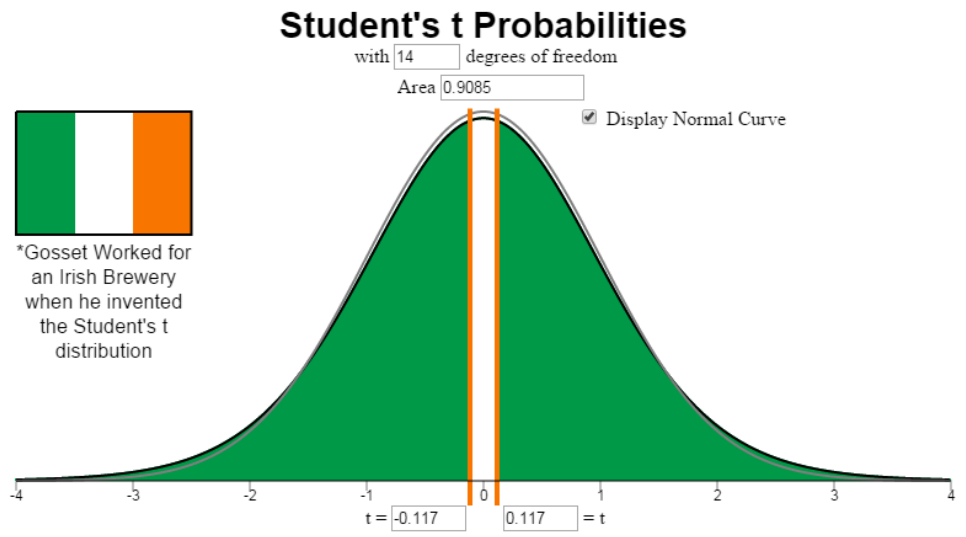


# Lesson 11: Inference for One Mean; Sigma unknown (Hypothesis Test)

## Preparation

## Solutions

Problem	Part	Solution
1	-	<ul style="list-style-type: none"> <li>- Symmetrical</li> <li>- Mean of 0</li> <li>- Exact shape depends on the degrees of freedom</li> <li>- Bell Shaped</li> <li>- More area in the tails than the standard normal distribution</li> </ul>
2	-	$df = n - 1$ (that is sample size - 1)
3	-	$\bar{x} - t^* \times \frac{s}{\sqrt{n}}, \bar{x} + t^* \times \frac{s}{\sqrt{n}}$
4	-	<ul style="list-style-type: none"> <li>- Sigma is not known</li> <li>- We compute a t-score from the Student t-distribution rather than a z-score from the normal distribution</li> <li>- We must now consider degrees of freedom for the t-distribution where the normal distribution did not</li> </ul>
5	-	$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$
6	-	<ul style="list-style-type: none"> <li>- A simple random sample was drawn from a population.</li> <li>- <math>\bar{x}</math> is normally distributed.</li> </ul>
7	-	The mean is 46.733. The standard deviation is 8.827
8	-	It is a random sample from a population. The $\bar{x}$ 's are normally distributed
9	-	(41.845 , 51.622)
10	-	(39.948 , 53.518)
11	A	(41.845 , 51.622)
11	B	(39.948 , 53.518)
12	-	The margin of error for the confidence interval is smaller for a 95% confidence level than a 99% confidence level.
13	A	$H_o : \mu = 47$ $H_a : \mu \neq 47$
13	B	t = -0.117
13	C	df = 14



- |    |   |  |
|----|---|--|
| 13 | D |  |
| 13 | E | P-value = 0.909  |
| 13 | F | fail to reject the null hypothesis   |
| 13 | G | We have insufficient evidence to conclude that the mean age of this realtor's customers who are buying second homes, is different than the national average. |