Simpson's Diversity Index

The **Simpson's Diversity Index** is used to calculate the degree to which an area is diverse compared to another or to a national average. It relates the number of individuals of a kind to the total number of individuals in an area.

Though primarily used in biodiversity studies, the Index can also feature in research into demography and social structures.

Worked example:

An area of derelict land was surveyed by a student. They noted the different vegetation species found there and their frequency in a given area.

Species	Frequency (*n*)	n/N	n/N^2
Daisy	15	0.053	0.003
Scentless mayweed	10	0.036	0.001
Groundel	104	0.370	0.137
Ragwort	42	0.149	0.022
Hairy bittercress	55	0.196	0.038
Fat hen	22	0.078	0.006
Nettle	9	0.032	0.001
Forget me not	7	0.025	0.001
Field speedwell	17	0.060	0.004
Total (N)	281	Total (Σ)	0.213

These individual frequencies are divided by the total number of individuals. The result of this calculation is then squared and its total recorded.

$$D = 1 - (\Sigma (n/N)^2)$$

$$D = 1 - (0.213)$$

$$D = 0.787$$

On its own, this result does not have any meaning, so would need to be compared to other areas or to larger scale comparative data.

The *D* value falls between zero (uniformity) and one (absolute diversity). The larger the value of the index, the more diverse the field site.