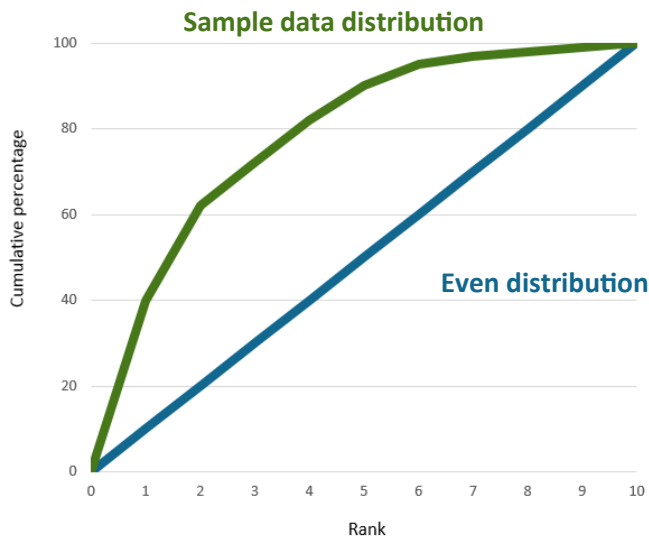


## Lorenz Curves

A **Lorenz Curve** is a graphical method of showing how diverse a set of sample data is when compared to a norm, or expected distribution of data across a series of **categories**.

For example, one might compare the distribution of a population across different age categories. The expected distribution would be an even distribution, with equal numbers in each age group. Other data that works well with Lorenz Curves can include occupation structure, bedload or sediment size, ethnic diversity, frequency of observed rock types along a transect or quantities of different types of retail units in a town.



The further the sample data line sits away from the even distribution line, the greater the level of inequality there is in that data. In this example, the sample data shows a largely uneven distribution across the different categories in the data set.

### Worked example:

A geographer wished to see the distribution of people in different age groups in two different countries.

A table was created displaying the raw data:

Age Range	Japan	Bangladesh
0 - 19	22,106,650	63,535,237
20 - 39	28,296,512	55,715,515
40 - 59	33,981,079	32,256,351
60 - 79	30,822,986	9,937,563
80+	11,116,487	1,466,198
TOTAL	126,323,714	162,910,864

This data was then placed in quantitative order and each age category given an appropriate rank.

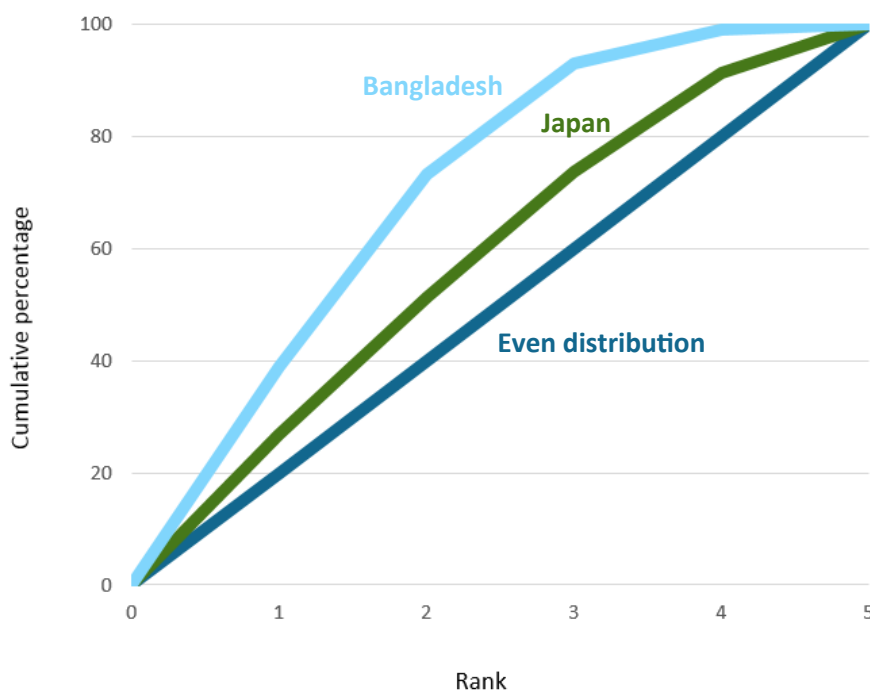
Age Range	Japan	Rank
40 - 59	33,981,079	1
60 - 79	30,822,986	2
20 - 39	28,296,512	3
0 - 19	22,106,650	4
80+	11,116,487	5
TOTAL	126,323,714	

Age Range	Bangladesh	Rank
0 - 19	63,535,237	1
20 - 39	55,715,515	2
40 - 59	32,256,351	3
60 - 79	9,937,563	4
80+	1,466,198	5
TOTAL	162,910,864	

Age Range	Japan	Rank	Percentage	Cumulative Percentage
40 - 59	33,981,079	1	26.9	26.9
60 - 79	30,822,986	2	24.4	51.3
20 - 39	28,296,512	3	22.4	73.7
0 - 19	22,106,650	4	17.5	91.2
80+	11,116,487	5	8.8	100
TOTAL	126,323,714			

Age Range	Bangladesh	Rank	Percentage	Cumulative Percentage
0 - 19	63,535,237	1	39.0	39.0
20 - 39	55,715,515	2	34.2	73.2
40 - 59	32,256,351	3	19.8	93.0
60 - 79	9,937,563	4	6.1	99.1
80+	1,466,198	5	0.9	100
TOTAL	162,910,864			

Percentages and cumulative percentages were then calculated for each age category and the latter figures used to draw a set of Lorenz Curves on a single set of axes.



In this example, we can see that the distribution of people in different age categories in Bangladesh is far more diverse than that of Japan, though both countries have age structures that are not evenly distributed.