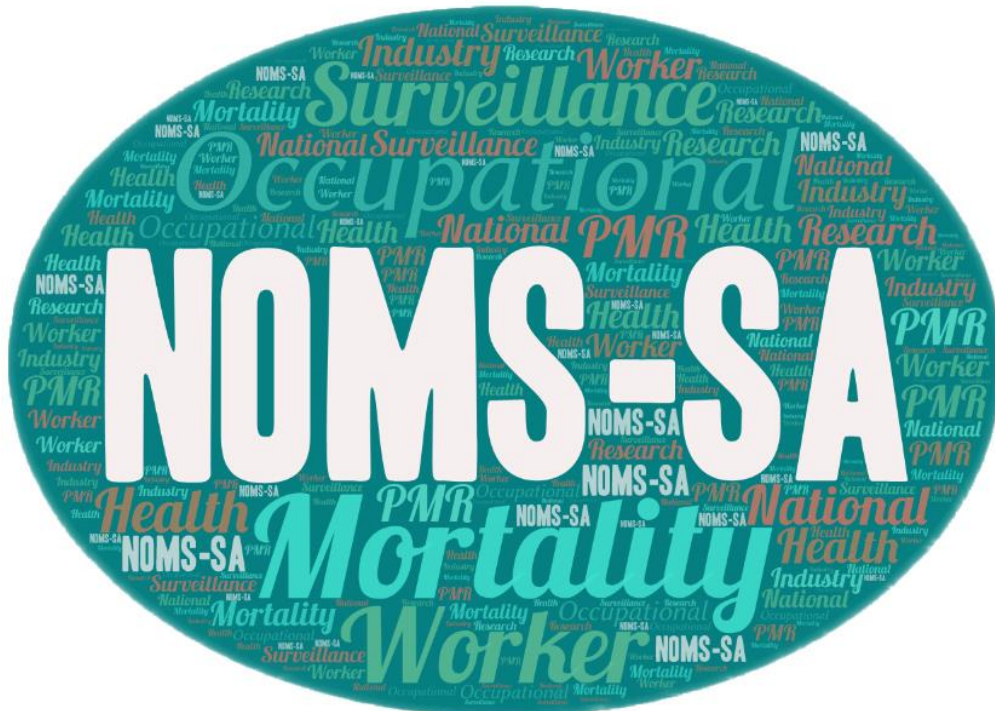


# National Occupational Mortality Surveillance South Africa 2016

## Data Brief



National Institute for Occupational Health South Africa

Epidemiology and Surveillance Unit

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## Mortality by Occupation for 2016

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### Key Findings 2016

#### Data from Statistics South Africa, Vital Statistics

- Excess mortality for infectious disease is concentrated mainly in low skilled / low socioeconomic occupations.
- Chronic disease has clear occupational relationships and sex differences.
- Unnatural causes are concentrated mainly in the employed with some relationships with sex and specific occupations.
- Ill-defined causes of death follow the same patterns seen in infectious and unnatural causes of death.
- Further breakdown of occupational groups is necessary to investigate these findings.

### What is NOMS-SA?

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.

### Why do we need mortality surveillance?

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.

### What data is used?

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+).

### Which causes of death are in the data brief?

Underlying cause of death coding, used here was provided by the South African [National Burden of Disease Study \(NBD\)](#). The NBD study developed their list to reflect local cause of-death patterns. This list provides the groups of ICD-10 codes, resulting in reasonable cause of deaths. Ill-defined causes of death were included in this data brief, as these account for a large proportion of deaths in South Africa.

This data brief summarizes the causes into 4 groups: communicable, non-communicable, unnatural and ill-defined.

### How do we group occupations?

Occupation was coded by Stats SA based on the [SASCO 2012](#). Where occupation was unspecified or not economically active it was included in the brief to account for the high unemployment rate of the working population in South Africa.

### What is proportional mortality?

Proportional mortality ratios (PMR) are 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. PMR also provides a way to compare occupations. A PMR is significant when the 95% confidence interval does not contain 100.

PMRs for the broad 10 occupational groups are presented in this data brief for the 2016 South African mortality by the four groups for causes of death: communicable, non-communicable, unnatural and ill-defined.

## A. Communicable diseases

### 1. HIV/AIDS

- In men, service workers and armed forces personnel, plant operators and elementary workers showed significantly raised proportional mortality ratios for HIV/AIDS.
- In women, service workers and armed forces personnel, agricultural workers and elementary workers had significantly raised proportional mortality ratios for HIV/AIDS.
- In both men and women managers, professionals, technicians and clerks significantly lower PMRs than the general population were seen.



Figure 1 Proportional mortality ratios for HIV/AIDS by sex and occupation group: South Africa, 2016.

\* / \* Significantly different from the general population

Notes: HIV/AIDS include HIV disease (B20-B24), other viral illnesses (B33), cryptococcosis (B45), Pneumocystosis (B59), Kaposi's sarcoma (C46), other immunodeficiencies (D84)

Access data table for figure 1 at [\[hyperlink\]](#), Appendix table 6.

## 2. Tuberculosis

- In men, elementary workers had significantly raised proportional mortality ratios for tuberculosis.
- In women, service workers and armed forces personnel and elementary workers had significantly raised proportional mortality ratios for tuberculosis.
- In both men and women managers, professionals, technicians and clerks had significantly lower PMRs than the general population.

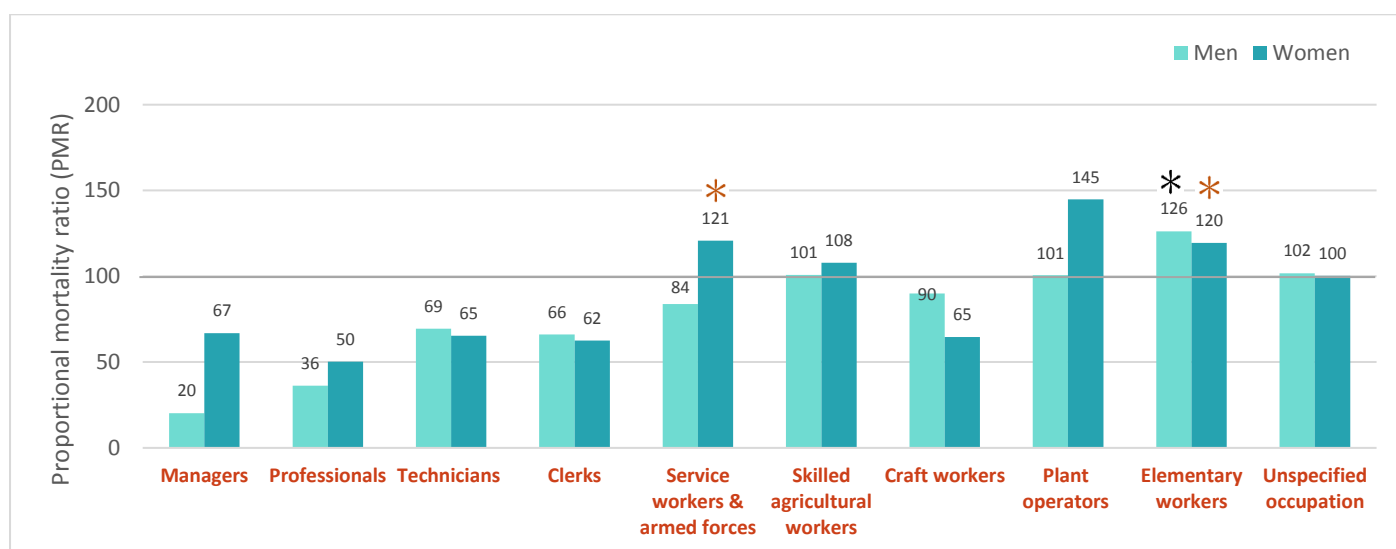


Figure 2 Proportional mortality ratios for tuberculosis by sex and occupation group: South Africa, 2016.

\* \* Significantly different from the general population

Notes: Tuberculosis includes tuberculosis (A15-A19), Sequelae of tuberculosis (B90), Drug resistant tuberculosis (U51-U52), pleural effusion (J90) and other pleural conditions (J94).

Access data table for figure 2 at [hyperlink], Appendix table 7.

### 3. Lower respiratory tract infection (LRTI)

- Men who were not economically active or did not specify an occupation had increased excess mortality for lower respiratory tract infections compared to the general population.
- All specified occupations in men and women had lower PMRs than the general population.

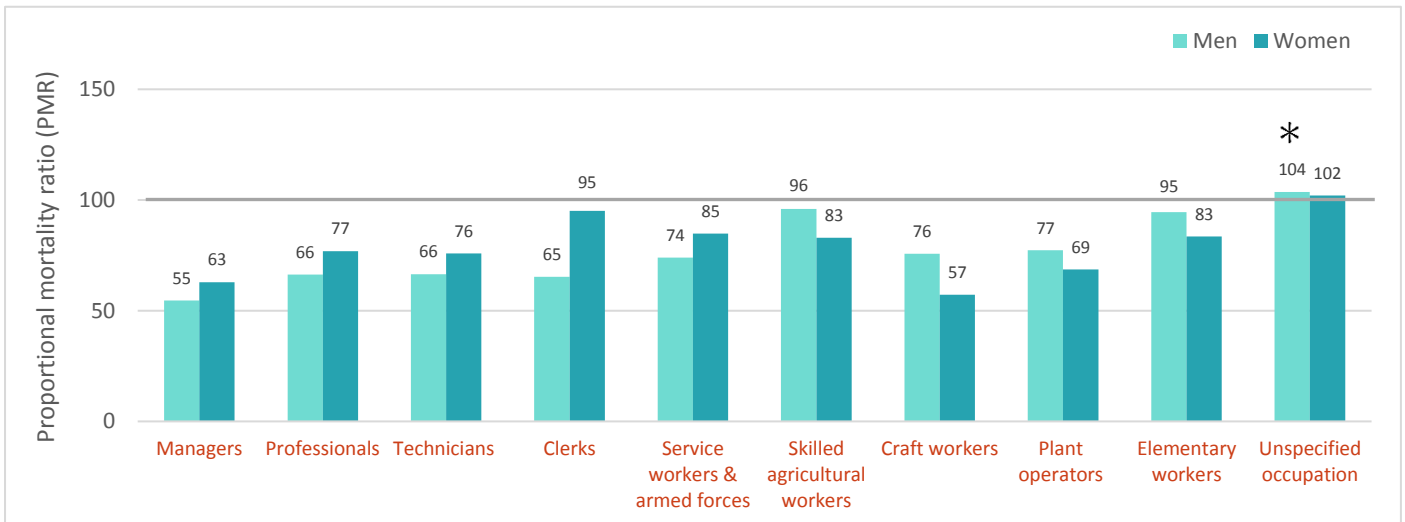


Figure 3 Proportional mortality ratios for lower respiratory tract infection (J09-J18, J20-J22 and J86), by sex and occupation group: South Africa 2016

\* \* – Significantly different from the general population

Notes: LRTI includes influenza and pneumonia (J09-J18), other acute lower respiratory tract infections (J20-J22) and pyothorax (J86)

Access data table for figure 3 at [hyperlink], Appendix table 1.

4. Intestinal Infectious Diseases

- Women and men with an unspecified occupation had a significantly raised proportional mortality for intestinal infectious diseases.
- Women who worked as skilled agricultural workers also appeared raised compared to the other occupations.

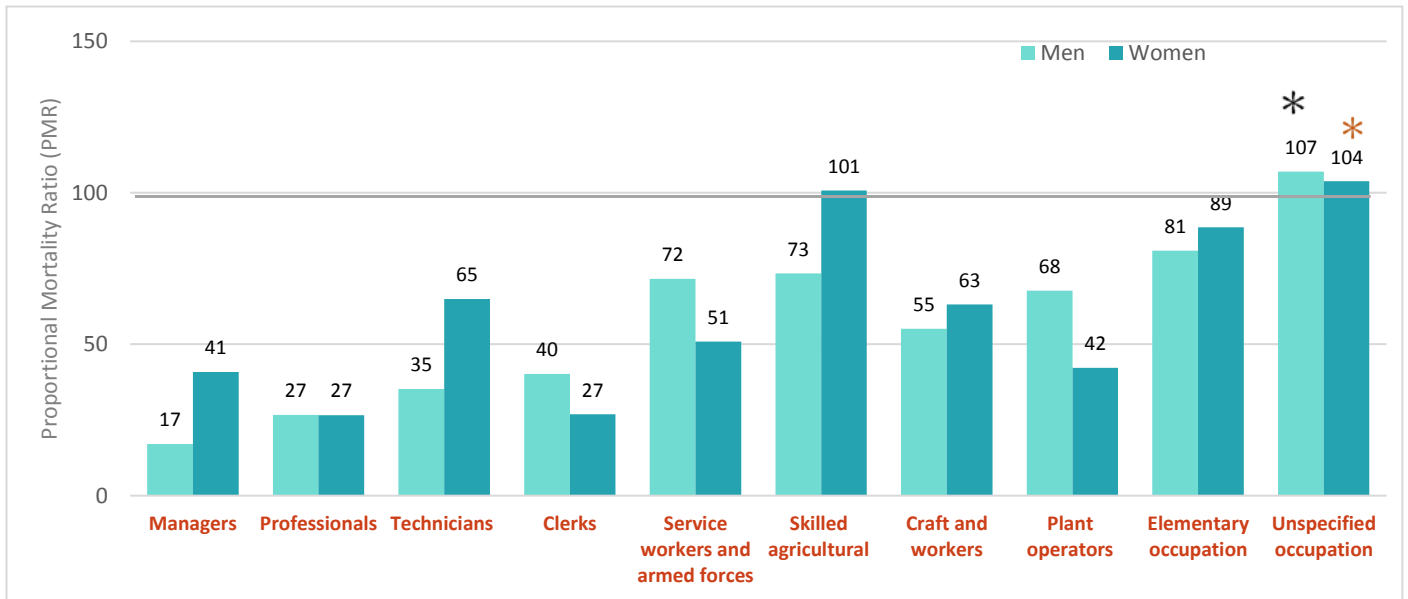


Figure 3 Proportional mortality ratios for intestinal infectious diseases, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Intestinal Infectious diseases include: (A00-A09) including Cholera (A00); salmonella (A02) and viral intestinal infections (A08)

Access data table for figure 4 at [hyperlink], Appendix table 11.

## B. Non-communicable diseases

### 1. Cerebrovascular diseases

- Men with unspecified occupations or not economically active had significantly raised proportional mortality ratios for cerebrovascular diseases.
- Women elementary workers had significantly raised proportional mortality ratios for cerebrovascular diseases.

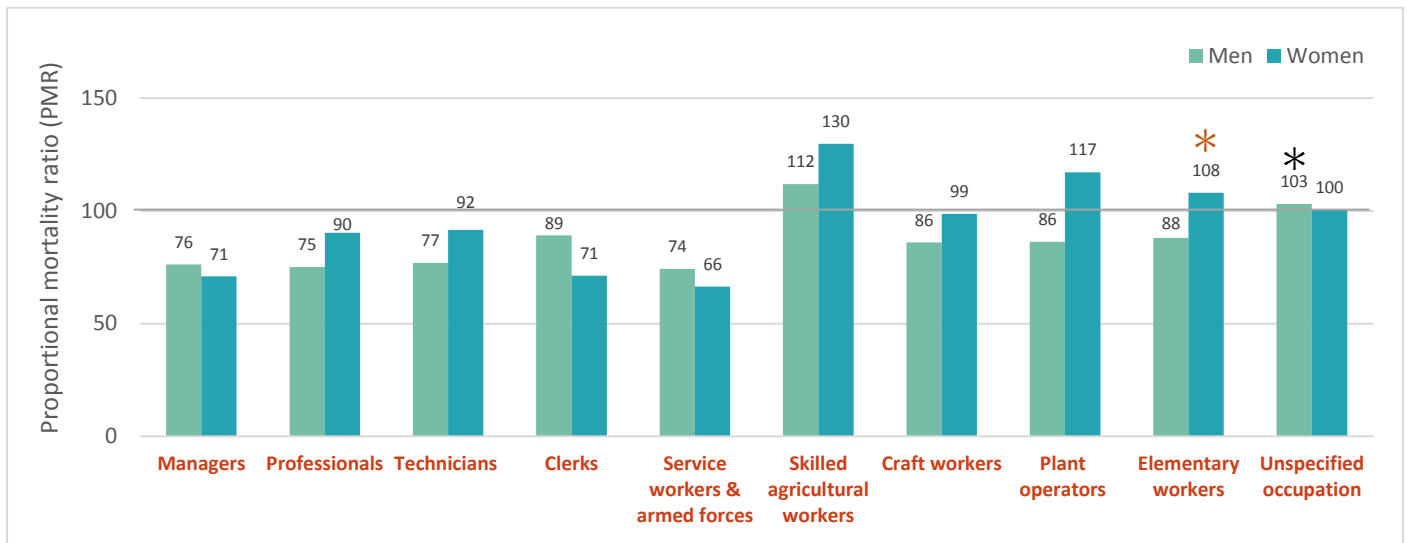


Figure 4 Proportional mortality ratios for cerebrovascular diseases, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Cerebrovascular diseases include cerebrovascular diseases (I60-I69) and hemiplegia (G81)

Access data table for figure 5 at [hyperlink], Appendix table 9.

2. Ischemic heart diseases (IHD)

- In men and women, managers, professionals, technicians, clerks, service workers and armed forces and craft workers had significantly raised proportional mortality ratios for ischemic heart disease.



Figure 5 Proportional mortality ratios for ischemic heart disease (I20-I25), by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: IHD include angina pectoris (I20), acute myocardial infarction (I21-I24) and chronic ischemic heart disease (I25).

Access data table for figure 6 at [hyperlink], Appendix table 2.



### 3. Diabetes

- In men, managers, professionals, technicians and elementary workers had significantly raised proportional mortality ratios for diabetes.
- In women, craft workers and elementary workers had significantly raised proportional mortality ratios for diabetes.

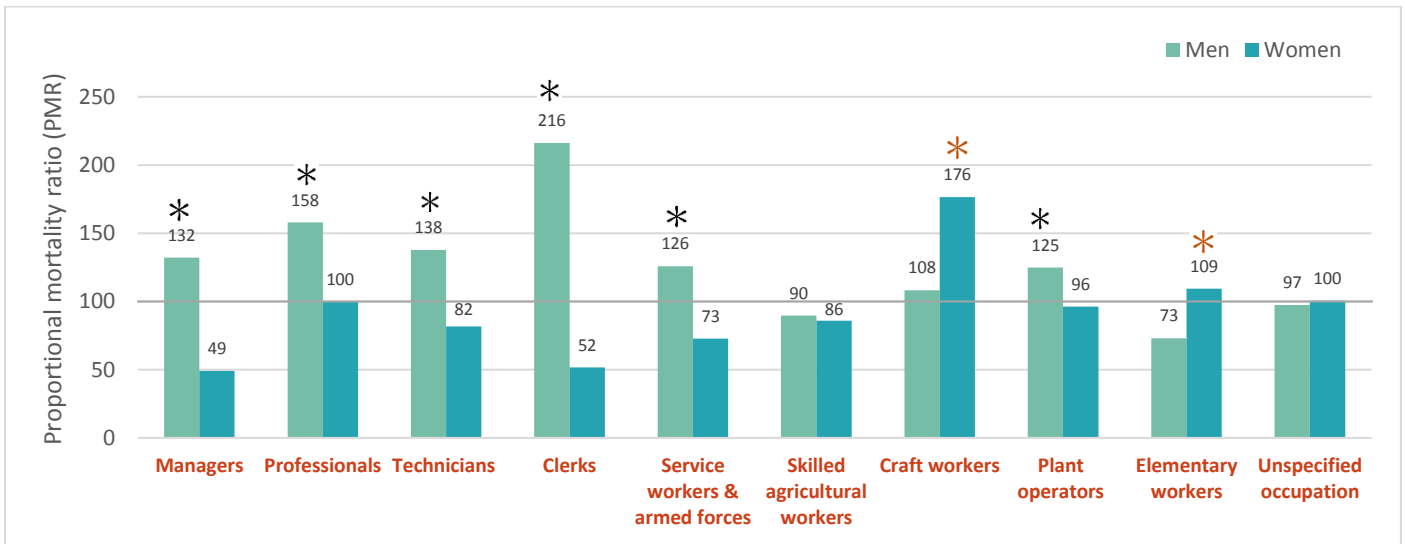


Figure 6 Proportional mortality ratios for diabetes by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Diabetes (E10-E14)

Access data table for figure 7 at [hyperlink], Appendix table 8.

4. Hypertensive diseases

- Men who were not economically active or did not specify an occupation had significantly raised proportional mortality ratios for hypertensive diseases.
- Women elementary workers had significantly raised proportional mortality ratios for hypertensive diseases.

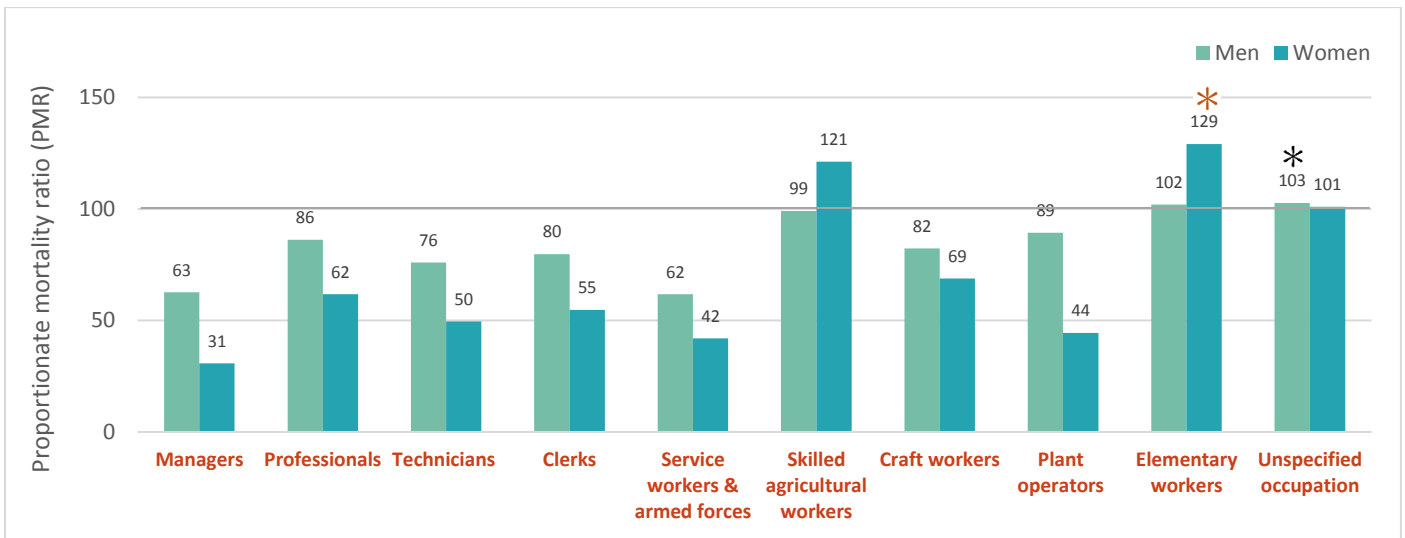


Figure 7 Proportional mortality ratios for hypertensive diseases, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Hypertensive diseases include: Essential or primary hypertension (I10) hypertensive heart or renal disease (I11-I13)

Access data table for figure 8 at [hyperlink], Appendix table 10.

5. Chronic lower respiratory disease

- In men, skilled agricultural workers, craft workers and elementary workers had significantly raised proportional mortality ratios for chronic lower respiratory disease
- In women, technicians and clerks had significantly raised proportional mortality ratios for chronic lower respiratory disease
- Chronic lower respiratory disease has clear occupational relationships and sex differences



Figure 8 Proportional mortality ratios for chronic lower respiratory disease, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Chronic lower respiratory disease includes bronchitis (J40-J42), emphysema (J43-J44), asthma (J45-J46) and bronchiectasis (J47).

Access data table for figure 9 at [hyperlink], Appendix table 3.

### C. Unnatural causes of death

#### 1. Unnatural causes of death due to transport and vehicles

- All men with a specified occupation had significantly raised PMRs for transport and vehicle related deaths
- Women managers followed by women plant operators had the largest significant increased proportion of deaths.
- Male plant operators had the largest significant increase in proportion of transport deaths



Figure 9 Proportional mortality ratios for transport and vehicle-related deaths, by sex and occupation group: South Africa, 2016

\* \* – Significantly different from the working population

Notes Transport and vehicle deaths include: (V01-V99) including pedestrians (V01-V09), car occupants (V40-V49) and unspecified vehicle accidents (V87-V89).

Access data table for figure 10 at [hyperlink], Appendix table 12.

## 2. Unnatural causes of death due to mechanical forces (e.g. sharp objects and firearms)

- Women working as professionals, technicians, service and armed forces and plant operators had a significantly raised proportional mortality for mechanical forces related deaths.
- The occupations with the highest female proportions were service and armed forces and plant operators.
- Male service and armed forces followed by male elementary workers were the highest significantly increased proportion of deaths in men.

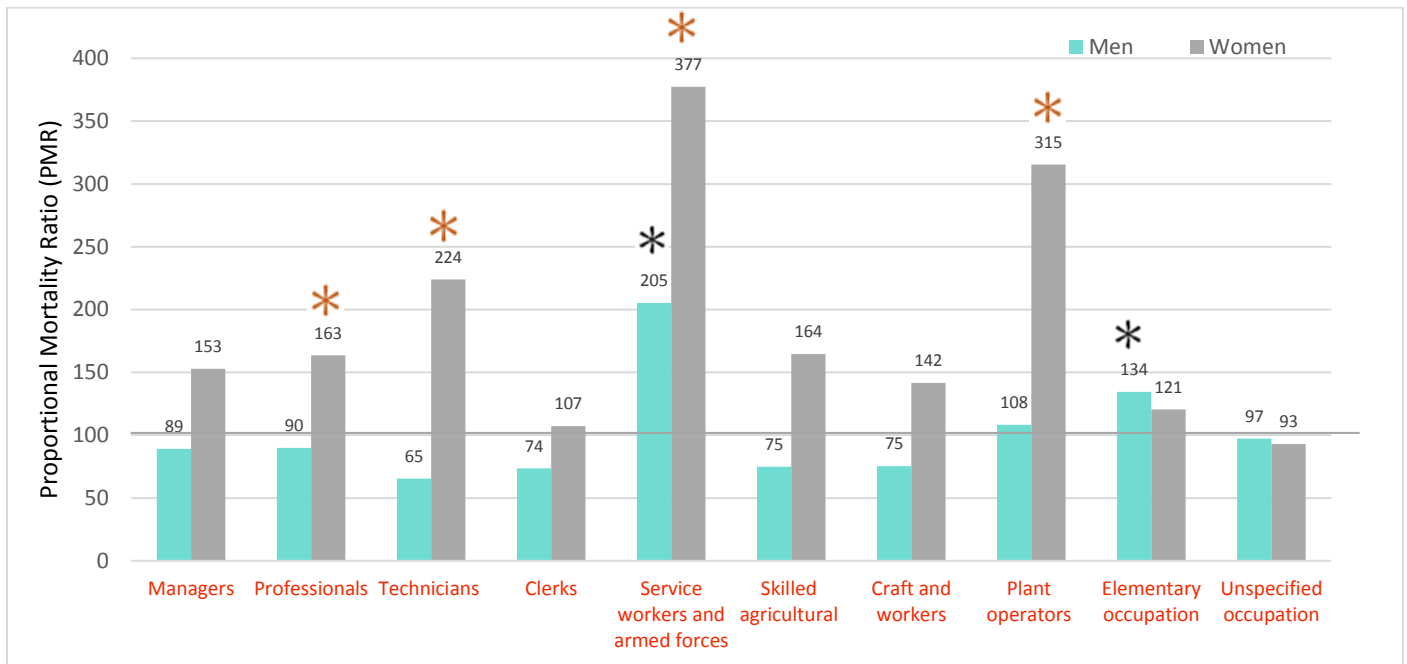


Figure 11 Proportional mortality ratios for mechanical forces, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Mechanical forces deaths (W24-34, W45-46 and X93-95, X99 Y00) including assault (X93-95, X99, Y00), contact with sharp objects (W25-27, W29) and firearms (W32-34).

Access data table for figure 11 at [\[hyperlink\]](#), Appendix table 13.

3. Unnatural causes of death due to threats to breathing

- The occupations with the highest female proportions were managers, technicians, and craft workers.
- In males, technicians followed by service and armed forces were the highest significantly increased proportion of deaths in men.

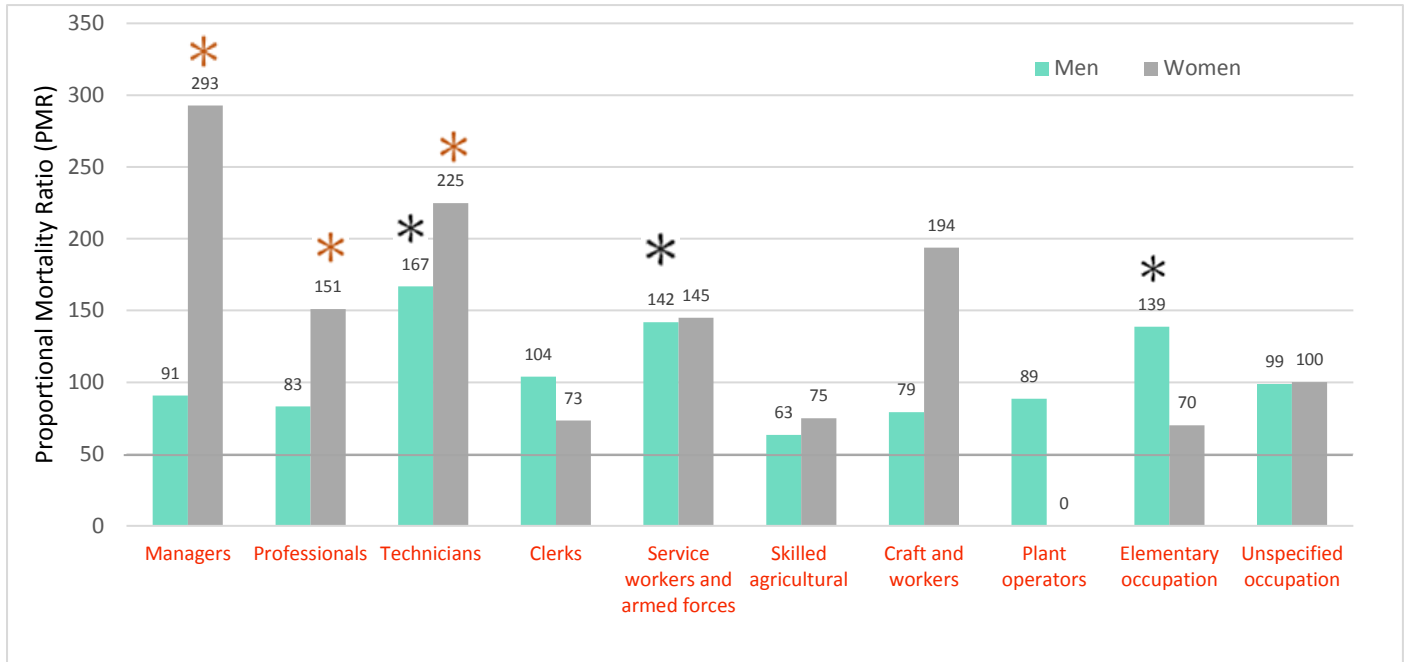


Figure 12 Proportional mortality ratios for mechanical forces, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Threats to breathing deaths include: (W75-84, Y20 and X91) including accidental hanging and strangulation (W75-76), threats to breathing undetermined intent (Y20) and assault by hanging or strangulation (X91).

Access data table for figure 12 at [hyperlink], Appendix table 14.

## D. Ill-defined

### 1. Ill-defined (natural)

- Men and women who were not economically active or did not specify an occupation had significantly raised proportional mortality ratios for ill-defined natural cause of death.

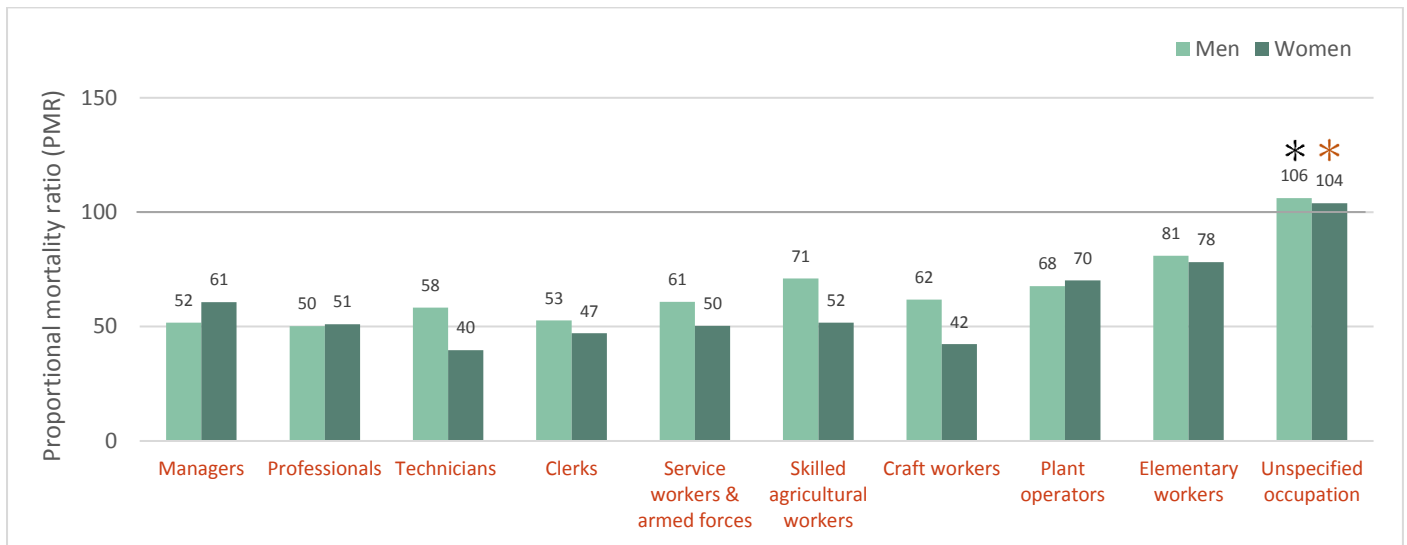


Figure 103 Proportional mortality ratios for ill-defined causes of death, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the general population

Notes: Ill-defined causes of death (R96-R99), including unattended death (R98) and ill-defined and unspecified death (R96, R99)  
 Access data table for figure 13 at [hyperlink], Appendix table 4.

## 2. Unnatural causes of death due to Exposure to Unspecified Factors

- Plant operators accounted for the largest increase in proportion of deaths in both males and females.
- In males, managers followed the plant operators with the highest significantly increased proportion of deaths in men.



Figure 14 Proportional mortality ratios for mechanical forces, by sex and occupation group: South Africa, 2016.

\* \* – Significantly different from the working population  
 Notes: Exposure to unspecified factors deaths include: (X58-X59)  
 Access data table for figure 14 at [hyperlink], Appendix table 5.



## Appendix

Table 1 Lower respiratory tract infections in men and women

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	44	1593	55	40.63	73.36	66.4	17	526	63	39.10	101.18	53.3
Professionals	137	4085	66	56.07	78.37	64.7	144	3642	77	65.35	90.60	64.8
Technicians	52	1546	66	50.66	87.25	58.7	42	1077	76	56.09	102.70	67.9
Clerks	28	847	65	45.12	94.63	55.2	88	1801	95	77.16	117.19	63.1
Service workers & armed forces	171	4564	74	63.75	86.03	51.4	106	2430	85	70.18	102.70	49.3
Skilled agricultural workers	135	2782	96	81.03	113.54	62.7	25	587	83	56.01	122.67	71.4
Craft workers	213	5559	76	66.22	86.62	55.7	20	681	57	36.88	88.60	61.4
Plant operators	275	7034	77	68.66	86.97	54.1	9	255	69	35.74	132.02	52.7
Elementary workers	475	9930	95	86.42	103.45	54.3	458	10677	83	76.18	91.49	57.6
Unspecified occupation	10 931	208 360	104	101.77	105.66	56.7	10 399	198 397	102	100.07	103.99	60.8

Table 2 Ischemic heart disease (IHD) in men and women

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	180	1593	377	325.45	435.89	62.7	37	526	284	205.51	391.47	68.5
Professionals	375	4085	306	276.54	338.59	68.7	190	3642	210	182.48	242.50	72.1
Technicians	126	1546	272	228.14	323.50	65.2	67	1077	251	197.43	318.71	72.4
Clerks	66	847	260	204.06	330.61	66.9	109	1801	244	202.27	294.44	72.5
Service workers & armed forces	194	4564	142	123.09	163.10	62.2	100	2430	166	136.40	201.87	72.6
Skilled agricultural workers	141	2782	169	143.24	199.26	67.8	22	587	151	99.51	229.52	69.8
Craft workers	353	5559	212	190.70	234.94	63.9	41	681	243	178.75	329.70	70
Plant operators	221	7034	105	91.79	119.49	61.3	9	255	142	74.05	273.52	66.1
Elementary workers	237	9930	80	70.05	90.36	60.5	271	10677	102	90.86	115.29	66.6
Unspecified occupation	5 511	208 360	88	85.87	90.52	65.8	4 618	198 397	94	91.19	96.60	72

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Table 3 Chronic lower respiratory disease (J40-J47)

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	59	1593	117	90.56	150.86	72.6	9	526	78	40.54	149.75	63.2
Professionals	115	4085	89	74.00	106.66	72.0	91	3642	114	92.65	139.73	70.2
Technicians	50	1546	102	77.35	134.66	72.5	52	1077	220	167.54	288.53	69.2
Clerks	30	847	112	78.15	159.86	66.6	82	1801	207	166.98	257.44	74.5
Service workers & armed forces	94	4564	65	53.10	79.56	60.8	59	2430	111	85.66	142.70	63.8
Skilled agricultural workers	145	2782	164	139.77	193.56	67.7	18	587	140	87.98	221.63	65.2
Craft workers	238	5559	135	118.99	153.41	67.2	20	681	134	86.28	207.29	66.9
Plant operators	217	7034	97	85.23	111.21	63.9	6	255	107	48.14	238.50	59.7
Elementary workers	391	9930	124	112.53	137.21	63.2	255	10677	109	96.20	122.96	64.3
Unspecified occupation	6 466	208 360	98	95.57	100.35	64.7	4 241	198 397	97	94.46	100.32	66.9

Table 4 Ill-defined (natural)

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	96	1593	52	42.35	63.18	57.8	41	526	61	44.66	82.38	49.6
Professionals	239	4085	50	44.24	57.01	58.5	239	3642	51	44.99	57.97	60.5
Technicians	105	1546	58	48.15	70.59	53.8	55	1077	40	30.51	51.76	64.1
Clerks	52	847	53	40.16	69.16	54.8	109	1801	47	39.04	56.83	55.7
Service workers & armed forces	323	4564	61	54.47	67.75	49.1	157	2430	50	43.00	58.79	49.7
Skilled agricultural workers	230	2782	71	62.36	80.76	57.5	39	587	52	37.78	70.77	64.8
Craft workers	400	5559	62	56.00	68.12	56.6	37	681	42	30.63	58.36	57.5
Plant operators	555	7034	68	62.32	73.60	54.7	23	255	70	46.64	105.63	47.8
Elementary workers	937	9930	81	75.97	86.35	53	1073	10677	78	73.67	83.03	59.2
Unspecified occupation	25 750	208 360	106	104.79	107.38	57.4	26 499	198 397	104	102.70	105.20	64.5

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Table 5 Ill-defined (unnatural)

Occupation	Men						Women					
	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
Managers	121	1593	145	121.11	172.96	44.7	27	526	276	189.55	403.05	45.8
Professionals	249	4085	116	102.58	131.51	42.2	116	3642	172	142.97	205.74	49.7
Technicians	110	1546	136	112.47	163.43	37.5	26	1077	130	88.51	190.92	52
Clerks	46	847	103	77.51	138.16	38.9	60	1801	179	139.29	231.04	46.9
Service workers & armed forces	414	4564	173	156.97	190.32	37.3	90	2430	199	162.21	245.20	41.5
Skilled agricultural workers	143	2782	98	83.14	115.39	42.7	10	587	92	49.36	170.49	51
Craft workers	377	5559	129	116.82	142.95	43	19	681	150	95.83	235.53	38.5
Plant operators	613	7034	166	153.42	179.74	41.5	17	255	359	223.16	577.46	40.4
Elementary workers	670	9930	129	119.19	138.68	36.7	253	10677	128	112.80	144.33	46.3
Unspecified occupation	10 183	208 360	93	91.33	94.95	43.8	3 469	198 397	94	91.07	97.34	52.9

Table 6 HIV/AIDS

Occupation	Men						Women					
	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
Managers	41	1593	28	20.92	38.58	45.3	29	526	55	38.37	79.45	40.7
Professionals	167	4085	45	38.77	52.52	45	193	3642	53	46.08	61.11	44
Technicians	98	1546	70	57.40	85.29	42.4	58	1077	54	41.69	69.76	40.4
Clerks	66	847	86	67.57	109.48	42.1	79	1801	44	35.23	54.76	40.2
Service workers & armed forces	510	4564	123	113.09	134.53	41.7	350	2430	144	129.89	160.16	37.7
Skilled agricultural workers	234	2782	93	81.68	105.54	43.4	68	587	116	91.46	147.13	40.5
Craft workers	545	5559	108	99.50	117.69	44.2	54	681	79	60.82	103.68	42.5
Plant operators	781	7034	123	114.26	131.46	44.7	27	255	106	72.71	154.61	41.4
Elementary workers	1103	9930	123	115.58	130.06	42.8	1311	10677	123	116.48	129.80	43.5
Unspecified occupation	16558	183959	99	97.85	100.88	43	17787	178162	100	98.52	101.46	40.1

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Table 7 Tuberculosis

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	27	1593	20	13.86	29.48	47.4	20	526	67	43.12	103.59	42.4
Professionals	124	4085	36	30.36	43.17	50.2	104	3642	50	41.42	60.83	45.6
Technicians	90	1546	69	56.47	85.37	47.9	40	1077	65	47.89	89.00	41.4
Clerks	47	847	66	49.73	88.09	44.9	64	1801	62	48.89	79.80	39.7
Service workers & armed forces	321	4564	84	75.19	93.58	43.7	167	2430	121	103.80	140.58	39.3
Skilled agricultural workers	235	2782	101	88.66	114.49	48.7	36	587	108	77.76	149.45	51.3
Craft workers	419	5559	90	81.69	98.93	48.7	25	681	65	43.60	95.50	49.2
Plant operators	593	7034	101	92.77	108.98	48.8	21	255	145	94.38	222.02	37
Elementary workers	1051	9930	126	118.83	134.10	48.4	726	10677	120	111.14	128.54	47.5
Unspecified occupation	15698	183959	102	100.20	103.38	48.3	10166	178162	100	98.37	102.27	45

Table 4 Diabetes

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	92	1593	132	107.73	162.12	63.4	20	526	49	31.69	76.13	57.2
Professionals	282	4085	158	140.57	177.53	64.8	281	3642	100	88.66	112.02	67.1
Technicians	93	1546	138	112.34	168.68	63.1	68	1077	82	64.30	103.44	67.2
Clerks	80	847	216	173.60	269.09	61.5	72	1801	52	40.99	65.06	66.2
Service workers & armed forces	251	4564	126	111.20	142.42	59.5	137	2430	73	61.60	86.10	64.5
Skilled agricultural workers	109	2782	90	74.31	108.17	68.5	39	587	86	62.70	117.46	66.9
Craft workers	263	5559	108	95.94	122.17	66	93	681	176	143.96	216.15	70
Plant operators	384	7034	125	113.03	138.07	61.4	19	255	96	61.39	150.89	65.7
Elementary workers	317	9930	73	65.44	81.55	64.7	903	10677	109	102.35	116.61	67
Unspecified occupation	7826	183959	97	95.22	99.53	65	13839	178162	100	98.68	102.02	68

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Table 5 Cerebrovascular diseases

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	53	1593	76	58.19	99.70	71.4	25	526	71	47.97	105.06	57
Professionals	134	4085	75	63.40	88.95	66.3	220	3642	90	79.05	102.97	70.5
Technicians	52	1546	77	58.67	101.05	64.8	66	1077	92	71.91	116.50	70.4
Clerks	33	847	89	63.41	125.46	62	86	1801	71	57.73	88.10	75.8
Service workers & armed forces	148	4564	74	63.19	87.21	60.1	108	2430	66	54.97	80.16	65.3
Skilled agricultural workers	136	2782	112	94.60	132.39	69.1	51	587	130	98.62	170.75	72.7
Craft workers	209	5559	86	75.16	98.57	64.3	45	681	99	73.69	132.18	68.2
Plant operators	265	7034	86	76.46	97.28	61.2	20	255	117	75.57	181.57	64.4
Elementary workers	382	9930	88	79.66	97.36	62.7	772	10677	108	100.64	115.88	68.7
Unspecified occupation	8281	183959	103	100.86	105.30	65.4	11987	178162	100	98.71	102.30	71.7

Table 6 Hypertensive diseases

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	34	1593	63	44.76	87.66	66	10	526	31	16.54	57.14	63.6
Professionals	120	4085	86	72.09	103.10	69.4	139	3642	62	52.26	72.88	76.8
Technicians	40	1546	76	55.70	103.52	69.3	33	1077	50	35.22	69.70	79.1
Clerks	23	847	80	52.96	119.93	80	61	1801	55	42.61	70.39	80.5
Service workers & armed forces	96	4564	62	50.54	75.40	69.1	63	2430	42	32.75	53.67	70
Skilled agricultural workers	94	2782	99	81.01	121.38	67.2	44	587	121	90.20	162.88	73.9
Craft workers	156	5559	82	70.40	96.35	65.2	29	681	69	47.85	99.09	75.8
Plant operators	214	7034	89	78.09	102.09	64.1	7	255	44	21.16	93.11	72.7
Elementary workers	345	9930	102	91.75	113.31	67.1	852	10677	129	120.66	138.00	71.8
Unspecified occupation	6439	183959	103	100.25	105.26	68.4	11120	178162	101	99.07	102.82	73.6

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Table 7 Intestinal infectious diseases

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	4	1593	17.09	6.41	45.53	63.5	4	526	40.88	15.34	108.92	63.7
Professionals	16	4085	26.66	16.33	43.51	53.7	18	3642	26.57	16.74	42.17	53.1
Technicians	8	1546	35.22	17.61	70.42	47.9	13	1077	64.89	37.68	111.75	47.5
Clerks	5	847	40.18	16.72	96.52	52.2	9	1801	26.86	13.98	51.63	53.8
Service workers & armed forces	48	4564	71.58	53.94	94.98	44.7	23	2430	50.88	33.81	76.57	39.9
Skilled agricultural workers	30	2782	73.39	51.31	104.97	55	11	587	100.73	55.79	181.90	59.5
Craft workers	45	5559	55.09	41.13	73.79	51.8	8	681	63.15	31.58	126.27	50.1
Plant operators	70	7034	67.73	53.58	85.61	48.9	2	255	42.16	10.54	168.58	61
Elementary workers	118	9930	80.87	67.52	96.87	52.6	176	10677	88.61	76.44	102.72	56.2
Unspecified occupation	3 275	208 360	106.97	103.37	110.70	54.3	3 830	198 397	103.77	100.54	107.11	58.6

Table 12 Transport deaths

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	61	1593	199.35	155.11	256.22	39.5	15	526	375.35	226.28	622.61	41.5
Professionals	155	4085	197.54	168.76	231.22	44	82	3642	296.35	238.67	367.96	43.7
Technicians	58	1546	195.31	150.99	252.64	38.4	13	1077	158.88	92.25	273.62	35.9
Clerks	37	847	227.42	164.77	313.88	37.4	34	1801	248.48	177.55	347.76	36.9
Service workers & armed forces	177	4564	201.90	174.24	233.95	36.9	49	2430	265.41	200.59	351.17	35.3
Skilled agricultural workers	87	2782	162.81	131.95	200.88	54.5	9	587	201.81	105.00	387.86	43
Craft workers	160	5559	149.84	128.33	174.96	37.3	9	681	173.95	90.51	334.32	34.4
Plant operators	387	7034	286.43	259.27	316.44	41.8	6	255	309.70	139.13	689.37	41
Elementary workers	282	9930	147.85	131.56	166.15	40	114	10677	140.54	116.97	168.85	42.8
Unspecified occupation	3 327	208 360	83.13	80.35	86.00	41.3	1 341	198 397	88.97	84.33	93.86	39.9

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Table 13 Mechanical forces

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	66	1593	89.07	69.98	113.37	44.2	5	526	152.92	63.65	367.40	50
Professionals	171	4085	89.99	77.46	104.54	48.8	37	3642	163.43	118.41	225.57	43.2
Technicians	47	1546	65.36	49.10	86.99	37.6	15	1077	224.06	135.07	371.65	38.7
Clerks	29	847	73.61	51.15	105.92	41.6	12	1801	107.19	60.87	188.74	40.8
Service workers & armed forces	436	4564	205.37	186.97	225.58	36.6	57	2430	377.35	291.07	489.21	50.5
Skilled agricultural workers	97	2782	74.96	61.43	91.46	37.3	6	587	164.43	73.87	366.02	44
Craft workers	195	5559	75.41	65.54	86.77	35.7	6	681	141.74	63.68	315.50	36.2
Plant operators	354	7034	108.19	97.49	120.07	37	5	255	315.44	131.29	757.86	35.6
Elementary workers	621	9930	134.44	124.27	145.44	32.1	80	10677	120.54	96.82	150.07	37.3
Unspecified occupation	9 441	208 360	97.41	95.46	99.39	34.7	1 145	198 397	92.84	87.62	98.38	39.3

Table 14 Threats to breathing

Occupation	n	Total deaths	PMR	95% LL	95% UL	Mean age	n	Total deaths	PMR	95% LL	95% UL	Mean age
	Men						Women					
Managers	23	1593	90.81	60.35	136.65	41.6	7	526	292.87	139.62	614.34	50.1
Professionals	54	4085	83.14	63.68	108.56	45.0	25	3642	151.07	102.08	223.57	46.6
Technicians	41	1546	166.80	122.82	226.53	38.4	11	1077	224.77	124.48	405.88	46.2
Clerks	14	847	103.96	61.57	175.53	43.8	6	1801	73.32	32.94	163.20	32.8
Service workers & armed forces	103	4564	141.94	117.01	172.18	33.8	16	2430	144.90	88.77	236.53	30.6
Skilled agricultural workers	28	2782	63.30	43.71	91.68	36.0	2	587	74.98	18.75	299.82	58.0
Craft workers	70	5559	79.20	62.66	100.11	35.1	6	681	193.90	87.11	431.60	41.5
Plant operators	99	7034	88.52	72.69	107.80	36.2	0	255	0.00	0.00	0.00	0
Elementary workers	219	9930	138.71	121.51	158.36	35.3	34	10677	70.08	50.07	98.08	40.3
Unspecified occupation	3 274	208 360	98.83	95.50	102.27	38.5	903	198 397	100.17	93.84	106.92	43.2





