![LFB London Fire Brigade logo]

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The London Fire Commissioner is the
fire and rescue authority for London

Date: **22 January 2020**

To Andrew Dismore AM
Chair of the London Assembly's Fire, Resilience and
Emergency Planning Committee

Dear Chair,

Request for Information from Meetings of the Fire, Resilience and Emergency Planning Committee

I write in response to your requests for information from meetings of the Fire, Resilience and Emergency Planning Committee.

The detailed responses are set out below.

05 January 2021

1.   *More detailed statistics on the audits of high-rise buildings (8,500 to be completed by end 2021) and an update on buildings needing to be inspected fortnightly, as they have simultaneous evacuation policies in the place of stay put;*

Please note this figure should read 8,005 inspections to be completed by end 2021.

To satisfy the requirements of the Building Risk Review (BRR) programme, based on MHCLG and LiDAR[1] data of 8,005 addresses, 3,511 buildings have now been triaged and a return for them has been provided to NFCC, for collation as part of the national programme[2]. This figure is 1,037 addresses ahead of LFB's trajectory.

Fire station crews have now completed 5,889 Premises Risk Assessment (PRA) visits[3] that has resulted in 3,927 electronic Premises Information Plates (ePIPs) being created for high-rise

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[1] LiDAR being the measurement of building via laser measurement from a fly over London.
[2] Data as of 11/01/21. Some of these buildings may require an additional audit by Inspecting Officers as part of the process.
[3] PRAs have been undertaken as part of the Operational Risk Information (ORI) project, which as of 06/01/21 has now been combined with the BRR programme to provide additional efficiencies due to the overlapping work.

buildings and uploaded to the Operational Risk Database (ORD) and/or the Mobile Data Terminal[4] (MDT).

In terms of residential buildings which have had to change the building strategy to 'simultaneous evacuation' from 'stay put', the numbers are changing on a daily basis due to new buildings with issues being identified, or else where remediation has taken place.

The latest data as of 11th January 2021, is as follows:

625 Buildings at all heights are listed having been changed from a stay put to a simultaneous evacuation strategy.

Of these, 550 have had a recent fire safety audit and 596 have a PRA in place.

The 75 buildings requiring an audit and the 29 requiring a PRA have already been passed to fire safety and fire station teams for the respective visits to be carried out as a priority.

By tenure type, the breakdown is:

- 61 - Local Authority
- 234 - Housing Association
- 286 - Privately owned
- 44 – To be confirmed

The heights of the 625 buildings are:

- 546 - Over 18m or 6 floors
- 79 - Under 18m or 6 floors (some buildings not classified as high rise, still must change the design strategy due to serious fire safety failings).

The primary reasons for change from a stay put strategy is[5]:

- 147 buildings with ACM cladding (137 are over 18m, or 6 floors; 10 buildings are under 18m or 6 floors)
- 309 buildings with non-ACM cladding issues (272 are over 18m, or 6 floors; 37 buildings are under)

Non-ACM cladding related issues could include other cladding/façade systems such as high-pressure laminate (HPL) or expanded polystyrene systems (EPS) as two examples.

For non-cladding related issues, the following breakdown of key points apply:

- 35 buildings have cavity barriers missing/inappropriate (31 are over 18m, or 6 floors; 4 buildings are under)

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[4] If the building is considered to be low risk due to factors such as construction and fire safety measures, an ORD entry may not be required and in which case, only an entry on the MDT will be made.
[5] Some buildings may have a combination of issues leading to a change of building strategy.

- 117 buildings have compartmentation issues (96 are over 18m, or 6 floors; 21 buildings are under)
- 1 building has structural issues (over 18m in height)
- 1 building has ventilation issues (over 18m in height)

A further 15 buildings have moved to a simultaneous evacuation strategy, for reasons yet to be confirmed by officers (8 are over 18m, or 6 floors, 7 are under).

Simultaneous evacuation data in table form:

ALL Buildings - Over and Under 18m Currently in Simultaneous Evacuation			
As of 11th January, 2021	Total	Over 18m	Under 18m
Number of buildings currently on the simultaneous list	625	546	79
ACM related	147	137	10
Non-ACM cladding issues	309	272	37
Compartmentation issues	117	96	21
Cavity barriers missing/inappropriate	35	31	4
Structural issues	1	1	0
Ventilation not working	1	1	0
Unknown issues*	15	8	7

2. The global benchmarking data to other comparative international cities.

We have attached a paper to this letter, which aims to show you how LFB compares to other FRSs serving Global Cities.

If you have any queries, please do not hesitate to contact me.

Yours sincerely,

Andy Roe
London Fire Commissioner

C.C. Janette Roker and Philippa Goffe, Senior Policy Advisers

LFB Global Comparisons

Introduction
This paper aims to show how LFB compares, in broad terms, to other FRSs serving Global Cities and is an information paper aimed to increase directors' awareness of the differences and similarities between LFB and other global FRSs.

Background
A "Global City" is a city, which is "a primary node in the global economic network". In simple terms it is a city that through its economy, research and development, cultural interaction, liveability and environment[1] has a global impact. In 2020 London maintained its position in the Global Power Index City 2020[2], as number one Global City, ahead of New York, Tokyo, Paris and Singapore. Each city faces some significant risks in relation to its inequalities of wealth, its built environment, its exposure to terrorism, economy and power and the three-dimensional nature of the city with its interconnecting airports, rail system and sub surface transport network and London is no exception. As such, London and the cities used in this paper for comparison, have a relatable degree of global risk and significance, which make them a more appropriate comparison then the intra-national comparators, which are normally used.

Methodology/scope
The Global Cities used in this paper have been chosen for a combination of their frequency of appearance in the metrics, which identify Global Cities[3] and the availability of data for these cities combined with the reliability of the sources. Every effort has been made to source the data from primary sources such as the FRS's own reports or a nation's/city's data agency. For this reason, Berlin has not been included due to the lack of reliable information available and the fact that Berlin does not appear in any of the lists identifying Global Cities. Future work may look to include these cities if it is felt they would be of benefit for the user.

It should be noted that although these cities have been chosen due to their similarities regarding their global significance, their FRSs are all structured differently to varying degrees. As such, it should be borne in mind that those base differences have led to the FRSs evolving in different ways, and ultimately into different services. Several comparative factors have been considered and are presented in the subsections below.

Budget allocation
Each service featured in this paper draws its funding from public money sourced through general taxation. However, there are notable differences in the size of the population which, the service covers and therefore the average amount paid per week by each resident in order to maintain that city's FRS.

City	Population covered (2019)	Budget billions (2019/20) (£)	Cost of FRS per head of population per week (£)	Cost of FRS per head of population per year (£)
London	8,961,989[4]	£0.392[5]	£0.84	£43.74
Tokyo	13,491,000*[6]	£1.787[7]	£2.74	£142.31
New York	8,336,817[8]	£1.518[9]	£3.50	£182.08
Paris	6,930,566[10]	£0.390[11]	£0.92	£48.10
Toronto	2,731,571*[12]	£0.288[13]	£2.02	£105.43
Hong Kong	7,509,200[14]	£0.435[15]	£1.11	£57.92
Singapore	5,770,000[16]	£0.348[17]	£1.17	£60.31
Average	7,675,878	£0.737	£1.76	£91.41

Table 1. FRS's budget represented as a cost per resident.

* Tokyo's population is taken from 2015 census and Toronto from 2016 census as it is the most reliable source, most up to date figures estimate Tokyo City's population at closer to 13,849,000 and 2,956,024 respectively.

In comparison with the whole group, LFB's budget is the fourth lowest at £392m. However, when the cost of the FRS is compared per head of population, London is also the cheapest service, costing each resident 84p a week or £43.74 a year. The other services, with the exception of Toronto, referenced in this paper deliver some form of an emergency medical service (EMS) as well as a fire service such as the New York Fire Department (FDNY), which took on EMS in 1996. If the London Ambulance Service's (LAS) budget were included in the costs for London, these figures would become £1.17 per week and £61.03 per year, which would still result in London's services costing the joint lowest per head of population with Singapore. The average across the seven Global Cities is £1.83 per week, and £103.75 a year, with FDNY the most expensive per head of population, at £3.50 per week and £182.08 a year.

City	City GDP billions (2018/19)	Budget billions (£)	FRS budget as % of GDP
London	£487[18]	£0.389[19]	0.08
Tokyo	£730[20]	£1.787[21]	0.24
New York	£1,146[22]	£1.518[23]	0.13
Toronto	£234[24]	£0.288[25]	0.12
Hong Kong	£274[26]	£0.435[27]	0.16
Singapore	£448[28]	£0.348[29]	0.08
Average	£553	£0.794	0.14

Table 2. Size of FRS budget as a percentage of the city's GDP.
Note. It has not been possible to get an accurate figure for the GDP of the area that Paris Fire Brigade covers. However, it is reasonable to assume that because the GDP of Paris is generally reported as being lower that London and the FRS's budgets are similar, that Paris spends a greater portion of its GDP on its FRS than London.

When the size of an FRS's budget is compared to the economic output of the city, as measured in Gross Domestic Product (GDP), then it is shown that London represents the joint best value at 0.08 percent of the annual GDP alongside Singapore, whilst the average is 0.14 percent of GDP. Again, if the LAS's budget is included in this then their combined budgets are 0.11 percent of London GDP, which is about 30 percent below the average for all Global Cities. There is overall a trend for size of a Global City's FRS's budget to be relative to the GDP that city generates. Therefore, it could be concluded that the greater the economic risk a city holds, the larger the investment in real terms is invested in its protection.

Resource allocation

City	Stations/ appliance locations	'City' Sq kms	Number of stations per sq kms	Average area station coverage in sq kms
London	102	1,572[30]	0.06	15
Tokyo	81[31]	2,191[32]	0.04	27
New York	214[33]	786[34]	0.27	3
Paris	71[35]	760[36]	0.09	11
Toronto	83[37]	630[38]	0.13	8
Hong Kong	82[39]	1,104[40]	0.07	13
Singapore	50#[41]	725[42]	0.03	15
Average	98	1,110	0.10	13

Table 3. The number of stations compared to the area of coverage (cells shaded light grey indicate information taken from Wikipedia).
Singapore has 30 Fire Posts, which each have a Light Fire Attack Vehicle (LFAV) stationed at them. These are strategically located to reduce attendance times and are normally have an ambulance located there as well.

Table 3 shows that London has the second most stations of the seven selected cities. However, London covers the second largest area of all listed cities after Tokyo. In London, each station covers an average area of 15 km^2, with 0.06 stations per km^2. The average area across all selected Global Cities covered by one station is 13 km^2 which is just below London's figure.

City	Population covered	Pumps/ Light fire vehicles	Ladders/ Aerials	Rescue vehicles	Total pumps, ladders/ aerials, and rescue units	Number of ambulances	Number of people covered by each pump
London	8,961,989[43]	142	11	14	167	450	63,113
Tokyo	13,491,000#[44]	489[45]	86[46]	64[47]	639	259[48]	27,588
New York	8,336,817[49]	202[50]	154[51]	18[52]	369	520[53]	41,271
Paris	6,930,566[54]	156[55]	63[56]		219	195[57]	44,426
Toronto	2,731,571#[58]	109[59]	37[60]	7[61]	153	242[62]	25,060
Singapore	5,770,000[63]	70*[64]	20*[65]	6[66]	96	84[67]	82,428
Average	**7,703,657**	**195**	**62**	**22**	**274**	**311**	**47,314**

Table 4. Resource allocation for 'pumps, aerials, rescue units and ambulances (cells shaded light grey indicate information taken from Wikipedia) Note, the data for Hong Kong was unavailable.
#Tokyo's population is taken from 2015 census and Toronto from 2016 census as it is the most reliable source, most up to date figures estimate Tokyo City's population at closer to 13,849,000 and 2,956,024 respectively.
* Singapore has 40 type B fire appliances and 30 Light Fire Attack Vehicles; also 18 of its 20 aerials are combined aerial ladder platforms.

Looking at the overall composition of front-line appliances it can be seen that Tokyo, New York and Paris all have a higher number of vehicles, with New York and Tokyo both deploying large pre-determined attendances (PDAs) to incidents (Tokyo sends an average of nine appliances to a fire incident, with each riding around four fighters and Toronto sends between three and 10 appliances depending on if it's a single family dwelling or a high-rise building[68]). London has the third highest number of pumping appliances, and similarly the third highest number of pumps, aerials and rescue units combined, with other six cities relying on aerial appliances much more heavily than London. This could a result of the significant restrictions on high-rise development in London for the first two thirds of the twentieth century[69]. The number of people served by each pumping appliance in London is only exceeded in Singapore and is over twice the number served in Tokyo and Toronto and 50 percent more than New York.

In addition, most other Global City FRSs have a wider variety of specialist vehicles for specific risks and resilience; for example, Tokyo has 64 specialist rescue vehicles, and several services have helicopters and off-road vehicles to deal with low probability, high consequence incidents.

Performance

City	Population covered	Number of fires (2019)	Number of fires per 100,000 pop	Number of fire deaths (2019)	Number fire deaths per million pop
London	8,961,989[70]	17,993[71]	204	37[72]	4.2
Tokyo	13,491,000[73]	3,973[74]	29	86[75]	6.2
New York	8,336,817[76]	22,984[77]	274	66[78]	7.8
Paris	6,930,566[79]	13,524[80]	195	46[81]	6.6
Toronto	2,731,571[82]	11,046#[83]	75#	12[84]	4.3
Hong Kong	7,509,200[85]	37,306[86]	496	14[87]	1.9
Singapore	5,77,000[88]	4,060[89]	71	1[90]	0.2
Average	**7,675,878**	15,841	**212**	**37**	**4.5**

Table 5. Fires and fire deaths.
#Figures taken from Ontario which has a population of 13,448,494.

The table above shows the number of fires in each city in 2019 and the number of fire deaths. It should be noted that there might be variations in the way that each city categorises fires and fire deaths, and as such this should be borne in mind when viewing the data. In general, the table shows that size of fire service is not necessarily related to the number of fires or the number of reported fire deaths that occur in that city. When compared to the other Global Cities, London has just below the average number of fires per 100,000 population and similarly around the average number of fire deaths per million population each year.

Conclusion
Using either cost per head or percentage of GDP, the LFB is demonstrably a comparatively lean service, even considering that LFB, unlike most other global cites used in this report, does not provide an emergency medical response. It has been shown that the cost of the LAS and LFB combined is still lower compared to other Global Cities.

Additionally, this paper shows that a city's FRS budget is closely correlated to that city's GDP and, as well as a humanitarian life-saving service, a Global City's FRS can be considered an insurance policy against economic, social and reputational loss. London is currently ranked fifth in the world in GDP and predicted by 2035 to have the fourth[91] highest GDP in the world and as such its global significance is predicted to increase. It could be argued that as London's GDP increases, LFB's budget should continue to grow in proportion to London's economic output, in a similar way that the UK Defence budget is maintained at two percent of the UK GDP.

This research will be used to inform the work to develop the target operating model for the community risk management plan. Further work to develop aspects of this research may be commissioned as a result.

[1] Global Power Index City 2020 http://mori-m-foundation.or.jp/pdf/GPCI2020_summary.pdf (retrieved 7th January 2020)
[2] Global Power Index City 2020 http://mori-m-foundation.or.jp/pdf/GPCI2020_summary.pdf (retrieved 7th January 2020)
[3] https://en.wikipedia.org/wiki/Global_city (retrieved 7th January 2020)
[4] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (retrieved 6th January 2020)
[5] https://www.london-fire.gov.uk/media/3655/lfc-0133d-2019-20-budget.pdf (retrieved 6th January 2020)
[6] https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/HISTORY/history03.htm (retrieved 7th January 2020)
[7] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/data/annual_report_2019_06.pdf (retrieved 6th January 2020) – exchange rate used 0.0071 Japanese Yen to pounds
[8] https://www.census.gov/quickfacts/newyorkcitynewyork (retrieved 7th January 2020)

[9] https://council.nyc.gov/budget/wp-content/uploads/sites/54/2020/05/FDNY-and-NYCEM-Budget-Note.pdf (retrieved 6th January 2020) – exchange rate used 0.73 US dollars to pounds

[10] Email from BSPP dated 21st January 2020

[11] Email from BSPP dated 21st January 2020

[12] https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=3520005&Geo2=PR&Data=Count&B1=All (retrieved 6th January 2020)

[13] https://www.toronto.ca/legdocs/mmis/2020/bu/bgrd/backgroundfile-141493.pdf (retrieved 6th January 2020) – exchange rate used 0.58 Singapore dollars to pounds

[14] https://www.censtatd.gov.hk/hkstat/sub/bbs.jsp (retrieved 6th January 2020)

[15] https://www.budget.gov.hk/2019/eng/pdf/head045.pdf (retrieved 6th January 2020) – exchange rate used 0.094 Hing Kong dollars to pounds

[16] https://www.imf.org/en/Countries/SGP (retrieved 12th January 2020)

[17] https://www.singaporebudget.gov.sg/docs/default-source/budget_2019/download/pdf/37-MHA-2019.pdf (retrieved 7th January 2020)

[18] https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/regionaleconomicactivitybygrossdomesticproductuk/1998to2018 (retrieved 6th January 2020)

[19] https://www.london-fire.gov.uk/media/3655/lfc-0133d-2019-20-budget.pdf (retrieved 6th January 2020)

[20] https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/APPENDIX/appendix02.htm (retrieved 7th January 2020)

[21] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/data/annual_report_2019_06.pdf (retrieved 6th January 2020) – exchange rate used 0.0071 Japanese Yen to pounds

[22] https://www.statista.com/statistics/183808/gmp-of-the-20-biggest-metro-areas/ (retrieved 6th January 2020)

[23] https://council.nyc.gov/budget/wp-content/uploads/sites/54/2020/05/FDNY-and-NYCEM-Budget-Note.pdf (retrieved 6th January 2020) – exchange rate used 0.73 US dollars to pounds

[24] https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610046801 (retrieved 6th January 2020)

[25] https://www.toronto.ca/legdocs/mmis/2020/bu/bgrd/backgroundfile-141493.pdf (retrieved 6th January 2020) – exchange rate used 0.58 Singapore dollars to pounds

[26] https://www.gov.hk/en/about/abouthk/facts.htm (retrieved 7th January 2020)

[27] https://www.budget.gov.hk/2019/eng/pdf/head045.pdf (retrieved 6th January 2020) – exchange rate used 0.094 Hong Kong dollars to pounds

[28] https://www.imf.org/en/Countries/SGP (retrieved 12th January 2020)

[29] https://www.singaporebudget.gov.sg/docs/default-source/budget_2019/download/pdf/37-MHA-2019.pdf (retrieved 7th January 2020)

[30] https://data.london.gov.uk/dataset/land-area-and-population-density-ward-and-borough (retrieved 7th January 2020)

[31] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 6th January 2020)

[32] https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/APPENDIX/appendix02.htm (retrieved 7th January 2020)

[33] https://en.wikipedia.org/wiki/New_York_City_Fire_Department (retrieved 6th January 2020)

[34] https://www.census.gov/quickfacts/newyorkcitynewyork (retrieved 7th January 2020)

[35] Email from BSPP dated 21st January 2020

[36] Email from BSPP dated 21st January 2020

[37] https://www.toronto.ca/community-people/public-safety-alerts/understanding-emergency-services/fire-station-locations/ (retrieved 6th January 2020)

[38] https://www12.statcan.gc.ca/census-recensement/2011/dp-pd/hlt-fst/pd-pl/Table-Tableau.cfm?LANG=Eng&T=301&S=3&O=D (retrieved 6th January 2020)

[39] https://www.gov.hk/en/about/abouthk/factsheets/docs/fire_services.pdf (retrieved 6th January 2020)

[40] https://www.gov.hk/en/about/abouthk/facts.htm (retrieved 7th January 2020)

[41] https://www.scdf.gov.sg/docs/default-source/scdf-library/annual-reports/scdf_annual_report_fy19-20.pdf (retrieved 12th January 2020)

[42] https://data.gov.sg/dataset/total-land-area-of-singapore?view_id=e6e37f25-01ef-4c23-a7cb-5682ab5edb75&resource_id=f4bbfac9-c3ed-4f71-9b9a-238517b214ef (retrieved 12th January 2020)

[43] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (retrieved 6th January 2020)

[44] https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/HISTORY/history03.htm (retrieved 7th January 2020)

[45] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 6th January 2020)

[46] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 6th January 2020)

[47] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 6th January 2020)

[48] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 12th January 2020)

[49] https://www.census.gov/quickfacts/newyorkcitynewyork (retrieved 7th January 2020)

[50] https://www1.nyc.gov/site/operations/performance/fleet-report.page (retrieved 6th January 2020)

[51] https://www1.nyc.gov/site/operations/performance/fleet-report.page (retrieved 6th January 2020)

[52] Griffiths, J 2012. Fire Department of New York – an Operational Reference. Ninth Edition. FDNY Foundation, New York.

[53] https://www1.nyc.gov/site/operations/performance/fleet-report.page (retrieved 12th January 2020)

[54] Email from BSPP dated 21st January 2020

[55] Email from BSPP dated 21st January 2020

[56] Email from BSPP dated 21st January 2020

[57] Email from BSPP dated 21st January 2020

[58] https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=3520005&Geo2=PR&Data=Count&B1=All (retrieved 6th January 2020)

[59] https://www.toronto.ca/wp-content/uploads/2019/04/8e80-A1902231_TFSAnnualReport2018_WEB.pdf (retrieved 6th January 2020)

[60] https://www.toronto.ca/wp-content/uploads/2019/04/8e80-A1902231_TFSAnnualReport2018_WEB.pdf (retrieved 6th January 2020)

[61] https://www.toronto.ca/wp-content/uploads/2019/04/8e80-A1902231_TFSAnnualReport2018_WEB.pdf (retrieved 6th January 2020)

[62] https://en.wikipedia.org/wiki/Toronto_Paramedic_Services (retrieved 12th January 2020)

[63] https://www.imf.org/en/Countries/SGP (retrieved 12th January 2020)

[64] Email from SCDF dated 14th January 2020

[65] Email from SCDF dated 14th January 2020

[66] Email from SCDF dated 14th January 2020

[67] Email from SCDF dated 14th January 2020

[68] https://www.nfpa.org/assets/files/AboutTheCodes/1710/1710_Tip_Sheet_2016_edition.pdf.pdf (retrieved 8th January 2020)

[69] https://hes32-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.dalaric.com%2fthe%2dlondon%2dskyline%2f&umid=306d5ebe-c14d-49fe-aec4-8a8d79059b61&auth=eb307c54eb70905f0cc41c69e0499be51aa4b479-d32c9c0b2dec90ce3fc3a8001e416d572e756450 (retrieved 7th January 2020)

[70] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (retrieved 6th January 2020)

[71] https://data.london.gov.uk/dataset/lfb-fires-in-london-1966-2019---fire-facts (retrieved 7th January 2020)

[72] https://data.london.gov.uk/dataset/fire-facts--fire-deaths-in-greater-london (retrieved 7th January 2020)

[73] https://www.metro.tokyo.lg.jp/ENGLISH/ABOUT/HISTORY/history03.htm (retrieved 7th January 2020)

[74] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 7th January 2020)

[75] https://www.tfd.metro.tokyo.lg.jp/hp-soumuka/gyouseigaiyou_e/index.html (retrieved 7th January 2020)

[76] https://www.census.gov/quickfacts/newyorkcitynewyork (retrieved 7th January 2020)

[77] https://www1.nyc.gov/site/911reporting/reports/end-to-end-detail.page (retrieved 7th January 2020)

[78] https://www1.nyc.gov/site/fdny/news/fa0121/fire-commissioner-nigro-5-decrease-fire-deaths-2020#/0 (retrieved 7th January 2020)

[79] Email from BSPP dated 21st January 2020

[80] Email from BSPP dated 21st January 2020

[81] Email from BSPP dated 21st January 2020

[82] https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=CSD&Code1=3520005&Geo2=PR&Data=Count&B1=All (retrieved 6th January 2020)

[83] https://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/AllFireIncidents/stats_all_fires.html (retrieved 12th January 2020)

[84] https://www.toronto.ca/wp-content/uploads/2019/04/8e80-A1902231_TFSAnnualReport2018_WEB.pdf (retrieved 7th January 2020)

[85] https://www.censtatd.gov.hk/hkstat/sub/bbs.jsp (retrieved 6th January 2020)

[86] https://www.gov.hk/en/about/abouthk/factsheets/docs/fire_services.pdf (retrieved 7th January 2020)

[87] https://www.gov.hk/en/about/abouthk/factsheets/docs/fire_services.pdf (retrieved 7th January 2020)

[88] https://www.imf.org/en/Countries/SGP (retrieved 12th January 2020)

[89] https://www.scdf.gov.sg/docs/default-source/scdf-library/amb-fire-inspection-statistics/scdf-annual-statistics-2019.pdf (retrieved 12th January 2020

[90] https://www.scdf.gov.sg/docs/default-source/scdf-library/amb-fire-inspection-statistics/scdf-annual-statistics-2019.pdf (retrieved 12th January 2020)

[91] https://www.visualcapitalist.com/top-10-cities/ (retrieved 7th January 2020)