



INSTITUTO NACIONAL DE ESTATÍSTICA  
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press release

# DIISTAQUE

16 May 2023  
CAUSES OF DEATH-2021  
2010-2021

*Version rectified on 16/05/2023 17:30*

In the second paragraph of the lead, where it reads "The COVID-19 disease was the second leading cause of death in the year (...)" it should read "The COVID-19 disease was the third leading cause of death in the year (...); and where it reads "The mortality rate from the COVID-19 disease was 124.8 deaths per 100,000 residents in Portugal, higher for men (139.8 per 100,000 men) than for women (111.2 per 100,000 women). The mean age at death was 80.5 years, higher for women (82.4 years) than for men (78.7 years)." it should read "The mortality rate from the COVID-19 disease was 124.5 deaths per 100,000 residents in Portugal, higher for men (139.3 per 100,000 men) than for women (111.0 per 100,000 women). The mean age at death was 80.5 years, higher for women (82.5 years) than for men (78.8 years).".

On page 4, Table 2, data shown have been changed.

In the last paragraph of page 9, where it reads "Compared to other diseases of the circulatory system, namely cerebrovascular diseases, ischemic heart diseases have low crude mortality rates in the under 55 age groups.." it should read "Compared to other diseases of the circulatory system, namely cerebrovascular diseases, ischemic heart diseases have higher crude mortality rates in the under 55 age groups.".

## **IN 2021, THERE WAS AN INCREASE IN DEATHS FROM MALIGNANT NEOPLASMS OF THE TRACHEA, BRONCHI AND LUNG, BESIDES THOSE OF COVID-19**

In 2021, the diseases of the circulatory system continued to be the cause of the highest number of deaths in Portugal (32,452), despite the 6.2% decrease in relation to the previous year. In relative terms, those deaths represented 25.9% of all deaths, 5.9 pp less than in the previous year and 4.0 pp less than in 2019. Of all deaths due to diseases of the circulatory system, it stood out those caused by strokes (9,613 deaths), despite a decrease of 16.0% compared to the previous year. There were also fewer deaths from ischemic heart disease (6,683 deaths) and from acute myocardial infarction (3,977 deaths), in both cases 2.4% less than in 2020.

The COVID-19 disease was the third leading cause of death in the year, with 12,986 deaths, representing 10.4% of all deaths in the country. This result considers the number of deaths in which the underlying cause of death, i.e., the disease that initiated the chain of pathological events that led to death, was the COVID-19. More than 80% of deaths caused by COVID-19 (81.3%) occurred in the first quarter of 2021, with 10,559 deaths recorded. Deaths due to COVID-19 that occurred in August (3.1%) and December (4.4%) also stood out. The mortality rate from the COVID-19 disease was 124.5 deaths per 100,000 residents in Portugal, higher for men (139.3 per 100,000 men) than for women (111.0 per 100,000 women). The mean age at death was 80.5 years, higher for women (82.5 years) than for men (78.8 years).

Diseases of the respiratory system, which, as defined by the World Health Organization for the ICD-10 classification, do not include the disease COVID-19, caused 10,273 deaths in 2021, 8.8% less than in 2020, and represented 8.2% of the total mortality in the country (less 0.9 pp than in 2020 and less 2.7 pp than in 2019). Of

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all deaths due to diseases of the respiratory system, deaths caused by pneumonia stood out, with 3,765 deaths, which represented 3.0% of the mortality that occurred in 2021 (3.5% in 2020 and 4.2% in 2019), despite the reduction of 13. 6% compared to the previous year.

In 2021, deaths from malignant neoplasms of the trachea, bronchi and lungs increased by 1.9%: 4,318 deaths in 2020 and 4,400 deaths in 2021. Deaths from malignant neoplasms of the colon, rectum and anus decreased in 2021 (from 3 810 deaths in 2020 to 3,609 deaths in 2021), representing 2.9% of mortality in 2021 (3.1% in 2020 and 3.4% in 2019).

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Statistics Portugal releases today the statistical results on mortality by causes of death in Portugal in 2020, according to 55 groups of causes of death based on the «OECD Health Data» list of the Organization for Cooperation and Economic Development (OECD). This information considers the codification of death certificates by the Directorate-General of Health until April 27, 2023.

The indicators include the main groups of causes of death by disease, especially diseases of the circulatory system, malignant neoplasms, diseases of the respiratory system, and endocrine, nutritional, and metabolic diseases, as well as deaths from external causes of injury or poisoning and those caused by the new coronavirus SARS-CoV-2, also called COVID-19.

Each cause of death is indicated together with the number of deaths by sex, age group, and place of residence of the deceased, and other derivative indicators: sex ratio; average age at the time of death; crude death rate; standardized death rate; and average number of potential years of life lost, among others.

This information is available using the Tree-navigation available at Statistics Portugal website, [https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine\\_base\\_dados&contexto=bd&selTab=tab2](https://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_base_dados&contexto=bd&selTab=tab2), and choosing the Health/Causes of death. The indicators for the main causes of death are presented in this press release.



Table 1. Main indicators of deaths from causes of death in 2021

	Deaths		Annual variation	Crude mortality rate	Average age at death	Average number of potential years of life lost <sup>(2)</sup>	Sex ratio
	No.	%	%	by 100 thousand inhabitants	Years		by 100 women
<b>Total deaths <sup>(1)</sup></b>	<b>125,223</b>	<b>100.0</b>	<b>1.2</b>	<b>1,199.8</b>	<b>79.0</b>	<b>12.2</b>	<b>101.0</b>
<b>Diseases of the circulatory system, of which</b>	<b>32,452</b>	<b>25.9</b>	<b>-6.2</b>	<b>310.8</b>	<b>81.8</b>	<b>10.7</b>	<b>80.2</b>
Cerebrovascular diseases	9,613	7.7	-16.0	92.2	82.0	9.8	77.8
Ischaemic heart diseases	6,683	5.3	-2.3	63.6	77.7	11.3	135.6
Acute myocardial infarction	3,977	3.2	-2.7	37.8	76.7	11.5	132.8
<b>Malignant neoplasms, of which</b>	<b>27,644</b>	<b>22.1</b>	<b>-2.6</b>	<b>265.0</b>	<b>73.6</b>	<b>10.6</b>	<b>141.8</b>
Malignant neoplasm of trachea, bronchus, lung	4,400	3.5	1.9	42.2	71.3	8.6	284.9
Malignant neoplasm of colon, rectum and anus	3,609	2.9	-5.3	34.6	75.8	10.3	134.8
<b>Diseases of the respiratory system, of which</b>	<b>10,273</b>	<b>8.2</b>	<b>-8.8</b>	<b>98.6</b>	<b>83.0</b>	<b>10.0</b>	<b>111.4</b>
Pneumonia	3,765	3.0	-13.6	36.1	83.7	10.9	106.1
<b>COVID-19 disease</b>	<b>12,986</b>	<b>10.4</b>	<b>82.3</b>	<b>124.5</b>	<b>80.5</b>	<b>9.3</b>	<b>114.0</b>

Source: Statistics Portugal, Mortality by causes of death.

**Explanatory notes:** 1) The number of deaths, and their proportion and annual variation, refer to the total number of deaths that occurred in the country, while the other indicators relate only to deaths of residents in Portugal. 2) Regarding the superiority of the average number of potential years of life lost for total causes in relation to the main causes of death, this is due to the fact that this indicator focuses only on deaths before the age of 70, which tend to occur to a lesser extent in the case of the causes of death analysed.

### COVID-19 disease was the second leading cause of death in 2021

In 2021, deaths from diseases of the circulatory system and from malignant neoplasms decreased by 6.2% and 2.6%, respectively, compared to the previous year. Together, and unlike previous years, they accounted for less than half of the deaths in the country (46.0%), probably due to the increased impact of the COVID-19 disease on mortality in 2021.

In 2021, there were 12,986 deaths caused by the COVID-19 disease in Portugal, representing 10.4% of all deaths in the country. Of these, 12,952 were residents in Portugal and 34 were residents abroad. These results consider deaths in which the underlying cause of death, i.e., the disease that initiated the chain of pathological events that led to death, was COVID-19.

The COVID-19 male ratio for residents in Portugal accounted for 114.0 male deaths for every 100 female deaths, and the mean age at death was 80.5 years, higher for women (82.5 years) than for men (78.8 years).



The mortality rate was 124.5 deaths per 100,000 residents in Portugal, higher for men (139.3) than for women (111.0). By region, mortality rates from COVID-19 were higher in the regions *Alentejo* (184.4 per 100,000 inhabitants) and *Área Metropolitana de Lisboa* (161.1). Also noteworthy are the significantly lower mortality rates in the *Região Autónoma dos Açores* (14.7 per 100,000 inhabitants) and in the *Região Autónoma da Madeira* (50.0).

**Table 2. Deaths and crudes mortality rates (per 100,000 inhabitants) by COVID-19, by sex, NUTS 2, 2021**

Region of residence NUTS 2	Deaths by sex			Mortality rates by 100 thousand inhabitants and sex		
	MF	M	F	MF	M	F
<b>Total <sup>(1)</sup></b>	<b>12,986</b>	<b>6,925</b>	<b>6,061</b>	<b>124.8</b>	<b>139.8</b>	<b>111.2</b>
Portugal	12,952	6,899	6,053	124.5	139.3	111.0
Continente	12,790	6,814	5,976	129.0	144.4	115.0
Norte	2,830	1,559	1,271	78.5	90.8	67.4
Centro	3,445	1,775	1,670	153.4	165.8	142.2
A. M. Lisboa	4,646	2,530	2,116	161.1	186.3	138.6
Alentejo	1,311	634	677	184.4	183.9	184.8
Algarve	558	316	242	118.7	138.5	100.1
R. A. Açores	35	21	14	14.7	18.1	11.5
R. A. Madeira	126	63	63	50.0	53.2	47.1

**Source:** Statistics Portugal, Mortality by causes of death.

**Explanatory notes:** 1) Mortality rates for the total number of deaths in the country consider the resident population in the denominator.

Crudes mortality rates due to COVID-19 were higher at older ages, being more significant from the age of 55 and in the age group of 85 years and over.

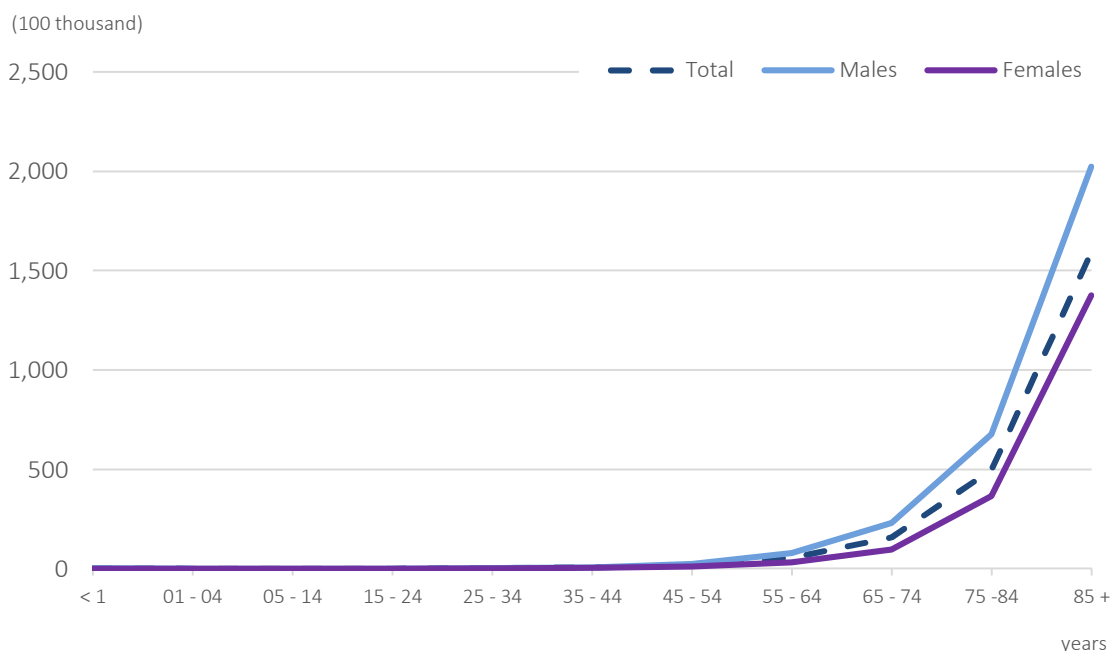


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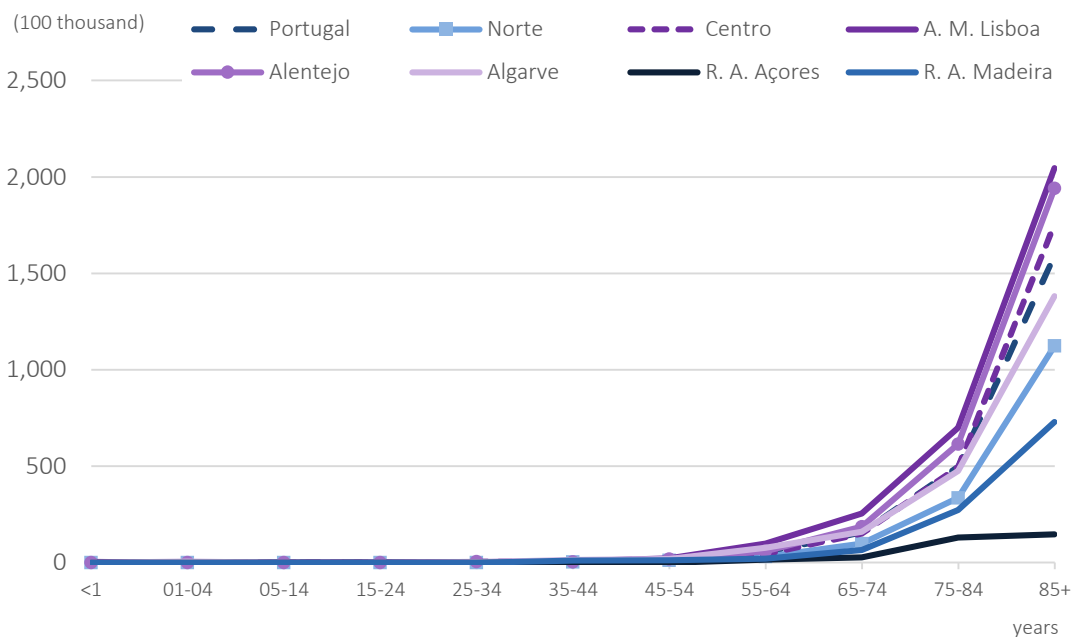
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Figure 1. COVID-19 crude mortality rates per 100,000 inhabitants by sex and age group, Portugal, 2021



Source: Statistics Portugal, Mortality by causes of death.

Figure 2. COVID-19 crude mortality rates per 100,000 inhabitants by age group, NUTS 2, 2021



Source: Statistics Portugal, Mortality by causes of death.





The monthly distribution of deaths from COVID-19 in 2021 shows that more than 80% of deaths caused by this disease (81.3%) occurred in the first quarter of 2021, with 10,559 deaths recorded. Deaths due to COVID-19 that occurred in August (3.1%) and December (4.4%) also stood out.

**Quadro 3. Monthly distribution of the number of deaths due to COVID-19, by NUTS 2, 2021**

NUTS 2	January	February	March	April	May	June	July	August	September	October	November	December	Total
<b>Total</b>	<b>6,106</b>	<b>3,805</b>	<b>648</b>	<b>171</b>	<b>89</b>	<b>106</b>	<b>281</b>	<b>408</b>	<b>261</b>	<b>202</b>	<b>333</b>	<b>576</b>	<b>12,986</b>
Portugal	6,102	3,799	648	171	88	106	280	406	257	200	325	570	12,952
Continente	6,065	3,773	636	167	83	103	275	400	256	195	299	539	12,791
Norte	1,413	738	132	47	22	23	64	86	55	48	63	139	2,830
Centro	1,792	962	135	32	13	15	32	71	69	57	101	166	3,445
A. M. Lisboa	2,037	1,551	307	72	35	58	128	164	81	34	68	111	4,646
Alentejo	670	395	45	9	7	4	19	34	22	37	29	40	1,311
Algarve	153	126	17	7	6	3	32	45	29	19	38	83	558
R. A. Açores	5	4	2	2	2	1	4	4	1	3	4	3	35
R. A. Madeira	32	22	10	2	3	2	1	2	0	2	22	28	126

Source: Statistics Portugal, Mortality by causes of death.

## 2% less deaths from diseases of the circulatory system in 2021

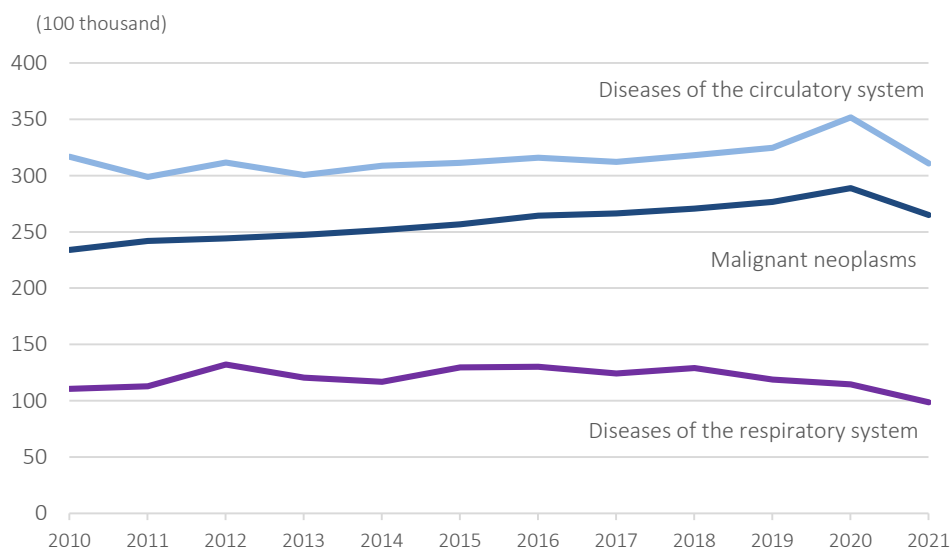
Deaths from circulatory system diseases decreased by 6.2%, from 34,593 in 2020 to 32,452 in 2021.

Considering only the deaths of residents, the mortality rate from diseases of the circulatory system was 310.8 per 100,000 inhabitants, considerably lower than in the previous year (335.0).

However, this decrease was not reflected in a decrease in the average number of potential years of life lost due to diseases of the circulatory system, having even increased by 0.4 years in relation to the previous year (10.3 in 2020 and 10.7 years in 2021), because of higher mortality before the age of 70 from this disease.

The male ratio in 2021 was 80.2 deaths of male residents for every 100 deaths of female residents, higher than that recorded in the previous year (79.4).

Figure 3. Mortality rates due to cerebrovascular diseases, ischemic heart disease and acute myocardial infarction, per 100,000 inhabitants, Portugal, 2010-2021

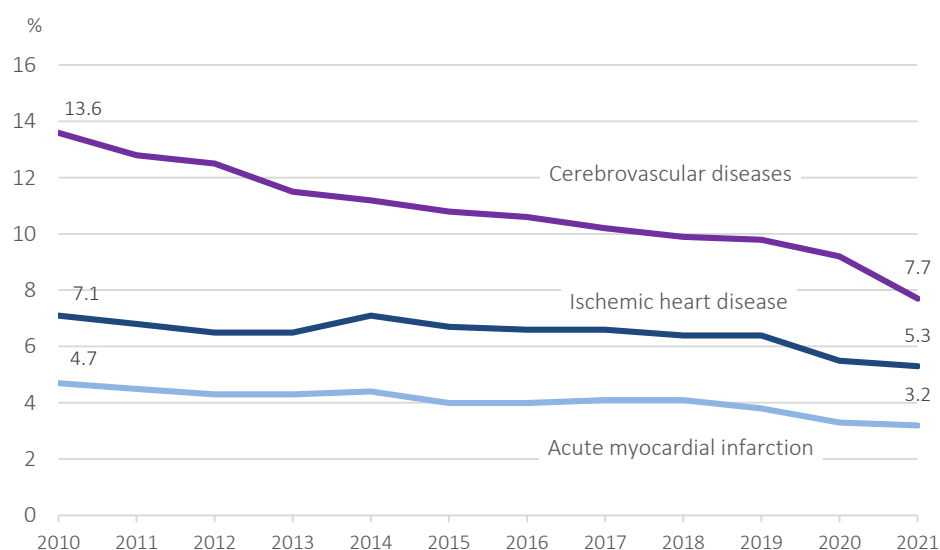


Source: Statistics Portugal, Mortality by causes of death.

### About 10,000 deaths of residents were caused by stroke in 2021

In recent years, in relative terms, there has been a decrease in the proportion of deaths caused by diseases of the circulatory system in total deaths, from 31.8% in 2010 to 28.0% in 2020 and 25.9% in 2021, mainly due to the decrease in the importance of deaths due to cerebrovascular diseases, also known as strokes (13.6% in 2010, to 9.2% in 2020 and 7.7% in 2021).

**Figure 4. Proportion of deaths (in %) from cerebrovascular diseases, acute myocardial infarction and ischemic heart disease, in the country, 2010-2021**



Source: Statistics Portugal, Mortality by causes of death.

Yet, strokes continued to be the cause of the highest number of deaths from diseases of the circulatory system in 2021 (9,613), representing 7.7% of total mortality and a rate of 92.2 deaths of residents per 100,000 inhabitants. Even so, this result reflects a significant decrease compared to 2020, when 11,439 deaths had been registered, which corresponded to 9.3% of the total and a rate of 111.0 deaths of residents per 100,000 inhabitants.

In 2021, stroke deaths continued to affect mainly women, with a ratio of 78.0 male deaths for every 100 female deaths. Women also continued to die relatively later than men from this disease: the average age at death for women was 83.9 years and for men 79.6 years.

Of the total deaths due to cerebrovascular diseases, 93.0% were of people aged 65 and over and 81.6% of people aged 75 and over. The average number of potential years of life lost was 9.8 years, higher than in the previous year (9.3).

The corresponding crude mortality rates decreased in some elderly age groups: in the case of 65 to 74 years old, from 110.2 per 100 thousand residents in 2020 to 86.8 in 2021; in the case of those aged 75 to 84, from 461.4 in 2020 to 352.0 in 2021.

In 2021, 10,763 potential years of life were lost due to cerebrovascular diseases, less than in the previous year (11,093), which results in a decrease in the number of deaths under 70 years of age due to this cause.



## Nearly 7,000 deaths due to ischemic heart disease

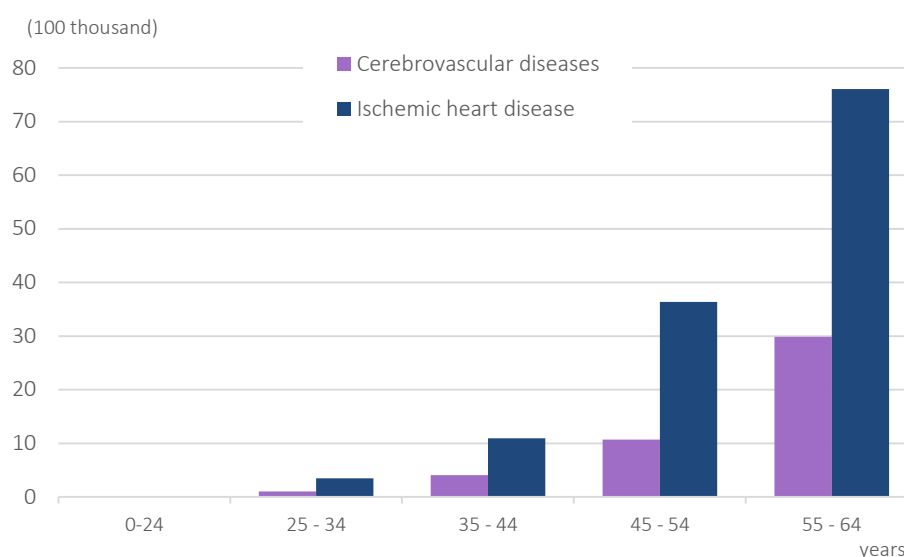
Also regarding diseases of the circulatory system, there were 6,683 deaths due to ischemic heart disease, representing 5.3% of total mortality in 2021 and a reduction of 2.3% in relation to the previous year, when there were 6,838 deaths due to this cause.

Of the total deaths due to ischemic heart disease, 6,622 were residents, which corresponds to a crude mortality rate for residents of 63.6 deaths per 100,000 inhabitants in 2021, lower than in 2020 (65.9). In 2021, unlike the previous year, these deaths mainly affected women, with a ratio of 75.8 deaths of men per 100 of women, lower than in 2020 (136.6). The average age at death for women was 73.9 years, remaining substantially later (about 8 years less) than that recorded for men (82.4 years).

In 2021, of the total deaths of residents due to ischemic heart disease, 82.2% were of people aged 65 and over and 66.1% of people aged 75 and over. The average number of potential years of life lost was 11.3 years (higher than that recorded in 2020: 10.6 years).

Compared to other diseases of the circulatory system, namely cerebrovascular diseases, ischemic heart diseases have higher crude mortality rates in the under 55 age groups.

**Figure 5. Mortality rates from cerebrovascular diseases and ischemic heart diseases per 100,000 inhabitants before 65 years of age, by age group, Portugal, 2021**



Source: Statistics Portugal, Mortality by causes of death.

## Deaths from acute myocardial infarction decreased by 2.7%

In 2021, there were 3,077 deaths from acute myocardial infarction, representing 3.2% of total mortality and decreasing by 2.7% compared to the previous year (4,086 deaths).



Deaths of residents due to acute myocardial infarction affected mainly men, with a ratio of 132.8 male deaths per 100 female deaths. The mean age at death for women was 81.7 years, approximately 9 years more than that observed for men (72.9 years).

Of the total deaths of residents due to acute myocardial infarction, 80.4% were of people aged 65 and over and 63.2% of people aged 75 and over, and the average number of potential years of life lost was 11.5 years. The crude mortality rate due to acute myocardial infarction for residents was 37.8 deaths per 100,000 inhabitants, with significantly increasing values for those aged 45 and over (cf. page 11, Figure 6.D).

## A 1.9% increase in deaths caused by malignant neoplasms of the trachea, bronchi and lungs in 2021

Malignant neoplasms caused 27,644 deaths in 2021, 2.6% less than in the previous year (28,393 deaths in 2020). These diseases represented 22.1% of the total mortality that occurred in the country in 2021.

In 2021, the mortality rate of residents due to malignant neoplasms was 265.0 per 100,000 inhabitants, quite higher for men (326.4) than for women (209.2). There were 105,311 potential years of life lost, which is lower than the result of 108,174 years of life lost in 2020, which was associated to a decrease in the number of deaths under 70 years of age.

Regarding malignant neoplasms, 4,400 deaths were caused by malignant neoplasms of the trachea, bronchi, and lungs, which accounted for 3.5% of all deaths in the country and increased by 1.9% in relation to the previous year. These neoplasms continued to affect men and women very differently, with crude mortality rates of 65.6 deaths per 100,000 men and 20.9 deaths per 100,000 women, resulting in a ratio of 284.9 deaths of men per 100,000 men. 100 of women. The crude mortality rate due to malignant neoplasms of the trachea, bronchus and lung was 42.2 deaths per 100,000 residents, with significantly increasing values for those aged 45 and over (cf. page 11, Figure 6.E).

Malignant neoplasms of the colon, rectum and anus accounted for 2.9% of mortality in 2021, with 3,609 deaths (5.3% less than in the previous year). These neoplasms continued to affect mainly men, with a ratio of 134.8 male deaths per 100 female deaths. The crude mortality rate due to malignant neoplasms of the colon, rectum and anus was 34.7 deaths per 100,000 residents, with significantly increasing values for those aged 55 and over (cf. page 11, Figure 6.F).

## Reduction of almost 9% in deaths from respiratory diseases in 2021

In 2021, respiratory system diseases caused 10,273 deaths, 8.8% less than in the previous year and, at the same time, there was a reduction in their representation in total deaths (from 9.1% in 2020 to 8.2%, in 2021). It should be noted that, following WHO standards, deaths from COVID-19 were not classified or included in the set of respiratory diseases, constituting a separate set of diseases (see methodological note).

Consequently, the mortality rate from respiratory system diseases was 98.6 per 100,000 residents, lower by about 11 cases per 100,000 inhabitants compared to the previous year (109.2). However, the average number of



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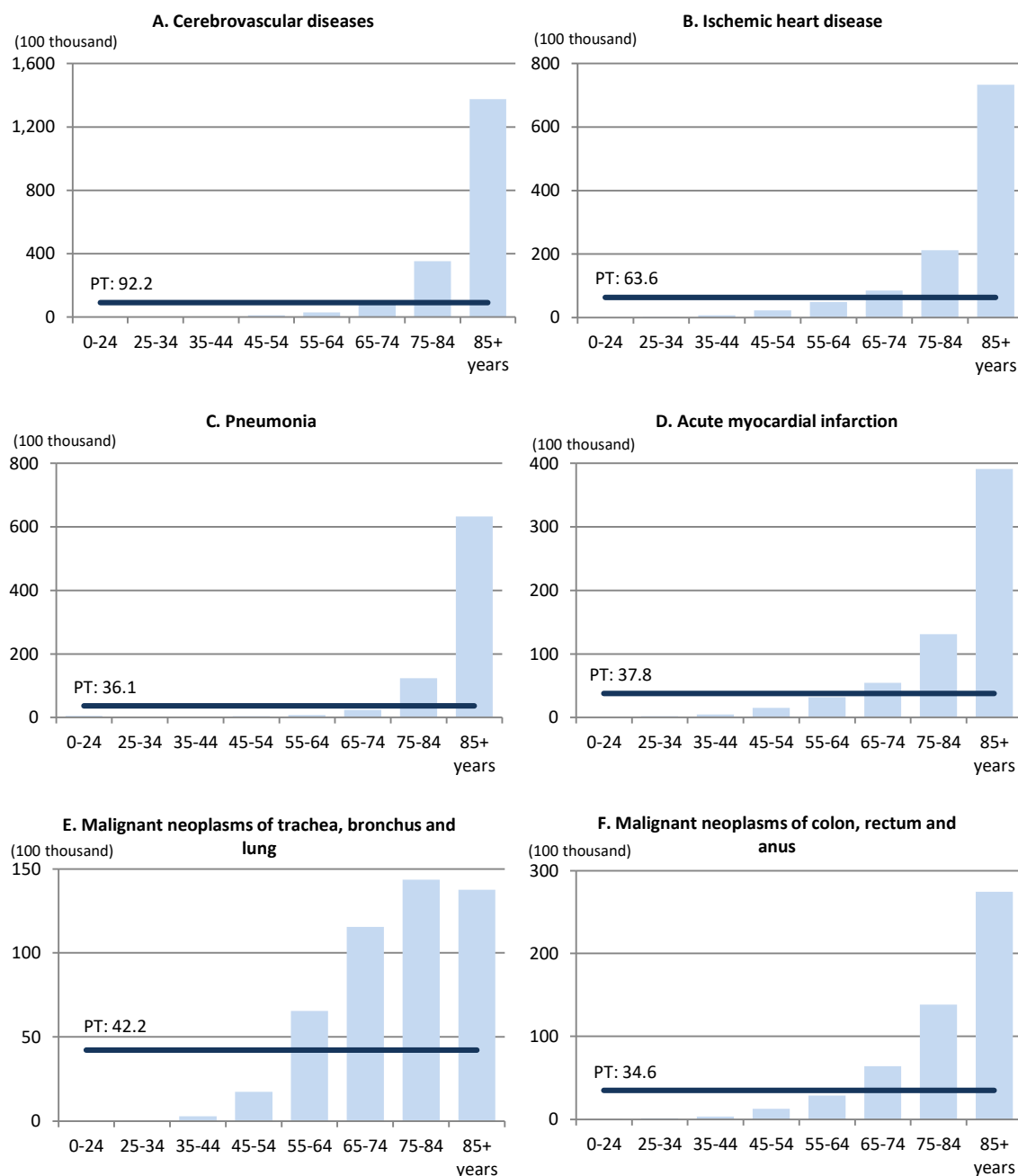
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potential years of life lost due to diseases of the respiratory system decreased by 0.6 years compared to 2020 (from 10.6 in 2020 to 10.0 in 2021), which was associated with a decrease in the number of deaths under 70 years of age.

In this group of diseases, deaths of residents caused by pneumonia stood out, with 3,765 deaths, which represented 3.0% of the mortality that occurred in 2021 (3.5% in 2020 and 4.2% in 2019), and a decrease of 13.6% deaths compared to the previous year. The crude mortality rate from pneumonia was 36.1 deaths per 100,000 residents, with significantly increasing values for those aged 65 and over (see page 11, Figure 6.C).

In 2021, deaths from pneumonia hit men more significantly, with a ratio of 106.4 men for every 100 women. The mean age at death was 85.2 years for women, about 3 years higher than for men (82.3 years).

Figure 6. Crude mortality rates from some diseases per 100,000 inhabitants, by age group, Portugal, 2021



Source: Statistics Portugal, Mortality by causes of death.



## METHODOLOGICAL NOTE

Data on deaths from causes of death result from the use of administrative data for statistical purposes. This is information subject to civil registration and collected from the Civil Registry Office through the Integrated System of Civil Registration and Identification (SIRIC) and the Death Certificate Information System (SICO). The General Directorate of Health collaborates with the INE by identifying the underlying cause of death and the cause of external death, when there is, and subsequently to the codification of causes of death according to the International Classification of Diseases (ICD-10), of the World Health Organization (WHO). The results of the statistics for 2021 presented in this highlight were obtained based on the information of the Information System of Death Certificates available until April 27, 2023. Following WHO standards, deaths due to COVID-19 were not included in the diseases of the respiratory system, constituting a specific category of diseases. In ICD-10, deaths due to COVID-19 were classified according to codes for special uses, corresponding to the following set of codes: U00 to U99.

## CONCEPTS

**Potential years of life lost (PVPA):** Number of years that theoretically a given population stops living if they die prematurely (before the age of 70). It is the result of the sum of the products of the number of deaths occurred in each age group ( $O_i$ ) by the difference ( $A_i$ ) between the upper limit considered (70 years) and the midpoint of the class interval corresponding to each age group.

$$APVP = \sum_i O_i \times A_i$$

**Underlying cause of death:** Illness or injury that initiates the chain of pathological events leading to death, or circumstances of the accident or act of violence that produce the fatal injury.

**External cause:** Circumstance in which a particular injury, intoxication or adverse effect occurs.

**Average age at death:** Quotient between the sum of the product of each midpoint of the age group by the number of observations in each age group and the total number of observations.

**Average number of potential years of life lost:** Quotient between the number of potential years of life lost and the number of deaths under 70 years of age.

**Masculinity-to-death ratio:** Quotient between male and female deaths per 100 women.

**Crude mortality rate:** Number of deaths observed during a certain period of time, usually a calendar year, due to a certain cause of death, referred to the average population of that period (estimated in number of deaths per 100,000 inhabitants).