

Cancer incidence and mortality in Poland in 2023

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Introduction. Cancers are a real global health problem. Europe accounts for 1/10 of the world's population, but 1/4 of all cancer cases occurs in this region. Poland is in the group of countries where cancer mortality is the highest. The aim of this article is to present a summary of the epidemiological indicators of malignant neoplasms in Poland in 2023.

Material and methods. This report presents observed morbidity and mortality data for 2010–2021, and also estimated values two years ahead (2022–2023). Data aggregation was carried out according to sex, age, cancer site, or administrative division of Poland. Time trends were determined using joinpoint regression. The Polish National Cancer Registry is responsible for gathering cancer morbidity data in Poland; mortality data came from Statistics Poland.

Results. The Polish National Cancer Registry reported about 171,558 new cases and 93,652 cancer deaths in 2021. The most common cancers in men were prostate, lung, and colon cancer. The most common cancers in women were breast, lung, and colorectal cancers. The prediction of morbidity and mortality for 2023 indicates a continuation of long-term trends.

Conclusions. The increase in the number of cases (approximately 25,000) and the number of deaths (by approximately 6000) observed in 2021 compared to 2020 indicates the huge impact of the COVID-19 pandemic on health indicators in Poland. However, the year 2021 shows the characteristics of the previous trend among cancer data.

Key words: mortality, morbidity, neoplasms, Poland

Introduction

Cancers are a real global health problem. Europe accounts for 1/10 of the world's population, but 1/4 of all cancer cases occurs in this region [1]. In addition, 23% of deaths in Europe are caused by cancers (data from 2020) [2–4]. Poland is in the group of countries where cancer mortality is the highest [1]. The impact of COVID-19 on the mortality rate of the Polish population continues. Deaths from COVID accounted for almost the same percentage as deaths from cancer (17.0% vs. 18.7%). In 2021, for every 100,000 inhabitants, 452 people were diagnosed with cancer [5].

The purpose of the article is to present a summary of the epidemiological indicators of malignant neoplasms in Poland in 2021.

Materials and methods

Source of data and identification of cancer cases

The Polish National Cancer Registry (PNCR) is the source of cancer morbidity data. In Poland, the entire country has a unified protocol, allowing us to maintain the same principles of cancer registration in every region. Cancer mortality data comes from

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Statistics Poland [3]. All the data presented were collected during the 10th revision of the International Classification of Diseases and Health Problems [6].

Statistical analysis

The basic statistical measurements presented in this report are absolute numbers, percentages, crude and age-standardized (revised European Standard Population (ESP2013) [7]) rates. The projected data for 2022–2023 were estimated based on linear regression. Time trends were determined using Joinpoint regression [2] using Joinpoint Trend Analysis Software.

Results

Overall national analysis

In Poland, cancer is still a growing social problem and a challenge to both economic and health systems. The most common cancers in men in 2021 were (listed as the most common):

- prostate (21%),
 - lung (15%),
 - colon (7%),
 - bladder cancers (6%).
- In women, these were:
- breast (24%),
 - lung (9%),
 - corpus uteri (7%),
 - colon (6%),
 - thyroid gland (4%),
 - ovarian (4%) cancers.

Skin cancers also constitute a high percentage in both groups, in each sex they constitute approximately 8% of cases (tab. I).

Among the main causes of death, the most common cancer sites were in men: lung cancer (27%) and prostate cancer (11%), in women: breast cancer (16%) and lung cancer (18%) (tab. II). Detailed data on morbidity and mortality in women and men are presented in tables I and II, respectively.

Table I. Cancer incidence in Poland in 2021

Site	ICD-10	Absolute number	Crude rate		Absolute number	Stand. rate (ESP2013)	
			Males	Females		Males	Females
all cancers	C00–C97, D00–D09	84,275	458.9	549.5	87,283	444.7	419.7
all cancers but skin	C00–C97, D00–D09 excluded C44	77,610	422.6	499.3	80,408	409.7	386.9
oral cavity and pharynx	C00–C14	3,173	17.3	18.7	1,357	6.9	6.5
lip	C00	171	0.9	1.2	85	0.4	0.4
tongue	C01–C02	618	3.4	3.6	239	1.2	1.1
pharynx	C10–C13	780	4.2	4.4	173	0.9	0.8
digestive organs	C15–C26	17,696	96.4	116.3	13,749	70.1	65.6
oesophagus	C15	1,046	5.7	6.4	324	1.7	1.5
stomach	C16	3,010	16.4	19.8	1,747	8.9	8.3
small intestine	C17	224	1.2	1.4	215	1.1	1.0
colon	C18	5,607	30.5	38.1	4,990	25.4	24.0
rectosigmoid junction	C19	901	4.9	6.0	649	3.3	3.1
rectum	C20	3,428	18.7	22.2	2,133	10.9	10.2
anus and anal canal	C21	73	0.4	0.5	226	1.2	1.1
colorectum	C18–C21	10,009	54.5	66.6	7,998	40.8	38.4
liver	C22	828	4.5	5.3	534	2.7	2.5
gallbladder and biliary tract	C23–C24	595	3.2	4.1	880	4.5	4.2
pancreas	C25	1,864	10.2	11.9	1,923	9.8	9.1
respiratory system	C30–C39	14,417	78.5	91.9	8,791	44.8	41.0
larynx	C32	1,743	9.5	10.6	316	1.6	1.5
trachea and lung	C33–C34	12,344	67.2	79.2	8,248	42.0	38.5
bone and articular cartilage	C40–C41	214	1.2	1.2	190	1.0	1.0

Table I cont. Cancer incidence in Poland in 2021

Site	ICD-10	Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number		Crude rate		Stand. rate (ESP2013)	
					Males		Females		Males	
neoplasms of skin	C43–C44	8,541	46.5	62.2	9,093	46.3	43.5			
melanoma	C43	1,876	10.2	11.9	2,218	11.3	10.8			
other neoplasms of skin	C44	6,665	36.3	50.2	6,875	35.0	32.8			
mesothelial and soft tissue	C45–C49	926	5.0	5.7	842	4.3	4.1			
breast	C50	167	0.9	1.1	21,079	107.4	102.2			
female genital organs	C51–C58	–	–	–	12,662	64.5	61.0			
vulva and vagina	C51–C52	–	–	–	620	3.2	2.9			
cervix uteri	C53	–	–	–	2,160	11.0	10.4			
corpus uteri	C54	–	–	–	6,024	30.7	29.0			
ovary	C56	–	–	–	3,624	18.5	17.6			
male genital organs	C60–C63	19,416	105.7	124.9	–	–	–			
penis	C60	259	1.4	1.6	–	–	–			
prostate	C61	17,832	97.1	116.7	–	–	–			
testis	C62	1,303	7.1	6.5	–	–	–			
urinary tract	C64–C68	8,662	47.2	57.1	3,940	20.1	18.8			
kidney and renal pelvis	C64–C65	3,235	17.6	20.0	2,107	10.7	10.2			
bladder	C67	5,301	28.9	36.3	1,742	8.9	8.2			
eye	C69	238	1.3	1.5	260	1.3	1.2			
central nervous system	C70–C72	1,469	8.0	8.7	1,300	6.6	6.4			
brain	C71	1,375	7.5	8.1	1,195	6.1	5.8			
endocrine glands	C73–C75	950	5.2	5.3	4,019	20.5	19.9			
thyroid gland	C73	842	4.6	4.6	3,871	19.7	19.1			
ill-defined, secondary and unspecified sites	C76–C80	1,014	5.5	6.6	1,094	5.6	5.2			
lymphoid, haematopoietic and related tissue	C81–C96	5,295	28.8	33.8	4,871	24.8	23.7			
Hodgkin lymphoma	C81	372	2.0	2.0	378	1.9	2.0			
non-Hodgkin lymphoma	C82–C86, C96	1,863	10.1	11.8	1,768	9.0	8.5			
immunoproliferative diseases	C88	69	0.4	0.4	98	0.5	0.5			
multiple myeloma	C90	855	4.7	5.5	878	4.5	4.2			
lymphoid leukaemia	C91	1,324	7.2	8.7	1,002	5.1	4.9			
myeloid leukaemia	C92	681	3.7	4.4	645	3.3	3.1			
all leukaemias	C91–C95	2,136	11.6	14.0	1,749	8.9	8.5			
carcinoma <i>in situ</i>	D00–D09	1,504	8.2	10.5	3,486	17.8	17.0			

Predictions for 2023

The publication of PNCR data has two-year intervals compared to the current year, the last year reported is 2021. Precise data for 2022 and 2023 are incomplete due to the data collection process. We have made forecasts for these years to illustrate the situation in Poland. The basis for these predictions was

the years 2010–2021. Tables III and IV present the observed cases in 2021 and expected in 2023.

It is estimated that in 2023 the number of cancer cases will increase and the most frequently diagnosed cancer cases in men will remain prostate (23%), lung (14%), and colorectal cancer (12%); in women, breast (24%), lung (10%),

Table II. Cancer deaths in Poland in 2021

Site	ICD-10	Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
			Males	Females			
all cancers	C00–C97, D00–D09	50,581	275.4	355.0	43,071	219.5	203.3
all cancers but skin	C00–C97, D00–D09 excluded C44	50,484	274.9	354.1	42,988	219.0	202.9
oral cavity and pharynx	C00–C14	2,300	12.5	13.9	789	4.0	3.7
lip	C00	68	0.4	0.6	40	0.2	0.2
tongue	C01–C02	467	2.5	2.8	164	0.8	0.8
pharynx	C10–C13	653	3.6	3.9	145	0.7	0.7
digestive organs	C15–C26	15,101	82.2	105.3	11,640	59.3	54.9
oesophagus	C15	1,157	6.3	7.3	340	1.7	1.6
stomach	C16	2,820	15.4	19.6	1,539	7.8	7.3
small intestine	C17	122	0.7	0.8	115	0.6	0.5
colon	C18	4,262	23.2	31.3	3,491	17.8	16.5
rectosigmoid junction	C19	249	1.4	1.8	176	0.9	0.8
rectum	C20	1,966	10.7	14.0	1,247	6.4	5.9
anus and anal canal	C21	93	0.5	0.6	108	0.6	0.5
colorectum	C18–C21	6,570	35.8	47.7	5,022	25.6	23.8
liver	C22	1,219	6.6	8.2	876	4.5	4.1
gallbladder and biliary tract	C23–C24	575	3.1	4.0	1,035	5.3	4.9
pancreas	C25	2,328	12.7	15.4	2,363	12.0	11.1
respiratory system	C30–C39	14,644	79.7	97.1	8,218	41.9	38.4
larynx	C32	1,220	6.6	7.8	197	1.0	0.9
trachea and lung	C33–C34	13,059	71.1	86.8	7,807	39.8	36.5
bone and articular cartilage	C40–C41	179	1.0	1.2	117	0.6	0.6
neoplasms of skin	C43–C44	758	4.1	5.8	699	3.6	3.3
melanoma	C43	661	3.6	4.9	616	3.1	2.9
other neoplasms of skin	C44	97	0.5	0.9	83	0.4	0.4
mesothelial and soft tissue	C45–C49	601	3.3	4.1	473	2.4	2.3
breast	C50	63	0.3	0.5	6,406	32.6	30.5
female genital organs	C51–C58	–	–	–	6,415	32.7	30.5
vulva and vagina	C51–C52	–	–	–	401	2.0	1.9
cervix uteri	C53	–	–	–	1,361	6.9	6.5
corpus uteri	C54	–	–	–	1,647	8.4	7.8
ovary	C56	–	–	–	2,639	13.4	12.7
male genital organs	C60–C63	5,764	31.4	47.0	–	–	–
penis	C60	138	0.8	1.0	–	–	–
prostate	C61	5,458	29.7	45.1	–	–	–
testis	C62	146	0.8	0.8	–	–	–



Table II cont. Cancer deaths in Poland in 2021

Site	ICD-10	Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
urinary tract	C64–C68	4,558	24.8	34.1	1,849	9.4	8.6
kidney and renal pelvis	C64–C65	1,491	8.1	10.4	891	4.5	4.2
bladder	C67	2,978	16.2	23.1	889	4.5	4.1
eye	C69	64	0.3	0.5	56	0.3	0.3
central nervous system	C70–C72	1,471	8.0	9.3	1,376	7.0	6.6
brain	C71	1,369	7.5	8.5	1,285	6.5	6.2
endocrine glands	C73–C75	134	0.7	0.9	273	1.4	1.3
thyroid gland	C73	75	0.4	0.6	200	1.0	0.9
ill-defined, secondary and unspecified sites	C76–C80	2,065	11.2	14.8	2,048	10.4	9.6
lymphoid, haematopoietic and related tissue	C81–C96	2,845	15.5	20.4	2,683	13.7	12.7
Hodgkin lymphoma	C81	64	0.3	0.4	60	0.3	0.3
non-Hodgkin lymphoma	C82–C85, C96	817	4.4	5.8	814	4.1	3.9
immunoproliferative diseases	C88	24	0.1	0.2	19	0.1	0.1
multiple myeloma	C90	604	3.3	4.3	664	3.4	3.1
lymphoid leukaemia	C91	671	3.7	5.1	472	2.4	2.2
myeloid leukaemia	C92	548	3.0	3.8	547	2.8	2.6
all leukaemias	C91–C95	1,336	7.3	9.7	1,126	5.7	5.3
carcinoma <i>in situ</i>	D00–D09	0	0.0	0.0	0	0.0	0.0

Table III. Estimated cancer cases and deaths numbers in 2023 from the most common cancers among men and women

Males					
Cancer cases			Cancer deaths		
Site	Absolute number	Percents	Site	Absolute number	Percents
all cancers	84,390	100%	all cancers	53,399	100%
prostate	19,745	23%	lung	14,525	27%
lung	11,525	14%	colorectum	7,375	14%
colorectum	10,304	12%	prostate	6,134	11%
bladder	5,389	6%	bladder	3,312	6%
kidney	3,108	4%	stomach	3,024	6%
stomach	2,819	3%	pancreas	2,494	5%
leukaemias	1,978	2%	leukaemias	1,543	3%
melanoma	1,969	2%	kidney	1,527	3%
pancreas	1,836	2%	brain	1,524	3%
non-Hodgkin lymphomas	1,757	2%	larynx	1,351	3%



Table III cont. Estimated cancer cases and deaths numbers in 2023 from the most common cancers among men and women

Females					
Cancer cases			Cancer deaths		
Site	Absolute number	Percents	Site	Absolute number	Percents
all cancers	86,697	100%	all cancers	46,434	100%
breast	20,530	24%	lung	8,872	19%
lung	8,835	10%	breast	7,355	16%
colorectum	8,097	9%	colorectum	5,358	12%
corpus uteri	6,161	7%	ovary	2,783	6%
thyroid gland	3,969	5%	pancreas	2,586	6%
ovary	3,507	4%	corpus uteri	2,109	5%
melanoma	2,223	3%	stomach	1,555	3%
kidney	1,994	2%	cervix uteri	1,402	3%
pancreas	1,971	2%	brain	1,301	3%
bladder	1,916	2%	thyroid	1,301	3%
cervix uteri	1,875	2%	leukaemias	1,268	3%
stomach	1,733	2%	bladder	1,044	2%

and colorectal cancer (9%). These cancer sites will also be the leading causes of death (tab. III). Based on the crude rate (cases per 100,000), the number of cases primarily of stomach, larynx, and lung cancer in men will be noticeably lower in 2023 than in 2021. Most of the rest of the cancer sites show an increase in incidence in 2023. There will be a reduction in cases of breast and ovarian cancers by comparing crude rates among women. Mortality will increase for every cancer site in both sexes, except gallbladder in women (tab. IV and V).

The number of cancer cases increases throughout the observation period in both sexes. Until 2007, the number of cases among men was higher than among women, after which both became equal. In 2020, due to the COVID-19 pandemic, there was a break in the trend, but the estimated data for 2021 indicate a return to the previous trend. The change in the number of deaths shows a similar trend for both sexes, an increase until 2003 and then a slowdown, although there is a clear difference in the absolute number, approximately 10,000 more deaths in men (fig. 1).

The standardized incidence rate among both sexes increased until 2013, with varying annual percentage changes. Then, among men, this rate began to decline, and among women, the incidence rate remained at a similar level. Among men, the standardized mortality rate showed an increasing trend until 2002, when it became decreasing. Among women, the trend in the standardized mortality rate has remained at a similar level since 1980 (fig. 1). The three cancer sites

with the highest incidence rate in men are: prostate, lungs, and colorectum. This order of occurrence has been maintained since 2013. Previously, lung cancer took first place, followed by prostate cancer. This change was caused by a favorable reversal of the trend in lung cancer incidence and a decrease in the incidence value since 1995 (fig. 2).

The highest incidence rate in women is in breast cancer; the trend has been constantly increasing since 1980. The difference between the incidence of breast cancer and other cancers in women is noticeable (fig. 3). The next cancer sites with the highest incidence rates are the lung and colorectum. For the last 30 years, colorectal cancer has taken second place, but according to predictions, in 2022 this will change and lung cancer will be the second most frequently diagnosed cancer among women (fig. 3).

Since the early 1970s, the most common cause of death among Polish men has been lung cancer. Since the beginning of the 21st century, we have been observing a decline in mortality due to this cancer. Data from 2021 and forecasts indicate that the trend has leveled out in the following years (fig. 4). The next causes of death are colon and prostate cancer. In the case of colorectal cancer, a slowdown in the increasing trend in mortality has been observed since 2003, and a decrease in mortality has been observed since 2018 (annual percentage change – APC = –3.6% [CI: –5.3; –1.1]) (fig. 6). After a period of stabilization of the coefficient values, an increase in mortality due to prostate cancer has been observed since 2012 (APC = 1.5

Table IV. Estimated number of cancer cases in Poland in 2023 comparing to observed data in 2021

Males							
Site	ICD-10	2021 – observed			2023 – expected		
		Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
all cancers	C00–D09	84,275	458.9	549.5	84,390	463.9	526.4
oesophagus	C15	1,046	5.7	6.4	1,083	6.0	6.4
stomach	C16	3,010	16.4	19.8	2,819	15.5	17.9
colorectum	C18–C21	10,009	54.5	66.6	10,304	56.6	65.4
pancreas	C25	1,864	10.2	11.9	1,836	10.1	11.2
larynx	C32	1,743	9.5	10.6	1,514	8.3	9.0
lung	C33–C34	12,344	67.2	79.2	11,525	63.4	70.9
melanoma	C43	1,876	10.2	11.9	1,969	10.8	12.2
prostate	C61	17,832	97.1	116.7	19,745	108.6	121.1
kidney	C64	3,054	16.6	18.8	3,108	17.1	18.3
bladder	C67	5,301	28.9	36.3	5,389	29.6	35.1
brain	C71	1,375	7.5	8.1	1,285	7.1	7.4
Hodgkin lymphoma	C81	372	2.0	2.0	344	1.9	1.9
non-Hodgkin lymphomas	C82–C86+C96	1,863	10.1	11.8	1,757	9.7	10.8
leukaemias	C91–C95	2,136	11.6	14.0	1,978	10.9	12.4
Females							
Site	ICD-10	2021 – observed			2023 – expected		
		Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
all cancers	C00–D09	87,283	444.7	419.7	86,697	445.5	406.1
stomach	C16	1,747	8.9	8.3	1,733	8.9	8.0
colorectum	C18–C21	7,998	40.8	38.4	8,097	41.6	37.5
gallbladder	C23–C24	880	4.5	4.2	664	3.4	3.0
pancreas	C25	1,923	9.8	9.1	1,971	10.1	9.0
lung	C33–C34	8,248	42.0	38.5	8,835	45.4	39.6
melanoma	C43	2,218	11.3	10.8	2,223	11.4	10.6
breast	C50	21,079	107.4	102.2	20,530	105.5	97.3
cervix uteri	C53	2,160	11.0	10.4	1,875	9.6	8.9
corpus uteri	C54	6,024	30.7	29.0	6,161	31.7	28.9
ovary	C56	3,624	18.5	17.6	3,507	18.0	16.7
kidney	C64	1,984	10.1	9.6	1,994	10.2	9.3
bladder	C67	1,742	8.9	8.2	1,916	9.8	8.7
brain	C71	1,195	6.1	5.8	1,106	5.7	5.3
thyroid gland	C73	3,871	19.7	19.1	3,969	20.4	19.7
Hodgkin lymphoma	C81	378	1.9	2.0	345	1.8	1.8
non-Hodgkin lymphomas	C82–C86+C96	1,768	9.0	8.5	1,717	8.8	8.0
leukaemias	C91–C95	1,749	8.9	8.5	1,626	8.4	7.7

Table V. Estimated number of cancer deaths in Poland in 2023 comparing to observed data in 2021

Males							
Site	ICD-10	2021 – observed			2023 – expected		
		Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
all cancers	C00–D09	50,581	275.4	355.0	53,399	293.6	362.6
oesophagus	C15	1,157	6.3	7.3	1,249	6.9	7.6
stomach	C16	2,820	15.4	19.6	3,024	16.6	20.3
colorectum	C18–C21	6,570	35.8	47.7	7,375	40.5	51.4
pancreas	C25	2,328	12.7	15.4	2,494	13.7	15.9
larynx	C32	1,220	6.6	7.8	1,351	7.4	8.3
lung	C33–C34	13,059	71.1	86.8	14,525	79.9	92.7
melanoma	C43	661	3.6	4.9	780	4.3	5.5
prostate	C61	5,458	29.7	45.1	6,134	33.7	47.8
kidney	C64	1,418	7.7	9.8	1,527	8.4	10.2
bladder	C67	2,978	16.2	23.1	3,312	18.2	24.5
brain	C71	1,369	7.5	8.5	1,524	8.4	9.3
Hodgkin lymphoma	C81	64	0.3	0.4	86	0.5	0.5
non-Hodgkin lymphomas	C82–C86+C96	817	4.4	5.8	1,038	5.7	7.0
leukaemias	C91–C95	1,336	7.3	9.7	1,543	8.5	10.8
Females							
Site	ICD-10	2021 – observed			2023 – expected		
		Absolute number	Crude rate	Stand. rate (ESP2013)	Absolute number	Crude rate	Stand. rate (ESP2013)
all cancers	C00–D09	43,071	219.5	203.3	46,434	238.6	211.9
stomach	C16	1,539	7.8	7.3	1,555	8.0	7.1
colorectum	C18–C21	5,022	25.6	23.8	5,358	27.5	24.5
gallbladder	C23–C24	1,035	5.3	4.9	948	4.9	4.3
pancreas	C25	2,363	12.0	11.1	2,586	13.3	11.8
lung	C33–C34	7,807	39.8	36.5	8,872	45.6	39.8
melanoma	C43	616	3.1	2.9	684	3.5	3.1
breast	C50	6,406	32.6	30.5	7,355	37.8	34.0
cervix uteri	C53	1,361	6.9	6.5	1,402	7.2	6.5
corpus uteri	C54	1,647	8.4	7.8	2,109	10.8	9.6
ovary	C56	2,639	13.4	12.7	2,783	14.3	12.9
kidney	C64	848	4.3	4.0	883	4.5	4.0
bladder	C67	889	4.5	4.1	1,044	5.4	4.7
brain	C71	1,285	6.5	6.2	1,301	6.7	6.1
thyroid gland	C73	200	1.0	0.9	228	1.2	1.0
Hodgkin lymphoma	C81	60	0.3	0.3	65	0.3	0.3
non-Hodgkin lymphomas	C82–C86+C96	814	4.1	3.9	893	4.6	4.1
leukaemias	C91–C95	1,126	5.7	5.3	1,268	6.5	5.8

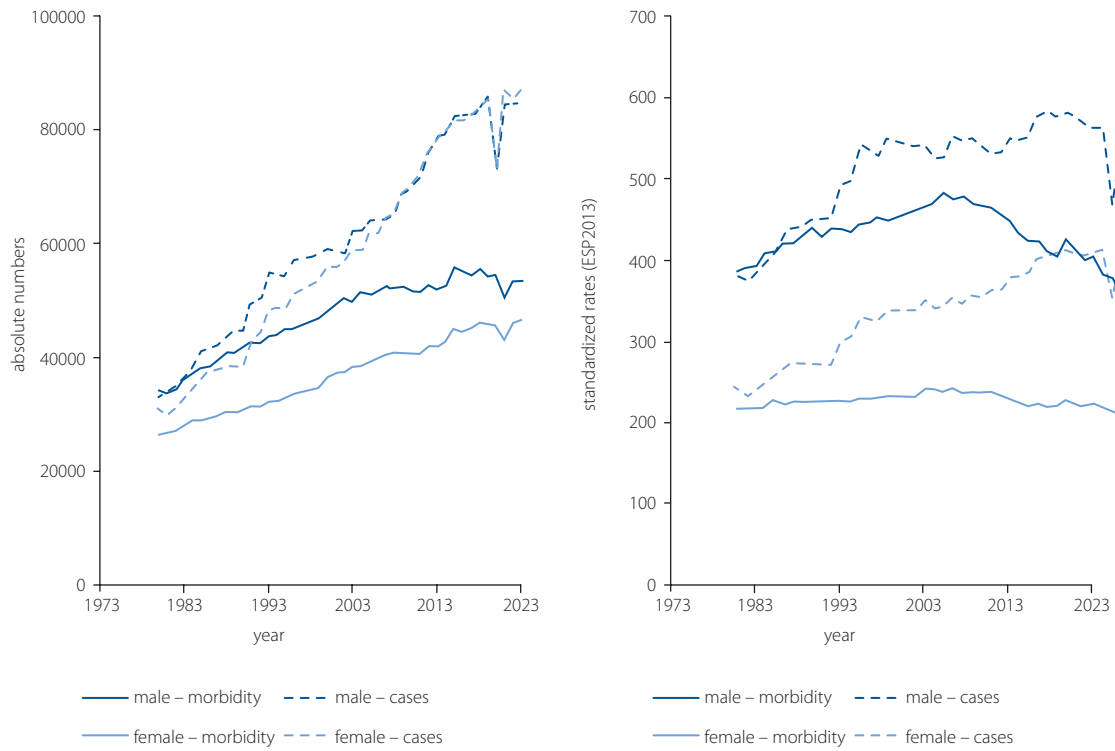


Figure 1. Cancer morbidity and mortality trends in Poland in 1980–2023*

*Values for 2022–2023 estimated based on trends in 2010–2021

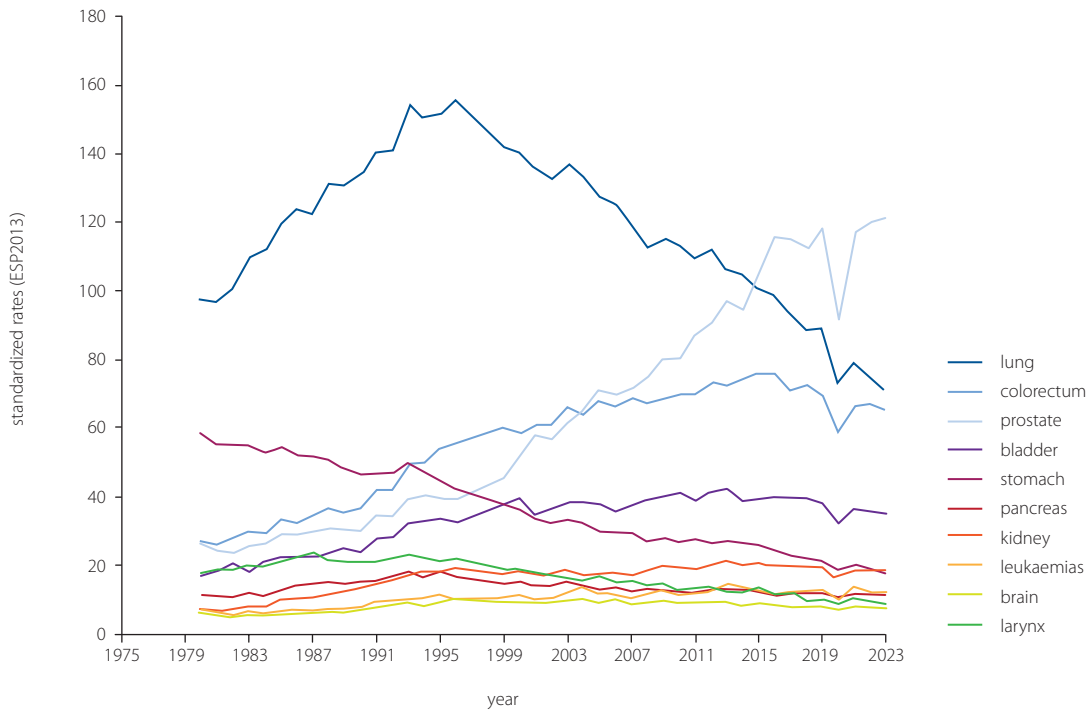


Figure 2. Incidence trends of the leading cancer sites for males, Poland 1980–2023 (2022–2023 estimation)

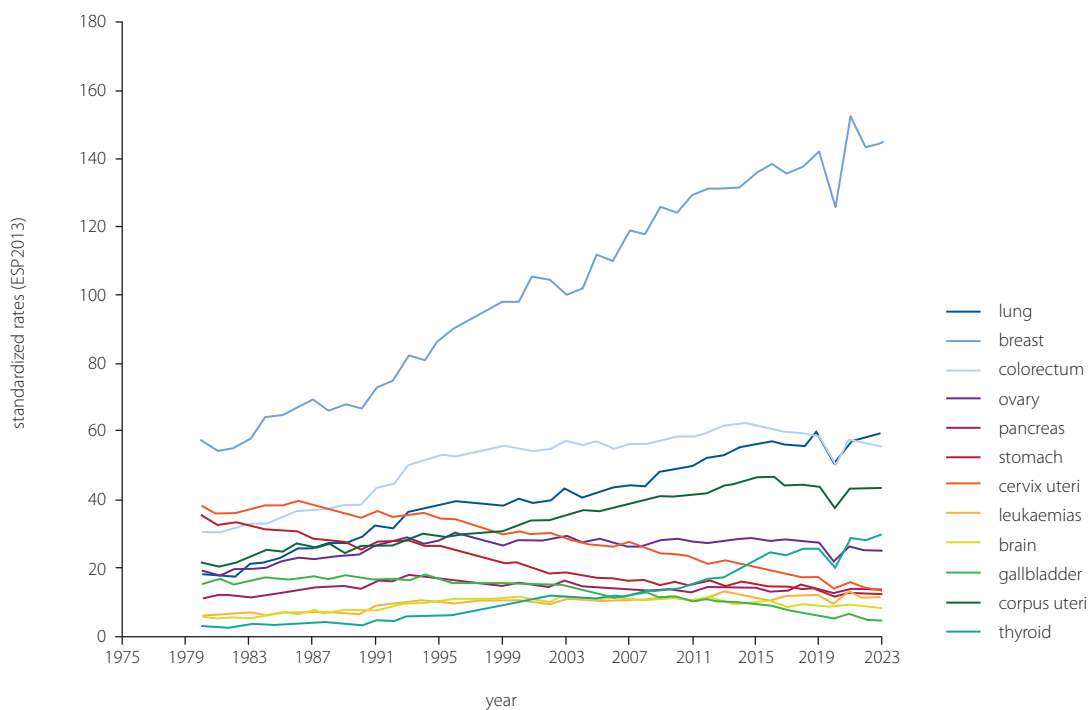


Figure 3. Incidence trends of the leading cancer sites for females, Poland 1980–2023 (2022–2023 estimation)

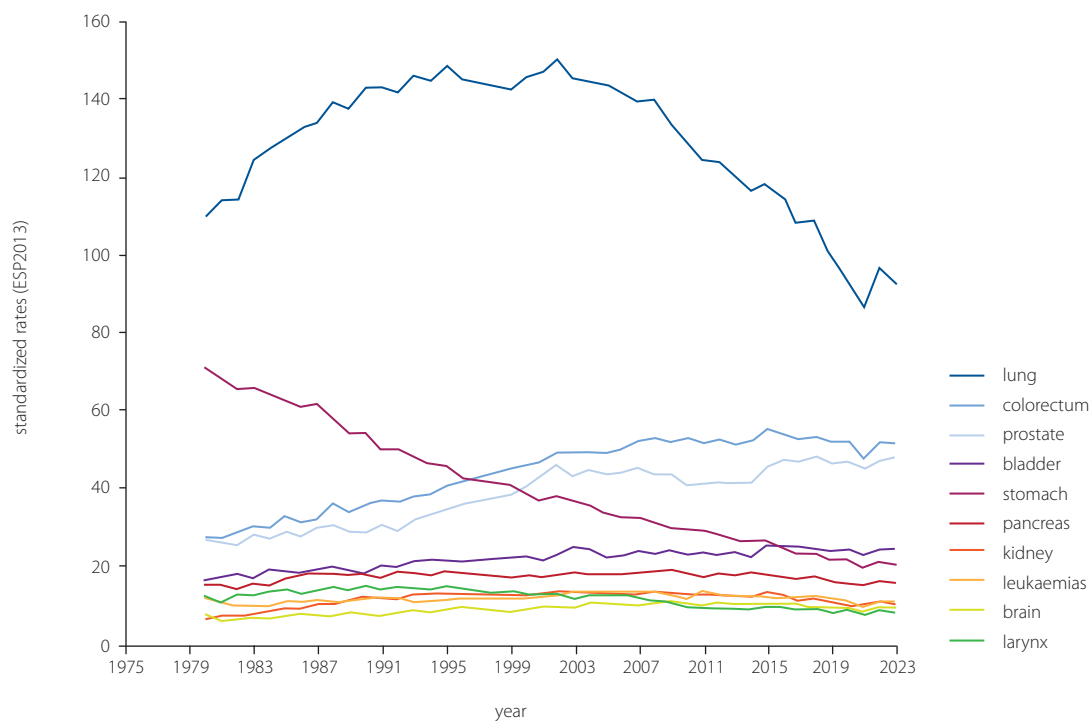


Figure 4. Mortality trends of the leading cancer sites for males, Poland 1980–2023 (2022–2023 estimation)

[CI: 0.6; 3.9]) (chart 6). It is also worth emphasizing the long-term downward trend in the case of stomach cancer, which became the 5th cause of death in 2015 (fig. 4).

In women, as in men, a temporary decrease in cancer mortality can be observed among all analyzed cancers during the COVID-19 pandemic. Data from 2021 and forecasts indicate

that mortality rates will return to pre-pandemic levels in the coming years. Since 2007, lung cancer has been the first cause of cancer death in women. The mortality and incidence rates for lung cancer are very similar. Breast cancer remains the second cause of death, with an increasing trend in mortality since 2010 (APC = 1.1 [CI: 0.6; 2.5]) (fig. 6). Although colorectal cancer

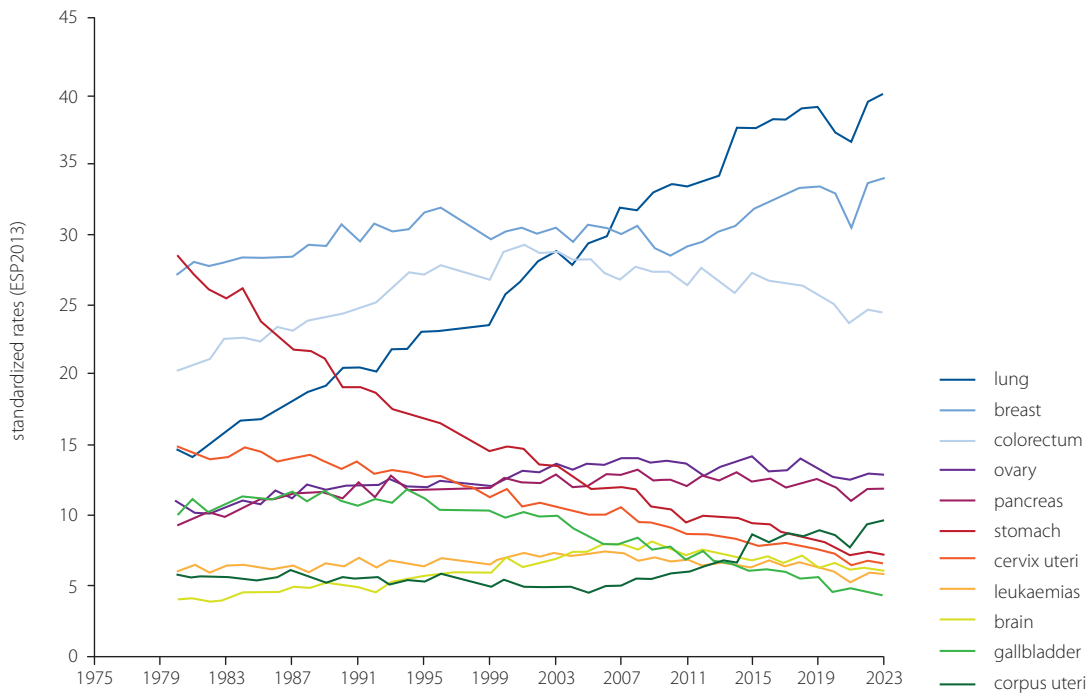


Figure 5. Mortality trends of the leading cancer sites for females, Poland 1980–2023 (2022–2023 estimation)

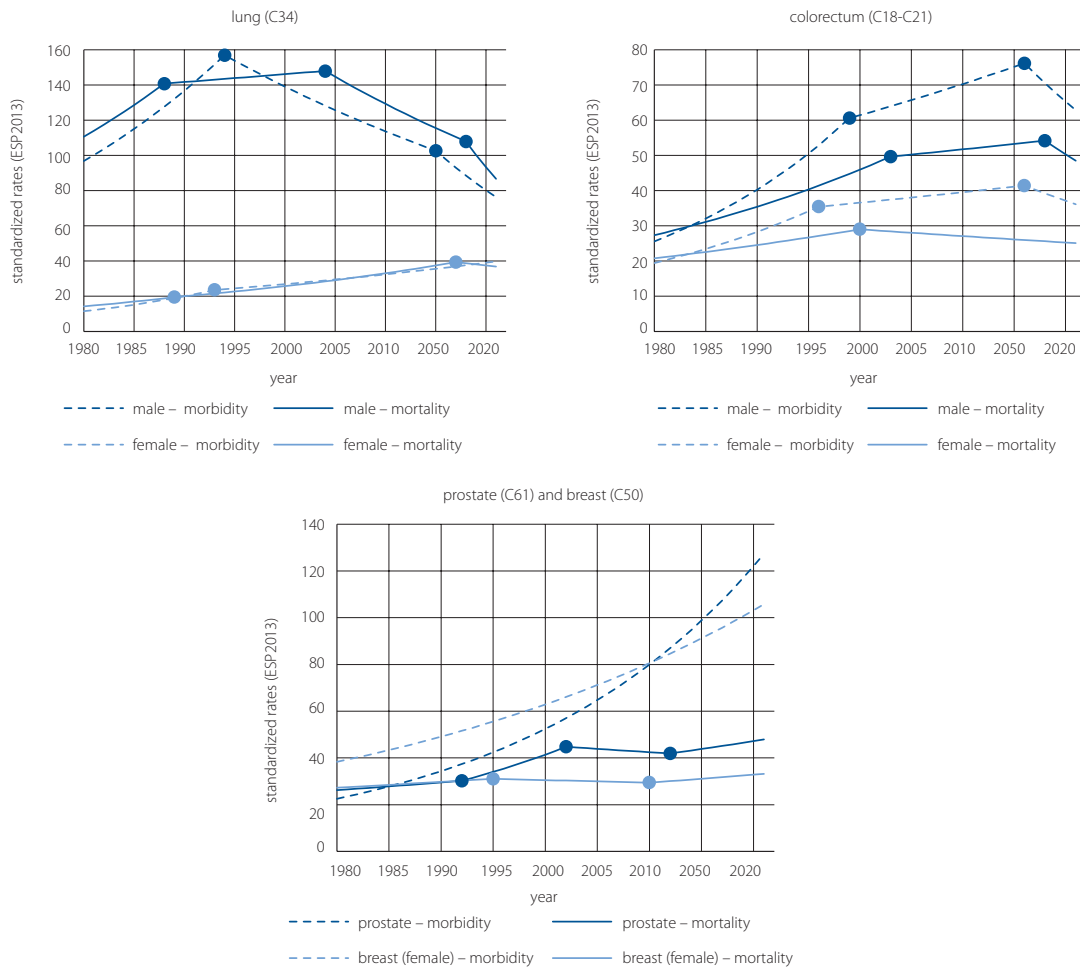


Figure 6. Time trends in incidence and mortality standardized rates (ESP2013) from lung, colorectal, prostate and breast cancer in 1980–2021 based on Joinpoint regression analysis

still ranks third in terms of mortality, a downward trend has been observed since 2000 (APC = -0.7% [CI: -0.9; -0.5] (fig. 6). Similarly to among men, a steady decline in stomach cancer mortality has been observed for over 6 decades.

Age group analysis

In both girls and boys (0–19 years of age), the most common cancer diagnoses are leukemia, brain and central nervous system (CNS) tumors. The same cancers are also the most common causes of death in children. In women, breast cancer ranks first among all age groups older than 20 years. In men, the most common diagnoses vary according to age. Testicular cancer is most common in the 20–44 age group (24%), and prostate cancer is most common in older groups (over 45 years). Among the five most common cancers in adult men aged 20 to 44 years, there are also cancers of the thyroid, skin, colorectum, brain, and CNS. In women, these include thyroid cancer, skin cancer, cervix uteri cancer and cancers *in situ*.

In the 45+ age group in men, the first three sites of incidence include prostate, lung, and colorectal cancer, which coincides with the most common causes of death, with the exception of prostate cancer in men aged 45–64, which is characterized by a much lower mortality rate in this group, and its place in the top three in terms of mortality is taken by pancreatic cancer.

In women 45+ years, the most common cancers depend on the age group. In the 45–64 group, the most common breast cancer survivors are corpus uteri and lung cancer, and in the 65+ group, lung and colorectal cancer. The first two causes of cancer death in women over 40 years of age are lung and breast cancer. The exact incidence and mortality values for the most common cancers by sex and age are presented in tables VI and VII, respectively.

Geographical analysis

In 2021, the most cancer cases were recorded in the Śląskie and Mazowieckie Voivodship, which also have the largest population. The fewest cases were recorded in the Lubuskie Voivodship. Among the most common cancers in Poland, especially in the Mazowieckie, Śląskie, and Dolnośląskie Voivodships, lung cancer ranks high, where the highest mortality rate is also observed (tab. VIII).

Breast cancer is the most common form of cancer among women, with the highest incidence in the Mazowieckie, Śląskie, and Wielkopolskie Voivodships, accounting for a total of 35% of cases throughout the country. However, in terms of women's mortality, the leader is lung cancer, which is responsible for 14.6% of deaths in the Mazowieckie Voivodship (tab. IX).

In most voivodships, the most common malignant tumor in men in 2021 was prostate cancer, with the largest share

in the Wielkopolskie Voivodship (27%). Only in the Warmińsko-Mazurskie Voivodship is lung cancer the most common disease, with a share of approximately 18% (tab. X).

The structure of cancer incidence in women by voivodship repeats one pattern: in all voivodships, breast cancer comes first, with its share ranging from 21% (Warmińsko-Mazurskie Voivodship) to 27% (Mazowieckie Voivodship), and the second place is lung cancer, from 7% to 13%, followed by colorectal cancer, 8–10% (tab. XI).

Discussion

In 2021, the number of new cancer cases and deaths was similar to the data for 2019, the year before the COVID-19 pandemic. In 2021, the Polish National Cancer Registry registered 171,558 new cancer incidences and 93,652 deaths, while in 2019 it was 171,218 new cancer cases and 100,324 deaths [8].

The morbidity trends observed over many years and the mortality rate due to malignant tumors in Poland are determined by both the age structure of the population and changes in the Polish population's exposure to carcinogens, mainly associated with smoking (in 2023 the percentage of men and women smoking was equal, 21% of adults smoke). In 2021, the number of women who died of lung cancer exceeded that of women who died of breast cancer by 1389 deaths.

The most common disease in men is prostate cancer with 21%, characterized by a dynamic increase in incidence and a plateau in long-term mortality, which, however, has been increasing since 2004. In the male population, a reduction in the incidence and mortality rate of lung cancer has been observed in the last 15 years, mainly attributable to the reduction in the percentage of men who smoke in recent decades.

In the female population, the main cancer sites are still breast, lung, colorectum, and cervix uteri. Lung cancer is still the leading cause of death in women (18%) and is superior to breast cancer (14.9%). Breast cancer dominates women and has been characterized by ever-increasing incidence over the past half century. The mortality rate of breast cancer has changed several times over the past 30 years. The initial increase in mortality was stopped in the mid-1990s, and a decline in mortality was recorded in the years 1996–2010. During the period 2010–2021, there was an unfavorable change in the trend. Colorectal cancer has been the third most common cause of cancer death in recent years.

Infection with the SARS-Cov2 virus among cancer patients in 2021 caused 11,640 deaths. Most deaths due to COVID-19 were found in patients with digestive system cancers (17%), lymphatic, lymphatic tissue and related tissue cancers (15%), cancers of the respiratory system (14%), and male genital cancers (14%).

Table VI. The incidence of the 5 most common cancer sites in Poland in 2021, depending on sex and age

Males							
0–19 years		20–44 years		45–64 years		65+ years	
Number	Percents	Number	Percents	Number	Percents	Number	Percents
all cancers		all cancers		all cancers		all cancers	
691	100%	4,199	100%	23,891	100%	55,494	100%
leukaemias (C91–C95)		testis (C62)		prostate (C61)		prostate (C61)	
180	26%	1,001	24%	4,091	17%	13,715	25%
brain and CNS (C71–C72)		thyroid (C73)		lung (C33–C34)		lung (C33–C34)	
117	16%	277	7%	3,571	15%	8,668	16%
non-Hodgkin lymphomas (C82–C85+C96)		melanoma (C43)		colorectum (C18–C21)		colorectum (C18–C21)	
72	10%	273	7%	2,955	12%	6,783	12%
Hodgkin lymphoma (C81)		colorectum (C18–C21)		kidney and renal pelvis (C64–C65)		other and unspecified malignant neoplasm of skin (C44)	
56	8%	267	6%	1,271	5%	5,225	9%
other connective and soft tissue (C49)		brain and CNS (C71–C72)		other and unspecified malignant neoplasm of skin (C44)		bladder (C67)	
45	7%	257	6%	1,231	5%	3,756	7%
Females							
0–19 years		20–44 years		45–64 years		65+ years	
Number	Percents	Number	Percents	Number	Percents	Number	Percents
all cancers		all cancers		all cancers		all cancers	
605	100%	8,934	100%	28,912	100%	48,832	100%
leukaemias (C91–C95)		breast (C50)		breast (C50)		breast (C50)	
148	24%	2,501	28%	9,104	31%	9,472	19%
brain and CNS (C71–C72)		thyroid (C73)		corpus uteri (C54)		lung (C33–C34)	
92	15%	1,631	18%	2,464	9%	5,969	12%
thyroid (C73)		cancer <i>in situ</i> (D00–D09)		lung (C33–C34)		colorectum (C18–C21)	
56	9%	1,010	11%	2,190	8%	5,561	11%
Hodgkin lymphoma (C81)		melanoma (C43)		colorectum (C18–C21)		other and unspecified malignant neoplasm of skin (C44)	
52	9%	503	6%	2,126	7%	5,206	11%
kidney and renal pelvis (C64–C65)		cervix uteri (C53)		ovary (C56)		corpus uteri (C54)	
34	6%	437	5%	1,533	5%	3,342	7%

Table VII. The mortality of the 5 most common cancer sites in Poland in 2021, depending on sex and age

Males							
0–19 years		20–44 years		45–64 years		65+ years	
Number	Percents	Number	Percents	Number	Percents	Number	Percents
all cancers		all cancers		all cancers		all cancers	
107	100%	974	100%	12,665	100%	36,835	100%
brain and CNS (C71–C72)		brain and CNS (C71–C72)		lung (C33–C34)		lung (C33–C34)	
34	32%	131	13%	3,580	28%	9,419	26%
leukaemias (C91–C95)		colorectum (C18–C21)		colorectum (C18–C21)		colorectum (C18–C21)	
25	23%	100	10%	1,411	11%	5,057	14%
bone and articular cartilage (C40–C41)		testis (C62)		pancreas (C25)		prostate (C61)	
12	11%	93	10%	763	6%	4,989	14%
other connective and soft tissue (C49)		lung (C33–C34)		stomach (C16)		bladder (C67)	
12	11%	60	6%	759	6%	2,008	5%
liver (C22)		leukaemias (C91–C95)		brain and CNS (C71–C72)		stomach (C16)	
5	5%	58	6%	516	4%	1,815	5%
Females							
0–19 years		20–44 years		45–64 years		65+ years	
Number	Percents	Number	Percents	Number	Percents	Number	Percents
all cancers		all cancers		all cancers		all cancers	
75	100%	1,084		9,633		32,279	
brain and CNS (C71–C72)		breast (C50)		lung (C33–C34)		lung (C33–C34)	
31	41%	287	26%	1,830	19%	5,931	18%
leukaemias (C91–C95)		cervix uteri (C53)		breast (C50)		breast (C50)	
16	21%	114	11%	1,706	18%	4,413	14%
other connective and soft tissue (C49)		colorectum (C18–C21)		ovary (C56)		colorectum (C18–C21)	
4	5%	96	9%	856	9%	4,070	13%
kidney and renal pelvis (C64–C65)		brain and CNS (C71–C72)		colorectum (C18–C21)		pancreas (C25)	
4	5%	89	8%	855	9%	1,849	6%
non-Hodgkin lymphomas (C82–C85+C96)		ovary (C56)		cervix uteri (C53)		ovary (C56)	
4	3%	75	7%	501	5%	1,706	5%

Table VIII. Numbers of incidences and deaths for the most common malignant tumors among men in 2021 by voivodships

Voivodship	All cancers	Sto-mach	Colorec-tum ¹	Pancre-as	Lung	Melano-ma	Prostate	Kidney	Bladder	non-Hodgkin lympho-mas ²	Leuka-emias ³
Incidence											
Dolnośląskie	6,543	215	774	154	1,005	200	1,275	249	468	152	172
Kujawsko-Pomorskie	5,080	197	566	95	893	108	994	195	348	94	68
Lubelskie	4,667	151	488	81	585	80	1,158	197	369	93	125
Lubuskie	1,939	83	236	48	283	27	458	103	110	29	32
Łódzkie	5,462	204	665	119	759	150	1,067	187	304	139	251
Małopolskie	6,759	228	749	151	882	142	1,321	220	380	201	167
Mazowieckie	9,994	370	1,193	245	1,611	242	1,994	345	545	279	249
Opolskie	2,390	75	303	47	309	60	474	89	165	46	55
Podkarpackie	4,369	161	541	118	562	122	881	183	200	113	124
Podlaskie	2,647	65	352	61	312	59	652	110	165	46	53
Pomorskie	6,018	191	566	88	861	105	1,629	225	510	105	73
Śląskie	10,605	427	1,447	246	1,561	199	2,240	320	670	238	314
Świętokrzyskie	3,368	117	383	76	470	66	802	100	228	80	89
Warmińsko-Mazurskie	2,980	98	381	54	533	61	520	104	172	63	111
Wielkopolskie	8,229	292	1,025	226	1,091	183	1,675	313	455	154	209
Zachodniopomorskie	3,225	136	340	55	627	72	692	114	212	31	44
Poland	84,275	3,010	10,009	1,864	12,344	1,876	17,832	3,054	5,301	1,863	2,136
Deaths											
Dolnośląskie	3,940	231	497	219	1,013	48	426	117	226	55	82
Kujawsko-Pomorskie	2,828	158	344	146	860	36	306	59	182	50	75
Lubelskie	2,657	129	368	112	643	30	290	105	140	36	83
Lubuskie	1,205	61	142	56	369	16	132	21	65	23	25
Łódzkie	3,404	198	487	136	926	36	322	83	205	46	98
Małopolskie	4,283	253	516	179	997	63	510	125	303	65	125
Mazowieckie	6,747	358	852	328	1,825	94	713	166	399	120	178
Opolskie	1,284	67	186	45	305	18	140	40	83	20	41
Podkarpackie	2,395	160	320	97	517	39	297	63	121	47	59
Podlaskie	1,488	76	198	59	369	23	179	45	88	22	45
Pomorskie	3,090	169	353	180	816	39	339	86	171	42	90
Śląskie	6,599	404	894	270	1,597	83	653	172	372	94	161
Świętokrzyskie	1,839	98	231	84	454	19	234	61	122	33	43
Warmińsko-Mazurskie	1,862	97	257	75	516	28	220	58	89	66	47
Wielkopolskie	4,571	233	636	231	1,180	54	461	142	295	63	119
Zachodniopomorskie	2,389	128	289	111	672	35	236	75	117	35	65
Poland	50,581	2,820	6,570	2,328	13,059	661	5,458	1,418	2,978	817	1,336

¹colorectum C18–C21; ²non-Hodgkin lymphomas C82–C85 + C96; ³leukaemias C91–C95

Table IX. Number of incidences and deaths for the most common malignant tumors among women in 2021 by voivodships

Voivodship	All cancers	Colorec-tum ¹	Lung	Breast	Cervix uteri	Corpus uteri	Ovary	Kidney	Bladder	non-Hodgkin lymphomas ²	Leukaemias ³
Incidence											
Dolnośląskie	7,276	637	720	1,808	167	451	313	156	166	142	173
Kujawsko-Pomorskie	5,468	445	662	1,254	117	317	245	144	116	83	43
Lubelskie	4,431	375	371	1,035	98	335	189	138	97	103	115
Lubuskie	1,913	171	194	451	55	115	92	73	47	24	33
Łódzkie	6,162	543	546	1,539	156	440	296	119	114	138	207
Małopolskie	7,376	649	526	1,727	147	531	298	124	103	173	141
Mazowieckie	10,987	886	1,146	2,990	258	732	325	207	170	251	242
Opolskie	2,275	241	194	541	63	209	94	49	30	53	42
Podkarpackie	4,288	396	277	1,014	84	374	192	98	64	113	107
Podlaskie	2,716	262	189	629	75	193	121	74	54	34	25
Pomorskie	5,547	471	703	1,300	151	309	182	149	178	106	55
Śląskie	10,315	1,152	1,019	2,336	283	768	559	226	240	212	207
Świętokrzyskie	3,015	293	234	643	90	241	118	94	57	69	71
Warmińsko-Mazurskie	3,299	309	353	702	96	169	145	67	66	76	105
Wielkopolskie	8,373	828	663	2,137	213	568	324	193	139	151	153
Zachodniopomorskie	3,842	340	451	973	107	272	131	73	101	40	30
Poland	87,283	7,998	8,248	21,079	2,160	6,024	3,624	1,984	1,742	1,768	1,749
Deaths											
Dolnośląskie	3,511	403	662	451	91	128	217	79	72	59	80
Kujawsko-Pomorskie	2,462	293	570	356	64	76	139	46	30	44	60
Lubelskie	2,154	255	337	307	83	104	160	31	31	36	69
Lubuskie	1,053	119	215	143	34	31	66	24	27	21	27
Łódzkie	3,004	354	553	459	88	97	189	54	54	37	100
Małopolskie	3,666	410	540	550	117	179	225	74	78	84	110
Mazowieckie	5,830	652	1,143	895	192	223	335	117	106	116	142
Opolskie	1,140	153	178	184	44	40	58	33	19	20	33
Podkarpackie	1,899	221	242	295	62	108	124	40	31	43	63
Podlaskie	1,214	169	177	196	51	50	73	29	27	22	39
Pomorskie	2,548	291	540	337	89	75	144	43	57	49	57
Śląskie	5,691	689	938	908	157	227	384	103	122	84	128
Świętokrzyskie	1,365	153	185	214	49	72	104	28	33	23	46
Warmińsko-Mazurskie	1,507	154	305	206	51	58	70	43	43	71	36
Wielkopolskie	3,934	475	745	641	122	114	246	64	106	64	81
Zachodniopomorskie	2,093	231	477	264	67	65	105	40	53	41	55
Poland	43,071	5,022	7,807	6,406	1,361	1,647	2,639	848	889	814	1,126

¹colorectum C18–C21; ²non-Hodgkin lymphomas C82–C85 + C96; ³leukaemias C91–C95

Table X. Standardized rates of morbidity and mortality for the most common malignant neoplasms in men in Poland in 2021 by voivodships

Voivodship	All cancers	Stomach	Colorectum ¹	Pancreas	Lung	Melanoma	Prostate	Kidney	Bladder	non-Hodgkin lymphomas ²	Leukaemias ³
Incidence rates (ESP2013)											
Dolnośląskie	556.3	18.5	66.9	12.9	84.7	16.3	108.1	20.4	41.0	12.6	15.6
Kujawsko-Pomorskie	618.3	24.0	70.8	11.6	105.8	13.1	118.5	22.5	45.3	10.7	8.7
Lubelskie	544.9	17.2	58.6	9.1	65.6	9.1	137.0	21.9	46.2	10.8	14.6
Lubuskie	482.3	22.0	58.7	11.4	70.0	7.4	112.3	23.8	28.2	8.8	9.1
Łódzkie	528.0	20.1	65.7	11.9	71.6	14.6	102.1	17.0	30.9	13.0	24.6
Małopolskie	511.5	17.7	57.9	11.5	66.6	10.7	101.8	15.8	30.9	14.5	12.1
Mazowieckie	469.6	17.6	56.6	11.5	75.5	10.7	94.2	15.3	26.6	13.0	12.3
Opolskie	589.7	19.6	76.7	11.6	76.1	14.7	113.6	20.1	41.2	10.2	14.7
Podkarpackie	528.5	19.8	67.1	14.2	69.4	14.3	109.9	20.4	25.4	13.2	14.0
Podlaskie	565.7	14.2	76.0	11.8	66.9	12.3	141.7	22.7	36.1	9.2	10.9
Pomorskie	674.3	20.5	65.3	9.6	95.8	11.0	182.5	23.6	61.7	11.0	8.2
Śląskie	562.9	23.0	78.4	12.4	81.1	10.3	120.5	16.1	36.6	12.5	16.3
Świętokrzyskie	624.9	22.2	71.5	14.5	84.6	12.0	143.6	17.9	43.5	15.1	16.3
Warmińsko-Mazurskie	553.8	17.2	70.7	9.7	93.8	11.9	98.9	17.9	34.2	11.0	21.4
Wielkopolskie	619.1	22.2	80.4	16.6	80.8	13.4	125.8	22.1	36.2	10.5	15.7
Zachodniopomorskie	455.8	19.5	49.0	7.5	85.3	10.0	99.0	14.5	30.3	4.3	6.7
Poland	549.5	19.8	66.6	11.9	79.2	11.9	116.7	18.8	36.3	11.8	14.0
Mortality rates (ESP2013)											
Dolnośląskie	363.6	21.2	47.0	19.1	89.2	5.2	46.0	10.8	23.5	5.2	8.2
Kujawsko-Pomorskie	371.3	19.8	47.0	18.6	108.1	5.2	48.3	7.1	27.7	5.9	10.6
Lubelskie	331.3	15.3	47.5	13.9	76.2	4.0	42.5	13.1	19.3	4.8	10.6
Lubuskie	331.8	17.1	39.9	13.7	94.7	5.0	46.6	5.4	19.7	5.6	7.4
Łódzkie	352.2	20.7	51.7	13.8	90.4	3.6	38.0	8.2	24.0	4.7	10.3
Małopolskie	352.9	20.5	43.3	14.1	78.7	5.7	48.6	10.5	27.4	5.3	10.3
Mazowieckie	337.5	17.7	44.3	15.7	87.4	4.8	40.9	8.1	21.8	6.1	9.1
Opolskie	337.1	17.3	50.7	11.3	75.5	4.9	42.3	10.2	22.8	5.1	11.1
Podkarpackie	315.0	20.3	43.0	11.5	64.0	5.0	45.6	8.1	18.2	6.8	8.0
Podlaskie	340.3	18.3	47.3	13.4	80.6	5.7	45.1	10.0	21.2	4.6	10.8
Pomorskie	368.8	19.5	44.3	20.3	92.6	4.5	48.8	10.4	22.4	5.1	11.1
Śląskie	374.0	23.0	52.6	13.9	86.6	5.1	43.1	9.6	22.1	5.6	9.3
Świętokrzyskie	368.4	20.2	47.4	15.5	83.7	3.7	54.6	12.1	27.3	7.3	9.1
Warmińsko-Mazurskie	384.9	18.9	55.5	14.2	96.7	5.3	59.5	10.9	20.8	13.2	10.6
Wielkopolskie	368.2	18.6	53.9	17.4	89.8	4.7	44.0	11.5	26.7	5.1	9.8
Zachodniopomorskie	365.2	20.2	43.8	16.2	96.1	6.3	44.3	11.6	19.9	6.0	10.0
Poland	355.0	19.6	47.7	15.4	86.8	4.9	45.1	9.8	23.1	5.8	9.7

¹colorectum C18–C21; ²non-Hodgkin lymphomas C82–C85 + C96; ³leukaemias C91–C95

Table XI. Standardized rates of morbidity and mortality for the most common malignant neoplasms in women in Poland in 2021 by voivodships

Voivodship	All cancers	Colorec-tum ¹	Lung	Breast	Cervix uteri	Corpus uteri	Ovary	Kidney	Bladder	non-Hodg-kin lym-phomas ²	Leuka-emias ³
Incidence rates (ESP2013)											
Dolnośląskie	444.9	38.6	42.1	112.0	10.0	10.0	19.2	9.8	9.7	8.8	10.9
Kujawsko-Pomorskie	493.3	40.0	57.8	113.7	10.6	10.6	22.2	12.9	10.2	7.7	4.2
Lubelskie	381.9	32.0	30.9	90.8	8.3	8.3	16.4	12.2	8.1	8.8	9.9
Lubuskie	351.6	31.8	34.8	82.5	9.9	9.9	16.7	13.6	8.4	4.3	6.5
Łódzkie	429.1	37.1	35.8	108.7	11.2	11.2	21.1	8.5	7.9	9.9	15.0
Małopolskie	417.6	37.0	29.9	97.8	8.2	8.2	17.4	7.2	5.8	9.9	8.0
Mazowieckie	373.1	30.0	38.1	102.7	8.8	8.8	11.3	7.0	5.7	8.5	8.2
Opolskie	416.5	43.8	34.5	99.3	12.1	12.1	17.2	8.7	5.6	10.0	7.5
Podkarpackie	390.9	36.0	25.2	92.8	7.7	7.7	17.5	8.9	5.7	10.6	9.9
Podlaskie	426.4	41.2	29.3	99.5	12.2	12.2	19.4	11.9	8.1	5.2	3.7
Pomorskie	462.7	39.9	57.4	109.6	12.5	12.5	15.4	12.4	15.0	8.9	4.6
Śląskie	407.4	45.0	38.4	92.8	11.6	11.6	22.3	8.9	9.2	8.4	8.6
Świętokrzyskie	435.9	41.6	32.1	95.1	13.3	13.3	17.1	13.4	7.8	9.6	10.2
Warmińsko-Mazurskie	444.5	42.2	46.2	95.3	12.8	12.8	19.3	8.9	8.6	10.1	14.2
Wielkopolskie	462.4	46.4	36.2	118.6	11.6	11.6	17.6	10.8	7.4	8.1	8.3
Zachodniopomorskie	413.2	36.0	45.2	105.8	11.6	11.6	14.2	8.0	11.1	4.5	3.4
Poland	419.7	38.4	38.5	102.2	10.4	10.4	17.6	9.6	8.2	8.5	8.5
Mortality rates (ESP2013)											
Dolnośląskie	210.4	24.3	39.6	27.2	5.4	7.6	13.2	4.8	4.2	3.4	4.7
Kujawsko-Pomorskie	219.1	26.6	50.0	31.5	5.6	6.7	12.8	3.9	2.6	3.9	5.4
Lubelskie	180.1	21.2	28.1	25.6	7.2	8.6	13.8	2.8	2.4	3.0	5.8
Lubuskie	195.5	22.5	39.1	25.9	6.1	5.9	12.0	4.7	5.3	4.1	5.3
Łódzkie	198.5	23.3	35.7	31.2	5.9	6.4	12.6	3.7	3.5	2.4	6.8
Małopolskie	203.3	22.6	30.4	30.5	6.5	10.0	12.6	4.1	4.2	4.8	6.0
Mazowieckie	193.2	21.3	38.0	30.0	6.5	7.4	11.5	3.9	3.4	3.8	4.5
Opolskie	204.2	27.0	31.0	33.2	8.1	7.4	10.2	5.8	3.4	3.6	6.1
Podkarpackie	170.4	20.1	22.0	26.9	5.5	9.4	11.2	3.6	2.6	3.8	5.4
Podlaskie	181.9	24.9	27.3	29.3	8.0	7.2	11.1	4.2	4.0	3.3	6.0
Pomorskie	212.3	24.8	44.3	28.2	7.3	6.1	11.9	3.6	4.6	4.1	4.7
Śląskie	220.5	26.8	35.6	35.4	6.2	8.8	15.1	3.9	4.7	3.3	5.0
Świętokrzyskie	187.9	20.7	25.1	29.5	6.8	9.8	14.6	3.6	4.4	3.1	6.5
Warmińsko-Mazurskie	202.8	21.0	40.2	28.1	6.9	7.7	9.4	5.5	6.0	9.6	4.7
Wielkopolskie	218.2	26.9	40.5	35.9	6.8	6.4	13.8	3.6	5.8	3.6	4.4
Zachodniopomorskie	223.4	24.5	49.9	28.6	7.1	7.1	11.3	4.3	5.5	4.5	6.2
Poland	203.3	23.8	36.5	30.5	6.5	7.8	12.7	4.0	4.1	3.9	5.3

¹colorectum C18–C21; ²non-Hodgkin lymphomas C82–C85 + C96; ³leukaemias C91–C95

Conclusions

Deaths from COVID-19 are still a competitive cause of death compared to cancer. Both data from 2021 and forecasts until 2023 indicate that after a temporary reduction in cancer morbidity and mortality during the COVID-19 pandemic, both values will return to the trends presented before the pandemic.

In Poland in 2021, the most frequently diagnosed cancers among men were prostate, lung, and colorectal cancers. Among women, the main cancer sites remain: breast, lung, and colorectum. Mortality from colorectal cancer has been on downward trend since 2015, and this decreasing trend continues. A still disturbing phenomenon is the higher mortality rate than morbidity for lung cancer among men, and the similar number of lung cancer cases and deaths in women.

Strengths and limitations of the report

The analysis covers the entire population of Poland, and is the best source of cancer incidence data. Cancer registration in the Polish National Cancer Registry (PNCr) is mandatory, ensuring a high level of completeness of the data.

Article information and declarations

Data availability statement

The presented data come from the Polish National Cancer Registry (PNCr) and is available at <https://onkologia.org.pl/>.

Author contributions

Joanna A. Didkowska – devised the project, the main conceptual ideas and proof outline.

Klaudia Barańska – performed the analysis, wrote the manuscript with input from all authors.

Marta J. Miklewska – performed the analysis, wrote the manuscript with input from all authors.

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Conflict of interest

None declared

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