



Supporting Information

Supplementary methods and results

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Appendix to: Whiteman DC, Neale RE, Baade P, et al. Changes in the incidence of melanoma in Australia, 2006–2021, by age group and ancestry: a modelling study. *Med J Aust* 2024; doi: 10.5694/mja2.52404.

Supplementary methods

1. Melanoma incidence rates for other countries

We obtained data on incident invasive melanoma cases from population-based cancer registries in Australia, New Zealand, United States (whites only), Sweden, Norway, and England for the period 2000–2018. Australian melanoma incidence and population data were obtained from the Australian Institute of Health and Welfare.¹ All data for New Zealand were obtained from the New Zealand Cancer Registry via direct request. US data were obtained from the Surveillance, Epidemiology, and End Results (SEER) program of the National Cancer Institute (nine registries), currently covering about 9.4% of the US population.² Melanoma incidence data and population denominators for Sweden and Norway were sourced from NORDCAN.³ For England, all data were obtained via direct request; melanoma incidence data from the National Cancer Registration and Analysis Service (NCRAS), and population denominators from the Office for National Statistics for England.

2. Ancestry-based risk of melanoma

The Australian census asks respondents about the ancestry of both parents, if known. We used the ancestry rubrics of the ABS Australian Standard Classification of Cultural and Ethnic Groups⁴ to classify parents of respondents into three groups of melanoma risk:

Broad group		Ancestral melanoma risk
1	Oceanian	Low
2	North-West European	High
3	Southern And Eastern European	High
4	North African And Middle Eastern	Medium
5	South-East Asian	Low
6	North-East Asian	Low
7	Southern And Central Asian	Low
8	Peoples Of The Americas	Medium
9	Sub-Saharan African	Low

The broad ancestral groups include subgroups for which ancestral melanoma risk is very likely to deviate from the ancestral risk assigned to the broad category. For example, group 1 ‘Oceanian’ includes the following 2- and 4-digit classifications (nec = not elsewhere classified):

11	Australian peoples	
	1101	Australian
	1102	Australian Aboriginal
	1103	Australian South Sea Islander
	1104	Torres Strait Islander
	1105	Norfolk Islander
12	New Zealand Peoples	
	1201	Maori
	1202	New Zealander
13	Melanesian and Papuan	

	1301	New Caledonian
	1302	Ni-Vanuatu
	1303	Papua New Guinean
	1304	Solomon Islander
	1399	Melanesian and Papuan, nec
14	Micronesian	
	1401	I-Kiribati
	1402	Nauruan
	1499	Micronesian, nec
15	Polynesian	
	1501	Cook Islander
	1502	Fijian
	1503	Niuean
	1504	Samoan
	1505	Tongan
	1506	Hawaiian
	1507	Tahitian
	1508	Tokelauan
	1511	Tuvaluan
	1512	Pitcairn
	1599	Polynesian, nec

While most of the rubrics in Group 1 “Oceania” align with the overall designation of low ancestral risk of melanoma, the rubrics “1101” [Australian] and “1202” [New Zealand]” are most frequently reported by people of European ancestry whose forebears first migrated from Europe several generations ago. We therefore assigned these rubrics to the high risk ancestry group. We similarly scrutinised all four digit rubrics for other ancestral groups, and made assignments to high, medium, and low risk groups accordingly.

Mixed ancestry

We also determined the melanoma risk for each person based on the combinations of parental risk.

Combinations of parental ancestral risk	Derived ancestral risk of individual
High/High	High
High/Medium	Medium
High/Low	Medium
Medium/Low	Low
Low/Low	Low
High/Missing	High
Low/Missing	Low
Medium/Missing	Medium
Missing/Missing	Imputed [see below]

Imputation of melanoma risk for respondents with missing ancestry data for both parents

A sizeable proportion of census respondents (11% in some years) did not report ancestry data for either parent (“completely missing”). In this case, we applied the ancestry distributions for people with non-missing ancestry data according to their country of birth, 5-year age group (18 groups), and sex. In this way, we allocated all individuals in each census year to either high, medium or low risk for melanoma. In sensitivity analyses, we assigned all people with completely missing ancestry data to the high risk or low risk melanoma groups.

These methods were used for four census events: 2006, 2011, 2016 and 2021.

Estimating melanoma incidence rates for Australians with medium or low risk ancestry

We used two different sources of cancer registration data to infer sex- and age-specific melanoma incidence rates for representative ancestral populations:

1. SEER (17 registries, for years 2006, 2011, 2016 and 2020; 2021 data not available):
 - Low risk = melanoma rates for non-Hispanic Asians/Pacific Islanders and non-Hispanic Blacks combined;
 - Medium risk = rates for non-Hispanic American Indian/Alaska Natives.
2. GLOBOCAN (2020 data used for all four time points; no data beyond 2010 available)
 - Low risk = rates for SE Asia;
 - Medium risk = rates for South American hub.

The rates for the medium risk group were similar with the two sources, but the rates for the low risk group were slightly lower in GLOBOCAN than in SEER.

Numbers of melanoma diagnoses in Australia

We obtained registration data for invasive melanomas from the Australian Institute of Health and Welfare (sex- and age-specific counts for four time points (2006, 2011 and 2016; predicted for 2021).

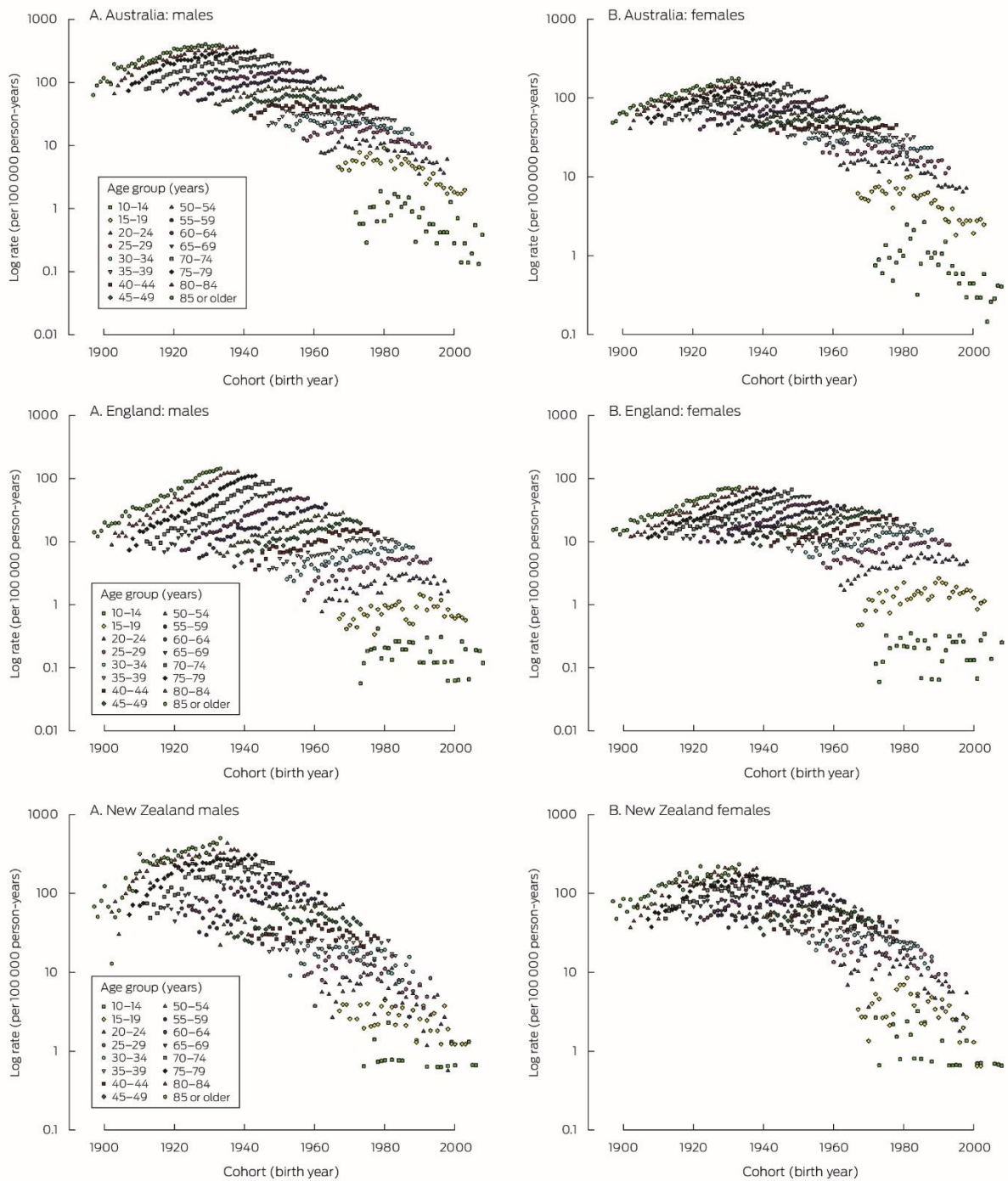
Table 1. Melanoma rates per 100 000 population for the moderate and low risk groups in the SEER and GLOBOCAN databases

Age group	SEER rates for 2021				GLOBOCAN rates for 2021			
	Males		Females		Males		Females	
	Moderate risk	Low risk	Moderate risk	Low risk	Moderate risk	Low risk	Moderate risk	Low risk
0-4	0.12	0.00	0.13	0.00	0.06	0.03	0.03	0.03
5-9	0.10	0.00	0.00	0.00	0.04	0.03	0.06	0.01
10-14	0.10	0.10	0.20	0.10	0.06	0.02	0.08	0.01
15-19	0.20	0.00	0.10	0.00	0.13	0.03	0.18	0.02
20-24	0.40	0.10	0.40	0.20	0.46	0.04	0.44	0.04
25-29	0.30	0.10	1.30	0.20	0.68	0.06	0.76	0.09
30-34	1.10	0.10	2.10	0.60	1.10	0.13	1.30	0.13
35-39	1.40	0.70	2.70	0.70	1.50	0.17	1.80	0.24
40-44	1.80	0.70	3.10	0.70	2.20	0.30	2.30	0.35
45-49	2.50	0.60	4.90	1.00	3.10	0.47	3.00	0.46
50-54	3.10	1.00	5.00	1.10	4.40	0.73	3.90	0.60
55-59	6.60	1.40	5.70	1.40	6.40	0.90	5.20	0.81
60-64	7.60	2.30	9.10	2.60	8.90	1.50	6.80	1.10
65-69	9.00	2.40	9.70	2.60	11.10	2.00	8.10	1.50
70-74	14.40	4.30	10.50	1.20	14.30	2.40	10.80	2.00
75-79	25.00	5.20	12.40	4.40	21.40	3.00	18.80	2.40
80-84	20.40	6.10	19.50	2.40	21.40	3.00	18.80	2.40
85+	35.90	4.10	15.10	4.60	21.40	3.00	18.80	2.40

* US SEER 17: Hispanics (any race) as moderate risk group, non-Hispanic Asians/Pacific Islanders and Blacks as low risk group.

GLOBOCAN: South American hub as moderate risk group, South East Asia as low risk group.

Figure 1. Age-specific incidence rate of invasive melanoma among people aged 10 years or older, six countries, 2000–2018, by sex (two pages)*



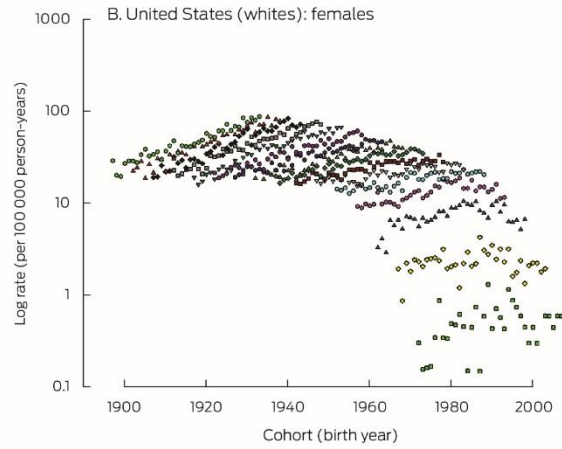
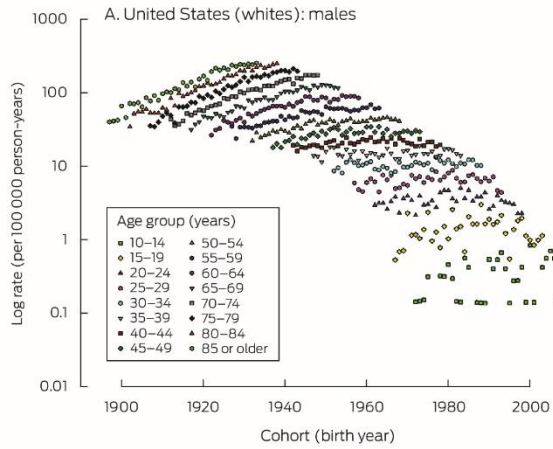
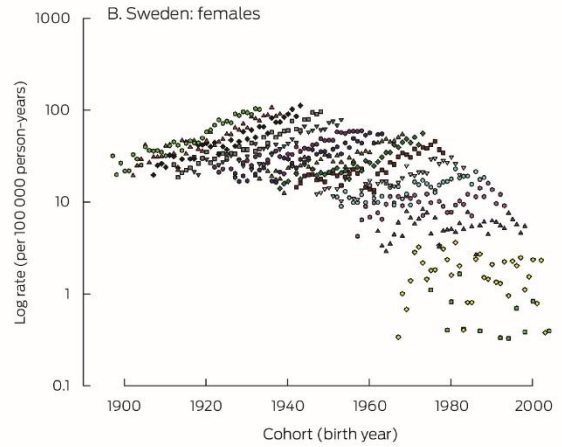
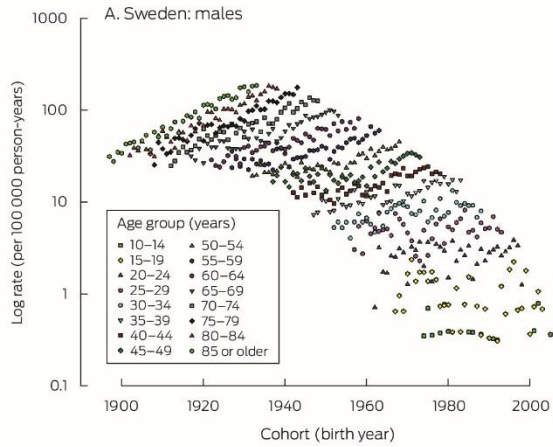
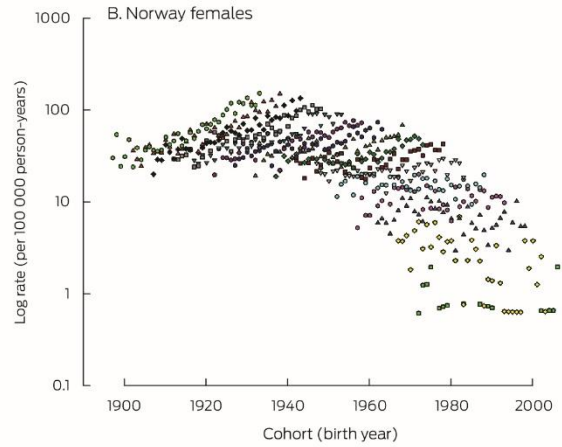
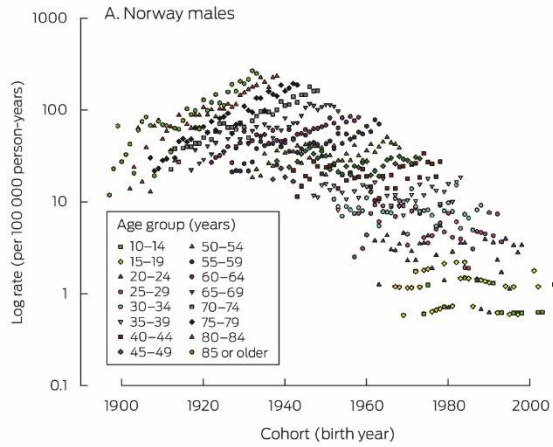


Table 2. Proportion of the Australian population in ancestral risk groups by 5-year age groups in four census periods

Age group (years)	2006			2011			2016			2021		
	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk
	MEN											
0–4	5.5%	0.6%	0.6%	5.4%	0.7%	0.8%	4.7%	0.7%	1.1%	3.6%	1.1%	1.3%
5–9	5.7%	0.5%	0.6%	5.2%	0.6%	0.8%	5.0%	0.6%	1.0%	4.0%	1.1%	1.4%
10–14	6.0%	0.5%	0.7%	5.3%	0.5%	0.8%	4.8%	0.5%	0.9%	4.3%	1.0%	1.2%
15–19	5.8%	0.5%	0.8%	5.4%	0.5%	0.9%	4.8%	0.5%	1.0%	4.1%	0.8%	1.0%
20–24	5.4%	0.5%	1.1%	5.1%	0.5%	1.3%	4.8%	0.5%	1.5%	4.1%	0.8%	1.5%
25–29	5.1%	0.4%	0.9%	5.1%	0.5%	1.5%	4.9%	0.5%	1.7%	4.4%	0.8%	1.9%
30–34	5.8%	0.4%	0.8%	5.0%	0.5%	1.3%	4.9%	0.6%	1.8%	4.5%	0.8%	1.9%
35–39	6.2%	0.4%	0.7%	5.6%	0.4%	1.0%	4.8%	0.5%	1.4%	4.5%	0.8%	2.0%
40–44	6.3%	0.3%	0.8%	5.9%	0.4%	0.8%	5.3%	0.4%	1.1%	4.3%	0.6%	1.5%
45–49	6.3%	0.3%	0.7%	5.8%	0.3%	0.8%	5.5%	0.4%	0.9%	4.8%	0.5%	1.1%
50–54	5.8%	0.2%	0.6%	5.7%	0.3%	0.7%	5.4%	0.3%	0.8%	5.0%	0.5%	0.9%
55–59	5.7%	0.2%	0.4%	5.3%	0.2%	0.5%	5.3%	0.2%	0.6%	4.8%	0.4%	0.8%
60–64	4.5%	0.2%	0.2%	5.1%	0.2%	0.4%	4.8%	0.2%	0.5%	4.7%	0.3%	0.7%
65–69	3.6%	0.1%	0.2%	3.9%	0.1%	0.2%	4.5%	0.2%	0.4%	4.2%	0.2%	0.5%
70–74	2.8%	0.1%	0.1%	3.0%	0.1%	0.2%	3.4%	0.1%	0.2%	3.9%	0.2%	0.4%
75–79	2.4%	0.0%	0.1%	2.2%	0.0%	0.1%	2.5%	0.1%	0.1%	2.8%	0.1%	0.2%
80–84	1.6%	0.0%	0.0%	1.7%	0.0%	0.1%	1.6%	0.0%	0.1%	1.8%	0.1%	0.1%
85+	1.0%	0.0%	0.0%	1.2%	0.0%	0.0%	1.5%	0.0%	0.1%	1.5%	0.0%	0.1%
	WOMEN											
0–4	5.1%	0.5%	0.5%	5.0%	0.6%	0.7%	4.3%	0.6%	1.0%	3.4%	1.0%	1.2%
5–9	5.2%	0.5%	0.6%	4.8%	0.6%	0.7%	4.7%	0.6%	0.9%	3.7%	1.0%	1.3%
10–14	5.5%	0.5%	0.6%	4.9%	0.5%	0.7%	4.4%	0.5%	0.8%	4.0%	0.9%	1.1%
15–19	5.4%	0.5%	0.7%	5.0%	0.5%	0.8%	4.4%	0.5%	1.0%	3.8%	0.8%	1.0%
20–24	5.1%	0.5%	1.0%	4.9%	0.5%	1.3%	4.6%	0.5%	1.5%	3.9%	0.8%	1.4%
25–29	5.0%	0.4%	0.9%	4.9%	0.5%	1.5%	4.7%	0.6%	1.8%	4.2%	0.8%	1.8%
30–34	5.8%	0.4%	0.9%	4.9%	0.5%	1.3%	4.8%	0.6%	1.9%	4.4%	0.8%	2.2%
35–39	6.2%	0.4%	0.9%	5.5%	0.4%	1.1%	4.7%	0.5%	1.5%	4.3%	0.8%	2.1%

Age group (years)	2006			2011			2016			2021		
	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk	High risk	Moderate risk	Low risk
40–44	6.2%	0.3%	0.9%	5.9%	0.4%	1.0%	5.2%	0.4%	1.2%	4.2%	0.6%	1.6%
45–49	6.2%	0.3%	0.8%	5.8%	0.3%	0.9%	5.4%	0.4%	1.0%	4.7%	0.5%	1.3%
50–54	5.7%	0.2%	0.7%	5.7%	0.3%	0.8%	5.3%	0.3%	0.9%	4.9%	0.5%	1.0%
55–59	5.5%	0.2%	0.4%	5.2%	0.2%	0.6%	5.2%	0.3%	0.8%	4.8%	0.4%	0.9%
60–64	4.4%	0.1%	0.3%	5.0%	0.2%	0.4%	4.8%	0.2%	0.6%	4.7%	0.3%	0.8%
65–69	3.5%	0.1%	0.2%	3.9%	0.1%	0.2%	4.5%	0.2%	0.4%	4.3%	0.3%	0.7%
70–74	3.0%	0.1%	0.1%	3.1%	0.1%	0.2%	3.5%	0.1%	0.2%	4.0%	0.2%	0.4%
75–79	2.8%	0.0%	0.1%	2.5%	0.1%	0.1%	2.7%	0.1%	0.2%	3.0%	0.1%	0.2%
80–84	2.3%	0.0%	0.1%	2.2%	0.0%	0.1%	2.0%	0.0%	0.1%	2.1%	0.1%	0.1%
85+	2.1%	0.0%	0.1%	2.3%	0.0%	0.1%	2.4%	0.0%	0.1%	2.4%	0.1%	0.1%

Table 3. Number of invasive cases for men and women in the moderate and low risk groups, by census time point.

Age group (years)	2006			2011			2016			2021		
	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group
	MEN											
0-4	0	0	0	1	0	0	1	0	0	0	0	0
5-9	0	0	0	1	0	0	0	0	0	0	0	0
10-14	3	0	0	5	0	0	4	0	0	0	0	0
15-19	31	0	0	18	0	0	13	0	0	7	0	0
20-24	60	0	0	44	0	0	37	0	0	40	0	0
25-29	110	0	0	99	0	0	89	1	0	76	0	0
30-34	171	0	0	141	0	0	159	1	1	136	1	0
35-39	223	1	0	193	1	0	217	1	0	216	1	2
40-44	307	1	1	313	1	1	348	1	1	329	1	1
45-49	408	1	1	384	1	1	478	1	1	523	2	1
50-54	498	1	1	514	2	1	593	2	1	651	2	1
55-59	689	2	1	689	1	1	849	2	2	901	3	1
60-64	659	2	1	962	2	1	993	2	1	1102	3	2
65-69	692	1	1	861	3	1	1229	3	2	1363	3	2
70-74	691	1	1	818	2	1	1146	3	1	1552	3	2
75-79	728	1	1	649	1	1	934	2	1	1306	4	1
80-84	476	1	0	597	1	1	726	1	1	949	2	1
85+	343	1	1	493	1	1	680	1	1	873	2	0
Total	6089	13	9	6782	16	10	8496	21	13	10024	27	14
	WOMEN											
0-4	0	0	0	0	0	0	2	0	0	1	0	0
5-9	0	0	0	2	0	0	0	0	0	0	0	0
10-14	3	0	0	2	0	0	1	0	0	2	0	0
15-19	27	0	0	20	0	0	22	0	0	16	0	0

Age group (years)	2006			2011			2016			2021		
	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group	High risk group	Moderate risk group	Low risk group
20-24	78	1	0	58	0	1	59	0	0	46	0	0
25-29	141	0	0	113	1	1	148	1	1	110	1	0
30-34	209	1	0	135	2	1	215	1	0	226	2	2
35-39	245	2	0	269	2	1	275	2	1	291	3	2
40-44	301	1	1	308	2	1	342	2	1	374	3	1
45-49	370	1	1	394	2	1	448	2	1	475	3	2
50-54	390	2	1	421	2	1	501	3	1	577	3	1
55-59	447	1	1	459	1	1	552	2	2	619	3	2
60-64	369	1	0	541	2	1	639	2	2	758	4	3
65-69	379	1	0	542	1	1	766	2	1	877	3	2
70-74	347	1	1	470	1	1	621	2	1	903	3	1
75-79	399	1	1	343	1	1	514	1	1	706	2	1
80-84	298	1	0	370	1	1	376	1	0	479	2	0
85+	306	0	0	375	1	1	544	1	1	630	1	1
Total	4309	14	6	4822	19	14	6025	22	13	7091	33	18

Table 4. Average annual percent rate of change (AAPC) in incidence of invasive cutaneous melanoma by age group and sex, Australia, 2006–2021: Australia and high risk ancestry group*

Age group (years)	Australia: AAPC (95% CI)			High risk ancestry group: AAPC (95% CI)		
	Males	Females	All persons	Males	Females	All persons
10-14	No cases	-3.6 (-8.0, 1.0)	-5.0 (-21.7, -15.3)	NC	-3.0 (-15.3, 11.2)	-4.8 (-18.6, 11.5)
15-19	-9.5 (-12.4, -6.4)	-3.6 (-7.0, 0.0)	-6.2 (-9.5, -2.7)	-8.5 (-11.5, -5.4)	-2.2 (-6.9, 2.7)	-5.0 (-9.1, -0.7)
20-24	-3.9 (-10.3, 2.9)	-3.9 (-8.3, 0.7)	-3.9 (-8.3, 0.6)	-2.8 (-8.9, 3.6)	-3.0 (-6.5, 0.5)	-3.1 (-7.1, 1.2)
25-29	-4.3 (-6.3, -2.3)	-2.7 (-8.3, 3.3)	-3.4 (-7.1, 0.5)	-3.1 (-3.7, -2.4)	-1.4 (-7.3, 4.8)	-2.1 (-5.7, 1.6)
30-34	-2.8 (-5.5, -0.1)	-0.6 (-7.6, 6.9)	-1.6 (-6.5, 3.6)	-1.2 (-3.5, 1.2)	1.3 (-6.0, 9.1)	0.2 (-4.6, 5.3)
35-39	-1.3 (-4.1, 1.6)	-0.2 (-2.2, 1.9)	-0.7 (-2.1, 0.8)	0.7 (-2.7, 4.2)	1.9 (0.7, 3.2)	1.4 (-0.2, 3.0)
40-44	0.1 (-1.4, 1.6)	1.0 (-0.4, 2.4)	0.5 (-0.5, 1.6)	1.5 (-0.0, 3.0)	2.5 (-0.3, 5.5)	2.0 (-0.0, 4.1)
45-49	1.3 (-1.7, 4.4)	1.0 (0.4, 1.6)	1.2 (-0.7, 3.0)	2.1 (-1.2, 5.6)	2.0 (1.0, 3.0)	2.1 (-0.1, 4.3)
50-54	0.8 (-1.2, 2.9)	1.6 (-0.6, 3.8)	1.2 (-0.9, 3.3)	1.4 (-0.7, 3.5)	2.2 (0.2, 4.3)	1.8 (-0.3, 3.9)
55-59	0.7 (-1.1, 2.5)	0.8 (-0.7, 2.4)	0.7 (-0.9, 2.4)	1.4 (-0.0, 2.8)	1.6 (-0.1, 3.2)	1.4 (0.0, 2.9)
60-64	0.7 (-1.7, 3.1)	1.8 (0.4, 3.2)	1.1 (-0.9, 3.1)	1.3 (-1.0, 3.6)	2.6 (1.5, 3.6)	1.7 (-0.1, 3.5)
65-69	1.5 (0.2, 2.8)	2.0 (0.7, 3.4)	1.7 (1.0, 2.4)	1.9 (0.8, 3.0)	2.6 (1.5, 3.6)	2.1 (1.8, 2.5)
70-74	1.5 (0.1, 2.9)	2.2 (1.3, 3.2)	1.8 (1.3, 2.3)	1.7 (0.8, 2.7)	2.6 (1.3, 3.9)	2.0 (1.7, 2.4)
75-79	1.4 (-2.3, 5.2)	2.0 (-2.3, 6.5)	1.7 (-2.2, 5.8)	1.5 (-1.9, 5.1)	2.1 (-1.8, 6.1)	1.8 (-1.7, 5.5)
80-84	1.9 (1.1, 2.6)	1.5 (-0.0, 3.1)	2.0 (1.5, 2.5)	2.1 (1.5, 2.8)	1.7 (-0.4, 3.9)	2.3 (1.4, 3.2)
85+	1.5 (0.8, 2.2)	2.4 (-0.0, 4.9)	2.3 (1.2, 3.4)	1.9 (1.2, 2.5)	2.6 (0.3, 5.0)	2.6 (1.6, 3.6)
All ages	0.9 (-0.4-2.3)	1.2 (0.1-2.4)	1.1 (-0.2-2.4)	1.4 (0.1-2.7)	2.0 (0.7-3.3)	1.7 (0.4-3.0)

NC = not calculatable (no cases in some years).

* AAPCs with 95% confidence intervals (CIs) calculated using the four census time points (2006, 2011, 2016, 2021); United States 2000 standard population used for age-standardisation.⁵

Table 5. Case numbers and age-standardised incidence rates (per 100,000 persons) of invasive cutaneous melanoma, Australia, for four census years, by inferred ancestry and sex

Census year	High risk ancestry		Moderate risk ancestry*		Low risk ancestry*	
	Cases	Age-standardised incidence (95% CI)†	Cases	Age-standardised incidence (95% CI)†	Cases	Age-standardised incidence (95% CI)†
2006						
Females	4317	44.5 (43.2, 45.9)	11	3.6 (1.3, 5.9)	1†	0.1 (0.0, 0.3)
Males	6100	67.9 (66.2, 69.6)	10	3.7 (1.2, 6.3)	1†	0.1 (0.0, 0.3)
2011						
Females	4840	46.0 (44.7, 47.3)	12	3.3 (1.3, 5.3)	3	0.2 (0.0, 0.5)
Males	6792	68.0 (66.4, 69.6)	13	3.4 (1.4, 5.5)	3	0.3 (0.0, 0.6)
2016						
Females	6040	52.7 (51.3, 54.1)	14	2.9 (1.3, 4.6)	6	0.4 (0.1, 0.7)
Males	8507	76.3 (74.7, 78.0)	18	4.2 (2.1, 6.4)	5	0.4 (0.0, 0.8)
2021						
Females	7105	58.6 (57.2, 60.1)	28	3.3 (2.0, 4.6)	9	0.4 (0.1, 0.7)
Males	10030	82.2 (80.5, 83.9)	27	3.5 (2.1, 5.0)	8	0.5 (0.1, 0.8)

CI = confidence interval.

* Derived from GLOBOCAN age-specific incidence rates⁶ and census-based age-specific population numbers (Australian Bureau of Statistics TableBuilder).

† Case number rounded up to one to allow age-standardised incidence estimation.

‡ Age-standardised to the United States 2000 standard population (2000).⁵

Table 6. Numbers of cases and age-standardised incidence rates of invasive cutaneous melanoma (per 100,000 persons), Australia, by inferred ancestry-based melanoma risk group, census year, and sex: people without ancestry information allocated to the high risk group

	Total population	High risk ancestry		Moderate risk ancestry*		Low risk ancestry†	
Census year	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡
2006							
Females	39.4 (38.3, 40.6)	4312	44.0 (42.7, 45.3)	11	3.5 (1.2, 5.8)	6	0.9 (0.1, 1.7)
Males	61.8 (60.3, 63.4)	6092	67.2 (65.5, 68.9)	11	4.4 (1.5, 7.2)	8	1.5 (0.4, 2.7)
2011							
Females	39.7 (38.6, 59.2)	4825	45.4 (44.0, 46.7)	17	4.6 (2.2, 6.9)	13	1.3 (0.5, 2.2)
Males	60.6 (59.2, 62.1)	6784	67.3 (65.6, 68.9)	14	4.6 (1.9, 7.4)	10	1.8 (0.5, 3.1)
2016							
Females	43.7 (42.6, 44.9)	6027	51.8 (50.4, 53.1)	21	4.6 (2.3, 6.9)	12	0.9 (0.3, 1.5)
Males	66.3 (64.9, 67.8)	8500	75.3 (73.7, 76.9)	19	4.6 (2.3, 6.9)	11	1.2 (0.4, 2.1)
2021							
Females	45.4 (44.3, 46.5)	7093	57.4 (56.0, 58.8)	31	3.7 (2.3, 5.1)	18	0.8 (0.4, 1.3)
Males	67.8 (66.5, 69.2)	10,026	80.8 (79.2, 82.5)	25	3.8 (2.2, 5.4)	14	0.9 (0.4, 1.4)

CI = confidence interval.

* Derived from SEER (17 registries) age-specific incidence rates for Hispanics/any race⁷ and Australian census-based age-specific population numbers (Australian Bureau of Statistics TableBuilder).

† Derived from SEER (17 registries) age-specific incidence rates for non-Hispanic Asians/Pacific Islanders and Blacks,⁷ and Australian census-based age-specific population numbers (Australian Bureau of Statistics TableBuilder).

‡ Age-standardised to the United States 2000 standard population (2000).⁵

Table 7. Numbers of cases and age-standardised incidence rates of invasive cutaneous melanoma (per 100,000 persons), Australia, by inferred ancestry-based melanoma risk group, census year, and sex: people without ancestry information allocated to the low risk group

Census year	Total population	High risk ancestry		Moderate risk ancestry*		Low risk ancestry†	
	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡	Cases	Age-standardised incidence (95% CI)‡
2006							
Females	39.4 (38.3, 40.6)	4298	48.0 (46.5, 49.4)	11	3.5 (1.2, 5.8)	20	1.2 (0.7, 1.8)
Males	61.8 (60.3, 63.4)	6082	74.2 (72.3, 76.1)	11	4.4 (1.5, 7.2)	18	1.4 (0.7, 2.0)
2011							
Females	39.7 (38.6, 59.2)	4815	49.0 (47.5, 50.4)	17	4.6 (2.2, 6.9)	23	1.2 (0.7, 1.7)
Males	60.6 (59.2, 62.1)	6774	73.4 (71.6, 75.2)	14	4.6 (1.9, 7.4)	20	1.3 (0.7, 1.9)
2016							
Females	43.7 (42.6, 44.9)	6016	56.6 (55.1, 58.1)	21	4.6 (2.3, 6.9)	23	0.9 (0.5, 1.3)
Males	66.3 (64.9, 67.8)	8487	82.8 (81.0, 84.6)	19	4.6 (2.3, 6.9)	24	1.2 (0.7, 1.7)
2021							
Females	45.4 (44.3, 46.5)	7084	62.0 (60.5, 63.6)	31	3.7 (2.3, 5.1)	27	0.9 (0.5, 1.2)
Males	67.8 (66.5, 69.2)	10018	88.0 (86.2, 89.8)	25	3.8 (2.2, 5.4)	22	0.9 (0.5, 1.3)

CI = confidence interval.

* Derived from SEER (17 registries) age-specific incidence rates for Hispanics/any race⁷ and Australian census-based age-specific population numbers (Australian Bureau of Statistics TableBuilder).

† Derived from SEER (17 registries) age-specific incidence rates for non-Hispanic Asians/Pacific Islanders and Blacks,⁷ and Australian census-based age-specific population numbers (Australian Bureau of Statistics TableBuilder).

‡ Age-standardised to the United States 2000 standard population (2000).⁵

References

1. Australian Institute of Health and Welfare. Data tables: CDIA 2023: Book 1a. Cancer incidence (age-standardised rates and 5-year age groups). In: Cancer data in Australia. Updated 31 Aug 2023. <https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia/data> (viewed Nov 2023).
2. Surveillance Epidemiology and End Results (SEER) Program (<http://www.seer.cancer.gov>). National Cancer Institute, US National Institutes of Health,. SEER*Stat Database: Incidence—SEER Research Data, 9 Registries, Nov 2020 Sub (1975-2018). National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch.
3. Engholm G, Ferlay J, Christensen N, et al. NORDCAN--a Nordic tool for cancer information, planning, quality control and research. *Acta Oncol* 2010; 49(5): 725-36.
4. Australian Bureau of Statistics. Australian Standard Classification of Cultural and Ethnic Groups (ASCCEG). 18 Dec 2019. <https://www.abs.gov.au/statistics/classifications/australian-standard-classification-cultural-and-ethnic-groups-ascceg/latest-release> (viewed July 2023).
5. Anderson R, Rosenberg H. Age standardization of death rates: implementation of the year 2000 standard. *Natl Vital Stat Rep* 1998; 47: 1-16, 20.
6. International Agency for Research on Cancer (World Health Organization). Global Cancer Observatory: Cancer over time. <https://gco.iarc.fr/overtime> (viewed July 2023).
7. Surveillance, Epidemiology, and End Results (SEER) Program. SEER*Stat Database: Incidence – seer research data, 17 registries, Nov 2022 Sub (2000–2020) – linked to county attributes – time dependent (1990–2021) income/rurality, 1969-2020 counties, National Cancer Institute, Surveillance Research Program, released April 2023, based on the November 2022 submission <https://seer.cancer.gov/seerstat> (viewed July 2023).