

Untitled

Introdução

Os dados foram obtidos do arquivo moscas.txt, extraído do site <http://www.ime.unicamp.br/~cnaber/Moscas.txt>. Este se refere à sete variáveis medidas em duas espécies das moscas chamadas biting fly (*Leptoconops carteri* e *Leptoconops torrens*), sendo elas espécie (0 - torrens e 1- carteri), comprimento da asa, largura da asa, comprimento do terceiro palpo, largura do terceiro palpo, comprimento do quarto palpo, comprimento do 12º segmento da antena e comprimento do 13º segmento da antena. Para ser mais eficiente, renomearemos essas variáveis como sendo: Espécie, C.Asa, L.Asa, C3p, L3p, C4p, C12a e C13a, respectivamente.

O objetivo do estudo é comparar as duas espécies de moscas com as demais variáveis de interesse para saber se há diferença entre esses dois grupos e, se houver, em que variáveis reside(m) essa(s) diferença(s).

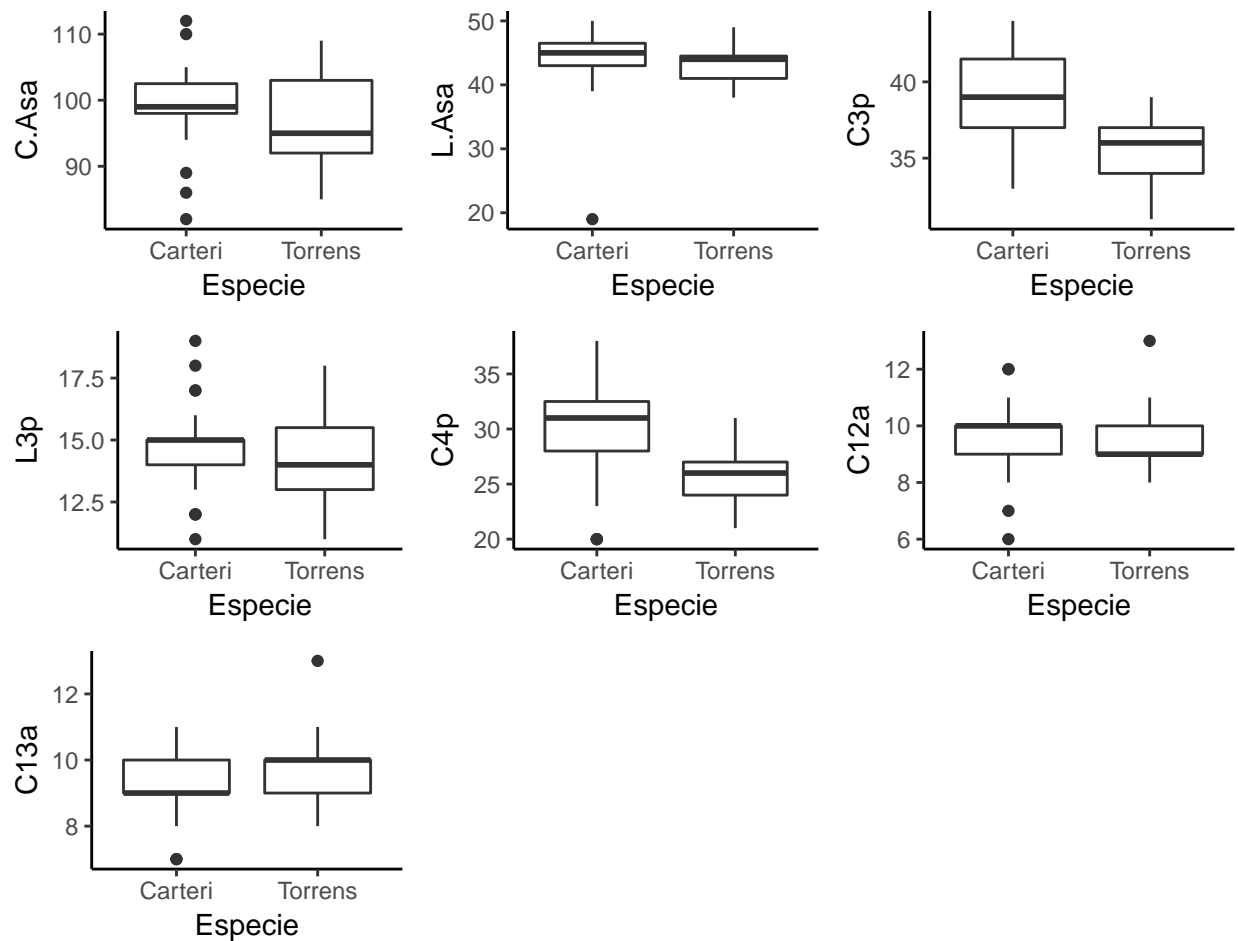


Figure 1: BoxPlots

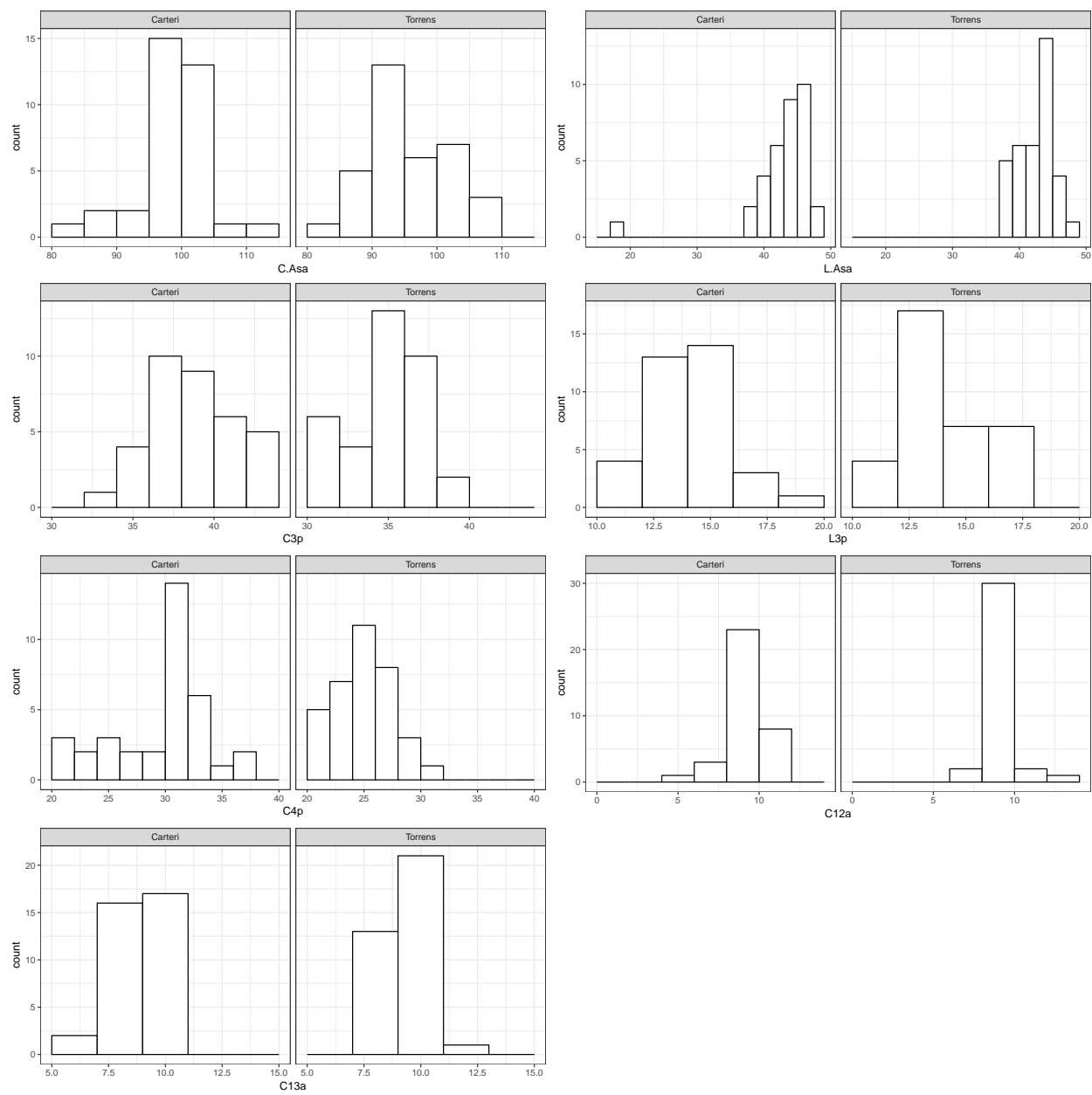
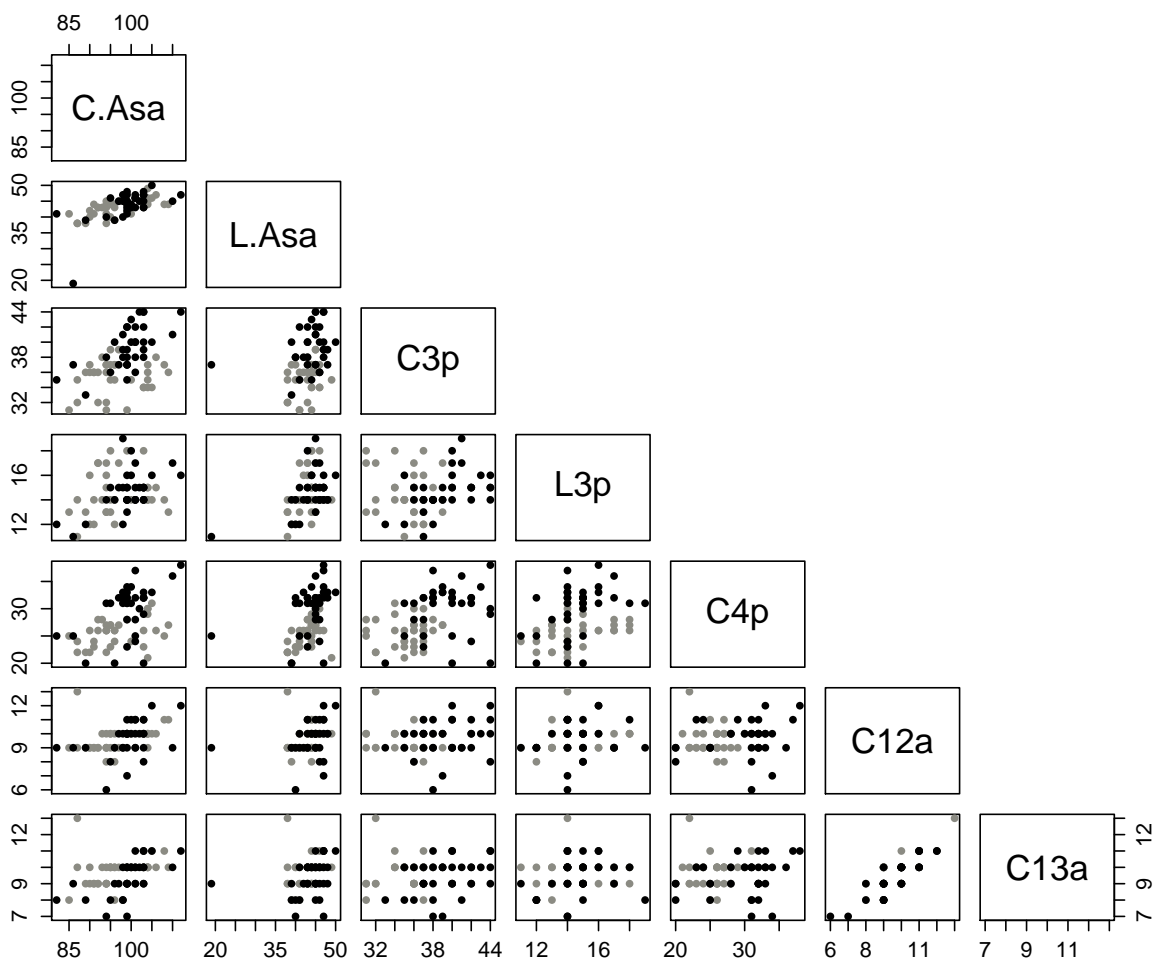


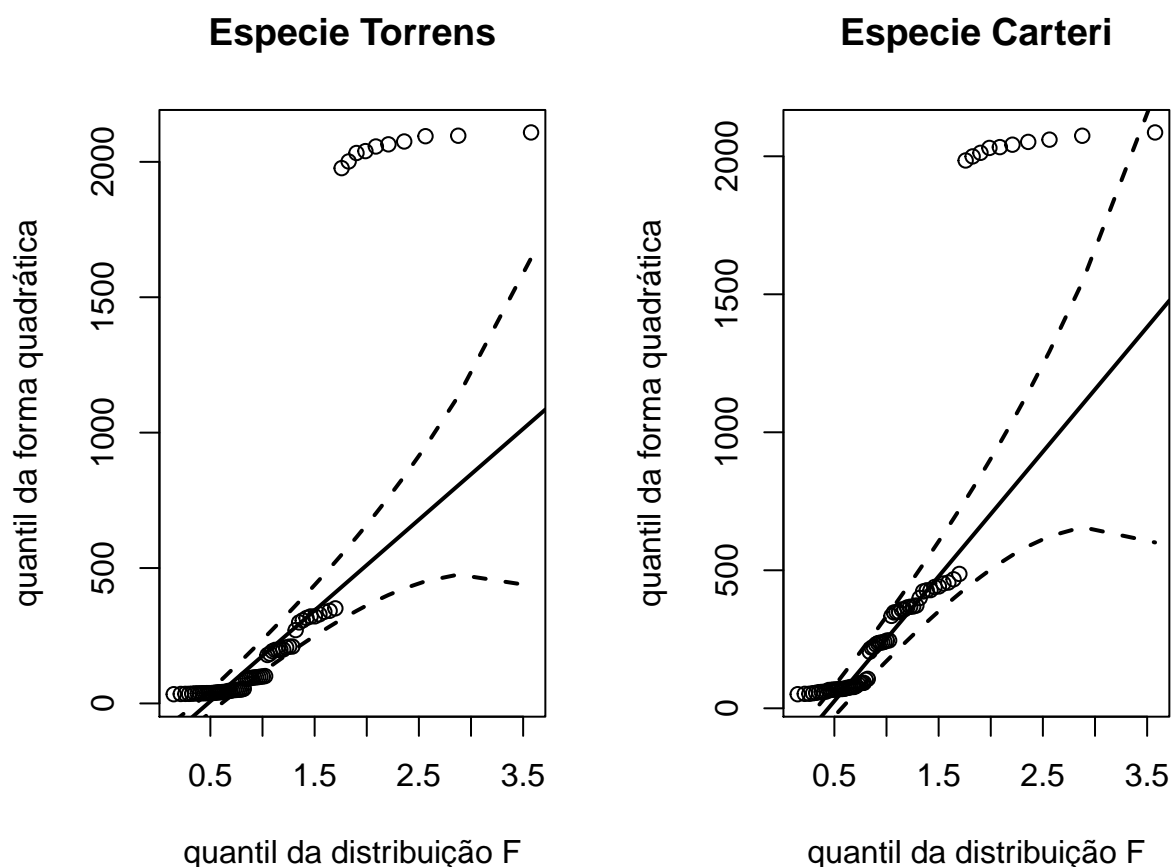
Figure 2: BoxPlots

Gráfico de Dispersão



	C.Asa	L.Asa	C3p	L3p	C4p	C12a	C13a
TORRENS							
C.Asa	40,73	0,67	0,17	0,19	0,39	0,32	0,29
L.Asa	11,72	7,49	0,30	0,37	0,48	0,13	0,12
C3p	2,33	1,83	4,83	-0,19	0,11	-0,18	0,09
L3p	2,20	1,84	-0,78	3,38	0,37	0,10	0,00
C4p	6,26	3,26	0,61	1,70	6,24	-0,01	-0,02
C12a	1,88	0,32	-0,37	0,17	-0,02	0,84	0,78
C13a	1,66	0,30	0,17	0,00	-0,05	0,64	0,80
CARTERI							
C.Asa	31,29	0,61	0,62	0,56	0,50	0,42	0,60
L.Asa	17,47	25,79	0,26	0,50	0,38	0,28	0,28
C3p	9,83	3,70	8,04	0,46	0,20	0,22	0,38
L3p	5,15	4,14	2,17	2,70	0,41	0,18	0,25
C4p	12,88	8,94	2,62	3,12	21,29	0,20	0,26
C12a	2,97	1,79	0,79	0,38	1,15	1,58	0,87
C13a	3,63	1,57	1,17	0,46	1,32	1,19	1,18

Variável	Especie	Média	DP	Var	CV	Mínimo	Mediana	Máximo	n
C.Asa	Carteri	99,34	5,59	31,29	5,63	82	99,00	112	35
	Torrens	96,46	6,38	40,73	6,62	85	95,00	109	35
L.Asa	Carteri	43,74	5,08	25,78	11,61	19	45,00	50	35
	Torrens	42,91	2,74	7,49	6,38	38	44,00	49	35
C3p	Carteri	39,31	2,84	8,05	7,21	33	39,00	44	35
	Torrens	35,37	2,20	4,83	6,21	31	36,00	39	35
L3p	Carteri	14,66	1,64	2,70	11,22	11	15,00	19	35
	Torrens	14,51	1,84	3,37	12,66	11	14,00	18	35
C4p	Carteri	30,00	4,61	21,29	15,38	20	31,00	38	35
	Torrens	25,63	2,50	6,24	9,75	21	26,00	31	35
C12a	Carteri	9,66	1,26	1,58	13,04	6	10,00	12	35
	Torrens	9,57	0,92	0,84	9,58	8	9,00	13	35
C13a	Carteri	9,37	1,09	1,18	11,60	7	9,00	11	35
	Torrens	9,71	0,89	0,80	9,20	8	10,00	13	35



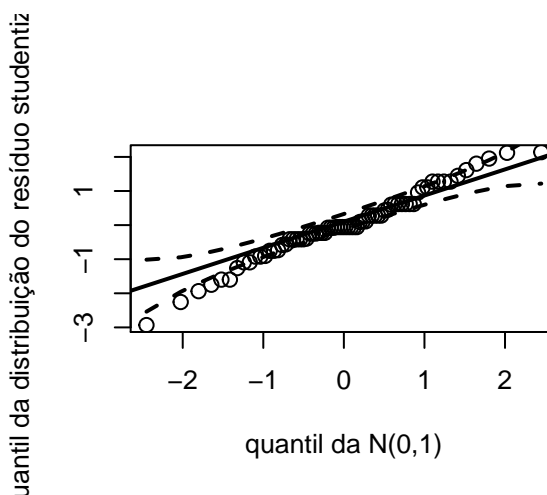
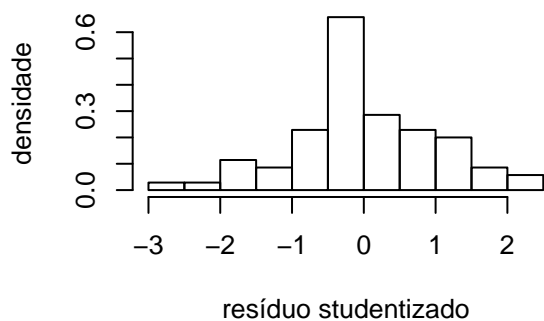
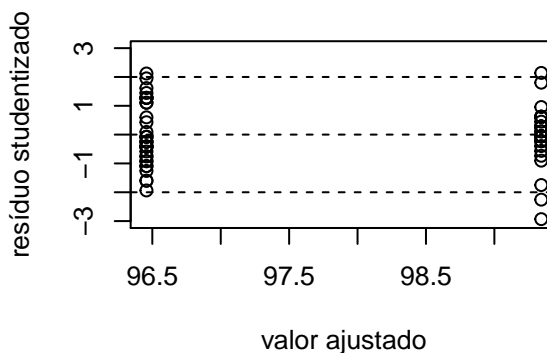
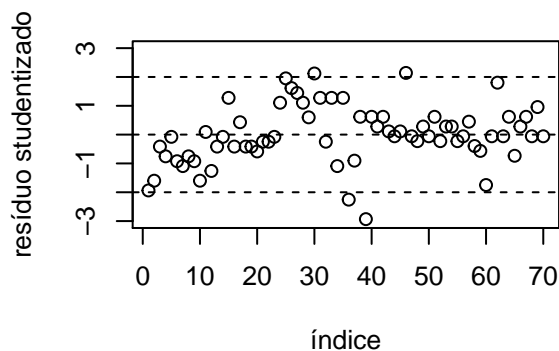
A fim de comparar ambas as espécies, foi utilizado a metodologia MANOVA para testar se há diferença entre a média da espécie Torrens e Carteri. Quatro testes multivariados foram utilizados: Wilks, Pillai, Hotelling-Lawley e Roy, nas quais têm aproximação pela distribuição F. Para todos os testes constata-se que não há evidências para afirmar que as médias são iguais e, portanto, há o interesse em analisar cada variável separadamente para identificar onde reside a diferença.

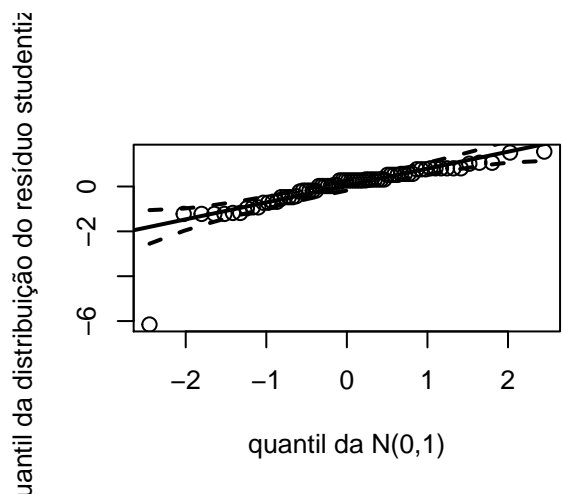
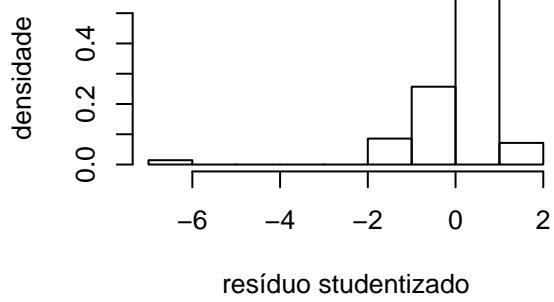
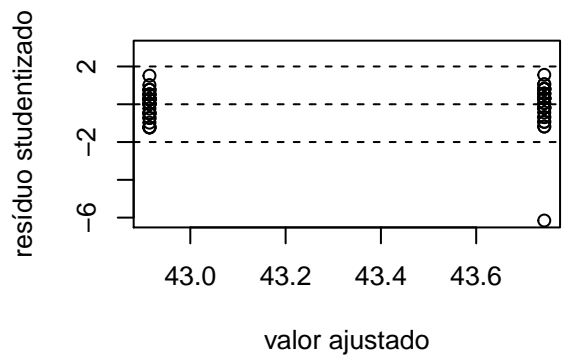
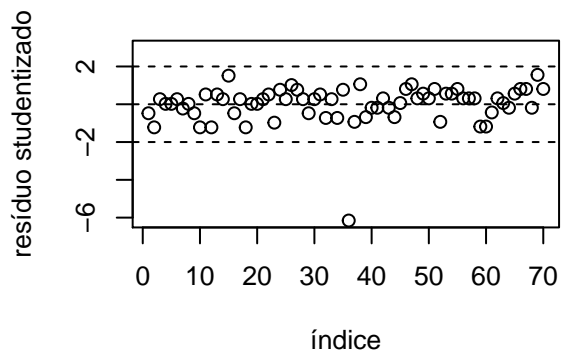
Para tal, foi utilizado o teste do tipo CBU=M. Considerando um nível de significância de 5%, conclui-se que

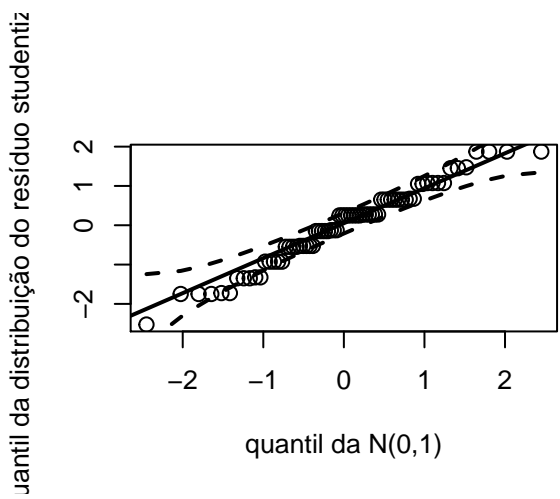
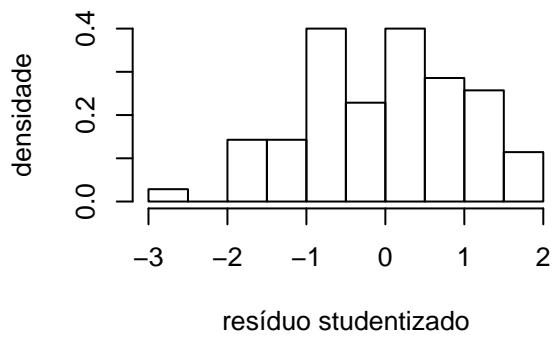
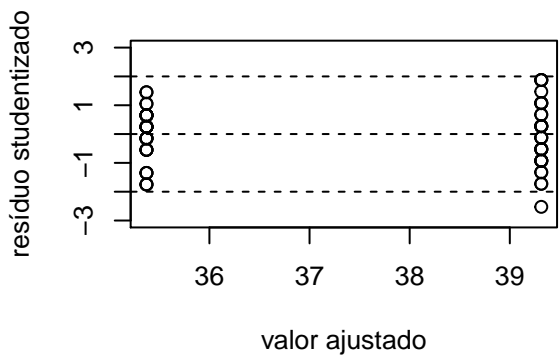
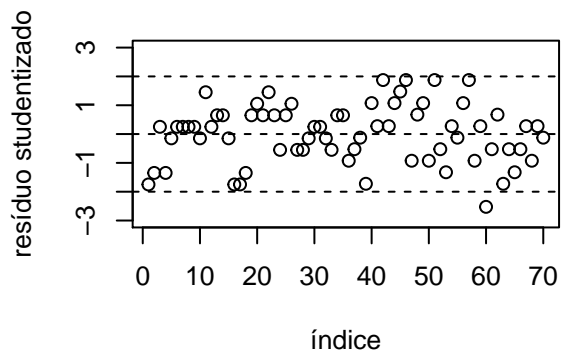
quatro variáveis possuem as médias estatisticamente iguais em relação as duas espécies, sendo estas a largura da asa, largura do terceiro palpo, comprimento do 12º segmento da antena e comprimento do 13º segmento da antena. Para as demais, tem-se evidência que existe diferença entre as espécies de estudo.

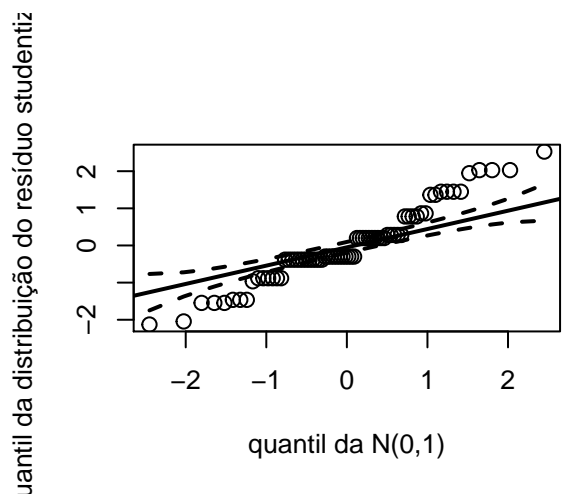
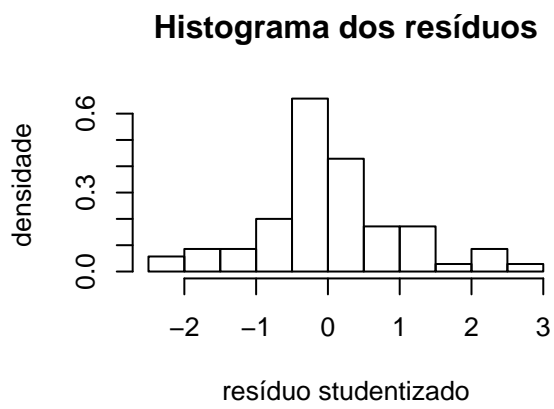
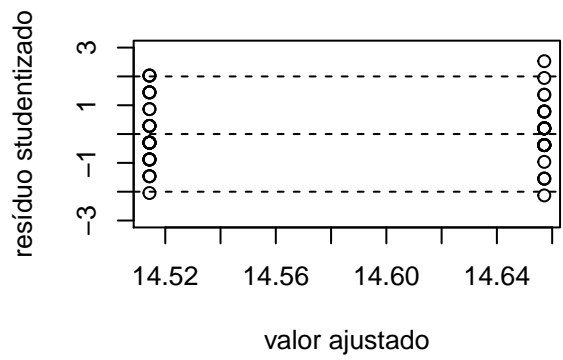
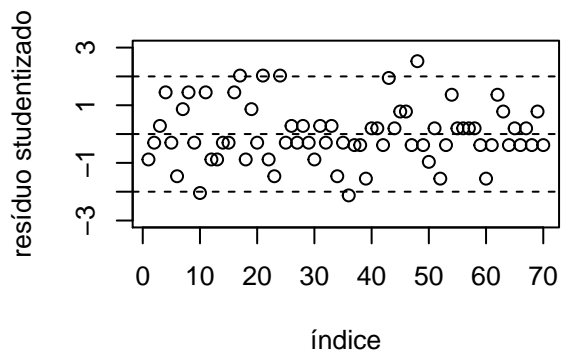
Estatística	Valor	Aprox. Dist. F	P-Valor
Wilks	0,39	13,82	<0,01
Pillai	0,61	13,82	<0,01
Hotteling-Lawley	1,56	13,82	<0,01
Roy	1,56	13,82	<0,01

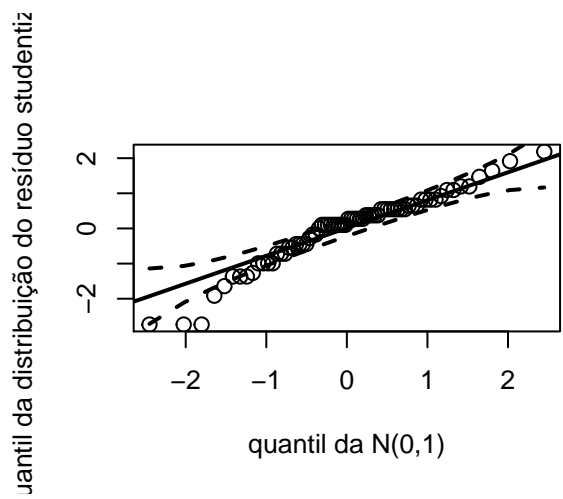
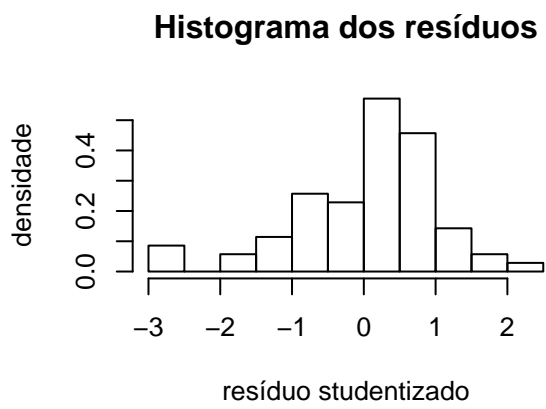
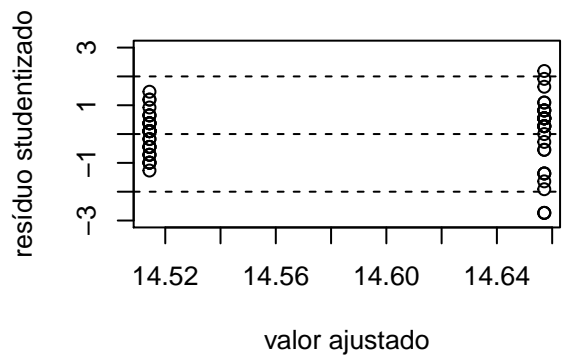
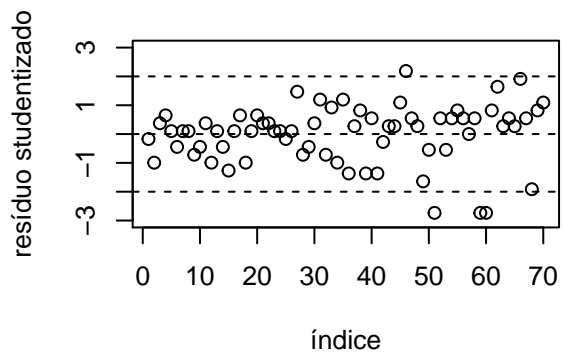
Variável	Estatística	p-valor
C.Asa	4,05	0,00
L.Asa	0,72	0,40
C3p	42,26	0,00
L3P	0,12	0,73
C4p	24,29	0,00
C12a	0,11	0,75
C13a	2,08	0,15

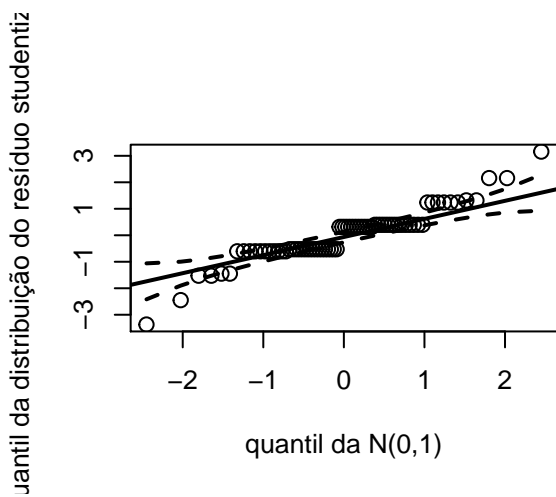
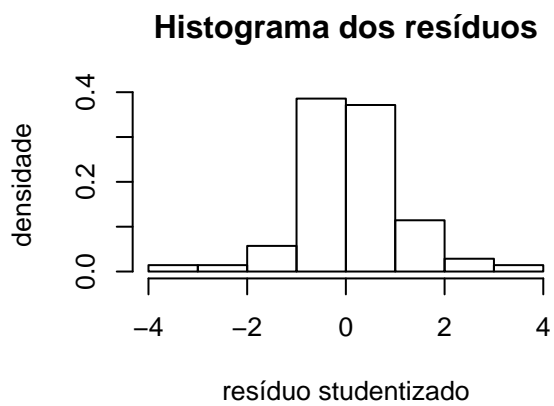
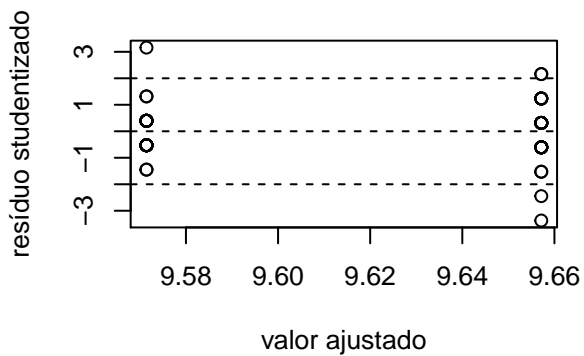
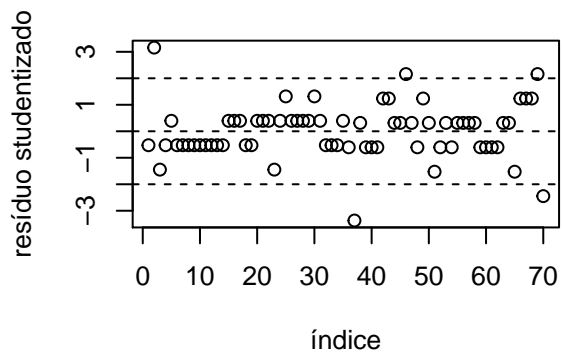


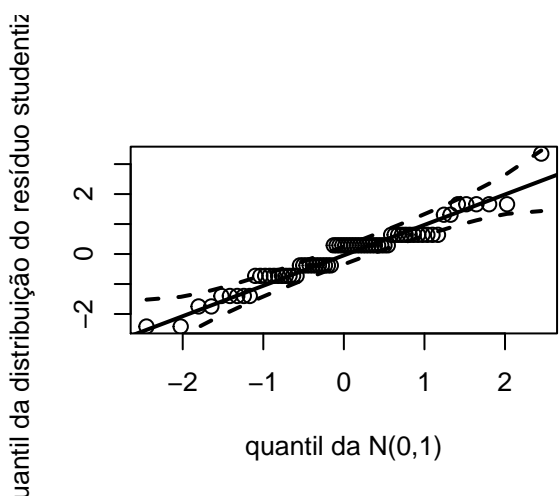
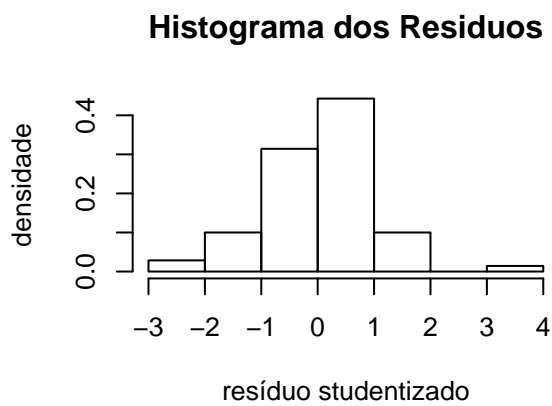
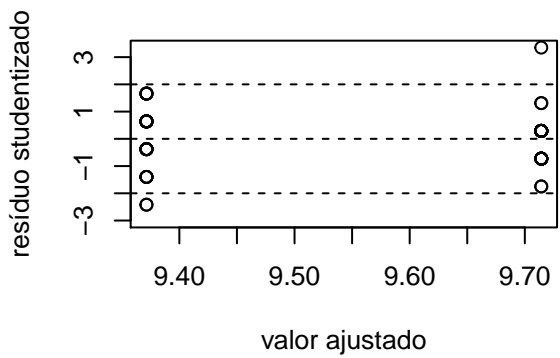
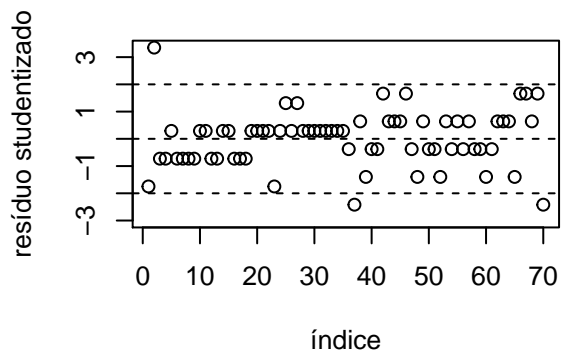










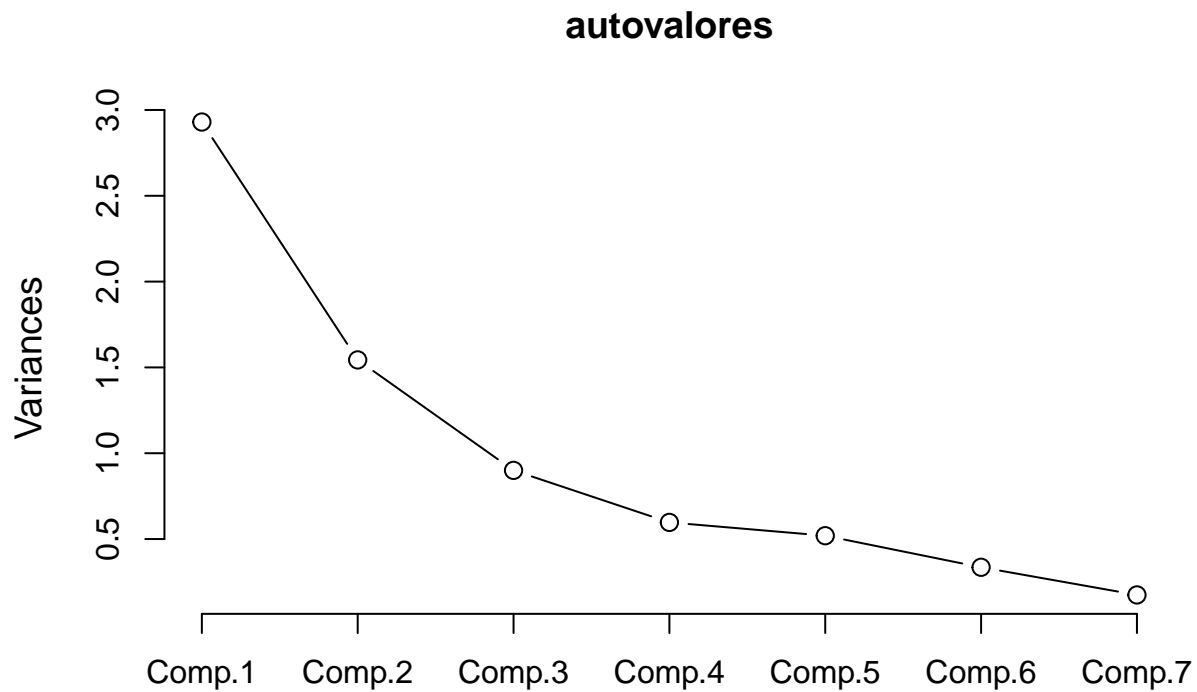


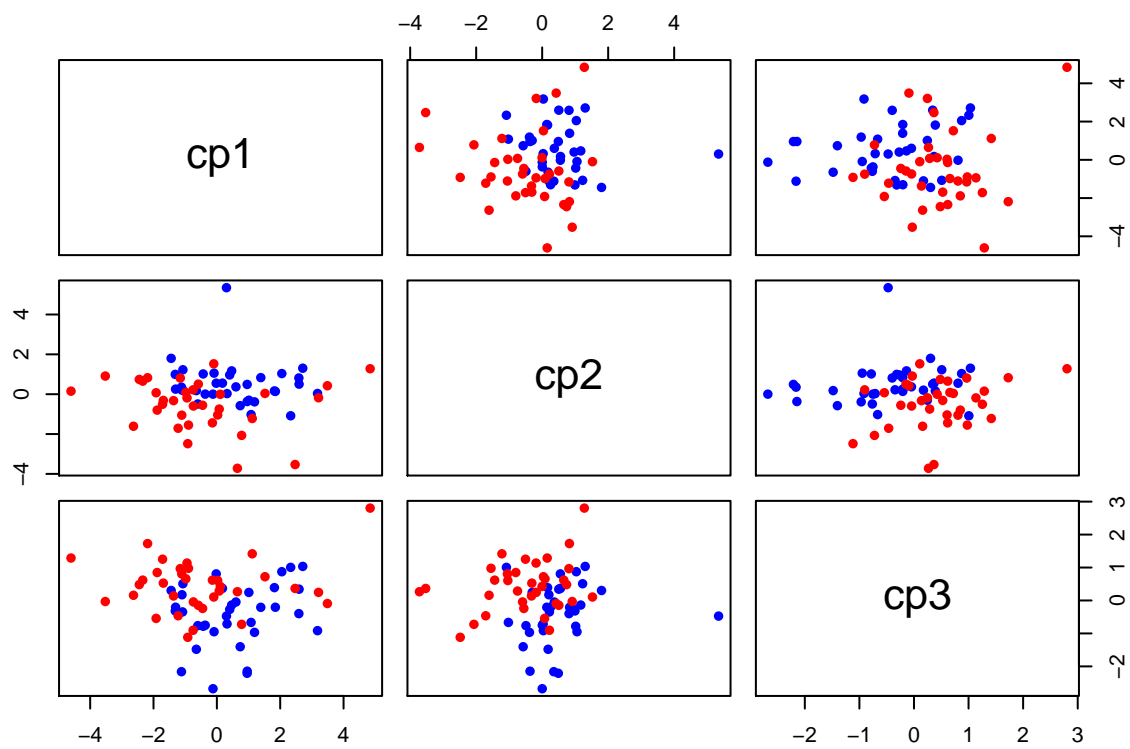
QUESTÃO 2

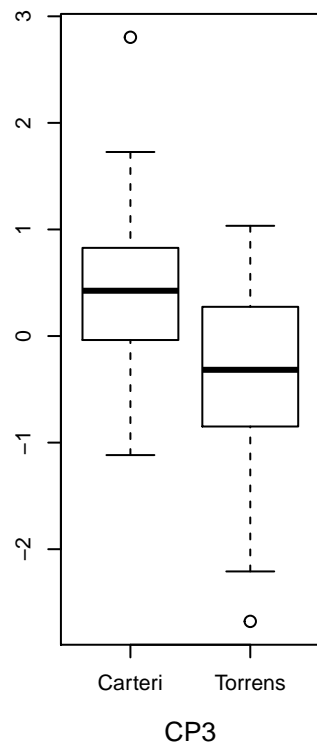
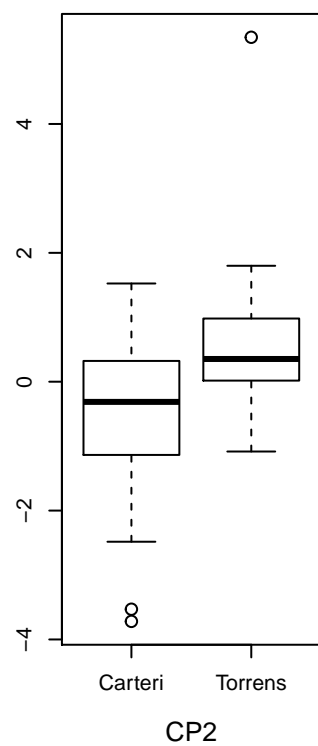
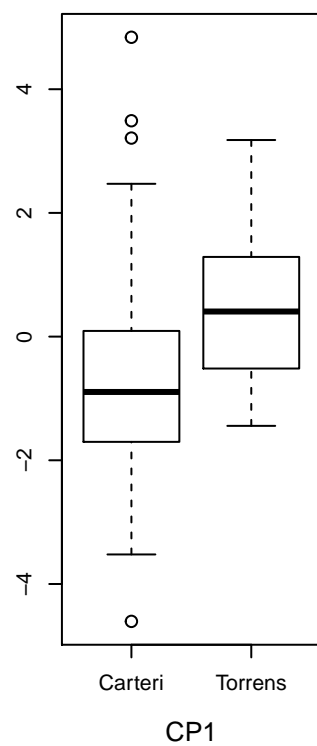
Importance of components:

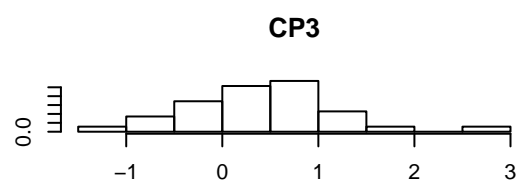
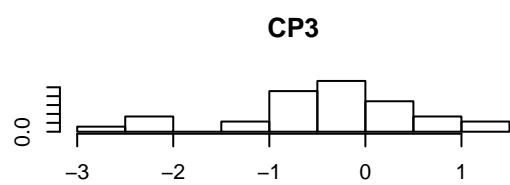
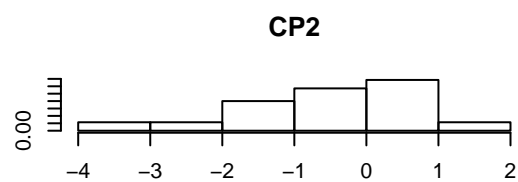
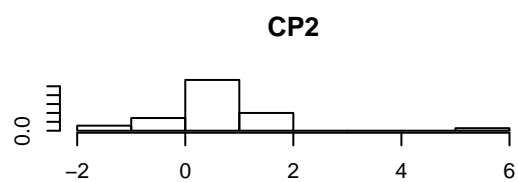
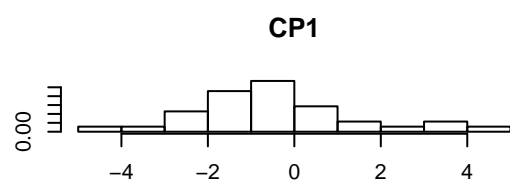
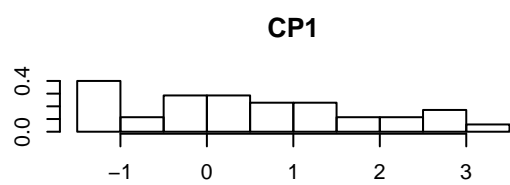
##	Comp.1	Comp.2	Comp.3	Comp.4	Comp.5
## Standard deviation	1.7116366	1.2424549	0.9487536	0.77266752	0.72078630
## Proportion of Variance	0.4185286	0.2205277	0.1285905	0.08528787	0.07421898
## Cumulative Proportion	0.4185286	0.6390563	0.7676468	0.85293466	0.92715364

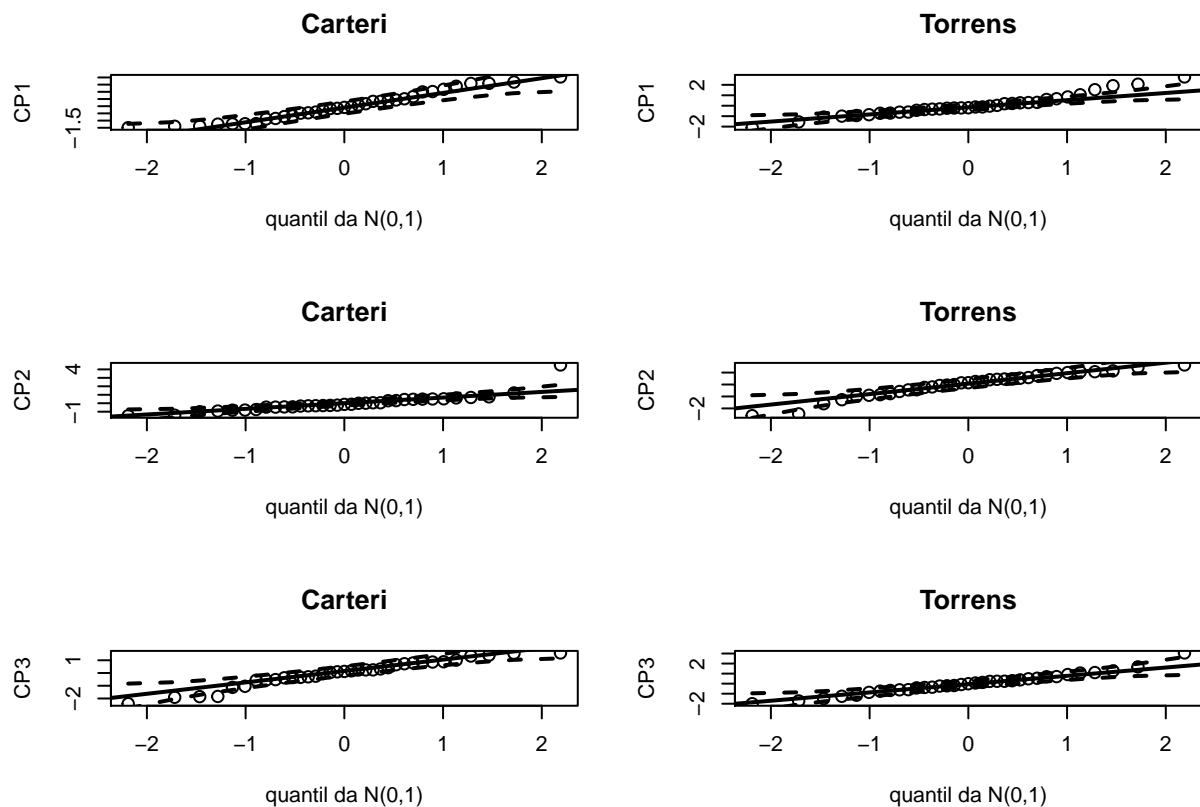
##	Comp.6	Comp.7
## Standard deviation	0.5792105	0.41765975
## Proportion of Variance	0.0479264	0.02491995
## Cumulative Proportion	0.9750800	1.00000000





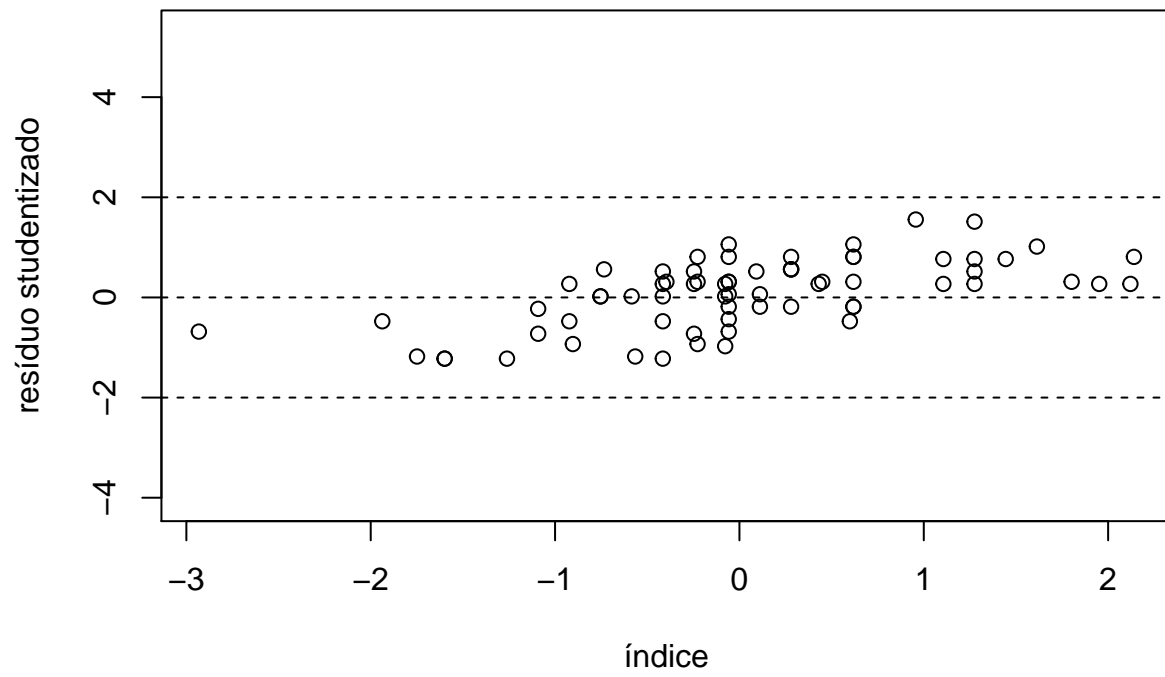


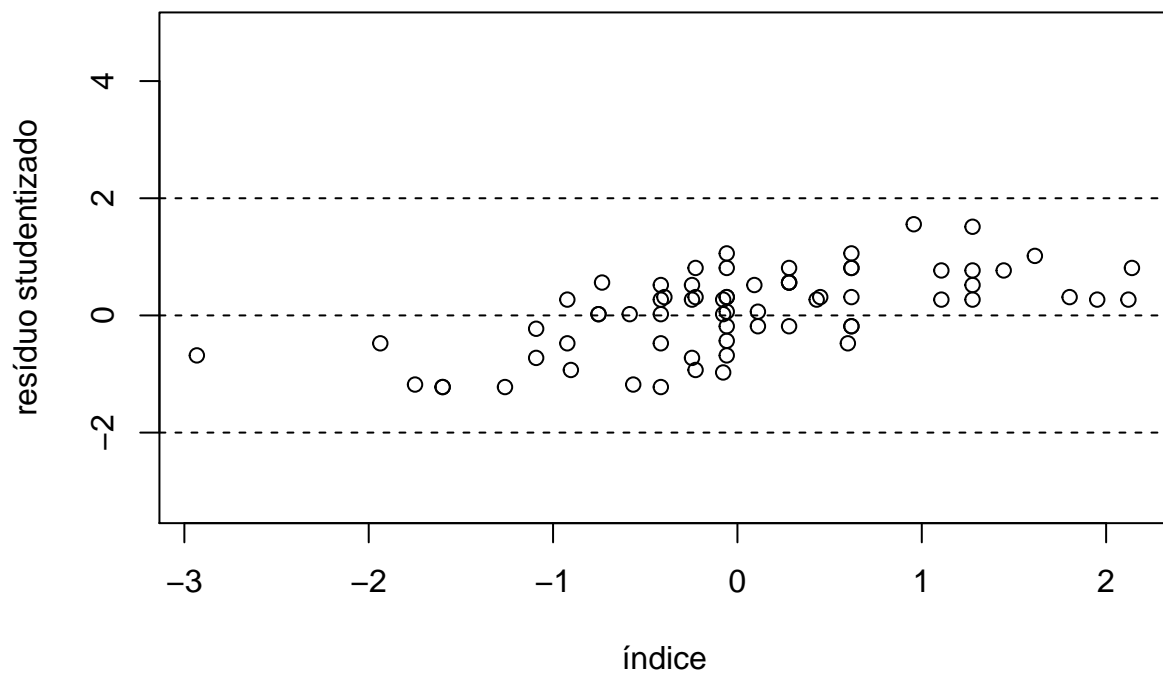


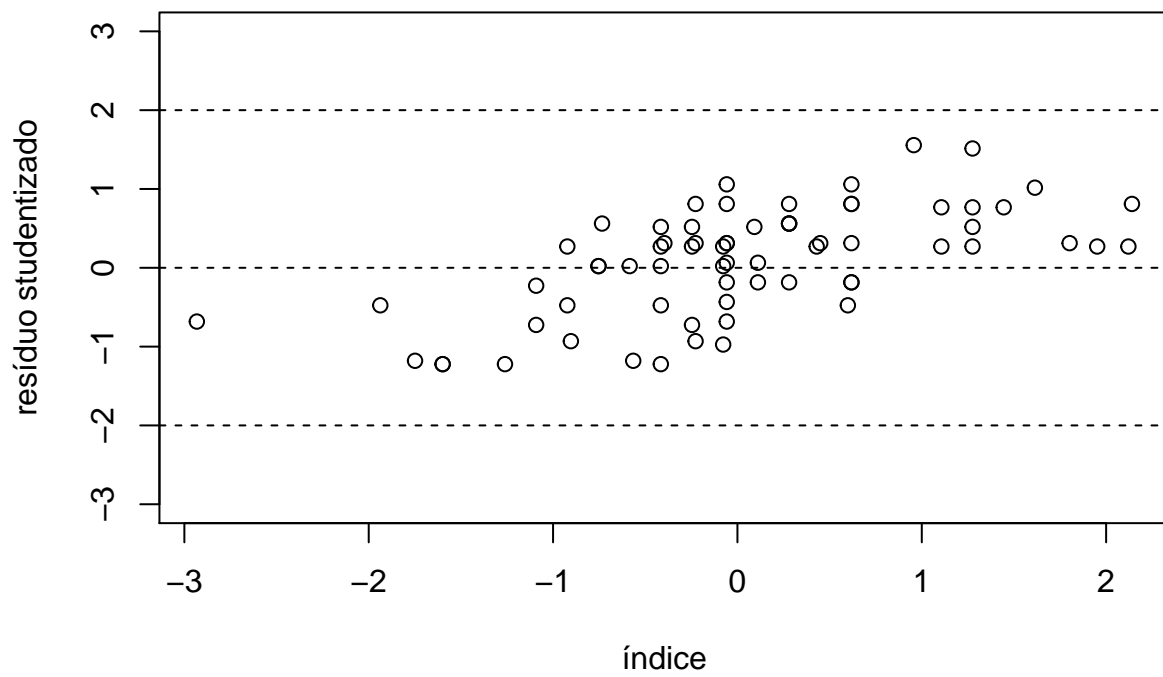


```
##
## Call:
## lm(formula = cp1 ~ especief)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -4.0902 -1.1506 -0.2188  0.6618  5.3544
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -0.5144     0.2800  -1.837   0.0705 .
## especiefTorrens  1.0288     0.3959   2.598   0.0115 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.656 on 68 degrees of freedom
## Multiple R-squared:  0.09033,    Adjusted R-squared:  0.07695
## F-statistic: 6.752 on 1 and 68 DF,  p-value: 0.01147
```

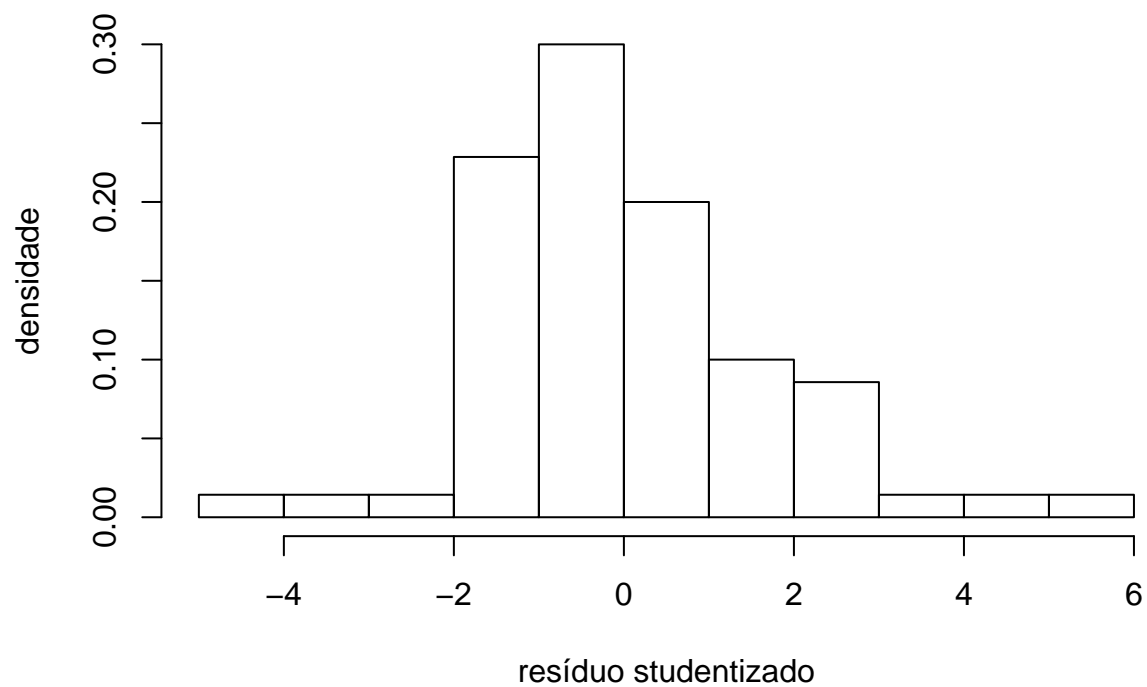

Resíduos do modelo com a Componente 1



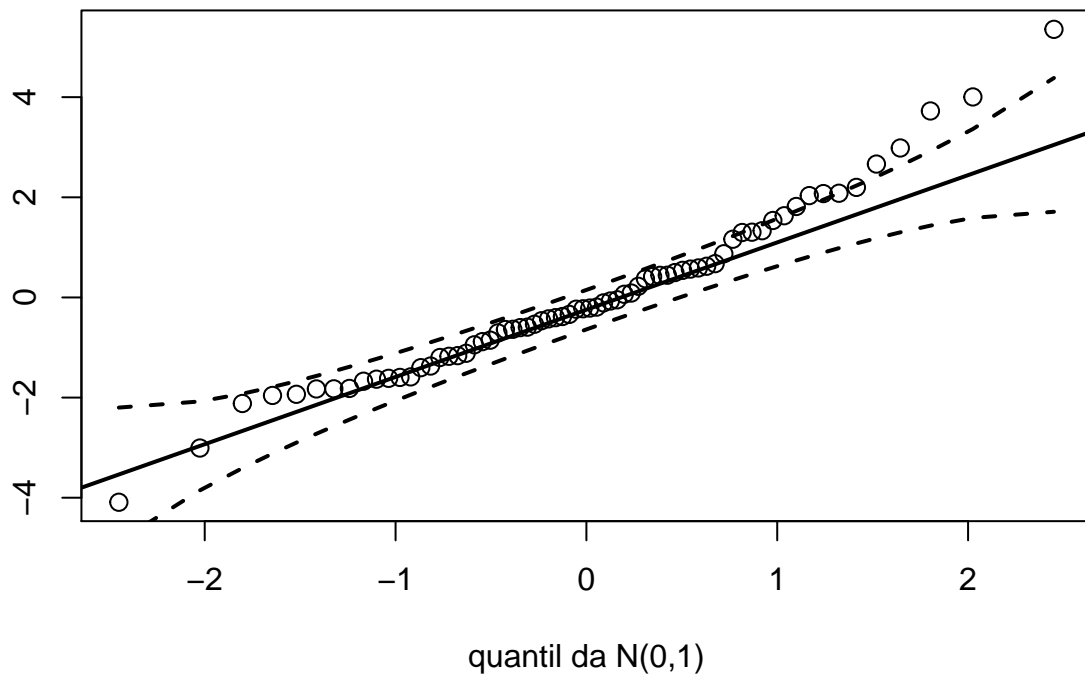




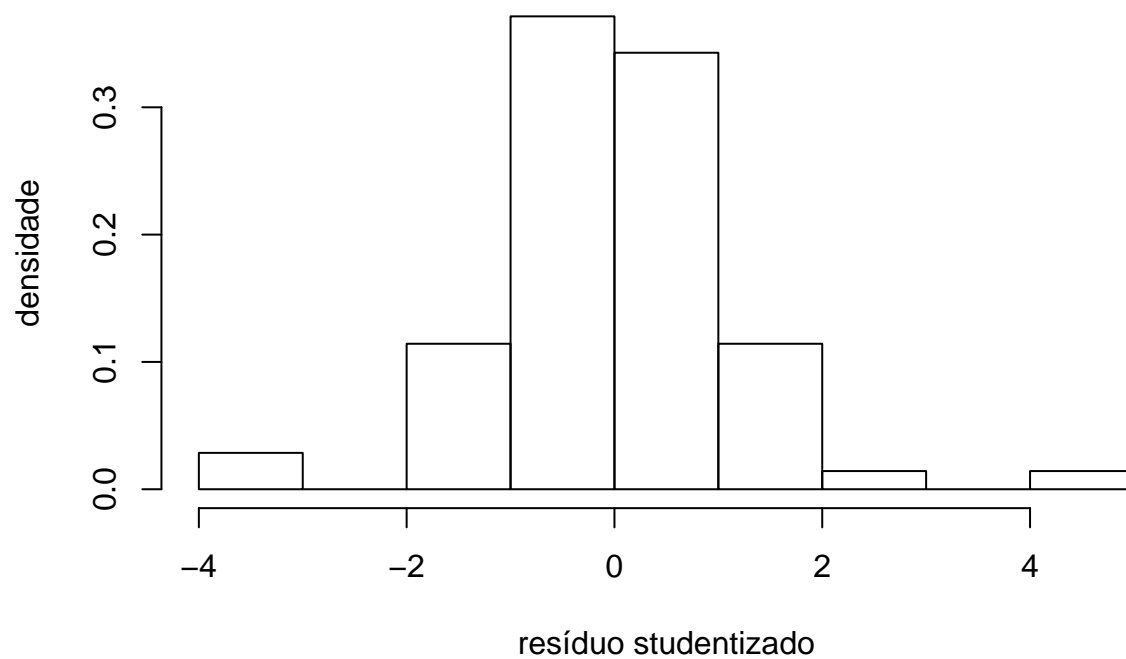
Histograma dos resíduos



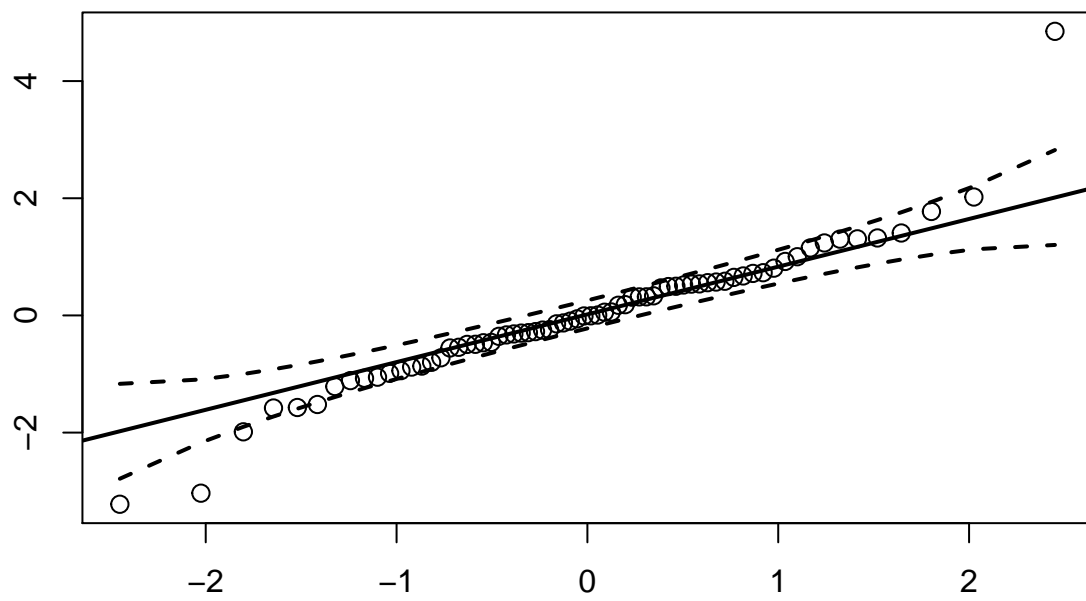
quantil da distribuição do resíduo studentizado



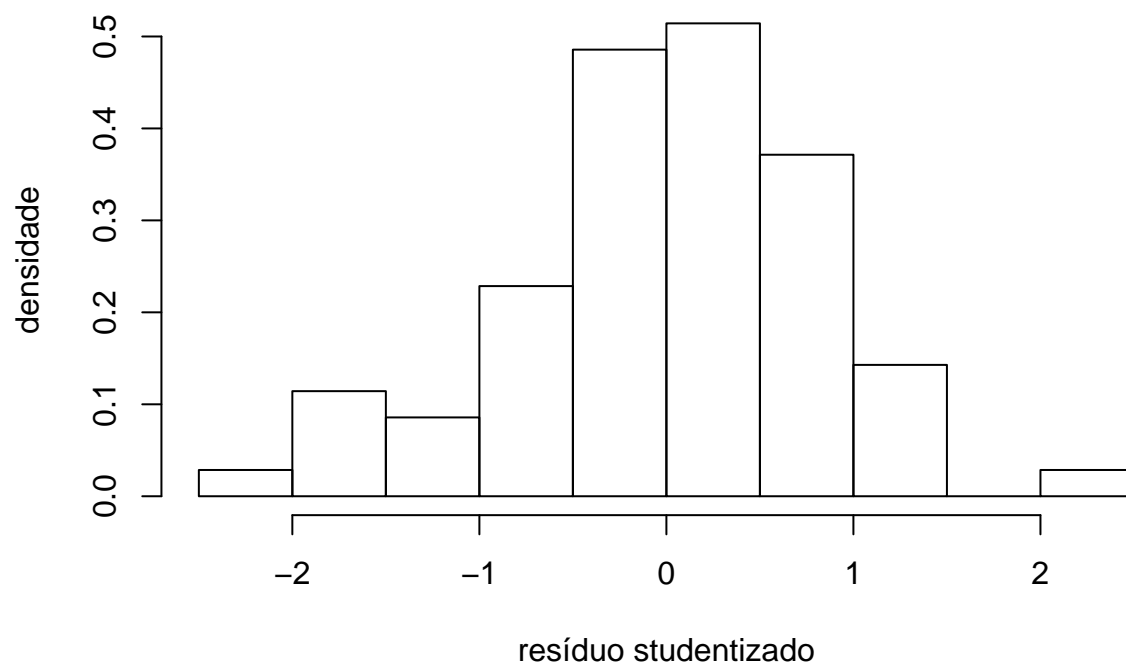
Histograma dos resíduos



quantil da distribuição do resíduo studentizado



Histograma dos resíduos



quantil da distribuição do resíduo studentizado

