

# The “average” house price

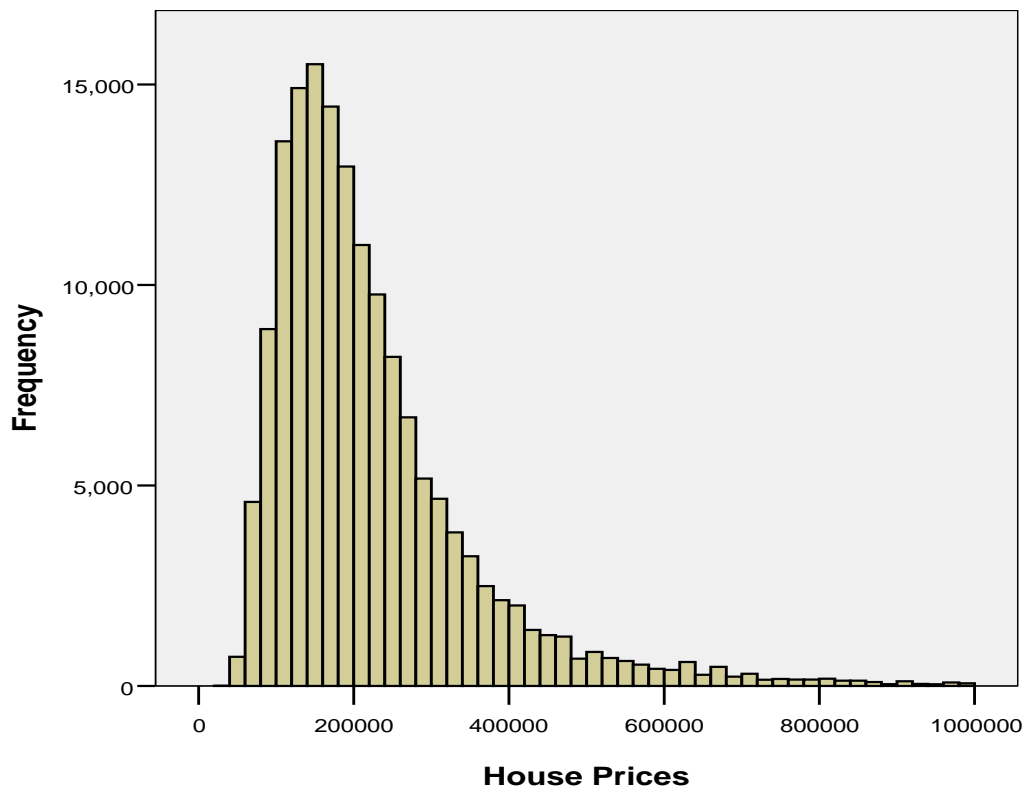


House prices – how is an average house price calculated? Our Acadametrics colleagues report on the differing methodologies adopted by the primary providers of house price indices in the UK. We note that the US Case-Shiller index, like some in the UK, provides a “standardized” house price

## A DISTRIBUTION OF HOUSE PRICES IN ENGLAND AND WALES

The LSL Property Services/ Acadametrics House Price Index, prepared by Acadametrics, provides an average house price which regularly differs from the prices quoted by Halifax (part of the Lloyds Banking Group), Nationwide Building Society and the Land Registry (source of the factual prices at which properties are transacted in England & Wales. We hope the following discussion will cast some light on this topic.

### England & Wales Q2 2010



The above graph shows the distribution of the prices paid for all houses purchased in England and Wales for the period April – June 2010, as recorded by the Land Registry. The interval width for each bar is set at £20,000. The distribution is left-skewed with a long tail off to the right. In fact, the tail extends much further to the right than is depicted, with the highest price paid during the period being £8.9 million; however for clarity purposes the graph has been truncated at the £1 million mark.

The distribution has the following statistical characteristics:

Mean price	£230,950
Median price	£188,300
Mode price	£150,000
Geometric average	£196,300
Minimum price	£ 37,250
Maximum price	£8.9 million

25% quartile	£135,300
75% quartile	£271,000
Count	157,622

The mean price is the arithmetic average. The median price is the half way point; that is, if all houses sold during the period were put in a long line next to each other in ascending order of price, the median value is the price of the house half way along this hypothetical street. The 25% quartile would be the value of

a house a quarter of the way along the street and, similarly, the 75% quartile would be the value three quarters of the way along the street. The mode is the most frequently paid price, which occurs at the peak of the distribution curve. The geometric average is often used when studying growth patterns in data series. It is calculated by taking the natural log of each price in the data set, calculating the arithmetic mean of these log values and then converting the result back to the original scale.

All of the above statistics are unadjusted and have not, therefore, been subject to any seasonal or mix adjustment.

The “average” house prices quoted by the leading Index providers for the period April – June 2010 are as follows:

	Average price
Halifax	£167,283
Nationwide	£169,025
Land Registry	£165,757
CLG (Table 592)	£213,109
LSL/Acadametrics	£221,475

The Halifax, Land Registry and LSL/Acadametrics house prices are seasonally adjusted, whereas those for CLG and Nationwide are not. We estimate that our reported house price would be £600 lower, if we did not apply any seasonal factors to the data. Note that both CLG and Nationwide publish monthly and annual house price inflation results which, unlike those for their average house prices, are seasonally adjusted.

Halifax and Nationwide both use a “standardised” house as the basis of their calculations. They do not advise on the make-up of the “standard” house, but it will have been defined as having a set number of bedrooms, living rooms, a bathroom etc. The ‘standardised’ house price is then calculated by summing the current value of each separate element of the house to arrive at the current total value. The Halifax ‘standard’ house is based on research carried out in 1983. Nationwide advise that the representative property which it tracks was updated in 1993. The Halifax and Nationwide “standardised” prices may no longer represent the ‘typical’ property that is now purchased in the UK, to the extent that the market has subsequently moved on from the representative property of the eighties or nineties. However, both the lender indices have been using the same methodology for some twenty years which provides an excellent basis to compare prices over a long period of time.

Land Registry bases its house values on the April 2000 “geometric average” price. Each month it calculates the level of house price inflation that has been prevalent, using a repeat sales regression methodology, which compares prices only of houses that have been sold more than once and calculates the change in price since the previous sale. The index then updates the “geometric average” April 2000 house price by the calculated level of monthly inflation.

Both CLG and LSL/Acadametrics calculate their house prices using an ‘arithmetic average’ approach, which is then mix-adjusted to maintain consistency over time between areas and property types. CLG updates the mix-adjustment it uses each January (Table 592) whereas LSL/Acadametrics has used the same mix-adjustment weights since 2004, in order not to cause retrospective index changes. The weights are based on the approximately 4.9 million transactions that took place between January 2000 and December 2003. It is believed that the reason the CLG ‘average price’ is somewhat below the LSL/Acadametrics average price analysed above, is that its source data are derived from the ‘Regulated Mortgage Survey’, which does not include cash sales. Typically, houses at the top-end of the market are purchased by means other than through the mortgage lenders. The LSL/Acadametrics average price is also currently lower than the mean price of the Q2 2010 dataset due to the mix-adjustment between the regions. The current housing market has a larger preponderance of sales in

the Greater London area than is the 'norm', which results in a lower 'average' price being reported by LSL/Acadametrics.

To come back to the initial question, why is our 'average' price so different from that of Halifax and Nationwide? The answer is that the LSL/Acadametrics price is closely based upon the average prices reported to the Land Registry being an 'arithmetic average' price, mix adjusted to maintain consistency over time. By contrast Halifax and Nationwide provide what may be thought of as a 'notional' price being that of a 'standard' house, based on the 'average features' of a home. The Land Registry 'average' is based on the 'geometric average' price, prevailing in April 2000, updated thereafter by the measured monthly house price inflation. In April 2000 the 'geometric average' price was 20% below the 'arithmetic average', with the differential between the Land Registry price and the LSL/Acadametrics 'arithmetic average' price having grown to some 25%, at the present day. Whilst Land Registry describes its price as a "standardised" price, it does not appear to represent the price of a 'standard' house as in the lender indices. The CLG index average price, is based upon prices at mortgage completion, using a procedure comparable with that used for the LSL/Acad index.