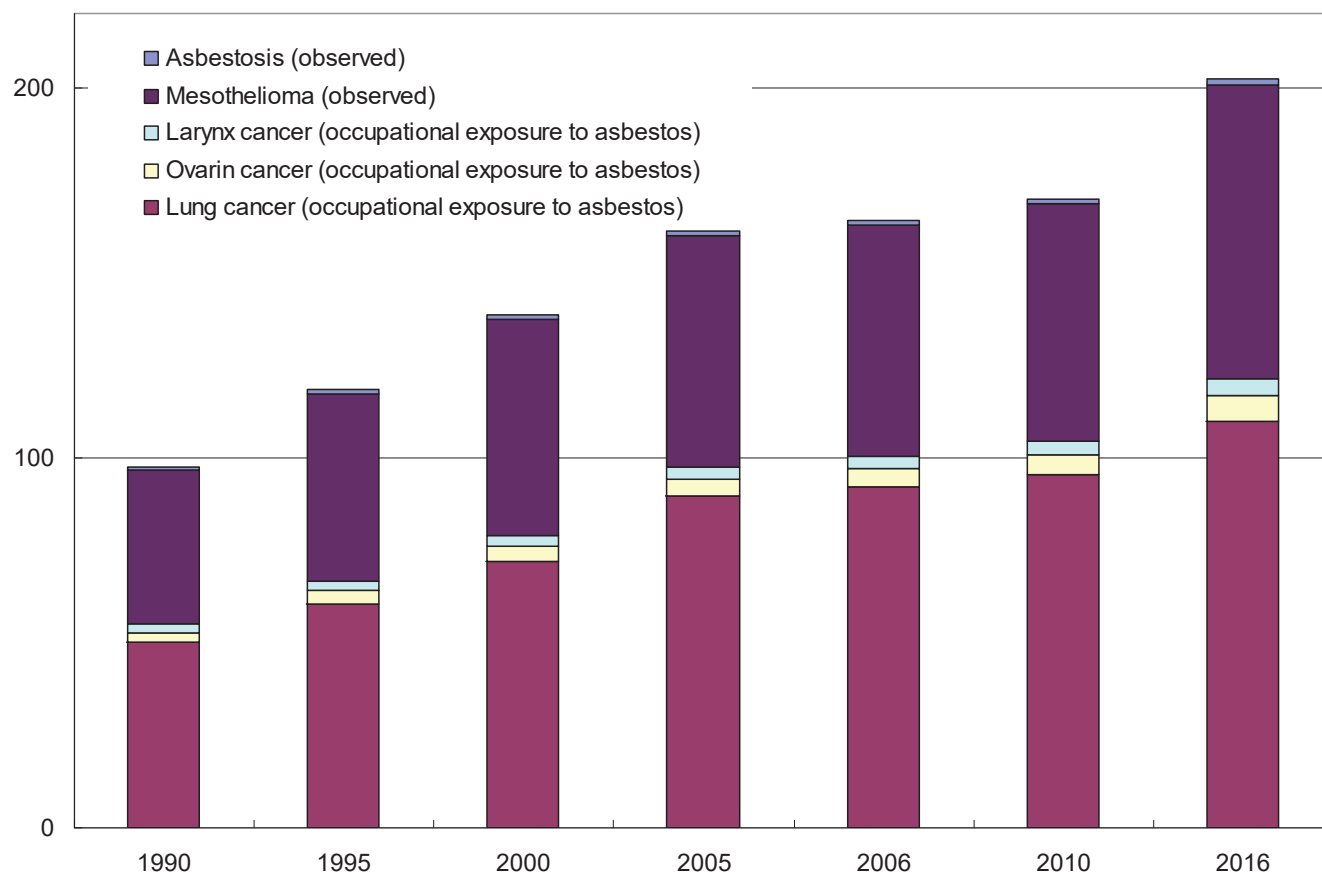


Sri Lanka: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



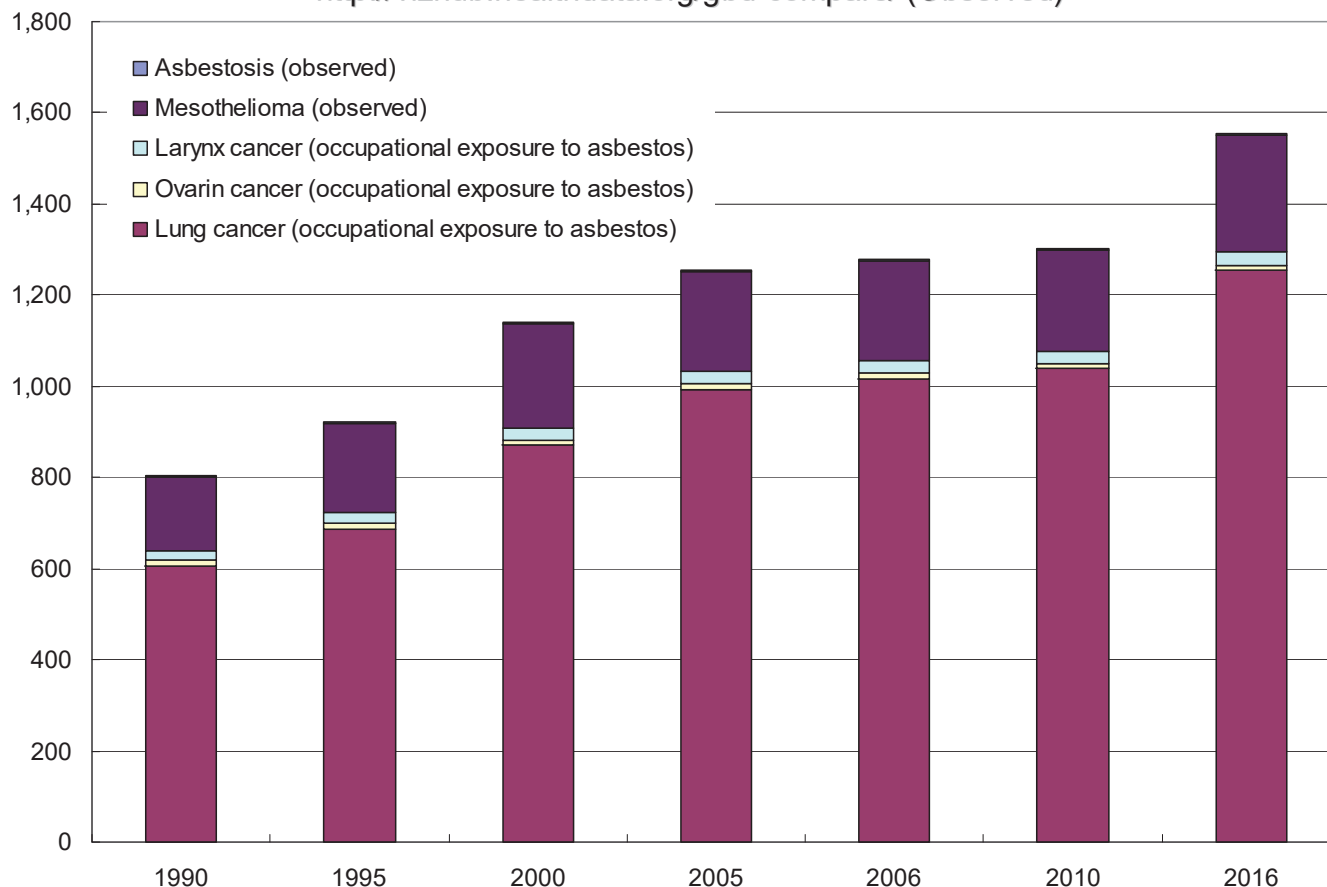
Sri Lanka: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	91	111	131	153	162	193
Mesothelioma (occup) - A	35	44	51	55	56	71
Lung Cancer (occup) - B	50	61	72	89	95	110
Ovarin Cancer (occup) - C	3	4	4	5	5	7
Larynx Cancer (occup) - D	2	2	3	3	4	4
Asbestosis (occup) - E	1	1	1	1	1	1
Mesothelioma (total) - A+F	42	51	58	62	64	80
Mesothelioma (non-occup) - F	6	7	7	8	8	9
% of occupational - A/(A+F)	84.7%	86.0%	87.2%	87.7%	87.6%	89.1%
LC / Meso - B/A	1.41	1.39	1.42	1.64	1.70	1.55
Asbestosis (total) - G	1	1	1	1	1	1
Total = B+C+D+(A+F)+G	98	119	139	161	170	202

Thailand: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



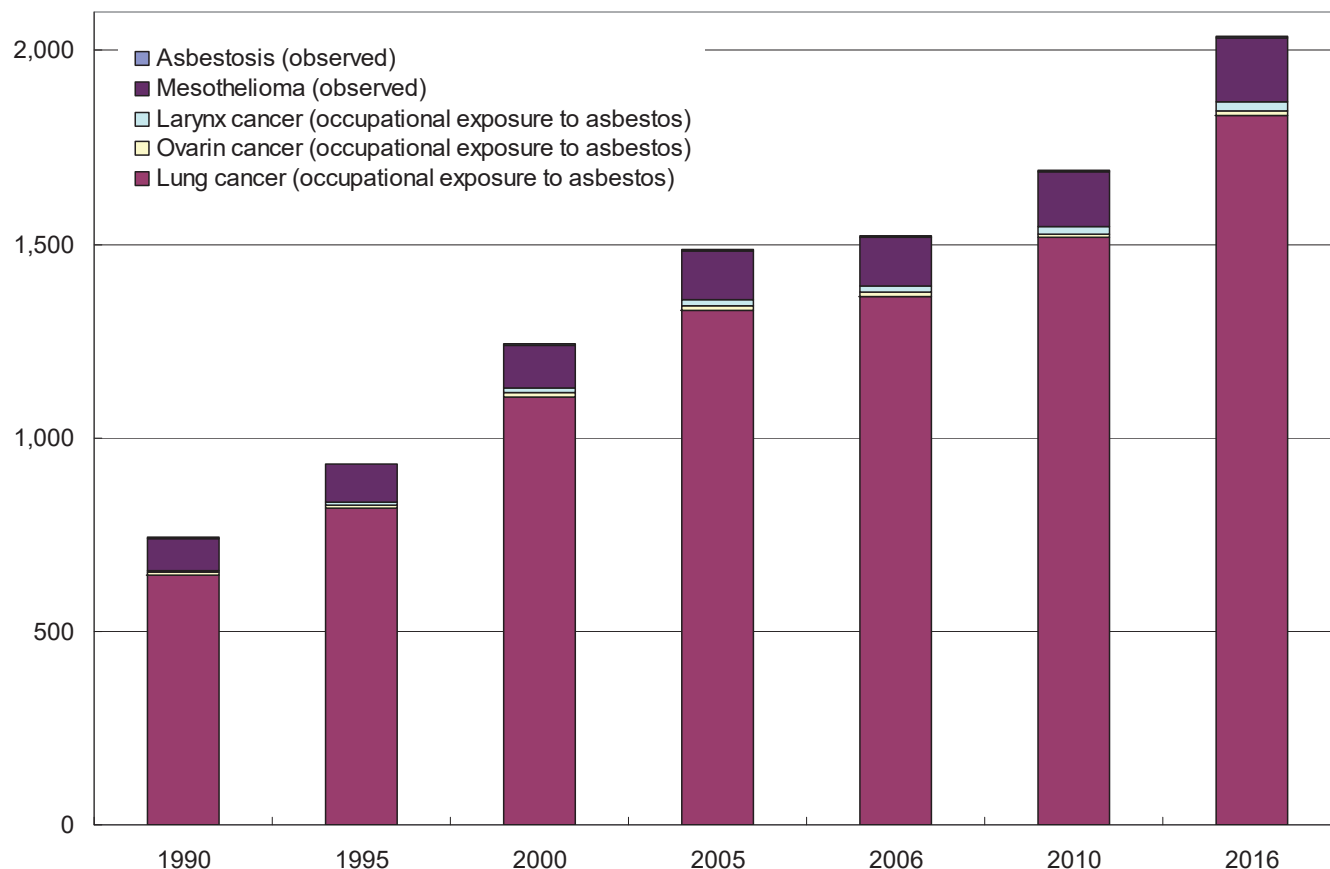
Thailand: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	779	896	1,113	1,226	1,272	1,522
Mesothelioma (occup) - A	139	171	200	191	193	222
Lung Cancer (occup) - B	606	688	871	994	1,038	1,255
Ovarin Cancer (occup) - C	11	11	12	11	11	10
Larynx Cancer (occup) - D	20	23	26	27	26	31
Asbestosis (occup) - E	2	3	3	3	4	4
Mesothelioma (total) - A+F	162	198	229	221	225	255
Mesothelioma (non-occup) - F	24	27	29	30	32	34
% of occupational - A/(A+F)	85.3%	86.6%	87.4%	86.4%	86.0%	86.8%
LC / Meso - B/A	4.38	4.01	4.35	5.20	5.37	5.66
Asbestosis (total) - G	2	3	3	3	4	4
Total = B+C+D+(A+F)+G	803	923	1,141	1,256	1,304	1,556

Vietnam: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



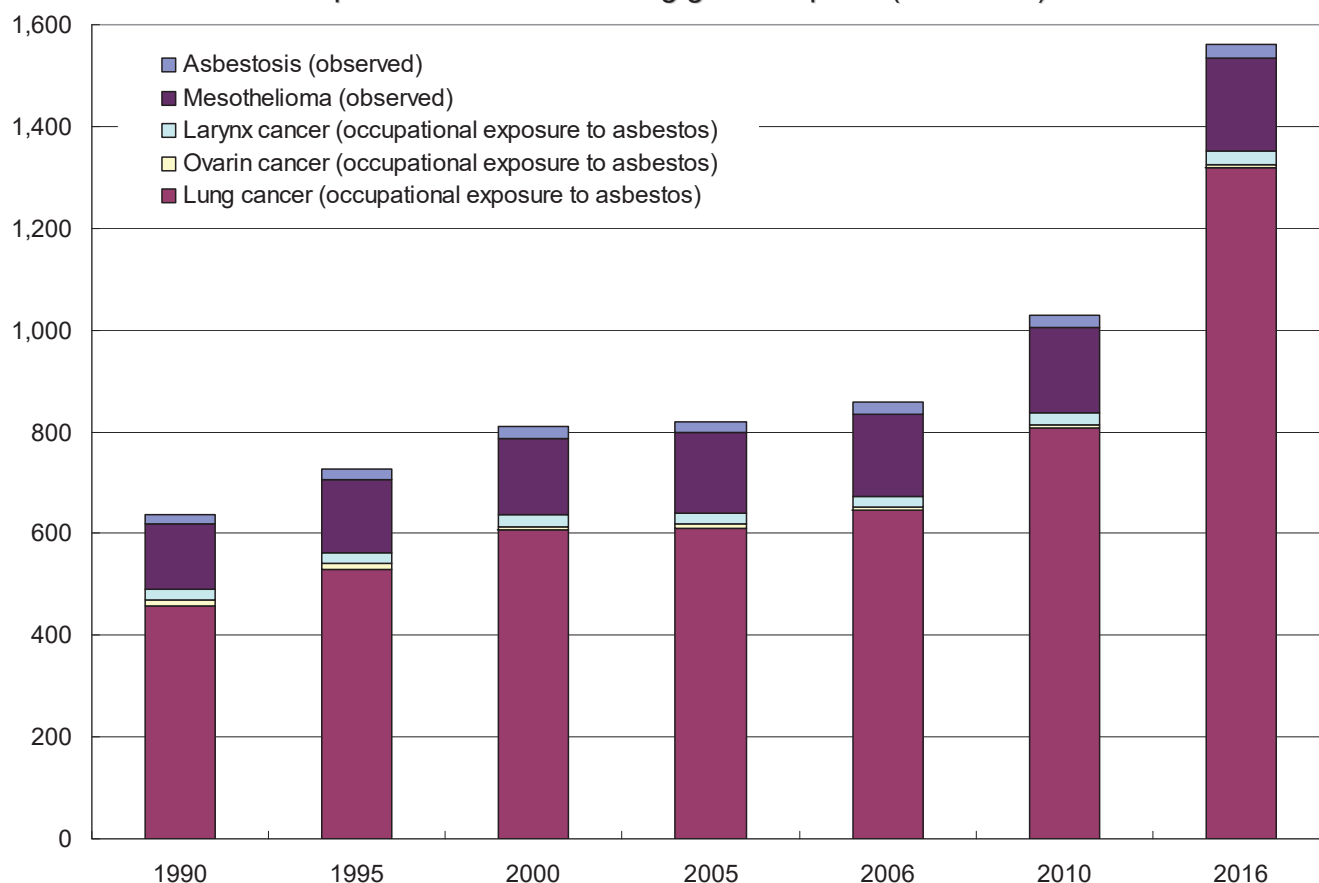
Vietnam: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	721	909	1,215	1,456	1,658	2,000
Mesothelioma (occup) - A	63	72	84	95	108	127
Lung Cancer (occup) - B	643	817	1,105	1,331	1,516	1,834
Ovarin Cancer (occup) - C	8	10	10	10	11	11
Larynx Cancer (occup) - D	5	8	14	17	19	23
Asbestosis (occup) - E	2	2	2	3	4	5
Mesothelioma (total) - A+F	85	96	111	125	141	165
Mesothelioma (non-occup) - F	22	25	28	30	33	37
% of occupational - A/(A+F)	74.5%	74.5%	75.3%	75.8%	76.4%	77.3%
LC / Meso - B/A	10.19	11.37	13.20	14.07	14.06	14.40
Asbestosis (total) - G	2	2	2	3	4	5
Total = B+C+D+(A+F)+G	743	934	1,243	1,486	1,691	2,038

Bangladesh: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



Bangladesh: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	634	718	795	798	1,000	1,525
Mesothelioma (occup) - A	104	113	119	122	128	137
Lung Cancer (occup) - B	459	531	606	611	809	1,319
Ovarin Cancer (occup) - C	11	11	8	6	6	5
Larynx Cancer (occup) - D	40	43	40	36	35	37
Asbestosis (occup) - E	19	21	22	22	23	27
Mesothelioma (total) - A+F	129	142	151	159	168	183
Mesothelioma (non-occup) - F	26	29	33	37	40	46
% of occupational - A/(A+F)	80.2%	79.6%	78.3%	77.0%	76.0%	74.7%
LC / Meso - B/A	4.42	4.70	5.11	4.99	6.34	9.64
Asbestosis (total) - G	19	21	22	22	23	27
Total = B+C+D+(A+F)+G	659	747	828	834	1,041	1,572

India: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



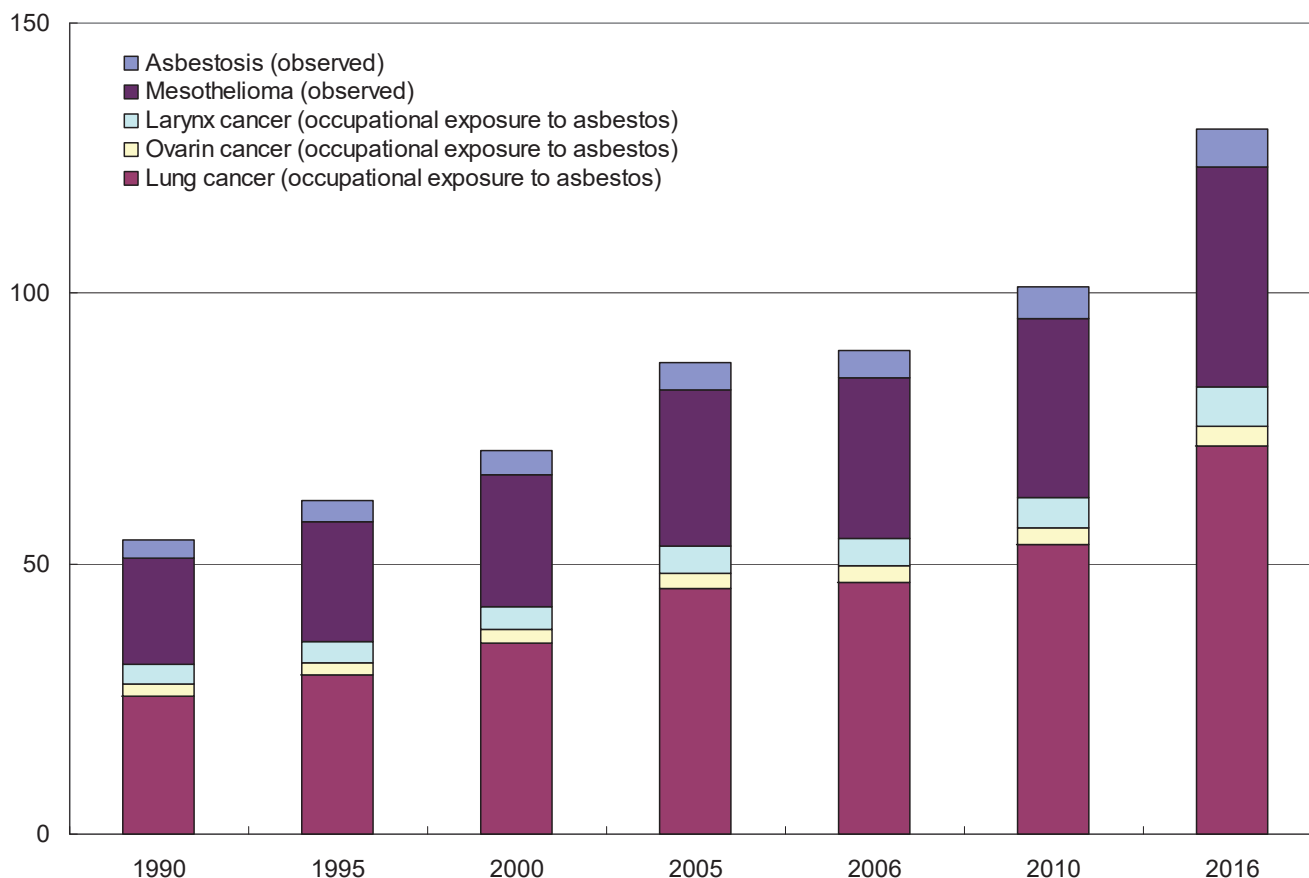
India: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	2,486	2,905	3,483	4,308	5,413	7,136
Mesothelioma (occup) - A	758	875	1,049	1,276	1,567	1,976
Lung Cancer (occup) - B	1,188	1,409	1,710	2,264	2,942	4,018
Ovarin Cancer (occup) - C	57	62	71	87	109	144
Larynx Cancer (occup) - D	235	269	308	343	404	517
Asbestosis (occup) - E	248	292	345	337	391	482
Mesothelioma (total) - A+F	982	1,129	1,340	1,604	1,938	2,405
Mesothelioma (non-occup) - F	224	254	291	327	371	429
% of occupational - A/(A+F)	77.2%	77.5%	78.3%	79.6%	80.8%	82.2%
LC / Meso - B/A	1.57	1.61	1.63	1.77	1.88	2.03
Asbestosis (total) - G	248	292	345	337	391	482
Total = B+C+D+(A+F)+G	2,710	3,159	3,774	4,635	5,784	7,565

Nepal: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



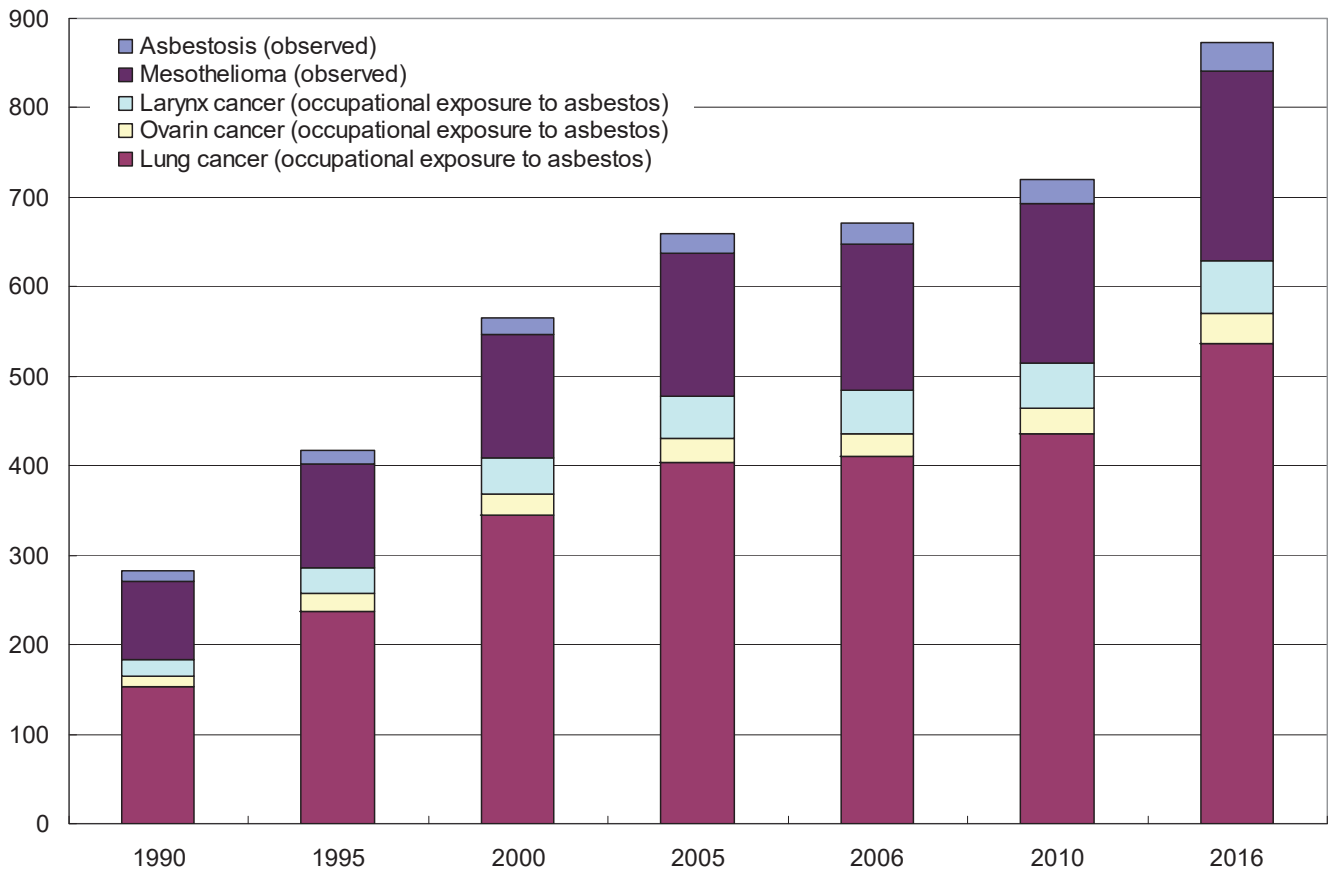
Nepal: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	50	57	65	81	94	123
Mesothelioma (occup) - A	15	17	19	23	27	33
Lung Cancer (occup) - B	26	29	35	45	54	72
Ovarin Cancer (occup) - C	2	2	2	3	3	4
Larynx Cancer (occup) - D	4	4	4	5	6	7
Asbestosis (occup) - E	3	4	4	5	6	7
Mesothelioma (total) - A+F	20	22	24	29	33	41
Mesothelioma (non-occup) - F	4	5	6	6	7	8
% of occupational - A/(A+F)	77.5%	77.1%	77.2%	78.8%	79.9%	80.8%
LC / Meso - B/A	1.67	1.74	1.89	1.98	2.02	2.18
Asbestosis (total) - G	3	4	4	5	6	7
Total = B+C+D+(A+F)+G	55	62	71	87	101	130

Pakistan: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



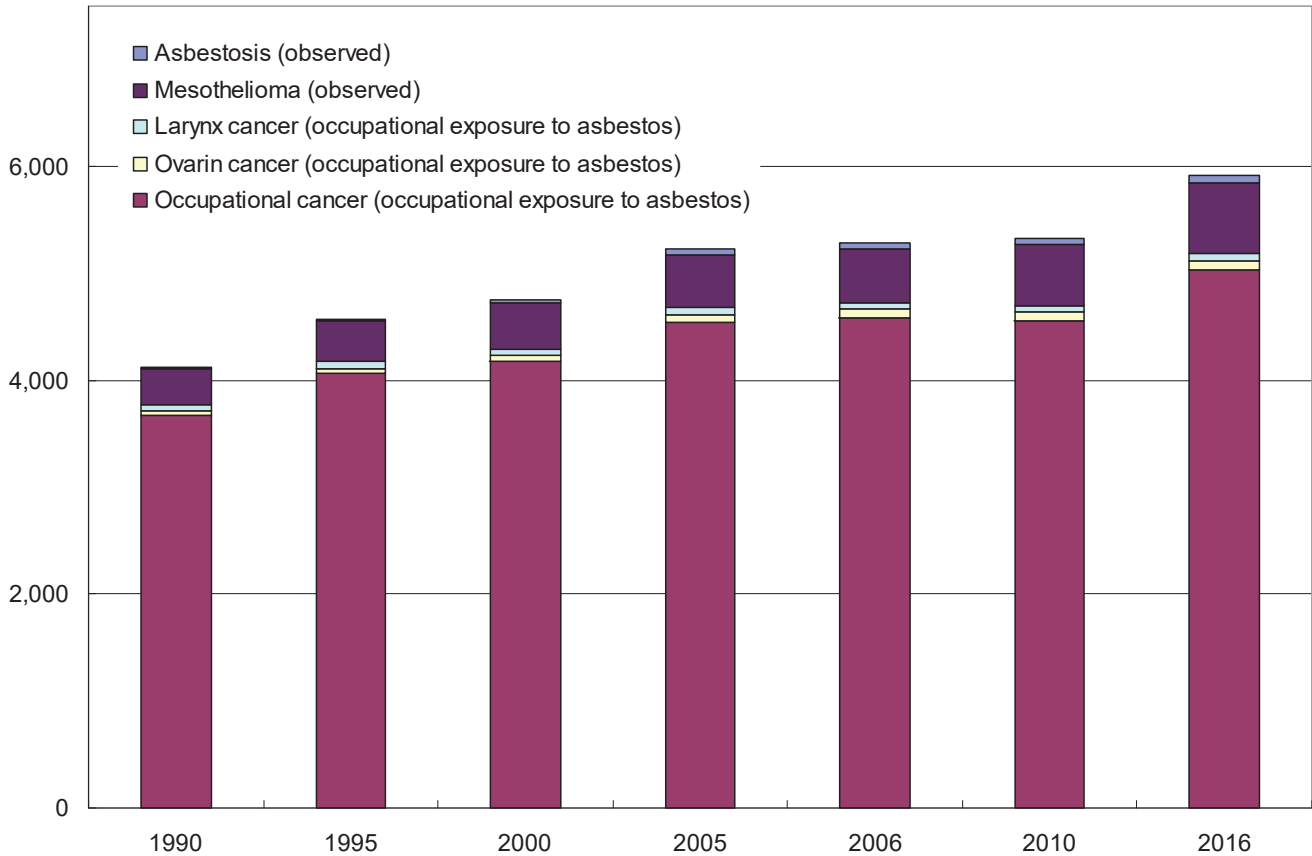
Pakistan: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)

Deaths	1990	1995	2000	2005	2010	2016
Occupational Asbestos Cancer	259	388	531	620	674	819
Mesothelioma (occup) - A	63	87	103	119	132	158
Lung Cancer (occup) - B	154	236	345	404	436	537
Ovarin Cancer (occup) - C	12	20	23	26	28	32
Larynx Cancer (occup) - D	18	29	41	48	52	60
Asbestosis (occup) - E	12	16	19	23	26	31
Mesothelioma (total) - A+F	87	116	137	159	178	212
Mesothelioma (non-occup) - F	24	29	34	39	45	54
% of occupational - A/(A+F)	72.0%	74.7%	75.2%	75.2%	74.5%	74.6%
LC / Meso - B/A	2.44	2.73	3.35	3.38	3.30	3.40
Asbestosis (total) - G	12	16	19	23	26	31
Total = B+C+D+(A+F)+G	283	418	565	659	719	873

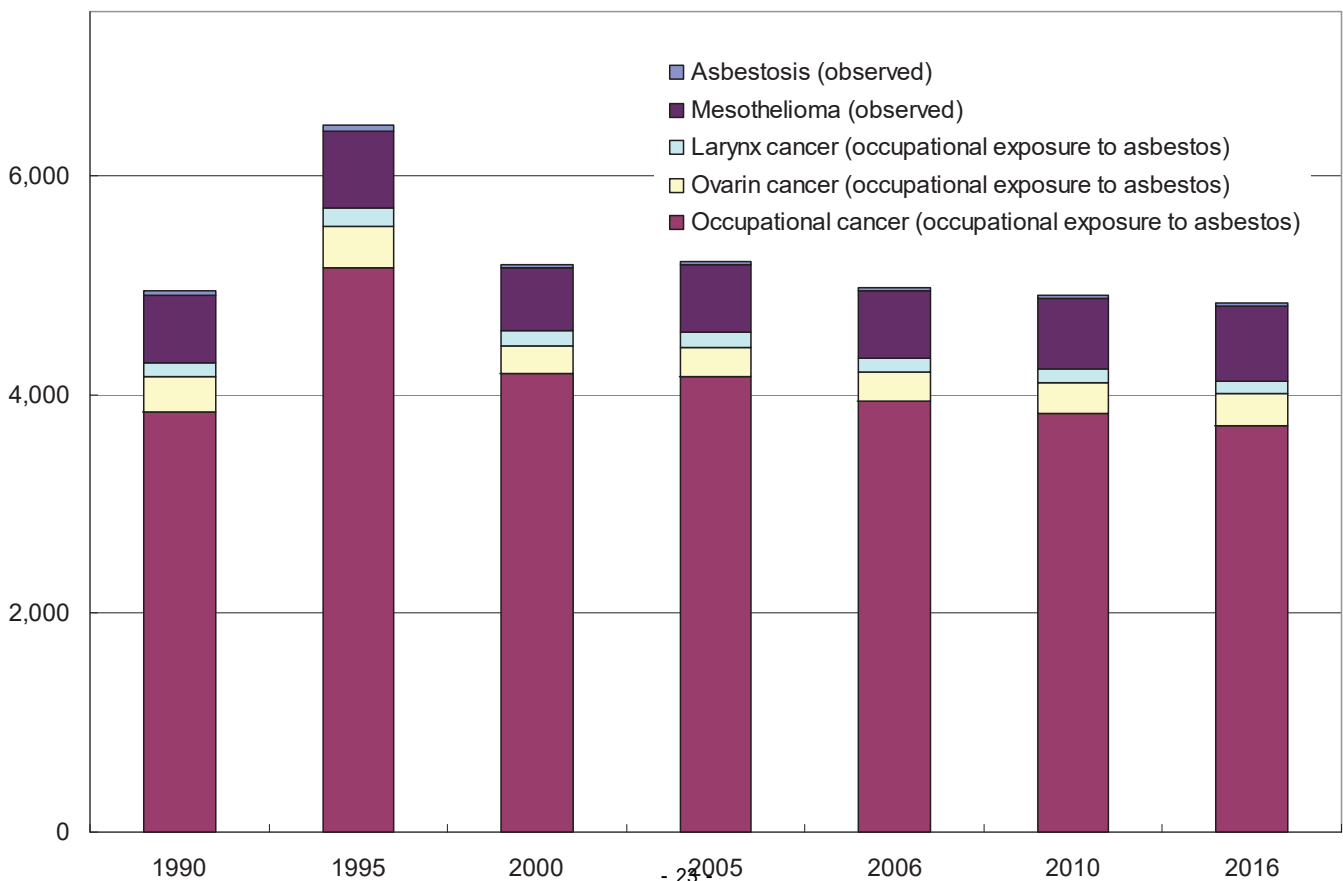
Canada: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



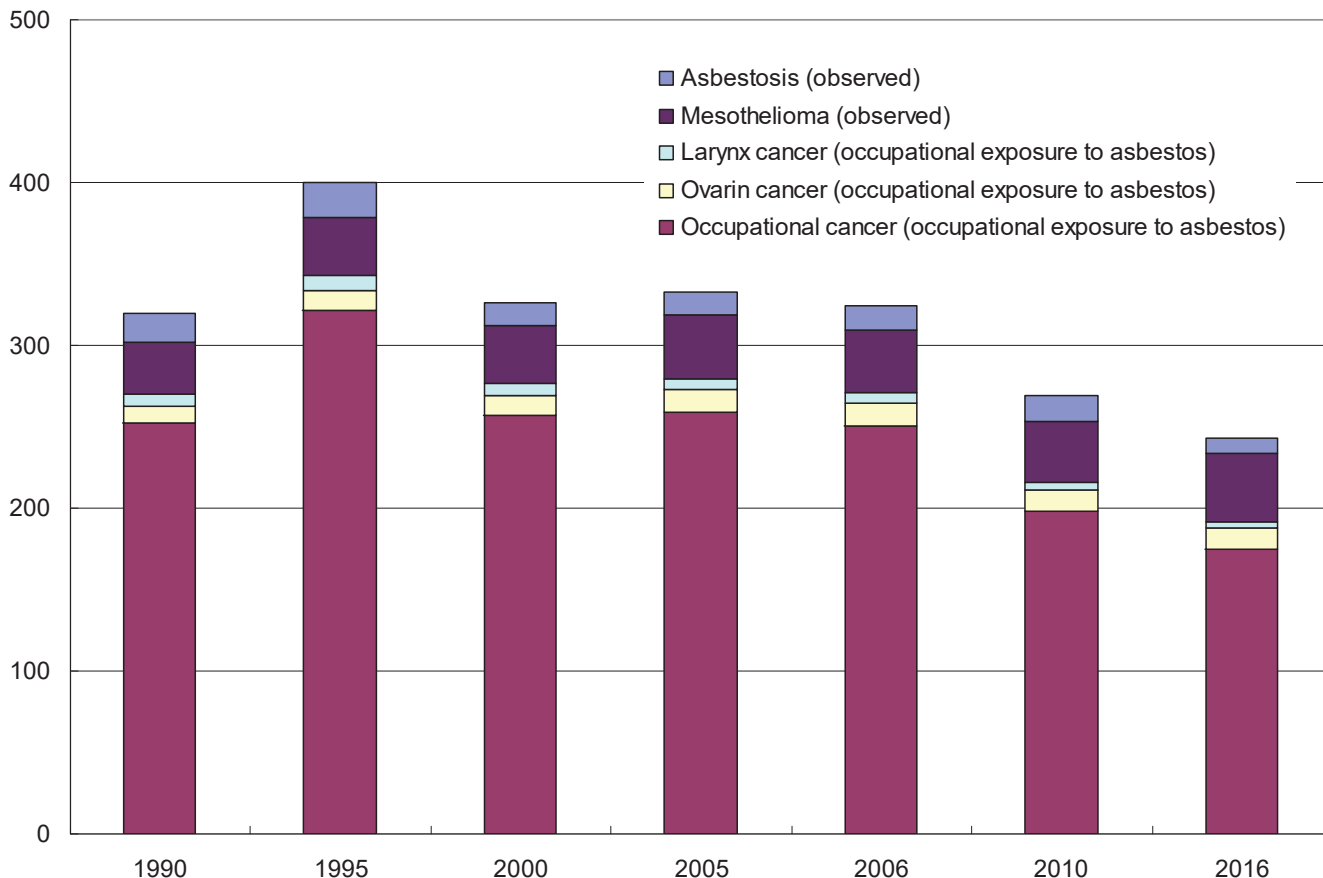
Russia: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



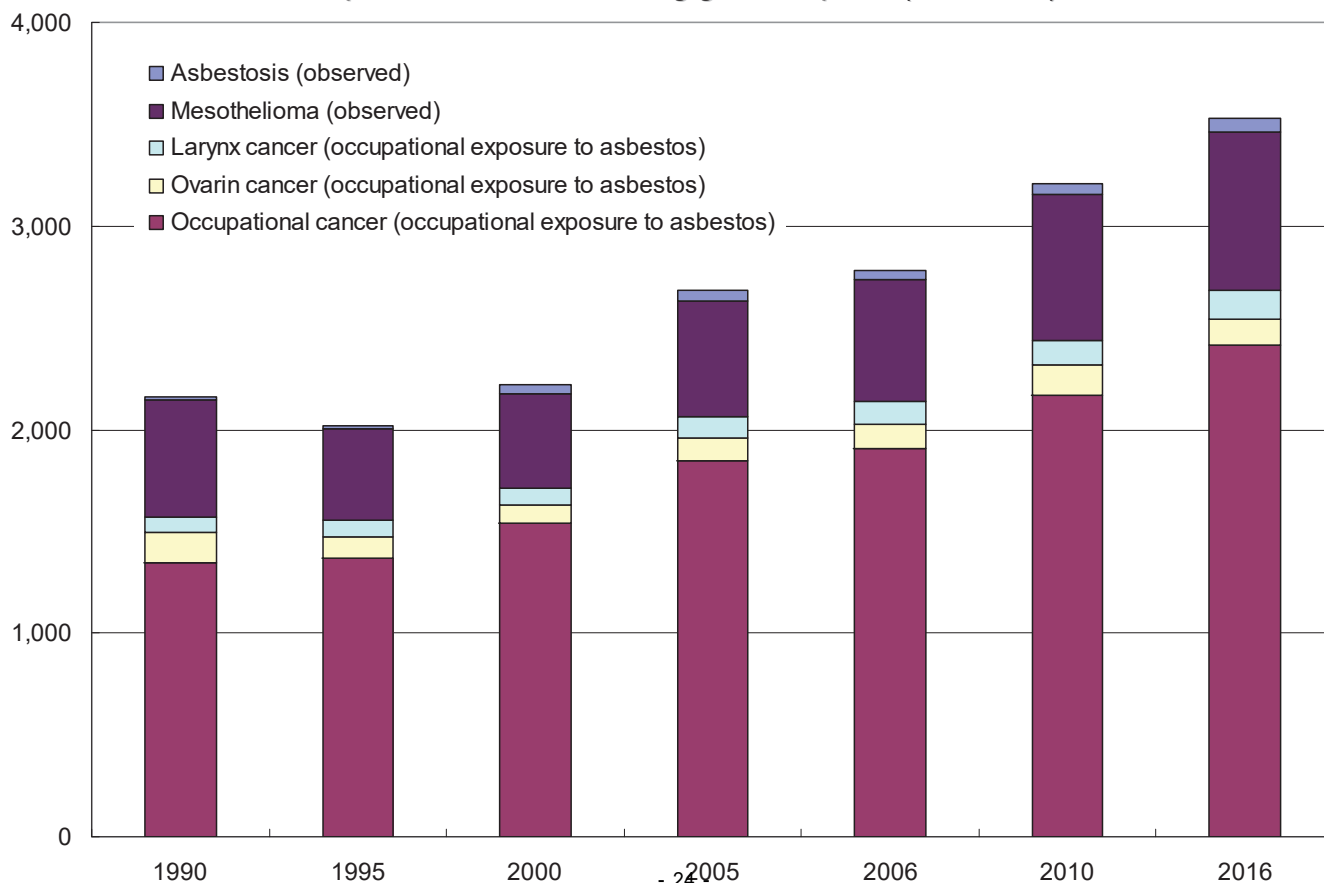
Kazakhstan: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



Brazil: GBD2016 (published in 2017) Estimates of ARDs Deaths

<http://vizhub.healthdata.org/gbd-compare/> (Observed)



Estimation of the global burden of mesothelioma deaths from incomplete national mortality data

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Odgerel Chimed-Ochir,¹ Ken Takahashi,^{1,2} Tom Sorahan,³ Tim Driscoll,⁴ Christina Fitzmaurice,⁵ Makoto Yoko-o,¹ Kittisak Sawanyawisuth,⁶ Sugio Furuya,⁷ Fumihiko Tanaka,⁸ Seichi Horie,⁹ Nico van Zandwijk,² Jukka Takala¹⁰

Table 2 Numbers of annual mesothelioma deaths by status of countries for three extrapolation methods

Extrapolation method	Status of countries (No. of countries)	Mesothelioma deaths*						
		Men		Women		Total		Men %
		N	%	N	%	N	%	
Asbestos adjusted	Countries used for reference rates (59)	11 697	38.9	3314	39.7	15 011	39.1	77.9
	Estimated for (171)	18 338	61.1	5039	60.3	23 377	60.9	78.4
	Countries with poor quality data (45)	1655	5.5	507	6.1	2162	5.6	76.5
	Countries with no reported data (126)	16 683	55.6	4532	54.3	21 215	55.3	78.6
	Total (230)	30 035	100.0	8353	100.0	38 388	100.0	78.2
Continent adjusted	Countries used for reference rates (59)	11 697	41.4	3314	41.2	15 011	41.4	77.9
	Estimated for (171)	16 523	58.6	4724	58.8	21 247	58.6	77.8
	Countries with poor quality data (45)	1925	6.8	539	6.7	2464	6.8	78.1
	Countries with no reported data (126)	14 598	51.7	4185	52.1	18 783	51.8	77.7
	Total (230)	28 220	100.0	8038	100.0	36 258	100.0	77.8
Employment adjusted	Countries used for reference rates (59)	11 697	39.7	3314	41.5	15 011	40.1	77.9
	Estimated for (171)	17 756	60.3	4688	58.5	22 444	59.9	79.1
	Countries with poor quality data (45)	2191	7.4	642	8.0	2833	7.6	77.3
	Countries with no reported data (126)	15 565	52.8	4046	50.4	19 611	52.3	79.4
	Total (230)	29 453	100.0	8002	100.0	37 455	100.0	78.6

<http://oem.bmj.com/content/early/2017/09/02/oemed-2017-104298>

- Estimation of annual mesothelioma deaths in countries without high quality data by using high quality data
- 104 countries had reported data to WHO during 1994-2014 and 126 had no reported data.
- 45 countries were excluded because they had (1) <0.5 deaths/million/year, (2) <2 reported years or (3) <10 total reported deaths.
- Reference rates (sets of mesothelioma mortality rates specified by age and gender) were calculated from reported data for 3 most recent years of remaining 59 countries with high quality data in terms of (1) historical level of asbestos use (per capita and cumulative, stratified into High, Middle, Low and No use groups), (2) continental region and (3) percentage of workforce in industrial sector (grouped into High, Middle and Low groups) as selected attributers.
- Estimations were made by 3 extrapolation methods – adjusted by (1) asbestos use, (2) continent and (3) employment in industrial sector.

Meso deaths by status of countries for 3 extrapolation methods

Extrapolation method	Statute of countries (no. of countries)	Mesothelioma deaths		
		Number	%	Men %
Asbestos adjusted	Countries used for reference rates (59)	15,011	39.1	77.9
	Estimated for (171)	23,377	60.9	78.4
	Estimated with poor quality data (45)	2,167	5.6	76.5
	Estimated with no reported data (126)	21,215	55.3	78.6
	Total (230)	38,388	100.0	78.2
Continent adjusted	Countries used for reference rates (59)	15,011	41.4	77.9
	Estimated for (171)	21,247	58.6	77.8
	Estimated with poor quality data (45)	2,464	6.8	78.1
	Estimated with no reported data (126)	18,783	51.8	77.7
	Total (230)	36,258	100.0	77.8
Employment adjusted	Countries used for reference rates (59)	15,011	40.1	77.9
	Estimated for (171)	22,444	59.9	79.1
	Estimated with poor quality data (45)	2,833	7.6	77.3
	Estimated with no reported data (126)	19,611	52.3	79.4
	Total (230)	37,455	100.0	78.6

GBMeso: <http://oem.bmj.com/content/early/2017/09/02/oemed-2017-104298>

Comparison of Meso Estimates: GBMeso vs GBD2016 -1

GBMeso						GBD2016	
Ra nk	Country	A	C	E	Average (for 3 yrs)	Ra nk	Meso Deaths In 2011
Countries used for ref rates (59)					15,011		17,364
3	USA	H	America	H	2,611 (2011-13)	1	2,911
4	UK	H	Europe	H	2,405 (2011-13)	2	2,547
5	Italy	H	Europe	H	1,423 (2011-13)	5	1,635
6	Germany	H	Europe	H	1,413 (2011-13)	6	1,628
7	Japan	H	Asia	H	1,357 (2011-13)	8	1,345
10	France	H	Europe	H	972 (2009-11)	7	1,471
11	Australia	H	Oceania	M	609 (2009-11)	10	688
14	Netherlands	H	Europe	M	493 (2011-13)	13	575
15	Canada	H	America	M	436 (2009-11)	12	578
16	Spain	H	Europe	H	412 (2011-13)	14	486
18	Turkey	H	Asia	H	363 (2011-13)	15	470
	Other 48				2,517		3,030

GBD2016: [https://vizhub.healthdata.org/gbd-compare/%20\(Observed\)](https://vizhub.healthdata.org/gbd-compare/%20(Observed))
 GBMeso: <http://oem.bmj.com/content/early/2017/09/02/oemed-2017-104298>

Comparison of Meso Estimates: GBMeso vs GBD2016 -2

GBMeso								GBD2016	
Ra nk	Country	A	C	E	Asbestos adjusted	Continent adjusted	Employment adjusted	Ra nk	Meso Deaths In 2011
Estimated with poor quality data (45)					2,162	2,464	2,833		1,359
9	Brazil	H	America	H	1,183	779	1,143	9	724
	Other 44				979	1,685	1,690		634
Estimated with no reported data (126)					21,215	18,783	19,611		9,464
1	China	H	Asia	M	10,459	6,456	9,549	3	2,477
2	India	H	Asia	M	5,940	3,732	5,411	4	2,011
8	Russia	H	Europe	H	1,292	1,645	1,241	11	648
12	Indonesia	M	Asia	L	548	700	184	16	385
13	Thailand	H	Asia	L	539	330	83	22	228
17	Nigeria	H	Africa	L	410	472	73	42	68
19	Iran	H	Asia	H	361	221	350	17	342
20	Pakistan	M	Asia	M	337	431	646	27	182
	Other 118				1,329	4,796	2,029		3,124
Total (230)					38,388	36,258	37,455		27,043

GBD2016: <https://vizhub.healthdata.org/gbd-compare/%20> (Observed)
 GBMeso: <http://oem.bmj.com/content/early/2017/09/02/oemed-2017-104298>

Comparison of Meso Estimates: GBMeso vs GBD2016

GBMeso								GBD2016	
Ra nk	Country	A	C	E	Asbestos adjusted	Continent adjusted	Employment adjusted	Ra nk	Meso Deaths In 2011
1	China	H	Asia	M	10,459	6,456	9,549	3	2,477
2	India	H	Asia	M	5,940	3,732	5,411	4	2,011
12	Indonesia	M	Asia	L	548	700	184	16	385
13	Thailand	H	Asia	L	539	330	83	22	228
20	Pakistan	M	Asia	M	337	431	646	27	182
23	Taiwan	H	Asia	N	230	135	24	52	50
26	Philippines	M	Asia	L	179	230	60	31	119
30	Malaysia	H	Asia	H	139	90	136	66	34
32	Bangladesh	N	Asia	L	104	408	104	28	168
40	Korea	H	Asia	H	86	86	86	35	109
42	Vietnam	N	Asia	L	76	298	84	30	144
46	SriLanka	M	Asia	H	67	82	129	45	66
50	Myanmar	L	Asia	L	55	149	41	25	191
79	Nepal	N	Asia	L	17	71	19	64	34
102	Cambodia	N	Asia	L	8	30	7	80	20
164	Laos	N	Asia	L	0	10	1	119	8