

# itals

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## **EDITORIAL**

This edition of our Vitals Publication delves into Maternal Mortality and takes a closer look at its history, our surveillance system, the local, global, and regional trends as well as the risk factors and the impact of the COVID-19 pandemic.

As of 2019, globally, 189 million women become pregnant each year with 295,000 of them dying during and following pregnancy and childbirth. Additionally, approximately 2.4 million children die in the first month of life. The health and wellbeing of mothers and babies remains of utmost importance to Jamaica's health infrastructure. This is now certainly heightened given the difficulties associated with new and emerging diseases, placing greater significance on this vulnerable group.

The Sustainable Development Goal (SDG) 3, to which Jamaica has agreed to, speaks to the reduction in maternal mortality ratio to 70 per 100,000 live births by 2030. This is also the regional target. It is important to note that the high number of maternal deaths in some areas of the world reflects inequalities in access to quality health services.

The fact that every 1 to 2 minutes, a woman somewhere dies in pregnancy or childbirth calls on Jamaica to have an all-government sustained response. This approach must continue to address inequalities in access to maternal and newborn healthcare services, and identify and mitigate all causes of maternal mortality, morbidity, and related disabilities.

In this regard, the Government of Jamaica, through the Ministry of Health & Wellness continues to recognize the vulnerability of pregnant women and their newborns and has an action plan to protect them. We are committed to enhancing universal health coverage for comprehensive reproductive, maternal, and newborn healthcare. This is to deliver better outcome for every pregnant woman and her newborn in Jamaica.

I congratulate the editorial team and all the contributors of this Vital Edition, who have put this information together, so that it is not only available for future reference but will be used as a progress marker as Jamaica seeks to reduce the incidences of maternal mortality.



Dr. the Hon. Christopher Tufton, MP Minister of Health and Wellness

## **Maternal Mortality Statistics at a Glance**

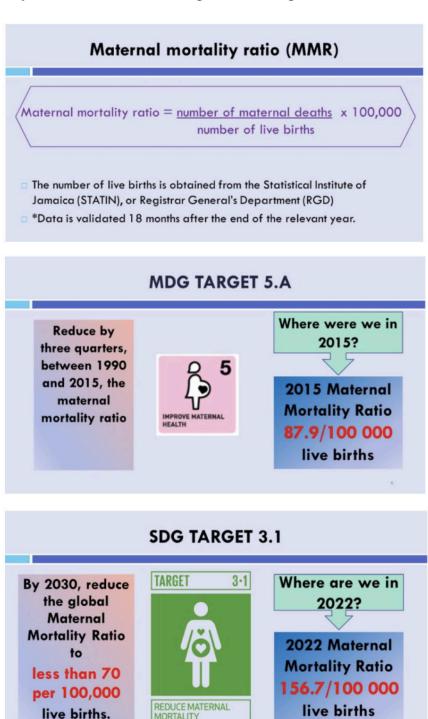
Variable	2017	2022*
Number of live births	34,226	31,276
Fertility Rate (children per woman)	2.0	1.4**
Number of maternal deaths	33	49
Number of deaths in women of reproductive age	1,164	1,152**
Proportion Maternal	0.03	0.03**
Maternal mortality ratio (deaths per 100,000 live births):		
Jamaica	96.4	156.7
• SERHA	125.9	129.4
• NERHA	79.8	124.3
● WRHA	91.6	118.5
• SRHA	26.8	273.0

<sup>\*</sup>Preliminary data, \*\*2020 data

Source: Data from National Surveillance Unit, National Epidemiology Branch, Ministry of Health and Wellness, Jamaica

## INTRODUCTION

The maternal mortality ratio gives an indication of obstetric risk or the risk associated with pregnancy. It allows for comparison between countries as it is a standardized indicator. Countries across the world have reached a consensus that this ratio should be a sustainable development goal indicator (SDG 3). This gives an indication of the health status of the country and it measures the responsiveness of health systems to the health needs of a population. The goal is to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by the year 2030 with no country having a maternal mortality ratio above twice the global average.



Sources: World Health Organization (2017)

## **DEFINITIONS**

Maternal deaths are Class 1 notifiable health events and require notification within 24 hours of suspicion to the Parish Health Department or the National Surveillance Unit. For surveillance purposes, all deaths in women of reproductive age (10 to 50 years) in whom there is evidence of pregnancy within one year prior to death should be reported and investigated.

#### **Maternal Deaths Definitions**

Type of Death	Description/Definition
Maternal Death	■ The death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
i. Direct Death	Death due to <b>obstetric</b> complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, treatment or from a chain of events resulting from any of these.
ii. Indirect Death	Death due to <b>non-obstetric</b> conditions that develop during pregnancy or pre-existing conditions that are aggravated by the pregnancy
Late maternal deaths	<ul> <li>Direct or indirect death 43-364 days after the pregnancy ended (included in surveillance but excluded from maternal mortality statistics)</li> </ul>
Coincidental deaths	<ul> <li>Deaths from accidents and violence, excluding suicide (included in surveillance but excluded from maternal mortality statistics)</li> </ul>
Obstetric sequelae	<ul> <li>Deaths occurring more than one year after the pregnancy ended, but from complications arising during the index pregnancy, labour or puerperium. (not included in surveillance or maternal mortality statistics)</li> </ul>

Source: World Health Organization (WHO, 2021).

#### **Proportion Maternal (PM)**

The proportion of all-cause deaths in women of reproductive age (15-49 years) that are due to maternal causes.

## **DEFINITIONS**

#### **DELAYS**

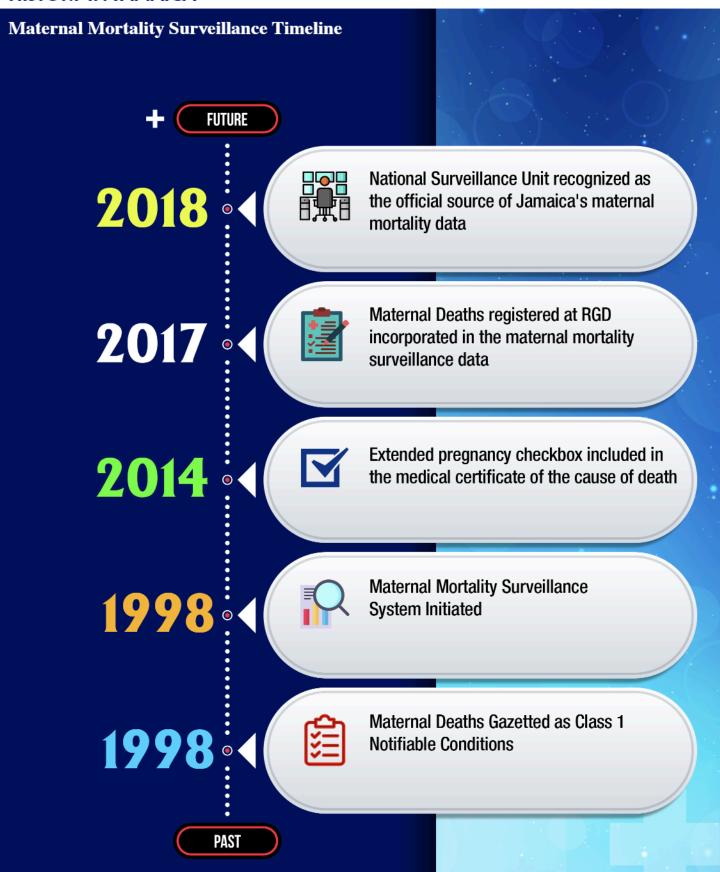
The Four Delays Model is used to examine the factors associated with accessing or receiving appropriate care that contributed to the maternal deaths and to identify those that can be addressed to prevent future deaths. The four delays are defined as follows:

- Delay 1: Patient did not recognize the problem
- Delay 2: Patient delayed seeking care
- Delay 3: Delayed access to care (cost, transportation and other community issues)
- Delay 4: Delay receiving appropriate care after presenting to the health facility.

Delay four is further subdivided as follows:

- Part 1: Provider of care at time of death (training, quality, availability)
- Part 2: Decision making (recognition of serious problems, correct diagnosis, consultation process)
- Part 3: Actions taken (referral, emergency obstetric care, appropriate treatment)
- Part 4: Delays in referral (transport, money, permission, physical environment)
- Part 5: Facilities (quality, blood, anesthesia, supplies, drugs)

## MATERNAL MORTALITY SURVEILLANCE SYSTEM HISTORY IN JAMAICA



# MATERNAL MORTALITY SURVEILLANCE SYSTEM SURVEILLANCE GUIDELINES

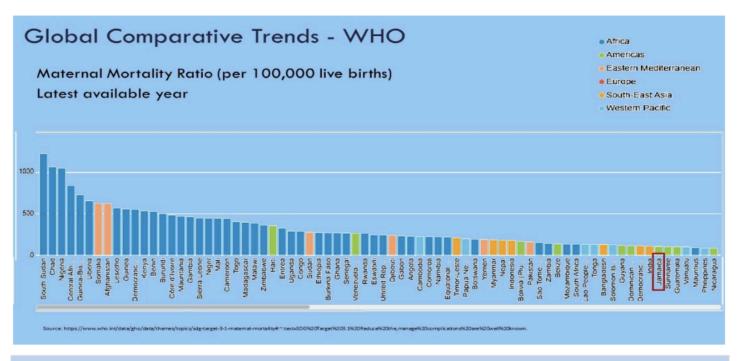
Maternal deaths are Class 1 notifiable health events and require notification within 24 hours of suspicion to the Parish Health Department or the National Surveillance Unit. For surveillance purposes, all deaths in women of reproductive age (10 to 50 years) in whom there is evidence of pregnancy within one year prior to death should be reported and investigated.

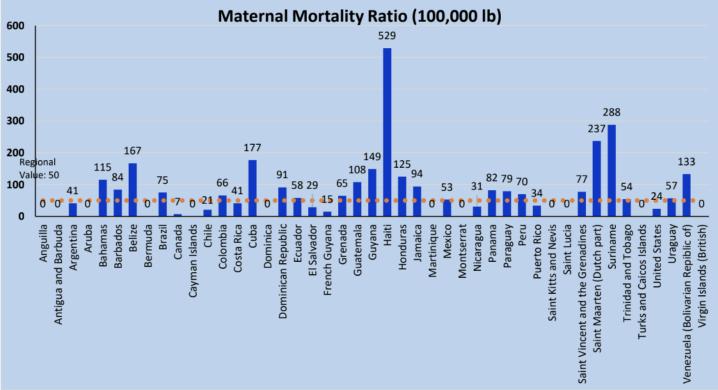
### **Maternal Mortality Surveillance Guidelines**

Sto	eps	Person Responsible	Description of Duties/Activities
	•	•	
1.	Identification and Notification of cases	Hospital active surveillance (HAS) Officers	<ul> <li>Identify cases via visits to public and private maternity facilities, death registries, police, funeral homes</li> <li>Notification of maternal deaths immediately on suspicion – Class1 notification form</li> <li>Time Frame: Within 24 hours</li> </ul>
2.	Logging and routing of cases for investigation	Parish Medical Officer of Health [MO(H)]	<ul> <li>Log suspected cases and forward notification to:         <ul> <li>Public health nurse responsible for community of residence</li> <li>National Surveillance Unit – MOHW</li> <li>MO(H) of the parish of residence (if different parish)</li> </ul> </li> <li>Time Frame: Within 24 hours of notification</li> </ul>
3.	Conduct Case Investigation	Obstetrician or Midwife	<ul> <li>Complete and submit clinical summary forms to Parish Health Department through HAS officer</li> <li>Time Frame: Within 72 hours of notification</li> </ul>
		Regional Medical Epidemiologist/ Regional Epidemiologist/ Regional Surveillance Officer	<ul> <li>Conduct home visit and interview relatives</li> <li>Visit antenatal clinic (community health centre, private practitioner, high risk clinic, hospital)</li> <li>Complete Maternal Mortality Home Visit and Antenatal Report</li> <li>Time Frame: Within 3 weeks of notification</li> <li>Liaise with pathologist to receive postmortem report</li> <li>Complete and submit Maternal Mortality Postmortem Summary</li> <li>Time Frame: Within 4 weeks of receipt of notification</li> </ul>
4.	Complete case investigation reports	Regional Epidemiologist/ Regional Surveillance Officer	<ul> <li>Compile and submit maternal mortality surveillance forms</li> <li>Time Frame: Within 1 week of receipt of reports</li> </ul>
	Review maternal mortality cases	Regional Technical Director	<ul> <li>Convene regional case review meetings</li> <li>Finalize and submit the maternal mortality case review summary</li> <li>Time Frame: Within 6 weeks of notification</li> </ul>
6.	Monitor maternal mortality surveillance system	Medical Epidemiologist, National Surveillance Unit	<ul> <li>Update and maintain national maternal mortality database</li> <li>Analyze maternal mortality data</li> <li>Prepare data and reports for stakeholders</li> <li>Monitor surveillance process and programme indicators</li> <li>Time Frame: Quarterly</li> </ul>

## TEMPORAL TRENDS IN MATERNAL MORTALITY GLOBAL AND REGIONAL TRENDS

Globally, every day in 2020, almost **800** women died from preventable causes related to pregnancy and childbirth. A maternal death occurred almost **every two minutes** in 2020. Between 2000 and 2020, the maternal mortality ratio (MMR, number of maternal deaths per 100 000 live births) **dropped by about 34**% worldwide. Almost **95**% of all maternal deaths occurred in **low and lower middle-income countries** in 2020. Care by **skilled health professionals** before, during and after childbirth can save the lives of women and newborns.

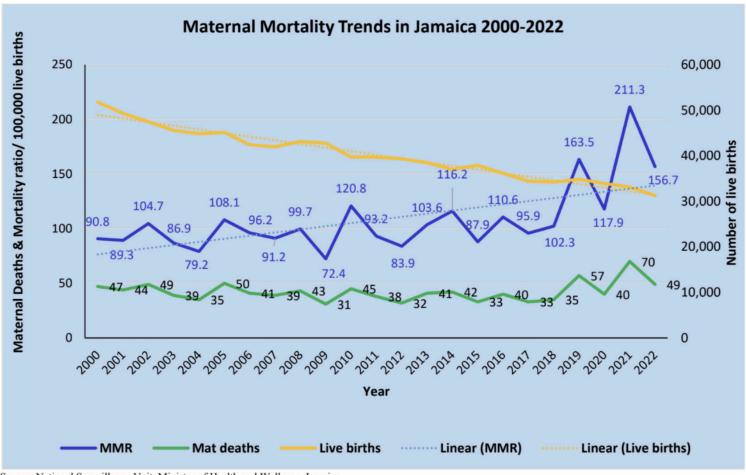




Source: https://www.who.int/data/gho/data/themes/topics/sdg-target-3-1-maternal-mortality#:~:text=SDG%20Target%203.1%20Reduce%20the,manage%20complications%20are%20well%20known

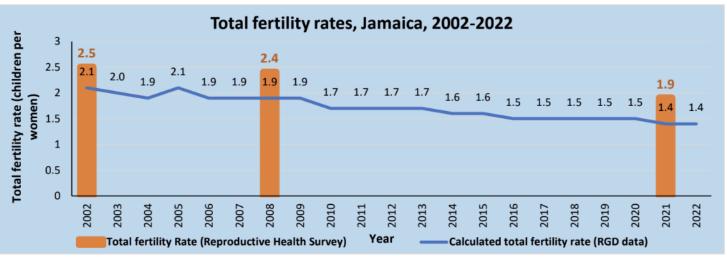
## TEMPORAL TRENDS IN MATERNAL MORTALITY JAMAICAN TRENDS

In Jamaica, between 2000 and 2022 there was an increase in the maternal mortality ratio while there was also a decrease in the number of live births over the same period.



## TEMPORAL TRENDS IN MATERNAL MORTALITY JAMAICAN TRENDS

There has been a decline in the total fertility rate over the last two decades. This is the average number of children that would be born per woman by age 50 years, if all women lived to the end of their childbearing years and bore children according to a given fertility rate at each age 1. From both sources in the chart (calculated and Reproductive Health Survey), Jamaica is below the replacement level of 2.1 children per woman.



Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

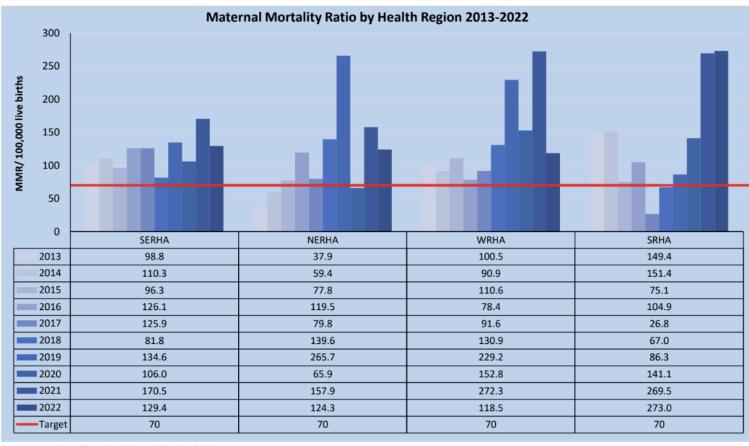
Maternal Mortality in Jamaica: 2000 - 2022

Year	<b>Total Maternal Deaths</b>	Number of Live Births	MMR <sup>β</sup> (per 100,000 live births)
2000	47	51,779	90.8
2001	44	49,291	89.3
2002	49	47,464	104.7
2003	39	45,559	86.9
2004	35	44,843	79.2
2005	50	45,114	108.1
2006	41	42,399	96.2
2007	39	41,987	91.2
2008	43	43,112	99.7
2009	31	42,782	72.4
2010	45	39,734	120.8
2011	38	39,693	93.2
2012	32	39,348	83.9
2013	41	38,480	103.6
2014	42	36,996	116.2
2015	33	37,900	87.9
2016	40	36,160	110.6
2017	33	34,426	95.9
2018	35	34,211	102.3
2019	57	34,862	163.5
2020	40	33,941	117.9
2021*	70	33,126	211.3
2022*	49	31,276	156.7
Source: National Surveillance I	Unit, Ministry of Health and Wellness, Jama	ica. β MMR: Maternal Mortality Ratio.	* Preliminary data

<sup>&</sup>lt;sup>1</sup> World Health Organization. (2018). 2018 Global reference list of 100 core bealth indicators (Plus bealth-related SDGs). https://apps.who.int/iris/handle/10665/259951

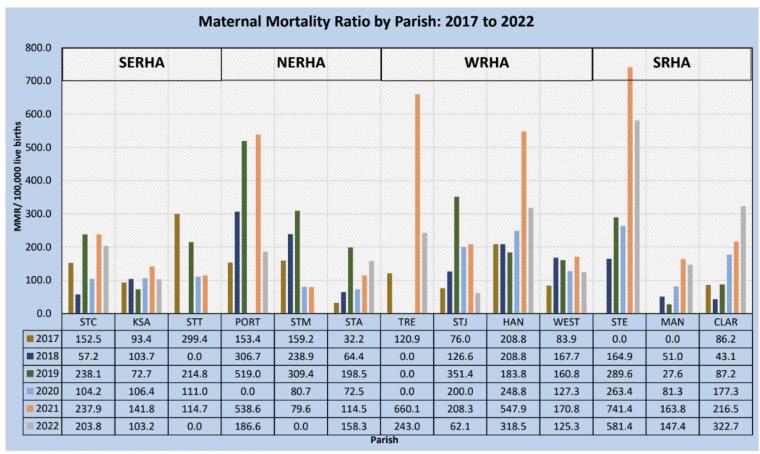
# MATERNAL MORTALITY GEOGRAPHIC DISTRIBUTION

The regional maternal mortality ratios, show a general increasing trend across all four regions. For the period examined (2013 – 2022), the regions had MMRs below 150 deaths per 100,000 up to 2019. Each region showed an increase in the MMR in 2019, and a sharp increase in 2021. Southern Region was the exception to this trend, having shown a general decrease before 2017 and an increase in the MMR after 2017.

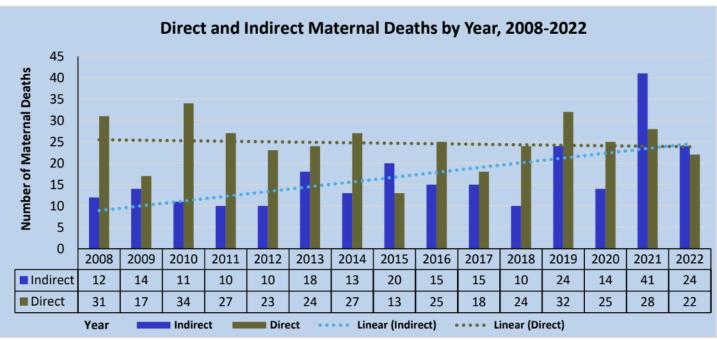


# MATERNAL MORTALITY GEOGRAPHIC DISTRIBUTION

Parish MMR showed a general increase between 2017 and 2022, except for St. Thomas and St. Mary. A sharp increase was noted in 2021 in several parishes due to the COVID-19 pandemic.

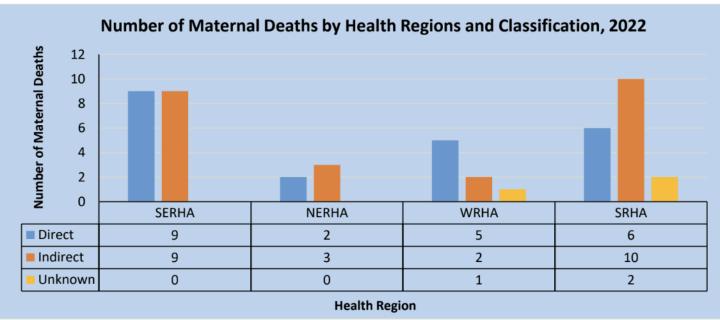


There was a general increase in the number of indirect deaths and a general decrease in the number of direct deaths (2008-2022). Direct deaths were highest in 2010 (34) for the fifteen year period reviewed. The number of direct deaths increased to thirty-two (32) in 2019, the highest it had been in the last ten (10) years. Despite a decreasing trend in direct deaths, it was noted that the number of direct deaths each year was higher than the number of indirect deaths for twelve (12) of the fifteen (15) years examined. The number of indirect deaths was highest in 2021 (41) due to the COVID-19 outbreak.

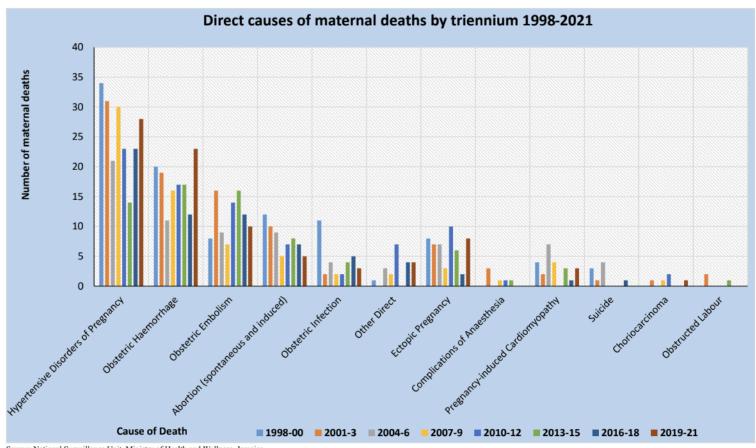


Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

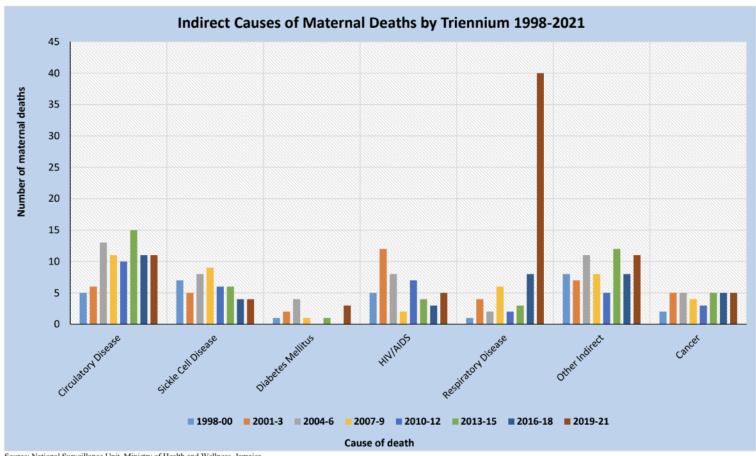
In 2022, direct deaths were noted to be highest in the South East Region (9, 18%), while indirect deaths were higher in the Southern Region (10, 20%).



Leading causes of direct maternal deaths in 2022 were hypertensive disorders of pregnancy (n=6), obstetric haemorrhage (n=4), ectopic pregnancy (n=4) and obstetric embolism (n=3). For the triennium from 2019 to 2021, hypertensive disorders of pregnancy, obstetric haemorrhage and obstetric embolism emerged as the leading causes of direct maternal deaths.



Sickle cell disease (n=6) and respiratory disease (n=4) were the main contributors to indirect maternal deaths in 2022. However, for the 2019-2021 triennium the leading causes of indirect maternal deaths were respiratory diseases (n=40), circulatory disease (n=11), cancer (n=5) and HIV/AIDS (n=5).



The age range for maternal deaths in 2022 was from 17 to 42 years with a mean age of 30.2 years. Approximately half (24, 48.9%) of women were between 25 and 34 years of age. The youngest patient (17 years) was from the parish of Saint Catherine.

Maternal Deaths in 2022 by Age Category and Classification

Age Group	Direct	Indirect	Unknown	Total
<15	0	0	0	0
15-19	3	1	0	4
20-24	3	4	0	7
25-29	2	6	2	10
30-34	6	8	0	14
35-39	5	1	0	6
40-44	3	4	1	8
>44	0	0	0	0
TOTAL	22	24	3	49

Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

Hypertensive disorders of pregnancy were the leading causes of direct maternal deaths in all age groups in both triennia (2016 to 2018 and 2019 to 2021). However, haemorrhage featured more prominently in women ≥25 years. Abortion (spontaneous and induced) did not feature highly at the extremes of maternal age (<20 and >34 years).

Leading Causes of Direct Maternal Deaths by Age

	Hypertensive Disorders of Pregnancy		Haemorrhage		Obstetric	Embolism	Abortion	
Age Groups (years)	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021
12 -15	0	0	0	0	0	0	0	0
16-19	3	5	1	1	1	0	1	0
20-24	7	4	2	1	2	2	3	1
25-34	8	10	4	11	5	4	2	4
>34	4	8	5	10	4	3	1	0

Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

Respiratory disease was the leading cause of indirect maternal deaths in the second triennium (2019-2021), with a greater proportion if these deaths occurring in women  $\geq 25$  years. A higher proportion of indirect deaths occur in women in older age groups ( $\geq 35$  years).

Leading Causes of Indirect Maternal Deaths by Age

	Circu Disc	latory ease		e Cell ease	Car	icer	HIV/	AIDS	Respir Disc	ratory ease	Diab Mel	
Age Groups (years)	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021	2016- 2018	2019- 2021
12 -15	0	0	0	0	0	0	0	0	0	0	0	0
16-19	0	1	1	0	1	1	0	1	1	0	0	1
20-24	1	0	1	0	0	0	1	2	1	7	0	0
25-34	3	6	1	3	1	2	1	2	2	23	0	0
>34	3	5	1	0	1	2	1	0	2	10	0	1

## MATERNAL MORTALITY COVID-19

In 2020, two pregnant or post-partum women positive for SARS-CoV-2 died. This figure increased to 41 in 2021 and represented 5.0% and 58.6% of pregnancy-related deaths in 2020 and 2021 respectively.

The effect of COVID-19 on the maternal mortality ratio was also substantial with Jamaica's MMR increasing from 117.9 in 2020 to 211.3 per 100,000 live births in 2021. The case fatality ratio for SARS-CoV-2 positive pregnant or post-partum women was 6.7% in 2020, 20.9% in 2021 and 15.7% in 2022. These figures were much greater than the overall case fatality ratio for the general Jamaican population (2.3%).

#### **COVID-19 and Pregnancy-related Deaths**

Category	2020	2021	2022	Total
No. Pregnant and post-partum women positive for SARS-CoV-2	30	196	116	342
No. Deaths among pregnant and post-partum women positive for				
SARS-CoV-2	2	41	8	51
Pregnancy-related Case fatality ratio (%)	6.7	20.9	15.7	18.4
Overall Case fatality ratio (Jamaica) (%)	2.6	3.2	0.9	2.3

Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

When the effects of COVID-19 were examined by Health Region, COVID-19 was the cause of more than half of the 2021 maternal deaths in both SRHA and WRHA (57.9%), and more than one third of the deaths in SERHA (36.0%). COVID-19 was the cause of more than a quarter of the maternal deaths in NERHA (28.6%). Overall, the disease-specific MMR for COVID-19 in 2021 was 99.6 per 100,000 live births.

**COVID-19 Maternal Deaths by Health Region: 2021** 

Health Region	No. Maternal Deaths	No. of COVID-19 Maternal Deaths	No. of Live Births	MMR (/100,000 live births)	Proportion of COVID- 19 Maternal Deaths (%)	MMR due to COVID- 19 (/100,000 live births)
NERHA	7	2	4433	157.9	28.6	45.1
SERHA	25	9	14665	170.5	36.0	61.4
SRHA	19	11	7051	269.5	57.9	156.0
WRHA	19	11	6977	272.3	57.9	157.7
Jamaica	70	33	33126	211.3	47.1	99.6
Jamaica (without COVID-19)	37	-	33126	111.7	-	-

# MATERNAL MORTALITY COVID-19

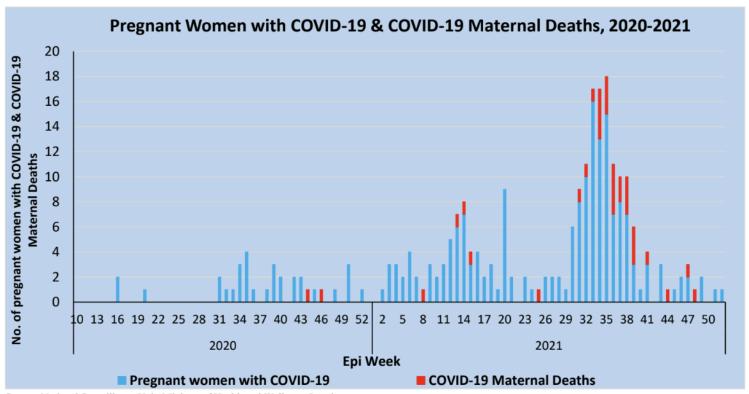
In 2022 the effects of the COVID-19 pandemic on maternal deaths were less pronounced with 11.1% of the maternal deaths in SRHA being attributable to COVID-19.

**COVID-19 Maternal Deaths by Health Region: 2022** 

Health Region	No. Maternal Deaths	No. of COVID-19 Maternal Deaths	No. of Live Births	Regional MMR (/100,000 live births)	Proportion of COVID- 19 Maternal Deaths (%)	MMR due to COVID-19 (/100,000 live births)
NERHA	5	0	4024	124.3	0	0
SERHA	18	0	13908	129.4	0	0
SRHA	18	2	6593	273.0	11.1	30.3
WRHA	8	0	6751	118.5	0	0
Jamaica	49	2	31276	156.7	4.1	6.4

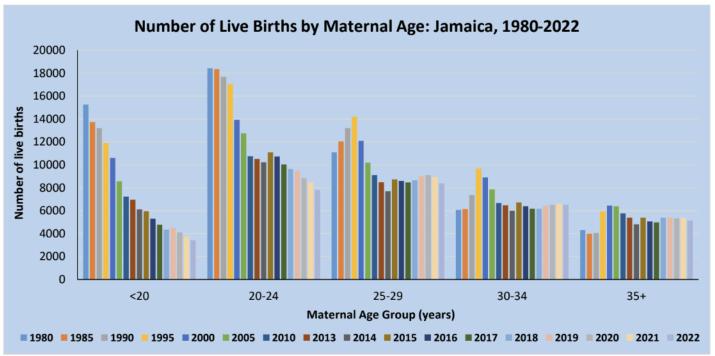
Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

There was an increase in the number of pregnant or post-partum women confirmed positive for SARS-CoV-2 during the COVID-19 waves. Likewise, the number of deaths in pregnant or post-partum women also increased during the COVID-19 waves and especially in the third wave (in 2021) when the Delta variant predominated.



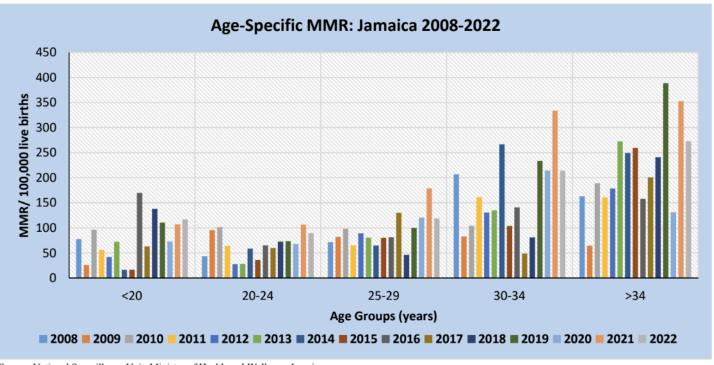
## MATERNAL MORTALITY RISK FACTORS

Advanced maternal age and high parity are some of the risk factors for maternal mortality. Since 1980, there has been a decrease in the number of annual live births among females under 20 years and those 20 to 24 years of age.



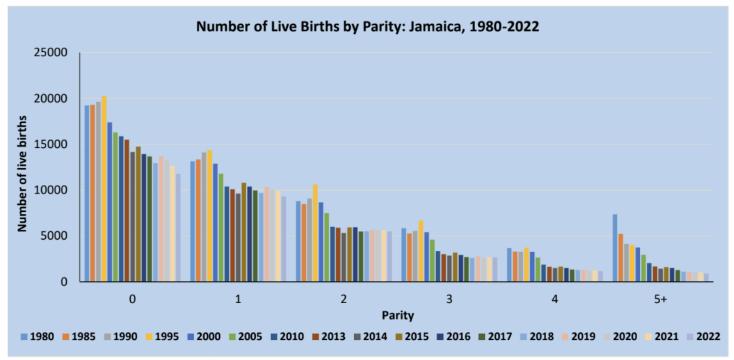
Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica

Over the fourteen-year period from 2008 to 2022, the annual maternal mortality ratio was highest in 2021 among the age categories 20 years and older. Among females under 20 years of age, the highest reported MMR was in 2016.



## MATERNAL MORTALITY RISK FACTORS

Since 1980, there was a general decrease in the number of live births in women of all parity (the total number of previous pregnancies carried beyond 28 weeks). This change was more pronounced in women in their first pregnancy as well as those with more than five previous third trimester pregnancies.

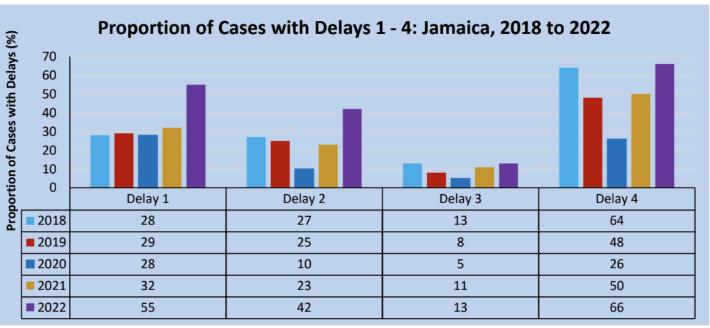




## MATERNAL MORTALITY DELAYS

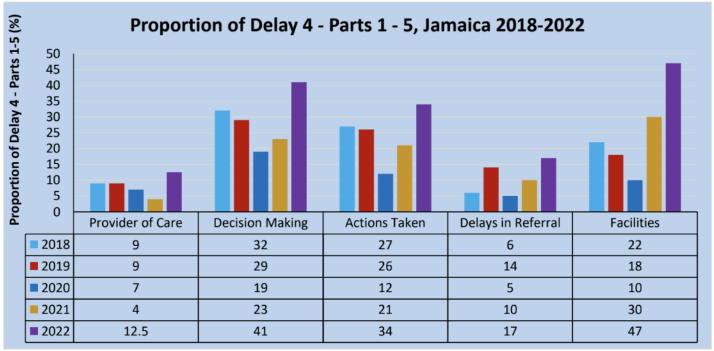
Using the Four-Delay model, between 2018 to 2022 Type 4 delays accounted for the highest proportion of delays. These relate to receiving the appropriate care once in the health facility. There was also a general increase in Type 1 and Type 2 delays which relate to patients not recognizing a health problem and not seeking care early.

Note that several types of delay feature in some cases.



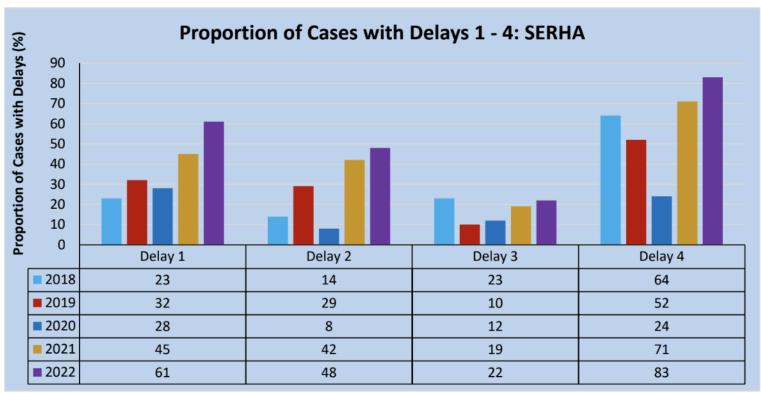
Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

Delay 4, part 5 affected most pregnancy-related deaths in 2018 to 2022. These delays relate to the quality of health facilities and availability of supplies, drugs, anaesthesia and blood products.

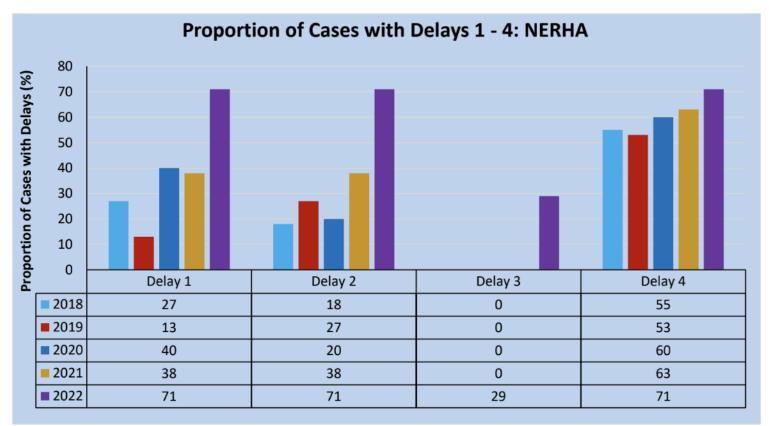


## MATERNAL MORTALITY DELAYS

A similar picture is seen in most health regions where Type 4 delays accounted for the highest proportion of delays from 2018 to 2022, and an increase in Types 1 and 2 delays.

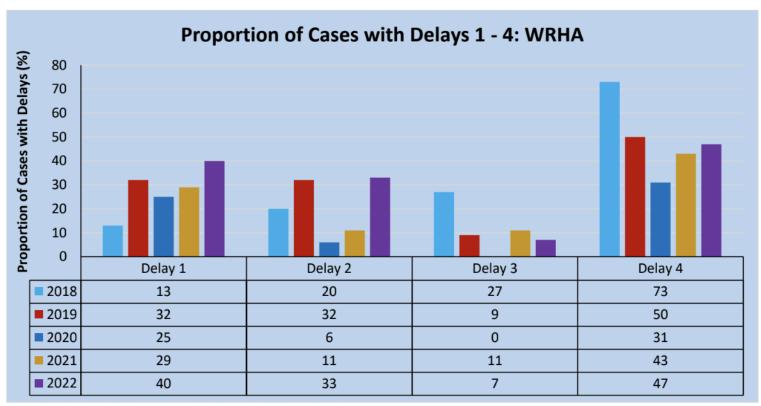


Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.

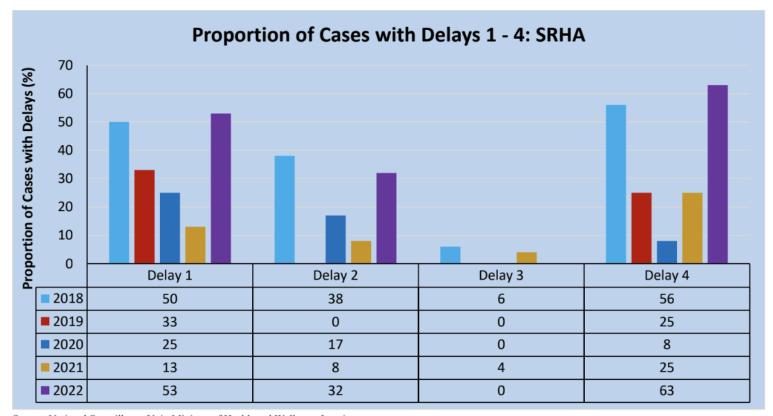


## MATERNAL MORTALITY DELAYS

A high proportion of Delay 1 was also noted in SRHA in 2018 and 2022, suggesting that several women failed to recognize a serious medical condition and seek care.



Source: National Surveillance Unit, Ministry of Health and Wellness, Jamaica.



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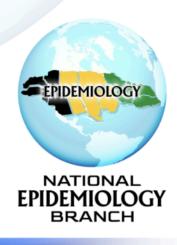
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# schedule



## Yes!

Age	Vaccine
Birth	BCG (for Tuberculosis), Hepatitis B
6 weeks, 3 months & 6 months	Polio, Pentavalent (Diphtheria, Pertussis, Tetanus [DPT]; Hepatitis B; H. Influenzae type b)
12 months	1 <sup>st</sup> MMR (Measles, Mumps, Rubella)
18 months	2 <sup>nd</sup> MMR (Measles, Mumps, Rubella); 4 <sup>th</sup> Polio, 4 <sup>th</sup> DPT
4-6 years	5 <sup>th</sup> Polio, 5 <sup>th</sup> DPT
11-12 years	6 <sup>th</sup> DT
9-14 years (up to 26 years for girls)	HPV (Human Papillomavirus)



moh.gov.jm/vaccination-resources/ @themohwgovjm 888-ONE-LOVE (663-5683) moh.gov.jm









## **MINISTRY OF HEALTH & WELLNESS LOCATIONS**

#### **RKA BUILDING**

10-16 GRENADA WAY, KINGSTON 5 876-633-8172 /876-633-7771 /876-633-8172 (RKA)

- MINISTER'S OFFICE
- PERMANENT SECRETARY
- CHIEF MEDICAL OFFICER
- •LEGAL SERVICES
- INTERNATIONAL COOPERATION IN HEALTH
- •HEALTH SERVICE PLANNING & INTEGRATION (HSPI)
  - -MENTAL HEALTH UNIT
  - -ADOLESCENT HEALTH UNIT
  - -FAMILY HEALTH UNIT
  - -PHARMACY SERVICES UNIT
  - -HEALTH SERVICES SUPPORT & MONITORING UNIT
- ORAL HEALTH UNIT
- POLICY PLANNING & DEVELOPMENT DIVISION
  - -HEALTH SYSTEMS IMPROVEMENT BRANCH
  - -PLANNING & EVALUATION BRANCH
  - -HEALTH POLICY COORDINATION UNIT
- PUBLIC RELATIONS AND COMMUNICATION
- DOCUMENTATION INFORMATION AND ACCESS SERVICES

#### MASONIC BUILDING

45-47 BARBADOS AVENUE, KINGSTON 5 876-633-7433

- HEALTH FACILITIES MAINTENANCE UNIT
- INFORMATION COMMUNICATION TECHNOLOGY UNIT
- PROJECTS UNIT

#### **IBM BUILDING**

52-60 GRENADA CRESCENT, KINGSTON 10

- EMERGENCY, DISASTER MANAGEMENT & SPECIAL SERVICES
- EMERGENCY OPERATIONS CENTRE



#### **BEVAD LTD BUILDING**

10A CHELSEA AVENUE, KINGSTON 5

- ACCOUNTS & FINANCE
- HUMAN RESOURCE MANAGEMENT & ADMINISTRATION

#### THE NEW ARC BUILDING

15 KNUTSFORD BOULEVARD, KINGSTON 5

- HUMAN RESOURCES DEVELOPMENT UNIT
- NATIONAL EPIDEMIOLOGY BRANCH
- ENVIRONMENTAL HEALTH UNIT
- VETERINARY PUBLIC HEALTH UNIT

#### THE REIT BUILDING,

52-60 GRENADA CRESCENT, KINGSTON 5: OFFICE OF THE MINISTER OF STATE

- •HEALTH PROMOTION & PROTECTION BRANCH [WITH THE EXCEPTION OF VETERINARY PUBLIC HEALTH AND ENVIRONMENTAL HEALTH UNITS]
- STANDARDS AND REGULATION DIVISION
- INTERNAL AUDIT UNIT

#### KINGSTON SCHOOL OF NURSING

50 HALF WAY TREE ROAD, KINGSTON 10 876-922-0210

- CUBA EYE-CARE PROJECT
- PESTICIDE CONTROL AUTHORITY
- TRANSPORT & SECURITY UNIT

#### NATIONAL PUBLIC HEALTH LAB

21 SLIPE PEN ROAD KINGSTON 876-967-2234

TRANSPORT & SECURITY UNIT



