	10 (0.6)	3 (0.2)	5 (0.3)	2 (0.1)	4 (0.3)	30 (0.3)	103
Monduli DC	5 (0.3)	6 (0.4)	7 (0.4)	5 (0.3)	4 (0.3)	3 (0.2)	30 (0.3)	104
Newala TC	8 (0.5)	5 (0.3)	4 (0.2)	7 (0.4)	4 (0.3)	2 (0.1)	30 (0.3)	105
Rorya DC	6 (0.3)	6 (0.4)	5 (0.3)	5 (0.3)	3 (0.2)	5 (0.3)	30 (0.3)	106
Tunduru DC	13 (0.7)	5 (0.3)	4 (0.2)	3 (0.2)	4 (0.3)	1 (0.1)	30 (0.3)	107
Kakonko DC	6 (0.3)	7 (0.4)	7 (0.4)	2 (0.1)	4 (0.3)	3 (0.2)	29 (0.3)	108
Mpimbwe DC	5 (0.3)	4 (0.2)	5 (0.3)	6 (0.4)	4 (0.3)	5 (0.3)	29 (0.3)	109
Tunduma TC	6 (0.3)	6 (0.4)	4 (0.2)	5 (0.3)	5 (0.3)	3 (0.2)	29 (0.3)	110
Iramba DC	3 (0.2)	3 (0.2)	4 (0.2)	4 (0.3)	5 (0.3)	9 (0.6)	28 (0.3)	111
Kisarawe DC	8 (0.5)	6 (0.4)	7 (0.4)	3 (0.2)	2 (0.1)	2 (0.1)	28 (0.3)	112
Kyela DC	4 (0.2)	6 (0.4)	7 (0.4)	5 (0.3)	1 (0.1)	5 (0.3)	28 (0.3)	113
Makambako TC	9 (0.5)	2 (0.1)	5 (0.3)	7 (0.4)	2 (0.1)	3 (0.2)	28 (0.3)	114

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Songwe DC	6 (0.3)	5 (0.3)	4 (0.2)	1 (0.1)	6 (0.4)	6 (0.4)	28 (0.3)	115
Butiama DC	5 (0.3)	1 (0.1)	3 (0.2)	4 (0.3)	6 (0.4)	8 (0.5)	27 (0.3)	116
Kaliua DC	3 (0.2)	11 (0.7)	3 (0.2)	2 (0.1)	0 (0.0)	8 (0.5)	27 (0.3)	117
Kiteto DC	5 (0.3)	3 (0.2)	5 (0.3)	8 (0.5)	3 (0.2)	3 (0.2)	27 (0.3)	118
Longido DC	8 (0.5)	4 (0.2)	6 (0.4)	6 (0.4)	3 (0.2)	0 (0.0)	27 (0.3)	119
Mbogwe DC	4 (0.2)	12 (0.7)	2 (0.1)	3 (0.2)	3 (0.2)	3 (0.2)	27 (0.3)	120
Nanyamba TC	3 (0.2)	9 (0.5)	3 (0.2)	5 (0.3)	3 (0.2)	4 (0.3)	27 (0.3)	121
Hanang DC	4 (0.2)	3 (0.2)	6 (0.4)	2 (0.1)	8 (0.5)	3 (0.2)	26 (0.3)	122
Kibiti DC	3 (0.2)	7 (0.4)	5 (0.3)	3 (0.2)	2 (0.1)	6 (0.4)	26 (0.3)	123
Mafinga TC	1 (0.1)	8 (0.5)	8 (0.5)	3 (0.2)	6 (0.4)	0 (0.0)	26 (0.3)	124
Momba DC	7 (0.4)	4 (0.2)	3 (0.2)	6 (0.4)	2 (0.1)	4 (0.3)	26 (0.3)	125
Msalala DC	2 (0.1)	2 (0.1)	6 (0.4)	7 (0.4)	4 (0.3)	5 (0.3)	26 (0.3)	126
Rufiji DC	6 (0.3)	6 (0.4)	2 (0.1)	3 (0.2)	4 (0.3)	5 (0.3)	26 (0.3)	127
Chalinze DC	6 (0.3)	6 (0.4)	2 (0.1)	6 (0.4)	3 (0.2)	2 (0.1)	25 (0.3)	128
Kilolo DC	4 (0.2)	5 (0.3)	5 (0.3)	4 (0.3)	3 (0.2)	4 (0.3)	25 (0.3)	129
Muheza DC	6 (0.3)	7 (0.4)	6 (0.4)	3 (0.2)	1 (0.1)	2 (0.1)	25 (0.3)	130
Ulanga DC	6 (0.3)	5 (0.3)	9 (0.5)	3 (0.2)	1 (0.1)	1 (0.1)	25 (0.3)	131
Bukoba DC	3 (0.2)	3 (0.2)	5 (0.3)	0 (0.0)	9 (0.6)	4 (0.3)	24 (0.2)	132
Meru DC	4 (0.2)	7 (0.4)	1 (0.1)	5 (0.3)	4 (0.3)	3 (0.2)	24 (0.2)	133
Nyang'hwale DC	5 (0.3)	4 (0.2)	5 (0.3)	4 (0.3)	3 (0.2)	3 (0.2)	24 (0.2)	134
Simanjiro DC	2 (0.1)	4 (0.2)	5 (0.3)	4 (0.3)	3 (0.2)	6 (0.4)	24 (0.2)	135
Kibaha DC	7 (0.4)	5 (0.3)	0 (0.0)	7 (0.4)	1 (0.1)	3 (0.2)	23 (0.2)	136
Musoma DC	4 (0.2)	5 (0.3)	4 (0.2)	4 (0.3)	1 (0.1)	5 (0.3)	23 (0.2)	137
Bahi	1 (0.1)	5 (0.3)	5 (0.3)	6 (0.4)	1 (0.1)	3 (0.2)	21 (0.2)	138
Kongwa	5 (0.3)	4 (0.2)	2 (0.1)	2 (0.1)	1 (0.1)	7 (0.5)	21 (0.2)	139
Rombo DC	1 (0.1)	3 (0.2)	4 (0.2)	4 (0.3)	4 (0.3)	5 (0.3)	21 (0.2)	140
Mtwara DC	7 (0.4)	2 (0.1)	4 (0.2)	1 (0.1)	3 (0.2)	3 (0.2)	20 (0.2)	141
Wang'ing'ombe DC	3 (0.2)	5 (0.3)	3 (0.2)	2 (0.1)	4 (0.3)	3 (0.2)	20 (0.2)	142
Handeni DC	0 (0.0)	5 (0.3)	4 (0.2)	3 (0.2)	3 (0.2)	4 (0.3)	19 (0.2)	143
Kilombero DC	6 (0.3)	2 (0.1)	5 (0.3)	5 (0.3)	0 (0.0)	1 (0.1)	19 (0.2)	144

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Kishapu DC	4 (0.2)	1 (0.1)	5 (0.3)	4 (0.3)	3 (0.2)	2 (0.1)	19 (0.2)	145
Mafia DC	2 (0.1)	3 (0.2)	5 (0.3)	4 (0.3)	3 (0.2)	2 (0.1)	19 (0.2)	146
Mkalama DC	2 (0.1)	4 (0.2)	1 (0.1)	4 (0.3)	2 (0.1)	6 (0.4)	19 (0.2)	147
Busega DC	4 (0.2)	2 (0.1)	1 (0.1)	1 (0.1)	4 (0.3)	6 (0.4)	18 (0.2)	148
Kyerwa DC	1 (0.1)	5 (0.3)	3 (0.2)	4 (0.3)	3 (0.2)	2 (0.1)	18 (0.2)	149
Moshi DC	1 (0.1)	12 (0.7)	4 (0.2)	1 (0.1)	0 (0.0)	0 (0.0)	18 (0.2)	150
Nyasa DC	5 (0.3)	4 (0.2)	3 (0.2)	2 (0.1)	2 (0.1)	2 (0.1)	18 (0.2)	151
Namtumbo DC	7 (0.4)	3 (0.2)	2 (0.1)	2 (0.1)	1 (0.1)	2 (0.1)	17 (0.2)	152
Pangani DC	3 (0.2)	2 (0.1)	4 (0.2)	4 (0.3)	2 (0.1)	2 (0.1)	17 (0.2)	153
Babati DC	4 (0.2)	2 (0.1)	3 (0.2)	3 (0.2)	2 (0.1)	2 (0.1)	16 (0.2)	154
Korogwe TC	10 (0.6)	3 (0.2)	3 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	16 (0.2)	155
Mbinga TC	3 (0.2)	4 (0.2)	2 (0.1)	0 (0.0)	4 (0.3)	3 (0.2)	16 (0.2)	156
Serengeti DC	6 (0.3)	1 (0.1)	2 (0.1)	1 (0.1)	4 (0.3)	2 (0.1)	16 (0.2)	157
Busokelo DC	3 (0.2)	5 (0.3)	3 (0.2)	1 (0.1)	1 (0.1)	2 (0.1)	15 (0.2)	158
Chemba	1 (0.1)	5 (0.3)	2 (0.1)	3 (0.2)	2 (0.1)	2 (0.1)	15 (0.2)	159
Ileje DC	3 (0.2)	1 (0.1)	2 (0.1)	1 (0.1)	4 (0.3)	4 (0.3)	15 (0.2)	160
Makete DC	2 (0.1)	4 (0.2)	1 (0.1)	3 (0.2)	4 (0.3)	1 (0.1)	15 (0.2)	161
Same DC	4 (0.2)	5 (0.3)	3 (0.2)	2 (0.1)	1 (0.1)	0 (0.0)	15 (0.2)	162
Urambo DC	6 (0.3)	3 (0.2)	2 (0.1)	2 (0.1)	0 (0.0)	2 (0.1)	15 (0.2)	163
Njombe DC	4 (0.2)	4 (0.2)	3 (0.2)	1 (0.1)	1 (0.1)	1 (0.1)	14 (0.1)	164
Karatu DC	6 (0.3)	2 (0.1)	1 (0.1)	1 (0.1)	2 (0.1)	1 (0.1)	13 (0.1)	165
Korogwe DC	1 (0.1)	3 (0.2)	0 (0.0)	4 (0.3)	3 (0.2)	2 (0.1)	13 (0.1)	166
Mkinga DC	4 (0.2)	0 (0.0)	2 (0.1)	7 (0.4)	0 (0.0)	0 (0.0)	13 (0.1)	167
Newala DC	0 (0.0)	2 (0.1)	2 (0.1)	4 (0.3)	4 (0.3)	1 (0.1)	13 (0.1)	168
Arusha DC	1 (0.1)	2 (0.1)	3 (0.2)	2 (0.1)	3 (0.2)	1 (0.1)	12 (0.1)	169
Mbulu TC	1 (0.1)	1 (0.1)	4 (0.2)	1 (0.1)	3 (0.2)	2 (0.1)	12 (0.1)	170
Siha DC	0 (0.0)	2 (0.1)	5 (0.3)	2 (0.1)	0 (0.0)	3 (0.2)	12 (0.1)	171
Kondoa DC	1 (0.1)	4 (0.2)	1 (0.1)	3 (0.2)	2 (0.1)	0 (0.0)	11 (0.1)	172
Nzega DC	3 (0.2)	2 (0.1)	1 (0.1)	1 (0.1)	4 (0.3)	0 (0.0)	11 (0.1)	173
Hai DC	3 (0.2)	2 (0.1)	3 (0.2)	0 (0.0)	0 (0.0)	2 (0.1)	10 (0.1)	174

District	2018	2019	2020	2021	2022	2023	Overall; 2018–2023	Ranking
Ludewa DC	1 (0.1)	3 (0.2)	3 (0.2)	0 (0.0)	2 (0.1)	1 (0.1)	10 (0.1)	175
Lushoto	1 (0.1)	1 (0.1)	0 (0.0)	5 (0.3)	1 (0.1)	2 (0.1)	10 (0.1)	176
Mbinga DC	1 (0.1)	3 (0.2)	2 (0.1)	0 (0.0)	2 (0.1)	2 (0.1)	10 (0.1)	177
Uyui DC	2 (0.1)	0 (0.0)	3 (0.2)	2 (0.1)	2 (0.1)	1 (0.1)	10 (0.1)	178
Bumbuli DC	3 (0.2)	2 (0.1)	0 (0.0)	1 (0.1)	2 (0.1)	1 (0.1)	9 (0.1)	179
Kilindi DC	1 (0.1)	1 (0.1)	3 (0.2)	1 (0.1)	1 (0.1)	2 (0.1)	9 (0.1)	180
Karatu TC	2 (0.1)	3 (0.2)	2 (0.1)	1 (0.1)	0 (0.0)	0 (0.0)	8 (0.1)	181
Mlimba DC	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.3)	4 (0.3)	8 (0.1)	182
Mwanga	0 (0.0)	3 (0.2)	1 (0.1)	2 (0.1)	1 (0.1)	0 (0.0)	7 (0.1)	183
Tarime TC	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)	1 (0.1)	4 (0.0)	184
Madaba DC	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.1)	2 (0.0)	185
Nachingwea DC	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.1)	0 (0.0)	0 (0.0)	2 (0.0)	186
Unknown	0 (0.0)	2 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.0)	187
Total	1744 (100.0)	1657 (100.0)	1640 (100.0)	1588 (100.0)	1541 (100.0)	1498 (100.0)	9668 (100.0)	188

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