

WHAT IS THE CHALLENGE?

Introductory statistics courses in psychology and related fields are often highly challenging for students and associated with increased *statistics anxiety* (Onwuegbuzie et al., 2003). During self-study phases, students often struggle to independently verify whether they have specified the test as intended, which diminishes self-efficacy (Perepiczka et al., 2011). Additionally, the reliance on external (AI-)tools for solving R-related issues may hinder students' ability to learn and intuitively apply the programming language (Yilmaz & Yilmaz, 2023).

HOW DOES IT WORK?

Load the **STARTistica** package
`library(STARTistica)`

Run a statistical test and save it as an R object, e.g.,
`obj <- lm(self-efficacy ~ startistica + self_study, data = data)`

Pass the test object to a verification function
`teach_test(obj)`

ANNOTATED OUTPUTS

Notes:

- Multiple plots have been created. Use the arrows to navigate.
- A table with calculations has been stored in the Global Environment.

Call:

`lm(formula = self_efficacy ~ startistica + self_study, data = data)`

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.02162	0.45683	0.047	0.963
startistica	0.92414	0.06021	15.349	7.36e-15 ***
self_study	0.08234	0.06561	1.255	0.220

Key model results:

- If *startistica* increases by one unit, we predict a change of 0.9241 units for *self_efficacy* (statistically significant, $p < .05$)
- If *self_study* increases by one unit, we predict a change of 0.0823 units for *self_efficacy* (not statistically significant, $p \geq .05$)
- The model explains 90.21% of variance in *self_efficacy*

WHAT DO YOU THINK?

The main aim of STARTistica is to support students in getting started with statistics, thereby increasing students' self-efficacy ...

1. Do you feel the current functionalities achieve this goal or can you think of additional features that could further support it?
2. Does the interface feel approachable for students with little to no coding background, or are there remaining barriers to be addressed?

From a lecturer's perspective, what would encourage you to adopt STARTistica in your coursework?

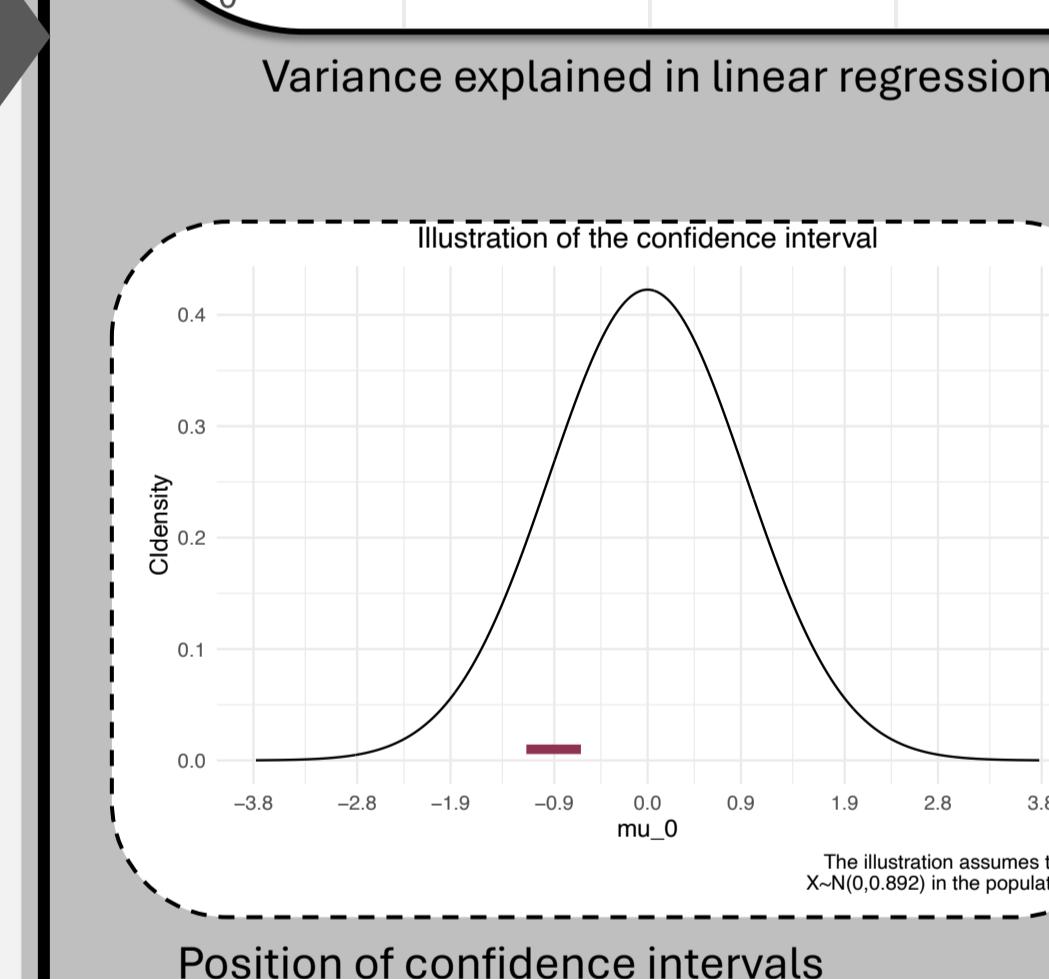
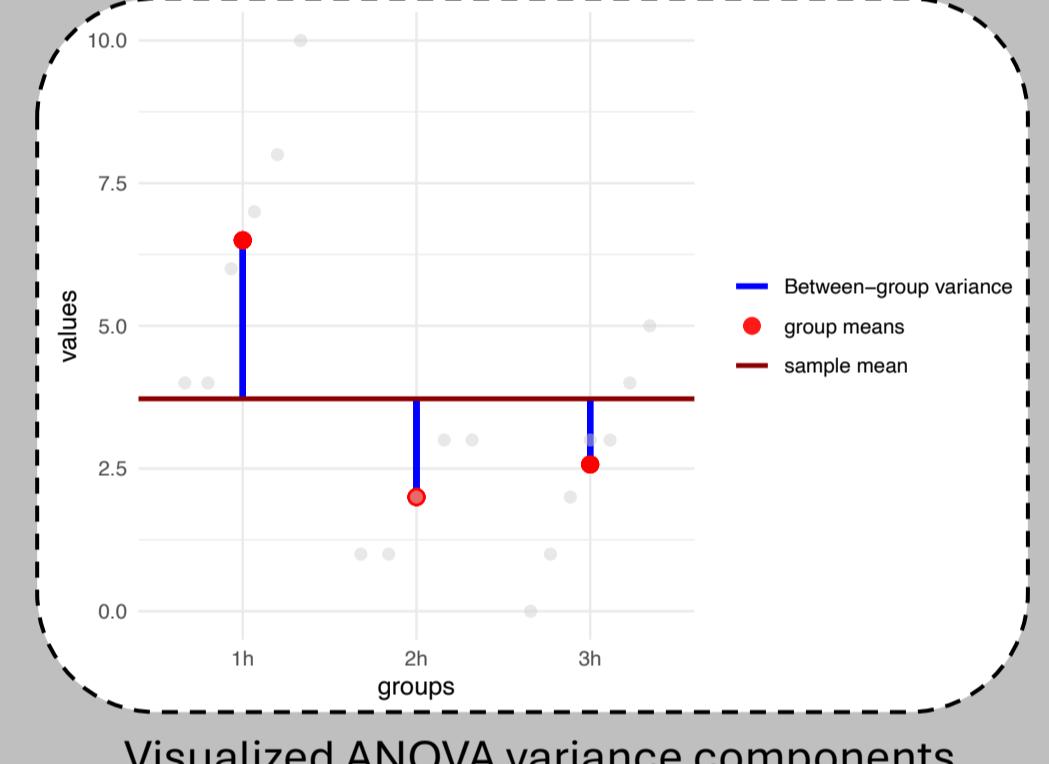
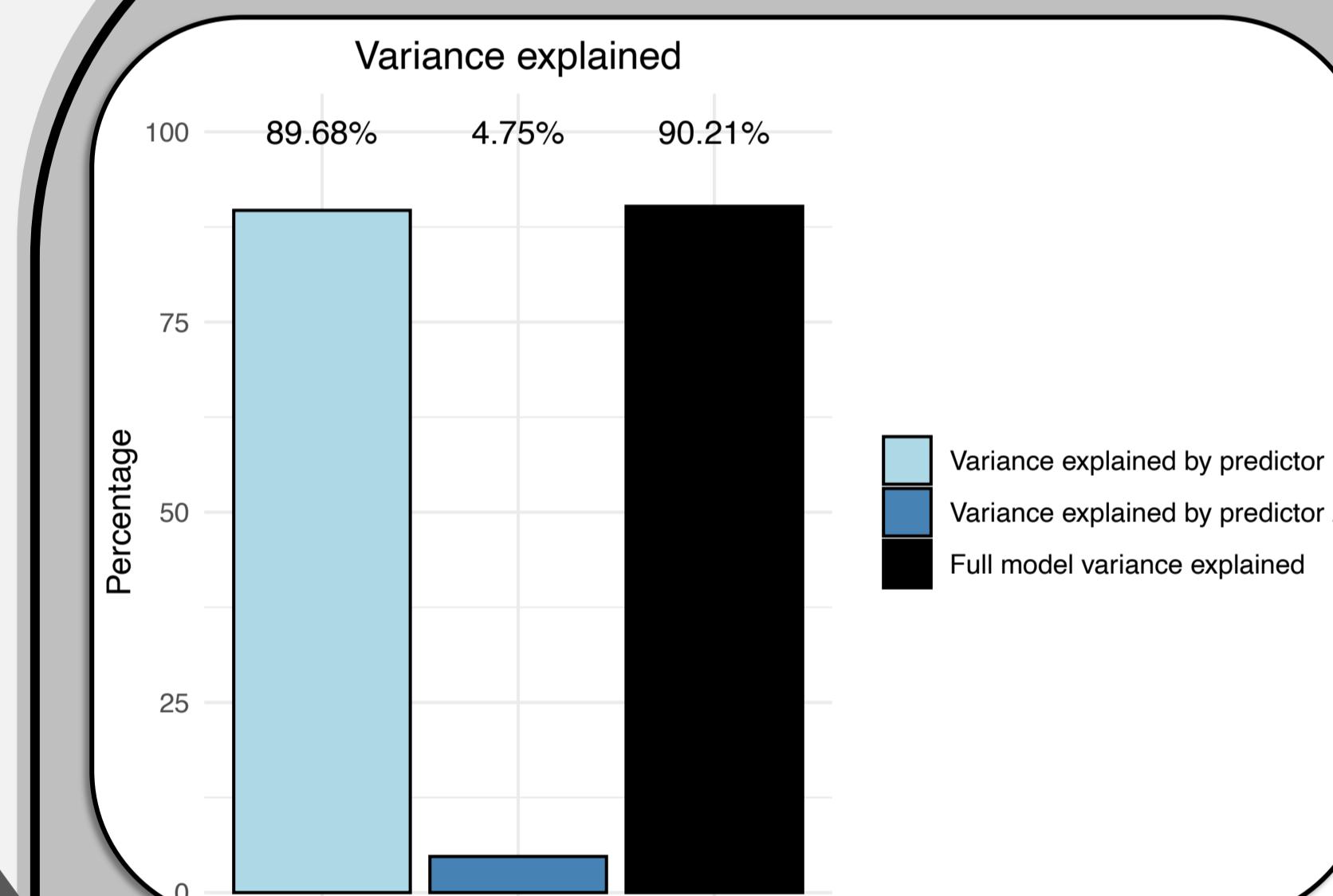
WHAT ARE WE WORKING ON?

Based on evaluations of students' needs, we developed the R package **STARTistica**, which aims at increasing students' self-efficacy when practicing the correct application of statistical test functions. The package provides complementary visualizations and information on test specifications, statistical assumptions, and data characteristics. This allows students to identify potential misspecifications while also serving as an efficient tool for lecturers to introduce and explain statistical tests and concepts in an illustrative way.

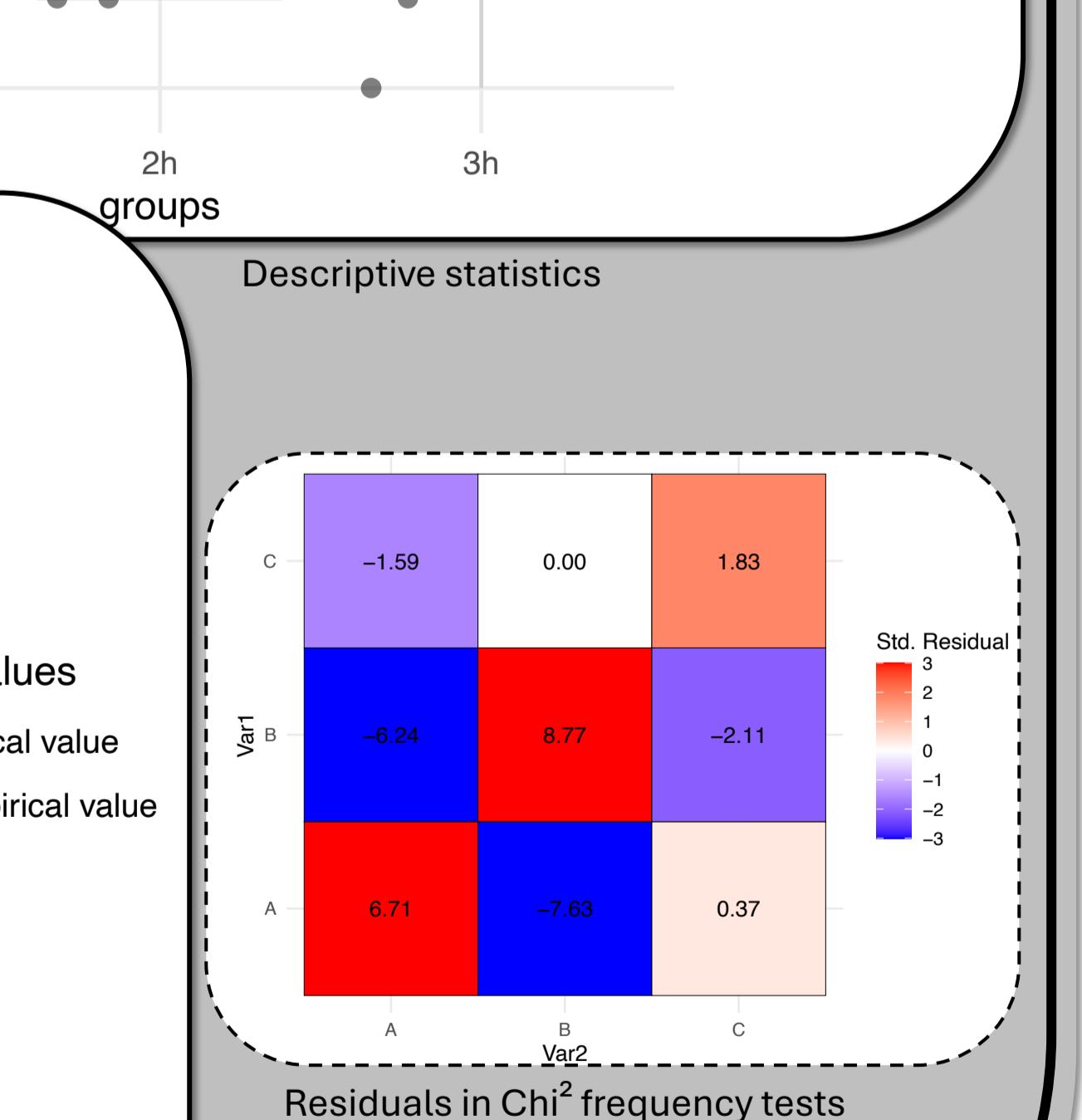
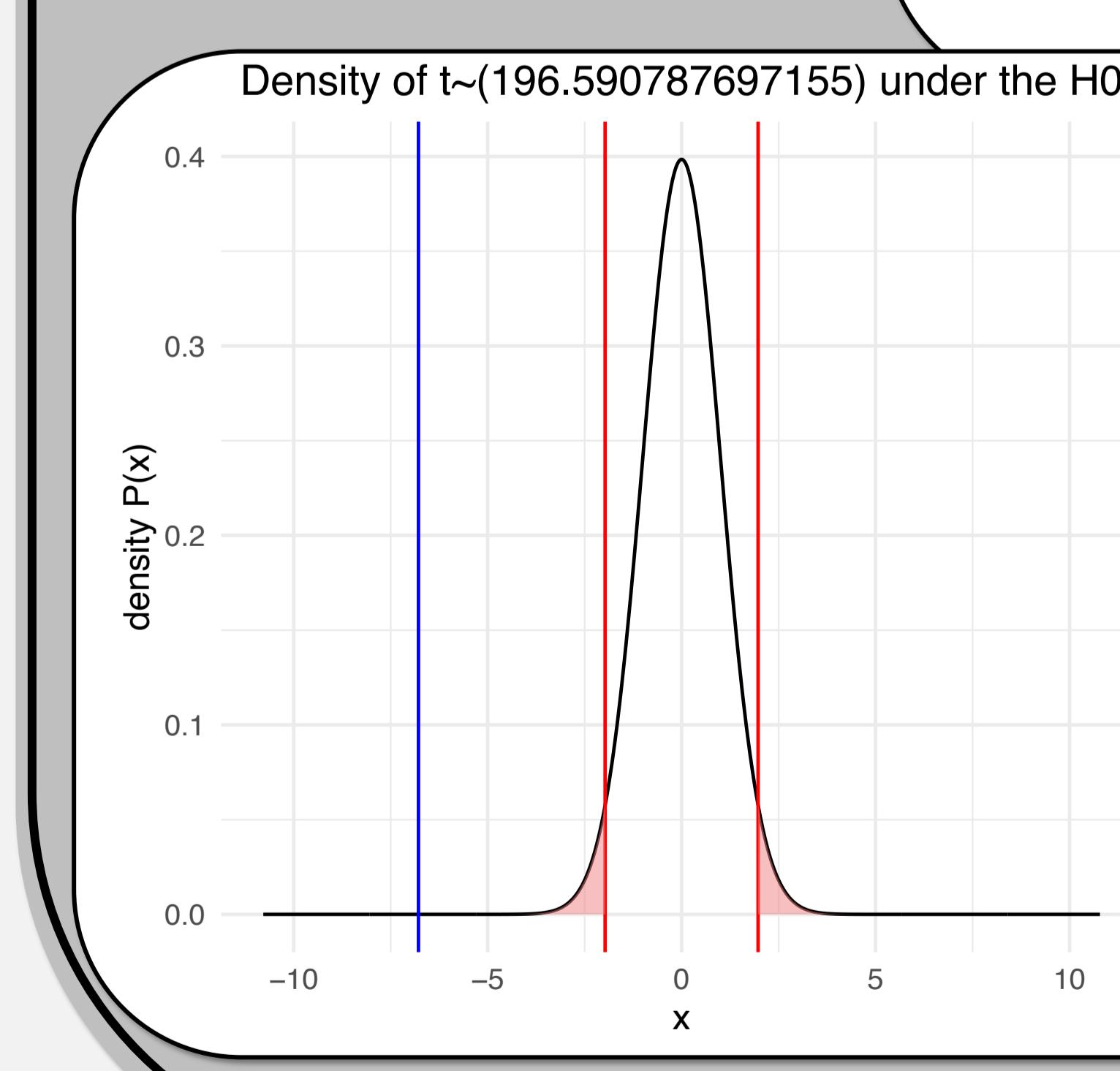
CALCULATION QUICK GUIDES

Indicator	Calculation
Global test results:	
df1	$df1 = k$
df2	$df2 = n-k-1$
Empirical F-value	$F_{emp} = (df2/df1)*(rsq/(1-rsq))$
Critical F-value	$F_{crit} = qf(0.95, df1, df2)$
F-test p-value	$p = 1 - pf(F_{emp}, df1, df2)$
Variance explained	$R_{square} = var_{predicted}/var_{observed}$
effect size f-squared	$f^2 = rsq/(1-rsq)$

INSTANT VISUALIZATIONS



Position of confidence intervals



R Code + References

