

## UK HOUSE PRICE INDEX AN ACADATA BRIEFING NOTE

### LSL ACADATA E&W HPI AND THE ONS UK HPI USE THE SAME DATA BUT REPORT VERY DIFFERENT PRICES. WHY?

The UK House Price Index from the Office for National Statistics, launched 14th June 2016, joins Acadata in using Land Registry data for England & Wales but joins the lenders in reporting average prices. Compared with the former ONS HPI, which the UK HPI replaces, England & Wales average house prices are lower by c.30%. From an average price close to those of Rightmove and LSL Acadata, ONS now provides an average close to those of Halifax and Nationwide. Are ONS endeavouring to show that houses are more affordable? No. ONS have changed what it is that the HPI measures.

Launch of the new ONS HPI brought significant change to UK house price reporting. Not only the former ONS HPI but also the Land Registry HPI were junked. Official house price indices no longer compete for attention with very different prices. But the changes bring with them a huge fall in the official level of house prices. What are users to make of it?

In calculating the new average, ONS has discarded the arithmetic mean in favour of the geometric mean calculation used on the continent, explaining that it lessens the skewing effect of high prices. We explain herein that the more correct explanation is that it gives equal weight to changes in all values whether the values are large or small. In choosing a geometric mean calculation, the ONS average price thus gives as much weight to the market movement for the one bedroom flat on the Old Kent Road as to the Mayfair mansion. Please see page 4. Quoting the 2015 prices shown in our "Frequency Distribution" below, the England & Wales average price has fallen from an arithmetic £296K to a geometric £215K. At £215K, the new ONS average is almost as low as the Halifax (£209K) and Nationwide (£197K) prices. These are aimed at providing the "price of an average house" as conceived for each index. As explained in an earlier "Which House Price Index?" paper, we see these as "conceptual" prices. The new ONS HPI average price might also be best thought of as conceptual since it is derived from a calculation which ONS has chosen to suit a purpose. All three "conceptual" prices are derived from "black box" calculations opaque to the public. Our LSL Acadata HPI "forecast" price is opaque too, but, once updated with further data, our LSL Acadata HPI "final" average price could be calculated and checked by an independent observer.

As said, the new ONS HPI average price is at the level of a lender "price of an average house". This is different from an LSL Acadata HPI "average of all prices paid for houses". We believe the arithmetic mean price to be the more useful, especially if viewed in conjunction with the median price which we also prepare. How these prices compare can be seen in our "Frequency Distribution".

ONS aim the UK HPI at endorsement as a National Statistic. It now includes data on properties bought with cash. But LR data lack e.g. numbers of bedrooms, used in the old index, which ONS now obtain from the Valuation Office Agency and third parties. As ONS recognises, this does raise quality issues and the new index is launched on trial.

**21st July 2017**

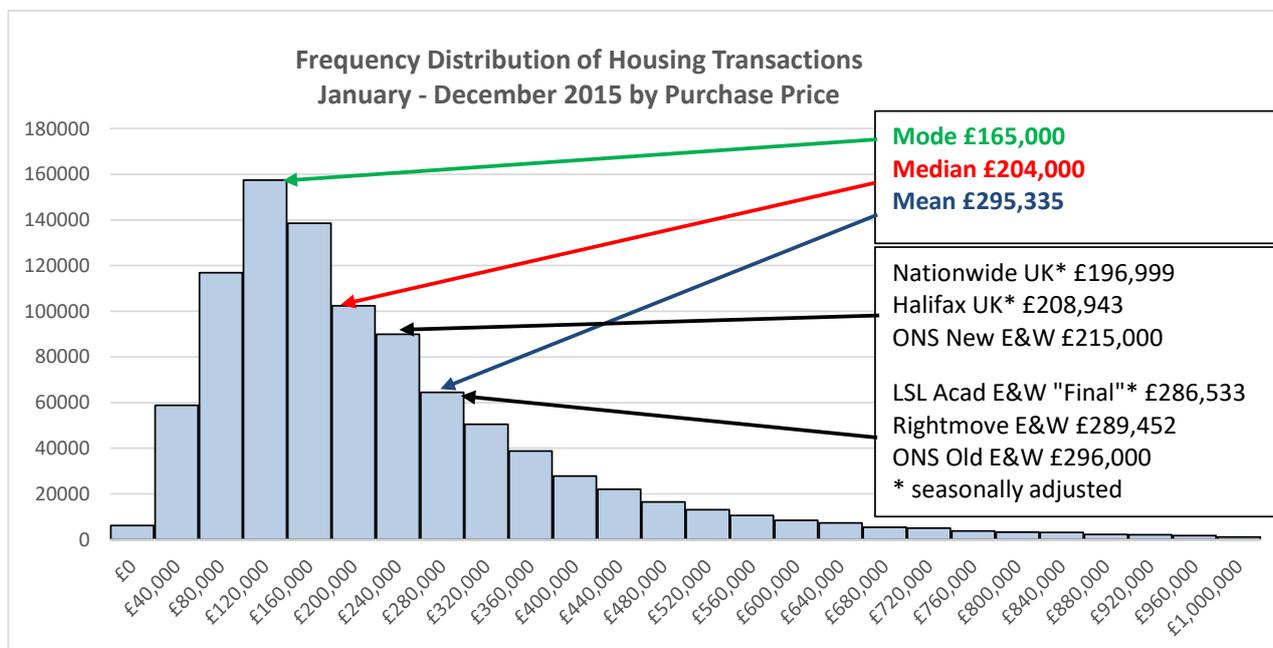
**New UK HPI** In choosing to dump mortgage data and to use Land Registry (LR) data for their E&W index, ONS follows Acadata. In 2002, a “committee of experts”, appointed to advise ONS, deemed Land Registry data unuseable for an index due to a lack of “timeliness”. Simultaneously, we (then named Acadametrics) chose to use LR data and to make the data timely by forecasting the missing numbers. Our FT House Price Index (now LSL Acadata HPI) was launched by the Financial Times in 2003, just a month ahead of the former ONS HPI. ONS now overcomes untimeliness by obtaining from LR a data download for the new ONS HPI 15 working days after the end of each month, providing ONS with a timely c.75% of the previous month’s house price data, without delaying the ONS release date. A good idea that ONS must wish that the 2002 experts had thought of.

ONS follows us, too, with an updating procedure to account for data unavailable for the first release of the index. We value this as official support for the view that time should be allowed to elapse to enable the bulk of house prices for each month to be reflected in an index used for e.g. modelling, economic analysis and important decision making.

**Our Frequency Distribution** for sales in England & Wales in December 2015 (now effectively all recorded), illustrates how skewed sales volumes are towards those with the lower prices although the tail of high-value sales would extend to the right far beyond the page were every London “mansion” price to be shown. Notice in the table overleaf that in the South West half of the April sales were at a price above and half were at prices below the new UK HPI average for E&W which was, therefore, the median price for the region in April.

All of the above prices are not directly comparable since e.g. the Halifax and Nationwide numbers are for the UK not England & Wales. But the broad picture is that:

- Halifax, Nationwide and the new ONS HPI report similar prices which are also similar to the median
- LSL Acadata and Rightmove HPI report similar prices which are also similar to the mean; both are arithmetic mean prices. Ditto the “ONS Old E&W HPI”



**Notice that** the above distribution shows that the ONS new UK HPI average price for E&W is not much above the median price of £204K. Notice, too, that the lenders’s averages are roughly as much above as below the median. The median price? The central price were every price laid out in a row in value order, lowest to the left, highest to the right. The mode price? The most commonly reported.

## Consider the new ONS price as that of an “average house”; where can such houses be found?

Take England with an April ONS new UK HPI average price of £224,731. The table below shows how many properties sold in March and April in the various regions fetched prices above or below the ONS average .

<b>Total Sales</b>	<b>Mar-16</b>	<b>Apr-16</b>		
EAST ANGLIA	4963	<b>833</b>		
EAST MIDLANDS	8965	<b>1625</b>		
GREATER LONDON	14525	<b>1776</b>		
NORTH	4678	<b>998</b>		
NORTH WEST	11496	<b>2123</b>		
SOUTH EAST	24940	<b>4417</b>		
SOUTH WEST	11755	<b>2046</b>		
WEST MIDLANDS	9314	<b>1680</b>		
YORKS & HUMBER	8681	<b>1820</b>		
<b>Total</b>	<b>99317</b>	<b>17318</b>		
	<b>Mar-16</b>	<b>Apr-16</b>	<b>Mar-16</b>	<b>Apr-16</b>
<b>Number of Sales less than Average Price = £224,731</b>			<b>%</b>	
EAST ANGLIA	3116	<b>491</b>	62.8%	58.9%
EAST MIDLANDS	7005	<b>1256</b>	78.1%	77.3%
GREATER LONDON	1116	<b>138</b>	7.7%	7.8%
NORTH	3862	<b>844</b>	82.6%	84.6%
NORTH WEST	9446	<b>1669</b>	82.2%	78.6%
SOUTH EAST	8512	<b>1243</b>	34.1%	28.1%
SOUTH WEST	6415	<b>1013</b>	54.6%	49.5%
WEST MIDLANDS	7064	<b>1221</b>	75.8%	72.7%
YORKS & HUMBER	7006	<b>1499</b>	80.7%	82.4%
<b>Total</b>	<b>53542</b>	<b>9374</b>	<b>53.9%</b>	<b>54.1%</b>
			<b>%</b>	
<b>Number of Sales greater than Average Price = £224,731</b>				
EAST ANGLIA	1847	<b>342</b>	37.2%	41.1%
EAST MIDLANDS	1960	<b>369</b>	21.9%	22.7%
GREATER LONDON	13409	<b>1638</b>	92.3%	92.2%
NORTH	816	<b>154</b>	17.4%	15.4%
NORTH WEST	2050	<b>454</b>	17.8%	21.4%
SOUTH EAST	16428	<b>3174</b>	65.9%	71.9%
SOUTH WEST	5340	<b>1033</b>	45.4%	50.5%
WEST MIDLANDS	2250	<b>459</b>	24.2%	27.3%
YORKS & HUMBER	1675	<b>321</b>	19.3%	17.6%
<b>Total</b>	<b>45775</b>	<b>7944</b>	<b>46.1%</b>	<b>45.9%</b>

Look at March for which 99,317 sales have been recorded at the time of writing. No surprises here! It was almost hopeless to look for a property at the average price or lower in Greater London. Better in the South East where one in three properties sold in the above two months were at or below the average. The further away from London, the more the properties sold at or below the “price of the average house”. But notice that March and April sales combined for Greater London, together with those for the South East, totalled 45,648 whilst sales in the remaining regions totalled 70,987. With 29,837 sales at or above the “price of the average house” out of 45,775 sales in all, these two regions, with the largest sales and the highest sales prices almost represent countries apart requiring their own indices. LSL Acadata HPI will, therefore, continue to include charts showing England & Wales house price inflation with and without Greater London and the South East.

## Regional House Prices

To illustrate why Greater London is another country, take the lower quartile of London prices (that is the 25% that have the lowest prices). The average price of these “cheapest” houses was £303K, much higher than the ONS new UK HPI average. Whether the “price of the average house” or the “average of prices paid for houses”, imbalances in regional prices make it essential to look at prices region by region. Only LSL Acadata and ONS report every month on prices by region. Halifax and Nationwide lack sufficient data to do so.

**Another look at the geometric mean ?** In an earlier “Which House Price Index” paper, we used 1, 2, 3, 4, 5. As an example. The geometric mean is calculated using the formula  $\sqrt[5]{(1 \times 2 \times 3 \times 4 \times 5)} = 2.605$  (to 3 decimal places). The arithmetic mean is  $(1 + 2 + 3 + 4 + 5)/5 = 3$ . Suppose we took 1, 1, 1, 5, 7. The arithmetic mean remains 3. The geometric mean is the 5th root of  $1 \times 1 \times 1 \times 5 \times 7 = 2.04$ . Seemingly, the lower numbers have more effect on the geometric mean than do the higher numbers. What is going on?

Mathematically speaking, the geometric mean is derived from the arithmetic mean of the logarithms of the numbers concerned. It is the use of logarithms that dampens the effect of the higher numbers. What is a logarithm? The Shorter Oxford English Dictionary says that “‘Logarithmus’ (Napier 1614)” is derived from the Greek for “proportion” and “Logarithmus is usu. taken to mean ‘ratio-number’”. So there you have it from academia; the geometric mean uses a proportion of a number. Mind you, the Oxford Dictionary cannot bring itself to mention Cambridge whilst waxing fulsomely on Oxford, Oxonian etc. Maybe, there is more to be said.

Academically, the most frequent (and possibly the only) recommended use for the geometric mean is where an average is sourced from sets of data from multiple ranges. Hence, a seemingly valid case would exist for its use in averaging Welsh house prices and Greater London prices - a different series with a different range.

The validity of a geometric mean lies not in giving less weight to higher values per se; it lies in giving equal weight to changes in all values, whether these values are large or small. For example, take three houses from Wales valued at £100K, £150K, £200K and three from London valued at £500K, £750K, £1M. Arithmetic mean = £450,000; geometric mean = £322, 497

- if we increase one of the Wales values by 10%, say £100K to £110K, arithmetic mean = £451,667; geometric mean = £327,661
- if instead, we increase one of the London values by 10%, say £1M to £1.1M, arithmetic mean = £466,667; geometric mean = £327,661

**The effect of increasing any one value in the series by a certain percentage has the same effect on the geometric mean as increasing any other value.** Hence the ONS geometric mean of E&W house prices reflects the increases in house prices over the years but does not give more weight to an increase in London prices than it gives to the same increase in Wales. The new UK HPI joins the lenders by providing another measure of the “price of an average house”. In using real house prices and far more data than available to the lenders, the new UK HPI must become the “go to” source for the “price of an average house”. The lender indices will continue to attract attention as the first to report. But ONS for the “price of an average house” and LSL Acadata for the “average of prices paid for houses” provide “compare and contrast” measures for serious users. LSL Acadata is quicker than ONS to report; ONS has the more detail.

**Updating the Acadata HPI and the new ONS HPI** Note that May house prices will be/will have been reported by Rightmove May 16; Nationwide June 1, Halifax June 7. **LSL Acadata reported June 10 and will report July 15; ONS will report July 19 and will report again August 16. Both indices will provide further reports similarly timed.**

**Is that all?** No; ONS is providing a monthly HPI for Scotland as well as for E&W and the UK. the new UK HPI also reports data on cash/non-cash purchases and on type of buyer. We will comment in more detail in our next “Which House Price Index?” update.