

# Re: Standard Deviation & the 68–95–99.7 rule

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*Source:* <http://sci.tech-archive.net/Archive/sci.math/2007-12/msg04449.html>

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- *From:* Maya <maya\_souj@xxxxxxxxxxxx>
  - *Date:* Fri, 21 Dec 2007 15:25:52 -0800 (PST)
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On Dec 21, 3:12 pm, Virgil <Vir...@xxxxxxx> wrote:

In article  
<befa0c10-aa71-454d-8b95-60c00767b...@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,

Maya <maya\_s...@xxxxxxxxxxxx> wrote:

On Dec 21, 1:58 pm, Maya <maya\_s...@xxxxxxxxxxxx> wrote:

On Dec 21, 1:02 pm, "FredJeffr...@xxxxxxx"  
<FredJeffr...@xxxxxxx>  
wrote:

On Dec 21, 11:39 am, Maya  
<maya\_s...@xxxxxxxxxxxx> wrote:

At the bottom of the intro to  
the Wikipedia entry on the  
68–95–99.7  
rule, it states:

"This rule is often used to  
quickly get a rough estimate  
of  
something's probability,  
given its standard  
deviation."

Re: Standard Deviation & the 68–95–99.7 rule

What an awful sentence.

What " thing's " probability  
could I estimate, given the  
thing's  
standard deviation? Let's say  
I have this data set: {6, 6, 8,  
8} .  
It's standard deviation is 1.  
So, given its "1", I can  
estimate the  
probability of ..... what?

[http://en.wikipedia.org/wiki/68-95-99.7\\_rule](http://en.wikipedia.org/wiki/68-95-99.7_rule)

You also need the mean, in the case of your  
data set 7. So the  
68–95–99.7 rule says that about 68% of  
observations will be within 1  
of 7 (between 6 and 8), 95% within 2 of 7  
(between 5 and 9) and 99.7%  
within 3 of 7 (between 4 and 10) IF your  
data set were distributed  
normally.

Say you have a normally distributed data set  
with mean 7 and standard  
deviation 1. Pick an element at random from  
your set. The probability  
of that element's being between 6 and 8 is  
68%, the probability of its  
being between 5 and 9 is 95%, etc.

There is a better example at the bottom of  
this  
page:[http://www-stat.stanford.edu/~naras/jsm/NormalDensity/NormalDensity.h  
tml](http://www-stat.stanford.edu/~naras/jsm/NormalDensity/NormalDensity.html)

Thanks Fred.

## Re: Standard Deviation & the 68–95–99.7 rule

This stuff seems to be going in a circle. The Empirical Rule applies only to Normal Distributions. So I can ascertain some things about the data points in a normal distribution by applying the empirical rule, but I should only apply the empirical rule if I'm first sure that the data set is a normal distribution!

I'm trying to find a real-world use for Standard Deviation and the Empirical Rule, but so far it seems the only uses are to tell me things about a data set if and only if I already know those very things about the data set are already true.– Hide quoted text –

– Show quoted text –

I thought the result of calculating the Standard Deviation of a data set would tell me whether the data set's distribution is Normal, Continuous, or Discrete?

If it can't tell me that, then what good is it to know that data points are either: 1)close to the mean, or 2)not so close to the mean ?

Among other things, this sort of information is used in statistical hypothesis testing, q.v.– Hide quoted text –

– Show quoted text –

IN what way? What would be a simple example of the good of knowing only the SD without knowing which type of distribution the data set is?

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