Location Quotients

A Location Quotient is a way of measuring the concentration of a geographical variable in a particular location. The calculation does this by comparing the chosen variable in a small area with that variable at a larger spatial area. It can be expressed as a ratio or as a single calculated figure.

However, a single location quotient figure holds very little meaning on its own. Instead, different location quotients, for different variables could be compared, or one could see how the location quotient for a variable changes over time. Equally, one could compare the same variable for two different locations.

The location quotient has traditionally been used by economic geographers to show the concentrations of different industries in different locations. However, it can have much wider uses for geographical researchers:

- Demography - how different **age groups** are concentrated in different areas of a region or country.
- Geomorphology - how concentrated certain **rock types** are in bedload samples in different locations.
- Industry - the concentrations of different **occupational sectors** in areas of a country.
- Settlements - how concentrated different **favourability scores** are in the spatial area around a redevelopment site.
- Development - the concentration of **teenage mothers** in different countries within a continent.
- Ecology - how concentrated certain **flowering species** are within different areas of a grassland habitat.
- Weather and Climate - the concentration of **tropical storm landfalls** in different areas of the same coastline over time.

How to carry out a location quotient calculation:

For this example, a geographical researcher wishes to investigate how concentrated a particular ethnic group has become in a particular London borough. They will use the 2001 and 2011 census data to calculate location quotients for the Asian/Asian British population of the borough of Brent in those time frames. The researcher formulated the following hypothesis:

"The concentration of Asian/Asian British people in Brent will have increased between 2001 and 2011 compared to the same data for London as a whole."

The researcher started by finding the data from the two censuses online, and summarised it in a table.

	No. Asian/Asian British people (V)		Total number of people (T)	
Brent 2001	73,062	(v_1)	263,464	(t_1)
Brent 2011	105,986	(v_2)	311,215	(t_2)
London 2001	866,693	(V_1)	7,172,091	(T_1)
London 2011	1,511,546	(V_2)	8,173,941	(T_2)

They then used the following formula to calculate a location quotient (LQ) for 2001 and another for 2011.

$$LQ = \frac{(v_x / t_x)}{(V_x / T_x)}$$

$$LQ\ (2001) = \frac{(73{,}062 / 263{,}464)}{(866{,}693 / 7{,}172{,}091)} \qquad LQ\ (2011) = \frac{(105{,}986 / 311{,}215)}{(1{,}511{,}546 / 8{,}173{,}941)}$$

$$LQ\ (2001) = \frac{0.277}{0.121} \qquad LQ\ (2011) = \frac{0.341}{0.185}$$

LQ (2001) = 2.29 **LQ (2011) = 1.84**

In this example, London is the large region against which data is compared, so this holds a value of 1. Therefore, both the 2001 and the 2011 censuses reveal that the borough of Brent is unrepresentative of London as a whole when one looks at Asian/ Asian British people: in both years there is a far higher concentration of Asian/Asian British people in Brent than in London as whole.

Between 2001 and 2011 we see the location quotient for Asian/Asian British people in Brent has actually gone down, despite the actual numbers increasing. Therefore in this example, the researcher should reject their hypothesis.