

# Statistics How To

Statistics for the rest of us!



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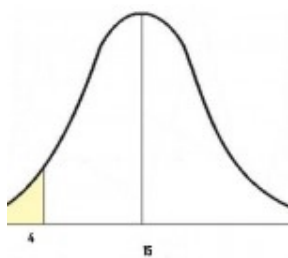
## Population Mean Definition

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## Population Mean Definition



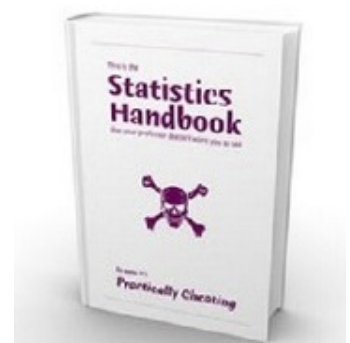
A normal distribution curve showing a mean of 15.

The population mean is an [average](#) of a group characteristic. The group could be a person, item, or thing, like “all the people living in the United States” or “all dog owners in Georgia”. A characteristic is just an item of interest. For example:

- In a school of 1,013 students, the average GPA is 3.1.
- Dogs seen in a certain veterinary practice weigh, on average, 38 pounds.
- Books in one school’s public library are checked out 7 times per year, on average.

In statistics, it’s actually rare that you can calculate the population mean. That’s because asking an entire [population](#) about something is usually cost prohibitive or too time consuming. For example, one veterinary practice probably keeps weight records of all the pets that come in the door, enabling you to calculate the average weight of a dog for that practice (i.e. the population mean for that practice). But if you were working for a pet food company who wanted to know the average weight of a

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## Probability and Statistics Topic Indexes

- Basic Statistics.
- Bayesian Statistics and Probability
- Descriptive Statistics: Charts, Graphs and Plots.
- Probability.
- Binomial Theorem.
- Definitions for Common Statistics Terms.
- Critical Values.
- Hypothesis Testing.
- Normal Distributions.
- T-Distributions.
- Central Limit Theorem.
- Confidence Intervals.
- Chebyshev's Theorem.
- Sampling and Finding Sample Sizes.
- Chi Square.
- Online Tables (z-table, chi-square, t-dist etc.).
- Regression Analysis / Linear Regression.
- Non Normal Distributions.

$\Sigma$  means “the sum of.”

X = all the individual items in the group.

N = the number of items in the group.

**Sample question:** All 57 residents in a nursing home were surveyed to see how many times a day they eat meals.

- 1 meal (2 people)
- 2 meals (7 people)
- 3 meals (28 people)
- 4 meals (12 people)
- 5 meals (8 people)

What is the population mean for the number of meals eaten per day?

**Solution:**

**Step 1:** Sum up all of your X values. This is the  $\Sigma X$  portion of the population mean formula.

[illegible]

Note: You could also sum this with the following formula:

$$(1 \cdot 2) + (2 \cdot 7) + (3 \cdot 28) + (4 \cdot 12) + (5 \cdot 8) = 188.$$

**Step 2:** Divide your answer to Step 1 with the number of items in your data set. There are 57 people, so:

$$188 / 57 = 3.29824561404$$

That's an average of 3.3 meals per person, per day.

The population mean is 3.3.

Figuring out the population mean should feel familiar. You're just taking an average, using the same formula you probably learned in basic math (just with different notation). However, care must be taken to ensure that you are calculating the mean for a population (the whole group) and not a sample (part of the group). The symbols for the two are different:

Population mean symbol =  $\mu$

Sample mean symbol =  $\bar{x}$

### Next: Difference Between a Statistic and a Parameter

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