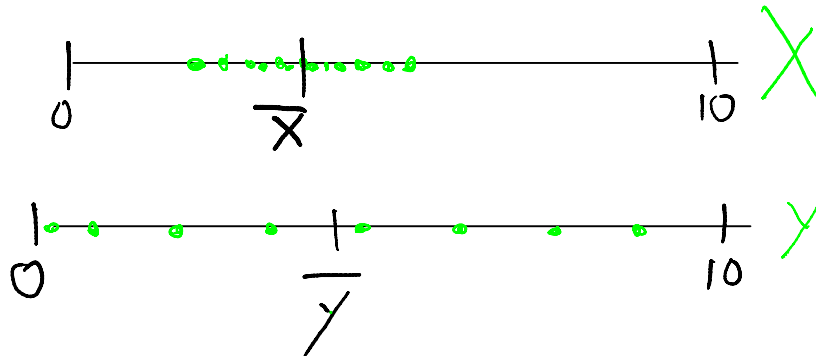


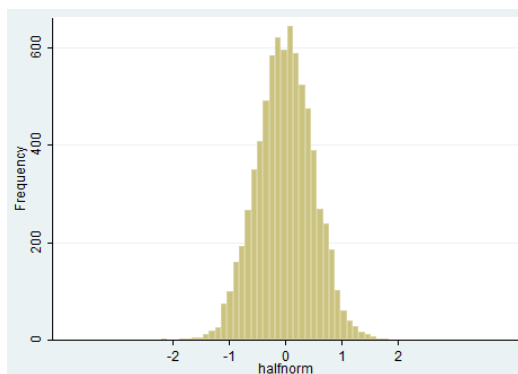
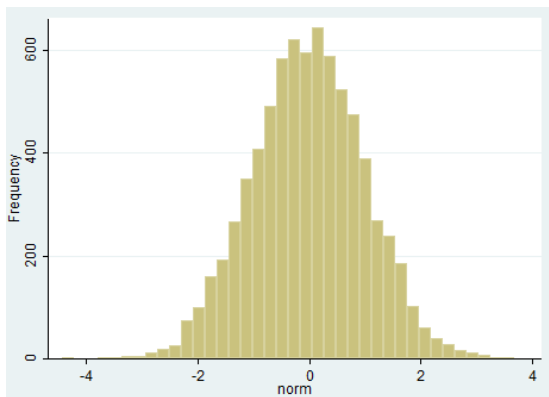
Lecture 4: probability

Tuesday, September 11, 2012
6:37 PM

Std dev



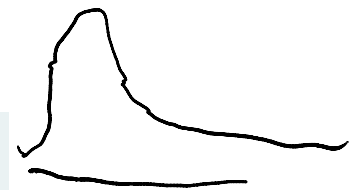
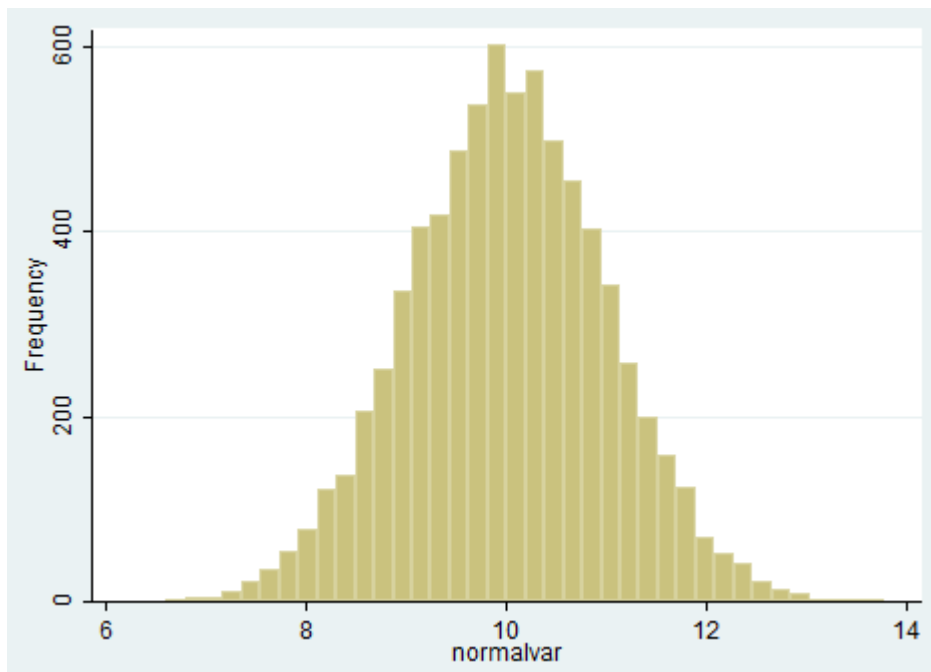
Show Relative Frequency Dist



```
.      sum norm halfnorm
```

Variable	Obs	Mean	Std. Dev.	Min	Max
norm	7500	-.014431	1.004839	-4.41705	3.667405
halfnorm	7500	-.0072155	.5024196	-2.208525	1.833702

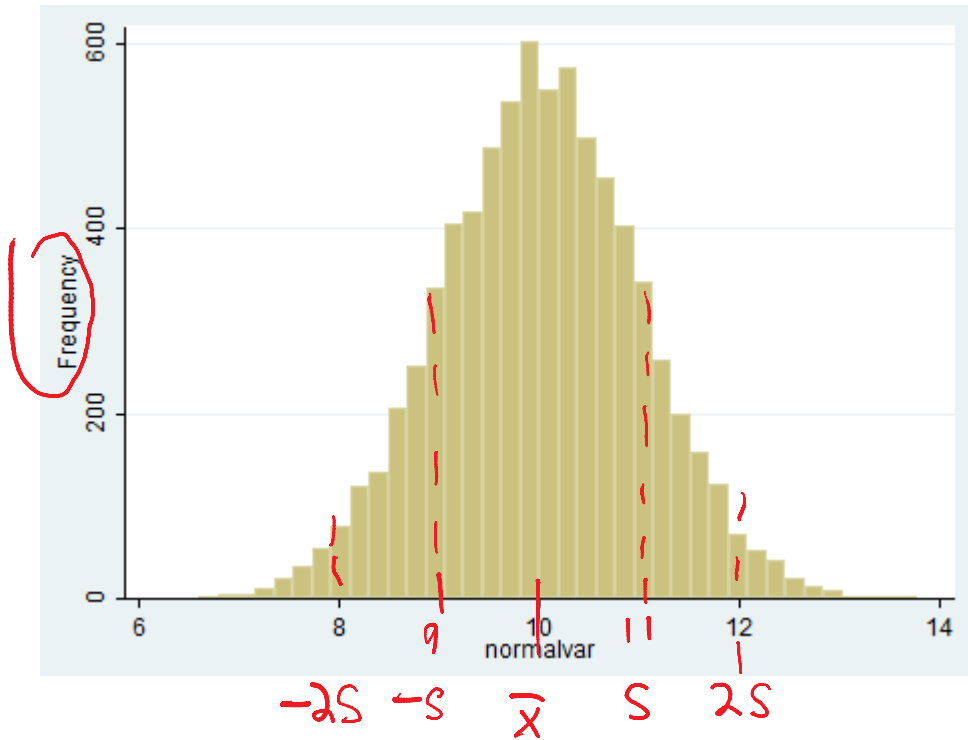
Normal Distribution



```
.      sum normalvar
```

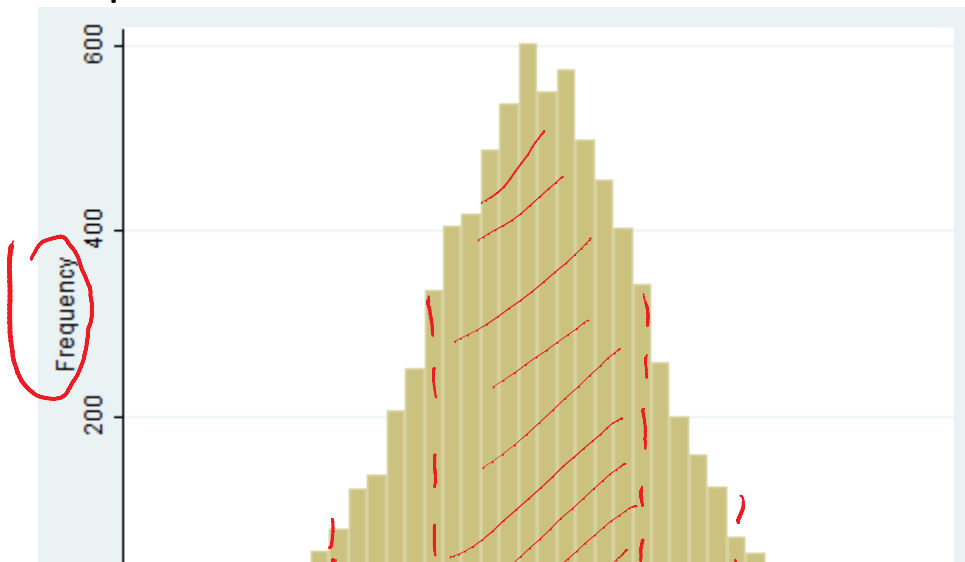
Variable	Obs	Mean	Std. Dev.	Min	Max
normalvar	7500	10.01074	.996638	6.59424	13.78094

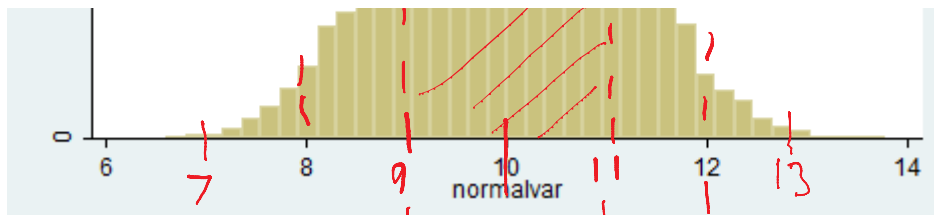
Normal Distribution



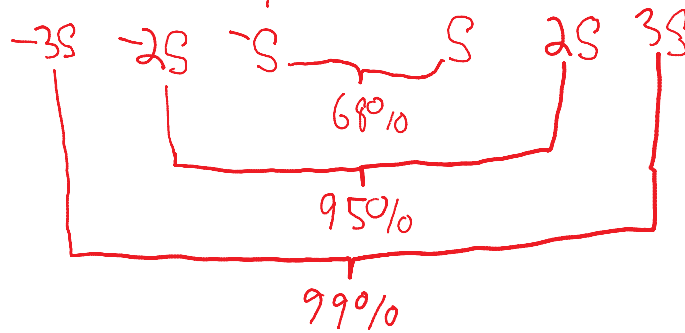
If an observation has a value of 12, how many standard deviations is that away from the mean?
 If an observation has a value of 0, how many standard deviations is that away from the mean?

Empirical Rule



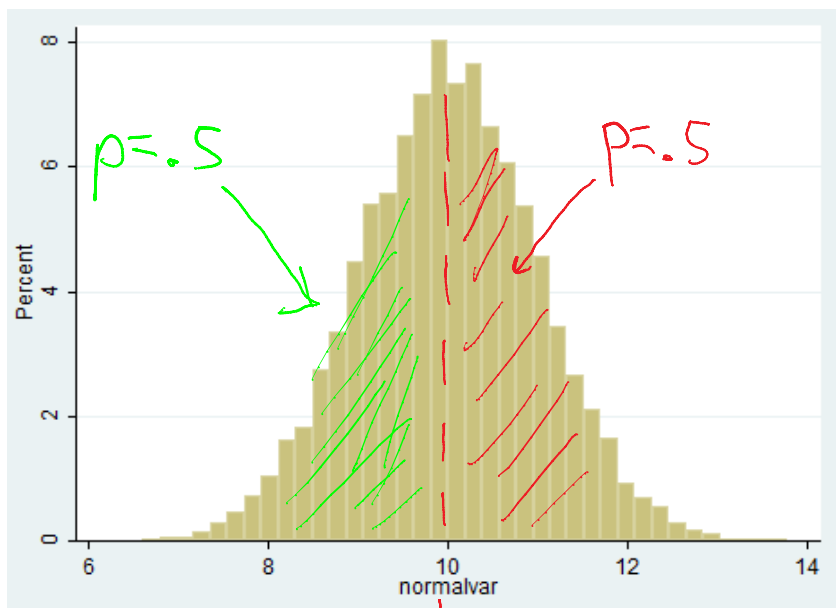


value of X



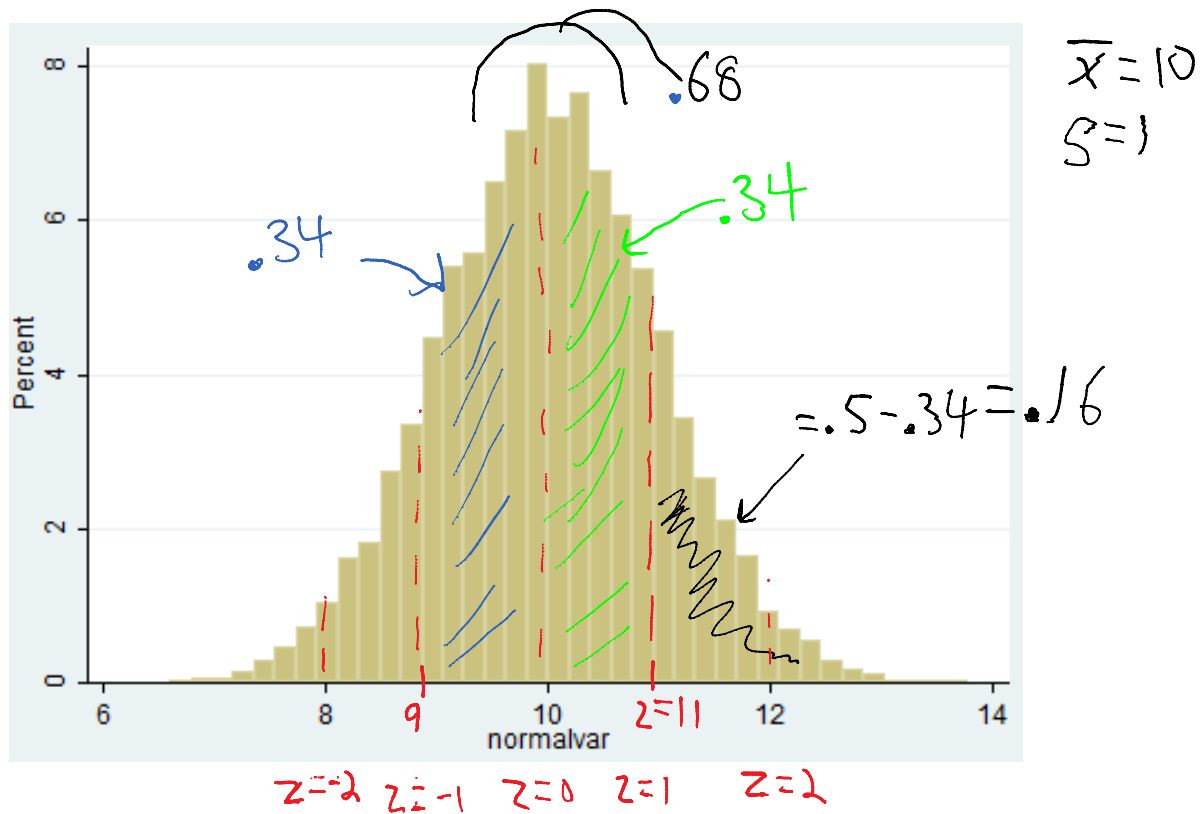
What is probability a random observation will have a value between 9 and 11?
A value between 8 and 12? A value between 7 and 13?

Z scores and probability distributions



$\bar{X} = 10, S = 1$
 $p = \text{probability}$

\bar{X}



- What percentage of observations fall between $z = -1$ and $z = 1$?
- What percentage of observations fall between $z = 0$ and $z = 1$?
- What percentage of observations fall between $z = -1$ and $z = 0$?
- What percentage of observations are greater than $z = 1$?
- What percentage of observations are less than $z = -1$?