Example 1. We are testing $H_0 : \rho = 0$ against $H_A : \rho > 0$. We find $r = -0.167, t = -1.05$, and $\text{prob } t \geq |t| = .30$.

- Which $p$ value (upper-tailed, lower-tailed, or two-tailed) is the correct $p$ value?

*Upper-tailed*

- Calculate the $p$ value.

$$p = 1 - \frac{1}{2} \text{prob } t \geq |t| = 1 - \frac{1}{2}(.30) = .85$$
Example 1. We are testing $H_0: \rho = 0$ against $H_A: \rho > 0$. We find $r = -0.167$, $t = -1.05$, and $\text{prob} > |t| = 0.30$.

- On the graph, depict the $p$ value.

\[ t = -1.05 \]

- Make a decision about $H_0$.

**Fail to reject**
Example 2. We are testing $H_0 : \rho = 0$ against $H_A : \rho < 0$. We find $r = -0.02$, $t = -0.12$, and $\text{prob} > |t| = .90$.

• Which $p$ value (upper-tailed, lower-tailed, or two-tailed) is the correct $p$ value?

**Lower-tailed**

• Calculate the $p$ value.

$$p = \frac{1}{2} \text{prob} > |t| = \frac{1}{2} (.90) = .45$$
Example 2. We are testing $H_0 : \rho = 0$ against $H_A : \rho < 0$. We find $r = -.02$, $t = -0.12$, and $prob > |t| = .90$.

- Make a decision about $H_0$

**Fail to reject**
Example 3. We are testing $H_0 : \rho = 0$ against $H_A : \rho > 0$. We find $r = .28$, $t = 1.74$, and

$$prob > |t| = .09.$$ 

• Which $p$ value (upper-tailed, lower-tailed, or two-tailed) is the correct $p$ value?

**Upper-tailed**

• Calculate the $p$ value.

$$p = \frac{1}{2} prob > |t| = \frac{1}{2}(.09) = .045$$
Example 3. We are testing $H_0 : \rho = 0$ against $H_A : \rho > 0$. We find $r = .28$, $t = 1.74$, and

$$\text{prob} > |t| = .09.$$  

- On the graph, depict the $p$ value.

- Make a decision about $H_0$

  Reject
Example 4. We are testing $H_0: \rho = 0$ against $H_A: \rho < 0$. We find $r = .32$, $t = 2.12$, and $\text{prob } > |t| = .04$.

- Which $p$ value (upper-tailed, lower-tailed, or two-tailed) is the correct $p$ value?

**Lower-tailed**

- Calculate the $p$ value.

$$p = 1 - \frac{1}{2} \text{prob } > |t| = 1 - \frac{1}{2}(.04) = .98$$
Example 4. We are testing $H_0 : \rho = 0$ against $H_A : \rho < 0$. We find $r = .32$, $t = 2.12$, and $\text{prob} > |t| = .04$.

- On the graph, depict the $p$ value.

\begin{tikzpicture}
  \node [below right] at (tangent cs:point={(2,0)},solution=1) {$t = 2.12$};
  \node [below left] at (tangent cs:point={(0.01,0)},solution=1) {$p = .98$};
  \node [below left,align=center] at (tangent cs:point={(2,0)},solution=1) {The area to the left of 2.12 is .98.};
\end{tikzpicture}

- Make a decision about $H_0$

**Fail to reject**