# Nearest Neighbours

**Background**

The Chartered Institute of Public Finance and Accountancy (CIPFA) Nearest Neighbours model seeks to measure similarity between Local Authorities. This is done by following the traditional ‘distance’ approach whereby a selection of variables (see below) is standardised (with a mean value of zero and a standard deviation of one) and the Euclidian distance between all possible pairs of local authorities is calculated1. These distances are then summed across every single subject and ‘rebased’ (by assigning a distance of 1 to the farthest neighbour meaning all overall distances will lie between zero and one) to calculate the final distance.



It should be noted that the output returned by these calculations is a simplistic way of presenting complex underlying data. Broadly speaking, the results are what might be expected, though the outcome ultimately relies on the indicators and mathematical procedures used.

For further information please see <http://www.cipfastats.net/resources/nearestneighbours/>.

**2018 model**

CIPFA have updated their Nearest Neighbours Model in 2018, resulting in amended peer groups for local authorities. These new benchmarking groups have been implemented in Fingertips from April 2018.

The CIPFA groups used in Fingertips are those provided by CIPFA as their “default” groupings – these include in benchmarking groups the 15 nearest neighbours selected only from local authorities of the same type.

For upper tier LA comparisons, LAs are only compared within one of these groups:

• Counties

• London boroughs

• All other unitary authorities (including metropolitan districts)

For lower tier LA comparisons, LAs are only compared within one of these groups:

• Non-metropolitan districts

• London boroughs

• All other unitary authorities (including metropolitan districts)

The CIPFA model allows selection of the indicators used to define the benchmarking groups, but again the groups used in Fingertips are those based on the “default” selection of indicators. These are:

• Population

• Proportion of population aged 0 to 17

• Proportion of population aged 75 to 84

• Proportion of population of working age

• Output area density

• Output area based sparsity

• Taxbase per head of population

• Proportion of population unemployed

• Retail premises (m2) per 1,000 population

• Housing benefit caseload (Proportion of population in receipt of housing benefit)

• Proportion of population born outside the UK and Ireland

• Proportion of households with less than four rooms

• Proportion of households in social rented accommodation

• Proportion of persons in lower NS-SEC (social) groups

• Standardised mortality ratio for all persons

• Authorities with coast protection expenditure

• Non-domestic rateable value per head of population

• Proportion of properties in council tax bands A to D

• Proportion of properties in council tax bands E to H

• Area cost adjustment (other services block**)**

1 – Euclidian distance (X, Y) = $\sqrt{\sum\_{i}^{}\left(X\_{i}-Y\_{i}\right)^{2}}$