

## 0.1 Confidence Interval for a mean (1)

Finally, an example to finish the class:

- For a given week, a random sample of 100 hourly employees selected from a very large number of employees in a manufacturing firm has a sample mean wage of  $\bar{x} = 280$  dollars, with a sample standard deviation of  $s = 40$  dollars.
- Estimate the mean wage for all hourly employees in the firm with an interval estimate such that we can be 95 percent confident that the interval includes the value of the population mean.
- The point estimate in this case is the sample mean  $\bar{x} = 280$  dollars.
- We have a large sample ( $n=100$ ) and the confidence level is 95%. Therefore the quantile is 1.96.
- The standard error is computed as follows:

$$S.E(\bar{x}) = \frac{s}{\sqrt{n}} = \frac{40}{\sqrt{100}} = 4$$

- **Confidence Interval for mean**

$$280 \pm (1.96 \times 4) = (280 \pm 7.84) = ( 272.16 , 287.84 )$$