



Estimates of cancer incidence to 2025 in Italy: Numbers and rates

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ABSTRACT

Objectives: We forecasted the incidence of malignant tumours in Italy in 2025, using the most representative estimates of incidence rates and recent trends in cancer incidence available. A comparison with estimates for 2025 obtained using different assumptions and data sets is also presented.

Methods: 34 cancer registries (81 % of the Italian population) were used to estimate incidence rate trends in 2013–2017, by cancer types, sex, and age. The stratified incidence rates were projected until 2025 by applying trends in the same strata, using a linear regression model with the calendar year as an independent variable.

Results: We estimated 362,100 new cancer cases in Italy in 2025 (182,300 in men, 179,800 in women). Prostate is the most frequent cancer site in men (31,200 cases; age-standardised incidence rates-ASR=92.3 per 100,000), followed by lung (27,100, ASR=80.9), bladder, and colon-rectum (23,000 cases each; ASR=69.0). 55,900 women were estimated to be diagnosed with breast cancer (ASR=159.0 per 100,000), 18,900 with colorectal (ASR=47.0) and 16,400 with lung cancers (ASR=41.0).

Conclusions: Our estimates were slightly lower than those based on other assumptions and/or different datasets (i. e., ECIS/GLOBOCAN ones). More effective anti-smoking campaigns are needed to halt the predicted increase in smoking-related cancers among women.

1. Introduction

Up-to-date projections on temporal trends in cancer incidence are needed to accurately assess the burden of disease at the national level and establish priorities for the allocation of resources for prevention and treatment. Since these data, usually provided by Population-Based Cancer Registries (PBCRs), have a physiological lag time in the complete registration [1–3], and the use of projections aims to overcome this limitation.

Data from PBCRs analysed by the European Cancer Information System (ECIS) and by the International Agency for Research on Cancer (IARC) provide projections of incidence (number of cases and rates) until 2040 for Europe [1]. To this end, incidence data (as of 2013–2017)

submitted by PBCRs, using internationally approved standard methods of collection, were used [1,2]. The ECIS and GLOBOCAN estimates used trends observed in the period 2008–2017 (based on mortality/incidence ratios in the period 2008–2017), assuming that they would continue until 2022, then remain constant until 2025, and finally applied them to the corresponding projected population for 2025. This assumption is probably not realistic, as incidence and mortality rates are strongly affected by factors evolving in time, such as prevalence and distribution of cancer risk factors, implementation of screening programs, and establishment of cancer control plans [1,4].

We aimed at providing a forecast of the incidence of malignant tumours in Italy in 2025 for the most common types of cancer, using the most representative estimates of incidence rates [5] and recent trends in

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cancer incidence available at the national level [6]. A comparison with estimates for 2025 obtained using different assumptions and data sets is also presented, in particular with those estimated assuming constant incidence rates.

2. Methods

The study population included the most updated and representative pool of the Italian cancer registries [3], which allowed the estimation of cancer incidence rates [5] and trends [6] in Italy. Briefly, data were collected by 34 PBCRs covering 48 million people (i.e., 81 % of the Italian population, with the same coverage and representativeness in both Italian areas - North-Center and South-Islands). These registries contributed to the estimation of incidence rate trends in the period 2013–2017 by age groups (0–49, 50–69, and ≥ 70 years), sex and area, for several cancer types, including the combination of all cancer types but non-melanoma skin cancer (defined below as “all cancers”).

The stratified-specific incidence rates were projected until 2025 by applying estimated trends in 2013–2017, using a linear regression model with trends calculated with the calendar year as an independent variable (i.e., adjusted) and applied (i.e., stratified) in each sex and age group.

The number of cancer cases in Italy in 2025 (specific by age, sex, and cancer type) was obtained by multiplying the rates projected for 2025 (in the same strata) by the corresponding estimated Italian population in that year [3].

Age-standardised incidence rates (ASR) for 2025 were also obtained from age-specific estimates and population projections. The estimations obtained as described above were compared with i) those calculated on the same database and the assumption that the rates observed in the period 2013–2017 would remain constant until 2025, and ii) those provided by ECIS and GLOBOCAN, based on more complex assumptions on trends [1,2].

In summary, the study did not aim to make methodological improvements on the state of the art, but rather to apply to the largest and most representative dataset of Italian PBCRs [3] a simple and

reproducible methodology, largely similar to established approaches widely used in the literature [1,2].

3. Results

Table 1 presents the distribution of new cases and age-standardised rates estimated in 2025 in Italy, for both sexes combined and for men and women separately. For both sexes combined and all ages, we estimated 362,100 new cancer cases in 2025, slightly more than one-half occurring in men (182,300) and 179,800 in women. In men, the prostate turned out to be the most frequent cancer type (31,200 new cases; ASR= 92.3 per 100,000 men), followed by cancers of the lung (27,100 cases; ASR= 80.9), bladder and colon-rectum (approximately 23,000 cases each; ASR= 68.6). These 4 cancer types represented 57 % of all cancers in men. Women were estimated to be diagnosed with 55,900 new breast cancer cases (31 % of all new cases; ASR=159 per 100,000), followed by 18,900 colorectal cancer cases (ASR=47.4) and 16,400 lung cancers (ASR=41.0). Other cancer types with an ASR > 20 per 100,000 women were melanoma (8440), corpus uteri (8260), and thyroid (8100).

In comparison with the incidence rates observed in the period 2013–2017 (Supplementary Table 1), a relevant ASR decrease is expected in 2025 (-16 %), mainly driven by the expected decrease (>10 %) in prostate cancer ASRs (-24 %), Colon-rectum (-18 %), and lung (-16 %). A decrease larger than 20 % was expected also for some less frequent cancer types, such as liver cancer, leukaemias, and laryngeal cancer. An opposite trend is expected from the period 2013–2017 to 2025 for melanomas (+29 %), pancreas (+4 %), and testicular cancers (+5 %).

In women, less positive trends are expected, with a slight increase (+2 %) for all cancers combined and remarkably higher ASRs in 2025, in comparison with 2013–2017, for skin melanomas (+44 %), lung (+24 %), breast (+7 %), laryngeal (+8 %), and upper aerodigestive tract cancers (+6 %), while ASRs are expected to decrease for colorectal (-12 %), stomach (-15 %), liver (-24 %), and corpus uteri cancers (-5 %) (Supplementary Table 1). After decades of increase, thyroid cancer

Table 1

Estimates of age-standardised incidence rates (ASR per 100,000) and new cases in Italy in 2025 for the most frequent cancer types and all cancers combined.

Cancer types	Men			Women			Total	
	ASR	Cases	%	ASR	Cases	%	Cases	%
Breast	.	.	.	159.0	55,900	31.1 %	55,900	15.4 %
Lung	80.9	27,100	14.9 %	41.0	16,400	9.1 %	43,500	12.0 %
Colorectal	68.6	22,800	12.5 %	47.4	18,900	10.5 %	41,700	11.5 %
Prostate	92.3	31,200	17.1 %	.	.	.	31,200	8.6 %
Bladder (incl. non-invasive)	69.4	23,100	12.7 %	15.1	6000	3.3 %	29,100	8.0 %
Skin Melanoma	29.0	9330	5.1 %	25.4	8440	4.7 %	17,770	4.9 %
Pancreas	21.8	7290	4.0 %	17.0	6980	3.9 %	14,270	3.9 %
Non-Hodgkin Lymphoma	21.9	7140	3.9 %	15.7	5890	3.3 %	13,030	3.6 %
Stomach	23.0	7660	4.2 %	11.7	4710	2.6 %	12,370	3.4 %
Kidney	22.6	7440	4.1 %	10.3	3880	2.2 %	11,320	3.1 %
Thyroid	9.9	3030	1.7 %	26.5	8100	4.5 %	11,130	3.1 %
Liver	20.1	6730	3.7 %	7.1	2930	1.6 %	9660	2.7 %
Corpus uteri	.	.	.	22.0	8260	4.6 %	8260	2.3 %
Leukaemias, all types	13.4	4280	2.3 %	9.7	3670	2.0 %	7950	2.2 %
Multiple Myeloma	10.8	3590	2.0 %	7.8	3100	1.7 %	6690	1.8 %
Central Nervous System	10.1	3240	1.8 %	6.8	2490	1.4 %	5730	1.6 %
Upper aerodigestive	10.8	3550	1.9 %	5.4	2030	1.1 %	5580	1.5 %
Ovary	.	.	.	14.7	5330	3.0 %	5330	1.5 %
Larynx	9.0	3010	1.7 %	1.4	530	0.3 %	3540	1.0 %
Acute Myeloid Leukaemia	4.2	1360	0.7 %	3.0	1110	0.6 %	2470	0.7 %
Cervix uteri	.	.	.	7.7	2420	1.3 %	2420	0.7 %
Testis	8.1	2180	1.2 %	.	.	.	2180	0.6 %
Hodgkin Lymphoma	4.0	1150	0.6 %	3.6	1000	0.6 %	2150	0.6 %
Urinary tract	4.5	1530	0.8 %	1.5	620	0.3 %	2150	0.6 %
Chronic Lymphocytic Leukaemia	3.4	1130	0.6 %	1.9	630	0.4 %	1760	0.5 %
Acute Lymphocytic Leukaemia	1.2	350	0.2 %	1.1	300	0.2 %	650	0.2 %
Chronic Myeloid Leukaemia	1.2	380	0.2 %	0.7	270	0.2 %	650	0.2 %
All types (except non-melanoma skin cancer)	552.2	182,300		485.9	179,800		362,100	

incidence is expected to slightly decline both in women (-2 %) and men (-1 %). Cases estimated in 2025, by sex and age groups, were presented in [Supplementary Table 2](#).

For men and women combined ([Table 2](#)), estimates of new cancer cases in 2025 were slightly higher (+7.7 %) using the assumption of constant rates calculated on the same dataset. ECIS estimates for 2025 were also higher (+14.2 %, 413,602 cases), as well as those from GLOBOCAN (+14.4 %, 414,309 cases), based on previous Italian datasets. The difference between our estimates and those obtained with other assumptions and datasets was non-negligible for cancer types showing decreasing trends: > 20 % for prostate, larynx, and liver cancers; > 10 % for colorectal, stomach, kidney cancers, and leukaemias. On the other hand, we estimated nearly 18,000 new cases of melanomas in 2025 versus approximately 13,000 (-27 %) with constant trends ([Table 2](#)).

4. Discussion

We estimated that the number of new malignant tumour diagnoses in 2025 will be about 360,000 (excluding non-melanoma skin cancers), with more than 55,000 breast, 42,800 lung, 41,900 colorectal, and 31,400 prostate cancer diagnoses.

Although the PBCR data used does not cover 100 % of the Italian population, it is the most comprehensive (80 %), and updated dataset analysed to date. In addition, the coverage is homogeneous (i.e., 81 %) both in North-Centre and Southern Italy [[3](#)], allowing a representativeness for the overall Italian population.

Our estimates are slightly (i.e., 10–15 %) lower than those provided by ECIS and GLOBOCAN using constant rate assumptions and estimates based on local incidence and mortality data, both on the same dataset as in those collected [[1,7](#)]. Notably, the number of cases estimated for 2025 from the current dataset using a constant rate assumption is very similar to that estimated by ECIS. The only notable exception is thyroid cancer (-21 % in ECIS estimates), probably due to its enormous geographical heterogeneity in incidence and the inaccuracy of the mortality/incidence ratio method in capturing the epidemiological pattern of

this neoplasm [[2,8](#)].

The simplified assumption of linear and constant trend may not be valid for long-term projections, but it is reasonable for common cancer types in the short-term [[9](#)], while allowing for capturing trends documented in the late 2010s for several cancers, as a result of changing indications that discouraged opportunistic screening, particularly for thyroid [[8](#)] and prostate cancers [[10](#)]. The decrease in the incidence of smoking-related cancers in men (not in women) is still a long-term trend expected to continue in the early 2020 s due the decreasing use of tobacco in men (from 60 % in the 1960s to 24 % in 2017), while among women the frequency of smokers increased in the past century with a decrease less marked than men the last 2 decades [[11](#)]. Notably, the decrease in colorectal cancer in both sexes following the spread of screening programmes since the early 2010s. Overall, the observed trends determined more favourable predictions in men and, consequently, a shrinking difference in cancer incidence between sexes, which is nicely incorporated in our modelling exercise. The increase observed for melanomas in both sexes is remarkable and consistent in successive cohorts born until middle 1970s, while subsequently tending to decline, accompanied by a trend towards decreasing tumour thickness, increasing survival [[12](#)], and stable mortality rates [[6](#)].

All studies showing trend-based projections are inevitably subject to more or less validated assumptions [[13](#)]. Many statistical methods to estimate trends and predictions have been proposed in the field of cancer incidence [[14](#)]. Given the great uncertainty and heterogeneity among methods, particularly in the case of changing trends, predicting cancer incidence for periods far in time (more than 5 years) remains very uncertain. Rather, it seems advisable to regularly update observed incidences from complete population-based high-quality registries, extend the population covered, and perform short-term forecasts. In any case, no statistical models can reasonably incorporate the impact of changing practice due to new guidelines, changing screening recommendations [[10](#)], or health-disruptive events, such as the COVID epidemic [[15](#)].

Table 2

Estimated new cancer cases (N) in Italy in 2025, according to the different assumptions on trends and comparison with ECIS [[1](#)] and GLOBOCAN [[2](#)] estimations.

	Estimations using AIRTUM database			ECIS estimations		GLOBOCAN estimations	
	N ^a (constant trends)	N ^b (constant rates)	Difference	N ^c	Diff. ECIS ^c vs ITA ^a	N ^d	Diff. GLOBOCAN ^d vs ITA ^a
Breast	55,900	53,690	-4.0 %	57,414	3.0 %	57,236	2.4 %
Lung	43,500	44,830	3.1 %	44,920	3.3 %	45,106	3.7 %
Colorectal	41,700	48,710	16.8 %	55,883	34.0 %	56,101	34.5 %
Prostate	31,200	40,190	28.8 %	39,357	26.2 %	39,522	26.7 %
Bladder (incl. non-invasive)	29,100	31,020	6.6 %	35,507	22.0 %	35,733	22.8 %
Skin Melanoma	17,770	12,940	-27.2 %	13,768	-22.5 %	13,723	-22.8 %
Pancreas	14,270	13,585	-4.8 %	16,044	12.4 %	16,111	12.9 %
Non-Hodgkin Lymphoma	13,030	13,270	1.8 %	15,795	21.2 %	15,800	21.3 %
Stomach	12,370	14,105	14.0 %	13,797	11.6 %	13,867	12.1 %
Kidney	11,320	13,280	17.3 %	13,065	15.4 %	13,891	22.7 %
Thyroid	11,130	11,380	2.2 %	8832	-20.9 %	8760	-21.3 %
Liver	9660	12,610	30.6 %	12,161	25.9 %	12,204	26.3 %
Corpus uteri	8260	8650	4.7 %	10,289	24.6 %	10,264	24.3 %
Leukaemias, all types	7950	9180	15.5 %	10,944	37.6 %	10,965	37.9 %
Multiple Myeloma	6690	6690	0.0 %	6443	-3.7 %	6465	-3.4 %
Central Nervous System	5730	6130	6.9 %	6390	11.5 %	6379	11.3 %
Upper aerodigestive	5580	5980	7.1 %	4943	-11.5 %	4946	-11.4 %
Ovary	5330	5420	1.8 %	6039	12.6 %	6023	13.0 %
Larynx	3540	4370	23.4 %	4366	23.2 %	4368	23.4 %
Cervix uteri	2420	2380	-1.6 %	2439	0.8 %	2420	0.0 %
Testis	2180	2060	-5.5 %	2363	8.3 %	2345	7.6 %
Hodgkin Lymphoma	2150	2220	3.2 %	2150	0.0 %	2132	-0.8 %
All types (except non-melanoma skin cancer)	362,100	390,110	7.7 %	413,602	14.2 %	414,309	14.4 %

^a This set of estimates is based on the assumption that trends observed in 2013–2017 (by sex, cancer type, and age) will continue until 2025

^b This set of estimates is based on the assumption that rates observed in 2013–2017 (by sex, cancer type, and age) will remain constant until 2025.

^c This set of estimates is based on observed trends 2008–2017 and projected to 2022. The 2022 rates were then applied to 2025 projected population.

^d Same as ^c, and the only difference is the 2025 projected population (Eurostat vs UN).

5. Conclusions

Two main patterns of cancer incidence projected for Italy up to 2025 emerged- i.e., decreasing trend and absolute numbers in men, accompanied by a slight increase in women, in particular for smoking-related cancers and breast cancer and a more marked increase of melanoma in both sexes. Our analysis revealed a favourable trend and a reduction of predicted cases in 2025 in men, which is likely the result of a mix of factors, including some decreasing trend of smoking-related cancers, a reduction of diagnostic pressure for prostate cancer, and a decreasing incidence of infiltrating colorectal cancer due to widespread diffusion of screening programmes in Italy.

Our findings should encourage more effective preventive initiatives to diminish specific risk factors. Actions focused on the Italian population are widely described [16]. These include reducing tobacco and alcohol use, increasing physical activity, improving dietary habits, promoting breastfeeding, and reducing unprotected exposure to the sun's ultraviolet (UV) radiation and outdoor air pollution [17].

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CRediT authorship contribution statement

Sabrina Fabiano: Methodology, Formal analysis, Data curation, Conceptualization. **Mazzucco Walter:** Writing – review & editing, Validation, Supervision, Conceptualization. **Luigino Dal Maso:** Writing – original draft, Conceptualization. **Fabrizio Stracci:** Writing – review & editing, Supervision, Conceptualization. **Diego Serraino:** Writing – review & editing, Supervision, Conceptualization. **Maria Teresa Pesce:** Methodology, Data curation. **Stefano Guzzinati:** Writing – review & editing, Supervision, Conceptualization. **Paolo Contiero:** Methodology, Formal analysis, Data curation. **Andrea Tittarelli:** Methodology, Formal analysis, Data curation. **Viviana Perotti:** Methodology, Formal analysis, Data curation.

Declaration of Competing Interest

None

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.canep.2026.102990](https://doi.org/10.1016/j.canep.2026.102990).

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