

***Cancer epidemiology, registries and inventory of technical structures
for cancer care in the Mediterranean
area: in Spain***

Catalan Mortality Registry
Girona Population Based Cancer Registry
Epidemiology and Cancer Registry Unit. Catalan Institute of Oncology
Catalan Oncology Directive Plan

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Spain Healthcare Organization

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POPULATION BASED CANCER REGISTRIES COVERAGE IN SPAIN



SOURCE: Cancer Incidence in Five Continents Vol. VIII

Cancer Mortality - Spain

TABLA 1.1. DIEZ CAUSAS PRINCIPALES DE MUERTE. ESPAÑA, 2000

	Causa	Número de defunciones	Tasa cruda	Tasa ajustada (*)	Porcentaje del total
	Todas las causas	357.788	906,58	623	
1	Tumores malignos	91.623	232,16	173,45	25,6
2	Enfermedades del corazón	77.237	195,71	127,56	21,6
3	Enfermedades cerebrovasculares	36.420	92,28	57,49	10,2
4	Enfermedades crónicas de las vías respiratorias inferiores	16.573	41,99	26,17	4,6
5	Accidentes (lesiones no intencionadas)	11.661	29,55	25,73	3,3
6	Diabetes mellitus	9.232	23,39	14,79	2,6
7	Gripe y neumonía	8.278	20,98	13,08	2,3
8	Enf. crónica del hígado y cirrosis	5.137	13,02	10,88	1,4
9	Nefritis, síndrome nefrótico y nefrosis	5.634	14,28	8,98	1,6
10	Enfermedad de Alzheimer	5.381	13,64	8,04	1,5

(*) Tasas ajustadas por 100.000 habitantes (población estándar europea).

Cancer Mortality - Spain

TABLA 1.2. NÚMERO DE DEFUNCIONES REGISTRADAS PARA LAS 10 CAUSAS DE MUERTE MÁS IMPORTANTES POR SEXO. ESPAÑA, 2000

		Todas las edades	
		Hombres	Mujeres
1.º	Cáncer	57.382	Enf. corazón 40.903
2.º	Enf. corazón	36.334	Cáncer 34.241
3.º	Enf. cerebrovascular	14.931	Enf. cerebrovascular 21.489
4.º	Enf. crónica respiratoria	12.197	Diabetes 5.686
5.º	Accidentes	8.524	Enf. crónica respiratoria 4.376
6.º	Gripe/Neumonía	4.127	Gripe/Neumonía 4.151
7.º	Diabetes	3.546	Alzheimer 3.622
8.º	Cirrosis	3.538	Accidentes 3.137
9.º	Nefritis, etc.	2.764	Nefritis, etc. 2.870
10.º	Suicidio	2.534	Aterosclerosis 2.749

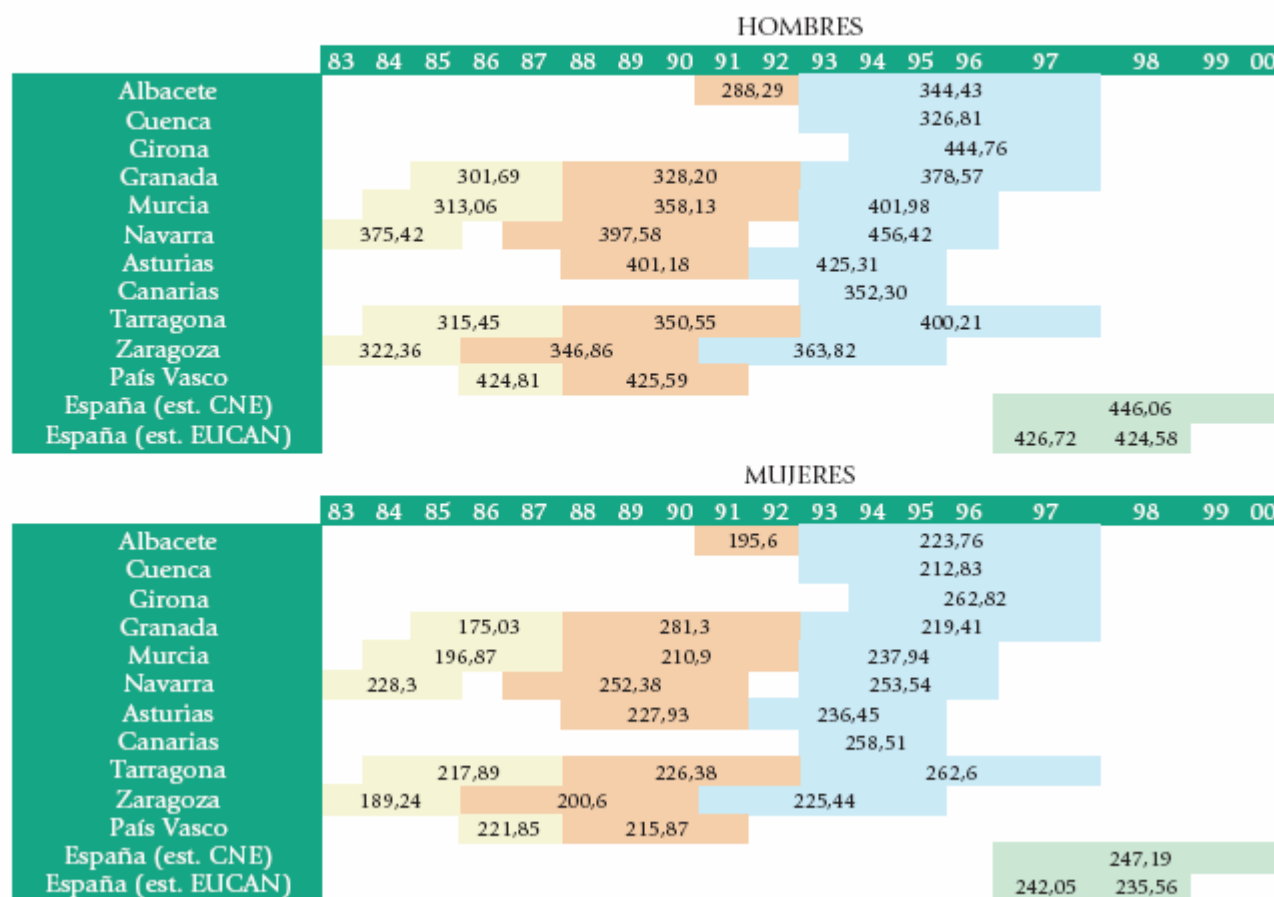
Mortality: The 10 most frequents

TABLA 1.3. NÚMERO DE DEFUNCIONES REGISTRADAS PARA LOS 10 TUMORES MALIGNOS MÁS FRECUENTES POR SEXO. ESPAÑA, 2000

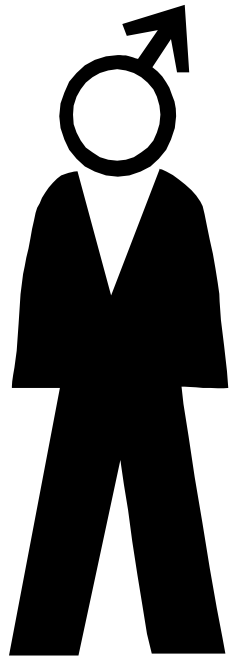
		Todas las edades	
		Hombres	Mujeres
1.º	Pulmón	15.432	Mama 5.663
2.º	Colorrectal	6.448	Colorrectal 5.184
3.º	Próstata	5.448	Tumores mal definidos 2.629
4.º	Estómago	3.741	Estómago 2.340
5.º	Tumores mal definidos	3.300	Páncreas 1.920
6.º	Vejiga	3.189	Pulmón 1.876
7.º	Páncreas	2.069	Útero 1.800
8.º	Cav. bucal y faringe	1.833	Ovario 1.755
9.º	Laringe	1.768	Leucemias 1.255
10.º	Hígado primario	1.722	LNH 1.101

Incidence standard rates: Spanish registries and global estimation

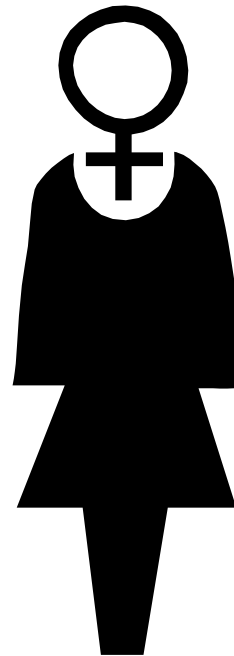
FIGURA 1.5. TASAS AJUSTADAS DE INCIDENCIA EN LOS REGISTROS ESPAÑOLES Y ESTIMADA PARA ESPAÑA



CANCER MORTALITY IN CATALONIA 1995 - 2004



- Lung (28.7%)
- Colorrectal (12.4%)
- Prostate (9.0%)
- Bladder (6.0%)
- Stomach (5.8%)
- Liver (5.3%)
- Pancreas (4.0%)
- Leukemia (3.1%)
- Oral Cavity and Pharynx (3.0%)
- Esophagus (2.8%)



- Breast (17.8%)
- Colorrectal (15.8%)
- Lung (6.3%)
- Pancreas (6.0%)
- Stomach (6.0%)
- Ovary (5.4%)
- Liver (4.7%)
- Leukemia (4.2%)
- Non-Hodgkin Lymphoma (3.8%)
- Central Nervous System (3.1)

CANCER MORTALITY TRENDS IN CATALONIA 1985 – 2004

MALES	ICD – 10	APC ¹		
		1985 – 2004	1995 – 2004	1995 – 2004
Lung	C33 – C34	-0.04 (-0.20; 0.12)	-0.39 (-0.85; 0.06)	—
Colorrectal	C18 – C21	1.24 (0.79; 1.70)	0.69 (-0.50; 1.90)	—
Prostate	C61	-1.11 (-1.70; 0.51)	-2.58 (-4.30; -0.83)	▼▼
Bladder	C67	-0.24 (-1.11; 0.63)	2.06 (-0.57; 4.76)	▲▲
Stomach	C16	-2.89 (-3.56; -2.22)	-2.51 (-4.69; -0.28)	▼▼▼
ALL SITES	all but C44	-0.43 (-0.47; -0.38)	-1.04 (-1.17; -0.91)	▼

▲: APC from 1 to 2; ▲▲: APC >2 to 4; ▲▲▲: APC > 4 to 6; ▲▲▲▲: APC >6; ▼: APC from -1 to -2; ▼▼: APC < -2 to -4; ▼▼▼: APC < -4 to -6; ▼▼▼▼: APC < -6; —: APC from -1 to 1;

■ APC increase statistically significant

■ APC decrease statistically significant

■ APC not statistically significant

SOURCE: Catalan Mortality Registry
¹APC: Annual Percent of Change

CANCER MORTALITY TRENDS IN CATALONIA 1985 – 2004

FEMALES	ICD – 10	APC ¹		1995 – 2004
		1985 – 2004	1995 – 2004	
Breast	C50	-1.49 (-1.94; -1.05)	-2.73 (-4.06; -1.37)	▼▼
Colorrectal	C18 – C21	-0.33 (-1.06; 0.40)	-1.01 (-3.06; 1.09)	▼
Lung	C33 – C34	2.68 (0.89; 4.50)	4.80 (0.18; 9.64)	▲▲▲
Pancreas	C25	1.22 (-0.92; 3.42)	2.96 (-2.94; 9.22)	▼▼
Stomach	C16	-3.64 (-5.13; -2.12)	-3.19 (-8.23; 2.13)	▼▼
ALL SITES	all but C44	-1.10 (-1.20; -1.01)	-1.44 (-1.72; -1.15)	▼

▲: APC from 1 to 2; ▲▲: APC >2 to 4; ▲▲▲: APC > 4 to 6; ▲▲▲▲: APC >6; ▼: APC from - 1 to - 2; ▼▼: APC < - 2 to - 4; ▼▼▼: APC < - 4 to - 6; ▼▼▼▼: APC < - 6; —: APC from -1 to 1;

■ APC increase statistically significant

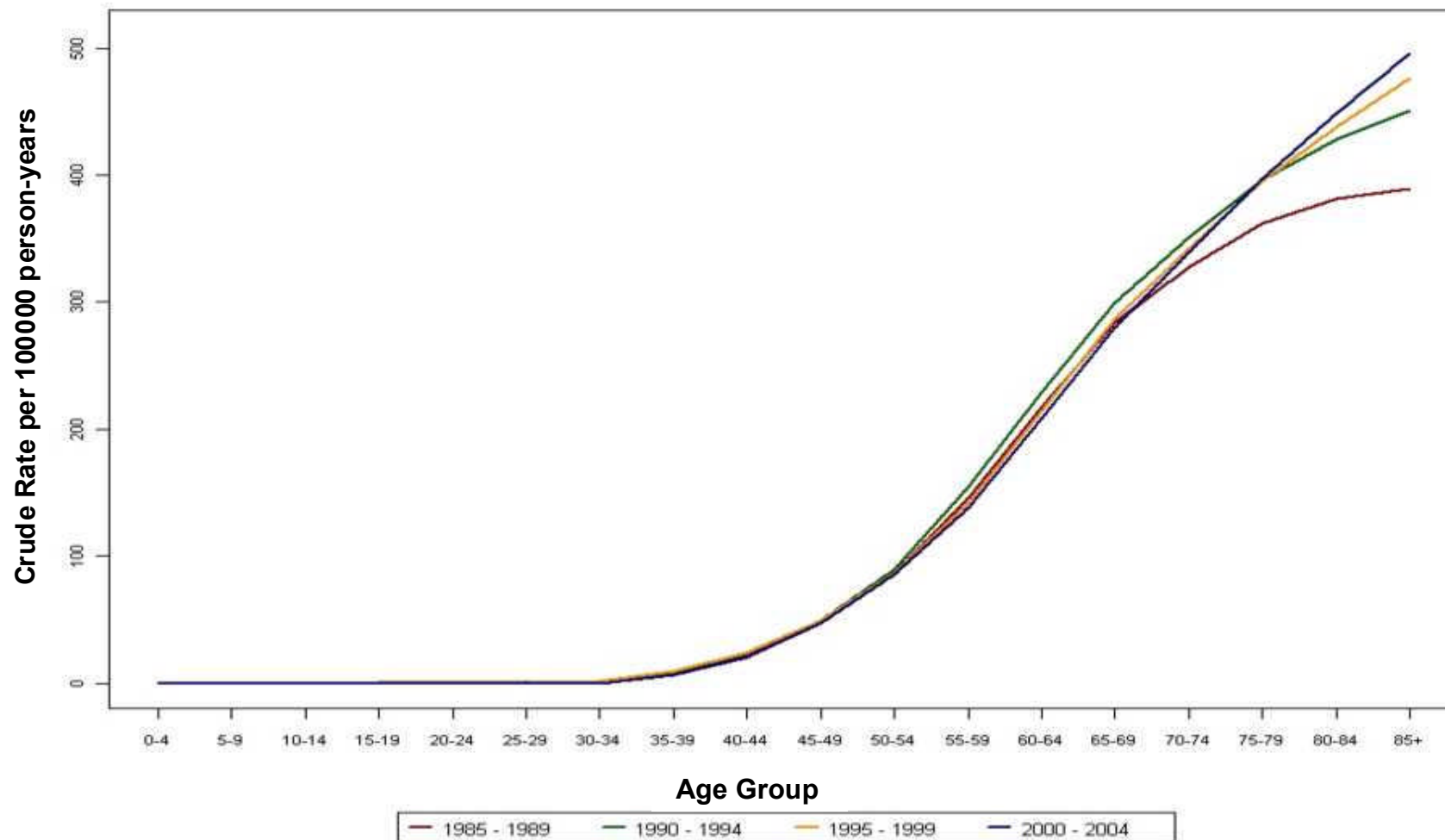
■ APC decrease statistically significant

■ APC not statistically significant

SOURCE: Catalan Mortality Registry
¹APC: Annual Percent of Change

AGE-SPECIFIC MORTALITY RATES OF LUNG CANCER IN CATALONIA BY PERIOD

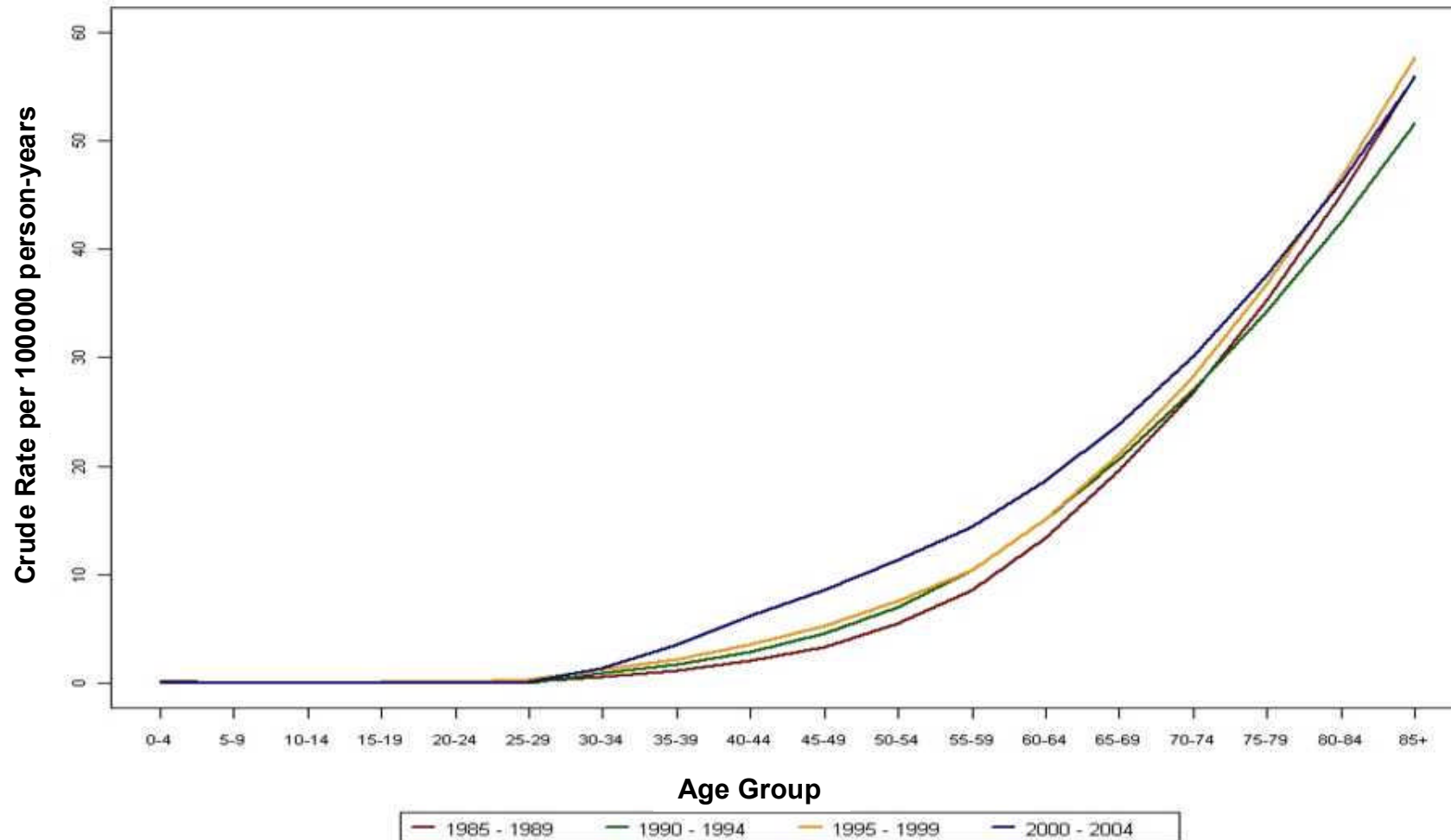
MALES



SOURCE: Catalan Mortality Registry

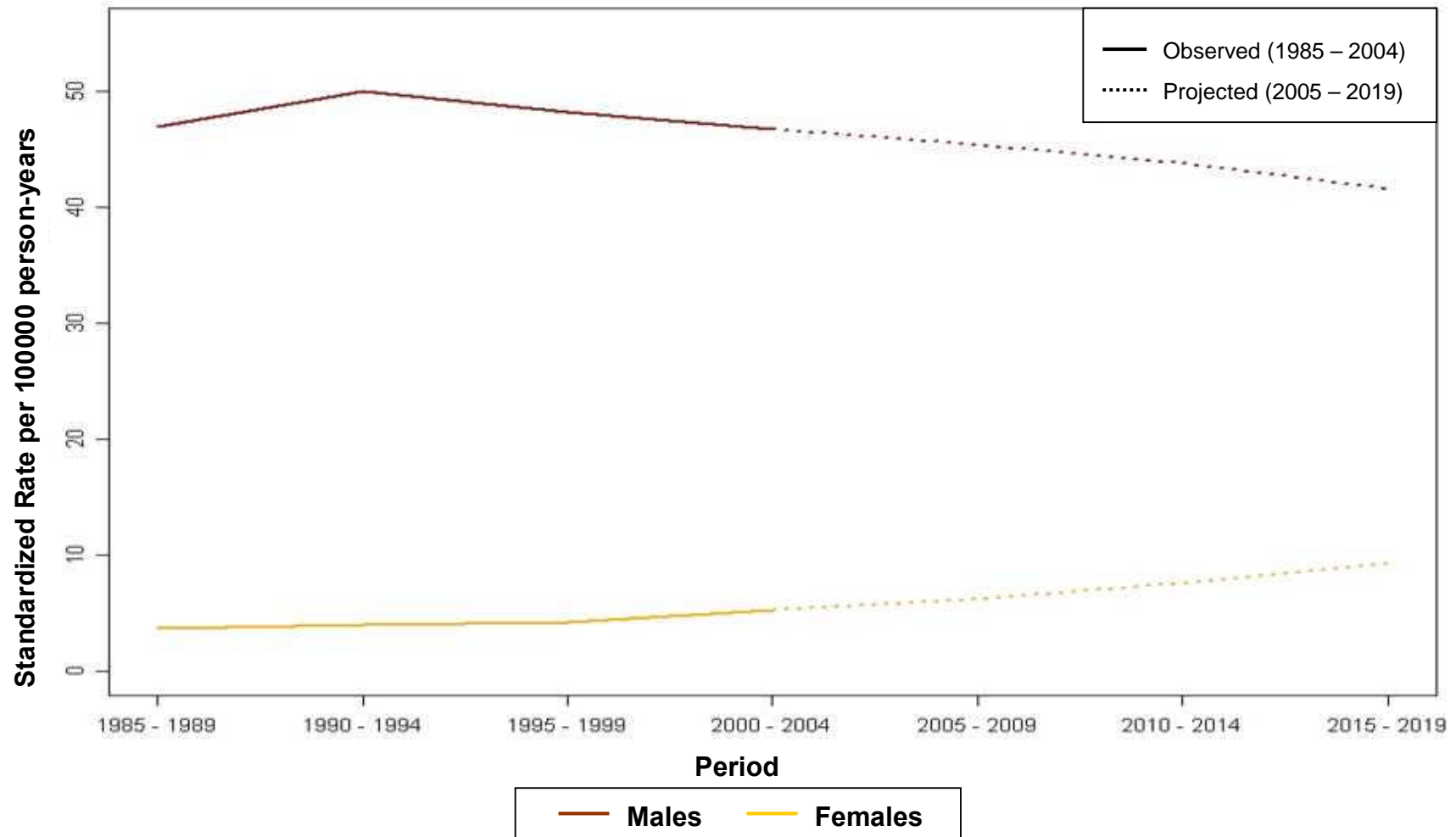
AGE-SPECIFIC MORTALITY RATES OF LUNG CANCER IN CATALONIA BY PERIOD

FEMALES



SOURCE: Catalan Mortality Registry

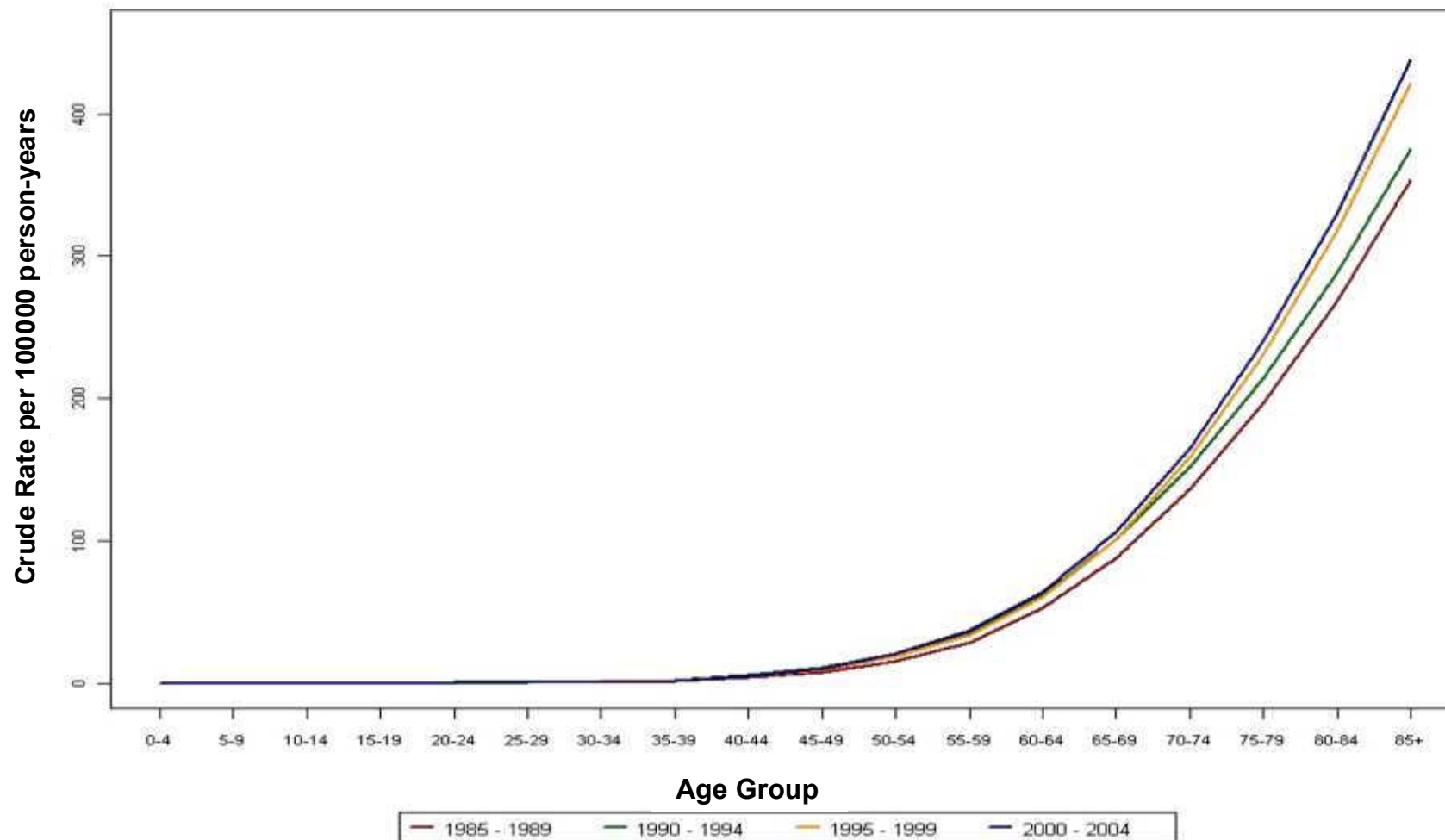
OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: LUNG CANCER



SOURCE: Catalan Mortality Registry

AGE-SPECIFIC MORTALITY RATES OF COLORRECTAL CANCER IN CATALONIA BY PERIOD

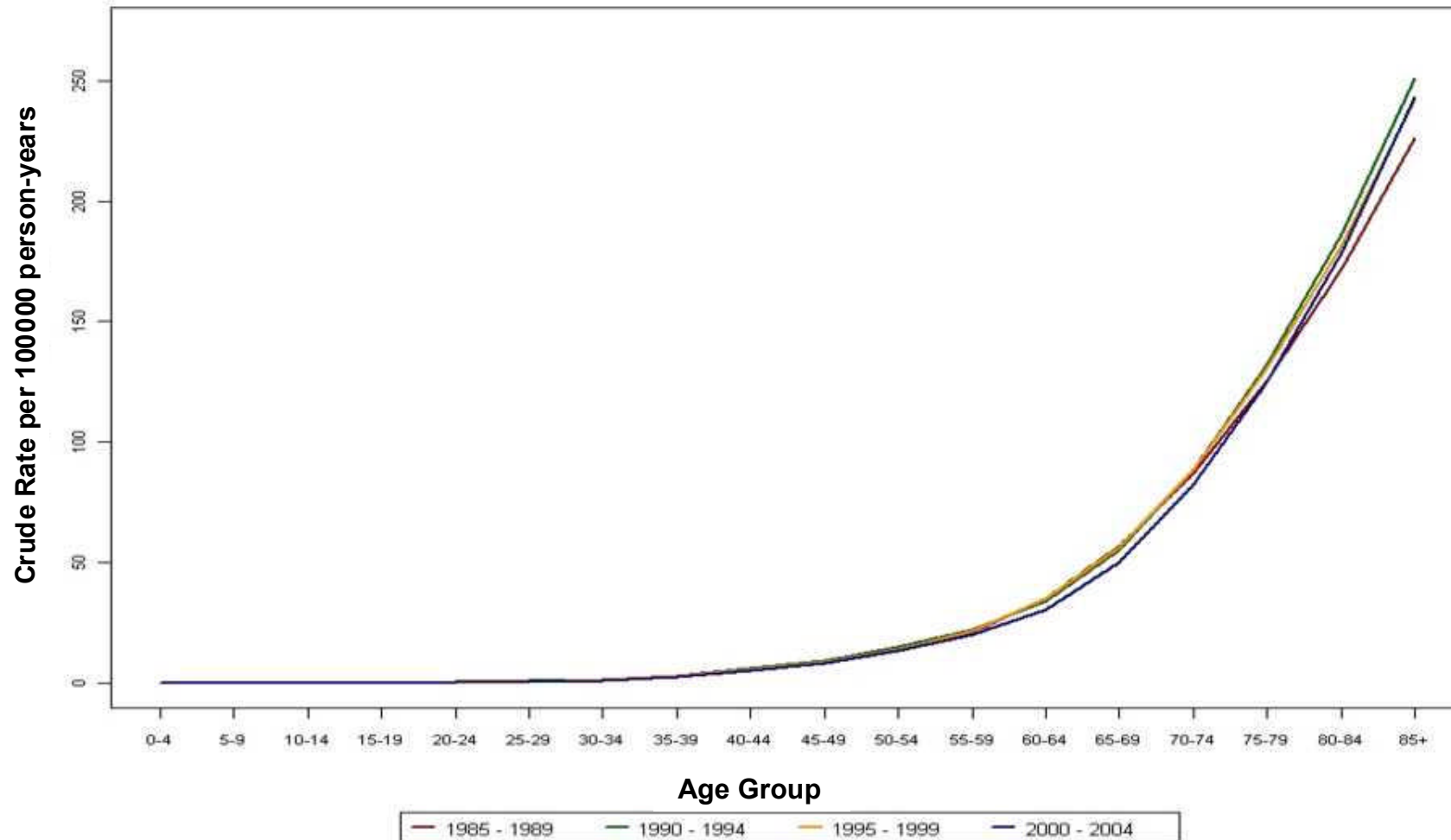
MALES



SOURCE: Catalan Mortality Registry

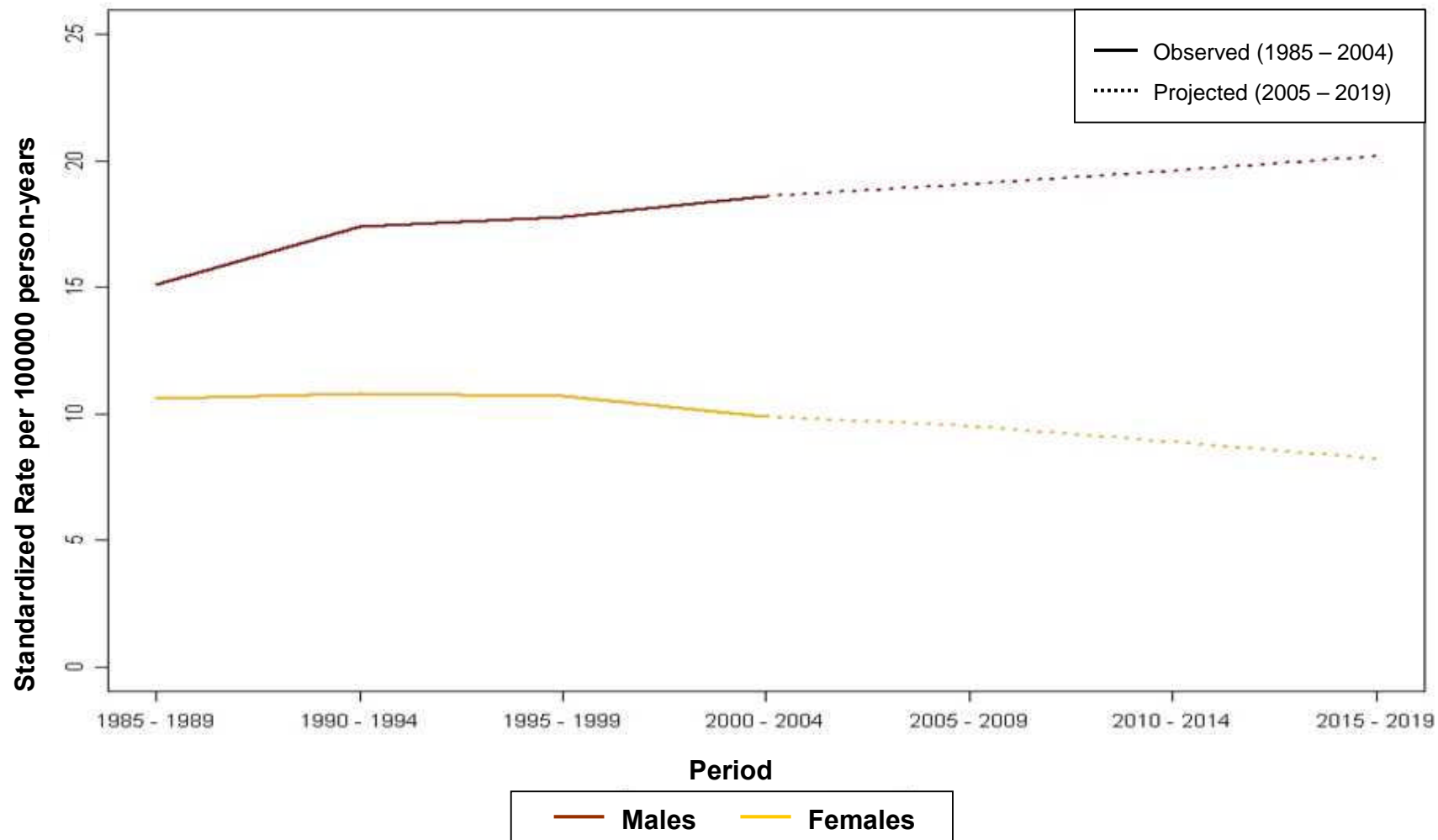
AGE-SPECIFIC MORTALITY RATES OF COLORRECTAL CANCER IN CATALONIA BY PERIOD

FEMALES



SOURCE: Catalan Mortality Registry

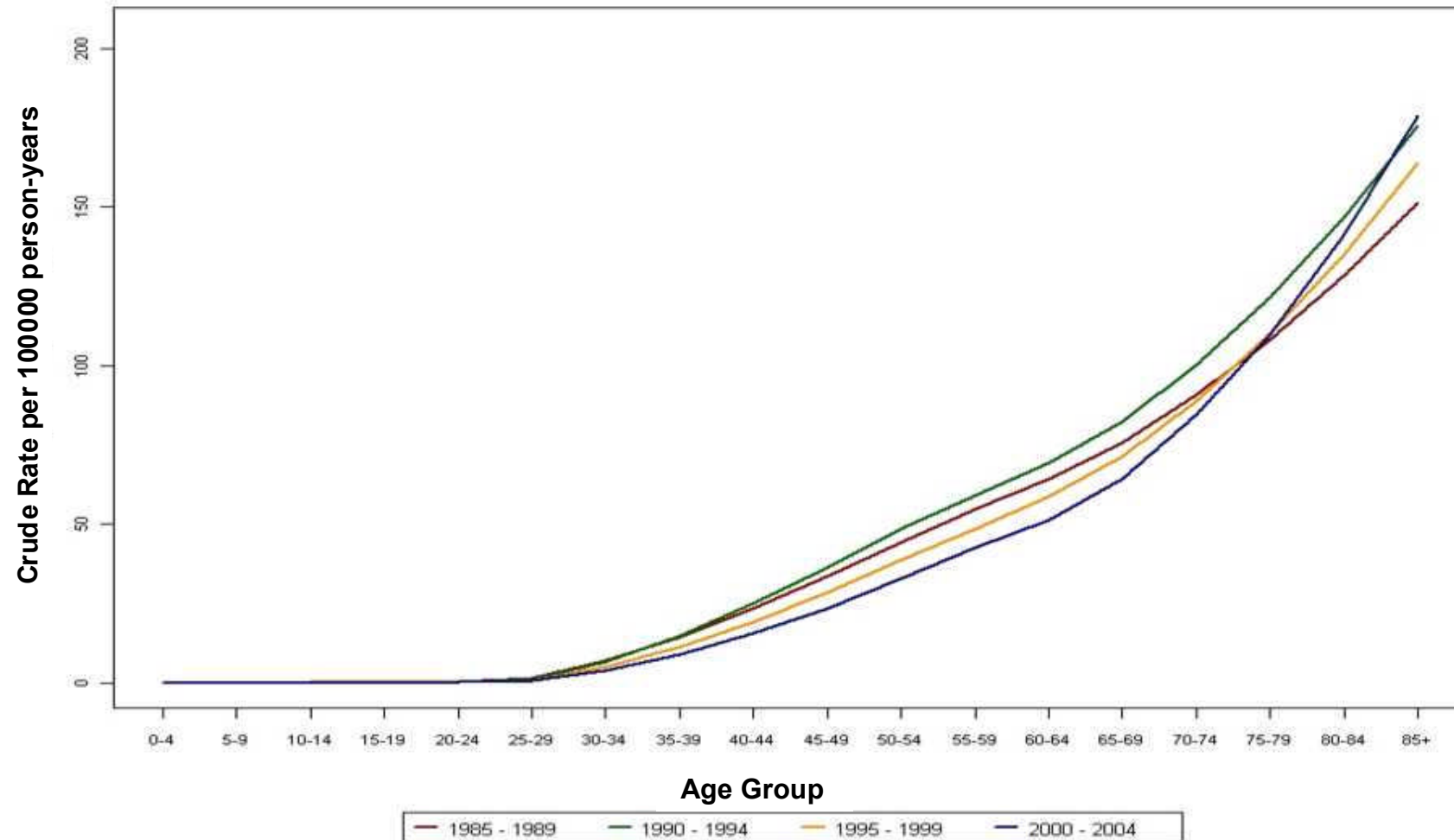
OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: COLORRECTAL CANCER



SOURCE: Catalan Mortality Registry

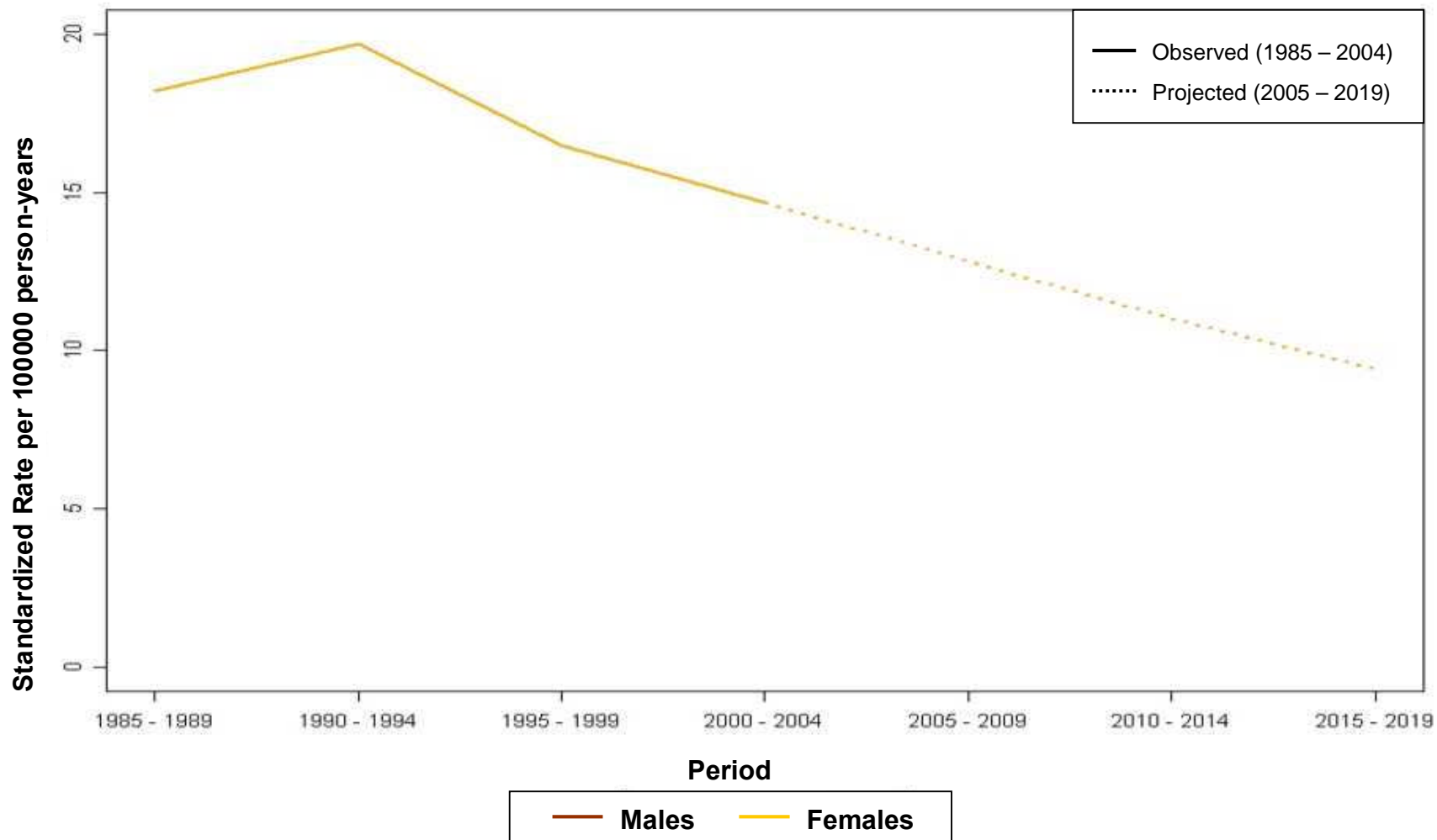
AGE-SPECIFIC MORTALITY RATES OF BREAST CANCER IN CATALONIA BY PERIOD

FEMALES



SOURCE: Catalan Mortality Registry

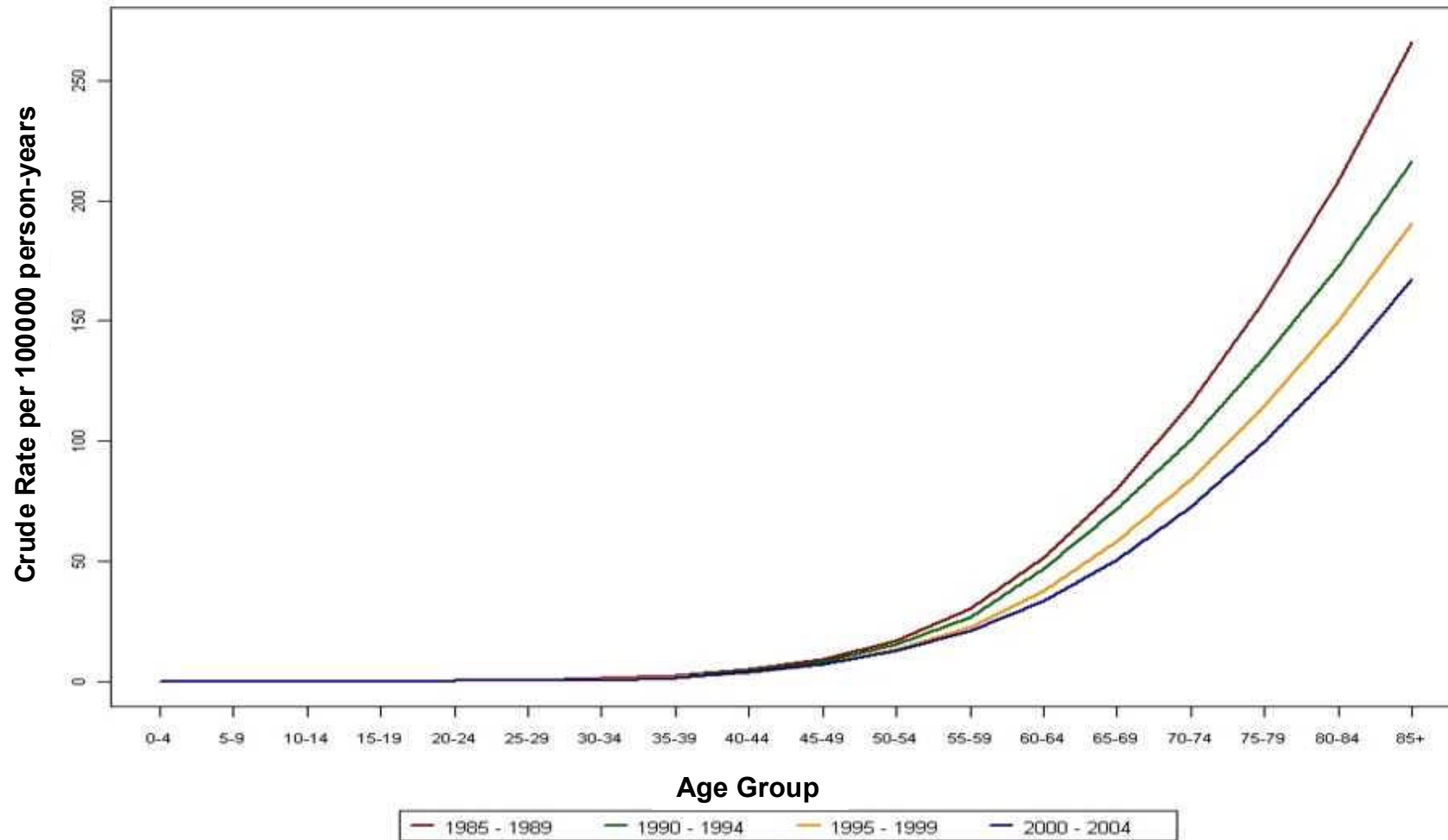
OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: BREAST CANCER



SOURCE: Catalan Mortality Registry

AGE-SPECIFIC MORTALITY RATES OF STOMACH CANCER IN CATALONIA BY PERIOD

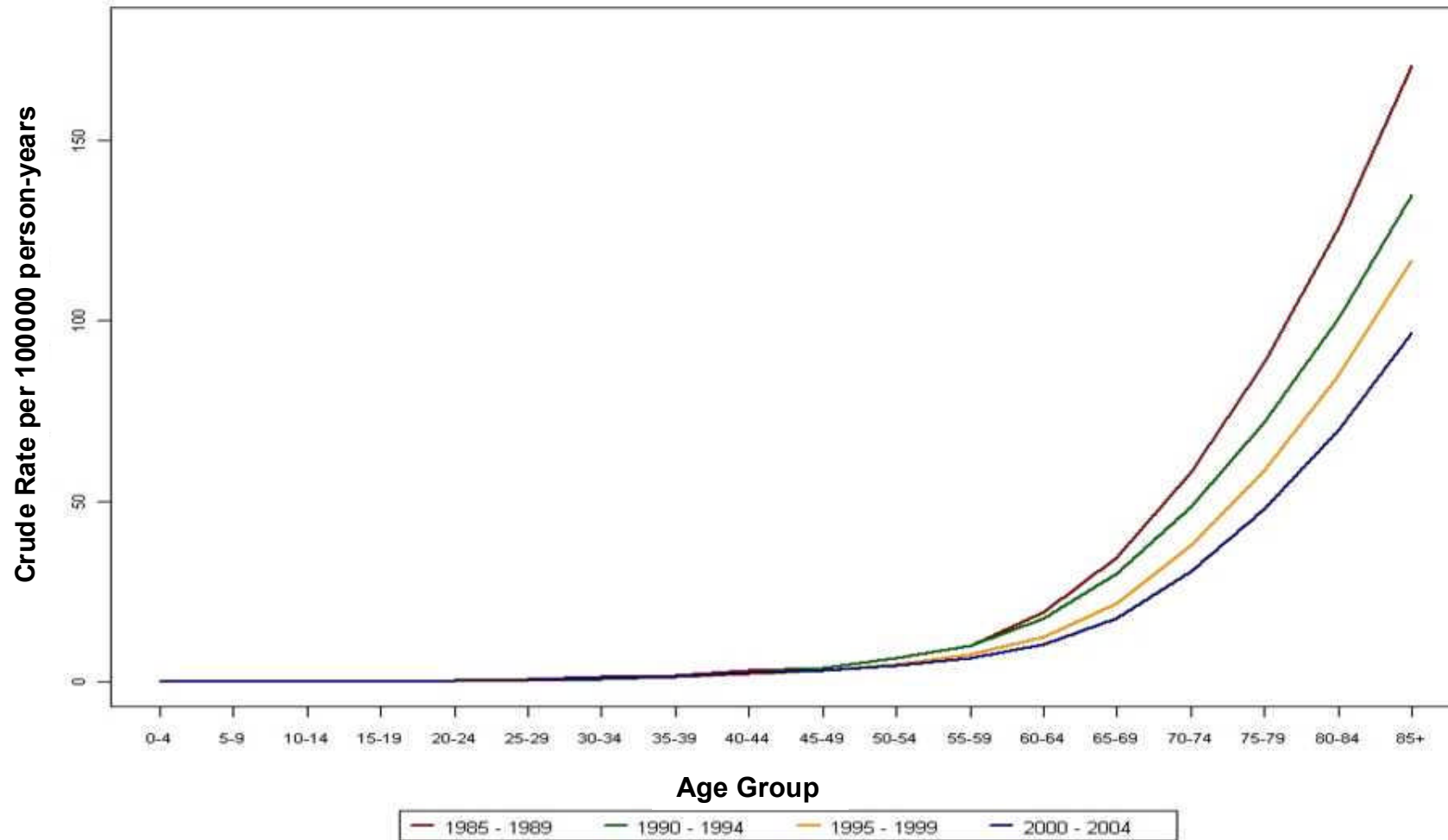
MALES



SOURCE: Catalan Mortality Registry

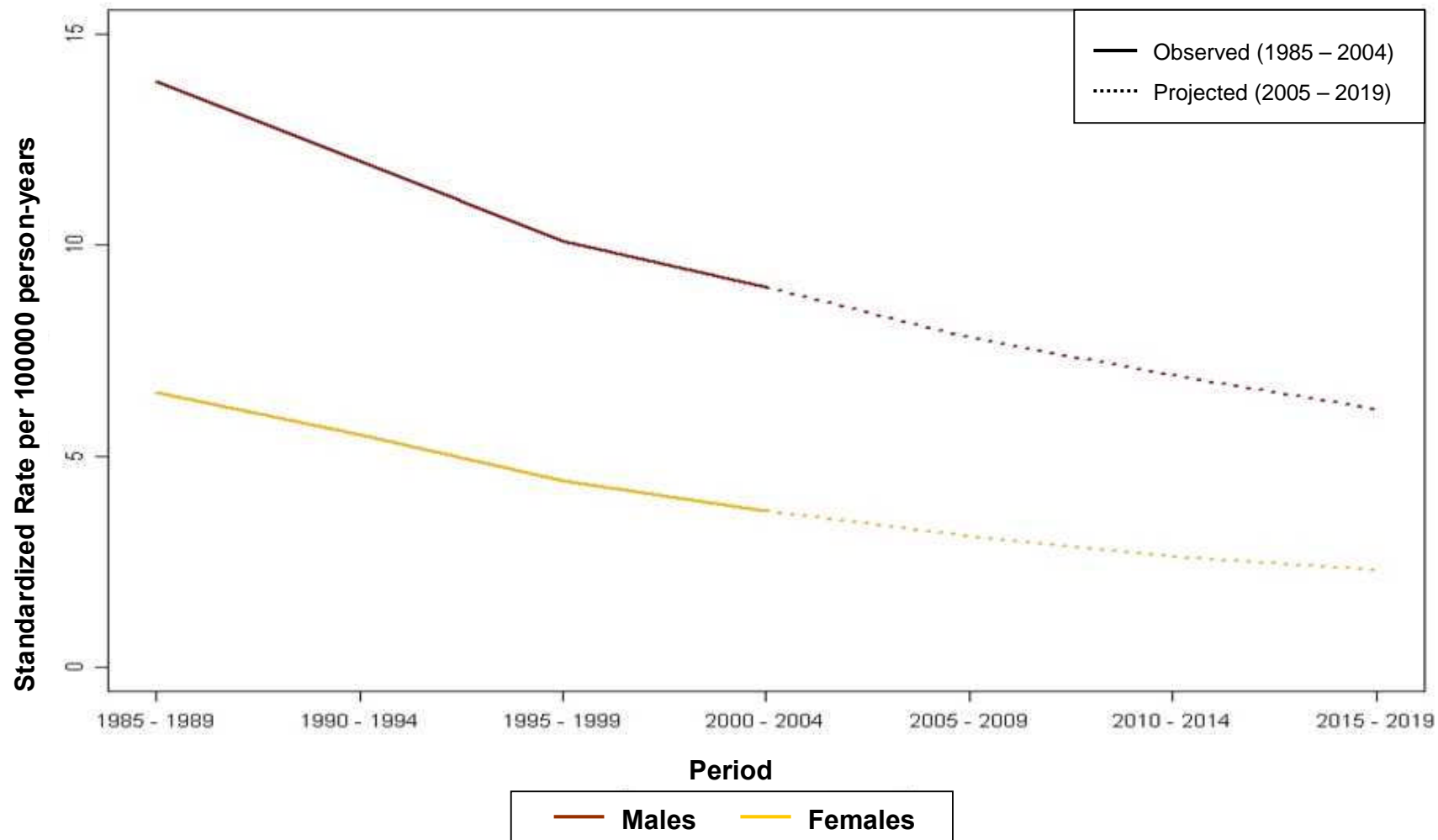
AGE-SPECIFIC MORTALITY RATES OF STOMACH CANCER IN CATALONIA BY PERIOD

FEMALES



SOURCE: Catalan Mortality Registry

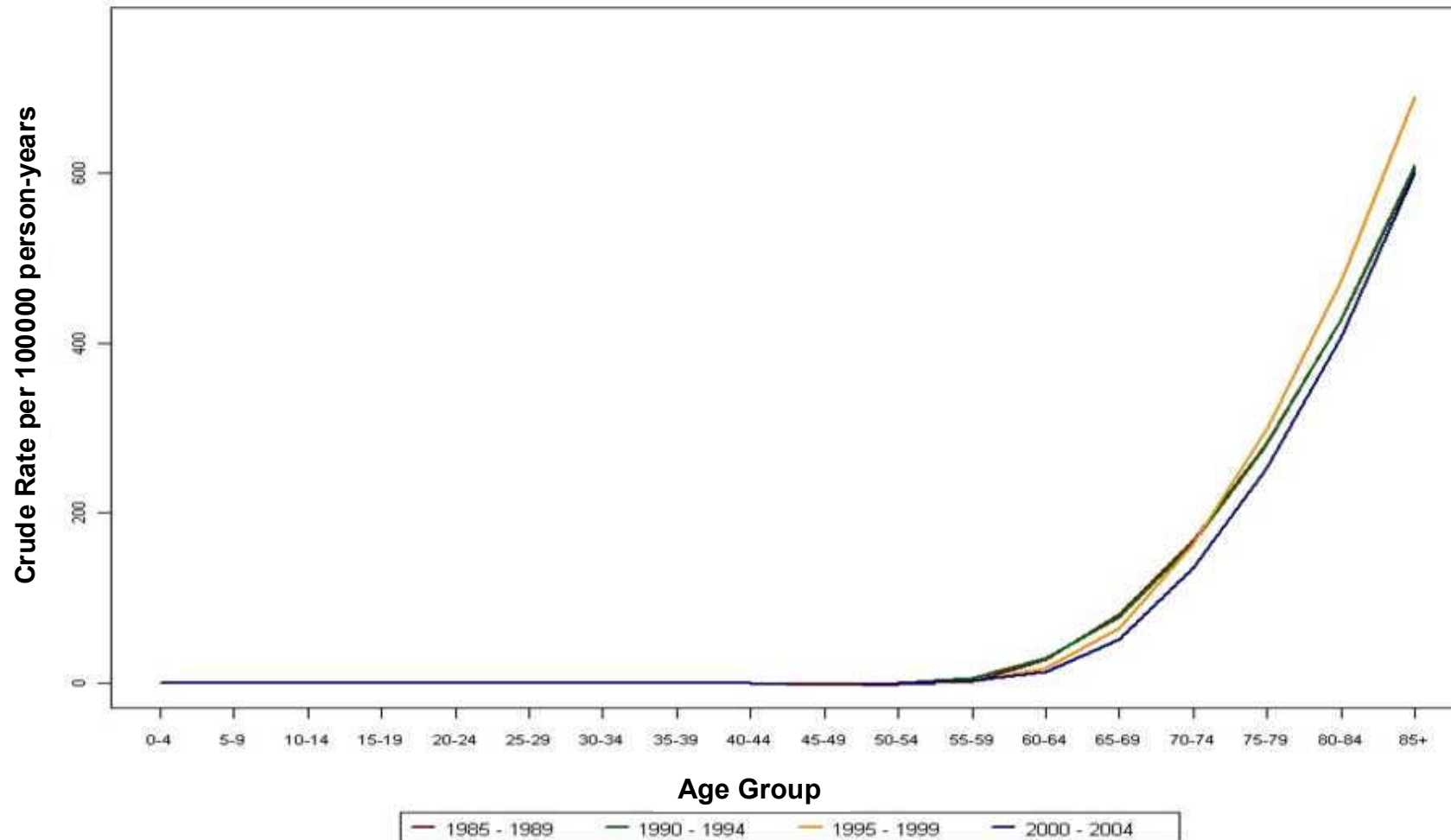
OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: STOMACH CANCER



SOURCE: Catalan Mortality Registry

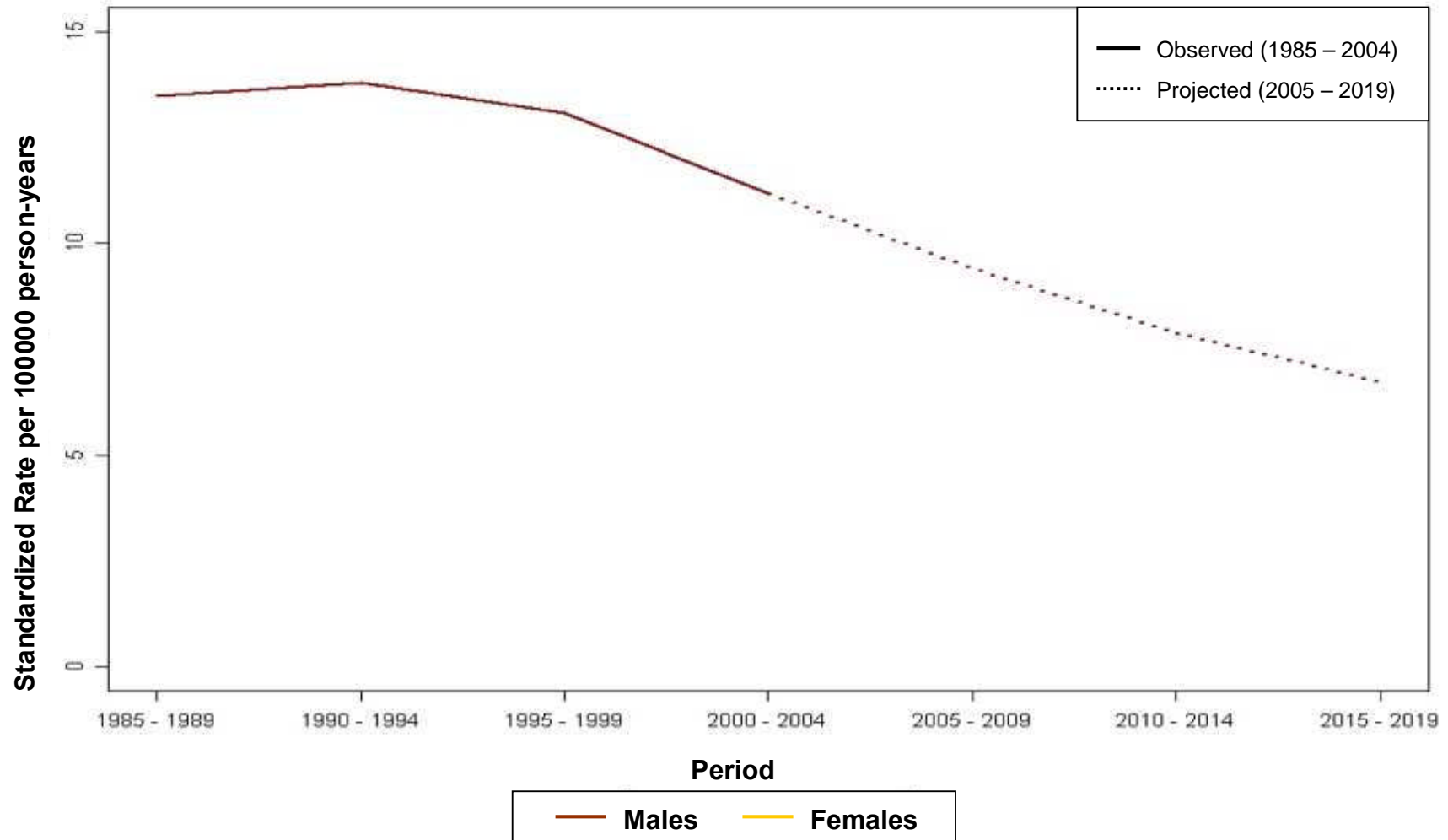
AGE-SPECIFIC MORTALITY RATES OF PROSTATE CANCER IN CATALONIA BY PERIOD

MALES



SOURCE: Catalan Mortality Registry

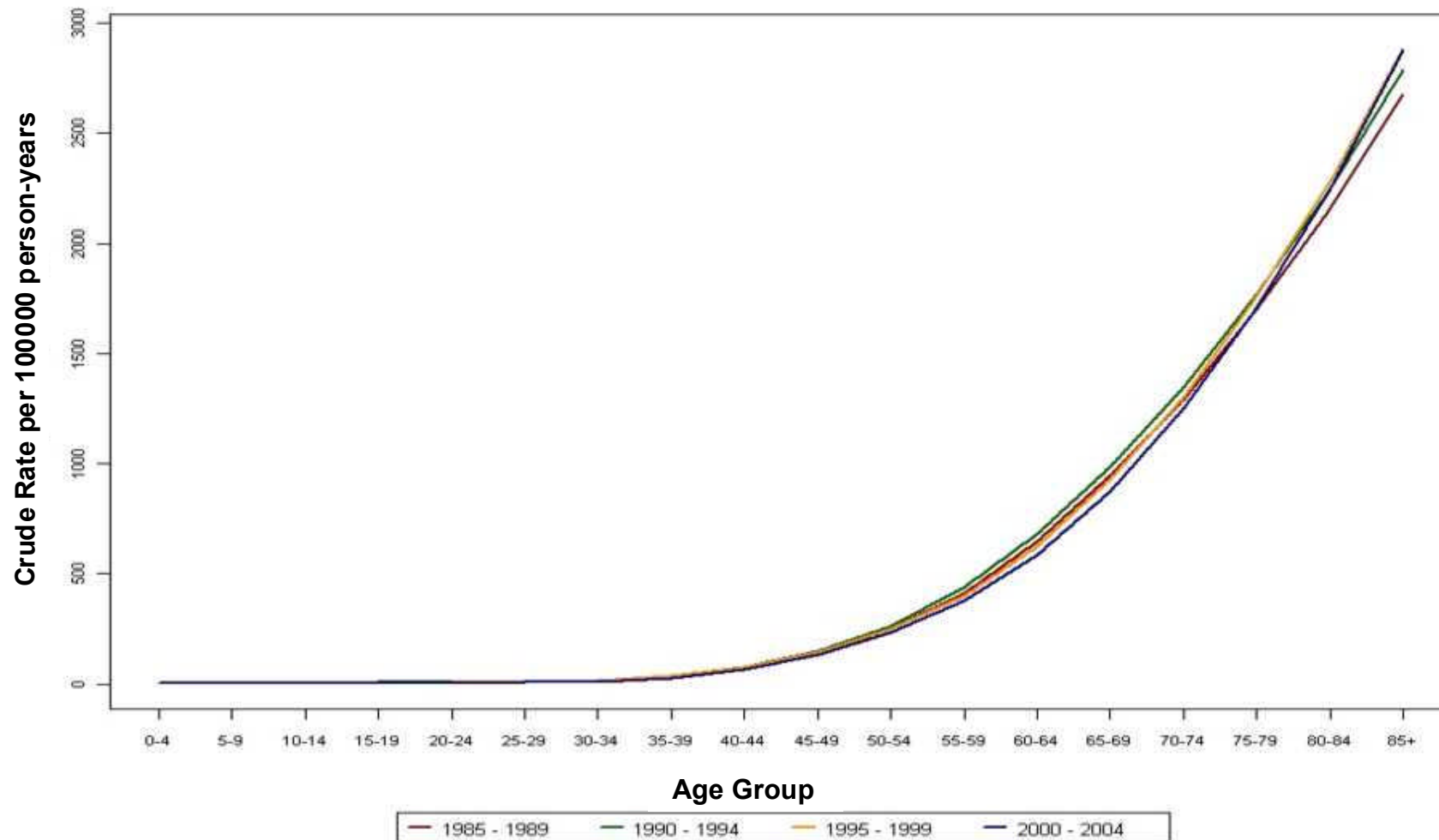
OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: PROSTATE CANCER



SOURCE: Catalan Mortality Registry

AGE-SPECIFIC MORTALITY RATES OF CANCER OF ALL SITES* IN CATALONIA BY PERIOD

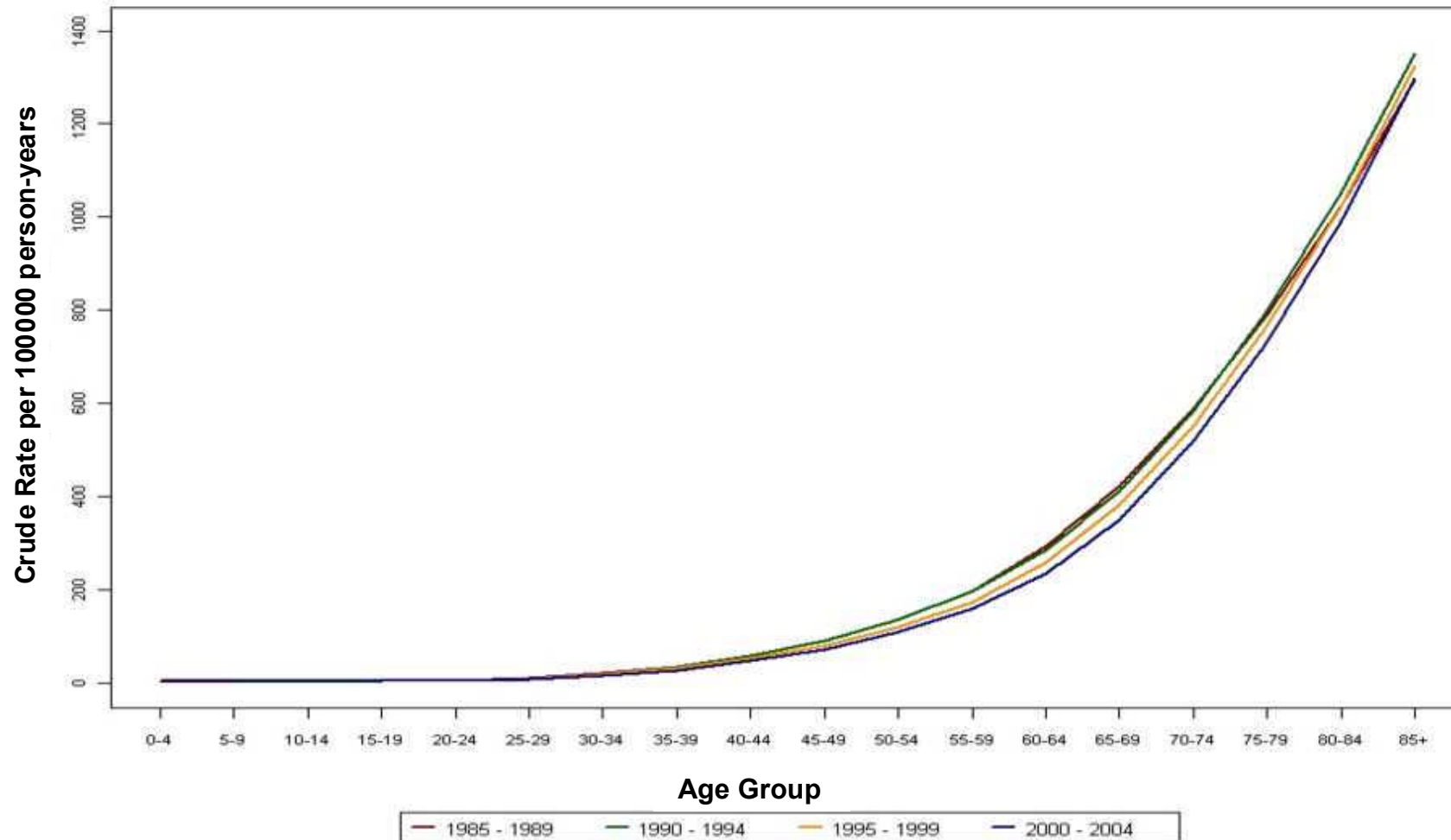
MALES



SOURCE: Catalan Mortality Registry
*Non-melanoma of the skin (C44) is excluded

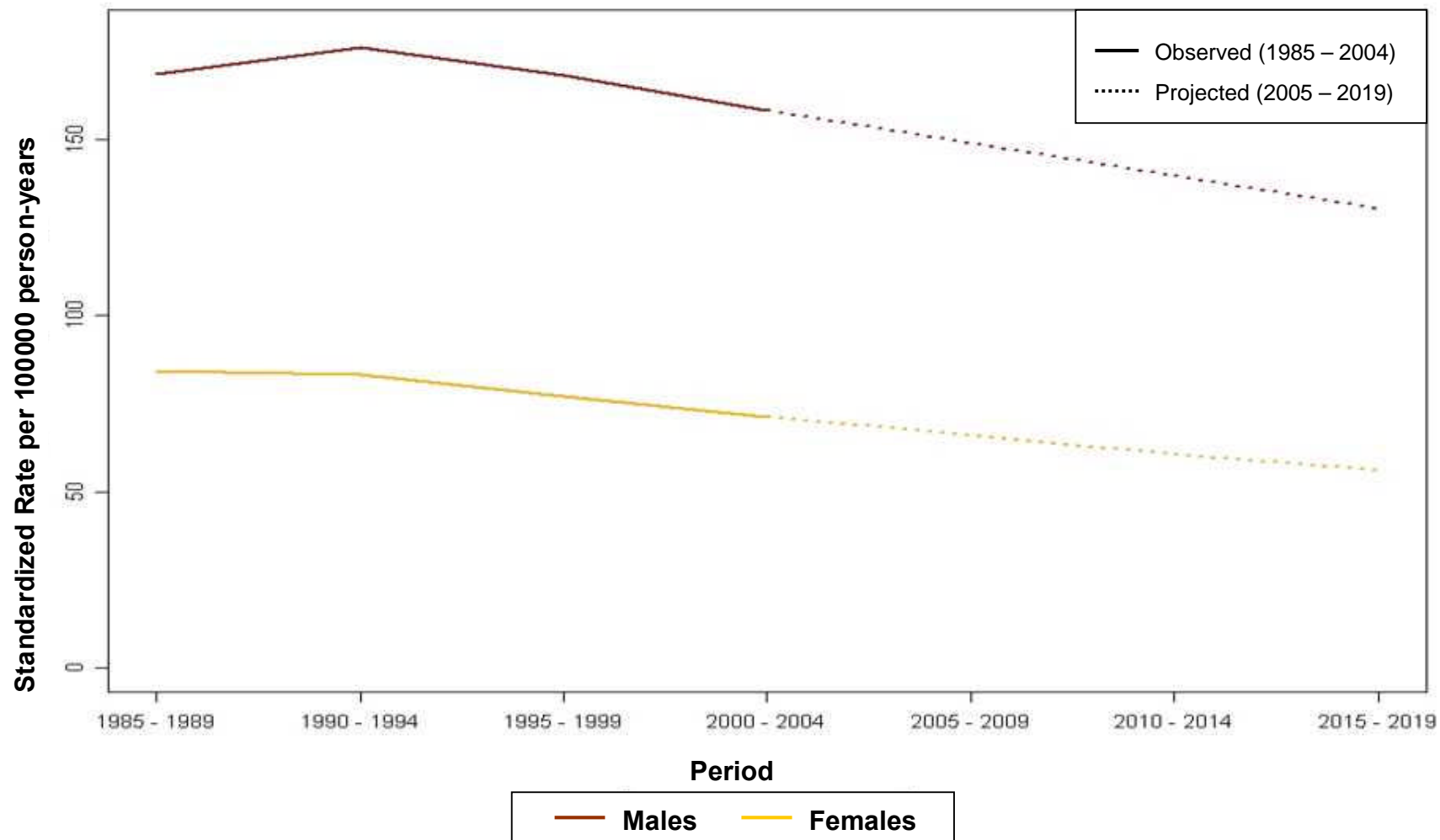
AGE-SPECIFIC MORTALITY RATES OF CANCER OF ALL SITES* IN CATALONIA BY PERIOD

FEMALES



SOURCE: Catalan Mortality Registry
*Non-melanoma of the skin (C44) is excluded

OBSERVED AND PREDICTED AGE-ADJUSTED MORTALITY RATES IN CATALONIA: CANCER OF ALL SITES*

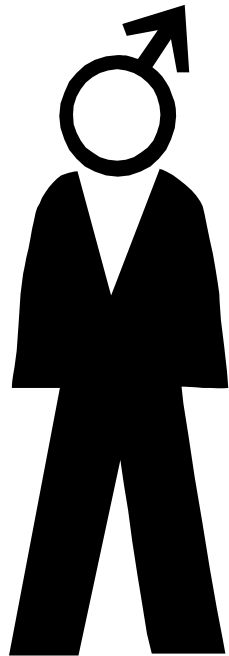


SOURCE: Catalan Mortality Registry
*Non-melanoma of the skin (C44) is excluded

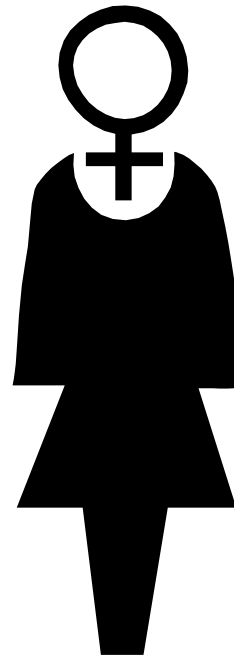
INCIDENCE

CANCER INCIDENCE IN GIRONA

1998 - 2002



- Prostate (20.7%)
- Lung (17.0%)
- Colorrectal (14.5%)
- Bladder (7.7%)
- Stomach (4.1%)
- Non-Hodgkin Lymphoma (3.4%)
- Oral Cavity and Pharynx (3.4%)
- Liver (2.9%)
- Kidney (2.7%)
- Larynx (2.7%)



- Breast (28.7%)
- Colorrectal (15.5%)
- Corpus Uteri (6.2%)
- Stomach (4.3%)
- Non-Hodgkin Lymphoma (4.3%)
- Ovary (4.1%)
- Melanoma of the skin (2.8%)
- Pancreas (2.7%)
- Lung (2.6%)
- Cervix Uteri (2.6%)

SOURCE: Girona population-based cancer registry

CANCER INCIDENCE TRENDS IN GIRONA 1985 – 2004

MALES	ICD – 10	APC ¹ (1995 – 2004)	
Prostate	C61	7.34 (6.79; 7.90)	▲▲▲▲
Lung	C33 – C34	-0.08 (-0.53; 0.38)	—
Colorrectal	C18 – C21	1.86 (1.27; 2.45)	▼
Bladder	C67	-0.66 (-1.33; 0.03)	—
Stomach	C16	-5.1 (-6.7; -3.47)	▼▼▼
ALL SITES but C44	all but C44	0.91 (0.84; 0.99)	▼

▲: APC from 1 to 2; ▲▲: APC >2 to 4; ▲▲▲: APC > 4 to 6; ▲▲▲▲: APC >6; ▼: APC from -1 to -2; ▼▼: APC < -2 to -4; ▼▼▼: APC < -4 to -6; ▼▼▼▼: APC < -6; —: APC from -1 to 1;

▲ APC increase statistically significant

▼ APC decrease statistically significant

— APC not statistically significant

SOURCE: Girona population-based cancer registry
¹APC: Annual Percent of Change

CANCER INCIDENCE TRENDS IN GIRONA 1985 – 2004

FEMALES	ICD – 10	APC¹ (1995 – 2004)	
Breast	C50	1.99 (1.6; 2.37)	▲
Colorrectal	C18 – C21	0.94 (-0.02; 1.91)	—
Corpus Uteri	C54	-0.92 (-2.85; 1.04)	—
Stomach	C16	-0.06 (-3.54; 3.53)	—
Non-Hodgkin Lymphoma	C82 – C85, C96	7.47 (4.27; 10.77)	▲▲▲▲
ALL SITES but C44	all but C44	0.92 (0.80; 1.04)	▼

▲: APC from 1 to 2; ▲▲: APC >2 to 4; ▲▲▲: APC > 4 to 6; ▲▲▲▲: APC >6; ▼: APC from - 1 to - 2; ▼▼: APC < - 2 to - 4; ▼▼▼: APC < - 4 to - 6; ▼▼▼▼: APC < - 6; —: APC from -1 to 1;

■ APC increase statistically significant

■ APC decrease statistically significant

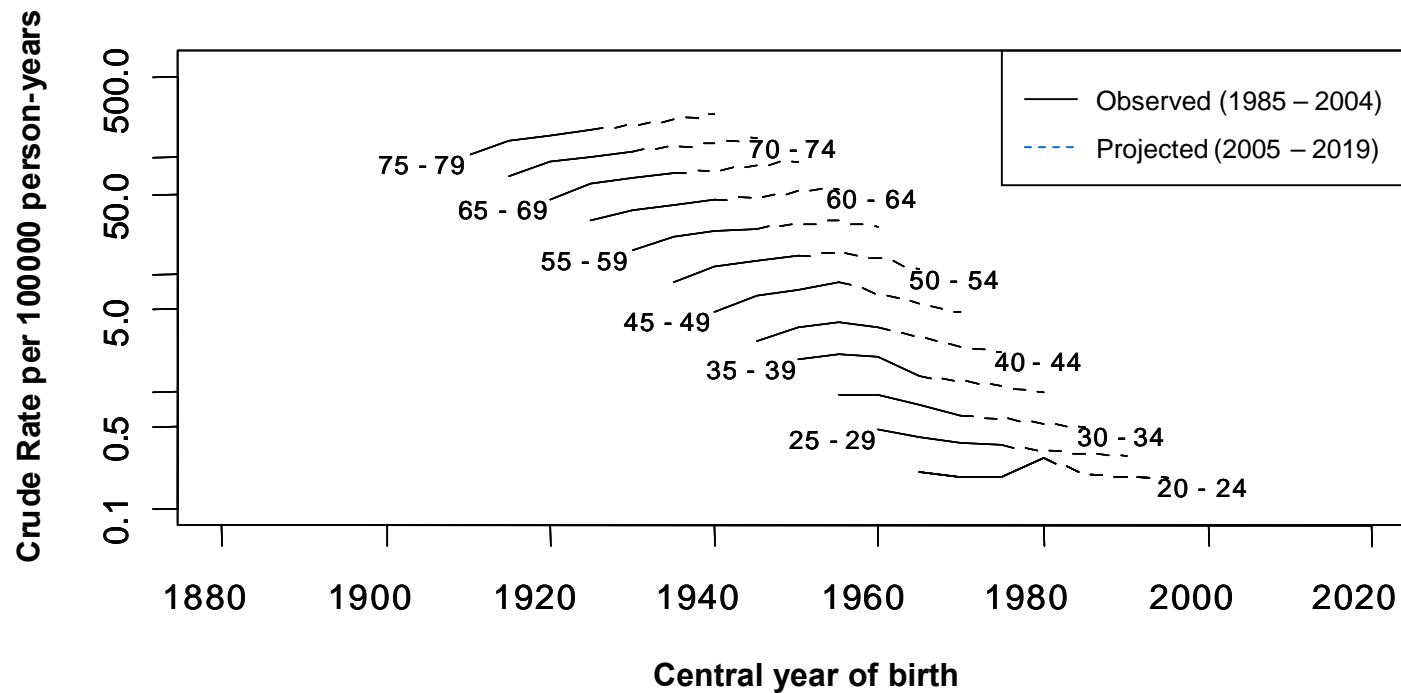
■ APC not statistically significant

SOURCE: Girona population-based cancer registry
¹APC: Annual Percent of Change

CANCER MORTALITY SPAIN

COLORRECTAL CANCER MORTALITY PROJECTIONS IN SPAIN BY AGE - GROUP

MALES

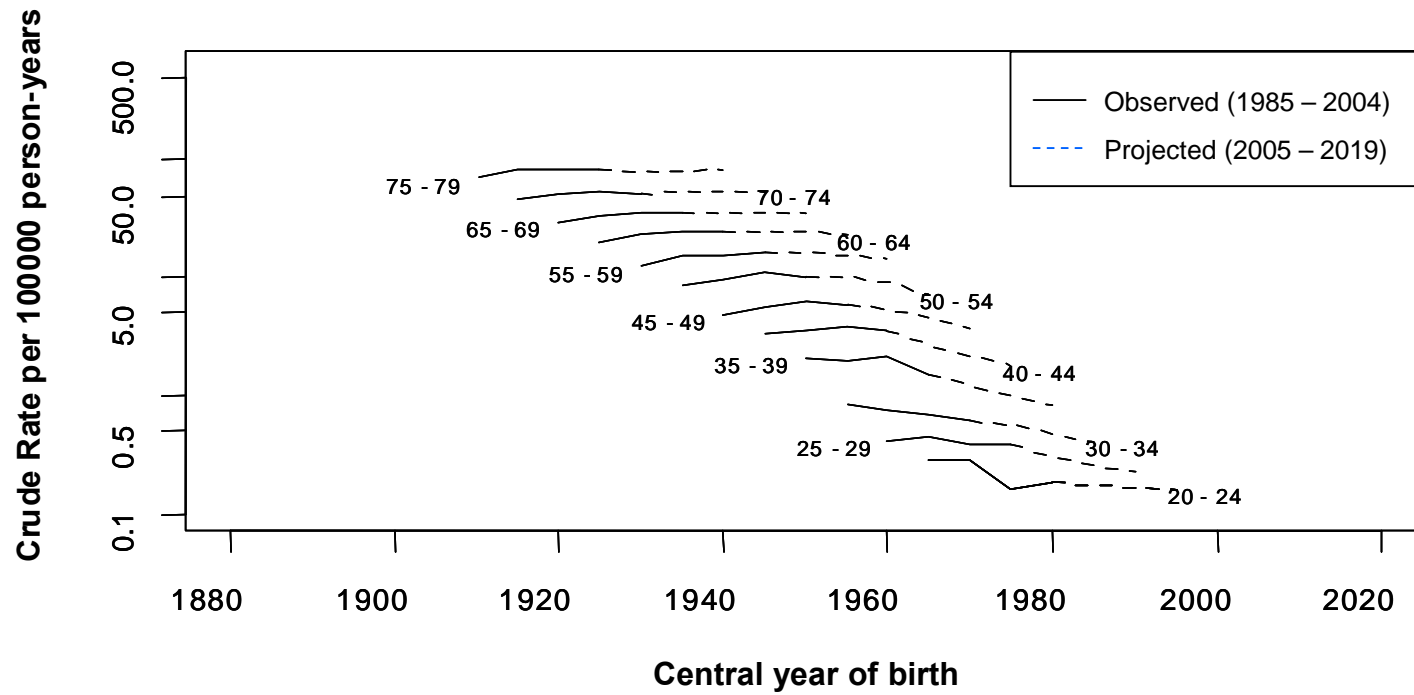


SOURCE: Instituto Nacional de Estadística

Cleries R, Ribes J, Navarro M, Esteban L, Pareja L, Binefa G, Peris M, Fernández E, Borrás JM., Colorectal cancer mortality in Spain: trends from 1985 to 2004 and Bayesian projection until 2019 (submitted)

COLORRECTAL CANCER MORTALITY PROJECTIONS IN SPAIN BY AGE - GROUP

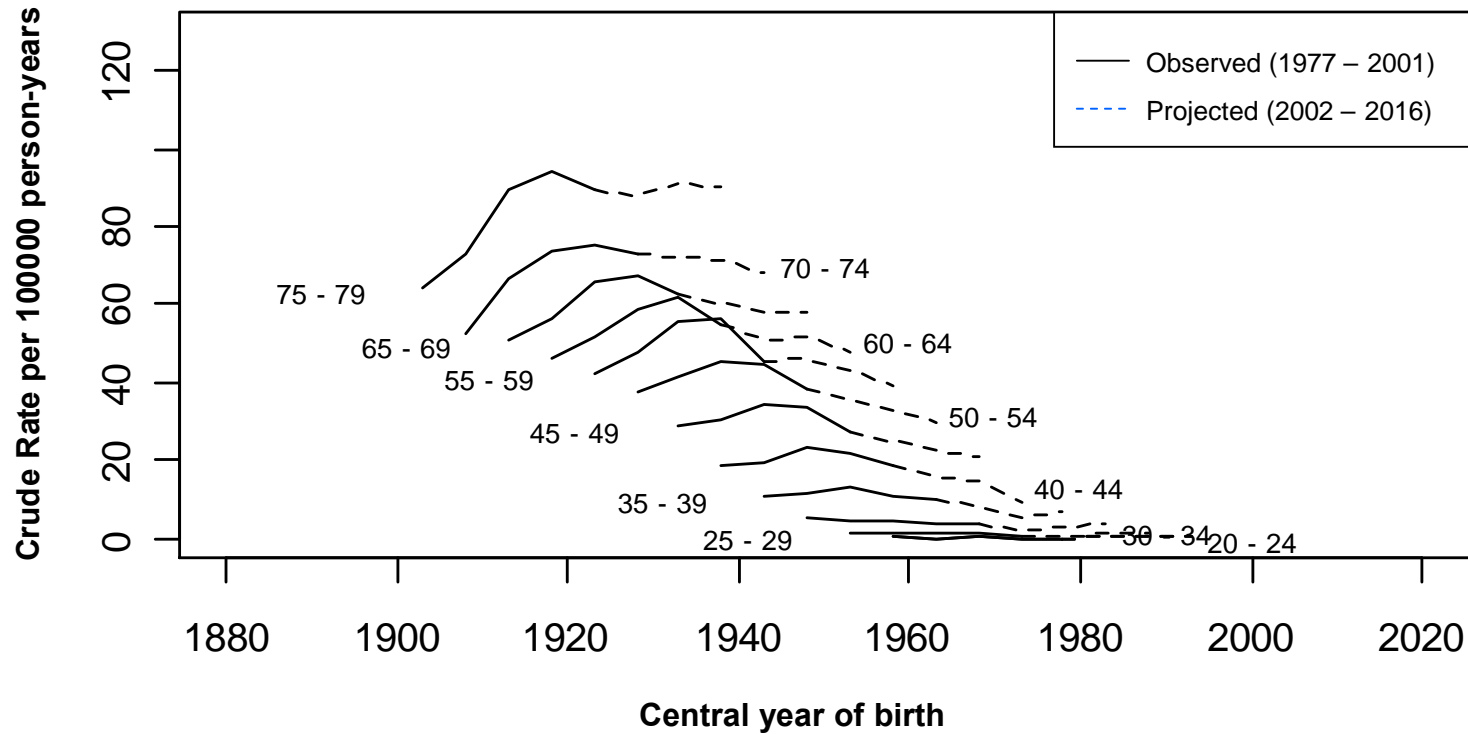
FEMALES



SOURCE: Instituto Nacional de Estadística

BREAST CANCER MORTALITY PROJECTIONS IN SPAIN BY AGE - GROUP

FEMALES



SOURCE: Instituto Nacional de Estadística

Cleries R, Ribes J, Esteban L, Martinez JM, Borrás JM., Time trends of breast cancer mortality in Spain during the period 1977-2001 and Bayesian approach for projections during 2002-2016. Ann Oncol. 2006 Dec;17(12):1783-91

TABLA 1.5. SUPERVIVENCIA DEL CÁNCER EN ESPAÑA POR LOCALIZACIÓN TUMORAL. RESULTADOS DEL PROYECTO EUROCARE-3. HOMBRES

Cáncer	Observaciones	Supervivencia	Supervivencia	Supervivencia	IC 95%
		1 año	3 años	5 años	
		Porcentaje	Porcentaje	Porcentaje	
Cavidad oral y faringe	2.021	71	42	36	[34-39]
Esófago	992	33	14	13	[10-16]
Estómago	2.848	44	28	27	[25-29]
Colon/Recto	5.044	72	57	53	[51-55]
Hígado	881	26	13	10	[8-13]
Páncreas	762	15	6	5	[3-8]
Laringe	2.214	88	71	67	[64-69]
Pulmón	8.789	32	14	12	[12-13]
Melanoma de piel	498	90	77	74	[69-79]
Próstata	3.635	86	70	65	[63-68]
Testículo	298	92	89	87	[84-91]
Vejiga	3.998	86	77	75	[73-78]
Riñón	999	71	58	56	[52-60]
Encéfalo, sistema nervioso	651	34	21	19	[16-22]
Tiroides	122	84	81	82	[68-98]
Linfoma no Hodgkin	277	87	79	73	[68-79]
Enfermedad de Hodgkin	1.083	69	57	53	[49-57]
Mieloma múltiple	350	70	46	34	[28-41]
Leucemia	764	64	50	47	[42-52]
Todas localizaciones excepto piel	36.021	62	47	44	[43-45]

Fuente: G. López-Abente *et al.*, *Situación del cáncer en España*, Madrid: Ministerio de Sanidad y Consumo, diciembre 2003. Elaborado a partir de Berrino *et al.*, *Survival of Cancer Patients in Europe: the EUROCARE-3 Study*, *Annals of Oncology*, volume 14, 2003, Supplement 5.

TABLA 1.6. SUPERVIVENCIA DEL CÁNCER EN ESPAÑA POR LOCALIZACIÓN TUMORAL. RESULTADOS DEL PROYECTO EUROCARE-3. MUJERES

Cáncer	Observaciones	Supervivencia	Supervivencia	Supervivencia	IC 95%
		1 año	3 años	5 años	
		Porcentaje	Porcentaje	Porcentaje	
Cavidad oral y faringe	322	78	55	52	[47-59]
Esófago	113	45	26	23	[16-35]
Estómago	1.546	48	33	30	[28-33]
Colon/Recto	3.709	73	58	55	[53-57]
Hígado	349	26	13	12	[8-16]
Páncreas	646	15	7	6	[5-9]
Laringe	42	92	79	80	[65-98]
Pulmón	773	33	16	13	[11-16]
Melanoma de piel	695	98	91	90	[86-93]
Mama	9.814	94	84	78	[77-79]
Cuello del útero	985	86	72	69	[66-72]
Cuerpo del útero	1.741	89	78	75	[73-78]
Ovario	1.084	66	49	43	[40-46]
Vejiga	665	82	73	70	[66-75]
Riñón	465	76	64	61	[56-66]
Encéfalo, sistema nervioso	461	37	20	18	[14-22]
Tiroides	437	87	86	86	[81-90]
Linfoma no Hodgkin	191	89	80	76	[70-83]
Enfermedad de Hodgkin	924	72	60	55	[52-59]
Mieloma múltiple	340	74	54	38	[32-44]
Leucemia	539	62	49	44	[40-49]
Todas localizaciones excepto piel	24.699	72	60	56	[56-57]

Fuente: G. López-Abente *et al.*, *Situación del cáncer en España*, Madrid: Ministerio de Sanidad y Consumo, diciembre 2003. Elaborado a partir de Berrino *et al.*, *Survival of Cancer Patients in Europe: the EUROCARE-3 Study*, *Annals of Oncology*, volume 14, 2003, Supplement 5.

TABLA 1.7. ESTIMACIÓN DE LOS COSTES TOTALES DE CÁNCER (*) EN ESPAÑA
Datos actualizados a 2003. En euros

	Coste total	Coste directo	Hospitalización (1)	Tratamiento ambulatorio	Coste indirecto	Mortalidad prematura	Incapacidad permanente (IP)	Incapacidad transitoria (IT)
Andalucía	258.223.155	187.141.350	4.493.648	142.647.702	71.081.805	34.589.144	32.534.358	3.958.303
Aragón	55.222.690	40.116.251	11.665.658	28.450.593	15.106.439	6.984.181	7.190.117	932.142
Asturias	54.385.230	40.532.927	11.250.605	29.282.322	13.852.303	6.375.310	6.632.507	844.485
Baleares	35.610.075	23.225.942	5.250.538	17.975.404	12.384.133	5.872.672	5.827.350	684.111
Canarias	55.659.944	37.019.763	8.464.139	28.555.624	18.640.181	8.949.827	8.617.863	1.072.491
Cantabria	22.494.205	14.776.319	3.337.178	11.439.141	7.717.886	4.016.627	3.302.498	398.760
Castilla y León	114.244.218	88.945.564	23.896.299	65.049.265	25.298.654	11.860.850	11.901.368	1.536.436
Castilla-La Mancha	65.468.983	48.901.030	11.343.883	37.557.147	16.567.953	7.716.315	7.850.403	1.001.234
Cataluña	307.879.651	198.790.493	55.997.630	142.792.863	109.089.158	54.238.810	48.698.847	6.151.501
Com. Valenciana	164.872.616	112.687.488	25.853.296	86.834.192	52.185.128	24.965.514	24.192.559	3.027.056
Extremadura	41.150.683	30.681.590	7.552.033	23.129.557	10.469.093	5.096.242	4.778.824	594.027
Galicia	128.279.235	93.348.733	27.146.187	66.202.546	34.930.502	16.375.408	16.429.951	2.125.142
Madrid	239.756.237	149.030.773	39.761.967	109.268.806	90.725.464	46.629.497	39.212.493	4.883.475
Murcia	40.070.822	29.449.513	6.275.134	23.174.379	10.621.309	5.422.835	4.627.576	570.897
Navarra (C. Foral)	24.683.406	16.487.628	3.814.396	12.673.232	8.195.778	4.139.721	3.573.122	482.934
País Vasco	105.603.723	62.123.374	14.365.341	47.758.033	43.480.349	21.351.055	19.499.624	2.629.669
La Rioja	12.950.798	9.286.396	2.493.452	6.792.944	3.664.402	1.858.983	1.573.728	231.690
Ceuta y Melilla	3.568.637	2.393.922	368.962	2.024.960	1.174.715	644.181	476.528	54.006
España	1.730.124.306	1.184.939.054	303.330.344	881.608.710	545.185.252	267.087.173	246.919.719	31.178.361

(*) Tumores: colorrectales, mama, próstata y cérvix.

(1) Según datos de CMBD y Encuesta de Morbilidad Hospitalaria (INE) referidos al año 2000.

Fuentes: Antoñanzas y col., *Estudio de costes directos del tratamiento del cáncer en España*. Oliva y col., *Informe sobre las pérdidas de productividad ocasionadas por el cáncer en España*.