

Command	Explanation
<code>t.test()</code>	uh, it performs a $t$ -test
<code>prop.test()</code>	performs a test of proportions
<code>qchisq(p, n - 1)</code>	gives $x$ such that $P(\chi_{n-1}^2 \leq x) = p$ for $\chi_{n-1}^2 \sim \chi^2(n-1)$
<code>qchisq(p, n - 1, lower.tail=FALSE)</code>	gives $x$ such that $P(\chi_{n-1}^2 \geq x) = p$ for $\chi_{n-1}^2 \sim \chi^2(n-1)$
<code>qf(p, v1, v2)</code>	gives $x$ such that $P(F_{v1,v2} \leq x) = p$ for $F_{v1,v2} \sim F(v1, v2)$
<code>qf(p, v1, v2, lower.tail=FALSE)</code>	gives $x$ such that $P(F_{v1,v2} \geq x) = p$ for $F_{v1,v2} \sim F(v1, v2)$
<code>cor(x, y)</code>	finds the sample correlation $r_{xy}$ between $x$ and $y$
<code>cor.test()</code>	tests whether $r_{xy}$ is statistically significant

## Examples

```
t.test(x, mu = 5, conf.level = 0.90)
```

Performs a  $t$ -test using data in  $x$  for  $H_0 : \mu = 5$  against  $H_1 : \mu \neq 5$  at 10% significance.

```
t.test(x, alternative = "greater", mu = 5, conf.level = 0.95)
```

Performs a  $t$ -test using data in  $x$  for  $H_0 : \mu \leq 5$  against  $H_1 : \mu > 5$  at 5% significance.

```
t.test(x, y, conf.level = 0.95)
```

Performs a  $t$ -test using data in  $x$  and  $y$  for  $H_0 : \mu_x = \mu_y$  against  $H_1 : \mu_x \neq \mu_y$  at 5% significance.

```
prop.test(94, 100, .90, alternative = "greater", conf.level = 0.95, correct = FALSE)
```

Performs proportions test with 94/100 successes for claim that true proportion is greater than 0.90. Note that the  $\chi^2$  test statistic in R output is the square of the  $z$ -statistic that we calculate by hand.

```
qchisq(0.05, 9, lower.tail = FALSE)
```

Finds the number  $\chi_{9,0.05}^2$  such that 5% of the mass of the  $\chi^2(9)$  distribution falls above it.

```
cor.test(x, y, method = c("pearson"))
```

Tests whether the correlation coefficient  $r_{xy}$  is statistically significant or not.

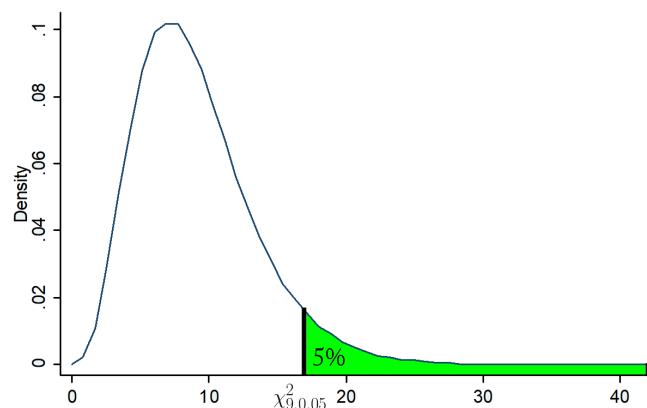


FIGURE 1:  $\chi_{9,0.05}^2$  is the number such that 5% of the mass of the  $\chi^2(9)$  distribution falls above it