

What you need to understand quantitative data

# MATH FOR JOURNALISTS

# PERCENTAGE CHANGE

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No number has any meaning unless it is compared with something else.

- ✖ Percentage change is used to get an idea of how much something has changed from one point to another. In storytelling it can be used to show progress or lack of it.

**Example:**

- ✖ Kenya's GDP per capita was US\$322 in 1960 and 584 in 2011. How has it changed from 1960 to 2011?

## **Answer:**

First subtract the 1960 GDP figure from the 2011 figure and get 262. That is how much the GDP grew in those years. But what was the percentage of change? To find that out divide this difference by the 1960 GDP figure then multiply by 100.

## Life expectancy dataset

- ✖ **Demonstration:** The percentage change in life expectancy from 1990 to 2012.

### Exercise:

- ✖ Which country recorded the best improvement in life expectancy between 1990 and 2012?
- ✖ Which country recorded the highest reduction in life expectancy between 1990 and 2012?
- ✖ What was the percentage change in Kenya's life expectancy between 1990 and 2012?
- ✖ How many countries experienced a decline in life expectancy during that period? Of these, how many are from Africa?

- ✖ How many countries experienced no change in life expectancy ?
- ✖ How many African countries recorded higher improvement in life expectancy than Kenya over that period?
- ✖ Which East African country recorded the best improvement in life expectancy and which ones have higher life expectancy than Kenya?

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- ✖ What is the world's average life expectancy?
  - ✖ How many countries in Africa have a life expectancy that is above the world average?

# MEASURES OF CENTRAL TENDENCY

- ✖ A measure of central tendency is a single value that attempts to describe a set of data by identifying the central position within that set of data. They include mean, median and mode.

## Mean

- ✖ A number expressing the central or typical value in a set of data. It tells you something about where the center of the group is and is the most commonly used way of looking at what is normal. To calculate the average add up all the values in a set of data and then divide that sum by the number of values in the dataset.

# MEAN, MODE, MEDIAN

Mayor's cronies dataset

Exercise:

What is was the total salary for the City Council employees last year? This year?

Calculate the total percentage raise the employees received?

Who received the highest percentage raise? Who got the lowest?

What was the average pay last year? This year?

How many employees earn an above average wage?

# MODE

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The most frequently occurring number in a group of numbers. For example, the mode of 4, 5, 5, 6, 8, and 12 is 5.

What is the mode salary?

## Median

The median is the middle score for a set of data that has been arranged in order of scale. The median is less affected by outliers and skewed data and it helps in showing inequality. For instance, if you earn less than the mean, you could still earn more than half of the population simply because the majority of the population earn little money. To calculate the median, sort the data we have and pick the value right in the middle.

# RATIO

## Exercise:

Look at the dataset on crime report Jan-May 2013 then read the following stories and indicate which one is accurate.

Rift Valley tops crimes statistics:

<http://www.nation.co.ke/News/Rift-Valley-tops-crime-statistics/-/1056/1873530/-/11w8wc9/-/index.html>

## Crime dataset

Calculate the crime rate by region and Kenya's overall crime rate.

- Police statistics shows crime level down by 10 per cent between January and May 2013
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[http://www.standardmedia.co.ke/?  
articleID=2000085284](http://www.standardmedia.co.ke/?articleID=2000085284)

Most dangerous places in Kenya

[http://www.thepeople.co.ke/3615/most-  
dangerous-places-in-kenya/](http://www.thepeople.co.ke/3615/most-dangerous-places-in-kenya/)

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A ratio gives us a way to compare one number to another on a rational basis.

## **Crime 2013 dataset**

- ✖ Calculate the crime rate by region and Kenya's crime rate.