Why is the death rate of security officers comparatively high? Thinking about the reasons

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Introduction

Why is the death rate of security officers comparatively high?

The news, announced in May, from the Office of National Statistics that security officers have one of the highest death dates from Covid-19 – 45.7 deaths per 100,000 people – make for difficult reading for the security profession.

Early in the pandemic, the Government classified licence-holding security professionals as critical workers which meant that many of our colleagues have been on the front line throughout this pandemic. When the rest of the building occupants have been working from home, security officers have been protecting empty buildings or supporting the skeleton staff remaining.

When the pandemic started, we took immediate action to protect our teams and have been amending those provisions as the situation changes. As part of that we decided to commission research from leading security and risk research company Perpetuity Research and Consultancy International to better understand why security officers are so badly affected by the Covid-19 virus. This understanding will allow us to better support and protect our people.

The following pages are the result of that research and we're delighted to share it with the wider security sector and look forward to your feedback and ideas. We must all work together and do all we can as an industry to ensure no more of our people die as a result of this terrible virus.

Mike Bullock
CEO
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Executive Summary

The focus of this report was to try and better understand the high rate of Covid-19 deaths experienced by security officers in the UK (compared to other occupations) as recently reported by the Office for National Statistics (ONS). The research was carried out through desk-top analysis of a number of data sources. The aim was to identity what Covid-19 risk factors are particularly applicable to the security sector and whether anything relating to the nature of security officers' roles renders them more vulnerable to Covid-19. Key findings include:

- Low-paid occupations were found to have the highest rates of death involving Covid-19, with security officers recording the highest rates at 45.7 deaths per 100,000 males.
- The role of security officers generally involves close proximity and frequent interactions with others, and this was found to be a significant risk factor for contracting Covid-19. However, their risk factor relating to exposure was not rated as high as healthcare personnel; the level of virus found in healthcare settings is much greater than among the general public.
- Older people appear to be more vulnerable to Covid-19 compared to their younger counterparts and experience less favourable outcomes. Our analysis of licences issued by the SIA suggests that 21% were obtained by those over 55 years of age, compared to the UK average for all occupations of 19% in that age group. Yet 42% of those with a manned guarding licence, were issued to those over 55 years of age. Caution is needed in interpreting this as an indicator that age is a factor in the high death rates of security officers from Covid-19 as the same pattern does not emerge for door supervisors, more work is needed.
- More men than women have been affected by Covid-19 generally and because approximately 90% of security personnel are men, the risk factor for the sector overall is higher than occupations with a lower proportion of males.
- Not all groups in the UK have been affected by Covid-19 equally and ethnicity appears to be a significant risk factor here. Nearly a third of security officers are from BAME backgrounds and vulnerability is linked to both genetic, social, and economic factors. Within this group, Black Africans, Pakistanis, and Bangladeshis appear to be particularly vulnerable and they are overrepresented in the security industry.
- The very nature of the role of security officers influences their risk to Covid-19. Being a frontline key worker may mean encountering conflict when trying to enforce Covid-19 guidelines; this makes social distancing more difficult. They also have to touch equipment and technology others have handled on a regular basis and may find it difficult to ensure they carry out frequent handwashing.
- Many security roles are located in major cities and some of these, particularly in London, the Midlands and South East have been particularly hard hit by Covid-19, affecting the vulnerability of those working there.

When comparing each risk factor to other occupations with similar risk scores, the death rate for security officers from Covid-19 is still very much an outlier and no one risk factor appears to explain this high figure. The true picture is complex, with some risk factors almost certainly interrelated, may still be emerging, or even not yet identified. What does seem clear though from this preliminary research is that gender, ethnicity, the nature of the job have all been seen to increase risks and these are all characteristics of security officers.

Section 1 Introduction

Aims and objectives

1.1 Covid-19 has had many dramatic impacts worldwide, one that has emerged in the UK is the comparatively high death rate of security officers, and this raises a number of questions which include:

- What factors might help to explain why security officers appear vulnerable?
- Are the factors related to Covid-19? If so, directly, or indirectly?

1.2 The aim of this project has been to explore these issues in more detail. It explores what data are available and assesses these in relation to the risk factors known to be associated with Covid-19.

Structure of the report

1.3 Following the Executive Summary and Introduction, Section 2 highlights the context for interpreting the findings by providing a brief review of key themes that have emerged from the data on Covid-19 deaths so far. This mainly draws upon the recent Office of National Statistics (ONS) data relating to deaths during the Covid-19 pandemic and a previous model of infectious diseases, as well as findings from Public Health England and the Health Foundation.

1.4 Section 3 details the Findings, outlining the various potential Covid-19 risk factors identified for security officers.[1] Finally, Section 4 incorporates a discussion of the key findings. An overview of the research methodology, which also includes limitations of the research and the generalisability of the findings, are found in Appendix 1. Further data are provided in Appendix 2.

1. For the purposes of this report, the authors have used a generic definition for security officers, incorporating all roles that have a significant security aspect. Any reference to security guards relates to specific terminology used in other research, or as defined through the ONS security codes (SOC 924 and 9241). Code 9241 does not however detail different security roles within their definition.

Section 2 Background

2.1 On 11 May 2020, the ONS released data which detailed a provisional count of 2,494 registered deaths (and age-standardised mortality rates) from Covid-19. It included people in England and Wales aged 20 to 64 and ran up to and including April 20.[2] By the end of May the total number of deaths (for all ages) totaled 38,934. It should be stressed that there is limited reliable data on the risks associated with underlying comorbidities on contracting or dying from Covid-19, certainly little relating to different population groups or settings.[3] That said, the ONS dataset was delineated into occupational groups showing the predicted effect of exposure to infectious diseases and proximity to others at work.[4]

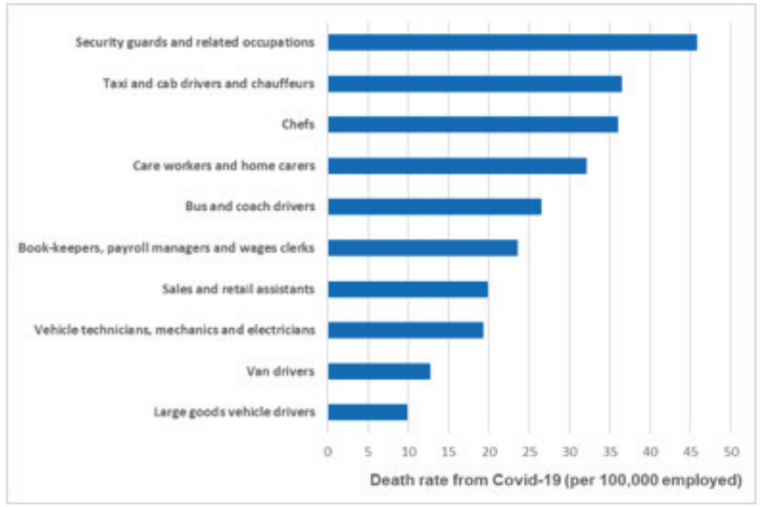
2.2 The risks of occupational exposure to the virus were first reported among people who worked at the wet animal and seafood market in Wuhan, China, where the virus is thought to have originated.[5] As cases increased, healthcare workers were identified as a high exposure group, both in China[6] [7] and other countries such as the US[8] and Italy.[9] As the pandemic continued, further occupations, particularly those on the frontline (such as care staff, delivery workers, drivers and those working in retail), have been highlighted to having possible higher exposure to the virus.

2.3 Such jobs are traditionally routine and manual occupations. Although these account for around 34% of all jobs, those working in them account for more than 43% of Covid-19 related deaths according to the ONS statistics. This compares to 28% for managerial and professional occupations, which make up 43% of all jobs.[10] Such results clearly represent an occupational class divide, but also reflect the impact of being a key worker compared to having a higher-wage job that can be carried out away from the frontline.[11] [12]

2. See https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationenglandandwales/deathsregistereduptoandincluding20april2020 [Accessed 18/5/20]
3. Jordan, R. E., Adab, P., & Cheng, K. K. (2020). Covid-19: risk factors for severe disease and death. Available from: https://taiga.vencealvirus.software.imdea.org/media/attachments/0/c/4/5/49d6da0f53692b0e81a71bf64129bd270bd2d2713df25f40594964f64e23/covid-19-risk-factors-for-severe-disease-and-death.pdf [Accessed 23/5/20]
4. See https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationshavethehighestpotentialexposuretothecoronaviruscovid19/2020-05-11 [Accessed 23/5/20)
5. Koh, D. (2020). Occupational risks for COVID-19 infection. Occupational medicine (Oxford, England), 70(1), 3.
6. Chou, R., Dana, T., Buckley, D. I., Selph, S., Fu, R., & Totten, A. M. (2020). Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers: A Living Rapid Review. Annals of Internal Medicine.
7. Wang D, Hu B, Hu C et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. J Am Med Assoc, doi:10.1001/jama.2020.1585.
8. Baker, M.G., Peckham, T.K., Seixas, N.S. (2020) Estimating the burden of United States workers exposed to infection or disease: A key factor in containing risk of COVID-19 infection https://doi.org/10.1371/journal.pone.0232452
9. Barbieri, T., Basso, G., & Scicchitano, S. (2020). Italian workers at risk during the Covid-19 epidemic. Available at SSRN 3572065.
10. The Conversation - Coronavirus class divide – the jobs most at risk of contracting and dying from COVID-19. Available from: https://theconversation.com/coronavirus-class-divide-the-jobs-most-at-risk-of-contracting-and-dying-from-covid-19-138857 [Accessed 25/5/20]
11. Adams-Prassl, A., Boneva, T., Golin, M. & Rauh, C. (2020), 'The large and unequal impact of covid-19 on workers', VoxEU.org, 08 April. Available from: https://voxeu.org/article/large-and-unequal-impact-covid-19-workers [Accessed 22/5/20)
12. Also, Dingel, J. & Neiman, B. (2020), 'How many jobs can be done at home?', Becker Friedman Institute white paper. Available from: https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf [Accessed 22/5/20)

2.4 The ONS data shows that specific occupation groups[13], and prominent amongst them elementary occupations (including security officers, but also others such as cleaners, construction workers, process plant operators) were found to have the highest rates of death involving Covid-19. The group that includes security occupations recorded the largest figure with 43.2 deaths per 100,000 males (see Appendix 2: Table A). This is equivalent to 70 deaths in the period under examination.[14] Within this group (which includes not only security officers[15], but also parking and civil enforcement occupations; school midday and crossing patrol occupations and other elementary security occupations), male security officers had the highest death rate with 45.7 deaths per 100,000 males (63 male deaths in total – see Figure 1) (and 2nd highest for all causes of death) (see, Appendix 2: Table B).[16]While the ONS statistics did not provide commentary on the reasons for the variations in death rates by occupation, it is worth considering whether the various duties carried out by security officers may impact on their risk. For example, they are likely to come into contact with other people, handle deliveries, use equipment, and are often the first person someone speaks to when they enter a commercial premises.[17]

Figure 1: Top ten male death rates involving Covid-19 (those aged 20 to 64 years), England and Wales, registered up to and including 20th April 2020)



Source: Figures extracted by authors from ONS, 2020

13. Occupations in the UK are defined via Standard Occupational Classifications. Available from: https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc [Accessed 26/5/20]
14. FMS 13 May 2020 ONS review points towards male security officers having highest COVID-19 death rates. Available from: https://www.fsmatters.com/Male-security-officers-passing-away-due-to-COVID [Accessed 19/5/20]
15. Although various datasets use the term 'security guard', we have refrained from this since in some contexts, and typically in the UK, it is viewed as a pejorative term.
16. ONS 2020 Table 8. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationenglandandwales/deathsregistereduptoandincluding20april2020
17. See https://www.corpssecurity.co.uk/security-services/ for the range of services typically offered by security firms

2.5 As a result of these figures, GMB, the union for keyworkers, described the ONS figures on Covid-19 related deaths as 'horrifying'.[18] In response, eleven private security companies sent an open letter to the Government at the beginning of May pleading for additional support and asking pressing questions raised by the pandemic.

2.6 Although the ONS data and analysis factored-in age, it did not consider people's ethnicity, location, wealth, or potential underlying health conditions. Therefore, it does not offer proof that deaths were caused by people's exposure to risk via carrying out their occupational tasks. That other factors may have been more influential was a factor acknowledged by Public Health England in their subsequent report on the disparities in the risk and outcomes of Covid-19.[19]

2.7 To overcome some of these limitations, the ONS published an article and data that explored possible differences in occupational exposure to the disease.[20] The analysis was based on variables from the US O*NET[21] database[22], using 2019 employment data.[23] O*NET asks a number of questions about individuals' working conditions and the day-to-day tasks undertaken as part of their duties.[24] To calculate the proximity and exposure measures, the questions asked were:

1. How physically close to other people are you when you perform your current job?
2. How often does your current job require that you be exposed to diseases or infection?

2.8 In order to explore in more detail why the death rates for security officers from Covid-19 appear high we have analysed the ONS occupations and exposure to disease data, and supplemented that with other data on a range of risk factors, namely:

- Proximity to others
- Exposure to the virus
- Age
- Gender
- Ethnicity
- Health
- Wealth
- Nature of work
- Working environment
- Geographical location

18. https://www.gmb.org.uk/news/ons-covid-19-death-figures-horrifying
19. Public Health England (PHE) (2020) Disparities in the risk and outcomes of COVID-19. Available from: https://www.gov.uk/government/publications/covid-19-review-of-disparities-in-risks-and-outcomes [Accessed 2/6/20]
20. See https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationshavethehighestpotentialexposuretothecoronaviruscovid19/2020-05-11 [Accessed 18/5/20]
21. ONET is a US Department of Labour website that contains detailed profiles on different occupations. Available from: https://www.onetonline.org/ [Accessed 25/5/20]
22. Hicks, Michael J., F. D. D. S. (2020), 'Occupational exposure to social distancing: A preliminary analysis using O'NET data', Becker Friedman Institute white paper. https://projects.cberdata.org/170/social-distance
23. https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/annualpopulationsurveyapsqmi [Accessed 25/5/20]
24. To use the model and show exposure to disease and physical proximity in the UK, US SOC codes were first mapped to ISCO-08 codes and then mapped from ISCO-08 codes to the equivalent UK SOC codes.

Section 3 Findings

Proximity to others

3.1 Infectious diseases primarily spread amongst people who are in close proximity, either via respiratory droplets from coughs and sneezes or via direct contact. Since most people display only mild, and some even no symptoms at all, it is possible to catch Covid-19 from people who do not appear ill.[25] Length of contact is also relevant, as is how infectious a person is which is determined by their viral load and stage of shedding.[26] Although scientific understanding of Covid-19 is still evolving studies have shown that repeated exposure to lower doses of the disease can be just as infectious as exposure to a single high dose. [27]

3.2 Occupations involving both a close proximity and frequent interactions with others have a higher potential of exposure to Covid-19.[28] Given the type of work security officers frequently undertake, it is not difficult to see how they might be at risk from the virus.

3.3 To reduce the spread of the disease, and in the absence of an effective vaccine, governments around the world, including the UK,[29] have attempted to reduce the mixing of susceptible and infectious people with others through social distancing,[30] although the effectiveness of such measures have been subject to much controversy[31].

3.4 Whatever the merits, it has been the mainstay of official policy, yet security personnel have not always found it easy to distance themselves from others. Indeed, one feature of their work during the pandemic, [32] has been deployment on the frontline helping to implement stringent rules on social distancing (including managing queues, restricting entry, managing egress) which has brought them into direct contact and even conflict with people. Moreover, they have often worked without appropriate safety measures, lacking personal and protective equipment (PPE).[33]

3.5 Table 1 details occupations with a similar indicator score (per the ONS predictions to disease model) in terms of working in proximity to others. To measure proximity respondents were required to define their physical proximity on a scale where:

0 – I do not work near other people (beyond 100 ft.)
25 – I work with others but not closely (for example, private office)
50 – Slightly close (for example, shared office)
75 – Moderately close (at arm's length)
100 – Very close (near touching)

3.6 The results are striking as the recorded death rates for security officers are so much higher than those with a similar level of proximity to others. This variable alone does not explain the high death rates as other occupations are working closely with the public and others are not suffering such high rates.[34]

25. Q&A on coronaviruses". World Health Organization (WHO). 11 February 2020
26. Liu, Y., Yan, L. M., Wan, L., Xiang, T. X., Le, A., Liu, J. M., ... & Zhang, W. (2020). Viral dynamics in mild and severe cases of COVID-19. The Lancet Infectious Diseases.
27. Li K, Wohlford-Lenane C, Perlman S, et al. Middle East respiratory syndrome coronavirus causes multiple organ damage and lethal disease in mice transgenic for human dipeptidyl peptidase 4. J Infect Dis 2016; 213: 712–22)
28. Rothe C, Schunk M, Sothmann P, et al. Transmission of 2019-ncov infection from an asymptomatic contact in Germany. N Engl J Med 2020; published Jan 30. DOI:10.1056/NEJMc2001468.
29. Public Health England issued guidance on Staying safe through social distancing, which has since been superseded by the new Staying alert and safe (social distancing) guidance.
30. Lewnard, J. A., & Lo, N. C. (2020). Scientific and ethical basis for social-distancing interventions against COVID-19. The Lancet. Infectious diseases.
31. Koo, J. R., Cook, A. R., Park, M., Sun, Y., Sun, H., Lim, J. T., ... & Dickens, B. L. (2020). Interventions to mitigate early spread of SARS-CoV-2 in Singapore: a modelling study. The Lancet Infectious Diseases.
32. The Changing Role of the Security Guard during the COVID-19 Pandemic in the UK. Available from: https://www.tracktik.com/blog/the-changing-role-of-the-security-guard-during-the-covid-19-pandemic-in-the-uk/ [Accessed 26/5/20]
33. https://www.swlondoner.co.uk/lack-of-ppe-leaves-security-guards-at-risk-from-covid-19-at-st-georges-university/ and https://www.yorkpress.co.uk/news/18453811.york-hospital-security-guard-suspended-amid-fears-ppe/ [Both accessed 26/5/20]
34. Healthcare workers obviously scored much higher (from 84.8 to 99.5) on this scale.
35. Rothe et al (2020). Op. cit.

Table 1: Covid-19 death rates by occupation and proximity to others

SOC Ind Occup	Occupation	Proximity to others	Total in employment	Deaths from Covid-19	Death rate per 100,000 *
2312	Further education teaching professionals	77.0	127,000	5	3.94
3312	Police officers (sergeant and below)	77.0	153,000	2	1.31
3315	Police community support officers	77.0	13,000	1	7.69
5313	Roofers, roof tilers and slaters	77.0	50,000	6	12.00
6139	Animal care services occupations	77.0	84,000	1	1.19
7113	Telephone salespersons	77.0	32,000	2	6.25
9241	Security guards and related occupations	77.3	190,000	64	33.68
1223	Restaurant and catering establishment managers and proprietors	78.0	144,000	14	9.72
3313	Fire service officers (watch manager and below)	78.0	44,000	1	2.27
5436	Catering and bar managers	78.0	68,000	4	5.88
3231	Youth and community workers	79.0	74,000	1	1.35
3233	Child and early years officers	79.0	43,000	1	2.33
3234	Housing officers	79.0	54,000	1	1.85
3239	Welfare and housing associate professionals	79.0	142,000	3	2.11
4123	Bank and post office clerks	79.0	97,000	5	5.15
4129	Financial administrative occupations	79.0	161,000	7	4.35
9274	Bar staff	79.0	204,000	3	1.47

Source: ONS 2020 * Authors analysis of ONS 2020 data

Exposure to disease

3.7 The risk factors of exposure and proximity are often confused. Exposure refers to how regularly people are exposed to diseases or infection, whereas proximity refers to physical closeness to others. So, although security officers' work often requires close contact with others, they are not normally knowingly exposed to disease on a regular basis, albeit that during this pandemic the risk of this has changed. A further issue here, as already mentioned, is that people with Covid-19 may present as asymptomatic (and be infectious before showing any significant symptoms), a factor that has been suggested is fueling the spread of the virus.[35]

3.8 The data calculated by O*NET which was adopted by the ONS as a predictor of exposure to disease was developed prior to Covid-19, and therefore does not reflect any changes to working practices implemented since the outbreak. However, the standardised exposure to disease or infections measure was rated on a scale where exposure was ranked as:

0 – Never
25 – Once a year or more but not every month
50 – Once a month or more but not every week
75 – Once a week or more but not every day
100 – Every day

Section 3 Findings

3.9 As expected, healthcare workers were ranked highly, with the majority who have day-to-day contact with others scoring 90 or more. However, as Table 2 shows, security officers scored only 33 in terms of exposure to disease. Considering other occupations in the table with similar indicator scores, once again the death rate for security officers is disproportionately high. Even hairdressers, which have received a lot of media attention for their susceptibility to Covid-19 had a lower death rate of 6.63.

Age

3.10 Evidence early on in the pandemic suggested that Covid-19 tends to affect older people certainly compared to younger people and even those who are middle aged.[36] Given this, age was identified as a significant risk factor when predicting the mortality of individuals from Covid-19.[37] In the UK, up to 1 May 2020, 384 people aged up to 44 years old had died from the virus compared to 3,529 people aged 45 to 64 years old.

Table 2: Covid-19 death rates by occupation and exposure to disease

SOC Ind Occup	Occupation	Exposure to disease	Total in employment	Deaths from Covid-19	Death rate per 100,000 *
2112	Biological scientists and biochemists	30.5	80,000	2	2.50
2119	Natural and social science professionals	30.5	62,000	11	17.74
4216	Receptionists	31.0	237,000	9	3.80
2212	Psychologists	32.6	36,000	0	0.00
2229	Therapy professionals	32.6	63,000	1	1.59
6221	Hairdressers and barbers	32.8	166,000	11	6.63
9241	Security guards and related occupations	33.0	190,000	64	33.68
1181	Health services and public health managers and directors	34.0	74,000	1	1.35
2463	Environmental health professionals	34.0	10,000	0	-
2319	Teaching and other educational professionals	36.0	253,000	7	2.77
6121	Nursery nurses and assistants	36.0	224,000	3	1.34
6125	Teaching assistants	36.0	309,000	10	3.24
6126	Educational support assistants	36.0	167,000	0	-

Source: ONS 2020 * Authors analysis of ONS 2020 data

Table 3: Age distribution of security licences issued by SIA during 2019

Sector	Total	Total Aged 55+	%
Cash and valuables in transit	7,441	1,748	23
Close protection	14,408	1,658	12
Door supervision	257,482	33,303	13
Key holding	929	268	29
Non-frontline	8,222	2,354	29
Public Space Surveillance (CCTV)	50,149	11,296	23
Security guarding	65,172	27,199	42
Total	**403,803**	**77,826**	**19%**

Source: SIA

3.11 Table 3 helps develop this point. It details the number of licences issued to the various sectors by the Security Industry Authority (SIA) for 2019, it shows the number of licences issued to those who are over 55 years old[38]. Although licenses do not represent the full extent of those employed in security 'guarding' roles, in the absence of definitive statistics on age for the industry, we are using these as indicative. The average proportion of the total UK workforce who are aged over 55 years is 21%,[39] and in the security sector this is similar at 19%. This varies between licence types issued to those aged over 55 years old, with 42% of security guarding licences issued for this age group and for and 29% for both key holding and non-frontline personnel. Although this suggests that age may be a risk factor for security officers, it needs more work, not least to identify exact roles relating to each licence category and which of these have continued to operate during the pandemic.

3.12 Table 4 details ONS data death rate data for occupations with a similar percentage of their workforce aged 55 years or over to security personnel. This highlights that security staff have a much higher death rate per 100,000 employed compared to all other similar age stratified occupations. The next highest occupation category to them is public services associate professionals (SOC 4112) which score less than half, with a death rate of 14.18 per 100,000.

Table 4: Covid-19 death rates by occupation and percentage of workforce aged over 55 years

SOC Ind Occup	Occupation	Percentage of workforce 55+ years	Total in employment	Deaths from Covid-19	Death rate per 100,000 *
4113	Local government administrative occupations	26.1	143,000	14	9.79
5435	Cooks	26.1	70,000	4	5.71
1242	Residential, day and domiciliary care managers and proprietors	26.2	63,000	4	6.35
8229	Mobile machine drivers and operatives	26.3	49,000	3	6.12
2442	Social workers	26.9	111,000	10	9.01
3563	Vocational and industrial trainers and instructors	27.0	155,000	10	6.45
9119	Fishing and other elementary agriculture occupations	27.1	21,000	1	4.76
9241	Security guards and related occupations	27.1	190,000	64	33.68
2434	Chartered surveyors	27.3	61,000	1	1.64
3561	Public services associate professionals	27.6	93,000	3	3.23
4112	National government administrative occupations	28.0	141,000	20	14.18
2124	Electronics engineers	28.1	32,000	0	-
2312	Further education teaching professionals	28.1	127,000	5	3.94
3531	Estimators, valuers and assessors	28.1	62,000	2	3.23

Source: ONS 2020 * Authors analysis of ONS 2020 data

36. Liu, K., Chen, Y., Lin, R., & Han, K. (2020). Clinical features of COVID-19 in elderly patients: A comparison with young and middle-aged patients. Journal of Infection.
37. Leung, C. (2020). Risk factors for predicting mortality in elderly patients with COVID-19: a review of clinical data in China. Mechanisms of Ageing and Development, 111255.
38. https://www.sia.homeoffice.gov.uk/Pages/info-responses.aspx?FOI=166 [Accessed 28/5/20] Figures exclude 18 licences for vehicle immobilisation where age statistics were withheld.
39. ONS 2020 op. cit.

3.13 Some of these differences might be explained by the nature of the jobs and exposure to Covid-19, for example, those which are office-based and have little contact with others, or where people are now likely to be working from home. However, when comparisons are made with other job roles which also involve a high proximity to the general public and others, and which show a potentially similar age structure, such as community police officers (SOC 3315 – 26% over 55 years); prison officers (SOC 3314 – 24% over 55 years), their death rates from Covid-19 are considerably lower.[40] Even hospital porters (SOC 9271) and ambulance staff (SOC 6142) who have 44% and 37% respectively of staff aged over 55 years and have a high exposure to the virus, have lower death rates than security officers. Age may contribute to some extent to explain the high death rates for security personnel, but without reliable age data for each type of security role, it is difficult to fully assess.

Gender[41]

3.14 The ONS data released on 26 May relating to Covid-19 deaths registered up to and including 15 May 2020 showed that of a total of 41,105 deaths, 56% (n=23,042) were men and 44% (n=18,063) women. It was only in the age group 85+ that more women died compared to men (53% compared to 47%). In all other working age groups, deaths were higher for men than women, and for those aged 45-74, men accounted for 66% of all Covid-19 related deaths. Public Health England reported that amongst those aged 40 to 79, the age specific death rates from Covid-19 among males were around double the rates for females. These are startling figures considering that the general workforce population is made up of 51% men and 49% women.[42]

3.15 Gender differences in other diseases have been previously observed[43] and also in respiratory infections.[44] Therefore, these findings for Covid-19 are not necessarily surprising.[45] Similar patterns of Covid-19 deaths by gender have been seen in other countries such as China, Italy, France and Germany, and at one point the US witnessed approximately twice as many men dying from the virus than women.[46] Although it is too early to know for sure what is causing this several potential explanations have been put forward:

1. Skewed data (however, previous studies suggest this is not the case).
2. Biological differences between the sexes' immune systems that may play a part response to infectious diseases.
3. Associations with existing co-morbidities which are generally found more in men than women.
4. Possible riskier behaviour of men.[47]

40. Police officers (SOC 3312) were not included here as due to early retirement schemes, individuals aged over 55 in this occupation were found to be 4% by ONS, 2020.
41. For the purposes of this research, individuals were defined as being either male or female.
42. ONS (2020). Op. cit.
43. Nasir, N., Jamil, B., Siddiqui, S., Talat, N., Khan, F. A., & Hussain, R. (2015). Mortality in Sepsis and its relationship with Gender. Pakistan journal of medical sciences, 31(5), 1201.
44. Channappanavar, R., Fett, C., Mack, M., Ten Eyck, P. P., Meyerholz, D. K., & Perlman, S. (2017). Sex-based differences in susceptibility to severe acute respiratory syndrome coronavirus infection. The Journal of Immunology, 198(10), 4046-4053.
45. Jin, J. M., Bai, P., He, W., Wu, F., Liu, X. F., Han, D. M., ... & Yang, J. K. (2020). Gender differences in patients with COVID-19: Focus on severity and mortality. Frontiers in Public Health, 8, 152 and Gausman, J., & Langer, A. (2020). Sex and gender disparities in the COVID-19 pandemic. Journal of Women's Health, 29(4), 465-466.
46. https://blogs.bmj.com/bmjgh/2020/03/24/sex-gender-and-covid-19-disaggregated-data-and-health-disparities [Accessed 27/5/20]
47. Sex, gender and COVID-19: Disaggregated data and health disparities. Available from: https://blogs.bmj.com/bmjgh/2020/03/24/sex-gender-and-covid-19-disaggregated-data-and-health-disparities/ [Accessed 27/5/20]

3.16 Although women now represent approximately 10% of the security workforce,[48] (although this proportion varies between organisations and sectors[49] see also Table D Appendix). Clearly, the security industry remains male-dominated. Considering just security officers (SOC 9241), the total of 64 deaths reported by the ONS were made up of 63 men (98.5%). Even for deaths from all causes (including Covid-19) during the same period (n=152), men accounted for 96% of these (see Appendix 2: Table C).

3.17 Table 5 details the top ten male death rates by occupation calculated by the ONS data, with security officers topping this list. Although there appears to be some correlation between how many of the workforce in an occupation are male and the number of Covid-19 related deaths, this is not the case for all occupations. For example, vehicle technicians, mechanics, electricians, van drivers, and large goods vehicle drivers all have a greater proportion of males in their workforce, but their death rates from Covid-19 are substantially lower than those of security officers.

Table 5: Top ten Covid-19 death rates by occupation compared to percentage of workforce that are male

SOC Ind Occup	Occupation	Death rate from Covid-19	*Percentage of workforce that are male
9241	Security guards and related occupations	45.7	84.7%
8214	Taxi and cab drivers and chauffeurs	36.4	96.4%
5434	Chefs	35.9	79.3%
6145	Care workers and home carers	32.0	16.3%
8213	Bus and coach drivers	26.4	91.1%
4122	Book-keepers, payroll managers and wages clerks	23.5	29.3%
7111	Sales and retail assistants	19.8	66.2%
5231	Vehicle technicians, mechanics, and electricians	19.2	98.8%
8212	Van drivers	12.6	92.1%
8211	Large goods vehicle drivers	9.8	99.1%

Source: ONS 2020 * Authors analysis of ONS 2020 data

48. SIA 2019 figures on license holders in the UK indicate that 10% are female. Available from: https://www.sia.homeoffice.gov.uk/Pages/info-responses.aspx?FOI=166 [Accessed 27/5/20]
49. Dale, A. 2013. 2013. Why is the private security sector lagging behind on gender equality? Available from: https://www.uniglobalunion.org/news/why-private-security-sector-lagging-behind-gender-equality

Section 3 Findings

3.18 When security officer death rates are compared to occupations with a similar proportion of men in their workforce (see Table 6), they vary widely. Although the numbers in the samples are quite small, it does not seem to suggest that gender is a primary reason why the death rate for security officers is so high compared to other occupations.

Ethnicity

3.19 The Covid-19 pandemic has affected some sections of the population more than others and ethnicity has been widely referenced as a key determining factor. Initially, some saw this as being a "Chinese virus", but towards the end of January it was apparent that this disease was spreading worldwide.[50] As it advanced to the western world, observed differences between Chinese and Italian mortality rates indicated that ethnicity might affect disease outcome, but there was little or no data to support or refute this.[51]

Table 6: Covid-19 death rates by occupation compared to percentage of workforce that are male

SOC Ind Occup	Occupation	Total in employ-ment	% of workforce male	*Total males in employ-ment	Males Covid-19 deaths	*Male Covid-19 death rate per 100,000
1123	Production managers and directors in mining and energy	19,000	85.9	16,321	2	12.3
5113	Gardeners and landscape gardeners	172,000	85.9	147,748	10	6.8
3511	Air traffic controllers	8,000	85.9	6,840	2	29..2
5422	Printers	29,000	85.5	24,650	4	16.2
8127	Printing machine assistants	9,000	85	7,632	0	-
9241	Security guards and related occupations Security officers	190,000	84.8	160,930	63	39.1
2135	IT business analysts, architects and systems designers	148,000	84.7	124.616	3	2.4
2434	Chartered surveyors	61,000	84.2	51,362	1	1.9
1211	Managers and proprietors in agriculture and horticulture	24,000	83.3	19,992	0	-
2129	Engineering professionals	130,000	83.2	108,160	3	2.8
1161	Managers and directors in transport and distribution	83,000	83.1	68,973	9	13.0

Source: ONS 2020 * Authors analysis of ONS 2020 data

50. Laurencin, C. T., & McClinton, A. (2020). The covid-19 pandemic: a call to action to identify and address racial and ethnic disparities. Journal of Racial and Ethnic Health Disparities, 1-5. Available from: https://www.researchgate.net/profile/Aneesah_Mcclinton2/publication/340753910_The_COVID-19_Pandemic_a_Call_to_Action_to_Identify_and_Address_Racial_and_Ethnic_Disparities/links/5ea5d7dba6fdccd794572a61/The-COVID-19-Pandemic-a-Call-to-Action-to-Identify-and-Address-Racial-and-Ethnic-Disparities.pdf [Accessed 28/5/20]
51. Pareek, M., Bangash, M. N., Pareek, N., Pan, D., Sze, S., Minhas, J. S., .. & Khunti, K. (2020). Ethnicity and COVID-19: an urgent public health research priority. The Lancet. Available from: https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30922-3.pdf [Accessed 28/5/20]

Section 3 Findings

3.20 Concerns in the UK about a possible association between ethnicity and outcome were raised after the first 10 doctors to die from Covid-19 were identified as all being from ethnic minorities.[52] Because the UK was the first country with an ethnically diverse population to experience Covid-19,[53] it was the first to gain an understanding of the disease's effects in different ethnic groups.[54] Early research by the Intensive Care National Audit and Research Centre, showed that a third of Covid-19 patients admitted to critical care units were from an ethnic minority background,[55] and ethnic minority groups have also been disproportionately affected by Covid-19 in the US.[56]

3.21 Following such evidence of over representation in hospitalisations and deaths from the virus, Public Health England launched an inquiry into the issue. Whereas a number of generalised risk factors for black and minority ethnic (BAME) groups were identified, one of the most crucial observations was that the impact of the pandemic has not been uniform across ethnic groups.[57] Ethnicity is complex, it consists not only of genetic make-up, but also social constructs, cultural identity, and behavioural patterns.[58]

3.22 The genetic make-up or pathophysiological differences of some BAME groups can make them more susceptible to infection[59] [60] and some characteristics are also known risk factors for increased disease severity in Covid-19 patients.[61] Other socio-economic factors experienced by many BAME groups such as higher poverty rates, limited health care access, poor and crowded housing conditions, and higher rates of jobs in service industries (which increases their exposure to risk as they are less able to work from home) all contribute to greater susceptibility to Covid-19. The spread of the virus has also been noted in cities with larger BAME populations that tend to live in close communities.[62] [63]

52. https://www.theguardian.com/society/2020/apr/10/ukcoronavirus-deaths-bame-doctors-bma [Accessed 28/5/20]
53 The ethnic minority population of the UK was around 13% at the time of the last census in 2011 (ONS, 2011)
54 Khunti, K., Singh, A. K., Pareek, M., & Hanif, W. (2020). Is ethnicity linked to incidence or outcomes of covid-19?. Available from: https://www.researchgate.net/profile/Awadhesh_Singh/publication/340779085_Is_ethnicity_linked_to_incidence_or_outcomes_of_covid-19/links/5e9d85124585150839ec360b/Is-ethnicity-linked-to-incidence-or-outcomes-of-covid-19.pdf [Accessed 28/5/20]
55 Resnick A, Galea S, Sivashanker K. COVID-19: the painful price of ignoring health inequities. BMJ Opinion, 18 Mar 2020. Available from: https://blogs.bmj.com/bmj/2020/03/18/COVID-19-the-painful-price-of-ignoring-health-inequities [Accessed 28/5/20]
56 Resnick A, Galea S, Sivashanker K. Covid-19: the painful price of ignoring health inequities. BMJ Opinion, 18 Mar 2020. Available from: https://blogs.bmj.com/bmj/2020/03/18/covid-19-the-painfulprice-of-ignoring-health-inequities
57 Platt, L., & Warwick, R. (2020). Are some ethnic groups more vulnerable to COVID-19 than others. Institute for Fiscal Studies, Nuffield Foundation. Available from: http://allcatsrgrey.org.uk/wp/download/public_health/inequalities_in_health/Are-some-ethnic-groups-more-vulnerable-to-COVID-19-than-others-V2-IFS-Briefing-Note.pdf [Accessed 28/5/20]
58 Ethnicity is a complex entity composed of Lee C. "Race" and "ethnicity" in biomedical research: how do scientists construct and explain differences in health? Soc Sci Med 2008; 68: 1183–90. Available from: http://catherineylee.com/wp-content/uploads/social-science-medicine-race-and-ethnicity-in-biomedical-research-how-do-scientists-construct-and-explain-differences-in-health.pdf [Accessed 28/5/20]
59 Ioannidis, J. P., Ntzani, E. E., & Trikalinos, T. A. (2004). 'Racial' differences in genetic effects for complex diseases. Nature genetics, 36(12), 1312-1318. https://www.researchgate.net/profile/Evangelia_Ntzani/publication/8184115_%27Racial%27_differences_in_genetic_effects_for_complex_diseases/links/543bb32a0cf204cab1db166b/Racial-differences-in-genetic-effects-for-complex-diseases.pdf [Accessed 9/6/20]
60 These may include increased prevalence of Vitamin D deficiency; increased inflammatory burden; difference in immune effects; higher prevalence of cardiovascular risk factors (such as insulin resistance); as well as differences in vaccination policies in the country of birth.
61 Is ethnicity linked to incidence or outcomes of covid-19? BMJ 2020; 369 doi: https://doi.org/10.1136/bmj.m1548 (Published 20 April 2020) https://www.bmj.com/content/369/bmj.m1548/rr-6 [Accessed 28/5/20]
62 Laurencin, C. T., & McClinton, A. (2020). Op.cit.
63 For example, the Guardian reported that in Birmingham, in March the City Hospital reported that 64% of their Covid-19 deaths had been from BAME communities, falling to 50% in April. https://www.theguardian.com/world/2020/may/05/doctors-in-birmingham-begin-probe-into-bame-deaths-from-covid-19 [Accessed 28/5/20]

3.23 According to the 2011 census 14% of people in England and Wales were from non-white ethnic groups and from the ONS occupation data BAME[64] groups make up 11.3% of the workforce in the 20-64 age range. Recent research by the Policy Exchange (see Table 7) measuring ethnic diversity across occupations in England and Wales used data from the 2015 Labour Force Survey (LFS), concluded that there were two sides to diversity. These were that individuals either held low-skilled jobs, or highly skilled professions that command prestige.[65] Security officer roles and related occupations ranked 7th in diversity, with a non-white share of 35.2%, compared to 12% for the overall population. Black Africans made up the largest share of minority groups.

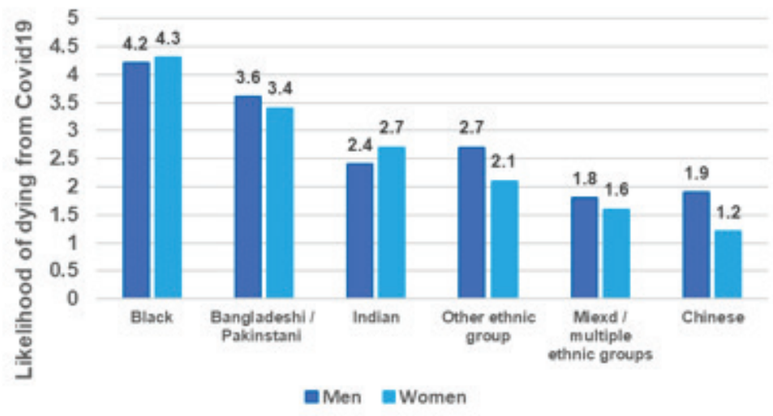
3.24 Provisional analysis by the ONS (see Figure 2) shows that the risk of death involving Covid-19 among some ethnic groups is significantly higher than that of those of white ethnicity. When taking into account age in the analysis, black males are 4.2 times more likely to die from Covid-19 than males of white ethnicity. Black Africans, Bangladeshis, Pakistanis, Indians, and those of mixed ethnicities also had a greater risk of death from Covid-19 compared with those of white ethnicity.

Table 7: Top ten most ethnically diverse occupations and largest minority group

Rank	Occupation	Diversity	Largest Minority Group	Share of Largest Minority Group
1	Taxi and cab drivers and chauffeurs	0.72	Pakistani	23.5%
2	Dental practitioners	0.69	Indian	20.0%
3	Packers, bottlers, canners and fillers	0.67	Other White	34.8%
4	Medical practitioners	0.65	Indian	12.9%
5	Food, drink, and tobacco process operatives	0.62	Other White	38.9%
6	Chefs	0.62	Other White	14.4%
7	Security guards & related occupations	0.62	Black African	11.4%
8	Pharmacists	0.61	Pakistani	11.9%
9	Legal professionals	0.59	Other White	16.2%
10	Restaurant & catering establishment managers & proprietors	0.57	Other White	13.4%

Source: Policy Exchange

Figure 2: Ratios for the risk of death involving Covid-19 by ethnicity



Source: ONS 2/3/20 to 10/4/20

64. The ONS BAME group includes: Mixed/Multiple ethnic groups; Indian; Pakistani; Bangladeshi; Chinese; any other Asian background; Black/African/Caribbean/Black British
65. Norrie, R. (2017). The two sides of diversity: which are the most ethnically diverse occupations? Available from: https://policyexchange.org.uk/wp-content/uploads/2017/03/The-two-sides-of-diversity-2.pdf [Accessed 28/5/20]

3.25 Although the ONS concluded that the results show that the difference between ethnic groups for Covid-19 mortality is partly a result of socio-economic disadvantage and other circumstances, it noted that some of the differences have not yet been explained.[66] The findings by Public Health England also broadly found similar inequalities.[67]

3.26 Looking at the ONS predictions of Covid-19 deaths through exposure, and then comparing death rates to ethnicity, Table 8 shows that security officers have the third highest percentage of BAME in their workforce, surpassed only by pharmacists and taxi and cab drivers/chauffeurs. This concurs with the Policy Exchange research, showing that the majority of occupations with a high percentage of BAME workers are from the low-skill sector.

Table 8: Covid-19 death rates by percentage of BAME in occupation

SOC Ind Occup	Occupation	Percentage of workforce BAME	Total in employment	Deaths From Covid-19	*Death rate per 100,000
7124	Market and street traders and assistants	22.7	15,000	7	46.67
1254	Shopkeepers and proprietors – wholesale and retail	26.6	117,000	16	13.68
2214	Ophthalmic opticians	27.2	18,000	0	0.00
2211	Medical practitioners	27.9	296,000	11	3.72
2215	Dental practitioners	28.2	41,000	0	0.00
9241	Security guards and related occupations	31.8	190,000	64	33.68
2213	Pharmacists	32.4	70,000	2	2.86
8214	Taxi and cab drivers and chauffeurs	44.1	231,000	77	33.33

Source: ONS 2020 * Authors analysis of ONS 2020 data

66. For full details see https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronavirusrelateddeathsbyethnicgroupenglandandwales/2march2020to10april2020 [Accessed 28/5/20]
67. PHE 2020 Op. cit. page 39

3.27 Although market traders show the greatest death rate from Covid-19, results could be possibly skewed by the low numbers recorded here. Security officers have the second highest death rate, followed closely by the category of taxi/cab drivers and chauffeurs, which has a similar percentage of BAME workers. What these two occupations have in common is their work is characterised by frequent (albeit it relatively short) interactions with others. They are both key work occupations, have continued to work throughout the lockdown period and therefore, had contact with the general public and other key workers who may have been exposed to the virus. In addition, they are both male-dominated occupations. It is less relevant to consider security officers alongside other comparable occupations, such as police officers, because the ethnic composition of their workforce is much lower at approximately 7%.[68]

3.28 Occupational exposure for BAME workers to Covid-19 may partially explain the disproportionately high death rate for security officers, but the issue is much more complex with social and economic factors also playing a part in what groups are most vulnerable to this virus.

Health and wealth

3.29 Recent Health Foundation research reported that the Covid-19 pandemic and the wider governmental and societal response to it have highlighted existing inequalities in health.[69] The research found that people facing the greatest deprivation are experiencing a higher risk of exposure to the virus which is compounded if they are in poor health. In addition, it was noted that measures to control the spread of the virus and protect lives (such as lock down, social distancing and cancellations of routine health care and operations) were having a greater impact on those already disadvantaged. It all reinforces the link between deprivation and risks to health.[70]

3.30 Research has shown that those living in more deprived areas are more likely to test positive for Covid-19,[71] and also have higher mortality rates. In fact, ONS analysis has shown that the most deprived areas in England had more than double the mortality rate from Covid-19 than the least deprived areas.[72] Another report from ICNARC highlighted that a larger proportion of patients critically ill in intensive care units with Covid-19 were from the most deprived areas.[73]

3.31 Figures released earlier in the year by the ONS have shown that the gap for life expectancy for males between the most and least deprived areas in England has widened to 9.5 years. Moreover, that those living in the most deprived areas can expect to spend almost two decades less in good health than their counterparts in the least deprived areas.[74] In addition, research by the Health Foundation found that those living in the most deprived areas are at risk of developing many long-term conditions (such as cardiovascular disease) ten years earlier in their lives than those in least deprived areas. Those in areas of highest deprivation were found, on average, to have two or more long term conditions by the age of 61 compared to 71 in the least deprived areas.[75]

68. https://www.ethnicity-facts-figures.service.gov.uk/workforce-and-business/workforce-diversity/police-workforce/latest#by-ethnicity-police-officers [Accessed 27/5/20]
69. Bibby, J., Everest, G., & Abbs, I. (2020). Will COVID-19 be a watershed moment for health inequalities?. London: Health Foundation. Available from: https://www.health.org.uk/publications/long-reads/will-COVID-19-be-a-watershed-moment-for-health-inequalities [Accessed 29/5/20]
70. Graham, H. (2007). Unequal lives: health and socioeconomic inequalities. McGraw-Hill Education (UK).
71. Rose, T. C., Mason, K., Pennington, A., McHale, P., Taylor-Robinson, D. C., & Barr, B. (2020). Inequalities in COVID19 mortality related to ethnicity and socioeconomic deprivation. Available from: https://www.medrxiv.org/content/medrxiv/early/2020/05/05/2020.04.25.20079491.full.pdf [Accessed 28/5/20]
72. Office for National Statistics (ONS). Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 17 April 2020. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand17april [Accessed 28/5/20]
73. Intensive Care National Audit & Research Centre (ICNARC). ICNARC report on COVID-19 in critical care. [Online] 22 May 2020. Available from: https://www.icnarc.org/Our-Audit/Audits/Cmp/Reports [Accessed 28/5/20]
74. ONS 2020 Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/bulletins/healthstatelifeexpectanciesbyindexofmultipledeprivationimd/2016to2018#:~:text=Main%20points,sexes%20since%202013%20to%202015. [Accessed 26/5/20]
75. Bibby et al, (2020). Op. cit.

3.32 Early research on Covid-19 in China revealed that as well as being older, those individuals with underlying diseases and conditions were more at risk of adverse outcomes, especially when they were immunocompromised. Findings outlined that hypertension, cardiovascular diseases, diabetes, smoking[76] COPD, malignancy, and chronic kidney disease were observed as prevalent underlying conditions among hospitalised patients with Covid-19.[77] ONS data showed that of the 33,841 deaths that occurred in March and April 2020 involving Covid-19 in England and Wales, 30,577 (90.4%) had at least one pre-existing condition, with a mean number of pre-existing conditions of 2.3.[78] At-risk underlying conditions were also found to affect some ethnic groups more severely and are especially prevalent among older Bangladeshis, Pakistanis and Black Caribbeans. Compared to white British individuals, Bangladeshis for example are 60% more likely to have a long-term health condition that makes them particularly vulnerable to infection.[79]

3.33 Early reports on underlying conditions to Covid-19 failed to mention obesity as a risk factor, which may reflect the fact that this is less of a problem in eastern countries.[80] But as the virus moved westwards from China towards Europe and the US, obesity emerged as an underlying risk factor, making the need for hospital admission and critical care more likely and leading to poorer outcomes for those who contracted Covid-19.[81] Individuals with obesity and an increased BMI have previously been shown to be more vulnerable to infections.[82] In addition, Public Health England reported that diabetes was reported on 21% of death certificates where Covid-19 was also mentioned, and this finding is consistent with other studies.[83] Previous research has revealed that the prevalence of type 2 diabetes is higher in people from BAME communities.[84]

3.34 Estimates for England suggest that 28.7% of adults are obese and a further 35.6% are overweight (but not obese), equating to around 36 million people with an increased BMI. Although being overweight is more prevalent in males, being obese is similar for both sexes.[85] The authors are not aware of any studies in the UK of obesity and occupational factors, but in the US, research found that security officers, police and firefighters have the highest obesity rates out of any occupational group. The study also found higher obesity rates correlated with working more than 40 hours per week and exposure to a hostile work environment.[86]

76 Further research has since suggested that current smoking is not associated with Covid-19 Rossato, M., Russo, L., Mazzocut, S., Di Vincenzo, A., Fioretto, P., & Vettor, R. (2020). Current smoking is not associated with COVID-19. European Respiratory Journal. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7191113/ [Accessed 29/5/20]
77 Emami, A., Javanmardi, F., Pirbonyeh, N., & Akbari, A. (2020). Prevalence of underlying diseases in hospitalized patients with COVID-19: a systematic review and meta-analysis. Archives of academic emergency medicine, 8(1). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7096724/#B11 [Accessed 29/5/20]
78 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19englandandwales/deathsoccurringinapril2020#characteristics-of-those-dying-from-covid-19 [Accessed 29/5/20]
79 Norrie, R. (2017). Op. cit.
80 Dietz, W., & Santos-Burgoa, C. (2020). Obesity and its Implications for COVID-19 Mortality. Obesity. https://onlinelibrary.wiley.com/doi/pdf/10.1002/oby.22818 7 [Accessed 29/5/20]
81 Lighter, J., Phillips, M., Hochman, S., Sterling, S., Johnson, D., Francois, F., & Stachel, A. (2020). Obesity in patients younger than 60 years is a risk factor for Covid-19 hospital admission. Clin Infect Dis, 9(10.1093). https://www.sochob.cl/web1/wp-content/uploads/2020/04/Obesity-in-patients-younger-than-60-years-is-a-risk-factor-for-Covid-19-hospital-admission.pdf [Accessed 29/5/20]
82 Kassir, R. (2020). Risk of COVID-19 for patients with obesity. Obesity Reviews, 21(6). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7235532/ [Accessed 29/5/20]
83 PHE 2020 Op. Cit. page 60.
84 NHS Digital. National Diabetes Audit Report 1 - Care Processes and Treatment Targets 2018-19. Available from: https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-audit/report-1--care-processes-and-treatment-targets-2018-19-short-report [Accessed 4/6/20]
85 http://researchbriefings.files.parliament.uk/documents/SN03336/SN03336.pdf [Accessed 29/5/20]
86 Luckhaupt, S. E., Cohen, M. A., Li, J., & Calvert, G. M. (2014). Prevalence of obesity among US workers and associations with occupational factors. American journal of preventive medicine, 46(3), 237-248). Available from: https://www.ajpmonline.org/article/S0749-3797(13)00617-X/fulltext [Accessed 29/5/20]

3.35 Poor job quality has also been found to be associated with worse health while employees in high-stress occupations are more at risk.[87] There is a case to be argued that security personnel have several different types of stressors for example overtime, shift work, isolation, and administrative and organisational pressures. Studies have shown that job-related demands, depression, and psychological distress among male law enforcement officers were related to weight gain and high BMI rates.[88]

3.36 A further factor is access to healthcare services. Although there are numerous studies about particular groups in society who find this difficult (such as ethnic groups,[89] those with disabilities,[90] the elderly,[91] the homeless[92]), there is insight available as to whether some occupations are more likely to encounter difficulties. It would be useful to explore with security officers whether there are facets of security work (such as shift patterns and contractual arrangements) that make them less likely to access medical care, and whether their work patterns may contribute to adverse health issues such as a poor diet (and therefore obesity or type 2 diabetes).

3.37 There is also a well-known link between low paid jobs and health inequalities as highlighted in the Marmot Review published in 2010.[93] Ten years on, although more people are now in work than in 2010 (albeit in poorer quality work and zero hour contracts) the rate of pay is still below 2010 levels. All these work-related issues have added to a higher rate of stress for individuals.[94]

3.38 ONS data showed that men working in the lowest skilled occupations had the highest rate of death involving Covid-19, with 21.4 deaths per 100,000 males (225 deaths) and as has been shown, men working as security officers had one of the highest rates, with 45.7 deaths per 100,000 (63 deaths). This compares to 5.6 deaths per 100,000 white-collar male workers.[95] When comparing the death rates for other occupations where individuals earn a similar hourly rate of pay[96] as security officers, Table 9 shows that security officers and process plant operators have the highest death rate. Chefs and those in refuse and salvage occupations also have fairly high death rates. But overall, the figures do not suggest that all those in low paid occupations are at equal risk of dying from Covid-19.

3.39 Explaining health and wealth inequalities in the UK is complex, they are impacted by physical, social, and economic factors, many of which are often interlinked. It is often impossible to separate the additional impact of BAME inequalities in determining what makes people generally, and certain occupational groups specifically more susceptible to Covid-19.

87. https://www.health.org.uk/news-and-comment/charts-and-infographics/job-quality [Accessed 29/5/20]
88. Gu, J. K., Charles, L. E., Burchfiel, C. M., Andrew, M. E., Ma, C., Bang, K. M., & Violanti, J. M. (2013). Associations between psychological distress and body mass index among law enforcement officers: the National Health Interview Survey 2004-2010. Safety and health at work, 4(1), 52-62. Available from: https://www.sciencedirect.com/science/article/pii/S2093791113410065 [Accessed 29/5/20]
89. Szczepura, A. (2005). Access to health care for ethnic minority populations. Postgraduate medical journal, 81(953), 141-147.
90. Gibson, J., & O'Connor, R. (2010). Access to health care for disabled people: a systematic review. Social care and Neurodisability.
91. O'Donnell, C. A. (2019). Health care for older and elderly migrants. Migrant Health: A Primary Care Perspective.
92. Elwell-Sutton, T., Fok, J., Albanese, F., Mathie, H., & Holland, R. (2017). Factors associated with access to care and healthcare utilization in the homeless population of England. Journal of Public Health, 39(1), 26-33.
93. http://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review [Accessed 29/5/20]
94. Marmot, M. (2020). Health equity in England: the Marmot review 10 years on. Bmj, 368. Available from: http://www.instituteofhealthequity.org/resources-reports/marmot-review-10-years-on/the-marmot-review-10-years-on-full-report.pdf [Accessed 29/5/20]
95. https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationenglandandwales/deathsregistereduptoandincluding20april2020 [Accessed 18/5/20]
96. This measure of pay comes from the Annual Survey of Hours and Earnings (ASHE). It is hourly earnings excluding overtime and calculated as gross pay excluding overtime/basic paid hours. The pay period in question was not affected by absence. It includes people aged 16+ both full-time and part-time.

Table 9: Covid-19 death rates by occupation compared to median hourly pay

SOC Ind Occup	Occupation	Median hourly pay £	Total in employment	Deaths from Covid-19	*Death rate per 100,000
9231	Window cleaners	9.64	28,000	1	3.57
9260	Elementary storage occupations	9.64	440,000	31	7.05
5434	Chefs	9.68	244,000	37	15.16
6146	Senior care workers	9.75	77,000	3	3.90
5432	Bakers and flour confectioners	9.76	31,000	6	19.35
9139	Elementary process plant occupations	9.88	95,000	32	33.68
9241	Security guards and related occupations	9.89	190,000	64	33.68
6125	Teaching assistants	9.91	309,000	10	3.24
6212	Travel agents	9.91	83.3	2	5.56
6126	Educational support assistants	9.92	36,000	0	0
5114	Groundsmen and greenkeepers	9.93	31,000	2	6.45
9235	Refuse and salvage occupations	9.96	37,000	6	16.22

Source: ONS 2020 * Authors analysis of ONS 2020 data

Nature of work, working environment and geography

3.40 As part of their daily working routines security officers may encounter conflict including from those they are trying to protect,[97] this complicates the requirement to abide by social distancing rules. The threats here are very real ones. Research on this has shown that 65% of security officers suffer verbal abuse at least once a month (50% of these were as regular as once a week); 43% suffer the threat of violence at least once a month (10 per cent were getting threatened on a daily basis); and more than 30% of those surveyed reported some kind of physical assault in the workplace once a year.[98]

3.41 Security officers are not alone in facing such risks.[99] The key is to ensure workers are properly protected. This includes putting the appropriate plans and policies in place and having the correct PPE albeit there have been massive shortages in the UK,[100] where the focus has been on the healthcare sector, particularly hospitals.[101]

97. https://www.researchgate.net/publication/49697991_Work-related_Violence_against_Security_Guards-Who_is_Most_at_Risk [Accessed 28/5/20]
99. Talas, R., Button, M., Doyle, M., & Das, J. (2020). Violence, abuse and the implications for mental health and wellbeing of security operatives in the United Kingdom: the invisible problem. Policing and Society, 1-16. https://worksmart.org.uk/health-advice/illnesses-and-injuries/violence-and-bullying/violence/which-jobs-carry-highest-risk [Accessed 28/5/20]
100. [Accessed 30/5/20]
101. Adams, J. G., & Walls, R. M. (2020). Supporting the health care workforce during the COVID-19 global epidemic. Jama, 323(15), 1439-1440.

3.42 There are other risks which have not been subjected to research. These include frontline workers like security officers not being in a position to wash their hands regularly, something that is particularly important as many are likely to touch doors, equipment, and paperwork regularly. Additionally, they need to be able to sanitise their radio and other equipment frequently and it is an unknown risk as to whether and how often this is done sufficiently and well. Further research with security officers would be helpful in understanding these risks and realities.

3.43 So far, the various risk factors for contracting or dying from Covid-19 have been considered against data reported for England and Wales collectively. However, just as there have been observed differences between different population groups, there have also been reported disparities in figures between different geographical locations. As the pandemic progresses understanding these differences may be crucial in tackling the virus and explaining the risks to workers in various locations.[102]

Figure 3: Number of Covid-19 related deaths and R values in England and Wales by region

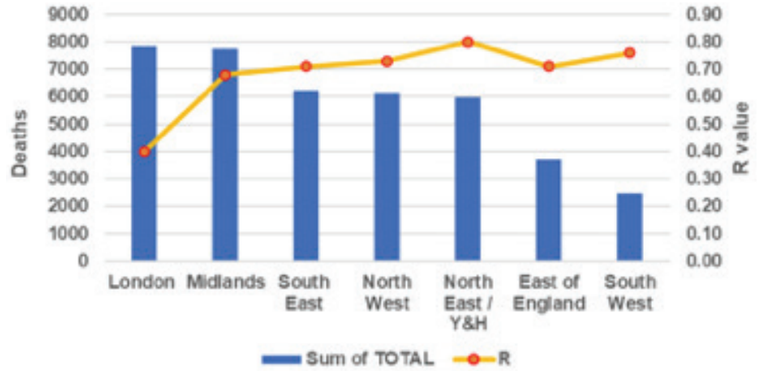


Table 10: Top ten most ethnically diverse occupations and largest minority group

City/Town	Total Number of deaths	Rank for Death	Percentage of Security personnel of working population in area	Rank for security % personnel
Birmingham	1,148	1	2.85%	1
Leeds	645	2	1.37%	4
County Durham	624	3	0.89%	14
Liverpool	550	4	1.00%	7
Sheffield	534	5	0.91%	12
Brent	472	6	0.77%	18
Croydon	471	7	0.83%	15
Cheshire East	454	8	0.48%	59
Barnet	446	9	0.58%	37
Bradford	441	10	1.01%	6

Sources: ONS 2020 data for Covid-19 related deaths in England and Wales up to May 29 and Occupation Minor Groups (924 Elementary Security Occupations) Census 2011

102. PHE (2020) Op. cit.

3.44 Figure 3 shows that regions across the UK vary considerably by the incidence of Covid-19 cases and deaths, with London, the North West, the North East, and South East being hardest hit by infection. The figures for London are statistically significantly higher than for other regions; this might contribute to the high death rate of security officers as a high proportion of these roles are found in the capital.[103] Additionally, other large cities found in the South East, North West, North East, and West Midlands which have also been hard hit by Covid-19 have many security officers working in their cities. BAME workers also make up a disproportionately large share of key worker sectors in London[104] and other cities, contributing to a picture of Covid-19 fatalities that is not uniform across the UK.

3.45 In addition, we compared the total number of Covid-19 related deaths reported by the ONS for England and Wales up to 29 May 2020 and ranked the areas in order. Then analysed these against the number of security personnel working in that area as a percentage of all the working population of that area.[105] London was split over various boroughs, therefore, the city of Birmingham ranked highest for deaths (which is not surprising given the risk factors we have highlighted such as the impact of a high BAME population, health and wealth inequalities etc.), and also ranked first for having the greatest percentage of security personnel in its population. Similar high correlations can also be seen for Leeds, Liverpool, and Bradford.

3.46 There are many ways to measure the impact of Covid-19 on the population, such as the number of cases, mortality rates, and excess deaths,[106] all of which are affected by the reliability of the data and time delays in reporting. Public Health England has developed a model to estimate all causes of excess mortality in the population. It showed that London had 2.3 times higher than expected deaths in the period 20 March to 7 May than would have be expected for the corresponding dates in 2015 to 2019. Whereas the South West had only 1.4 times higher.[107]

3.47 As the country starts to ease lockdown restrictions and open up businesses again, one of the most important measures of the effectiveness of efforts to control the virus will be the reproduction or R value; this measures the rate of spread of the virus. In other words, how many people one infected person could pass the virus onto? It needs to stay below 1 to ensure cases do not increase exponentially. Keeping it well below 1 will mean that the disease will eventually peter out.[108]

3.48 The R value therefore becomes a new risk factors as the pandemic continues and therefore, close analysis of these values might be important in the future to explain why security officers may have differential exposure to the virus. Interestingly, research by Cambridge University (see Figure 3) has shown that although places such as London and the Midlands have suffered high impacts of Covid-19, their R values are somewhat lower than other regions and also below the overall average for the country.[109] Similar results were also found by the London School of Hygiene and Tropical Medicine.[110]

103. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand17april
104. https://www.health.org.uk/chart/black-and-minority-ethnic-workers-make-up-a-disproportionately-large-share-of-key-worker [Accessed 31/5/20]
105. A word of caution is necessary here. For the purposes of this analysis, data were only available for minor occupations groups, not individual occupation groups. Therefore, figures for SOC 924 were utlised which include other security related occupations such as parking and civil enforcement occupations; school midday and crossing patrol occupations; and other elementary security occupations. The percentage of other groups was assumed to be consistent across all geographical areas.
106. Excess deaths are the additional deaths in a given time period compared to the number usually expected. In the UK these are calculated against a five-year rolling average.
107. PHE (2020) Op. cit. Table 2.1.
108. https://www.gov.uk/government/news/government-publishes-latest-r-number [Accessed 1/6/20]
109. https://www.mrc-bsu.cam.ac.uk/tackling-covid-19/nowcasting-and-forecasting-of-covid-19/ [Accessed 1/6/20]
110. https://www.lshtm.ac.uk/newsevents/news/2020/reproduction-number-covid-19-could-be-below-one-uk-lockdown [Accessed 1/6/20]

Section 4 Discussion

4.1 The findings in this report highlight that security officers face a number of risks from Covid-19, especially since being key workers large numbers have continued in their roles during lockdown in the UK. Many officers have been on the frontline ensuring that Government guidelines have been followed, including social distancing rules, controlling access to buildings, and checking that individuals are not displaying signs of the virus.

4.2 The progress of the pandemic has highlighted that outcomes vary starkly between different groups of people. From an occupational point of view, the risk factors affecting outcomes focus on the general exposure to the disease while carrying out duties. Security officers work in close proximity to members of the public, therefore, it was of no surprise to see that they ranked high with a score of 77.3 in terms of this risk factor, though comparatively lower for exposure as their work is not usually in highly infected workspaces. However, security officers appeared to have a much higher death rate than other occupations scoring similar exposure ratings, and this included police and community support officers who had considerably lower death rates at under a quarter of those experienced for security personnel.

4.3 According to ONS data, men compose approximately 85% of the security workforce and more men have been dying from Covid-19 than women. However, even looking at other occupations with comparable gender divisions and exposure risks to Covid-19, the death rate for security officers still outstripped them (e.g. taxi/cab, bus/coach and large goods vehicle drivers). Likewise, looking at age, when security officers are compared with other occupations with similar age profiles, all others had much lower rates of death from Covid-19.

4.4 When considering the ethnic mix within the security industry a more complex set of factors emerge. It is known that those from ethnic minority backgrounds are generally more likely to work in low paid sectors and that in security work they are disproportionately represented. Emerging research suggests that for some ethnic groups deaths involving Covid-19 is considerably higher than those of white ethnicity. In fact, when taking age into consideration, black males are over four times more likely to die from the virus than white males. In particular, Black Africans, Bangladeshis, Pakistanis, Indians, and those from mixed black ethnic minorities appear to be particularly vulnerable.

4.5 Although, ethnic difference may be made up of a number of components, not just physical or genetic characteristics, it is also influenced by social, geographic, and economic backgrounds. Whereas some of these factors contribute to the type of occupation a person ends up working in, they may also influence the health and wealth of an individual, which in turn render can them more vulnerable to Covid-19 from having underlying diseases and conditions. But as the virus pandemic has spread, obesity has been highlighted a high-risk factor for a poor outcome from the disease. Although there are no known (to the authors) UK studies specifically looking at weight and security occupations, earlier studies from the US suggest there is a link and that security officers do suffer a number of factors (such low job satisfaction, routine work, long hours and shift work) which are known contributors to a less healthy lifestyle.

4.6 It is not yet known whether the nature of security work may also make adhering to Covid-19 guidelines more difficult, but this is worthy of further investigation. Often involved in policing these guidelines, security officers may find themselves in conflict with the public making social distancing more difficult to achieve. In addition, the lone nature and demands of the job may mean that regular handwashing may be hard to achieve and many security personnel need to touch equipment and technology others have handled as well as receiving deliveries and/or managing goods on a daily basis.

4.7 Finally, it has been well documented that the virus has been most prevalent in major cities, especially in the south east, north west and midlands where many security officers could be located. Such geographical differences are also being further observed as the rate of infection (R rate) varies between locations. A risk factor that might become more important in the future as the economy opens back up.

4.8 To summarise, no one risk factor seems to fully explain why deaths from Covid-19 are so high for security officers. It is a complex issue. However, our analysis has identified a number of issues that may contribute to this figure. Although the risk factors of age and gender do not in themselves seem to explain the poor outcome of the virus amongst security officers, it is possible that the ethnic mix of those employed may be a contributory factor. This factor is determined by so many other variables it is difficult to pinpoint one specific reason and goes beyond genetic differences to also include social and economic consequences. However, the nature of security roles, especially during this pandemic, has highlighted that officers have frequent and close contact with the general public making them more vulnerable than most to the virus. In many instances they have been responsible for policing Government guidelines. This research highlights that there is no simple fix to address the risk of security personnel being exposed to Covid-19, and in the absence of a simple solution, it is likely that a more holistic view is needed. This may include addressing working conditions and environment which staff work in, as well as considering how employees, particularly those at increased likelihood of suffering health inequalities can best be supported.

Appendix 1 Methodology

The research involved a desktop review of existing data to try to uncover particular risk factors that affect security personnel. On 11 May 2020, the ONS published figures of registered deaths and age-standardised mortality rates up to and including April 20 involving Covid-19 for people in England and Wales aged 20 to 64 years. They stated that for elementary security occupations (SOC 924) this rate was 43.2 deaths per 100,000 males and for male security officers this was 45.7. Elementary security occupations include security officers (SOC 9241), parking and civil enforcement occupations (SOC 9242); school midday and crossing patrol occupations (SOC 9244), and elementary security occupations (SOC 9249). Data were only available for males or females and no overall death rate per occupation was provided by the ONS. For security officer's total death rates for this period were 64, with only one being female.

For five of the risk factors (proximity, exposure, age, gender, and ethnicity) the ONS model on predictions of infection was used to identify where security officers fitted into this model. In addition, where possible, five similar scores either side those for security officers were analysed to compare death rates for those with similar risk outcomes. Other datasets were also utilised where available and comparable, to illicit more information and were also used to review the remaining five factors (health, wealth, nature of work, working environment and location.

Limitations of the research

It should be borne in mind that this research focussed solely on statistics and information available on Covid-19, a virus that has been known to most of the world for less than six months. Therefore, the understanding and knowledge of this virus is still in its infancy and things are still being found out about its spread and impact upon the population. Statistics gathered for the period to date vary in reliability and completeness and countries have adopted various definitions for reporting infections and deaths.

Although this research has focused on why the reported incidence of Covid-19 deaths is so high amongst security officers, any data on occupational incidence cannot specify whether an individual picked up the virus through their work duties or otherwise. Occupations are also not usually recorded on death certificates, therefore, reliable comparable data on previous periods was not available. In addition, data does not pick up individual personal circumstances (such as who the person is living with and other factors that could increase risks). The data collection period also reflects deaths of individuals who may have contracted Covid-19 prior to lockdown and the cessation of some occupations.

The use of the US model on the impact of exposure to infections was a useful tool, however, it was designed for infectious diseases generally, not specifically for Covid-19. Other datasets were available but not always in the same format or classifications of security personnel, and some were several years old, making meaningful comparisons more difficult.

Appendix 1 Additional Data

Table A: Top ten minor occupation group data for male deaths involving Covid-19 and all causes (those aged 20 to 64 years), England and Wales, deaths registered up to and including 20th April 2020

SOC Minor Occup Group	Occupation	Death rate from Covid-19	Rank	Death rate All causes (including Covid-19	Rank
924	Elementary Security Occupations	43.2	1	100.7	5
913	Elementary Process PPEs Plant Occupations	37.7	2	153.8	2
543	Food Preparation and Hospitality Trades	36.4	3	138.6	3
614	Caring Personal Services	26.3	4	78.2	8
122	Managers and Proprietors in Hospitality and Leisure Services	26.3	5	95.0	6
912	Elementary Construction Occupations	25.9	6	173.6	1
411	Administrative Occupations: Government and Related Organisations	21.7	7	81.8	7
331	Protective Service Occupations	21.2	8	115.7	4
244	Welfare Professionals	20.6	9	46.2	10
412	Administrative Occupations: Finance	20.3	10	54.3	9

Figures extracted by authors from ONS, 2020 (Table 5)

Table B: Top ten individual occupation group data for male deaths involving Covid-19 and all causes (those aged 20 to 64 years), England and Wales, deaths registered up to and including 20th April 2020

SOC Minor Occup Group	Occupation	Death rate from Covid-19	Rank	Death rate All causes	Rank
9241	Security guards and related occupations	45.7	1	105.2	2
8214	Taxi and cab drivers and chauffeurs	36.4	2	73.6	5
5434	Chefs	35.9	3	132.5	1
6145	Care workers and home carers	32.0	4	99.7	3
8213	Bus and coach drivers	26.4	5	67.0	7
4122	Book-keepers, payroll managers and wages clerks	23.5	6	56.6	9
7111	Sales and retail assistants	19.8	7	72.0	6
5231	Vehicle technicians, mechanics and electricians	19.2	8	88.0	4
8212	Van drivers	12.6	9	58.9	8
8211	Large goods vehicle drivers	9.8	10	51.1	10

Figures extracted by authors from ONS, 2020 (Table 6a)

Appendix 1 Additional Data

Table C: Total deaths for security officers involving Covid-19 and all causes (those aged 20 to 64 years), England and Wales, deaths registered up to and including 20th April 2020

		MALE		FEMALE		ALL	
SOC	Description	Number of Covid-19 deaths	Total number of deaths	Number of Covid-19 deaths	Total number of deaths	Number of Covid-19 deaths	Total number of deaths
Individual Occupation 9241	Security guards and related occupations	63	146	1	6	64	152

Figures extracted by authors from ONS, 2020 (Table 6a)

Table D: Age distribution of security licences issued by SIA during 2019

Sector	18-24 Years	25-34 Years	35-44 Years	45-54 Years	55-64 Years	65+ Years	Total
Cash and Valuables in Transit	193	1,620	1,803	2,212	1,434	179	7,441
Close Protection	244	2,789	5,140	4,577	1,569	89	14,408
Door Supervision	30,356	74,569	65,712	53,542	29,306	3,997	257,482
Key Holding	58	162	187	254	197	70	929
Non- Frontline	313	1,154	1,840	2,561	1,853	501	8,222
Public Space Surveillance (CCTV)	1,983	10,513	13,256	13,101	9,509	1,787	50,149
Security Guarding	924	6,587	131,69	17,293	19,085	8,114	65,172
Vehicle Immobilisation	Withheld	Withheld	Withheld	Withheld	Withheld	Withheld	Withheld

Source: SIA

Table E: Security licences issued by SIA during 2019 by gender

Sector	Male	Female	Total
Cash and Valuables in Transit	7,101	340	7,441
Close Protection	13,571	837	14,408
Door Supervision	230,969	26,513	257,482
Key Holding	843	86	929
Non- Frontline	6,267	1,955	8,222
Public Space Surveillance (CCTV)	44,270	5,879	50,149
Security Guarding	60,100	5,072	65,172
Vehicle Immobilisation	Withheld	Withheld	Withheld

Source: SIA

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