

Briefing: Covid-19 socio-economic risk factors in London

June 2020

Contents

1. [Introduction](#)
2. [Household characteristics](#)
3. [Labour market risk factors](#)
4. [Social networks and leisure activity](#)
5. [Clinical risk factors](#)

1. Introduction

Coronavirus affects some members of the population more than others. Emerging evidence suggests that older people, men, people with health conditions such as respiratory and pulmonary conditions, and people of a Black, Asian Minority Ethnic (BAME) background are at particular risk.

There are also a number of other wider public health risk factors that have been found to increase the likelihood of an individual contracting coronavirus. These include household characteristics such as living in a large or overcrowded household, working in an occupation that involves being in close proximity to other people, travelling regularly via public transport and coming into contact with large numbers of other people via social networks and other activities. The evidence base for these socio-economic risk factors is still emerging but based on what the evidence suggests and more established research on communicable diseases, we can be reasonably confident that these are relevant to understanding who might be at risk of contracting coronavirus.

This briefing presents descriptive evidence on a range of these factors, seeking to understand at a London-wide level the proportion of the population affected by each. It also presents demographic data for each factor to illustrate how the risk varies across the population, focusing on protected characteristics as well as socio-economic status.

The majority of the evidence presented was collected before the global pandemic. As such it should be viewed as presenting the distribution of these risk factors across the population as the pandemic started, and can be used to help understand the starting risk profile of the population and the initial wave of cases and deaths. This briefing can be revised as more data becomes available covering the pandemic period itself.

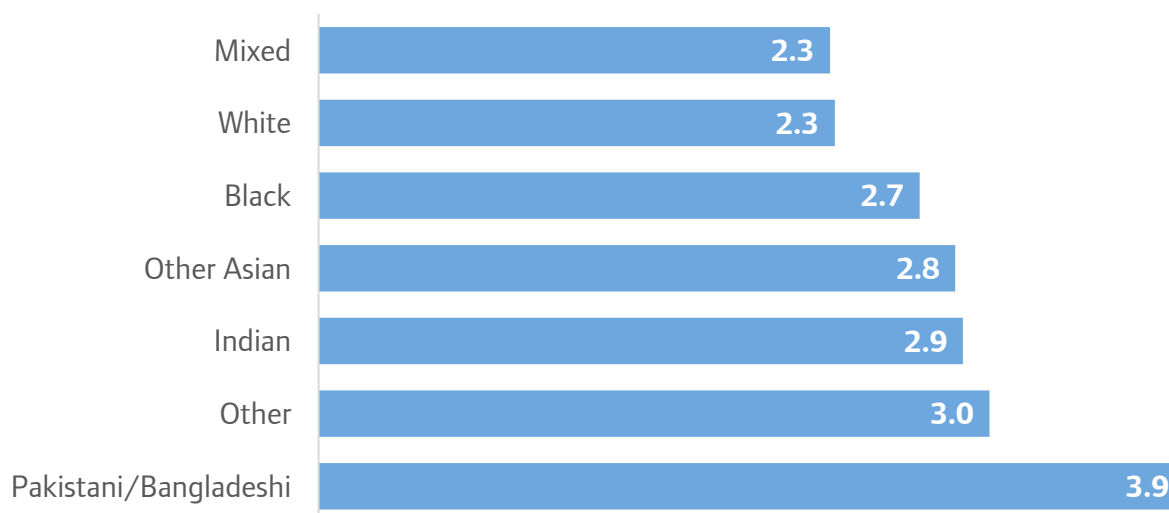
2. Household characteristics

Within-household transmission of Covid-19 is suspected to be an important driver of the spread of the disease. One study of 105 patients and 392 household contacts found that ‘secondary transmission’ occurred in 16.3 per cent of the contacts, rising to 27.8 per cent among spouses¹. Other studies support this finding, with one finding a secondary transmission rate of 19.3 per cent among those at the same address as a case². Another study found that household contacts of a case are several times more likely to become infected than those not living with someone who is infected³.

If it is true that household contacts of cases are at higher risk, then those living in larger households may be expected to be at particular risk, giving the increased opportunity for household transmission. Indeed, average household size has been used as a parameter in attempts to model the spread of infectious diseases such as Covid-19⁴. Households in London are larger on average than those in other countries and regions of the UK, with an average of 2.5 individuals per household.

BAME households in London tend to be larger. Pakistani/Bangladeshi households, for example, contain an average of 3.9 individuals, compared to 2.3 among White and Mixed households.

Average household size, London, 2019, by ethnicity of household reference person



Source: ONS Household Labour Force Survey, Q1-Q4 2019

The table below shows average household size for a range of other household characteristics. This shows that Muslim households and those with a household head aged 35-49 tend to be larger, with an average household size over 3.

¹ Li et al [The characteristics of household transmission of COVID-19](#), *Clinical Infectious Diseases* (17th April 2020)

² Qifang Bi et al [Epidemiology and transmission of COVID-19 in 391 cases and 1286 of their close contacts in Shenzhen, China: a retrospective cohort study](#), *Lancet Infectious Diseases* (27th April 2020)

³ Jing et al [Household Secondary Attack Rate of COVID-19 and Associated Determinants](#), *medRxiv* (15th April 2020)

⁴ See Wijaya et al [A Covid-19 epidemic model incorporating direct and fomite transmission as well as household structure](#) *medRxiv* (29th April 2020)

Average household size, London, 2019

Characteristics of household reference person	Household size (average number of individuals)
Disability	
EA/Work-limiting Disabled	2.1
Not EA/Work-limiting Disabled	2.7
Religion	
Christian	2.3
Hindu	2.9
Muslim	3.6
No religion	2.4
Other religion	2.5
Age group	
16-19	2.0
20-24	2.3
25-34	2.6
35-49	3.3
50-59	2.8
60-69	2.3
70+	1.5
Gender	
Female	2.3
Male	2.8
Social class	
Working-class	2.3
Intermediate	2.8
Professional	2.7

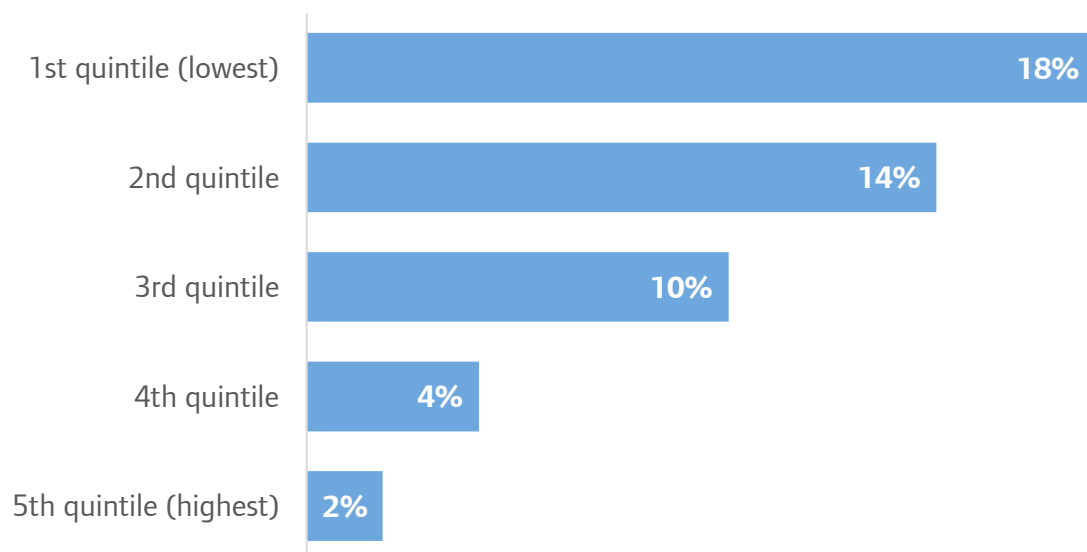
Source: ONS Household Labour Force Survey, Q1-Q4 2019

In addition, nine per cent of households in London are overcrowded, far higher than in other regions of England. Overcrowding is known to be associated with worse health outcomes and has been found to increase the spread of respiratory conditions in particular⁵.

Poorer households in London are more likely to be overcrowded. Evidence from The English Housing Survey suggests that almost 1 in 5 (18 per cent) of London households in the poorest fifth of households nationally are overcrowded, compared to 2 per cent of London households in the richest fifth.

⁵ ODPM (2004) [The impact of overcrowding on health and education: a review of evidence and literature](#)

Overcrowded households by household income quintile, London 2015/16-2017/18 (proportion of households overcrowded according to the bedroom standard)



Source: English Housing Survey, three-year average

BAME households are also more likely to be overcrowded: 16 per cent do not have enough bedrooms compared to 6 per cent of White households. Younger working-age households are also more likely to be overcrowded than those aged 45-64 or 65+ (see table below).

Overcrowded households by characteristics, London 2015/16-2017/18 (proportion of households overcrowded according to the bedroom standard)

Household/HRP characteristics	Proportion below bedroom standard
Age group	
16 - 29	11%
30 - 44	13%
45 - 64	9%
65 or over	2%
Ethnic group	
BAME	16%
White	6%
Disability	
Not disabled	9%
Disabled	7%

Source: English Housing Survey, three-year average

Aside from the size of the household, of particular concern are households that contain both clinically at-risk alongside other individuals. The UK government has published specific guidance for those households containing a mix of individuals aged 70+ and those aged under 70, as well as households containing clinically vulnerable individuals and those who are not clinically vulnerable⁶. The over 70s are at particular

⁶ Public Health England [Guidance for households with grandparents, parents and children living together where someone is at increased risk or has symptoms of coronavirus \(COVID-19\) infection](#) (updated 28th April 2020)

risk from dying with Covid-19, as illustrated by the population death rate, which increases exponentially with age⁷.

The proportion of over-70s who live in a household with someone aged under 70 is substantially higher in London than in other regions. Almost 1 in 5 (17 per cent) of Londoners aged 70 or older live with one or more individuals aged less than 70.

Older BAME Londoners are much more likely to live in an inter-generational household. 25 per cent of 70+ BAME Londoners live with one or more others aged under 70, compared to 3 per cent of White 70+ Londoners.

Older male Londoners are also much more likely to live in an inter-generational household: 19 per cent of 70+ male Londoners compared to 11 per cent of 70+ female Londoners (ONS Household Labour Force Survey, Q1-Q4 2017-2019).

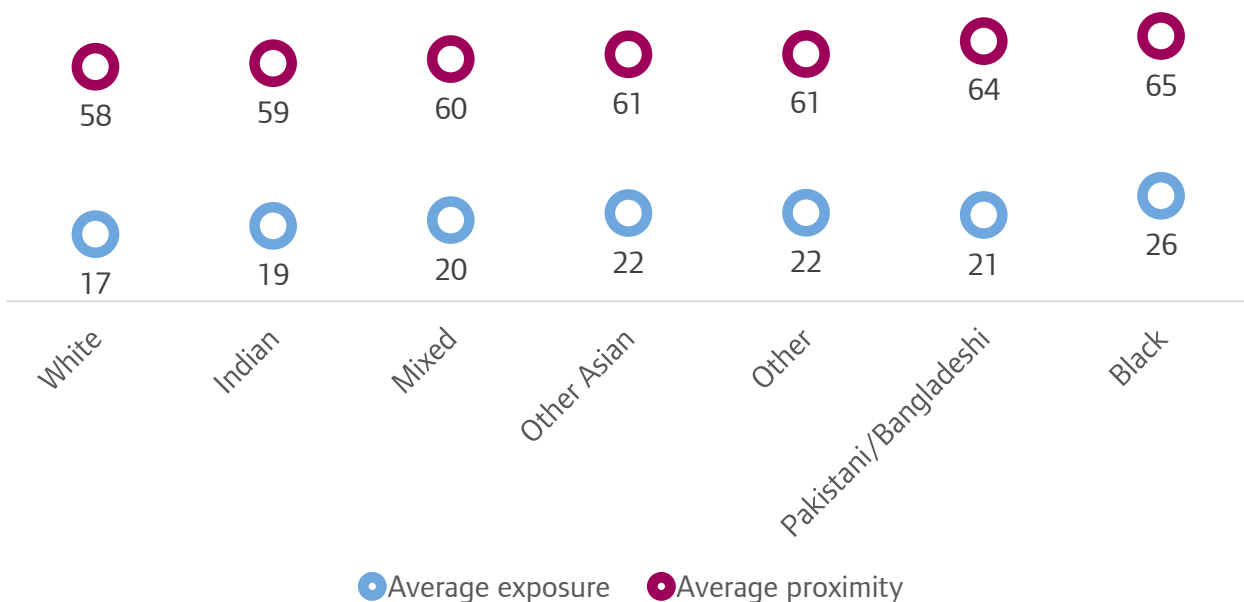
⁷ Spiegelhalter [What are the risks of COVID? And what is meant by 'the risks of COVID'?](#) Medium (13th May 2020)

3. Labour market risk factors

Recent research published by the Office for National Statistics suggests that the type of work someone does may affect their risk of dying with Covid-19. While the link between occupations and risk of contracting coronavirus has not yet been fully explained, the ONS has published a study that assesses detailed occupations by two key characteristics; the average proximity to other people while working, and how often a holder of that occupation may be exposed to infectious diseases⁸. Each occupation has a score of between 0 and 100 for both proximity and exposure. This may provide us with insight into which employed people are at risk of contracting coronavirus through their work.

BAME Londoners are more likely to work in occupations characterised by closer proximity to other people and more frequent exposure to disease. For example, the average proximity score of employed Londoners of a Black ethnic background is 65 (out of 100), compared to 58 among Londoners of a White ethnic background. The average exposure score for employed Black Londoners is 26, compared to 17 for White Londoners.

Average proximity and exposure scores of employed residents, by ethnic group, London, 2019



Source: GLA calculations using ONS Labour Force Survey, Q1-Q4

Other relevant characteristics include social class: employed working-class Londoners work in occupations with higher average exposure and proximity scores. Employed women tend to face higher exposure and proximity than employed men, on average. And Muslim Londoners who are employed appear to similarly face higher exposure and proximity than those Londoners who report having no religion (see table below).

⁸ ONS (2020) [Which occupations have the highest potential exposure to the coronavirus \(COVID-19\)?](#)

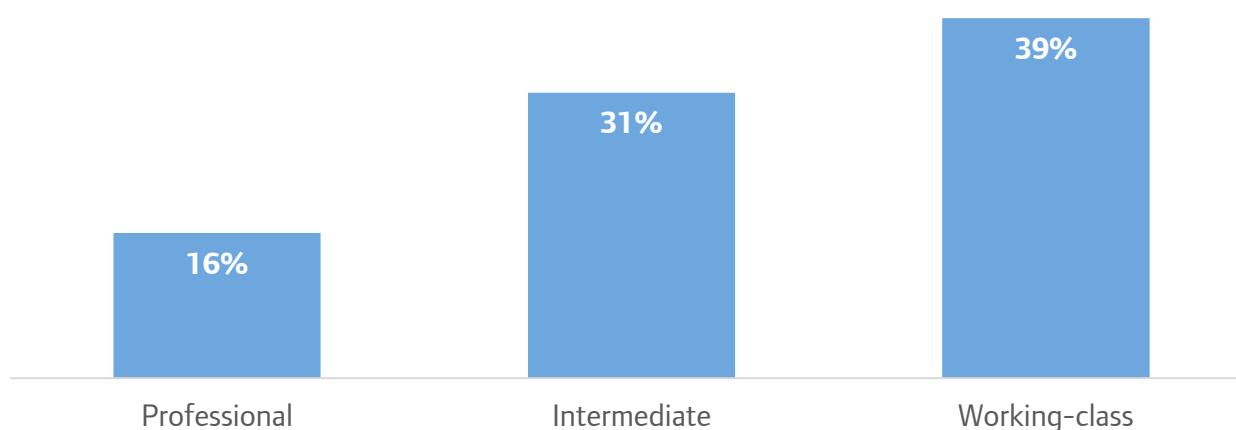
Average proximity and exposure scores of employed residents, by ethnic group, London, 2019

Characteristics of working population	Average exposure	Average proximity
Age group		
16-24	17.4	62.8
25-34	17.2	58.1
35-49	18.4	58.7
50-59	20.9	60.7
60-69	20.2	59.8
70+	19.8	58.9
Religion		
Christian	20.1	60.0
Hindu	20.3	60.3
Muslim	22.0	64.6
No religion	15.7	57.1
Other religion	17.6	58.4
Disability		
EA/Work-limiting Disabled	20.1	60.8
Not EA/Work-limiting Disabled	18.3	59.1
Gender		
Female	23.0	61.0
Male	14.7	57.9
Social Class		
Professional	16.6	54.1
Intermediate	18.7	62.1
Working-class	22.8	68.2

Source: GLA calculations using ONS Labour Force Survey, Q1-Q4

The chart below uses a proximity score of 72 to divide occupations into 'high risk' and 'low risk' and shows the proportion of employed people working in high-risk occupations by social class. This shows that almost 2 in 5 (39 per cent) employed working-class Londoners work in a high-risk occupation, compared to 31 per cent of intermediate Londoners and 16 per cent of professional Londoners.

Proportion of employed residents working in occupations characterised by high proximity to other people (proximity score greater than 72), by social class, London, 2019



Source: GLA calculations using ONS Labour Force Survey, Q1-Q4

The table below shows the proportion of the employed population working in high-risk occupations by a range of other characteristics. This shows that women are more likely to be working in these roles than men, BAME Londoners are more likely to be in an at-risk occupation than White Londoners, and Muslim Londoners in particular are highly likely to be in an at-risk job.

Proportion of employed residents working in occupations characterised by high proximity to other people (proximity score greater than 72), by characteristics, London, 2019

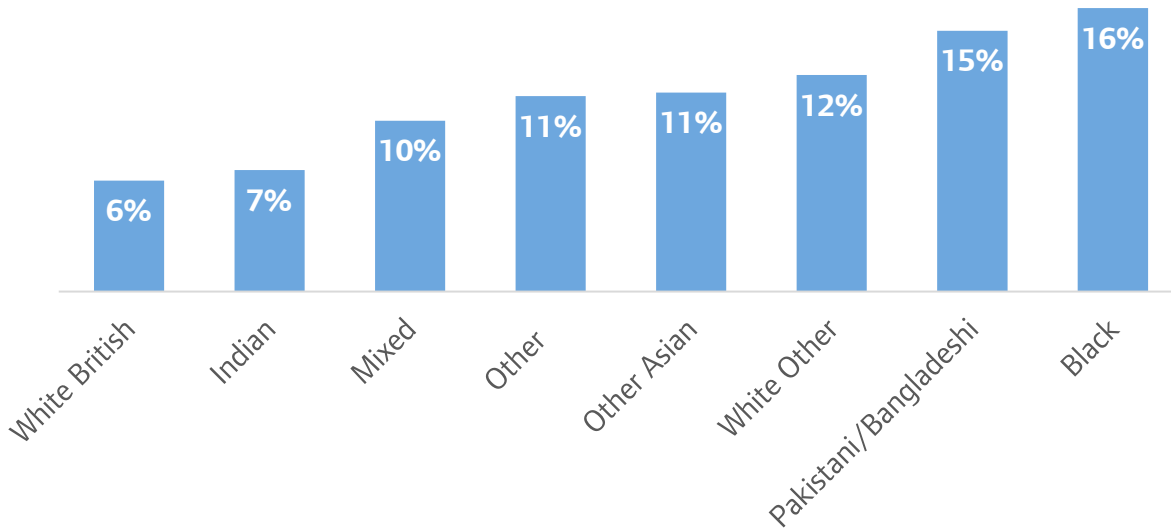
Characteristics of working population	Proportion in an occupation with a proximity score greater than 72
Age group	
16-24	29%
25-34	23%
35-49	24%
50-59	28%
60-69	25%
70+	21%
Disability	
EA/Work-limiting Disabled	28%
Not EA/Work-limiting Disabled	25%
Ethnic group	
Black	39%
Indian	23%
Mixed	24%
Other	28%
Other Asian	28%
Pakistani/Bangladeshi	36%
White	22%
Gender	
Female	29%
Male	21%
Religion	
Christian	27%
Hindu	26%
Muslim	37%
No religion	20%
Other religion	24%

Source: GLA calculations using ONS Labour Force Survey, Q1-Q4

Insecure workers are believed to have been at particular risk, due to their lower earnings and greater need to continue working while other workers, especially those employed on a permanent basis, were furloughed. Around 1 in 10 employed Londoners are in insecure work, higher than in other regions.

Some BAME Londoners are more likely to be in insecure employment. 16 per cent of employed Black Londoners, and 15 per cent of employed Pakistani/Bangladeshi Londoners, are in insecure work, compared to 7 per cent of Indian Londoners and 6 per cent of White British Londoners.

Proportion of employed residents working in insecure work, by ethnic group, UK, 2019⁹



Source: GLA calculations using ONS Labour Force Survey, Q1-Q4 2019

Young Londoners are also more likely to be in insecure employment: 15 per cent of employed 16-24-year-olds are in an insecure work arrangement. Muslim Londoners are also more likely to be employed on an insecure basis; 17 per cent versus 7 per cent among Hindu Londoners and those with no religion.

Proportion of employed residents in insecure work, by characteristics, London, 2019

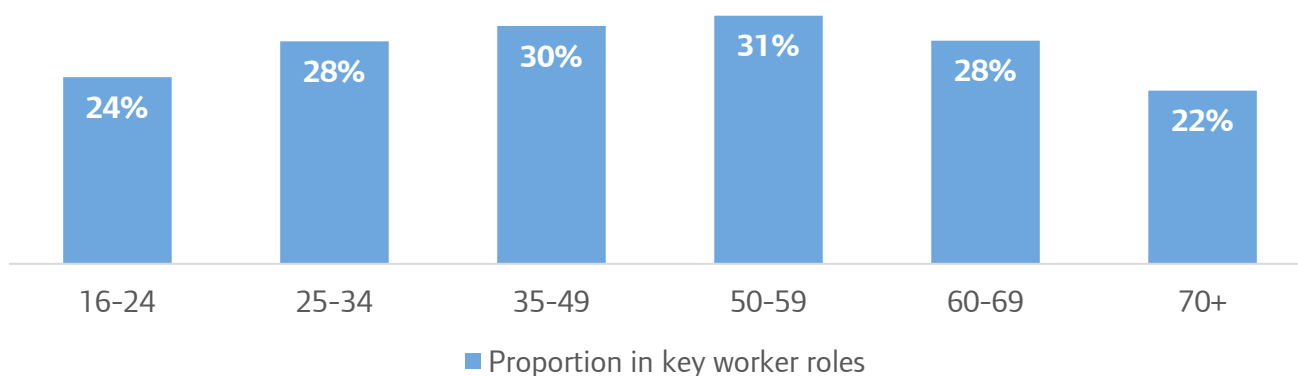
Characteristics of working population	Proportion of employed in insecure work
Disability	
Not disabled	9
EA core or work-limiting disabled	10
Religion	
No religion	7
Christian	10
Muslim	17
Hindu	7
Other	8
Age group	
16-24	15
25-34	9
35-44	8
45-54	9
55-64	9
Gender	
Male	9
Female	10

Source: GLA calculations using ONS Labour Force Survey, Q1-Q4 2019

⁹ Insecure work definition is the same as in GLA's Economic Fairness measures

Key workers are expected to have continued working through the peak of the pandemic, and so might be at greater risk of workplace transmission. Using a classification of key workers developed by ONS, the chart below shows how the proportion of Londoners in a key worker occupation varies by age group. It shows that employed Londoners aged 35-49 and 50-59 are the most likely to work in one of these roles, with 30 per cent employed in a key worker role.

Proportion of employed residents in a key worker occupation, by age group, London, 2019



Source: GLA calculations using ONS Labour Force Survey, Q1-Q4 2019

The table below shows the proportion of employed Londoners working in a key worker occupation by a range of other characteristics. This shows that employed female Londoners are much more likely to be in a key worker occupation than employed male Londoners (34 versus 25 per cent).

It also shows that some ethnic groups, particularly Black and Indian Londoners, are more likely to work in a key worker job than White Londoners.

Proportion of employed residents in a key worker occupation, by characteristics, London, 2019

Characteristics of working population	Proportion in key worker roles
Social class	
Professional	31%
Intermediate	22%
Working-class	29%
Disability	
EA/Work-limiting Disabled	30%
Not EA/Work-limiting Disabled	29%
Ethnic group	
Black	38%
Indian	38%
Mixed	34%
Other	29%
Other Asian	34%
Pakistani/Bangladeshi	28%
White	26%
Gender	
Female	34%
Male	25%
Religion	
Christian	29%
Hindu	36%
Muslim	31%
No religion	27%
Other religion	27%

Source: GLA calculations using ONS Labour Force Survey, Q1-Q4 2019

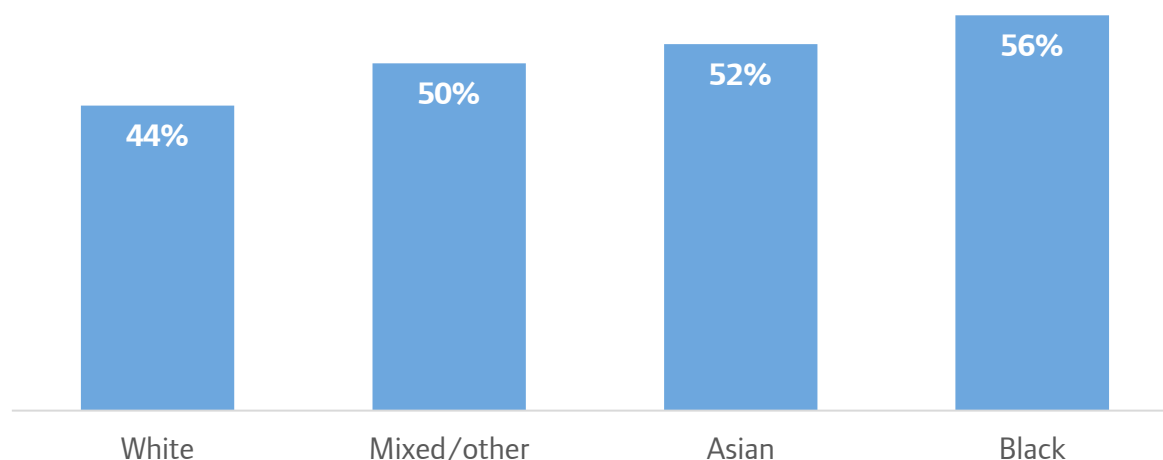
Outside of the workplace, travel is an everyday activity that has been associated with increased risk of contracting coronavirus. Recent UK Government guidance asks individuals to consider all other forms of transport before using public transport, due to the higher risks associated with public transport¹⁰.

In London, workers are far more likely to travel to work via public transport. Among employed Londoners who work mainly outside their home, 46 per cent travel to work via public transport, far higher than in other regions.

BAME Londoners are more likely to travel to work via public transport. More than half of Asian and Black Londoners use public transport to get to work, compared to 44 per cent of White Londoners.

¹⁰ Department for Transport (2020) [Coronavirus \(COVID-19\): safer travel guidance for passengers](#)

Commuting to work by public transport, by ethnic group, London (proportion of those who work outside the home), 2017/18



Source: GLA calculations using University of Essex, Institute for Social and Economic Research, NatCen Social Research, Kantar Public. (2019). *Understanding Society: Wave 9*

The table below shows commuting methods for employed Londoners who work outside the home. It shows that younger Londoners and professionals are particularly likely to commute by public transport. 62 per cent of 16-29 year-olds employed outside the home commute by public transport, compared to 35 per cent of those aged 50+. Fifty-seven per cent of professionals use public transport, compared to 40 per cent of those in an intermediate social class.

Commuting patterns, London (proportion of those who work outside the home), 2017/18

Characteristics of those who work outside the home	Commuting method			
	By car	Other	Public transport	Walk/cycle
Age group				
16-29	18%	3%	62%	17%
30-49	27%	11%	46%	16%
50+	34%	16%	35%	15%
Social class				
Professional	18%	10%	57%	14%
Intermediate	28%	21%	40%	12%
Working-class	35%	2%	44%	20%
Disability				
Disabled	26%	13%	48%	13%
Not disabled	27%	10%	46%	17%
Ethnic group				
Asian	32%	6%	52%	9%
Black	25%	6%	56%	12%
Mixed/other	22%	6%	50%	22%
White	27%	13%	44%	17%
Gender				
Female	26%	12%	45%	17%
Male	28%	9%	48%	15%

Source: GLA calculations using University of Essex, Institute for Social and Economic Research, NatCen Social Research, Kantar Public. (2019). *Understanding Society: Wave 9*

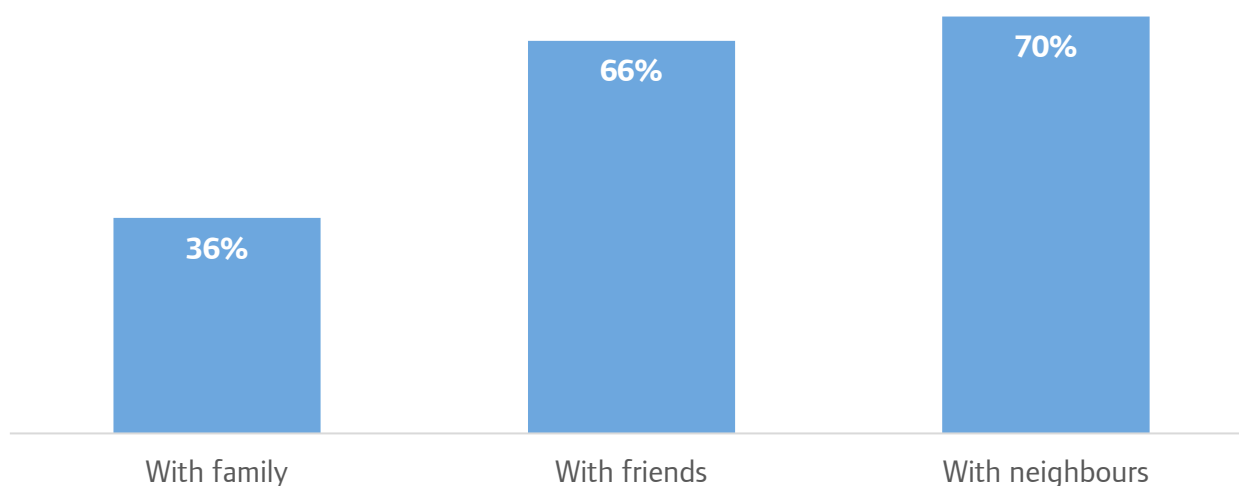
4. Social networks and leisure activity

Social mixing patterns are important drivers of infectious diseases. Public health modelling often seeks to understand the average number of social contacts of the population and the context in which these take place, such as work or school)¹¹. Aside from work, school and household contacts other activities outside the home such as leisure activities are another setting in which people come into contact with other people. Those who more regularly meet with others outside the home, or engage in leisure activities more frequently (particularly those that take place indoors) may be more likely to contract coronavirus.

The Survey of Londoners, a large-scale social survey carried out by NatCen and the GLA, collected a range of data of Londoners social networks and their activities outside the home.

One set of questions in The Survey asked respondents to tell us how often they have face-to-face contact outside the home with family, friends and neighbours. This shows that over a third of 16+ Londoners have face-to-face contact with family members outside the home at least once a week, two-thirds have contact with friends, and 70 per cent with their neighbours.

Proportion of 16+ Londoners having face to face contact outside the home at least once a week, by group (2018/19)



Source: GLA (2019) *The Survey of Londoners*

The table below shows the proportion of 16+ Londoners who have face-to-face contact with family members outside the home, friends and neighbours once a week or more often.

This shows that older Londoners are generally more likely to have frequent face-to-face contact with family outside the home and neighbours, whereas the youngest and oldest Londoners are most likely to have frequent face-to-face contact with friends.

By ethnic group, Black and Asian Londoners are more likely to have frequent face-to-face contact with family members outside the home than White British, and particularly White Other Londoners. White British Londoners are the most likely to have frequent face-to-face contact with friends, and Black Londoners with their neighbours.

¹¹ Petra Klepec et al (2020) [Contacts in context: large-scale setting-specific social mixing matrices from the BBC Pandemic project](#)

The table also shows that generally working-class Londoners (those in routine and manual occupations and those who have never worked or are long-term unemployed) are more likely to have frequent face to face contact with family outside the home. Those in intermediate or routine and manual social classes are more likely to have frequent contact with neighbours.

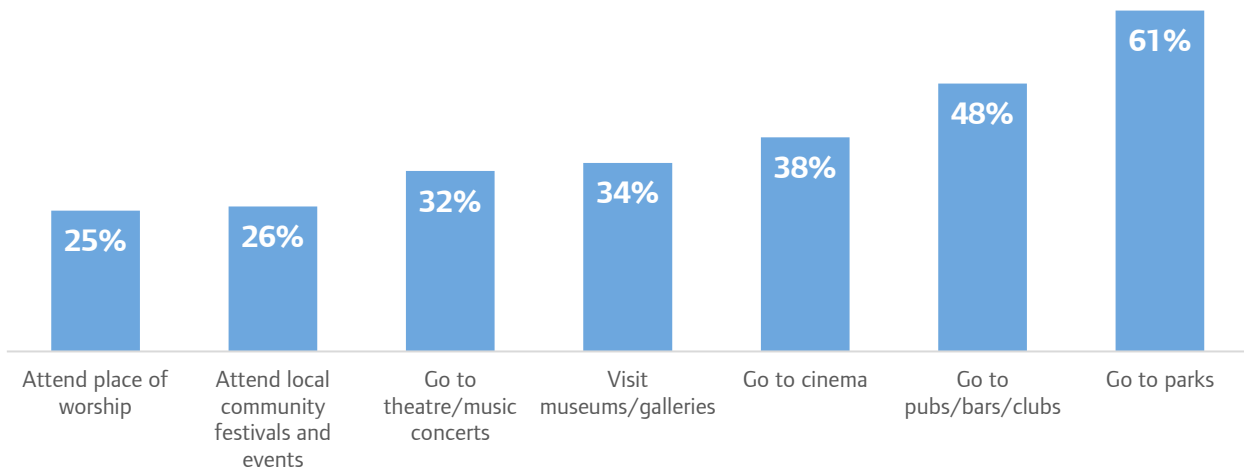
Proportion of 16+ Londoners having face to face contact outside the home at least once a week, by group and characteristics of 16+ Londoners (2018/19)

Characteristics of 16+ Londoners	Percentage that have face-to-face contact around once a week or more often with...		
	Family members outside the home	Friends	Neighbours
Age			
16 to 24	37.7	85.4	61.7
25 to 34	29.5	65.3	60.6
35 to 49	33.2	57.5	73.2
50 to 64	40.0	60.5	81.0
65 to 79	52.4	71.0	86.7
80+	65.4	79.5	83.9
Disability			
Disability	38.7	61.5	74.9
No disability	35.6	67.8	69.9
Ethnic group			
White British	35.4	72.9	71.9
White (Other)	21.7	64.6	69.5
Mixed / multiple ethnic groups	34.8	67.3	59.7
Asian / Asian British	45.8	62.8	70.6
Black / African / Caribbean / Black British	42.7	57.0	74.2
Other ethnic group	38.1	63.2	64.8
Gender			
Man	35.3	66.4	70.1
Woman	37.7	66.3	70.7
LGBT+			
Not LGBT+	37.1	65.6	71.0
LGBT+	24.9	77.4	62.3
Social class			
Managerial, administrative and professional occupations	30.0	64.4	68.2
Intermediate occupations	47.0	65.1	77.8
Routine and manual occupations	43.6	64.9	78.1
Never worked and long-term unemployed	46.8	85.4	65.3

Source: GLA (2019) *The Survey of Londoners*

The Survey of Londoners also asked respondents about their attendance and participation in the last month at a range of leisure activities taking place outside the home. The chart below shows the overall proportions for 16+ Londoners, by type of activity, finding sizable proportions attending each, from a quarter of Londoners attending a place of worship, to almost half of Londoners going to pubs/bars and clubs in the last month.

Proportion of 16+ Londoners who have participated in free-time activities in the last month, by type of activity



Source: GLA (2019) *The Survey of Londoners*

The table below shows the proportion of 16+ Londoners participating in each of the activities by a range of demographic characteristics. Generally, White British Londoners are more likely to do each of the activities than other ethnic groups, with the exception of places of worship, which are attended more frequently by BAME Londoners. For example, 52 per cent of Black Londoners say they have been to a place of worship in the last month, and 39 per cent of Asian Londoners, compared to just 15 per cent of White British Londoners.

Proportion of 16+ Londoners who have participated in free-time activities in the last month, by type of activity and characteristics of 16+ Londoners

Proportion who have participated in free-time activities in the last month, by type of activity							
Characteristics	Pubs/bars/clubs	Cinema	Place of worship	Museums galleries	Theatre Music concerts	Local community events	
Age group							
16 to 24	49	48	25	36	31	22	
25 to 34	63	43	19	37	38	26	
35 to 49	49	41	29	36	29	30	
50 to 64	44	33	27	31	33	25	
65 to 79	31	28	26	32	36	25	
80+	24	18	31	20	21	22	
Disability							
Disability	34	30	25	27	27	25	
No disability	53	41	26	36	35	27	
Ethnic group							
White British	63	42	15	40	42	27	
White (Other)	59	37	20	45	38	26	
Mixed	50	49	21	38	33	22	
Asian	27	36	39	25	17	28	
Black	21	30	52	15	21	25	
Other	41	47	24	35	27	20	
Gender							
Man	52	36	25	32	30	24	
Woman	44	41	26	35	36	28	
LGBT+							
Not LGBT+	52	39	24	36	33	25	
LGBT+	63	45	15	50	48	29	
Social class							
Professional	61	44	23	43	42	30	
Intermediate	44	39	25	30	30	25	
Working-class	36	30	30	21	18	22	

Source: GLA (2019) *The Survey of Londoners*

5. Clinical risk factors

It is now widely accepted that a number of so-called ‘pre-existing conditions’ make individuals more susceptible to hospitalisation and death from coronavirus.

Because we do not have access to detailed individual-level data on clinical risk factors, we cannot draw a conclusive link between other characteristics such as ethnicity or socio-economic position, and these pre-existing conditions. However, there is a large body of previous research on inequality in public health and the structural inequalities which lie behind these.

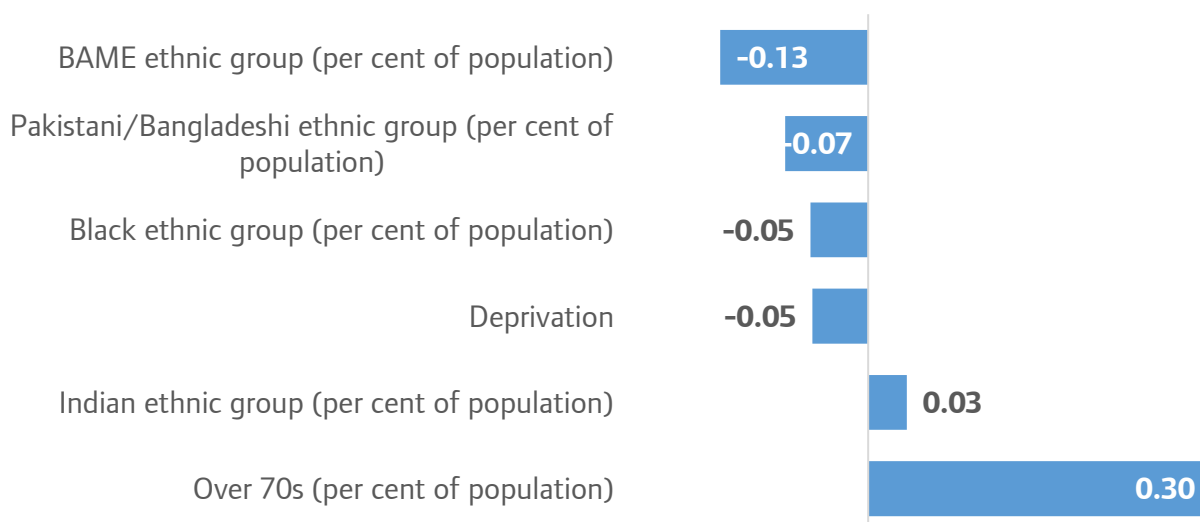
We are able instead to draw a geographic link between demographic characteristics and prevalence of particular conditions known to be associated with increased risk from coronavirus.

Using data at ‘Medium Super Output Area’ level, geographic areas of London with a population of around 8,000 each, we can observe whether areas with high prevalence of these conditions are also characterised by

For example, the chart below shows the correlation between ethnicity, deprivation and age and the prevalence of asthma. Deprivation is measured using the population-weighted average of the 2019 Index of Multiple Deprivation at MSOA level. Age is measured as the proportion of the population aged 70+. Ethnicity is measured as the proportion of the population who are of a BAME background, as well as the proportion of a Pakistani/Bangladeshi, Black and Indian ethnic background. In interpreting the figures, which are between -1 and +1, a higher positive value indicates a positive correlation.

In the case of Asthma, only age appears to be highly correlated with Asthma. What this suggests is that in MSOAs with an older population, Asthma is more prevalent.

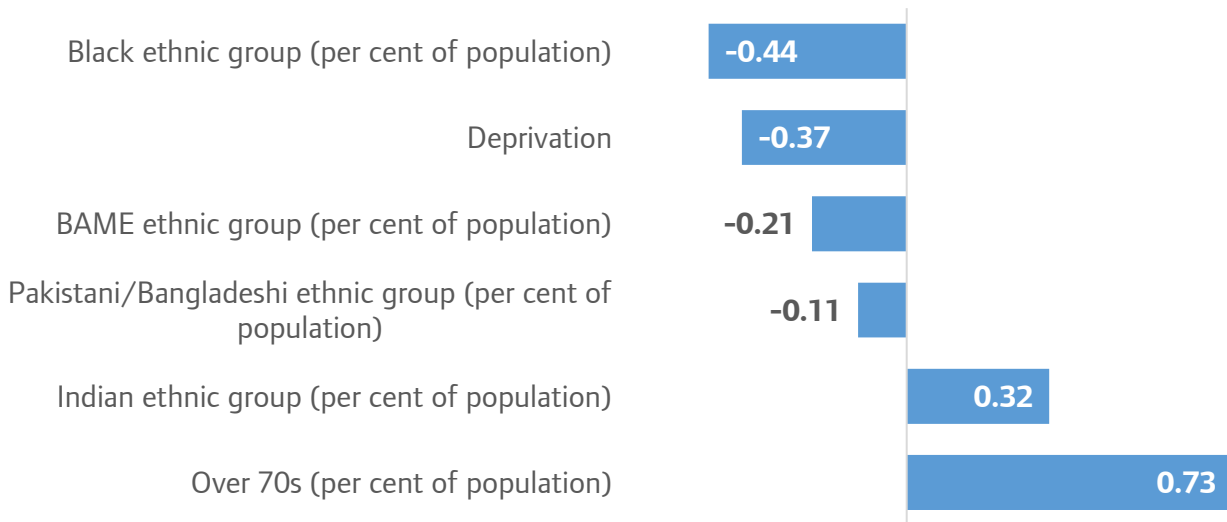
Correlation between local-area characteristics and prevalence of Asthma, London MSOAs



Source: GLA analysis of Census 2011, Indices of Deprivation 2019 and Public Health England data

Coronary heart disease is highly positively correlated with older populations, and somewhat correlated with the Indian population (see chart below).

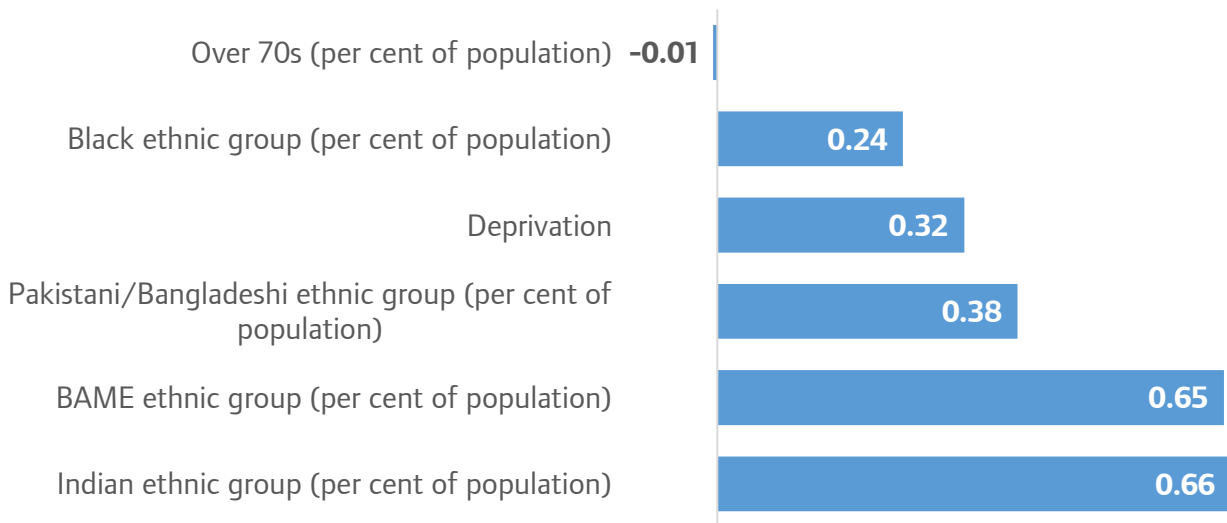
Correlation between local-area characteristics and prevalence of coronary heart disease, London MSOAs



Source: GLA analysis of Census 2011, Indices of Deprivation 2019 and Public Health England data

Diabetes is not highly correlated with age. Instead, it is strongly correlated with the relative size of the BAME population, and with the Indian population in particular. It is also fairly strongly correlated with deprivation and the relative size of the Pakistani/Bangladeshi population.

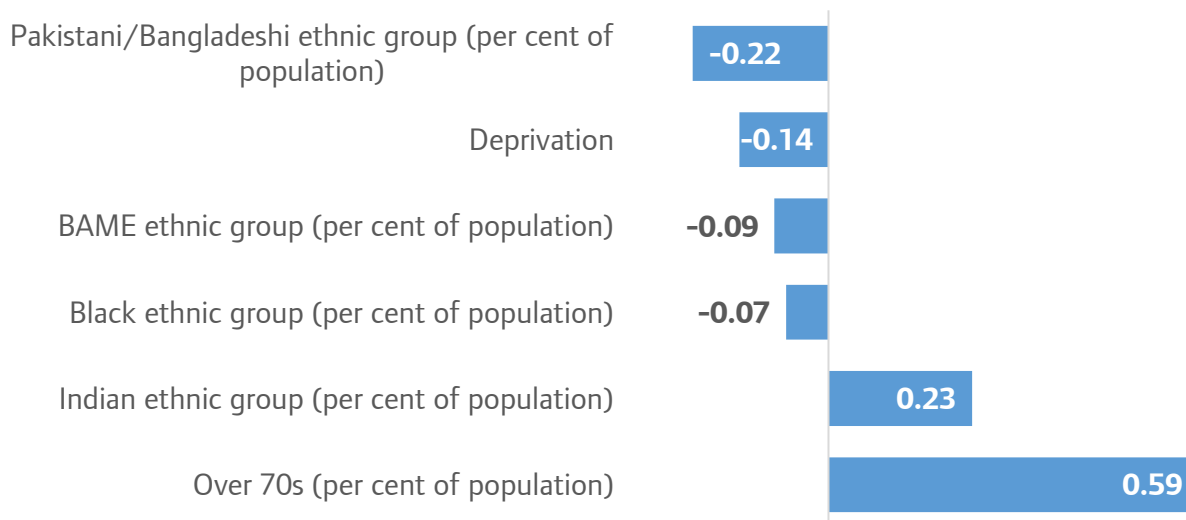
Correlation between local-area characteristics and prevalence of diabetes, London



Source: GLA analysis of Census 2011, Indices of Deprivation 2019 and Public Health England data

Hypertension is strongly positively correlated with age; areas with an older population have higher prevalence of hypertension.

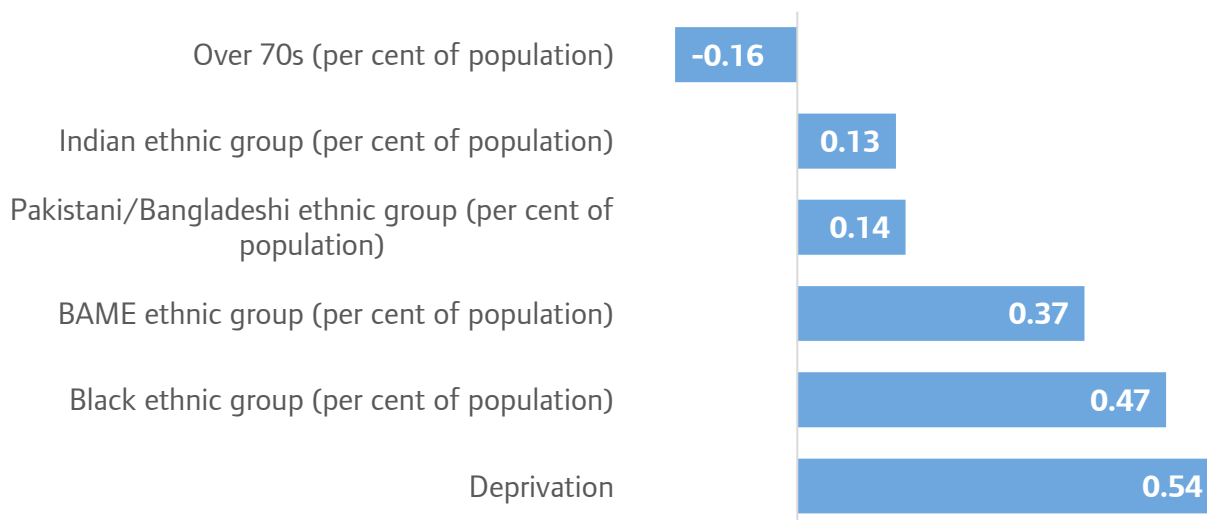
Correlation between local-area characteristics and prevalence of hypertension, London



Source: GLA analysis of Census 2011, Indices of Deprivation 2019 and Public Health England data

Finally, obesity is most strongly correlated with deprivation. Areas characterised by higher relative deprivation tend to have a higher prevalence of obesity. There is also a slightly weaker but nonetheless strong correlation with the relative size of the Black ethnic group.

Correlation between local-area characteristics and prevalence of obesity, London



Source: GLA analysis of Census 2011, Indices of Deprivation 2019 and Public Health England data

CITY INTELLIGENCE

Greater London Authority
City Hall
The Queens Walk
London SE1 2AA

Tel 020 7983 4000
Minicom 020 7983 4000
Email Spencer.Thompson@london.gov.uk

MAYOR OF LONDON