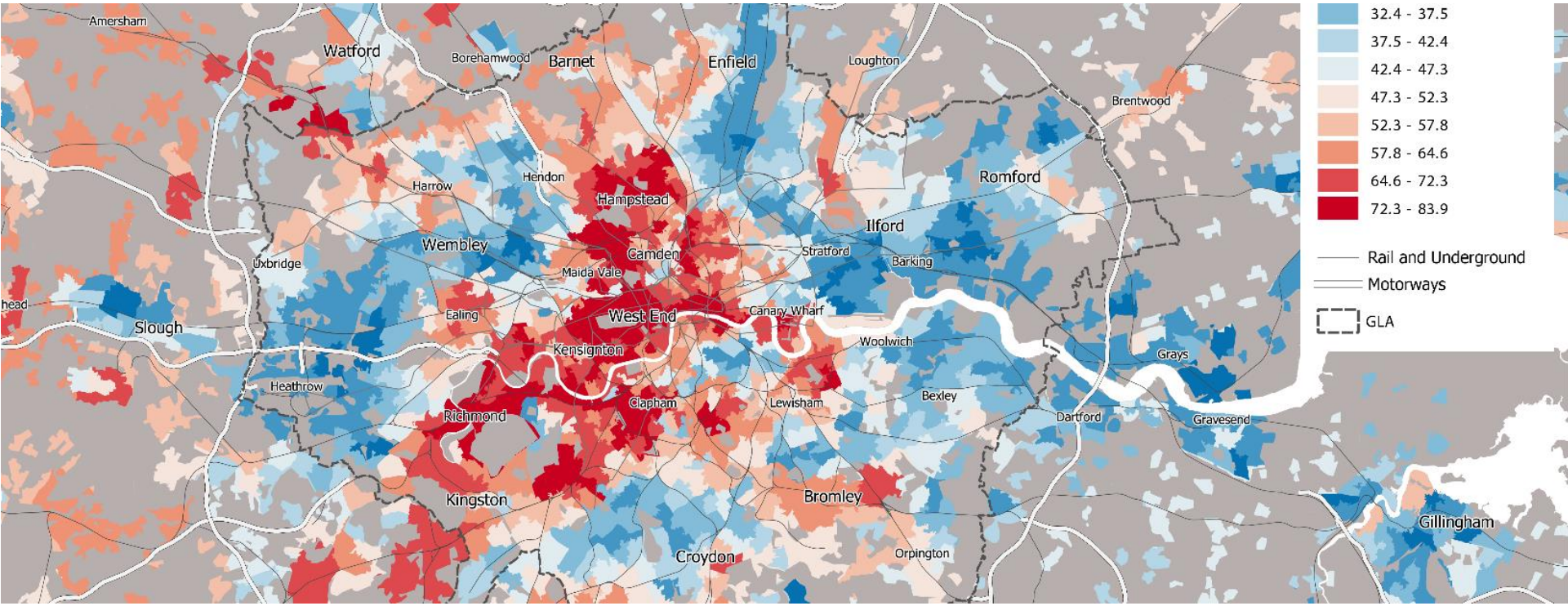
A Compact City for the Wealthy? Gentrification and Employment Accessibility Inequalities in London



Duncan A Smith

Centre for Advanced Spatial Analysis,
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casa

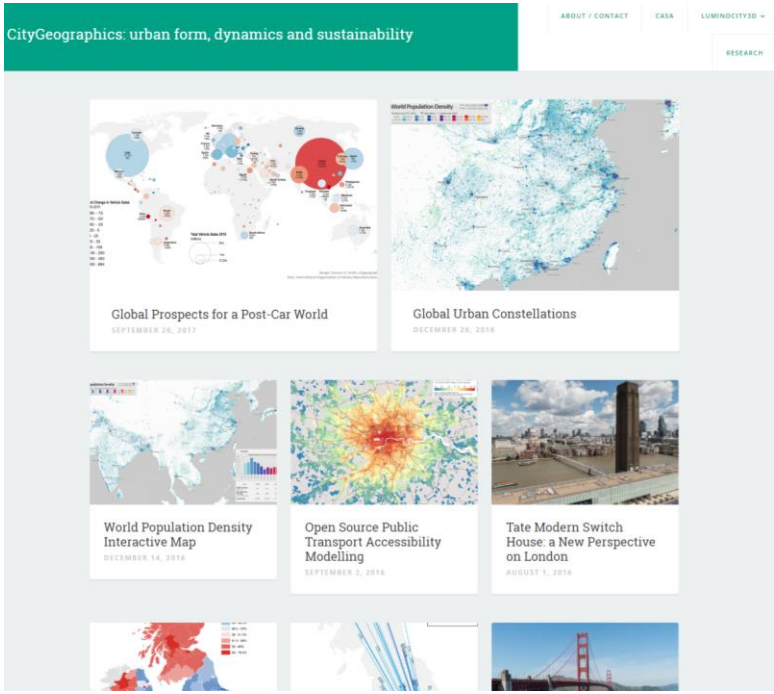
Intro

Academic Background

Research focused in urban geography, sustainable transport, GIS and online cartography. Lecturer in GIS and Visualisation, leader of CASA MSc in Spatial Data Science.

Twitter- @citygeographics

Blog- http://citygeographics.org



LSE Cities

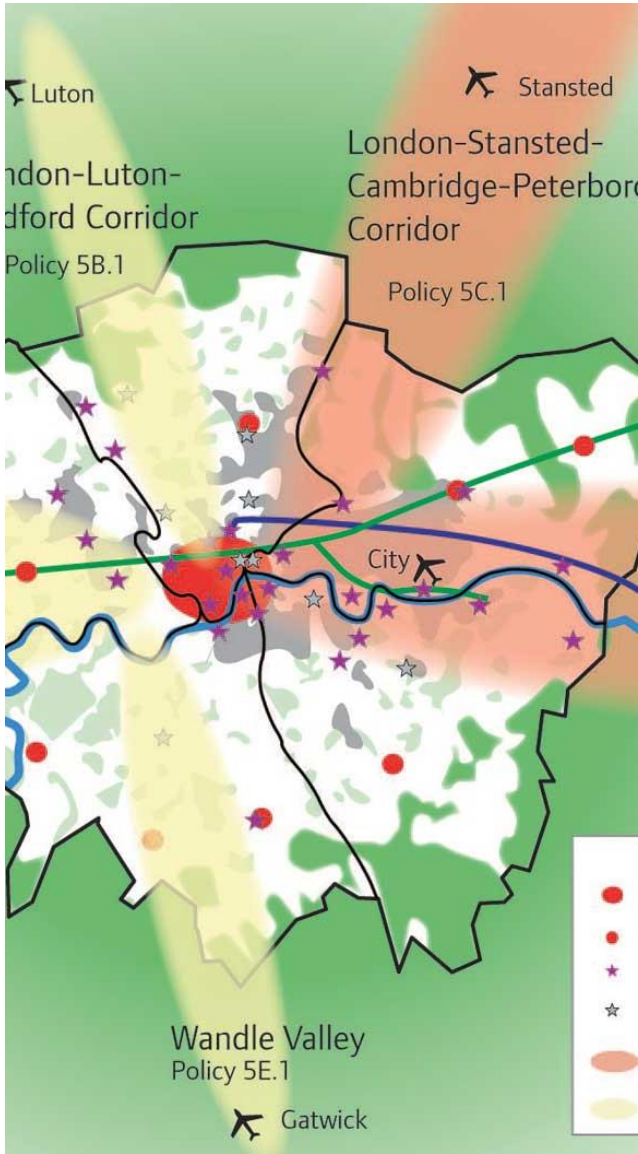
I worked as GIS Officer at LSE Cities 2012-14, mainly for the London Electric City and Rio Urban Transformations Urban Age conferences. Interested in core LSE Cities research themes of sustainable urban form and comparative urbanism.

Motivation for Research

Long Term Compact City Policy Consensus
Compact city planning enabled inner-city densification, mix-of-uses, public transport investment and public realm improvement since late 1990s in UK, earlier in other European countries.

London Achieving these Aims
Transformation of Inner London and Outer Metropolitan Centres. Large population growth, huge PT investment, pedestrian and cycling improvements. Vibrancy, economic and sustainability success story.

Yet Failing in Equity Terms?
Severe housing affordability crisis; housing developments mainly for wealthier groups; “affordable” housing rarely affordable; very little new council housing; major estate renewal creating displacement...



Gentrification, Segregation and Accessibility

Gentrification first identified in London in 1960s (Glass, 1964). Appears to be continued social transformation of Inner London in last decade, less affluent groups priced out. Useful to have more analysis of these patterns.

Further inner city gentrification likely to have accessibility consequences as more affluent groups living closer to opportunities and public transport services. Potentially selective benefits of compact city policies for more affluent populations.

Aim to analyse the following empirically for London-

- Measure the degree of residential segregation by income in London 2011;
- Assess to what extent gentrification continued in the last decade;
- Consider impacts of residential patterns on accessibility to jobs by sustainable transport modes.

Theoretical Perspectives on Gentrification

Evolution to Post-Industrial Economy

Gentrification is "the social and spatial manifestation of the transition from an industrial to a post-industrial urban economy" (Hamnett, 2003). An expanded middle class begins to locate in areas of well-built, low-priced, inner-city districts occupied by working classes.

Rent-Gap and Class-based Capital Accumulation

Neo-Marxist interpretations emphasise capital accumulation, where gentrifiers exploit the difference between initial house prices in working class neighbourhoods and the longer term location potential of inner city (Smith, 1979).

New-Build Gentrification

The value-uplift perspective also aligns with the aims of real-estate developers. Increasing importance of new-build gentrification processes (Davidson and Lees, 2010), with areas of major housing development targeting affluent buyers. Particularly important in London, with significant new-build housing.

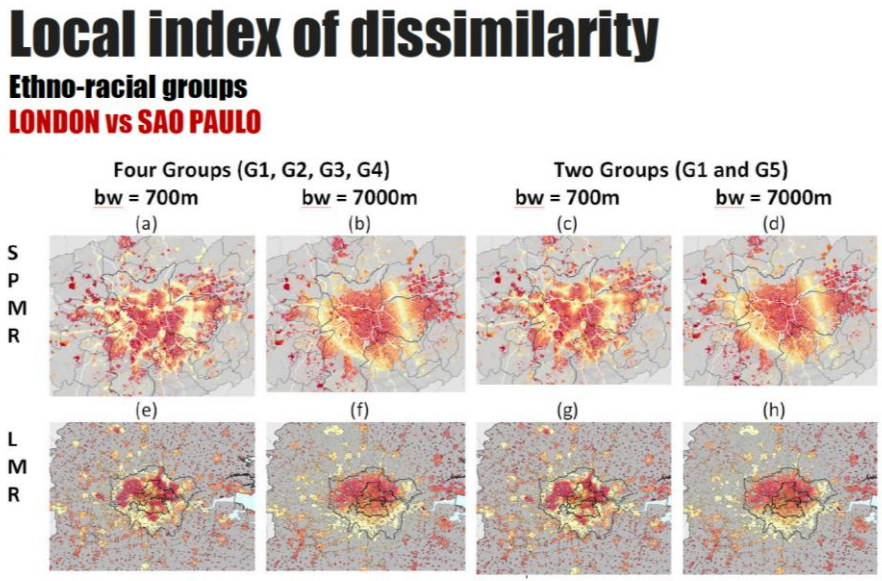
Research Projects

Work presented relates to two comparative urbanism research projects at CASA led by Professor Mike Batty-

RESOLUTION
RESILIENT SYSTEMS FOR LAND USE TRANSPORTATION

RESOLUTION
Joint Brazil-UK research project investigating accessibility inequalities and segregation in London and Sao Paulo. Funded by FAPESP and ESRC. Completed 2018.

SIMITRI
New project investigating mega-cities and housing inequalities, focussed on Pearl River Delta in China.



Presentation Overview

1. London Trends and Study Area

2. Occupational Class and Gentrification

3. Accessibility and Residential Segregation

4. Policy Options for the London Region

1. London Growth Trends and Study Area

London Growth Overview

Greater London population continues to grow, 8.9 million 2018. Projected to reach 10 million by 2030 (GLA, 2016).

Between 2011-2016 GLA population grew by 600k (7.5%), with 300k of growth in Inner London. Inner London retains majority of London jobs (2.6 million / 60%).

Substantial expansion in public transport trips (although recent levelling). Decline in percentage of car trips, stable in absolute terms.

Top right graph from Housing in London Report 2019.
Bottom right graph from Travel in London Report 2019.

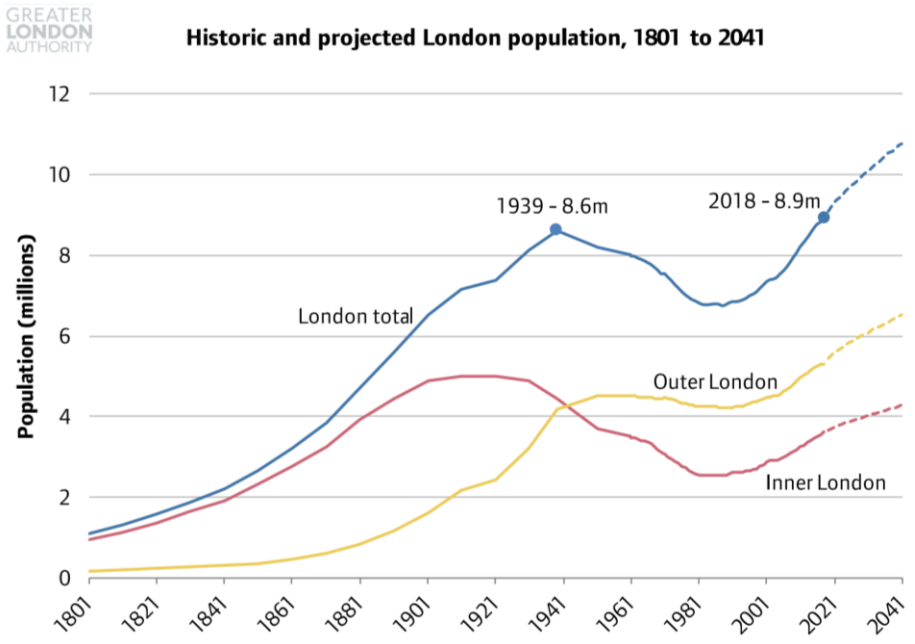
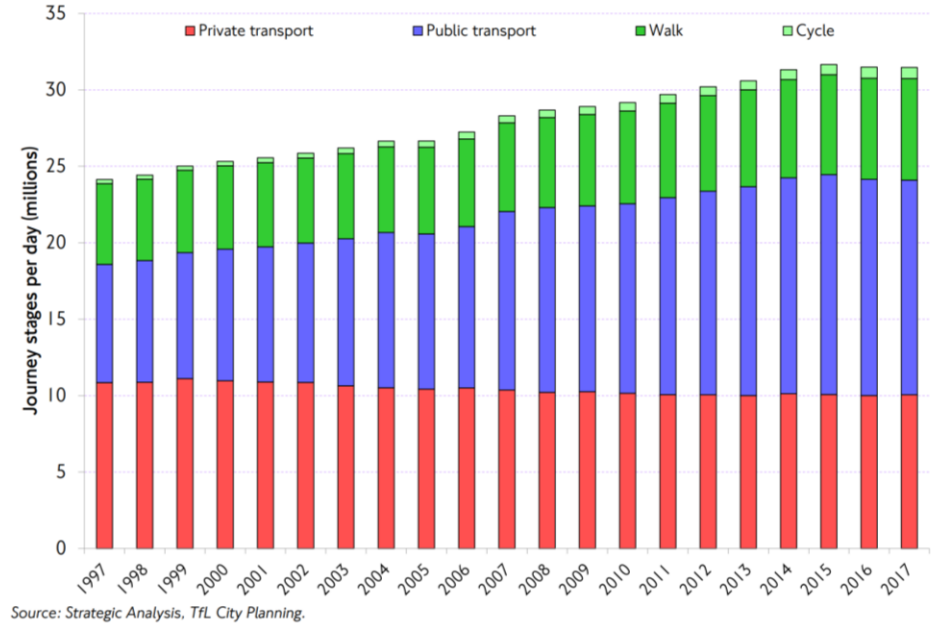
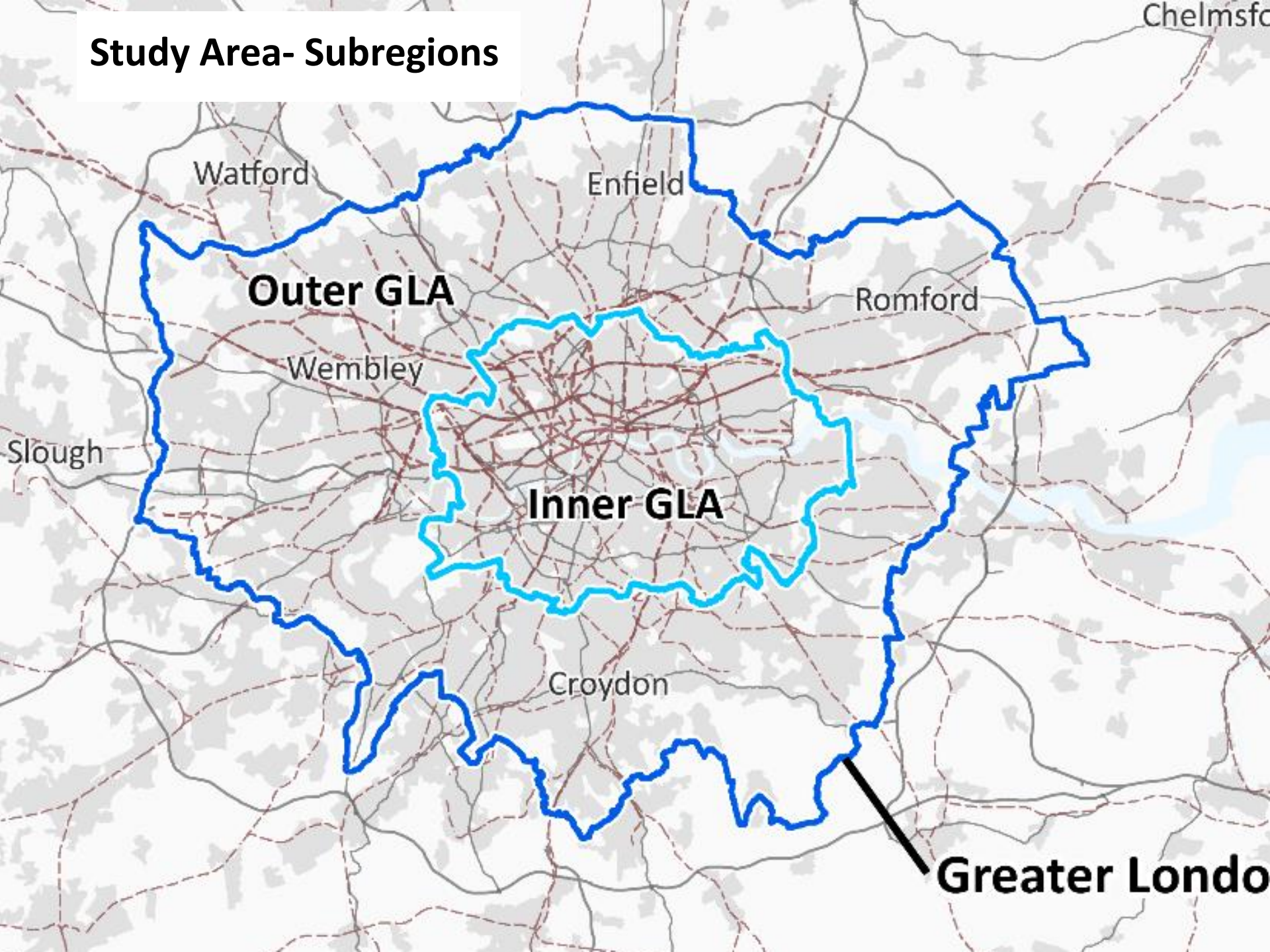


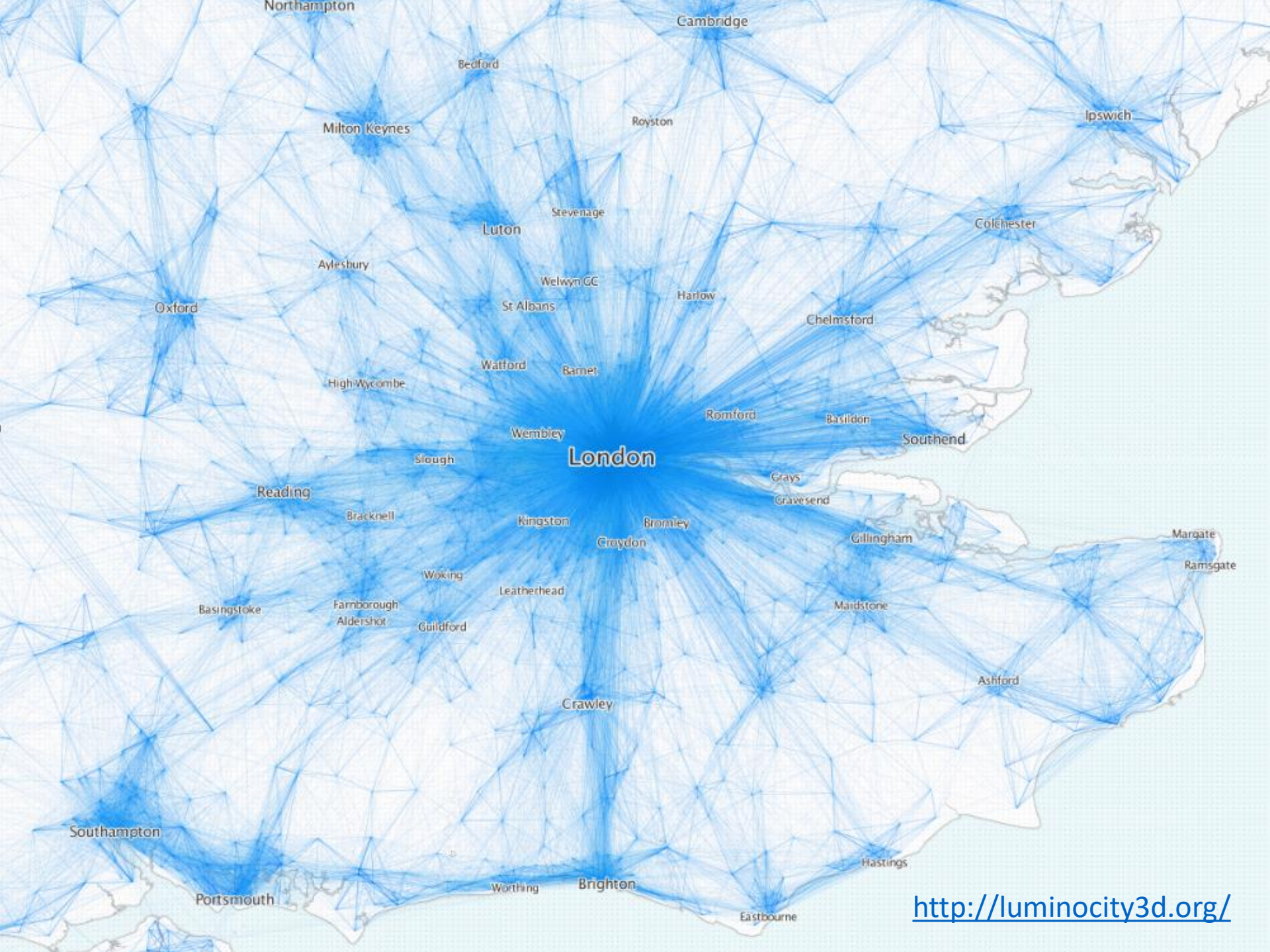
Figure 2.2 Aggregate travel volumes in Greater London. Estimated daily average number of journey stages, 1997-2017. Seven-day week.



Source: Strategic Analysis, TfL City Planning.

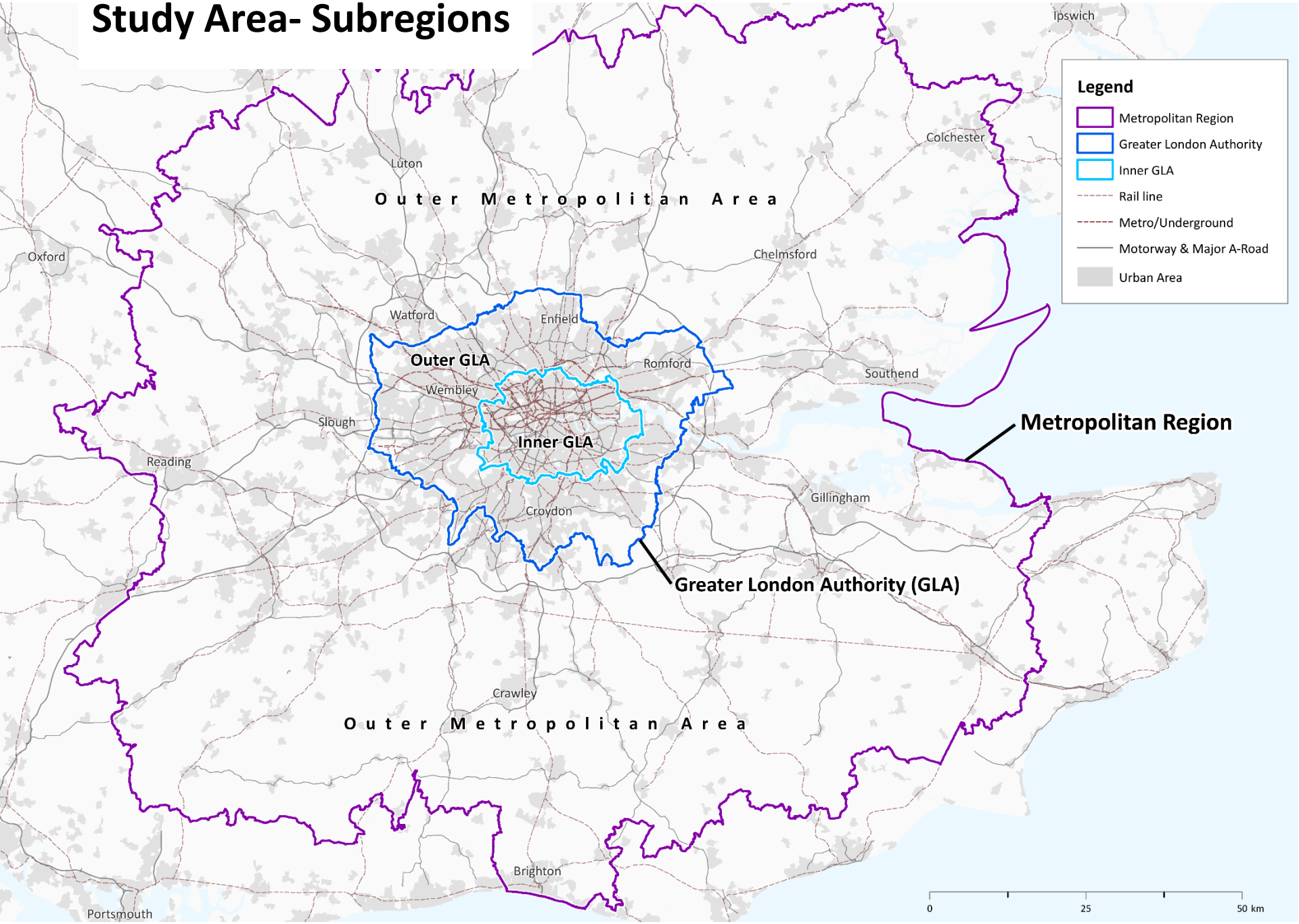
Study Area- Subregions





http://luminocity3d.org/

Study Area- Subregions



Population Growth by Sub-Region 2011-2016

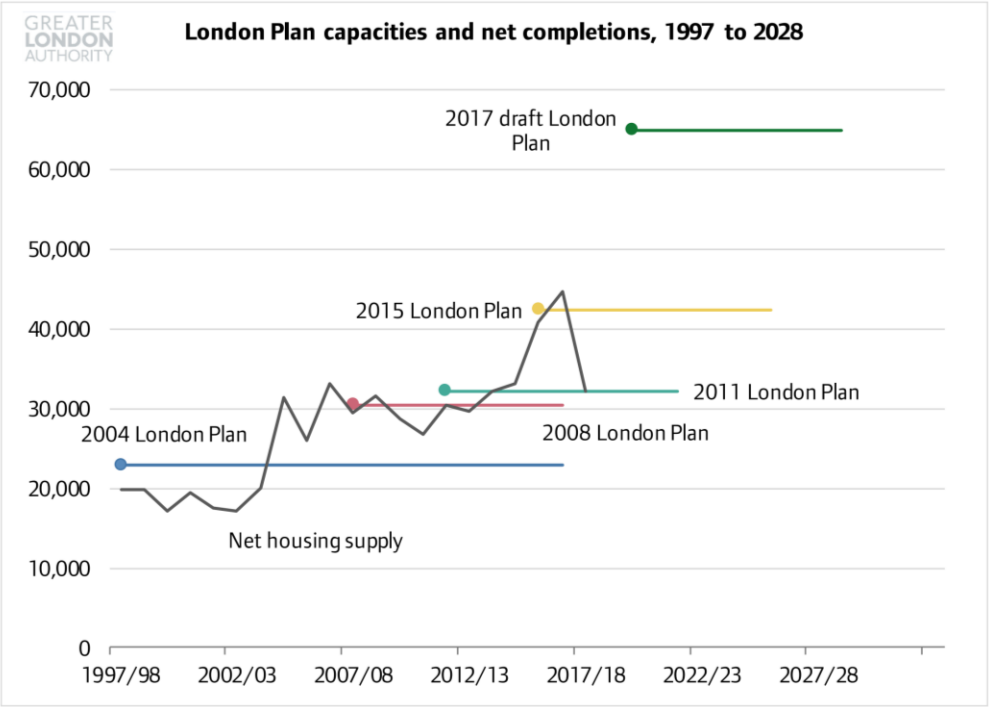
	Population 2011 (000's)	Population 2016 (000's)	Pop. Change 2011-2016 (000's)	Jobs by Workplace 2011 (000's)
Greater London Authority	8,159	8,773	+614 (7.5%)	4,496
Metropolitan Region	15,946	16,941	+995 (6.2%)	8,069
Inner GLA	3,224	3,523	+299 (9.3%)	2,662
Outer GLA	4,935	5,250	+315 (6.4%)	1,834
Outer Metro. Area	7,787	8,168	+382 (4.9%)	3,573

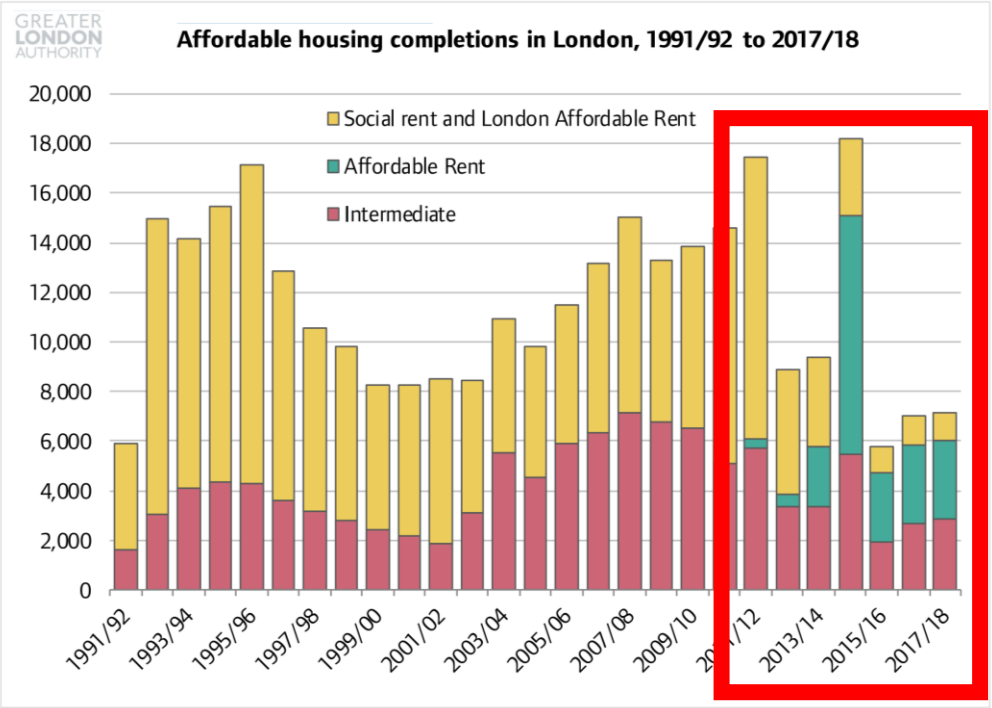
Housing Development

Housing completions steadily risen since the formation of the GLA. More ambitious targets in the current and forthcoming London Plans.

Affordable housing completions fallen massively during financial crisis and austerity periods. Also “Affordable Rent” (typically 80% market rate) and Intermediate housing typically not affordable for most of population.

Graphs from the [Housing London Report 2019](#) by GLA->

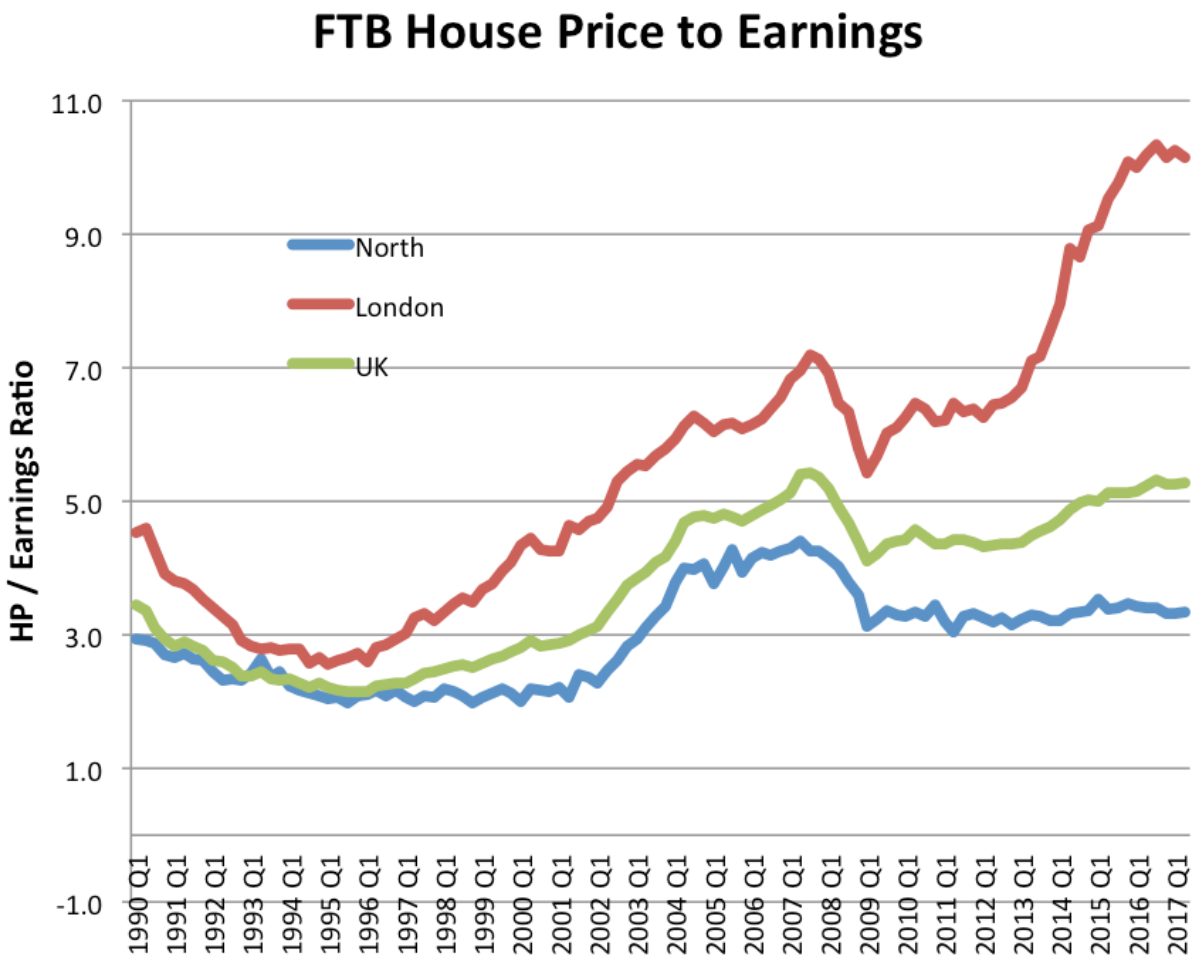




Affordability Crisis

Combination of continued population growth, financial crisis, austerity and lack of affordable housing had drastic impact on housing affordability in London since 2010.

What are the demographic impacts of these changes?



Data Source: Nationwide 2017

2. Occupational Class and Gentrification

Rationale for using Occupational Class

Would like to analyse residential patterns by income. No income data recorded in the UK census. Used occupational class (SOC) instead.

Arguments for using occupational class data as a substitute-

- Clear relationship with income, and other social class variables (e.g. education)
- Occupational class groups cluster residentially
- High quality data available through census (combine with travel behaviour, housing tenure) and Annual Population Survey dynamics

Problems with occupational class data-

- Considerable variation of income within classes
- Misses important trends such as self-employment, job security, gig-economy etc. Alternative approaches available (e.g. Savage et al. 2013, A New Model of Social Class).

Occupational Classes (SOC)

Standard Occupational Classification consists of the following major groups:

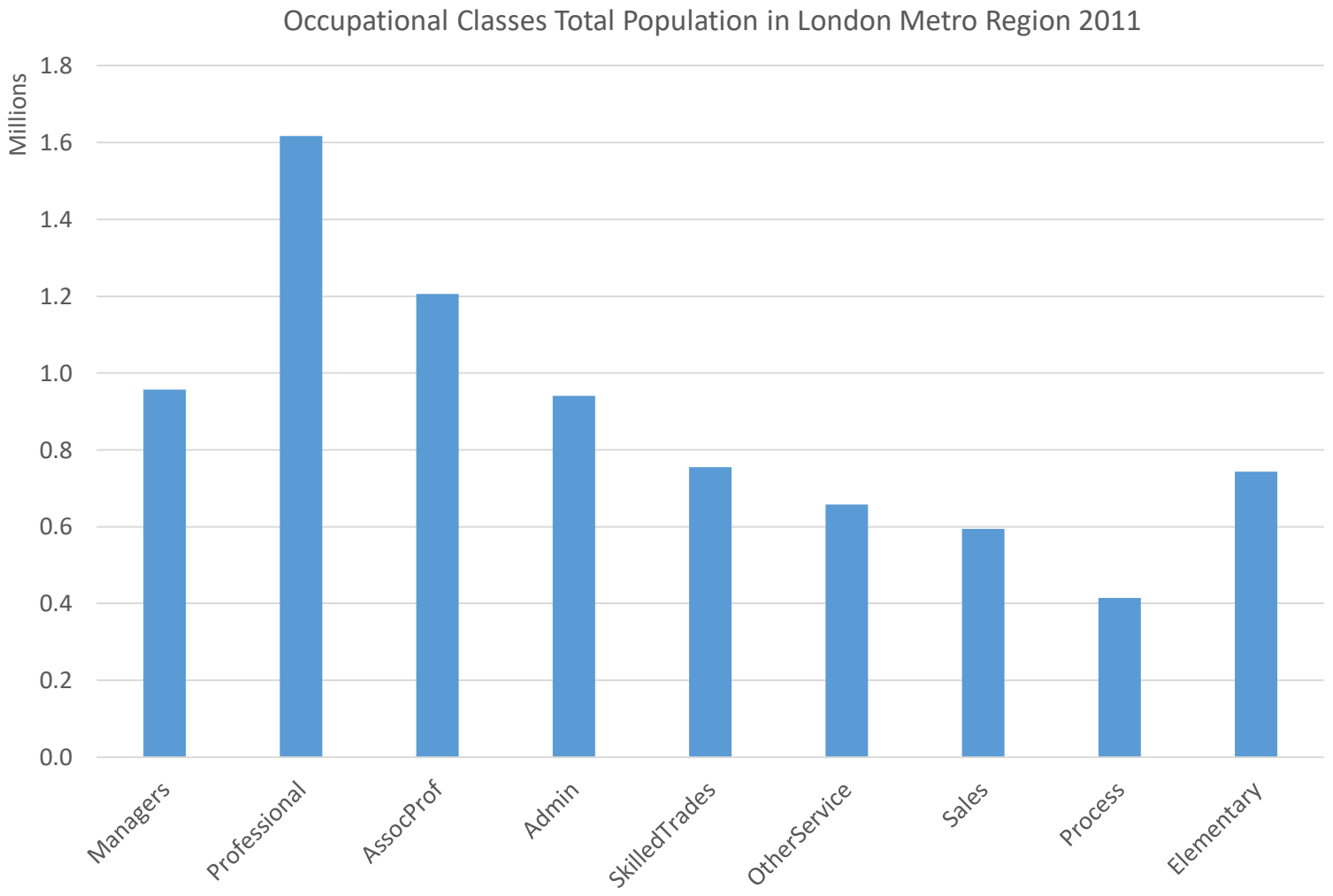
1. Managers, Directors and Senior Officials
2. Professional Occupations
3. Associate Professional and Technical Occupations
4. Administrative and Secretarial Occupations
5. Skilled Trades Occupations
6. Caring, Leisure and Other Service Occupations
7. Sales and Customer Service Occupations
8. Process, Plant and Machine Operatives
9. Elementary Occupations

Occupational Class and Income

Group Description	GLA % 2011	GLA Weekly Median Income 2016	Mean Age (2011)
1. Managers, directors and senior officials	12.7	**£ 1,125**	44
2. Professional occupations	22.8	**£ 824**	43
3. Associate professional and technical occ.	17.3	**£ 674**	41
4. Administrative and secretarial occupations	12.1	**£ 517**	43
5. Skilled trades occupations	7.8	**£ 522**	42
6. Caring, leisure and other service occ.	7.3	**£ 403**	40
7. Sales and customer service occupations	6.8	**£ 401**	34
8. Process, plant and machine operatives	4.6	**£ 560**	45
9. Elementary occupations	8.7	**£ 371**	38

Data Source: Annual Survey of Hours and Earnings 2016

Occupational Classes

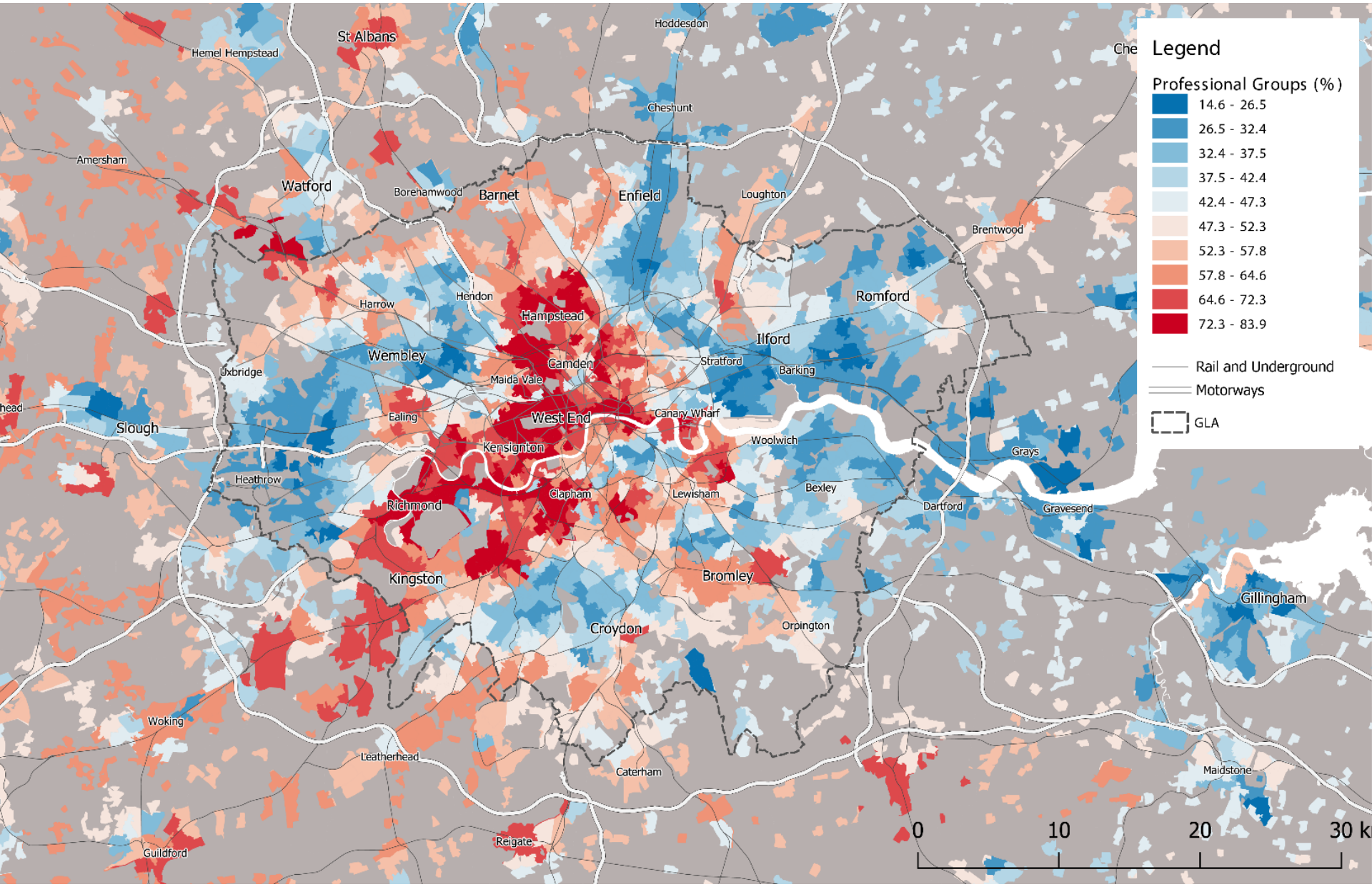


Occupational Classes Residential Correlation

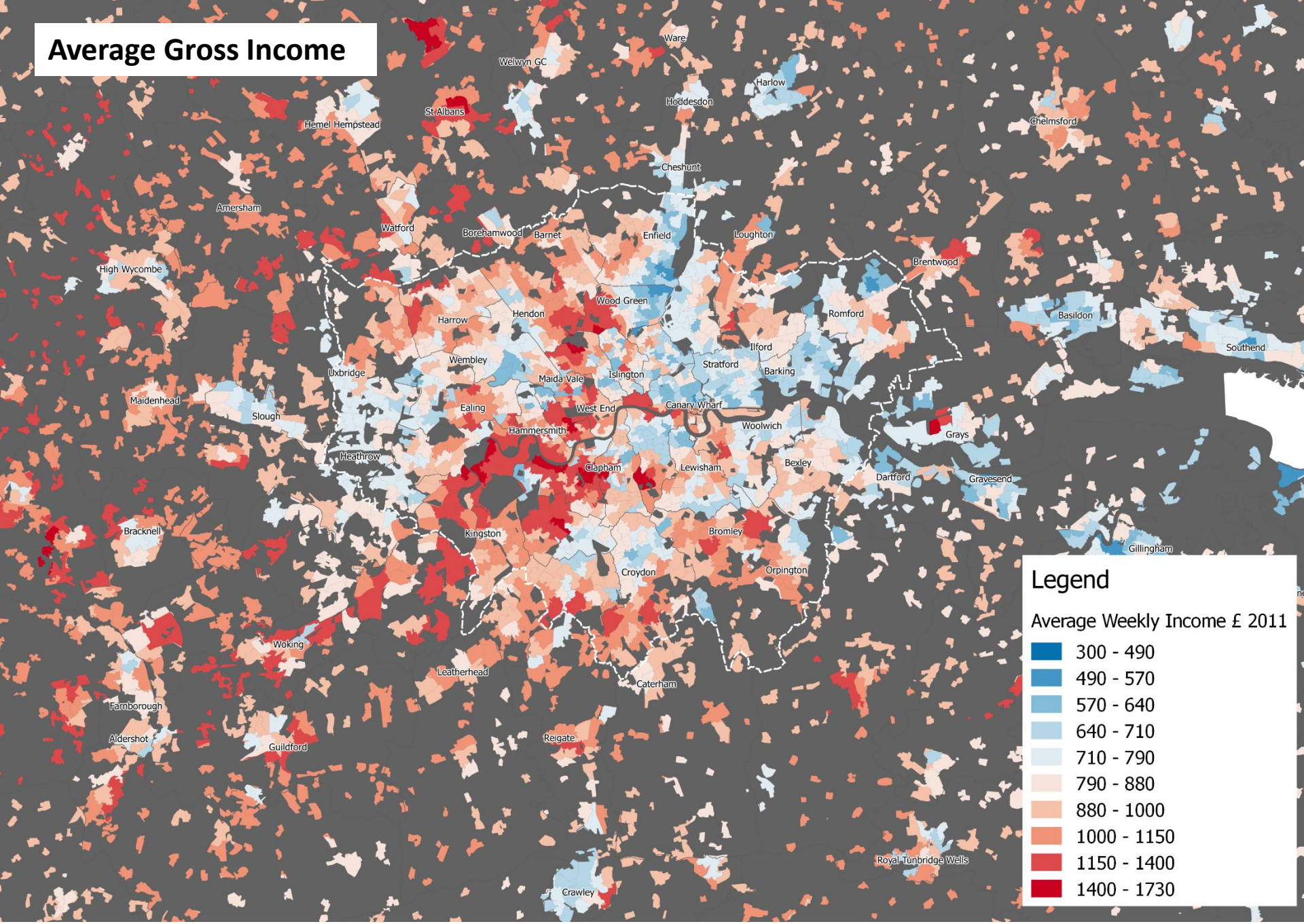
Pearson Correlation Matrix Between Occupational Classes by Residence 2011, MSOA scale-

	Manag	Prof	Assoc Prof	Admin	Skilled Trades	Other Serv	Sales	Process	Element
Manag	1	0.76**	0.79**	0.23**	-0.26**	-0.23**	-0.26**	-0.40**	-0.38**
Prof	0.76**	1	0.87**	0.23**	-0.31**	-0.16**	-0.13**	-0.42**	-0.23**
AssocP	0.79**	0.87**	1	0.36**	-0.12**	-0.02*	-0.05*	-0.28**	-0.14**
Admin	0.23**	0.23**	0.36**	1	0.61**	0.55**	0.50**	0.39**	0.25**
SkilledT	-0.26**	-0.31**	-0.12**	0.61**	1	0.80**	0.70**	0.80**	0.66**
OtherS	-0.23**	-0.16**	-0.02*	0.55**	0.80**	1	0.74**	0.69**	0.70**
Sales	-0.26**	-0.13**	-0.05*	0.50**	0.70**	0.74**	1	0.73**	0.81**
Process	-0.40**	-0.42**	-0.28**	0.39**	0.80**	0.69**	0.73**	1	0.81**
Element	-0.38**	-0.23**	-0.14**	0.25**	0.66**	0.70**	0.81**	0.81**	1

Occupational Class- Professional Groups 2011



Average Gross Income



Occupational Class 2011 Summary

Considerable residential segregation by occupational class in London. Three professional classes strongly correlated in terms of residential geography.

Mapping analysis shows professional concentrations in Inner London, radial sectors to north-west and south-west Outer London, and beyond the GLA boundary.

Occupational Class Change

We have considered occupational class distribution in 2011. What about more recent years? Can use Annual Population Survey (local authority level).

Change occurring across UK- evolution towards knowledge economy. So we are interested in how patterns in areas London differ from patterns for the UK and the London Region as a whole.

Occupational Class Residential Patterns 2011

Table 4: Sub-Regional Occupational Class Percentages by Residence 2011

	Manag	Prof	Assoc Prof	Admin	Skilled Trades	Other Serv	Sales	Process	Element
Inner GLA	12.4	25.3	19.4	9.8	6.3	7.2	6.7	3.4	9.4
Outer GLA	11.1	20.5	14.1	12.9	9.7	8.3	8.0	5.6	9.8
OMA	12.7	18.5	14.3	12.2	10.9	8.8	7.6	5.8	9.2
Metro. Reg.	12.1	20.5	15.3	11.9	9.6	8.3	7.5	5.3	9.4
Great Britain	10.9	17.5	12.8	11.5	11.4	9.3	8.4	7.2	11.1

Data source: Census 2011 (Office for National Statistics, 2016).

Occupational Class Change 2006-2016

Table 6: Sub-Regional Occupational Class Percentage Point Change by Residence 2006-2016 (final 2016 sub-regional percentages in brackets)

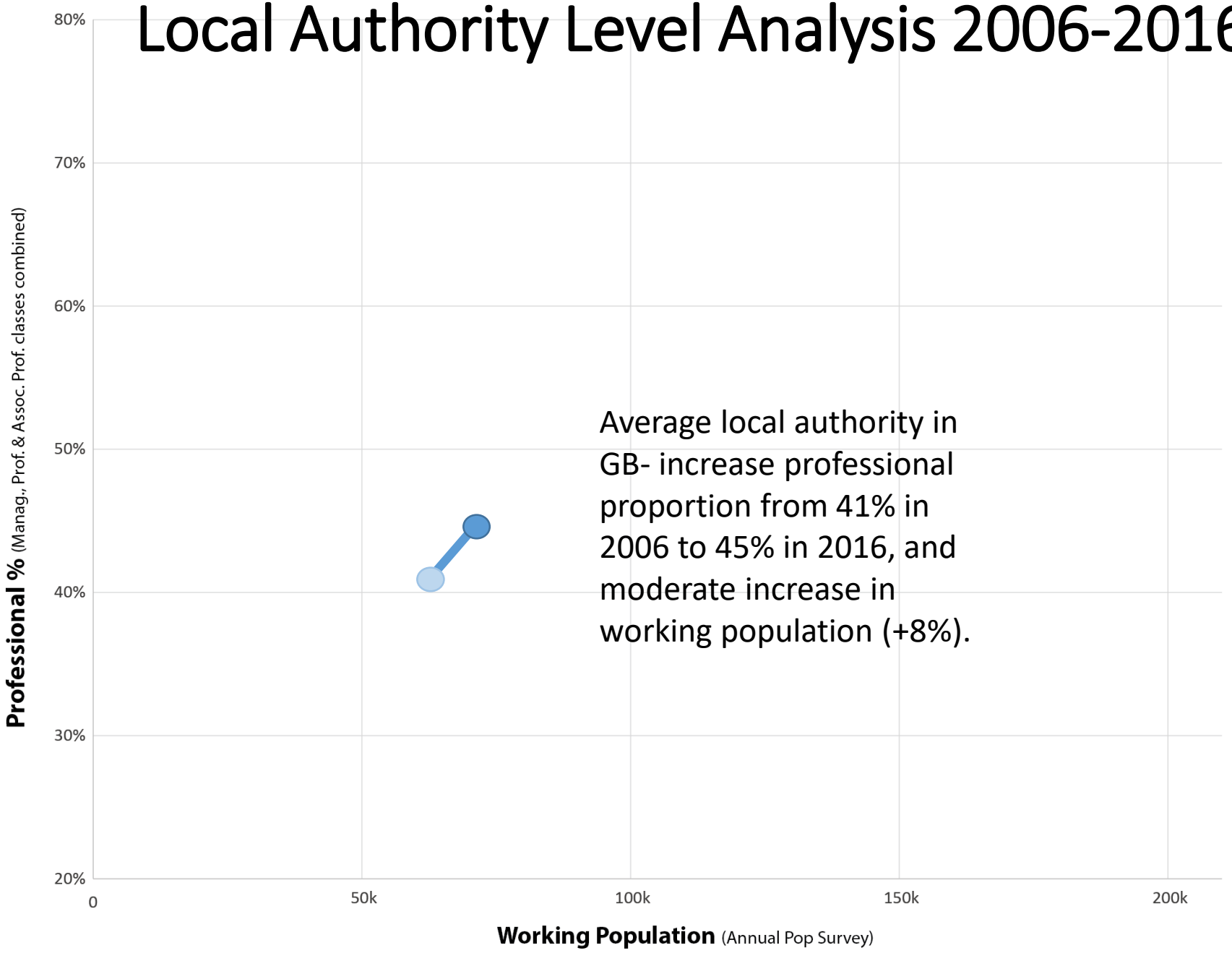
	Manag	Prof	Assoc Prof	Admin	Skilled Trades	Other Serv	Sales	Process	Element
Inner GLA	+2.2 (13.4)	+3.3 (27.1)	+0.7 (20.9)	-3.2 (8.2)	-1.3 (5.3)	-0.1 (6.7)	-0.1 (6.3)	-0.6 (3.1)	-0.6 (8.4)
Outer GLA	+0.4 (11.2)	+2.6 (23.4)	-0.8 (15.1)	-4.0 (10.7)	-0.5 (8.9)	+1.0 (8.2)	-0.4 (7.1)	+0.5 (5.4)	+1.5 (9.7)
OMA	+1.2 (11.9)	+2.2 (20.7)	+0.6 (15.5)	-1.7 (11.4)	-0.5 (10.6)	+0.9 (8.9)	-0.7 (7.2)	-0.7 (5.2)	-1.1 (8.7)
Metro. Reg.	+1.2 (12.0)	+2.7 (23.1)	+0.3 (16.6)	-2.9 (10.4)	-0.8 (8.8)	+0.7 (8.2)	-0.5 (7.0)	-0.3 (4.8)	-0.2 (8.9)
Grt. Britain.	+1.0 (10.6)	+2.6 (20.3)	+1.1 (14.4)	-2.4 (10.2)	-1.2 (10.3)	+1.0 (9.2)	-0.8 (7.5)	-1.0 (6.3)	-0.4 (10.7)

Data source: Annual Population Survey 2005-2017 (Office for National Statistics, 2018).

Inner London has increasing proportions of professional classes, faster rate than region & UK. Total prof. 55% in 2006, to 61.4% in 2016. Proportional losses in all other classes.

Opposite pattern in Outer London. Fits “suburbanisation of deprivation” argument, made by Travers, Sims, Bosetti (2016), Housing and Inequality in London, Centre for London.

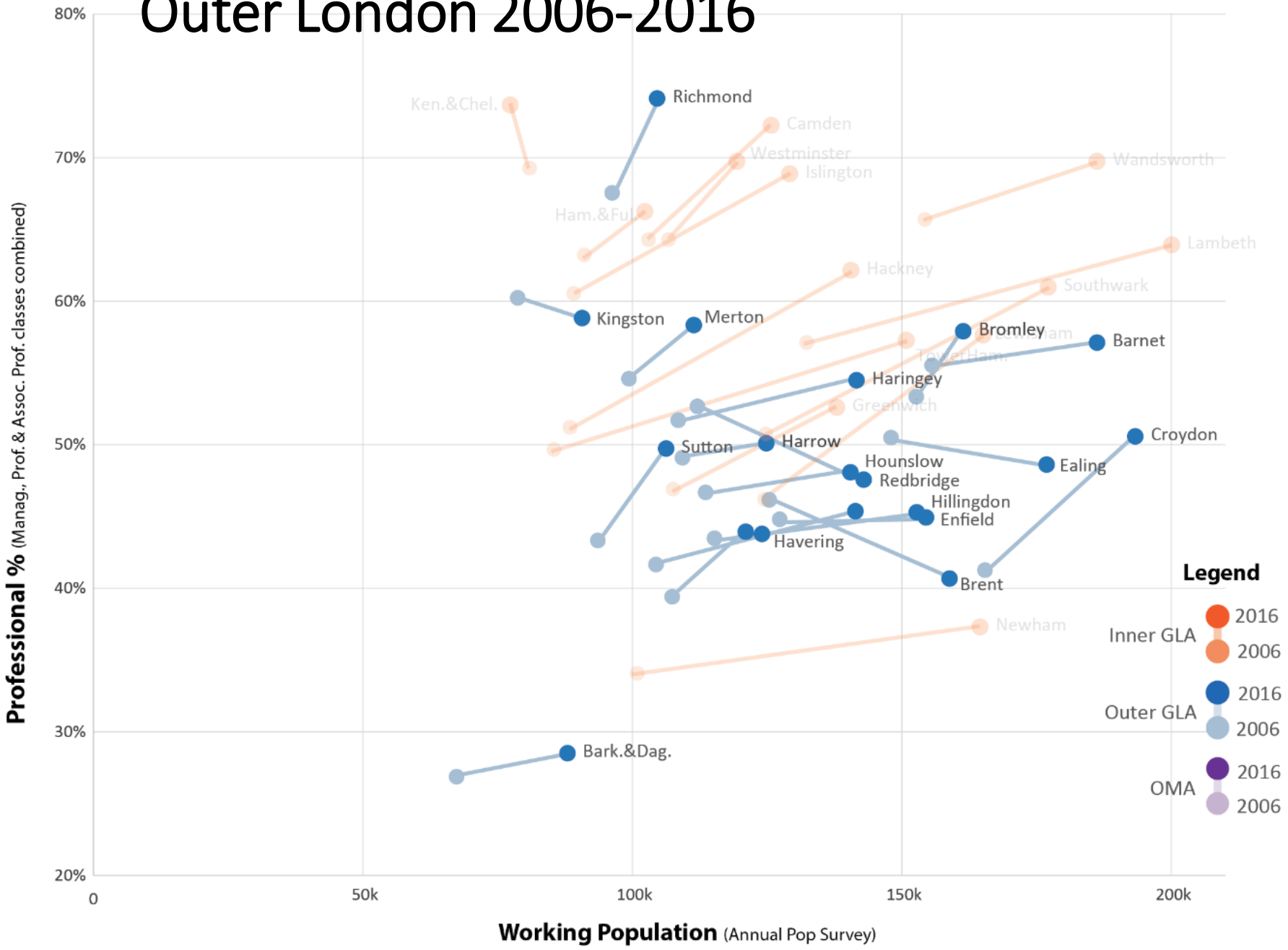
Local Authority Level Analysis 2006-2016

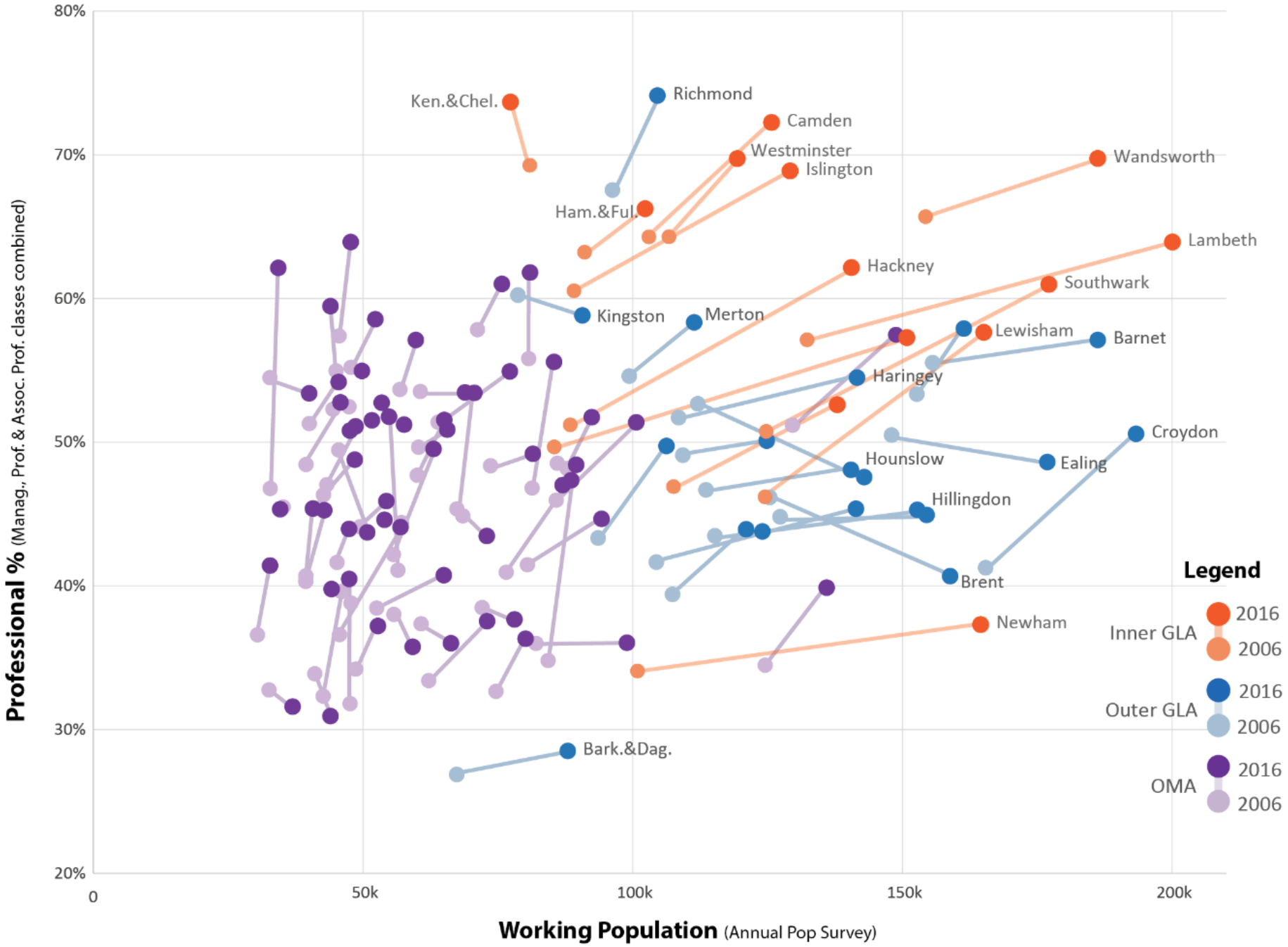


Average local authority in GB- increase professional proportion from 41% in 2006 to 45% in 2016, and moderate increase in working population (+8%).

Inner London 2006-2016

Outer London 2006-2016




80%
70%
60%
50%
40%
30%
20%
0
50k
100k
150k
200k
Professional % (Manag., Prof. & Assoc. Prof. classes combined)
Working Population (Annual Pop Survey)
Ken.&Chel.
Richmond
Camden
Westminster
Islington
Ham.&Ful.
Wandsworth
Lambeth
Hackney
Southwark
Kingston
Merton
Lewisham
Barnet
Haringey
Croydon
Hounslow
Ealing
Hillingdon
Brent
Newham
Bark.&Dag.
Legend
Inner GLA
2016
2006
Outer GLA
2016
2006
OMA
2016
2006

Income & Inequality Overview- London

Strong Regional Geography of Professional Classes
Most affluent groups concentrated in Inner London, with radial sectors of affluence extending to suburbs. Additionally East-West split, and higher incomes outside of the GLA.

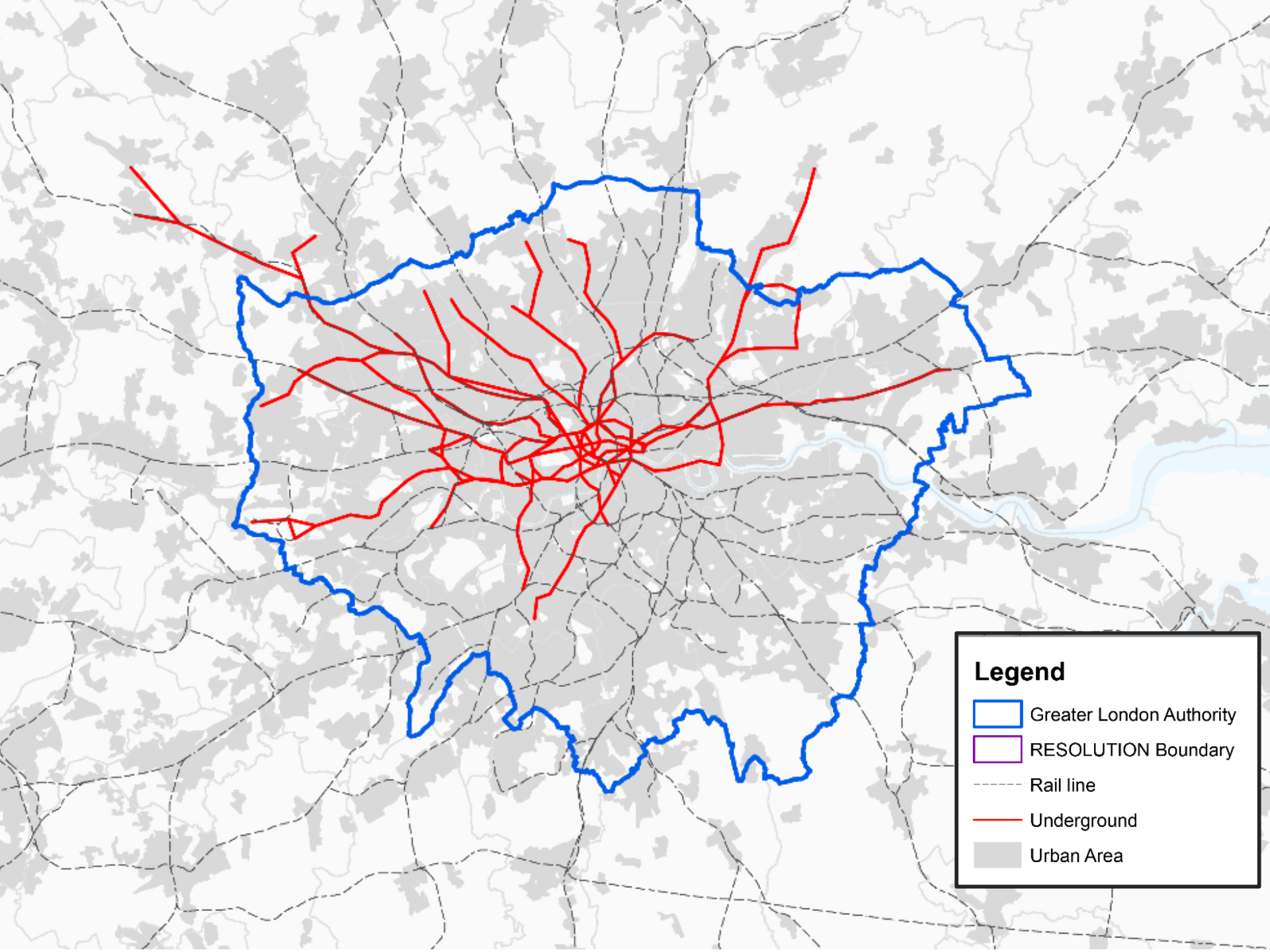
Gentrification Patterns are Exacerbating Residential Segregation
Recent changes showing increasing proportions of most affluent classes in Inner London, and decreasing proportions of less affluent groups. Significant population growth in inner boroughs indicating new-build gentrification processes.

Inner London now 62% from professional classes (some boroughs 70%+). Overall patterns indicate sub-regional segregation by occupational class increasing.

3. Accessibility and Residential Segregation

Given growth, gentrification and patterns of segregation by occupational class in Inner London, can anticipate resulting differences in accessibility for different classes.

Transit networks highly radial in London, while employment and many other opportunities strongly concentrated in Inner London. Inner London also better environment for walking and cycling.


Legend
Greater London Authority
RESOLUTION Boundary
Rail line
Underground
Urban Area

Commuting Patterns by Occupational Class

Car trips not strongly linked to affluence (relate to percentage of jobs in Inner London). Instead the main patterns are wealthy groups using rail/metro (more likely to work in Inner GLA) while less affluent groups more likely to use bus and walk.

Table 3: London Metro Region Journey-to-Work Main Mode[1] by Occupational Class 2011

	Car	Rail & Metro	Bus	Walking	Cycling	Other	Average Distance (km)[2]	Jobs % in Inner GLA
1.Manag	53.7	29.1	5.1	6.8	2.9	2.3	15.0	37.9
2.Prof	46.7	33.7	6.2	7.5	4.4	1.6	13.7	41.6
3.AssocP	43.2	37.0	6.2	6.9	4.2	2.4	14.7	43.5
4.Admin	48.2	29.2	10.3	9.4	1.8	0.9	11.6	35.3
5.SkilledT	68.0	15.5	6.2	5.2	2.8	2.2	12.6	18.7
6.OtherS	52.4	12.7	15.1	16.3	2.2	1.3	8.5	22.4
7.Sales	42.2	18.7	19.3	16.6	2.0	1.1	8.6	25.4
8.Process	69.4	9.0	6.2	5.5	2.8	7.1	11.5	17.9
9.Element	42.2	16.9	19.1	15.9	4.1	2.0	9.0	25.9
Metro. Reg.	50.1	25.4	9.7	9.5	3.3	2.0	12.3	33.0

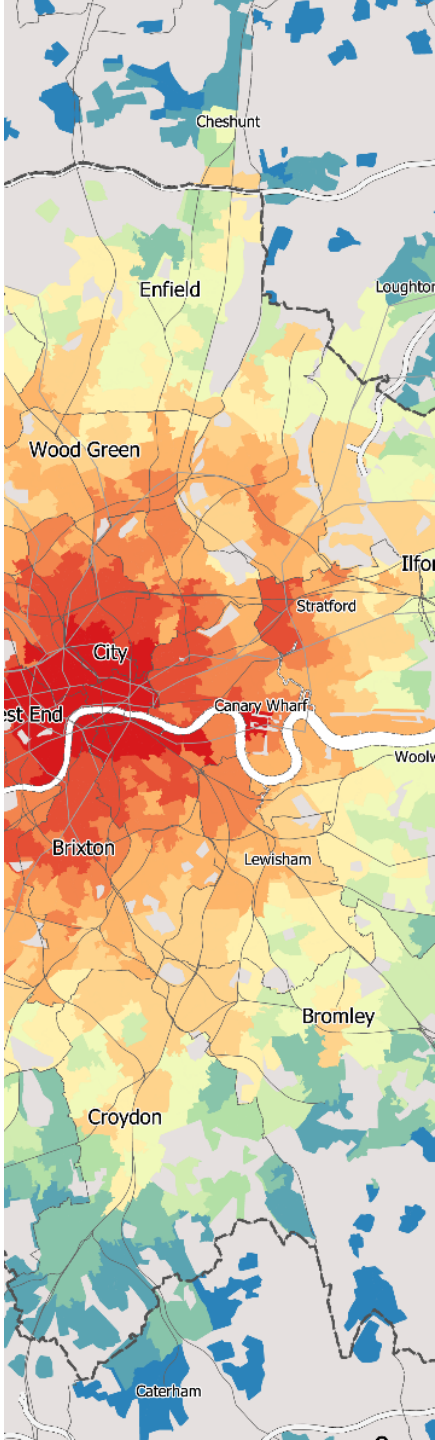
Accessibility Modelling

Decided to focus on commuting and accessibility to jobs. Strong links to residential location (but more comprehensive analysis would consider other types of trips: education, health etc.).

Why Not Use PTALs?
TfL produce PTAL measure, access to public transport stations/stops. Very useful, but limitations for this research:

- PTALs do not consider access ***through*** transit services to opportunities (jobs, shops, education…);
- Want a more flexible and open methodology for researchers;
- Want to consider more affordable options (bus, walking) in isolation for equity analysis.

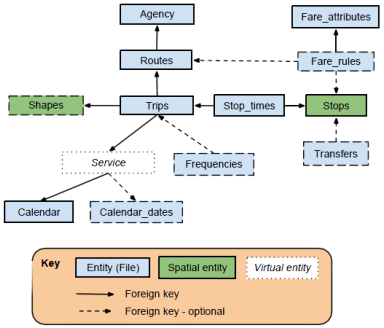
Place-Based and Person-Based Accessibility Measures
Location-based accessibility analysis produces place measures. To consider accessibility by occupational classes, we need person-based measures. This is achieved by weighting location results according to population distributions. Have to use census year 2011, as need occupational class data at small area (MSOA) scale.



Accessibility Modelling Methods

Transit Timetable, Stations and Street Network

Calculate journey cost from all origins to all destinations by multiple transport modes, combine with opportunity destinations.



Open Data and OpenTripPlanner

Key data inputs for accessibility modelling are street network and stops and the public transport timetable. Timetable data from UK Department for Transport (converted by Dr Richard Milton at CASA). Street network from Ordnance Survey Open Roads.

OpenTripPlanner popular transit accessibility modelling tool, used for this research.

OpenTripPlanner

Accessibility Modelling Aspects

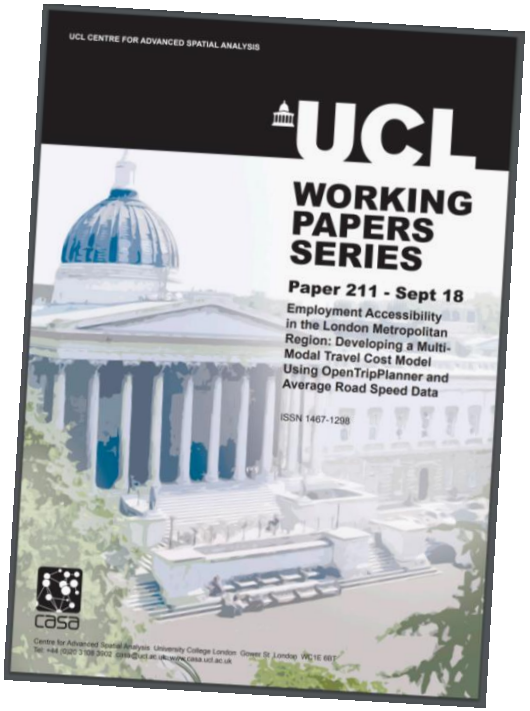
Morning Peak Only
This model has been run for the morning peak only. Most common commuting time. More comprehensive analysis needs to consider part-time, shift work outside peak periods, as often greater inequalities by transit outside of peak periods.

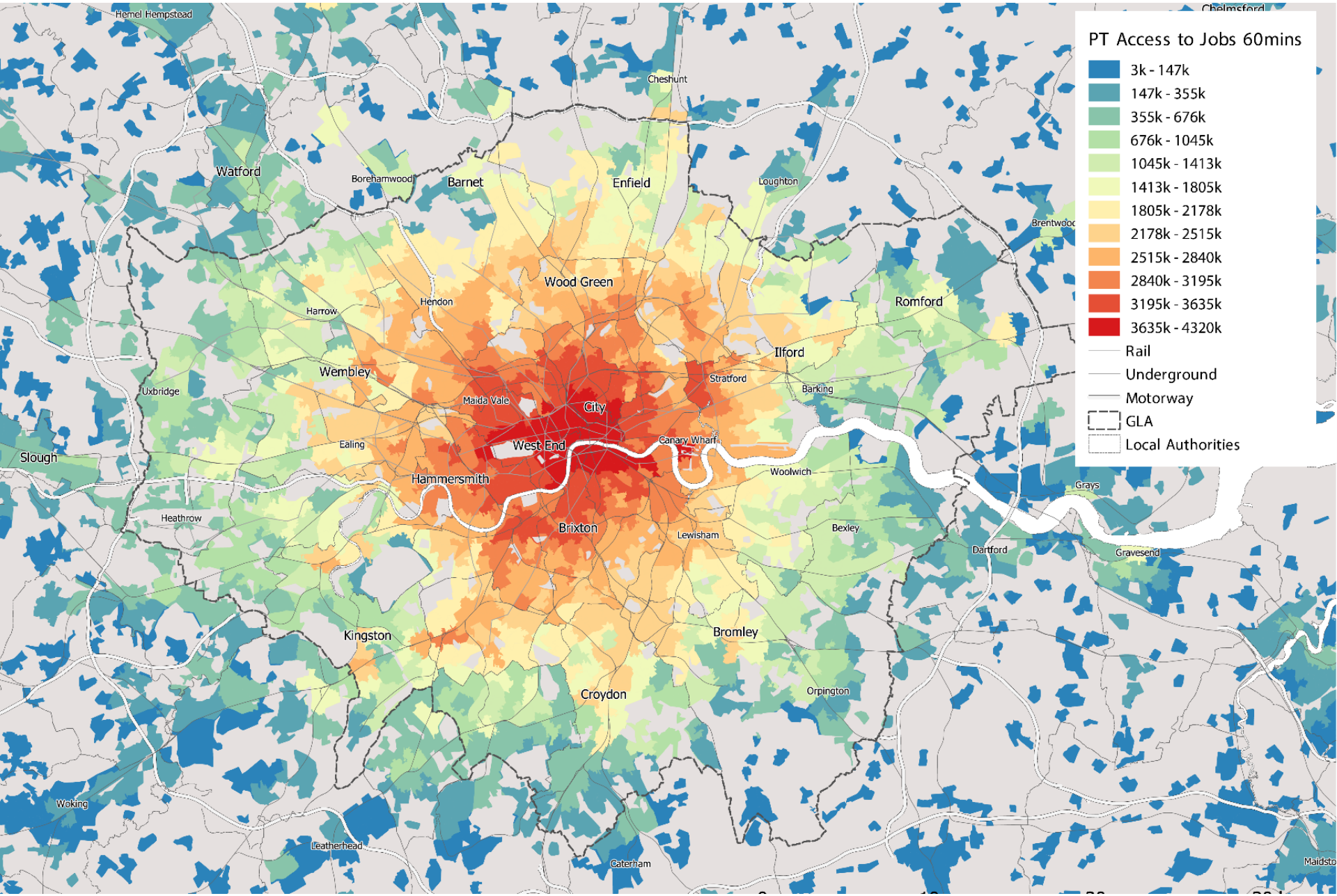
Travel Time Based, Rather than Fares
Generalised cost used in some aspects of modelling (e.g. prefer in-vehicle time to waiting and walking) but model does not include fares. Some consideration of this through modelling more affordable modes (bus, walk) independently.

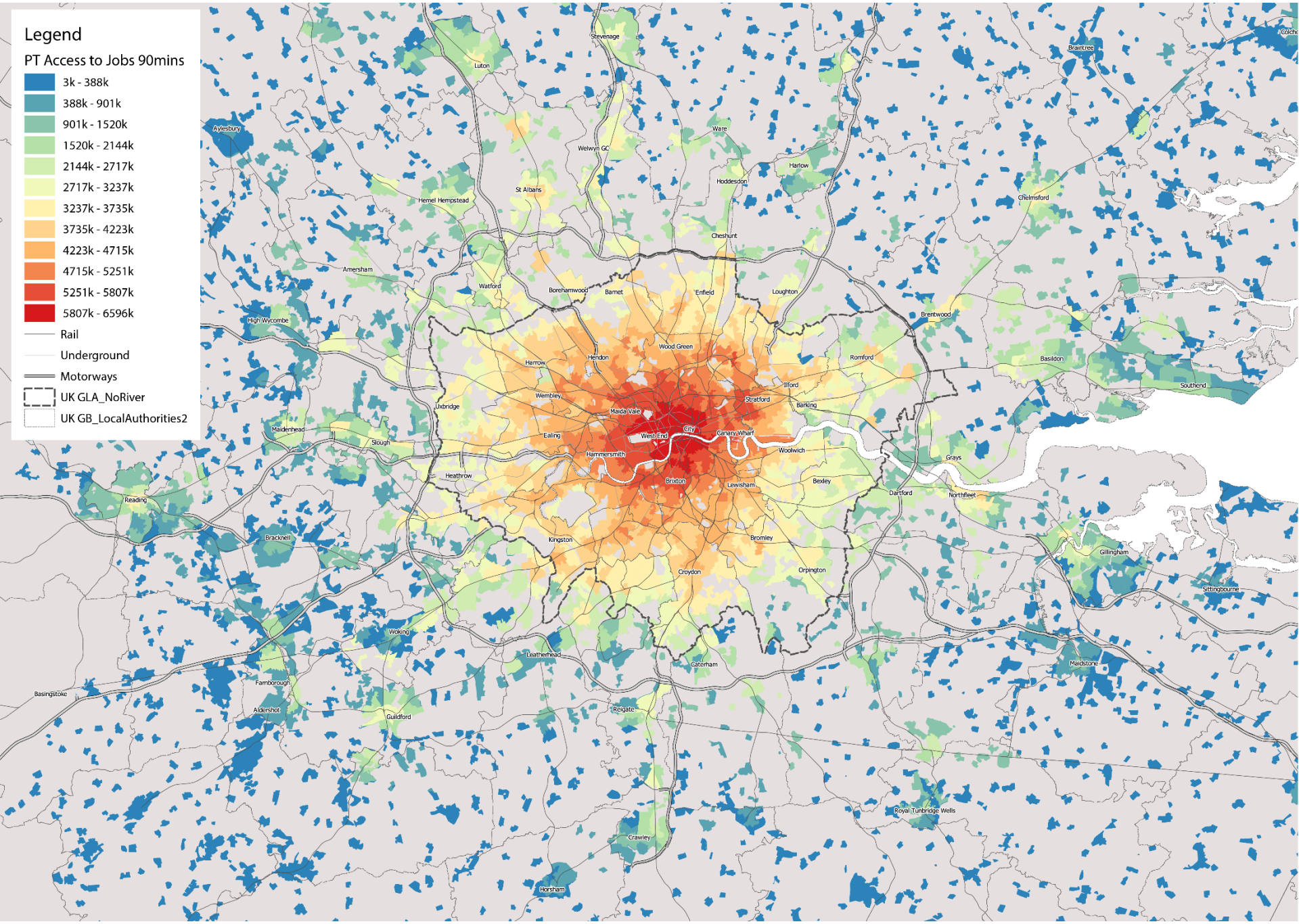
Temporal Variation
Accessibility can change minute by minute in relation to service frequency. Model calculated as Average of queries at 15 minute intervals across morning peak.

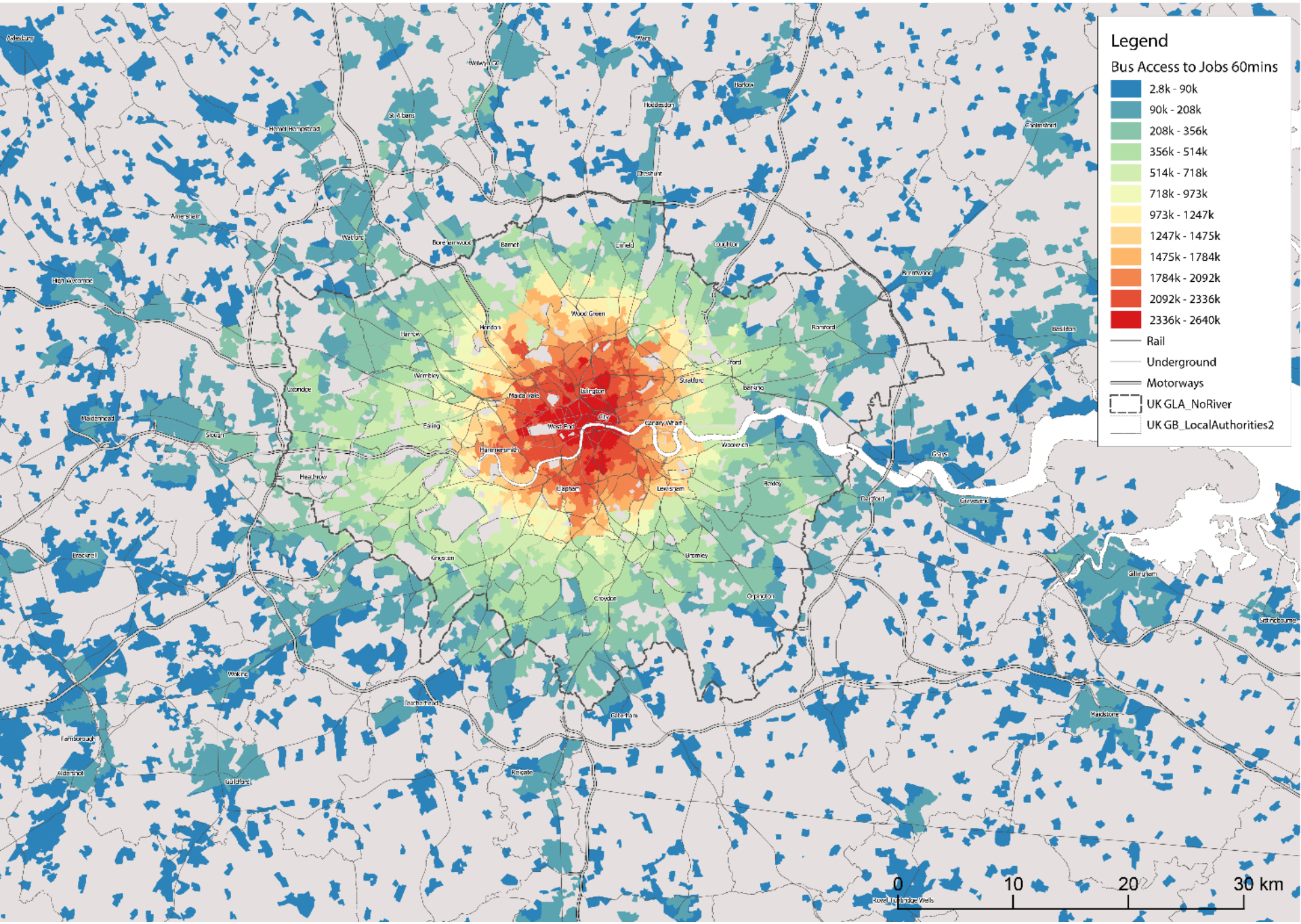
Full details of accessibility modelling method in working paper-

https://www.ucl.ac.uk/bartlett/casa/publications/2018/sep/casa-working-paper-211




PT Access to Jobs 60mins
3k - 147k
147k - 355k
355k - 676k
676k - 1045k
1045k - 1413k
1413k - 1805k
1805k - 2178k
2178k - 2515k
2515k - 2840k
2840k - 3195k
3195k - 3635k
3635k - 4320k
Rail
Underground
Motorway
GLA
Local Authorities
Hemel Hempstead
Watford
Borehamwood
Barnet
Cheshunt
Enfield
Loughton
Brentwood
Wood Green
Hendon
Harrow
Romford
Ilford
Wembley
Uxbridge
Stratford
Barking
Maida Vale
City
Ealing
West End
Canary Wharf
Slough
Hammersmith
Woolwich
Grays
Heathrow
Brixton
Lewisham
Bexley
Dartford
Gravesend
Kingston
Bromley
Croydon
Orpington
Woking
Leatherhead
Caterham

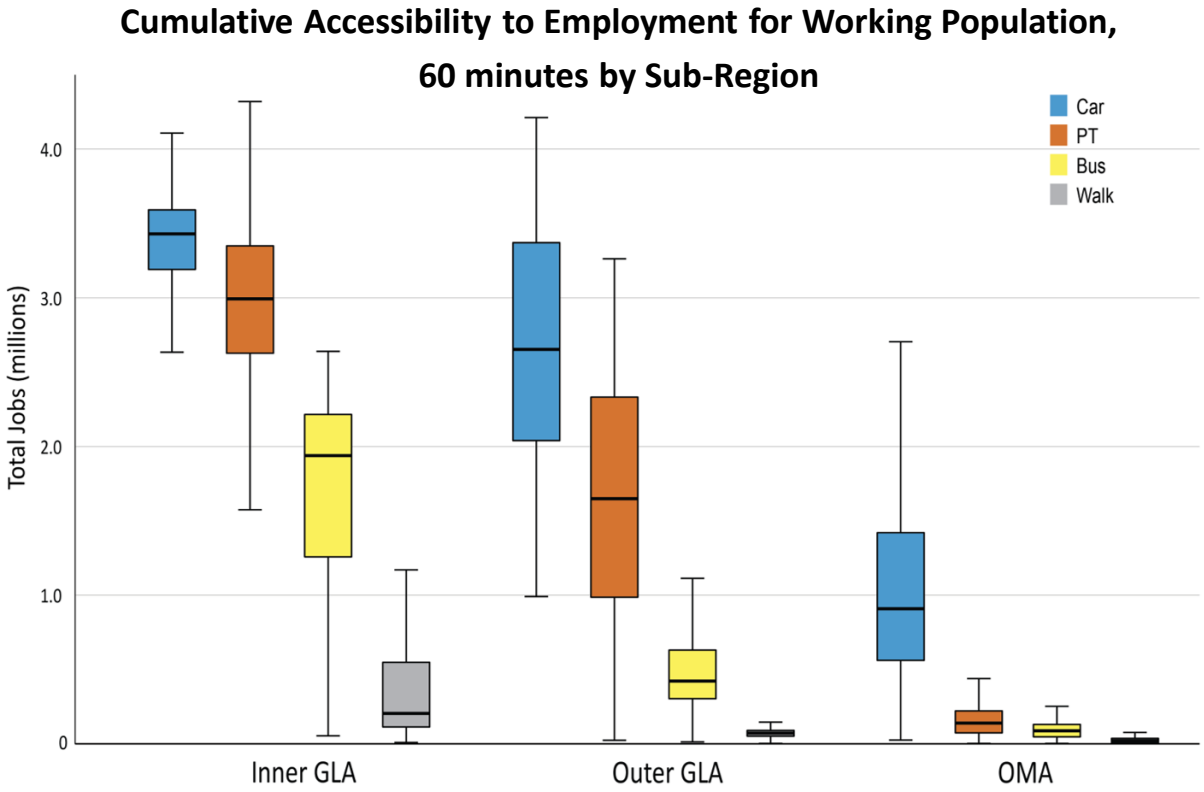

Legend
PT Access to Jobs 90mins
3k - 388k
388k - 901k
901k - 1520k
1520k - 2144k
2144k - 2717k
2717k - 3237k
3237k - 3735k
3735k - 4223k
4223k - 4715k
4715k - 5251k
5251k - 5807k
5807k - 6596k
Rail
Underground
Motorways
UK GLA_NoRiver
UK GB_LocalAuthorities2
Stevenage
Luton
Aylesbury
Welwyn GC
Ware
Harlow
Hoddesdon
St Albans
Hemel Hempstead
Chelmsford
Cheshunt
Amersham
Watford
Borehamwood
Barnet
Enfield
Loughton
Brentwood
High Wycombe
Wood Green
Harrow
Hendon
Romford
Basildon
Wembley
Ilford
Southend
Uxbridge
Maida Vale
Stratford
Barking
Maidenhead
Ealing
West End
City
Canary Wharf
Slough
Hammersmith
Woolwich
Grays
Heathrow
Brixton
Lewisham
Bexley
Reading
Dartford
Northfleet
Bracknell
Kingston
Bromley
Gillingham
Croydon
Orpington
Sittingbourne
Woking
Leatherhead
Caterham
Maidstone
Farnborough
Basingstoke
Aldershot
Guildford
Reigate
Royal Tunbridge Wells
Crawley
Horsham


Legend
Bus Access to Jobs 60mins
2.8k - 90k
90k - 208k
208k - 356k
356k - 514k
514k - 718k
718k - 973k
973k - 1247k
1247k - 1475k
1475k - 1784k
1784k - 2092k
2092k - 2336k
2336k - 2640k
Rail
Underground
Motorways
UK GLA_NoRiver
UK GB_LocalAuthorities2
0
10
20
30 km

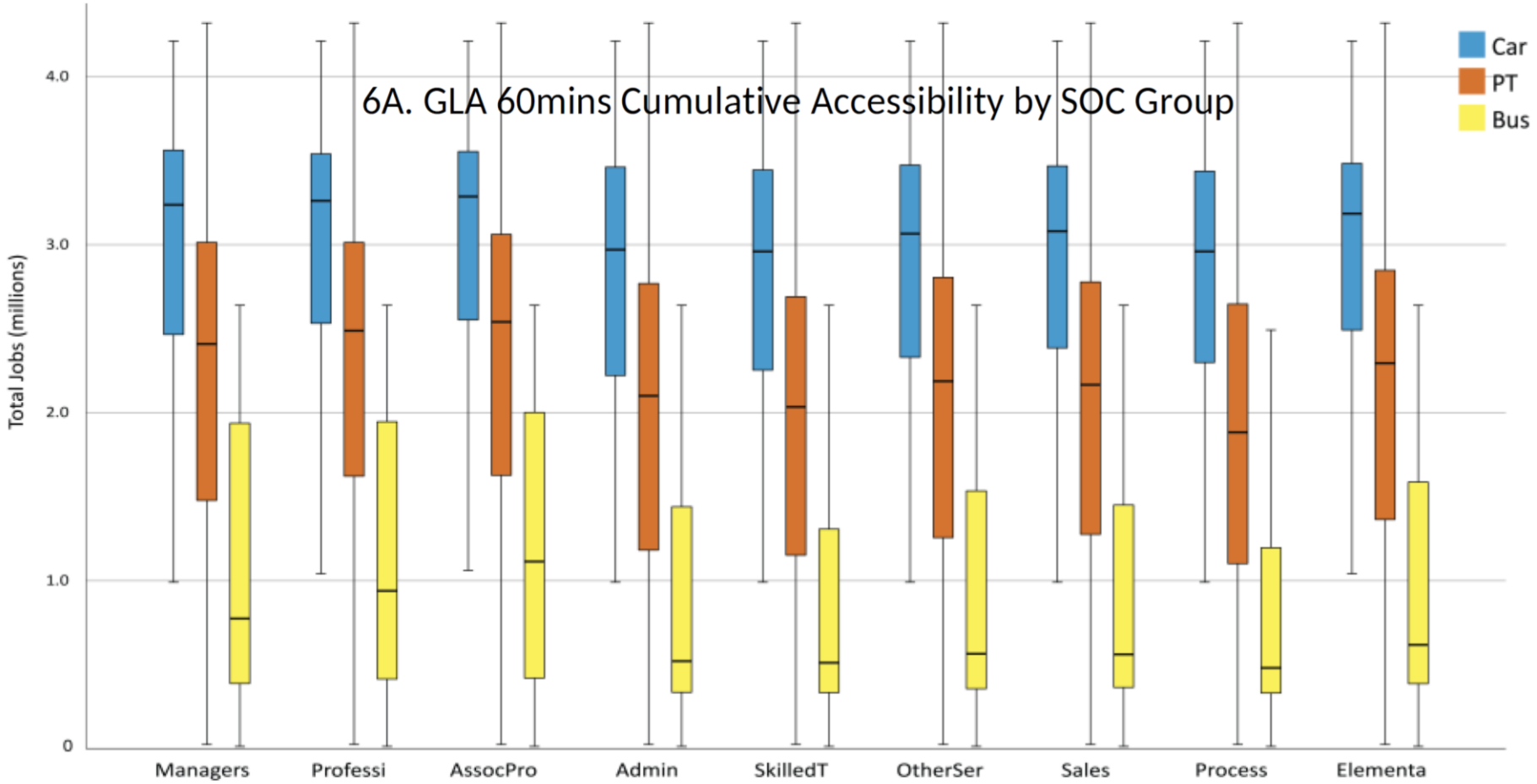
Place-Based to Population Based Accessibility by Sub-Region

Converting place-based measure to population-based measure produces a distribution of accessibilities for each population group for each mode.

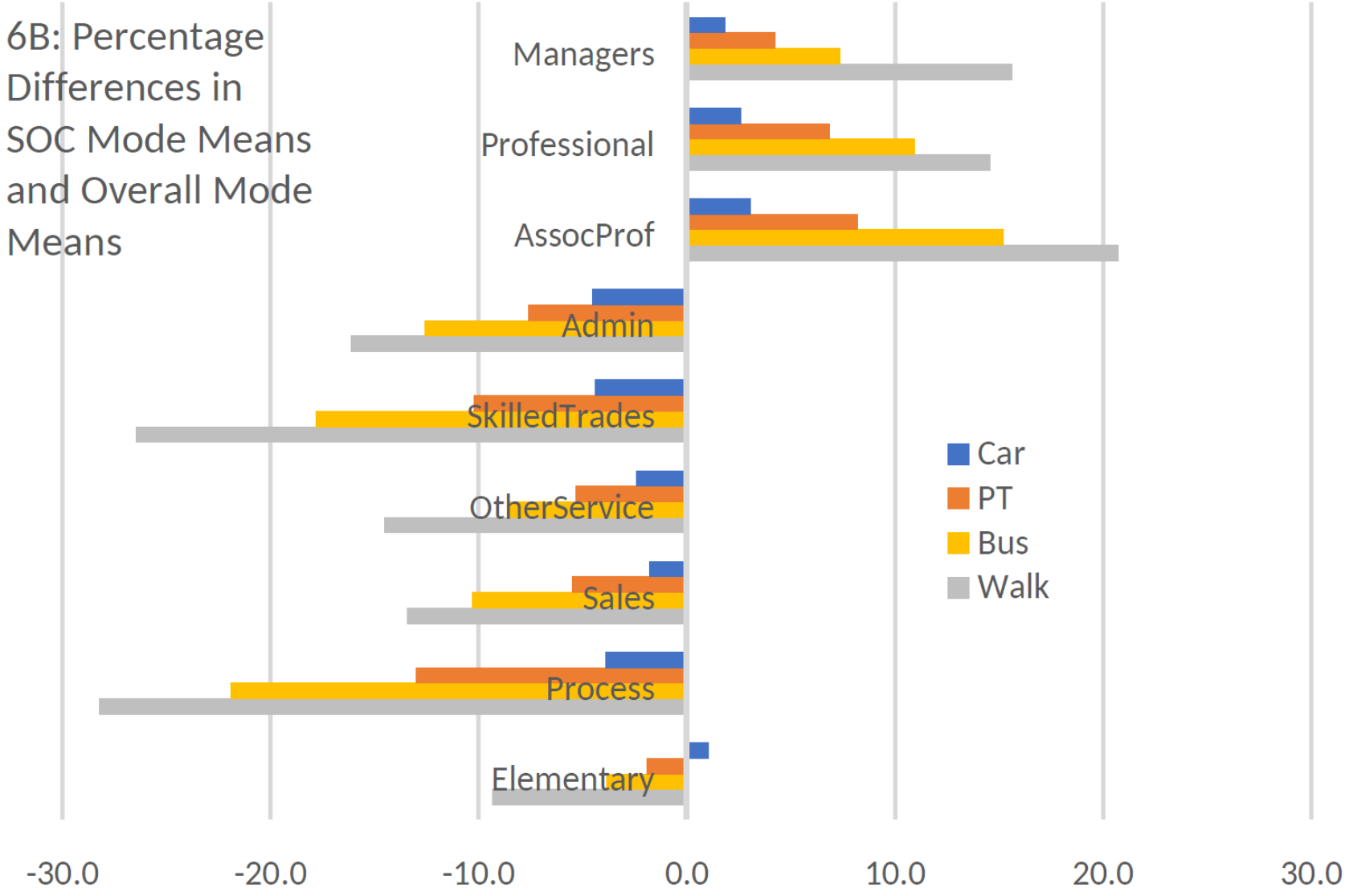
Main driver of inequalities in the GLA will be differences between Inner and Outer London. We can summarise this by plotting distributions by sub-regions-



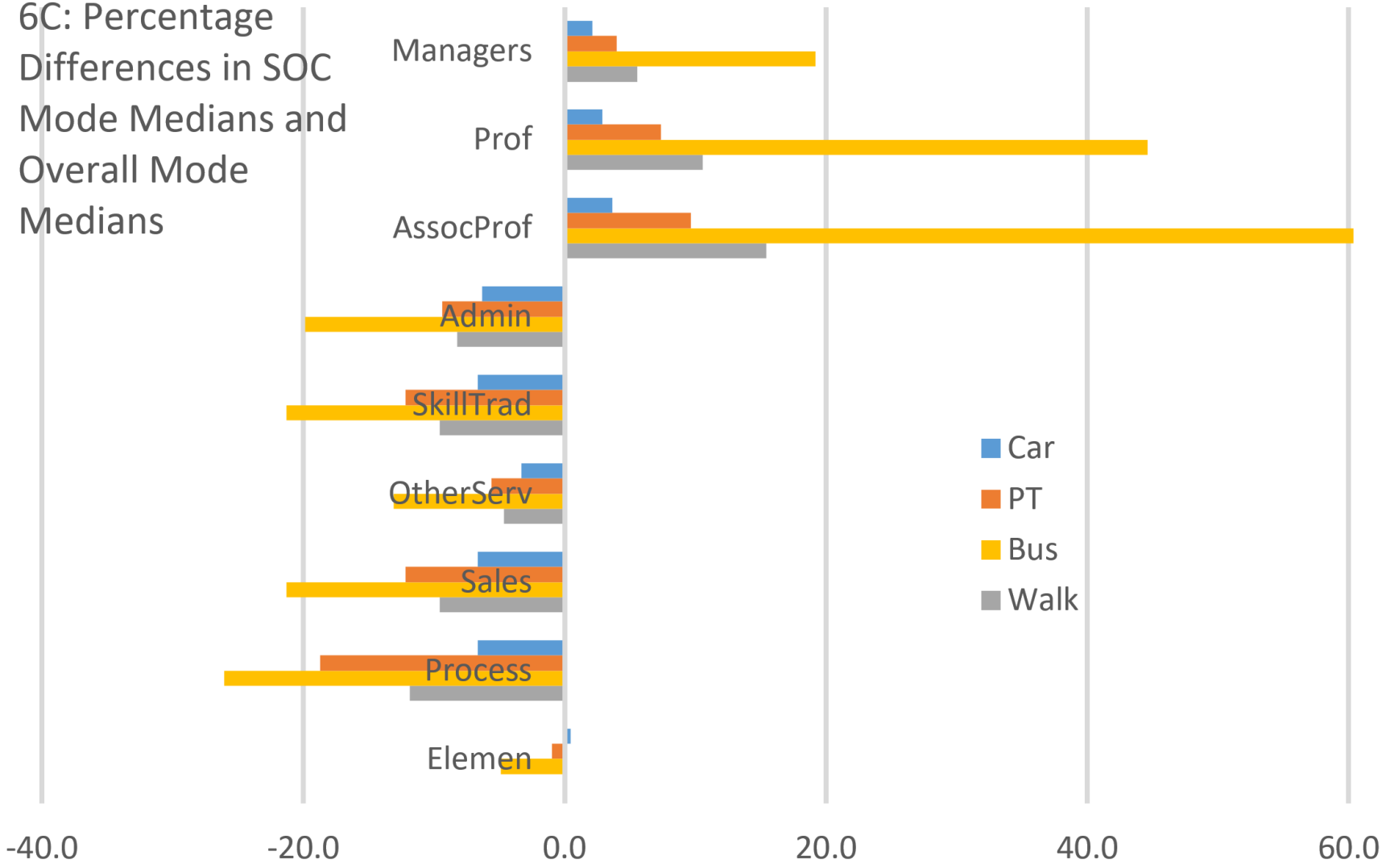
Accessibility to Jobs by Travel Mode and Occupational Class



Accessibility to jobs, differences from mean by occupational class- 60 minutes



Accessibility to jobs, differences from median by occupational class- 60 minutes



Testing Different Commute Threshold Times

Public Transport- Percentage Differences from Population Average

	30 mins		45 mins		60 mins		75 mins		90 mins	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Manag	12.4	6.4	7.3	18.4	4.2	4.0	3.0	2.1	2.3	2.1
Prof	14.7	10.0	11.3	37.4	6.8	7.4	4.5	3.2	3.5	3.2
AssocProf	20.2	14.2	15.2	53.9	8.2	9.6	5.3	5.4	4.3	4.9
Admin	-15.3	-11.2	-12.9	-26.4	-7.6	-9.4	-4.9	-5.5	-3.9	-5.3
SkillTrad	-25.2	-13.0	-18.1	-28.8	-10.2	-12.2	-6.9	-6.5	-5.5	-6.1
OtherServ	-14.0	-6.7	-9.3	-17.6	-5.3	-5.6	-3.5	-3.9	-2.8	-3.8
Sales	-13.1	-8.0	-10.3	-18.5	-5.5	-6.5	-3.5	-3.9	-2.8	-4.0
Process	-27.8	-15.2	-22.2	-35.3	-13.0	-18.7	-8.5	-8.6	-6.7	-7.5
Element	-7.9	-1.5	-3.3	-3.1	-1.9	-1.0	-1.4	-1.2	-1.0	-1.3

Bus Only- Percentage Differences from Population Average

	30 mins		45 mins		60 mins		75 mins		90 mins	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Manag	14.1	4.4	9.3	8.0	7.4	19.2	5.3	7.3	3.8	4.1
Prof	14.9	7.3	12.5	11.7	11.0	44.6	8.6	17.7	6.2	6.1
AssocProf	20.6	10.0	18.4	19.9	15.2	71.5	11.0	28.6	7.4	8.1
Admin	-15.6	-8.5	-14.3	-12.4	-12.6	-19.8	-10.0	-18.6	-7.3	-11.7
SkillTrad	-25.8	-10.1	-22.1	-14.0	-17.8	-21.3	-13.2	-20.4	-9.4	-14.7
OtherServ	-14.6	-5.7	-10.7	-8.2	-8.5	-13.1	-6.1	-11.5	-4.1	-5.9
Sales	-13.4	-5.4	-11.5	-8.3	-10.3	-13.7	-7.6	-14.1	-5.0	-8.6
Process	-28.0	-12.7	-25.0	-16.8	-21.9	-26.1	-16.9	-32.6	-12.0	-19.2
Element	-9.6	0.0	-5.1	-0.1	-3.8	-4.9	-2.4	-3.0	-1.4	-2.9

RESOLUTION Results: Accessibility

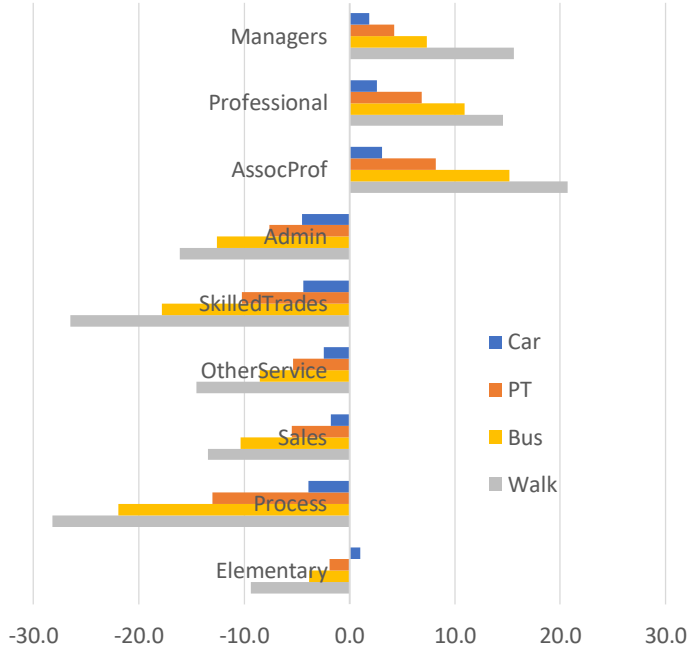
Accessibility Advantages for Wealthier Classes

Accessibility advantages to employment for wealthier classes, particularly for more affordable shorter distance travel: bus and walking modes.

Greatest advantages to the Professional and Associate Professional classes, with Management class third. Below average for all other groups. Elementary class fares better (council housing?).

Time Sensitive Results

Inequalities fall as commuting times increase. Metro/rail inequalities greater for commutes up to 45 minutes. Bus inequalities greater for longer trips of 60-75 minutes.



Accessibility Inequalities Likely to Increase

Analysis for 2011. These inequalities likely to become greater given expansion of the most affluent occupational classes in Inner London.

Housing Tenure and Occupational Class

Important housing tenure aspects to residential location and accessibility patterns.

Ownership and Accessibility Trade-Off
Rental housing generally more accessible. Some groups may sacrifice transit accessibility for security and investment of mortgage. While gentrification patterns generally about increasing home ownership for wealthy classes in relatively accessible areas.

Council Housing Remains Important
Social renting high (40%) amongst least affluent classes in Inner London. Important buffer against gentrification. But very little new social housing built in UK in last 30 years, sector under pressure.

Housing Tenure by Occupational Class

Table 7: Household Housing Tenure by Occupational Class, Metro Region and Inner GLA 2011

	London Metro Region			Inner GLA		
	Owner Occupied	Private Renting	Social Renting	Owner Occupied	Private Renting	Social Renting
Manage	73.7	21	5.3	54.5	35.9	9.6
Prof	69.6	24.6	5.8	51.7	37.3	11.0
AssoProf	66.0	26.8	7.2	45.9	41.9	12.3
Admin	65.0	20.9	14.1	42.2	30.7	27.1
Skilled	63.0	22.7	14.3	37.3	33.5	29.1
OtherServ	45.6	26.2	28.2	27.5	27.0	45.5
Sales	45.3	30.3	24.4	24.8	37.4	37.8
Process	58.5	20	21.5	35.0	23.3	41.8
Element	39.2	31.4	29.4	20.7	36.6	42.7
All	62.5	24.5	13.0	42.7	35.6	21.7

Tenure and Accessibility Inequalities

Professional classes combine accessibility advantages with highest rates of ownership- so access to jobs combined with likely investment benefits of ownership in more accessible locations.

Skilled Trades and Process classes have the poorest accessibility to jobs, but also least likely to work in Inner London and 70% car commuting. These groups favouring home ownership in wider region, less demand for transit access to Inner London.

Most disadvantaged classes include Sales and Other Services, with lower incomes, below average accessibility for bus and walking, and low home ownership. Elementary group has lowest home ownership, but better accessibility results.

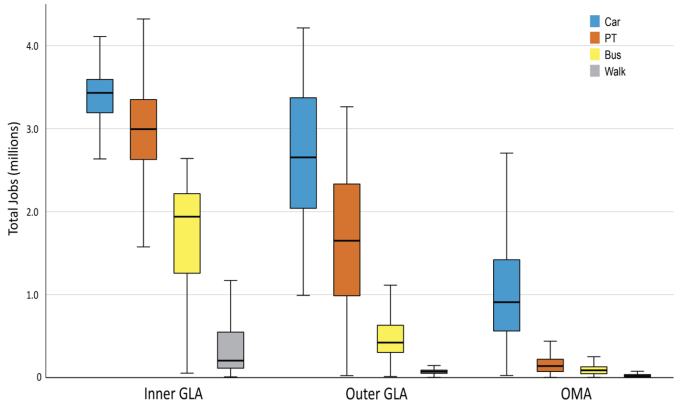
4. Policy Options for London

Policy Responses to Residential Changes

Keep Public Transport Costs Low

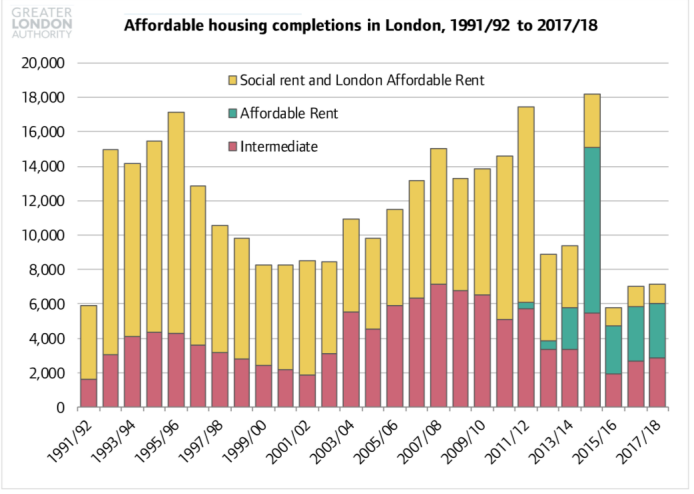
Bus trips more affordable, but jobs accessibility by bus limited for many groups. Tube and rail affordability increasingly important where less affluent populations mainly in Outer London.

Mayor already capped fares, good policies such as 'hopper fare' for bus interchanges. Also trying to expand TfL control of commuter rail network. TfL facing significant budget problems, so this policy will likely come under strain in coming years.



Major Expansion of Affordable Housing

Inner London now completely unaffordable for majority of the population, and increasingly the case for some parts of Outer London. Very poor record for affordable housing delivery post financial crisis, huge demand for major change. Need for genuinely affordable housing-council housing- in Inner London and Outer London town centres.



Policy Responses- Speculative

Promote Polycentric Development?
Concentration of jobs in Inner London central to economic success. Could however be complemented with stronger sub-centres in Outer London and OMA, e.g. Croydon, Wembley, Stratford… These locations successfully expanding as residential and retail centres, but office/industry roles more challenging to develop. Retail and office markets volatile in face of economic and social disruption.

Improve Orbital Public Transport?
Radial public transport locks in inner city advantages. Some orbital improvements pursued such as Overground, South London tram services. Could be expanded (indications of this from GLA).

If London social geography going to be more like Paris, will similar ambitious approach to regional orbital transit be necessary?

Conclusions

London Growing Significantly, Led by Inner City and Outer Metro Centres In Line with Compact City Policies

Significant Levels of Residential Segregation in London by Occupational Class

Translates into Accessibility Inequalities as Affluent Groups More Concentrated in Inner City

Evidence is that Residential Segregation Further Increased Since Financial Crisis, Mainly New Build Gentrification(?)

Much More Ambitious Response in Affordable Housing Development Needed

Conclusions- Methodology

Can Model Transit Accessibility More Comprehensively Using Open Data and Software

Useful to Have Population-Based Accessibility Measures to Complement Place-Based Measures

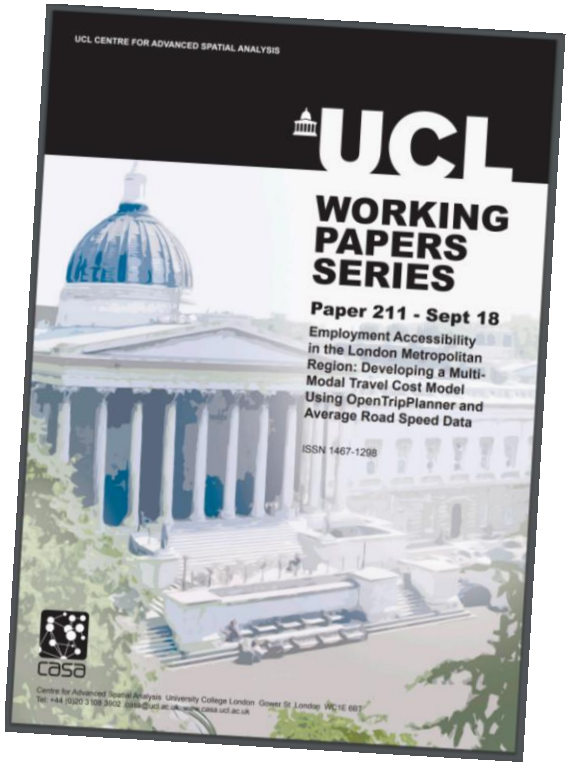
Not Considered Other Trip Types, Fares, Part-Time & Shift Workers etc.

Could Also Use this Approach for Testing Impacts of New Transport Infrastructure, Housing, Rather than Modelling Present Situation

Papers

Accessibility Methodology-
Smith D A (2018), Employment Accessibility in the London Metropolitan Region: Developing a Multi-Modal Travel Cost Model Using OpenTripPlanner-

https://www.ucl.ac.uk/bartlett/casa/publications/2018/sep/casa-working-paper-211



Gentrification and Occupational Class change in London-
Smith D A (2020?) Compact City for the Wealthy?, Journal of Transport Geography (under review)

Segregation and RESOLUTION Project-
Barros & Feitosa (2018), Uneven geographies: Exploring the sensitivity of spatial indices of residential segregation, Environment & Planning B,
https://doi.org/10.1177/2399808318760572

Thank you for listening!
Welcome Comments and Questions

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