

# Leading causes of death and mortality rates in Montserrat, 1998 to 2022

February 2024



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# 1. Background

Changes in population health, demographics, disease patterns, and healthcare delivery can profoundly influence mortality trends over time. Montserrat has undergone notable demographic transformations, particularly following the activation of the Soufrière Hills volcano in 1995, which prompted two-thirds of the population to evacuate the island. Between 1998 and 2009, the population resurged by 85%, rising from 2,726 to 5,039 inhabitants. However, by 2022, it had decreased by 12% to 4,433 residents, with individuals aged 65 years and above accounting for 19% of the total (846/4,433), indicative of an ageing population. In an aging population, mortality patterns are often characterised by a higher prevalence of chronic diseases, age-related conditions, susceptibility to infections and injuries, and the cumulative effects of lifestyle factors.

A recent study analysed hospital admission data in Montserrat over a 10-year period from 2011 to 2021, to understand trends and patterns in patient admissions. The results showed a steady increase in the number of admissions over the 10 years, with the highest growth seen in the categories of infectious disease, neoplasms, and mental health. In light of these findings, a study of mortality data was requested to investigate whether similar patterns were evident, and to help to further understand population health with the hope of guiding public health interventions, improving healthcare quality and reducing premature mortality.

## 2. Aims and objectives

### 2.1 Aim

To gain a comprehensive understanding of mortality patterns and causes in Montserrat between 1998 and 2022.

### 2.2 Objectives

- To describe deaths in Montserrat between 1998 and 2022 by time and person.
- To examine variations in mortality rates over time among different age groups and genders.
- To identify and categorise leading causes of death and examine any changes over time.

## 3. Methods

### 3.1 Study population

All individuals who died in Montserrat between 1 January 1998 and 31 December 2022.

### 3.2 Data sources and data collection

#### **Mortality data**

Mortality records were obtained from the Medical Records department in the Ministry of Health and Social Services. Data available included date of death, age, gender, occupation, nationality, place of residence, place of death and underlying cause of death. The underlying cause of death is defined by the World Health Organisation as: 'the disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury'.

#### **Population data**

Population data was obtained from the Statistics Department in the Ministry of Finance and Economic Management. For each year of the study, annual mid-year population estimates with gender and 5 year age breakdowns were provided. However, age and gender breakdowns were not available for the years 2005 to 2010 inclusive.

### 3.3 Data management and storage

Mortality data was anonymised and encrypted before being sent securely via government email and stored on a secure drive. All data was managed, and processed in accordance with Caldicott data protection principles and GDPR policies.

### 3.4 Data analysis

Data was imported into R Studio where it was cleaned and analysed.

#### **Data imputation**

To calculate gender and age-specific mortality rates over the study period, data imputation was employed using proportional allocation to estimate the population for years lacking age and gender breakdowns. For the years with missing data, it was assumed that the age and gender distributions were similar to those of the closest year with complete data (2004 for years 2005 to 2007, and 2011 for years 2008 to 2010). The proportions for each gender and age group relative to the population total were calculated for the complete data years (2004 and 2011) and applied to the years where only the total population was available.

### **Categorising cause of death**

The allocation of underlying cause ICD-10 codes to causes of death was conducted utilising the Global Burden of Disease (GBD) cause list. The codes were systematically organised into three major groups:

- Communicable diseases (e.g. lower respiratory tract infections, COVID-19, diarrhea, sepsis), maternal and perinatal causes (e.g. maternal hypertension, birth trauma) and nutritional conditions (e.g. protein-energy malnutrition)
- Noncommunicable diseases (e.g. cancer, diabetes, heart disease and stroke)
- External causes of mortality (e.g. accidents, homicide, suicide).

These three main groups were subdivided further based on the GBD categorisation. However, certain causes of death were reclassified from the 'Other' category to specific groups to better align with local context and interest. For example, 'Hypertension' was moved from the category of 'Other cardiovascular diseases' to its own category, specifically labeled as 'Hypertension'.

For a detailed breakdown of these groups and their corresponding subgroups, including the relevant ICD-10 codes, please refer to the appendices (Appendix 1).

### **Mortality rates**

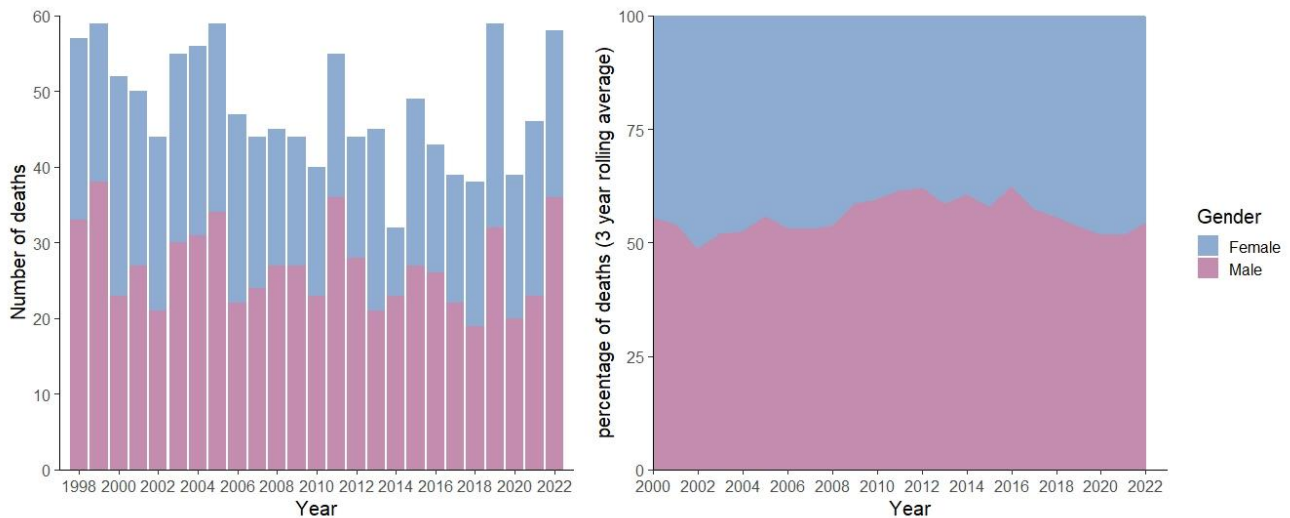
Crude rates per 1,000 population were calculated for both all causes and specific causes, categorised by age and sex. To account for variations in the age distribution over time, age-standardised mortality rates were calculated. These standardised rates were adjusted to reflect the demographic characteristics of the 2011 Montserrat population, selected as the reference point due to it being the midpoint of the study. Due to small numbers, 3-year moving averages were calculated to facilitate analysis of trends.

## **4. Results**

### **4.1 Distribution of deaths by year and gender**

Between 1 January 1998 to 31 December 2022, Montserrat recorded a total of 1,200 deaths, averaging 48 deaths annually. The yearly death toll reached its highest points at 59 in 1999, 2005 and 2019, while observing a low of 32 in 2014. The distribution of deaths by gender has fluctuated over the years, with males on average accounting for 56% of the total deaths (Figure 1).

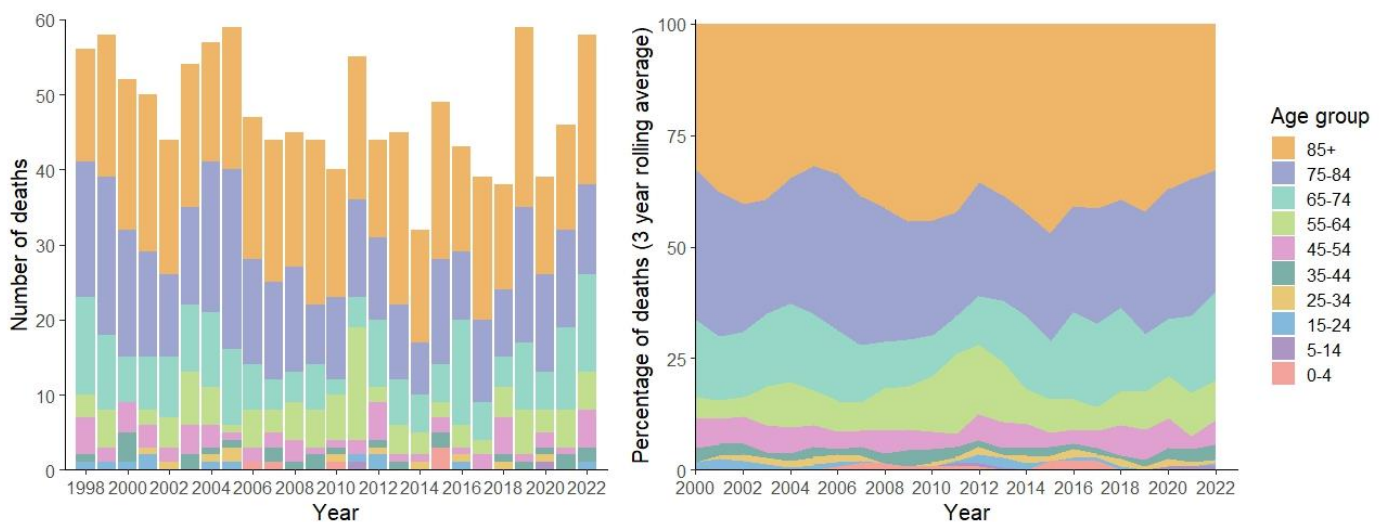
Figure 1: Number and proportions of deaths by gender, Montserrat, 1998 to 2022



## 4.2 Distribution of deaths by year and agegroup

The median age at the time of death across the 25 year period was 81 years. The lowest median age of death was in 2022 at 77 years. Overall, 38% (451/1,200) of deaths occurred in individuals aged 85 years and above, with 10% (118/1,200) of deaths occurring in individuals below 55 years. The proportion of deaths attributed to individuals aged below 55 years has remained relatively consistent over time. However, variations were observed among older age groups, particularly a slight decrease in the proportion of deaths among individuals aged 85 and above in recent years, attributable to a decline in the population within this age category.

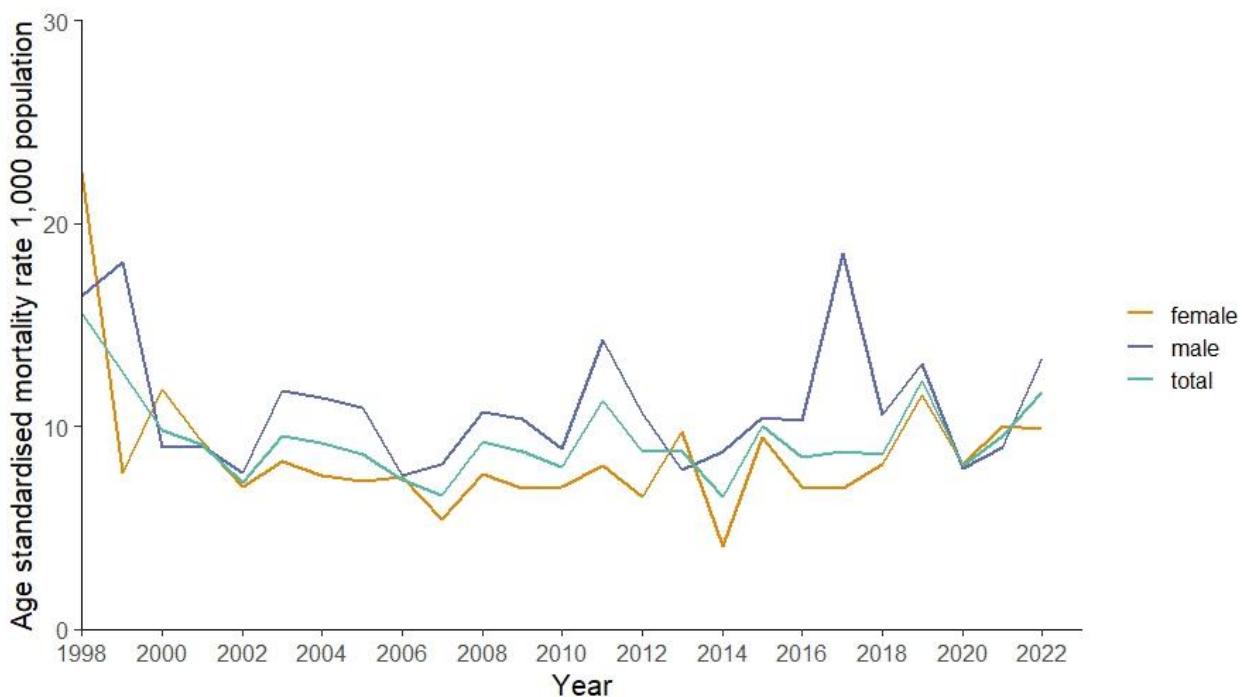
Figure 2: Number and proportions of deaths by gender, Montserrat, 1998 to 2022



### 4.3 Mortality rates by year and gender

The age standardised mortality rate peaked at 15.6 per 1,000 in 1998, before steadily declining to 7.2 per 1,000 in 2002. Since 2002 the death rate has fluctuated at an average of 9.0 per 1,000. In recent years, peaks in rates were observed in 2019 and 2022 at 12.2 and 11.7 per 1,000 population respectively. On average, mortality rates have been higher in males. In 2017, the peak age-standardised mortality rate for males reached 18.6 per 1,000, primarily due to an increase in mortality among the elderly male population aged 85 and above.

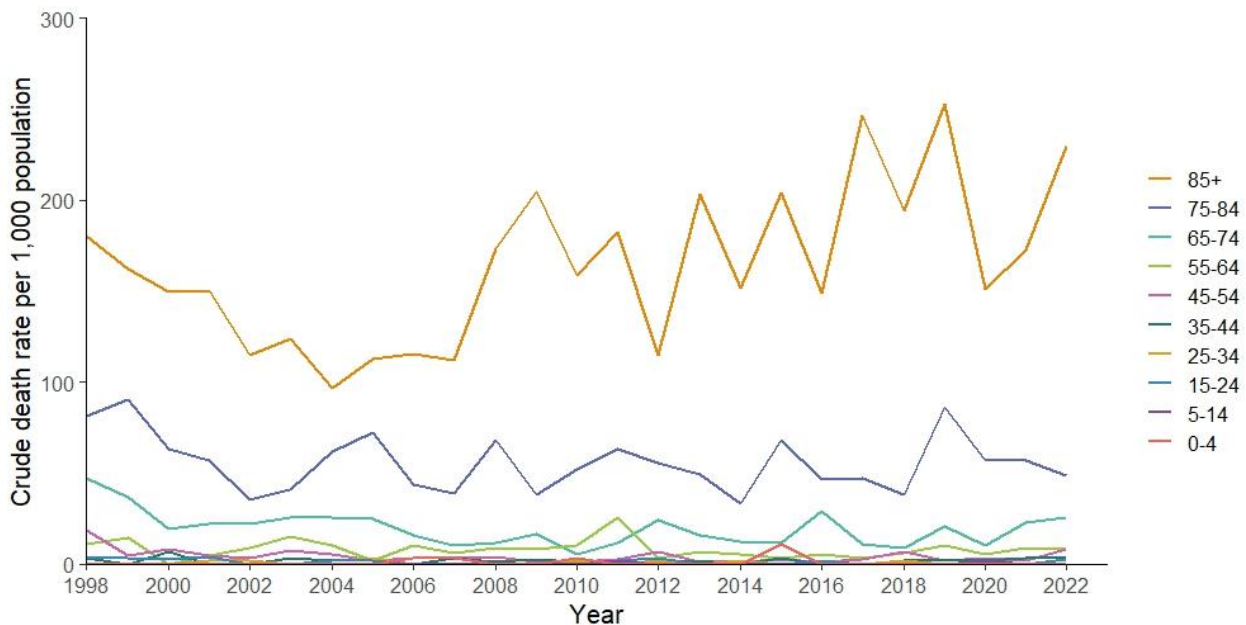
Figure 3: Age standardised mortality rates per 1,000 population by gender, Montserrat, 1998 to 2022



### 4.4 Mortality rates by year and age group

Crude mortality rates among individuals aged 85 years and above have shown an upwards trend since 2007, reaching a peak of 253 per 1,000 population in 2019 (Figure 4). Conversely, mortality rates for the population under 85 years have remained relatively stable throughout the study period.

Figure 4: Age-specific crude mortality rates, Montserrat, 1998 to 2022



#### 4.5 Leading causes of death

Between 2018 and 2022, 83% of total deaths (199/239) were attributed to non-communicable diseases (NCDs) (Figure 5). Cardiovascular diseases, encompassing conditions such as ischemic heart disease, cerebrovascular disease, hypertension, and heart failure, were the leading cause of death amongst all disease categories, accounting for 39% of total deaths (94/240). Malignant neoplasms followed at 18% (43/240) and diabetes mellitus at 10% (24/240). Communicable, maternal, perinatal and nutritional conditions constituted 15% of total deaths (36/239), and injuries accounted for 2% (4/239). Throughout the study period, there has been minimal variation in the distribution of deaths across the three primary cause-of-death categories: communicable diseases, noncommunicable diseases, and injuries (Figure 6). However, a slight uptick in the percentage of deaths attributable to communicable diseases has been noted since 2019.

Between 2018 and 2022, cerebrovascular disease and diabetes mellitus shared the lead as the primary individual causes of death, each contributing to 10% of the total deaths during this period (Table 1). This was followed by lower respiratory tract infections, ischaemic heart disease and heart failure. Eight out of the top ten leading causes of disease were NCD's, with lower respiratory infections and sepsis ranking the highest among communicable diseases. For males, diabetes mellitus retained its position as the leading cause of death, but prostate cancer emerged as the second-highest, accounting for 8.5% of male deaths (11 out of 130). Among females, the top three leading causes of death mirrored those of the overall population.

Figure 5: Distribution of deaths by major disease categories, Montserrat, 2018 to 2022

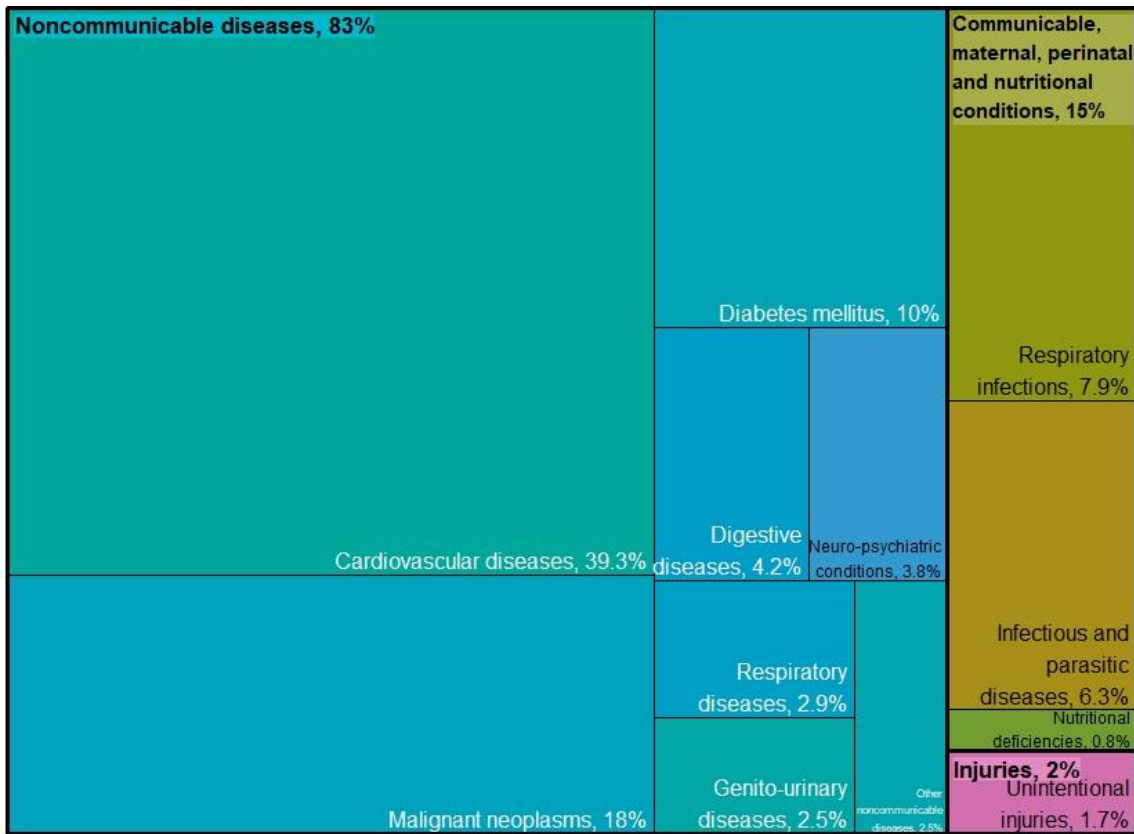
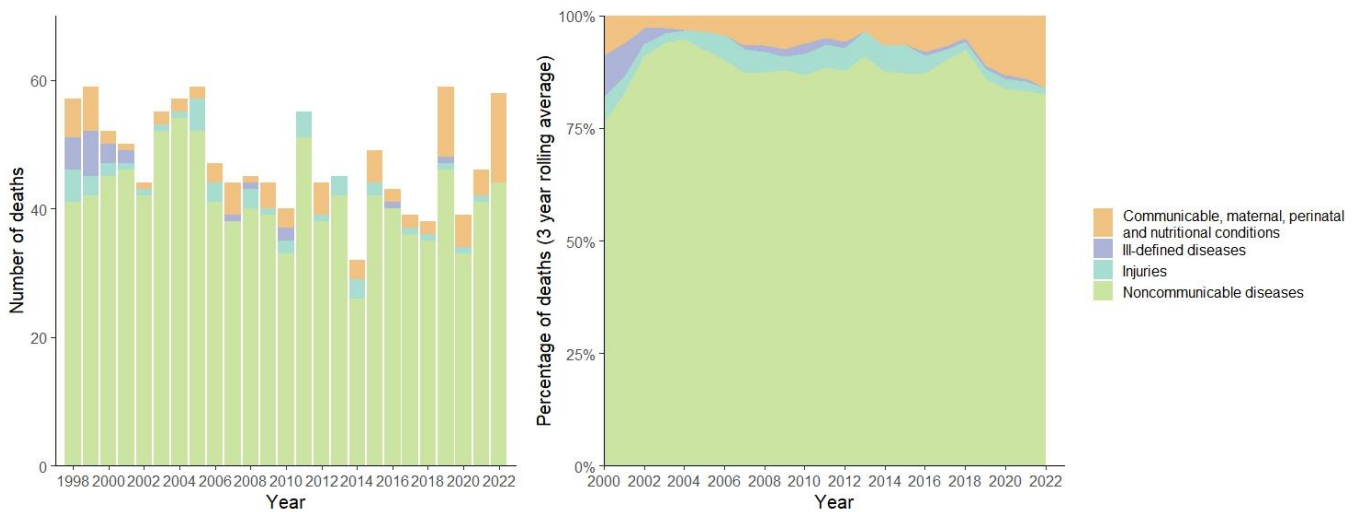


Table1: Top 10 leading causes of death, Montserrat, 2018 to 2022

Rank	Total				Male				Female			
	Cause of death	n	%	Rate	Cause of death	n	%	Rate	Cause of death	n	%	Rate
1	Cerebrovascular disease	24	10.0	1.1	Diabetes mellitus	14	10.8	1.2	Cerebrovascular disease	14	12.7	1.2
2	Diabetes mellitus	24	10.0	1.1	Prostate cancer	11	8.5	1.0	Diabetes mellitus	10	9.1	0.9
3	Lower respiratory infections	15	6.3	0.7	Cerebrovascular disease	10	7.7	0.9	Lower respiratory infections	9	8.2	0.8
4	Ischaemic heart disease	14	5.8	0.6	Heart failure	9	6.9	0.8	Breast cancer	5	4.5	0.4
5	Heart failure	13	5.4	0.6	Ischaemic heart disease	9	6.9	0.8	Hypertensive disease	5	4.5	0.4
6	Prostate cancer	11	4.6	0.5	Hypertension	6	4.6	0.5	Ischaemic heart disease	5	4.5	0.4
7	Hypertension	10	4.2	0.4	Lower respiratory infections	6	4.6	0.5	Sepsis	5	4.5	0.4
8	Sepsis	10	4.2	0.4	Sepsis	5	3.8	0.4	Heart failure	4	3.6	0.3
9	Hypertensive disease	8	3.3	0.4	Trachea, bronchus and lung cancers	4	3.1	0.4	Hypertension	4	3.6	0.3
10	Inflammatory heart diseases	7	2.9	0.3	COVID-19	3	2.3	0.3	Inflammatory heart diseases	4	3.6	0.3

Figure 6: Distribution of deaths by major disease categories, Montserrat, 2018 to 2022



## 4.5 Non-cummincable diseases

Cardiovascular age standardised rates per 1,000 population have consistently remained higher than all other NCDs across the analysed time period (Figure 7). The age-standardised rate fluctuated, maintaining an average of 3.4 per 1,000 until 2014, before increasing and reaching its peak at 4.5 per 1,000 in 2017. Subsequently, it gradually declined to 3.3 per 1,000 by 2022. Gender distributions of deaths attributed to cardiovascular diseases are even, with 52.9% of deaths occurring in men. The median age of death due to cardiovascular diseases was 83, with a slightly younger median age for males at 81 years compared to 84 for females. One fifth of deaths due to cardiovascular diseases (20%, 90/461) occurred in individuals under the 70 years.

The 3-year moving average mortality rate of diabetes mellitus reached it's peak at 2.6 per 1,000 in 2012. Since then, rates of diabetes have steadily declined to a 3-year average rate of 1.0 per 1,000 in 2022. There were no deaths attributed to diabetes mellitus in 2022. Deaths due to diabetes have been evenly distributed across genders, with 52% (103/199) occurring among females. The median age of death due to diabetes was 83 years, with females at 85 years and males at 82 years. 17% of diabetes deaths (33/199) occurred in individuals under 70 years.

Age standardised mortality rates of neoplasms have fluctuated between 1 and 2 per 1,000 population throughout the study period. However, in 2022, a peak standardised rate of 2.9 per 1,000 was observed. A higher proportion of deaths due to malignant neoplasms occurred in males at 67.8% (120/177). The median age of deaths due to malignant neoplasms was 76 years, with females at 74 years and males at 76 years. 35% of deaths due to malignant neoplasms (62/177) occurred in individuals under 70 years.

The age standardised mortality rates of all other NCDs have consistently remained low, below 1 per 1,000 population.

Figure 7: Age standardised mortality rates per 1,000 population of non-communicable disease, Montserrat, 1998 to 2022

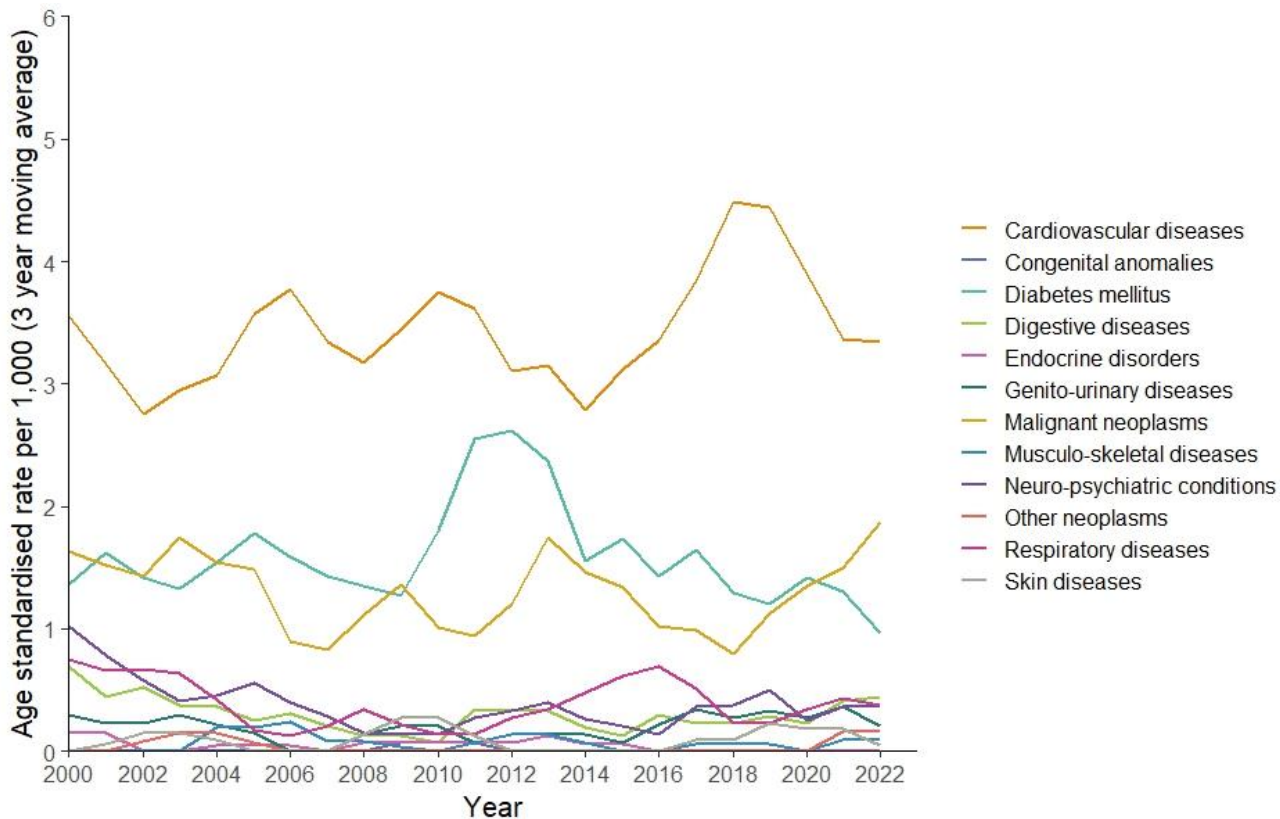
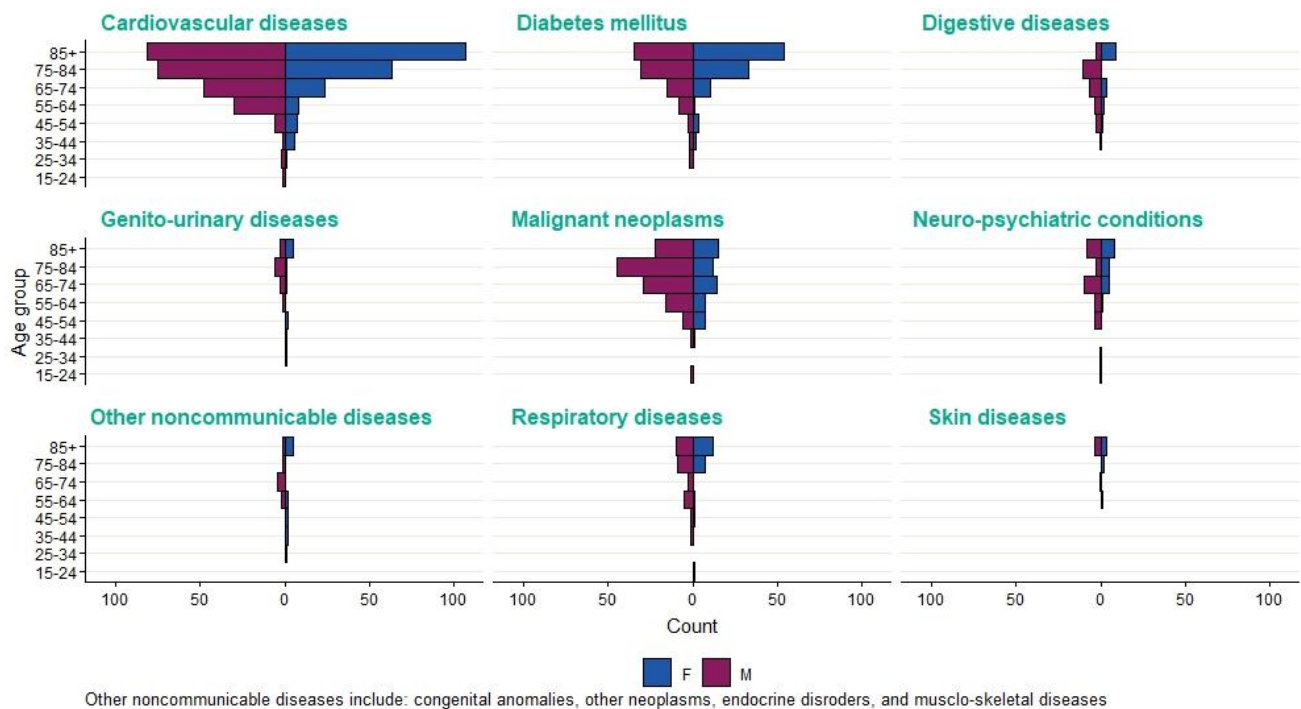


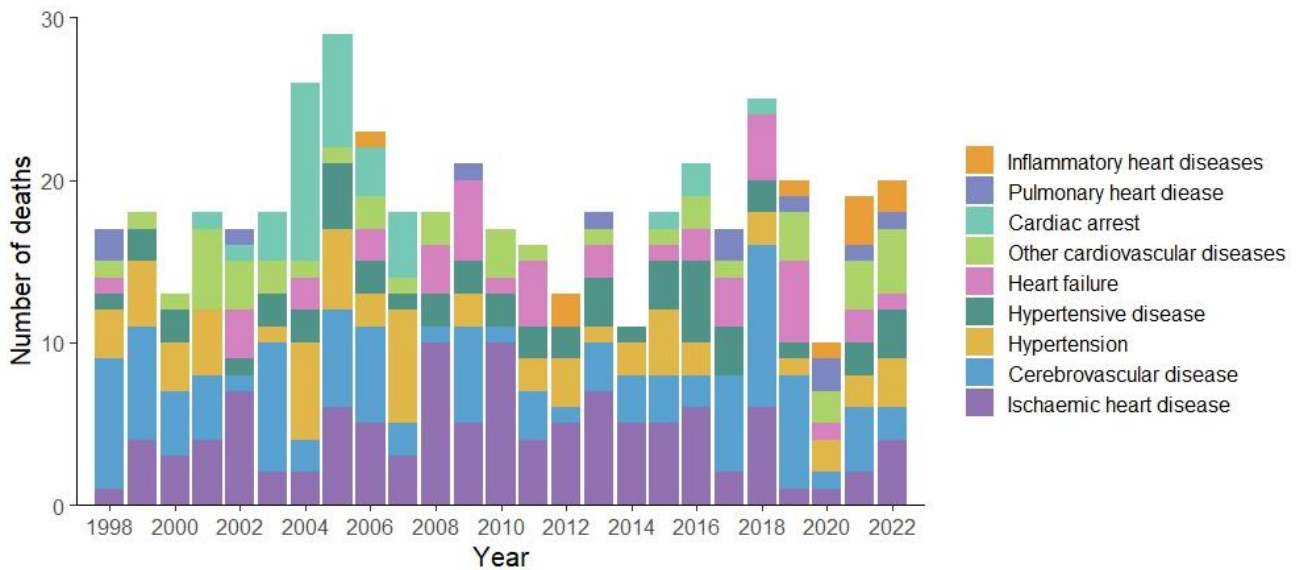
Figure 8: Age and sex distribution of non-communicable disease, Montserrat, 1998 to 2022



#### 4.5.2 Cardiovascular diseases

As a collective, cardiovascular diseases were the most common cause of death in Montserrat, contributing to an annual average of 18 fatalities. Among these, ischemic heart disease was the most prevalent, constituting a quarter (24%, 110/461) of all cardiovascular-related deaths throughout the study period. However, the mortality rates for ischemic heart disease have exhibited a consistent decline since 2008, dropping from 2.1 per 1,000 in 2008 to 0.9 per 1,000 in 2022. Cerebrovascular disease, ranking as the second most common cause of cardiovascular disease-related death, accounted for 22% of fatalities (101/461). Deaths due to cerebrovascular disease were also on a decreasing trend; however, a surge in numbers were observed between 2017 and 2019. Deaths attributed to hypertension accounted for 13% of cardiovascular related deaths (61/461), since 2008 deaths due to hypertension have occurred at an average of 2 per annum.

Figure 9: Deaths attributed to cardiovascular diseases by type and year, Montserrat, 1998 to 2022

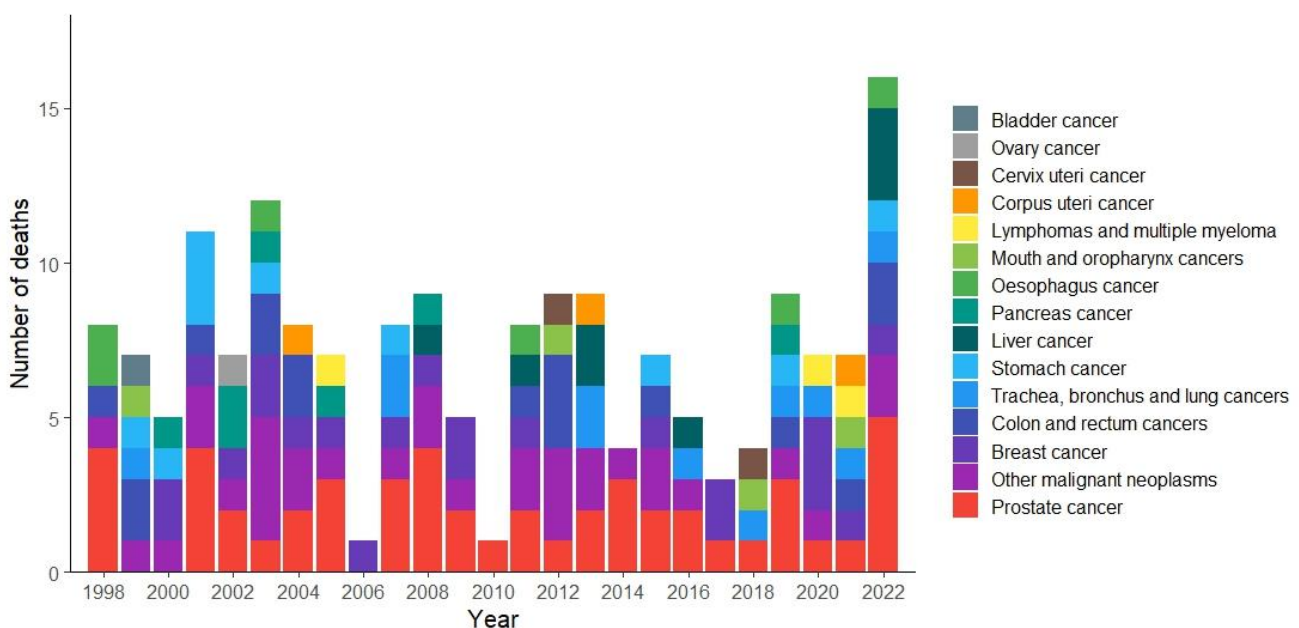


Other cardiovascular diseases include: mitral valve regurgitation, non-rheumatic aortic valve disorders, conduction disorder, atrial fibrillation, cardiac arrhythmia, Artherosclerosis, aortic aneurysm, other peripheral vascular diseases, arterial embolism, phlebitis and thrombophlebitis and other unspecified disorders of the circulatory system

#### 4.5.3 Malignant neoplasms

Throughout the study period, prostate cancer was the most common cause of death attributed to malignant neoplasms, contributing to 28% (50/177) of deaths. Subsequently breast cancer followed at 12% (22/177), and colon and rectum cancers at 10% (17/177). The year 2022 marked a record high with a total of 16 malignant neoplasm deaths. During this year, prostate cancer remained the most common cause, contributing to 31% (5/16) of malignant neoplasm deaths, followed by liver cancer at 19% (3/16).

Figure 11: Malignant neoplasm deaths by type and year, Montserrat, 1998 to 2022

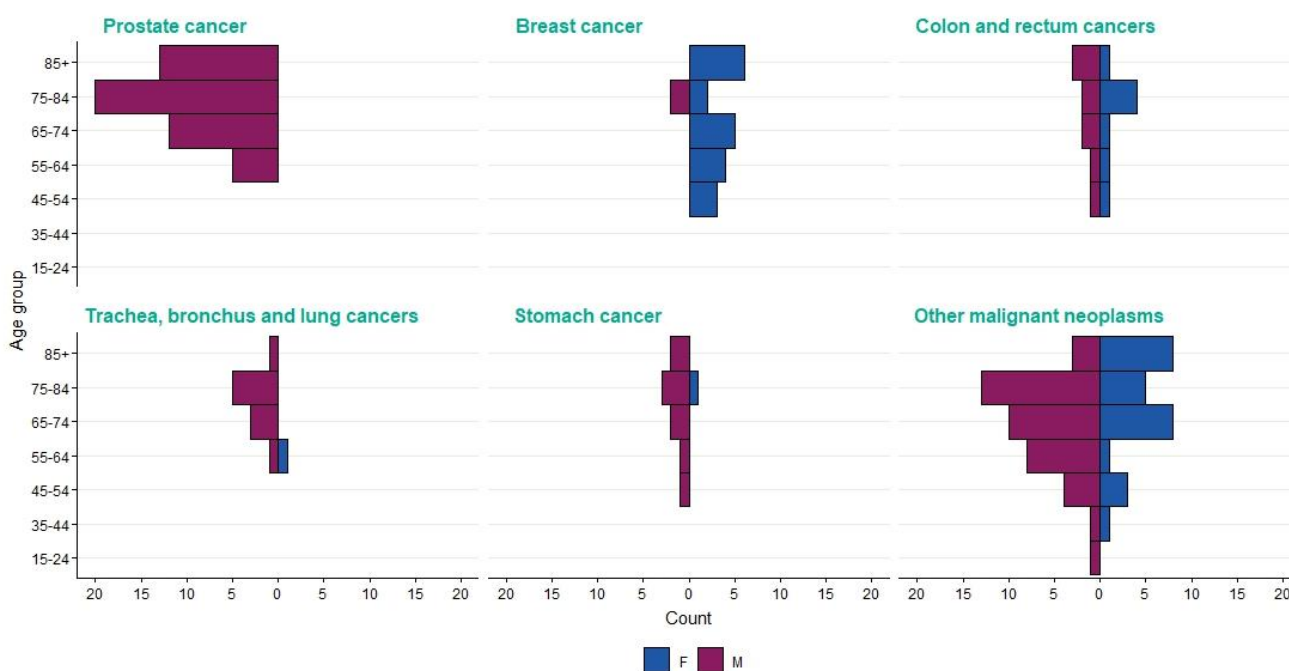


Other malignant neoplasms include neoplasms of the larynx, penis, brain, intestinal tract, kidney, connective soft tissue retroperitoneum and other or ill-defined sites

The median age of death for prostate cancers was 80 years, with 22% of deaths (11/50) occurring in males under the age of 70. Among breast cancer deaths, the majority were females, comprising 91% (20/22). The median age of death from breast cancer was 71, and just under half of breast cancer deaths (45%, 10/22) were individuals under the age of 70 years. The distribution of colon and rectum cancers deaths was evenly split between the sexes, with 53% (9/17) deaths occurring in males. The average age at which people died from colon and rectum cancers was 79, with 35% (6/17) of deaths occurring before the age of 70.

As for trachea, bronchus, and lung cancers and stomach cancers, the majority of deaths were males, accounting for 91% and 90% respectively. The median age at the time of death for both groups of cancers was 77 years.

Figure 12: Age and sex distribution of malignant neoplasm deaths, Montserrat, 1998 to 2022



#### 4.6 Communicable, maternal, perinatal and nutritional conditions

Between 1998 and 2022, only 0.3% (4/1200) were linked to conditions arising during the perinatal period (Figure 13). Among these deaths, 3 were attributed to prematurity and low birth weight, while the remaining death resulted from birth asphyxia and trauma. Since 2015, there have been no deaths reported due to perinatal conditions. Only one death was associated with a maternal condition, specifically hypertensive disorders of pregnancy in 2000. Nutritional deficiencies accounted for 1% of total deaths (16/239), with iron deficiency anemia being the leading cause, accounting for 81% (13/16) of all nutritional deficiency-

related deaths. The median age of deaths linked to nutritional deficiencies was 82 years, and 50% (8/16) were female (Figure 14).

Communicable diseases contributed to 6% of total deaths (71/1200). Among these, 42% (30/71) resulted from respiratory infections, while the remaining 58% (41/71) were caused by infectious and parasitic diseases. The majority of respiratory infections were lower respiratory infections (87%, 26/30), and the remaining 13% (4/30) were recorded as COVID-19 deaths, all occurring in 2022. A surge in respiratory infection-related deaths was noted in 2022, totaling 11 deaths, constituting 19% (11/58) of total deaths that year. This increase was driven by COVID-19 deaths, coupled with a rise in lower respiratory infections.

Approximately half of deaths related to infectious and parasitic diseases were recorded as sepsis deaths (56%, 23/41). Since 2018, there has been at least one sepsis-related death annually, with a peak of 4 deaths attributed to sepsis in 2019. The second most prevalent cause of death due to infectious and parasitic diseases was diarrhoeal disease, with 8 deaths across the study period (20%, 8/41). The last death recorded with an underlying cause of diarrhoeal disease was in 2019. There were a total of 4 deaths attributed to tuberculosis between the years of 1998 and 2002, and 1 death attributed to HIV in 1999.

Figure 13: Number of deaths due to communicable, maternal, perinatal and nutritional diseases, by cause and year, Montserrat, 1998 to 2022

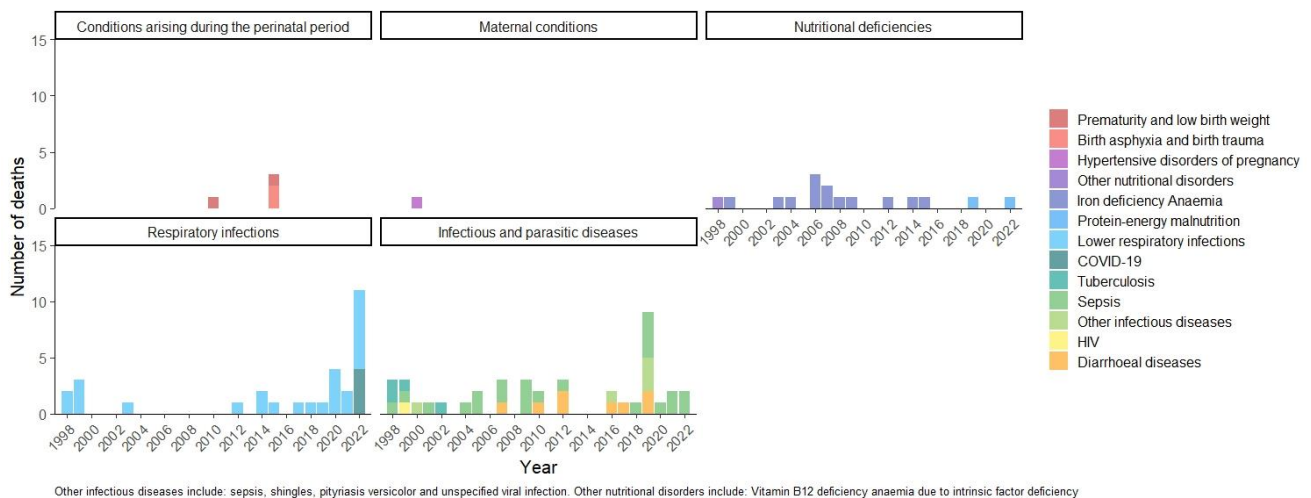
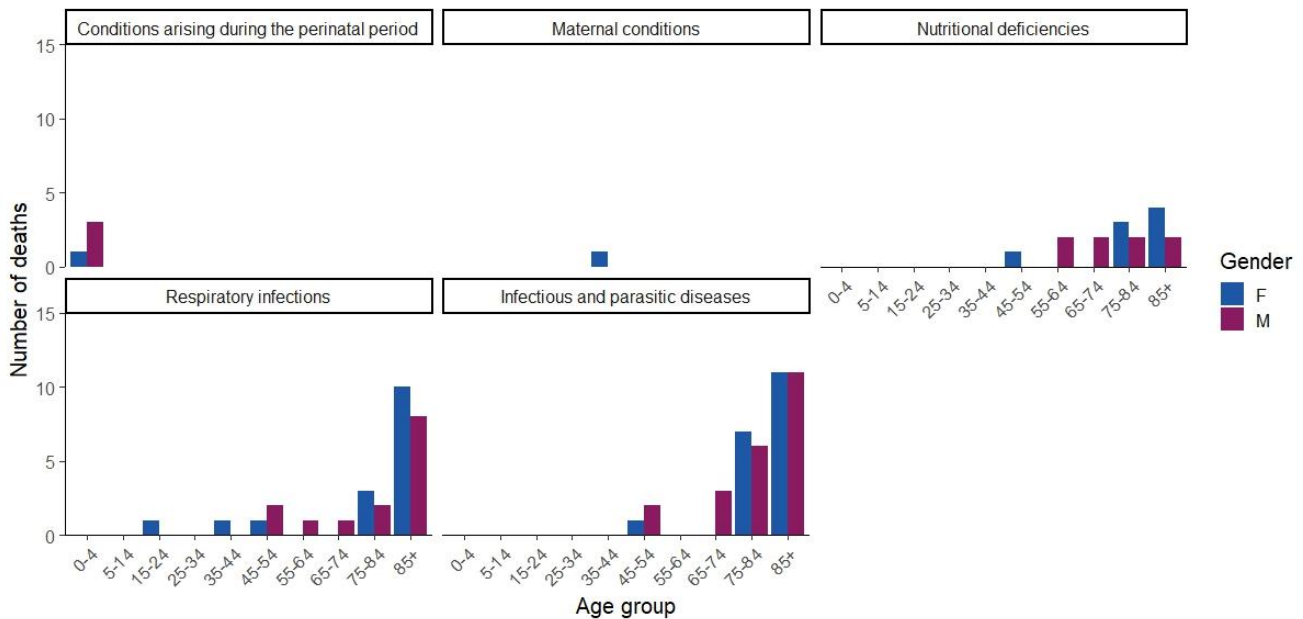


Figure 14: Age and sex distribution of deaths due to communicable, maternal, perinatal and diseases, by cause and year, Montserrat, 1998 to 2022



## 4.7 External causes of mortality

Between 1998 and 2022, 4% (46/1200) of deaths have been attributed to injuries, averaging 2 deaths per annum (Figure 15). Of these, approximately three quarters (78%, 36/46) were unintentional injuries. The most common causes of unintentional injury were falls (31%, 11/36), and drownings (22%, 8/36). Recorded intentional injuries totaled 6 deaths, comprising 5 due to violence, and one due to suicide. The most recent intentional injury-related fatality was in 2012. Three-quarters of external cause-related deaths were male (76%, 35/46), with a median age of 52 years (Figure 16).

Figure 15: Number of deaths due to external causes of mortality, by cause and year, Montserrat, 1998 to 2022

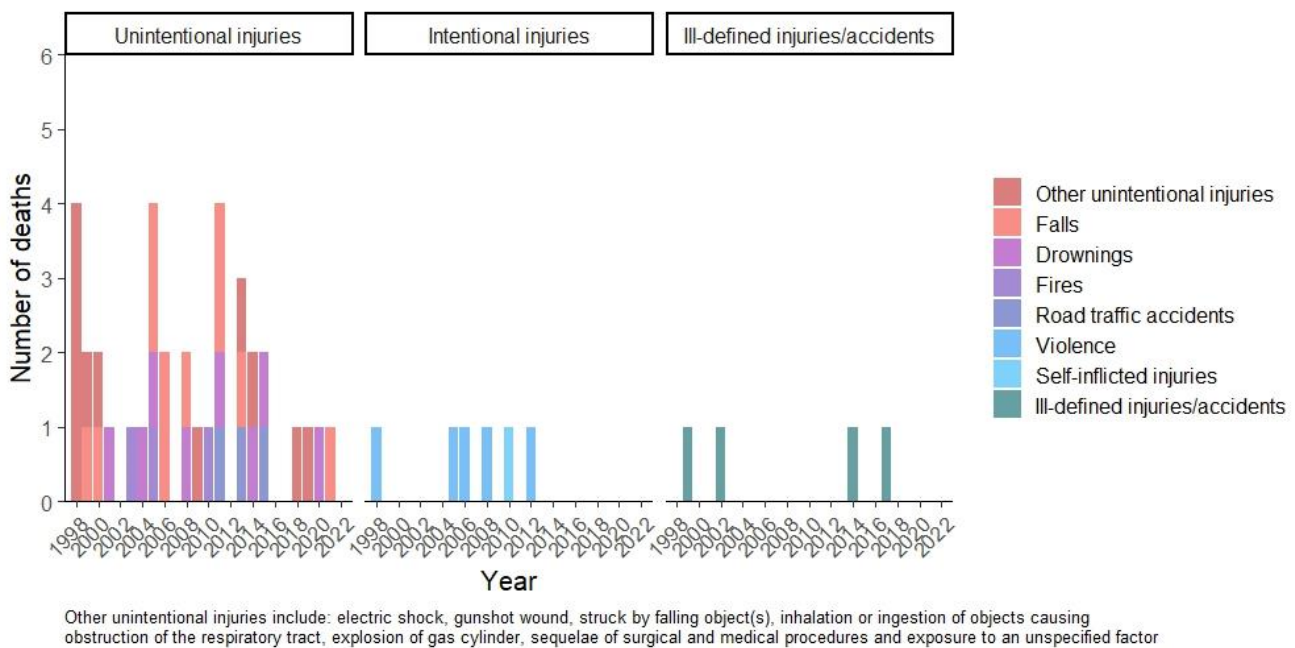
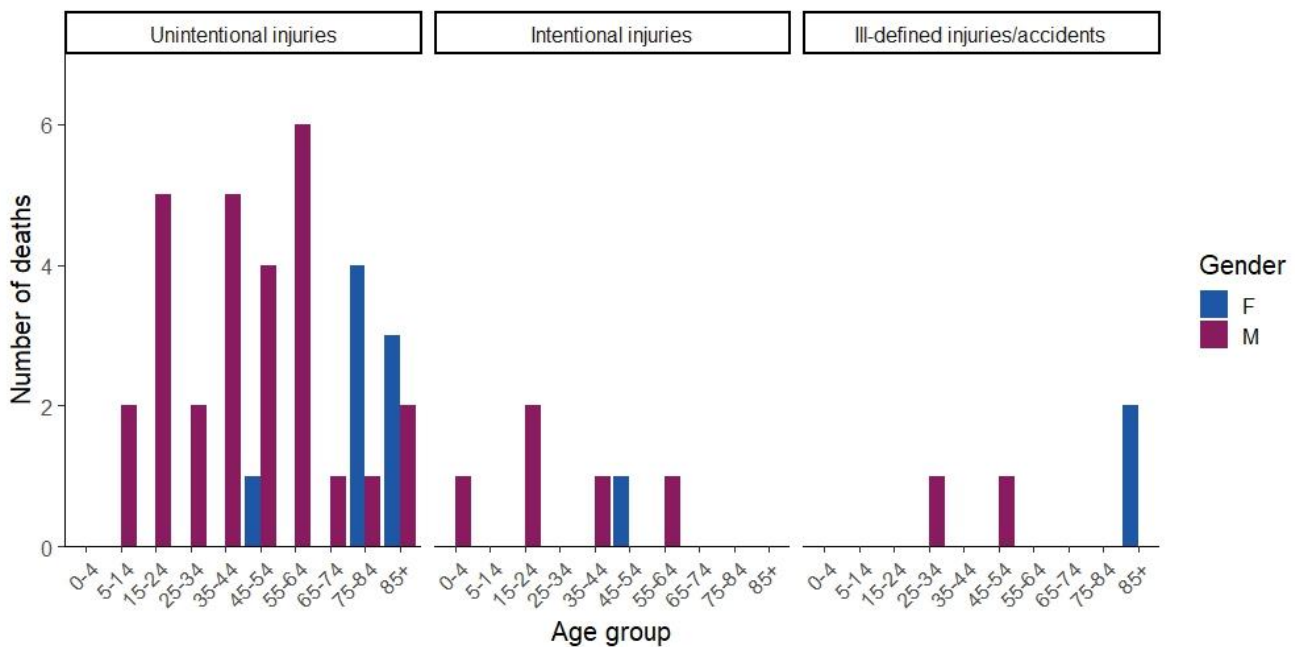


Figure 16: Age and sex distribution of deaths due to external causes, by cause and year, Montserrat, 1998 to 2022



## 5. Discussion

This study examined mortality data spanning 25 years to gain insights into mortality trends and patterns. The findings revealed a relatively stable mortality rate throughout the study period, with NCDs consistently accounting for the majority of annual deaths. Cardiovascular diseases, diabetes mellitus and malignant neoplasms were the three main contributors to NCD deaths. With nearly a quarter of all NCD deaths occurring prematurely under the age of 70 years, there is a need for a multifaceted approach that tackles risk factors, promotes healthy behaviours, emphasizes screening and early detection, engages in policy advocacy and conducts thorough data monitoring and research. However, there are encouraging signs of improved disease management for certain NCDs, such as the declining mortality rate of diabetes mellitus since 2012. This trend may signify heightened awareness and education, alongside improved disease management and access to healthcare services. However, it could also be an artefact of changes in coding practices.

In contrast, age standardised mortality rates due to malignant neoplasms have been increasing since 2018, with a particularly high rate observed in 2022 at 2.9 per 100,000. The recent study into admission data also revealed an overall increase in the number of neoplasm related hospital admissions between 2011 and 2021, with the highest increase observed in 2020 and 2021. It is possible that the COVID-19 pandemic played a role in both the increase in cancer-related admissions and deaths, with lockdown measures and limited travel making it more difficult for people to seek treatment or diagnostic services for cancer off island, possibly resulting in delayed diagnoses and poorer outcomes. Moreover, individuals who, under ordinary circumstances, would have chosen to seek treatment elsewhere would not be accounted for in Montserrat's mortality data upon their passing overseas, thereby contributing to an increase in numbers during the pandemic. Furthermore, neoplasm-related deaths had the highest proportion of premature deaths under 70 years (35%), highlighting the importance of effective cancer prevention and screening programmes and access to high-quality cancer care.

Lower respiratory infections and sepsis were the leading causes of death attributed to communicable diseases throughout the study period. In 2022, deaths from lower respiratory infections saw a notable increase, coinciding with Montserrat's recording of 4 COVID-19 fatalities. Despite comprehensive COVID-19 testing for all inpatients during this period, there is a potential for misdiagnosis, with some COVID-19-related deaths possibly being classified as lower respiratory infections. Concerning sepsis, at least one fatality has been documented annually since 2018, emphasizing the need for early detection, prompt antibiotic administration, and infection control measures.

### Limitations:

This study faces several limitations. The relatively low number of annual deaths in Montserrat presents challenges in discerning meaningful trends over time, as it becomes difficult to differentiate genuine trends from random fluctuations. Additionally, when

calculating rates based on these small numbers, there's a risk that resulting rates may not accurately depict the true mortality risk within the population. Even minor changes in the numerator or denominator can result in notable fluctuations in rates. Additionally, this analysis utilised data imputation techniques for the population data spanning the 6-year period between 2005 and 2010. This method assumes that the age and gender distributions remain unchanged from the nearest year with complete data.

The accuracy of cause-of-death data relies heavily on the precision of death certification and the consistency of coding. In Montserrat, death certification is performed by qualified medical practitioners, followed by coding from trained professionals using ICD codes to designate the underlying cause of death. However, this manual process heightens the likelihood of coding inconsistencies and diminishes the temporal comparability of mortality statistics.

Moreover, due to the limited availability of certain treatments on Montserrat, individuals may opt to seek specialized care elsewhere, leading to their exclusion from Montserrat's mortality statistics if they were to pass away overseas. Consequently, mortality rates for specific conditions are underestimated.

## 6. Conclusion

In conclusion, this comprehensive study spanning 25 years has shed light on mortality trends in Montserrat, revealing a consistent burden of non-communicable diseases (NCDs), particularly cardiovascular diseases, diabetes mellitus, and malignant neoplasms. Looking ahead, public health campaigns and educational initiatives are crucial to promote early detection, facilitate timely access to healthcare services, and advocate for healthy lifestyle choices encompassing regular exercise, balanced nutrition, and stress management. Moreover, it highlights the importance of supporting initiatives aimed at empowering patients to manage chronic conditions at home or within their communities. By prioritising these key areas, healthcare providers and policymakers can work together to reduce premature mortality, improve health outcomes, and ensure the well-being of the population of Montserrat.

# Appendix 1

Global Burden of Disease Study Classification system for diseases and injuries		
Title of cause	ICD-10 4 character codes	ICD-10 3 character codes
<b>All Causes</b>	<b>A00-Y89</b>	<b>A00-Y89</b>
<b>I. Communicable, maternal, perinatal and nutritional conditions</b>	A00-B99, D50-D53, D64.9, E00-E02, E40-E46, E50-E64, G00-G04, G14, H65-H66, J00-J22, N70-N73, O00-O99, P00-P96, U04, U07.1, U07.2, U09.9, U109	A00-B99, D50-D53, E00-E02, E40-E46, E50-E64, G00-G04, G14, H65-H66, J00-J22, N70-N73, O00-O99, P00-P96, U04, U07, U09, U10
<b>A. Infectious and parasitic diseases</b>	A00-B99, G00-G04, G14, N70-N73, P37.3, P37.4	A00-B99, G00-G04, G14, N70-N73
1. Tuberculosis	A15-A19, B90	A15-A19, B90
2. STDs excluding HIV	A50-A64, N70-N73	A50-A64, N70-N73
a. Syphilis	A50-A53	A50-A53
b. Chlamydia	A55-A56	A55-A56
c. Gonorrhoea	A54	A54
d. Other STDs	A57-A64, N70-N73	A57-A64, N70-N73
3. HIV/AIDS	B20-B24	B20-B24
4. Diarrhoeal diseases	A00, A01, A03, A04, A06-A09	A00, A01, A03, A04, A06-A09
5. Childhood-cluster diseases	A33-A37, A80, B05, B91, G14	A33-A37, A80, B05, B91, G14
a. Pertussis	A37	A37
b. Poliomyelitis	A80, B91, G14	A80, B91, G14
c. Diphtheria	A36	A36
d. Measles	B05	B05
e. Tetanus	A33-A35	A33-A35
6. Meningitis	A39, G00, G03	A39, G00, G03
7. Hepatitis B	B16-B19 (minus B17.1, B17.2, B18.2, B18.8)	B16-B19
8. Hepatitis C	B17.1, B18.2	-
9. Malaria	B50-B54, P37.3, P37.4	B50-B54
9. Tropical-cluster diseases	B55-B57, B65, B73, B74.0-B74.2	B55-B57, B65, B73
a. Trypanosomiasis	B56	B56
b. Chagas disease	B57	B57
c. Schistosomiasis	B65	B65
d. Leishmaniasis	B55	B55
e. Lymphatic filariasis	B74.0-B74.2	-
f. Onchocerciasis	B73	B73
10. Leprosy	A30	A30
11. Dengue	A90-A91	A90-A91
12. Japanese encephalitis	A83.0	-
13. Trachoma	A71	A71
14. Intestinal nematode infections	B76-B81	B76-B81
a. Ascariasis	B77	B77
b. Trichuriasis	B79	B79
c. Hookworm disease	B76	B76
Other intestinal infections	B78, B80, B81	B78, B80, B81
Other infectious diseases	A02, A05, A20-A28, A31, A32, A38, A40-A49, A65-A70, A74-A79, A81, A82, A83.1-A83.9, A84-A89, A92-A99, B00-B04, B06-B15, B17.2, B18.8, B25-B49, B58-B60, B64, B66-B72, B74.3-B74.9, B75, B82-B89, B92-B99, G04	A02, A05, A20-A28, A31, A32, A38, A40-A49, A65-A70, A74-A79, A81, A82, A83, A84-A89, A92-A99, B00-B04, B06-B15, B25-B49, B58-B60, B64, B66, B64, B66-B72, B74.3-B74.9, B75, B82-B89, B92-B99, G04
<b>B. Respiratory infections</b>	H65-H66, J00-J22, P23, U04, U07.1, U07.2, U09.9, U10.9	H65-H66, J00-J22, P23, U04, U07, U09, U10
1. Lower respiratory infections	J09-J22, P23, U04	J09-J22, P23, U04
2. COVID-19	U07.1, U07.2, U09.9, U10.9	U07, U09, U10
3. Upper respiratory infections	J00-J06	J00-J06
4. Otitis media	H65-H66	H65-H66
<b>C. Maternal conditions</b>	O00-O99	O00-O99
1. Maternal haemorrhage	O44-O46, O67, O72	O44-O46, O67, O72
2. Maternal sepsis	O85-O86	O85-O86
3. Hypertensive disorders	O10-O16	O10-O16
4. Obstructed labour	O64-O66	O64-O66
5. Abortion	O00-O07	O00-O07
Other maternal conditions	O20-O43, O47-O63, O68-O71, O73-O75, O87-O99	O20-O43, O47-O63, O68-O71, O73-O75, O87-O99
<b>D. Perinatal conditions</b>	P00-P96 (minus P23, P37.3, P37.4)	P00-P96 (minus P23)
1. Low birth weight	P05, P07, P22, P27-P28	P05, P07, P22, P27-P28
2. Birth asphyxia and birth trauma	P03, P10-P15, P20-P21, P24-P26, P29	P03, P10-P15, P20-P21, P24-P26, P29
Other perinatal conditions	P00-P02, P04, P08, P35-P96	P00-P02, P04, P08, P35-P96
<b>E. Nutritional deficiencies</b>	D50-D53, D64.9, E00-E02, E40-E46, E50-E64	D50-D53, D64, E00-E02, E40-E46, E50-E64
1. Protein-energy malnutrition	E40-E46	E40-E46
2. Iodine deficiency	E00-E02	E00-E02
3. Vitamin A deficiency	E50	E50
4. Iron-deficiency anaemia	D50, D64.9	D50, D64
Other nutritional disorders	D51-D53, E51-E64	D51-D53, E51-E64
<b>II. Noncommunicable diseases</b>	C00-C97, D00-D48, D55-D64 (minus D64.9) D65-D89, E03-E07, E10-E34, E65-E88, F01-F99, G06-G98 (minus G14), H00-H61, H68-H93, I00-I99, J30-J98, K00-K92, L00-L98, M00-M99, N00-N64, N75-N98, Q00-Q99, R95, U07.0	C00-C97, D00-D48, D55-D63, D65-D89, E03-E07, E10-E34, E65-E88, F01-F99, G06-G98 (minus G14), H00-H61, H68-H93, I00-I99, J30-J98, K00-K92, L00-L98, M00-M99, N00-N64, N75-N98, Q00-Q99, R95
<b>A. Malignant neoplasms</b>	C00-C97	C00-C97
1. Mouth and oropharynx cancers	C00-C14	C00-C14
2. Oesophagus cancer	C15	C15
3. Stomach cancer	C16	C16
4. Colon and rectum cancers	C18-C21	C18-C21
5. Liver cancer	C22	C22
6. Pancreas cancer	C25	C25
7. Trachea, bronchus, lung cancers	C33-C34	C33-C34
8. Melanoma and other skin cancers	C43-C44	C43-C44
9. Breast cancer	C50	C50
10. Cervix uteri cancer	C53	C53
11. Corpus uteri cancer	C54-C55	C54-C55
12. Ovary cancer	C56	C56
13. Prostate cancer	C61	C61
16. Bladder cancer	C67	C67
22. Lymphomas, multiple myeloma	C81-C90, C96	C81-C90, C96
23. Leukaemia	C91-C95	C91-C95
24. Other malignant neoplasms	C17, C23, C24, C26-C32, C37-C41, C45-C49, C51, C52, C57-C60, C62-C66, C68-C80, C97	C17, C23, C24, C26-C32, C37-C41, C45-C49, C51, C52, C57-C60, C62-C66, C68-C80, C97
<b>B. Other neoplasms</b>	D00-D48	D00-D48
<b>C. Diabetes mellitus</b>	E10-E14	E10-E14
<b>D. Endocrine disorders</b>	D55-D64 (minus D64.9), D65-D89, E03-E07, E15-E34, E65-E88	D55-D63, D65-D89, E03-E07, E15-E34, E65-E88
<b>E. Neuropsychiatric conditions</b>	F01-F99, G06-G98 (minus G14)	F01-F99, G06-G98 (minus G14)
1. Unipolar depressive disorders	F32-F33	F32-F33
2. Bipolar disorder	F30-F31	F30-F31

## Leading causes of death and mortality rates, Montserrat, 1998 to 2022

3. Schizophrenia	F20-F29	F20-F29
4. Epilepsy	G40-G41	G40-G41
5. Alcohol use disorders	F10	F10
6. Alzheimer and other dementias	F01, F03, G30-G31	F01, F03, G30-G31
7. Parkinson disease	G20-G21	G20-G21
8. Multiple sclerosis	G35	G35
9. Drug use disorders	F11-F16, F18-F19	F11-F16, F18-F19
10. Post-traumatic stress disorder	F43.1	F43
11. Obsessive-compulsive disorder	F42	F42
12. Panic disorder	F40.0, F41.0	-
13. Insomnia (primary)	F51	F51
14. Migraine	G43	G43
15. Mental Retardation	F70-F79	F70-F79
Other neuropsychiatric disorders	F04-F09, F17, F34-F39, F401-F409, F411-F419, F43 (minus F43.1), F44-F50, F52-F69, F80-F99, G06-G12, G23-G25, G36, G37, G44-G98, U07.0	F04-F09, F17, F34-F39, F40-F41, F44-F50, F52-F69, F80-F99, G06-G12, G23-G25, G36, G37, G44-G98
<b>F. Sense organ diseases</b>	H00-H61, H68-H93	H00-H61, H68-H93
1. Glaucoma	H40	H40
2. Cataracts	H25-H26	H25-H26
3. Vision disorders, age-related	H524	-
4. Hearing loss, adult onset	H90-H91	H90-H91
Other sense organ disorders	H00-H21, H27-H35, H43-H61 (minus H524), H68-H83, H92-H93	H00-H21, H27-H35, H43-H61, H68-H83, H92-H93
<b>G. Cardiovascular diseases</b>	I00-I99	I00-I99
1. Rheumatic heart disease	I01-I09	I01-I09
2. Hypertensive heart disease	I11-I15	I11-I15
3. Ischaemic heart disease	I20-I25	I20-I25
4. Cerebrovascular disease	I60-I69	I60-I69
5. Inflammatory heart diseases	I30-I33, I38, I40, I42	I30-I33, I38, I40, I42
Other cardiovascular diseases	I00, I10, I26-I28, I34-I37, I44-I51, I70-I99	I00, I10, I26-I28, I34-I37, I44-I51, I70-I99
<b>H. Respiratory diseases</b>	J30-J98	J30-J98
1. Chronic obstructive pulmonary disease	J40-J44	J40-J44
2. Asthma	J45-J46	J45-J46
Other respiratory diseases	J30-J39, J47-J98	J30-J39, J47-J98
<b>I. Digestive diseases</b>	K20-K92	K20-K92
1. Peptic ulcer disease	K25-K27	K25-K27
2. Cirrhosis of the liver	K70, K74	K70, K74
3. Appendicitis	K35-K37	K35-K37
Other digestive diseases	K20-K22, K28-K31, K38, K40-K66, K71-K73, K75-K92	K20-K22, K28-K31, K38, K40-K66, K71-K73, K75-K92
<b>J. Genitourinary diseases</b>	N00-N64, N75-N98	N00-N64, N75-N98
1. Nephritis and nephrosis	N00-N19	N00-N19
2. Benign prostatic hypertrophy	N40	N40
Other genitourinary system diseases	N20-N39, N41-N64, N75-N98	N20-N39, N41-N64, N75-N98
<b>K. Skin diseases</b>	L00-L98	L00-L98
<b>L. Musculoskeletal diseases</b>	M00-M99	M00-M99
1. Rheumatoid arthritis	M05-M06	M05-M06
2. Osteoarthritis	M15-M19	M15-M19
3. Gout	M10	M10
4. Back pain	M45-M48, M54 (minus M54.2)	M45-M48, M54
Other musculoskeletal disorders	M00-M02, M08, M11-M13, M20-M43, M50-M53, M54.2, M55-M99	M00-M02, M08, M11-M13, M20-M43, M50-M53, M55-M99
<b>M. Congenital anomalies</b>	Q00-Q99	Q00-Q99
1. Abdominal wall defect	Q79.2-Q79.5	-
2. Anencephaly	Q00	Q00
3. Anorectal atresia	Q42	Q42
4. Cleft lip	Q36	Q36
5. Cleft palate	Q35, Q37	Q35, Q37
6. Oesophageal atresia	Q39.0-Q39.1	-
7. Renal agenesis	Q60	Q60
8. Down syndrome	Q90	Q90
9. Congenital heart anomalies	Q20-Q28	Q20-Q28
10. Spina bifida	Q05	Q05
Other Congenital anomalies	Q01-Q04, Q06-Q18, Q30-Q34, Q38, Q392-Q399, Q40-Q41, Q43-Q56, Q61-Q78, Q790, Q791, Q796, Q798, Q799, Q80-Q89, Q91-Q99	Q01-Q04, Q06-Q18, Q30-Q34, Q38-Q41, Q43-Q56, Q61-Q89, Q91-Q99
<b>N. Oral conditions</b>	K00-K14	K00-K14
1. Dental caries	K02	K02
2. Periodontal disease	K05	K05
3. Edentulism	-	-
Other oral diseases	K00, K01, K03, K04, K06-K14	K00, K01, K03, K04, K06-K14
<b>O. Sudden infant death syndrome</b>	R95	R95
<b>III. Injuries</b>	V01-Y89, U12.9	V01-Y89, U12
<b>A. Unintentional injuries</b>	V01-X59, Y40-Y86, Y88, Y89, U12.9	V01-X59, Y40-Y86, Y88, Y89, U12
1. Road traffic accidents	V01-V04, V06 (1.-9), V09 (2.-3), V10-V14 (3.-9), V15-V19 (4.-9), V20-V28 (3.-9), V29-V79 (4.-9), V80 (3.-5), V81.1, V82 (1, 8.-9), V83-V86 (0.-3), V87 (0.-9), V89 (2.-3, 9), V99, Y85.0	V01-V04, V06, V09-V80, V87, V89, V99
2. Poisonings	X40-X49	X40-X49
3. Falls	W00-W19	W00-W19
4. Fires	X00-X09	X00-X09
5. Drownings	W65-W74	W65-W74
8. Other unintentional injuries	Rest of V, W20-W64, W75-W99, X10-X39, X50-X59, Y40-Y84, Y859, Y86, Y88, Y89, U12.9	Rest of V, W20-W64, W75-W99, X10-X39, X50-X59, Y40-Y84, Y859, Y86, Y88, Y89, U12
<b>B. Intentional injuries</b>	X60-Y09, Y35-Y36, Y870, Y871	X60-Y09, Y35-Y36, Y87
1. Self-inflicted injuries	X60-X84, Y870	X60-X84
2. Violence	X85-Y09, Y871	X85-Y09
3. War	Y36	Y36
Other intentional injuries	Y35	Y35, Y87
<b>C. Ill-defined injuries/accidents</b>	Y10-Y34, Y872	Y10-Y34
<b>Ill-defined diseases</b>	R00-R94, R96-R99	R00-R94, R96-R99

\*\* Please note certain causes of death have been reclassified from the 'Other' category to specific groups to better reflect local context and interests. 'Hypertension' (I10) was moved from the category of 'Other cardiovascular diseases' to its own designated category. Similarly, 'Sepsis' (A40-41) was moved from 'Other infectious diseases' to 'Sepsis'.