

# OCCUPATION AND MORTALITY

## Cerebrovascular Disease-related Mortality in South Africa, 2013- 2015

National Institute for Occupational Health

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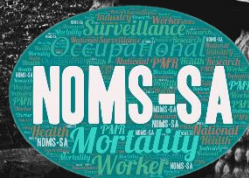
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Released: 31 March 2024



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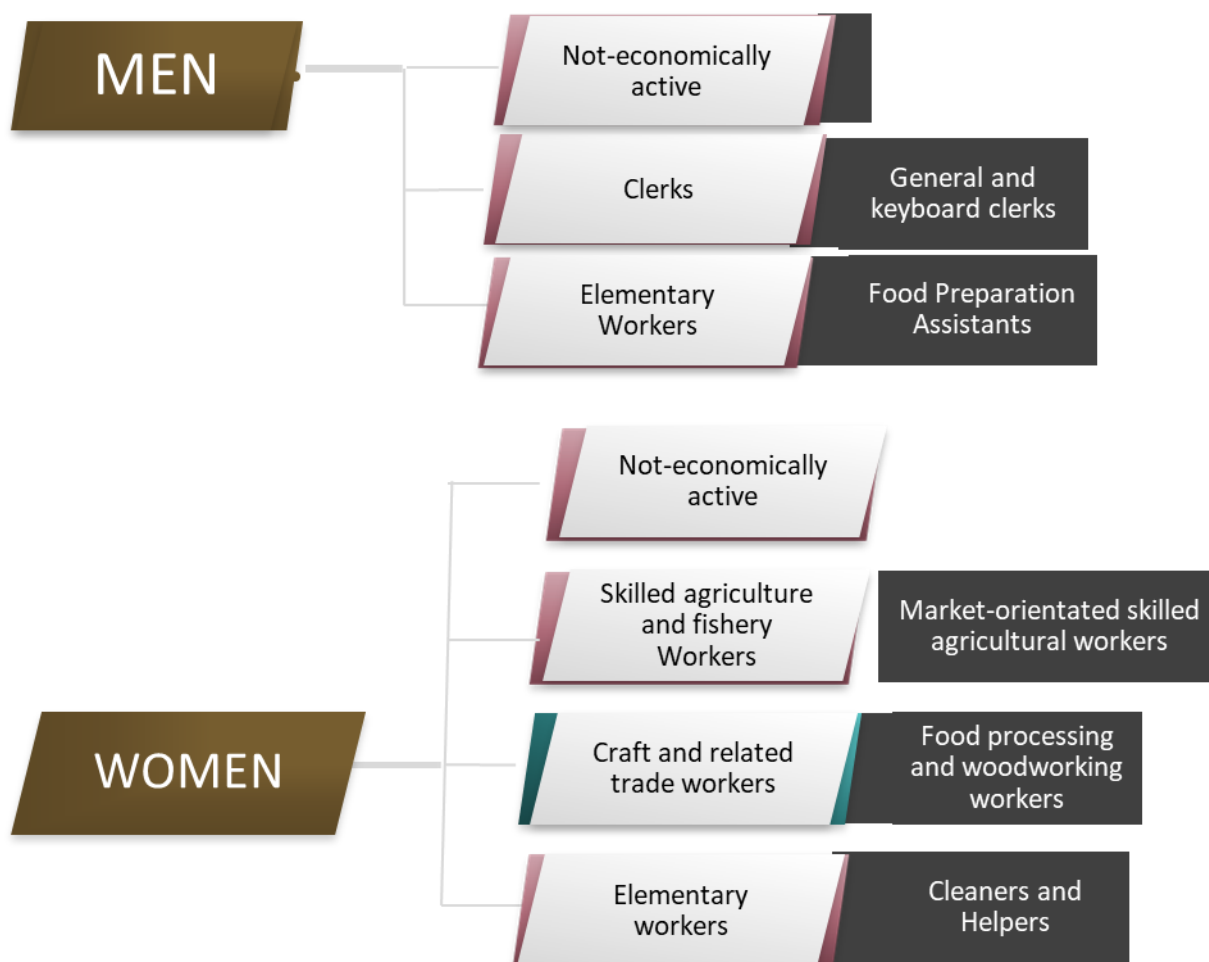
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## Main points

- There were 33 400 reported deaths due to cerebrovascular-related mortality from 2013-2015 in 15-69 year olds.
- Main industry with a significantly elevated PMR for Cerebrovascular-related mortality was educational services for men.
- Major occupation groups with significantly elevated PMRs for Cerebrovascular-related mortality were clerks, skilled agriculture and fishery workers, craft and related trade workers, and elementary workers.

Significantly elevated PMRs for major and sub-major occupations in men and women



# Introduction

The National Occupational Mortality Surveillance South Africa (NOMS-SA) is a nation-wide, evidence-based surveillance system that measures primary and common risks associated with specific occupations and industries using mortality data from Statistics South Africa. NOMS-SA describes the relationship between work and wellbeing in order to inform policy development to improve worker safety and health. It can provide information for workplaces and educational activities. Surveillance of occupational mortality can enable research and prevention strategies.

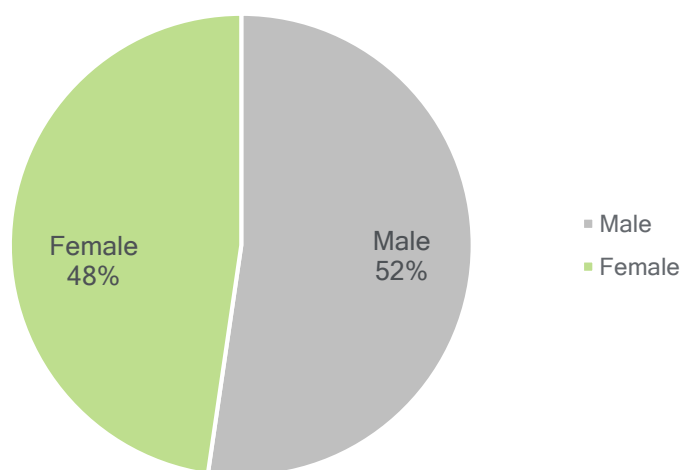
This report presents the analysis of deaths involving Cerebrovascular-related mortality in different occupation groups and industries among those aged 15 to 69 years in South Africa. This analysis includes deaths that were registered from 2013 to 2015 by the Statistics South Africa.

Occupation was defined using the South African Standard Classification of Occupations (SASCO). There are nine major occupation groups, which then divide in 42 sub-major groups. For further information on the breakdown of occupation groups, see Appendix A.

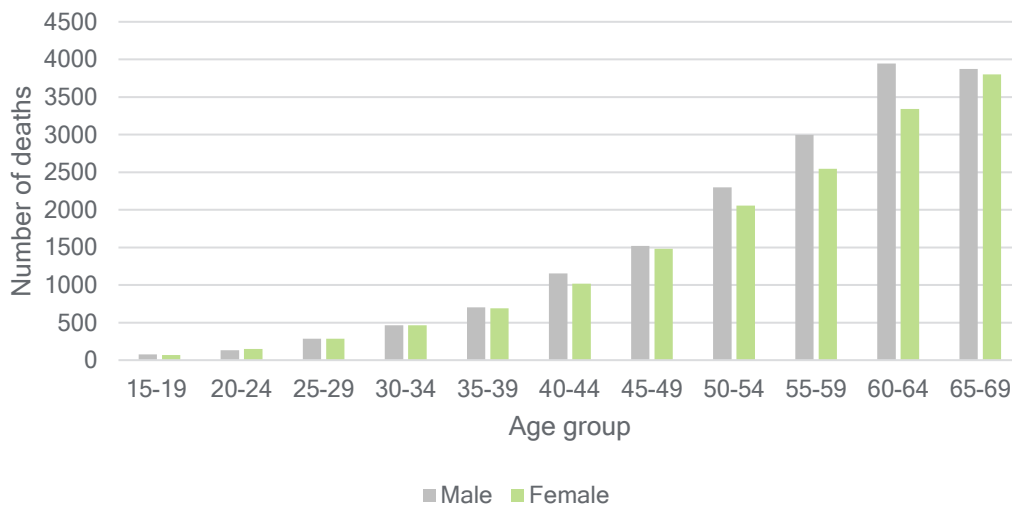
We calculated proportional mortality ratios for the population at risk of dying from Cerebrovascular-related mortality. The results of the analysis do not prove conclusively that the observed risk of death involving Cerebrovascular-related mortality are caused by occupational exposure. The findings presented here should be interpreted bearing in mind the warnings in the strengths and limitations section.

## Cerebrovascular related mortality by sex and age

- There were 33 400 reported deaths due to cerebrovascular-related mortality from 2013-2015.
- Number of reported deaths due to Cerebrovascular-related mortality by sex:
  - Men (17 442), Women (15 900), and Unspecified (58).



- Mean age of death due to Cerebrovascular-related mortality: men (55.5 years), women (55.3 years).





# Cerebrovascular-related mortality by sex and main industry

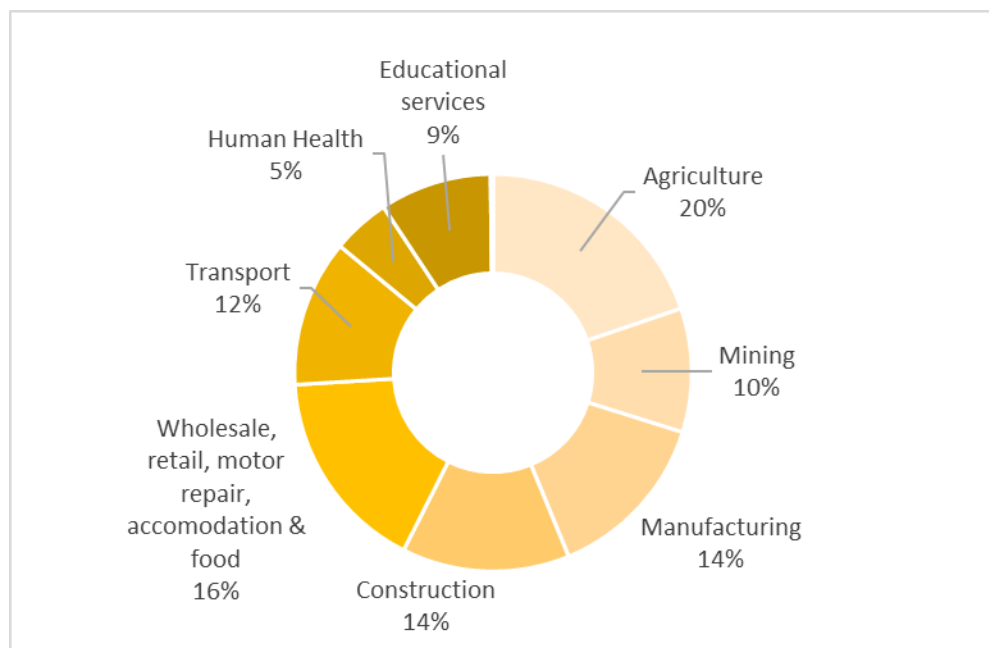


Figure 1. Percentage of Cerebrovascular-related mortality by main industry.

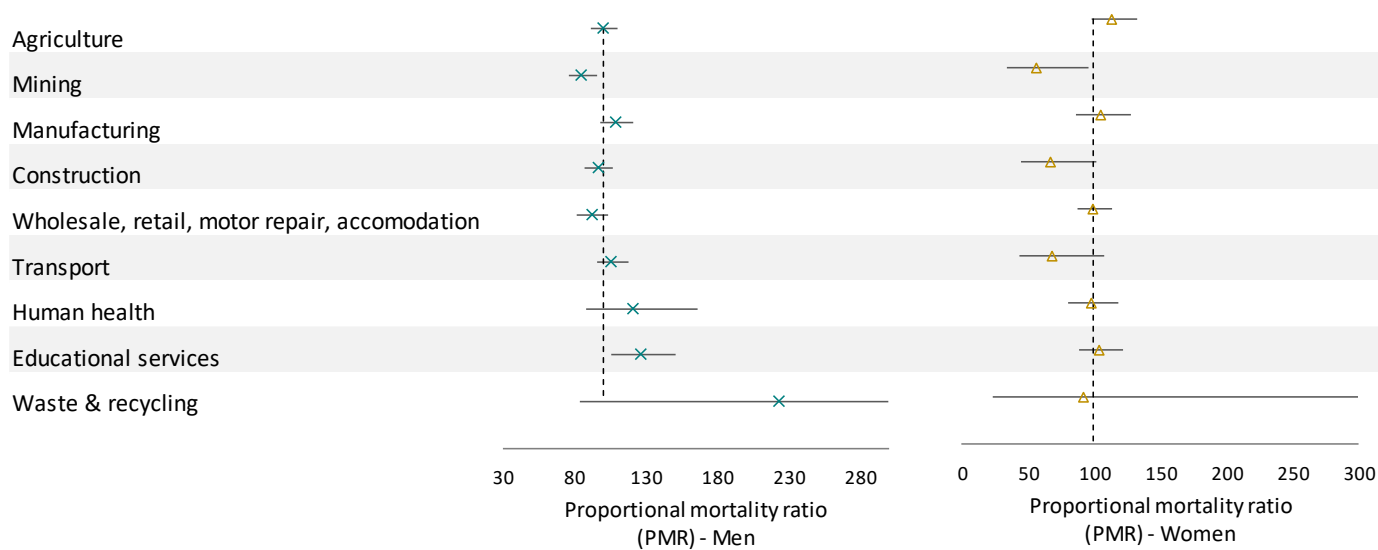
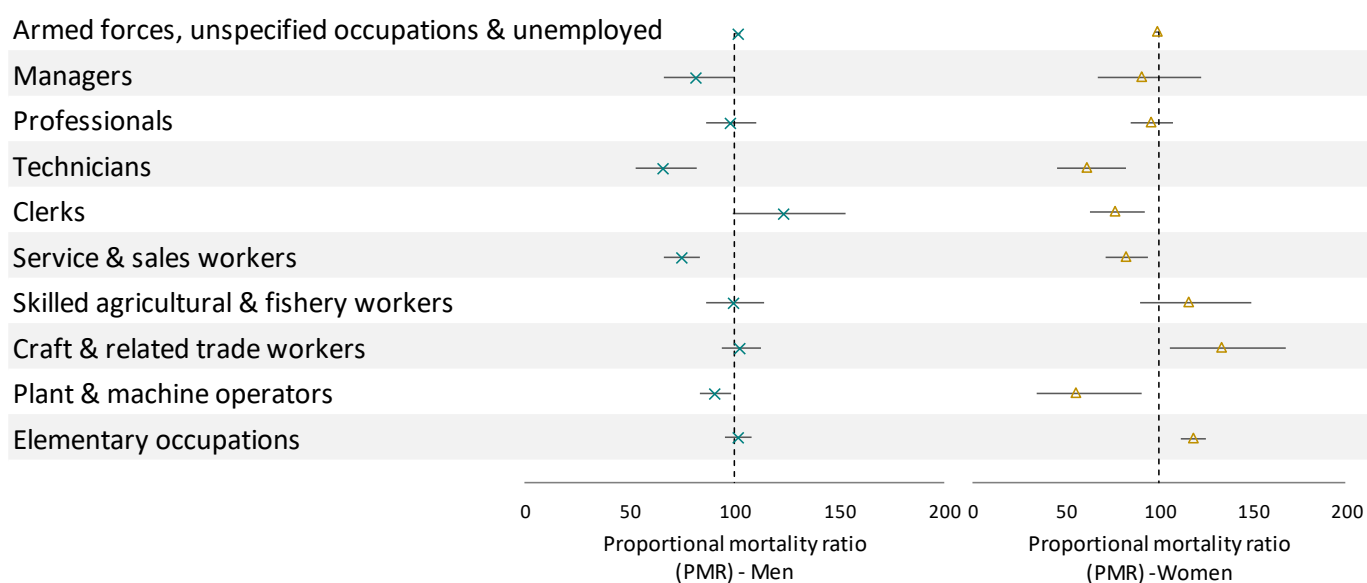


Figure 2 Cerebrovascular-related mortality by sex and main industry. Source: Statistics South Africa (See Appendix Table 1 and 2)

- Main industries with significant excess deaths for men was educational services and non-significantly elevated PMRs for men in human health was seen. No significant excess deaths were seen in women but there was a non-significant raised PMR in agriculture.

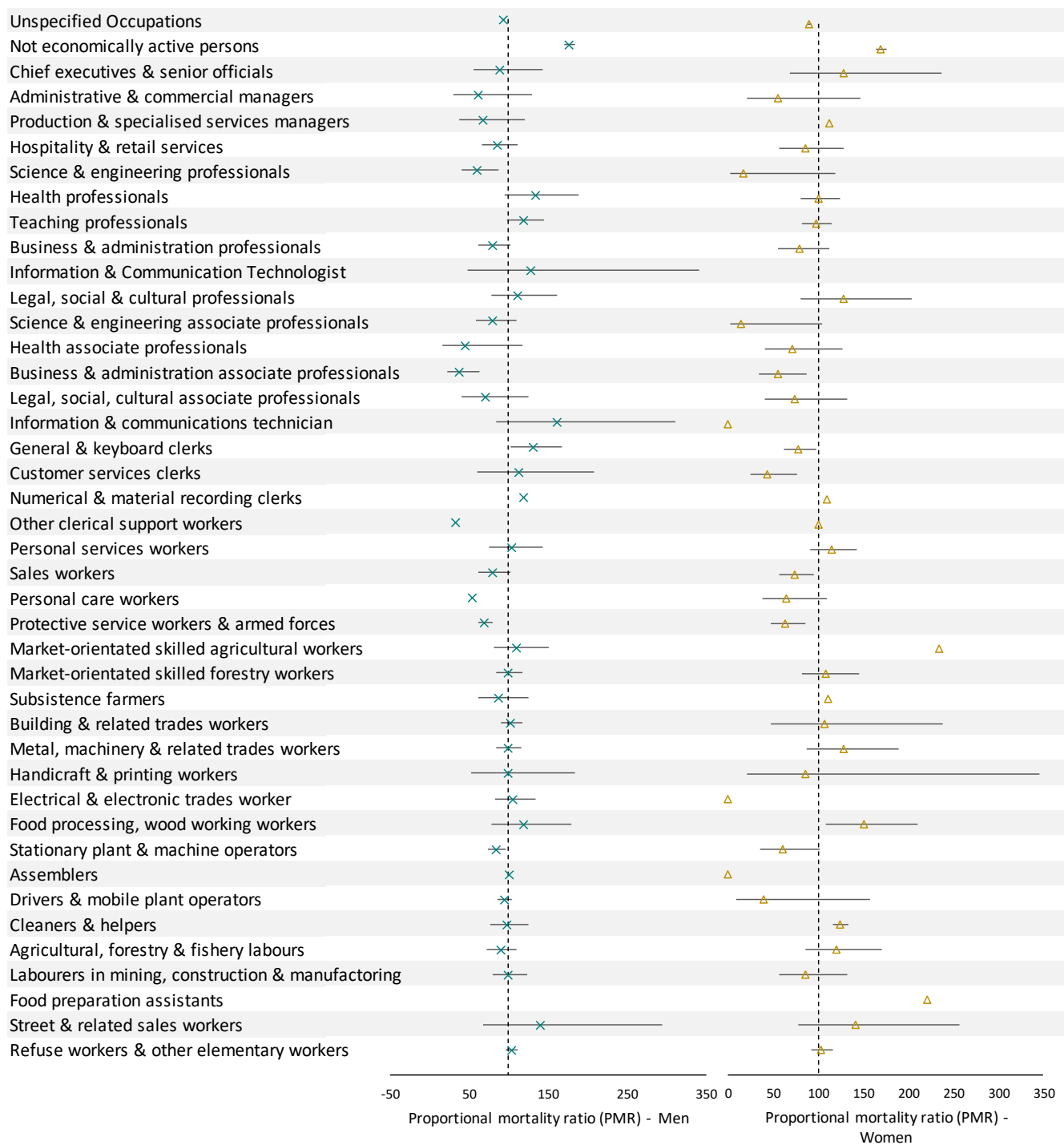
## Cerebrovascular-related mortality by sex and major occupation



**Figure 3.** Cerebrovascular-related mortality by sex and major occupation. Source: Statistics South Africa. (See Appendix Table 3 and 4)

- Men working as clerks had excess mortality due to Cerebrovascular-related mortality.
- Women working as craft and related trade workers and elementary occupations, had significant excess mortality due to Cerebrovascular-related mortality.

# Cerebrovascular-related mortality by sex and sub-major occupation



**Figure 4.** Cerebrovascular-related mortality by sex and sub-major occupation. Source: Statistics South Africa (See Appendix, Tables 5 and 6)



- Men employed in the following sub-major occupation groups had significant excess mortality due to Cerebrovascular-related mortality.
  - Not economically active
  - General and keyboard clerks
  - Food preparation assistants

Among men health, teaching, legal social and cultural professionals, information and communications technicians and numerical and material recording clerks and street and related sales workers had non-significantly raised excess mortality.

- Women employed in the following sub-major occupation groups had significant excess mortality due to Cerebrovascular-related mortality.
  - Not economically active
  - Market-orientated skilled agricultural workers
  - Food processing and woodworking workers
  - Cleaners and helpers

Women CEOs and senior officials, legal social and cultural professionals, information and communication technicians, personal service workers, metal machinery and related trades workers, agricultural forestry and fishery labourers, food preparation assistants and street and related sales workers.

## Measuring the data

- NOMS-SA uses mortality data with occupation information from Statistics South Africa, which is a South African national statistical entity, who is responsible for recording vital events on an annual basis. The data brief includes only the working population (15+).
- Deaths were defined using the International Classification of Diseases, 10<sup>th</sup> Revision (ICD-10). Deaths due to interpersonal violence include the following underlying cause of death codes: E10 to E14.
- The figures are based on proportional mortality ratios (PMRs). A simple and potentially useful way of portraying the burden of a specific disease within a population. PMRs are the ratio of the proportion of observed deaths in a specific occupation over the proportion of observed deaths in the total data. These were calculated to estimate where excess mortality by occupation is found. PMRs also provides a way to compare occupations. Confidence intervals that do not include 100 indicate that a PMR is significant.

$$\frac{(\textit{Proportion of deaths from a particular cause in a specific group of workers})}{(\textit{Proportion of deaths from that cause in the general population})} \times 100$$

## Strengths and limitations

- PMRs can only be calculated where data on occupation or industry are available; it is not a reflection of length of employment.
- A statistically significantly elevated PMR cannot be interpreted directly as a causal relationship between the occupation and the cause of death.
- A lack of significantly increased PMRs may represent the selection of healthy workers for particular occupations and/or improved socioeconomic circumstances of selected workers than the general population.

# References

1. SASCO.
2. Statistics South Africa.

# Appendix

Table 1 Cerebrovascular-related mortality by industry (men)

<b>Men</b>					
<b>Occupation</b>	<b>n</b>	<b>Total deaths</b>	<b>PMR</b>	<b>95% CI LL</b>	<b>95% CI UL</b>
Agriculture	426	12750	100,7238	91,60	110,76
Mining	292	10288	85,56269	76,29	95,96
Manufacturing	323	8923	109,125	97,85	121,70
Construction	390	12137	96,86922	87,72	106,98
Wholesale, retail, motor repair, accomodation	285	9295	92,43321	82,30	103,81
Transport	344	9742	106,4493	95,77	118,31
Human health	38	945	121,2228	88,21	166,60
Educational services	121	2881	126,6119	105,95	151,31
Waste & recycling	4	54	223,3052	83,81	594,99
<b>Total</b>	<b>2223</b>	<b>67015</b>			

Table 2 Cerebrovascular-related mortality by industry (women)

<b>Women</b>					
<b>Occupation</b>	<b>n</b>	<b>Total deaths</b>	<b>PMR</b>	<b>95% CI LL</b>	<b>95% CI UL</b>
Agriculture	174	3663	114,228	98,45598	132,5267
Mining	14	594	56,67636	33,56639	95,69722
Manufacturing	100	2293	104,8712	86,20543	127,5787
Construction	22	785	67,39279	44,37448	102,3513
Wholesale, retail, motor repair, accomodation	218	5247	99,90928	87,48913	114,0926
Transport	19	668	68,39707	43,62696	107,2309
Human health	105	2576	98,01755	80,95311	118,6791
Educational services	155	3576	104,2304	89,04779	122,0017
Waste & recycling	2	52	92,48835	23,13053	369,8184
<b>Total</b>	<b>809</b>	<b>19454</b>			

Table 3 Cerebrovascular-related mortality by major occupation (men)

<b>Men</b>					
Occupation	n	Total deaths	PMR	95% CI LL	95% CI UL
Armed forces, unspecified occupations & unemployed	14 449	414682	101,3497	99,71	103,02
Managers	91	3257	81,2687	66,17	99,81
Professionals	250	7441	97,72561	86,33	110,62
Technicians	78	3452	65,72393	52,64	82,05
Clerks	82	1938	123,0721	99,12	152,81
Service & sales workers	307	12013	74,33384	66,47	83,13
Skilled agricultural & fishery workers	198	5801	99,28006	86,37	114,12
Craft & related trade workers	464	13160	102,5562	93,64	112,33
Plant & machine operators	578	18578	90,49583	83,41	98,18
Elementary occupations	941	26898	101,7582	95,46	108,47
<b>Total</b>	<b>17 438</b>	<b>507220</b>			

Table 4 Cerebrovascular-related mortality by major occupation (women)

<b>Women</b>					
Occupation	n	Total deaths	PMR	95% CI LL	95% CI UL
Armed forces, unspecified occupations & unemployed	13903	332216	99,44752	97,8081	101,1144
Managers	42	1103	90,48566	66,87043	122,4406
Professionals	267	6644	95,49654	84,70206	107,6667
Technicians	44	1709	61,18101	45,52928	82,21337
Clerks	101	3143	76,363	62,83241	92,80733
Service & sales workers	196	5686	81,91345	71,21213	94,22289
Skilled agricultural & fishery workers	59	1212	115,6792	89,62648	149,305
Craft & related trade workers	71	1266	133,2695	105,6111	168,1712
Plant & machine operators	16	682	55,74958	34,15366	91,00095
Elementary occupations	1196	24056	118,1446	111,635	125,0338
<b>Total</b>	<b>15895</b>	<b>377717</b>			

Table 5 Cerebrovascular-related mortality by sub-major occupation (men)

Men					
Occupation	n	Total deaths	PMR	95% CI LL	95% CI UL
Occupations unspecified	12016	374613	93,30228	91,64883	94,98556
Not economically active persons	2433	40069	176,6236	169,7429	183,7833
Chief executives & senior officials	17	555	89,09865	55,38863	143,3249
Administrative & commercial managers	7	330	61,70201	29,41504	129,4283
Production & specialised services managers	11	478	66,93912	37,07049	120,8736
Hospitality & retail services	56	1894	86,00491	66,18728	111,7563
Science & engineering professionals	26	1268	59,64435	40,60989	87,60052
Health professionals	32	695	133,9308	94,712	189,3894
Teaching professionals	99	2431	118,4583	97,27805	144,25
Business & administration professionals	60	2202	79,2591	61,53999	102,08
Information & Communication Professionals	4	91	127,8597	47,98718	340,6767
Legal, social & cultural professionals	29	754	111,8773	77,74541	160,9937
Science & engineering associate professionals	38	1384	79,86614	58,1135	109,7611
Health associate professionals	4	263	44,24044	16,60393	117,8767
Business & administration associate professionals	15	1150	37,94099	22,87311	62,93496
Legal, social, cultural associate professionals	12	493	70,80265	40,20909	124,6737
Information & communications technician	9	162	161,6005	84,08211	310,5859
General & keyboard clerks	63	1396	131,2715	102,548	168,0404
Customer services clerks	10	259	112,3092	60,42782	208,7344
Numerical & material recording clerks	8	195	119,3357	59,67877	238,6279
Other clerical support workers	1	88	33,05465	4,656025	234,6657
Personal services workers	37	1042	103,2878	74,83589	142,557
Sales workers	58	2122	79,50561	61,46495	102,8414
Personal care workers	2	108	53,86683	13,47162	215,3887
Protective service workers & armed forces	210	8741	69,88329	61,04271	80,00423
Market-orientated skilled agricultural workers	39	1027	110,4611	80,70594	151,1866
Market-orientated skilled forestry workers	127	3716	99,413	83,54297	118,2978
Subsistence farmers	32	1058	87,9791	62,21629	124,4099
Building & related trades workers	219	6187	102,9625	90,19018	117,5436
Metal, machinery & related trades workers	147	4325	98,86587	84,10837	116,2127
Handicraft & printing workers	10	294	98,93908	53,23403	183,885
Electrical & electronic trades worker	66	1815	105,7749	83,10074	134,6357
Food processing, wood working workers	22	539	118,7269	78,1752	180,3139
Stationary plant & machine operators	210	7245	84,3133	73,64725	96,52408
Assemblers	1	29	100,3038	14,12863	712,0892
Drivers & mobile plant operators	367	11304	94,4385	85,25423	104,6122
Cleaners & helpers	66	1963	97,79999	76,83538	124,4848
Agricultural, forestry & fishery labours	89	2885	89,73448	72,9005	110,4557
Labourers in mining, construction & manufacturing	78	2280	99,51188	79,70647	124,2385
Food preparation assistants	2	14	415,5441	103,924	1661,57
Street & related sales workers	7	145	140,4253	66,94457	294,5609
Refuse workers & other elementary workers	698	19600	103,5892	96,18237	111,5664
<b>Total</b>	<b>17437</b>	<b>507209</b>	<b>100</b>	98,52667	101,4954



Table 6 Cerebrovascular-related mortality by sub-major occupation (women)

Women					
Occupation	n	Total deaths	PMR	95% CI LL	95% CI UL
Occupations unspecified	11182	294129	90,375447	88,7157525	92,066191
Not economically active persons	2721	38087	169,832418	163,56947	176,335169
Chief executives & senior officials	10	186	127,807363	68,7665702	237,538703
Administrative & commercial managers	4	172	55,2841149	20,7487419	147,302105
Production & specialised services managers	5	106	112,132875	46,6720695	269,406986
Hospitality & retail services	23	639	85,5649291	56,8597233	128,761743
Science & engineering professionals	1	141	16,8596946	2,37482996	119,692486
Health professionals	82	1935	100,739943	81,1335515	125,084332
Teaching professionals	135	3285	97,693847	82,5289084	115,645389
Business & administration professionals	31	933	78,9857719	55,5476573	112,313507
Information & Communication Technologist	0	17	0	-	-
Legal, social & cultural professionals	18	333	128,498213	80,958653	203,953378
Science & engineering associate professionals	1	161	14,7653226	2,07982003	104,823855
Health associate professionals	12	396	72,036877	40,9100153	126,846974
Business & administration associate professionals	18	779	54,9292747	34,6074858	87,1841783
Legal, social, cultural associate professionals	11	355	73,6602433	40,7926117	133,010151
Information & communications technician	2	18	264,135216	66,0579153	1056,15522
General & keyboard clerks	76	2309	78,2453389	62,490956	97,9715059
Customer services clerks	13	698	44,2748141	25,7081945	76,2503631
Numerical & material recording clerks	3	65	109,717705	35,385574	340,19442
Other clerical support workers	3	71	100,445786	32,3952438	311,445596
Personal services workers	79	1638	114,652099	91,9628867	142,939226
Sales workers	60	1930	73,9031174	57,3813937	95,1819119
Personal care workers	14	509	65,3851418	38,7241335	110,401871
Protective service workers & armed forces	43	1609	63,5303471	47,1163701	85,6624777
Market-orientated skilled agricultural workers	6	61	233,824617	105,046666	520,472985
Market-orientated skilled forestry workers	47	1023	109,217201	82,0593842	145,362984
Subsistence farmers	6	128	111,432044	50,0613016	248,037907
Building & related trades workers	6	133	107,24287	48,1792978	238,713174
Metal, machinery & related trades workers	26	479	129,03474	87,8555551	189,515212
Handicraft & printing workers	2	55	86,4442525	21,6189541	345,6508
Electrical & electronic trades workers	2	47	101,158168	25,2987761	404,484979
Food processing, wood working workers	35	552	150,729335	108,222065	209,932534
Stationary plant & machine operators	14	551	60,4011564	35,7723846	101,986483
Assemblers	0	10	0	-	-
Drivers & mobile plant operators	2	121	39,292842	9,82679732	157,114
Cleaners & helpers	830	15786	124,989868	116,769288	133,78918
Agricultural, forestry & fishery labours	32	630	120,747527	85,3891882	170,747206
Labourers in mining, construction & manufacturing	21	578	86,3694737	56,3131025	132,468034
Food preparation assistants	4	43	221,13646	82,9949677	589,208421
Street & related sales workers	11	184	142,11623	78,7031366	256,622846
Refuse workers & other elementary workers	298	6834	103,659738	92,5338046	116,123414
<b>Total</b>	<b>15889</b>	<b>377716</b>			