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DOI:

[10.1080/21681376.2014.985702](https://doi.org/10.1080/21681376.2014.985702)

*Document Version*

Publisher's PDF, also known as Version of record

[Link to publication record in King's Research Portal](#)

*Citation for published version (APA):*

Reades, J. (2014). Mapping changes in the affordability of London with open-source software and open data: 1997–2012. *Regional Studies, Regional Science*, 1(1), 336-338. <https://doi.org/10.1080/21681376.2014.985702>

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## Mapping changes in the affordability of London with open-source software and open data: 1997–2012

Jonathan Reades

To cite this article: Jonathan Reades (2014) Mapping changes in the affordability of London with open-source software and open data: 1997–2012, *Regional Studies, Regional Science*, 1:1, 336–338, DOI: [10.1080/21681376.2014.985702](https://doi.org/10.1080/21681376.2014.985702)

To link to this article: <http://dx.doi.org/10.1080/21681376.2014.985702>



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Published online: 06 Dec 2014.



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## REGIONAL GRAPHIC

### Mapping changes in the affordability of London with open-source software and open data: 1997–2012

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*(Received 2 November 2014; accepted 5 November 2014)*

This work shows how open data and open-source software can be used to create sophisticated maps from large spatial data sets. The resulting maps enable both the fine-grained details of London's property boom and the overarching impact that this is having on households with median earnings to be explored.

**Keywords:** open-source software; QGIS; Postgres; spatial databases; London; property prices; affordability

Since the mid-1990s, in spite of a brief correction in 2007, London's property market has seen unprecedented growth. In fact, the capital's seeming invulnerability to market crashes has increased demands by international money for 'safe as houses' investments. For Londoners with a foot on the property ladder things are looking up, but for many others the prospect of ownership is receding. The challenges facing 'Generation Rent' have received extensive coverage in the papers, but the confluence of cheap hardware, free software and open data enable this process to be brought to life visually.

#### Method

With an eye to continued innovation in the technology industry, the UK government has embarked on an ambitious plan to open up many of its departments' and agencies' data to the public. Amongst the largest and most exciting of these are the Land Registry's Price Paid Data Set<sup>1</sup> and the Ordnance Survey's (OS) OpenData.<sup>2</sup>

With more than 20 million records, and new transactions added monthly, Price Paid data covers the open market for housing in England and Wales at the individual address level. Only subsidised shared ownership and corporate transactions are excluded. Open-Data covers topics such as transport, terrain and built environment geographies. The only spatial data used here i.e. not yet accessible for free are the postcode polygons used in place of a full address lookup.<sup>3</sup>

The volume of transactional data contained in the Price Paid data set made working directly within a geographical information system (GIS) difficult, and so the free Post-GIS database plug-in was used for data storage and processing. By extending the already powerful – and free – Postgres database with an understanding of geography, every transaction in the Price Paid data set can be mapped to a point within the Open-Data layers in a single query. At this point, the – and, again, free – QGIS application

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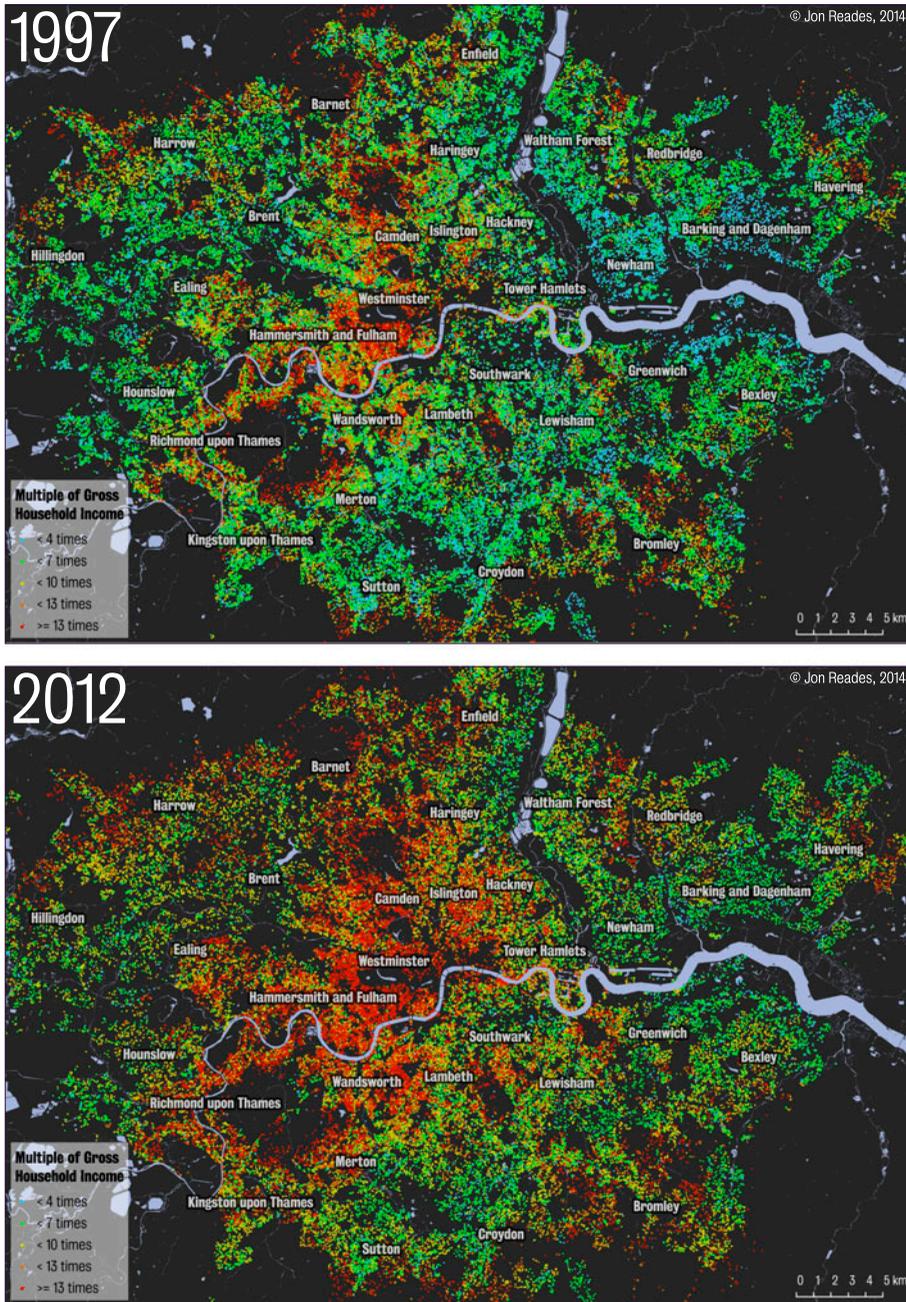


Figure 1. Changes in London property affordability: 1997—2012.

Note: Contains transactional data produced by Land Registry © Crown copyright 2014; Ordnance Survey data © Crown copyright and database right 2013; Royal Mail data © Royal Mail copyright and database right 2013; National Statistics data © Crown copyright and database right 2013.

enables one to add data from Postgres directly to the base map without exporting to a shapefile first, and to calculate new fields on the fly.

## Results

The point representation of transactions reveals tiny pockets of seeming affordability hidden within even the wealthiest areas; however, the visualizations emphasize the extent of the capital's unaffordability. No longer is it the traditionally exclusive axis between Kensington and Kingston upon Thames that is off-limits; spatially displaced demand (Hamnett, 2009) means that even the historically deprived East End is now, at best, something of a stretch for most households.

Once, maps such as these could only have been built using expensive, proprietary software. By lowering the 'cost of participation', open-source software and large, open data sets create new possibilities in advocacy and engagement. The primary obstacle today is, in fact, education: we have much to teach our geographers – and other social scientists – about how to code (Lazer et al., 2009; Singleton, 2014).

## Notes

1. See <https://www.gov.uk/government/collections/price-paid-data/>.
2. See <http://www.ordnancesurvey.co.uk/business-and-government/products/opensource-products.html/>
3. In principle this issue too could have been circumvented using Voronoi polygonization of the more readily accessible postcode points; however, for the sake of accuracy and simplicity I opted to use the polygons directly.

## References

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