

If It Moves, Measure It! Basic Business Statistics Explained

By Lyndsay Swinton

Understanding the basic principles of statistics transforms a good manager into a great manager. Using basic business statistics, you can turn data into knowledge and increase your decision making accuracy. In the time it takes to make a coffee, you'll know the most useful basic business statistics and become fluent in number-speak.

"Lies, damn lies and statistics".

But first, a cautionary note. Statistics are generated by everyday people who have underlying motives, both good and bad, for presenting numerical information. Your job is to question and question some more until you're satisfied you understand;

- What question the data is answering?
- Who paid for the research?
- What's the data source and how was it captured?
- How has the information been manipulated from its raw form, to its current form?

Conversely, if you are presenting information, it's good practice to answer those questions up-front, and you'll save yourself a major grilling from your audience.

Basic Business Statistics Terms

- **Mean** - the arithmetic mean is the average value of a set of numbers. E.g. the average in this number series, 5 6 8 1 2 7 5 6 4 9, is
 $5+6+8+1+2+7+5+6+4+9 = 53$ divided by the how many numbers in the series = 10, which gives you a mean of 5.3

- **Mode** - the number occurring most frequently, in a set of numbers. E.g. in this number series, 4 5 3 4 8 4 5 6 4 2, the mode is 4 as it occurs most frequently.
- **Median** - the middle value of the distribution, that is, if the numbers were put into order, an equal number lie above and below the median number. E.g. in this number series, 2 2 3 3 4 5 5 6 8, the median is 4 as there are an equal set of number both above and below it.
- **Average** - technically speaking, this can be the mean, mode or median, but usually people expect an average to equal the mean.
- **Standard Deviation** - nope, nothing to do with kinky fetishes, and everything to do with describing the data and how it varies. If a set of data has a high standard deviation, it means that the numbers include teeny numbers and massive numbers, but if the standard deviation is small, the range of the numbers is small too.
- **Outliers** - if you want to mislead and draw wonky conclusions, it's best to keep your freaky way off the scale numbers in your study. But often, those radically different numbers are because you've made a mistake. However, check them out before you cast the outliers aside, because you may have stumbled upon something genuine and worth further investigation.
- **Significance** - Numbers geeks get a bit sniffy if you don't understand statistical significance. In short, if you are comparing the results of a test and want to confidently say one result is better than the other, you have to test for statistical significance. This means doing a bit of number-crunching to figure out whether the difference in your results is genuine or is just due to something random, like the weather, day of the week, or errors in your data capture method.

- **Normal Distribution (Bell shaped curve)** - so named because when you plot the frequency of the numbers in a data set, you get a bell shaped line. A classic example of a bell shaped curve is the height of a population, where there are small numbers of extremely tall and extremely small people, and the majority residing somewhere in the middle.
- **Skewed Distribution** - if you did the same height exercise but only used basket-ball players, you're distribution curve will be skewed towards taller people. Non-bell shaped curves are valid descriptions of data too - don't be fooled into thinking everything has to be a perfectly symmetrical bell shape.
- **Quartile** - you'll probably come across this term in relation to salaries. Companies often compare who pays what for similar jobs and put this onto a graph. This will usually give a normal distribution, centred about the average salary, and ranging from the lowest to the highest pay rates. If you split the normal distribution into 4 pieces, or quartiles, you see what the bottom 25% of people get paid, the next 26% to 50% etc etc.

Some companies have a policy where if you are new into your job you will be paid in the lower quartiles, and as you gain skills and experience, your salary will increase and head into the upper quartiles. For example, a salary might range from \$40,000 to \$80,000 with the average at \$60,000. You will start in the lower quartiles somewhere between \$40,000 and \$60,000, and progress over time to a salary of between \$60,000 and \$80,000.

That's probably enough basic business statistics for now! Embrace numbers and you will transform from a good to great manager. I'll leave you with a quote to ponder;

"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind."

Lord Kelvin (1824-1907) Scottish physicist and mathematician.

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