

GATHER checklist of information that should be included in reports of global health estimates.

#	Checklist item	Section/paragraph/interpretation
Objectives and funding		
1	Define the indicators, populations, and time periods for which estimates were made.	Methods / “Data Sources” section
2	List the funding sources for the work.	Funding
Data Inputs		
<i>For all data inputs from multiple sources that are synthesized as part of the study:</i>		
3	Describe how the data were identified and how the data were accessed.	As mentioned in the Methods / “Data Sources” section, the details have been published previously.
4	Specify the inclusion and exclusion criteria. Identify all ad-hoc exclusions.	As mentioned in the Methods / “Data Sources” section, the details have been published previously.
5	Provide information on all included data sources and their main characteristics. For each data source used, report reference information or contact name/institution, population represented, data collection method, year(s) of data collection, sex and age range, diagnostic criteria or measurement method, and sample size, as relevant.	Available via online data source tools (http://ghdx.healthdata.org/gbd-2019/data-input-sources).
6	Identify and describe any categories of input data that have potentially important biases (e.g., based on characteristics listed in item 5).	As mentioned in the Methods / “Data Sources” section, the details have been published previously.
<i>For data inputs that contribute to the analysis but were not synthesized as part of the study:</i>		
7	Describe and give sources for any other data inputs.	Available via online data source tools (http://ghdx.healthdata.org/gbd-2019/data-input-sources).
<i>For all data inputs:</i>		
8	Provide all data inputs in a file format from which data can be efficiently extracted (e.g., a spreadsheet as opposed to a PDF), including all relevant meta-data listed in item 5. For any data inputs that cannot be shared due to ethical or legal reasons, such as third-party ownership, provide a contact name or the name of the institution that retains the right to the data.	Available via online data source tools (http://ghdx.healthdata.org/gbd-2019/data-input-sources); input data not available in tools will be made available upon request.
Data analysis		
9	Provide a conceptual overview of the data analysis method. A diagram may be helpful.	Flow diagrams of the overall methodological processes were available online (http://ghdx.healthdata.org/gbd-2019/code/cod-2)

10	Provide a detailed description of all steps of the analysis, including mathematical formulae. This description should cover, as relevant, data cleaning, data pre-processing, data adjustments and weighting of data sources, and mathematical or statistical model(s).	As mentioned in the Methods / “Statistical Analysis” section, the details have been published previously.
11	Describe how candidate models were evaluated and how the final model(s) were selected.	As mentioned in the Methods / “Statistical Analysis” section, the details have been published previously.
12	Provide the results of an evaluation of model performance, if done, as well as the results of any relevant sensitivity analysis.	As mentioned in the Methods / “Statistical Analysis” section, the details have been published previously.
13	Describe methods for calculating uncertainty of the estimates. State which sources of uncertainty were, and were not, accounted for in the uncertainty analysis.	Methods / “Statistical Analysis” section
14	State how analytic or statistical source code used to generate estimates can be accessed.	Methods / “Statistical Analysis” section
Results and Discussion		
15	Provide published estimates in a file format from which data can be efficiently extracted.	Results, and online data tools (data visualization tools, and data query tools, http://ghdx.healthdata.org/gbd-2019)
16	Report a quantitative measure of the uncertainty of the estimates (e.g. uncertainty intervals).	Results, and online data tools (data visualization tools, and data query tools, http://ghdx.healthdata.org/gbd-2019)
17	Interpret results in light of existing evidence. If updating a previous set of estimates, describe the reasons for changes in estimates.	Discussion, paragraphs 1-6
18	Discuss limitations of the estimates. Include a discussion of any modelling assumptions or data limitations that affect interpretation of the estimates.	Discussion, paragraph 7

Table S1. Deaths and age-standardized mortality rate per 100 000 people of mesothelioma in 1990 and 2019, and its average annual percentage change from 1990 to 2019.

Characteristics	1990		2019		AAPC of ASMR (95% CI) from 1990 to 2019
	ASMR/100 000 (95%UI)	Deaths (95%UI)	ASMR/100 000 (95%UI)	Deaths (95%UI)	
Global	0.40 (0.36, 0.44)	15385 (13815, 17017)	0.36 (0.33, 0.39)	29251 (26668, 31006)	-0.20 (-0.27, -0.14)
Male	0.63 (0.59, 0.70)	10304 (9664, 11443)	0.59 (0.56, 0.63)	21222 (19972, 22509)	0.01 (-0.08, 0.10)
Female	0.24 (0.17, 0.30)	5082 (3626, 6512)	0.18 (0.14, 0.21)	8029 (5879, 8923)	-0.90 (-0.94, -0.86)
SDI region					
High SDI	0.80 (0.74, 0.87)	8502 (7904, 9287)	0.75 (0.69, 0.79)	14770 (13620, 15585)	-0.09 (-0.15, -0.04)
High-middle SDI	0.35 (0.30, 0.41)	3699 (3225, 4369)	0.32 (0.28, 0.34)	6426 (5723, 6880)	-0.25 (-0.36, -0.15)
Middle SDI	0.16 (0.14, 0.20)	1729 (1436, 2125)	0.17 (0.15, 0.19)	4235 (3832, 4647)	0.26 (0.15, 0.36)
Low-middle SDI	0.17 (0.12, 0.24)	1021 (707, 1480)	0.21 (0.17, 0.25)	2860 (2348, 3493)	0.97 (0.89, 1.06)
Low SDI	0.17 (0.08, 0.38)	427 (200, 896)	0.18 (0.11, 0.35)	944 (549, 1776)	0.06 (-0.04, 0.17)
GBD Region					
High-income Asia Pacific	0.32 (0.29, 0.37)	629 (577, 721)	0.38 (0.35, 0.41)	1807 (1611, 1949)	1.26 (1.01, 1.51)
High-income North America	0.69 (0.65, 0.75)	2509 (2343, 2710)	0.59 (0.54, 0.63)	3832 (3522, 4095)	-0.75 (-0.88, -0.63)
Western Europe	1.08 (0.99, 1.19)	6315 (5770, 6964)	1.10 (1.02, 1.16)	10305 (9482, 10880)	0.26 (0.17, 0.35)
Australasia	1.81 (1.59, 2.17)	431 (378, 519)	1.76 (1.60, 1.90)	915 (832, 994)	0.05 (-0.09, 0.18)
Southern Latin America	0.28 (0.26, 0.34)	130 (119, 157)	0.37 (0.31, 0.39)	302 (258, 325)	1.49 (1.21, 1.77)
Andean Latin America	0.41 (0.24, 0.54)	84 (50, 112)	0.21 (0.16, 0.27)	118 (87, 151)	-3.33 (-3.85, -2.79)
Tropical Latin America	0.42 (0.34, 0.50)	386 (308, 478)	0.40 (0.34, 0.45)	971 (820, 1098)	0.08 (-0.05, 0.20)
Central Latin America	0.19 (0.17, 0.21)	167 (146, 185)	0.22 (0.19, 0.25)	525 (446, 606)	0.78 (0.59, 0.96)
Caribbean	0.19 (0.17, 0.23)	51 (44, 63)	0.18 (0.15, 0.22)	93 (76, 116)	-0.42 (-0.56, -0.29)
Eastern Europe	0.28 (0.19, 0.51)	765 (530, 1339)	0.29 (0.23, 0.38)	961 (748, 1214)	-0.41 (-0.77, -0.04)
Central Europe	0.19 (0.17, 0.23)	272 (248, 337)	0.29 (0.25, 0.33)	599 (515, 680)	2.08 (1.89, 2.27)
Central Asia	0.23 (0.13, 0.49)	117 (64, 244)	0.23 (0.16, 0.32)	174 (125, 241)	-0.74 (-1.06, -0.42)

North Africa and Middle East	0.26 (0.20, 0.37)	456 (340, 668)	0.22 (0.17, 0.28)	943 (751, 1212)	-0.63 (-0.77, -0.5)
South Asia	0.16 (0.11, 0.25)	915 (617, 1452)	0.20 (0.16, 0.25)	2770 (2191, 3558)	0.75 (0.66, 0.85)
Southeast Asia	0.14 (0.12, 0.18)	434 (345, 555)	0.15 (0.12, 0.17)	953 (775, 1115)	-0.18 (-0.35, 0.00)
East Asia	0.13 (0.11, 0.19)	1192 (916, 1654)	0.14 (0.12, 0.17)	2895 (2396, 3451)	0.88 (0.55, 1.21)
Oceania	0.19 (0.14, 0.26)	6 (4, 9)	0.25 (0.17, 0.35)	18 (12, 27)	1.29 (1.14, 1.45)
Western Sub-Saharan Africa	0.13 (0.07, 0.22)	119 (65, 198)	0.10 (0.07, 0.16)	208 (141, 319)	-1.22 (-1.47, -0.98)
Eastern Sub-Saharan Africa	0.24 (0.08, 0.71)	181 (61, 522)	0.23 (0.09, 0.68)	378 (155, 1069)	-0.16 (-0.26, -0.05)
Central Sub-Saharan Africa	0.24 (0.09, 0.69)	56 (20, 152)	0.23 (0.09, 0.61)	123 (51, 325)	-0.33 (-0.44, -0.22)
Southern Sub-Saharan Africa	0.63 (0.47, 0.79)	169 (127, 214)	0.67 (0.53, 0.75)	360 (288, 405)	-0.01 (-0.56, 0.54)

ASMR, age-standardized mortality rate; UI, uncertainty interval; AAPC, average annual percentage change; CI, confidential interval; SDI, socio-demographic index; GBD, Global Burden of Disease, Injuries, and Risk Factors Study.

Table S2. DALYs and age-standardized DALY rate per 100 000 people of mesothelioma in 1990 and 2019, and its average annual percentage change from 1990 to 2019.

Characteristics	1990		2019		AAPC of ASDR (95%CI) from 1990 to 2019
	ASDR/100 000	DALYs	ASDR/100 000	DALYs	
	(95%UI)	(95%UI)	(95%UI)	(95%UI)	
Global	9.44 (8.35, 10.59)	390646 (342695, 443115)	8.10 (7.38, 8.68)	668104 (608269, 716475)	-0.47 (-0.52, -0.42)
Male	13.56 (12.71, 15.22)	253860 (238126, 286802)	12.21 (11.49, 13.13)	471362 (443191, 509663)	-0.23 (-0.31, -0.15)
Female	6.13 (4.21, 8.15)	136786 (92295, 183215)	4.59 (3.35, 5.25)	196742 (143947, 225119)	-1.10 (-1.14, -1.06)
SDI region					
High SDI	17.99 (16.74, 19.73)	185429 (172683, 202445)	15.16 (14.25, 16.05)	276359 (258432, 291664)	-0.53 (-0.59, -0.48)
High-middle SDI	9.03 (7.78, 11.25)	100692 (86326, 128317)	7.80 (6.97, 8.59)	155032 (138241, 169570)	-0.56 (-0.67, -0.44)
Middle SDI	4.59 (3.76, 5.66)	57123 (45852, 71143)	4.65 (4.16, 5.14)	123268 (110390, 136210)	0.08 (-0.03, 0.18)
Low-middle SDI	4.62 (3.16, 6.72)	33256 (21991, 49216)	5.60 (4.55, 6.88)	83997 (67635, 103557)	0.83 (0.74, 0.92)
Low SDI	4.85 (2.25, 9.96)	13928 (6186, 27249)	4.70 (2.74, 8.85)	29076 (16571, 52729)	-0.19 (-0.30, -0.09)
GBD Region					
High-income Asia Pacific	7.39 (6.83, 8.38)	15181 (14061, 17197)	8.21 (7.63, 8.71)	33032 (30445, 35142)	0.89 (0.62, 1.17)
High-income North America	15.02 (14.14, 16.24)	52096 (49056, 56285)	11.37 (10.54, 12.17)	70450 (65425, 75302)	-1.27 (-1.43, -1.11)
Western Europe	24.96 (22.89, 27.25)	138897 (127241, 151835)	22.91 (21.47, 24.30)	193676 (180494, 204827)	-0.19 (-0.24, -0.14)
Australasia	40.44 (35.69, 48.17)	9489 (8327, 11344)	33.87 (31.22, 36.84)	16604 (15241, 18023)	-0.60 (-0.75, -0.44)
Southern Latin America	7.55 (6.89, 9.14)	3527 (3220, 4275)	9.23 (7.94, 9.93)	7384 (6333, 7957)	1.25 (0.98, 1.53)
Andean Latin America	10.45 (6.10, 14.26)	2417 (1415, 3332)	5.30 (3.94, 6.82)	3101 (2298, 4012)	-3.48 (-4.04, -2.92)
Tropical Latin America	11.6 (9.26, 15.02)	12680 (9898, 17749)	10.95 (9.31, 12.67)	27462 (23360, 31784)	-0.05 (-0.18, 0.07)
Central Latin America	5.32 (4.63, 5.92)	5288 (4600, 5959)	5.93 (5.04, 6.88)	14618 (12417, 16973)	0.60 (0.42, 0.77)
Caribbean	5.69 (4.74, 7.27)	1617 (1327, 2106)	5.33 (4.20, 6.97)	2752 (2172, 3581)	-0.39 (-0.51, -0.26)
Eastern Europe	8.44 (5.44, 18.15)	22980 (15043, 48794)	8.69 (6.68, 12.17)	26528 (20629, 35420)	-0.67 (-1.10, -0.24)
Central Europe	5.18 (4.72, 6.23)	7590 (6920, 9172)	7.57 (6.50, 8.63)	14544 (12516, 16564)	1.78 (1.61, 1.96)
Central Asia	7.55 (3.93, 16.87)	4085 (2054, 9583)	6.51 (4.62, 9.30)	5578 (3947, 8057)	-1.31 (-1.67, -0.95)
North Africa and Middle East	7.11 (5.26, 10.67)	14229 (10359, 21852)	5.52 (4.41, 7.12)	27094 (21480, 35066)	-1.04 (-1.18, -0.89)
South Asia	4.28 (2.87, 6.79)	28787 (18846, 46492)	5.12 (4.05, 6.70)	78059 (61629, 102825)	0.63 (0.53, 0.74)

Southeast Asia	4.87 (3.83, 6.28)	17031 (12601, 22338)	4.58 (3.61, 5.47)	32202 (25121, 38676)	-0.64 (-0.86, -0.42)
East Asia	3.74 (2.85, 5.30)	38368 (28704, 54482)	3.98 (3.28, 4.70)	82630 (67863, 98035)	0.89 (0.57, 1.21)
Oceania	5.29 (3.72, 7.59)	200 (138, 298)	6.86 (4.61, 10.06)	607 (396, 921)	1.25 (1.09, 1.40)
Western Sub-Saharan Africa	3.70 (1.95, 6.00)	3932 (1991, 6241)	2.87 (1.94, 4.38)	7160 (4715, 10674)	-1.23 (-1.47, -0.98)
Eastern Sub-Saharan Africa	6.36 (2.11, 18.05)	5753 (1826, 15371)	5.82 (2.40, 16.44)	11514 (4765, 31016)	-0.44 (-0.56, -0.33)
Central Sub-Saharan Africa	6.54 (2.32, 17.69)	1808 (611, 4660)	5.92 (2.43, 15.73)	3904 (1584, 10203)	-0.48 (-0.59, -0.37)
Southern Sub-Saharan Africa	15.73 (11.94, 20.04)	4692 (3558, 5935)	15.57 (12.7, 17.54)	9207 (7572, 10410)	-0.33 (-0.93, 0.28)

DALYs, disability-adjusted life years; ASDR, age-standardized DALY rate; UI, uncertainty interval; AAPC, average annual percentage change; CI, confidential interval; SDI, socio-demographic index; GBD, Global Burden of Disease, Injuries, and Risk Factors Study.

Table S3. Countries/territories with ASIR per 100 000 more than 1.5 in 2019.

Number	Location	ASIR per 100 000 (95% UI)	ASMR per 100 000 (95% UI)	ASDR per 100 000 (95% UI)
1	Netherlands	2.34 (1.81, 2.96)	1.85 (1.68, 2.01)	37.09 (33.75, 40.46)
2	Australia	2.34 (1.82, 3.00)	1.85 (1.68, 2.03)	35.44 (32.38, 38.92)
3	UK	2.33 (1.89, 2.83)	2.12 (1.96, 2.21)	40.81 (38.12, 42.65)
4	Andorra	2.03 (1.17, 3.00)	1.57 (0.89, 2.35)	33.49 (19.46, 49.20)
5	Lesotho	1.74 (0.74, 2.59)	1.45 (0.63, 2.13)	37.78 (15.03, 57.11)
6	France	1.67 (1.28, 2.19)	1.27 (1.14, 1.41)	28.67 (25.86, 31.79)
7	Belgium	1.56 (1.20, 2.01)	1.23 (1.11, 1.34)	25.70 (23.41, 28.16)

ASIR, age-standardized incidence rate; UI, uncertainty interval; ASMR, age-standardized mortality rate; ASDR, age-standardized disability-adjusted life year rate.

Table S4. Countries/territories with ASIR per 100 000 less than 0.07 in 2019.

Number	Location	ASIR per 100 000 (95% UI)	ASMR per 100 000 (95% UI)	ASDR per 100 000 (95% UI)
1	Tunisia	0.057 (0.029, 0.129)	0.046 (0.024, 0.108)	1.267 (0.662, 2.786)
2	Lebanon	0.059 (0.032, 0.122)	0.048 (0.026, 0.098)	1.369 (0.742, 2.718)
3	Algeria	0.062 (0.034, 0.140)	0.051 (0.027, 0.119)	1.390 (0.767, 2.940)
4	Palestine	0.064 (0.048, 0.080)	0.051 (0.038, 0.064)	1.489 (1.105, 1.877)
5	El Salvador	0.064 (0.045, 0.087)	0.051 (0.036, 0.068)	1.513 (1.056, 2.071)
6	Iran	0.066 (0.058, 0.083)	0.054 (0.048, 0.068)	1.509 (1.340, 1.758)
7	Sudan	0.069 (0.033, 0.151)	0.054 (0.026, 0.122)	1.546 (0.739, 3.391)

ASIR, age-standardized incidence rate; UI, uncertainty interval; ASMR, age-standardized mortality rate; ASDR, age-standardized disability-adjusted life year rate.

Table S5. Countries/territories with the most rapid increase in ASIR from 1990 to 2019.

Number	Location	AAPC of ASIR (95% CI)	AAPC of ASMR (95% CI)	AAPC of ASDR (95% CI)
1	Georgia	8.483 (6.708, 10.286)	8.634 (6.851, 10.447)	8.615 (6.858, 10.401)
2	Croatia	4.905 (3.809, 6.012)	5.098 (4.017, 6.19)	4.724 (3.596, 5.864)
3	Bahrain	4.771 (3.124, 6.445)	5.098 (3.414, 6.81)	4.236 (2.711, 5.783)
4	Kuwait	4.037 (2.808, 5.280)	4.380 (3.140, 5.636)	3.540 (2.441, 4.651)
5	Poland	3.771 (3.235, 4.311)	4.407 (3.789, 5.028)	4.081 (3.501, 4.664)
6	Qatar	3.080 (2.366, 3.799)	3.226 (2.524, 3.934)	3.003 (2.255, 3.757)
7	Fiji	2.512 (1.891, 3.136)	2.605 (1.993, 3.222)	2.586 (1.963, 3.212)
8	Oman	2.463 (1.809, 3.120)	2.659 (1.993, 3.329)	2.336 (1.691, 2.986)
9	Slovenia	2.322 (1.643, 3.005)	2.348 (1.689, 3.011)	2.037 (1.337, 2.742)
10	Argentina	2.260 (1.897, 2.624)	2.319 (1.947, 2.692)	2.050 (1.687, 2.415)
11	Kyrgyzstan	2.187 (1.898, 2.477)	2.389 (2.097, 2.681)	2.120 (1.832, 2.409)
12	Honduras	2.091 (1.908, 2.275)	2.383 (2.176, 2.590)	1.756 (1.587, 1.926)

ASIR, age-standardized incidence rate; AAPC, average annual percentage change; CI, confidence interval; ASMR, age-standardized mortality rate; ASDR, age-standardized disability-adjusted life year rate.

Table S6. Countries/territories with the most rapid decrease in ASIR from 1990 to 2019.

Number	Location	AAPC of ASIR (95% CI)	AAPC of ASMR (95% CI)	AAPC of ASDR (95% CI)
1	Peru	-5.575 (-6.371, -4.772)	-5.448 (-6.220, -4.669)	-5.585 (-6.406, -4.757)
2	Thailand	-3.358 (-3.956, -2.757)	-3.150 (-3.721, -2.576)	-3.484 (-4.143, -2.821)
3	Bermuda	-3.334 (-3.743, -2.924)	-3.114 (-3.482, -2.744)	-3.484 (-3.944, -3.022)
4	Ghana	-3.262 (-3.983, -2.536)	-3.166 (-3.879, -2.447)	-2.943 (-3.601, -2.281)
5	Maldives	-3.135 (-3.429, -2.840)	-2.907 (-3.186, -2.629)	-3.247 (-3.578, -2.916)
6	Kazakhstan	-2.786 (-3.533, -2.033)	-2.477 (-3.196, -1.753)	-3.120 (-3.942, -2.291)
7	Singapore	-2.699 (-2.888, -2.509)	-2.537 (-2.728, -2.345)	-3.103 (-3.317, -2.889)
8	Lithuania	-2.378 (-2.860, -1.894)	-2.218 (-2.693, -1.742)	-2.336 (-2.837, -1.832)
9	Saint Lucia	-2.356 (-2.807, -1.902)	-2.290 (-2.732, -1.847)	-2.150 (-2.579, -1.719)
10	Armenia	-2.334 (-2.633, -2.034)	-2.042 (-2.317, -1.766)	-2.605 (-2.934, -2.276)
11	Mauritania	-2.296 (-2.559, -2.032)	-2.184 (-2.431, -1.938)	-2.176 (-2.408, -1.943)
12	Antigua and Barbuda	-2.134 (-2.531, -1.735)	-1.955 (-2.345, -1.564)	-2.159 (-2.537, -1.780)
13	Grenada	-2.040 (-2.608, -1.469)	-1.998 (-2.592, -1.401)	-1.767 (-2.329, -1.202)
14	Jordan	-2.010 (-2.342, -1.678)	-1.769 (-2.077, -1.460)	-2.162 (-2.511, -1.812)

ASIR, age-standardized incidence rate; AAPC, average annual percentage change; CI, confidence interval; ASMR, age-standardized mortality rate; ASDR, age-standardized disability-adjusted life year rate.

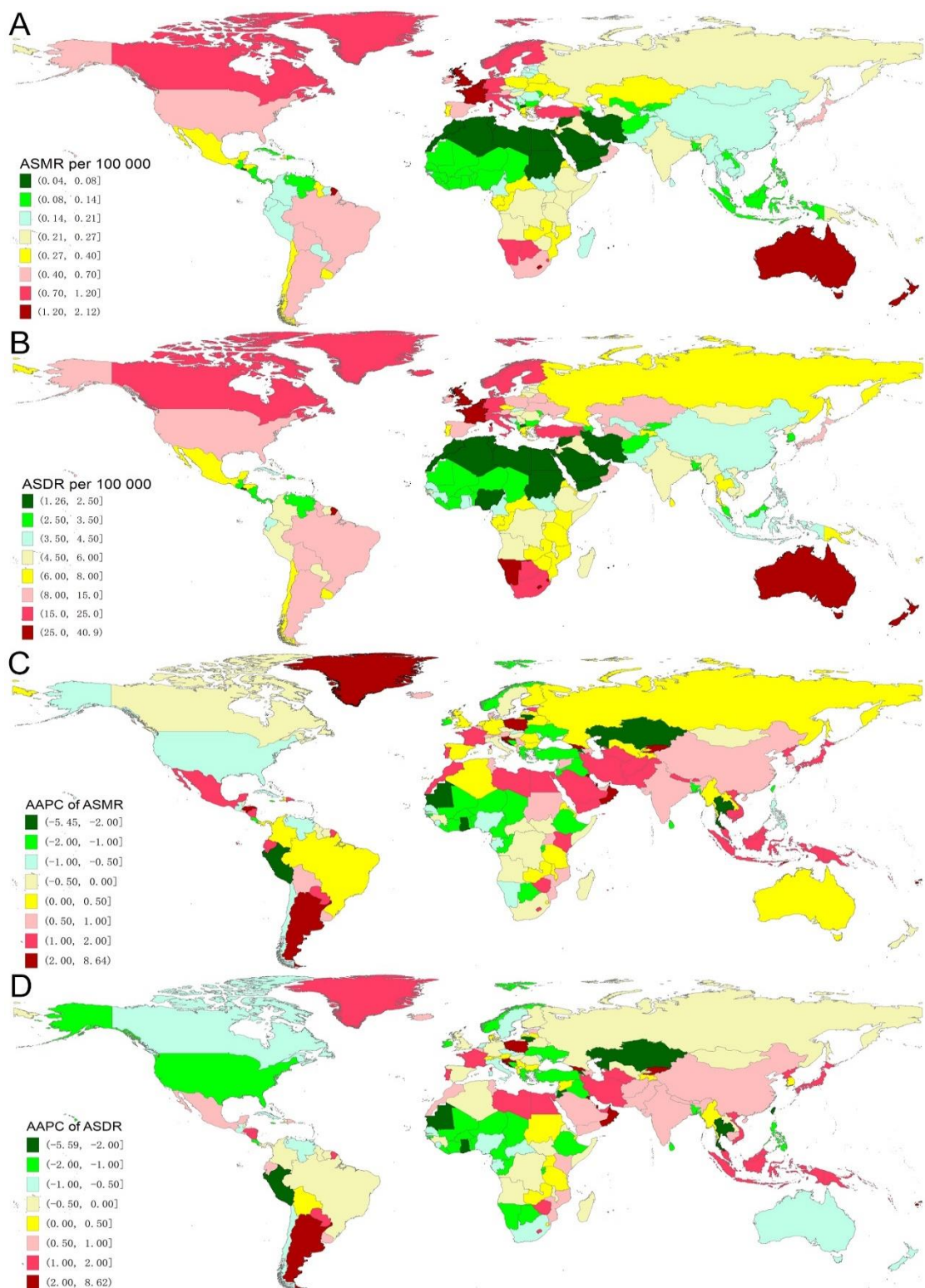


Figure S1. The global disease burden of mesothelioma in 204 countries and territories: (A) the ASMR per 100 000 in 2019, (B) the ASDR per 100 000 in 2019, (C) the AAPC of ASMR from 1990 to 2019 and (D) the AAPC of ASDR from 1990 to 2019. ASMR, age-standardized mortality rate; ASDR, age-standardized disability-adjusted life year rate; AAPC, average annual percentage change.

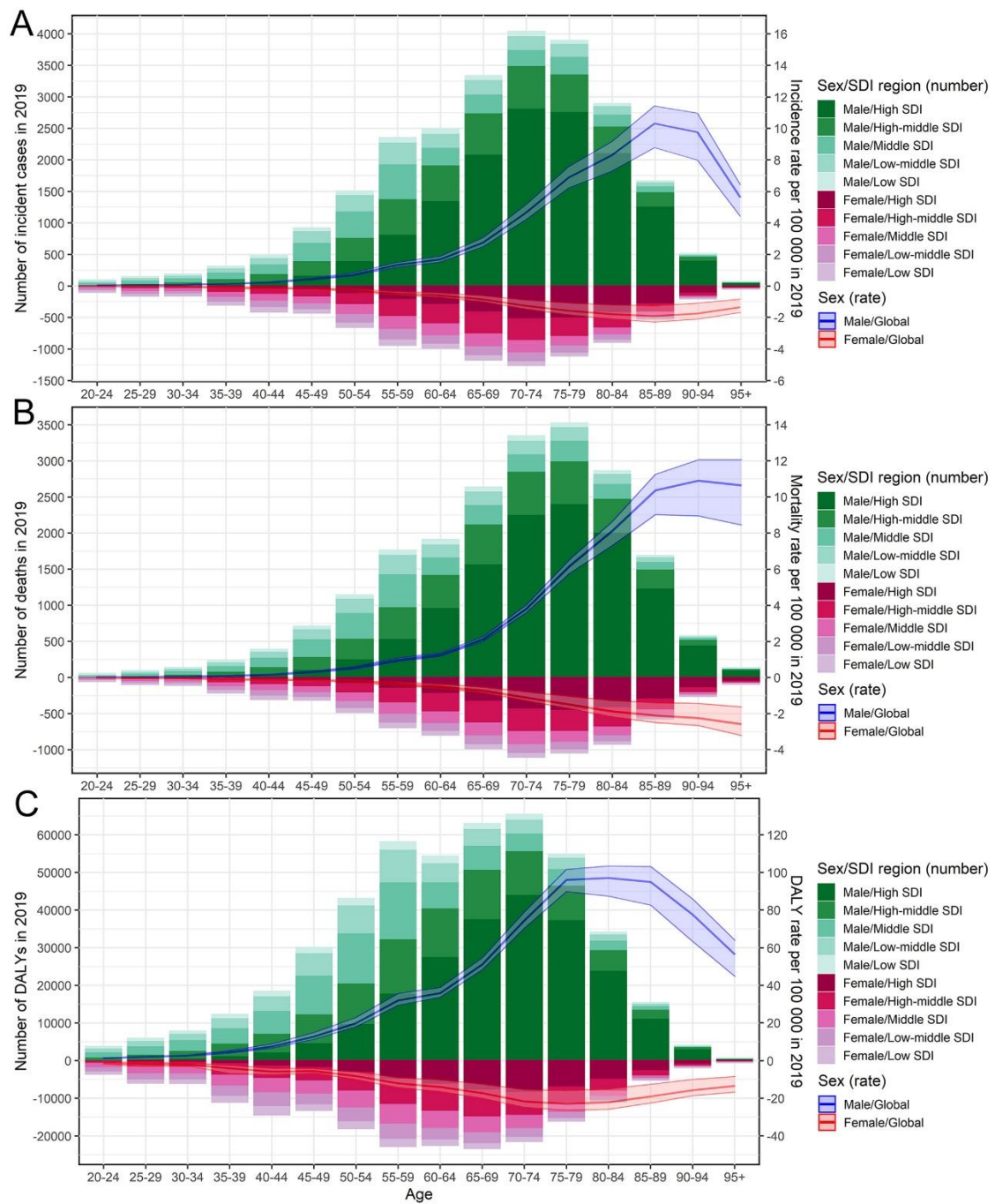


Figure S2. Age-specific counts and rates of mesothelioma burden by sex and SDI regions, 2019. (A) incidence; (B) deaths; (C) DALYs. SDI, socio-demographic index; DALYs, disability-adjusted life years.

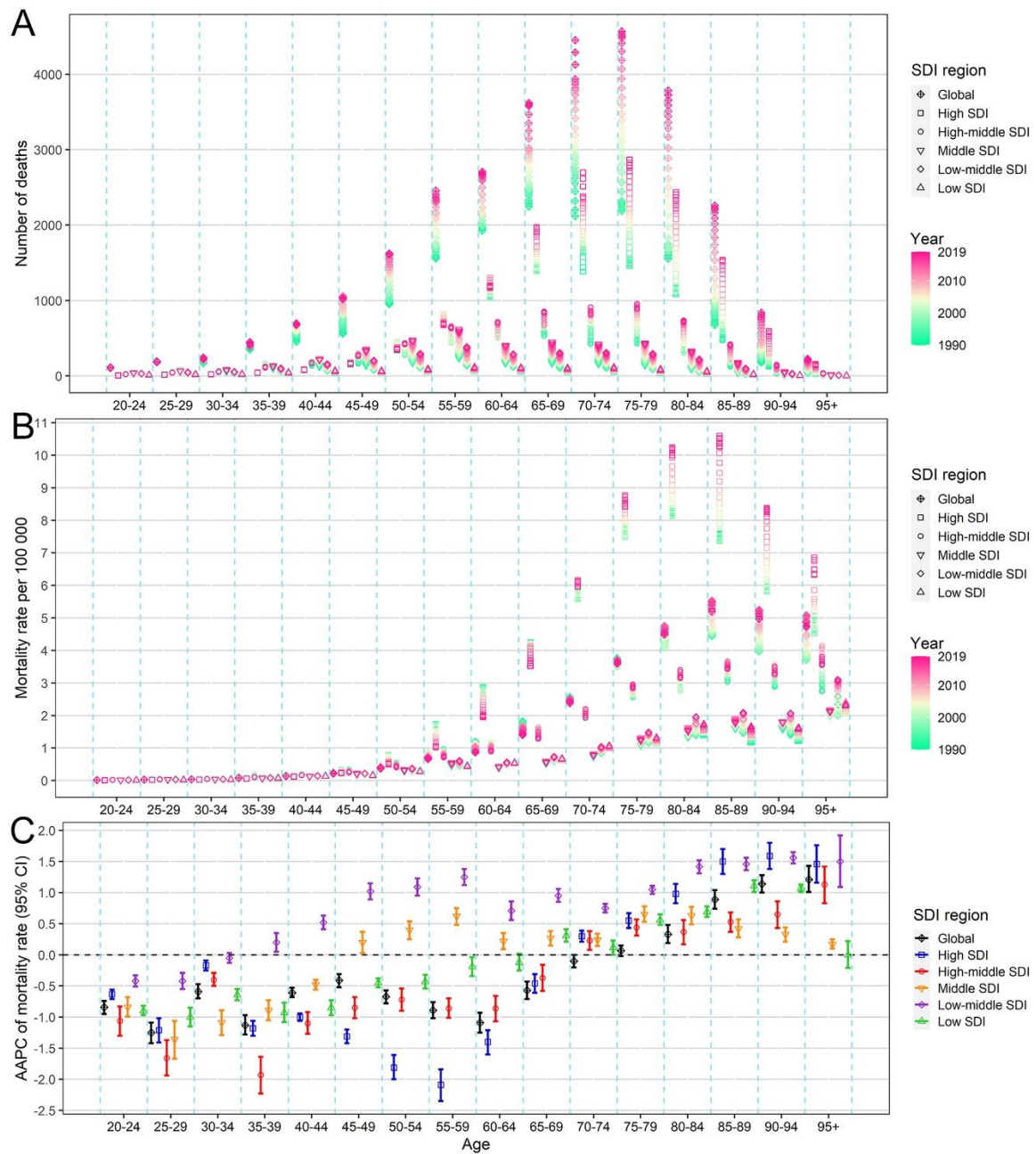


Figure S3. The annual burden of mesothelioma by different age groups, and SDI regions, from 1990 to 2019: (A) deaths, (B) mortality rate per 100 000 and (C) AAPC of mortality rate. SDI, socio-demographic index; AAPC, average annual percentage change.

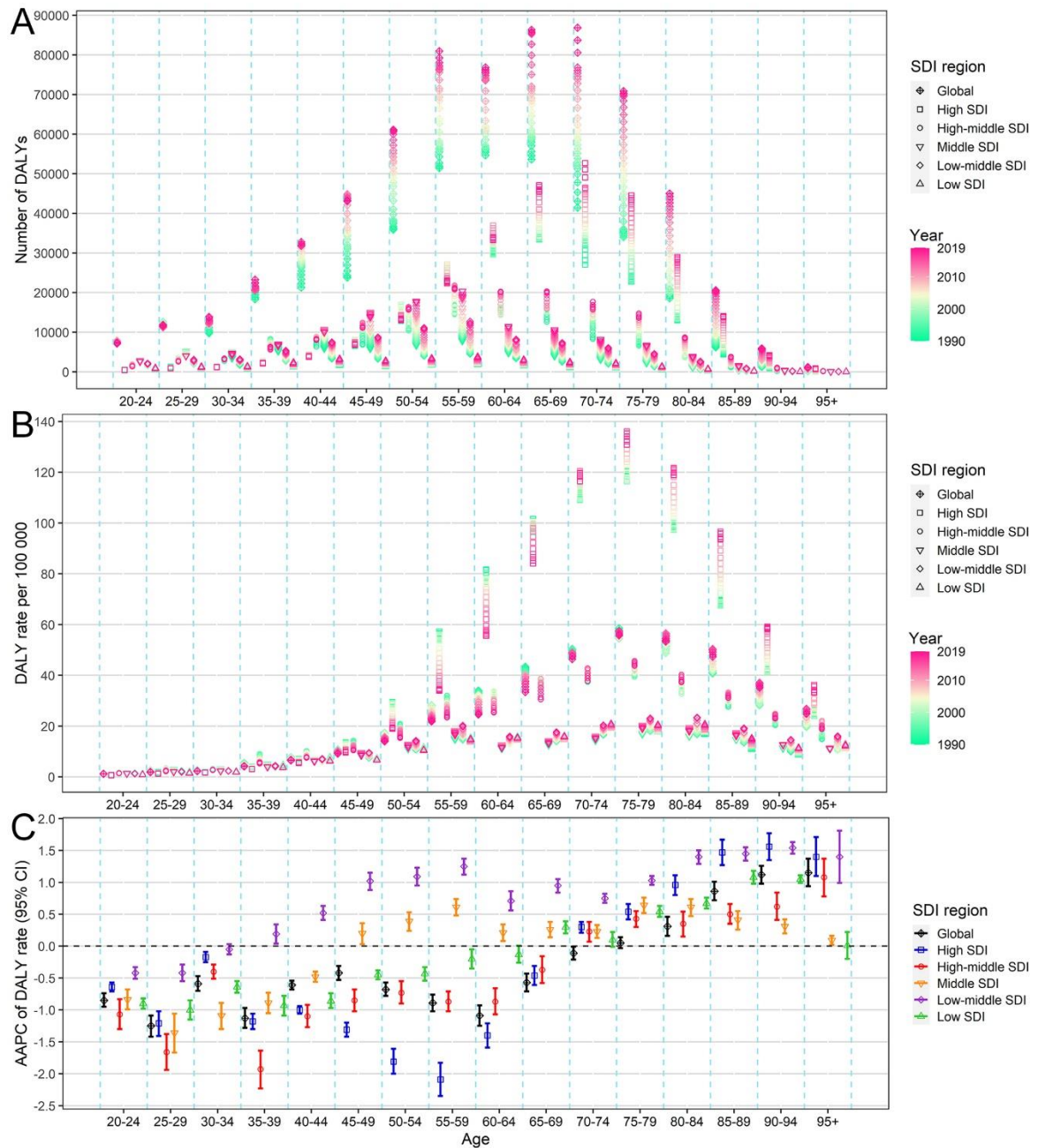


Figure S4. The annual burden of mesothelioma by different age groups, and SDI regions, from 1990 to 2019: (A) DALYs, (B) DALY rate per 100 000 and (C) AAPC of DALY rate. SDI, socio-demographic index; DALYs, disability-adjusted life years; AAPC, average annual percentage change.

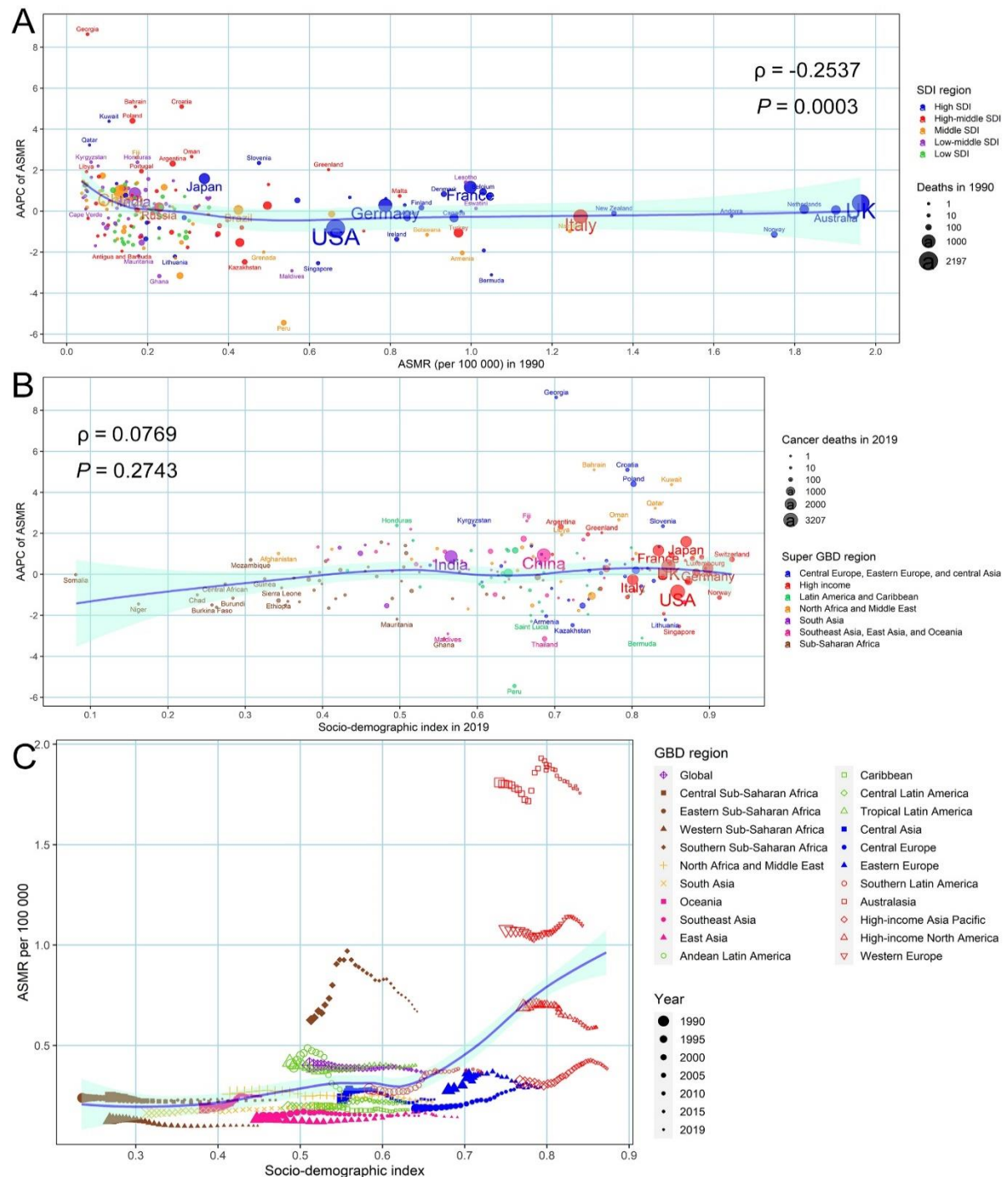


Figure S5. The factors affected the AAPC of ASMR of mesothelioma from 1990 to 2019, both sexes, at the national level: (A) ASMR in 1990 and AAPC of ASMR, (B) SDI in 2019 and AAPC of ASMR, (C) The annual burden in ASMR across 21 GBD regions with SDI from 1990 to 2019. AAPC, average annual percentage change; ASMR, age-standardized mortality rate; SDI, socio-demographic index; GBD, Global Burden of Disease, Injuries, and Risk Factors Study.

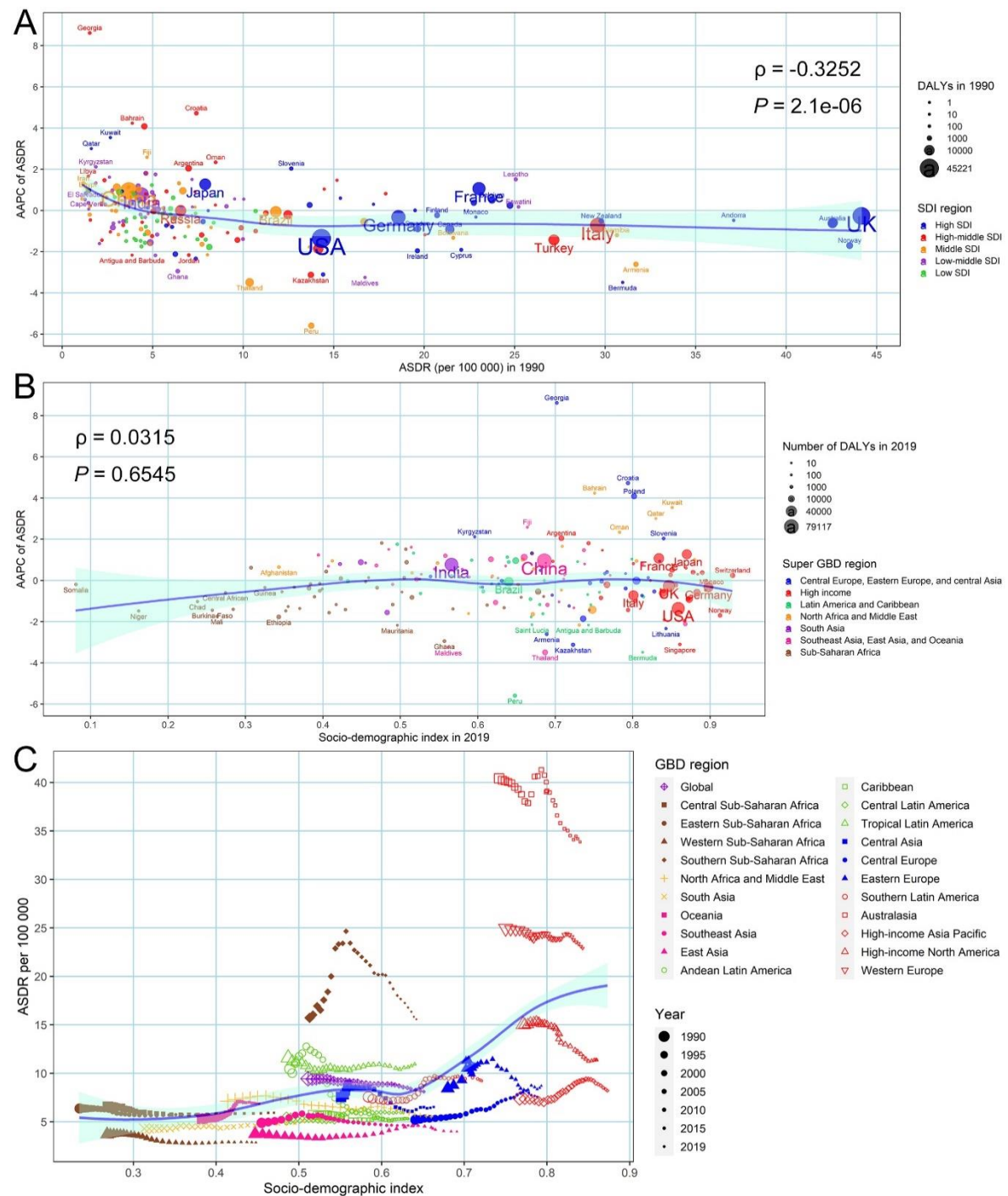


Figure S6. The factors affected the AAPC of ASDR of mesothelioma from 1990 to 2019, both sexes, at the national level: (A) ASDR in 1990 and AAPC of ASDR, (B) SDI in 2019 and AAPC of ASDR, (C) The annual burden in ASDR across 21 GBD regions with SDI from 1990 to 2019. AAPC, average annual percentage change; ASDR, age-standardized disability-adjusted life year rate; SDI, socio-demographic index; GBD, Global Burden of Disease, Injuries, and Risk Factors Study.