The Specification

Review of measures to prevent deaths from COVID-19 amongst bus drivers in London

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Transport for London

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0.   DOCUMENT CONTROL

0.1   Document History

Version	Date	Changes since previous issue
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0.2   Final Version Approval

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When making up the document internally to final version it should show version levels as it evolves.

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The reviewer must be a different person to the author(s). All other combinations are acceptable.

1. ORGANISATIONAL OVERVIEW

1.1 Transport for London (TfL)

TfL was created in 2000 as the integrated body responsible for London's transport system. TfL is a functional body of the Greater London Authority. Its primary role is to implement the Mayor of London's Transport Strategy and manage transport services to, from and within London.

TfL manages London's buses, the Tube network, Docklands Light Railway, Overground and Trams. TfL also runs Santander Cycles, London River Services, Victoria Coach Station, the Emirates Air Line and London Transport Museum. As well as controlling a 580km network of main roads and the city's 6,000 traffic lights, TfL also regulates London's taxis and private hire vehicles and the Congestion Charge scheme.

Further background on what TfL does can be found on the TfL website here:

https://tfl.gov.uk/corporate/about-tfl/what-we-do

1.2 Business Unit

The Mayor has an ambitious programme to deliver an affordable, accessible and safe transport network for London. The SHE (Safety, Health and Environment) Directorate has a key function in delivering the goals set out in the Mayor's Transport Strategy (MTS) and the London Environment Strategy and to Achieve Vision Zero. SHE is a pan-TfL function which allows for a positive health and safety culture, and a consistent approach to the way TfL manages safety, health and its impact on the environment.

2. INTRODUCTION

2.1 Background

As the Covid-19 pandemic continues, recognising the tragic deaths of a number of colleagues among bus operators within London and as consideration turns to the changes in lock down restrictions and longer-term recovery, TfL requires a full understanding of the Covid-19 prevention and control measures required to protect the health, safety and wellbeing of the bus community in London. This will ensure that TfL can take appropriate, effective, evidence-based action to minimise the risk to bus workers from Covid-19.

COVID-19 is a new virus, and the pandemic scenario has emerged since January. Throughout this period, TfL has based its approach to the protection of transport workers and customers on the latest national guidance from Public Health England and Department for Transport. TfL has undertaken a range of risk assessments that have informed directions to bus operators and other transport workers.

Where the application of national guidance has not been clear, TfL has sought additional advice through the Scientific and Technical Advisory Cell (STAC) established to support the London Strategic Control Group (SCG). This STAC have provided bespoke briefings for TfL on:

- Face mask use outside of health and care settings (6th April 2020)

- Personal protective equipment for TfL staff handling tickets and cash (6th April 2020)

- Face masks and face coverings for bus drivers (16th April 2020)

These briefings identified that based on current evidence bus workers should protect themselves by following social distancing and hand hygiene advice as per the advice for the general population (including key workers) who are not part of the health or social care workforce. National guidance, as well as the additional bespoke guidance in the STAC briefings was subsequently relayed to and implemented by bus operators.

The number of bus workers in London that have sadly lost their lives to COVID-19 has been and continues to be a key focus of attention for us. Recognising that we are still at a relatively early stage in the pandemic, and work is still in progress at national and international levels to better

understand the risk factors and spread of the virus, TfL commissioned an internal review[1] to understand more about these deaths.

This high-level analysis (see Appendix) compared the rate of reported deaths from COVID-19 amongst bus workers with that reported in the general population in England, adjusting for the different age structures of these population[2]. The analysis showed that the rate of COVID-19 deaths in London bus worker population is higher than would be expected in the total London population, if the risk profile of the populations were the same in all ways other than age.

However, the analysis also showed that London bus workers are more likely to be male and of BAME ethnicity than the general England population, both of which are thought to be risk factors for more severe COVID-19 (with BAME ethnicity being a proxy for other risks factors such as underlying health conditions).

This finding can likely be explained in large part by the fact that death rates in London are much higher than in England overall, however in the absence of age-adjusted data on COVID-19 deaths in London it was not possible to compare the bus worker death rate with the overall London COVID-19 death rate.

In addition, the recent Office for National Statistics publication[3] noted that death rates were significantly higher rates in male bus and coach drivers, with 26.4 deaths per 100,000 males

TfL has identified the need for further work to inform the prevention and control measures required to protect the health, safety and wellbeing of bus workers in London.

The aims and objectives in section 2.2 have been identified, and given the requirement for additional information to be obtained as rapidly as possible, this work is separated into two work packages.

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[1] The review was led public health specialists employed by TfL, with input from occupational health, health and safety, human resources. External advice was provided by PHE and the work was subsequently reviewed by the GLA's Head of Health as well as by PHE's Regional Director for London.

[2] Age-specific data is not available for London, meaning it was not possible to make any meaningful comparison with death rates in the overall London population.

[3] https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationenglandandwales/deathsregistereduptoandincluding20april2020

2.2   Objectives

Aim:

To better understand the deaths from COVID-19 in the London bus worker population, in order to inform recommendations on any additional occupational health measures that should be put in place to protect this key-worker population

Requirements:

- To undertake a rapid, short term review of the actions and measures that have been implemented to date to consider what is working and whether any elements should be amended or further improved. This can lead to possible short-term changes in practice and would be likely to take circa 3-4 weeks once commissioned.

Further detail on this is set out below:

Timescale 3-4 weeks.

I.   Review and advise on the relevant operational responses that have been actioned during the pandemic. All background information on this will be provided by TfL, working with relevant bus operators, to enhance this review. This will include:

- data on how the bus worker population has been impacted by COVID-19, including the numbers who have reported that they are shielding, self-isolating, absent from work with COVID-19 symptoms (unconfirmed); absent from work with COVID-19 symptoms (confirmed by testing) and the number who have sadly died.

- the prevention and control measures that have been recommended to bus operators by TfL, in line with national and bespoke guidance

As a result, we require a short report outlining findings of the review of current measures, and setting out recommendations and advice for how current operational measures might evolve to further reduce risk.

3. SCOPE

3.1 General Requirement

The requirement is for meeting the objectives as set out in section 2.2 above, with the results interpreted and presented in a report to which full data output tables are appended.

The commissioner (TfL) will be responsible for providing the necessary internal data, including data on bus workers, and access to workers and bus companies as appropriate.

4. DELIVERABLES / MILESTONES

1. Review and advise on the relevant operational responses that have been actioned during the pandemic. All background information on this will be provided by TfL, working with relevant bus operators, to enhance this review. This will include:

   - data on how the bus worker population has been impacted by COVID-19, including the numbers who have reported that they are shielding, self-isolating, absent from work with COVID-19 symptoms (unconfirmed); absent from work with COVID-19 symptoms (confirmed by testing) and the number who have sadly died.

   - the prevention and control measures that have been recommended to bus operators by TfL, in line with national and bespoke guidance

2. Produce a short report outlining findings of the review of current measures, and setting out recommendations and advice for how current operational measures might evolve to further reduce risk.

5. **SERVICE LEVEL AGREEMENTS (SLAS)/KEY PERFORMANCE INDICATORS (KPIS)**

N/A

6.   PROJECT PLAN/TIMESCALES

Timescale 3-4 weeks.

7. APPENDICES

Appendix I.

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TRANSPORT FOR LONDON

BRIEFING NOTE

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Subject: Deaths from COVID-19 in transport workers in London

Date: 27.04.20

Purpose

1.1   This briefing provides an update on the analysis of deaths from COVID-19 in transport workers in London. It sets out:

(a)   What is currently known about the pattern of deaths that has occurred in transport workers in London to date, and how the pattern compares with the pattern in the general population nationally

(b)   The additional analysis that is planned on this pattern of deaths

(c)   The additional data collection and analysis that is planned in order to understand patterns in any future deaths amongst frontline transport workers in London

Summary

1.2   There has been a total of 26 deaths from suspected or confirmed COVID-19 in transport workers in London, as of 19th April 2020. The majority (22) of those deaths were in bus workers, and analysis has been conducted to compare the rate of deaths in bus worker with that in the general population.

1.3   Using currently available data it has only been possible to compare the London bus worker death rate with the rate in the general England population. As would be expected, the London bus worker death rate is higher than the rate in England, which can likely be explained by the fact that England level data only includes hospital based deaths, and also the higher rates of infection and subsequent deaths in London, compared with England as a whole.

1.4   Based on the analysis that has been conducted to date, it is not possible to conclude the extent to which occupational exposure to COVID-19 may have contributed to the deaths in London bus workers. There are therefore no new policy recommendations, however all existing policies that employers have in place to protect frontline transport workers should continue to be followed, including social distancing and good hand hygiene.

1.5 Additional analysis of the bus worker COVID-19 deaths to date could include comparison with London rather than England general population data and exploration of the potential contribution of risk factors for which demographic data is available (sex and ethnicity). However, additional analysis depends on data availability.

1.6 We are also working with PHE to develop a plan for collection and analysis of relevant data on future confirmed cases of COVID-19 and any future deaths from COVID-19 in frontline transport workers in London.

Background

1.7 To date there have been 14,829 recorded hospital-based deaths from COVID-19 in England, with 3,906 deaths recorded in London[3].

1.8 A total of 26 COVID-19 related deaths have been reported in transport workers in London to date, however we do not currently have data on what proportion of these deaths were in individuals with laboratory confirmed COVID-19.

1.9 Of the 26 reported deaths, 22 were in bus workers[4], with a small number of deaths in those working in back-office functions, and a small number of deaths in London Underground staff.

1.10 Concern about the number of deaths in transport workers in London has led to a request for analysis to understand whether the death rate in frontline transport workers differs from that of the general population, and if so what factors might account for that difference.

1.11 Any difference in death rates between those with a certain occupational exposure and those in the general population could be explained by that occupational exposure or alternatively by the fact that individuals working in that occupation may be more likely to have other risk factors for the acquisition of disease and subsequent death (for example age, sex, ethnicity or underlying disease).

1.12 Given the small number of deaths to date, and the fact that the majority of these have been in bus workers, the current analysis has been restricted to bus staff only. If we continue to see additional deaths in other frontline transport workers such as London Underground staff then this population group would be included in any future analysis.

Methods

1.13 A rapid review of literature on risk factors was conducted. This focused on demographic risk factors as well as underlying health conditions and behavioural risk factors that have been associated with poor clinical outcomes and / or increased risk of individuals with COVID-19 infection.

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[3] National mortality data is available here: https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-daily-deaths. This only includes deaths of patients who have died in hospitals in England and had tested positive for COVID-19 at time of death. These figures do not include deaths outside hospital, such as those in care homes.

[4] Of the 22 bus workers, 19 were considered to be 'frontline' workers, however denominator data is only available for the total bus workforce, and so for the purpose of this analysis the total bus workforce was used.

1.14 Data was obtained from TfL Human Resources records for the 22 confirmed or suspected COVID-19 deaths in London bus staff. This data consisted of age, sex, ethnicity, underlying health conditions, last date at work, and date of death. Internal data on the age, sex and ethnicity profile of the total of bus workforce was also obtained from. Data on the co-morbidity profile of the total bus worker population was not available.

1.15 Publicly available data on COVID-19 mortality in England was obtained from NHS England, with cumulative figures as of 20th April used[5]. Publicly available data on the demographics of the England population was obtained from the Office of National Statistics.

1.16 Additional internal TfL data has been requested on the smoking status and home postcode among suspected or confirmed COVID-19 deaths, and deaths from all causes for the past 5 years among all TfL staff and bus staff only. Data on underlying medical conditions and occupation of household members of TfL staff was requested but was not available. London-specific COVID-19 mortality data has been requested from Public Health England (PHE), however, such additional analysis depends on data availability.

1.17 PHE's Field Service provided advice and support with methodology and analysis.

1.18 The demographic distribution (age, sex and ethnicity) of the London bus workers who died were compared with the demographic distribution of the total London bus worker population. Statistical testing (using z tests) was conducted to establish if differences were statistically significantly different.

1.19 An age-specific COVID-19 mortality rate for England was calculated using COVID-19 mortality data for England and the age distribution of the 2018 mid-year population of England. This mortality rate was applied to the London bus worker population in order to calculate the number of deaths that would be expected in the London bus worker population if death rates were in line with death rates from COVID-19 in the general population. A chi-squared test for significance was conducted to assess if there was statistically significant difference between the number of expected and observed deaths. Variables other than age were not adjusted for as part of this analysis.

1.20 The distribution of demographic characteristic (sex and ethnicity) in the London bus worker population was compared to the distribution in the England population.

Findings

1.21 Published literature has identified age, gender, smoking status, and a number of underlying health conditions as risk factors for progression to severe disease and death in COVID-19. Underlying health conditions that increase risk of poor clinical outcomes include obesity, hypertension, diabetes, cardiovascular disease, chronic respiratory disease, cancer and immunosuppression[i,ii,iii,iv]. There is not currently any published literature on occupational risk factors for COVID-19.

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[5] National mortality data is available here: https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-daily-deaths/. This only includes deaths of patients who have died in hospitals in England and had tested positive for COVID-19 at time of death. These figures do not include deaths outside hospital, such as those in care homes.

1.22 Other risk factors of interest include ethnicity and socio-economic status, however there is not currently sufficient evidence to know if these are independent risk factors. There has however been concern in the press and from professional bodies about the high numbers of black, Asian and minority ethnic (BAME) individuals who have died. Potential reasons for higher numbers of BAME deaths are set out in Appendix A.

1.23 The 22 deaths in bus workers in London occurred in the period between 23rd March 2020 and 19th April 2020. Data on the demographics of the 22 bus workers who died from confirmed or suspected COVID-19 in London show that they ranged in age from 36-76, with the majority aged over 50 years old (91%). All 22 staff members were male; 5 (23%) were white with 16 (73%) BAME and in 1 (5%) there was no ethnicity recorded. Of the 22 staff who died 11 (50%) had a relevant comorbidity recorded[6], 7 had data recorded that stated there were no comorbidities, and in 4 individuals there was no data recorded[7]. Compared with the general bus worker population those who died were more likely to be older, male and of BAME ethnicities. Associations for age and ethnicity were statistically significantly different. This data is set out in Appendix A.

1.24 Applying the age-specific COVID-19 mortality rate to the bus worker population shows that if all risk factors (other than age) for death from COVID-19 were present in the bus driver population to the same degree that they are present in the general England population, then a total of 3 deaths in bus workers would have been expected. The true number observed was 22, and chi-squared test for statistical significance showed that the number of observed deaths was statistically significantly different from the expected number (ie unlikely to be due to chance).

1.25 Analysis to compare the distribution of other risk factors (sex and ethnicity) in the bus worker population with those in the general population in England show that the bus worker population contains a higher proportion of males (91% vs 49%), and those from BAME ethnicities (52% vs 15%) when compared with the England population[8].

Discussion

1.26 The analysis has shown that the London bus workers who have died are more likely to have been older, and from BME ethnicities than the general London bus worker population. This is in-line with known risk factors for severe-COVID 19, with BAME ethnicity being seen as a potential proxy for an increased risk of underlying health conditions (see Appendix A).

1.27 The analysis has also shown the number of deaths in London bus workers to be greater than would be expected if the risk factors in the bus worker population matched those in the general England population (adjusted only for age). However, caution must be taken when interpreting the results, due to limitations with the data available.

1.28 The main limitation is that we are not comparing like-with-like data on deaths. The England level data consists of laboratory confirmed cases of those who died in hospital (and therefore not including deaths in the community), while deaths in London bus workers were reported internally by TfL (and we do not currently know how many of these deaths were laboratory confirmed as COVID-19).

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[6]Only comorbidities identified as risk factors for severe COVID-19 were included
[7] This data is provisional and will continue to be updated.
[8] National data is from the 2011 Census.

1.29 Also, given that 26% of all the COVID-19 deaths in England to date have occurred in London, we would anticipate a higher death rate in any London population compared to the total England population.

1.30 Additional analysis could be undertaken using London-specific COVID-19 death data; our analysis would be re-run using age-specific London rates as a comparator. However, such additional analysis depends on data availability.

1.31 If the analysis was re-run with a London population as a comparator, it is still likely that we will see an increased death rate in the bus worker population due to other risk factors (male sex and BAME ethnicity) that are more prevalent in the bus worker population than the total London population. We could establish a methodology to adjust for these risk factors on which we have data, however there will still be additional risk factors which we do not have data on (smoking status, socio-economic status and key worker status) and so it will still be difficult to draw any firm conclusion about how much any difference in death rate, between the bus worker population and the general London population, is attributable to occupational exposure.

1.32 It should also be acknowledged that the deaths in London bus workers that have occurred to date have all been within four weeks of the start of the current 'lockdown' period. Given the disease incubation period of up to 14 days and the additional time period between first symptoms and disease progression to death, it is likely that many of those who have died to date would have acquired their infection in the pre-lockdown period. In the pre-lockdown period transport staff would have been exposed to a much wider range of potential sources of infection, including social interactions as well as occupational ones.

Conclusion and next steps

1.33 Based on the analysis that has been conducted to date, it is not possible to conclude the extent to which occupational exposure to COVID-19 may have contributed to the deaths in London bus workers.

1.34 There are no new policy recommendations, however all existing policies that employers have in place to protect frontline transport workers should continue to be followed. This includes social distancing and promotion of good hand hygiene.

1.35 Additional analysis of the bus worker COVID-19 deaths to date could include comparison with London rather than England general population data and exploration of the potential contribution of risk factors for which demographic data is available (sex and ethnicity). However, additional analysis depends on data availability.

1.36 We are also working with PHE to develop a plan for collection and analysis of relevant data on future confirmed cases of COVID-19 and any future deaths from COVID-19 in frontline transport workers in London.

Appendices

1.37 Appendix A: Factors for higher deaths in BAME groups

- The issue of BAME being disproportionately impacted by COVID-19 has been highlighted in the media.
- Current data in the UK is sparse: a recent report found that 35% of critically ill COVID-19 patients were BAME[v]. In some cities in the United States have reported black residents are up to six times as likely to die from COVID-19 than their White counterparts[vi].
- In the UK, BAME are more likely to have underlying conditions that increase vulnerability to severe COVID-19 symptoms, such as high blood pressure, coronary heart disease, and diabetes[vii].
- BAME are twice as likely to live in poverty[viii], 2-3 times as likely to live in overcrowded housing[ix], and may have poorer access to healthcare compared to their White counterparts[x].
- BAME people may be more likely to be key workers and/or work in occupations where they are at a higher risk of exposure[xi].

1.38 Appendix B: Demographics of COVID-19 deaths in London bus workers and the and all bus staff[9]

Age	COVID-19 deaths	All bus staff
Under 50	9%*	54%*
50-54	36%*	17%*
55-59	27%	15%
60-64	9%	10%
65+	18%*	4%*

Sex	COVID-19 deaths	All bus staff
Female	0%	9%
Male	100%	91%

Ethnicity	COVID-19 deaths	All bus staff
White	23%	34%
BAME	73%*	52%*
Not stated	5%	14%

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[9] A z-test for significance was calculated. Percentages have an asterisk (*) where differences are statistically significant.

References

[i] Guan W-jie, Liang W-hua, Zhao Y, et al., 2020. 'Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis'. Eur Respir J March 26th 2020.

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[iv] European Centre for Disease Prevention and Control, 2020. 'Coronavirus disease 2019 (COVID-19) in the EU/EEA and the UK – eighth update'. Accessed on April 17th 2020 at https://www.ecdc.europa.eu/sites/default/files/documents/covid-19-rapid-risk-assessment-coronavirus-disease-2019-eighth-update-8-april-2020.pdf

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