

**Household income distribution
estimates: The example of Pay to Stay
impacts in Local Authority areas in
two English regions**

Chihiro Udagawa and Paul Sanderson

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Key findings

- Drawing on household income distributions, this pilot study estimates the localised impact and scale of Pay to Stay (PTS) for London and the West Midlands. The test results show that the new social rent regime will affect local authority (LA) areas unevenly – Pay to Stay affected household (PTS HH) proportions were estimated to range from around 6 to 16% while the counts ranged from around 300 to 6,500 households.

London

- The PTS HH proportion varied from 6.64% to 15.69% across London's LAs.
- The LA areas with a high PTS HH proportion were Richmond (15.69%), Kensington & Chelsea (13.79%), Hammersmith & Fulham (12.06%), Kingston (11.62%) and Islington (10.80%).
- The variation of the PTS HH counts appeared to depend more on total SR HH counts than on the PTS HH proportions. The LA areas with the most PTS HHs were Southwark (4,999), Hackney (4,660), Lambeth (4,565), Islington (4,255) and Lewisham (3,889).
- Richmond had the third fewest SR HH counts (9,962) but its highest PTS HH proportion raised its PTS HH counts to 1,563.

West Midlands

- The PTS HH proportion varied from 6.54% to 11.68% across the LA areas, less than was found in London.
- The LA areas with the highest PTS HH proportions were Rugby (11.68%), Bromsgrove (11.08%), Lichfield (10.95%), Stafford (10.94%) and Shropshire (10.90%).
- Again, the variation of the PTS HH counts depended on greatly on social rented (SR) HH counts. As more than half of SR HHs in the region were in the West Midlands metropolitan county, the LA areas with the most PTS HHs were observed within the county - Birmingham (6,531), Walsall (2,568), Dudley (2,565), Wolverhampton (2,525) and Sandwell (2,359).

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Introduction

Background – Pay to Stay policy

- The Pay to Stay (PTS) is the scheme under which the English council landlords voluntarily charge a rent at a market (or quasi-market) rates to tenants on incomes of £60,000 or more. From April 2017, the scheme will become compulsory for council landlords with the revised income thresholds - £40,000 in London and £31,000 elsewhere¹. Although the threshold application will remain discretionary for housing associations (HAs), the new PTS is likely to be adopted by them partly in order to maintain rental consistency within the SR market.
- The Government's initial income threshold outside the capital was £30,000 but the concession made during the passage of the Housing and Planning Bill in May 2016, reflected the PTS consultation responses from social landlords.
- Initial discussions on the introduction of the new mandatory scheme focused around the scale of the issue. Estimates of affected HHs made before the threshold concession were, for example, around 8-10% (DCLG, 2016) and about 7% around the time of the Housing and Planning Bill 2015 (Adam et. al, 2015). The then chancellor, George Osborne, reportedly estimated that PTS will affect 10% of social housing tenants^{2,3}.
- The fact that access to social housing is conditional tends to suggest that social tenants' incomes range only narrowly⁴. However, at local level there can be significant variation.
- In cases where there are significant variations, housing associations' strategies can also be expected to vary considerably, especially where providers operate across a number of LAs with different HH income profiles. There may well be a degree of cross-subsidization.
- There is therefore an urgent need to estimate the likely impact of the PTS at local level in England – using a customised, robust methodology to ensure optimal accuracy around the threshold levels. As a pilot study, this paper covers local authority areas in London and the West Midlands, with particular emphasis on the localised impacts of PTS.
- The remainder of the paper is structured as follows: Section 2 explains the methodological approach for the estimation. Section 3 sets out the estimation outcomes. Section 4 discusses the findings and suggests further research needs in the PTS and its relevant contexts. Various tables are annexed for reference.

¹ For details, see Housing and Planning Act 2016.

² Roberts, Y. (2016).

³ Restricted to its top ten local authority areas, Catalyst Housing (2015) estimated the proportion was 10.4%.

⁴ For example, see ONS UK Census results (2013) Table A20 "Percentage of households by economic activity, tenure and socio-economic classification in each gross income decile group, 2012 United Kingdom".
http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/dcp171766_337457.pdf

Approach – Social renting households’ income distribution by Local Authority

Methodological approach

- Our approach starts with estimation of an income distribution of SR HHs in each of local authority (LA) areas in London and the West Midlands. For the methodology of the estimation, see Udagawa and Sanderson (2015)⁵. The core data sources for the estimation include the Family Resource Survey, Census 2011, the Annual Survey of Hours and Earnings, the Average Weekly Earnings excluding bonuses excluding arrears at the sector level (seasonally adjusted), DCLG household projection, the Bank of England’s Quoted household interest rates and the Consumer Price Index⁶.
- The definition of a household income in this examination is taxable income as of September 2015, which is in accordance with the guidance by the PTS team of the Department for Communities and Local Government (DCLG). Thus, tax-free benefits (notably, Housing Benefit) are not included. This definition will be held throughout the remaining part of this paper, unless specified. The components of the taxable income are set out in Annex A.
- The definition of a SR HH used in our approach is a household fully renting. social accommodation, regardless of needs types. Households partially renting in a shared ownership scheme are excluded. The estimate point of the SR HH count is as of 2015. The estimation uses the following simple form⁷:

$$SR\ HH_{2015} = SR\ Stock_{2015} \times \frac{SR\ HH_{2011}}{SR\ Stock_{2011}}.$$

- The data source of the SR HH counts in 2011 is Census 2011, and that of SR Stock is DCLG Live Tables on dwelling stock⁸. The estimated SR HH count in each of the LA areas in London and the West Midlands are set out in Table 3 in Annex A.

Estimated income distribution curves and their interpretation in the PTS context

- The estimated results can be displayed as an income distribution curve. **Figure 1** shows curves for Islington (green line) and Sandwell (blue line)⁹.
- The horizontal axis of the chart represents a weekly household income, and the vertical axis represents the cumulative percentage of SR HHs whose income is up to the specified level.
- Taking Islington as the first example, the analytical process is as follows:

⁵ www.cchpr.landecon.cam.ac.uk/Downloads/Estimated-net-income-distribution-working-households-household-type-locality

⁶ In addition, for the inflationary adjustment of taxable benefits, Office for National Statistics (2015) *Nowcasting household income in the UK: Financial Year ending 2015* was in reference.

⁷ Readers who wish to use alternative SR HH counts for their operations will be advised to adopt the counts to our income distribution estimates on the %-base, which can be made available upon request.

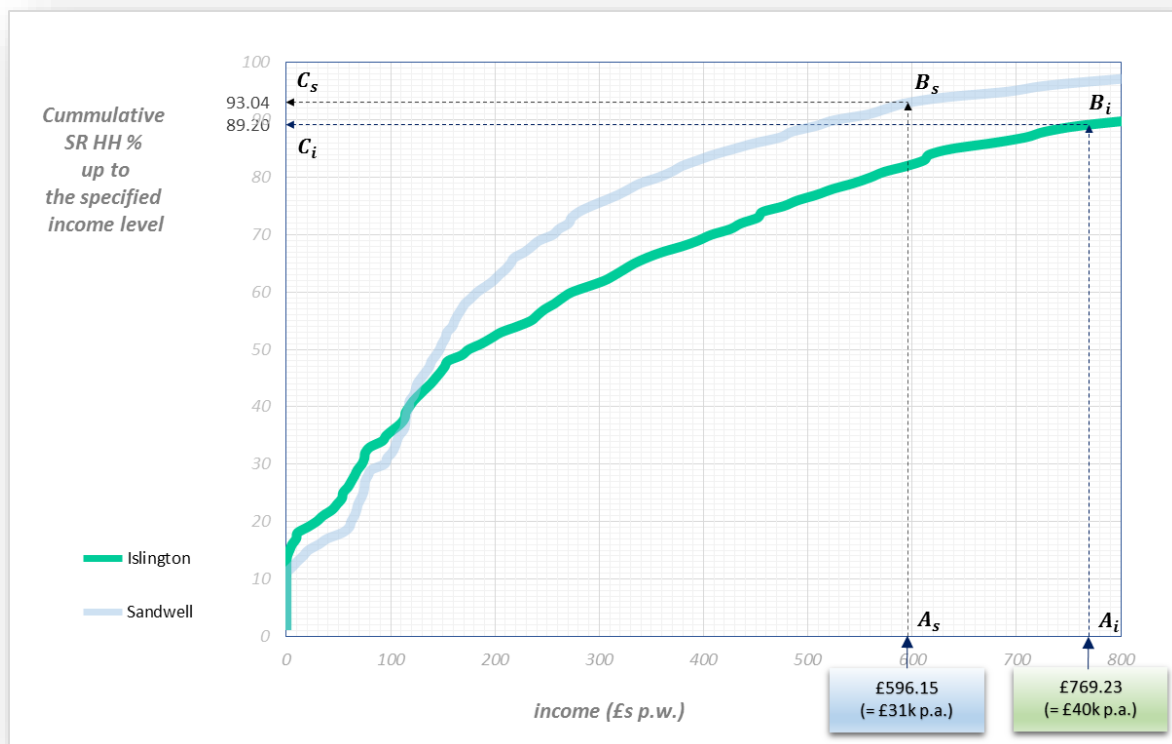
⁸ Table 116 Dwelling stock: local authority stock, by district: England 1994 – 2015.

<https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants>

⁹ The data file of the chart is available upon request.

- The PTS threshold income is £769.23 per week (=£40,000 p.a. / 52 weeks). On the horizontal axis, the level is at A_i
- The corresponding point on the income distribution curve is B_i .
- The cumulative proportion corresponding to B_i is at C_i on the vertical axis, 89.20%. The percentage means a proportion of SR HHs with a weekly income below £769.23.
- The remaining percentage (10.80%), thus, indicates the PTS HH proportion for Islington.
- Similarly, the PTS threshold income for Sandwell, £596.15 p.w. (= £31,000/52), at A_s on the horizontal axis.
- The proportion of SR HHs with income below the threshold is at C_s (via B_s), 93.04%.
- The remaining 6.96% was Sandwell's PTS HH proportion.

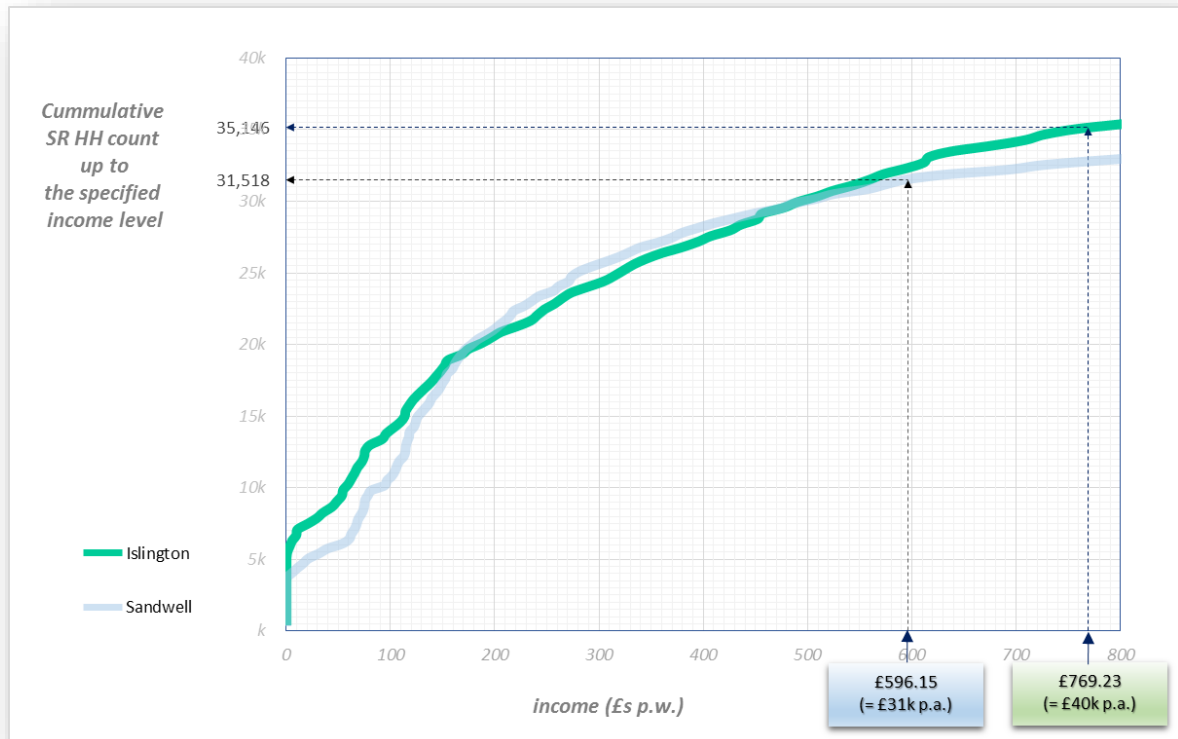
Figure 1 Income Distribution Curves (% base) for Islington and Sandwell: September 2015



- Drawing on the estimated number of SR HHs in each of the two LA areas (see **Table 3** in Annex), the income distribution curves by HH count are shown in **Figure 2** where the vertical axis represents the cumulative count of SR HHs up to the specified threshold.
- The chart shows that SR HHs below the PTS threshold amounted to 35,146 in Islington. The total number of SR HHs in the borough is 39,401, Islington is thus estimated to have had 4,255 PTS HHs as of 2015.

- Sandwell was estimated to have 2,359 (= 33,877 - 31,518) PTS HHs.

Figure 2 Income Distribution Curves (count base) for Islington and Sandwell: September 2015



Key outcomes of PTS HH Estimation

This section presents the estimated proportions and counts of PTS HHs by LA area for London and the West Midlands.

London

- Table 1 sets out the results of London LAs. Excluding the City of London¹⁰, the PTS HH proportion varied from 6.64% to 15.69% across the thirty-two LA areas in the capital. The range was somewhat wider than the Government's projection at the national scale in DCLG (2016), which was around 8 to 10%. Map 1 in Annex A illustrates the local figures.
- The LA areas with a high PTS HH proportion were observed in the upper reaches of the Thames. The highest five LAs were Richmond (15.69%), Kensington & Chelsea (13.79%), Hammersmith & Fulham (12.06%), Kingston (11.62%) and Islington (10.80%).
- The LA areas with the lowest PTS HH proportions were Barking & Dagenham (6.64%), Newham (6.67%), Tower Hamlets (8.05%), Harrow and Havering (8.54% for each).
- The variation of the PTS HH counts appeared to depend more on total SR HH counts than on the PTS HH proportions. The LA areas with the most PTS HHs were Southwark (4,999), Hackney (4,660), Lambeth (4,565), Islington (4,255) and Lewisham (3,889).
- The LA areas with the fewest PTS HHs were Harrow (769), Kingston (885), Merton (1,055), Redbridge (1,151) and Sutton (1,233).
- Richmond had the third fewest SR HH counts (9,962) but a relatively high PTS HH proportion, giving a PTS HH count of 1,563.

¹⁰ In this section, the analyses excluded the borough, which had exceptional socio-demographic features and thus failed to set out a robust estimate.

Table 1 PTS HHs by LA area in London

	SR HHs with income at or above £40k	
	%	count
<i>Barking and Dagenham</i>	6.64	1,561
<i>Barnet</i>	10.59	2,040
<i>Bexley</i>	9.66	1,292
<i>Brent</i>	9.09	2,434
<i>Bromley</i>	10.48	1,929
<i>Camden</i>	10.71	3,416
<i>City of London</i>	19.85 †	101 †
<i>Croydon</i>	10.65	2,897
<i>Ealing</i>	9.22	2,090
<i>Enfield</i>	9.66	1,982
<i>Greenwich</i>	10.47	3,672
<i>Hackney</i>	10.22	4,660
<i>Hammersmith and Fulham</i>	12.06	2,980
<i>Haringey</i>	10.68	2,870
<i>Harrow</i>	8.54	769
<i>Havering</i>	8.54	1,234
<i>Hillingdon</i>	9.79	1,693
<i>Hounslow</i>	9.54	2,100
<i>Islington</i>	10.80	4,255
<i>Kensington and Chelsea</i>	13.79	2,611
<i>Kingston upon Thames</i>	11.62	885
<i>Lambeth</i>	10.07	4,565
<i>Lewisham</i>	10.62	3,889
<i>Merton</i>	9.59	1,055
<i>Newham</i>	6.67	1,995
<i>Redbridge</i>	10.47	1,151
<i>Richmond upon Thames</i>	15.69	1,563
<i>Southwark</i>	9.41	4,990
<i>Sutton</i>	10.65	1,233
<i>Tower Hamlets</i>	8.05	3,366
<i>Waltham Forest</i>	9.65	2,099
<i>Wandsworth</i>	12.56	3,359
<i>Westminster</i>	9.58	2,598

Note: † Statistically unreliable estimate.

West Midlands

- Table 2 sets out the West Midlands' results. Map 2 in Annex A illustrates the table contents. The PTS HH proportion varied from 6.54% to 11.68% across the LA areas.
- The LA areas with the highest PTS HH proportions were Rugby (11.68%), Bromsgrove (11.08%), Lichfield (10.95%), Stafford (10.94%) and Shropshire (10.90%).
- The LA areas with the lowest PTS HH proportions were Birmingham, Coventry (6.54% for each), Sandwell (6.96%), Redditch (7.69%) and Nuneaton & Bedworth (7.71%).

- Again, the variation of the PTS HH counts depended greatly on SR HH counts. As more than half of SR HHs in the region resided in the West Midlands County, the LA areas with the most PTS HHs were observed within the county - Birmingham (6,531), Walsall (2,568), Dudley (2,565), Wolverhampton (2,525) and Sandwell (2,359).
- The LA areas with the fewest PTS HH counts were Staffordshire Moorlands (327), North Warwickshire (331), Bromsgrove (444), Malvern Hills (454) and Cannock Chase (538).

Table 2 PTS HHs by LA area in the West Midlands

	SR HHs with income at or above £31k	
	%	count
<i>Birmingham</i>	6.54	6,531
<i>Bromsgrove</i>	11.08	444
<i>Cannock Chase</i>	7.93	538
<i>Coventry</i>	6.54	1,455
<i>Dudley</i>	9.95	2,565
<i>East Staffordshire</i>	9.07	607
<i>Herefordshire</i>	9.58	1,020
<i>Lichfield</i>	10.95	602
<i>Malvern Hills</i>	9.98	454
<i>Newcastle-under-Lyme</i>	9.52	940
<i>North Warwickshire</i>	8.78	331
<i>Nuneaton and Bedworth</i>	7.71	612
<i>Redditch</i>	7.69	572
<i>Rugby</i>	11.68	736
<i>Sandwell</i>	6.96	2,359
<i>Shropshire</i>	10.90	1,926
<i>Solihull</i>	9.62	1,234
<i>South Staffordshire</i>	10.58	673
<i>Stafford</i>	10.94	880
<i>Staffordshire Moorlands</i>	8.61	327
<i>Stoke-on-Trent</i>	8.60	2,246
<i>Stratford-on-Avon</i>	9.98	691
<i>Tamworth</i>	8.95	544
<i>Telford and Wrekin</i>	8.68	1,131
<i>Walsall</i>	9.57	2,568
<i>Warwick</i>	10.39	831
<i>Wolverhampton</i>	8.92	2,525
<i>Worcester</i>	10.65	729
<i>Wychavon</i>	8.98	685
<i>Wyre Forest</i>	9.60	611

Discussion

- Drawing on household income distributions, this pilot study estimated the localised impact scale of PTS for London and the West Midlands. The test results suggest that the new social rent regime will affect LA areas unevenly – the PTS HH proportions were estimated to range from around 6 to 16% while the counts from around 300 to 6,500 HHs.
- The findings suggest that council landlords' gross rental income will rise, albeit unevenly. The performance of HAs will probably be similar.
- The reaction to PTS by HAs operating inter-locally is likely to depend on the nature of their property portfolios and the extent to which they are spread geographically, as well as the level of provision of non-rent services. The extent to which HAs cross-subsidise is not yet clear¹¹.
- Our estimates and analysis suggest a number of areas that would benefit from further research, including how HAs approach PTS assessments and in due course, the extent to which rental income rises. The simple index of rental difference between HAs and the private sector are experimentally shown in Figure 1 in Annex A, but the actual rental increase per PTS HH is complicated by the introduction of the Taper System¹². Of relevance here are the age and family structure of PTS HHs. The knock on effects on PTS HHs in terms of take-up of the Right to Buy scheme also need to be considered^{13, 14}.
- Fundamentally, this pilot study examines only two regions so needs to be extended to the rest of the country, not least to ensure accurate SR HH income data are available to the increasing number of HAs operating inter-locally following the recent spate of mergers and acquisitions.

¹¹ See Figure 2 in the Annex for experimental plotting by social housing needs and PTS impact in the areas examined.

¹² The Government has confirmed that in the PTS framework a taper will be applied above the minimum income thresholds and that households in receipt of Housing Benefit will be exempt from paying higher rents. The taper will operate so that affected households will pay an additional 15p in rent per week for every £1 they receive in taxable income above the thresholds (Wilson, 2016).

¹³ Many of the PTS consultation responses focused on the disincentives for HAs to apply PTS on SR HHs with income only marginally above the threshold (DCLG, 2016b). These were based on fears of deterring such tenants from seeking and maintaining employment.

¹⁴ Note that household income in this study comprises taxable income. This may differ from household income calculations made in respect of mortgage payment calculations. For this reason, applying PTS HH income calculations to Right to Buy may require adjustment to be made.

Annex A

Definition of Household Income

The Pay-to-Stay team within DCLG confirmed to CCHPR that a household income subject to PTS will be “taxable income”, which can be categorised as follows, drawing partly on the categories within the Family Resource Survey (FRS):

- Income from Employment
- Self-employment earnings
- Investment income
- Pension income
- State benefits (only taxable benefits)
- Remaining income

On taxable state benefits, DCLG referred to their website @<https://www.gov.uk/income-tax/taxfree-and-taxable-state-benefits>. This sets out the most common taxable benefits:

- the State Pension
- Jobseeker’s Allowance
- Carer’s Allowance
- Employment and Support Allowance (contribution based)
- Incapacity Benefit (from the 29th week you get it)
- Bereavement Allowance
- pensions paid by the Industrial Death Benefit scheme
- Widowed Parent’s Allowance
- Widow’s pension

Therefore, our estimate includes the above benefits with two caveats:

- Employment and Support Allowance (ESA) in the sourced datasets were not disaggregated into the contribution based part and into the income based part as the former is generally applied to the first 365 days, ESA whose recipient period was 52 weeks or fewer were assumed to be ESA (contribution based).
- The recipient period of Incapacity Benefit (IB) was not available from our datasets used for the estimation, notably, FRS, and the information on IB in the FRS were negligibly small, partly due to the takeover by ESA. Therefore, it is not included in our taxable benefits. This exclusion is, however, unlikely to affect the robustness of our outputs.

Estimation of SR HH counts by LA

- A SR HH in this paper is a household fully renting a social housing unit regardless of needs types. Households partially renting in a shared ownership scheme are excluded. The estimation point of the SRH HH count is as of 2015. The SR HH counts are estimated by the following simple form:

$$SR\ HH_{2015} = SR\ Stock_{2015} \times \frac{SR\ HH_{2011}}{SR\ Stock_{2011}} .$$

- The data source of the SR HH counts in 2011 is Census 2011. That of SR Stock is DCLG Live tables on dwelling stock¹⁵.

Table 3 Estimated number of social renting households by LA as of 2015

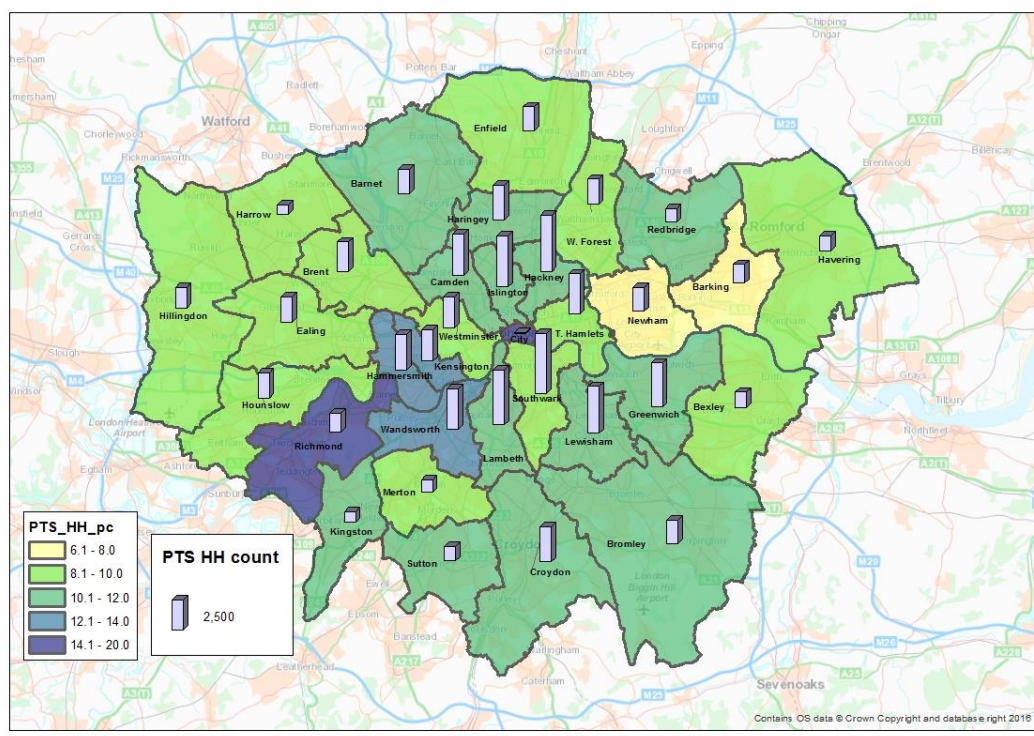
London	SR HH count	West Midlands	SR HH count
Barking and Dagenham	23,506	Birmingham	99,836
Barnet	19,262	Bromsgrove	4,011
Bexley	13,375	Cannock Chase	6,783
Brent	26,792	Coventry	22,236
Bromley	18,405	Dudley	25,773
Camden	31,897	East Staffordshire	6,692
City of London	510	Herefordshire, County of	10,642
Croydon	27,198	Lichfield	5,494
Ealing	22,669	Malvern Hills	4,552
Enfield	20,515	Newcastle-under-Lyme	9,878
Greenwich	35,070	North Warwickshire	3,764
Hackney	45,611	Nuneaton and Bedworth	7,943
Hammersmith and Fulham	24,715	Redditch	7,443
Haringey	26,861	Rugby	6,303
Harrow	9,002	Sandwell	33,877
Havering	14,444	Shropshire	17,660
Hillingdon	17,300	Solihull	12,824
Hounslow	22,004	South Staffordshire	6,363
Islington	39,401	Stafford	8,043
Kensington and Chelsea	18,938	Staffordshire Moorlands	3,800
Kingston upon Thames	7,620	Stoke-on-Trent	26,109
Lambeth	45,321	Stratford-on-Avon	6,930
Lewisham	36,627	Tamworth	6,077
Merton	11,001	Telford and Wrekin	13,030
Newham	29,906	Walsall	26,843
Redbridge	10,996	Warwick	7,999
Richmond upon Thames	9,962	Wolverhampton	28,306
Southwark	53,014	Worcester	6,845
Sutton	11,581	Wychavon	7,628
Tower Hamlets	41,822	Wyre Forest	6,361
Waltham Forest	21,750		
Wandsworth	26,753		
Westminster	27,123		

¹⁵ Table 116 Dwelling stock: local authority stock, by district: England 1994 – 2015.

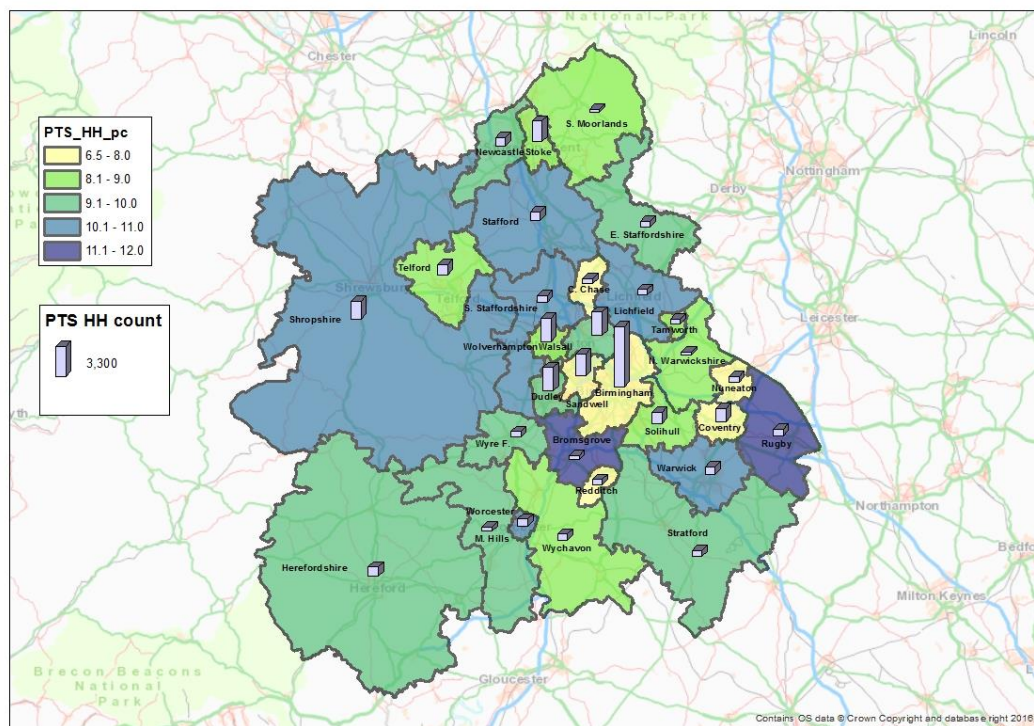
<https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants>

Mapping key outcomes of PTS HH Estimation

Map 1 PTS HHs by LA area in London



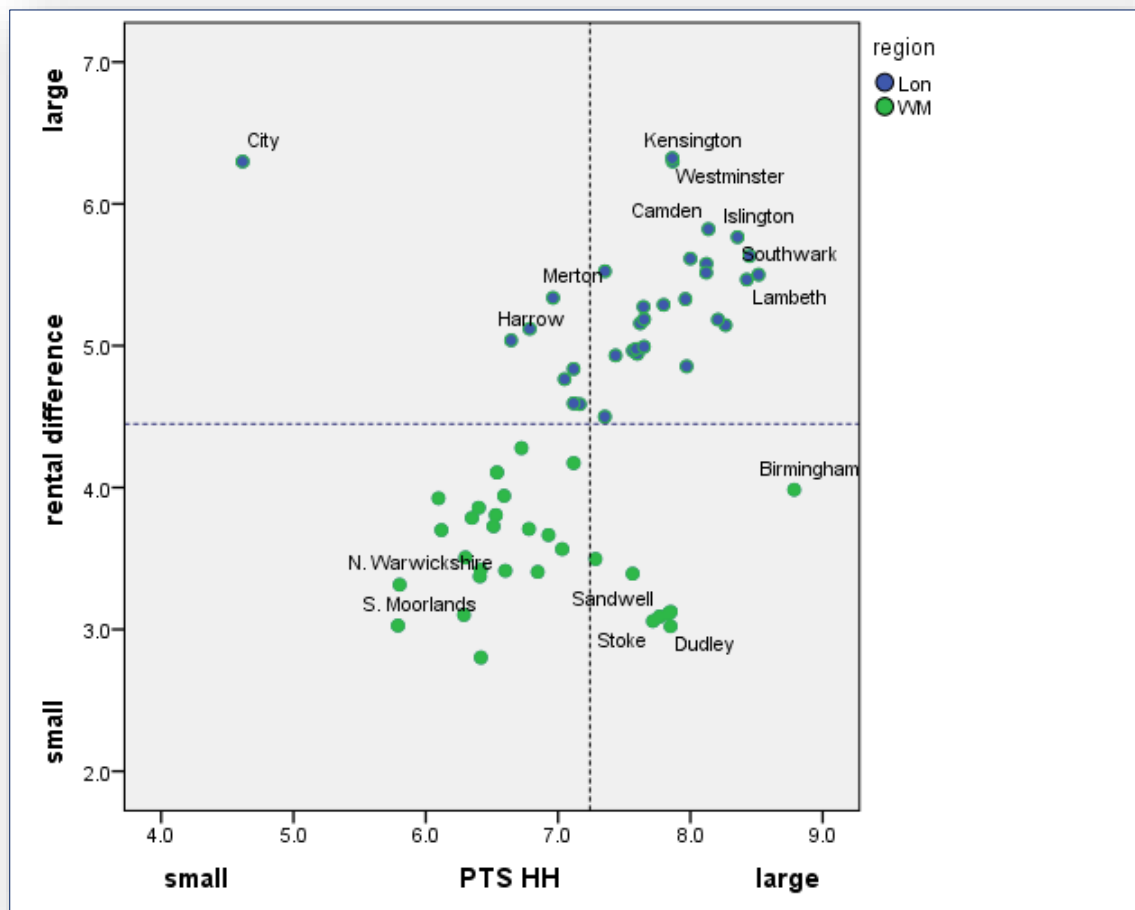
Map 2 PTS HHs by LA area in the West Midlands



Relationship indexed PT HH impacts with the rent and demand indices

The following scatter diagrams experimentally plot the examined LA areas according to indices representing PTS impacts, rental difference between the private and the social sectors and demand for social housing. As the variables are indices, they do not refer to absolute sizes or volumes but rather they simply display the relative position of each LA area according to the indicators. See note below for further caveats.

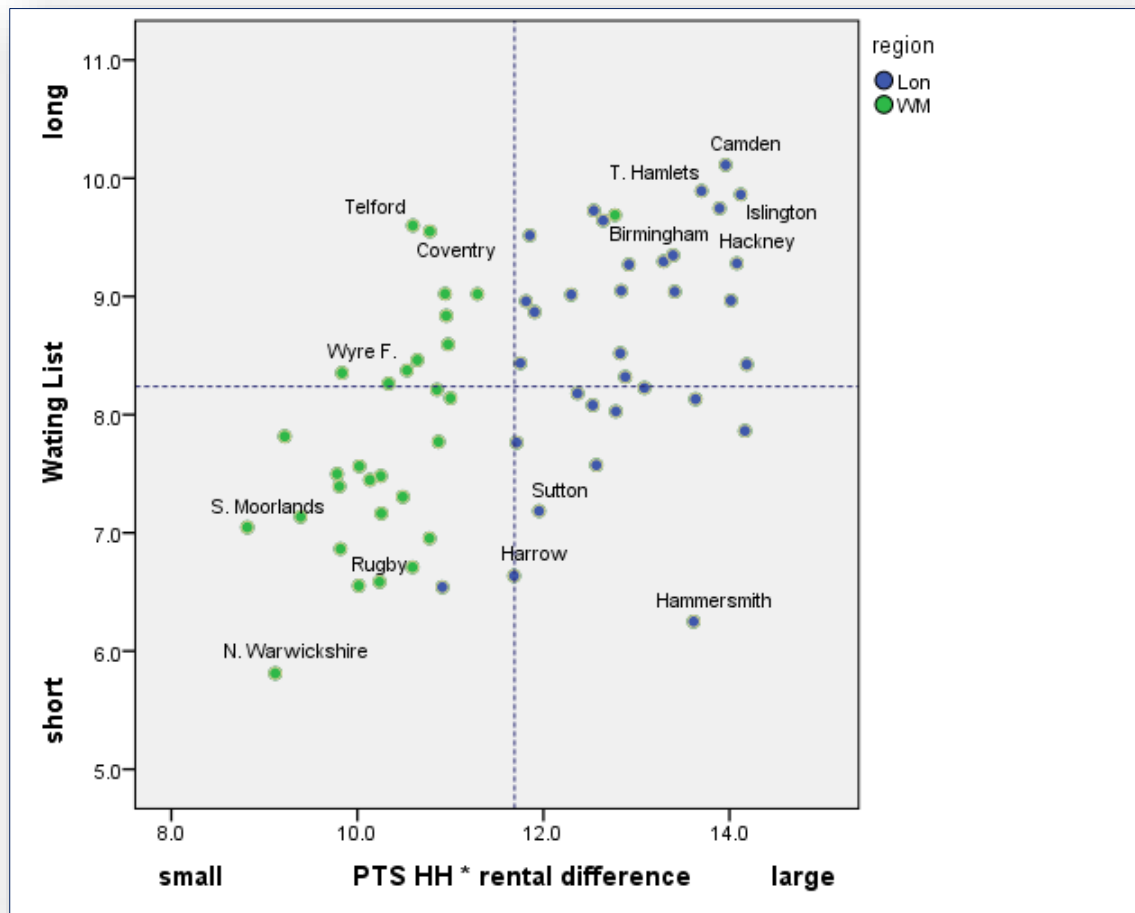
Figure 1 PTS HH Index vs. Index of difference between market rent and social rent



Note: PTS HH Index was measured in natural log form of the estimated PTS HH count as of 2015.

Rental difference Index was measured in natural log form of the average 2-bed market rent (end of March 2015) minus the average 2-bed housing association rent (general needs only as of 1st of April 2015). Both rents included service charges eligible for Housing Benefit. The data sources were Valuation Office Agency (market rent) and the authors' calculation based on the Statistical Data Return by Homes & Communities Agency. The reference lines (displayed as dotted) represent the mean of the 63 LAs.

Figure 2 PTS Impact Index vs. Social Housing Demand Index



Note: PTS Impact Index was measured in natural log form of the estimated PTS HH count multiplied by the rental difference driven from the previous chart. Social Housing Demand Index was measured in natural log form of household counts on Waiting List as of April 2015. The 2015 data for Telford and Wrekin was not available so the 2014 figure was used. The data source was DCLG Live Table 600 *Numbers of households on local authorities' housing waiting lists, by district: England 1997-2015* (accessed in August 2016). The reference lines (displayed as dotted) represent the mean of the 63 LAs.

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