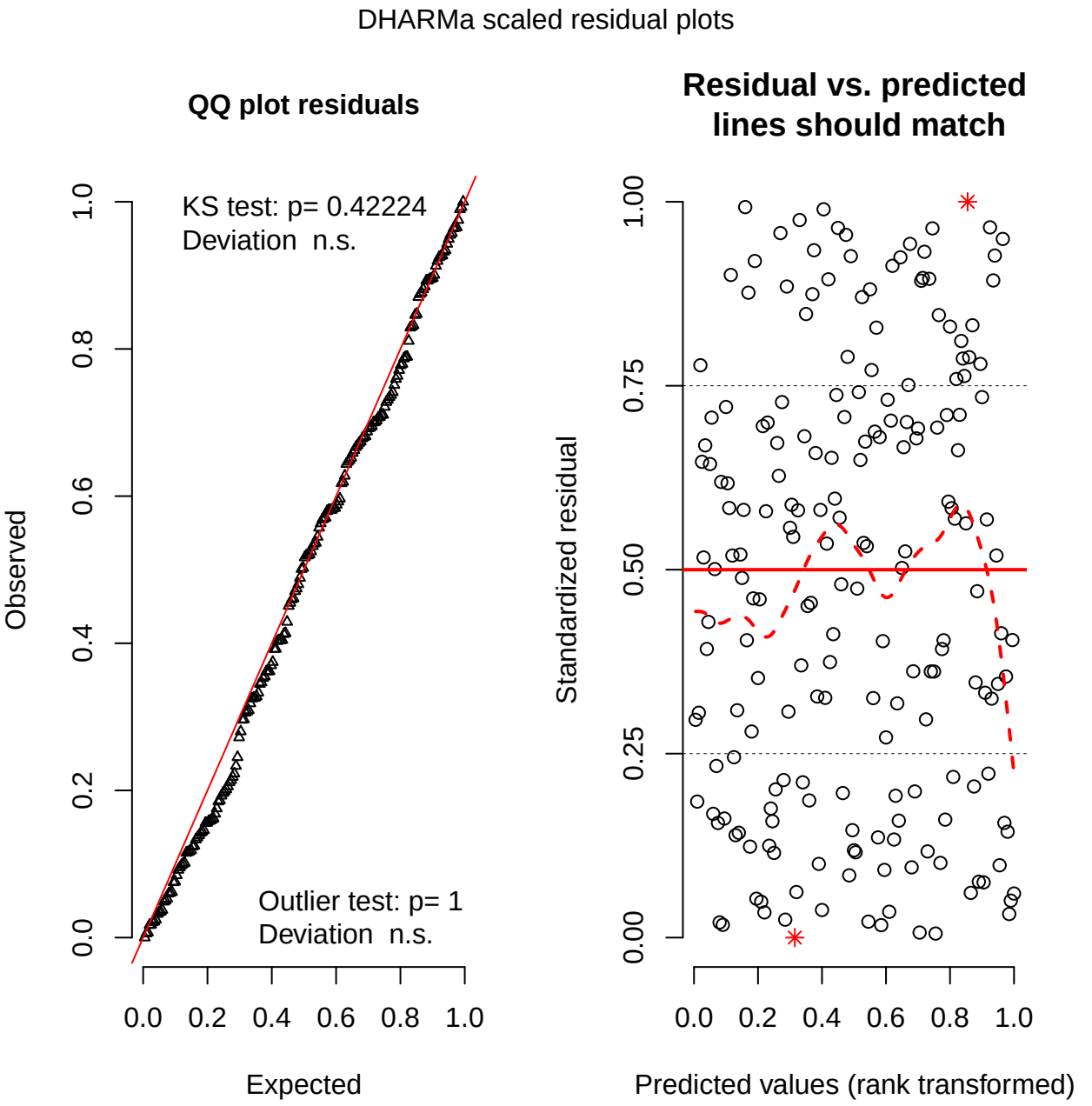
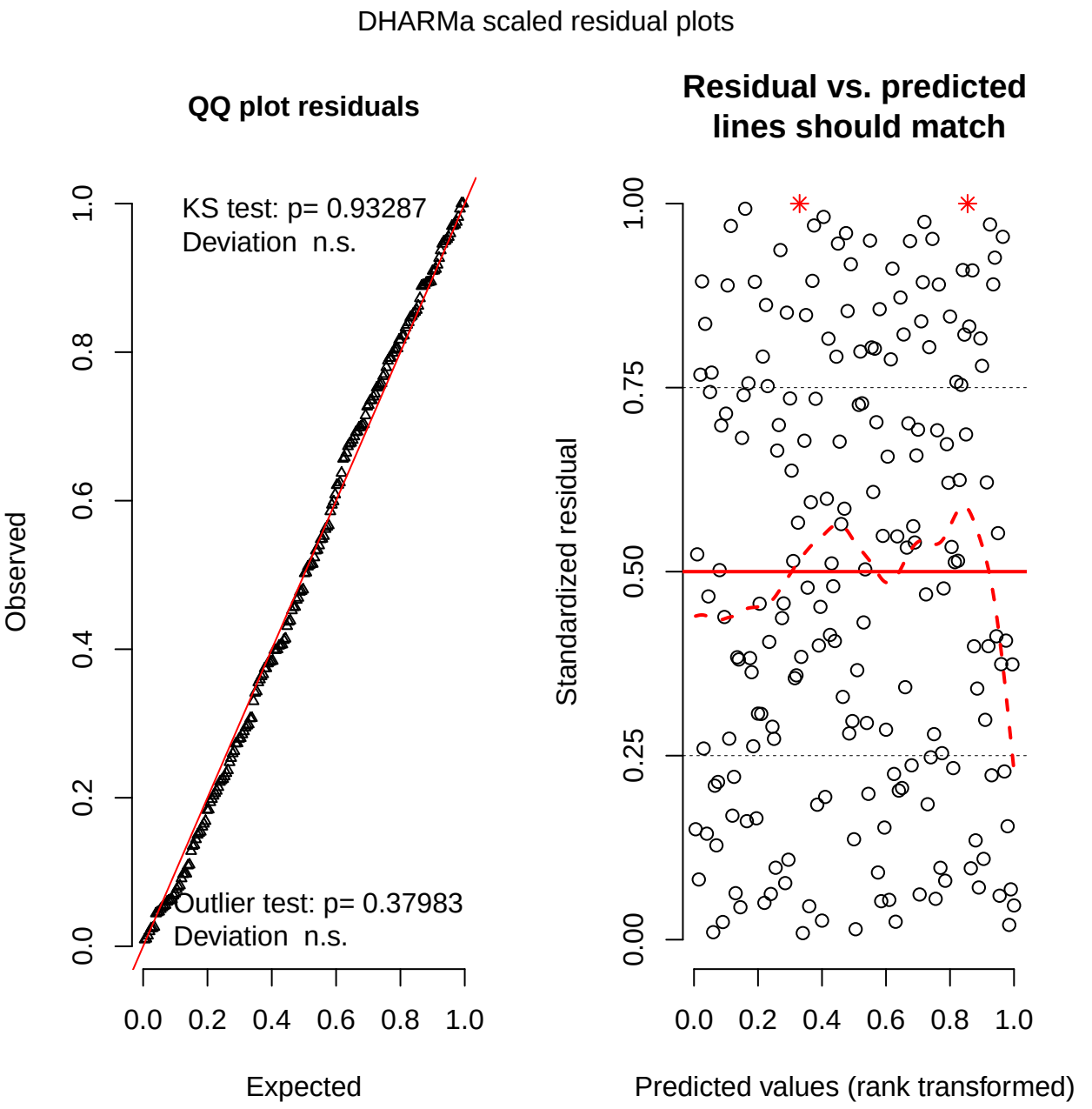
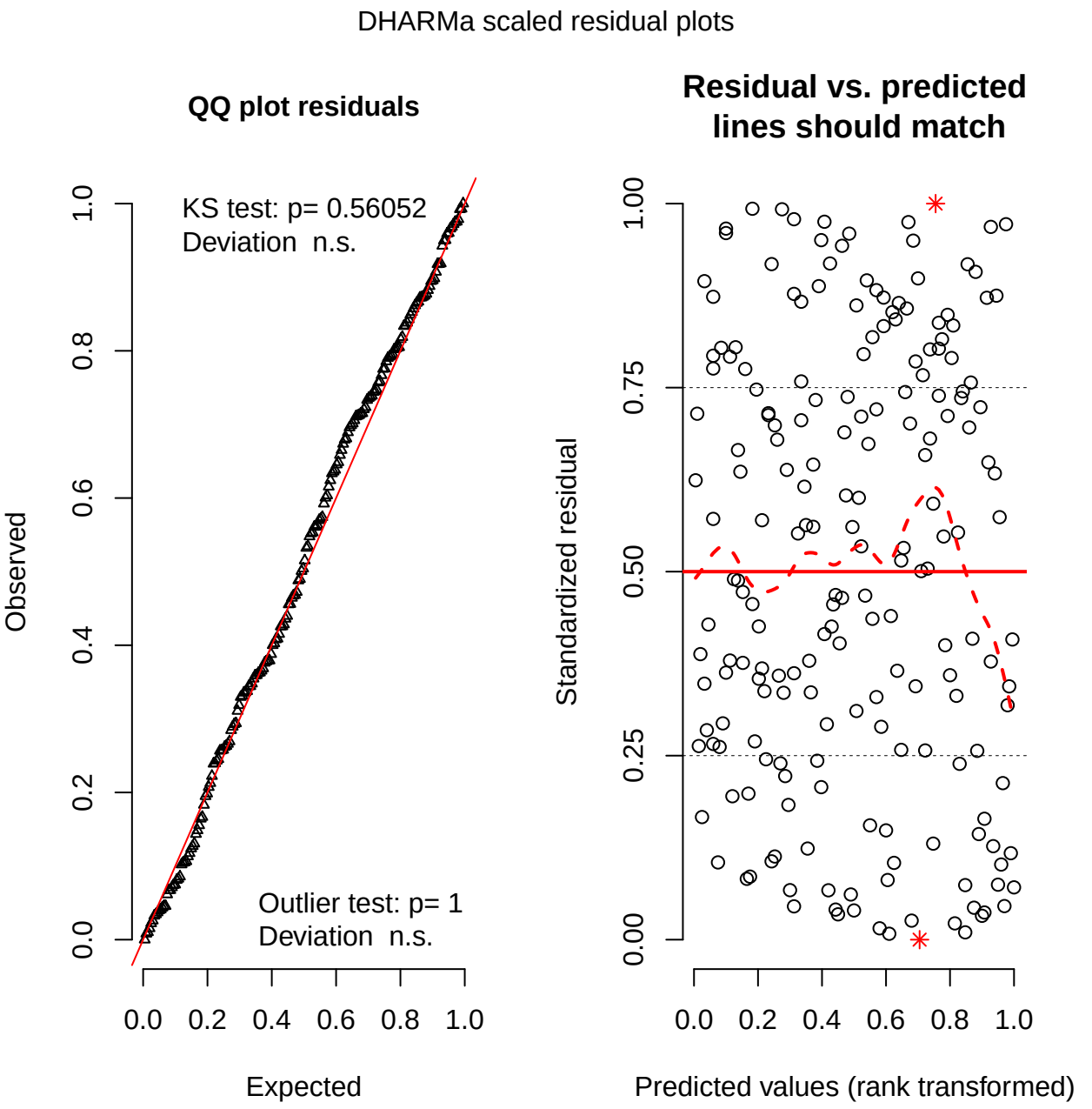
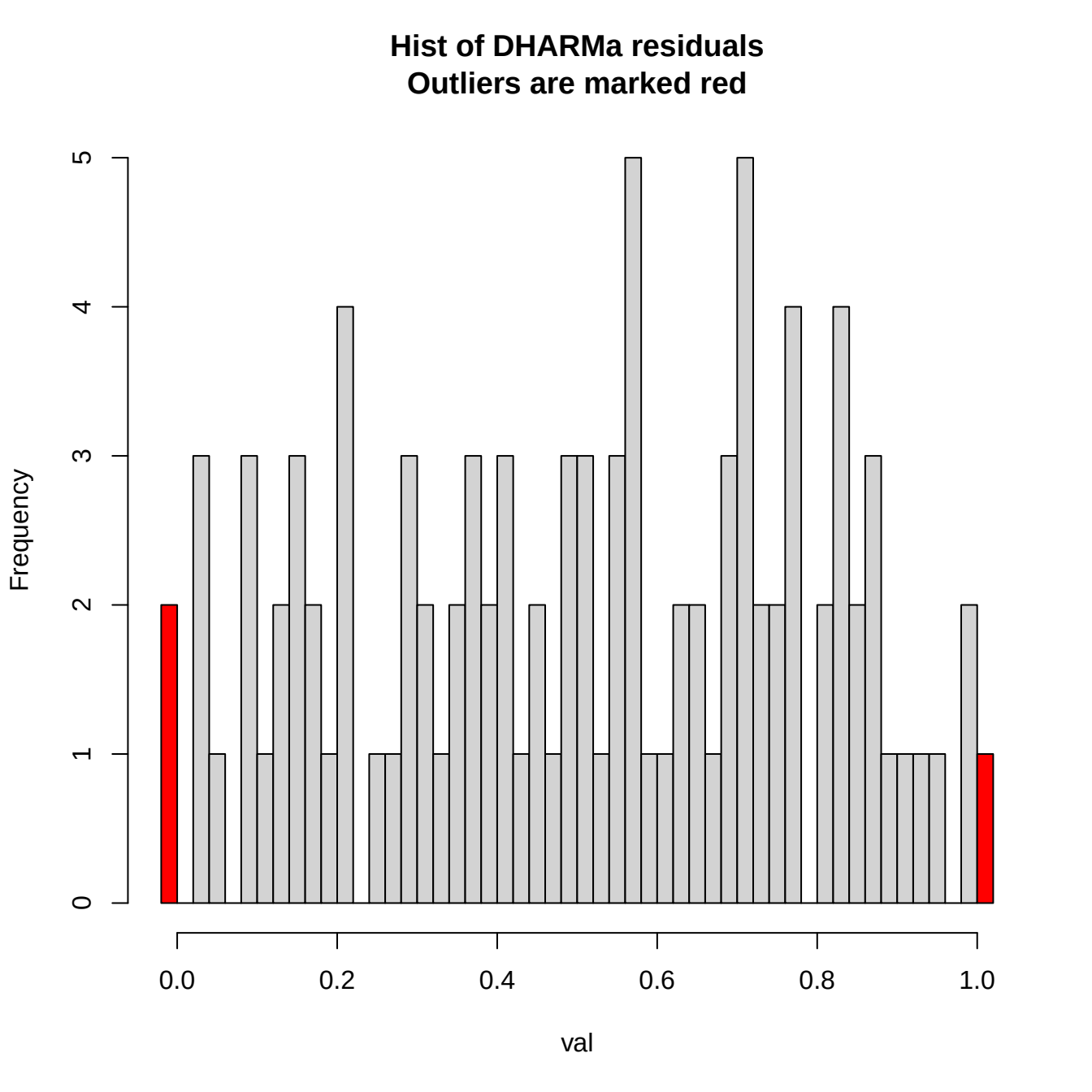
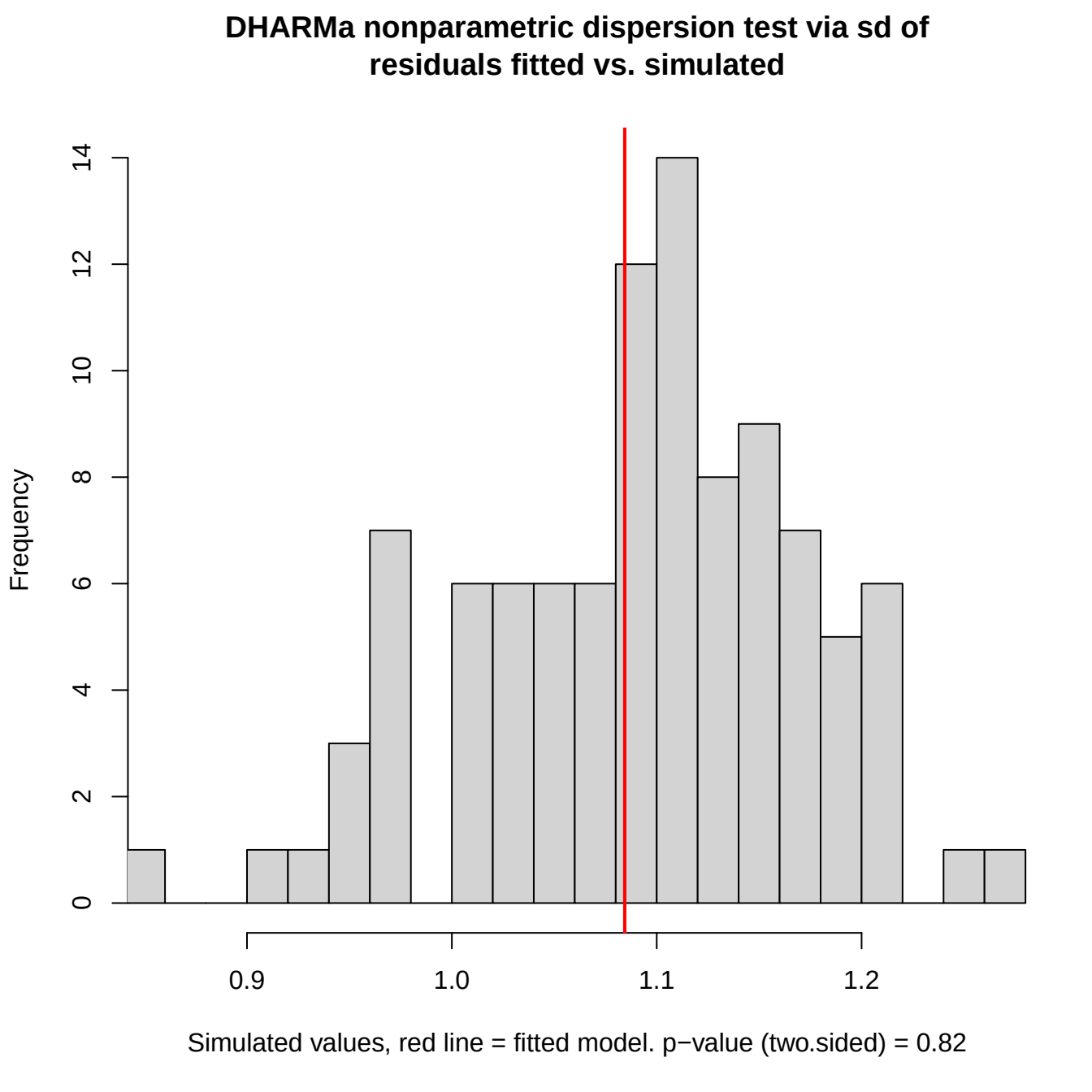
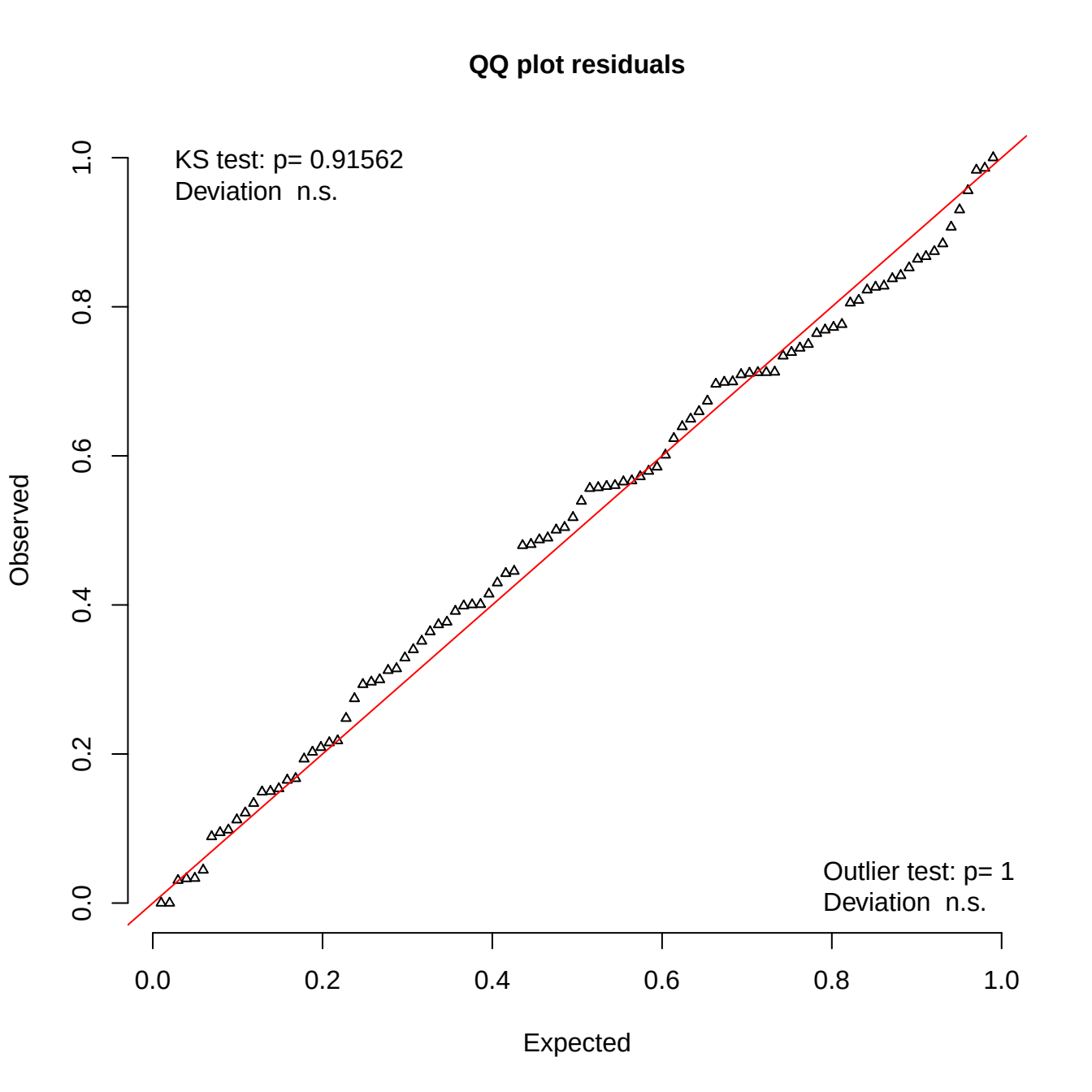

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.42224
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

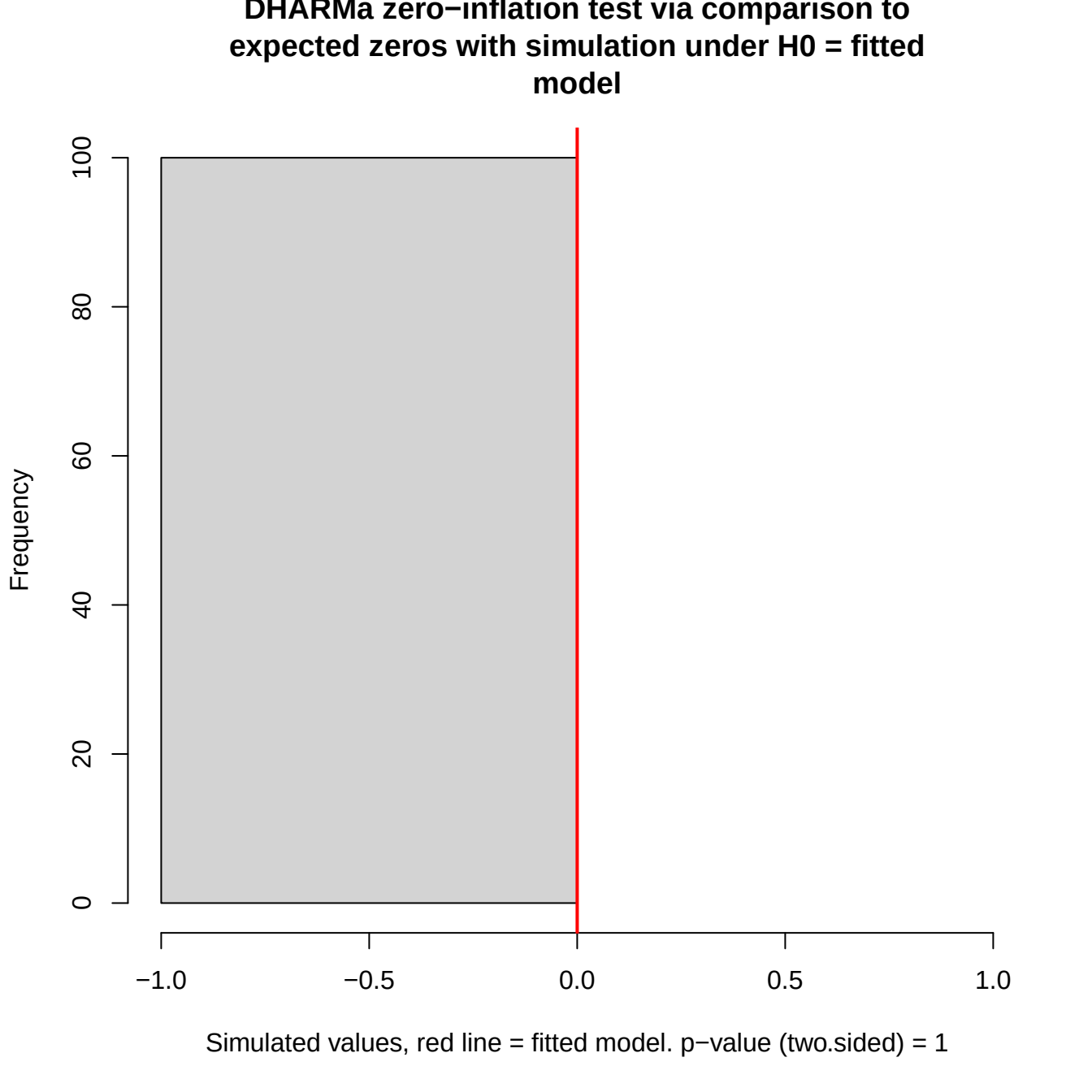

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.93287
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

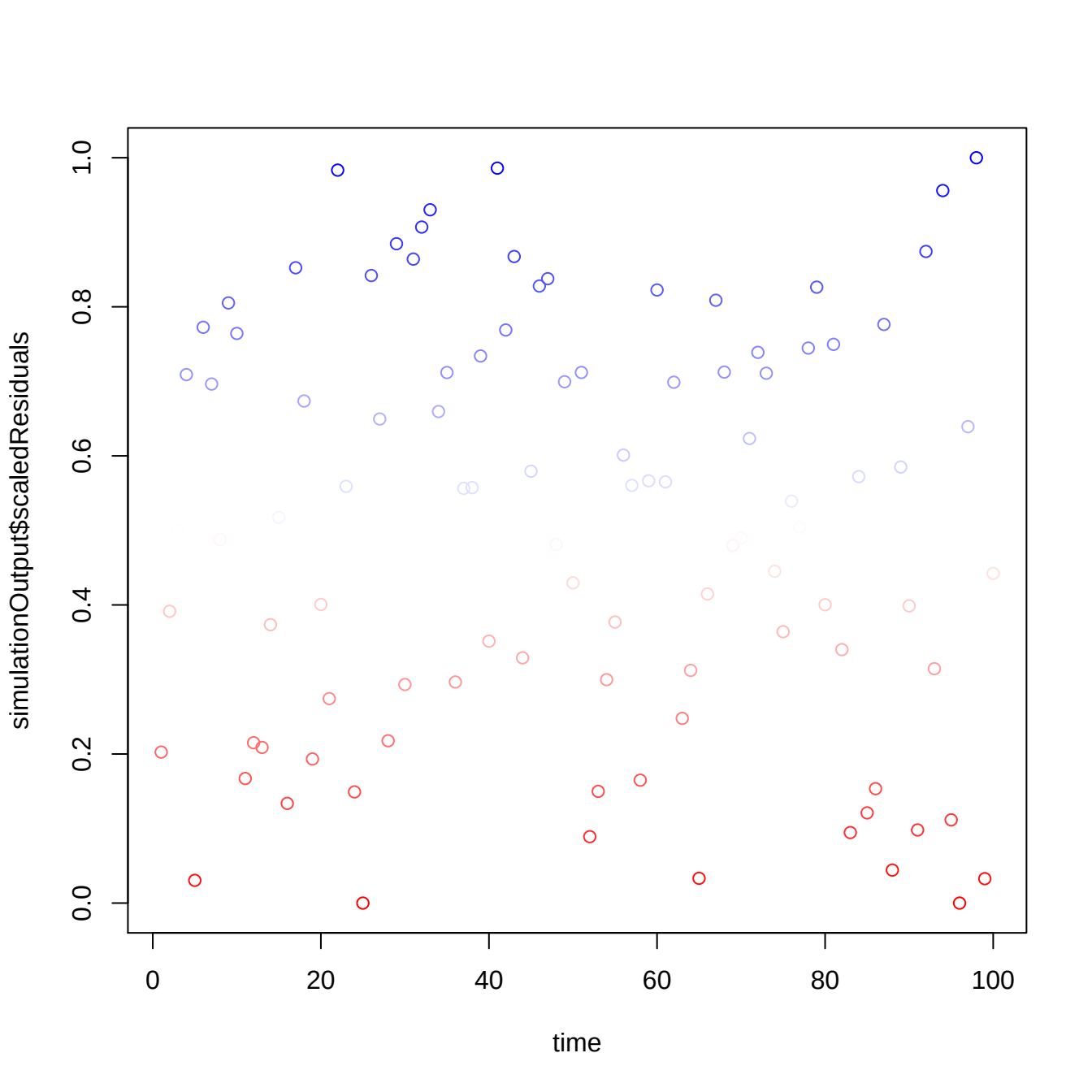

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.56052
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

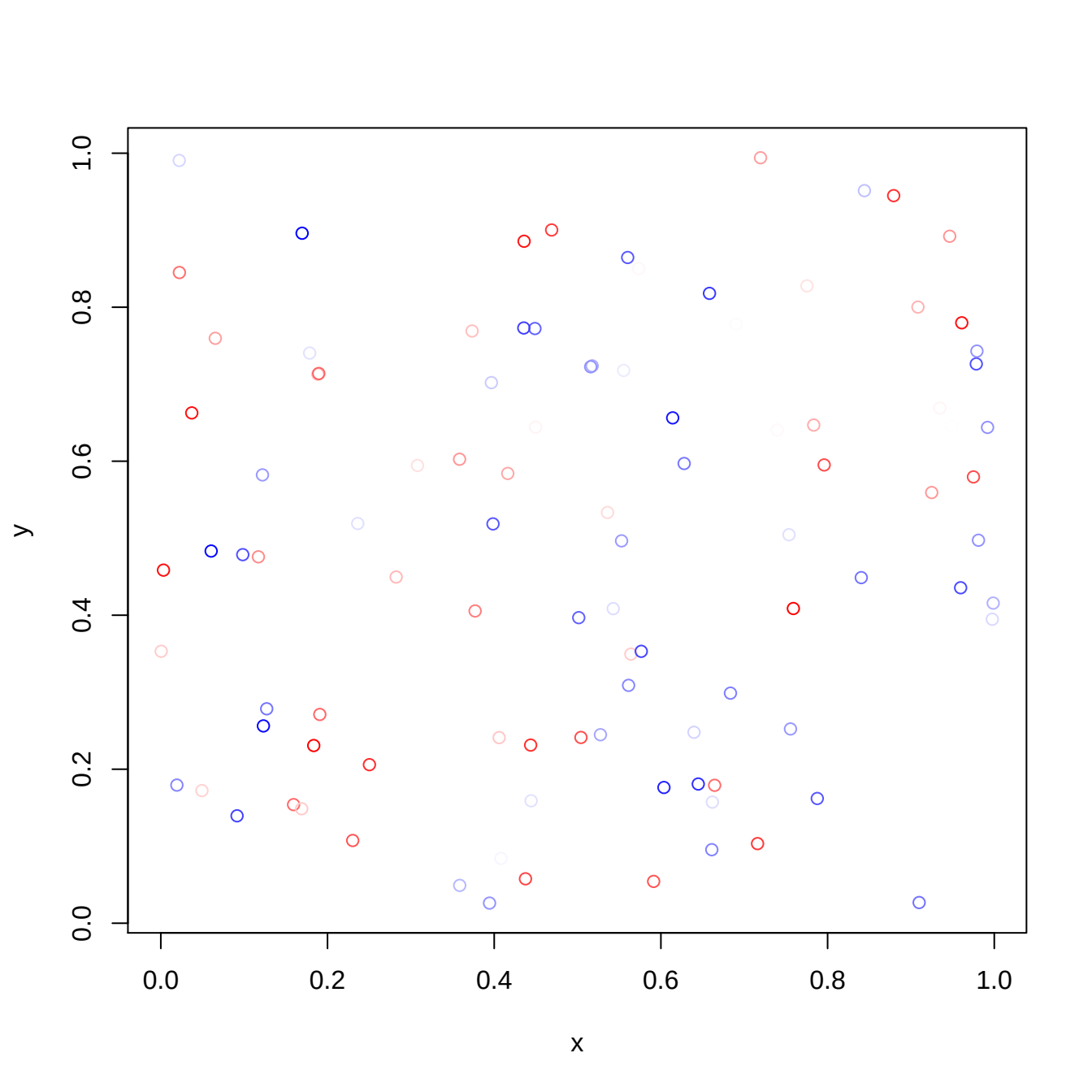

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
val

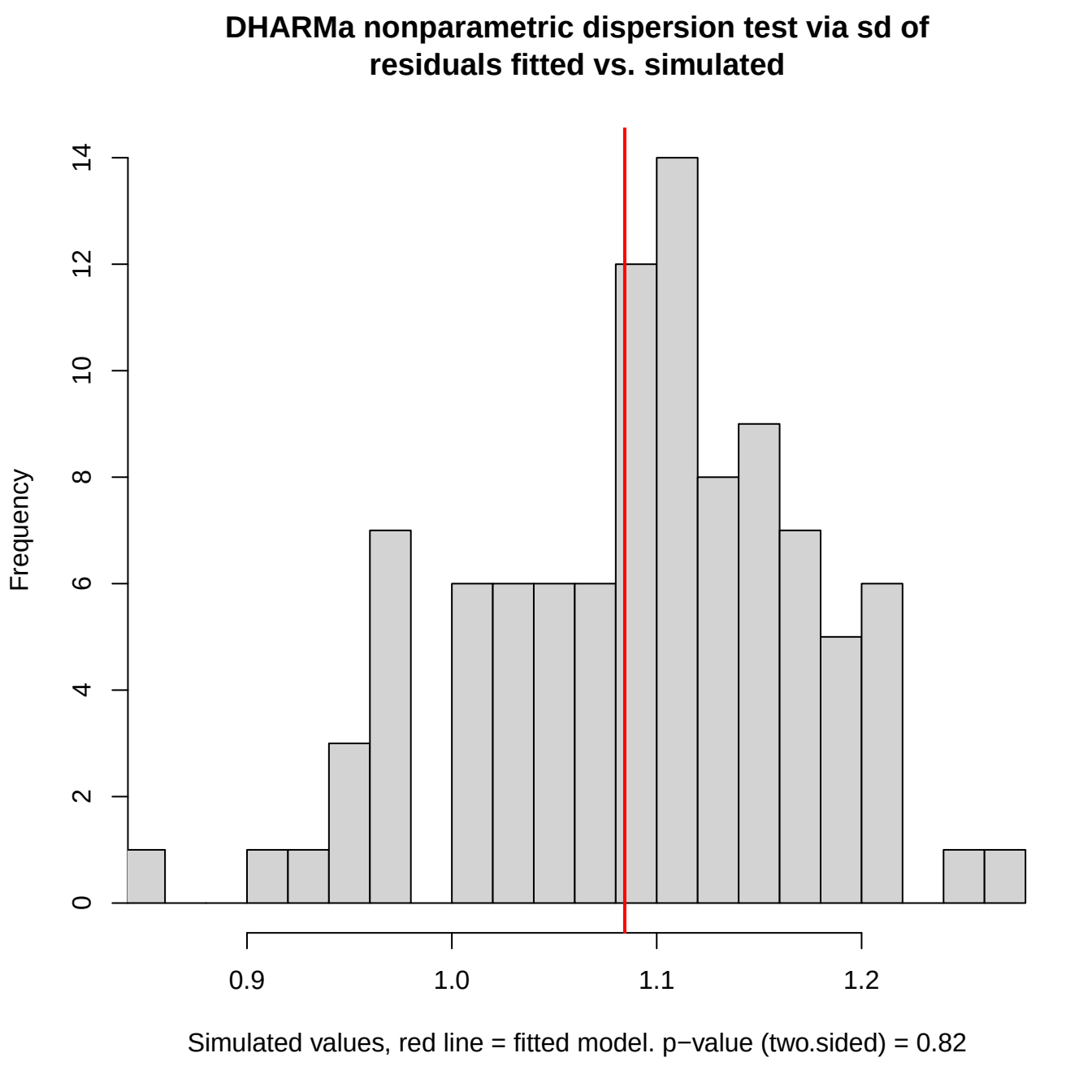

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.82

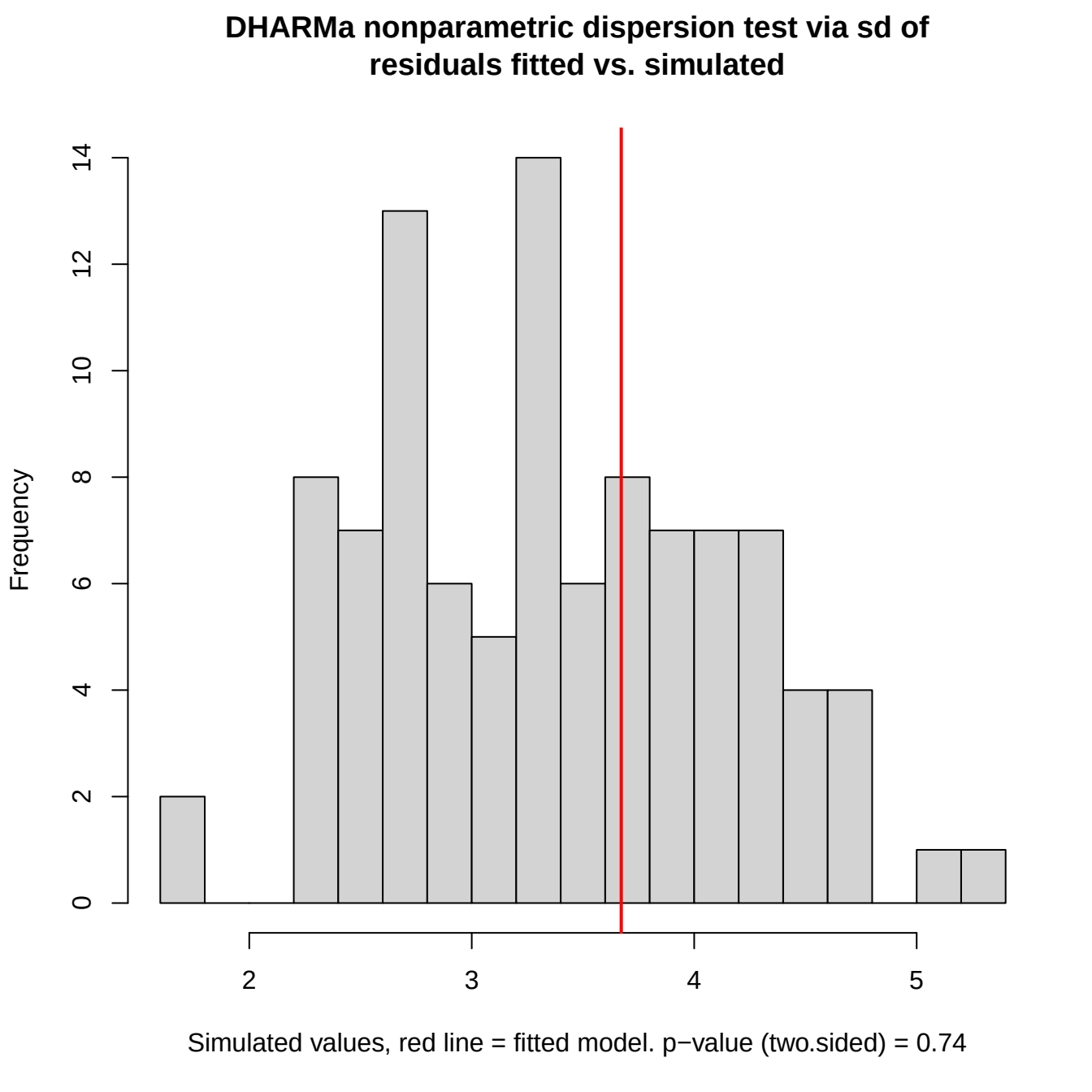

QQ plot residuals
KS test: p= 0.91562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

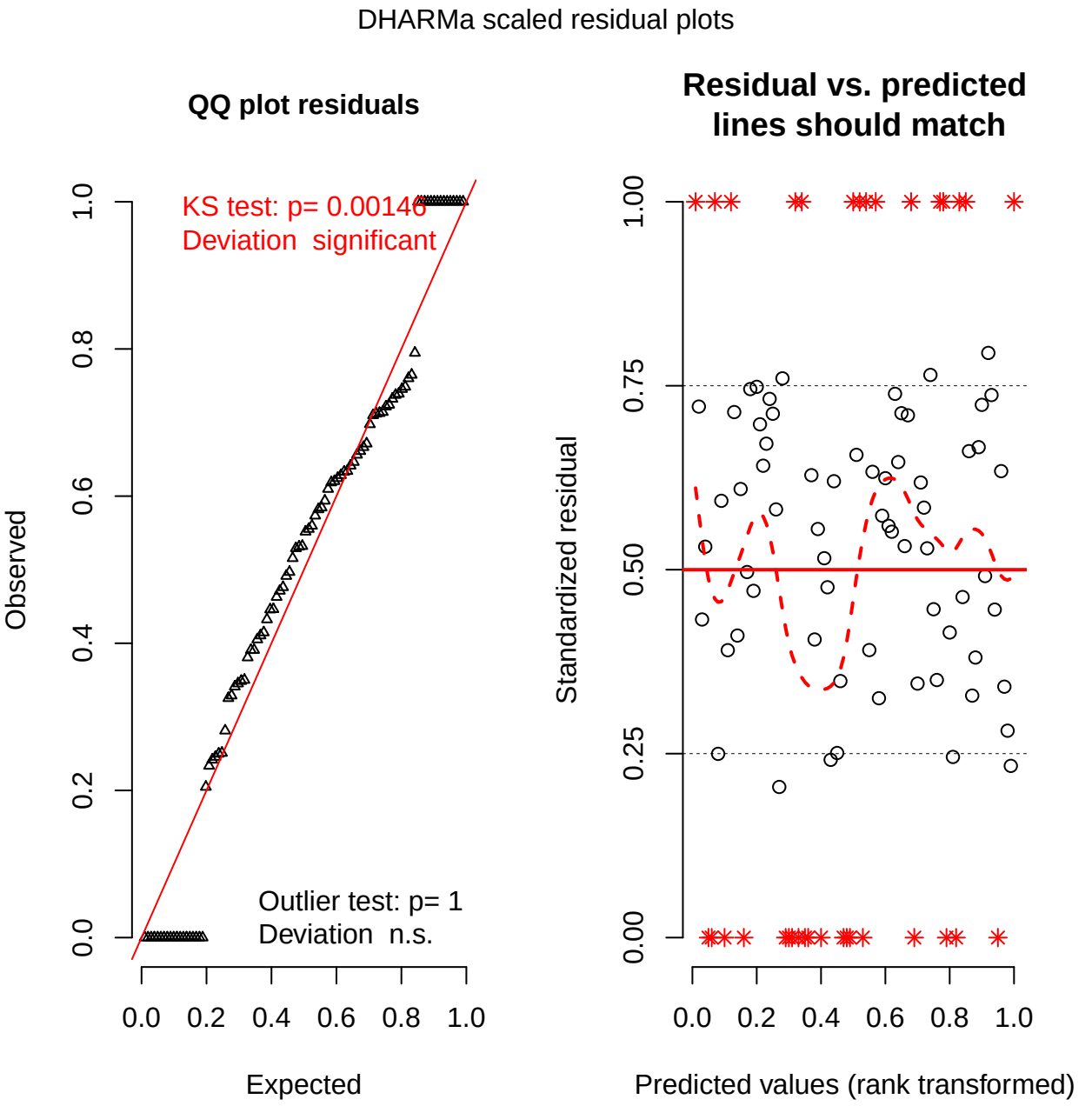

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

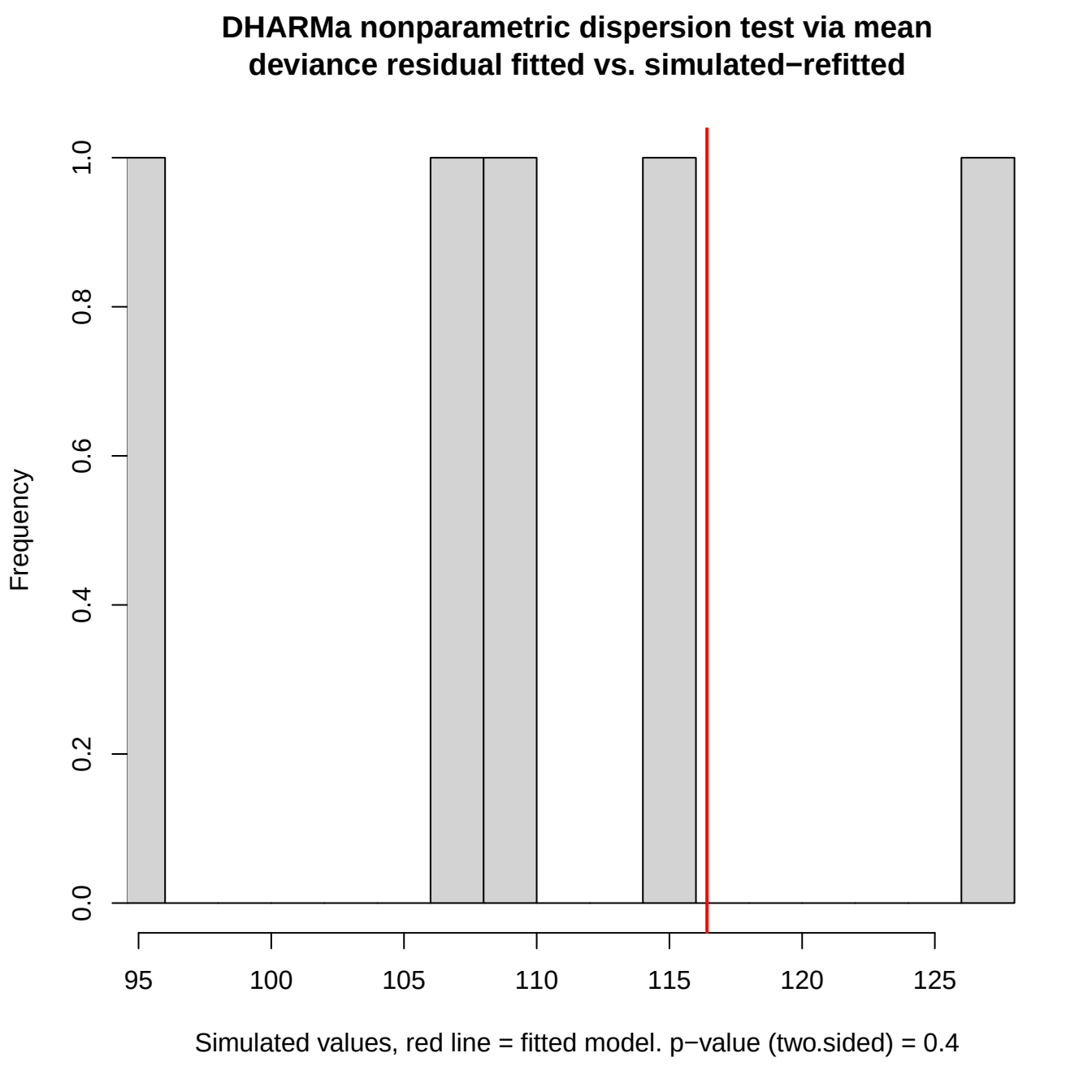

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

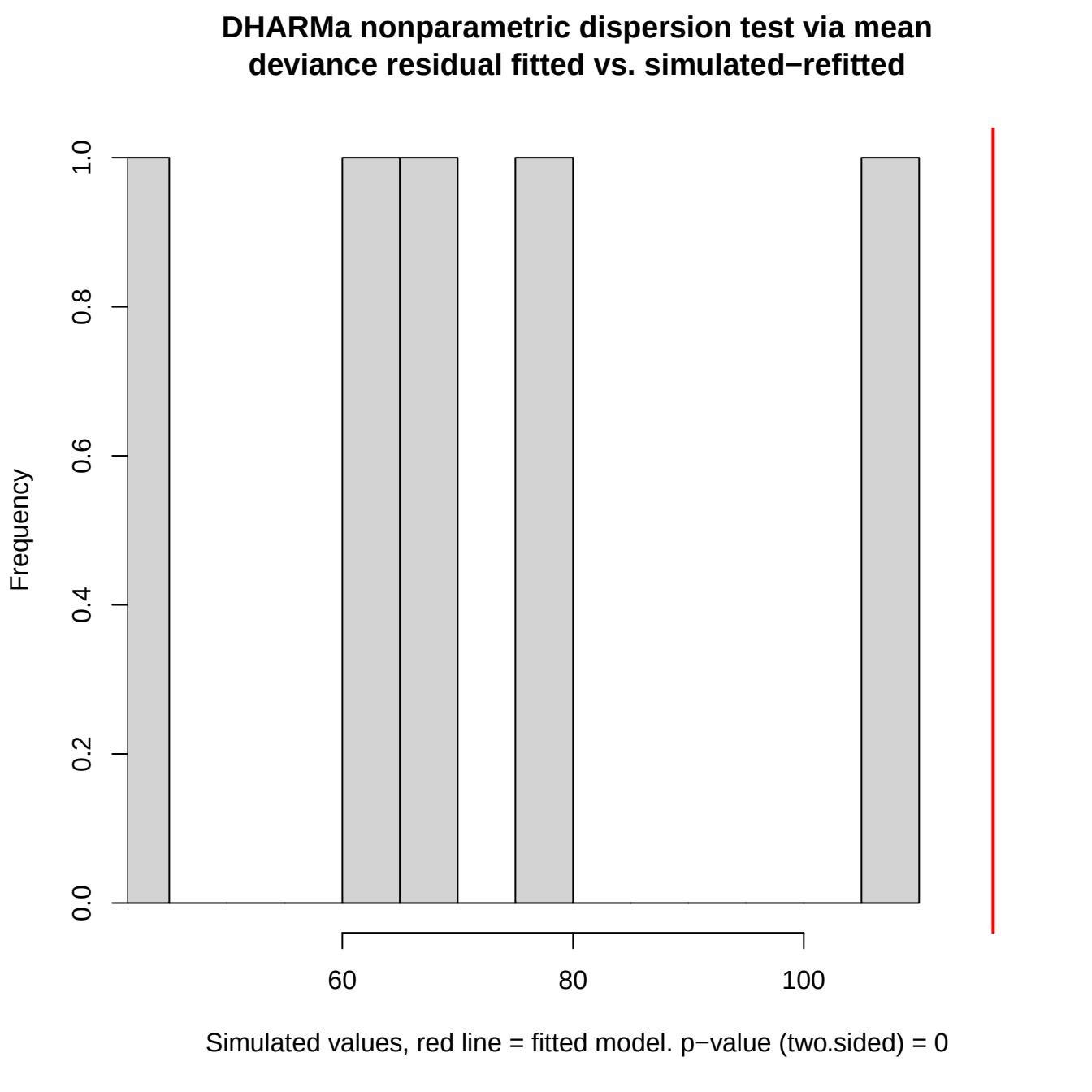

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

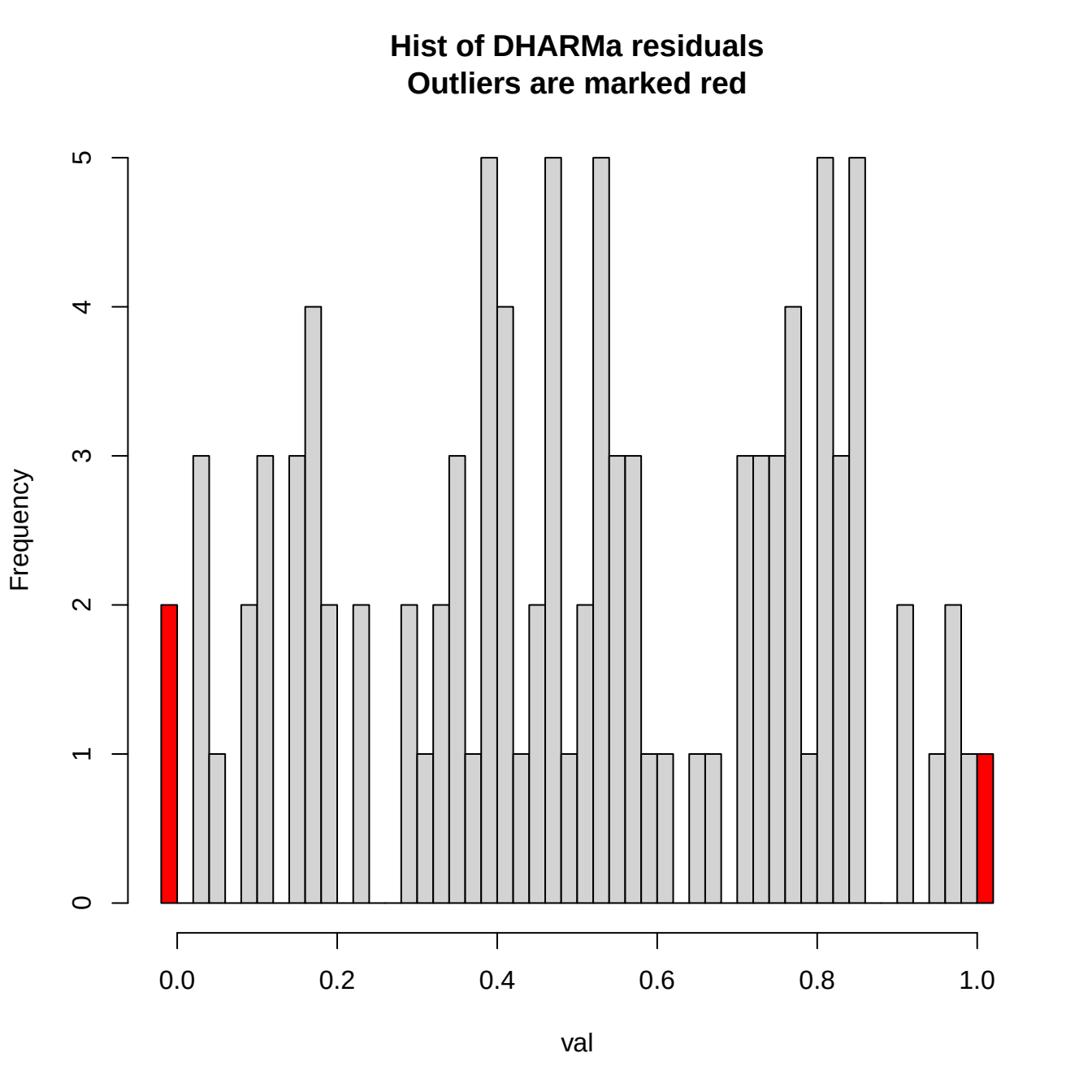

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.82

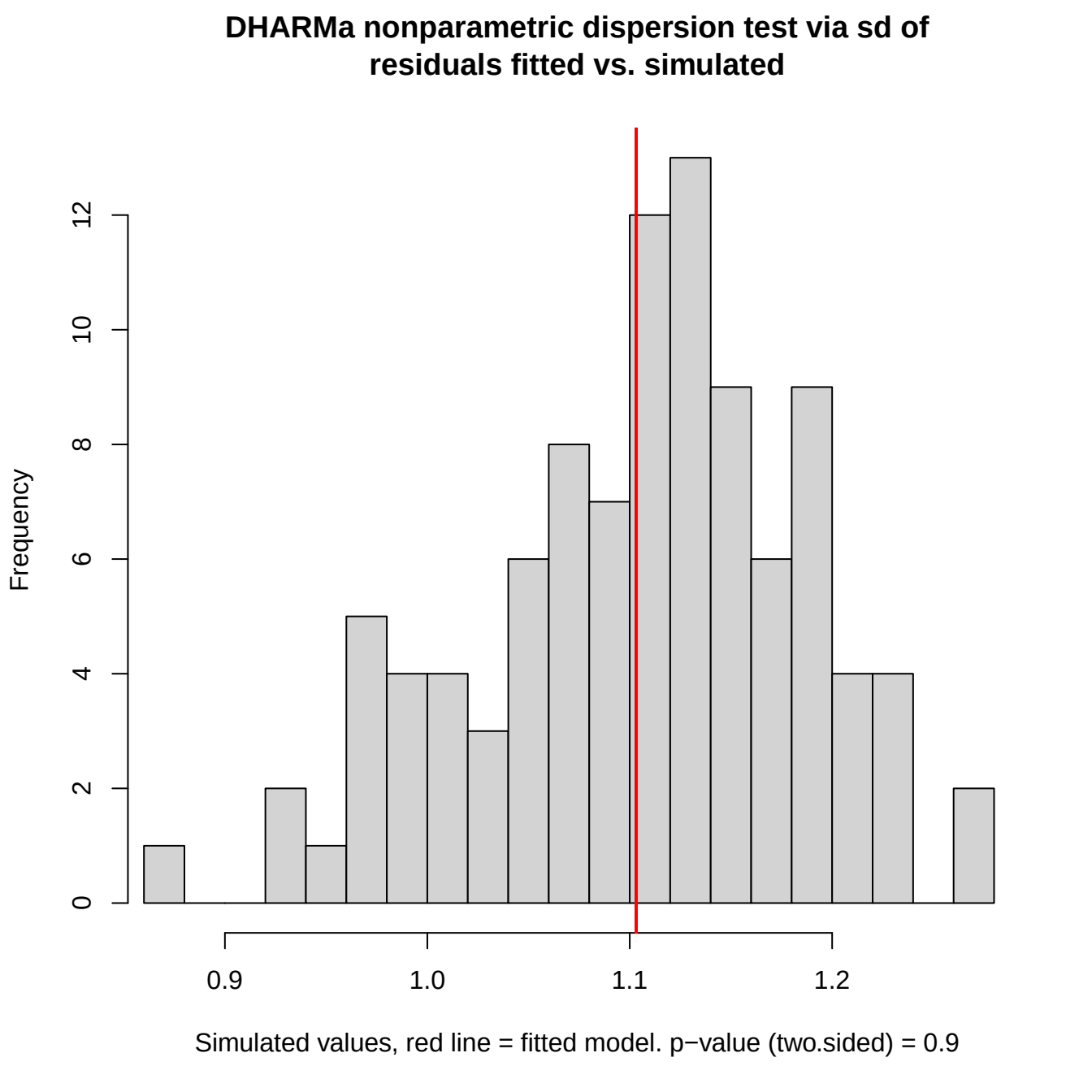

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

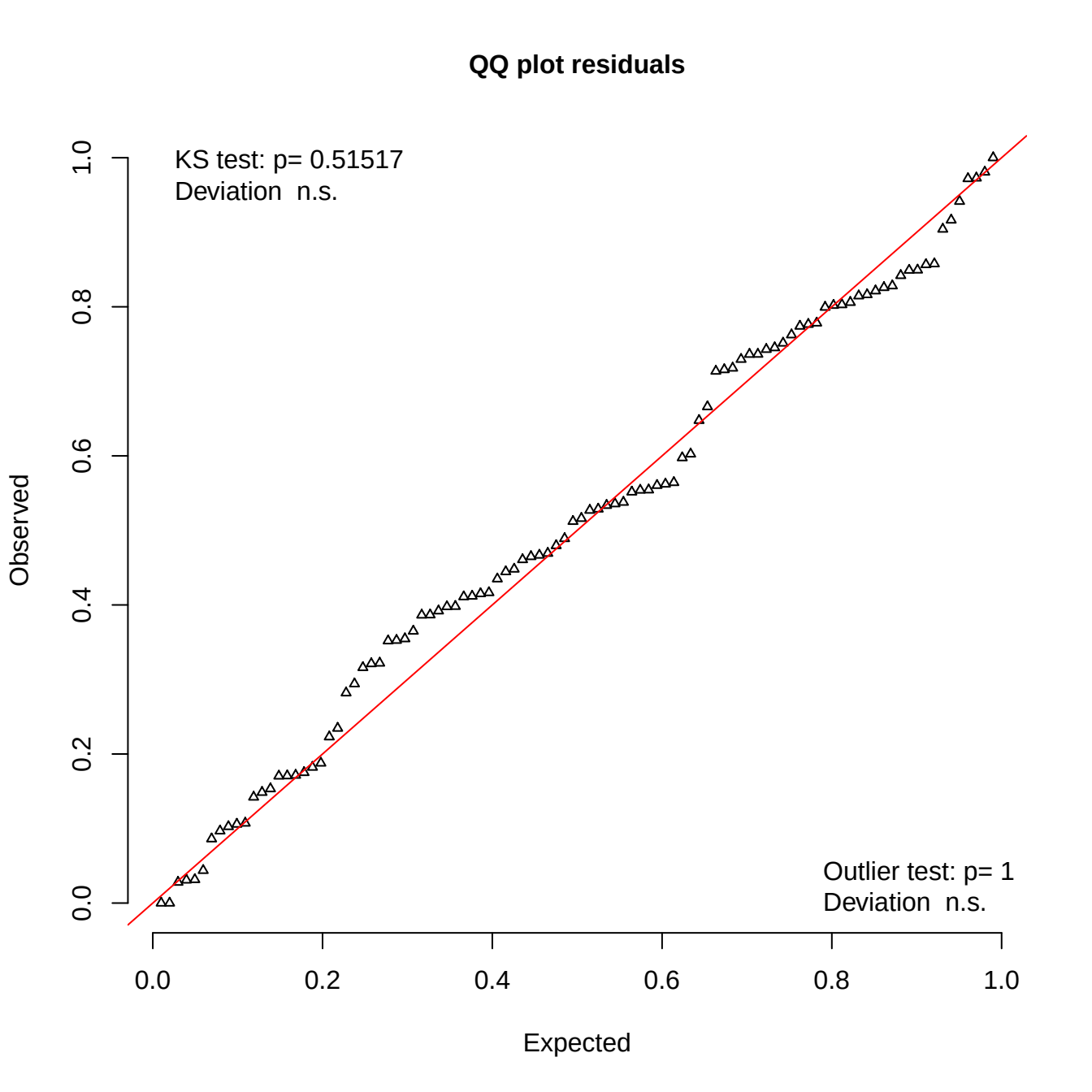

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00146
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

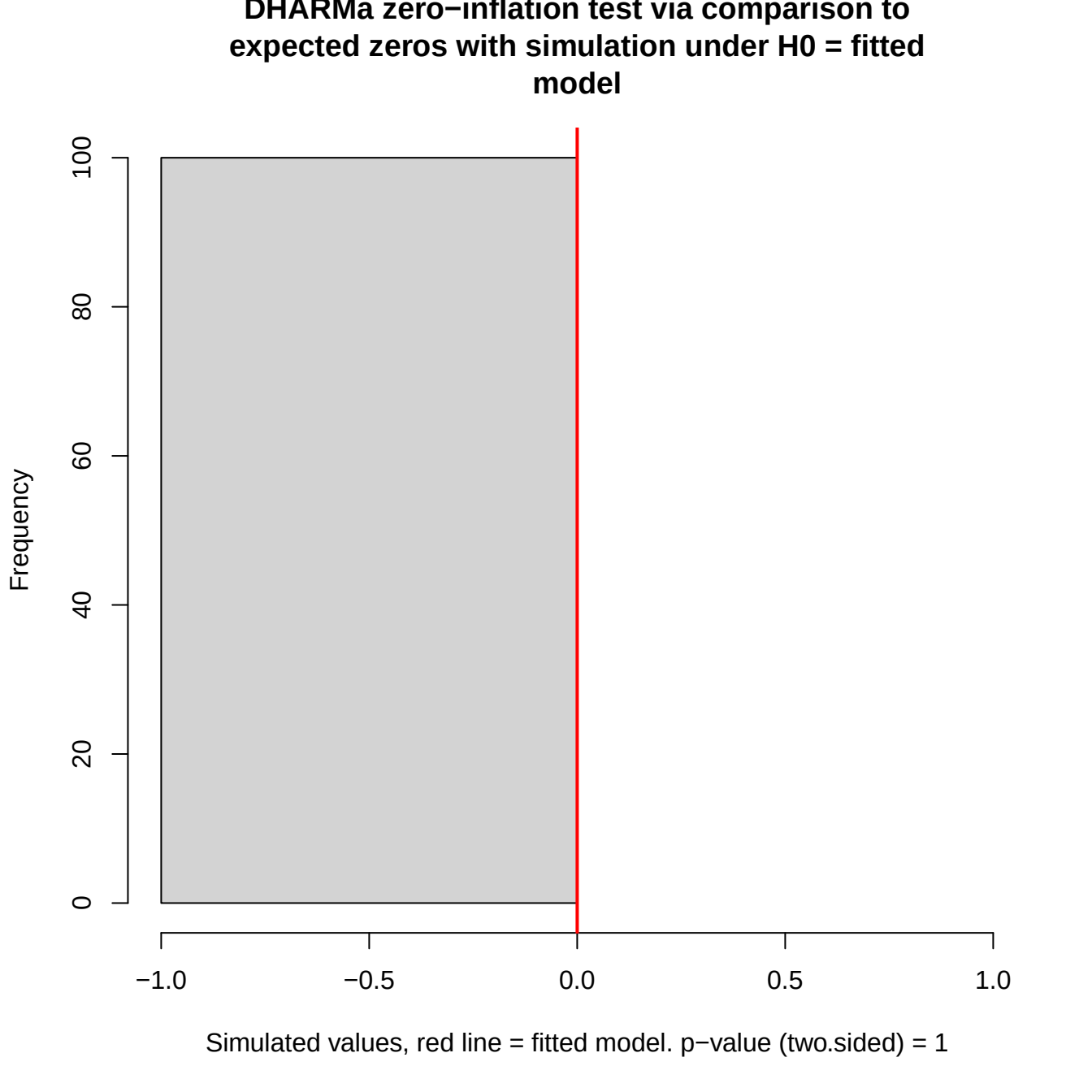

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
95
100
105
110
115
120
125
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

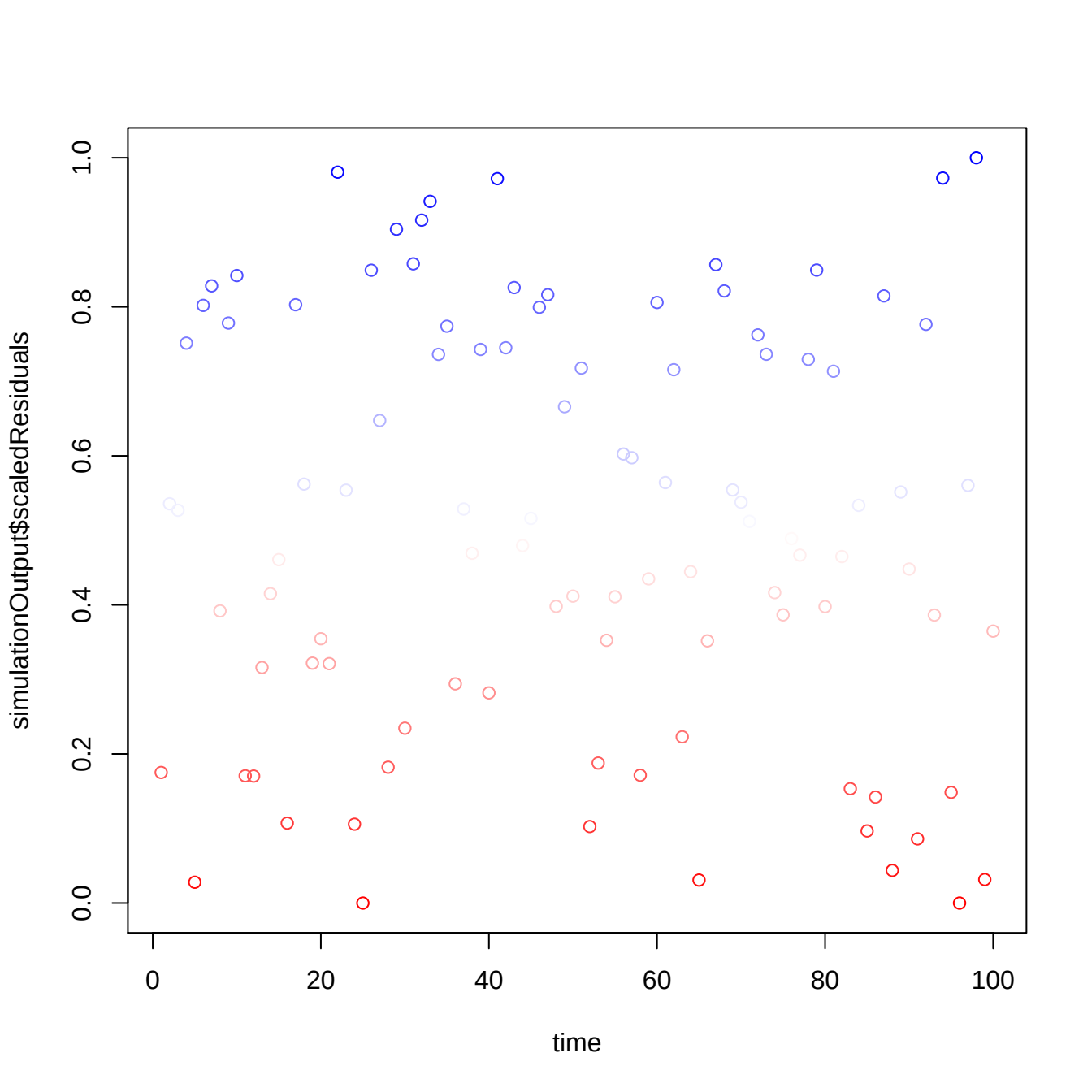

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
60
80
100
Simulated values, red line = fitted model. p−value (two.sided) = 0

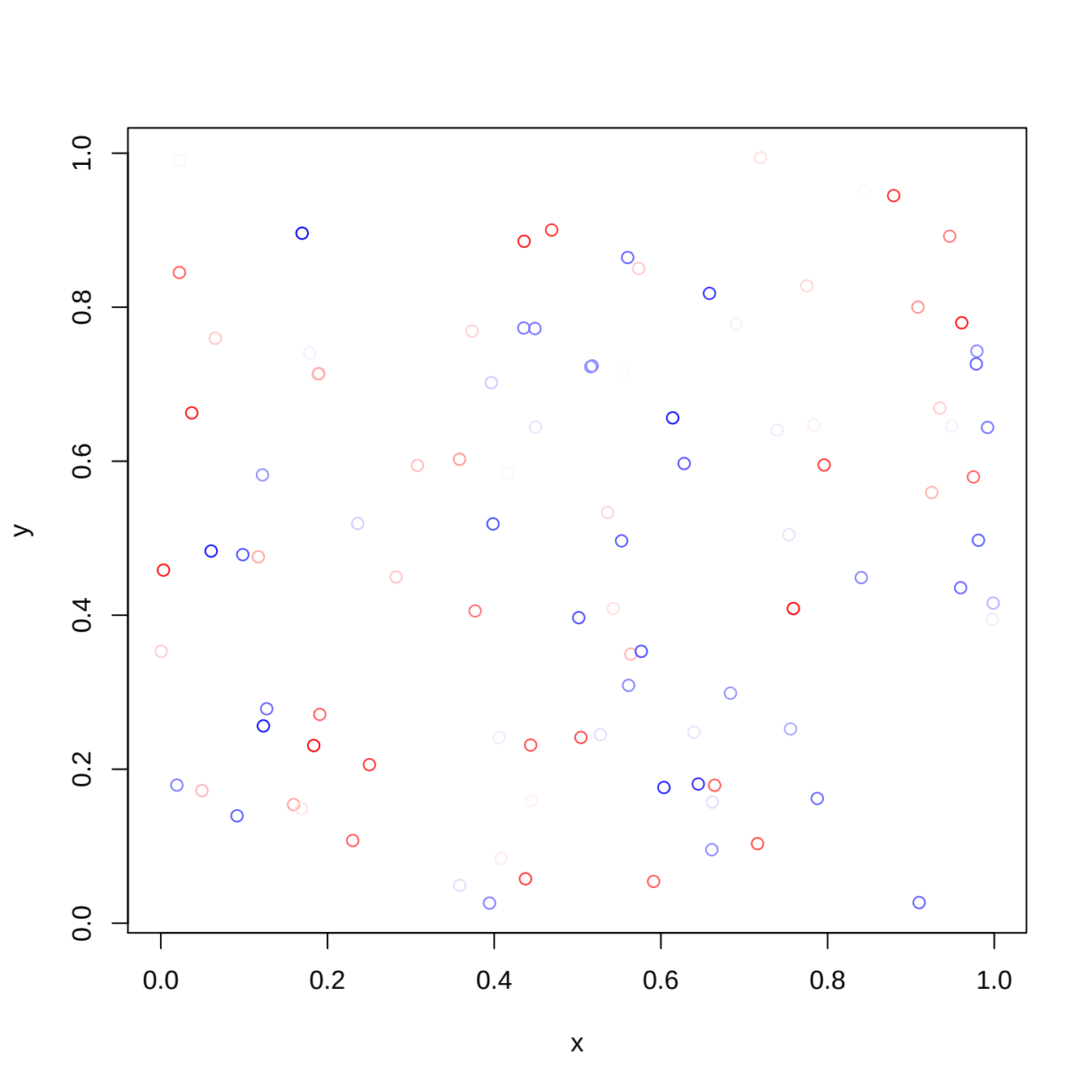

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
val

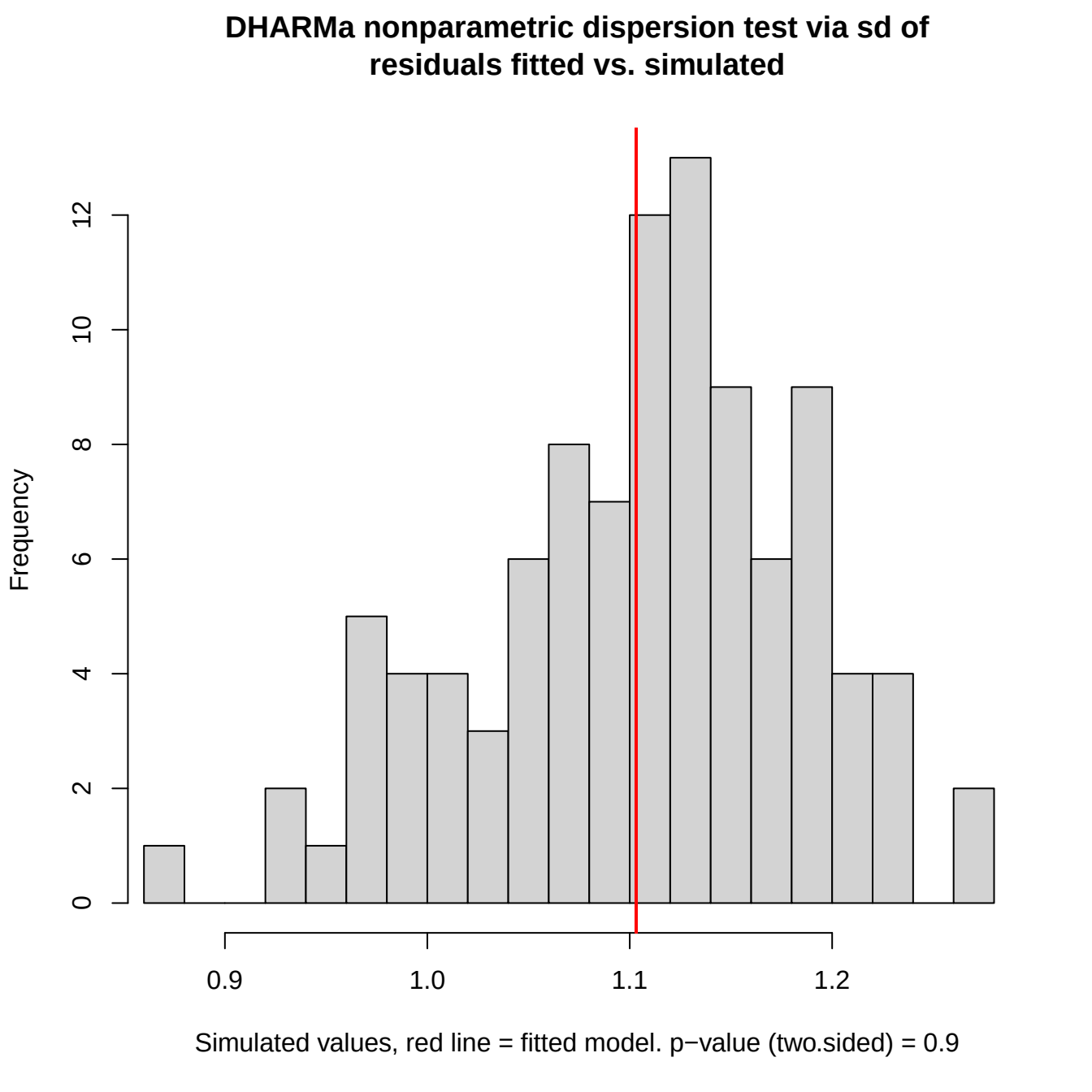

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

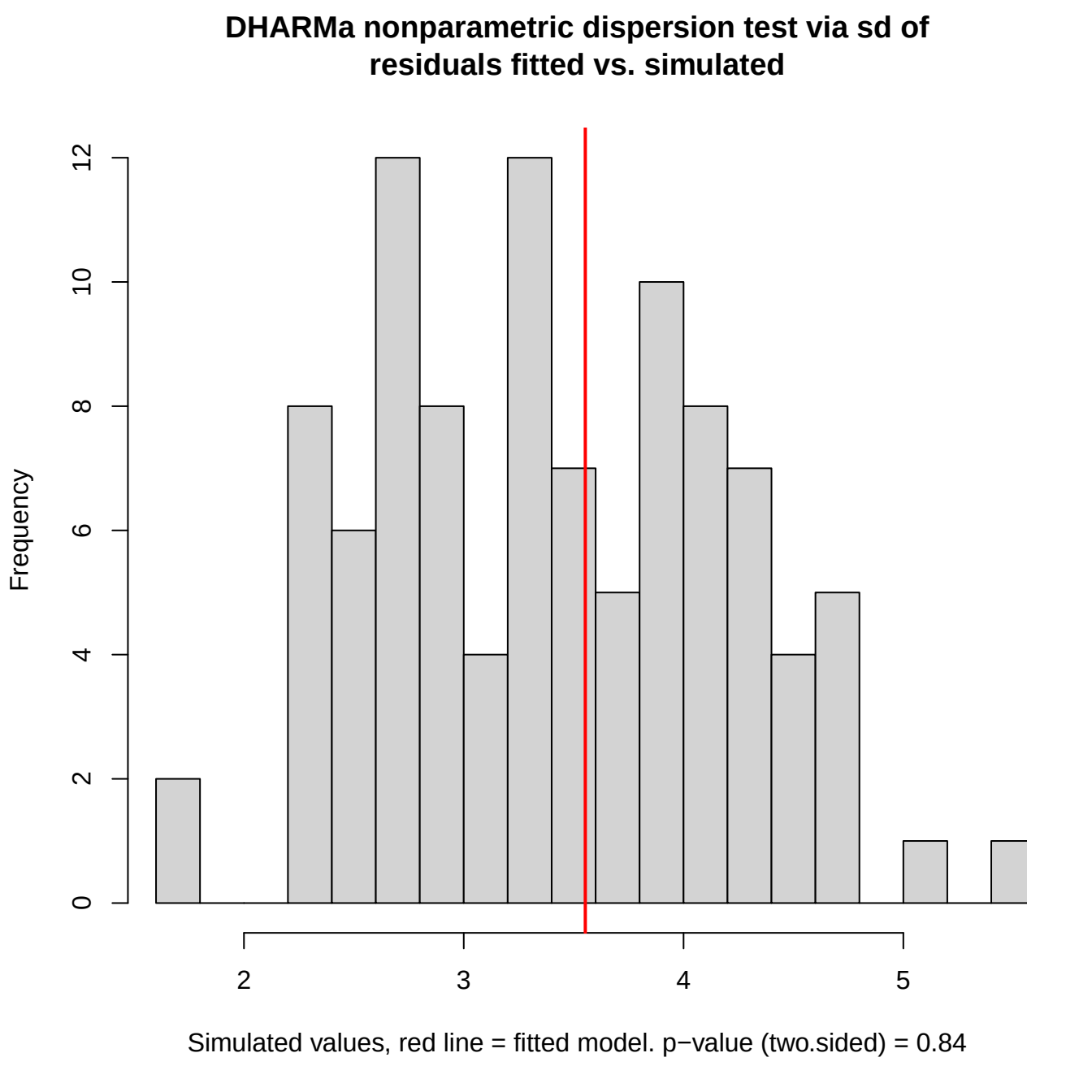

QQ plot residuals
KS test: p= 0.51517
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

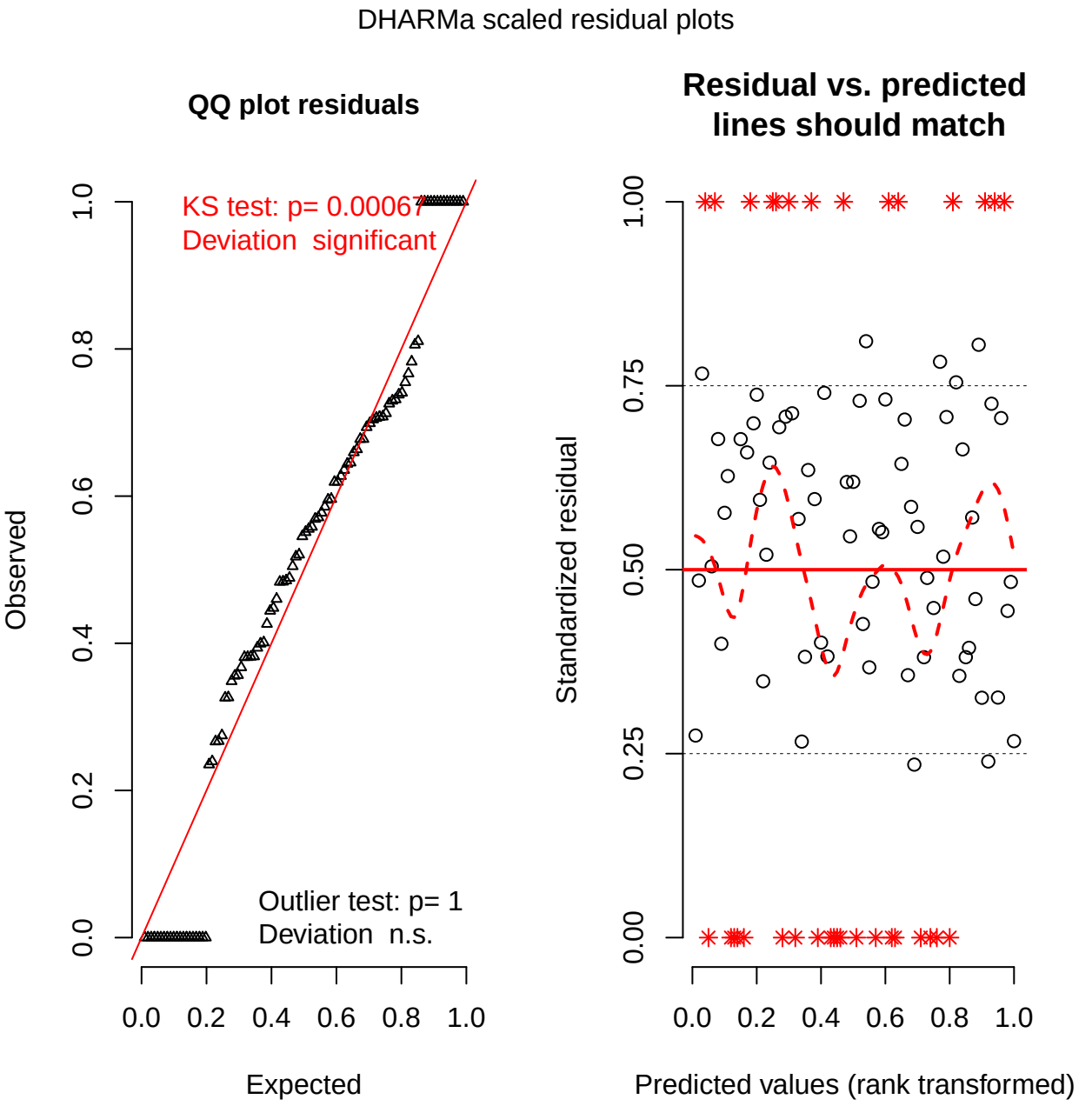

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

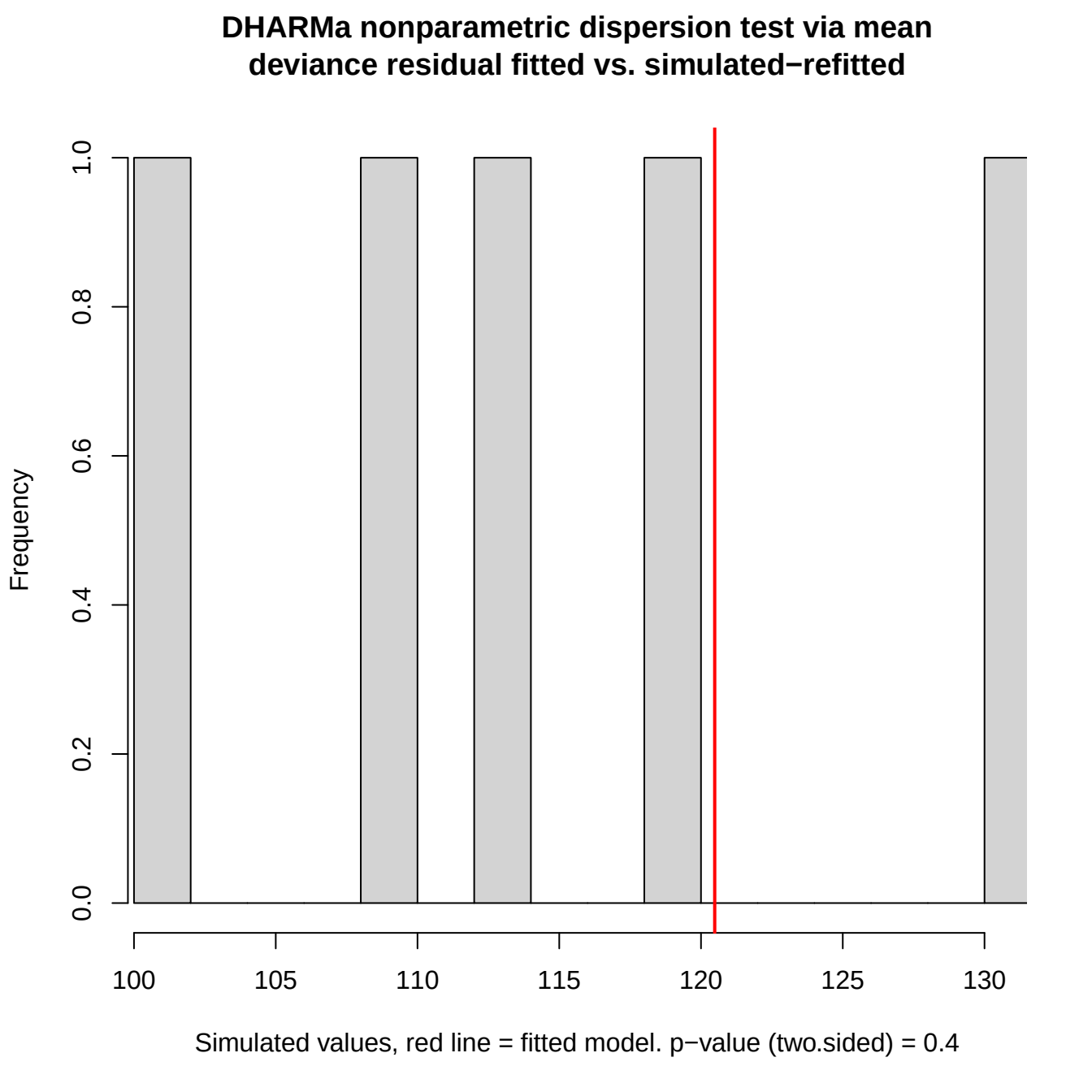

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

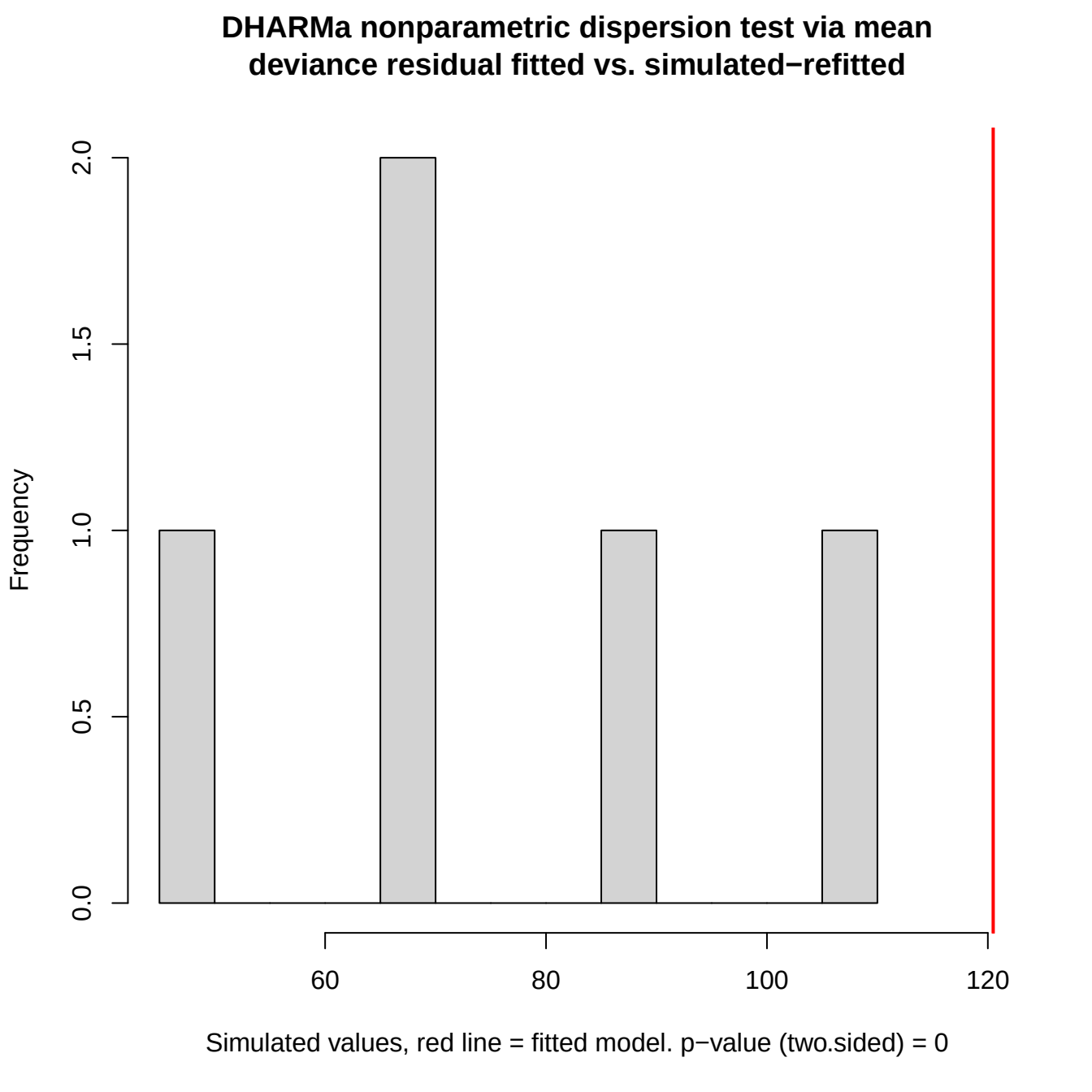

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

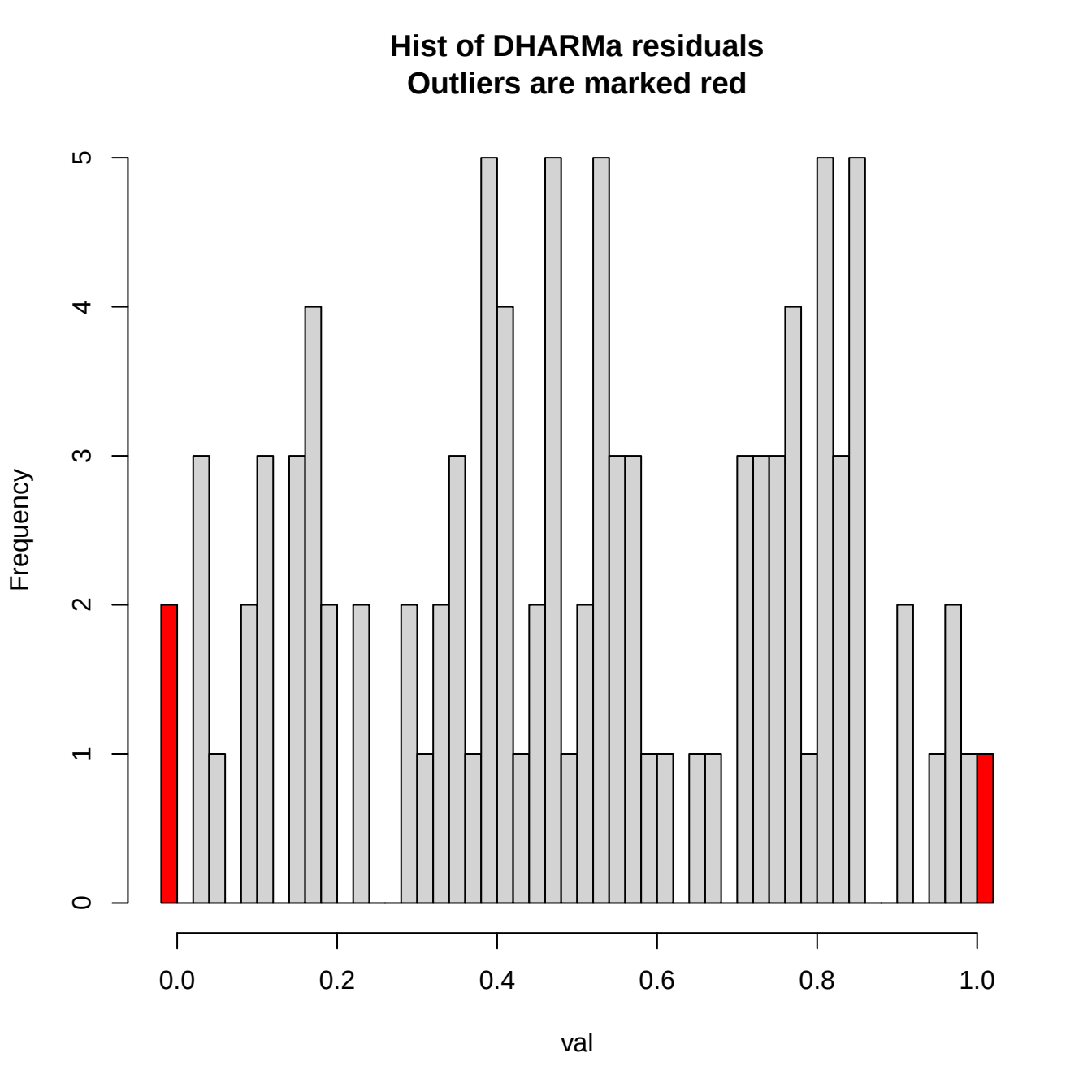

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

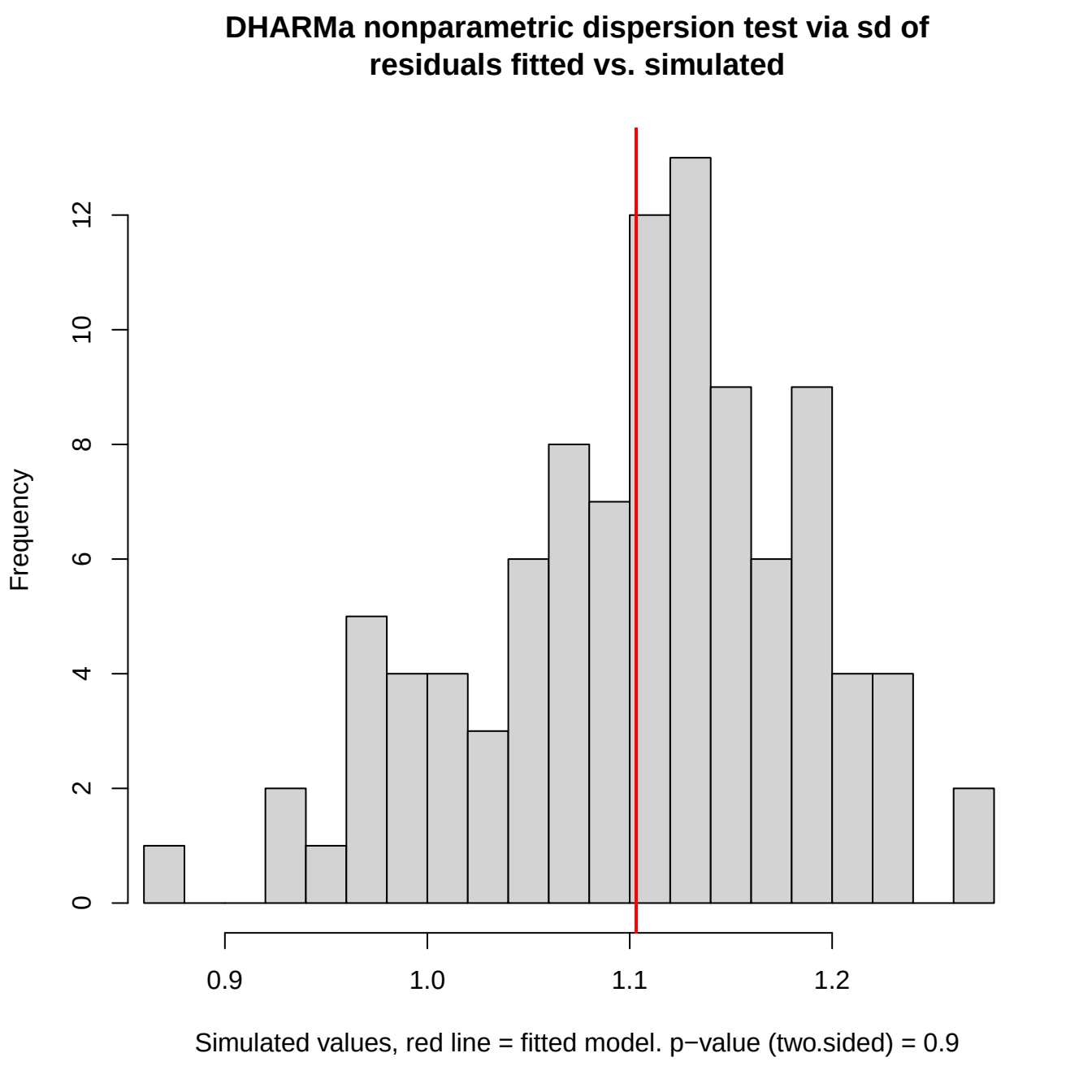

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.84

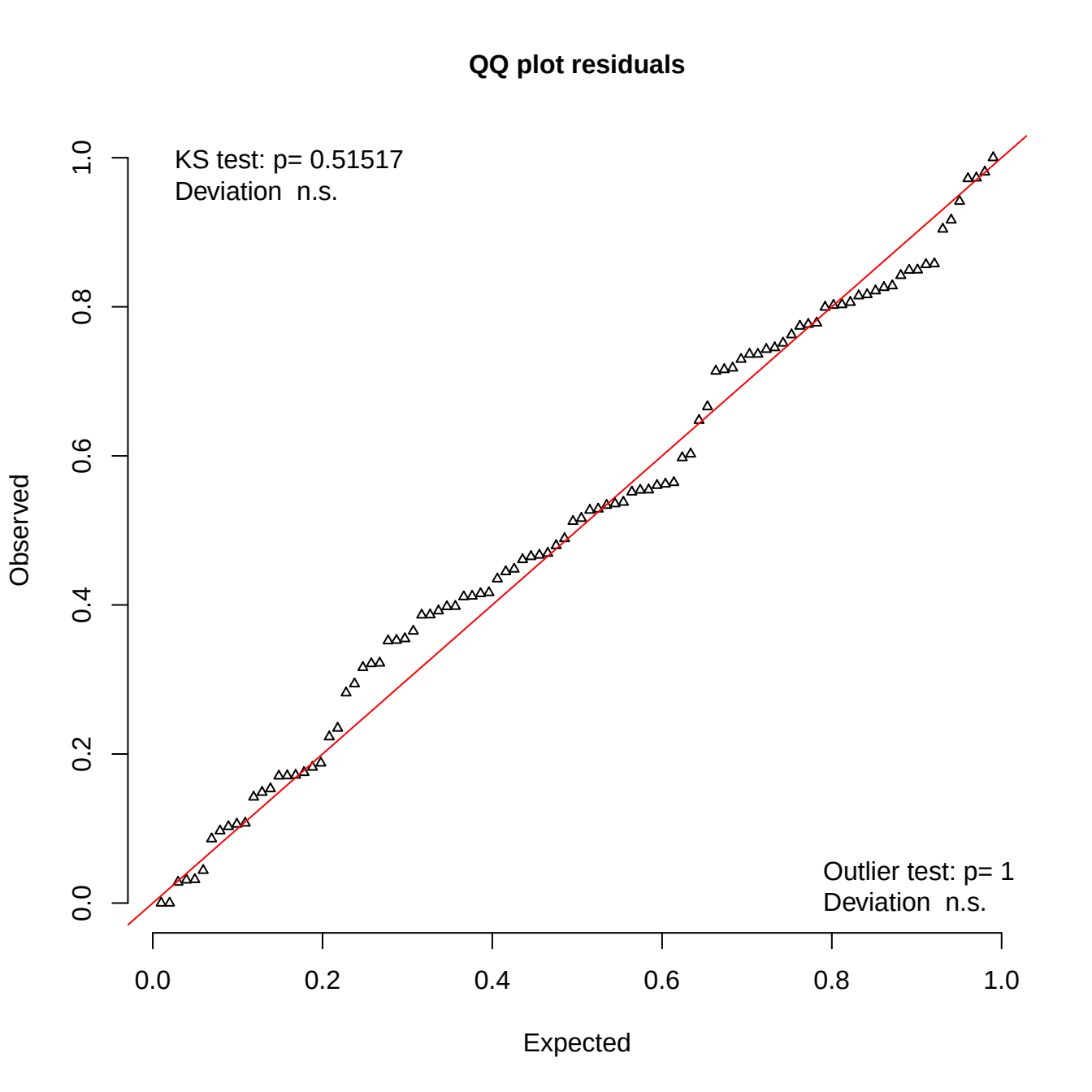

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00067
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

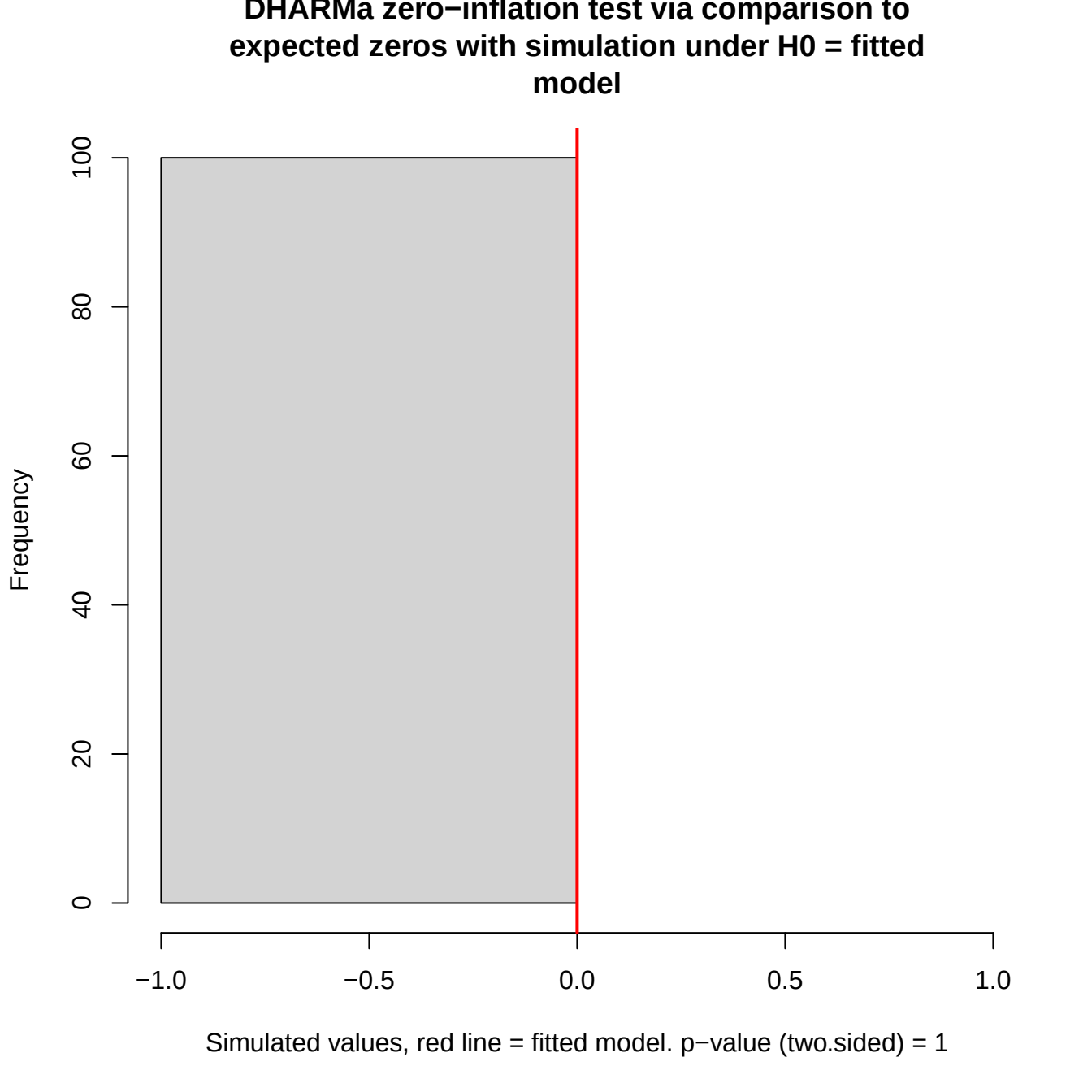

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
105
110
115
120
125
130
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

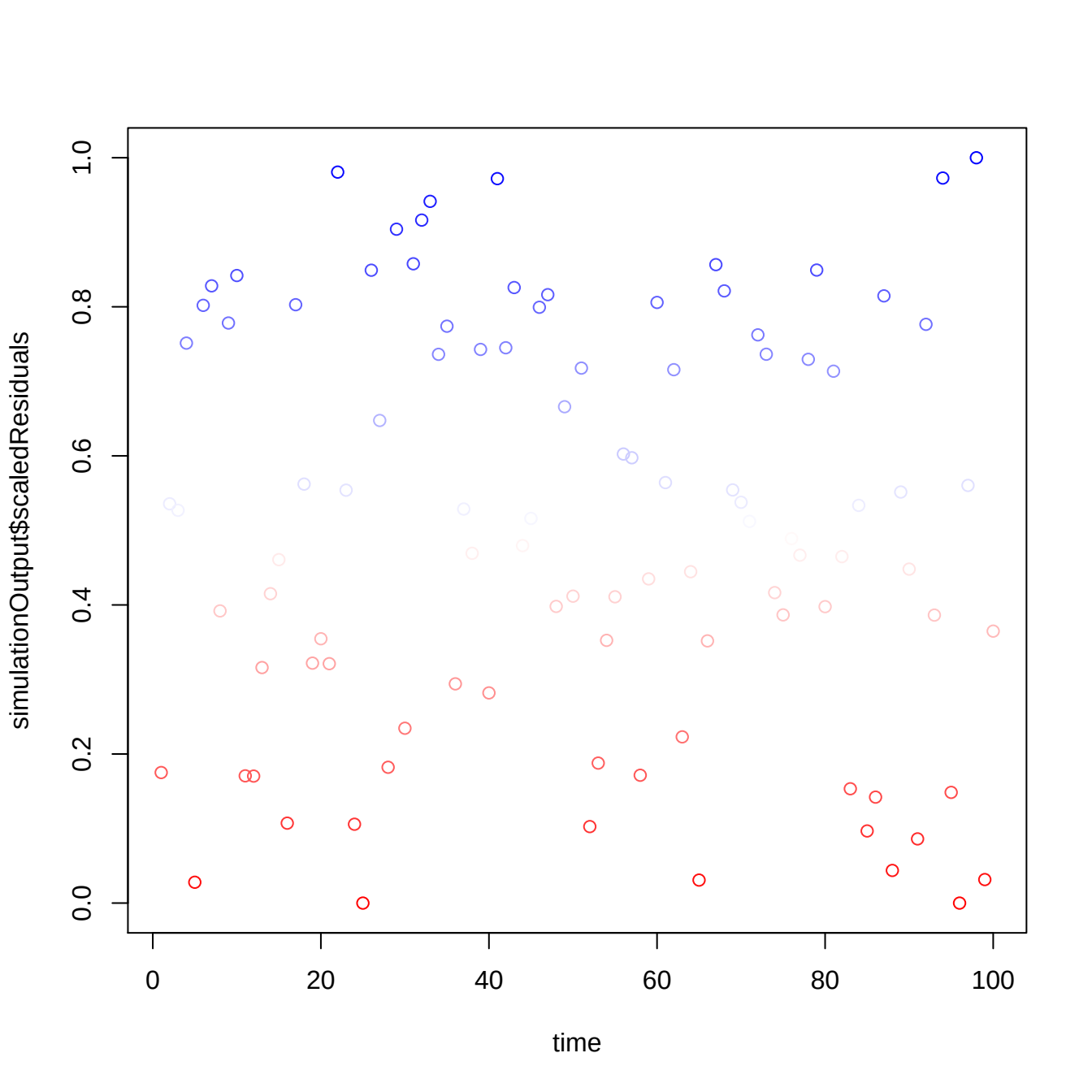

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
60
80
100
120
Simulated values, red line = fitted model. p−value (two.sided) = 0

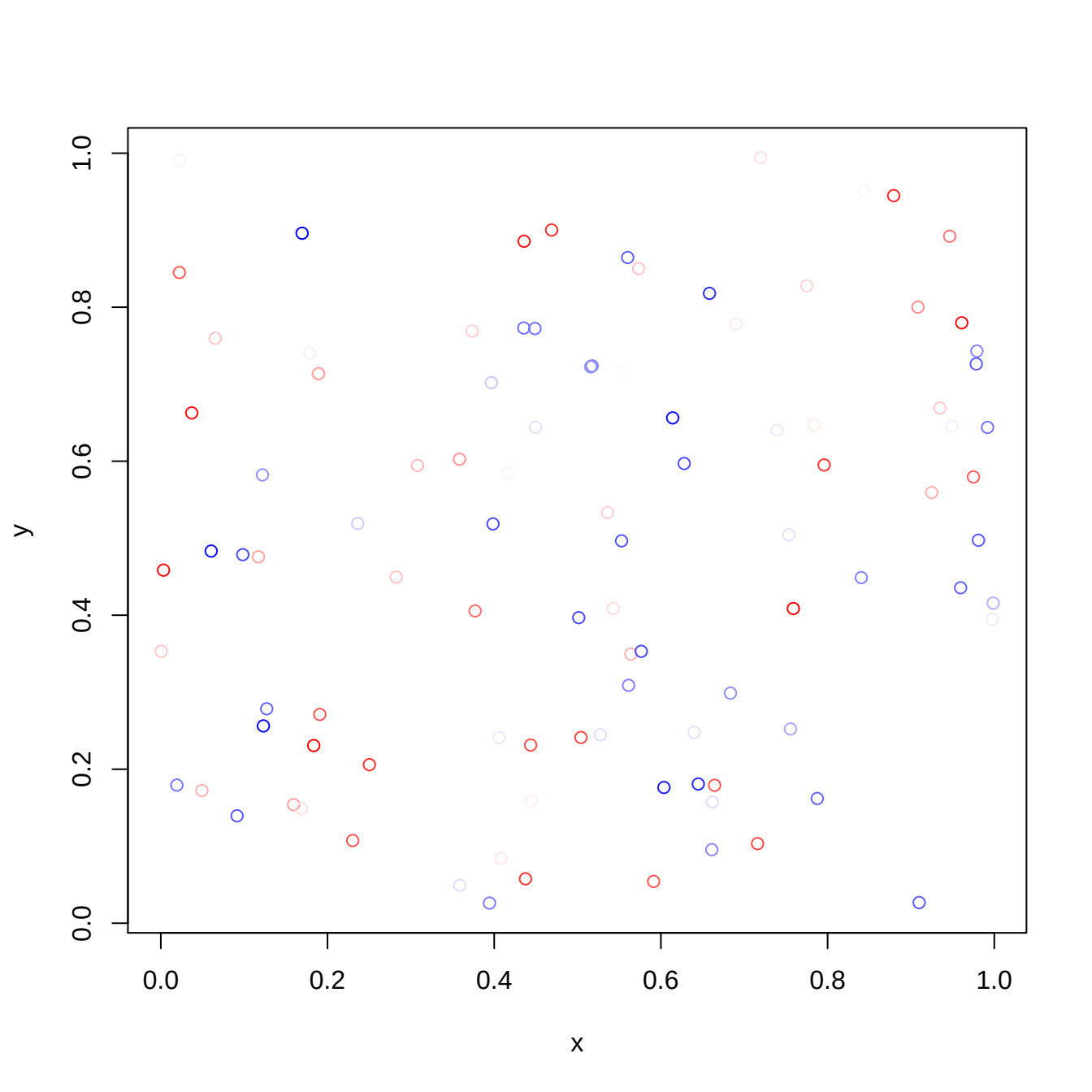

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
val

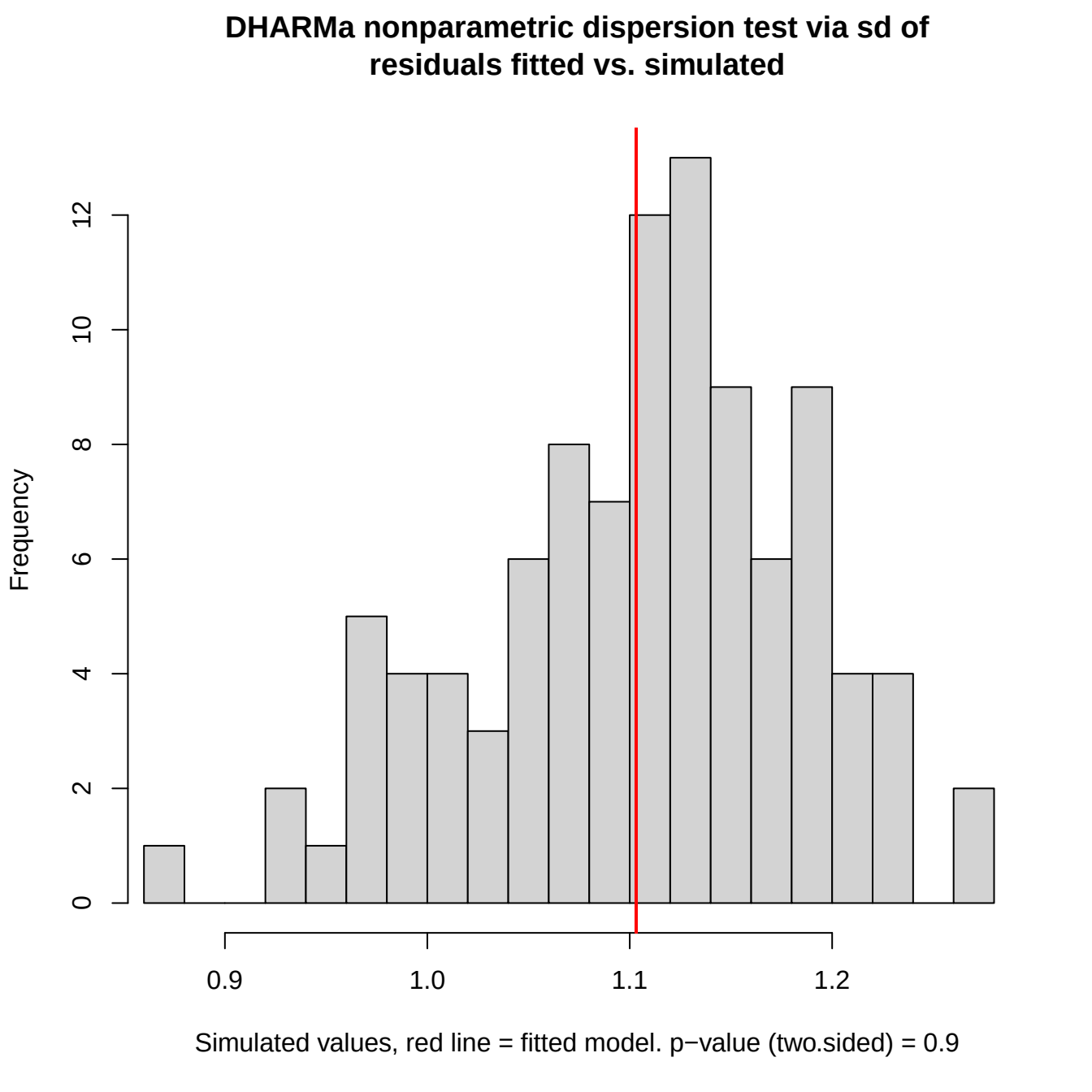

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

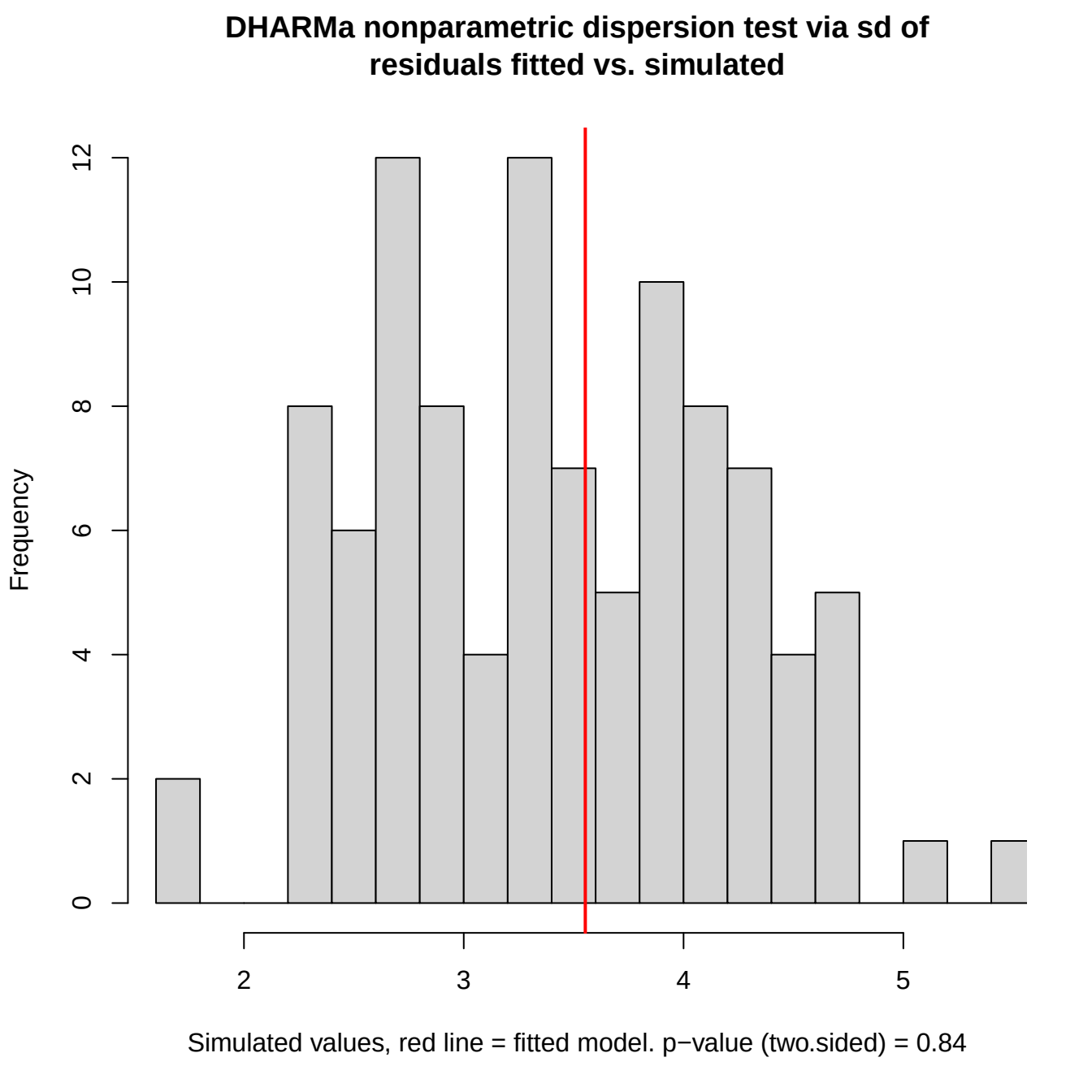

QQ plot residuals
KS test: p= 0.51517
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

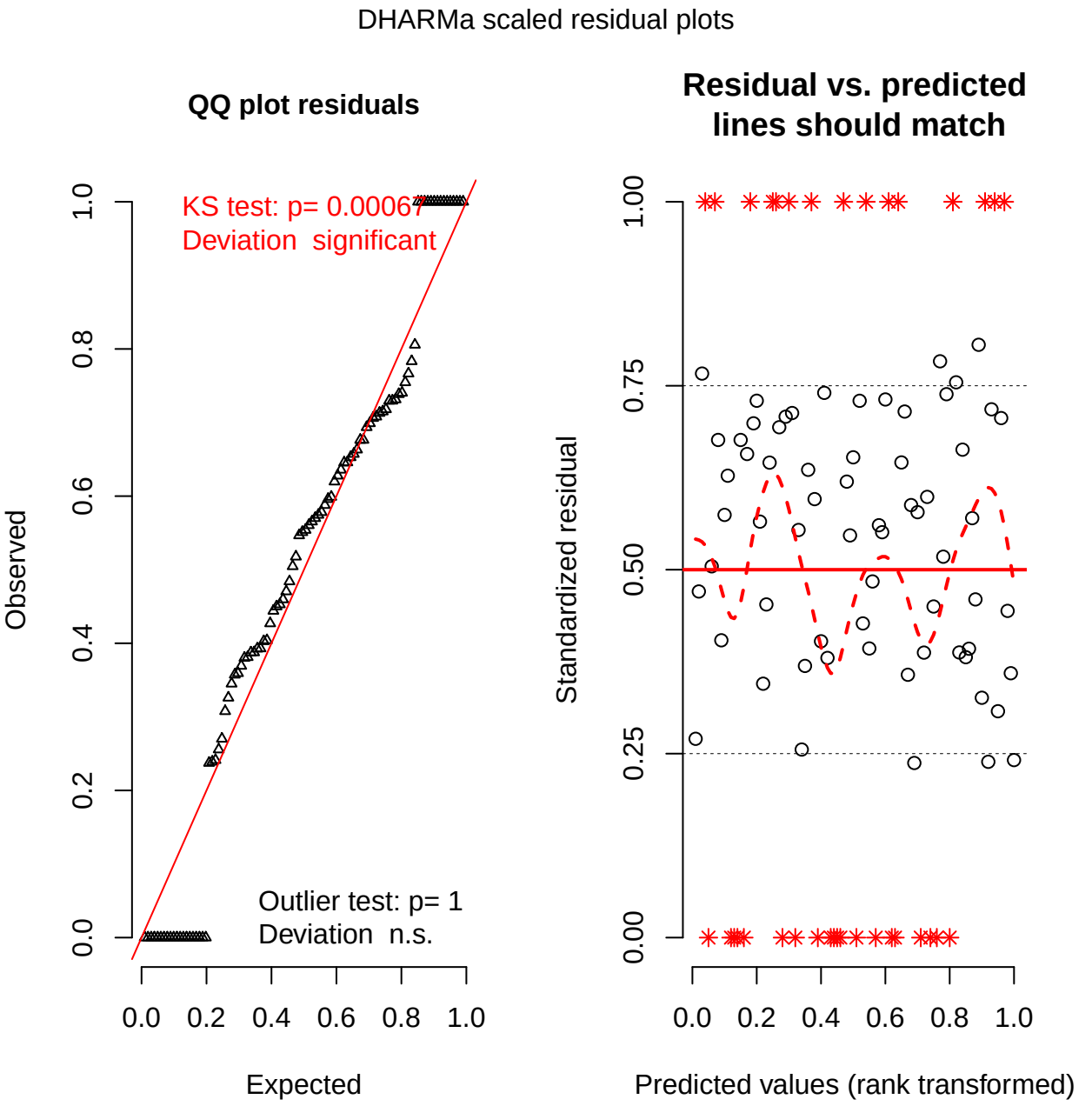

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

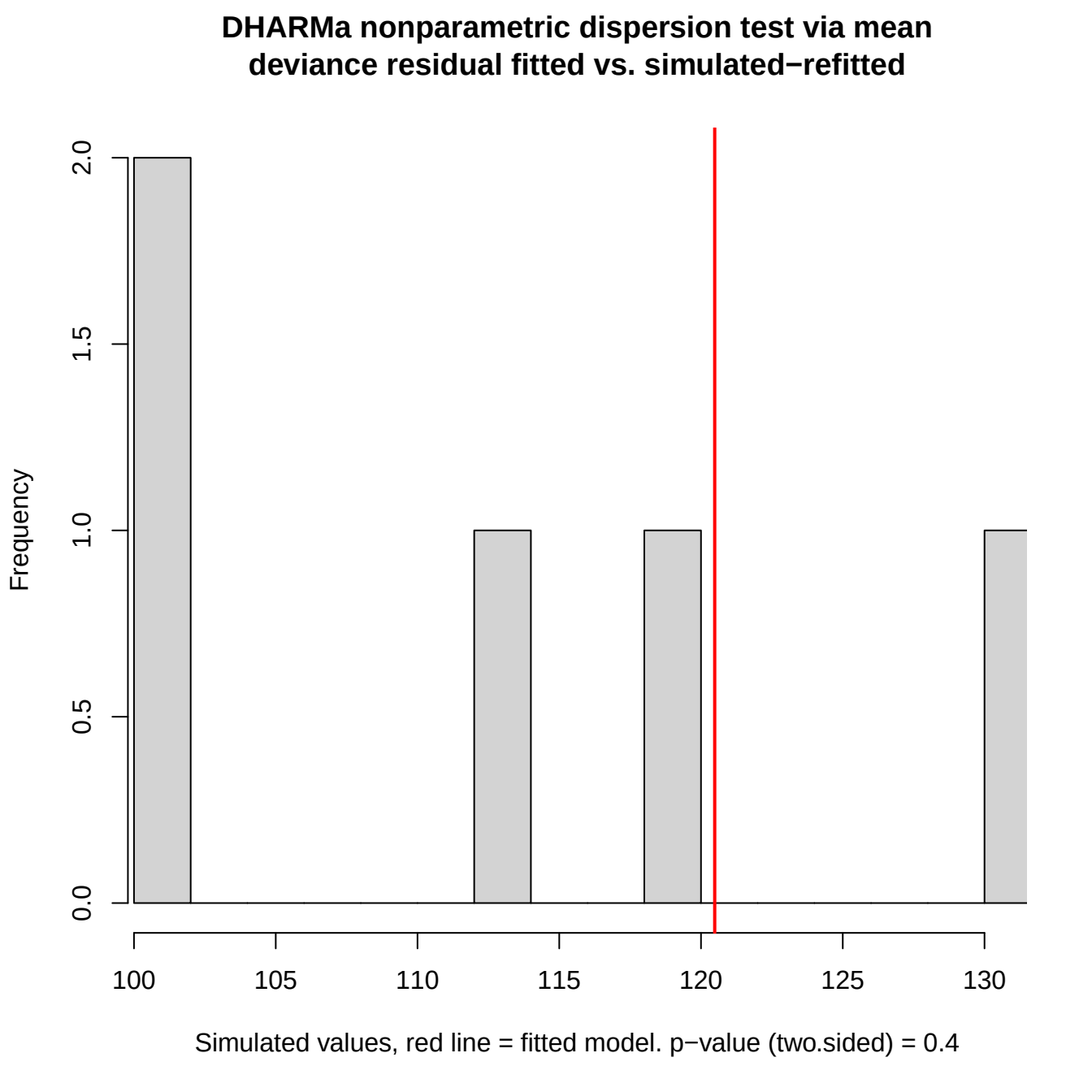

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

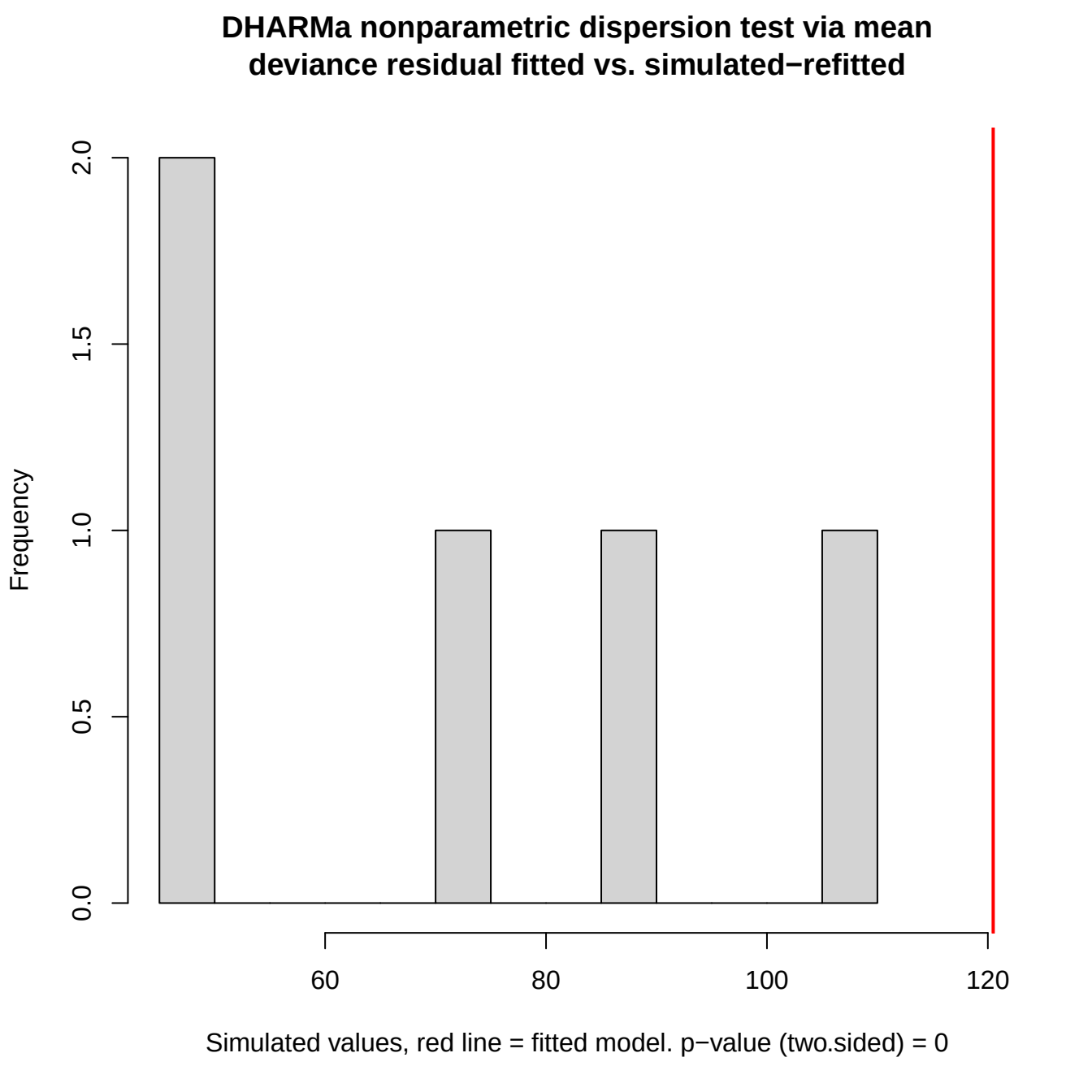

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

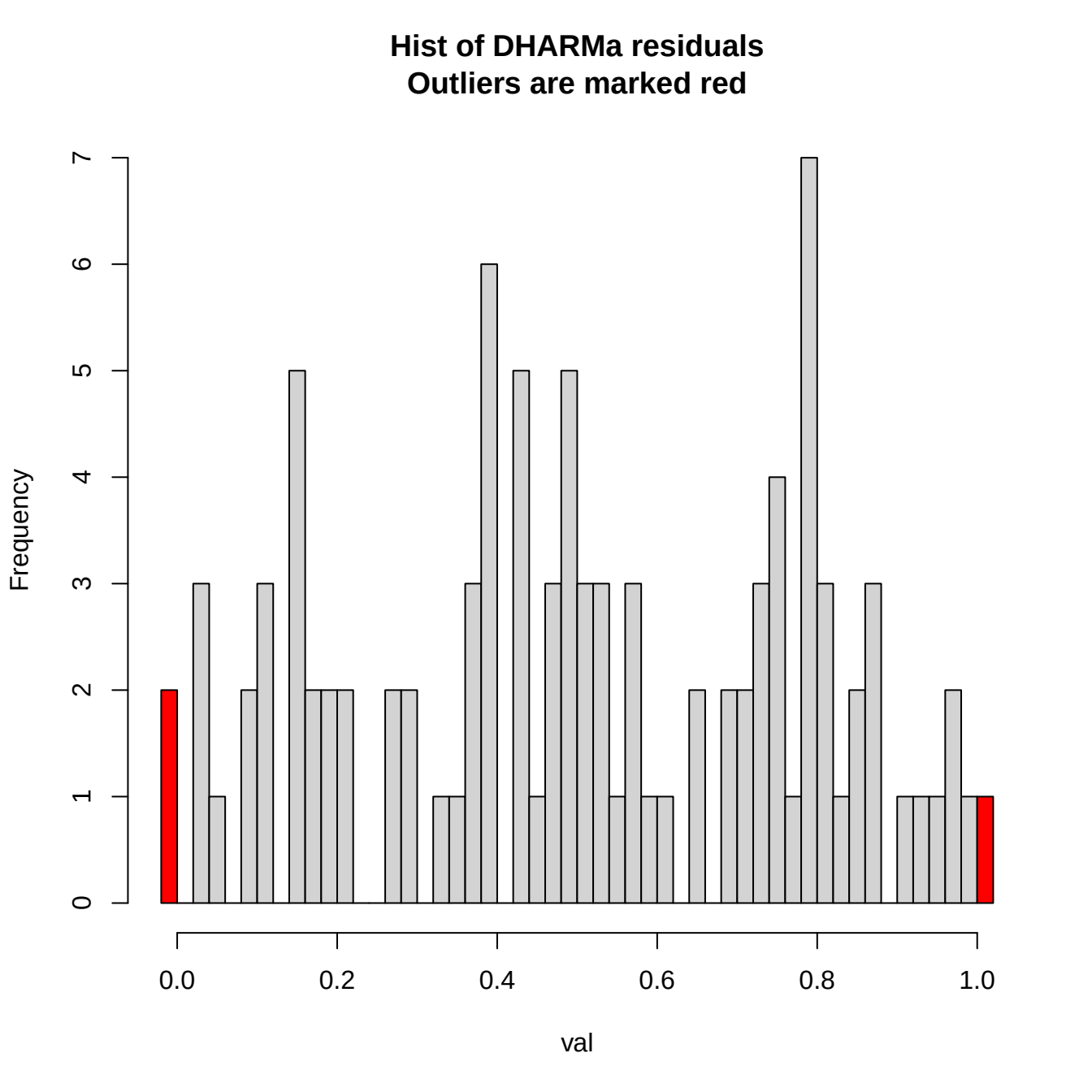

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

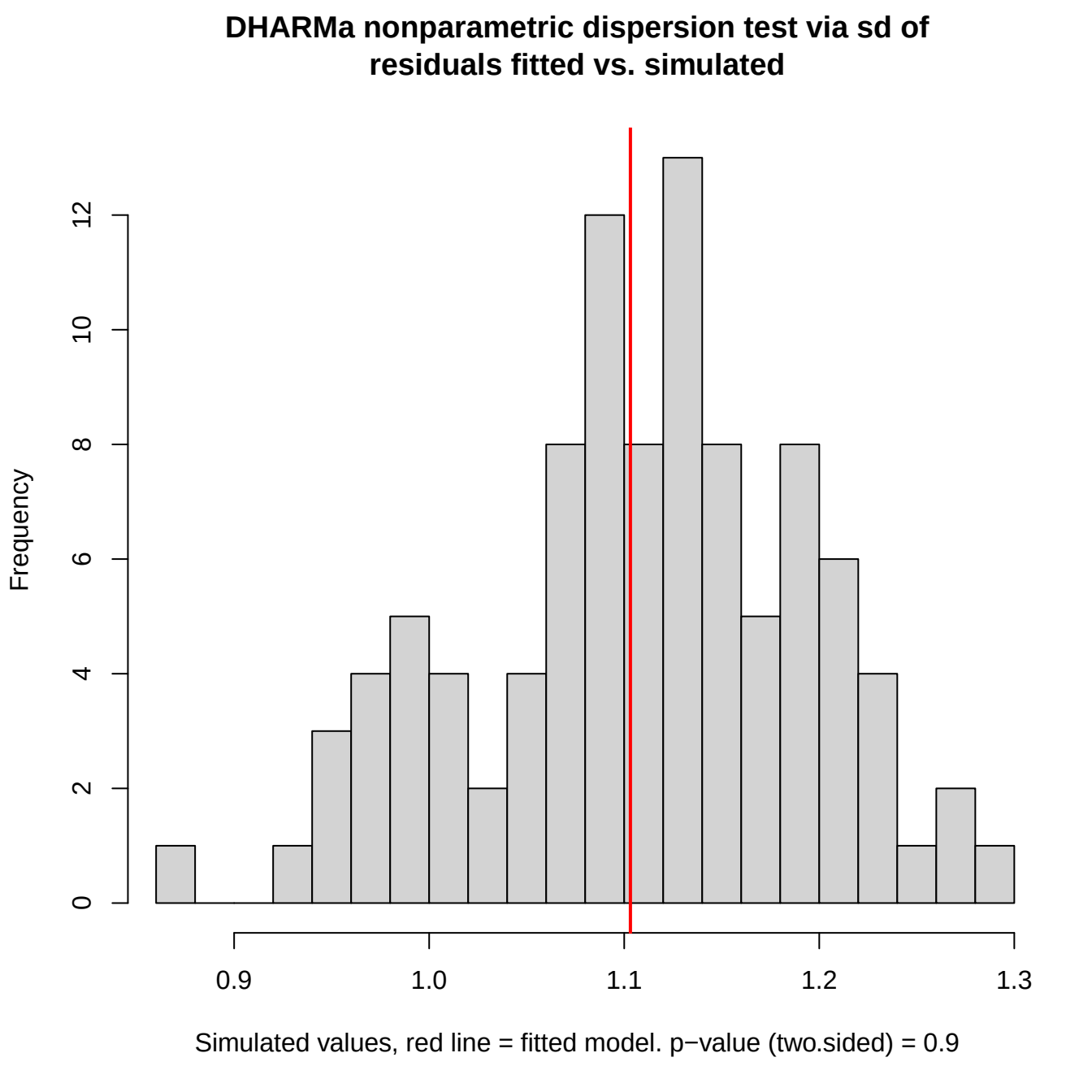

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.84

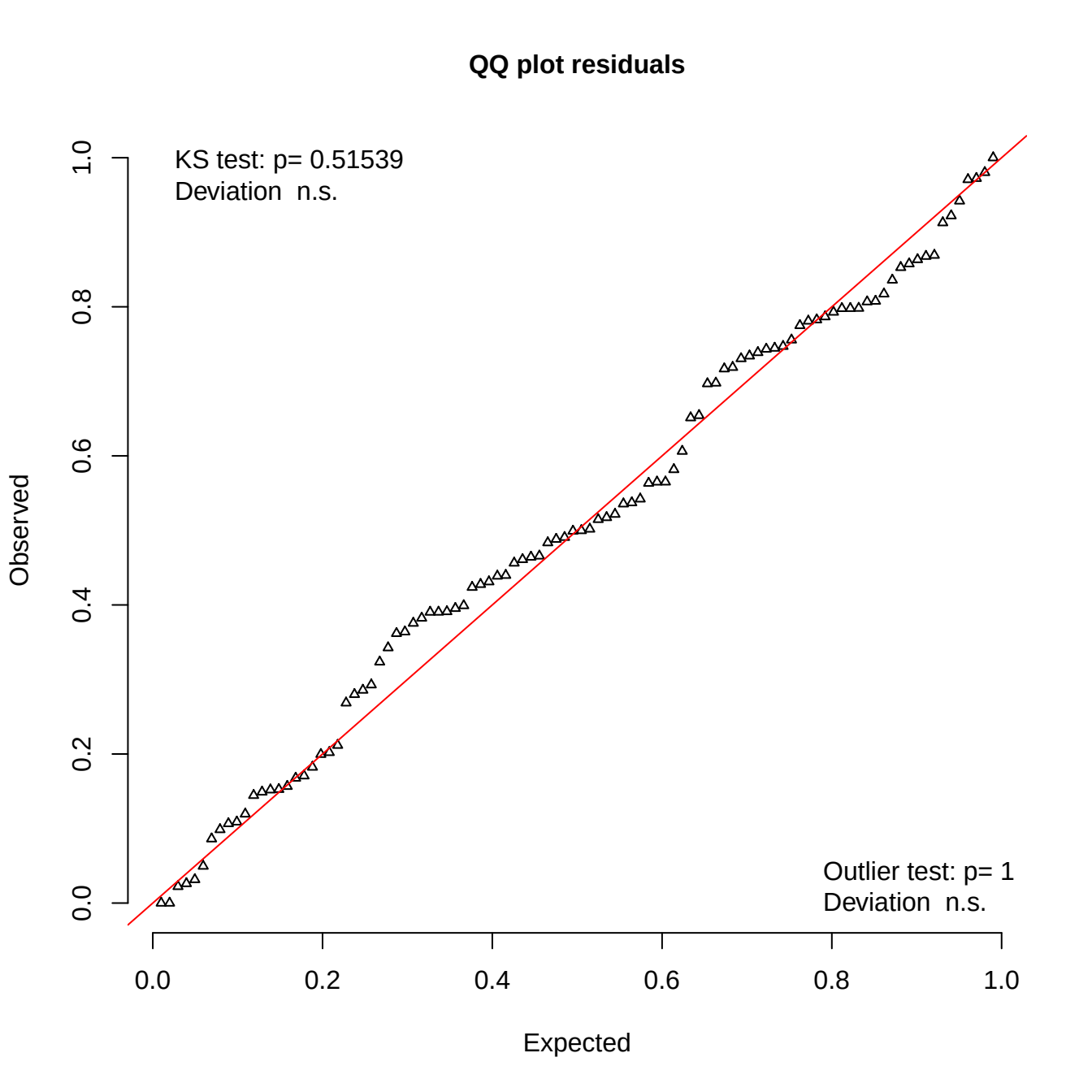

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00067
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

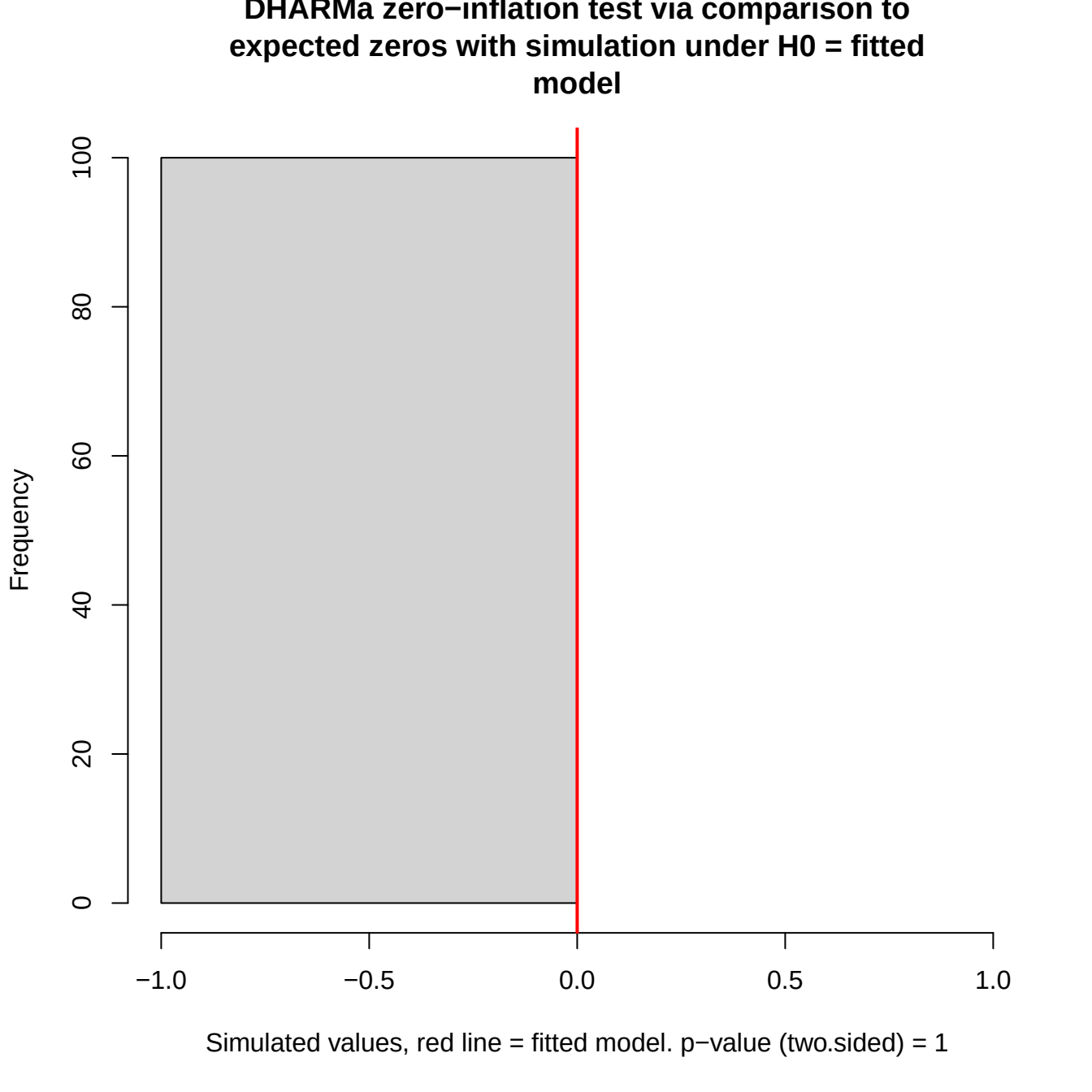

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
105
110
115
120
125
130
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

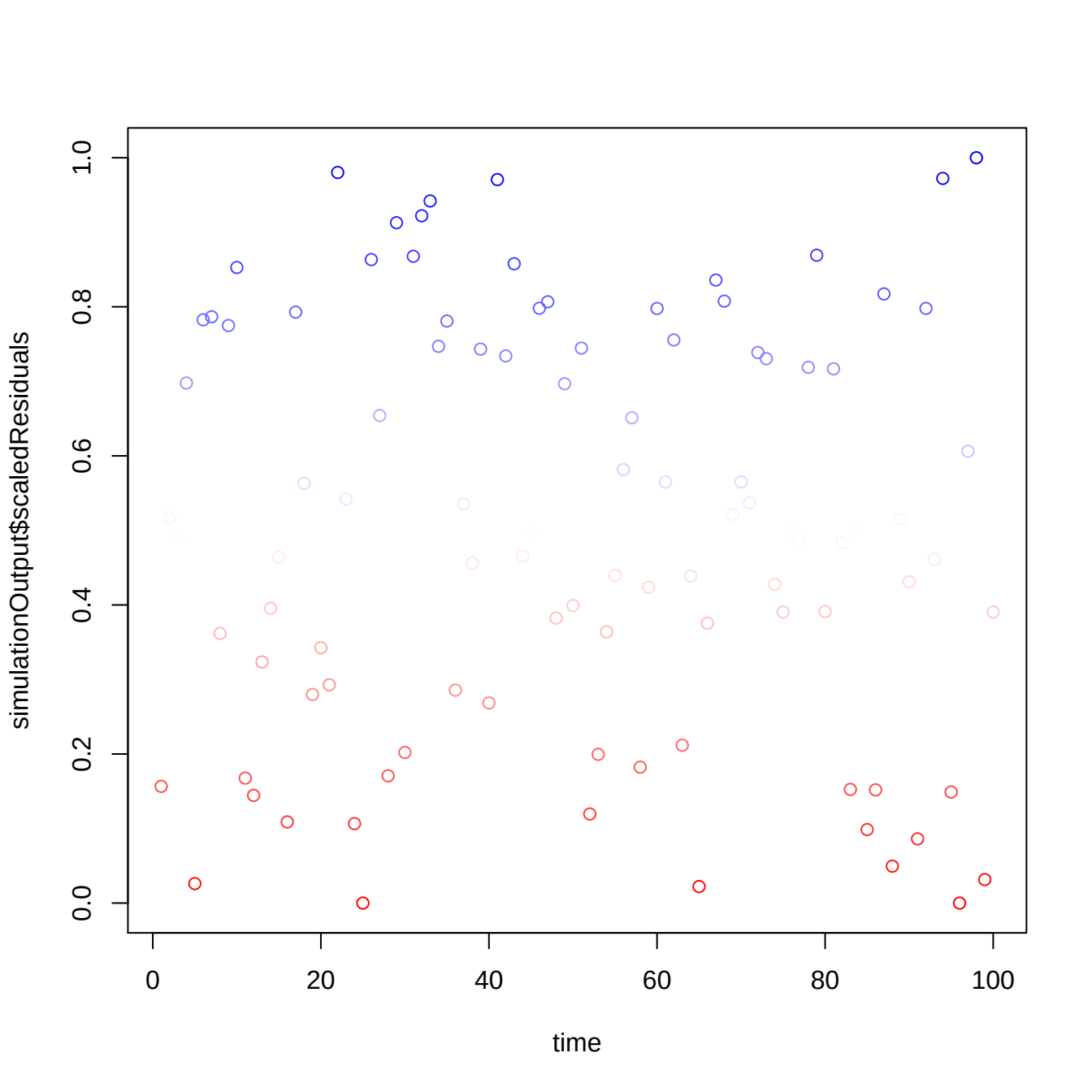

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
60
80
100
120
Simulated values, red line = fitted model. p−value (two.sided) = 0

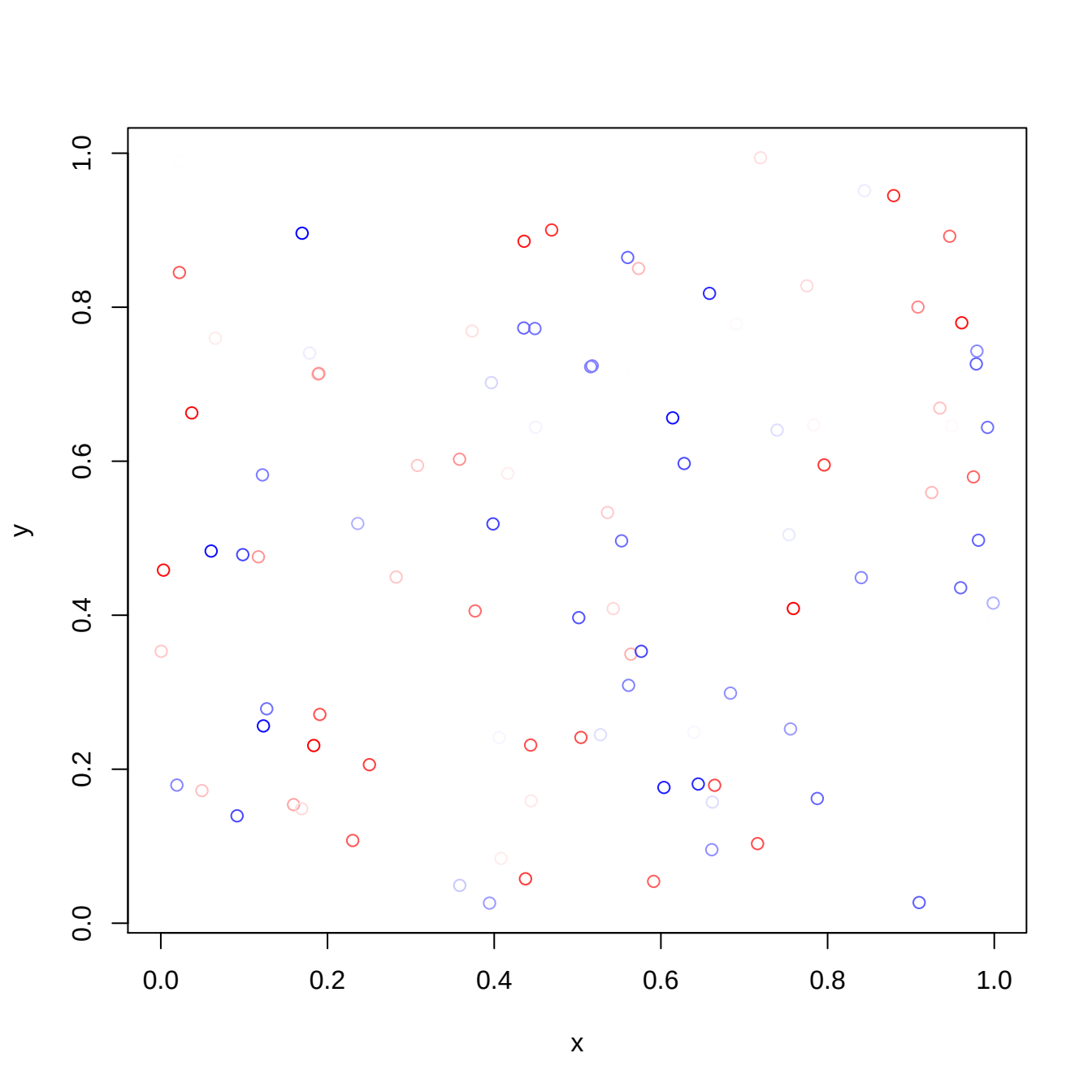

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
val

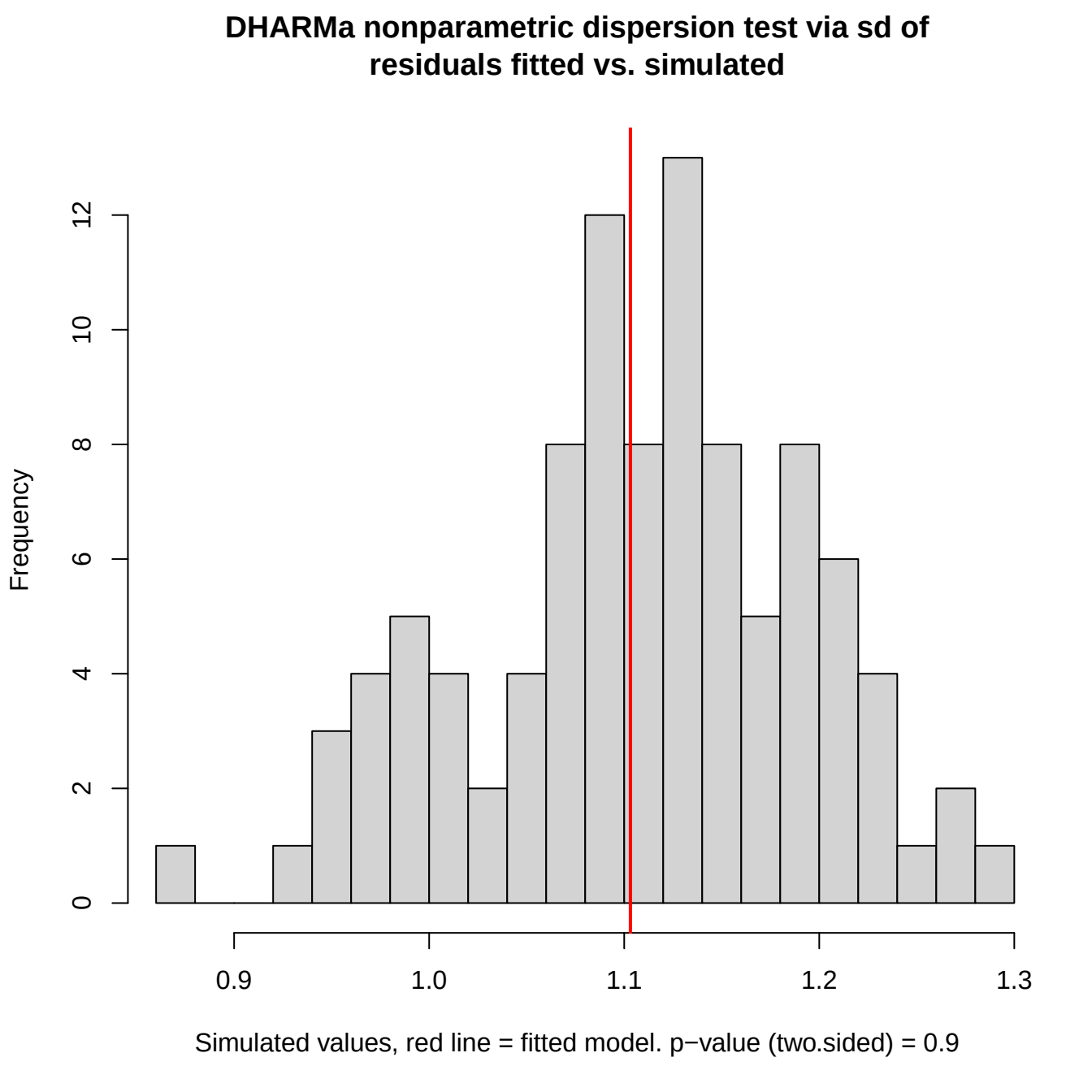

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

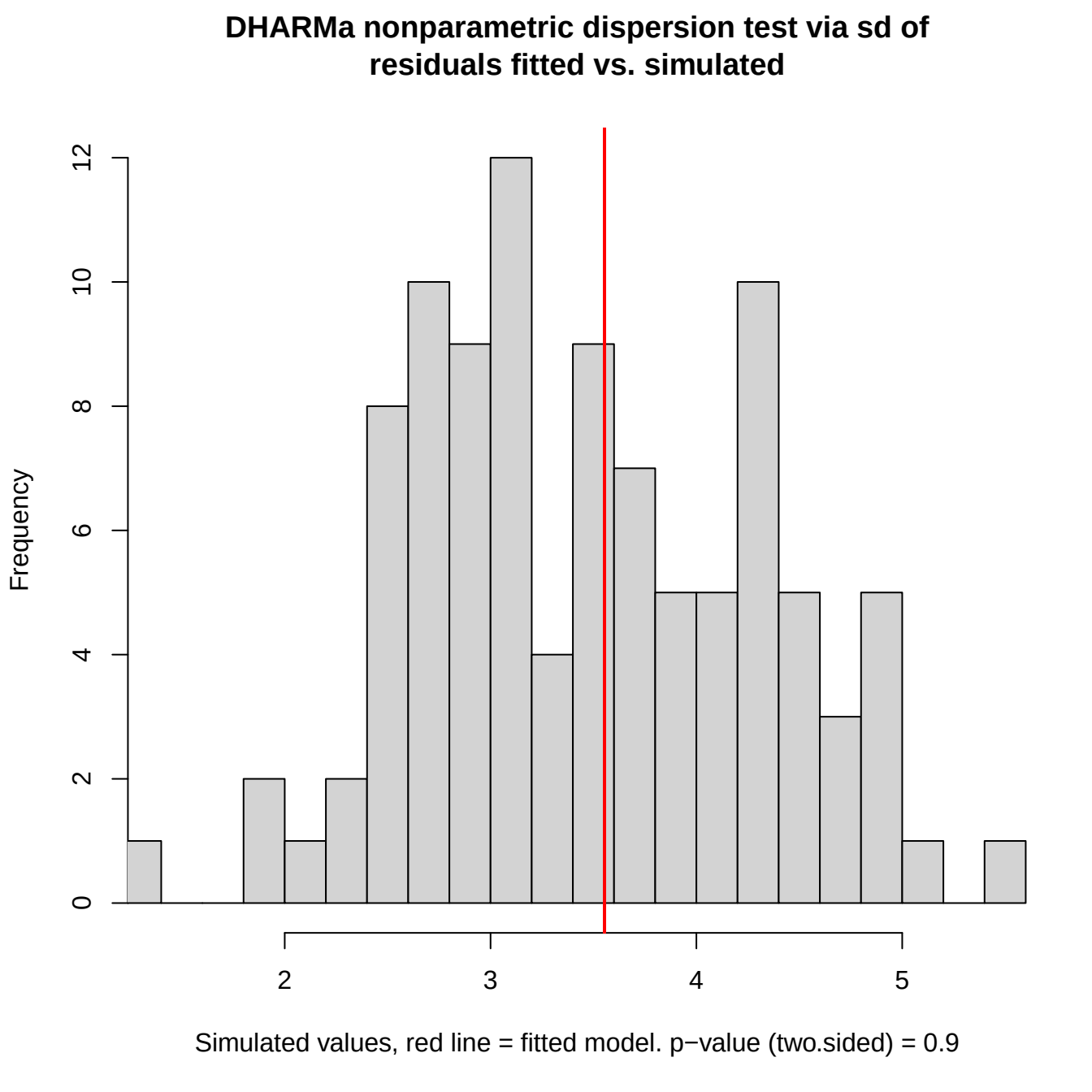

QQ plot residuals
KS test: p= 0.51539
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

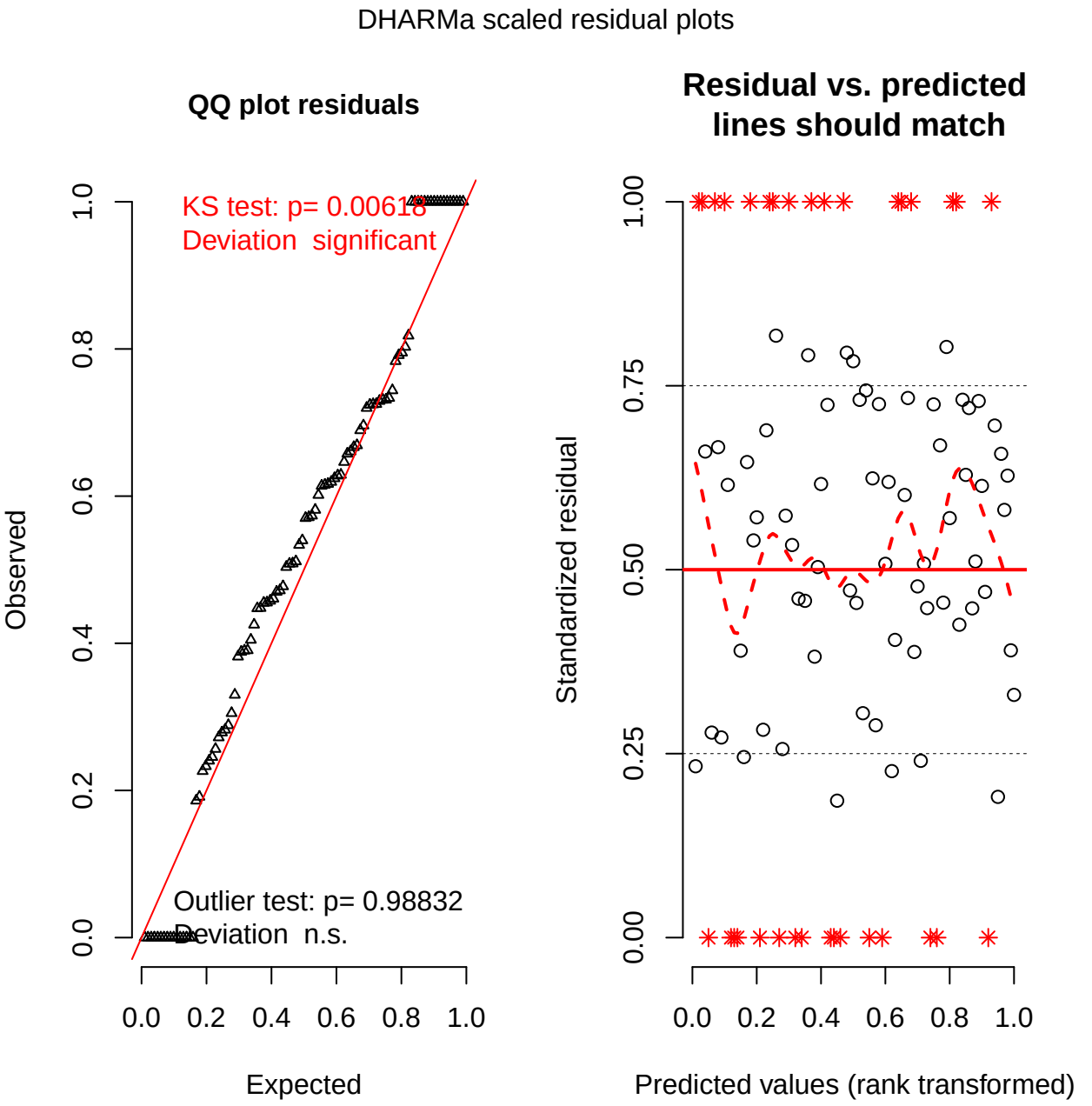

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

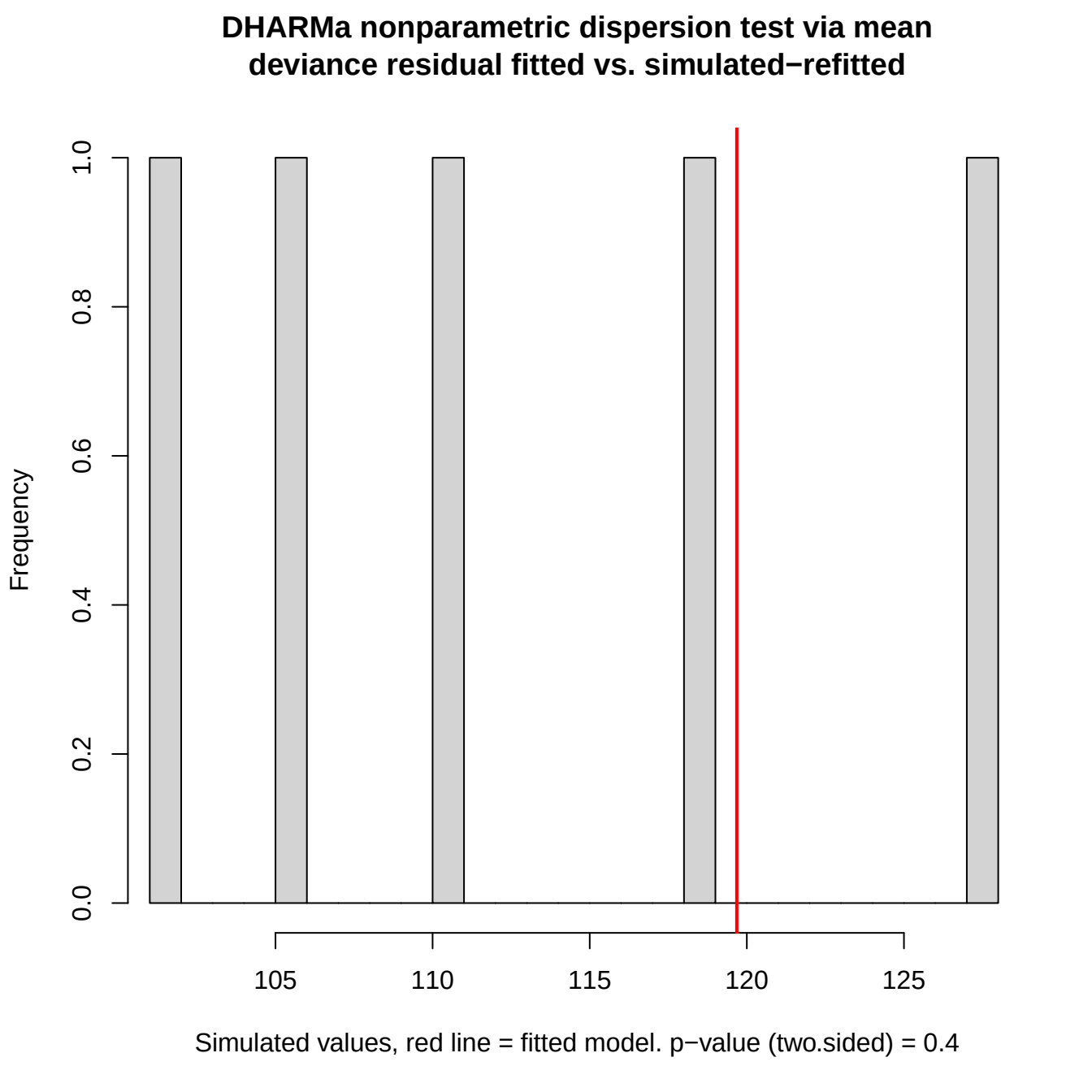

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

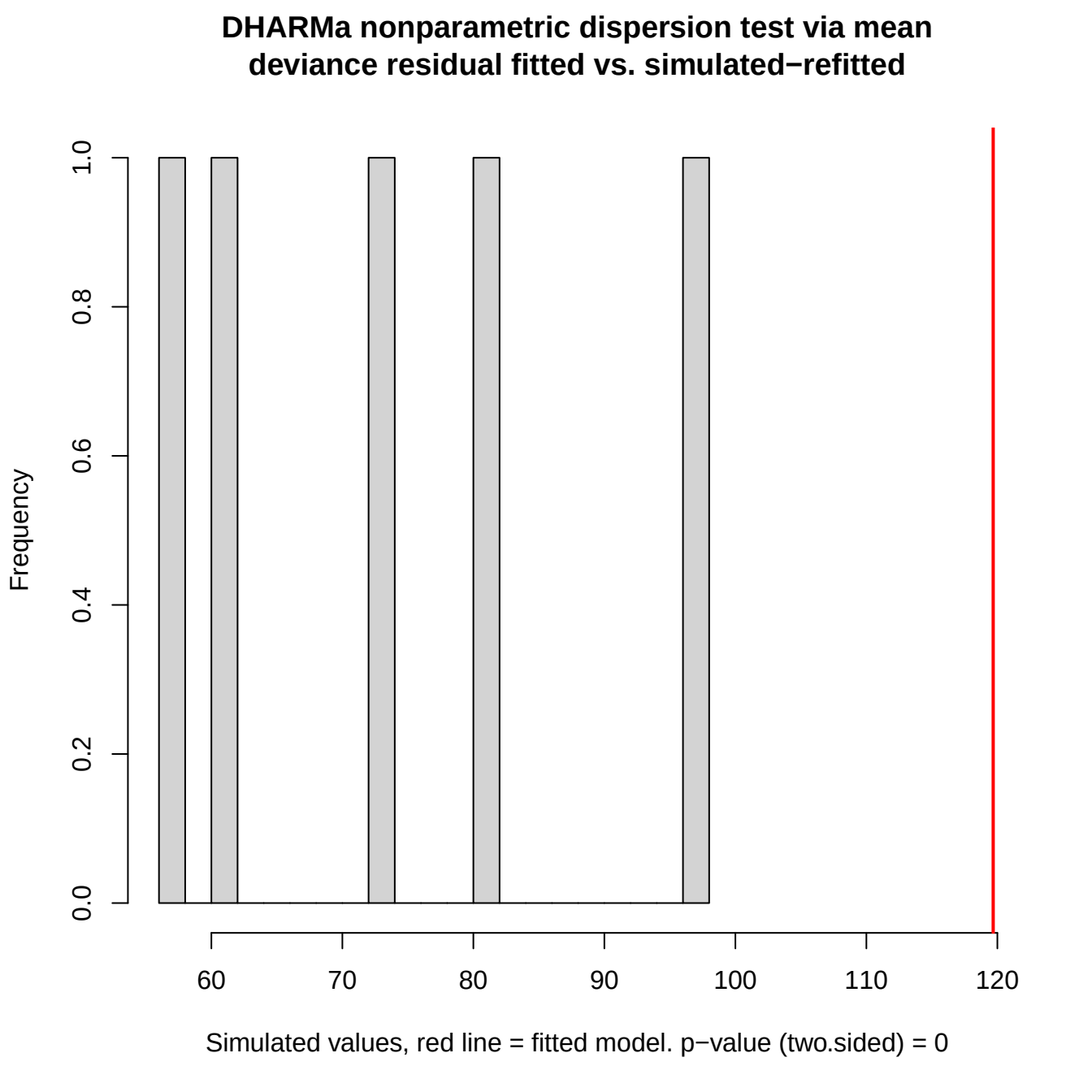

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

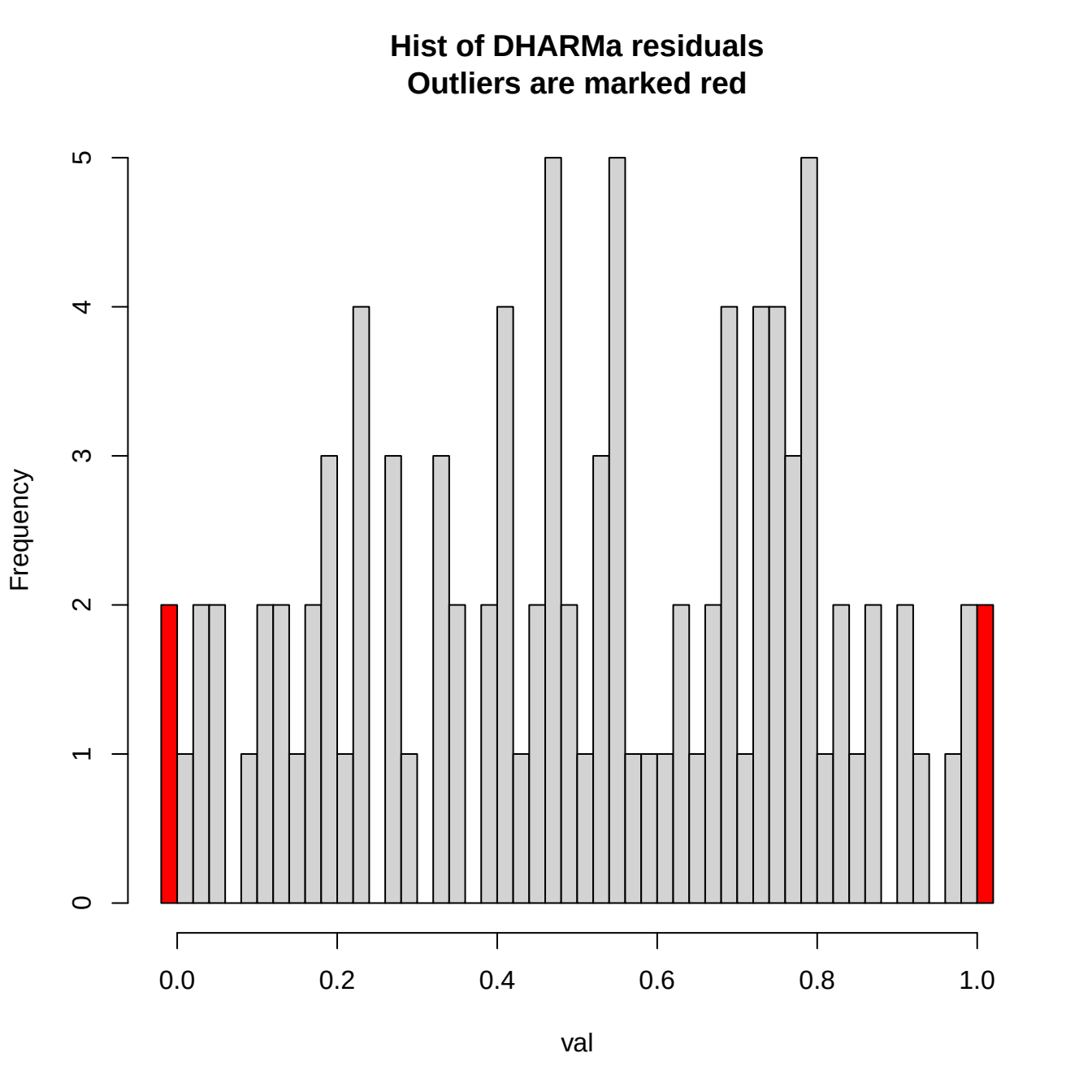

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

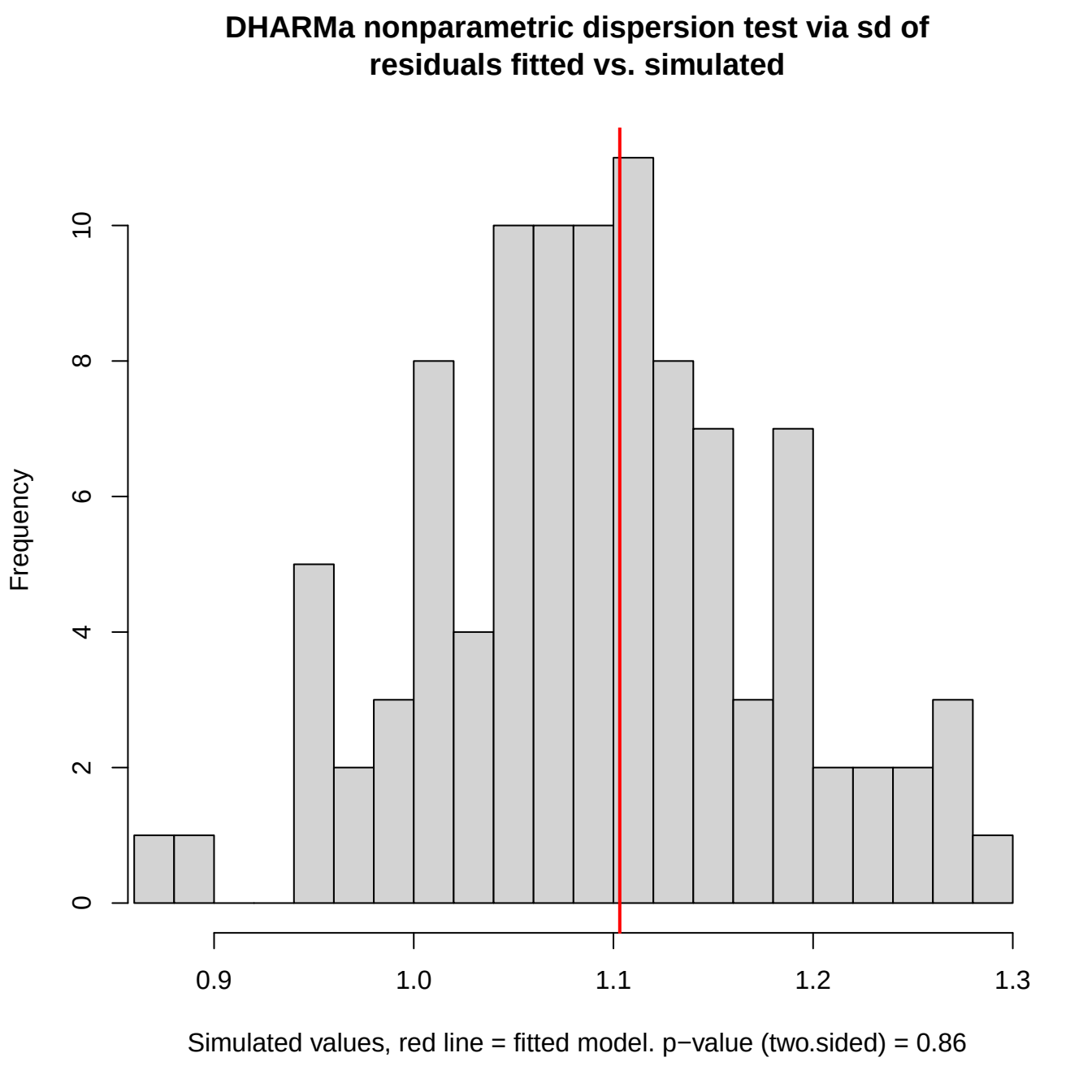

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

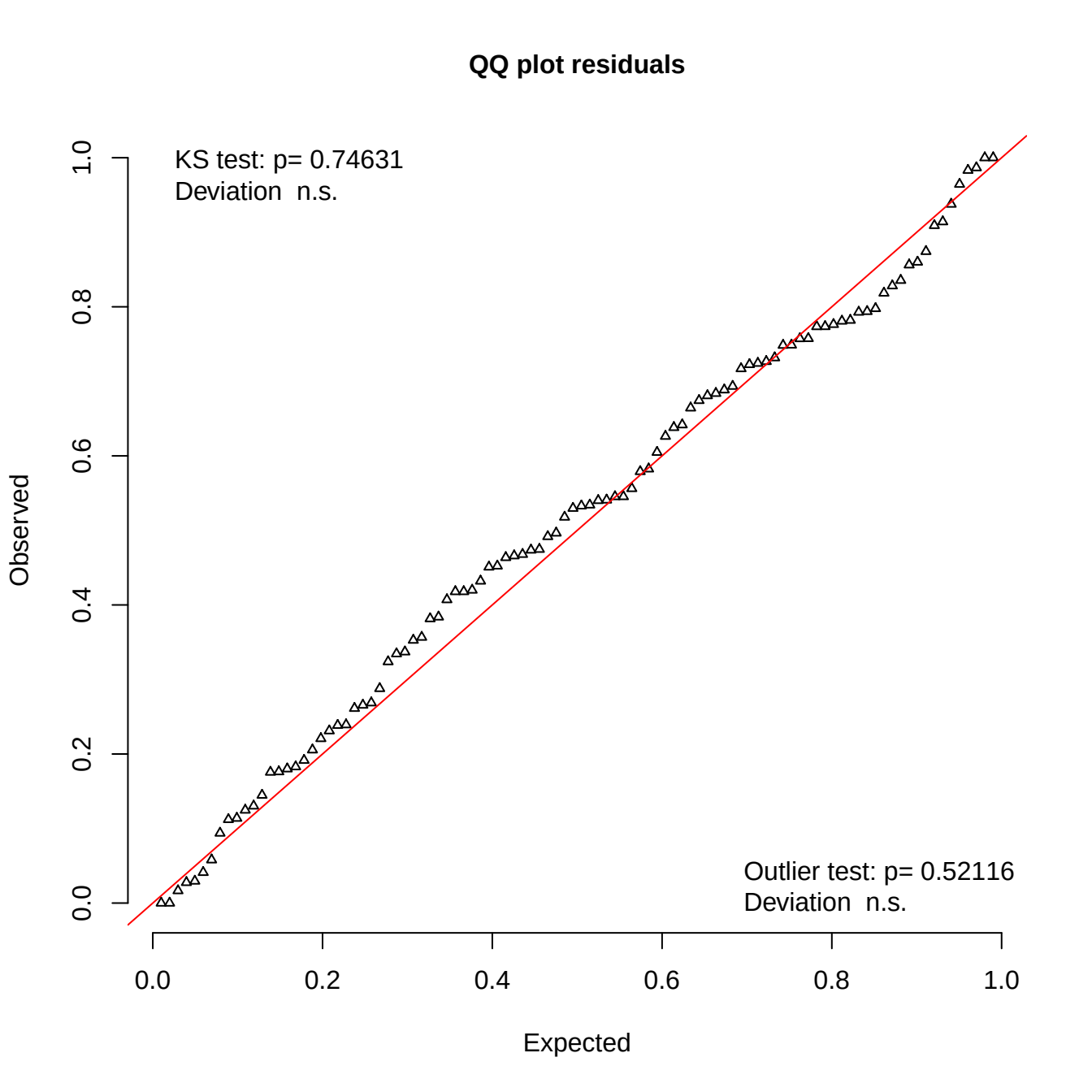

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00618
Deviation significant
Outlier test: p= 0.98832
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

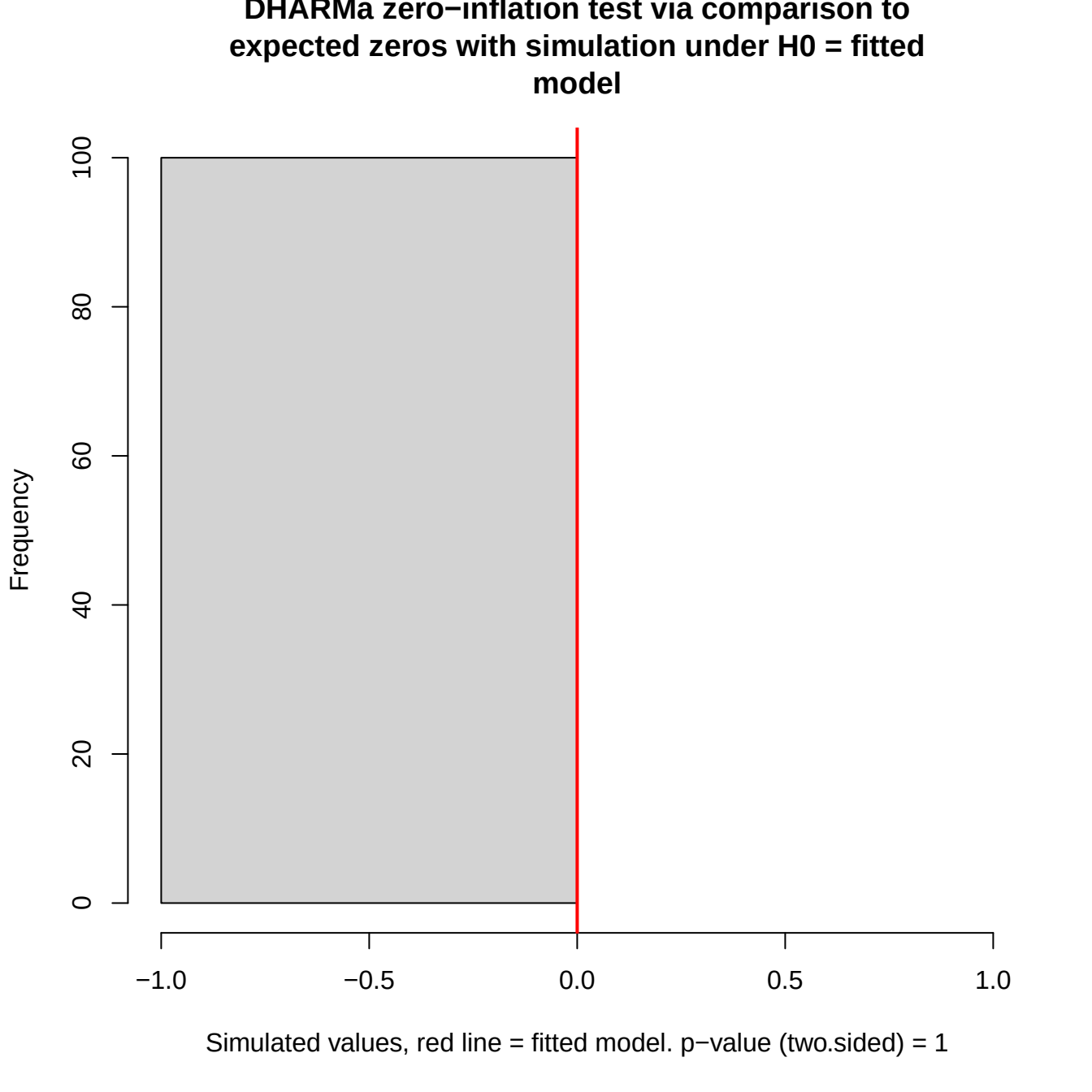

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
105
110
115
120
125
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

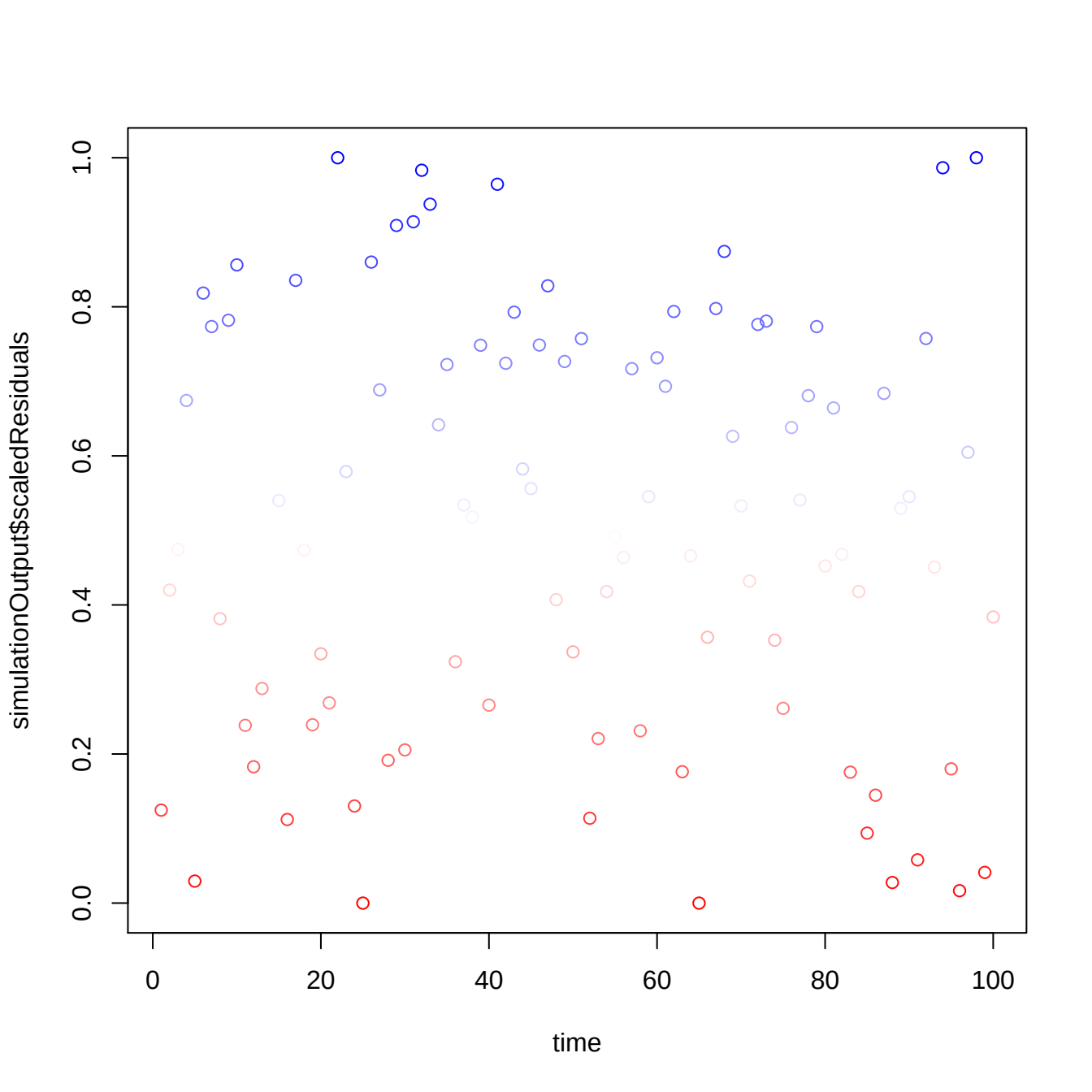

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
60
70
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 0

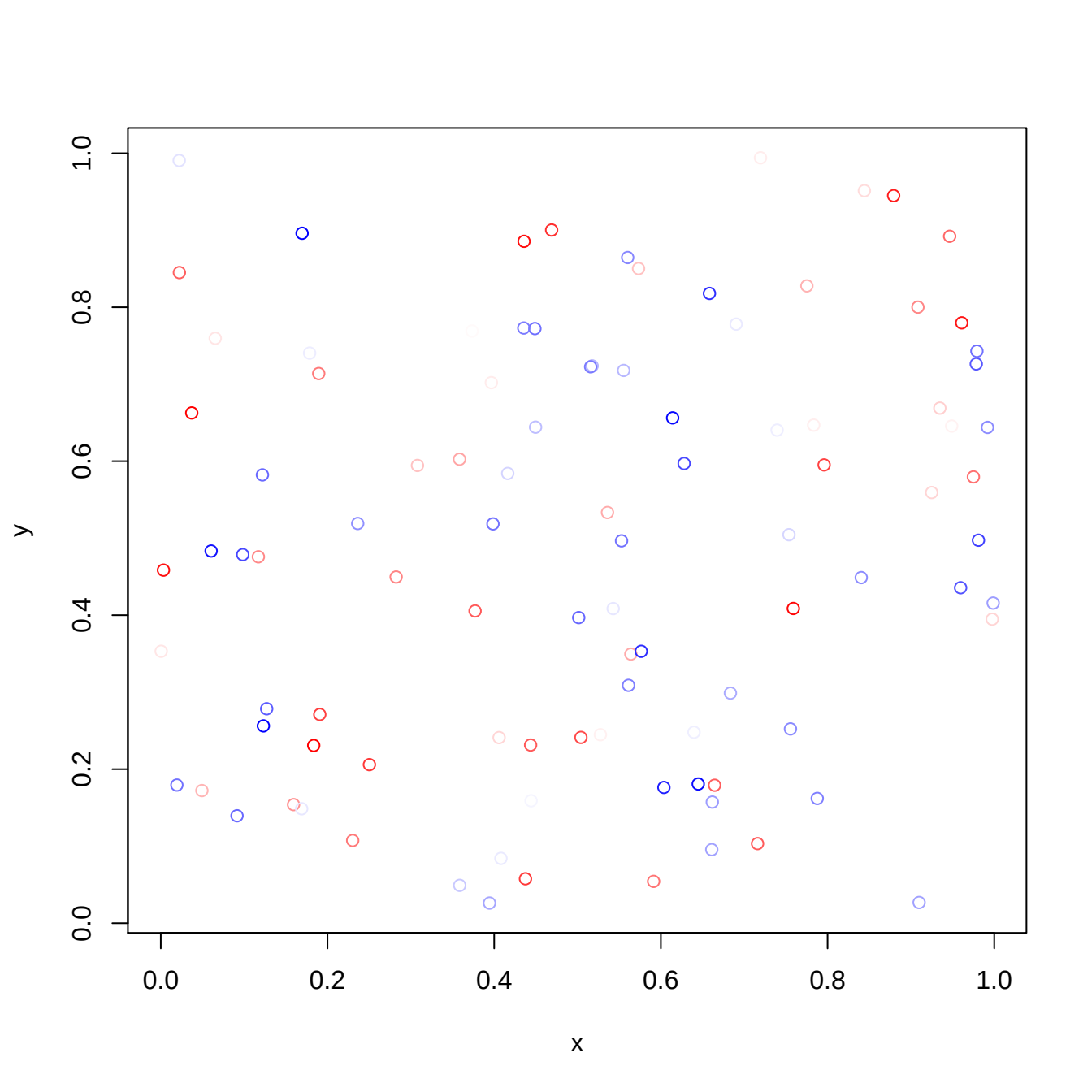

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
val

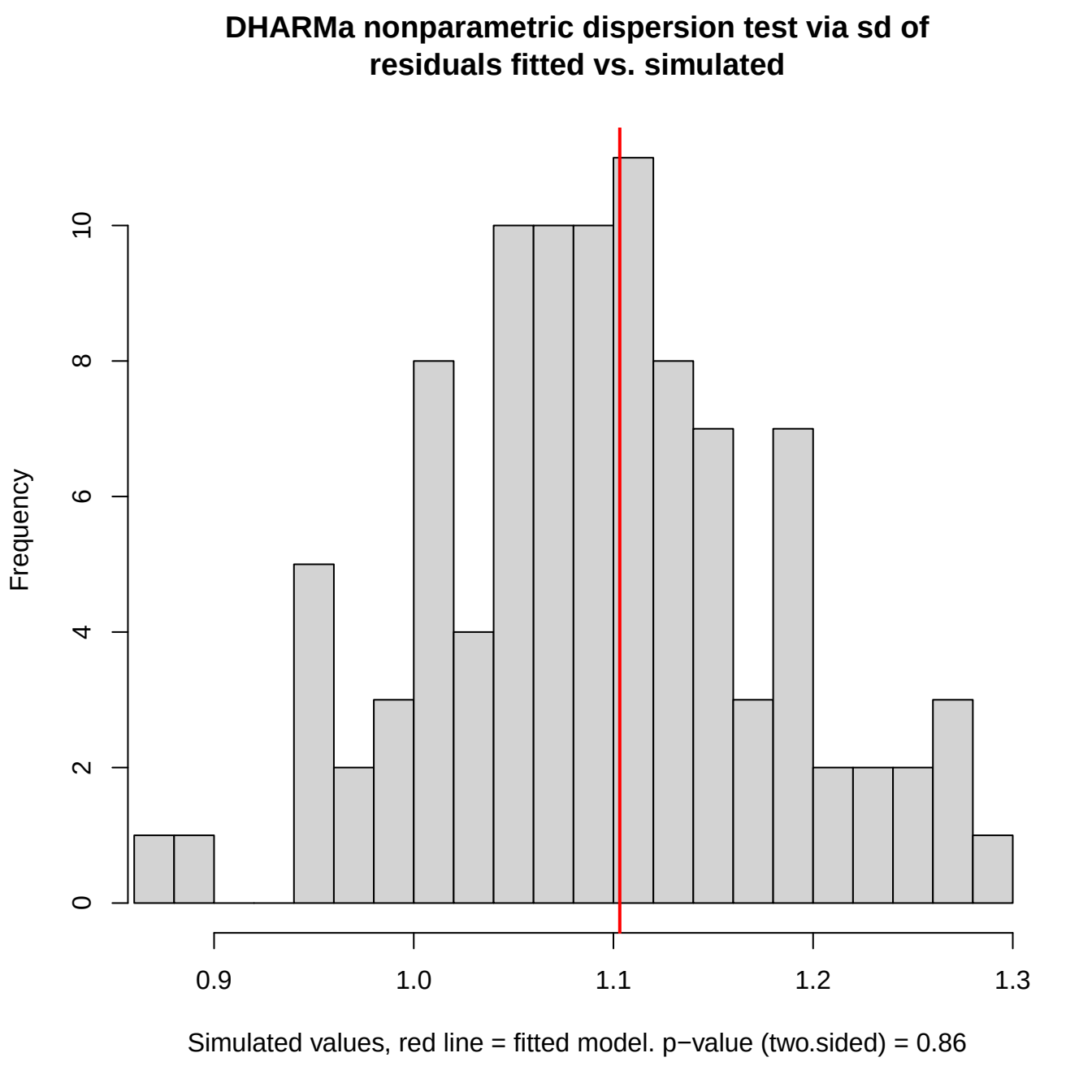

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.86

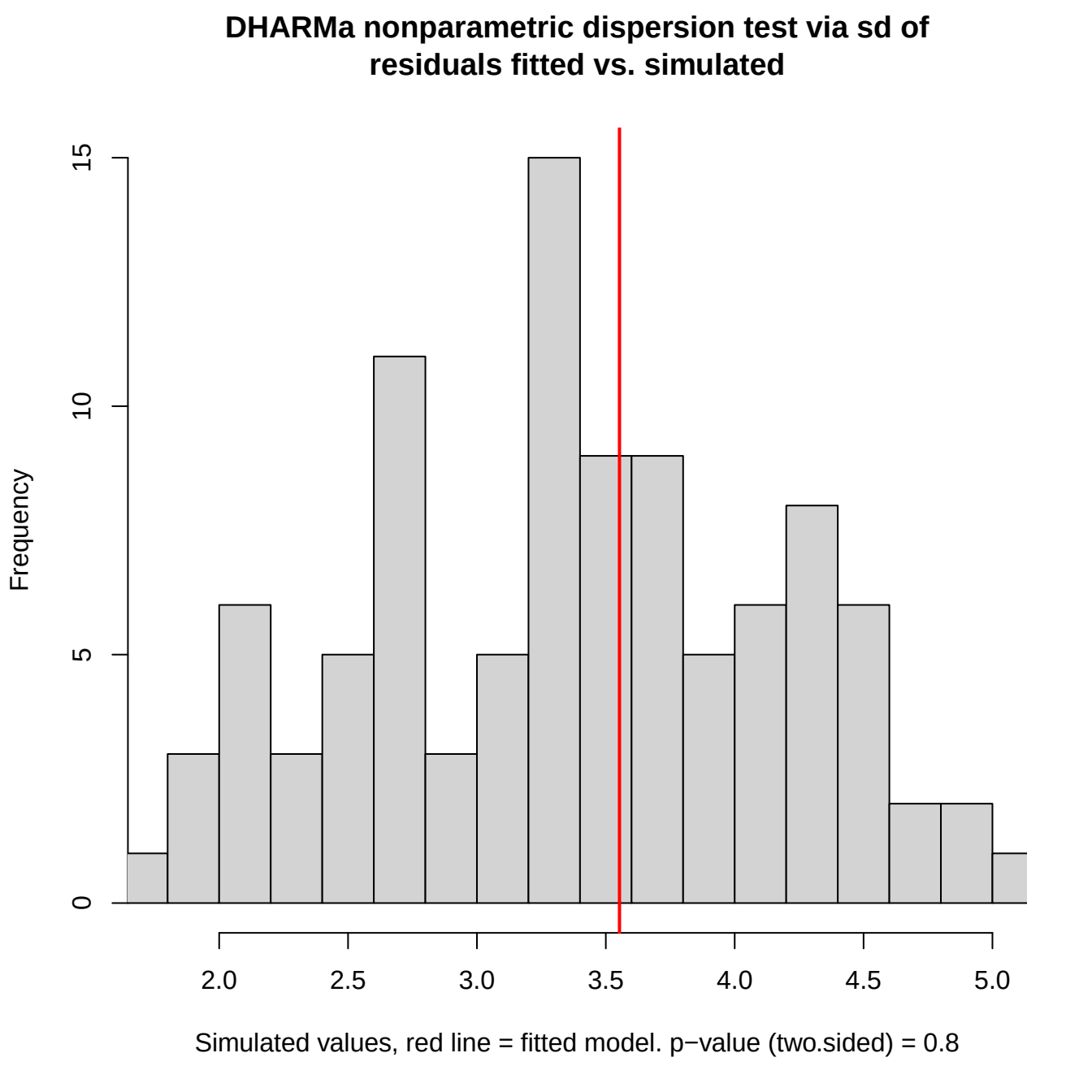

QQ plot residuals
KS test: p= 0.74631
Deviation n.s.
Outlier test: p= 0.52116
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

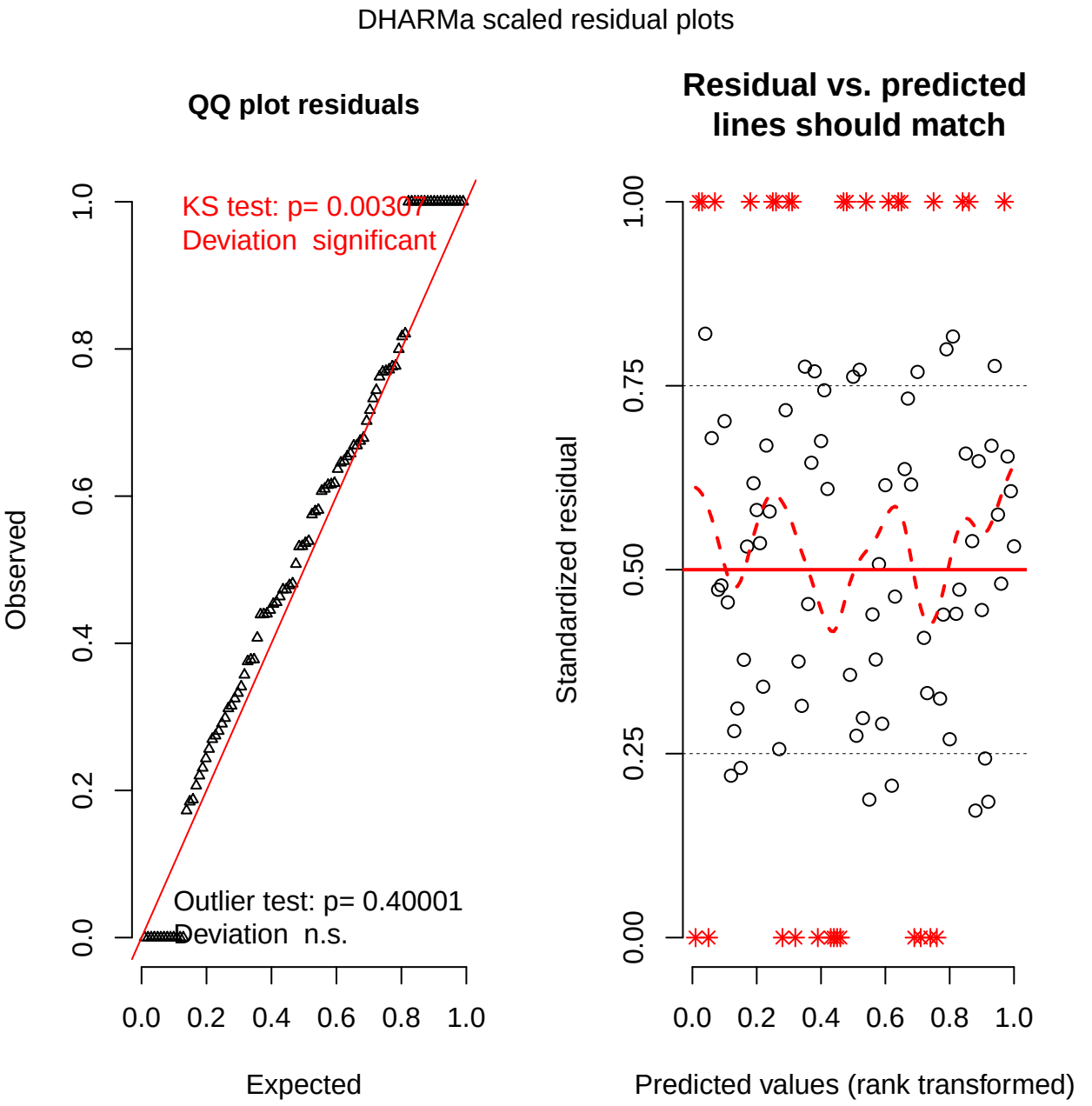

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

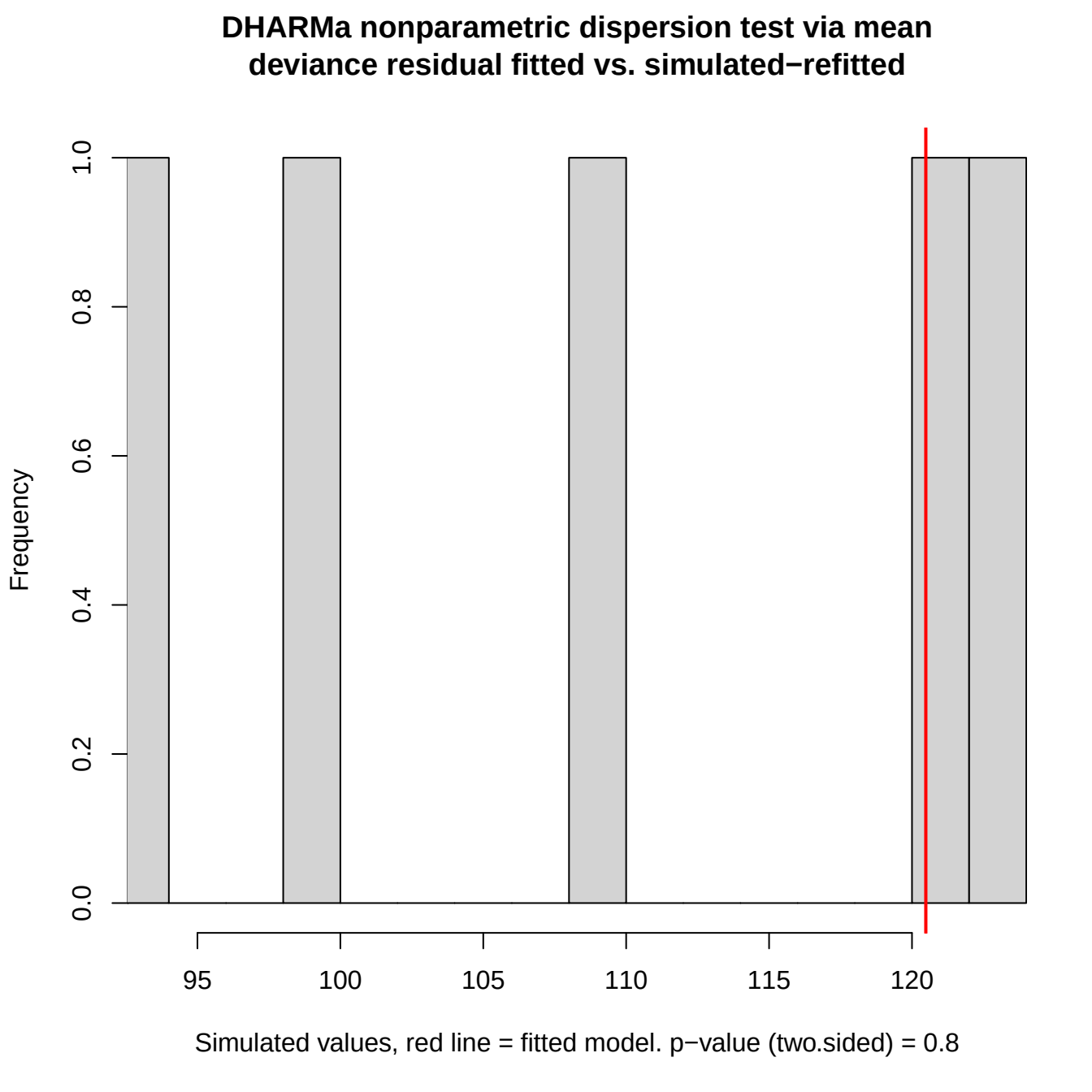

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

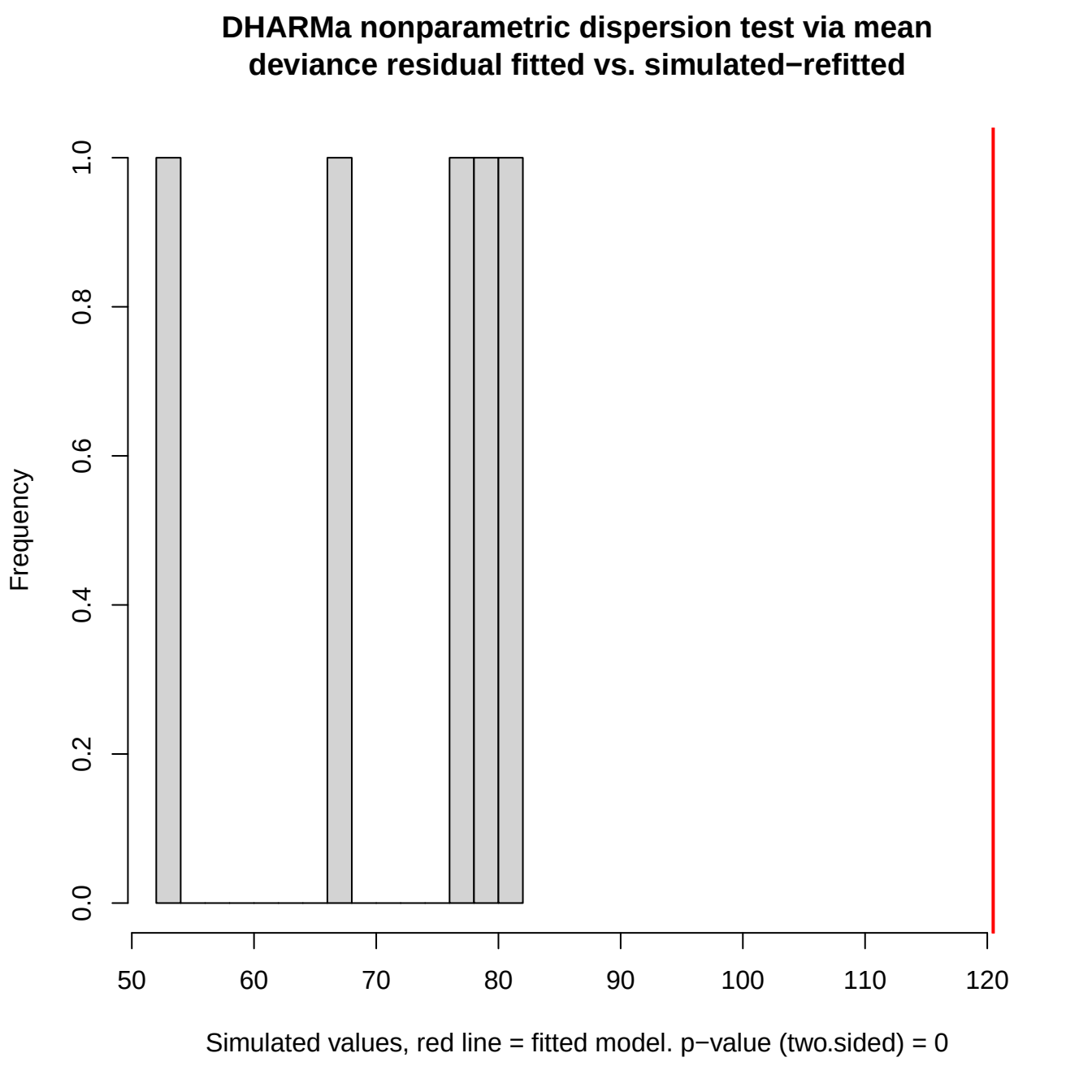

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

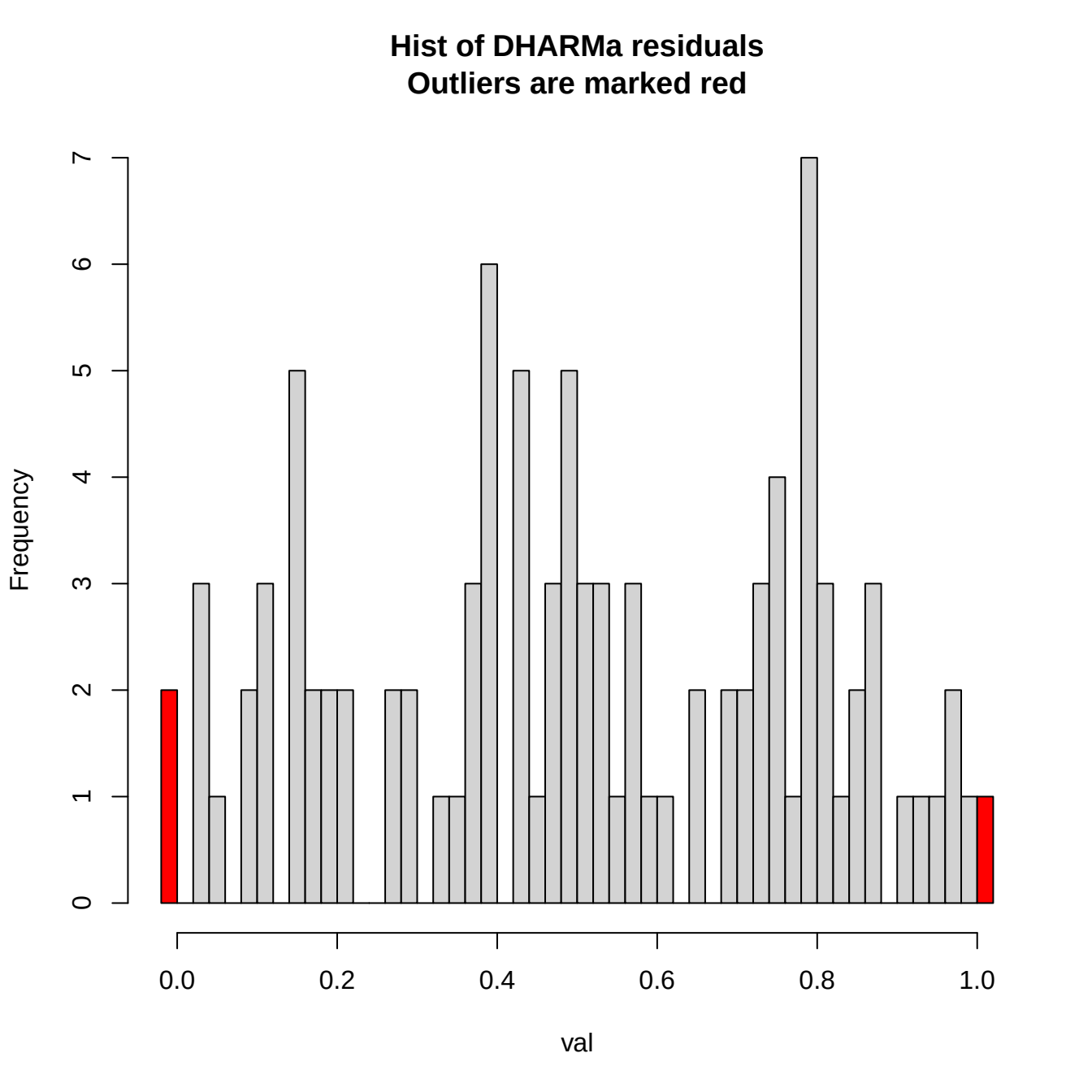

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.86

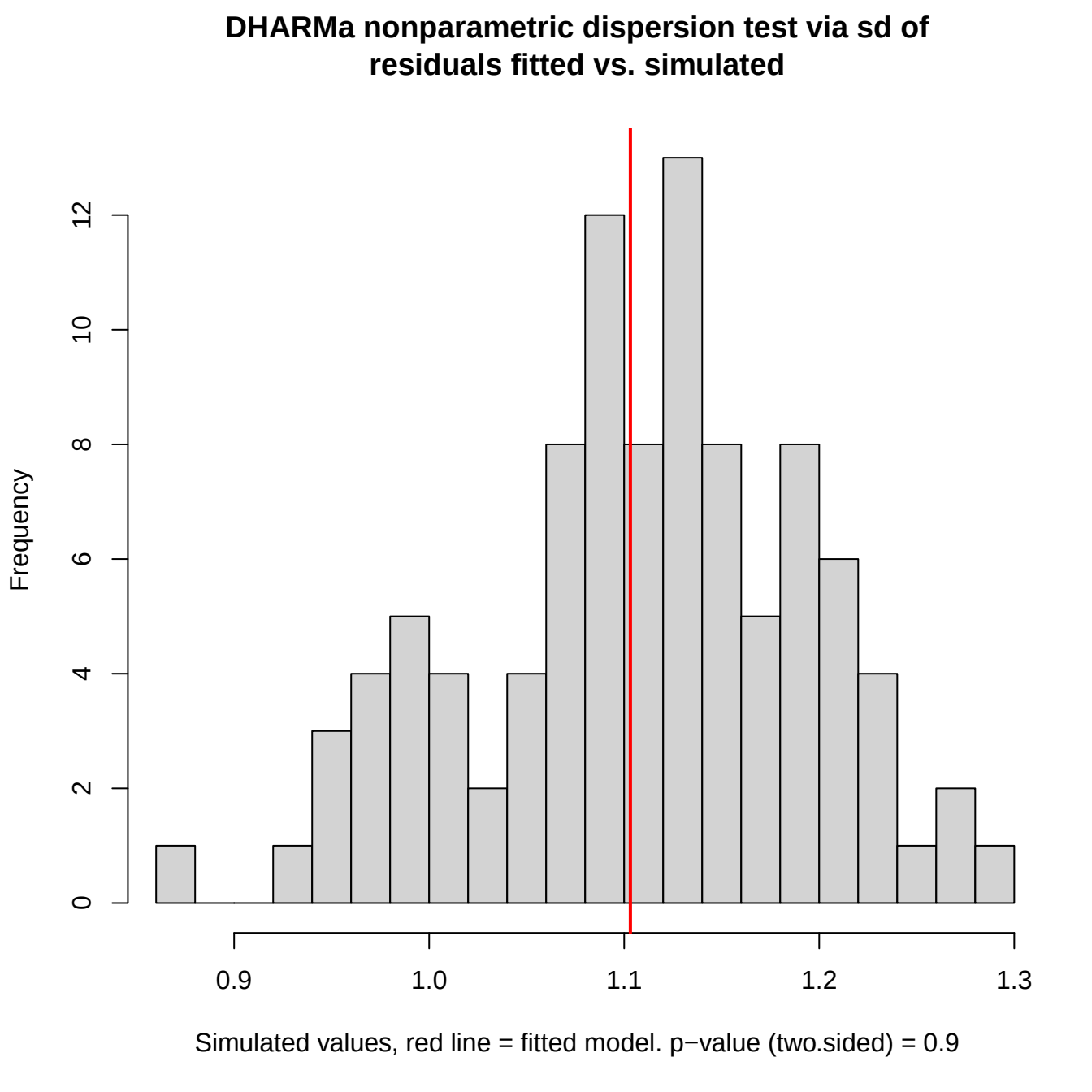

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

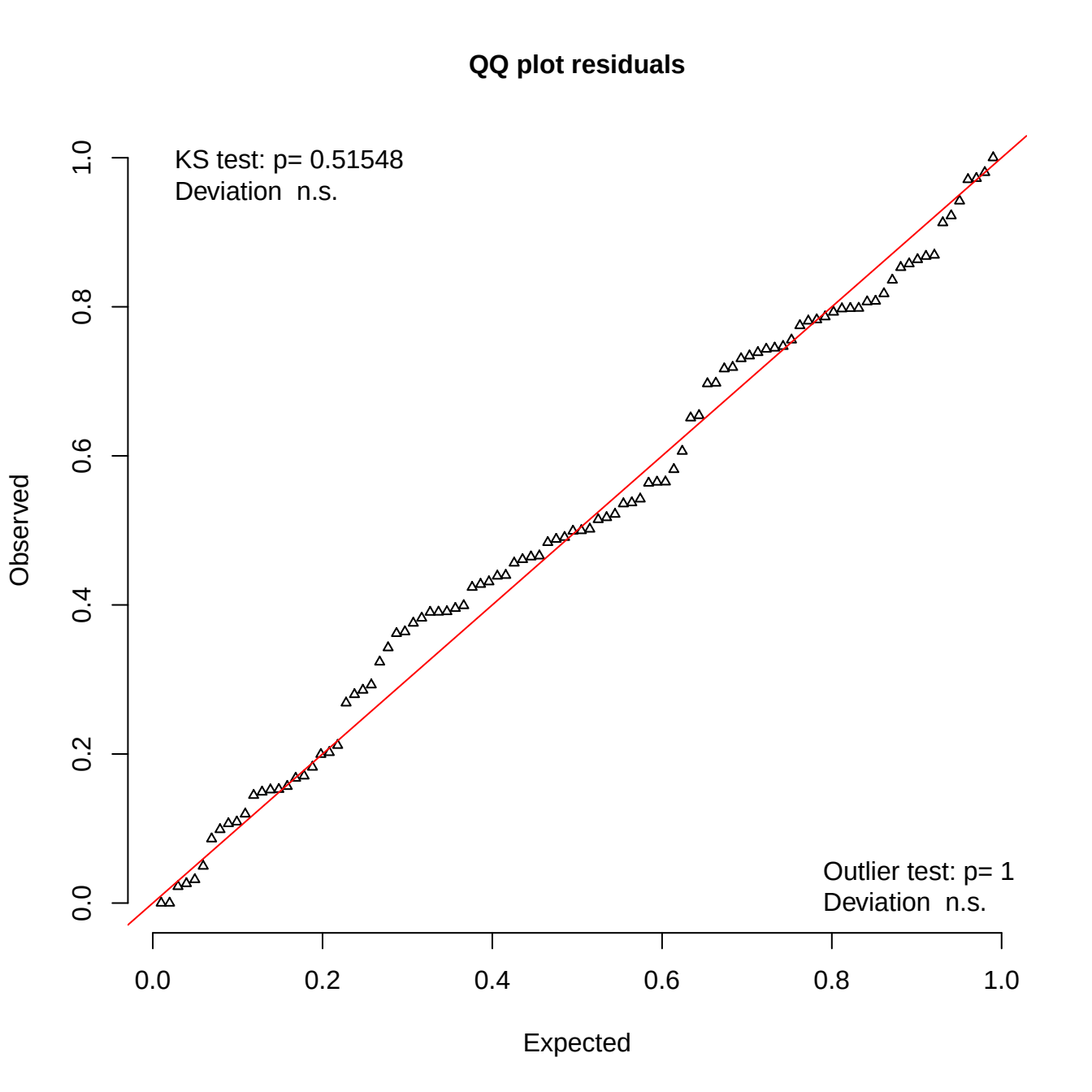

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00307
Deviation significant
Outlier test: p= 0.40001
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

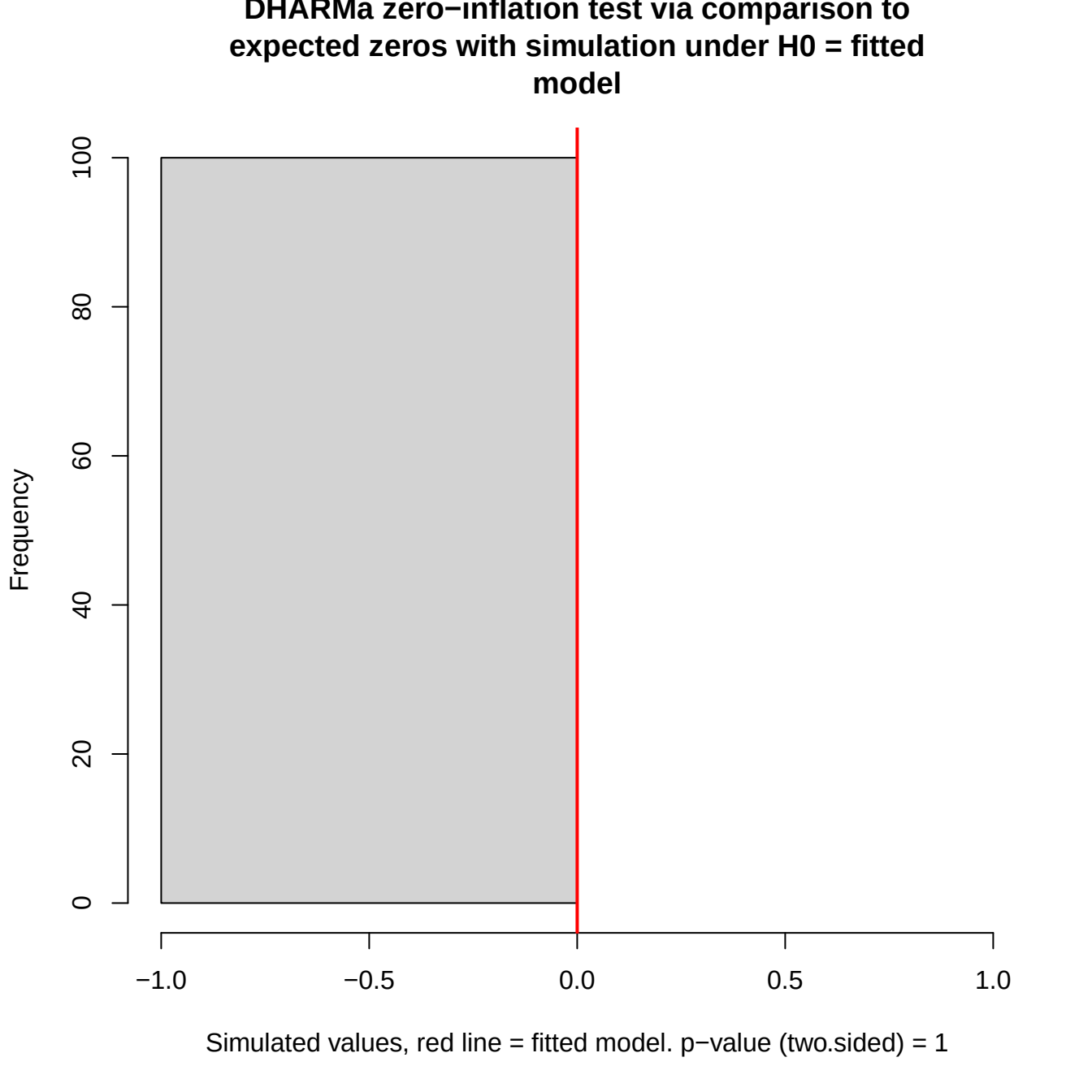

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
95
100
105
110
115
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

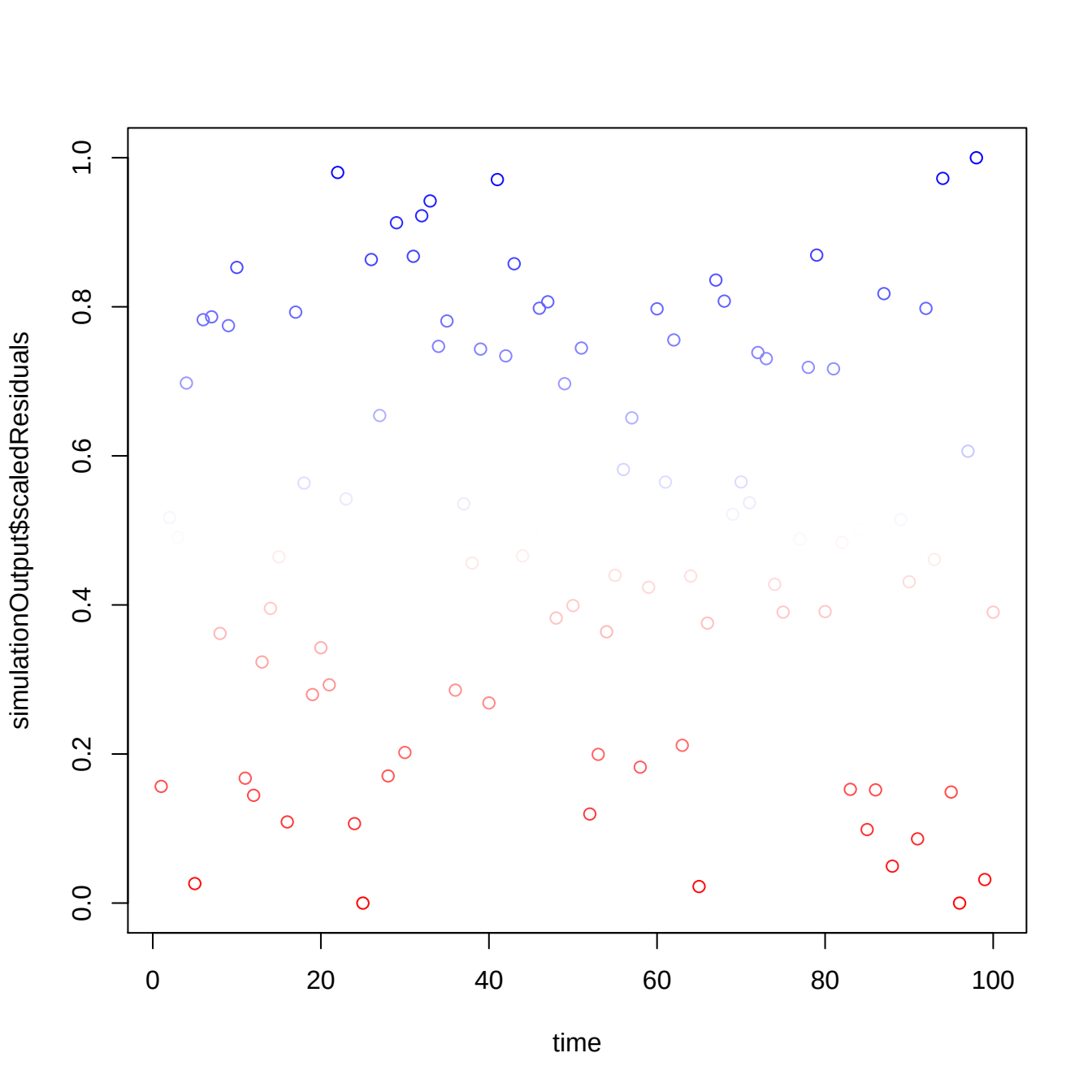

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
60
70
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 0

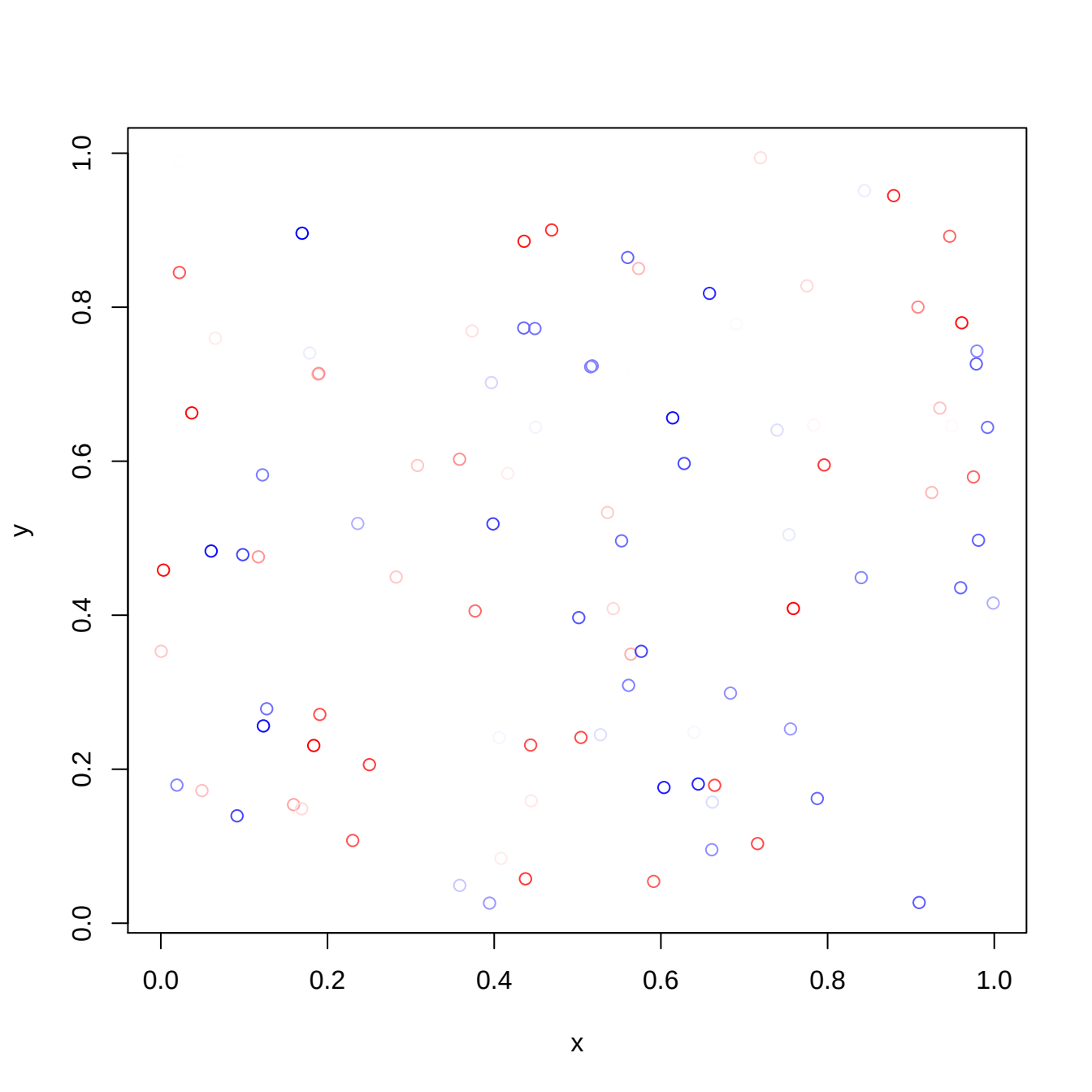

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
val

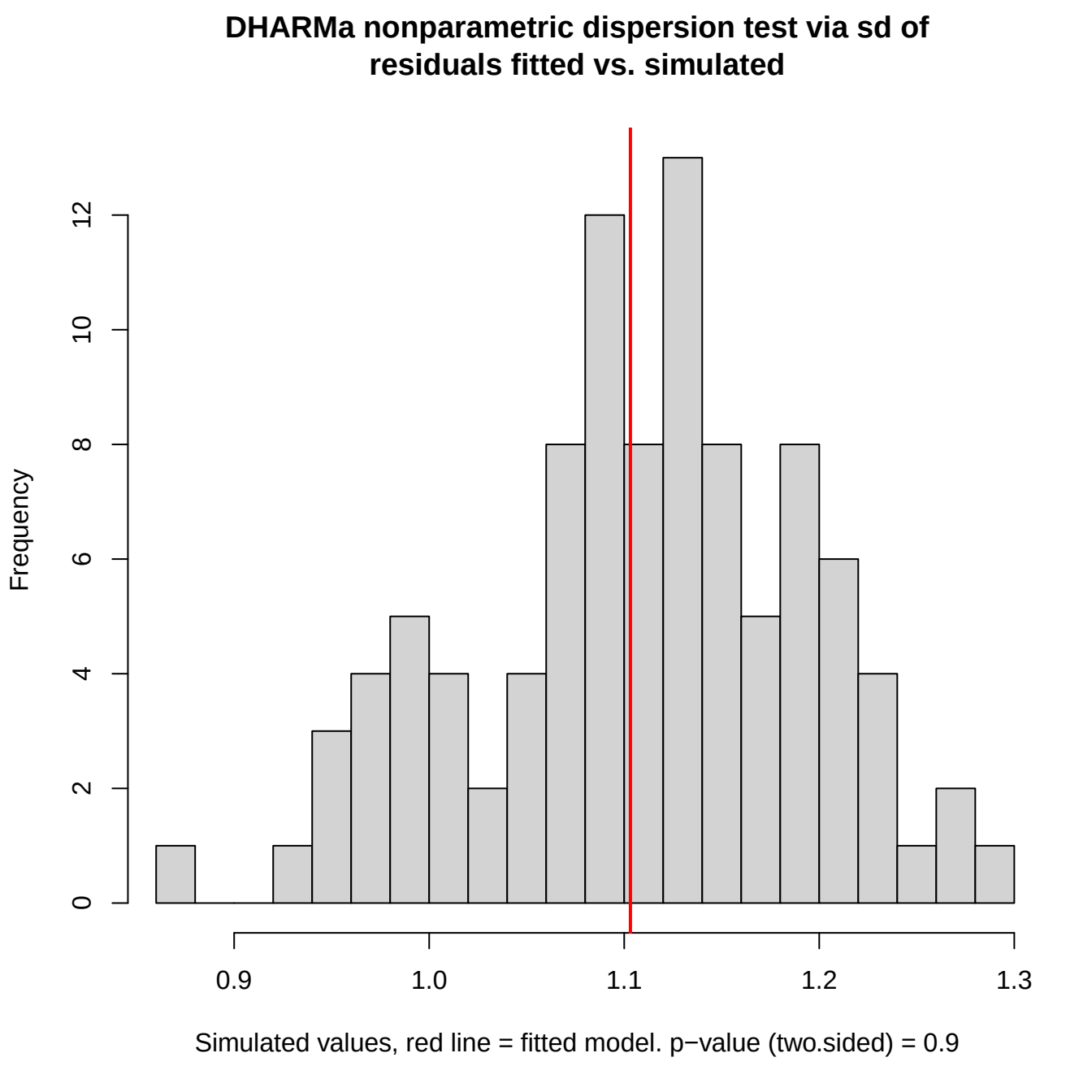

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

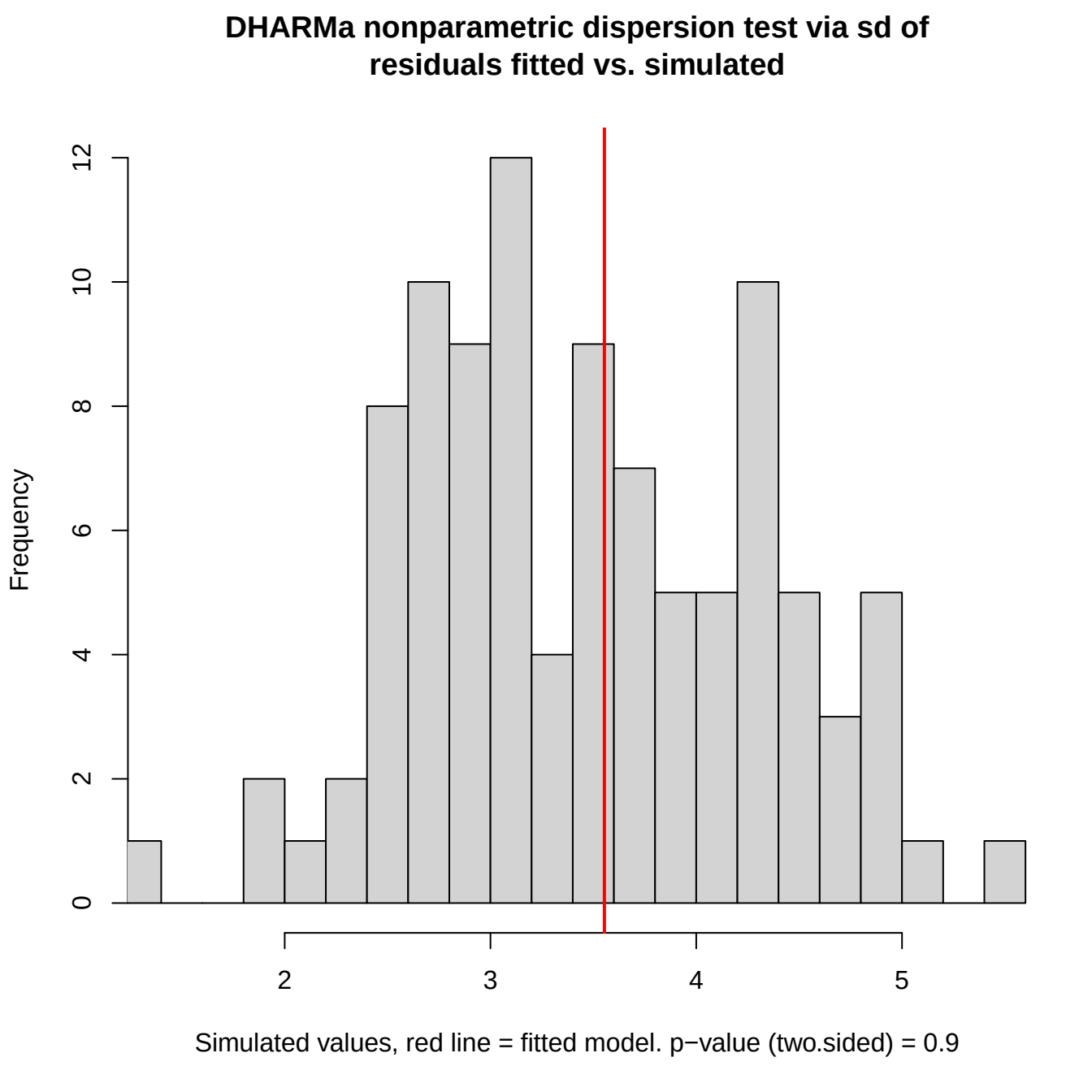

QQ plot residuals
KS test: p= 0.51548
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

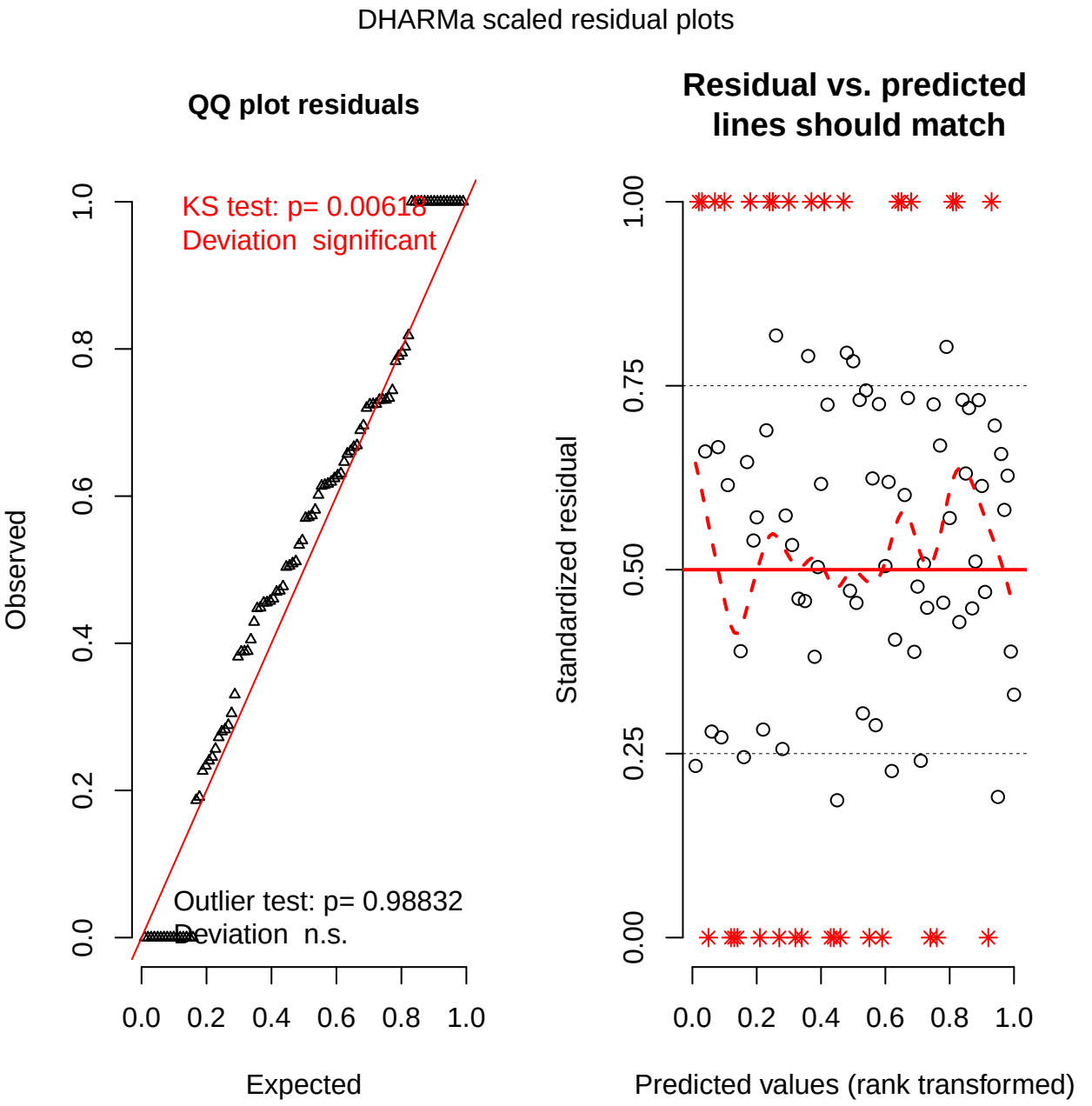

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

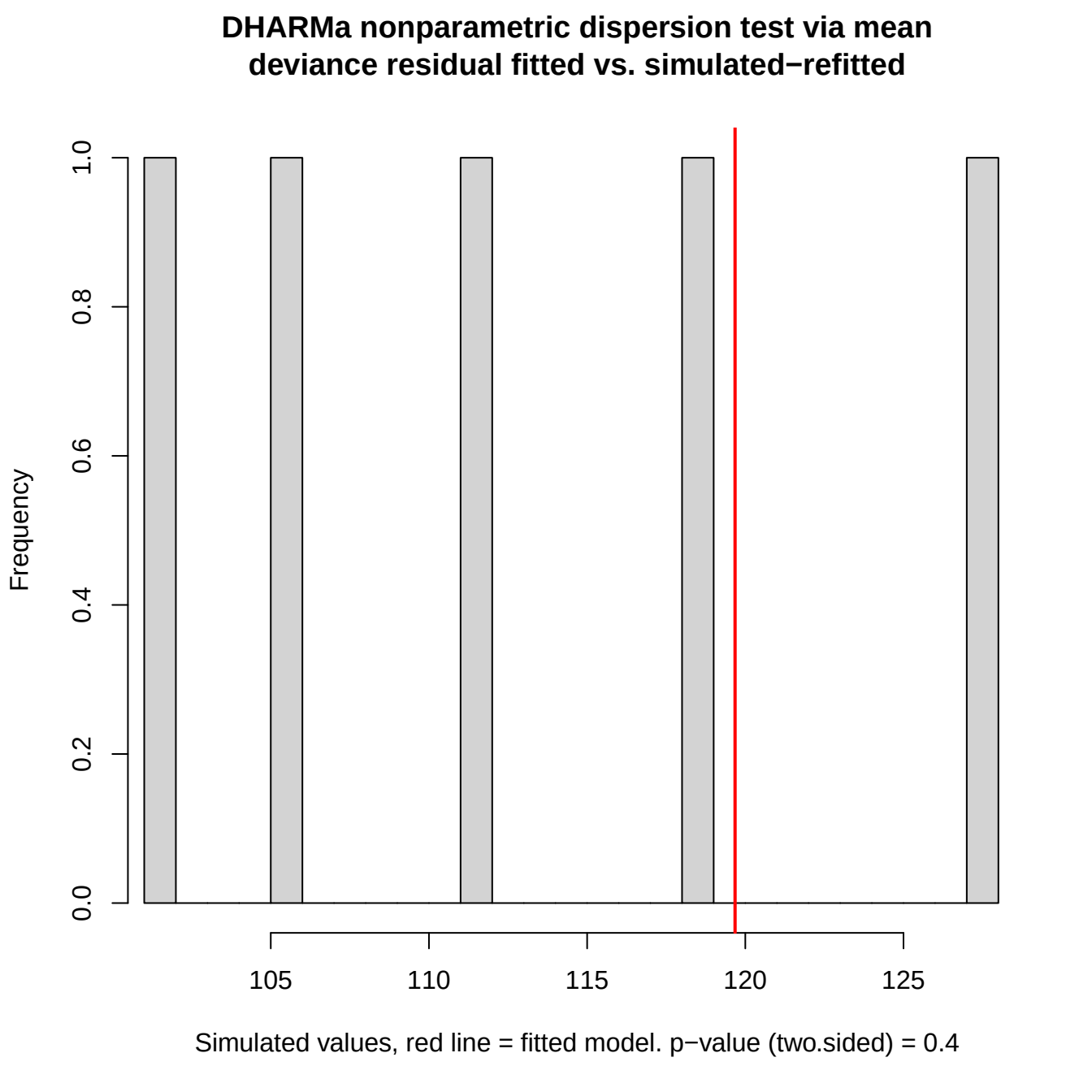

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

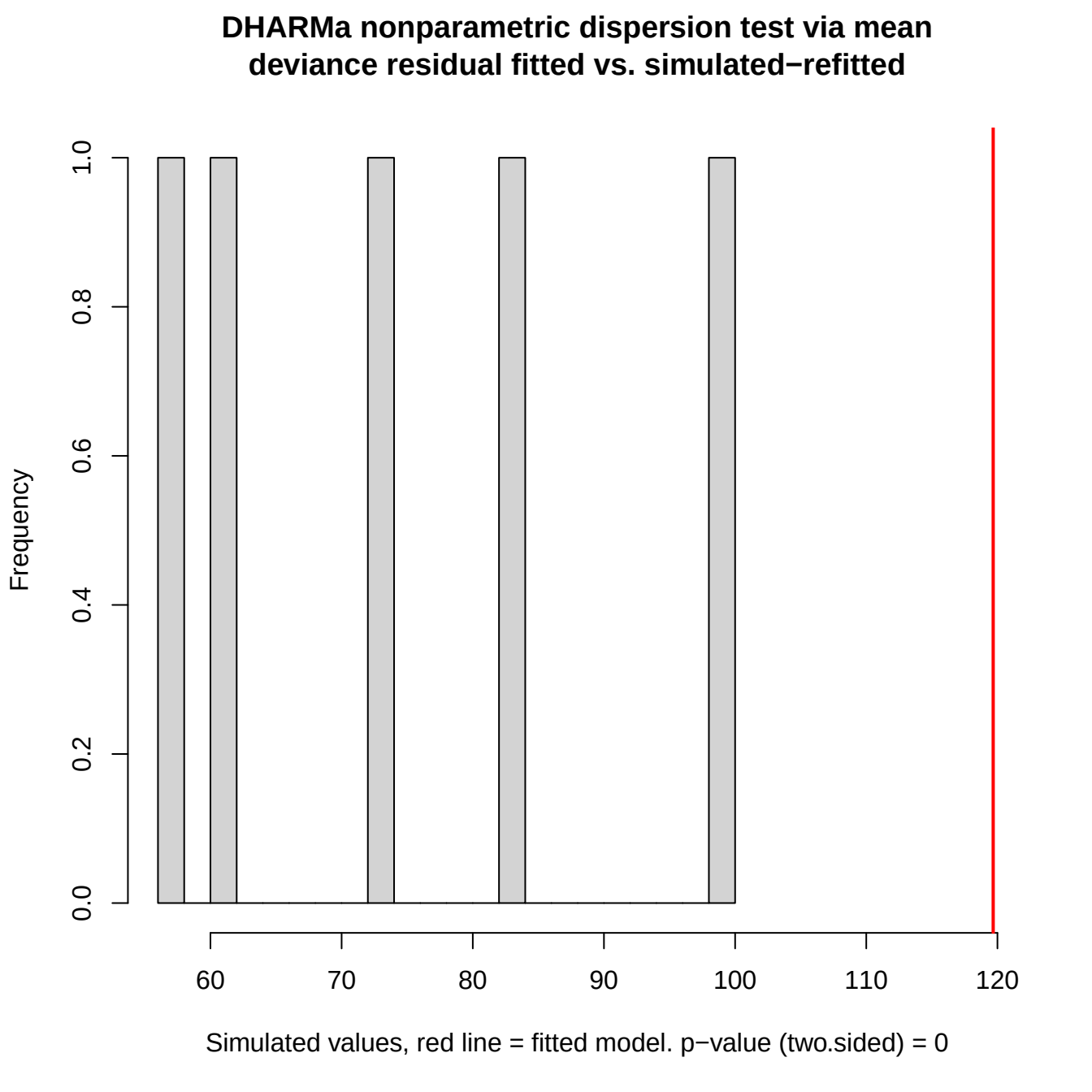

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

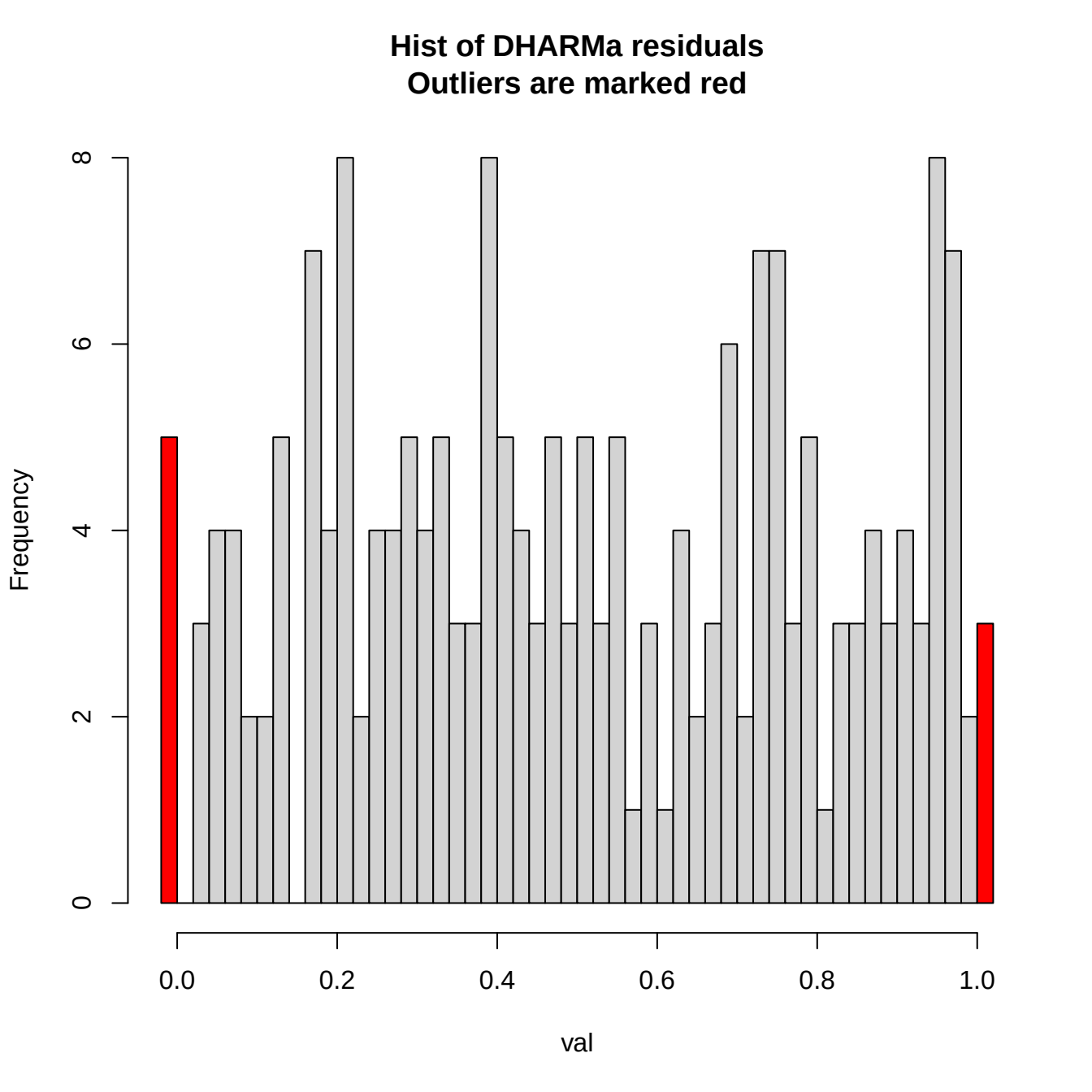

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

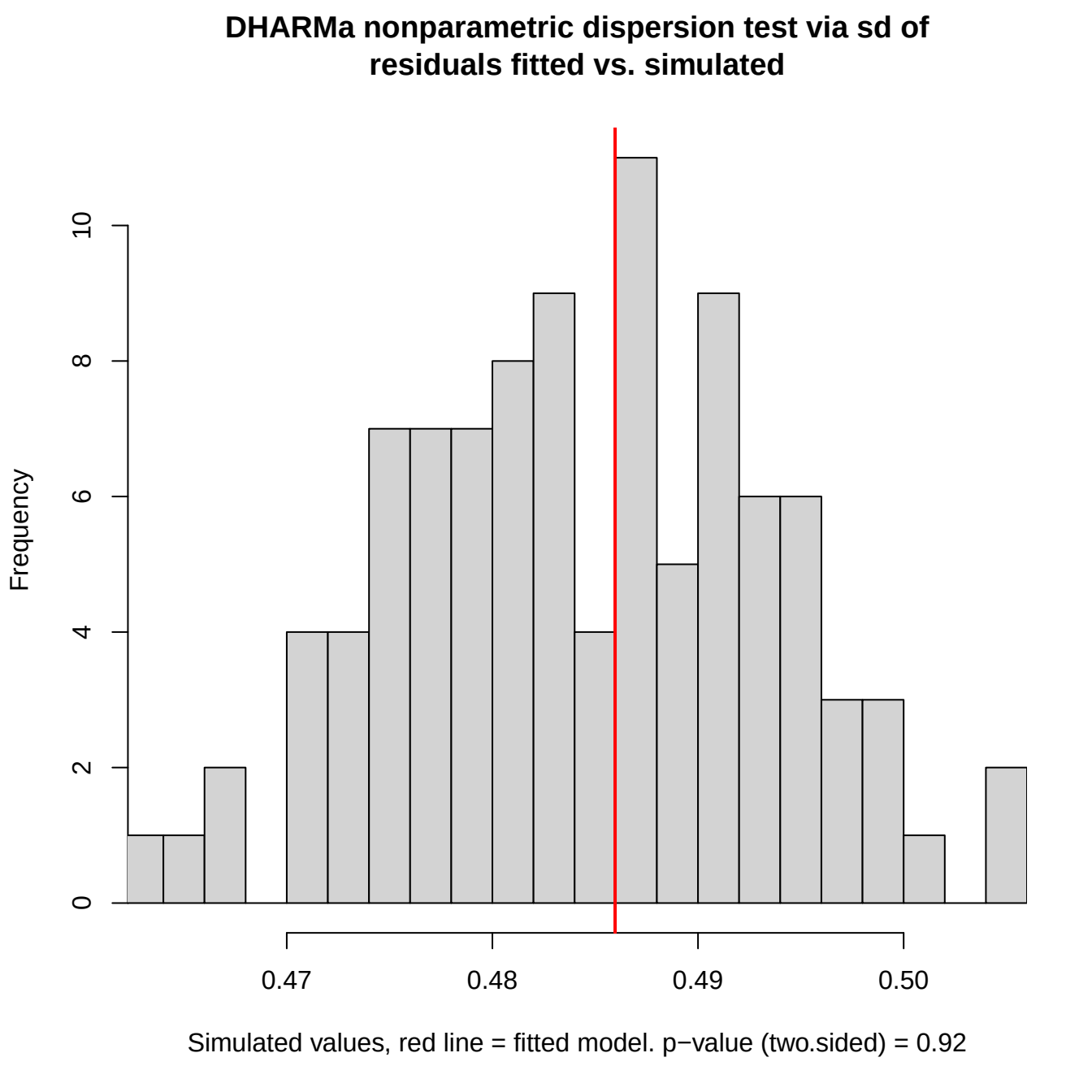

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

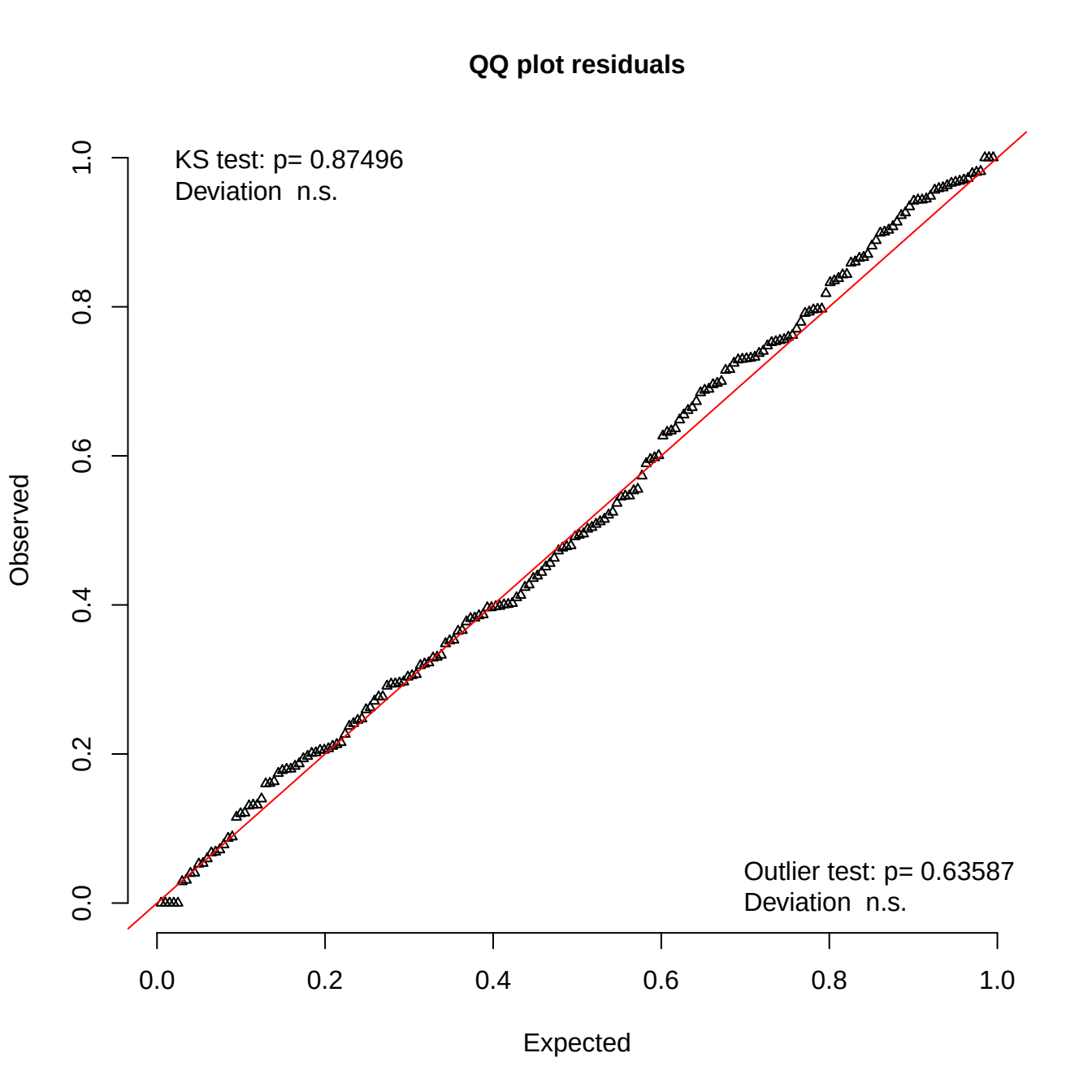

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00618
Deviation significant
Outlier test: p= 0.98832
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

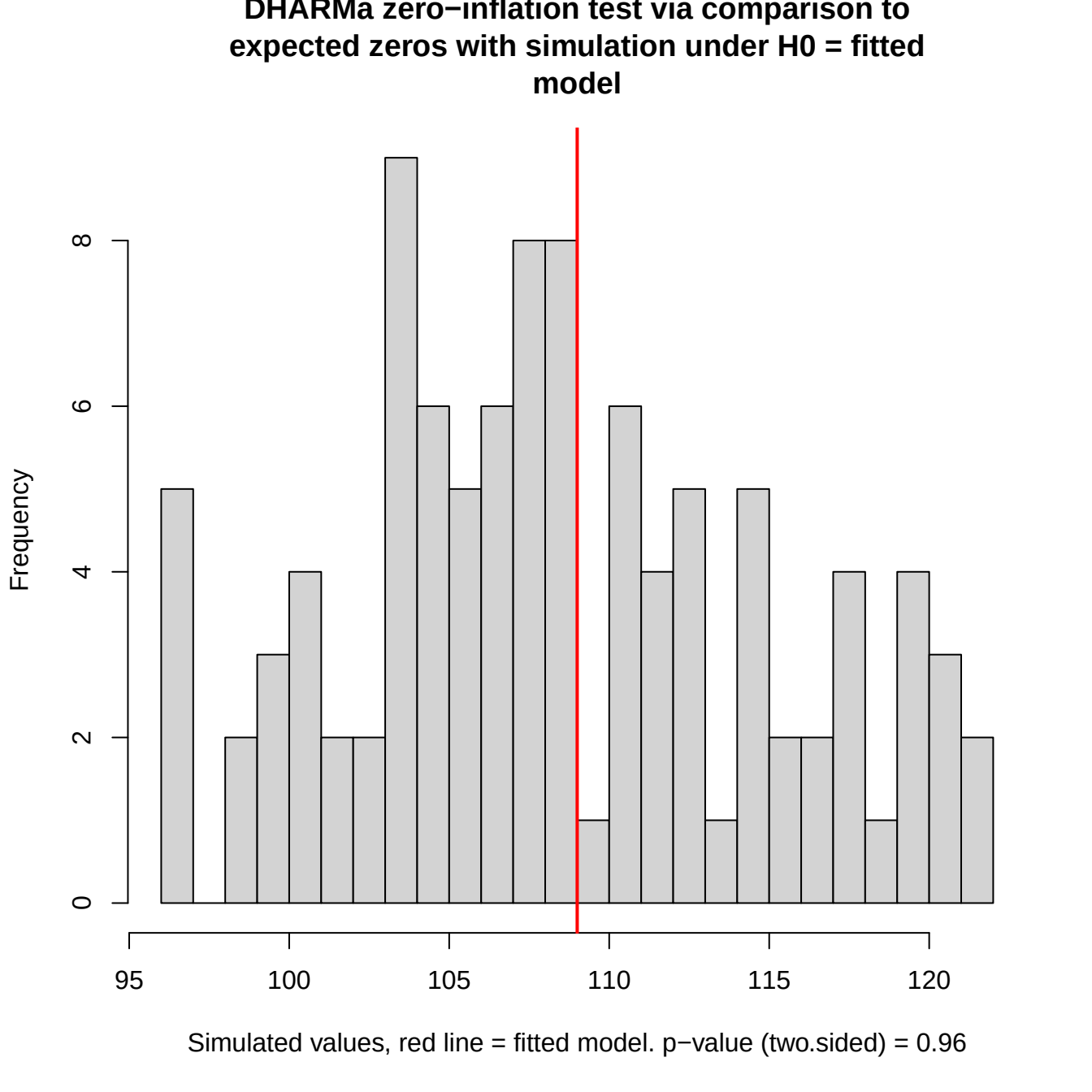

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
105
110
115
120
125
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

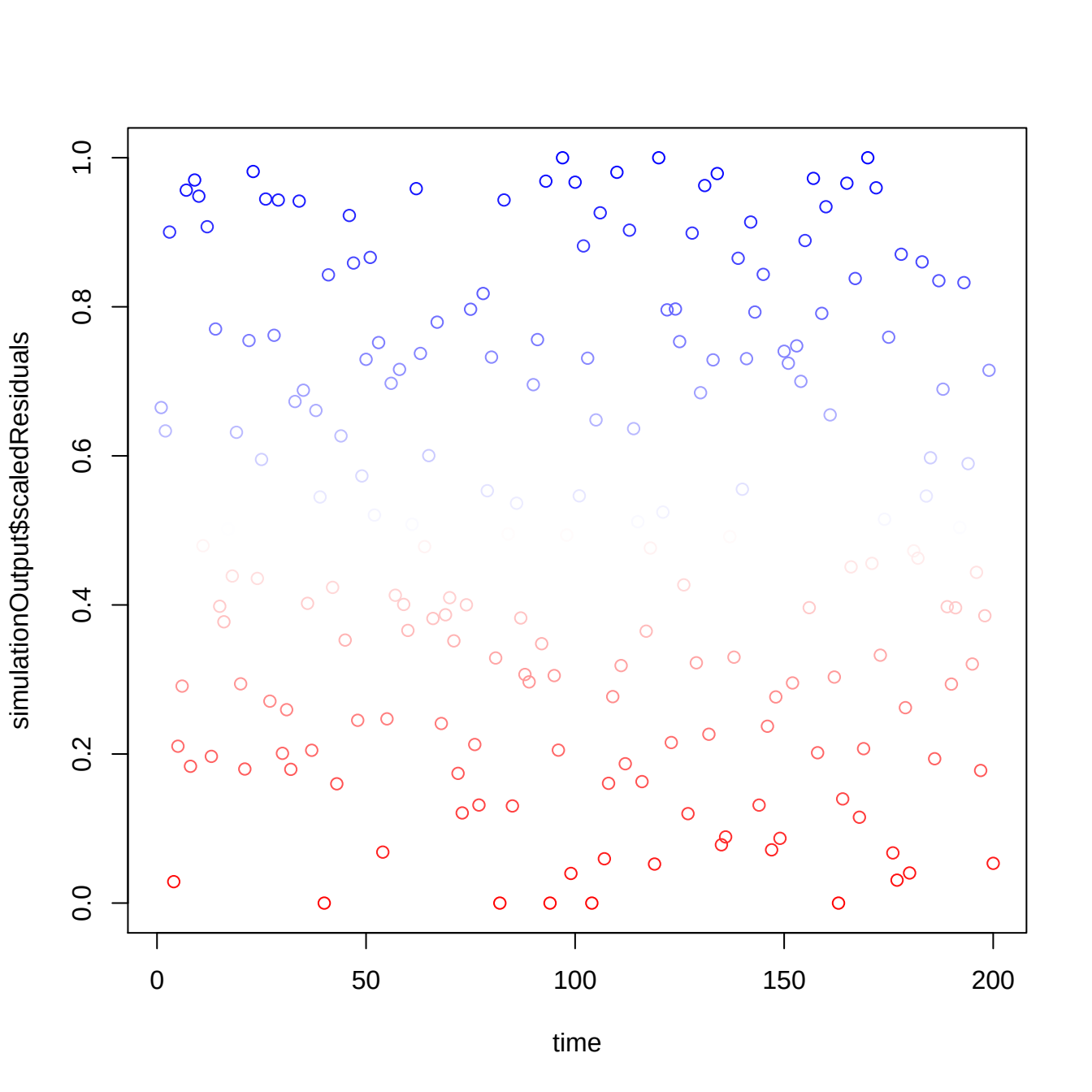

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
60
70
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 0

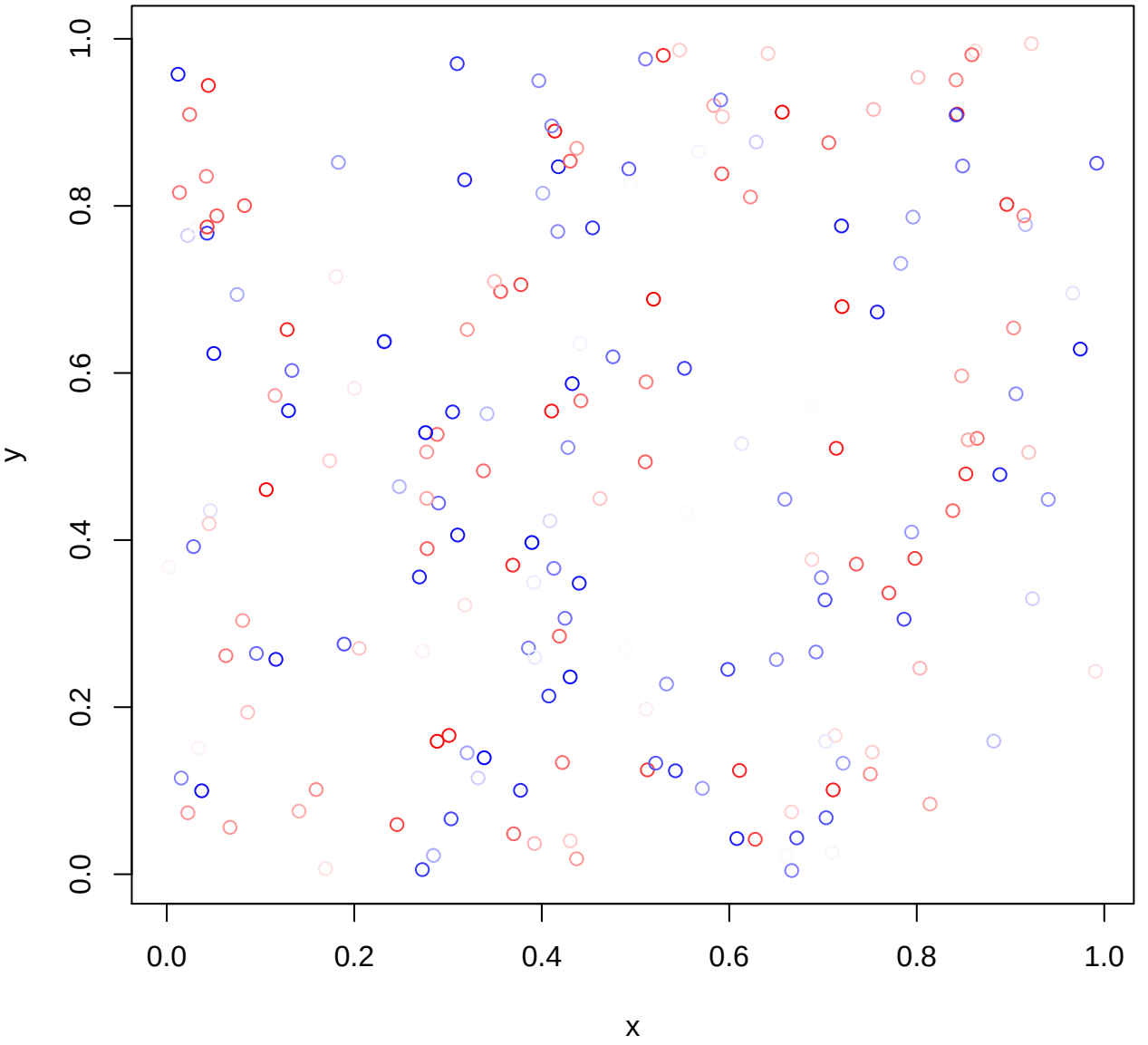

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

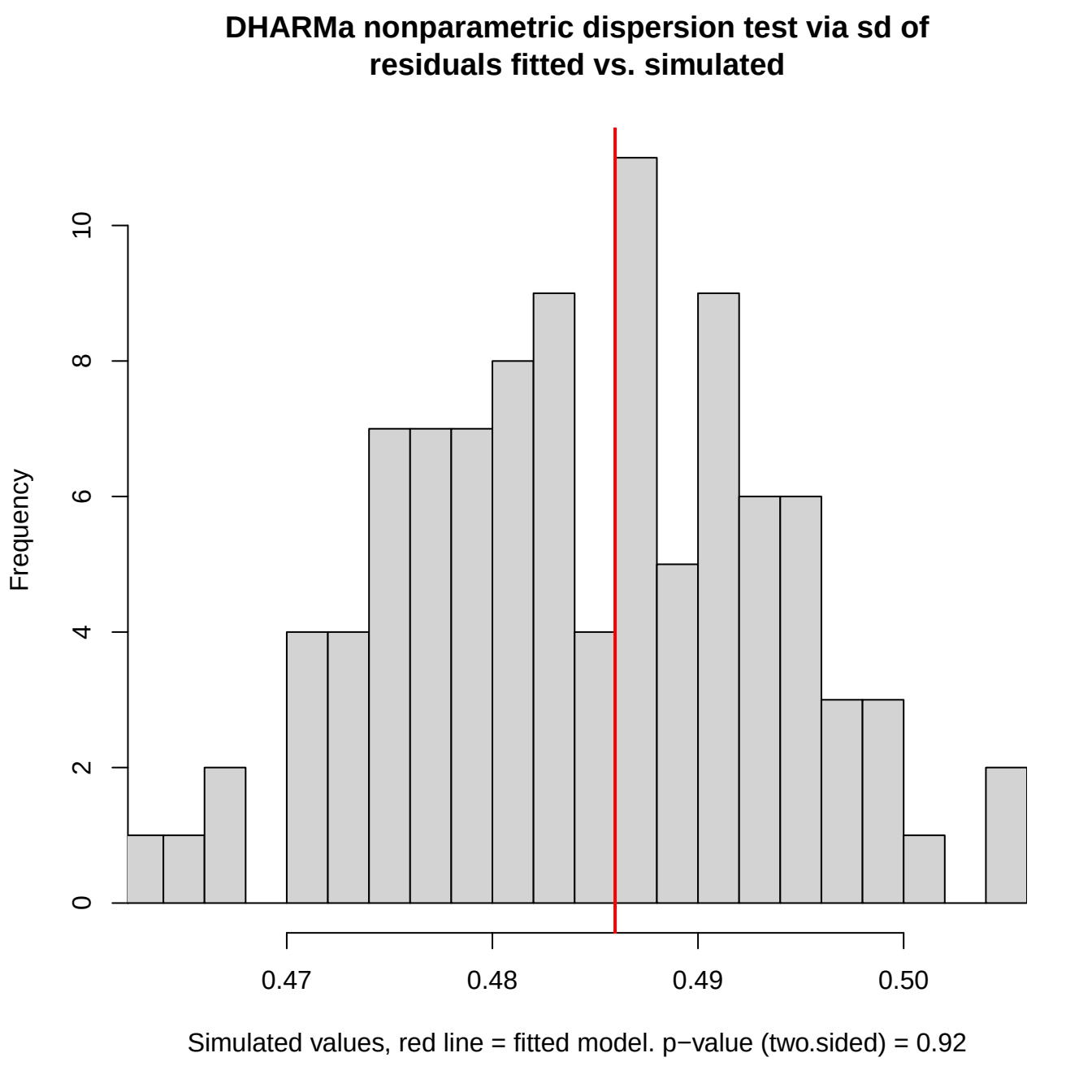

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

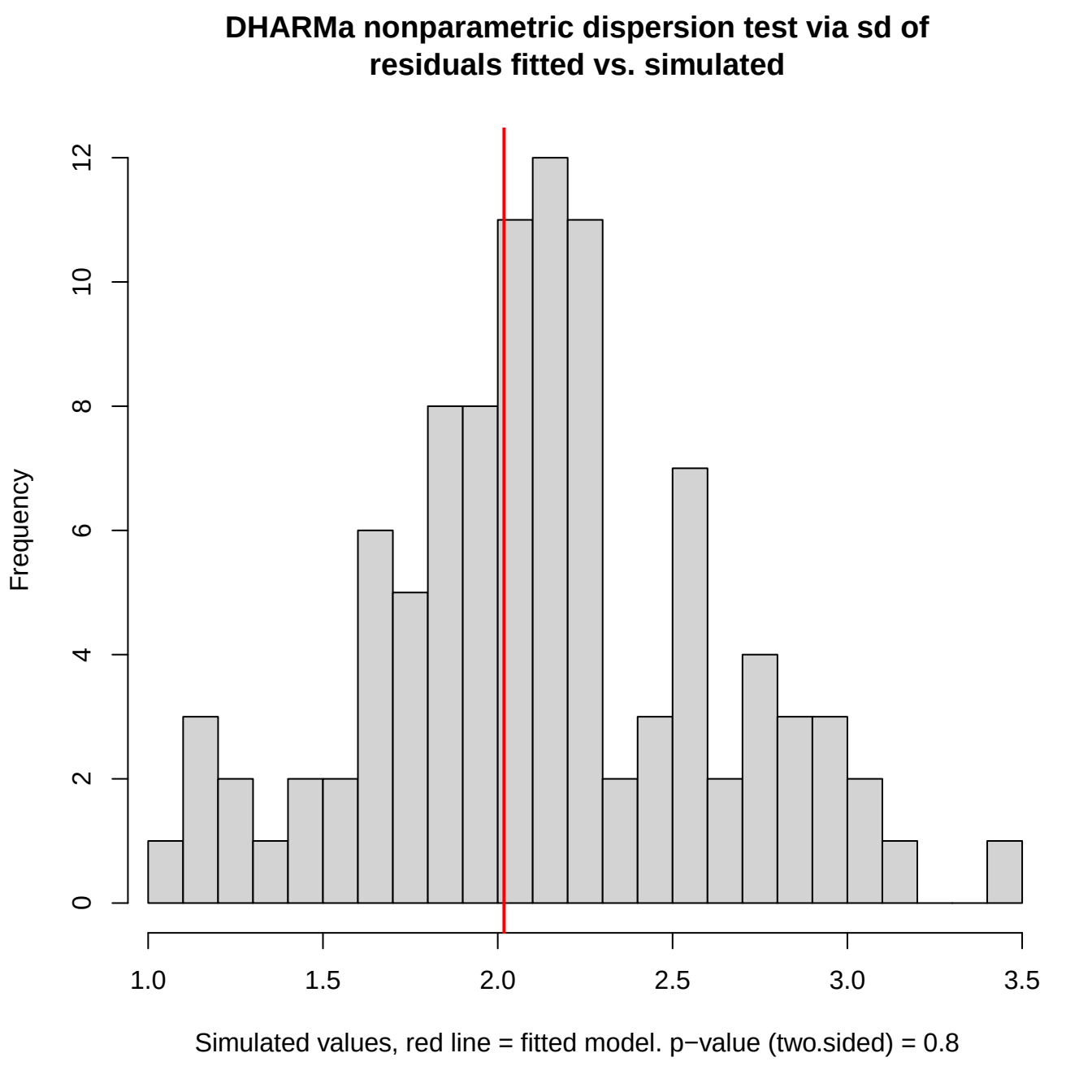

QQ plot residuals
KS test: p= 0.87496
Deviation n.s.
Outlier test: p= 0.63587
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

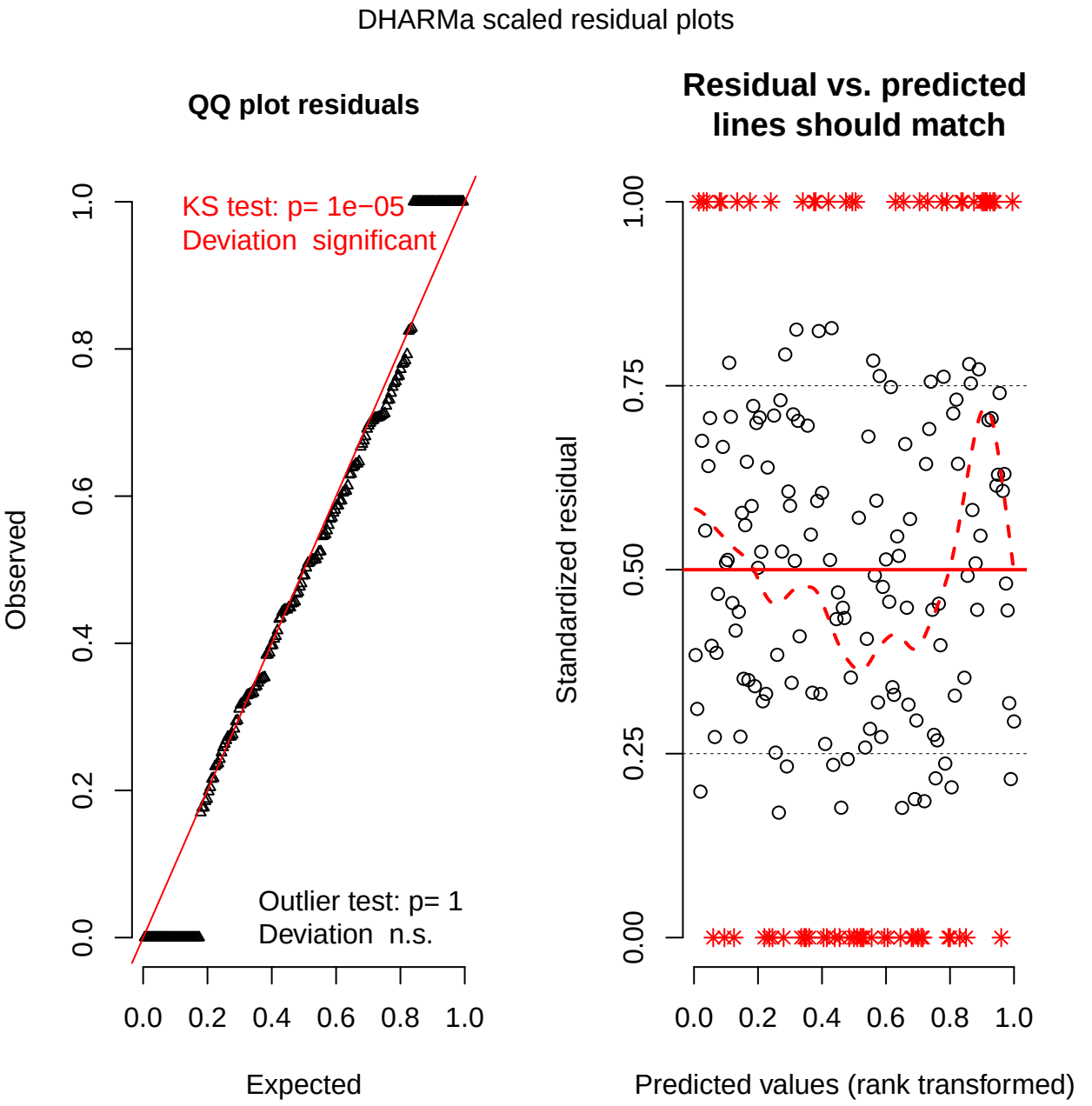

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
95
100
105
110
115
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

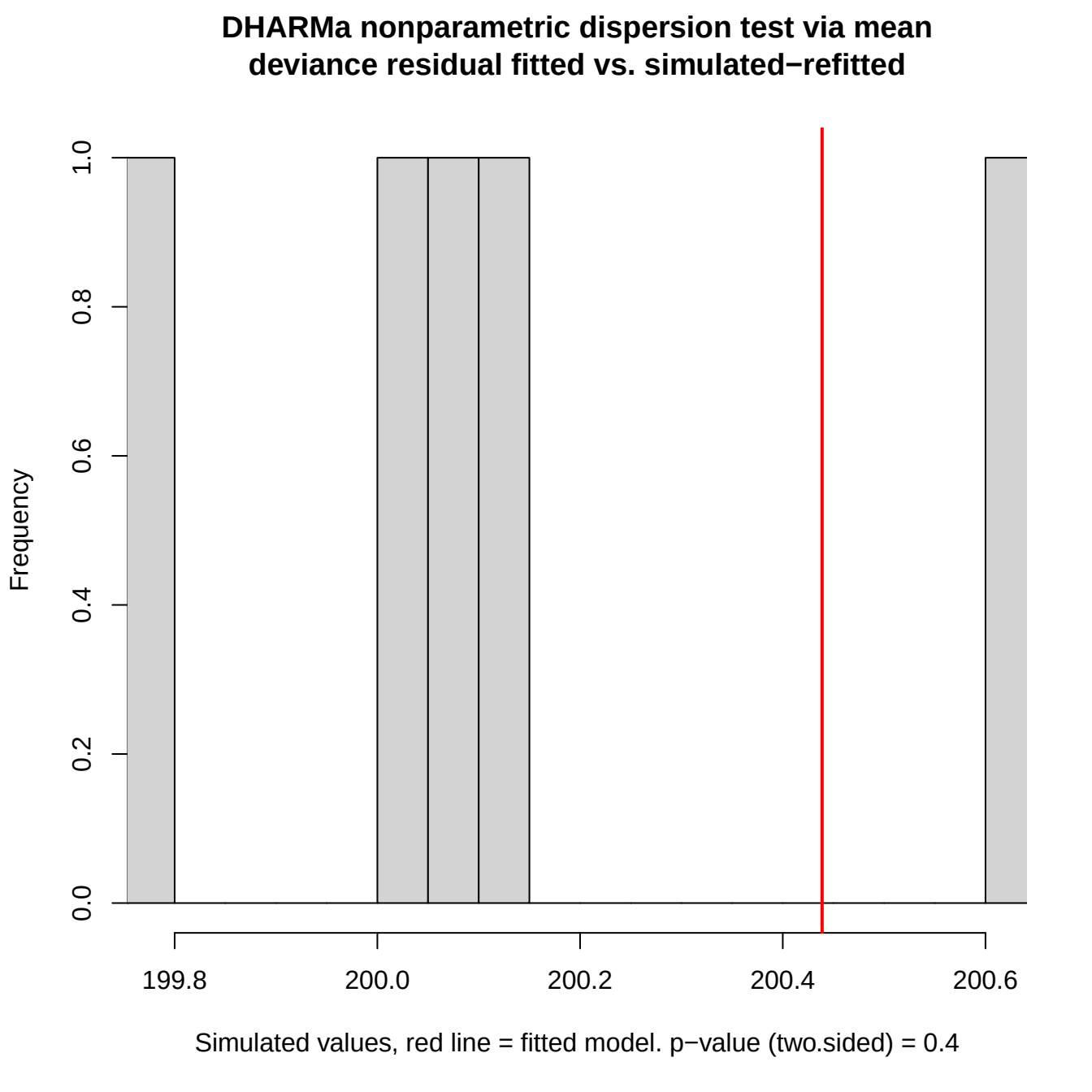

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

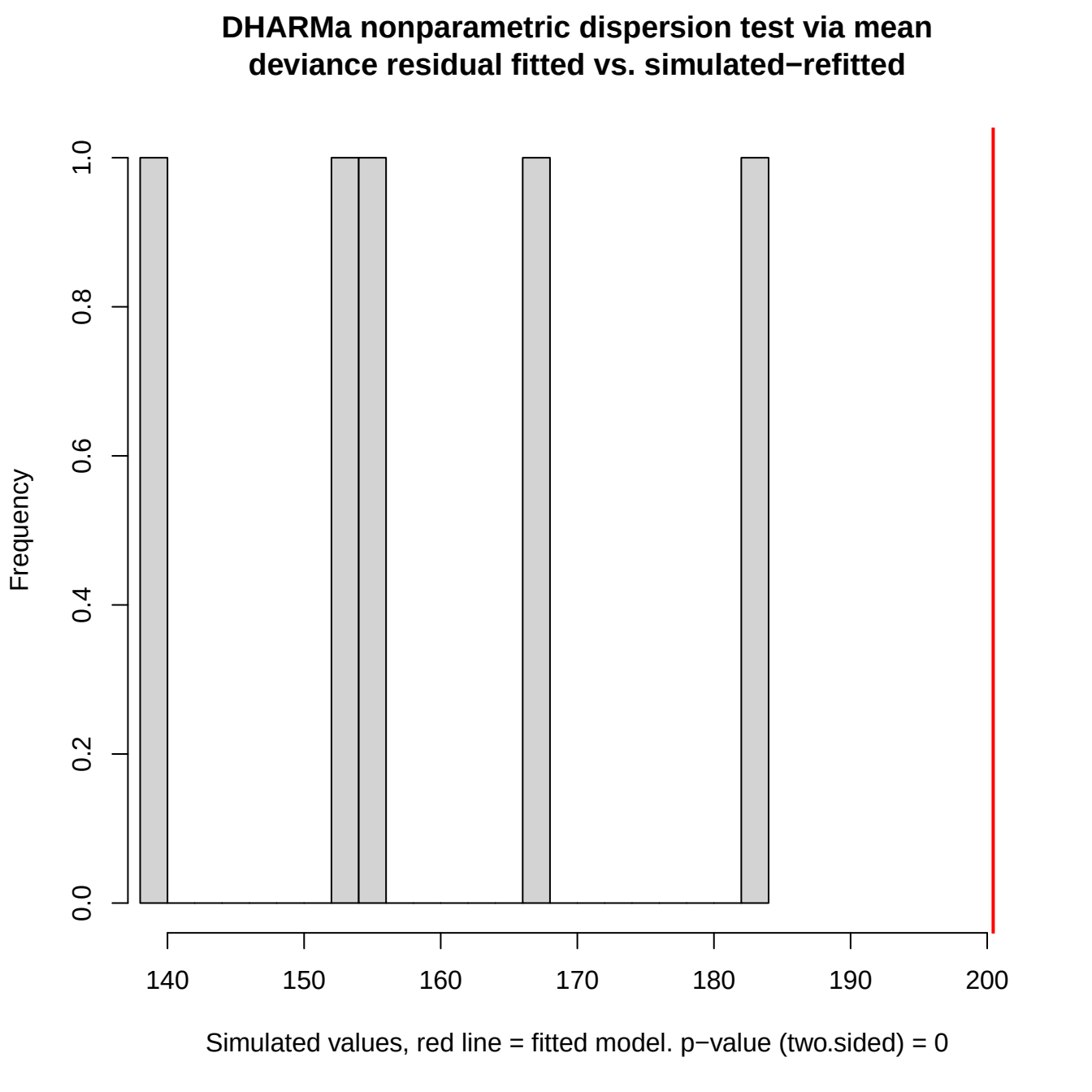

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

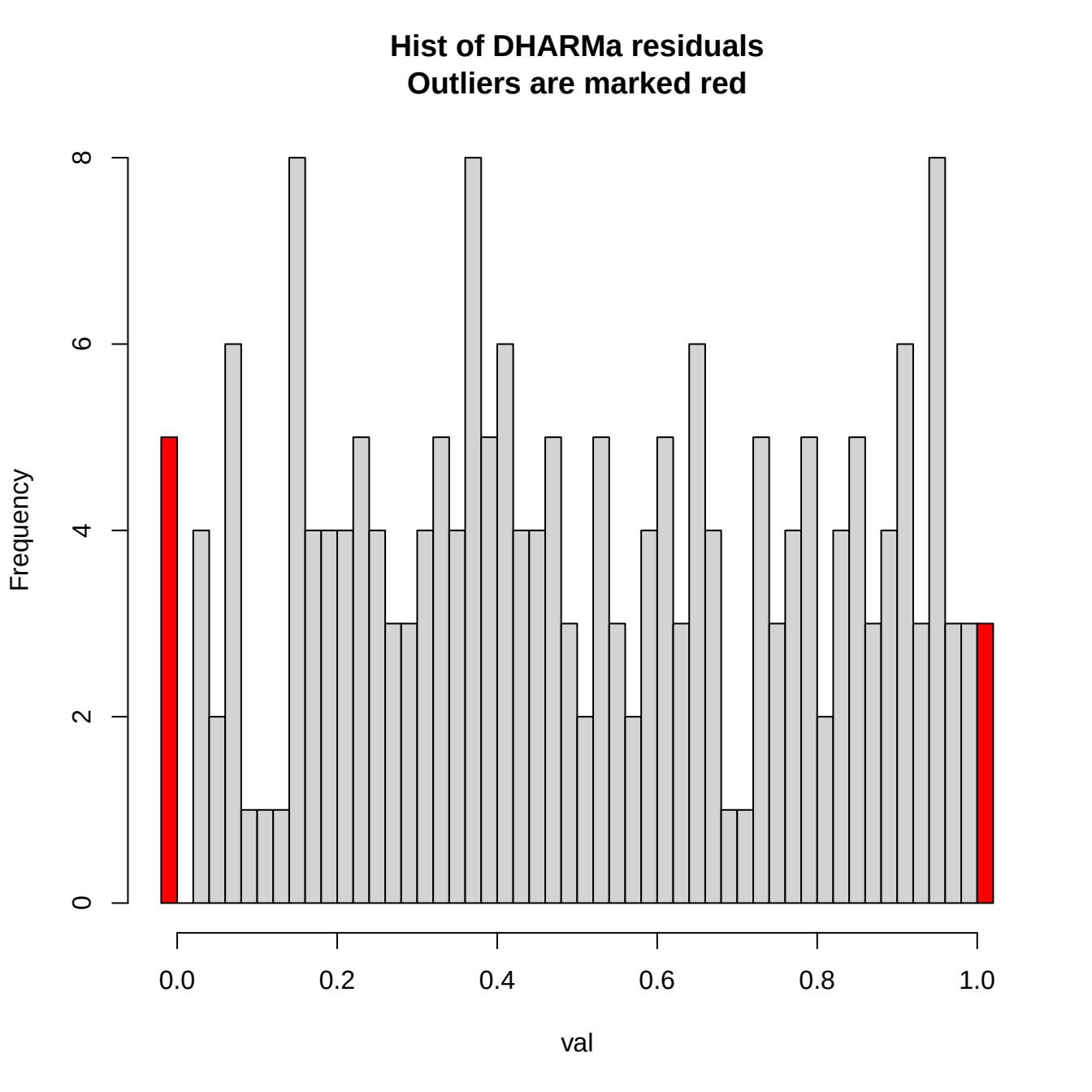

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

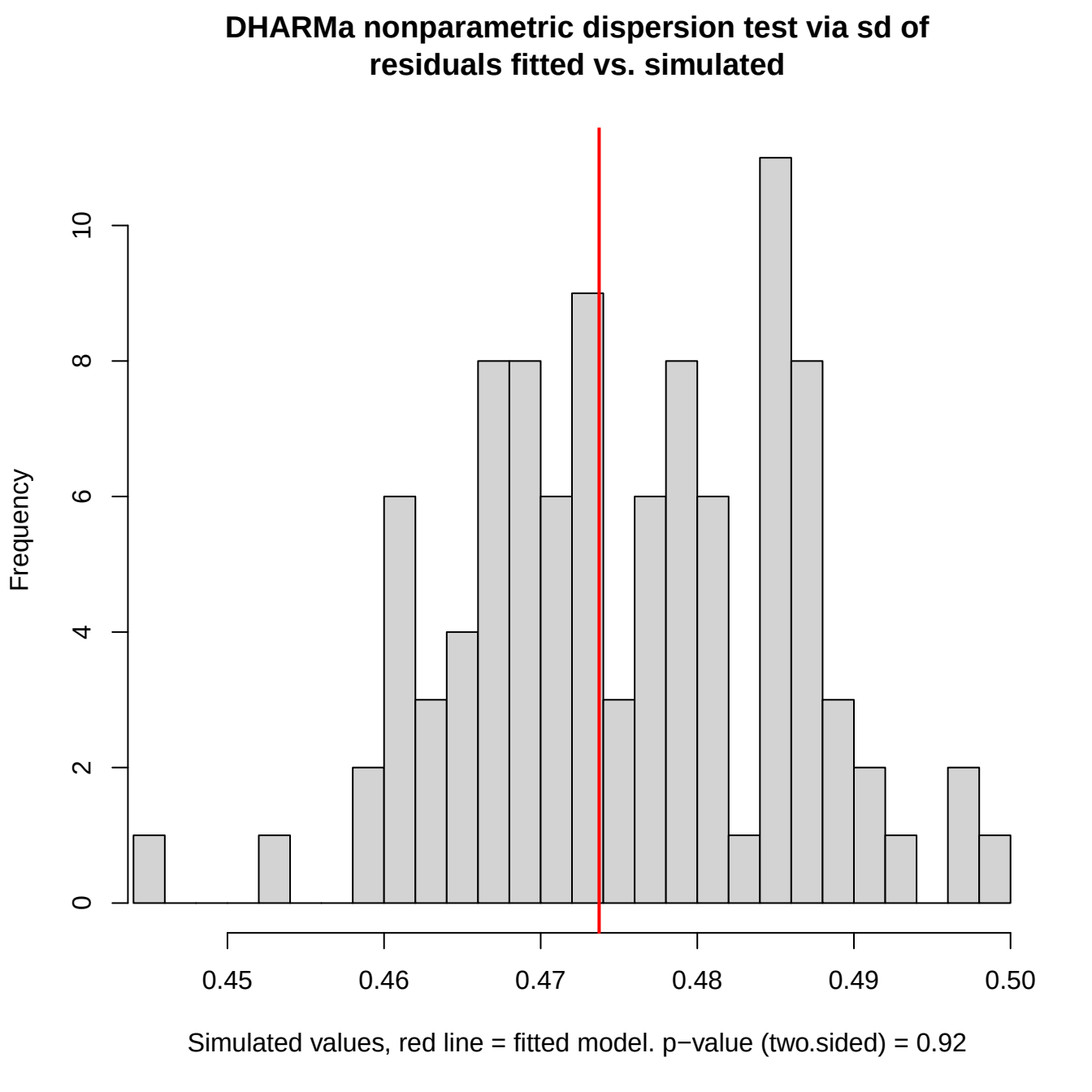

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

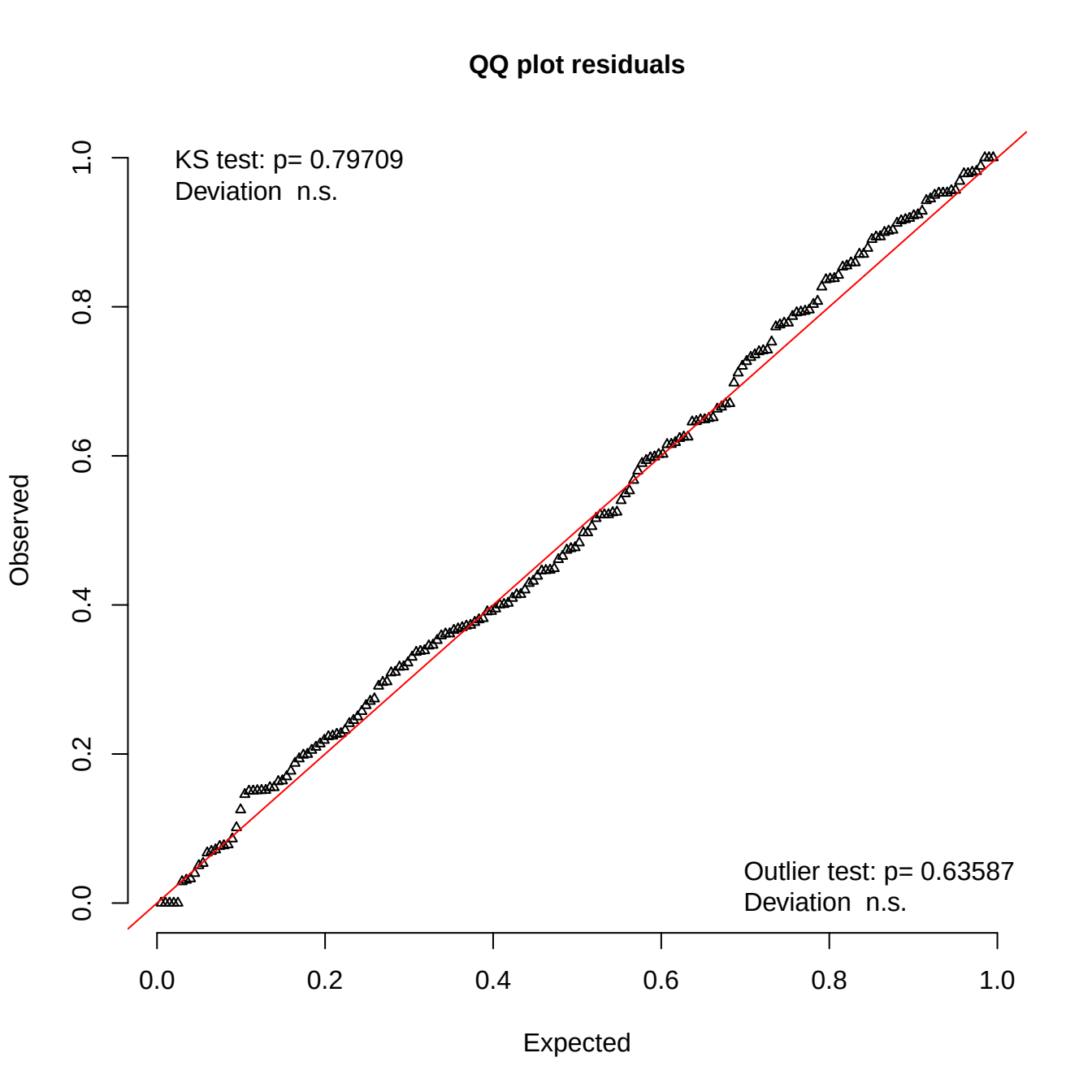

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 1e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

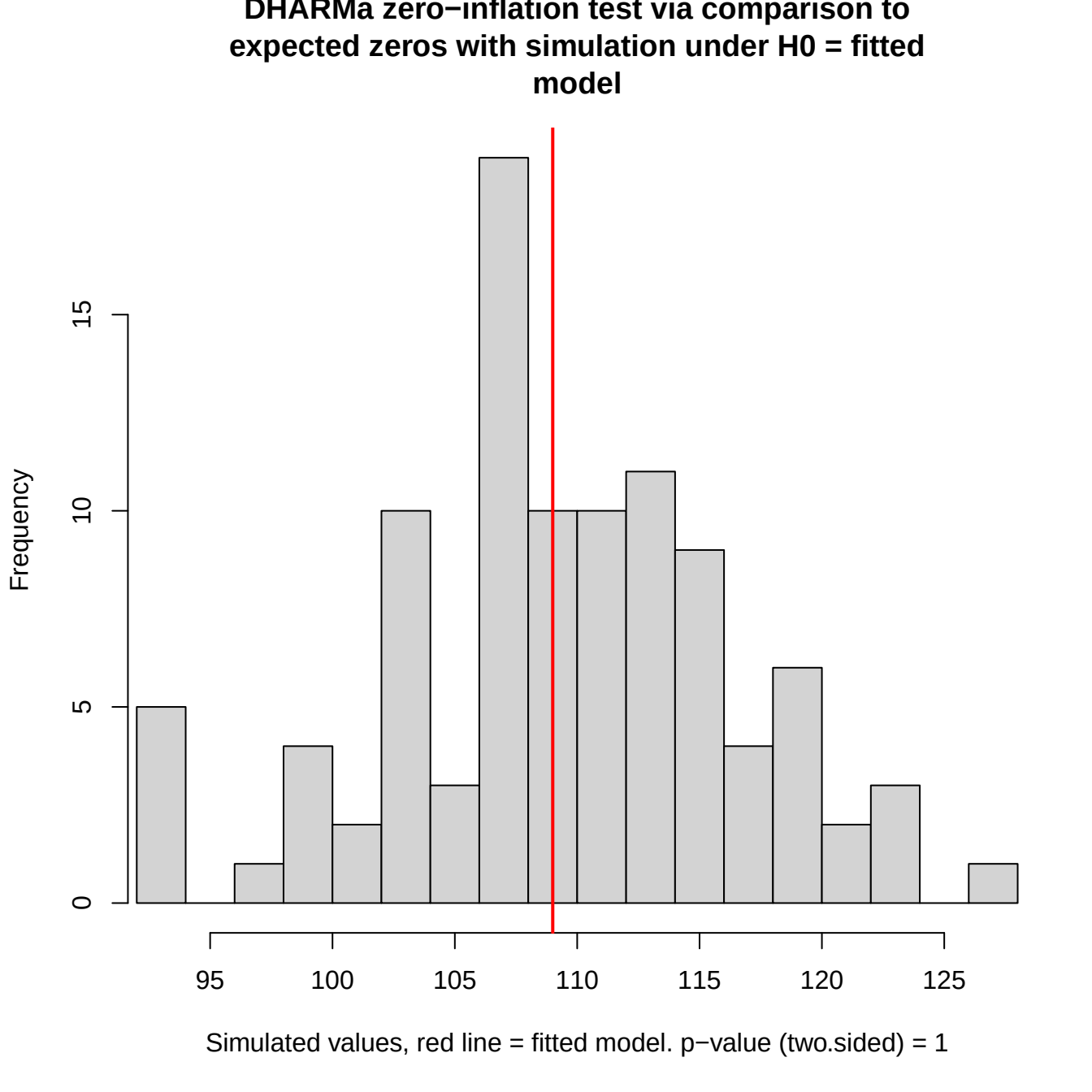

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
199.8
200.0
200.2
200.4
200.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

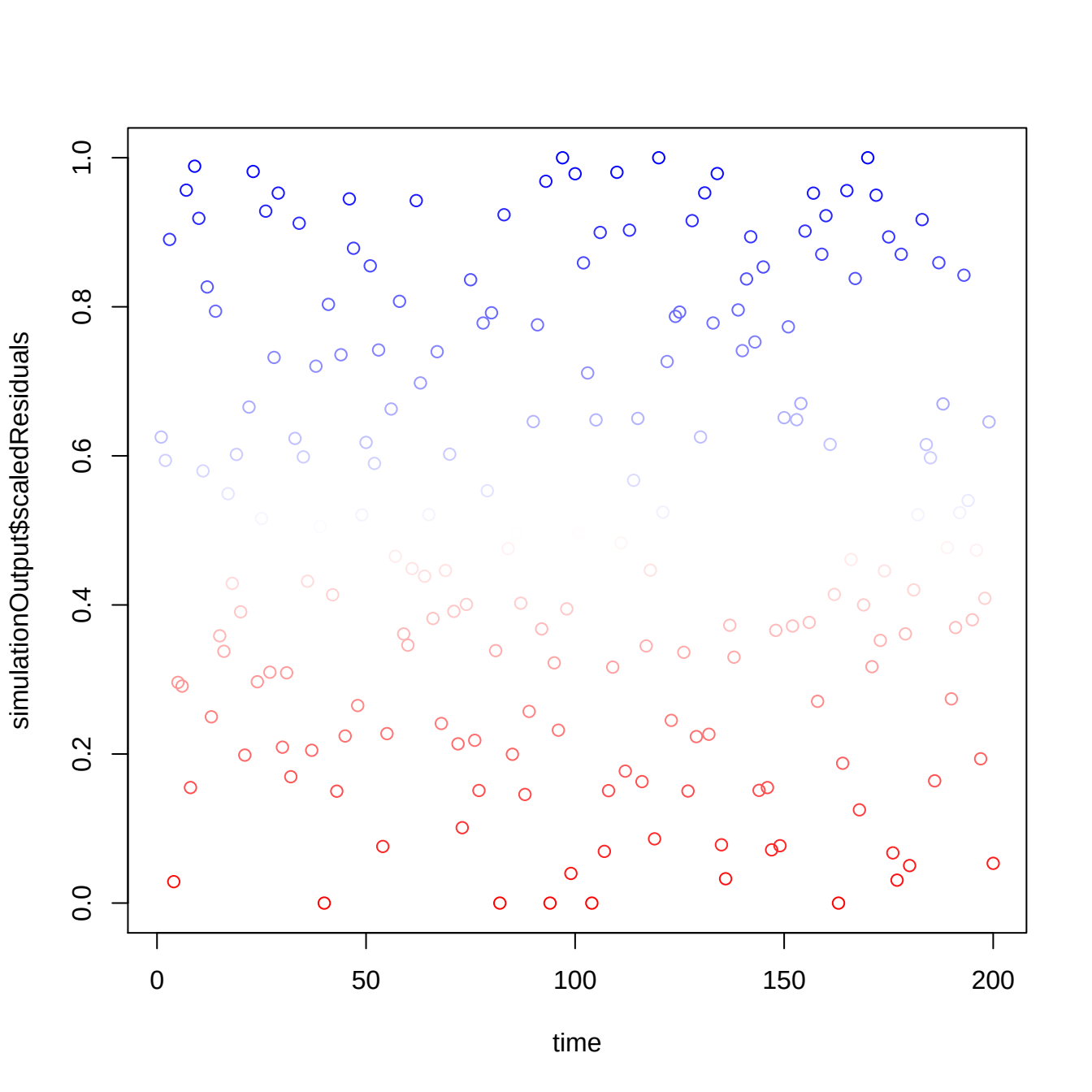

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
140
150
160
170
180
190
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

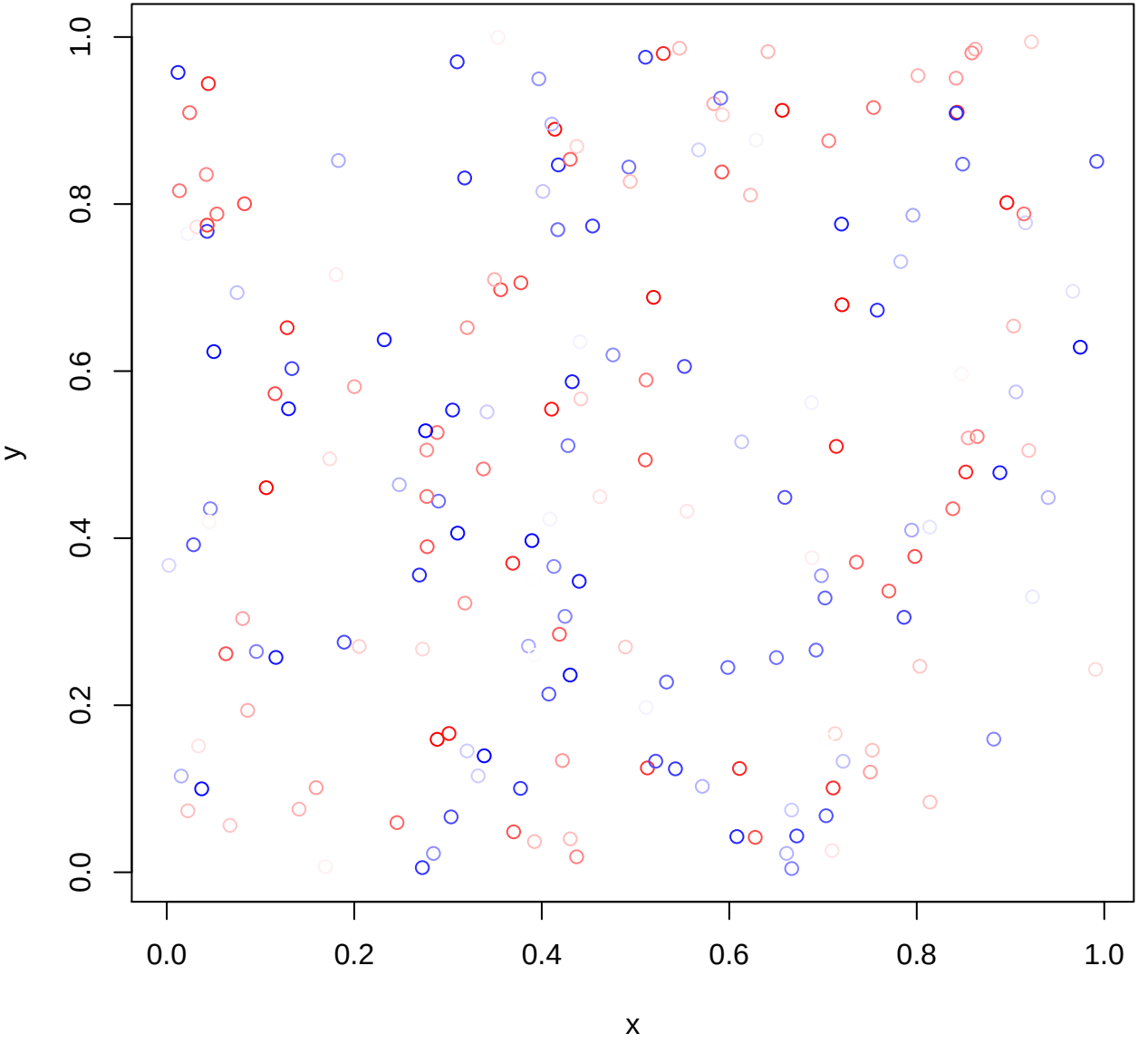

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

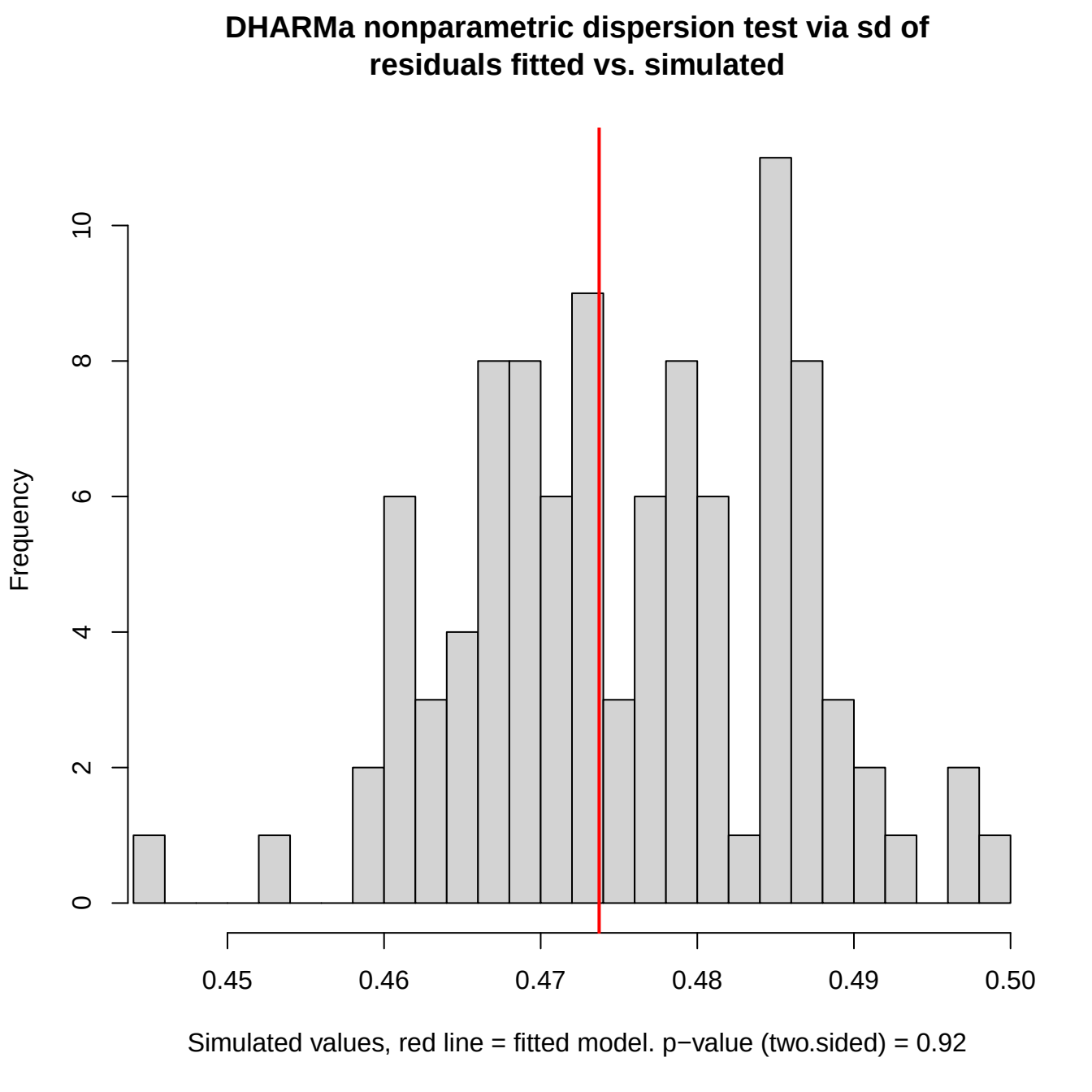

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

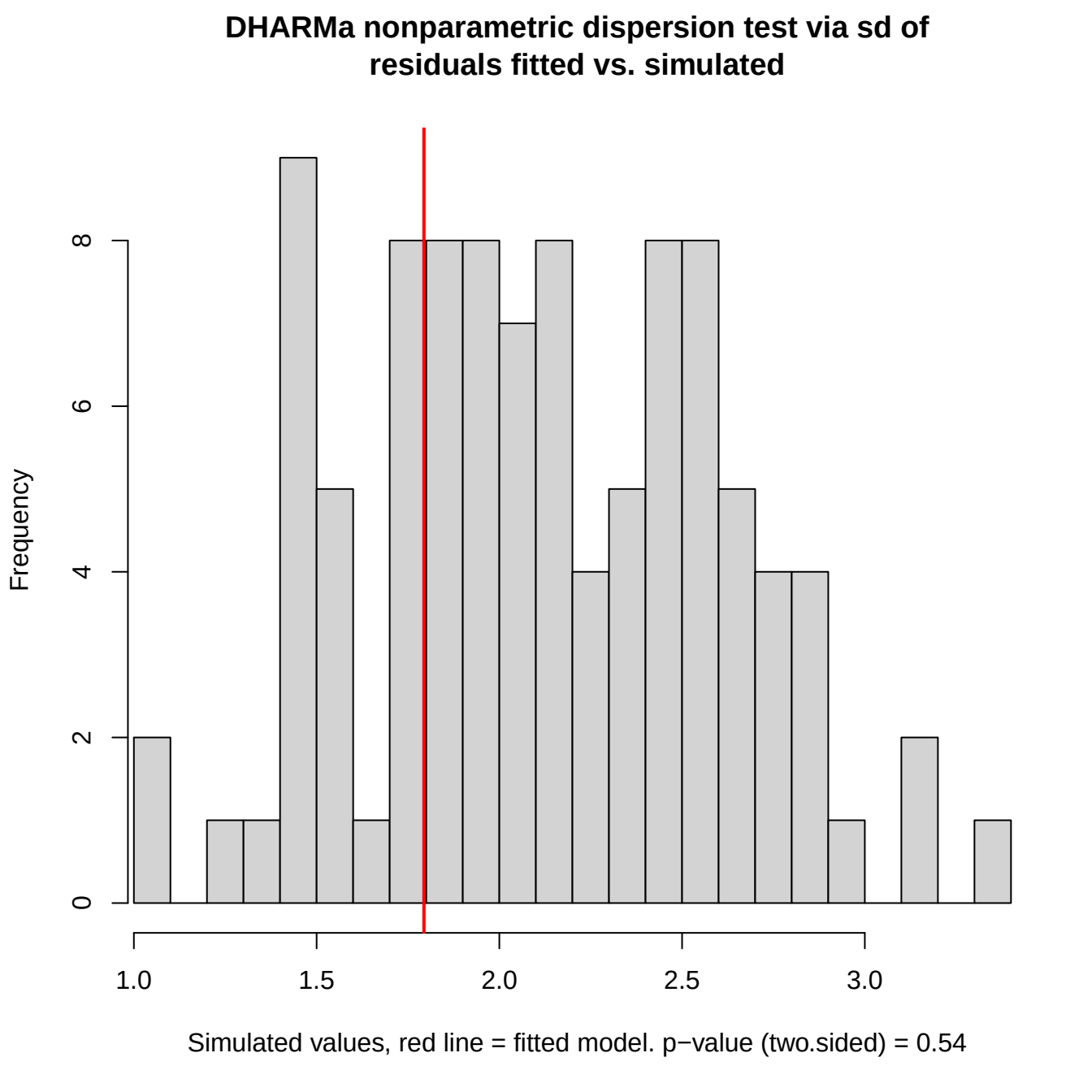

QQ plot residuals
KS test: p= 0.79709
Deviation n.s.
Outlier test: p= 0.63587
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

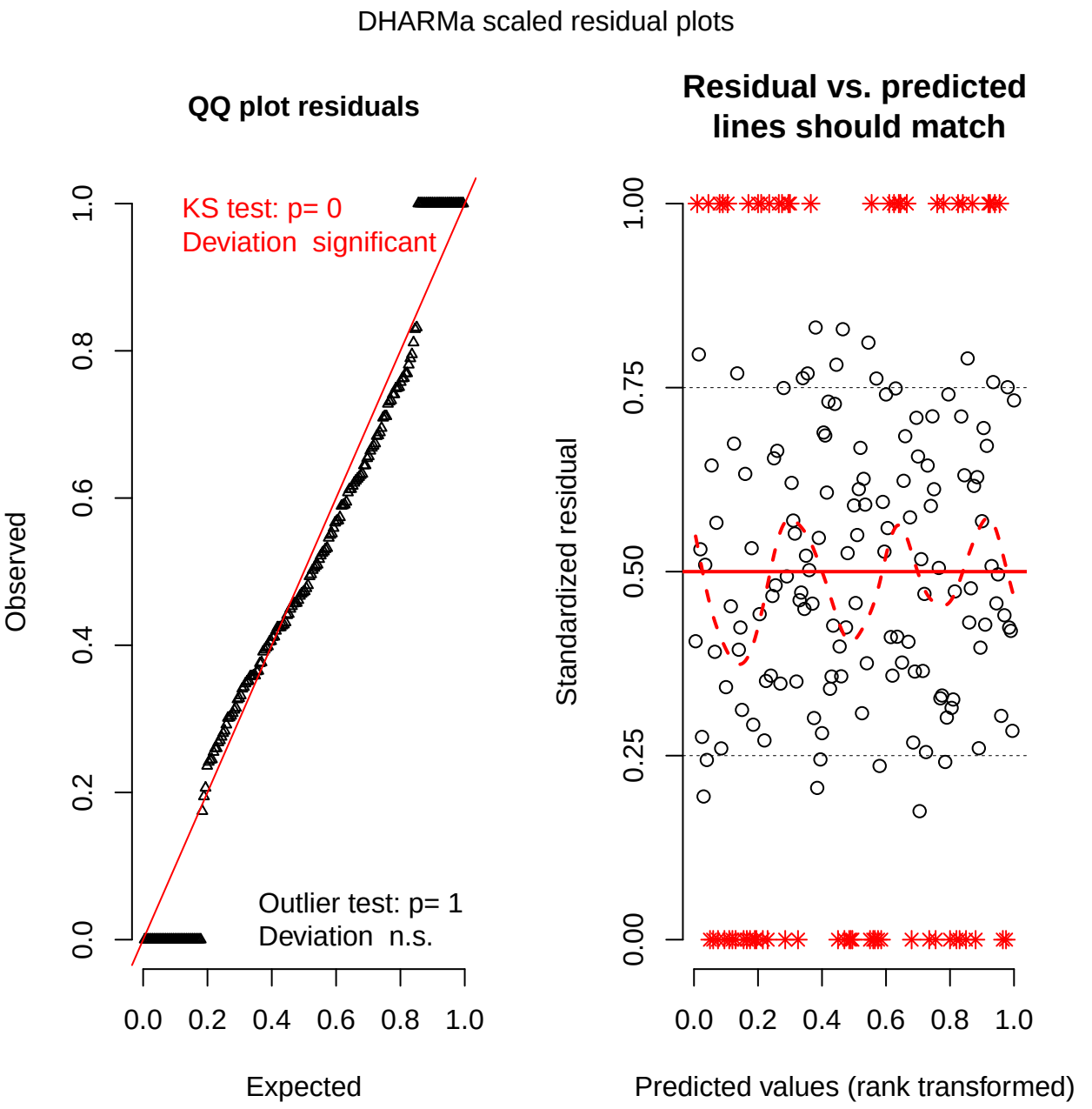

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
95
100
105
110
115
120
125
Simulated values, red line = fitted model. p−value (two.sided) = 1

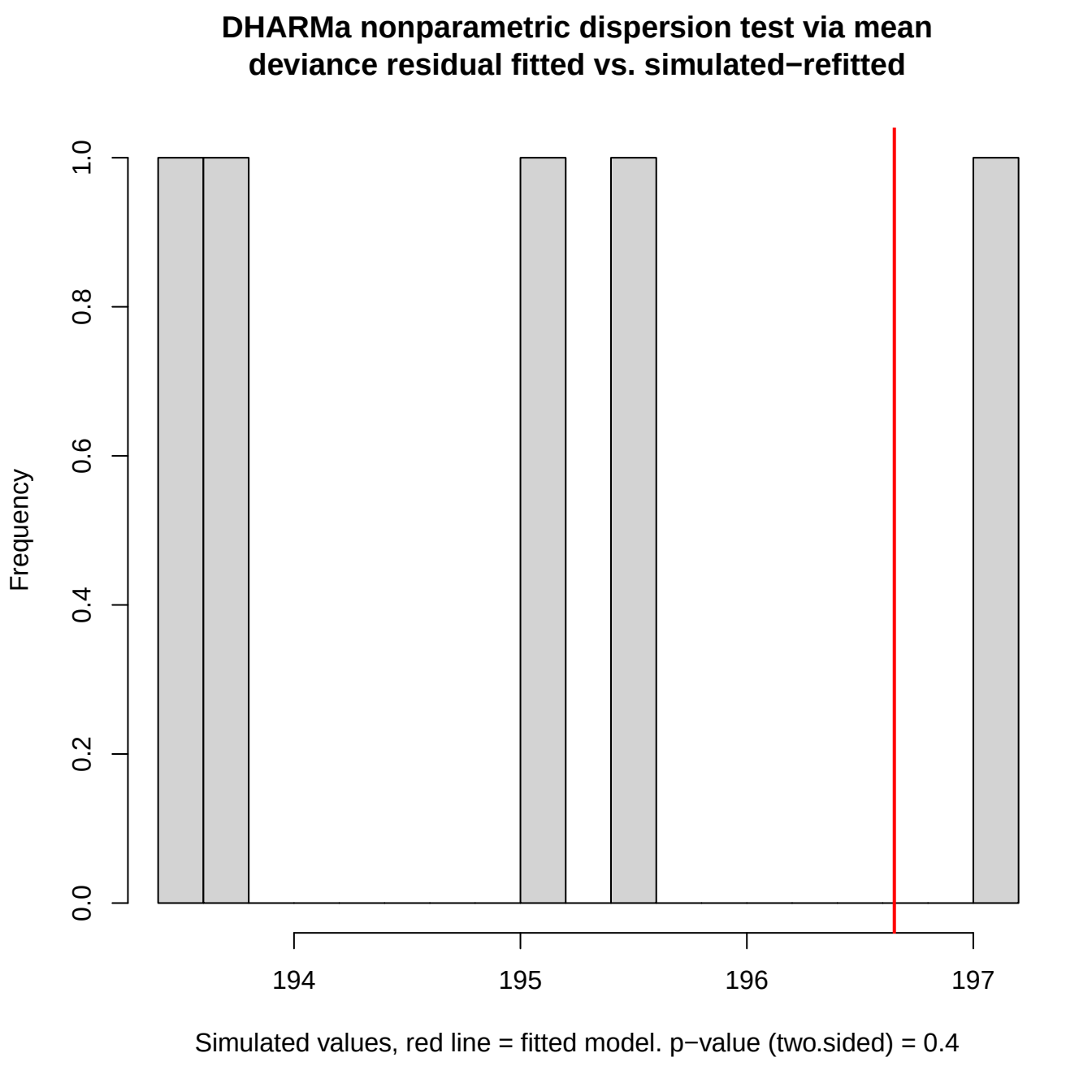

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

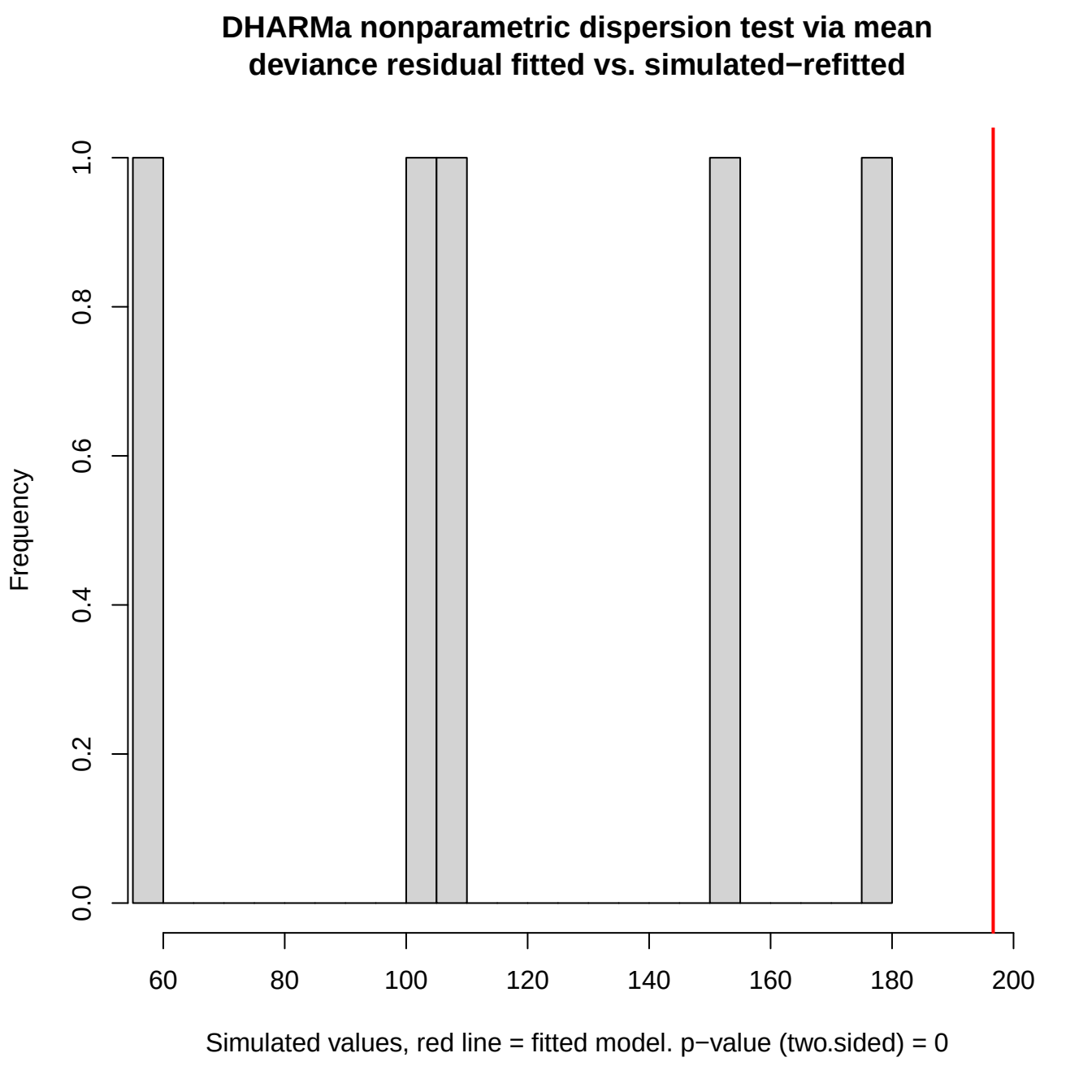

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

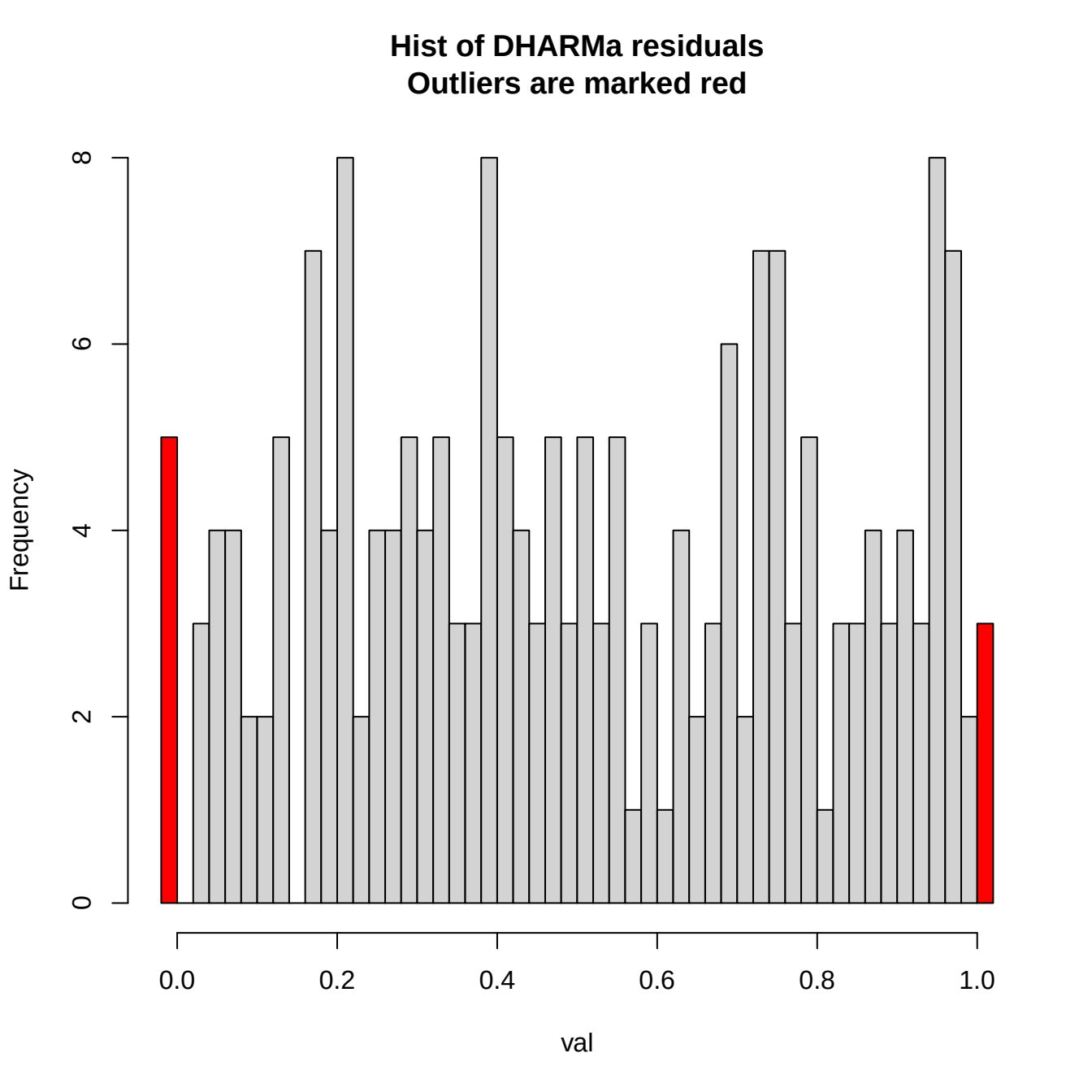

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

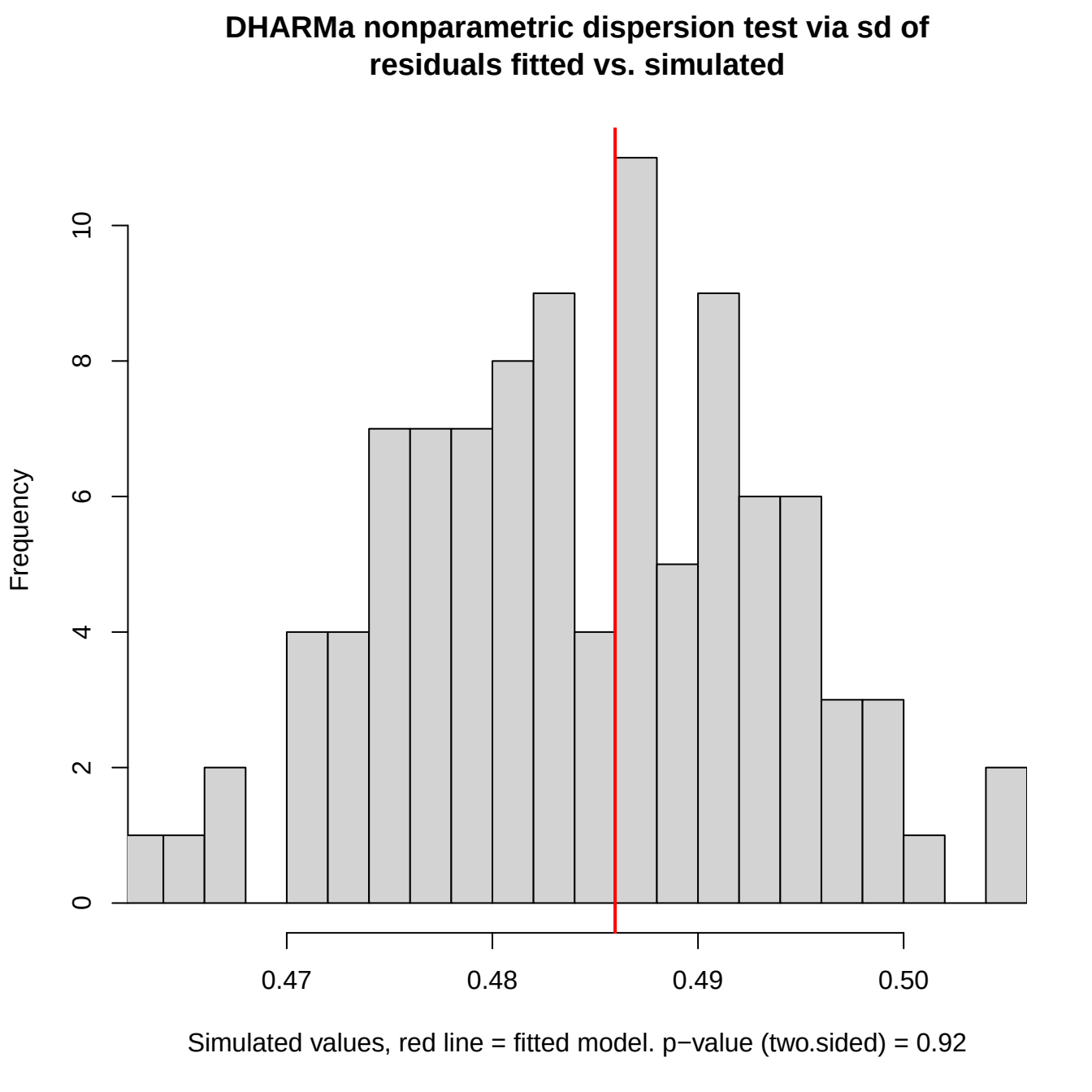

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
1.0
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

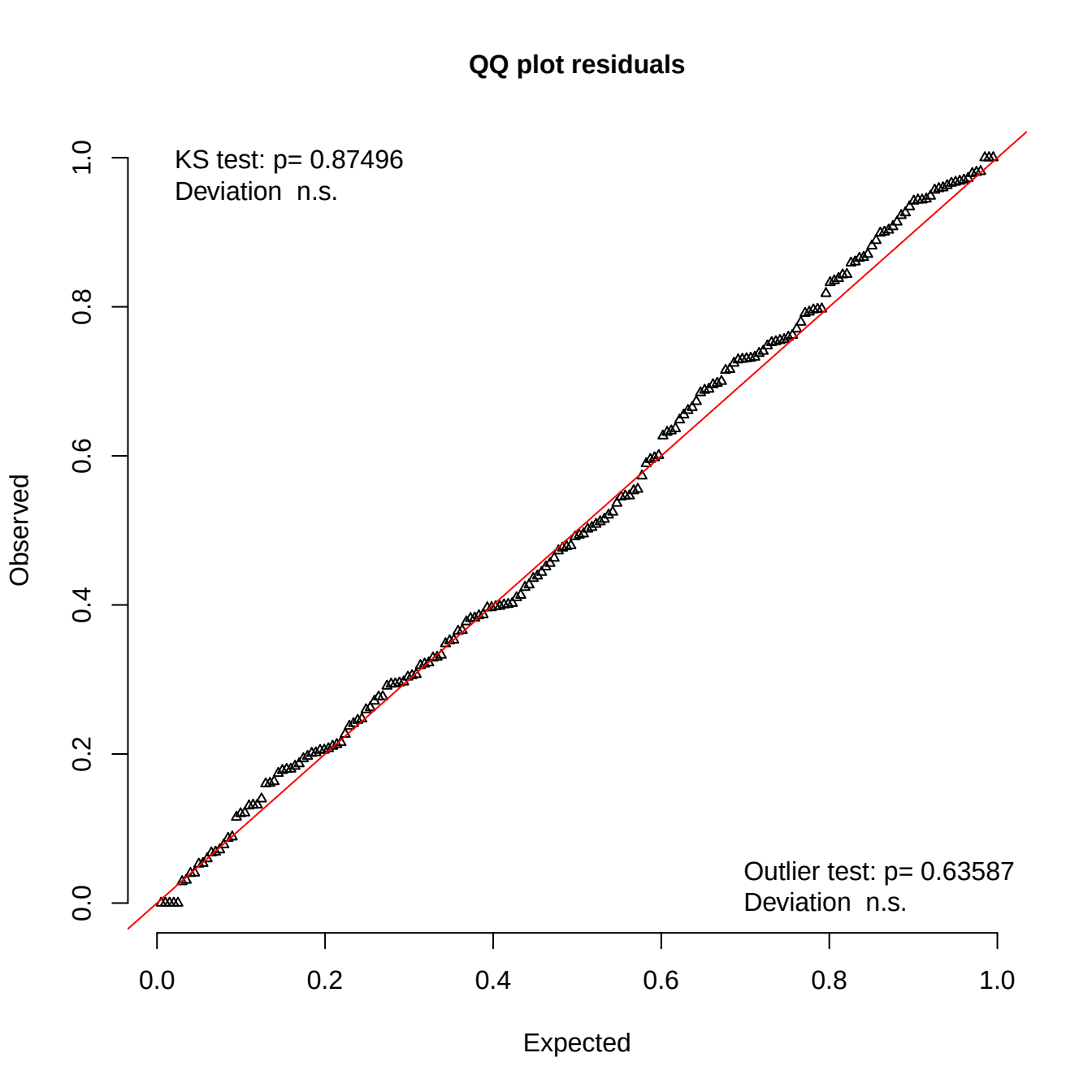

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

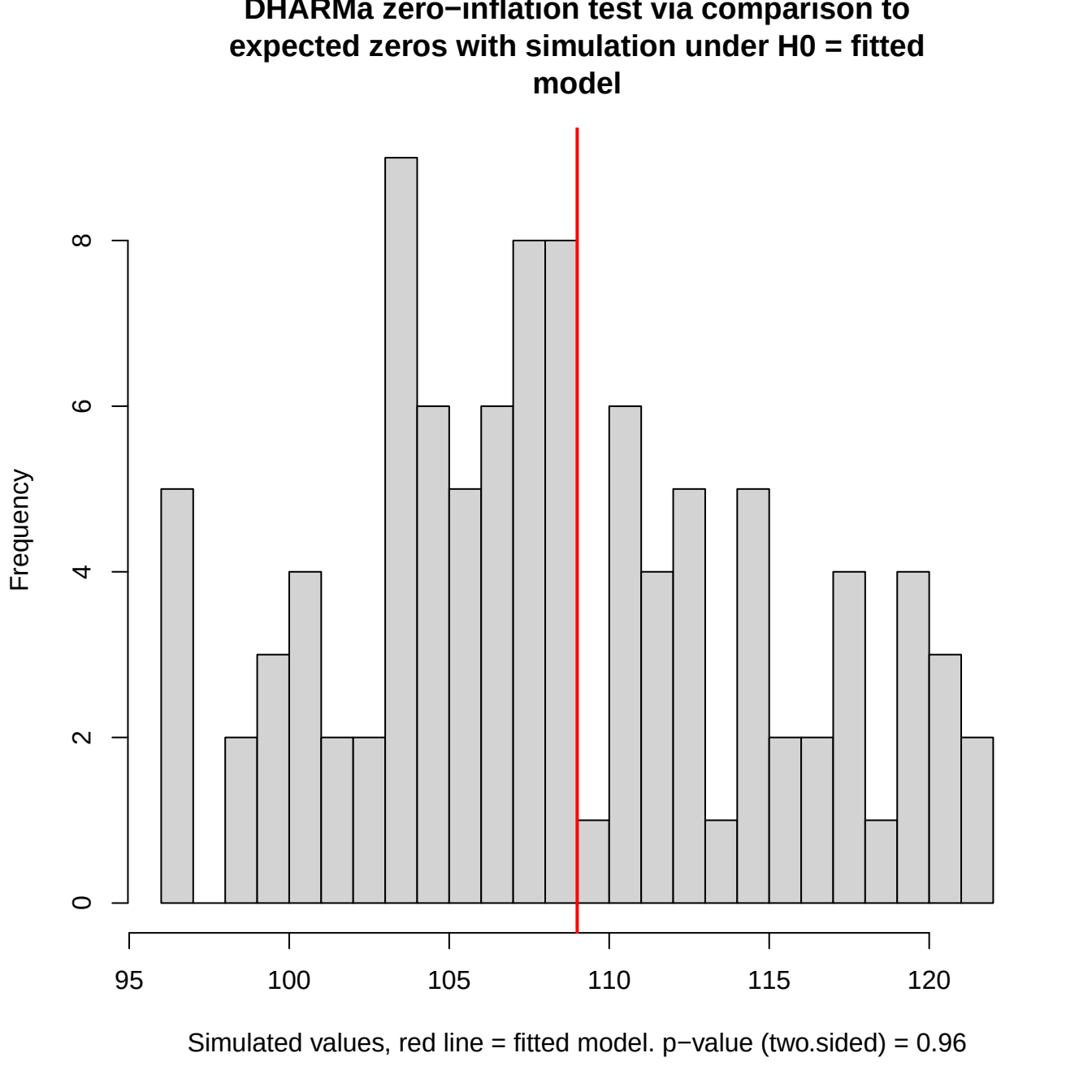

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
194
195
196
197
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

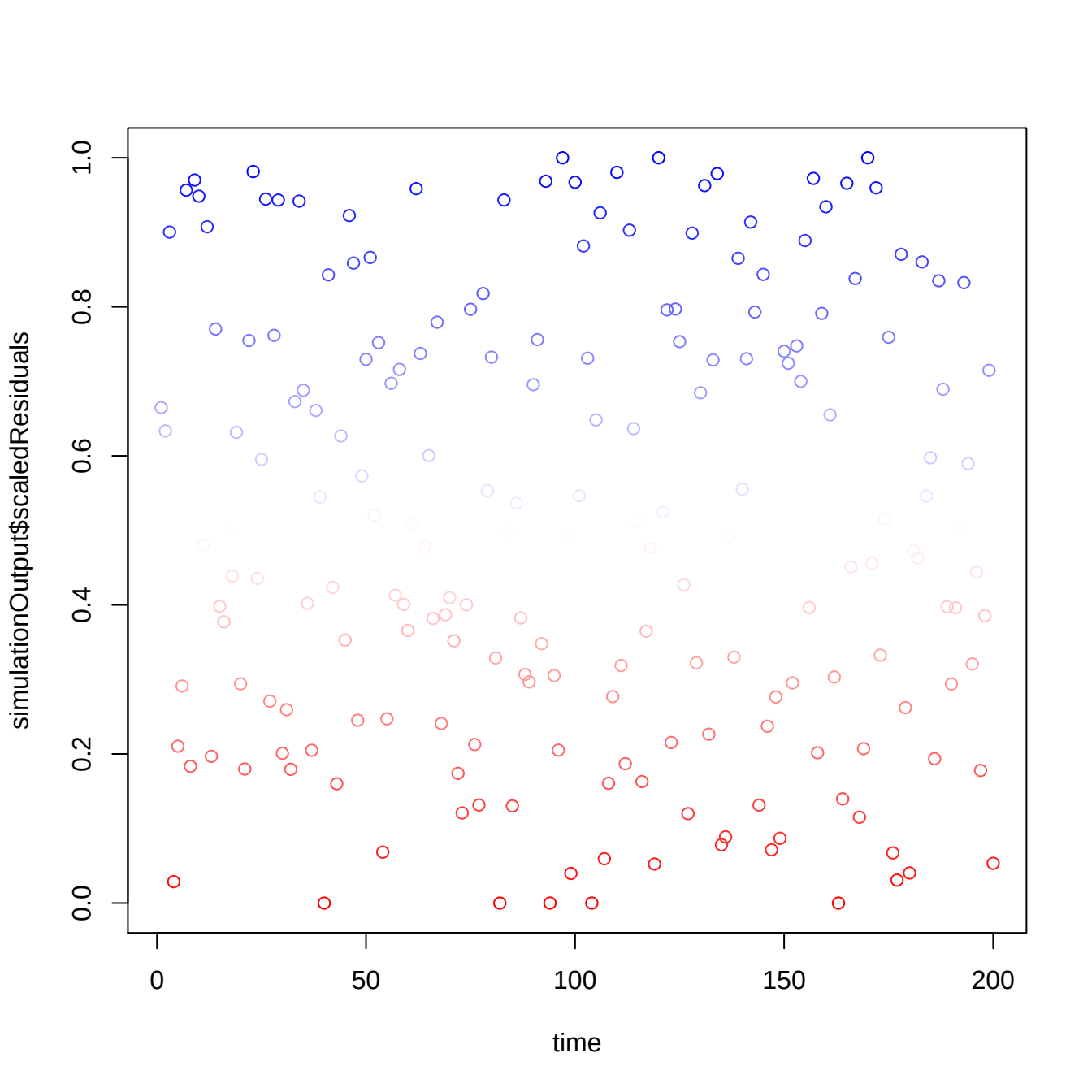

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
60
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

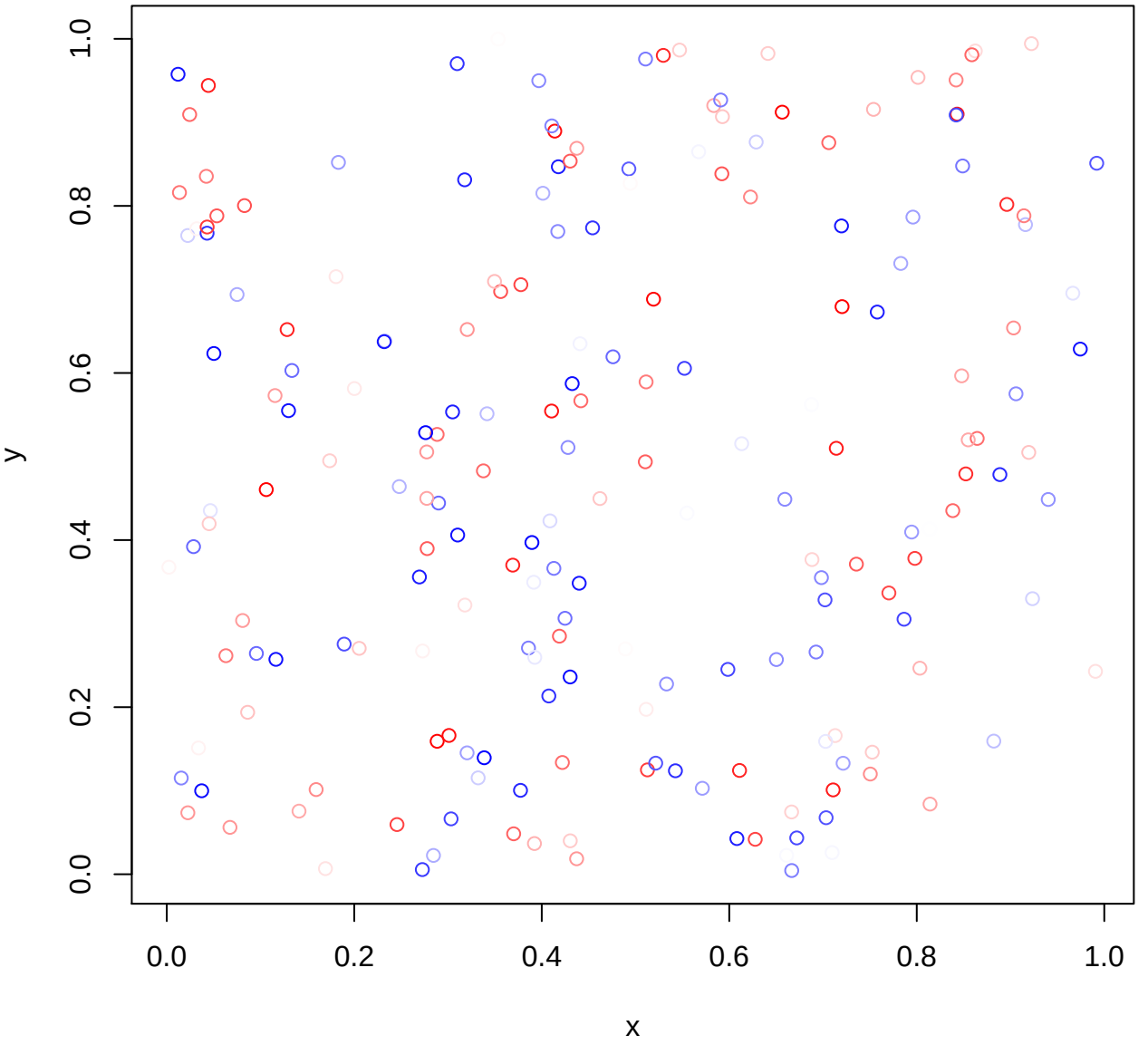

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

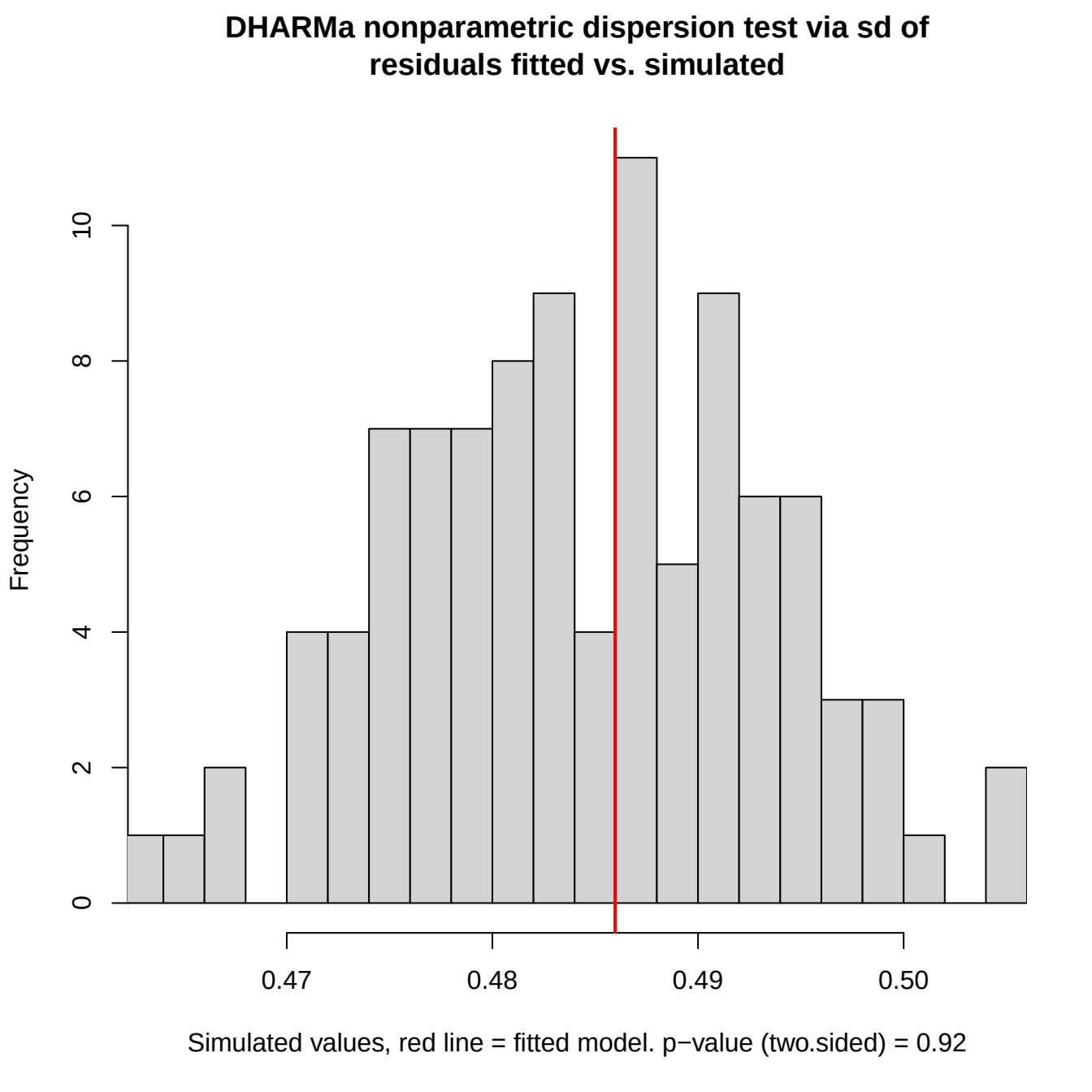

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

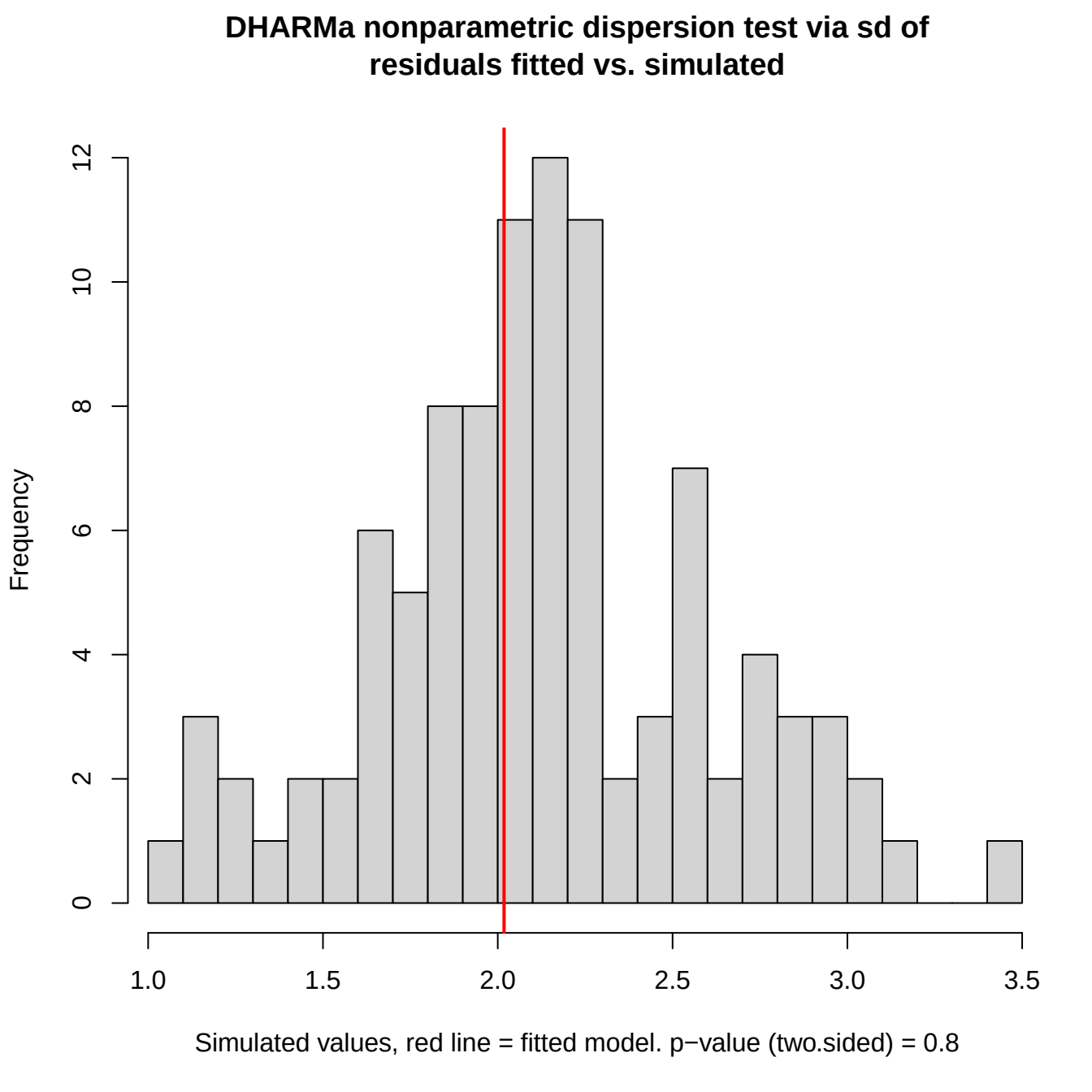

QQ plot residuals
KS test: p= 0.87496
Deviation n.s.
Outlier test: p= 0.63587
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

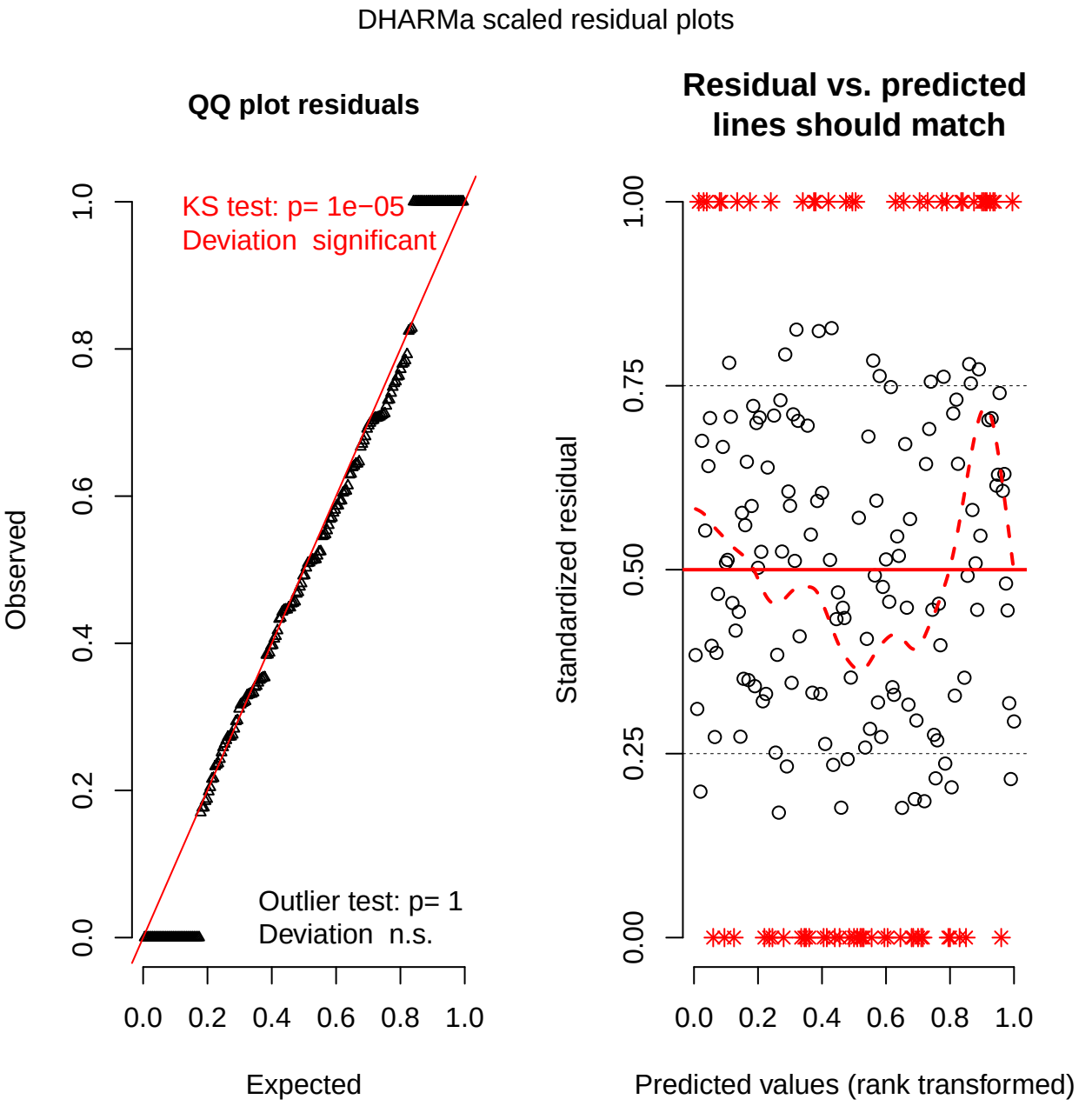

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
95
100
105
110
115
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

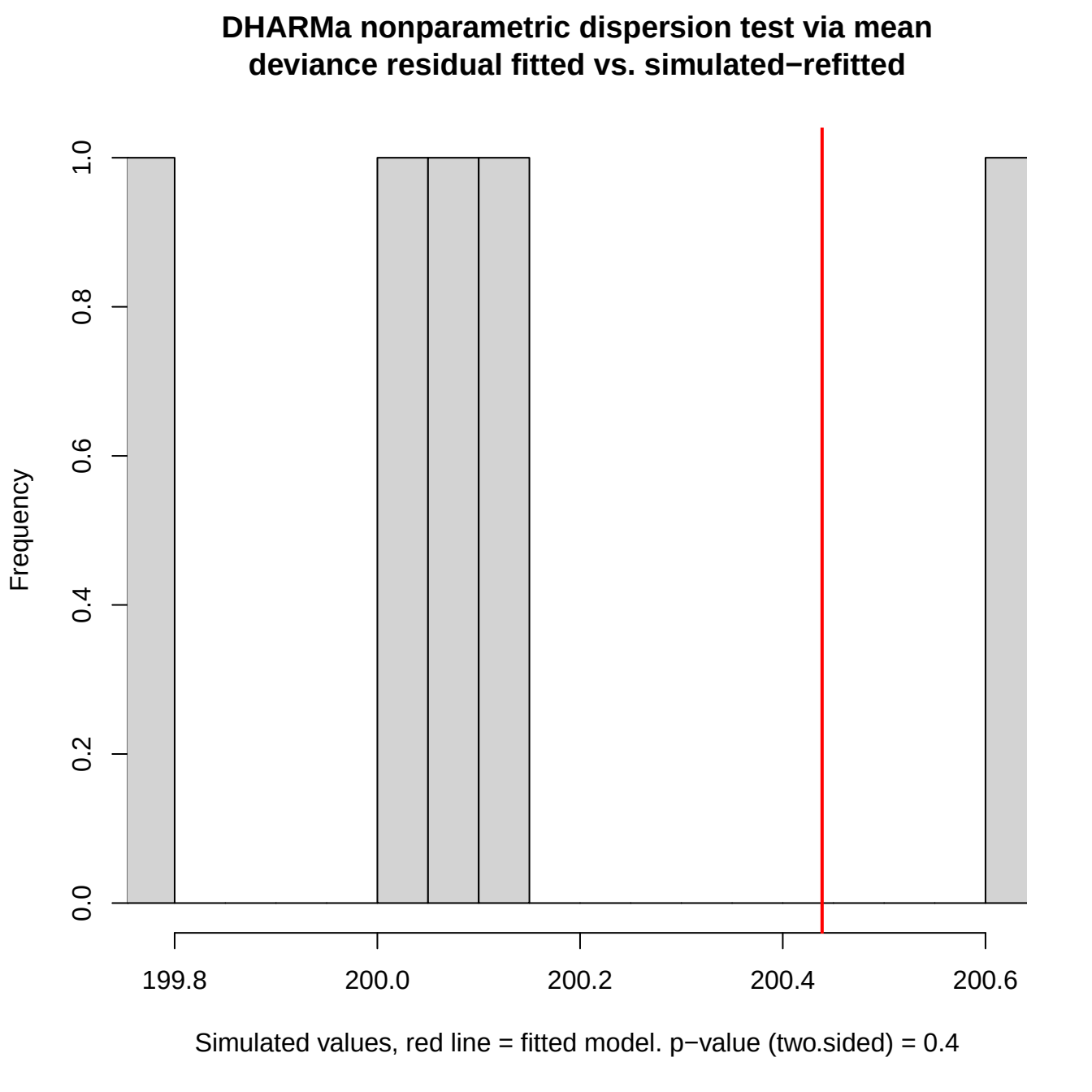

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

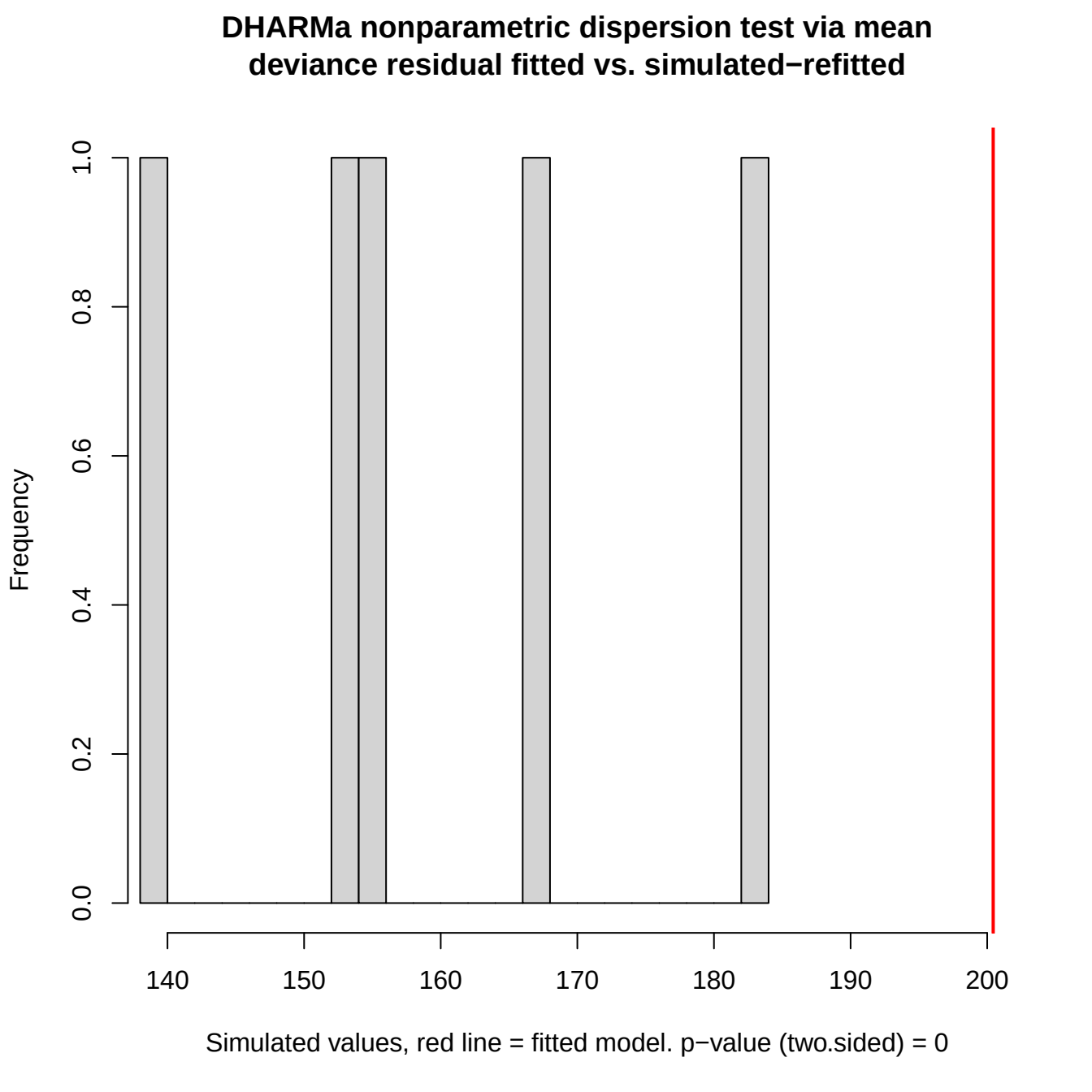

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

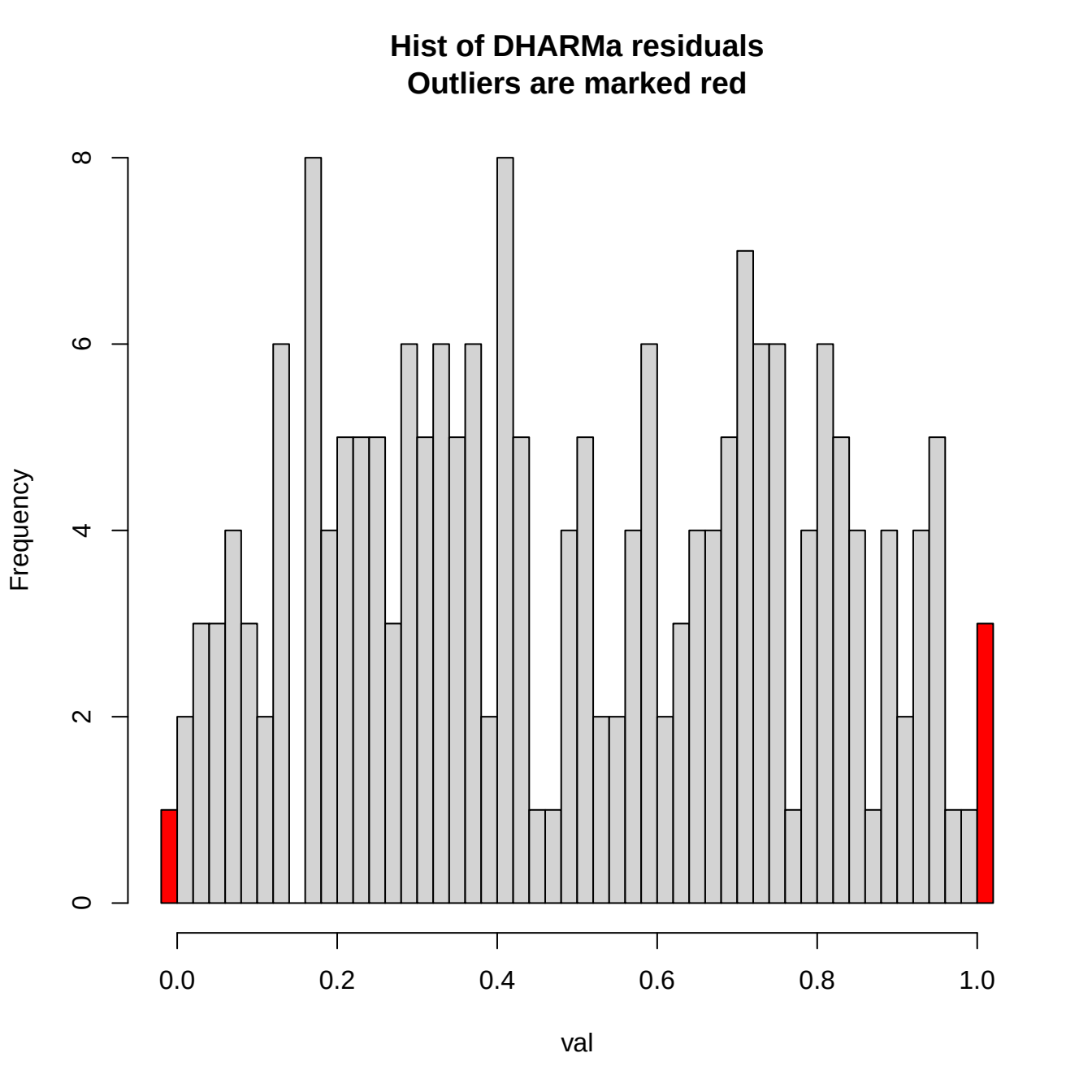

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

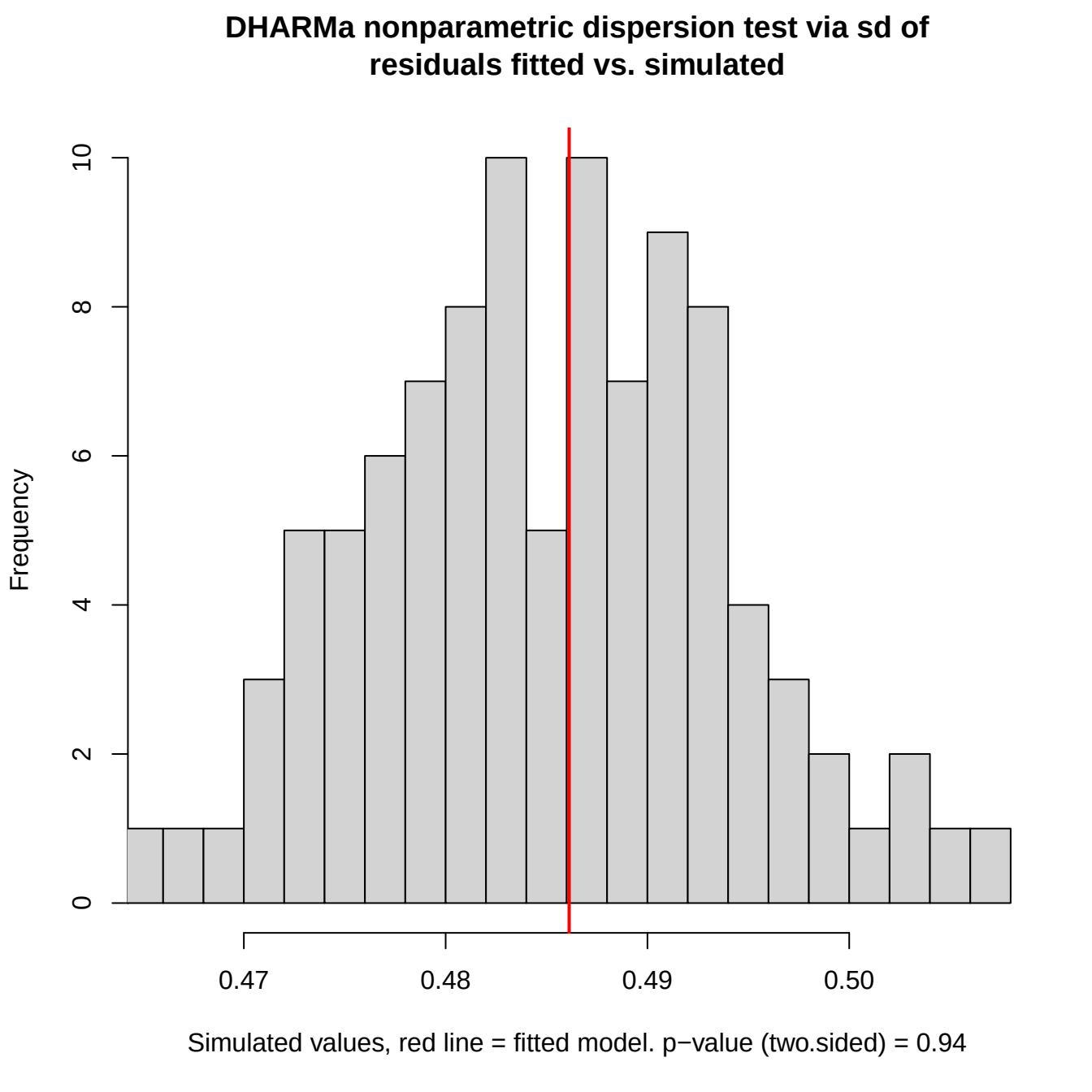

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

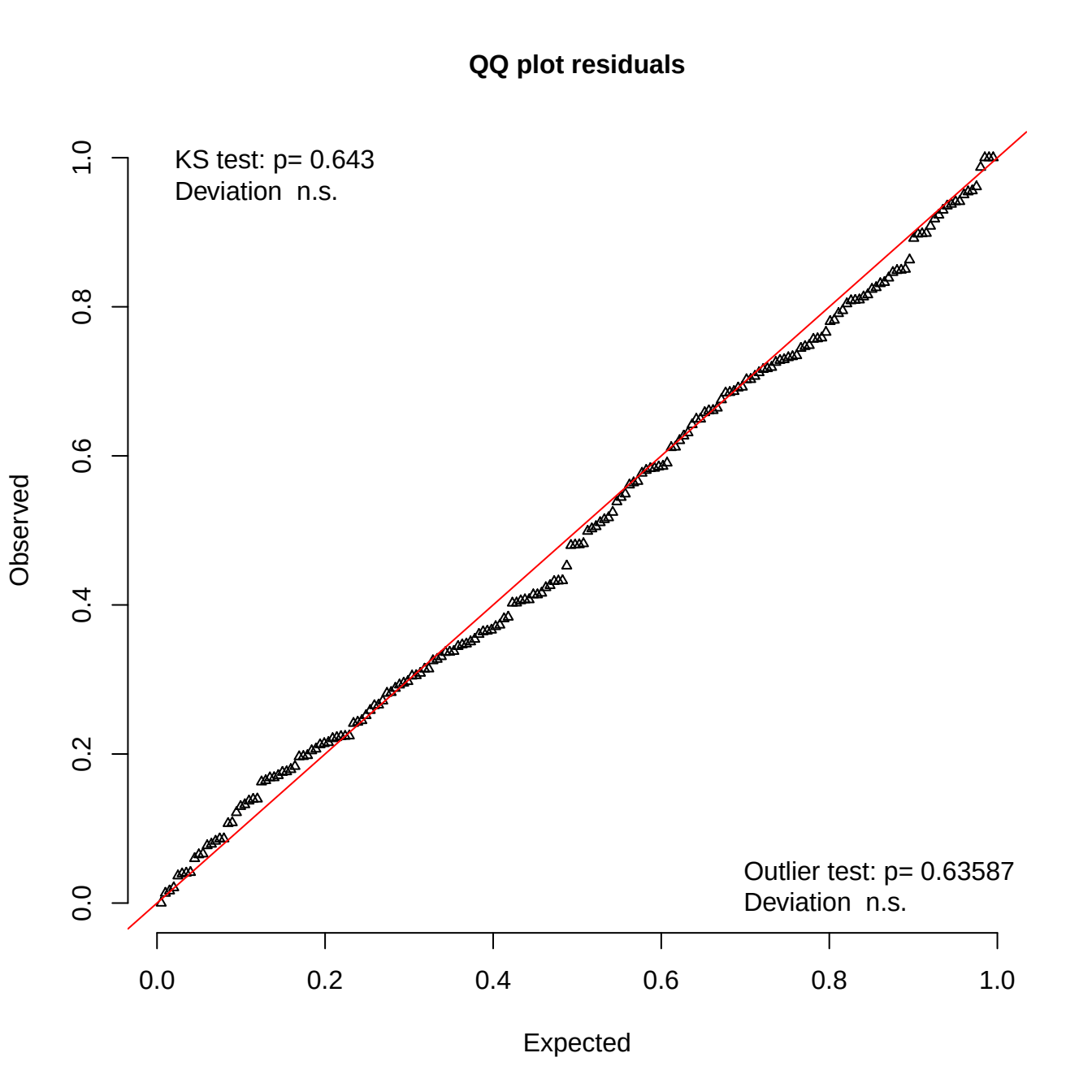

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 1e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

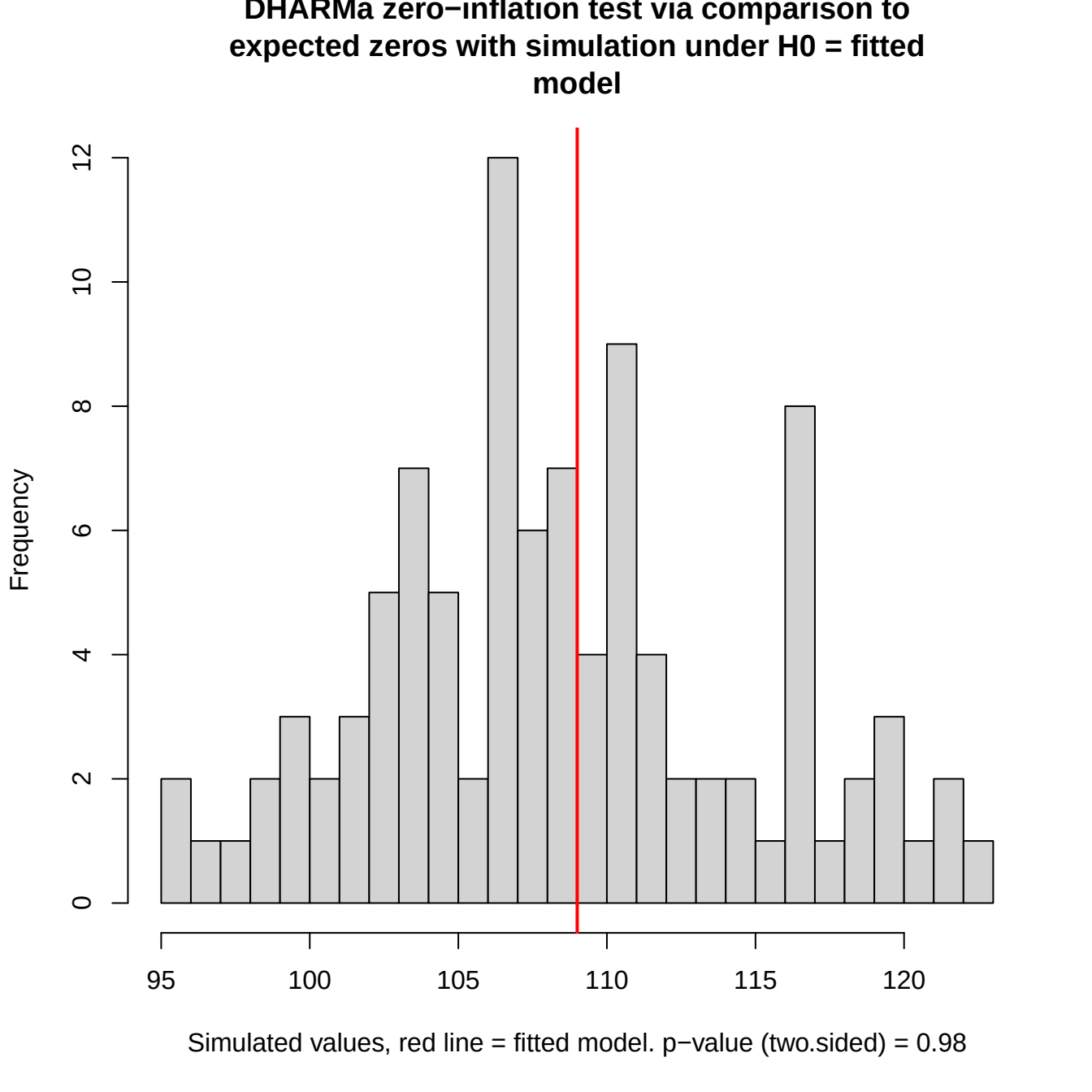

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
199.8
200.0
200.2
200.4
200.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

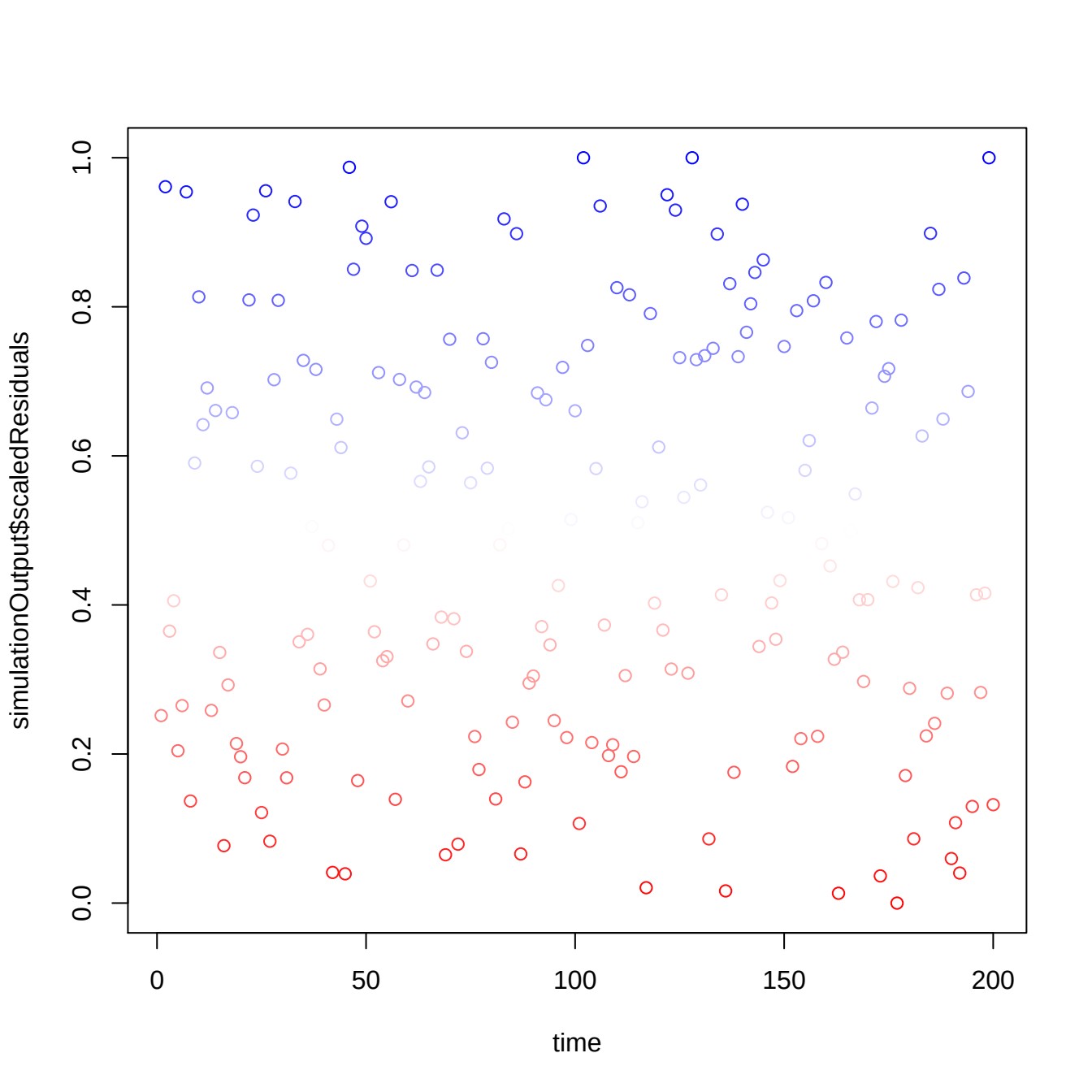

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
140
150
160
170
180
190
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

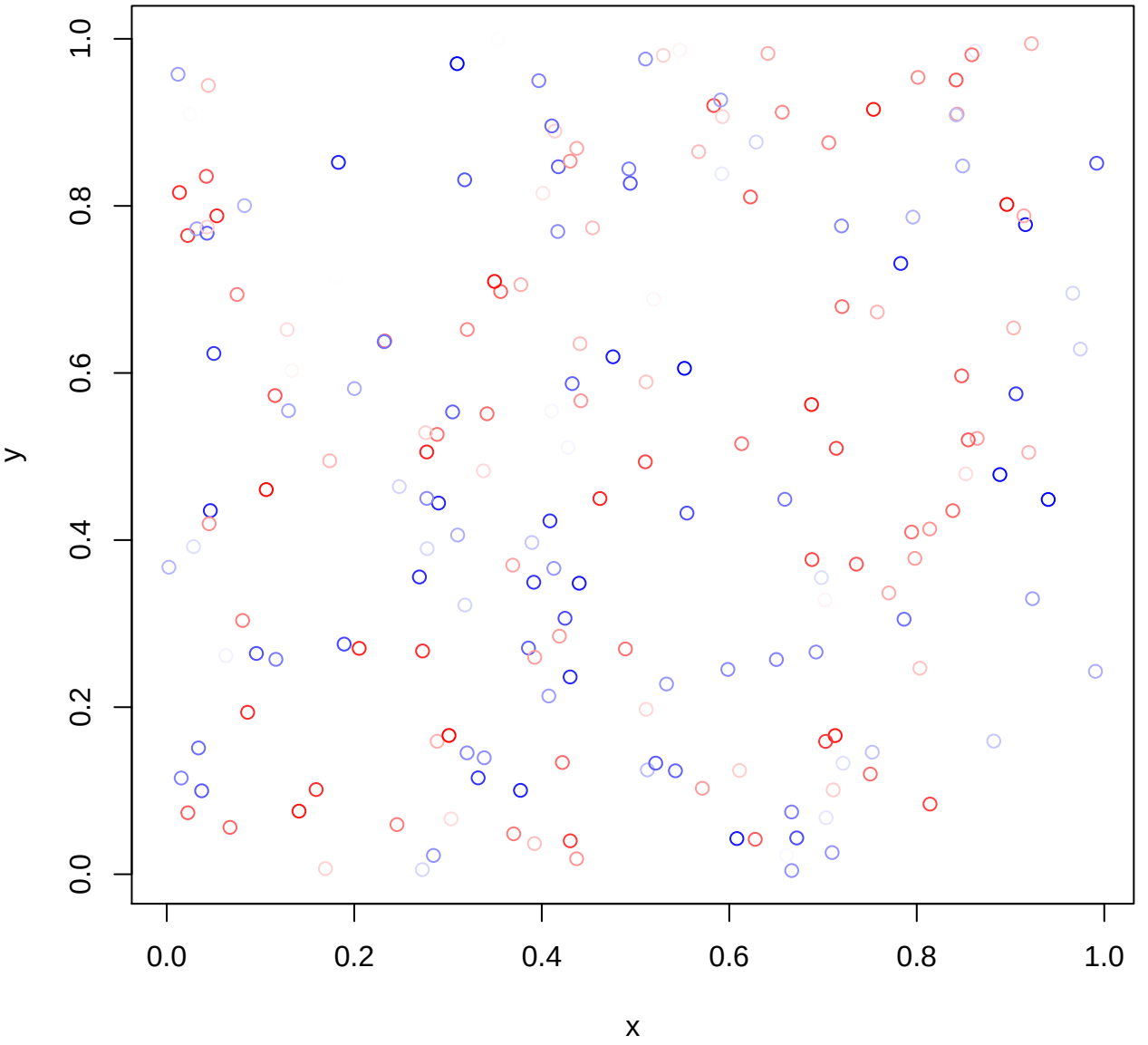

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

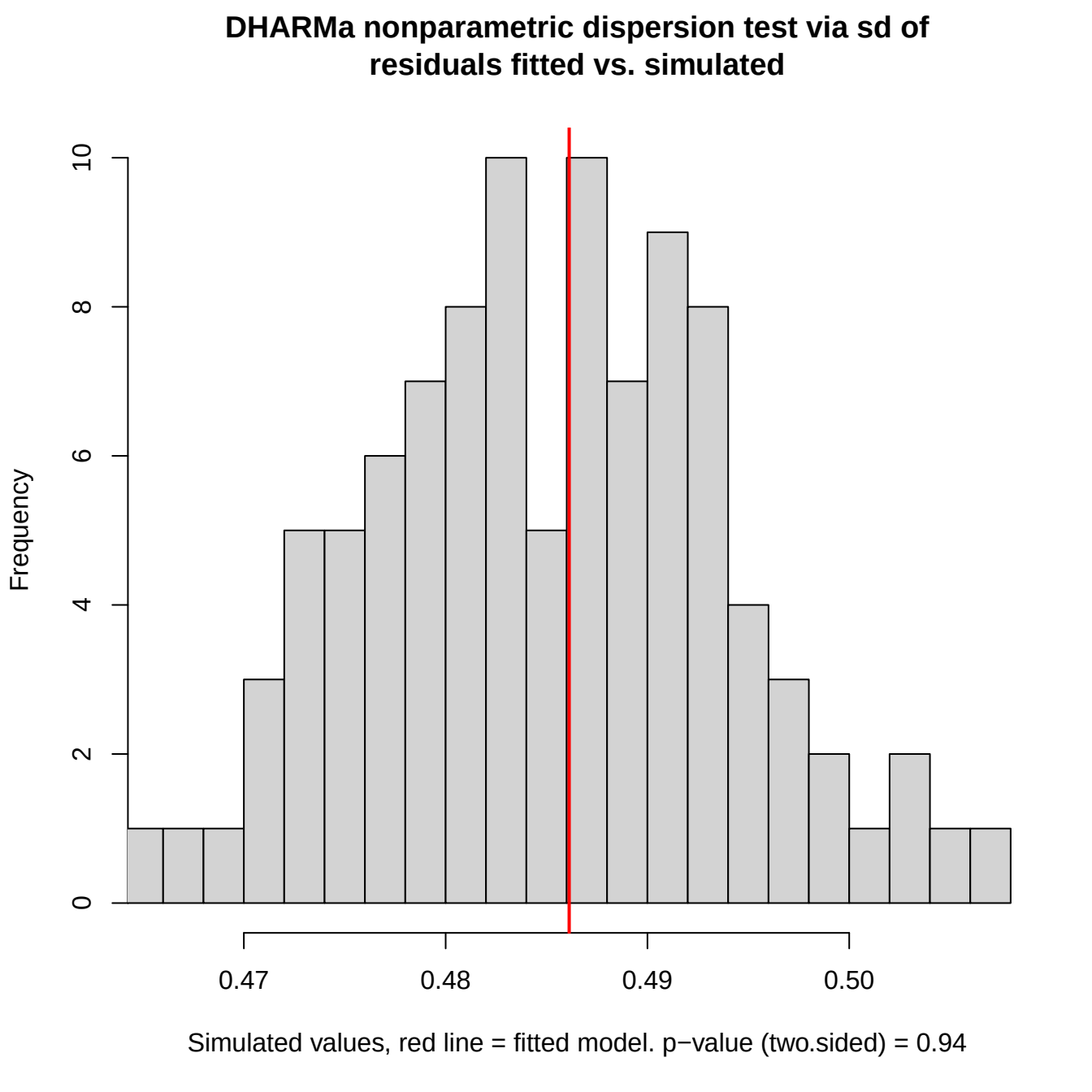

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

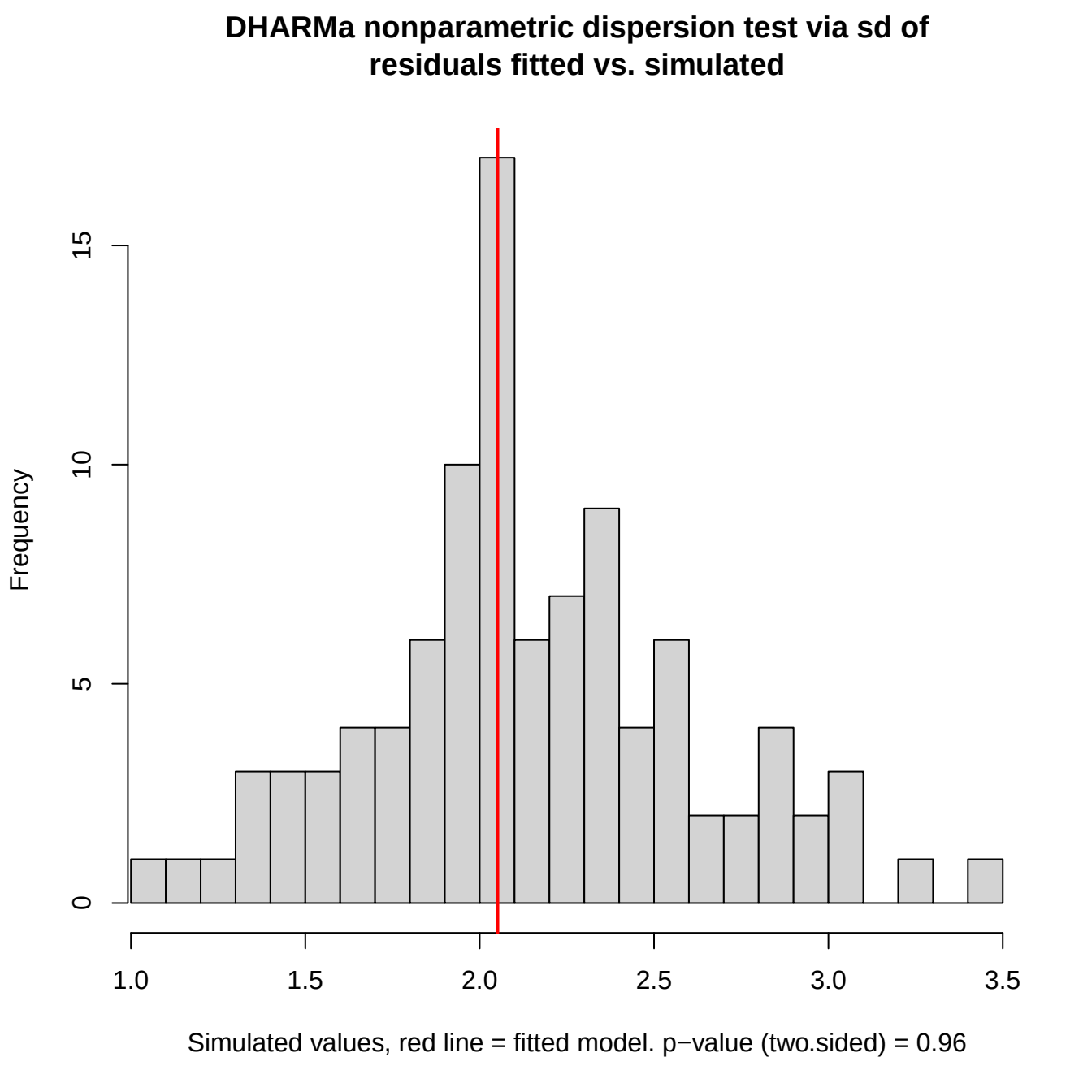

QQ plot residuals
KS test: p= 0.643
Deviation n.s.
Outlier test: p= 0.63587
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

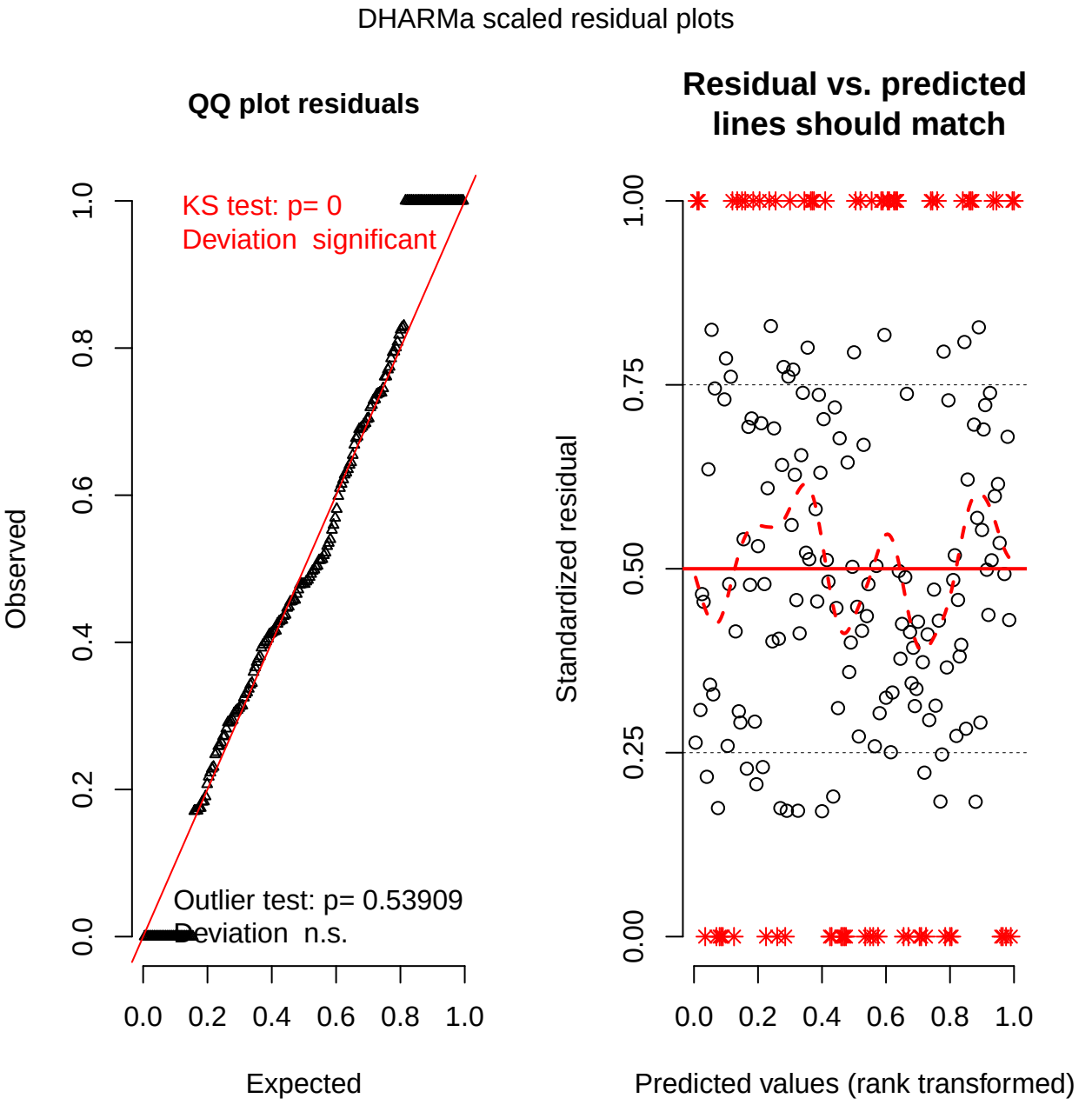

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
95
100
105
110
115
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

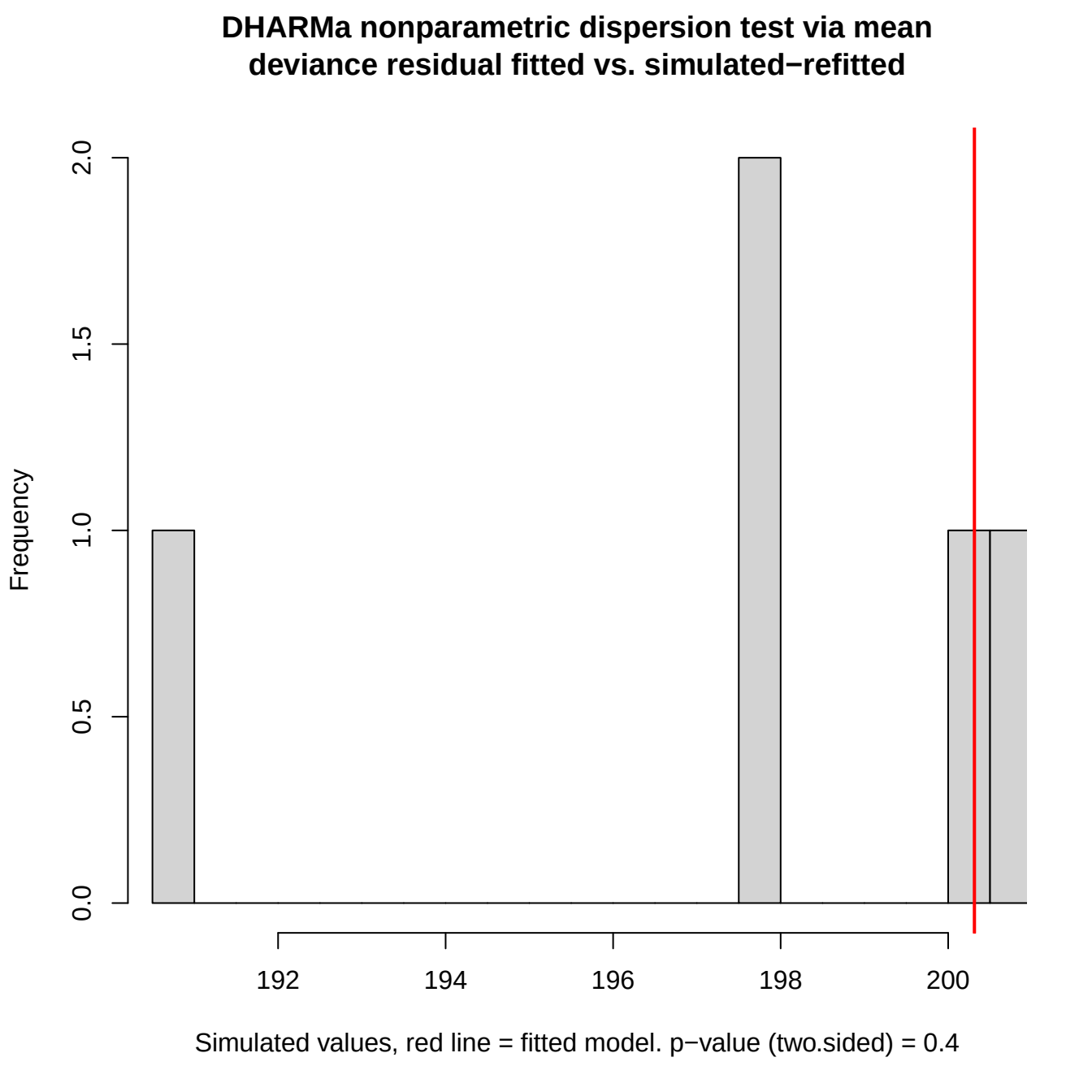

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

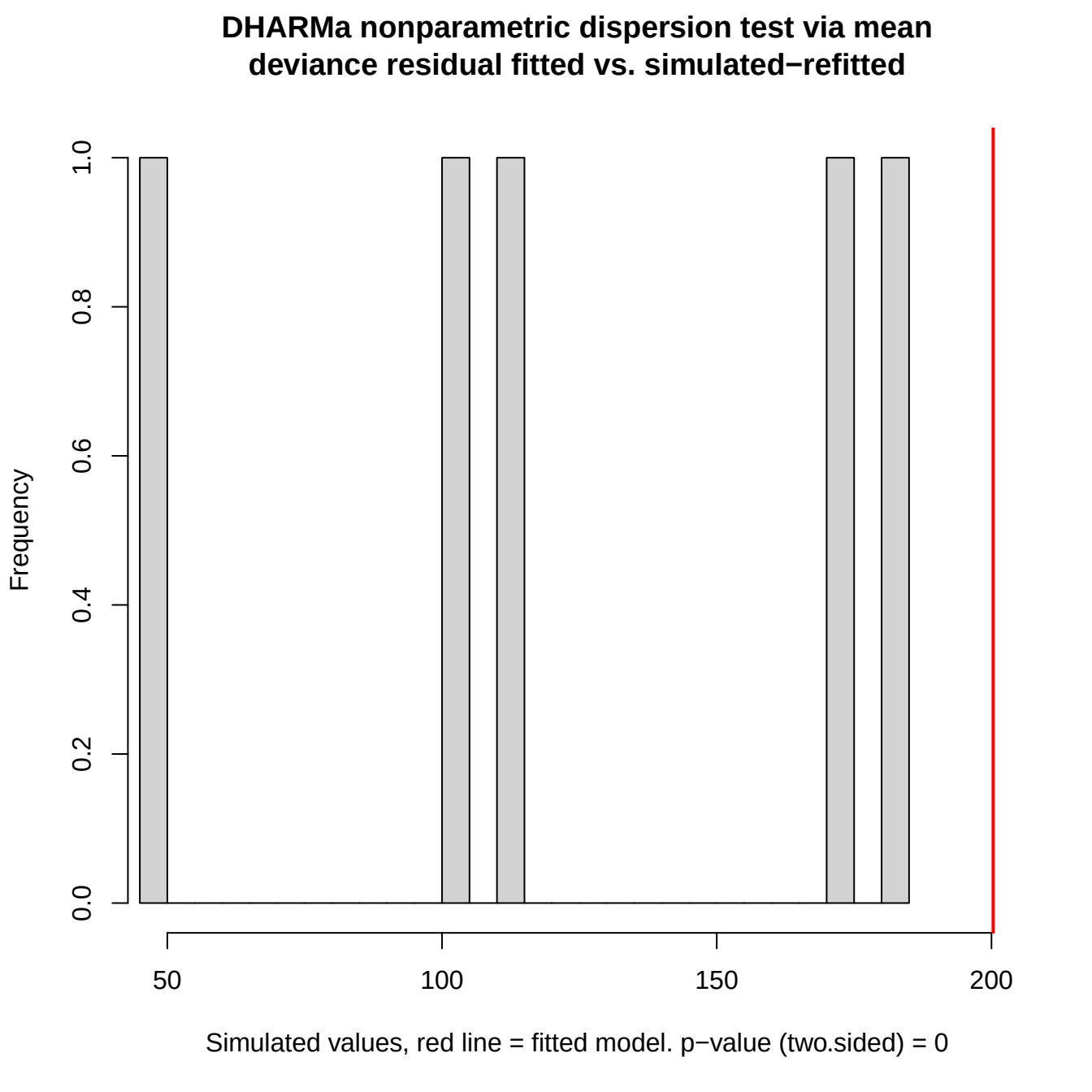

y
x
0.0
0.2
0.4
0.6
0.8
1.0

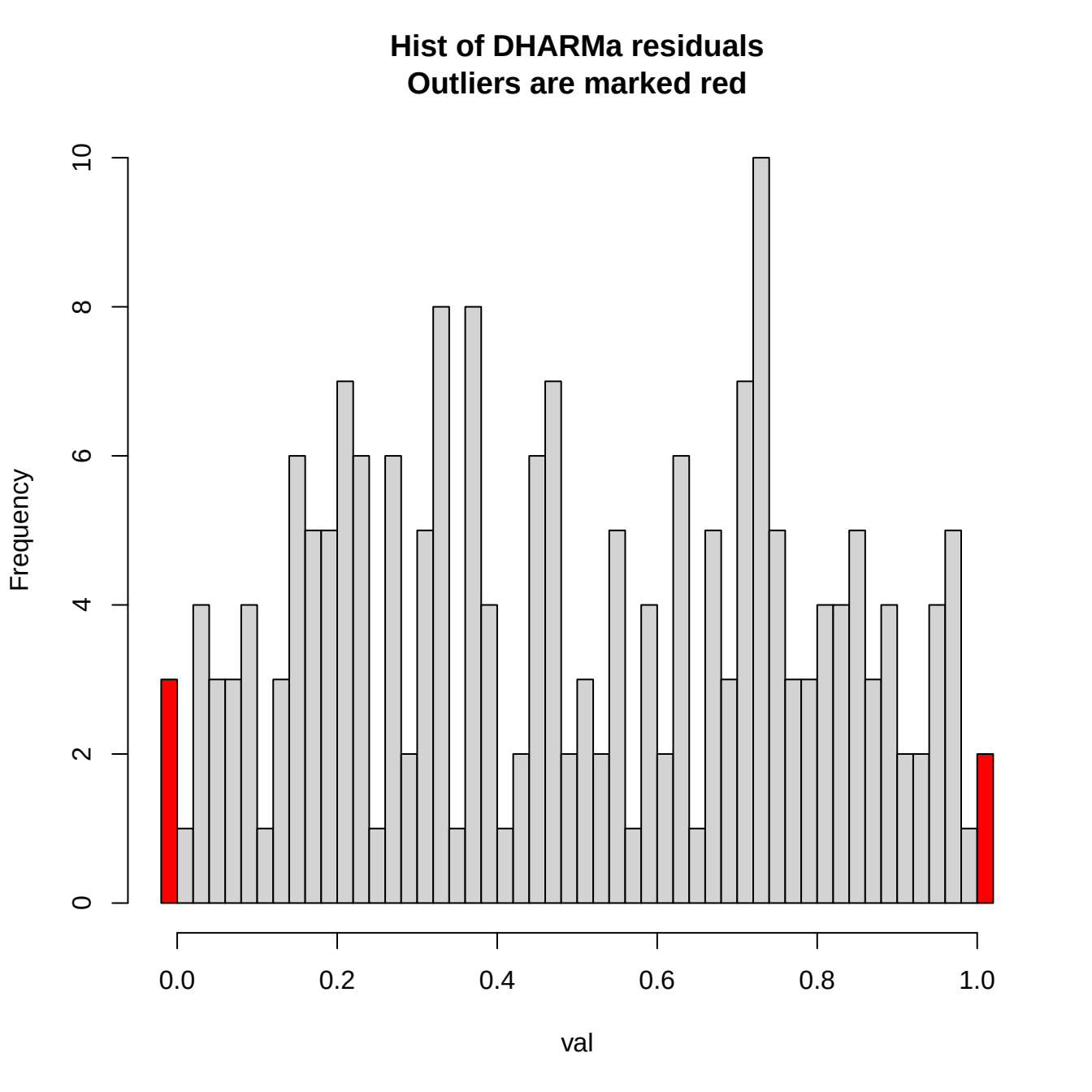

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

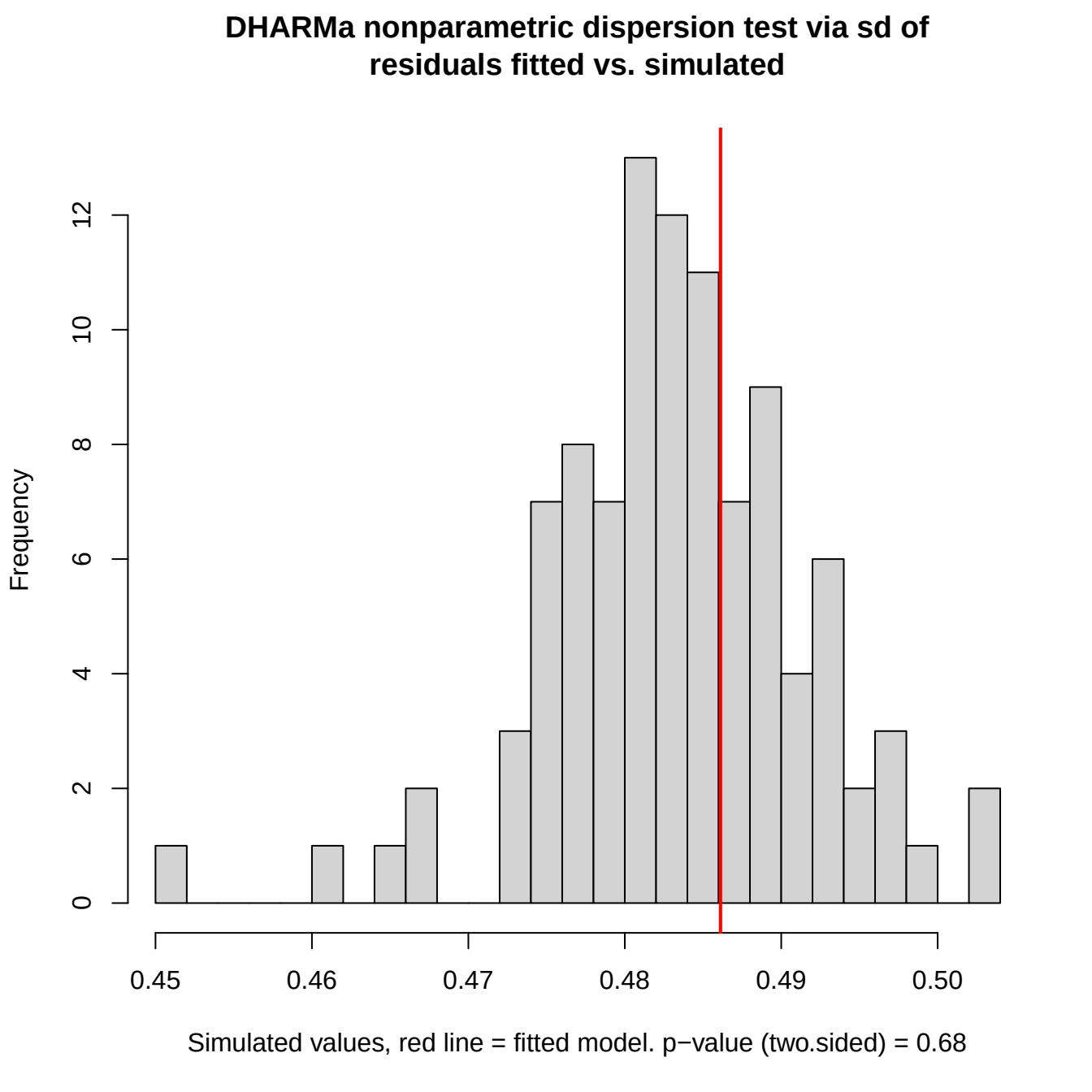

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

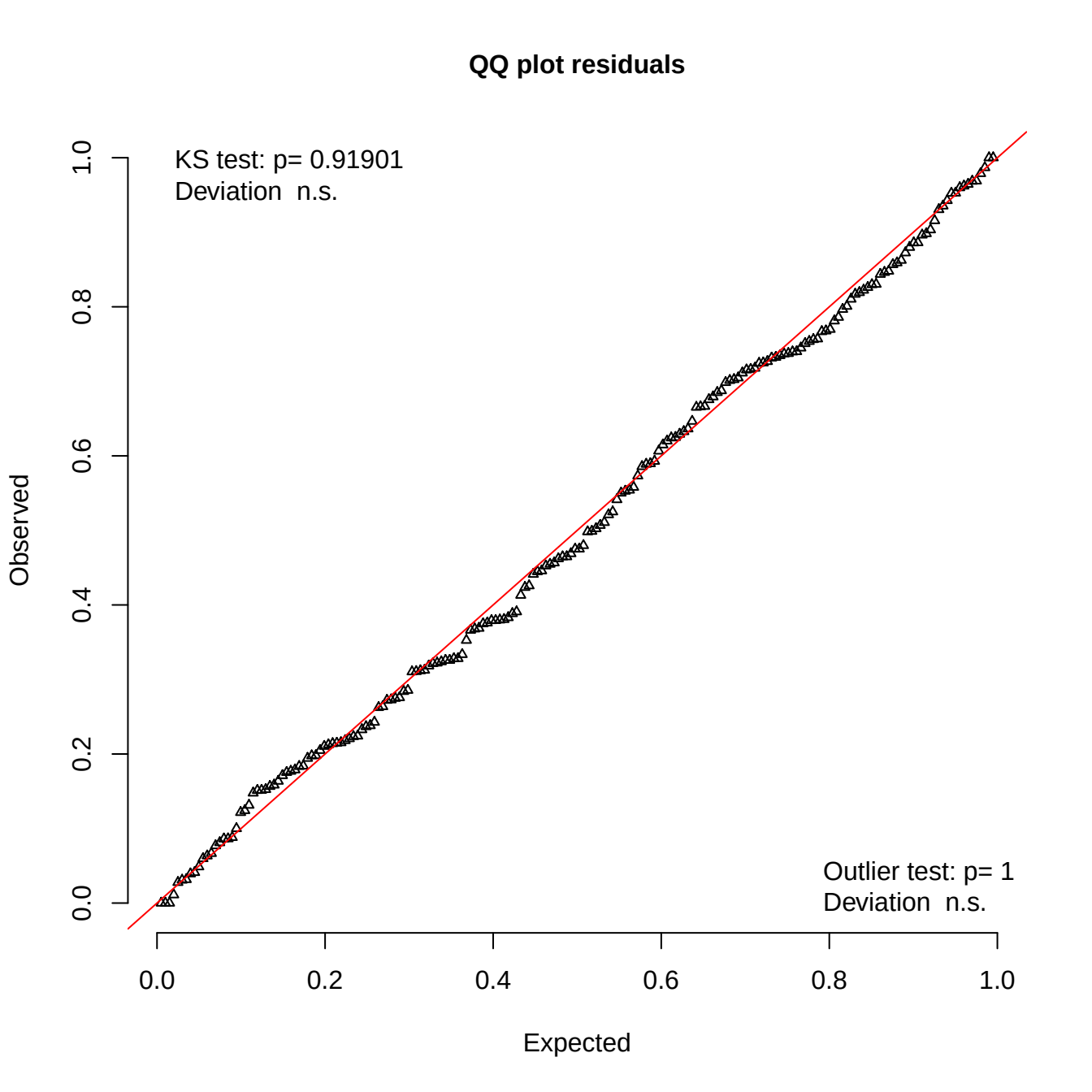

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.53909
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

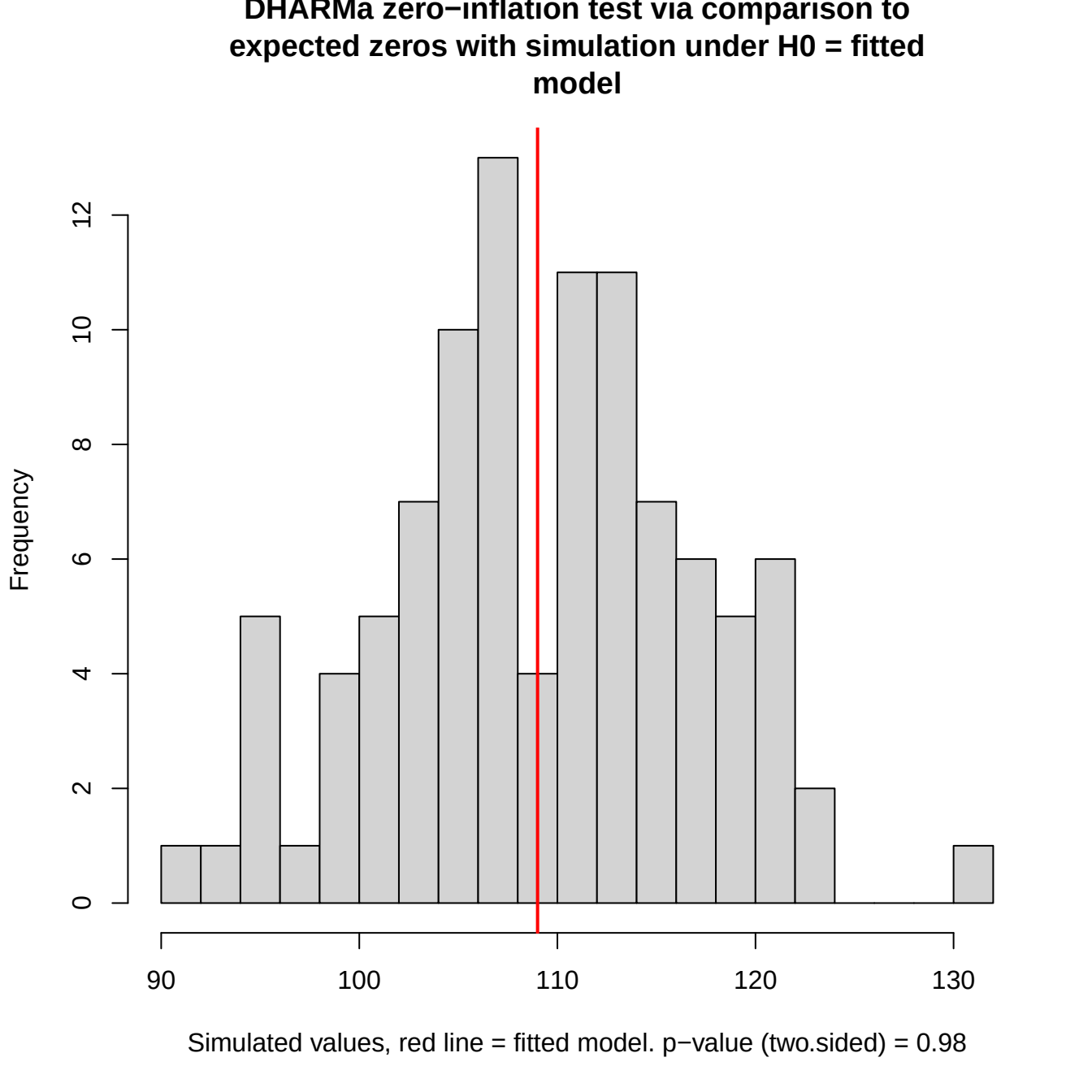

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

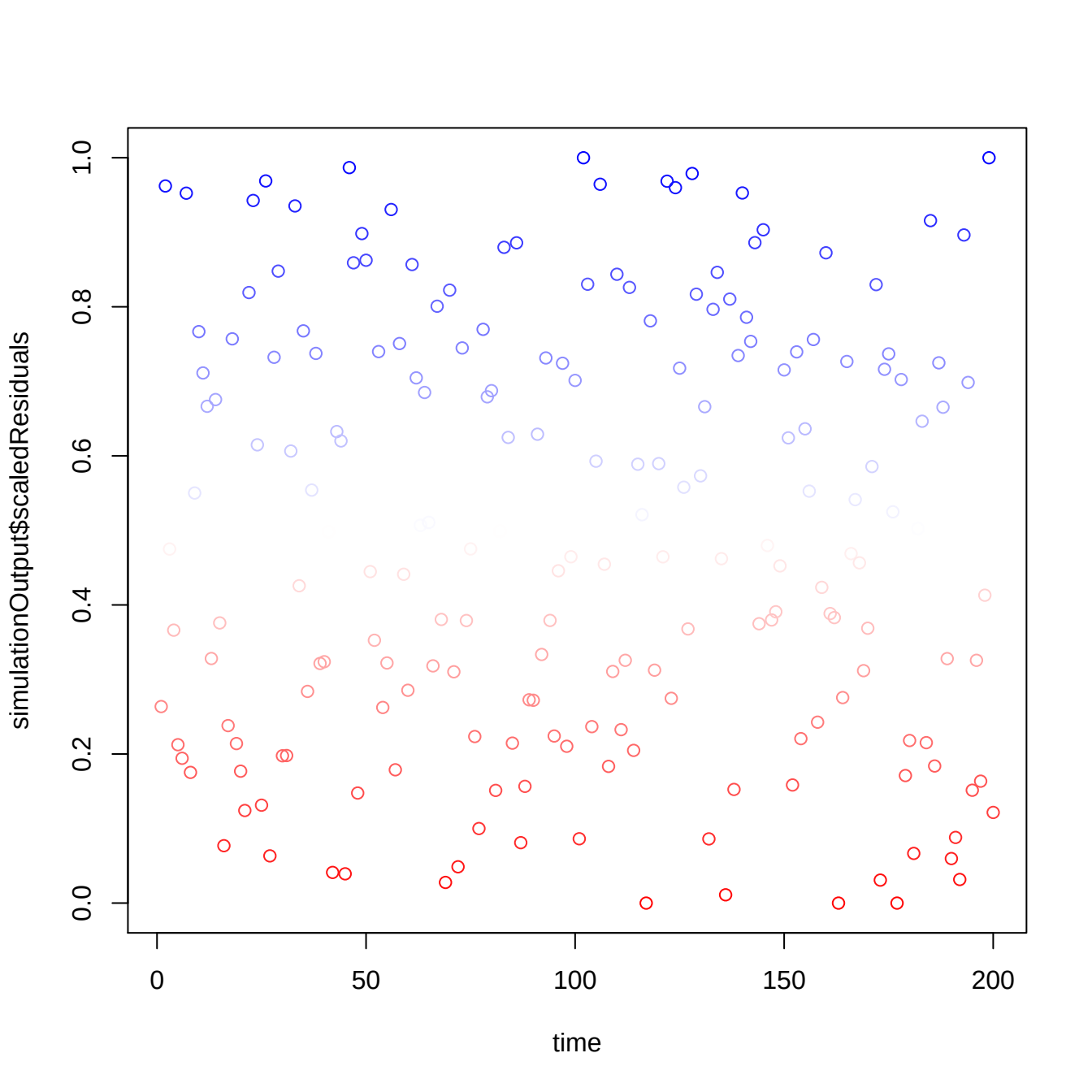

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

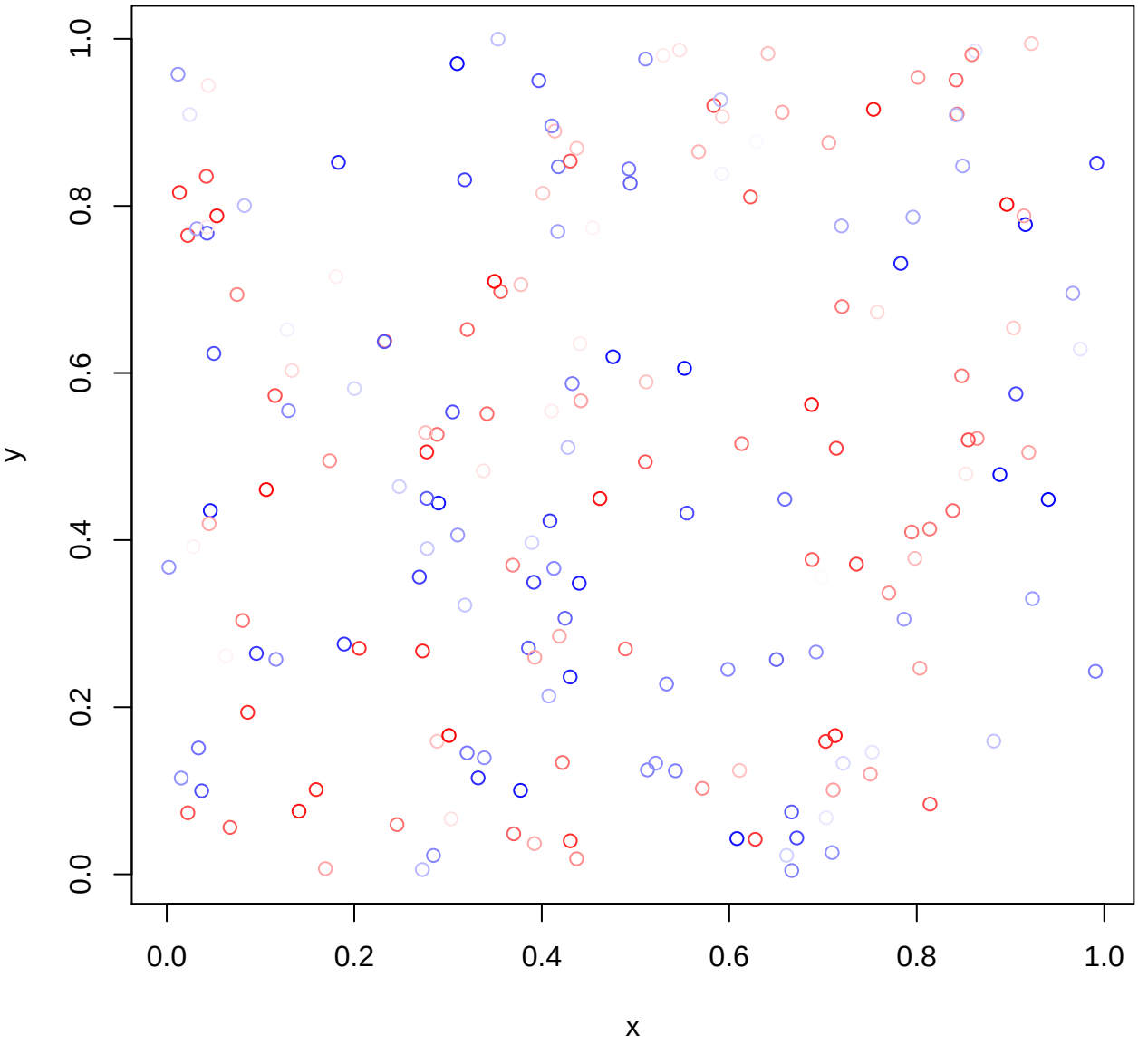

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

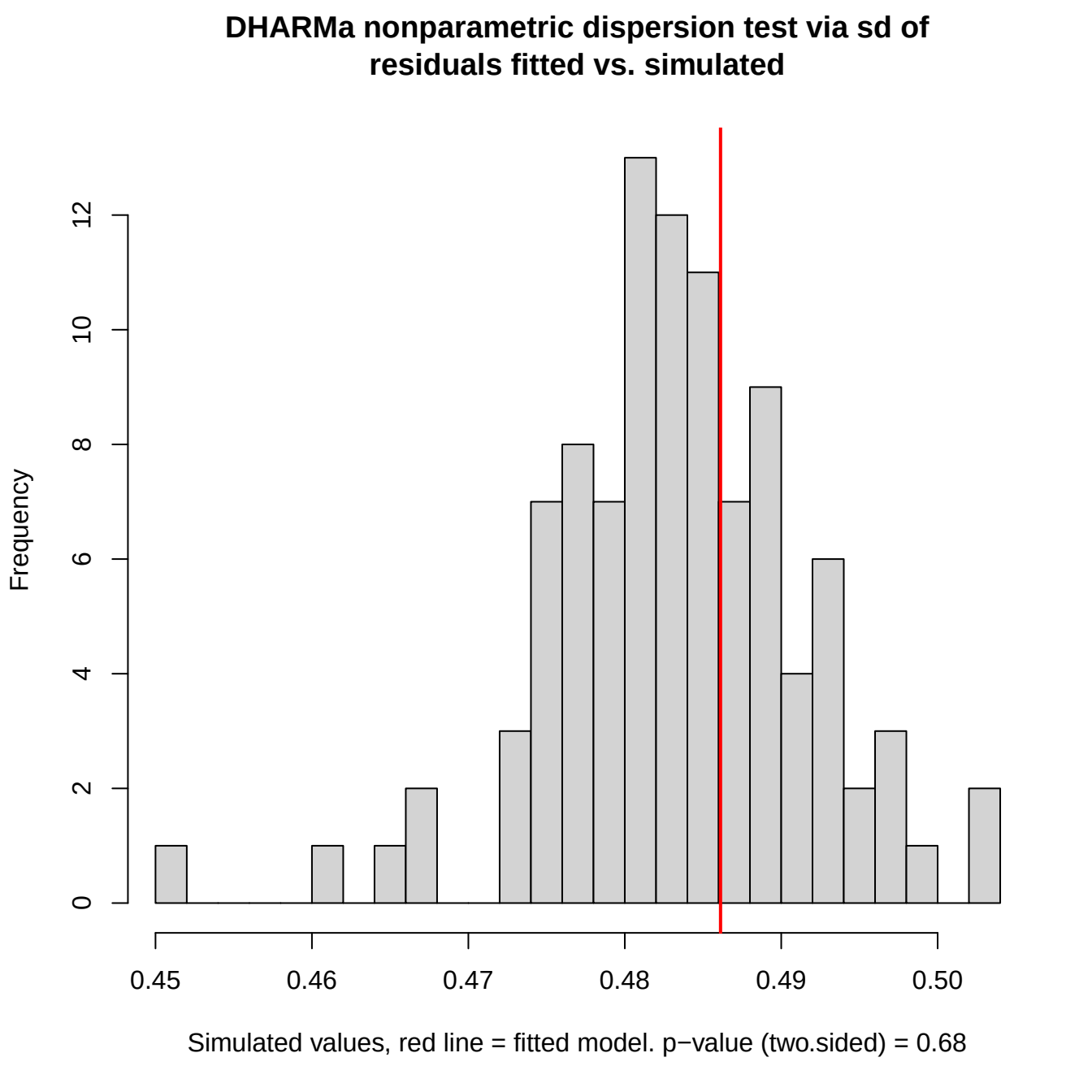

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.68

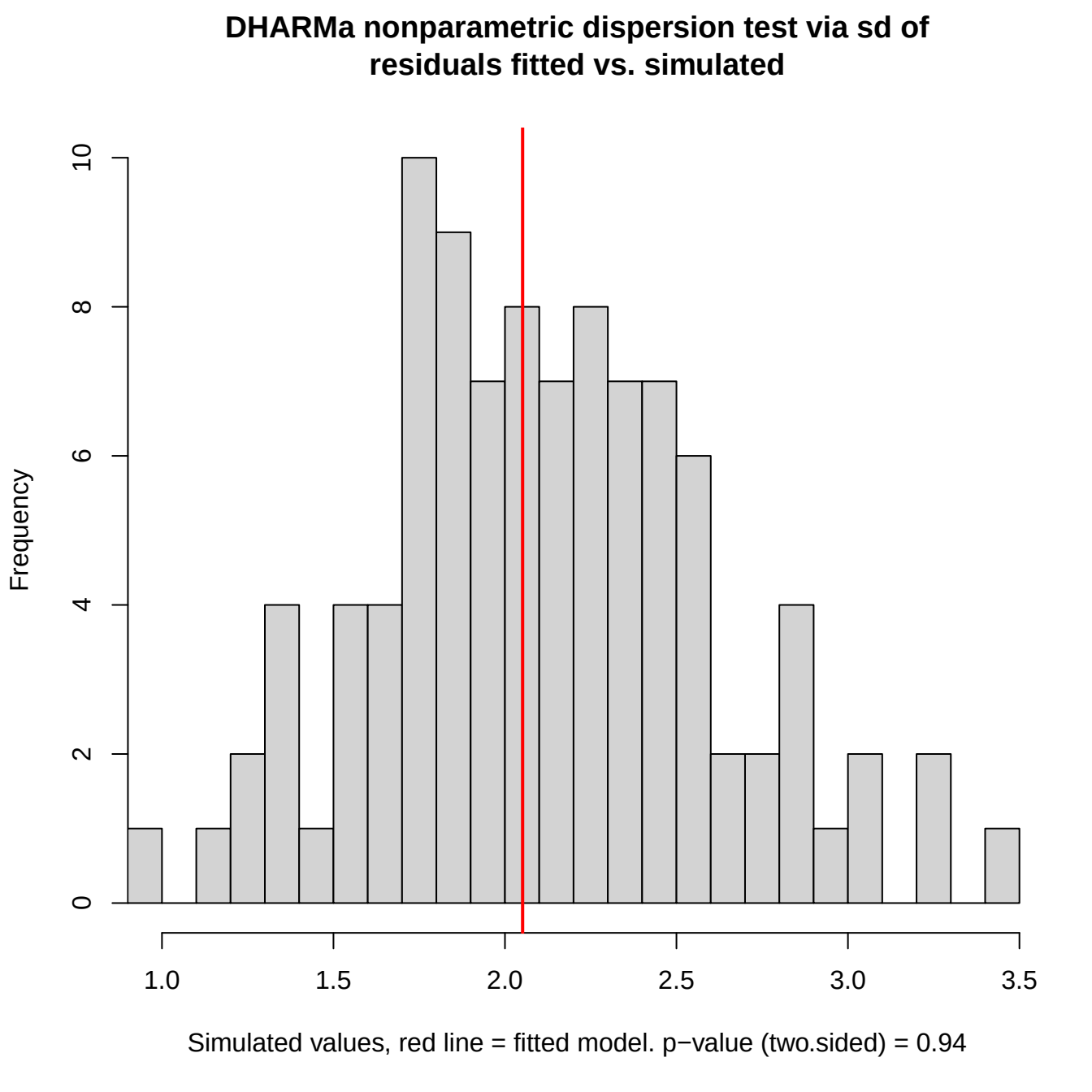

QQ plot residuals
KS test: p= 0.91901
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

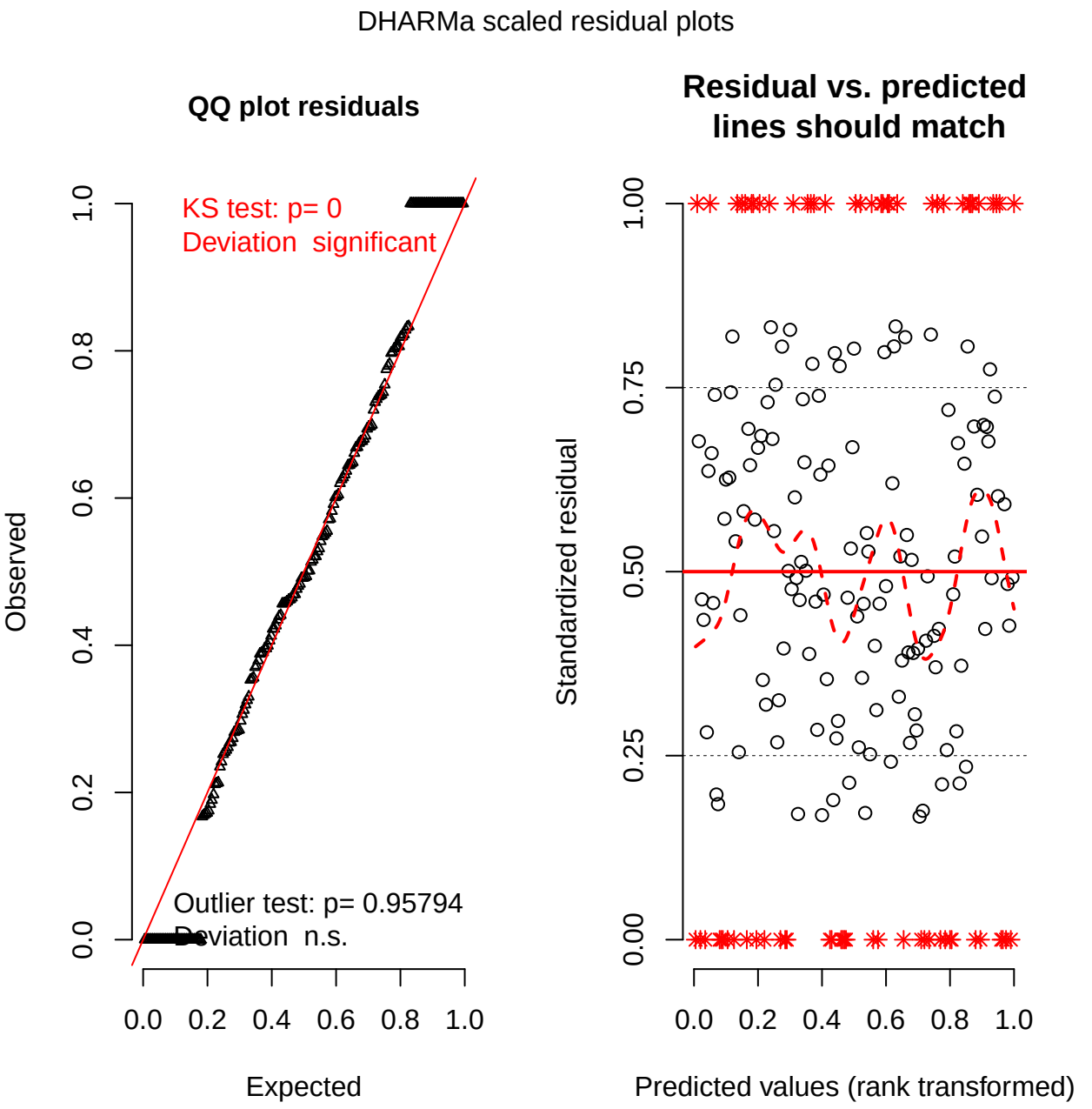

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
90
100
110
120
130
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

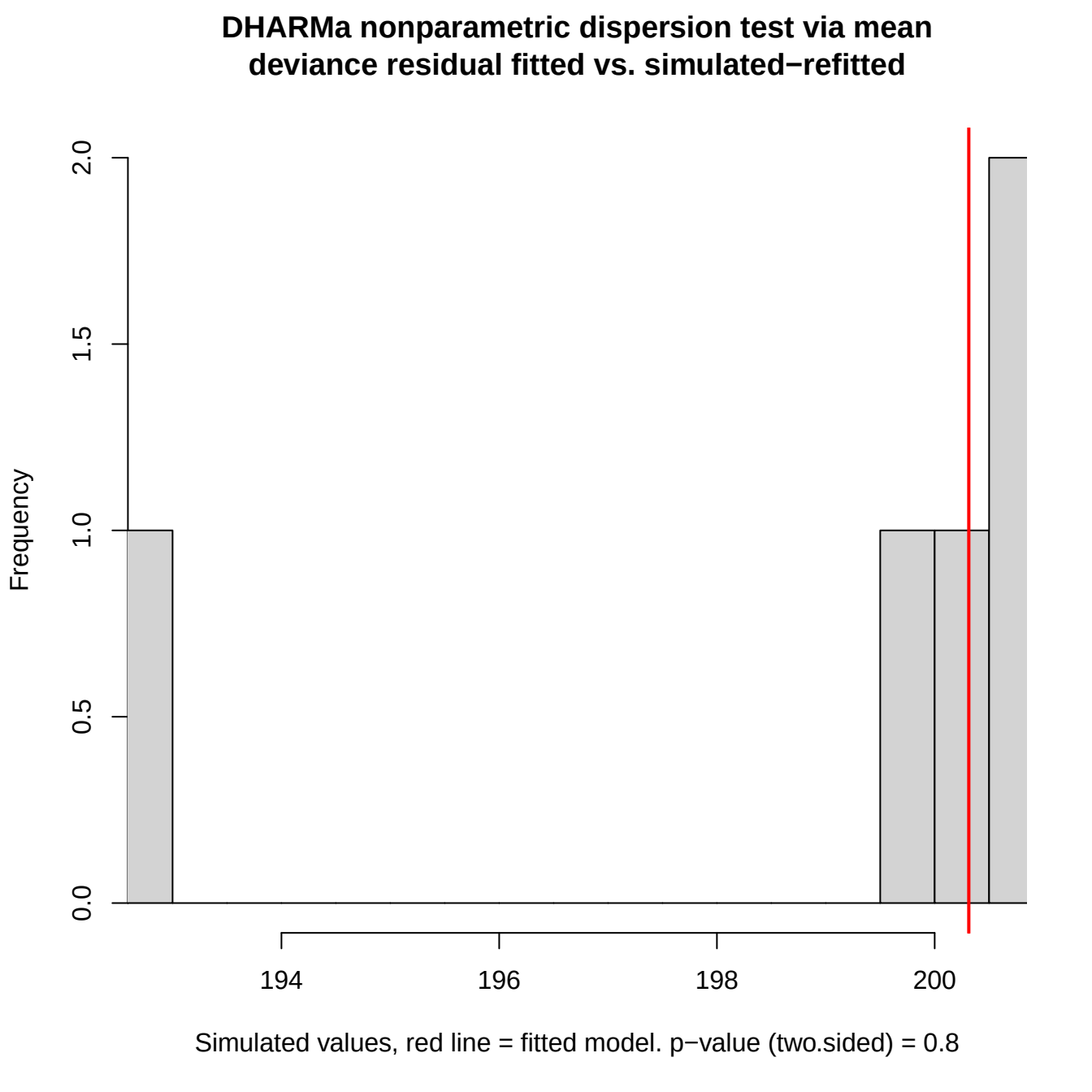

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

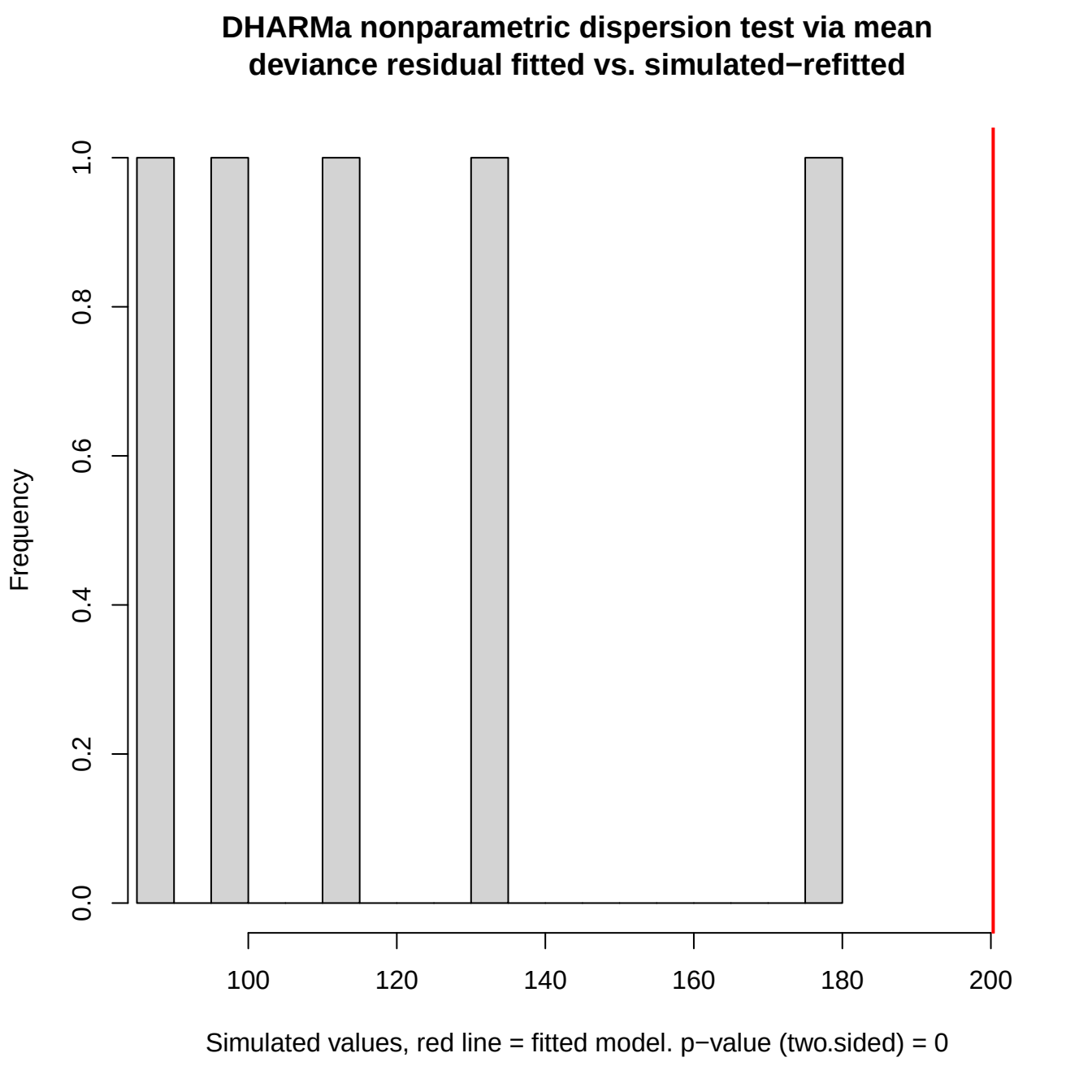

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

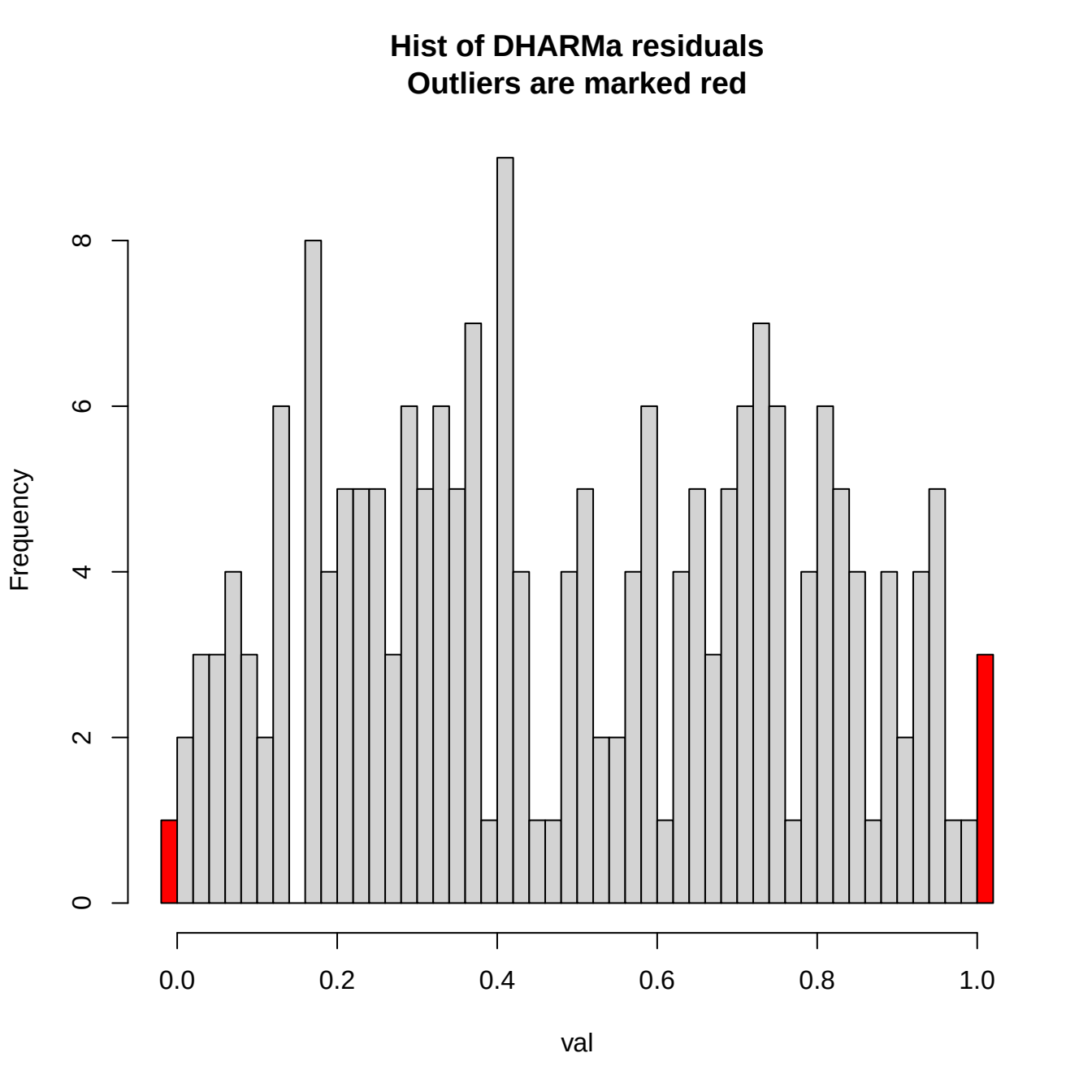

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.68

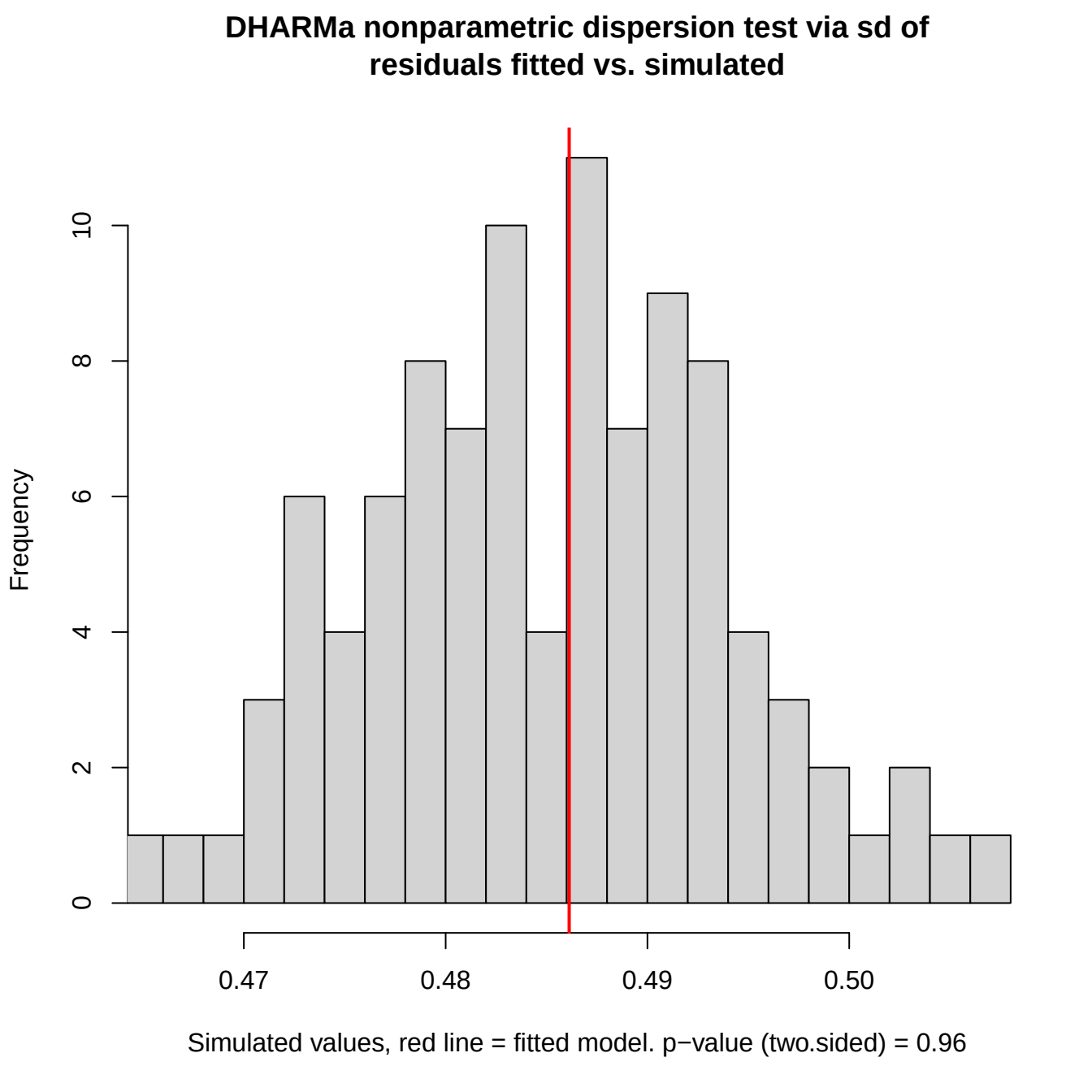

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

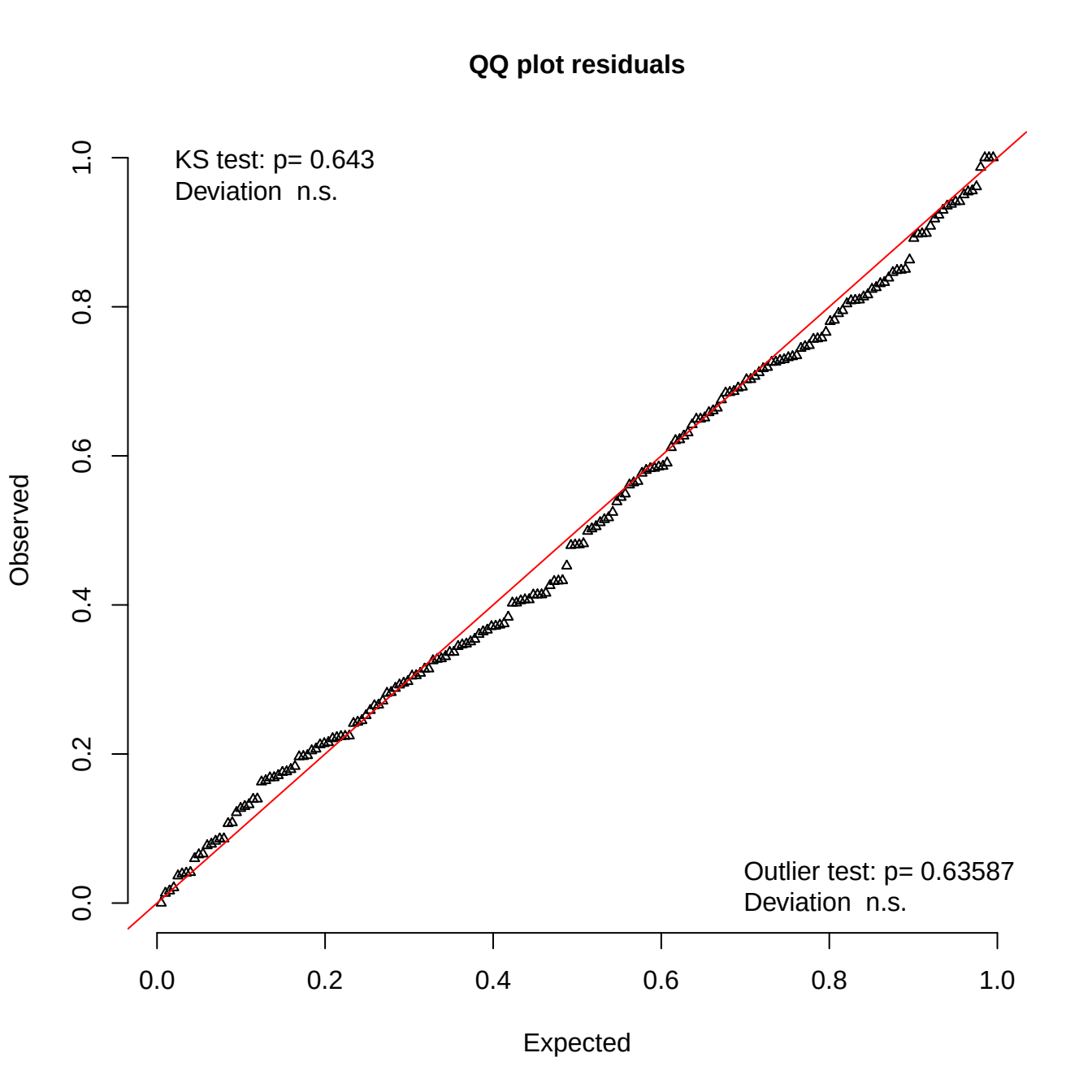

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.95794
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

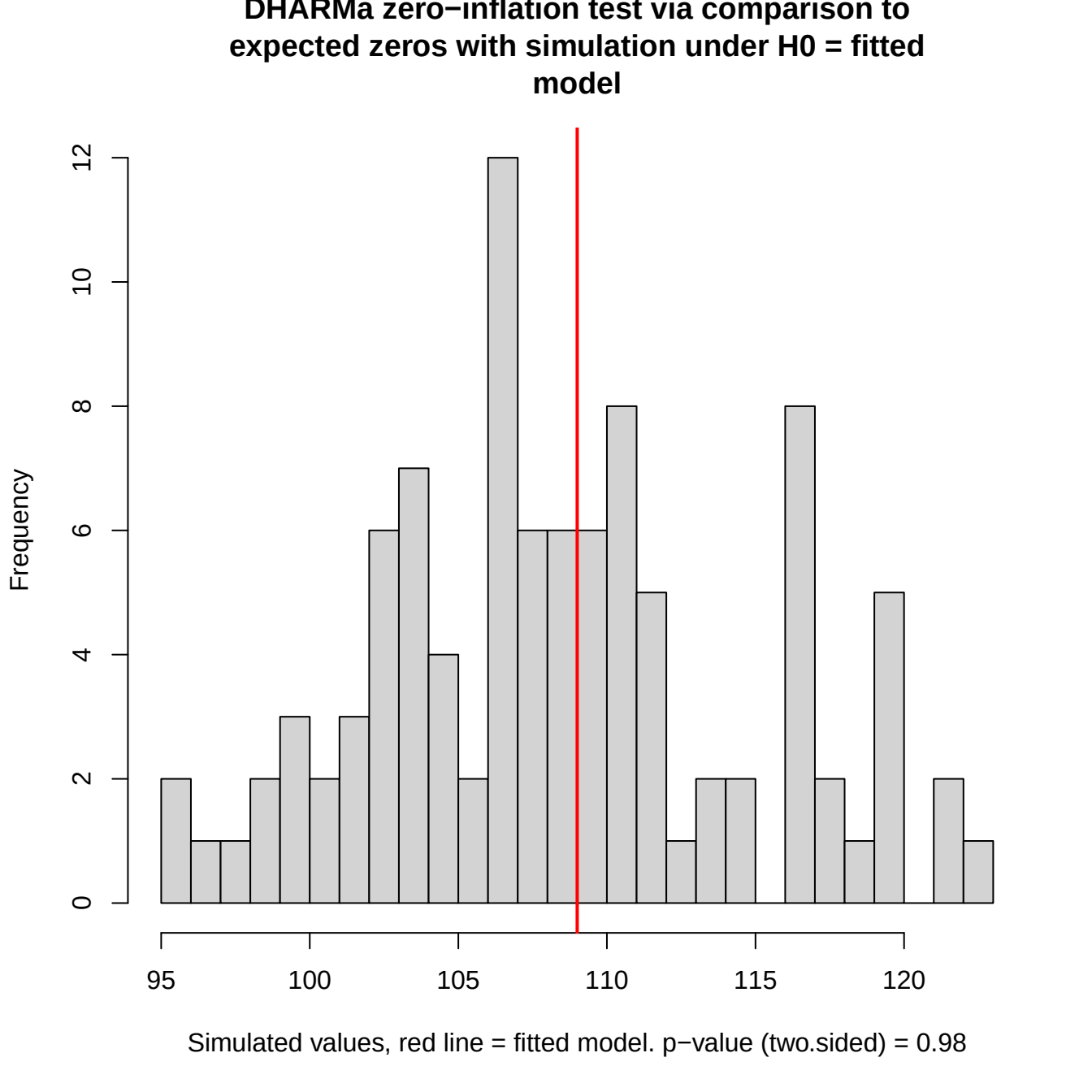

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

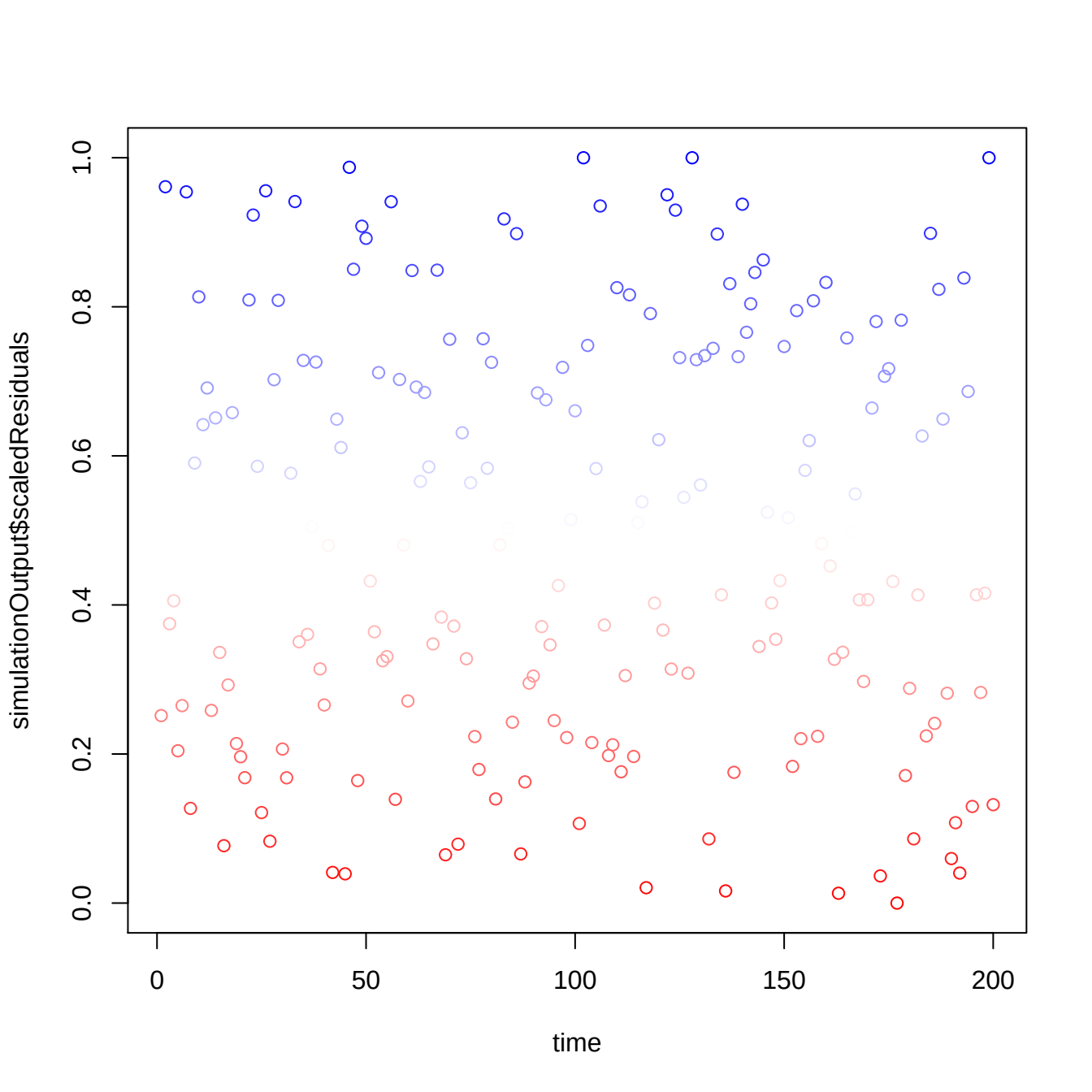

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

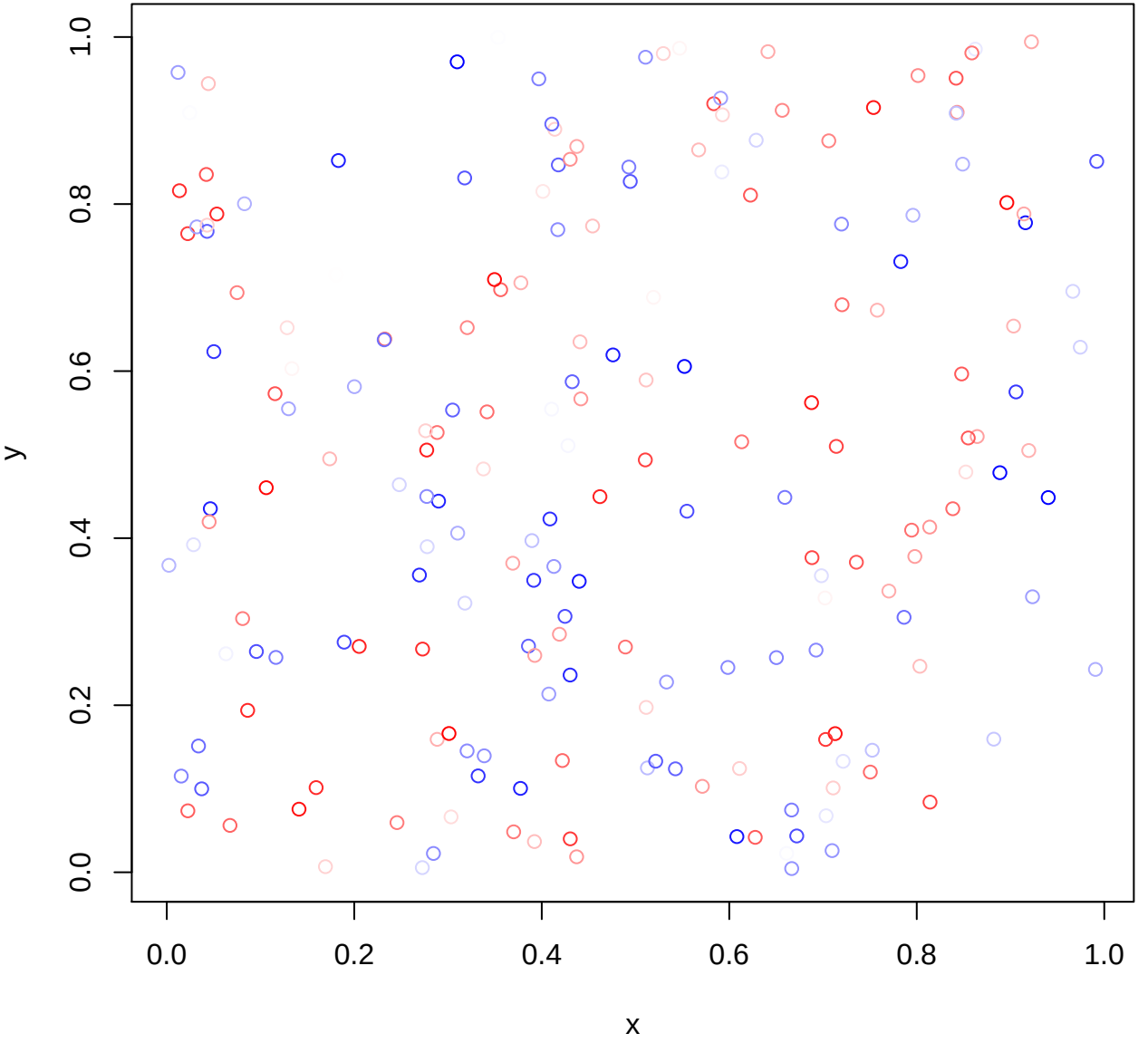

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

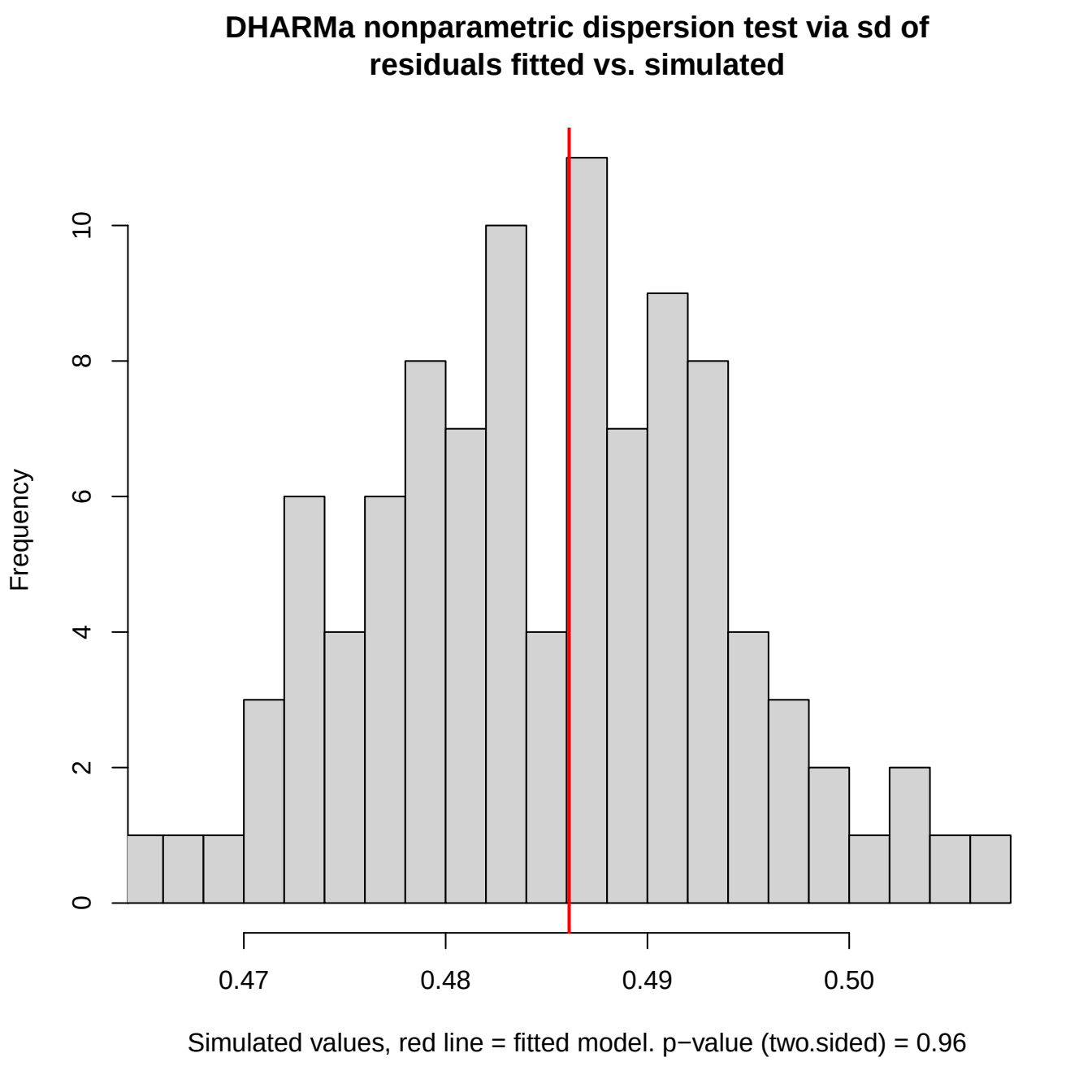

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

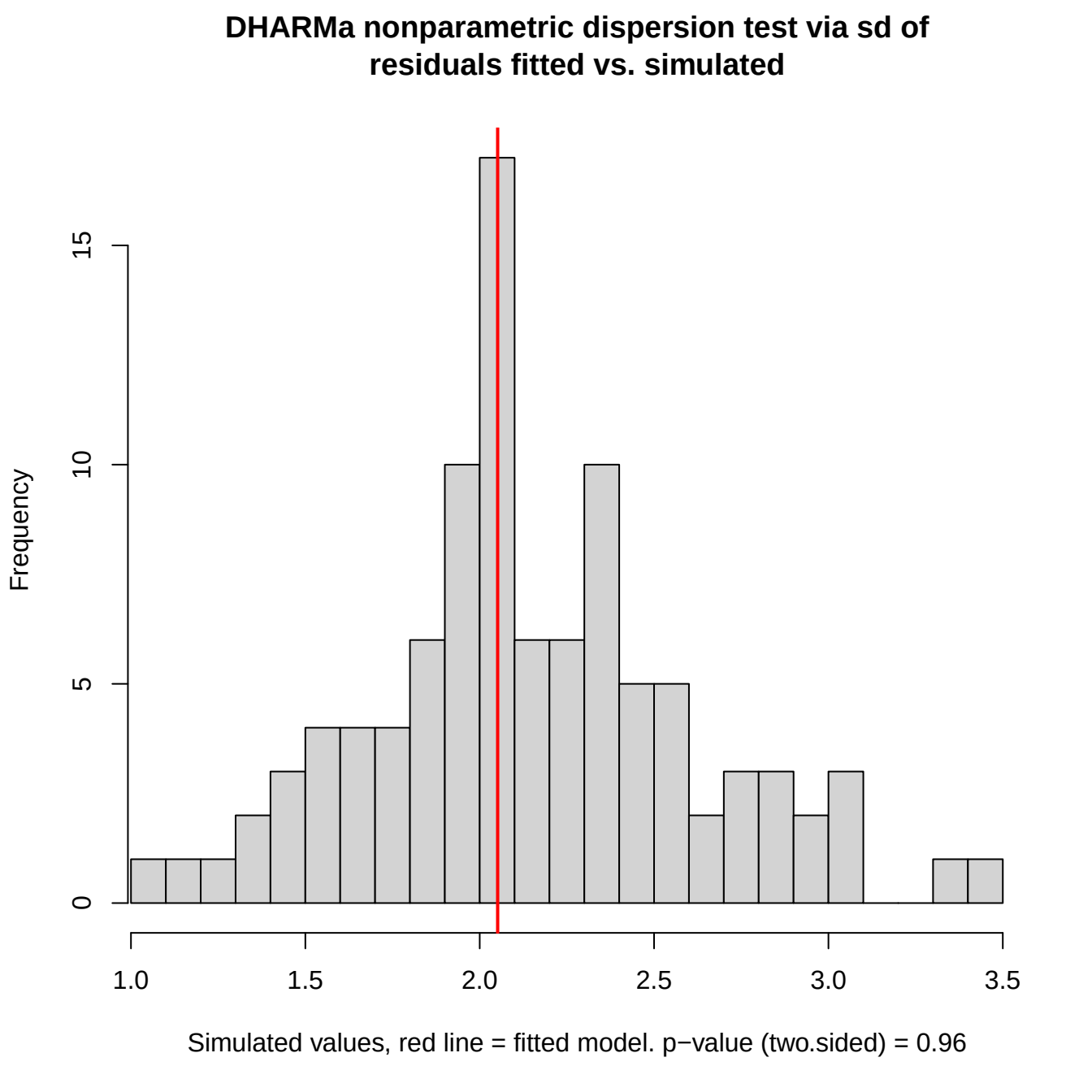

QQ plot residuals
KS test: p= 0.643
Deviation n.s.
Outlier test: p= 0.63587
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

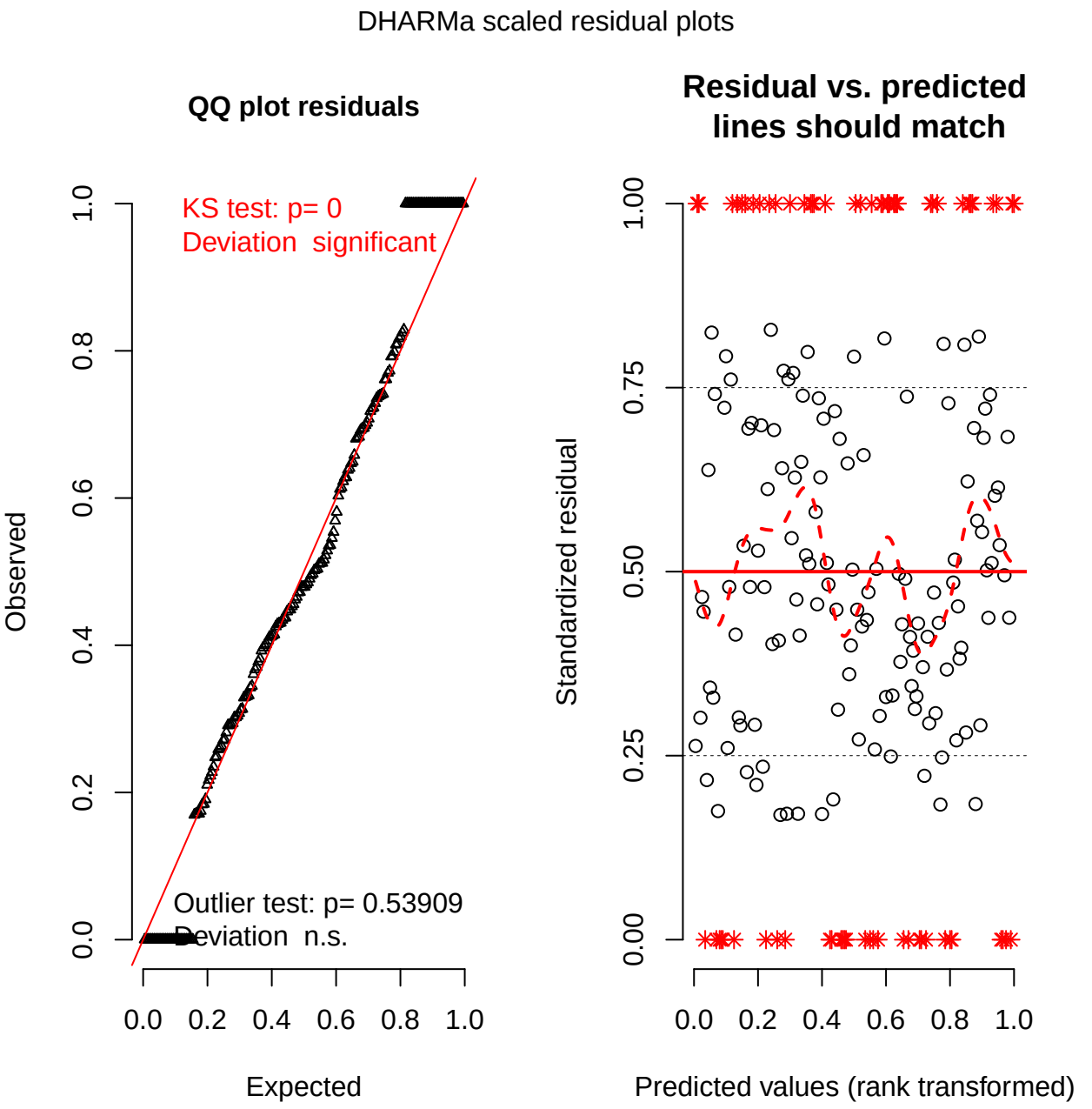

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
95
100
105
110
115
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

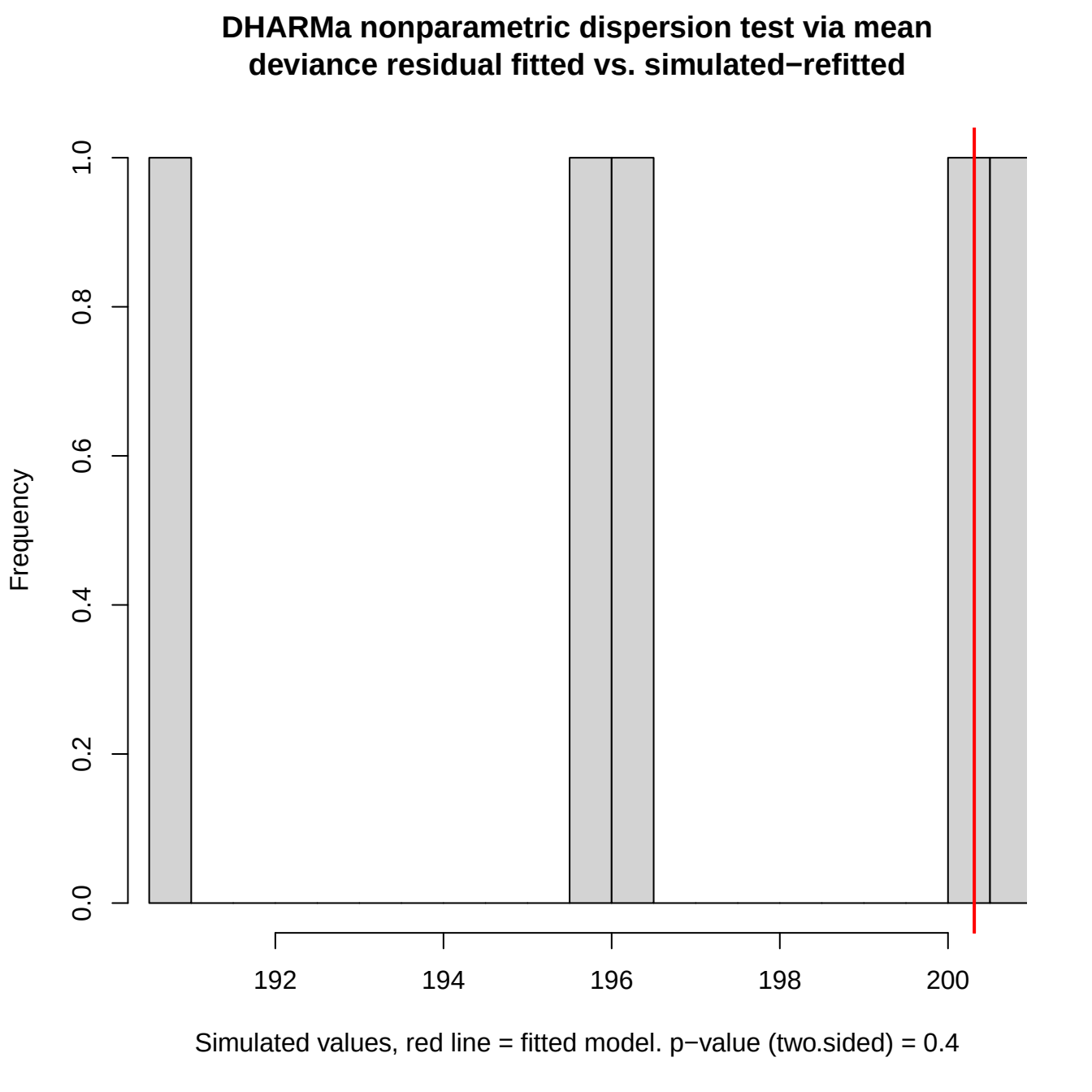

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

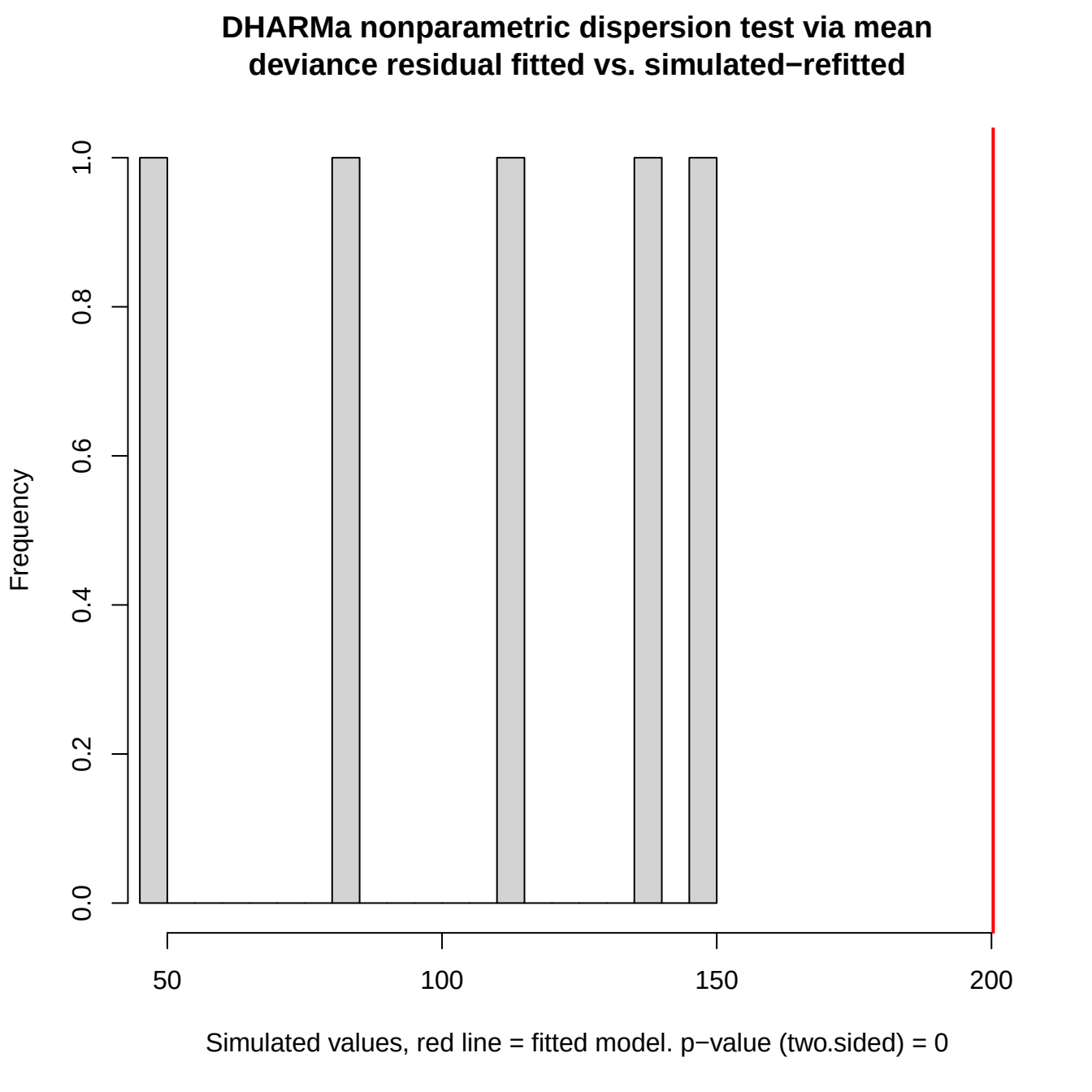

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

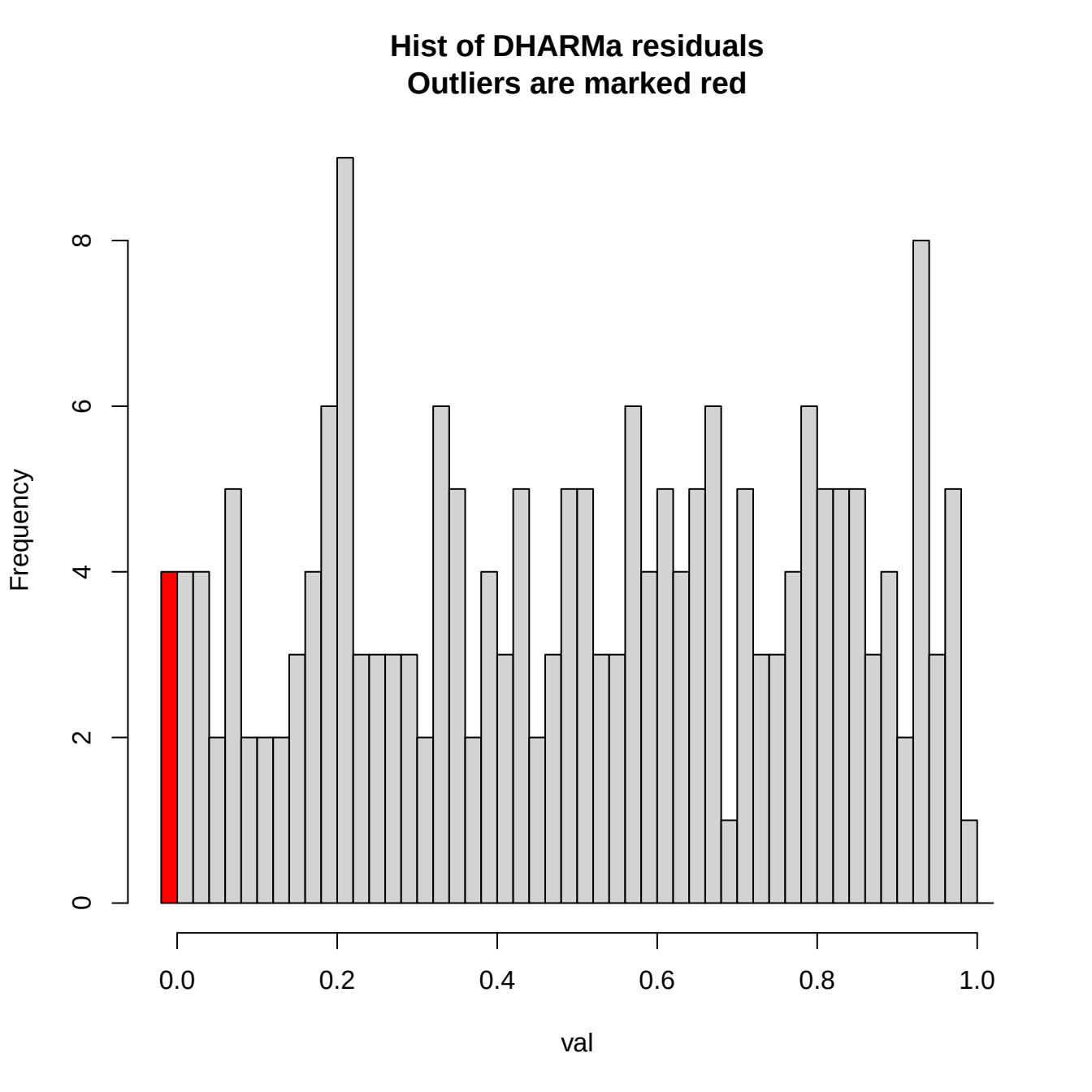

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

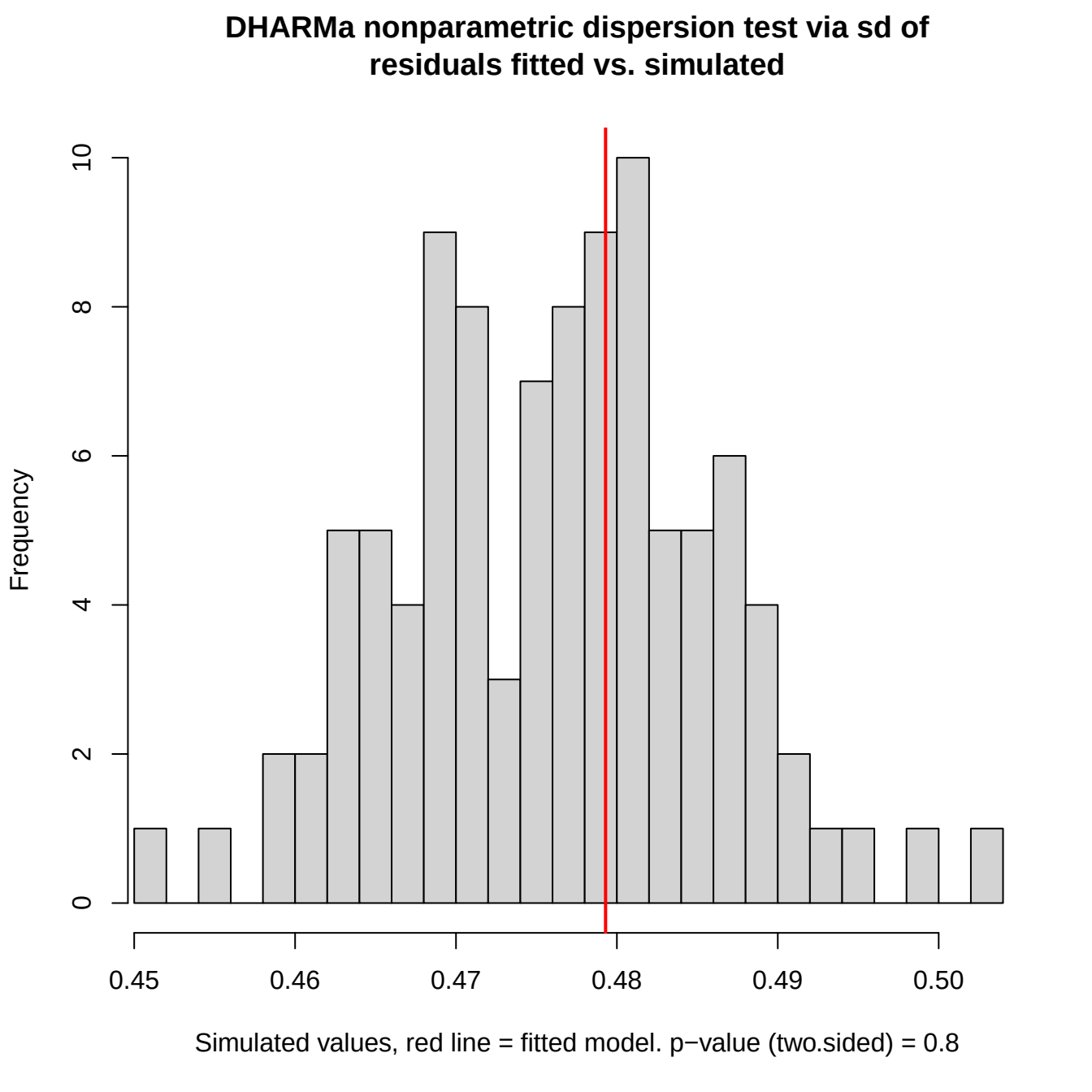

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

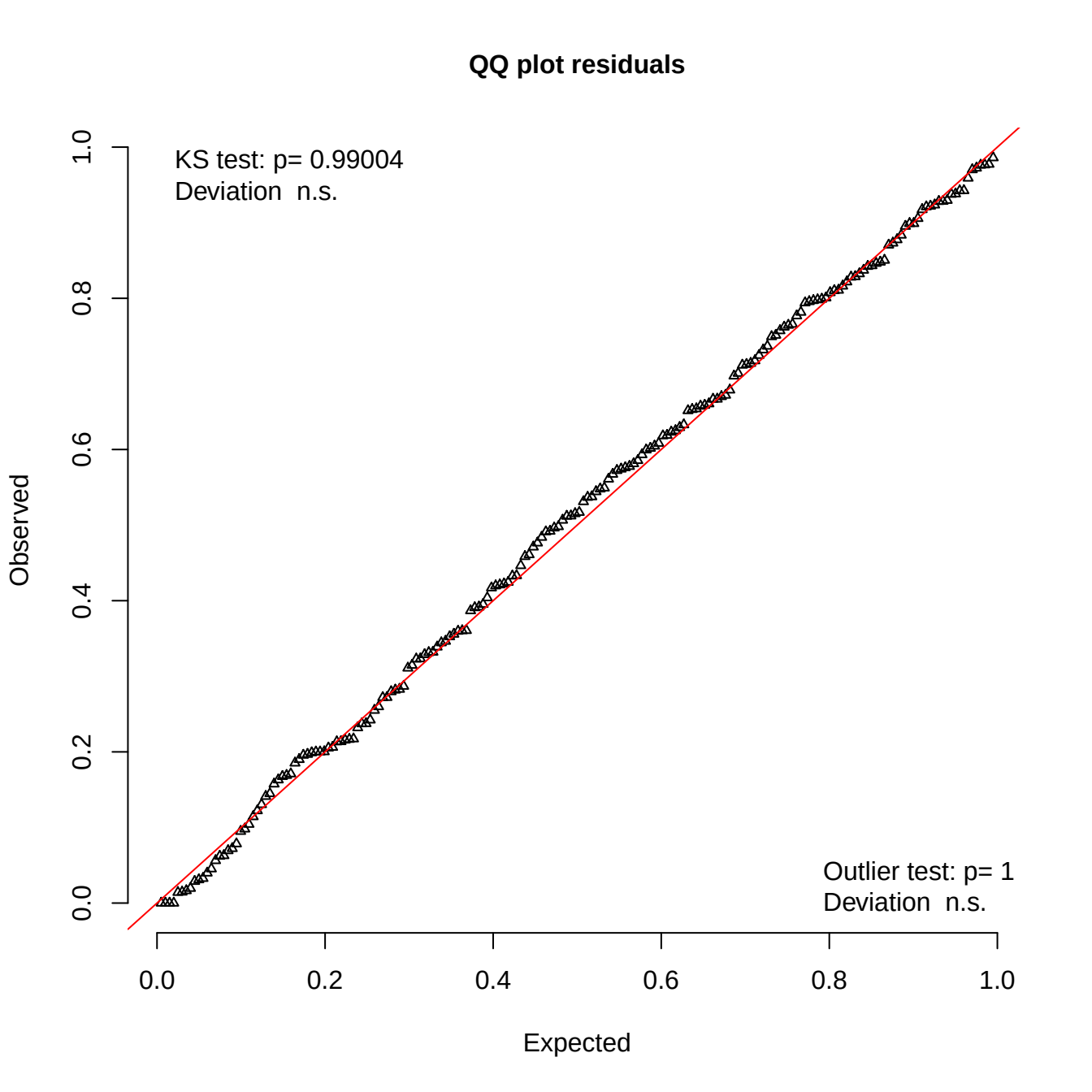

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.53909
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

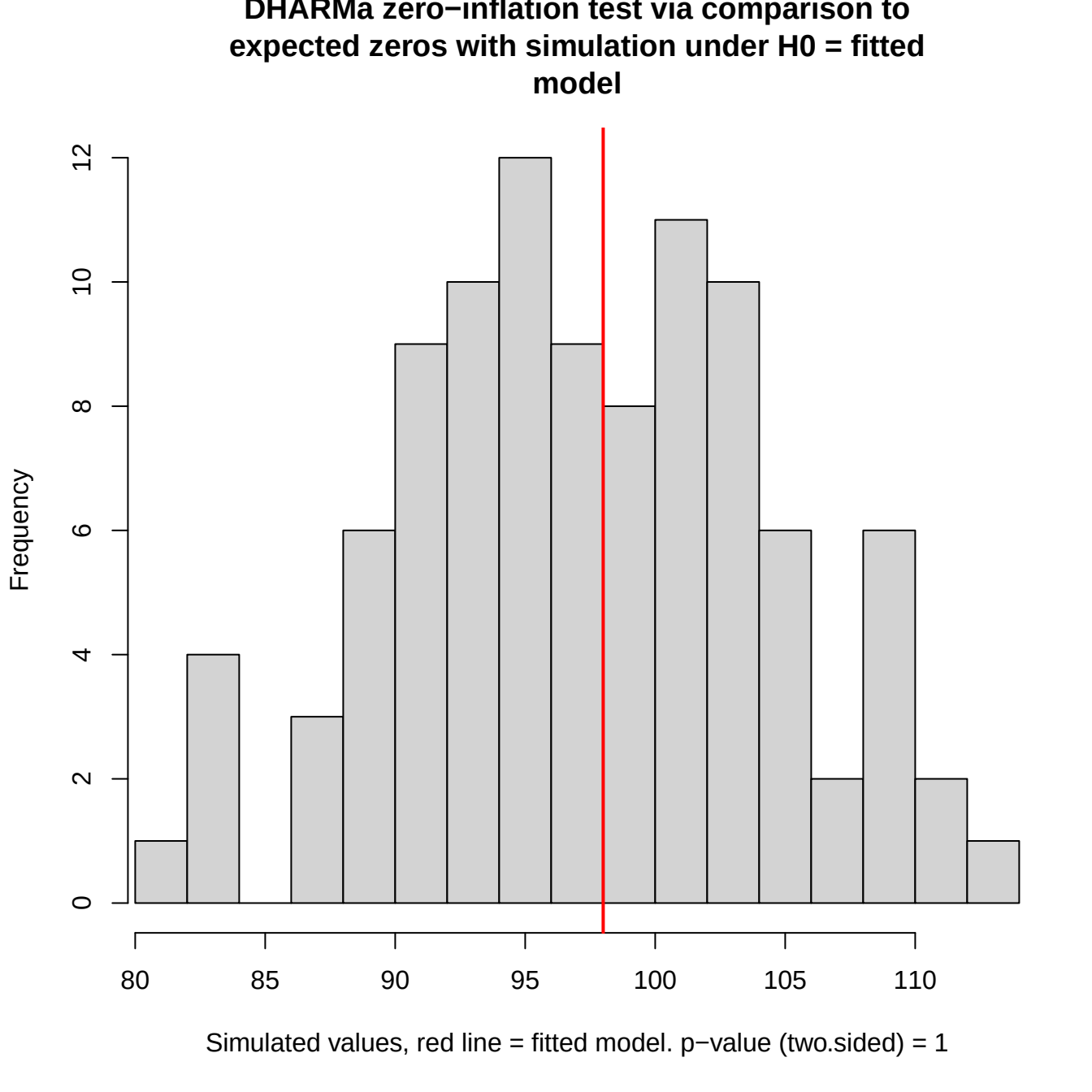

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

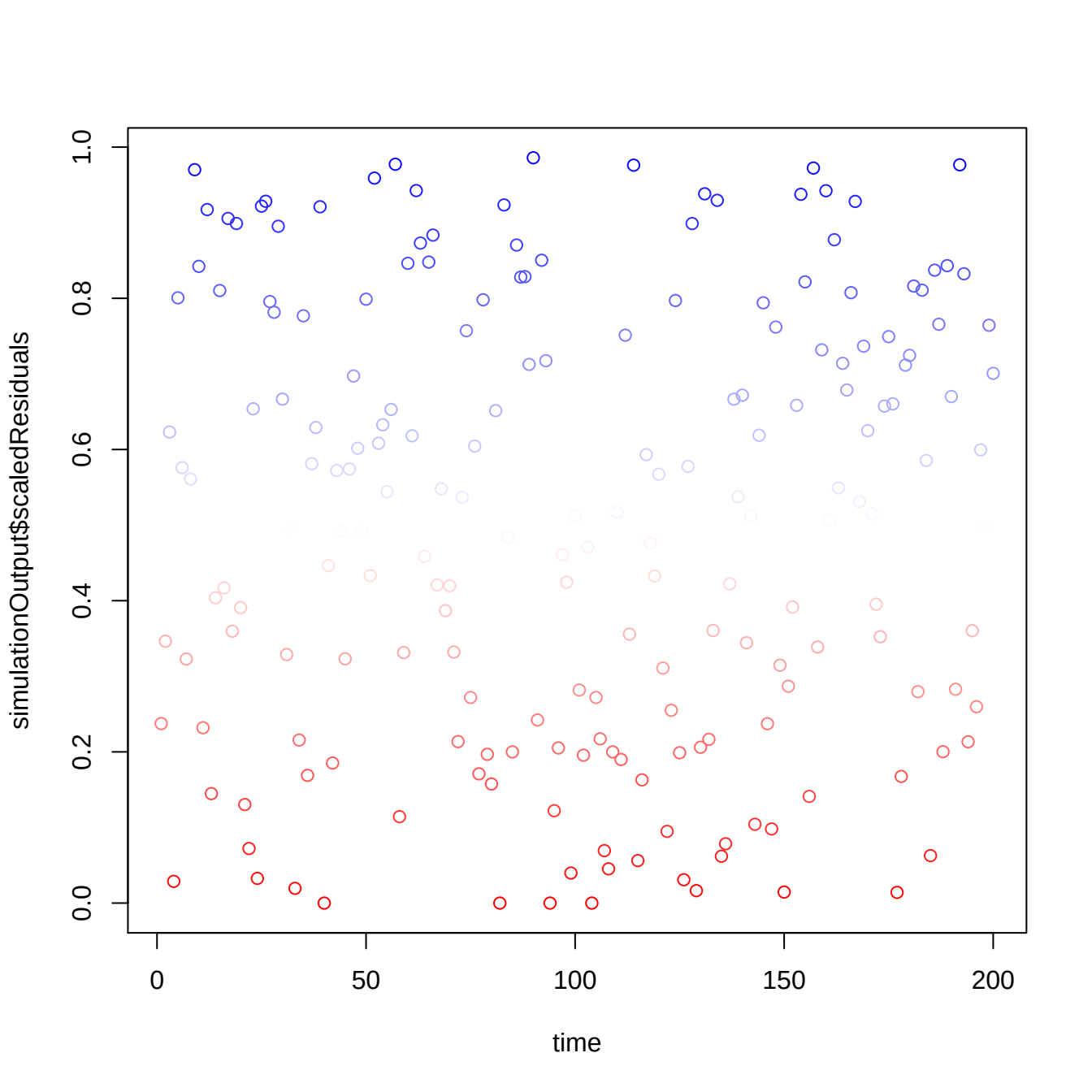

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

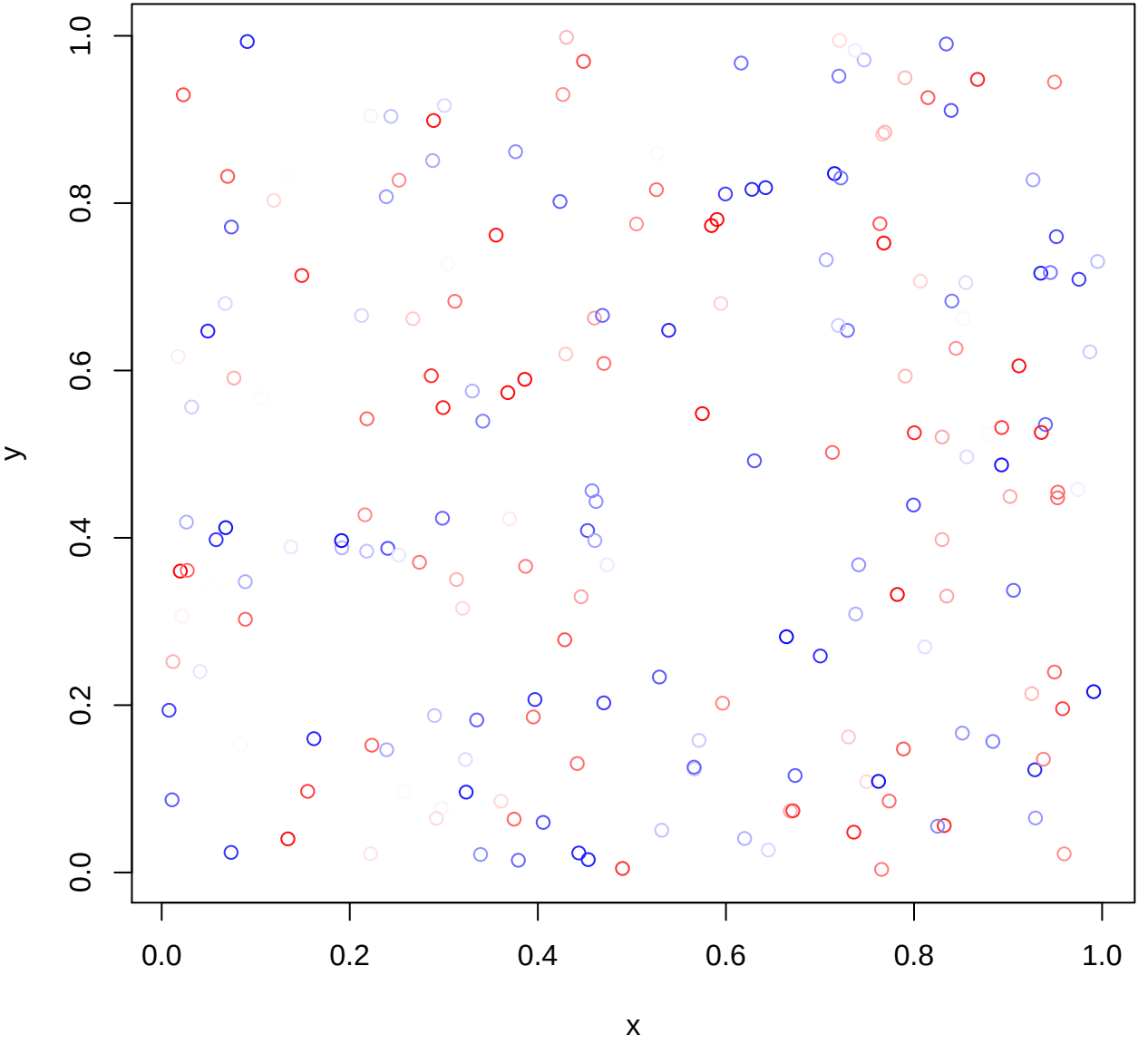

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

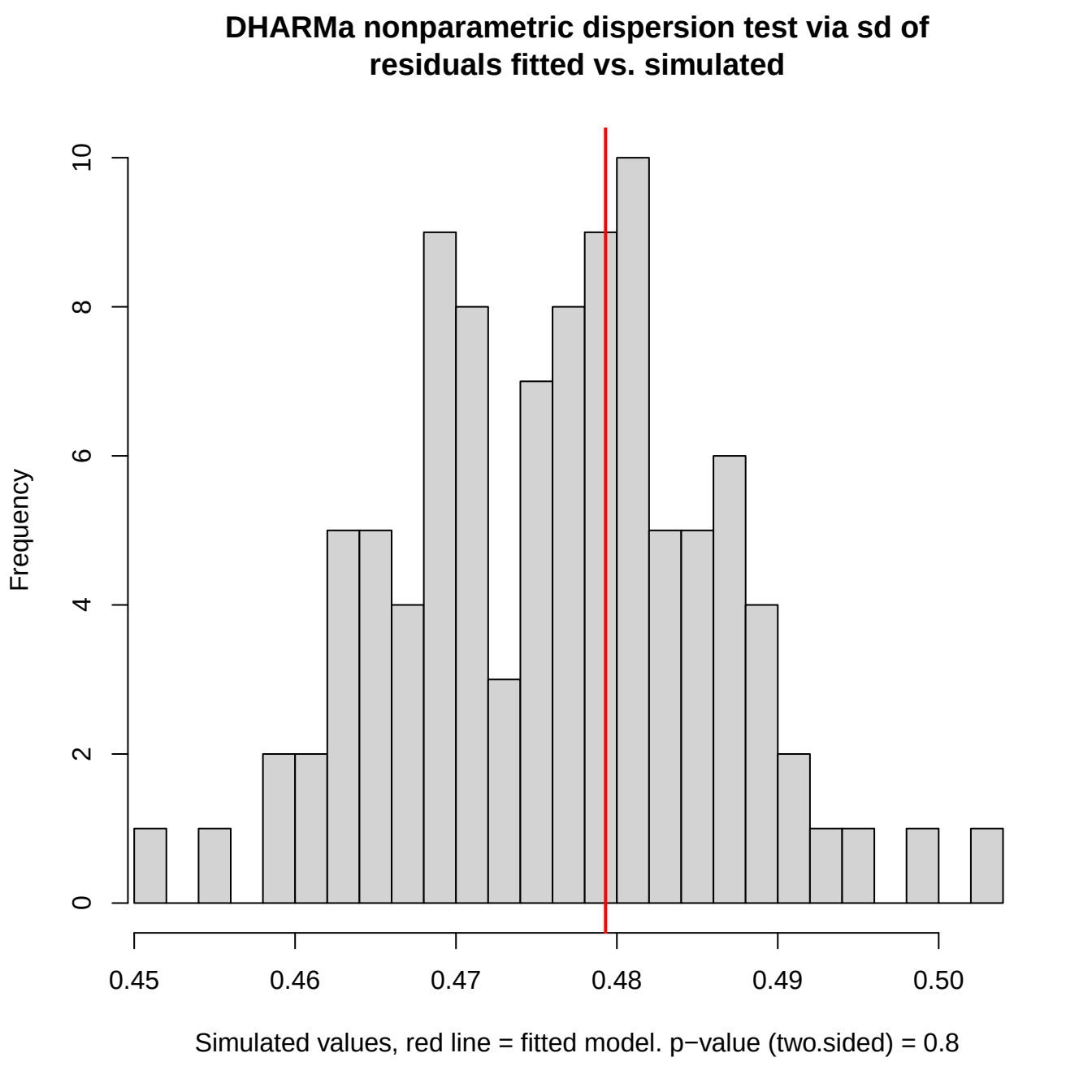

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

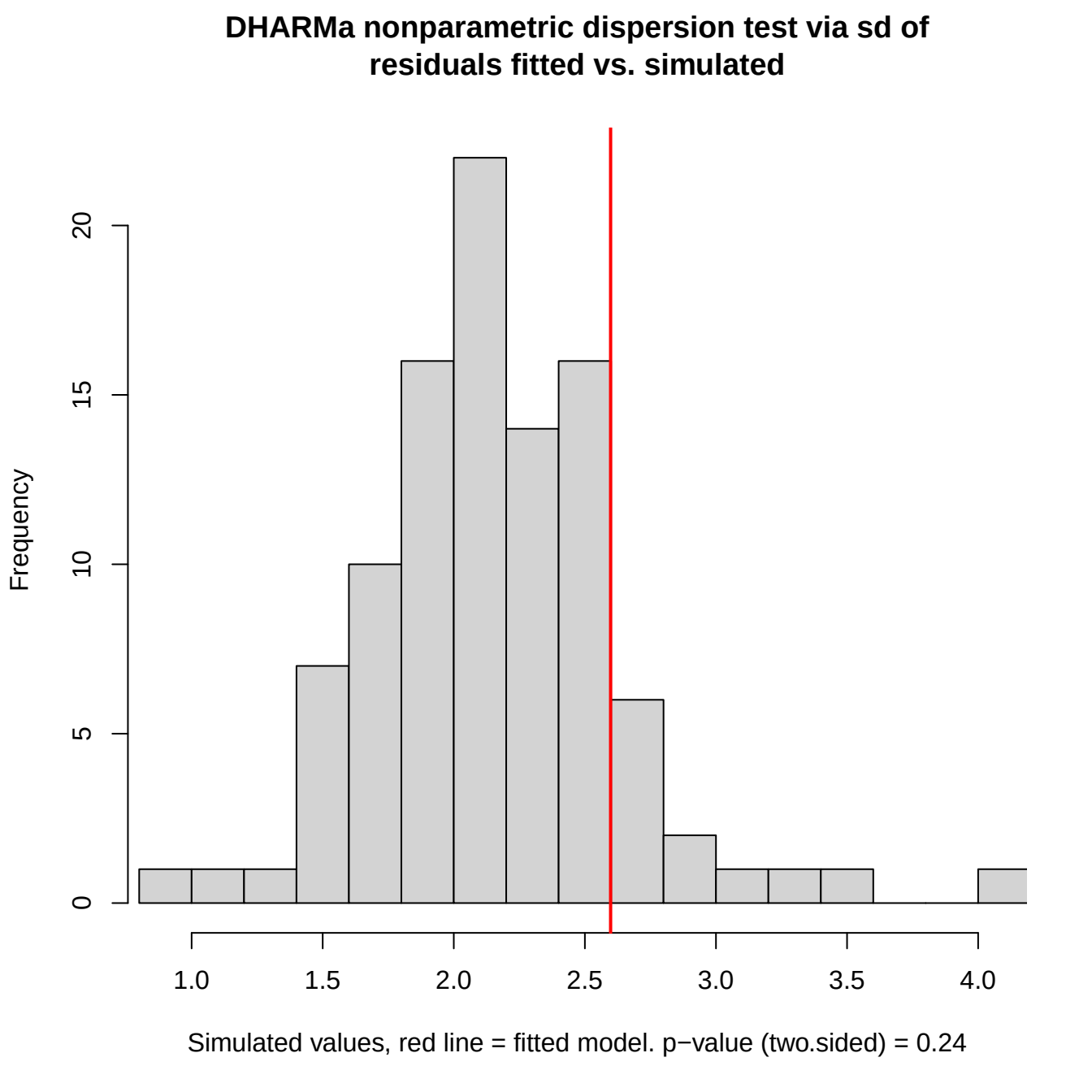

QQ plot residuals
KS test: p= 0.99004
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

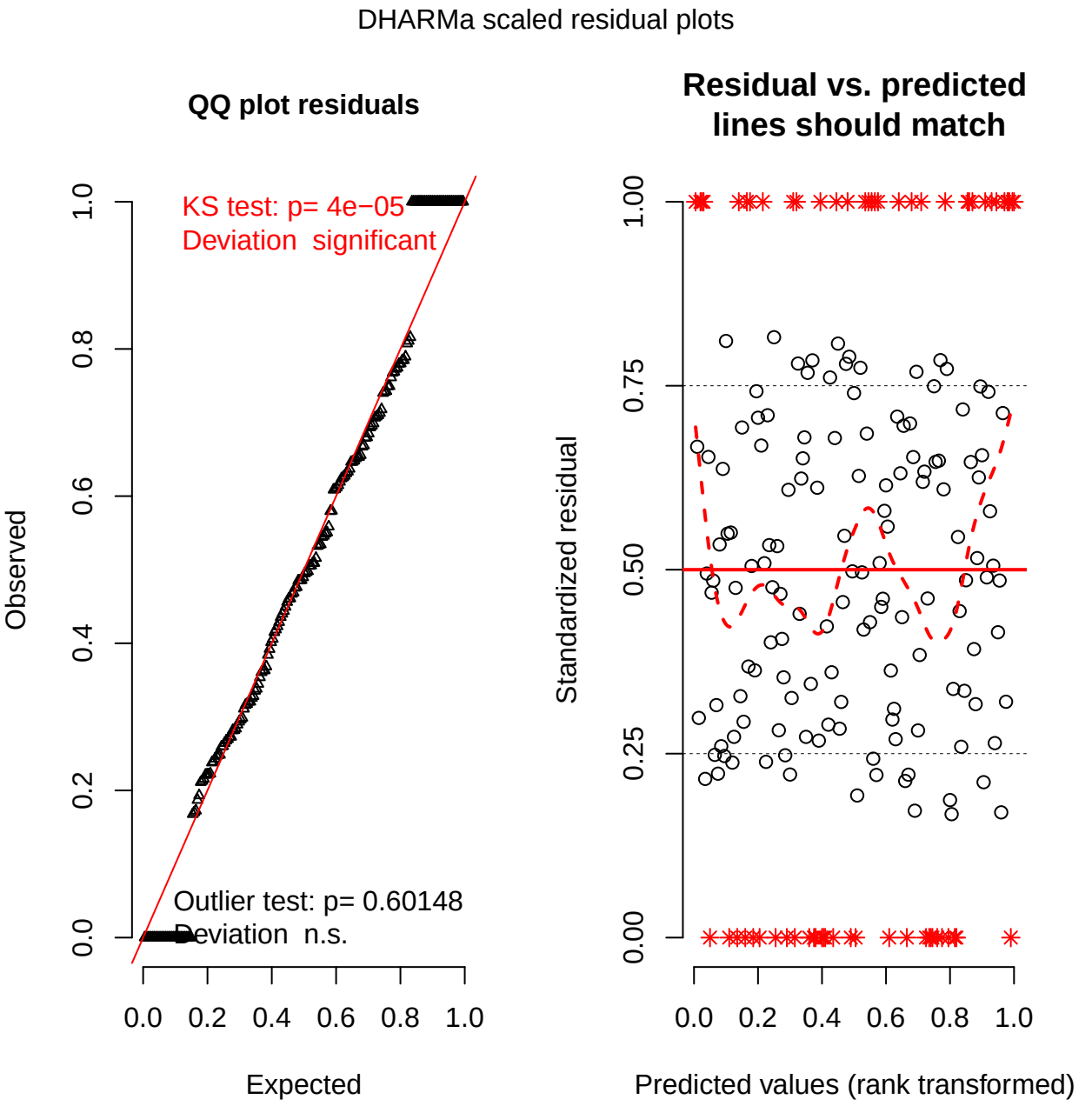

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 1

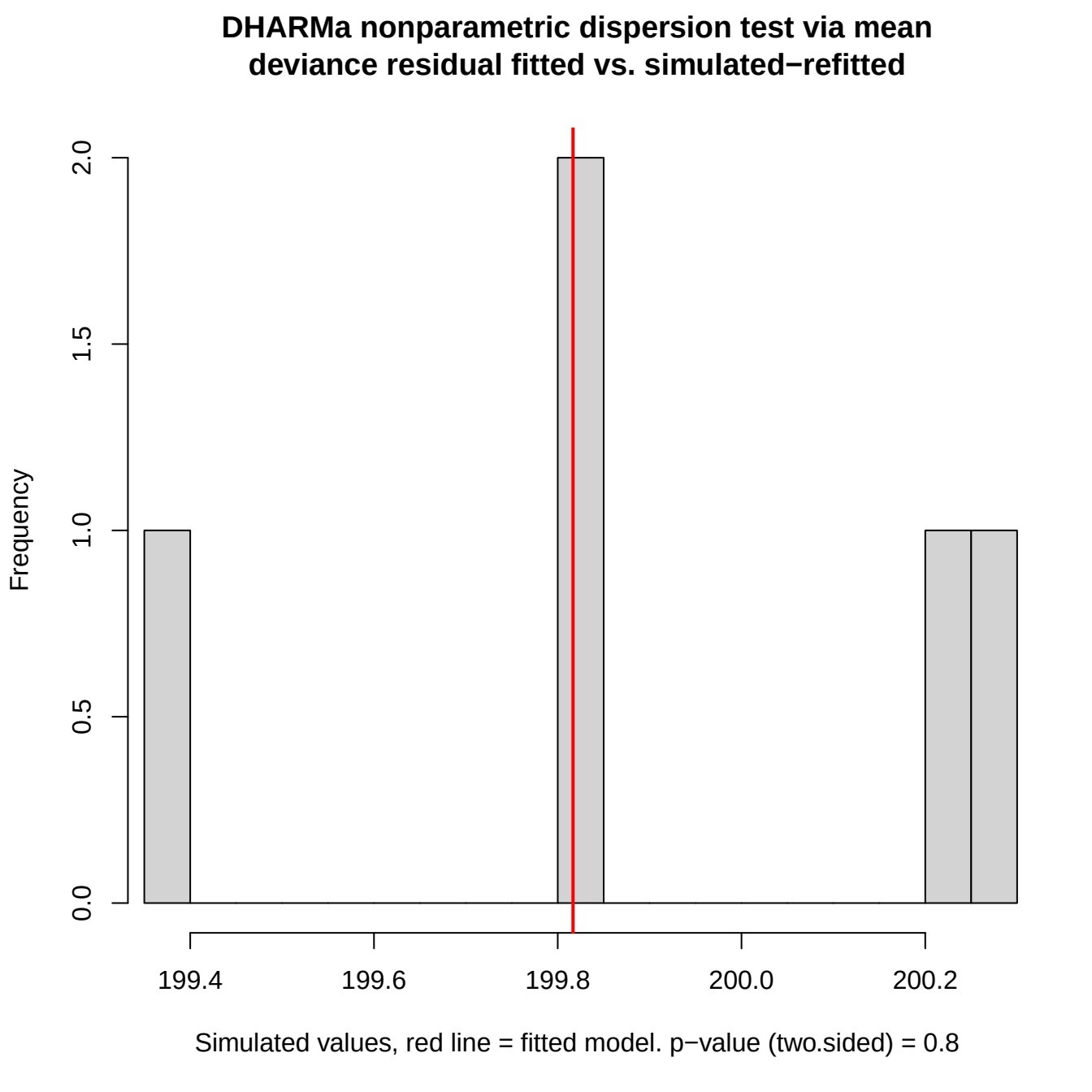

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

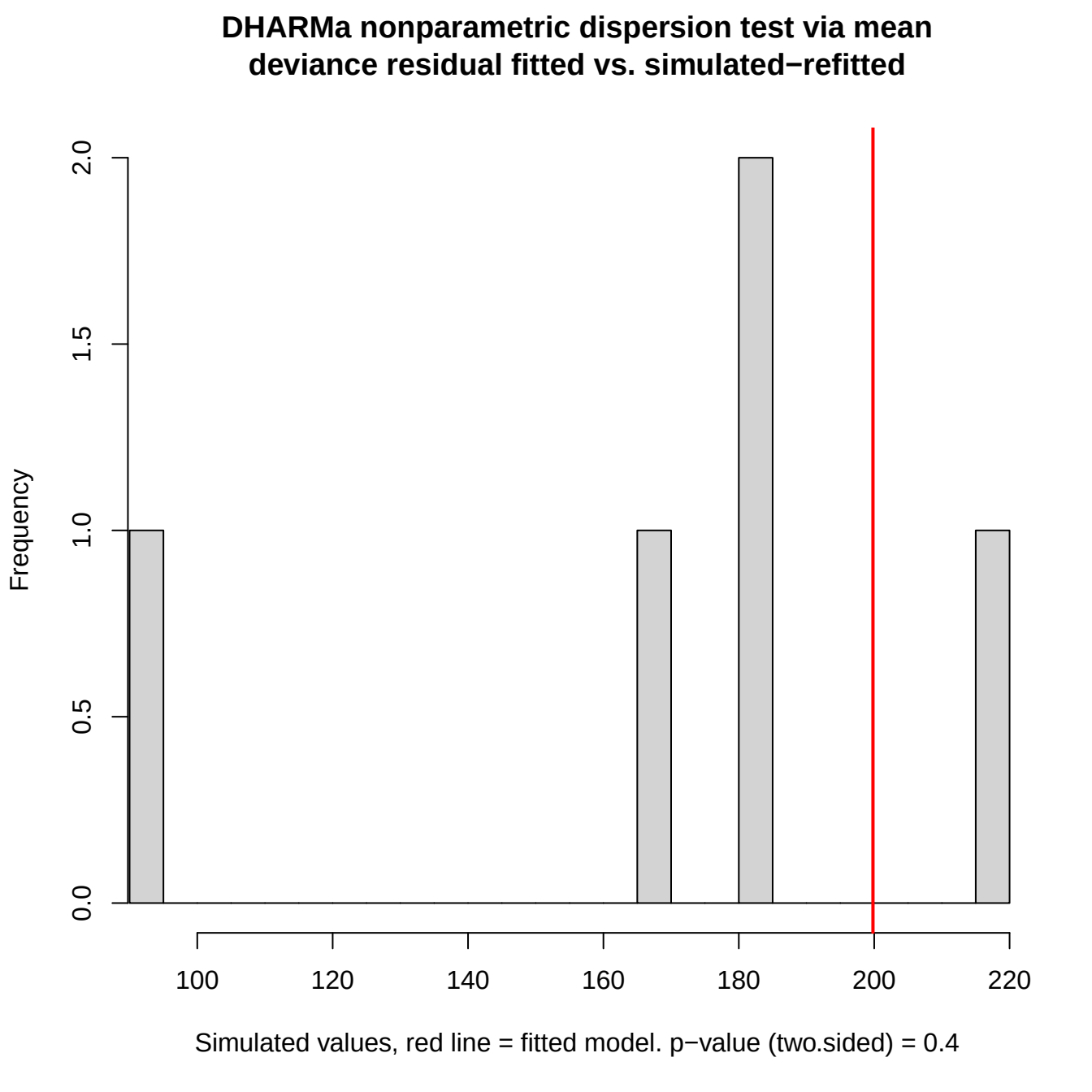

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

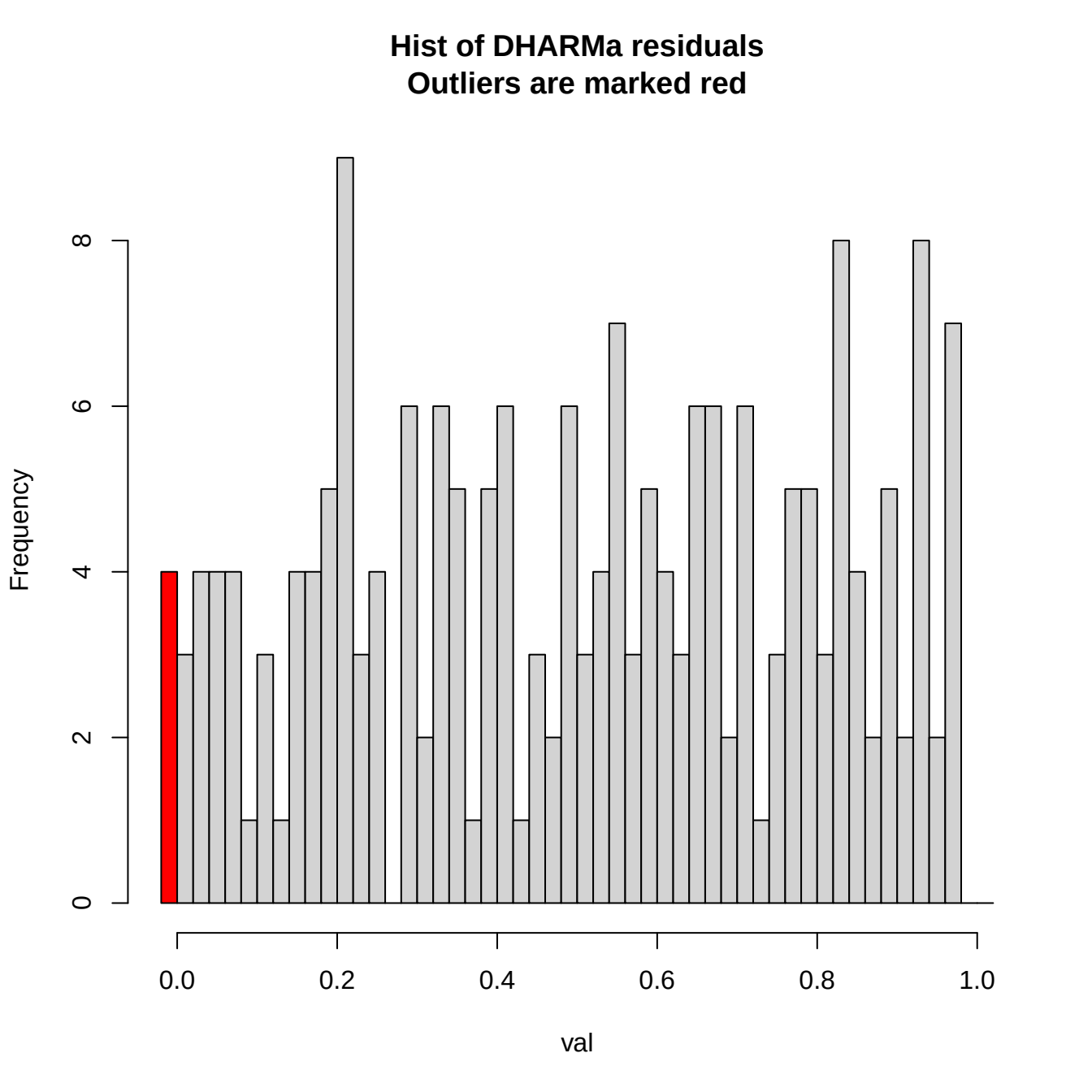

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

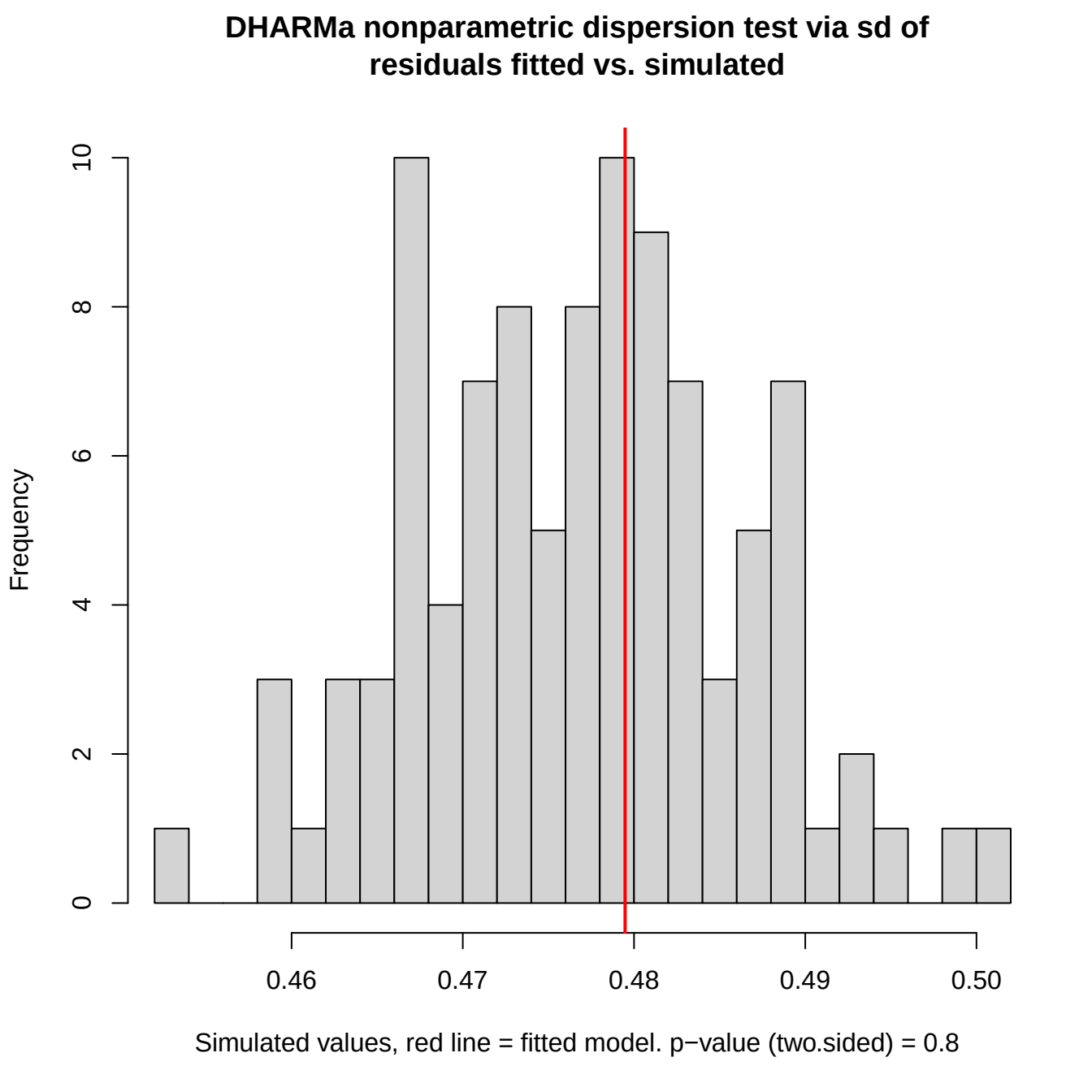

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.24

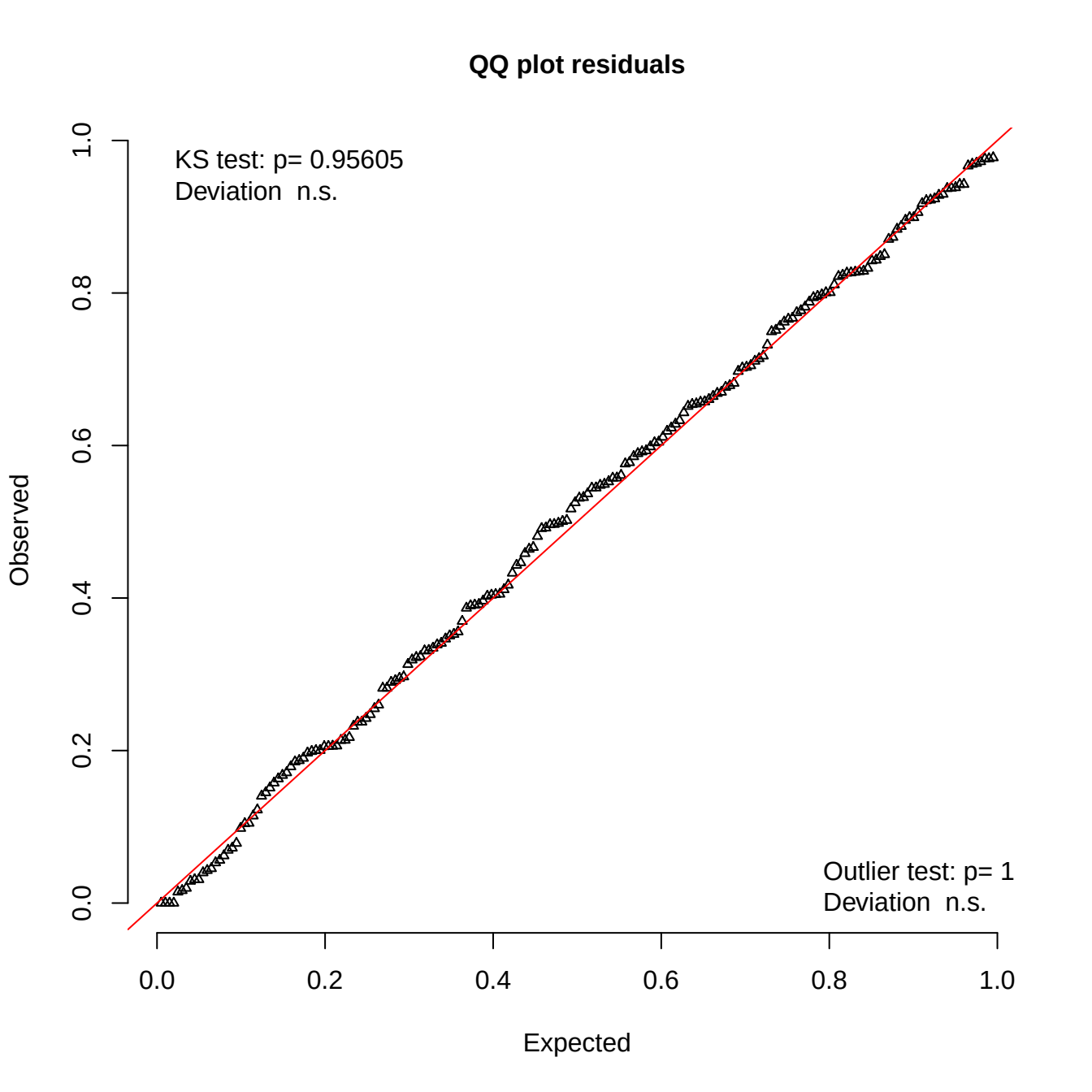

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.60148
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

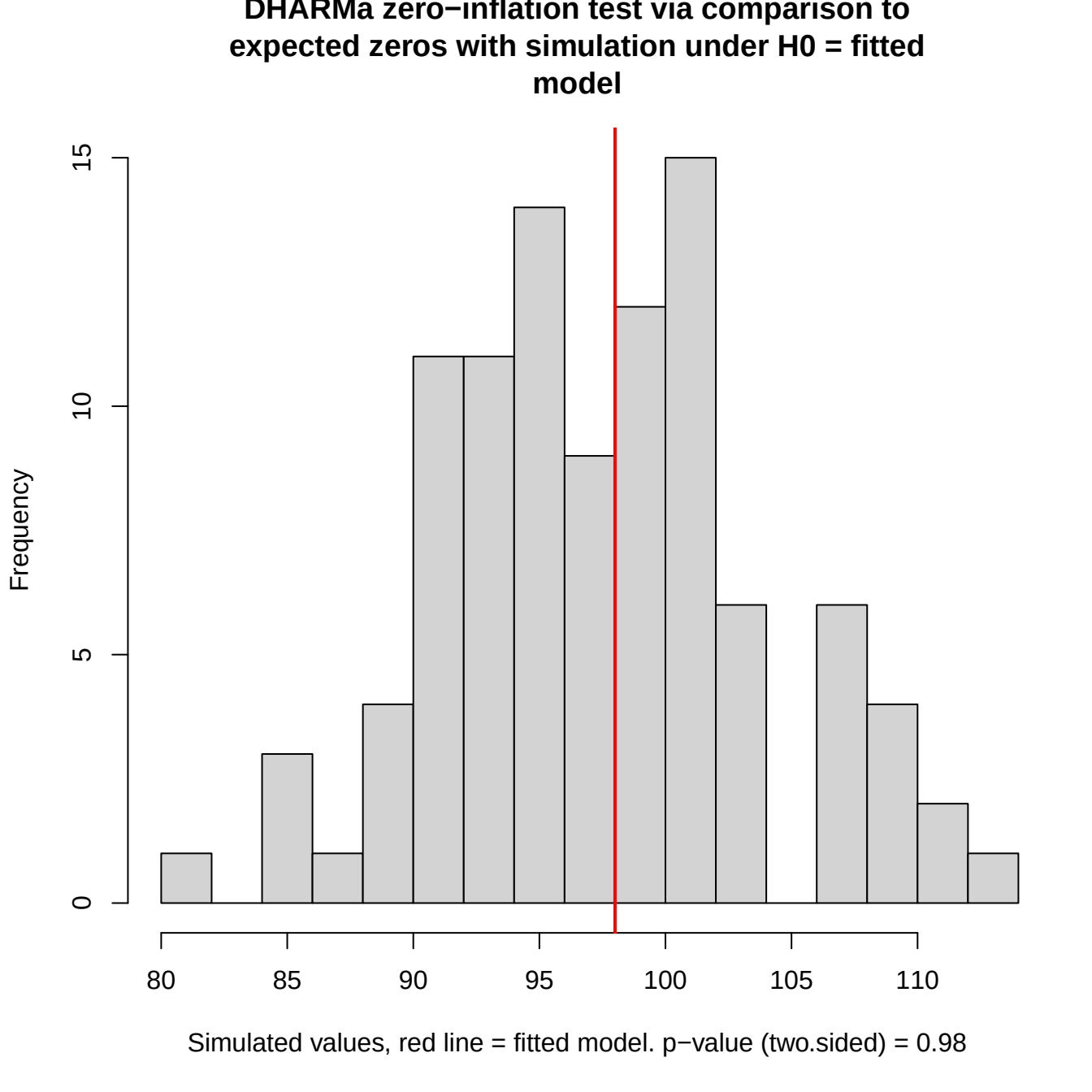

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
199.4
199.6
199.8
200.0
200.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

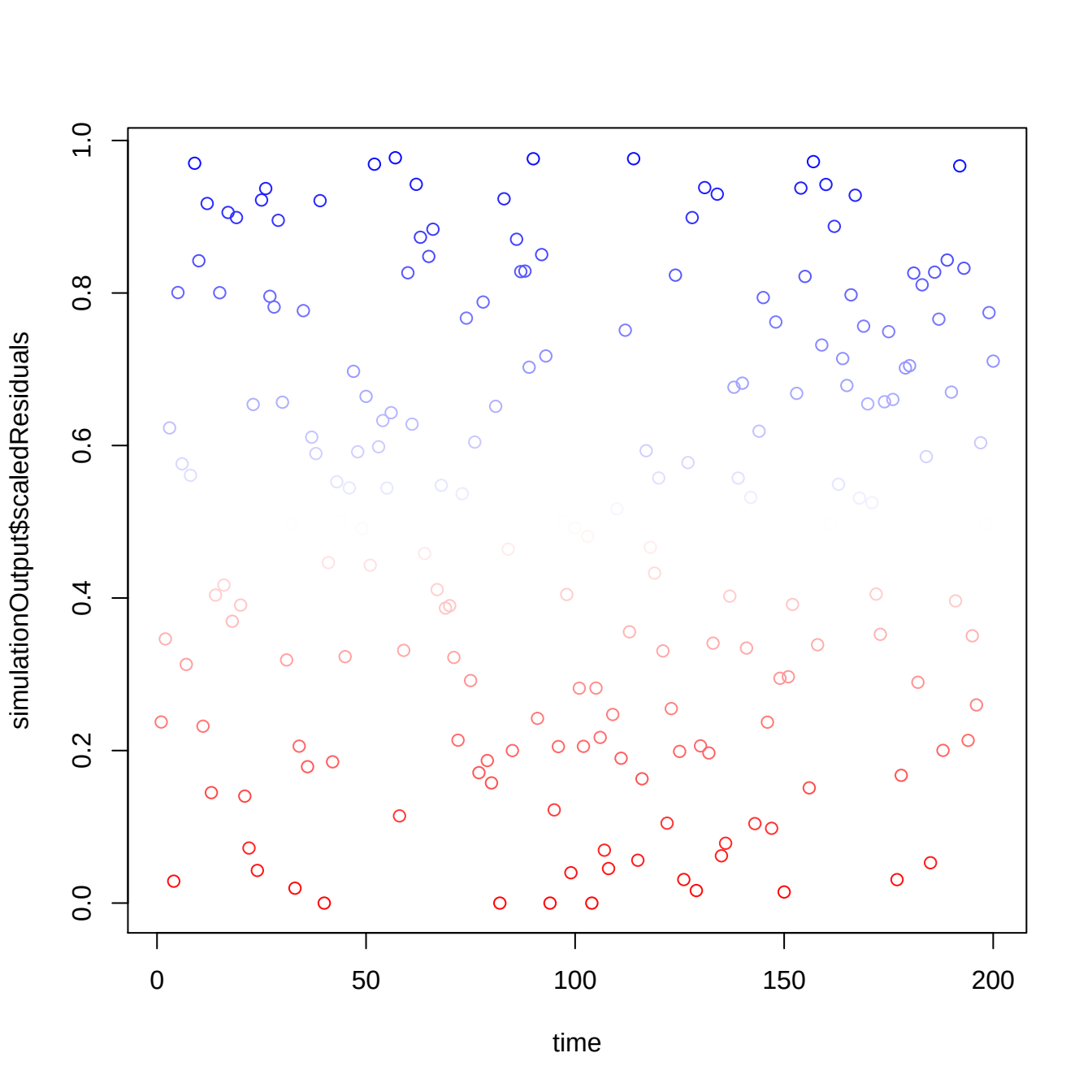

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

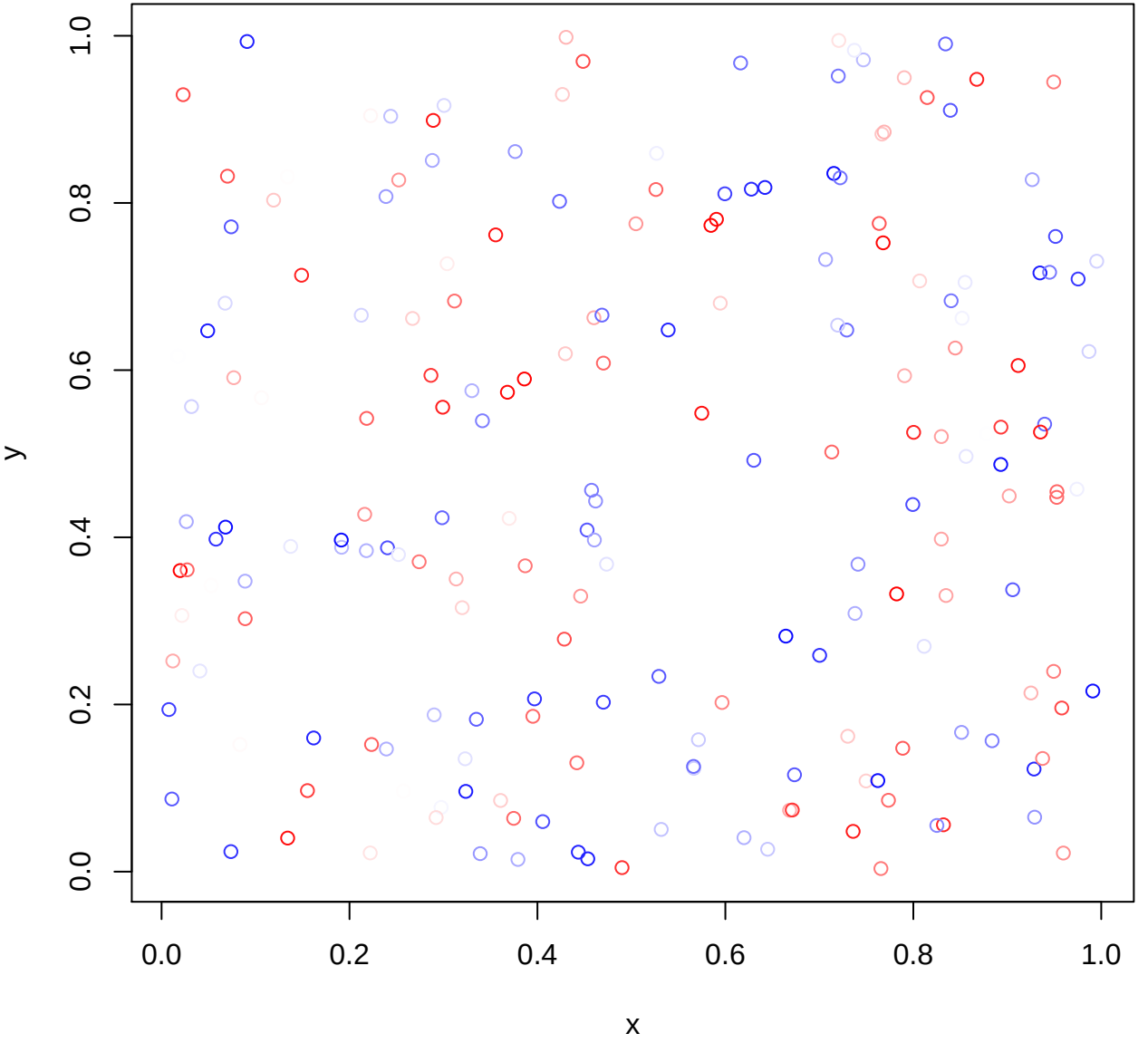

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

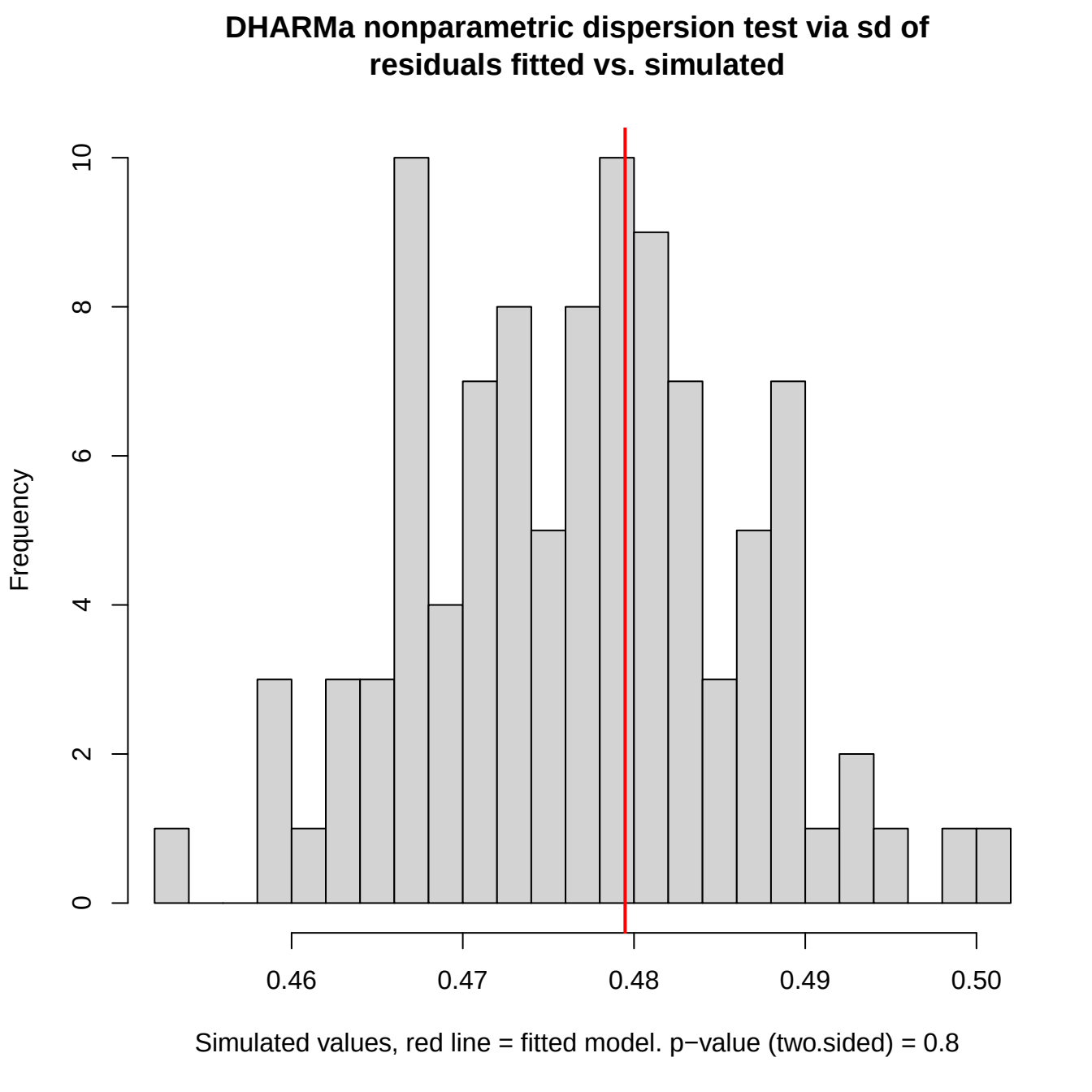

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

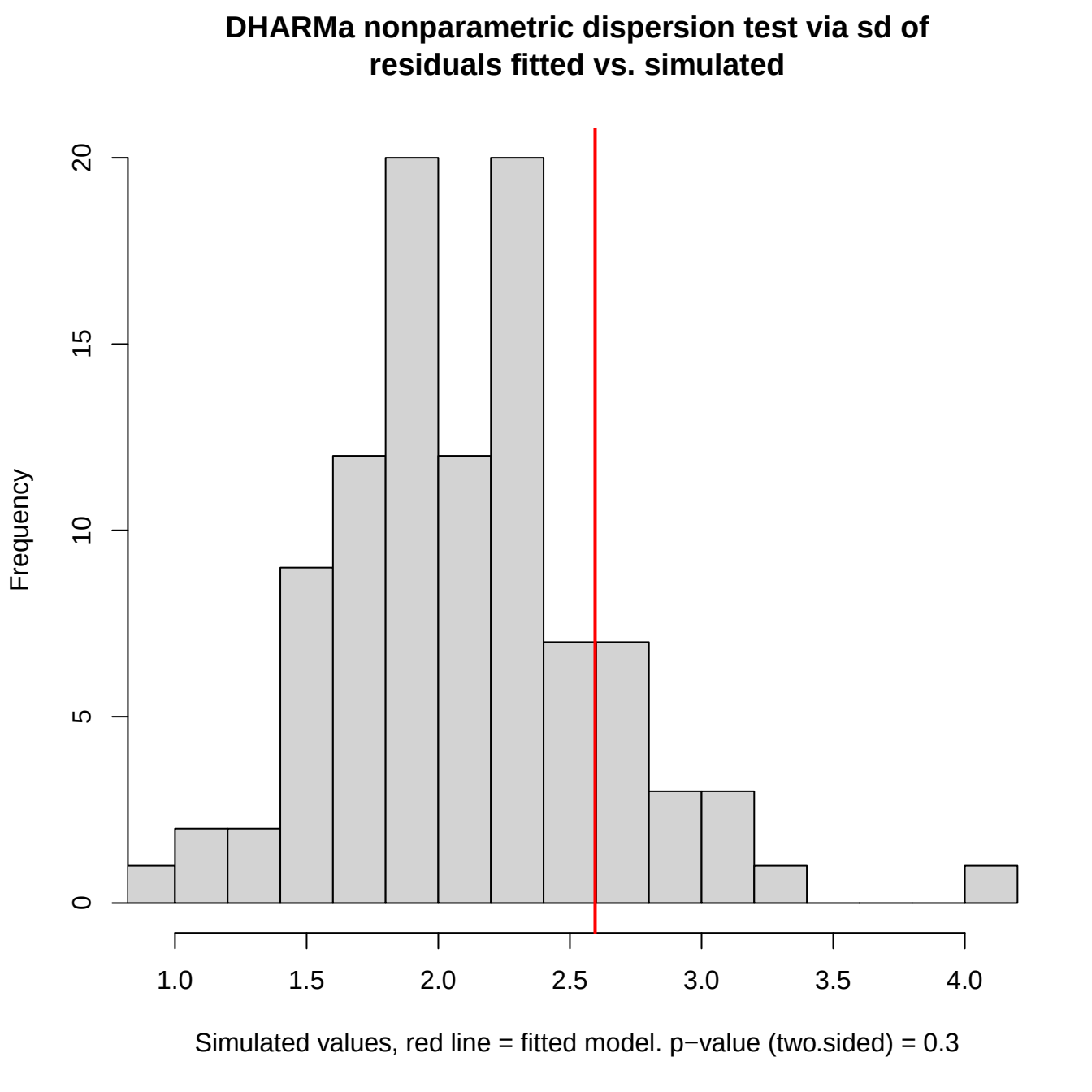

QQ plot residuals
KS test: p= 0.95605
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

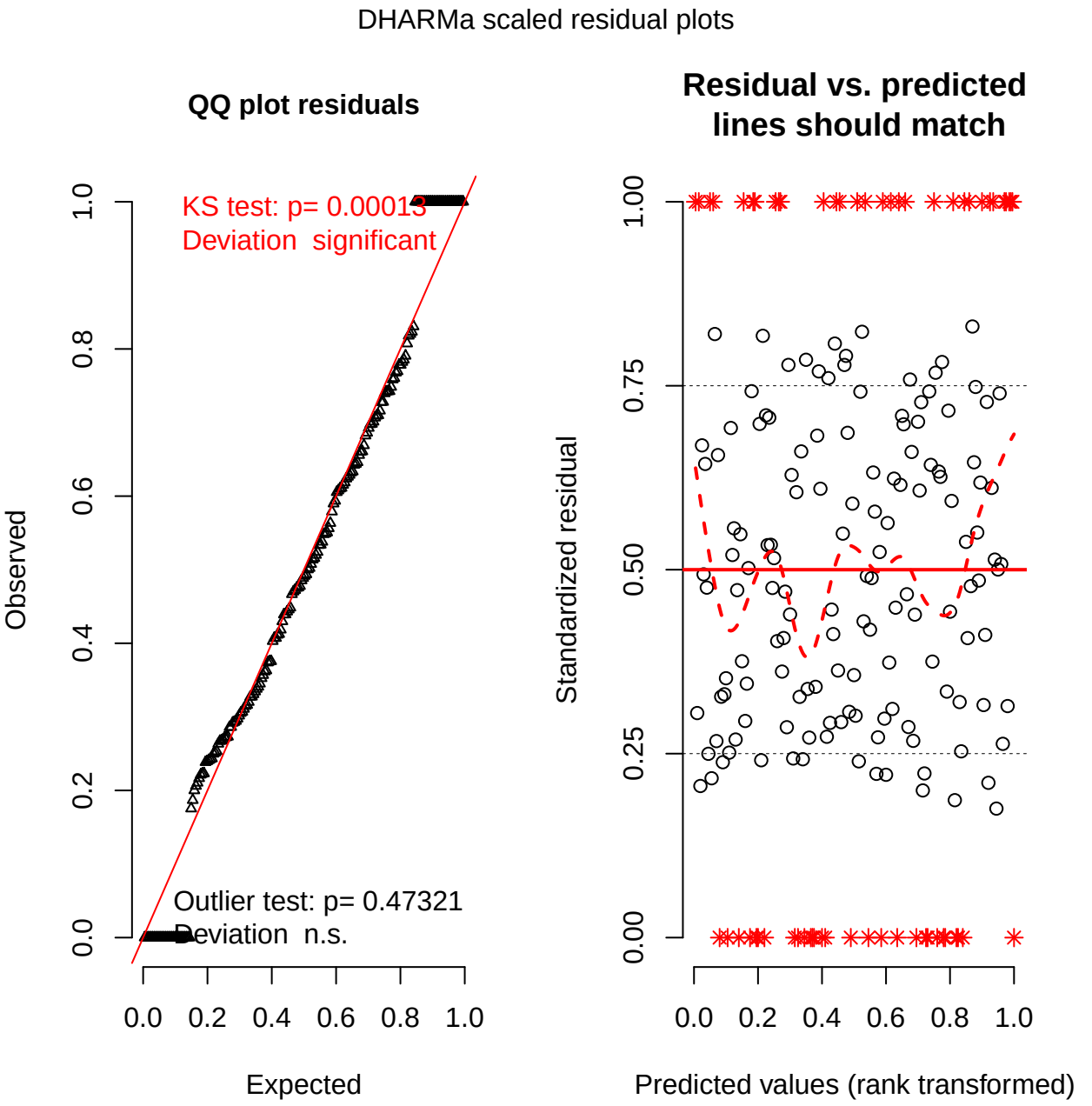

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

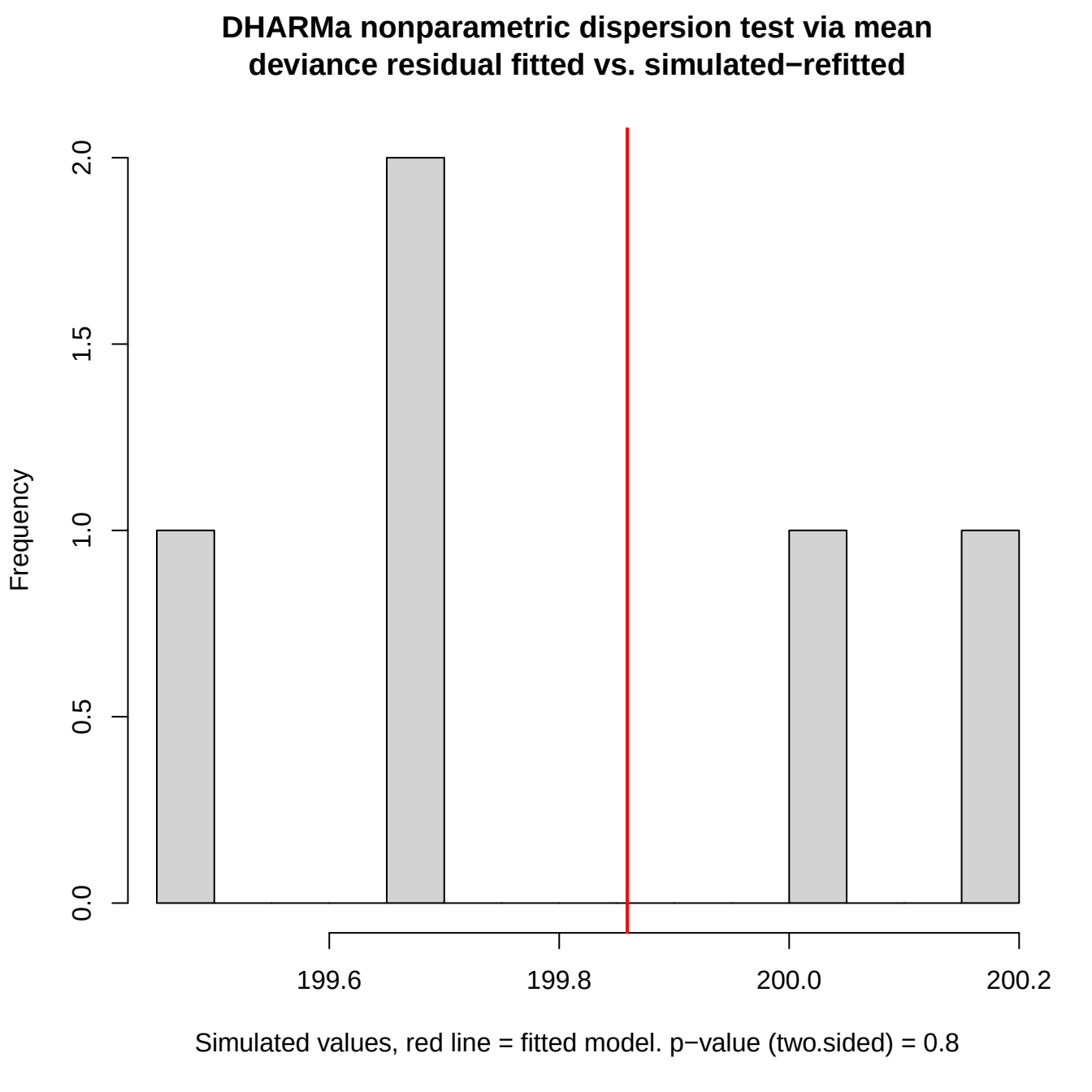

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

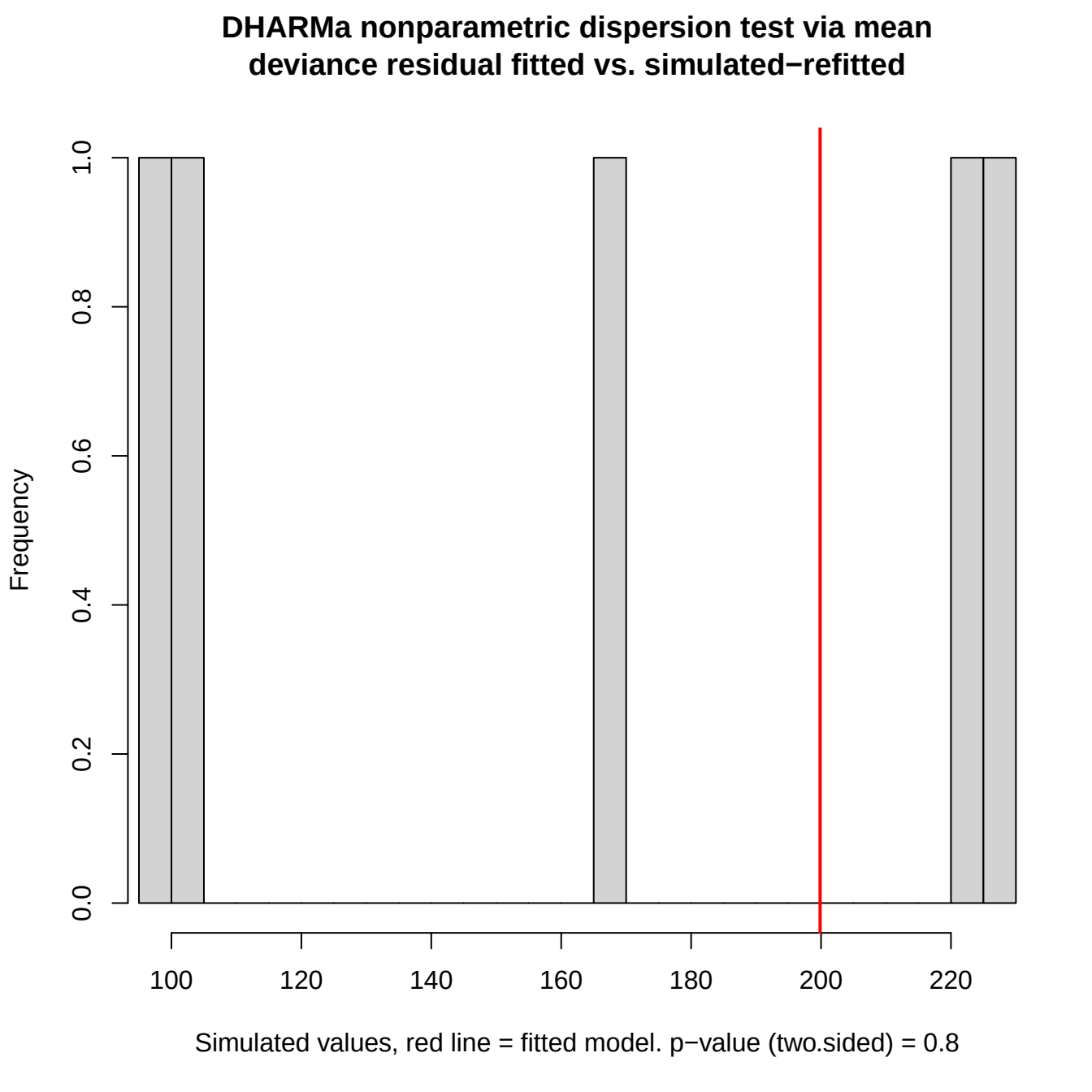

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

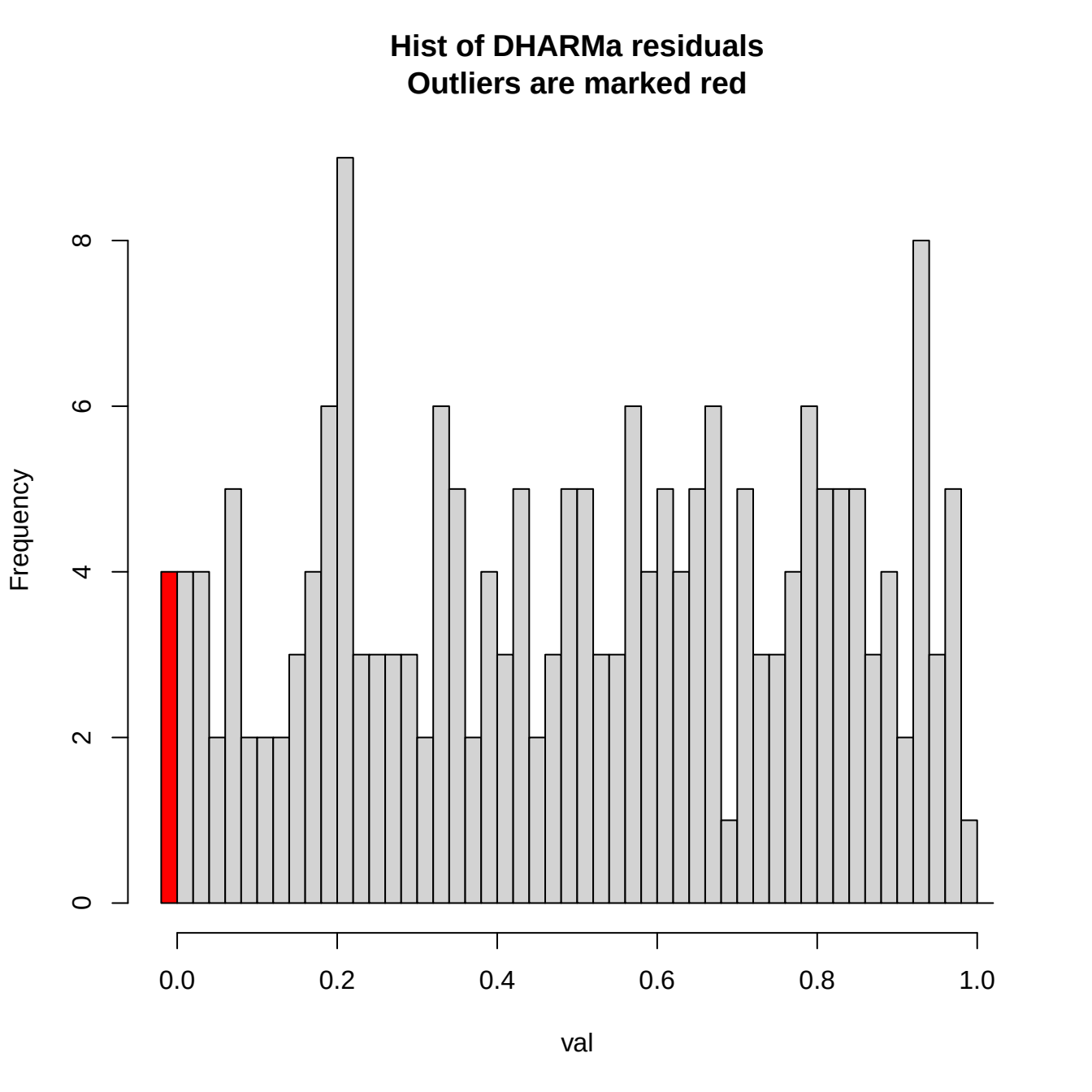

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

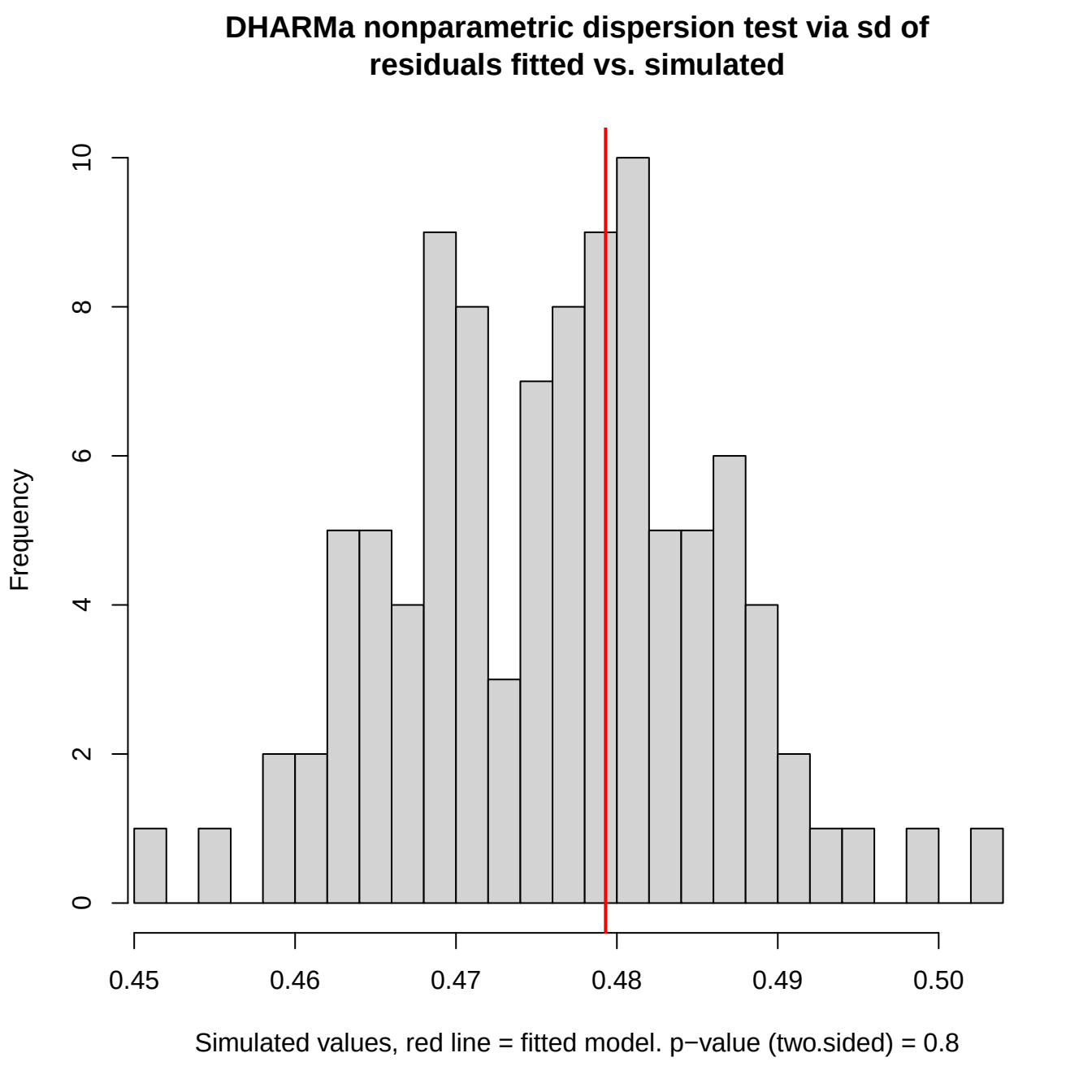

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.3

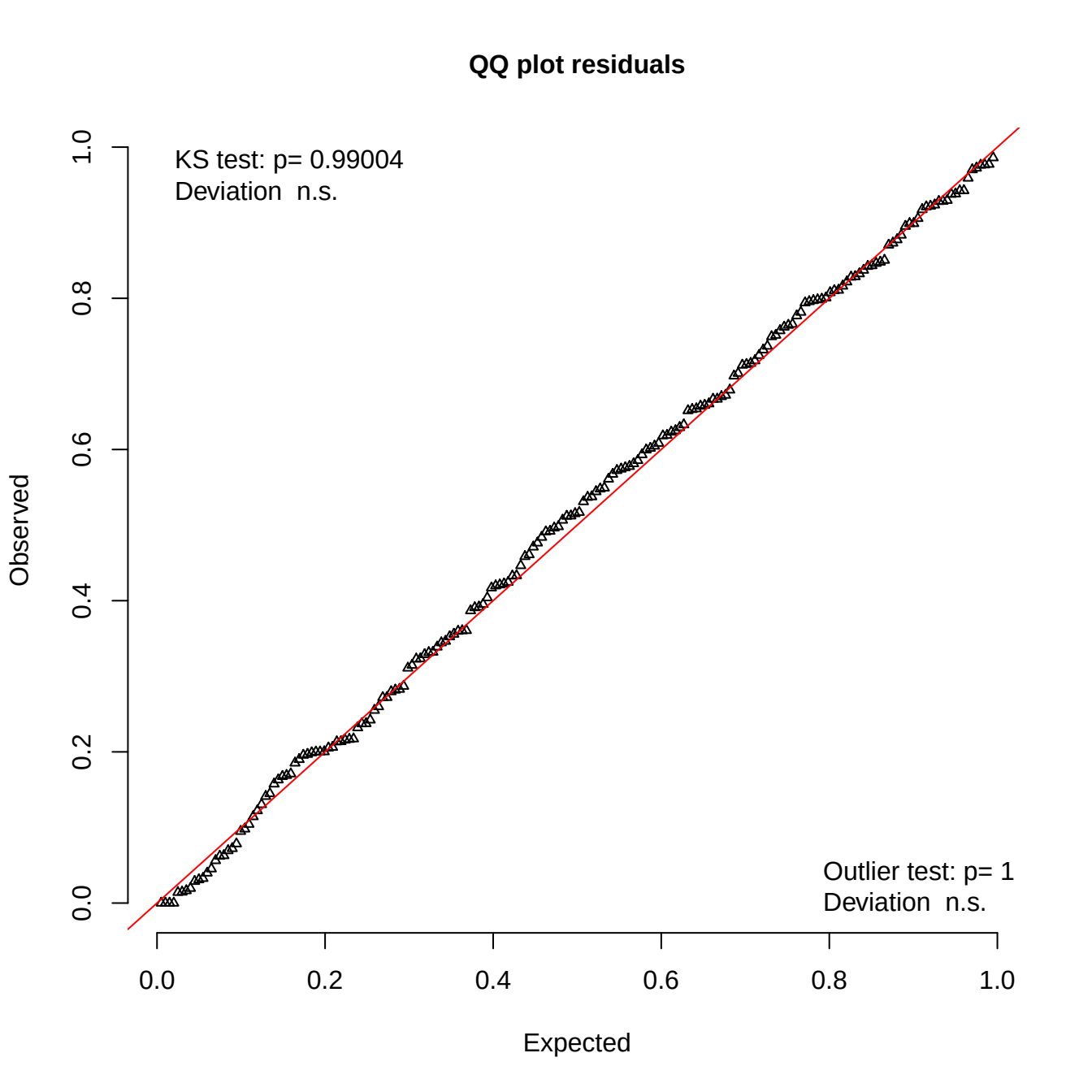

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00013
Deviation significant
Outlier test: p= 0.47321
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

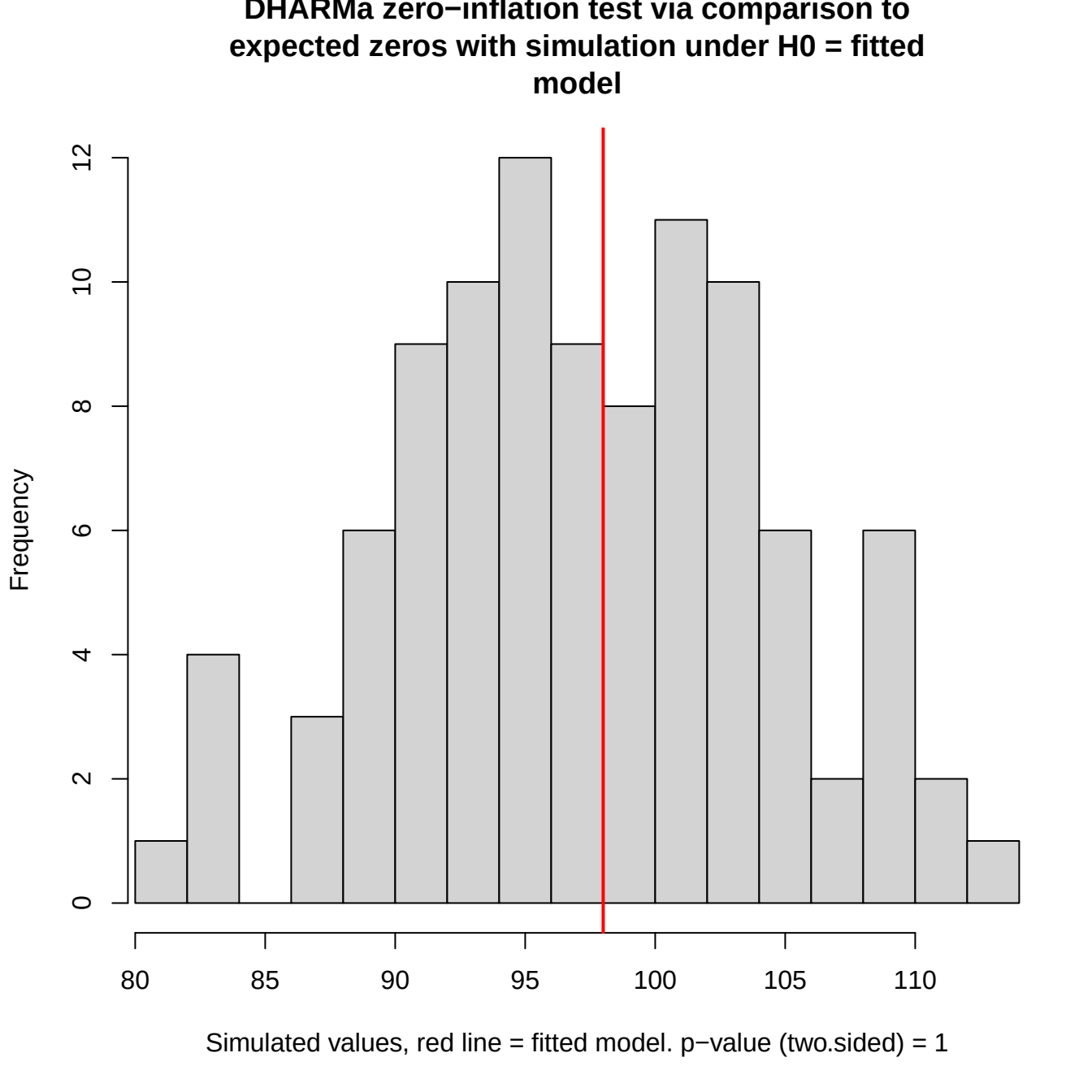

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
199.6
199.8
200.0
200.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

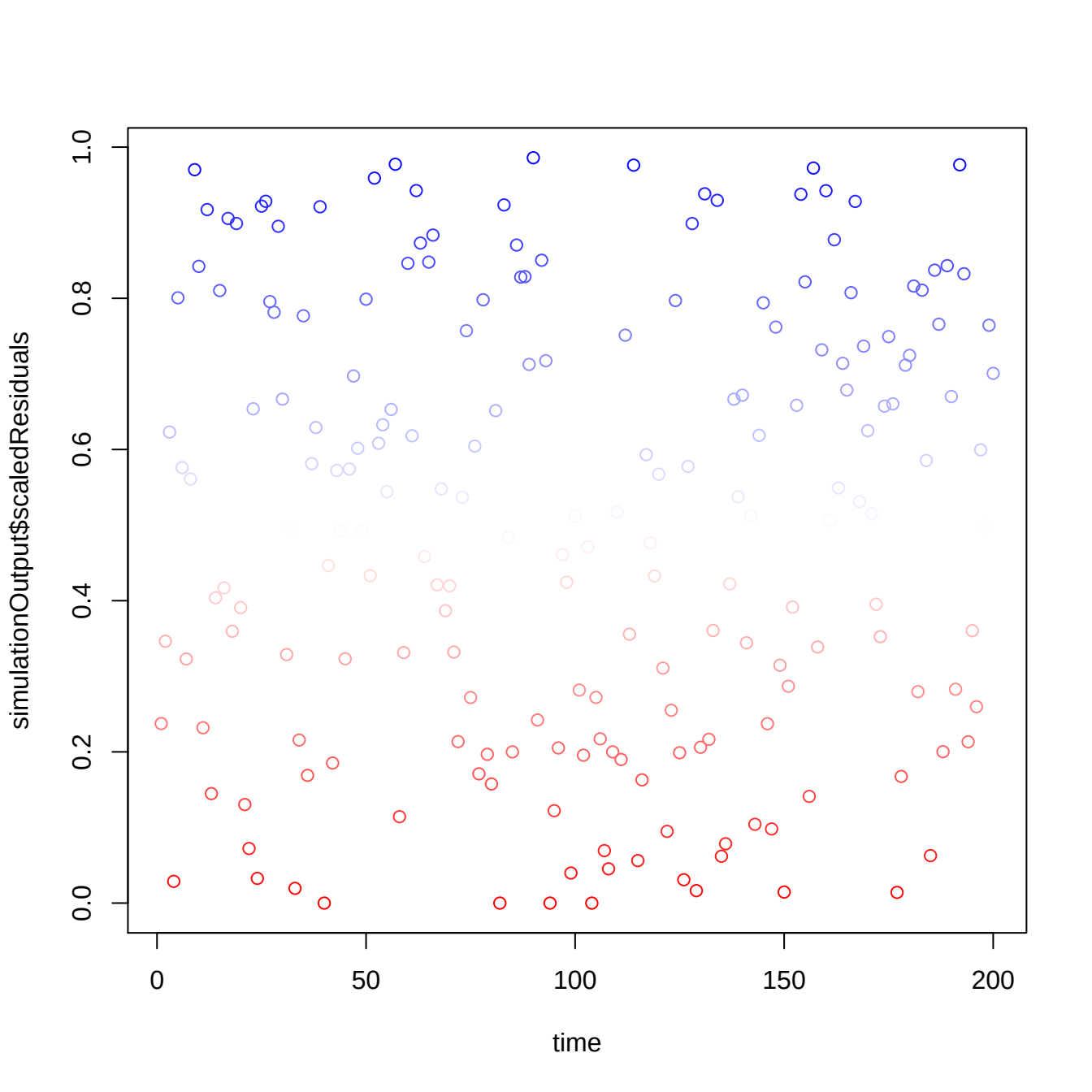

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

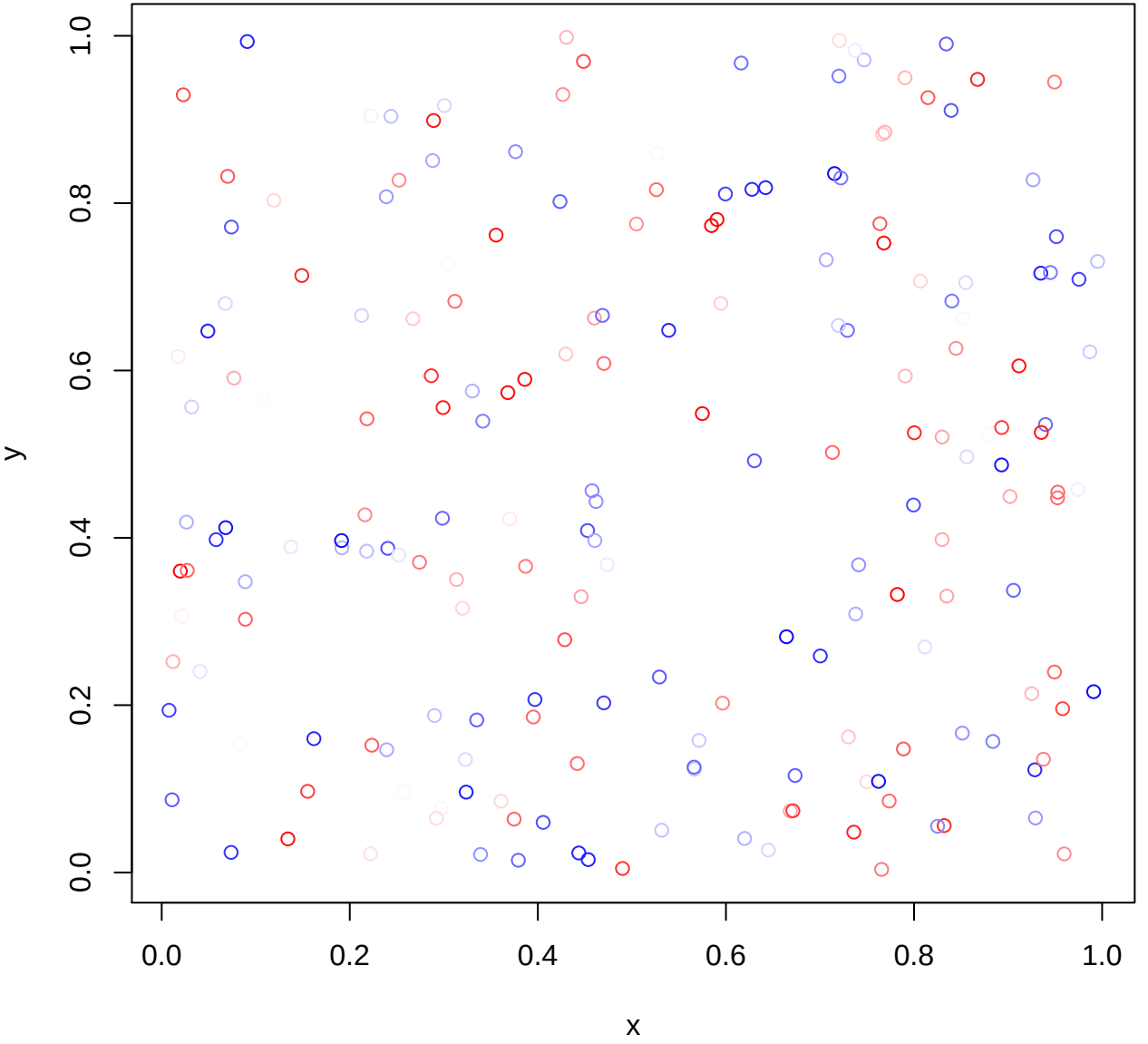

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

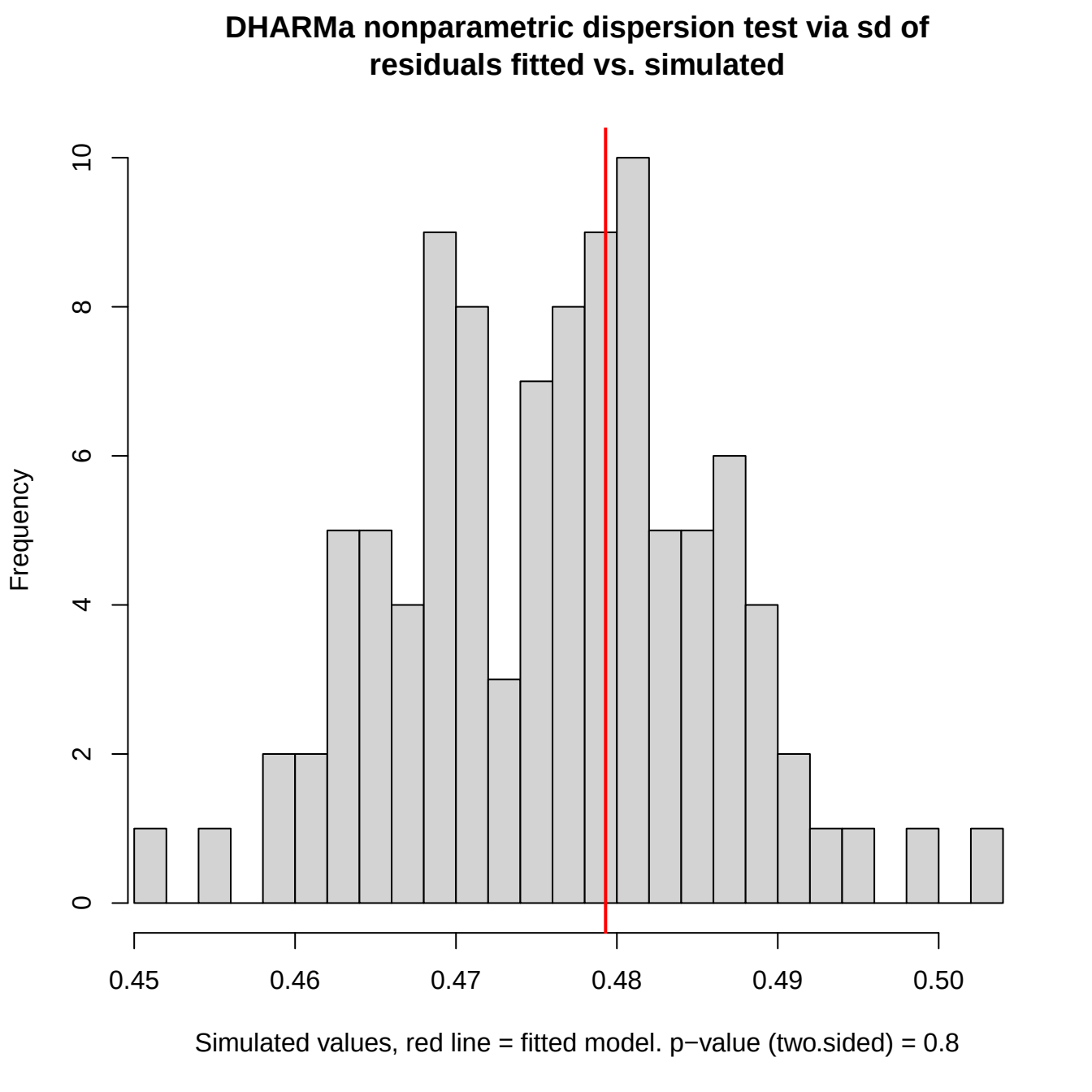

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

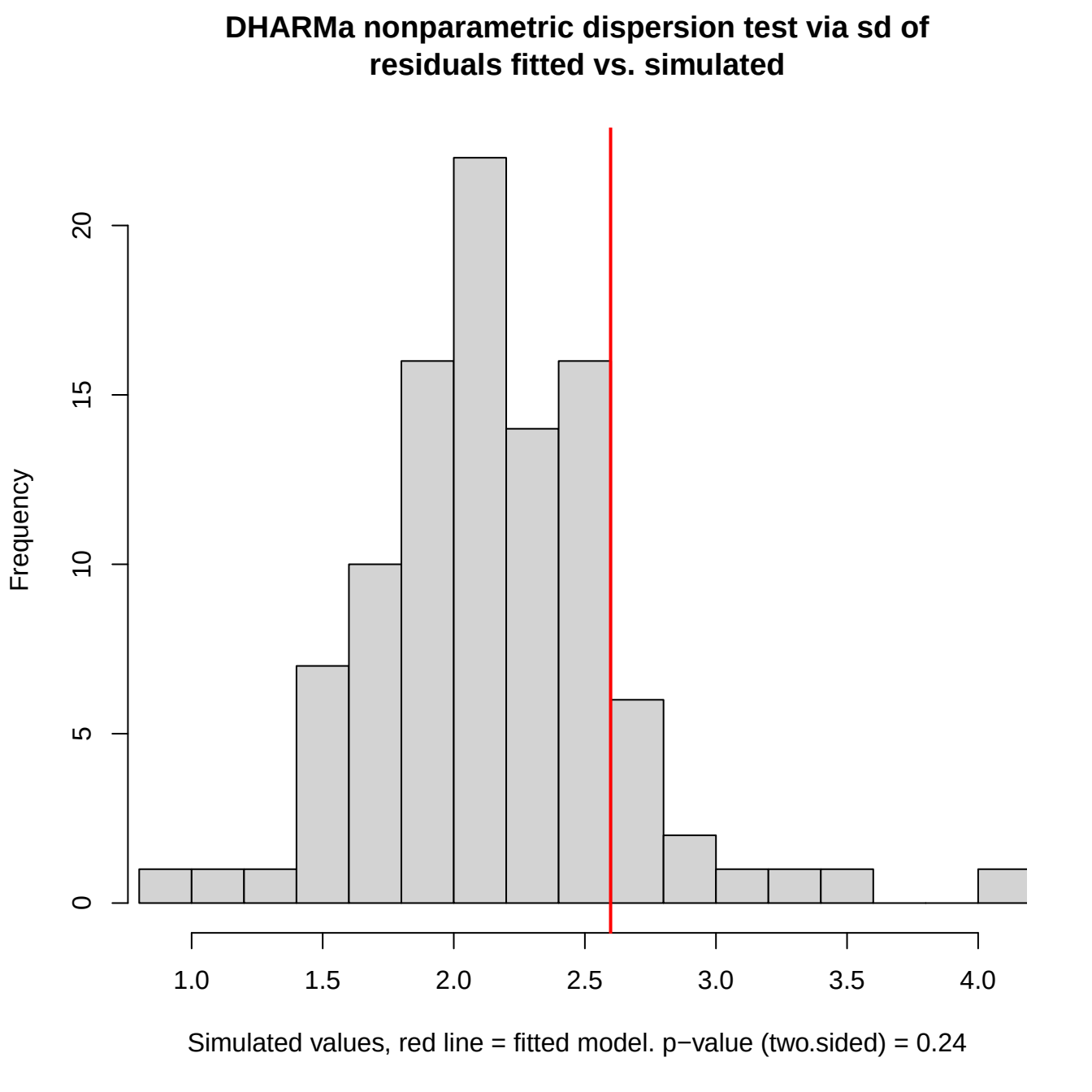

QQ plot residuals
KS test: p= 0.99004
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

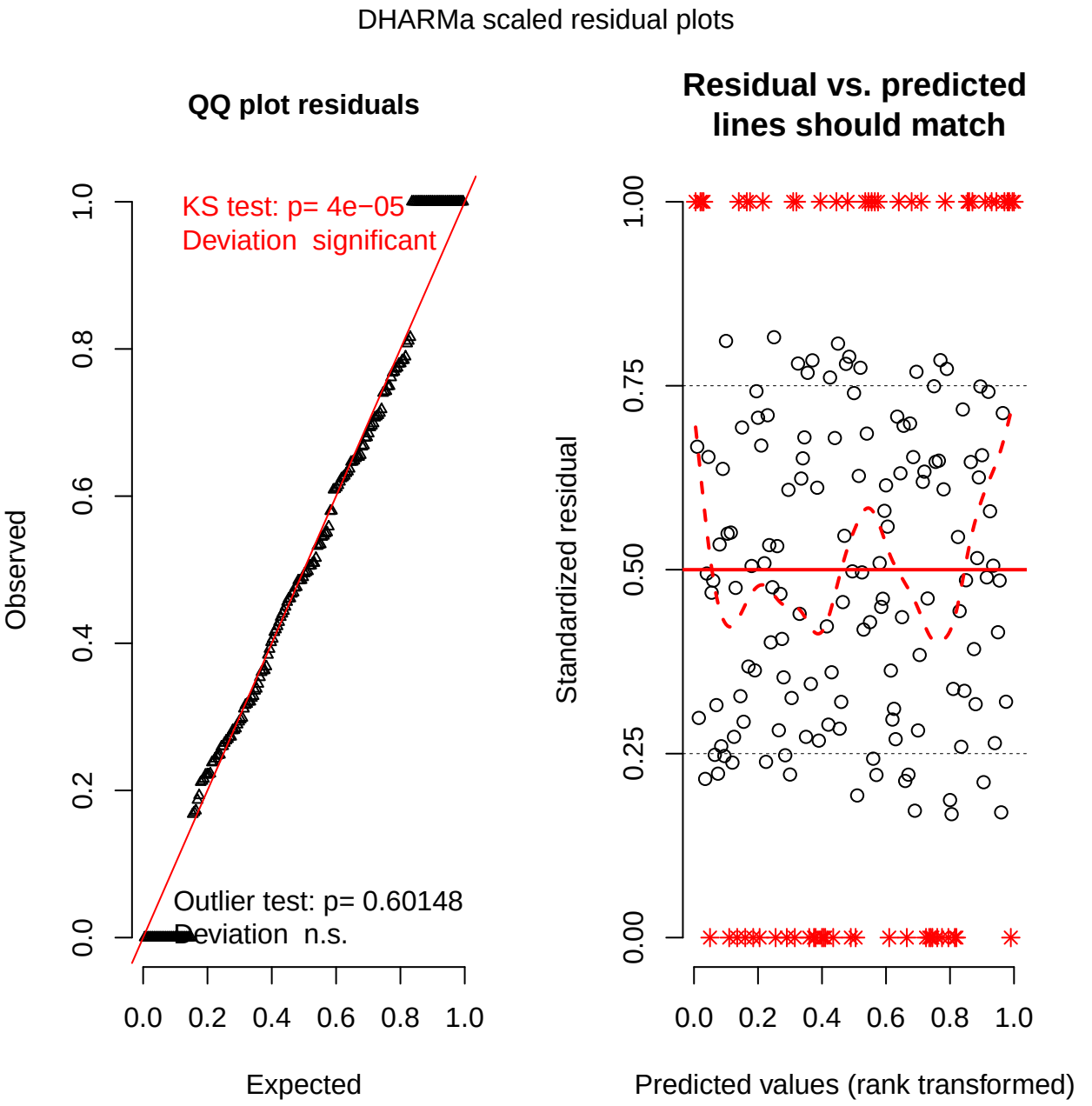

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 1

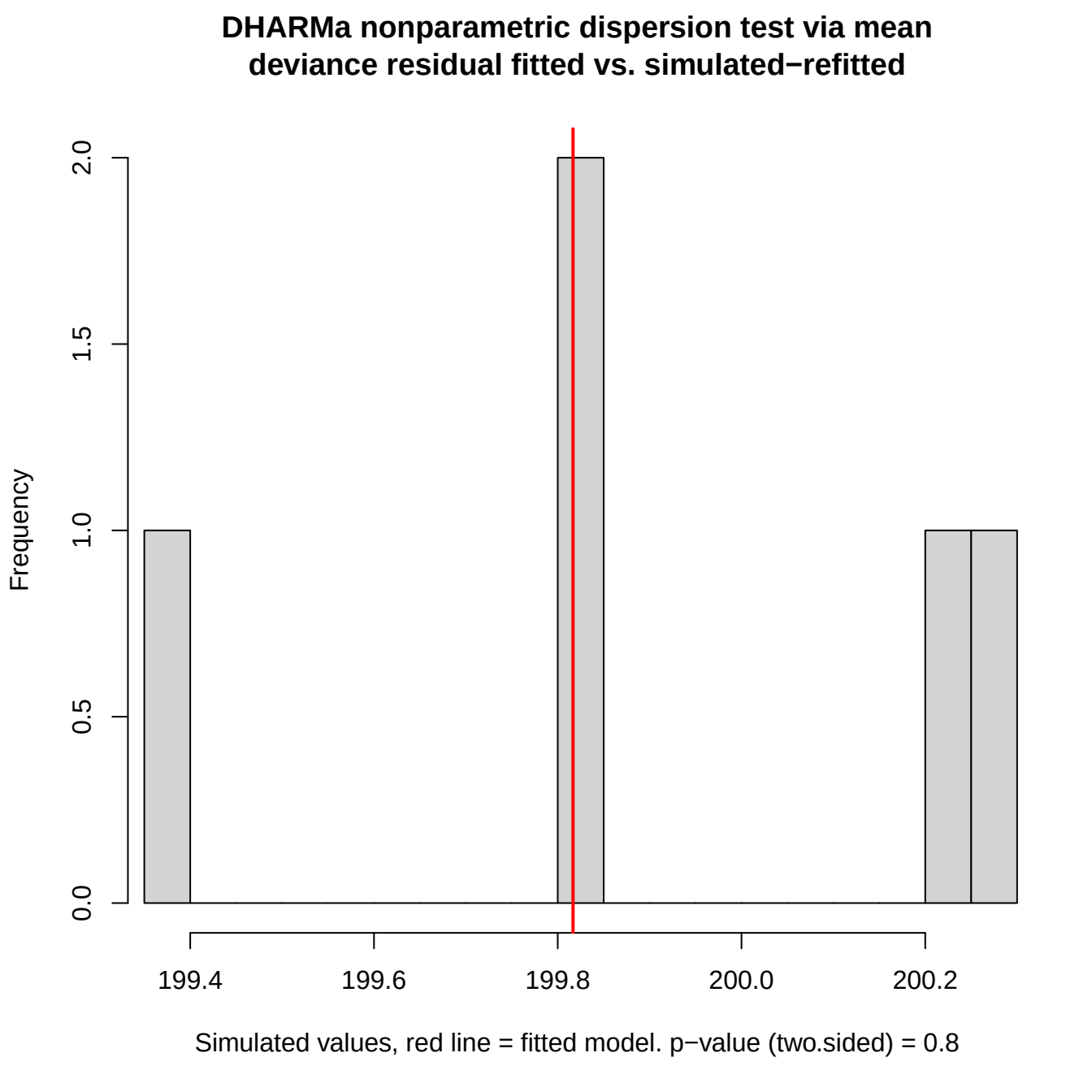

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

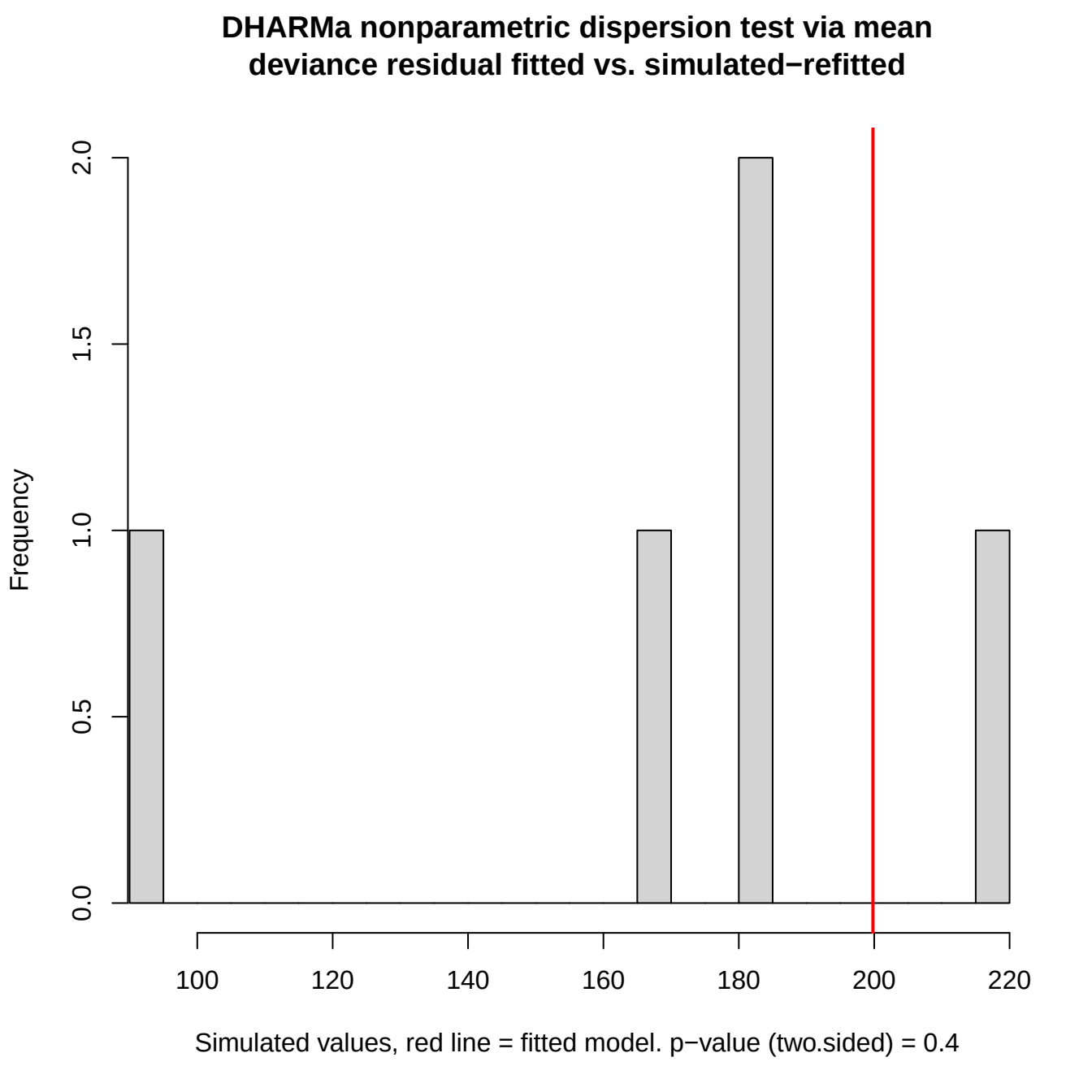

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

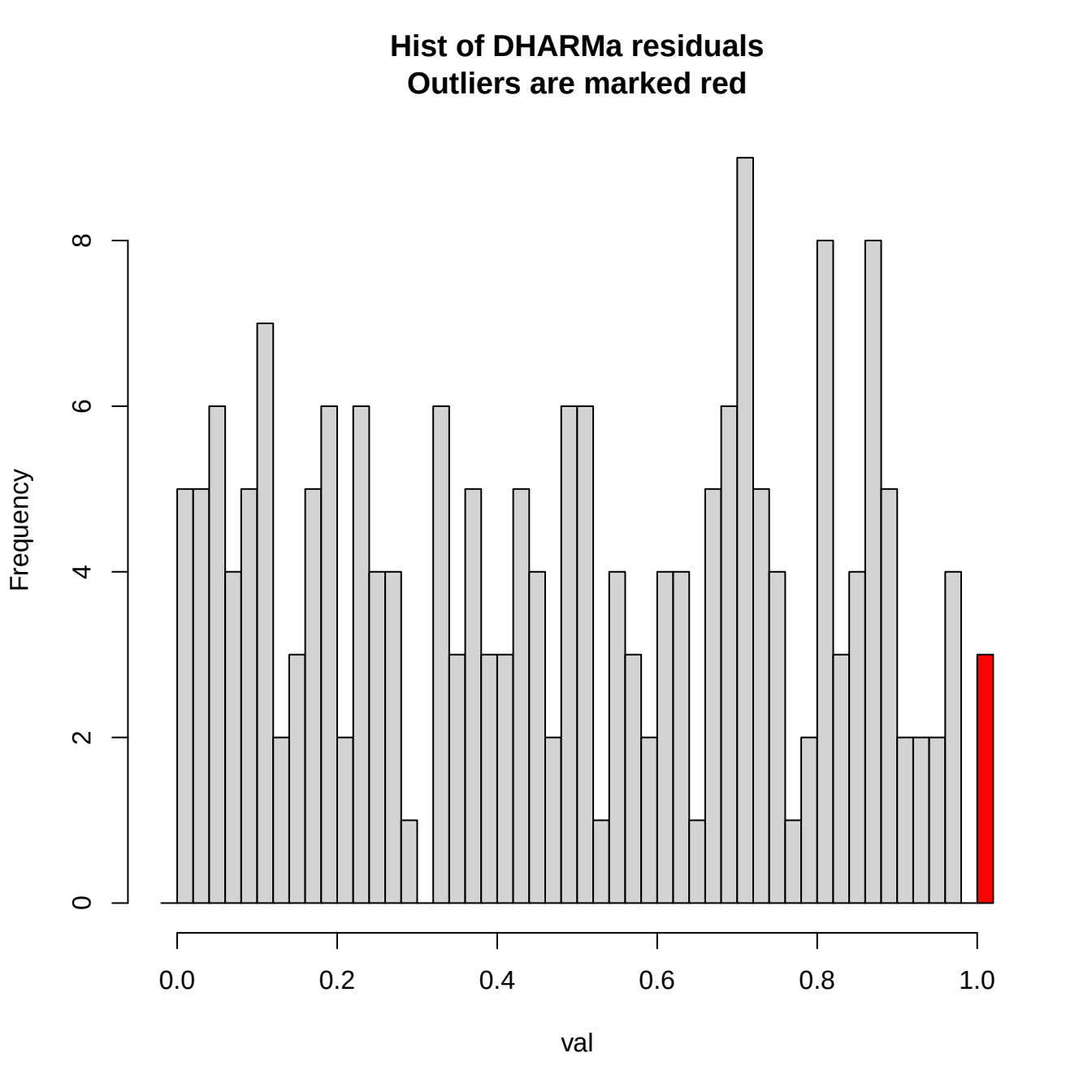

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

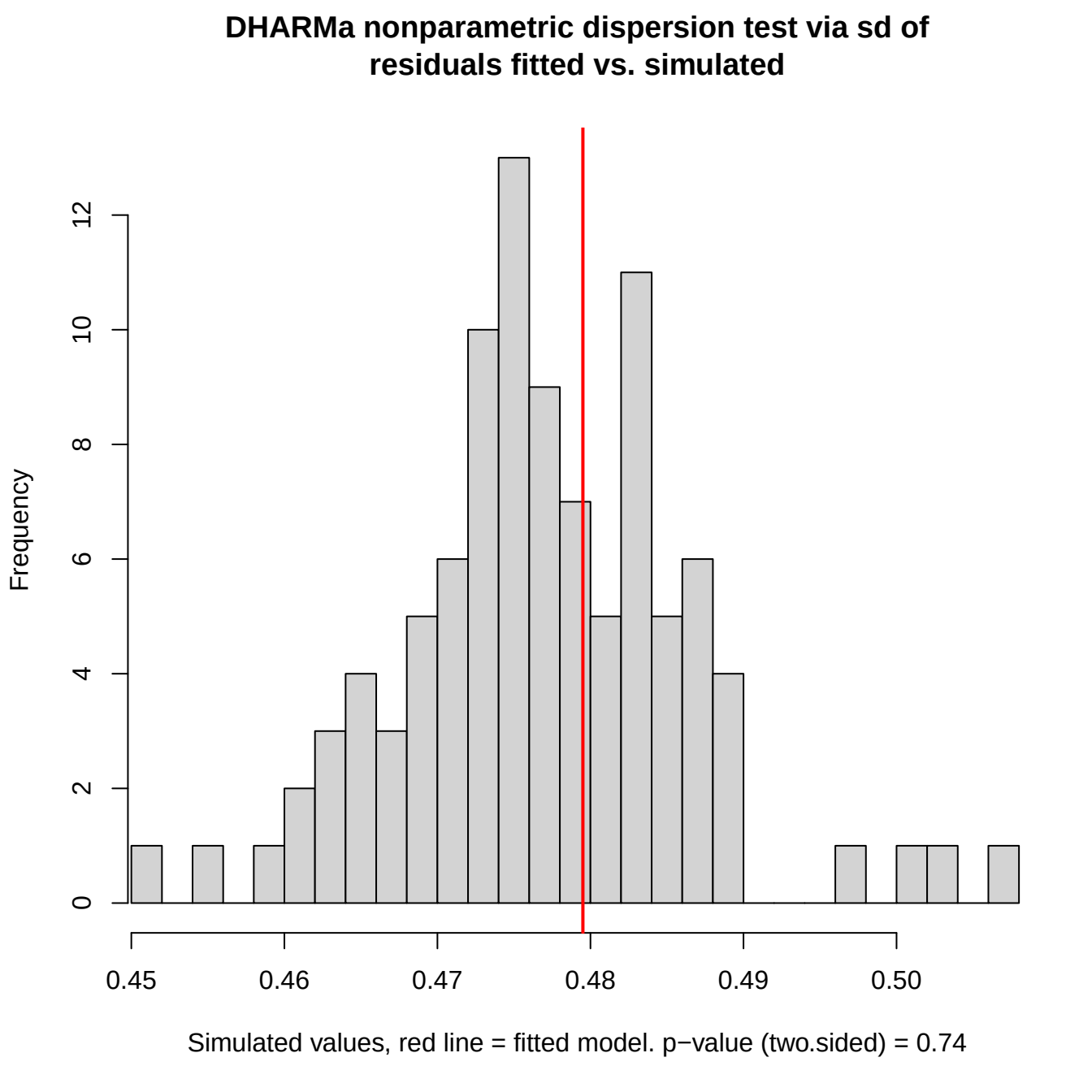

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.24

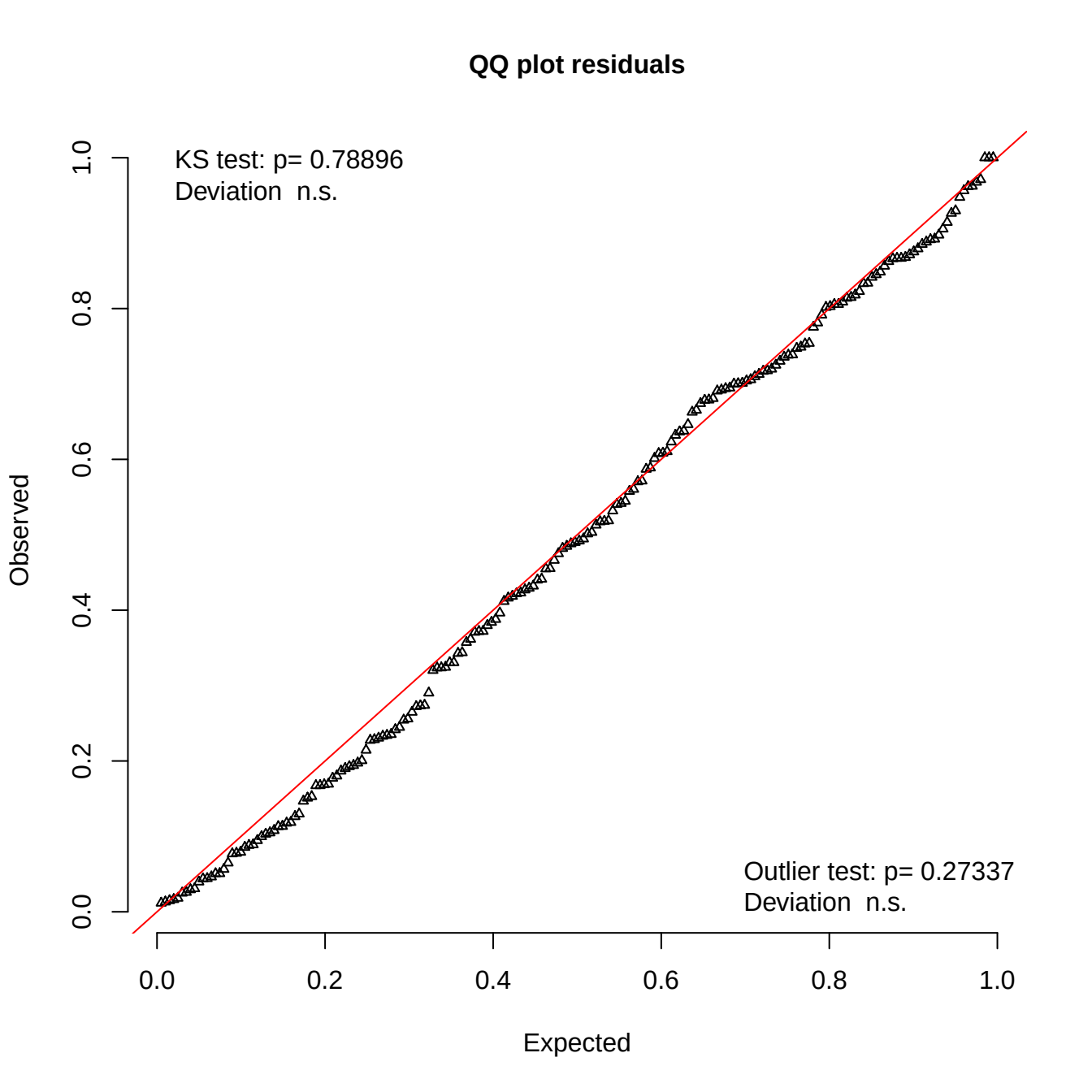

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.60148
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

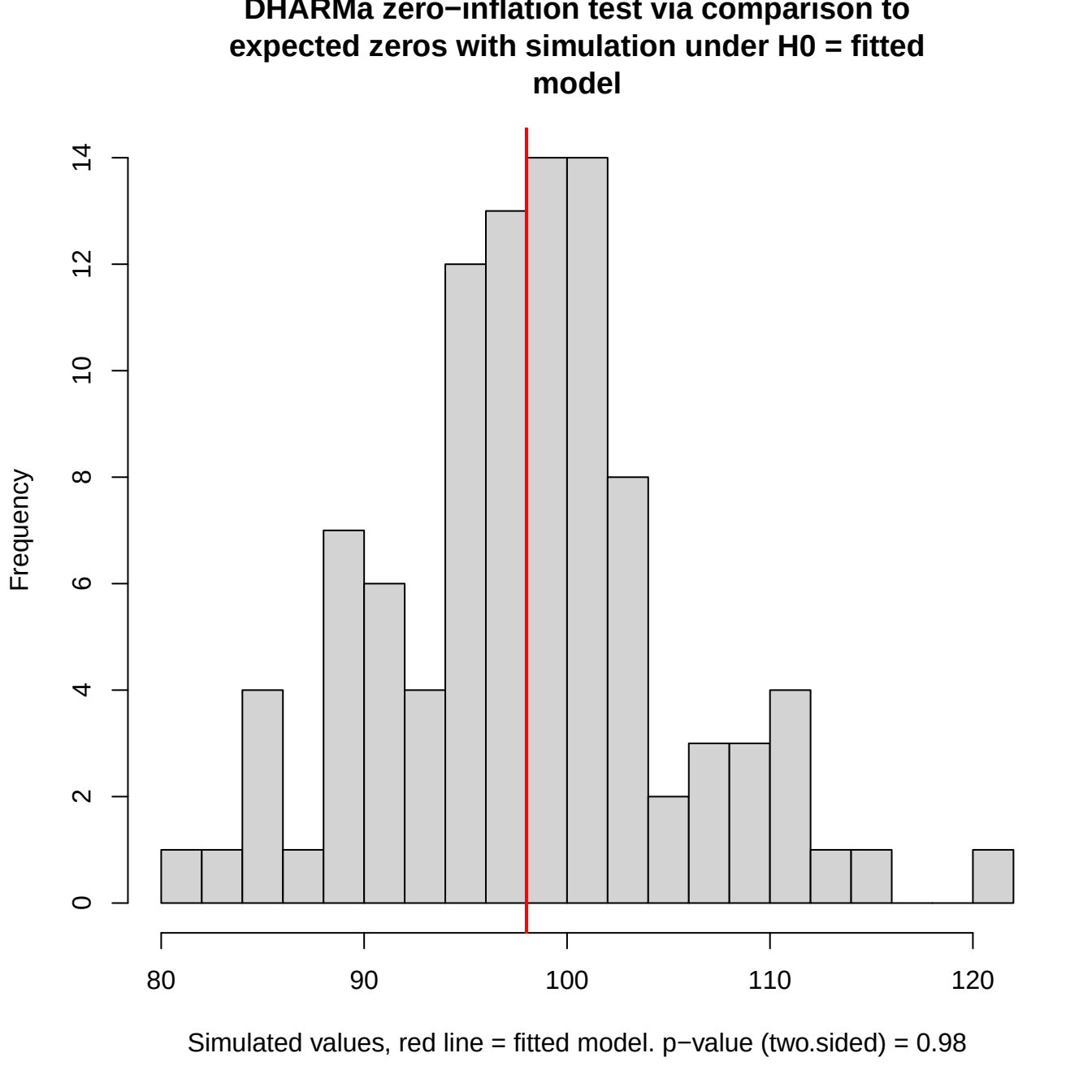

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
199.4
199.6
199.8
200.0
200.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

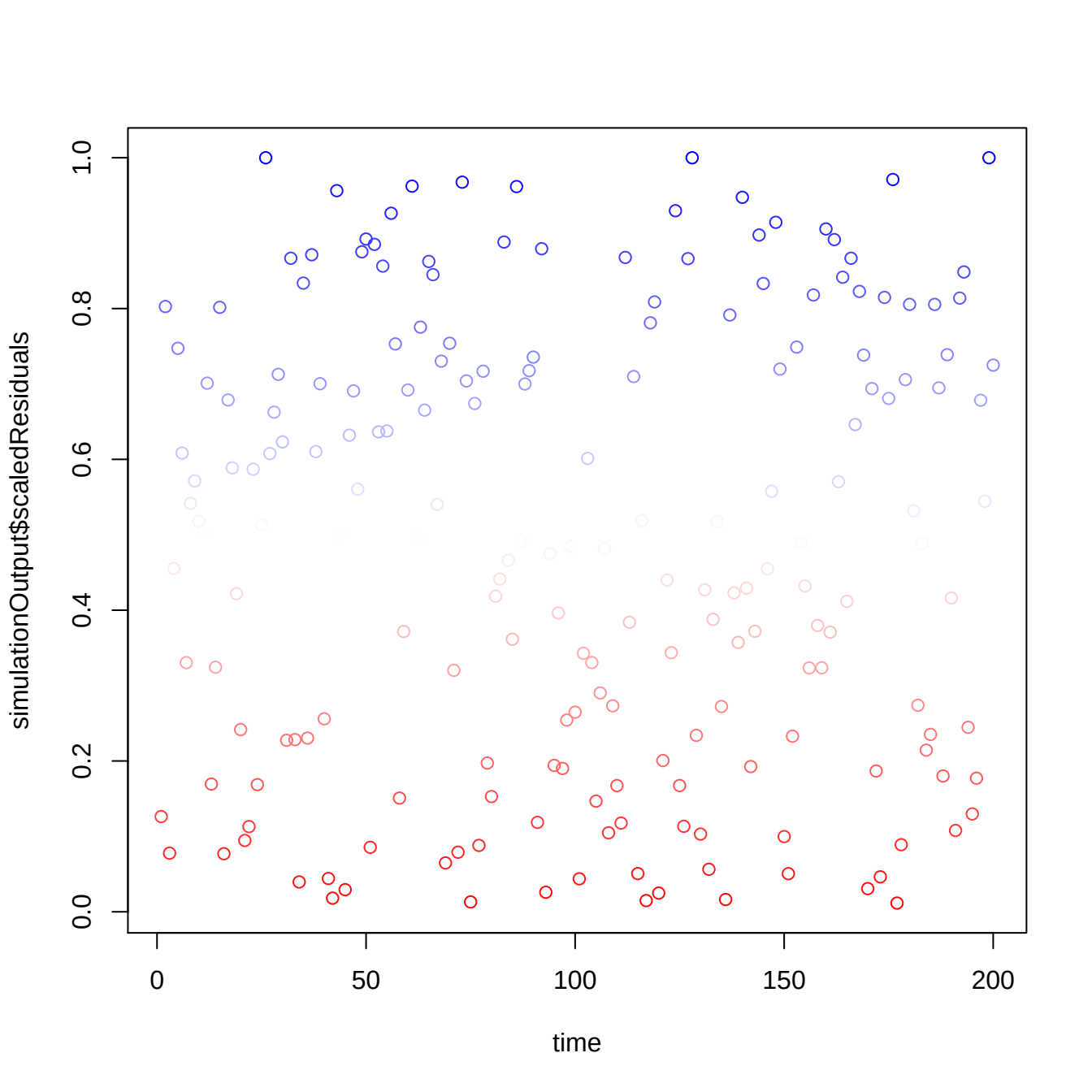

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

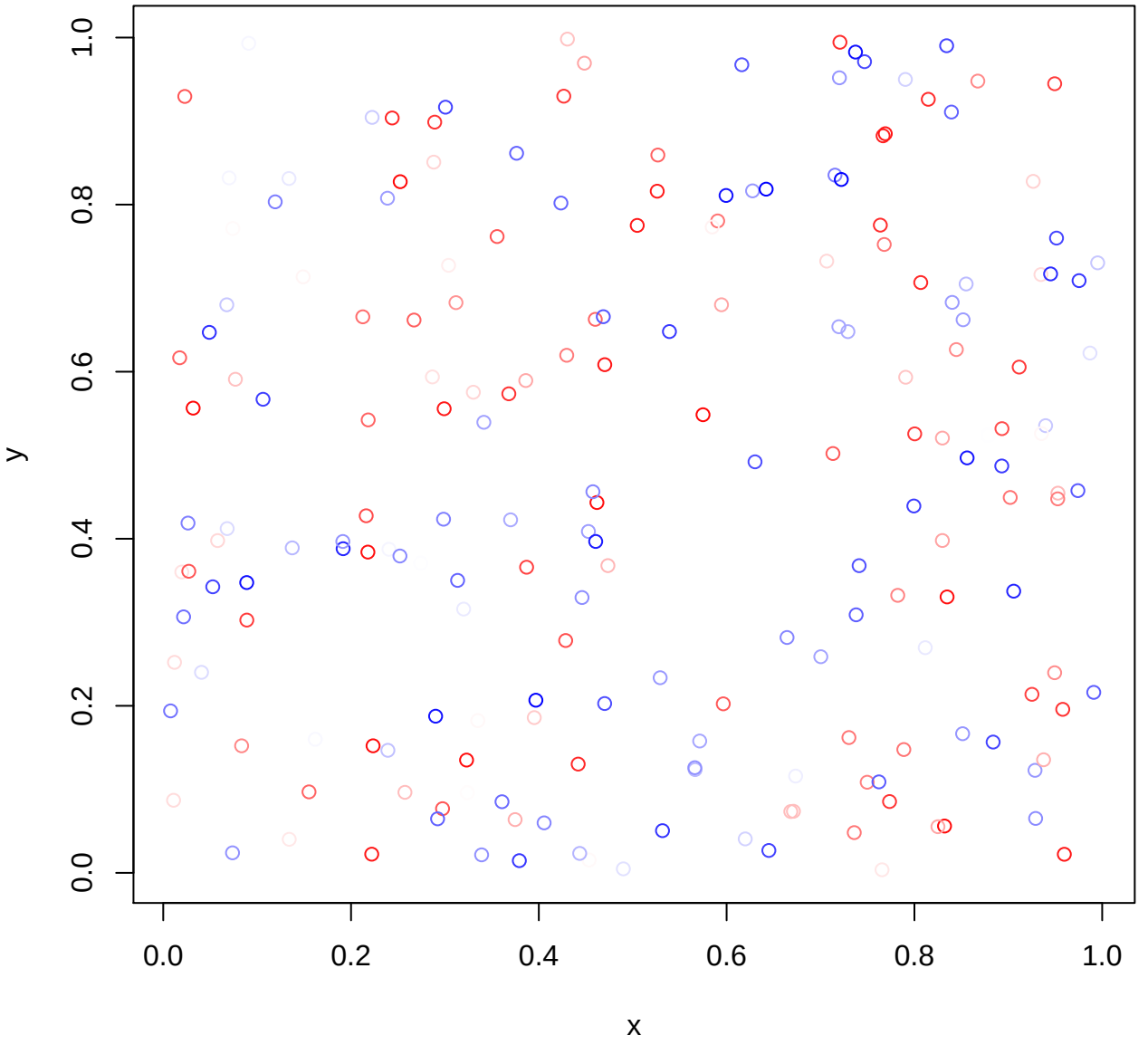

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

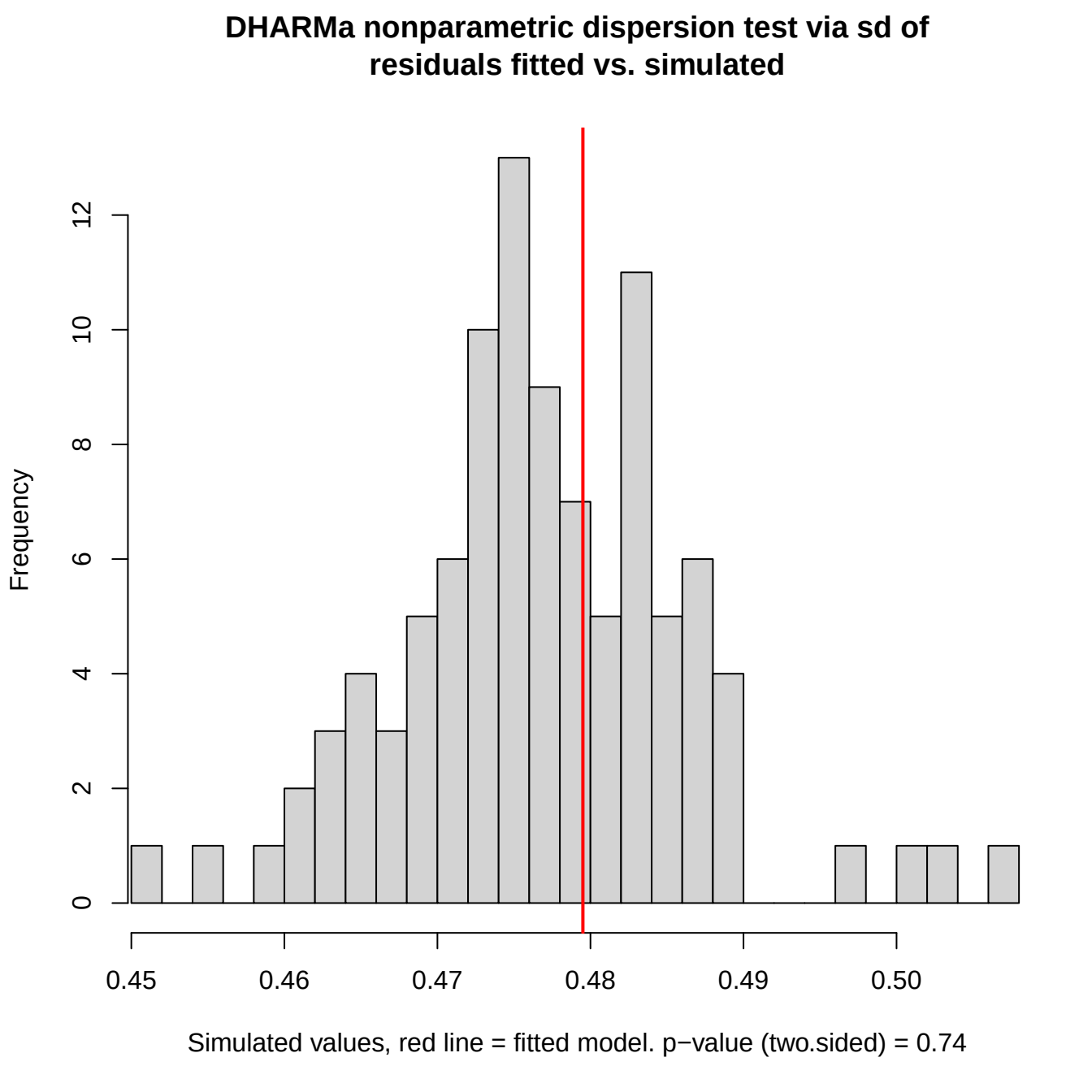

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

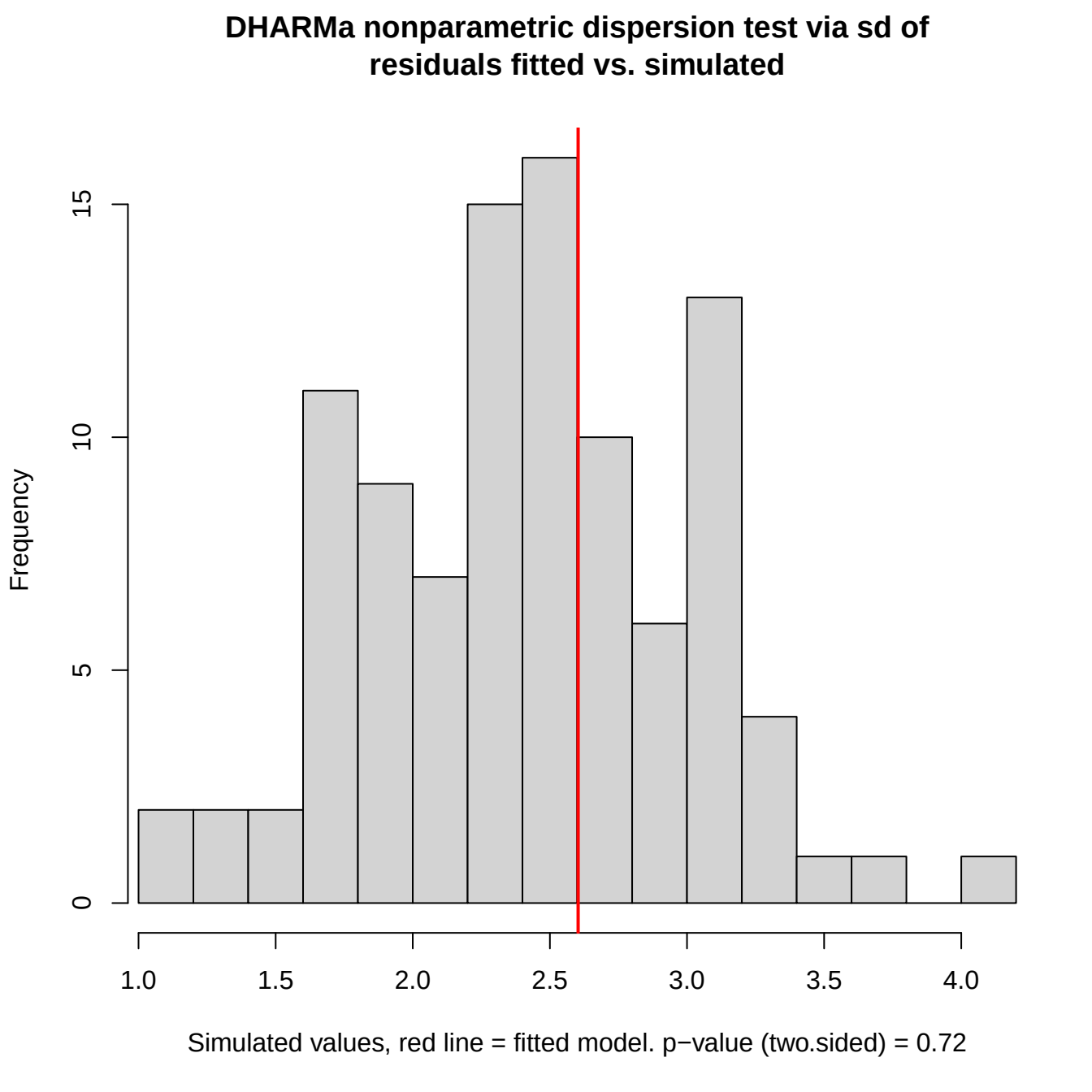

QQ plot residuals
KS test: p= 0.78896
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

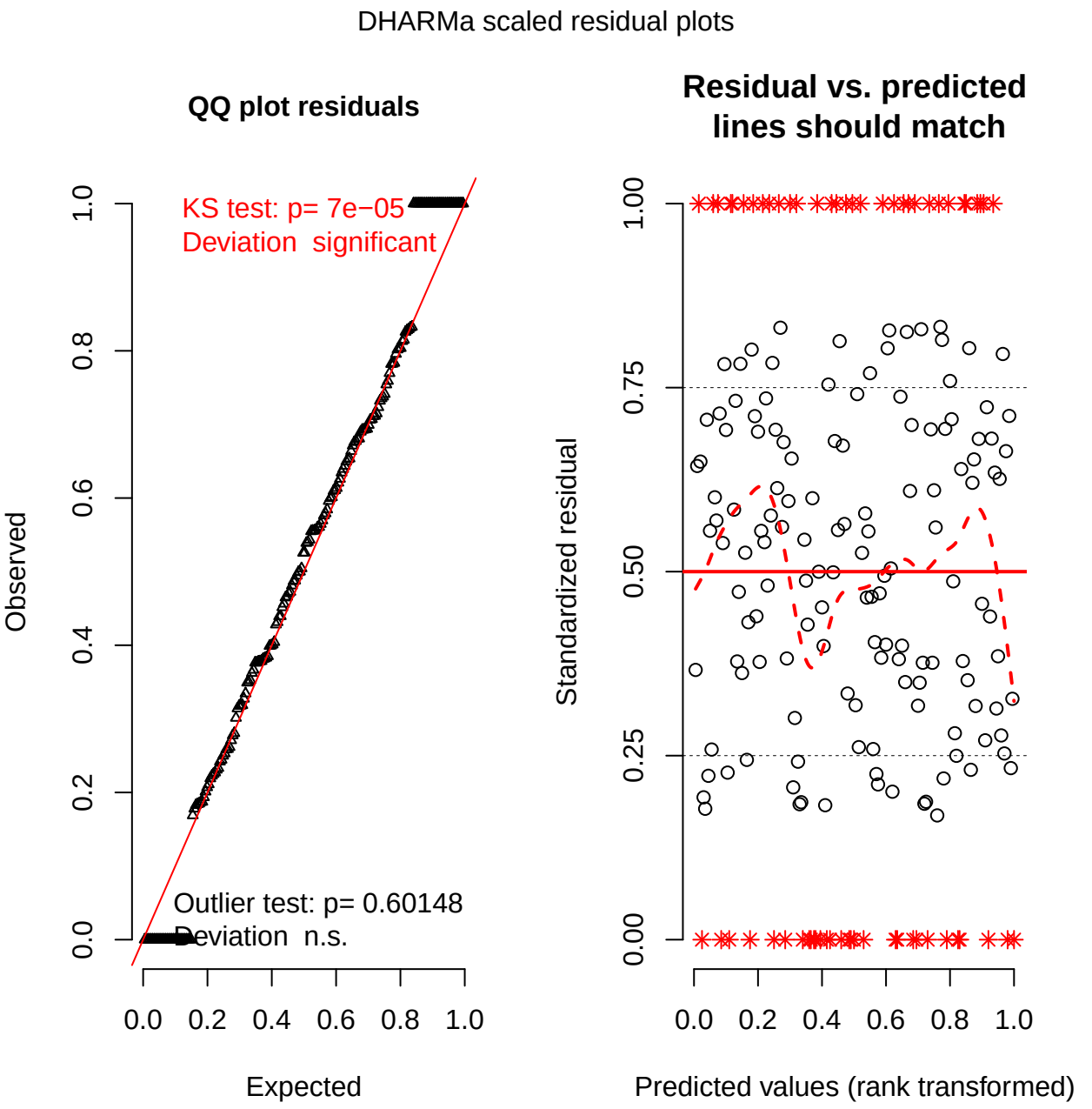

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

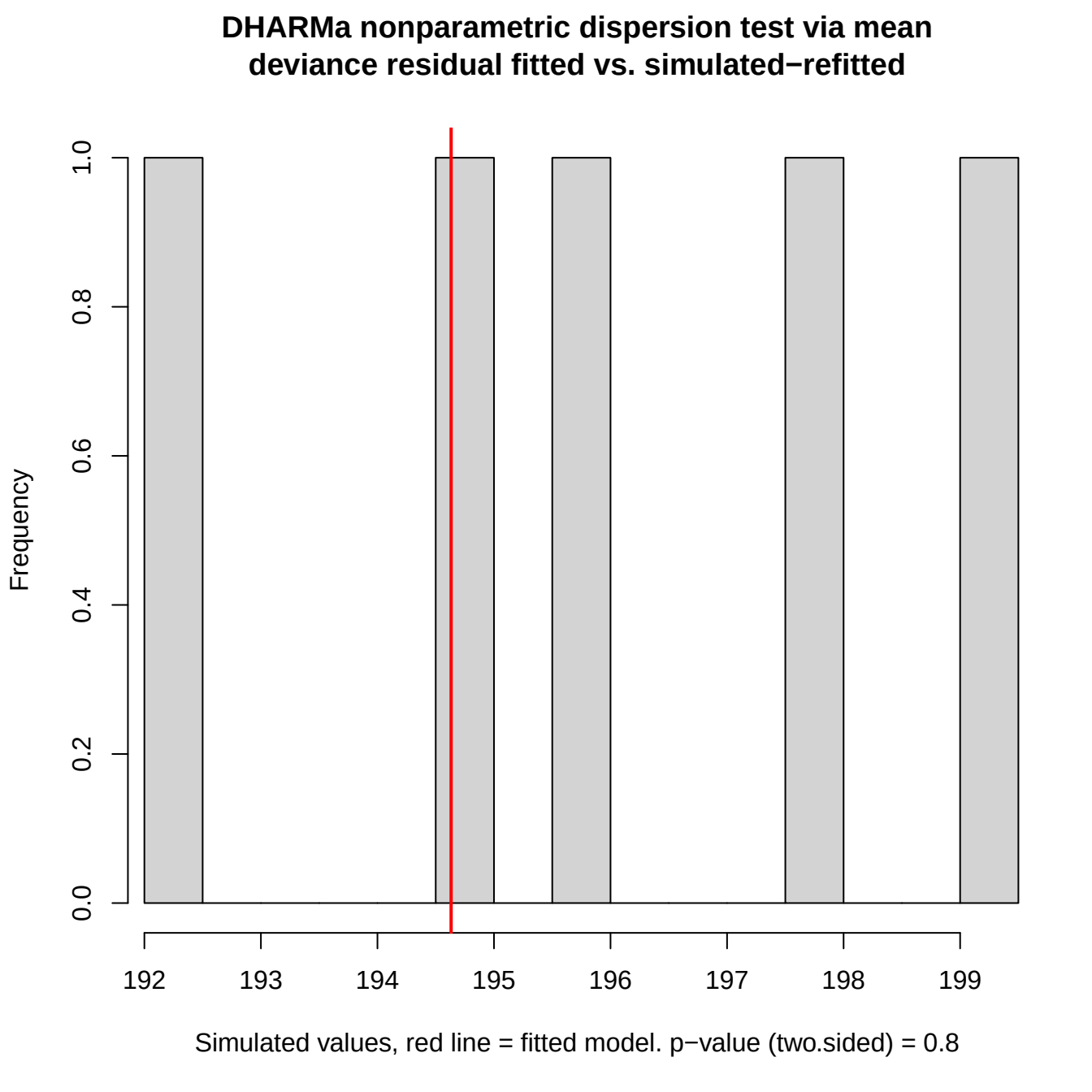

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

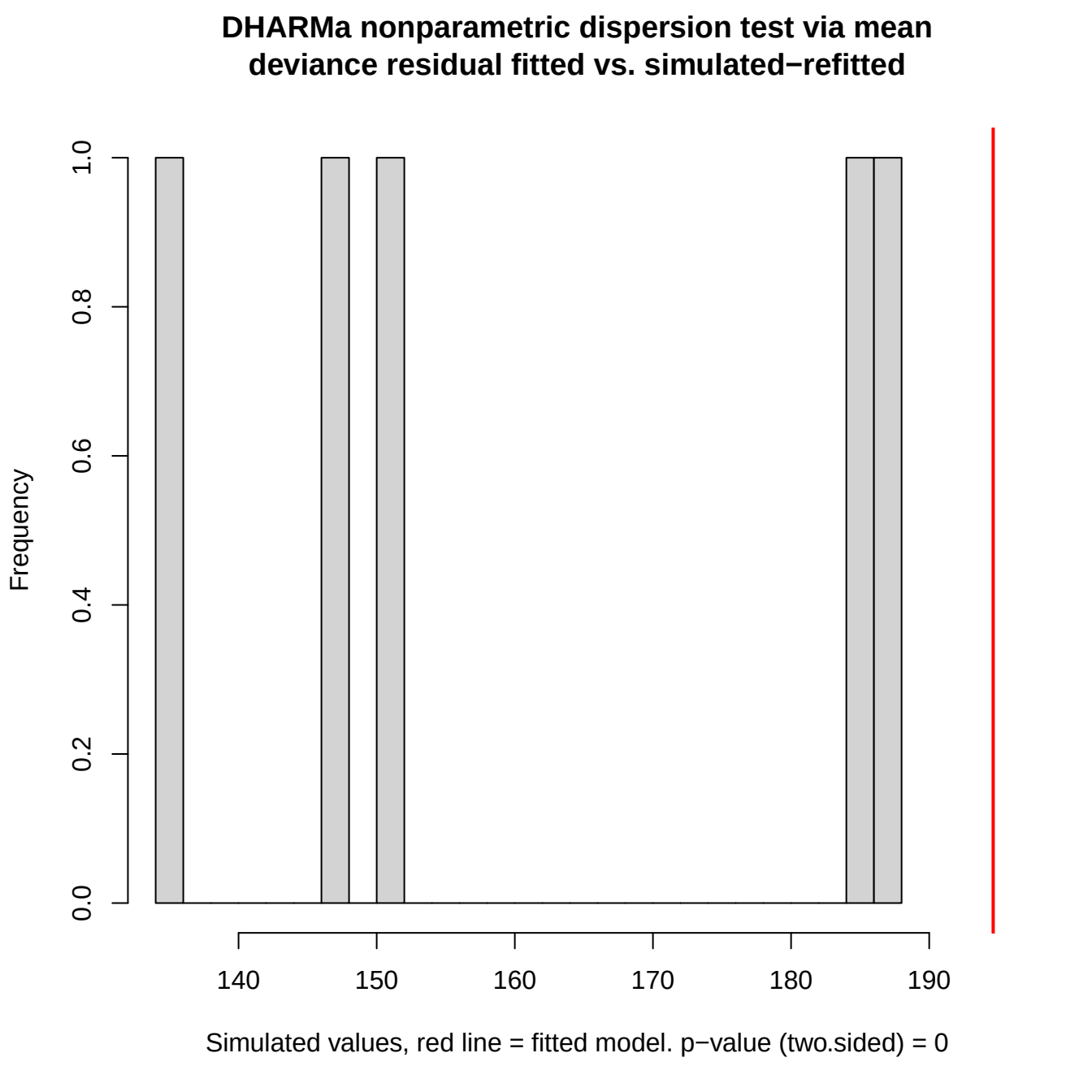

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

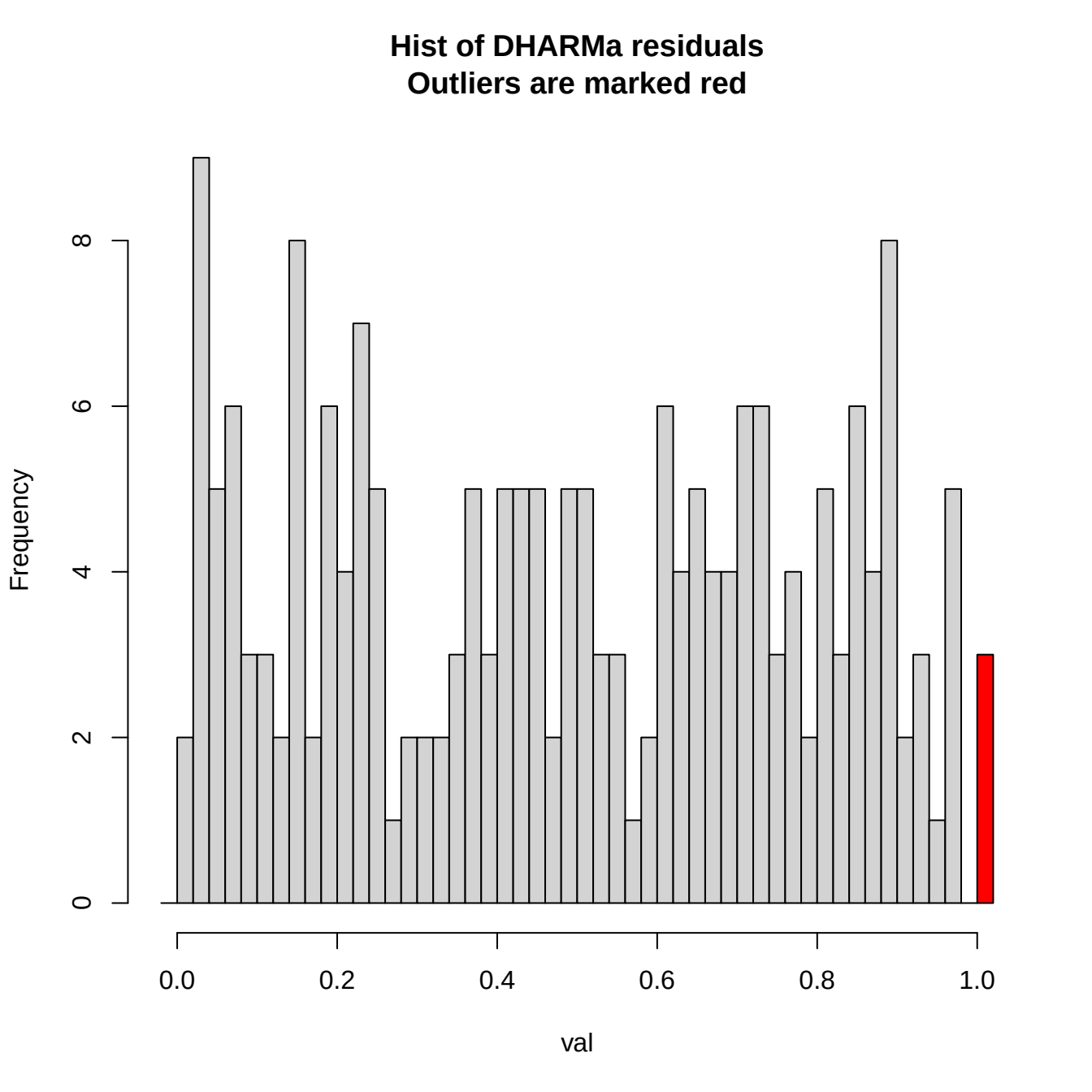

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

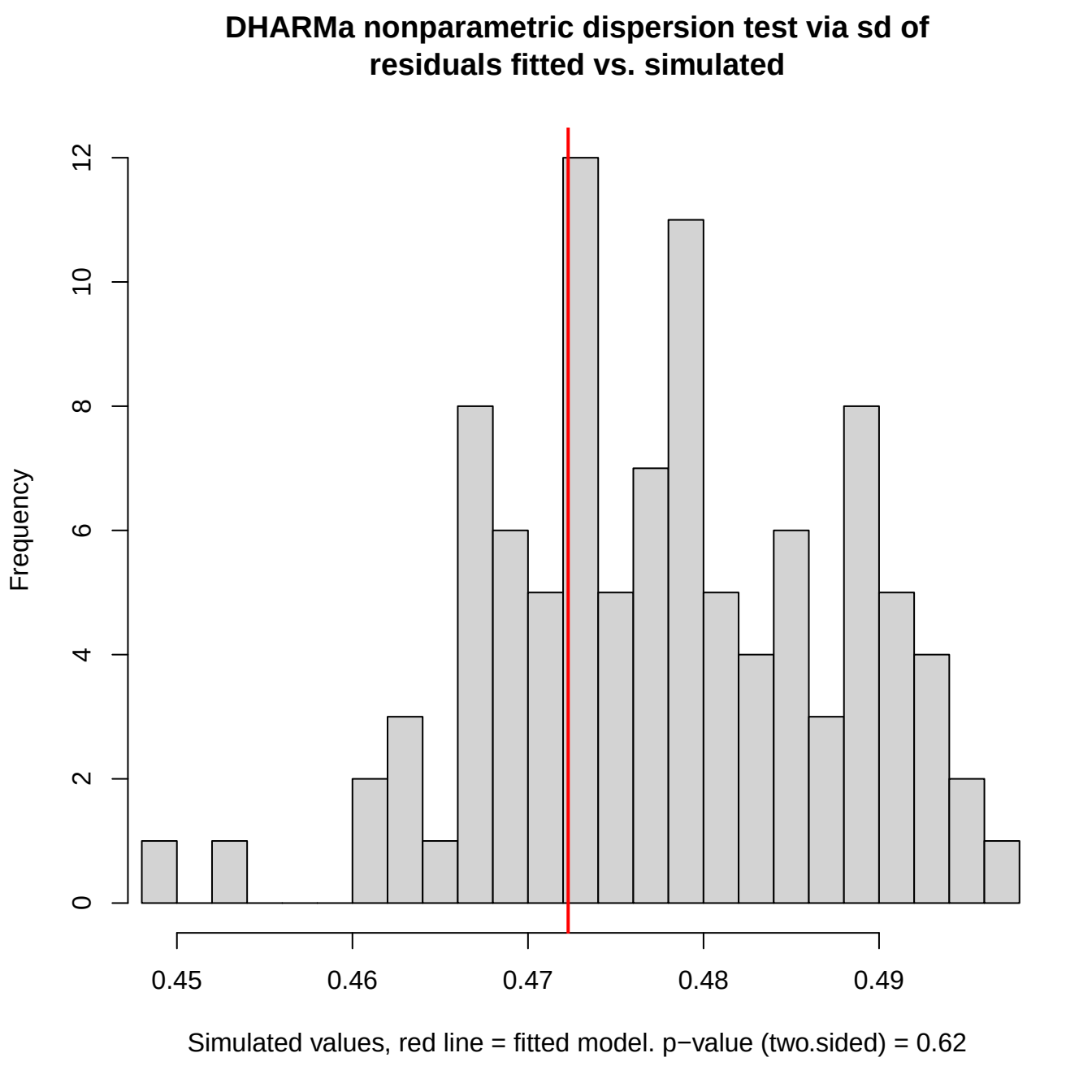

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.72

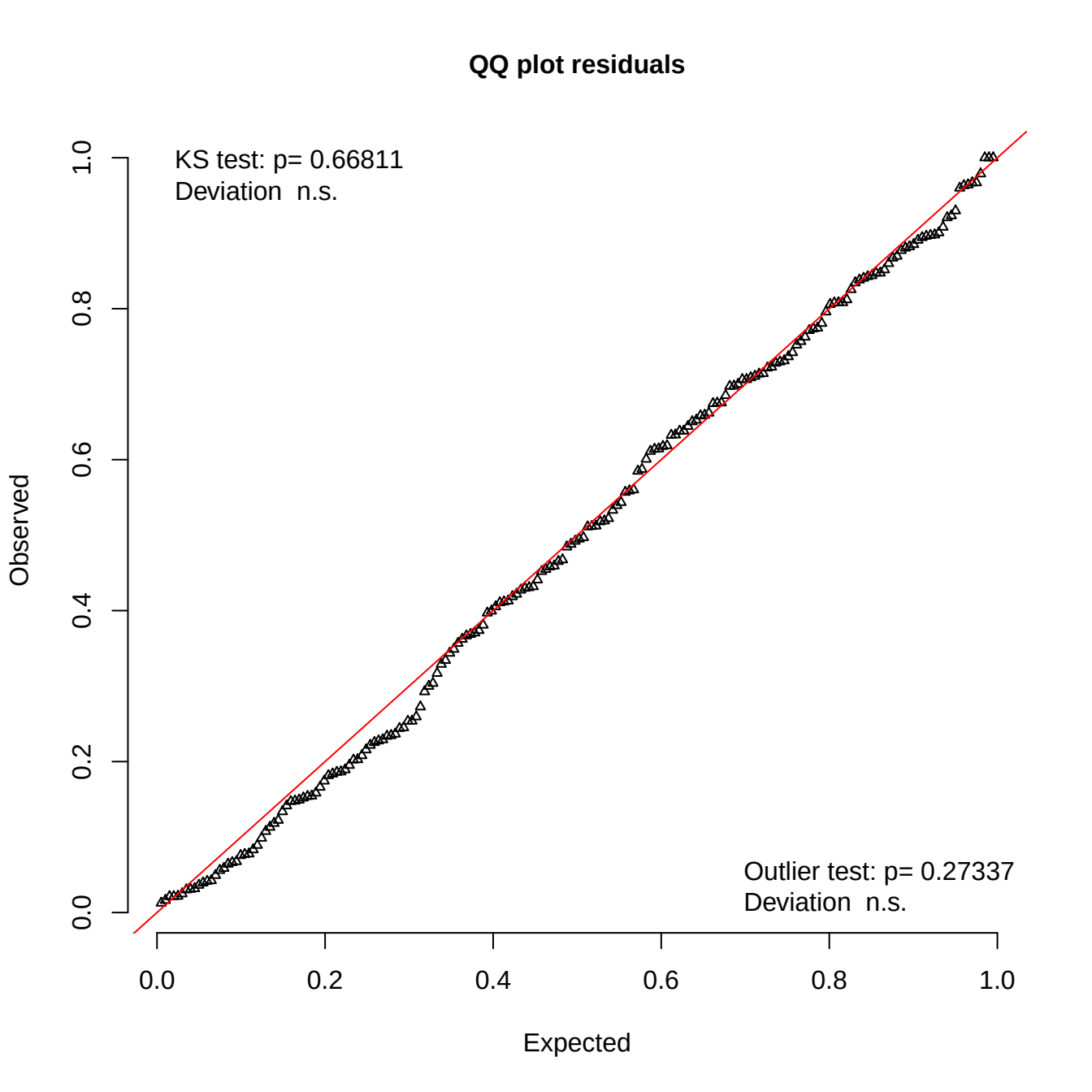

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 7e−05
Deviation significant
Outlier test: p= 0.60148
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

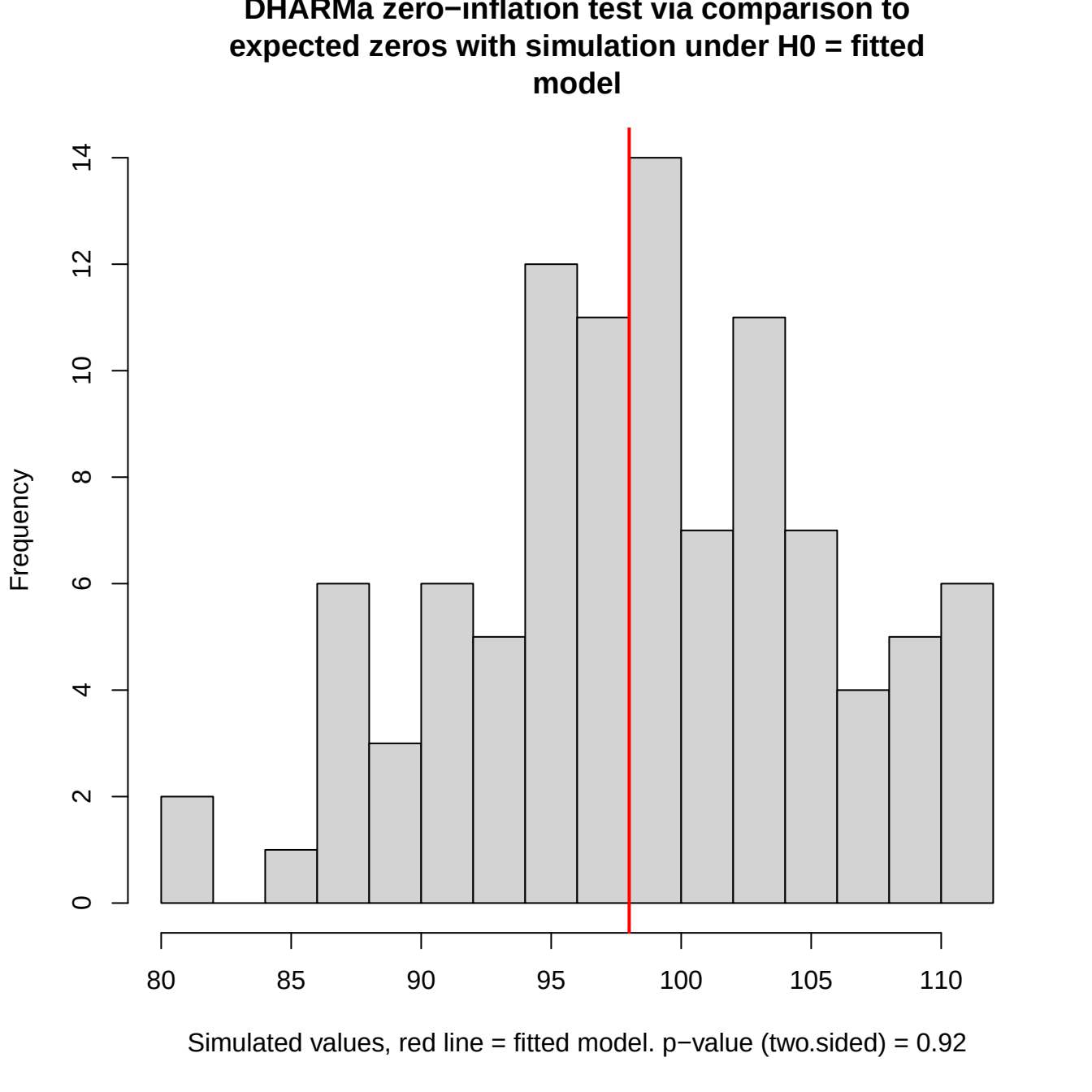

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
192
193
194
195
196
197
198
199
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

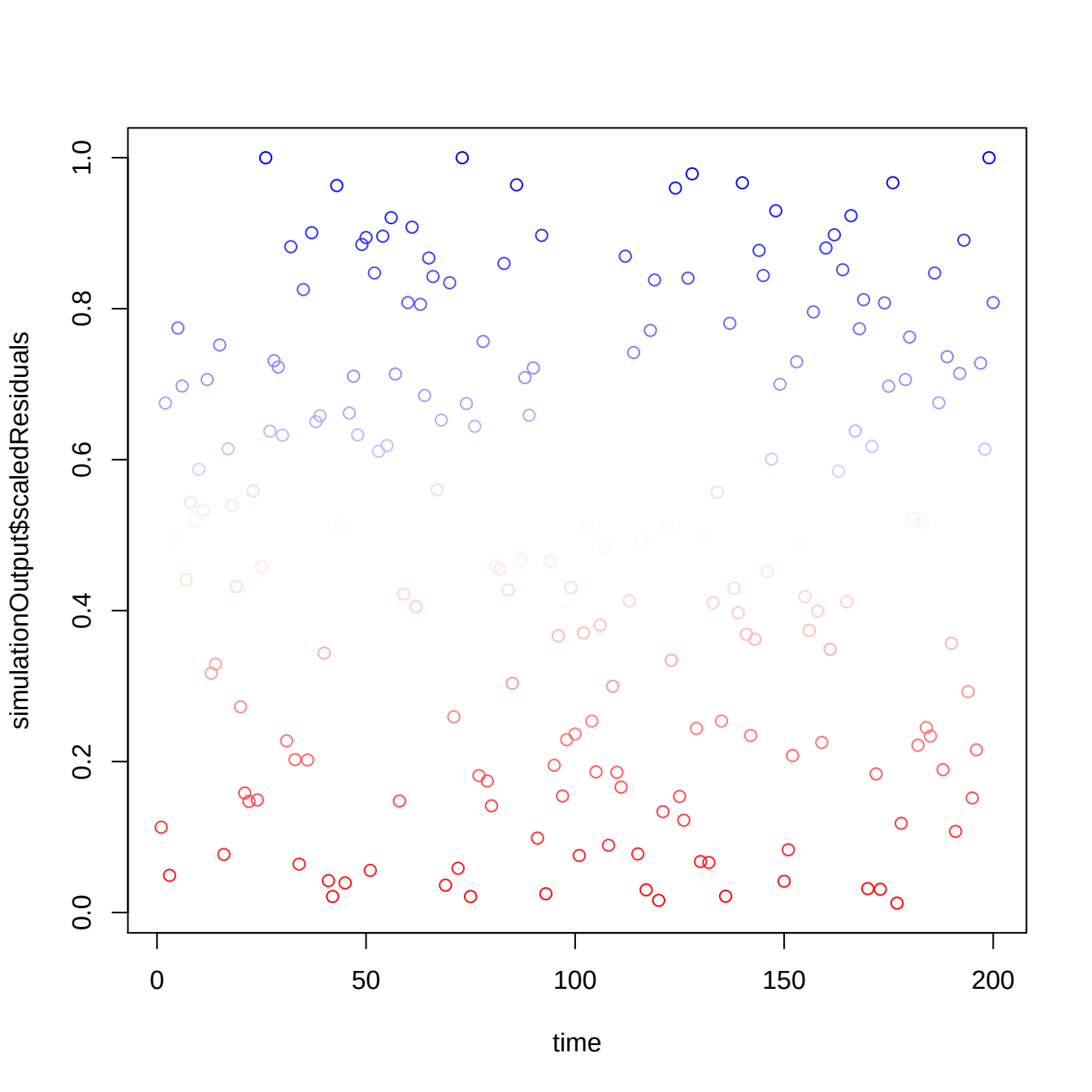

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
140
150
160
170
180
190
Simulated values, red line = fitted model. p−value (two.sided) = 0

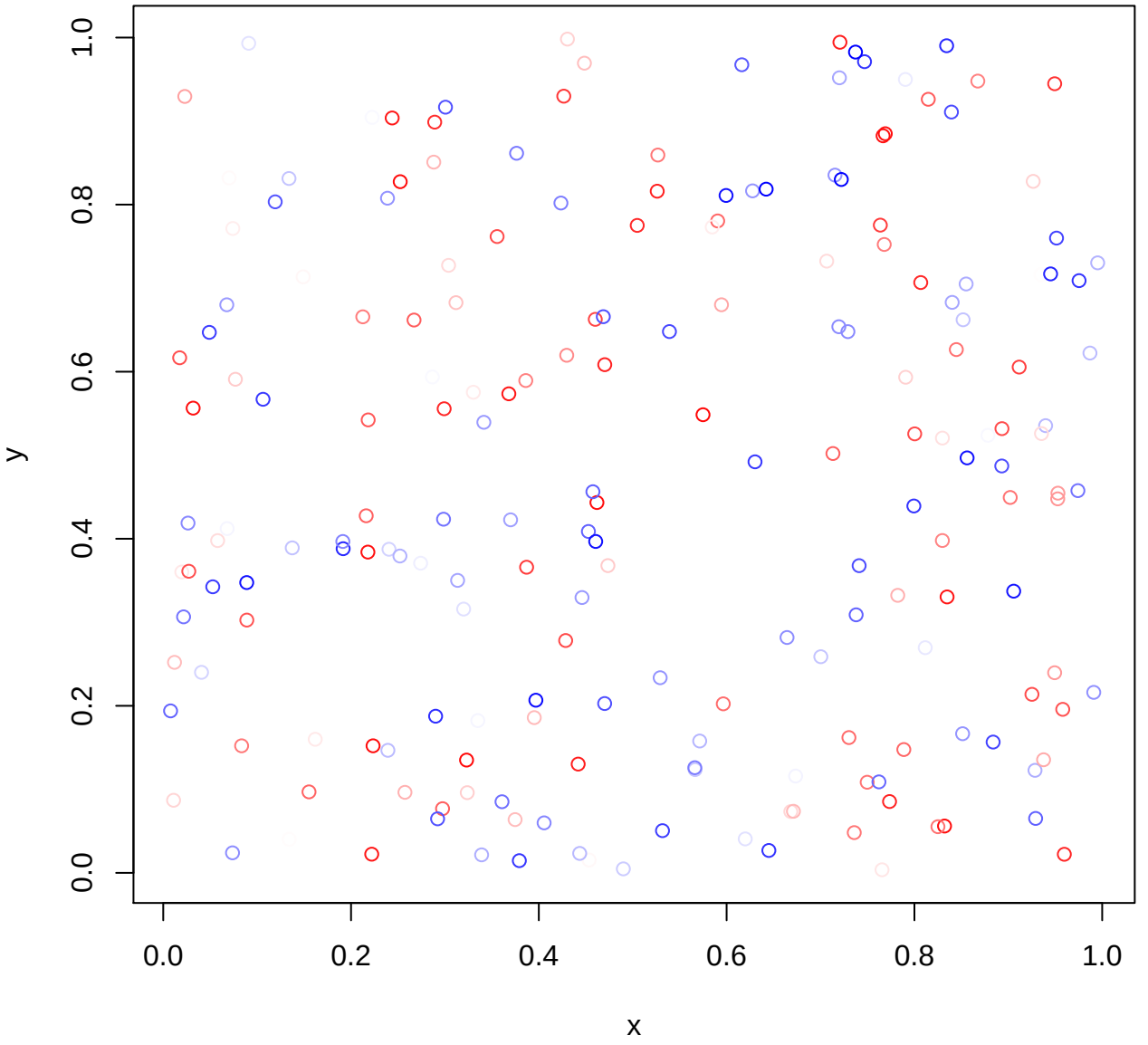

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

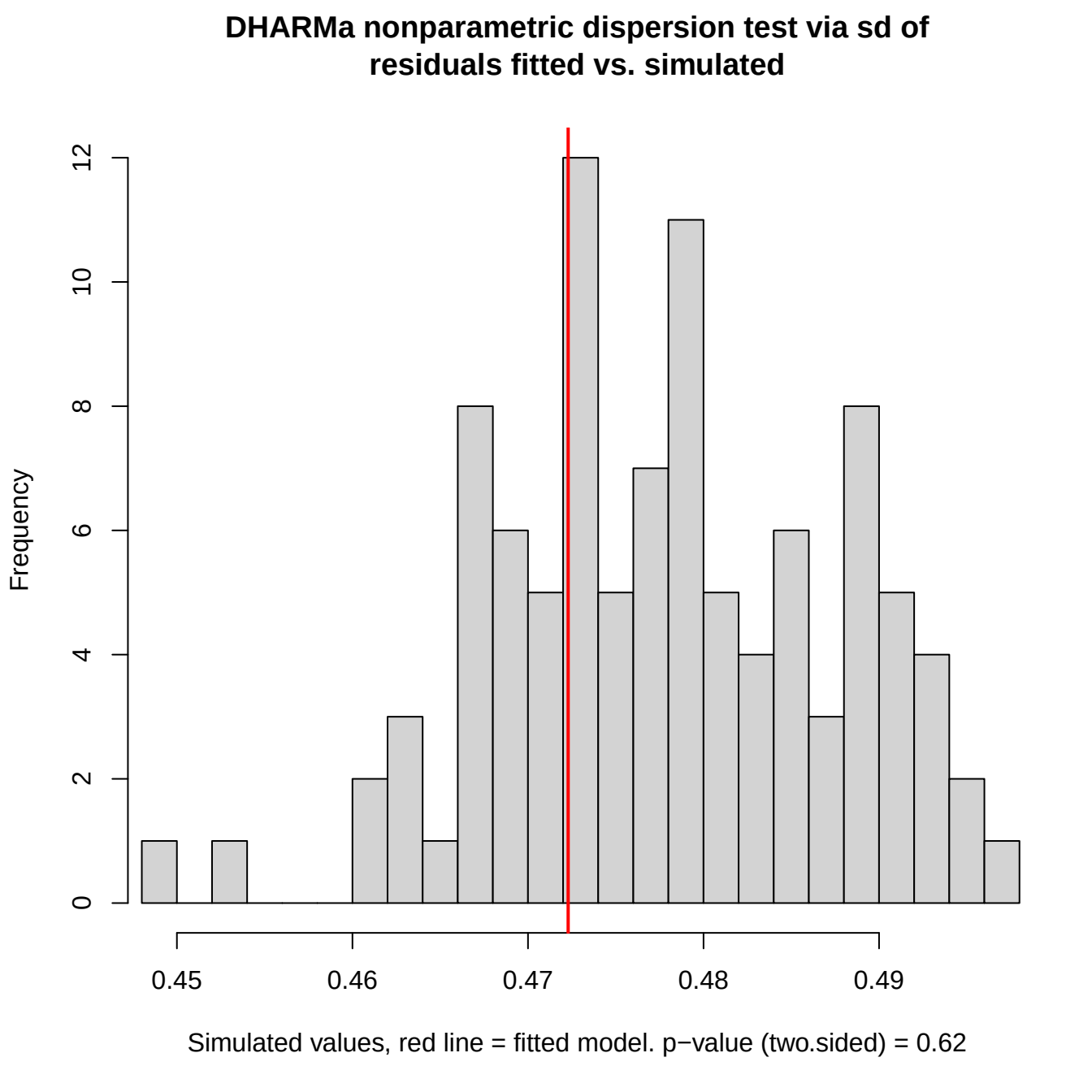

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

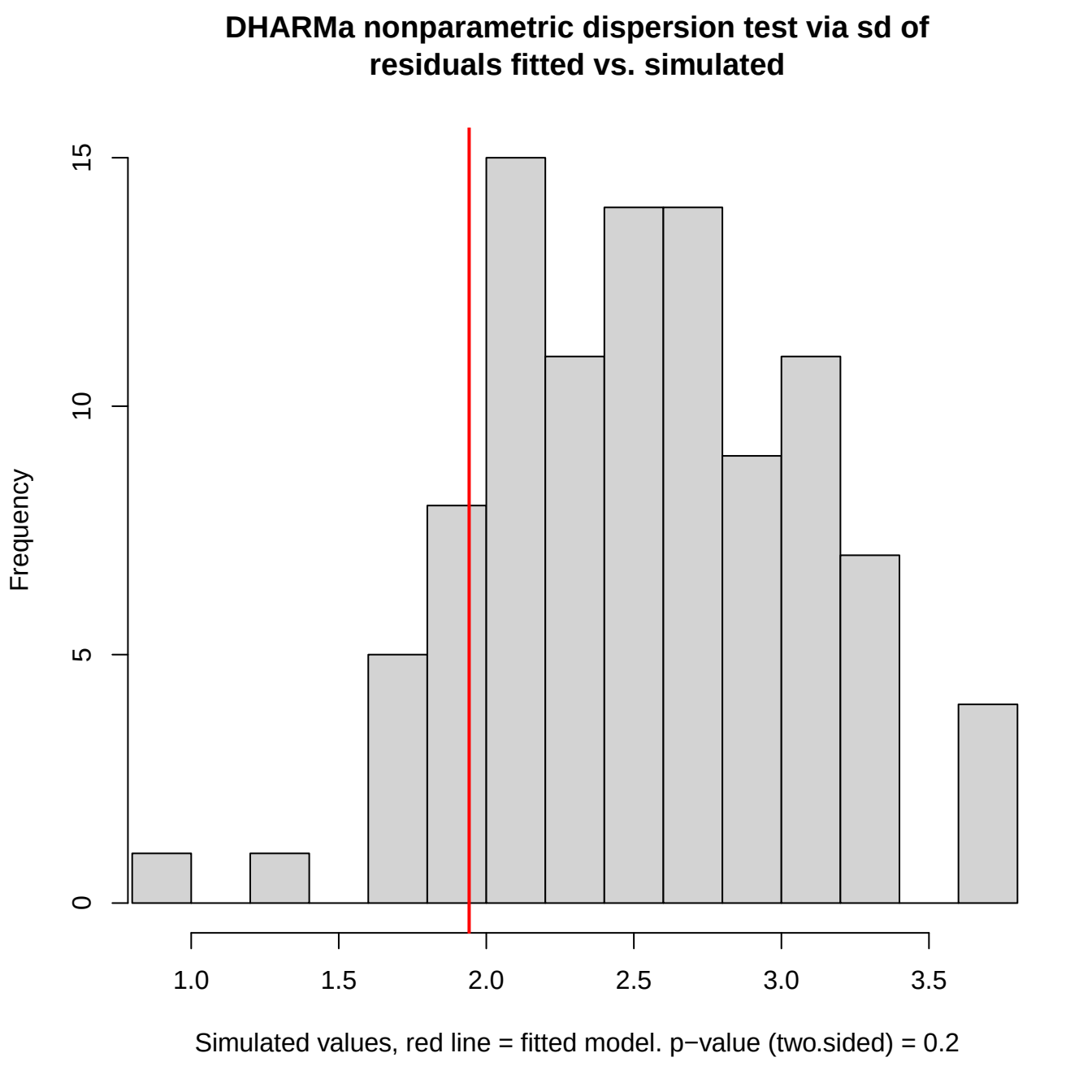

QQ plot residuals
KS test: p= 0.66811
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

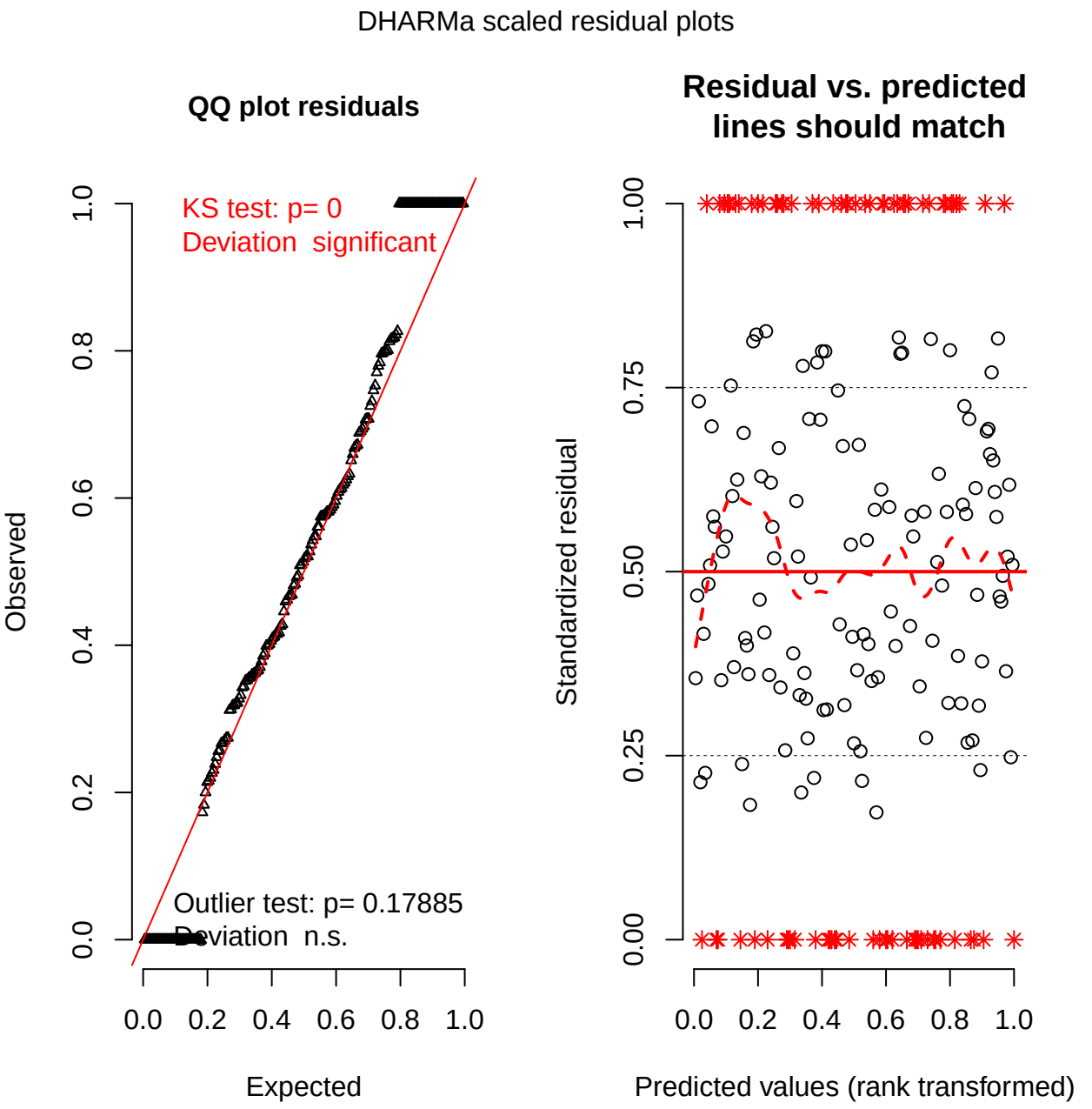

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

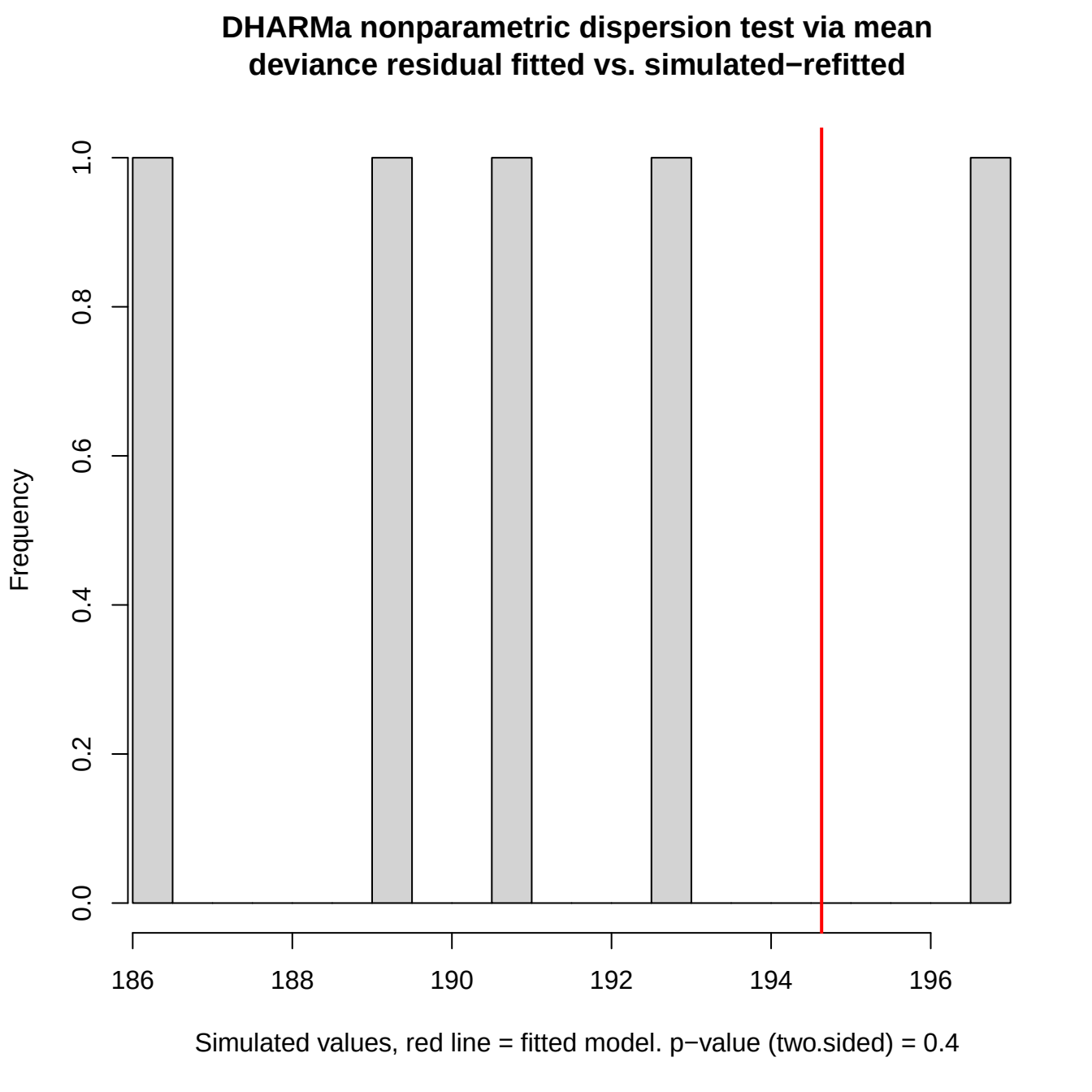

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

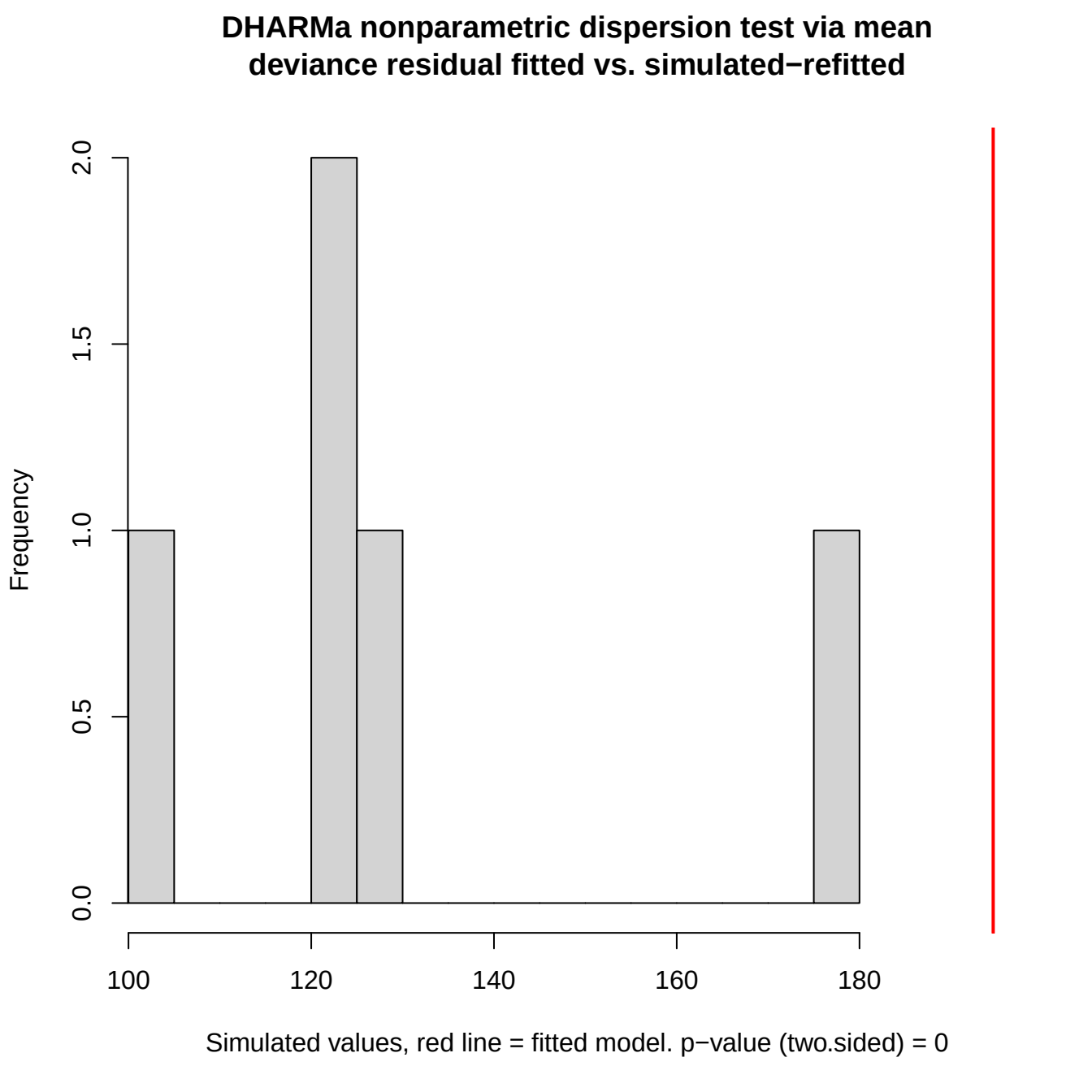

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

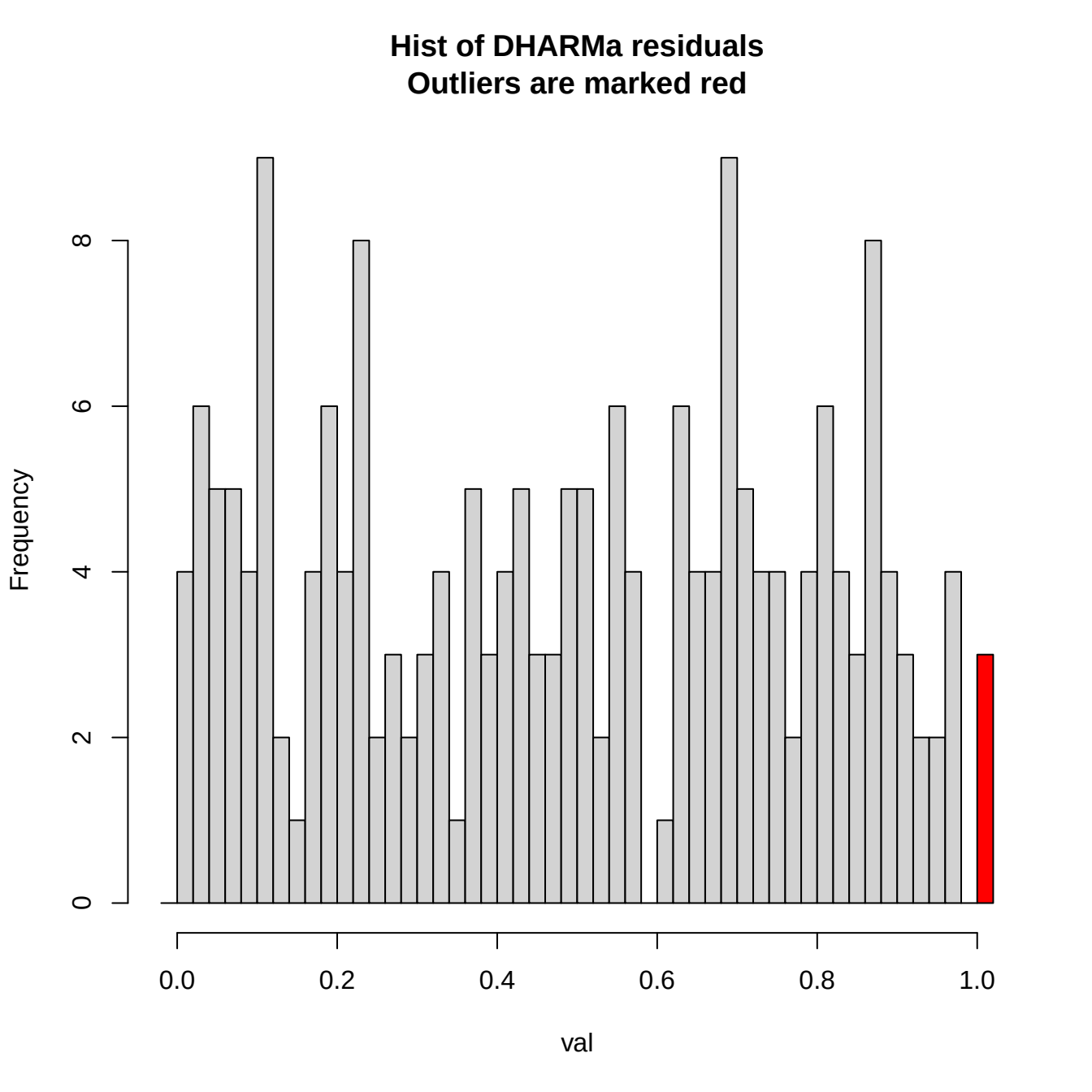

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

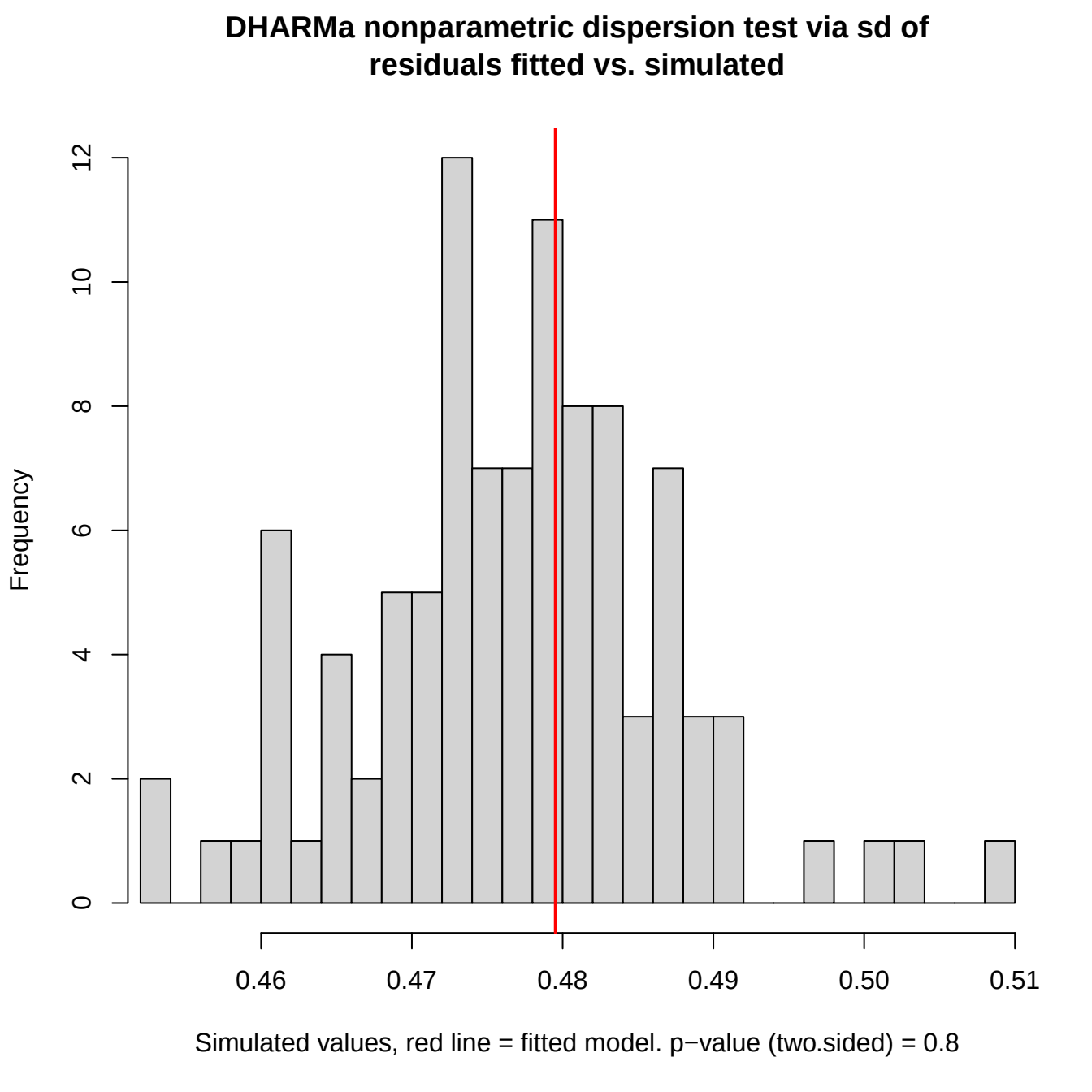

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.2

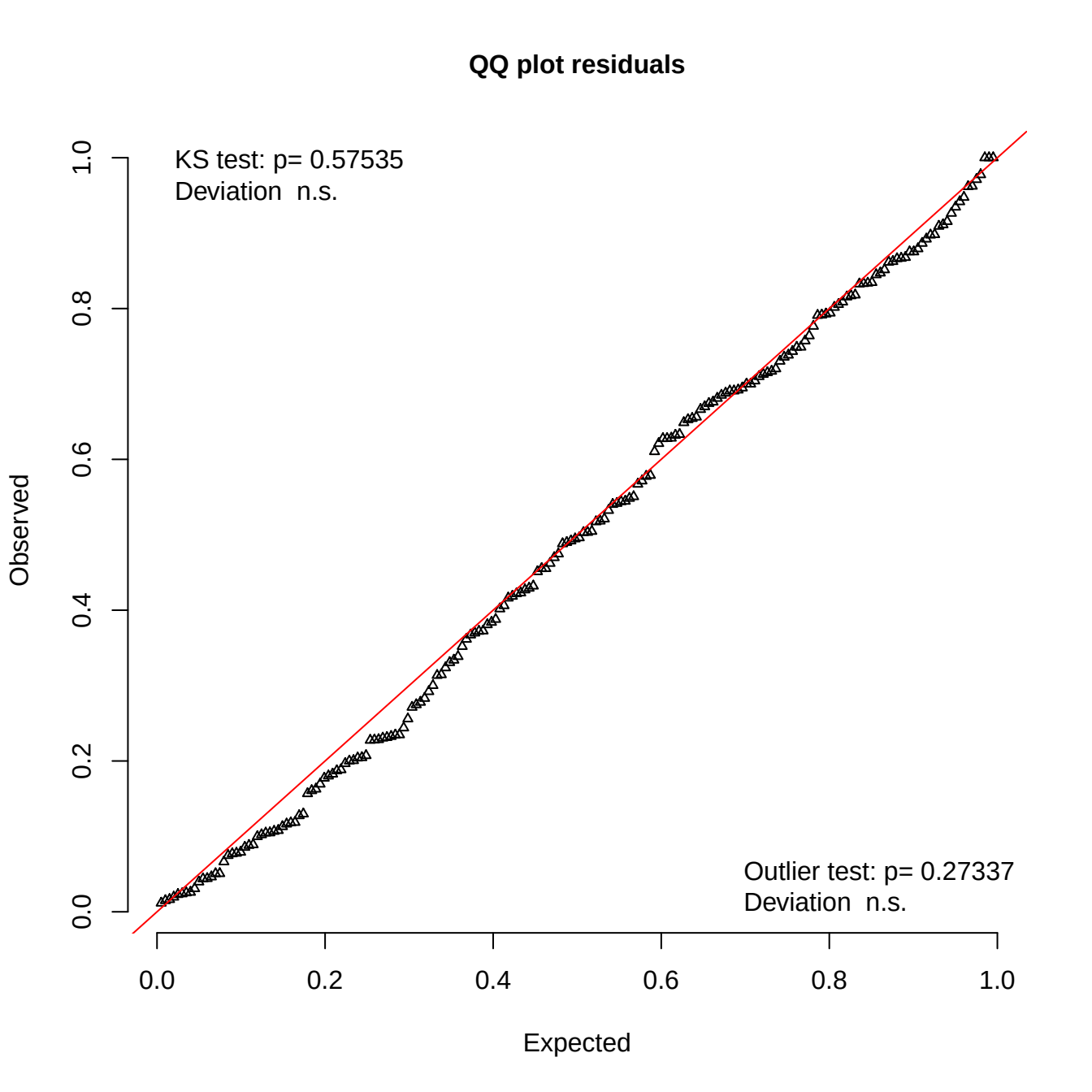

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.17885
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

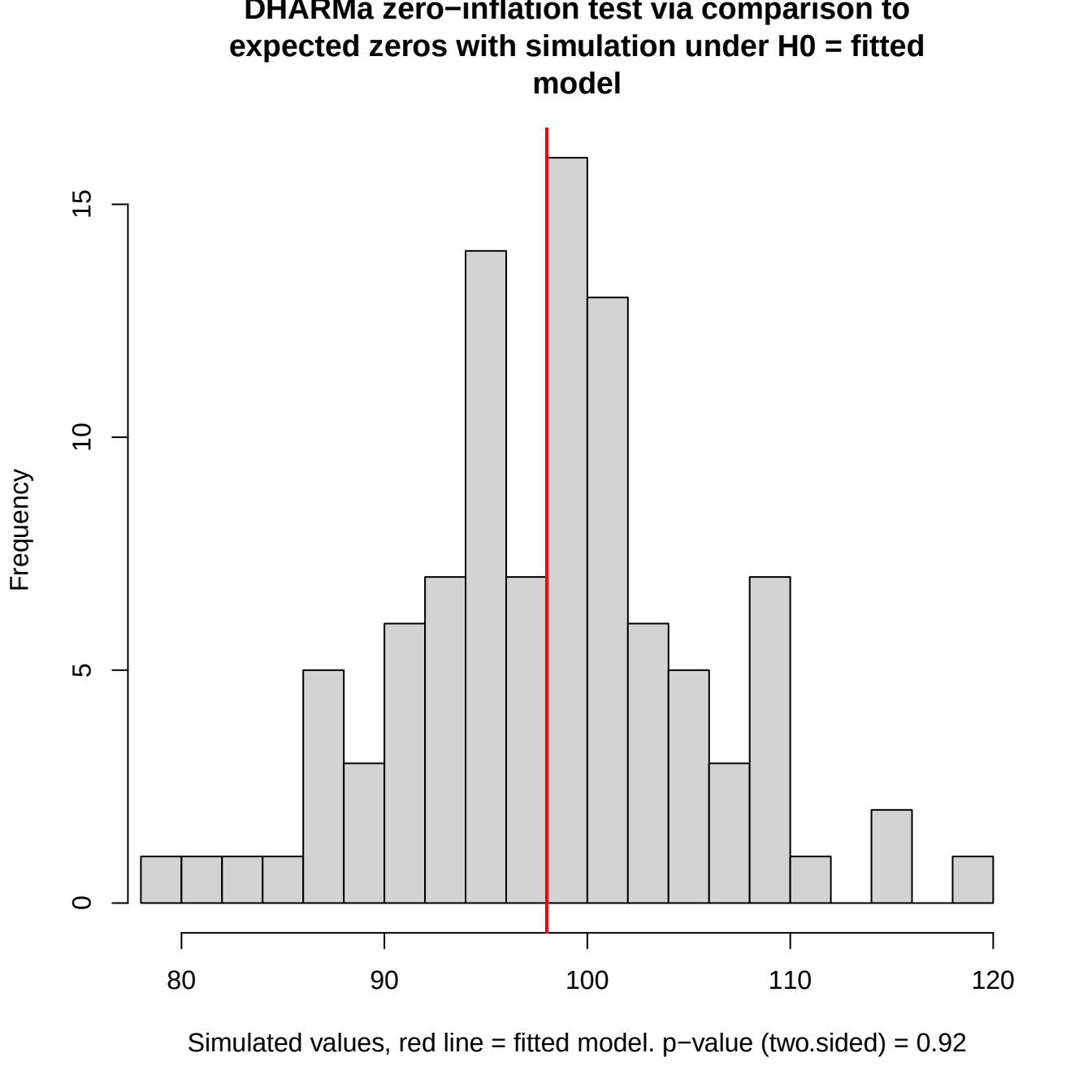

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
186
188
190
192
194
196
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

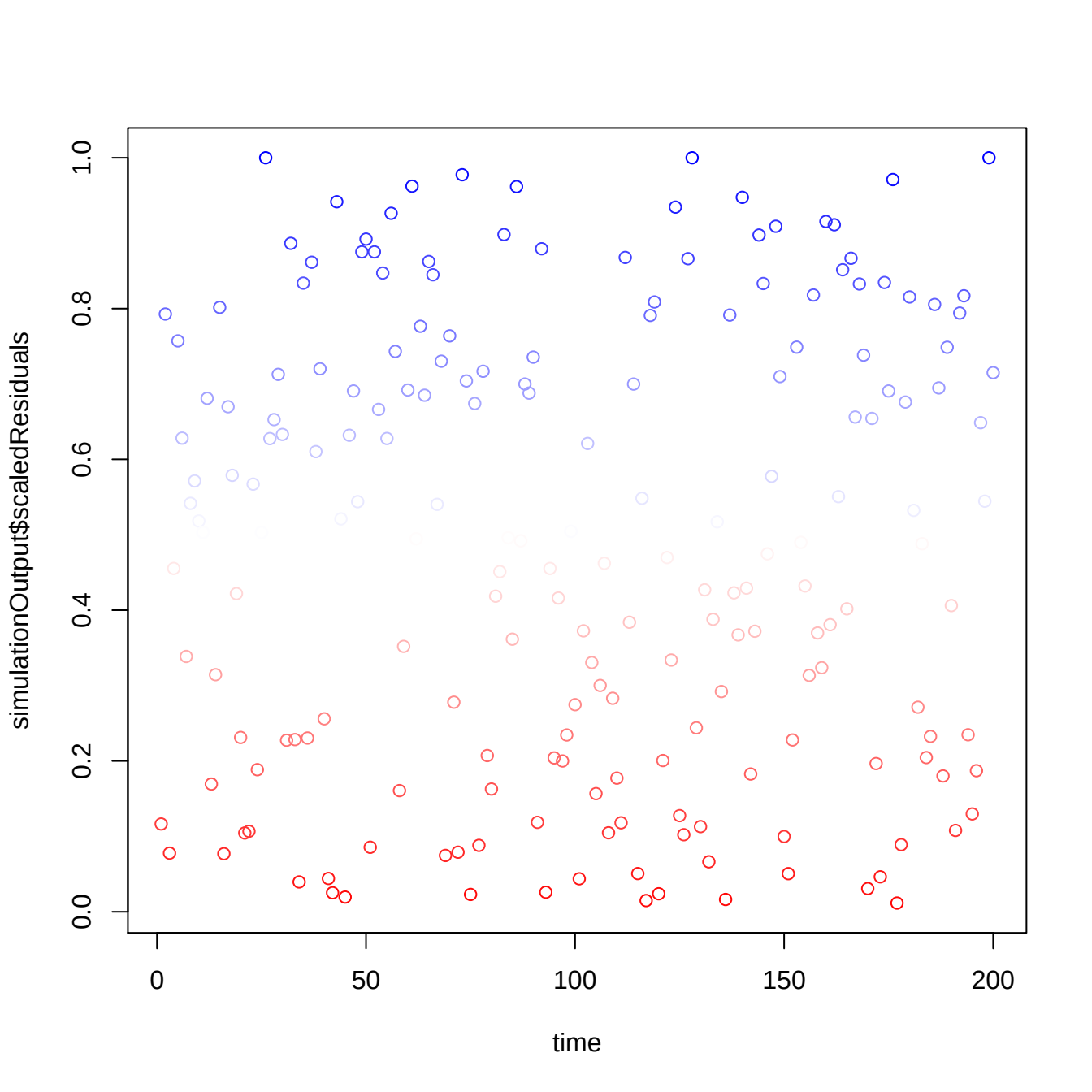

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

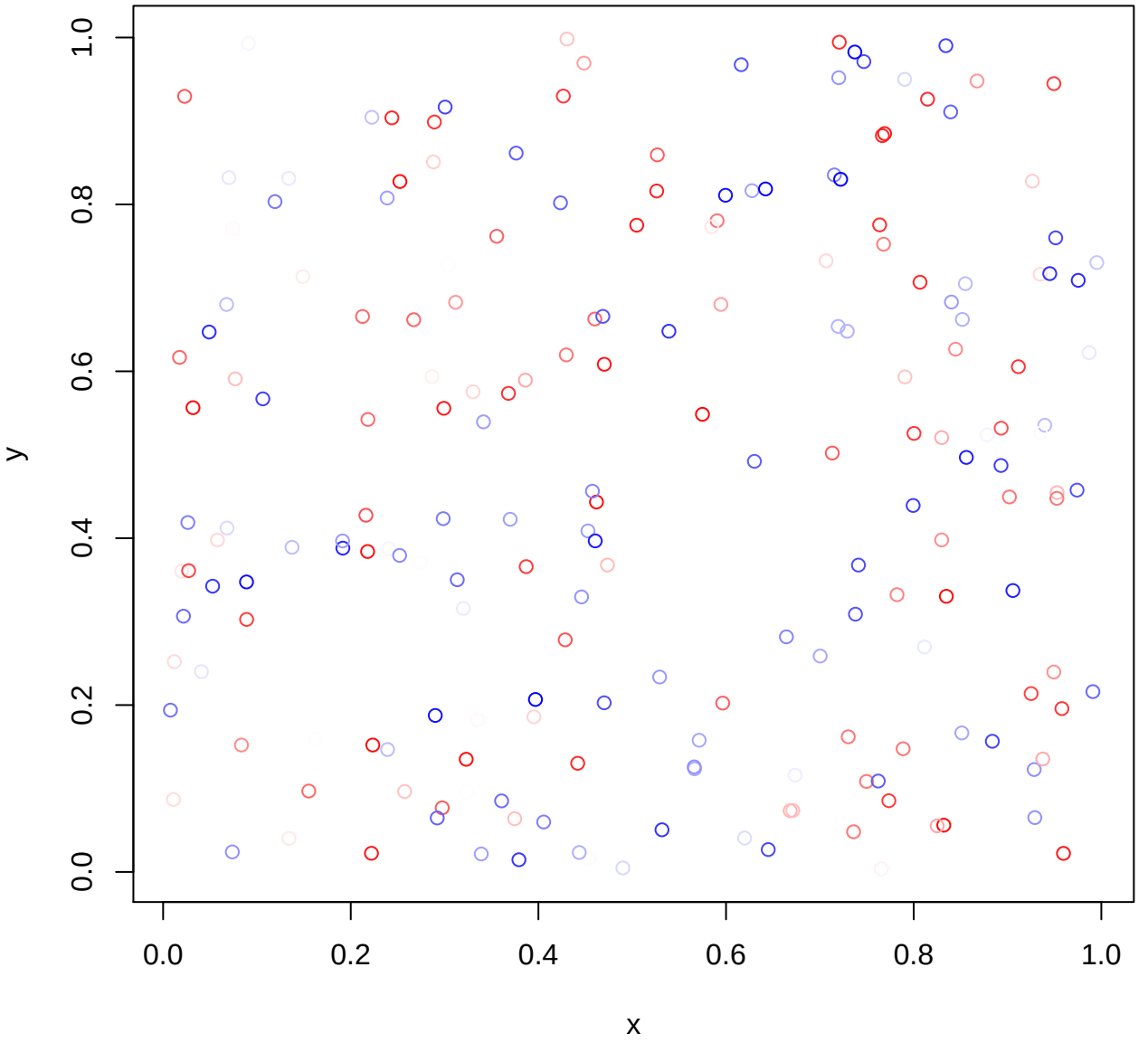

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

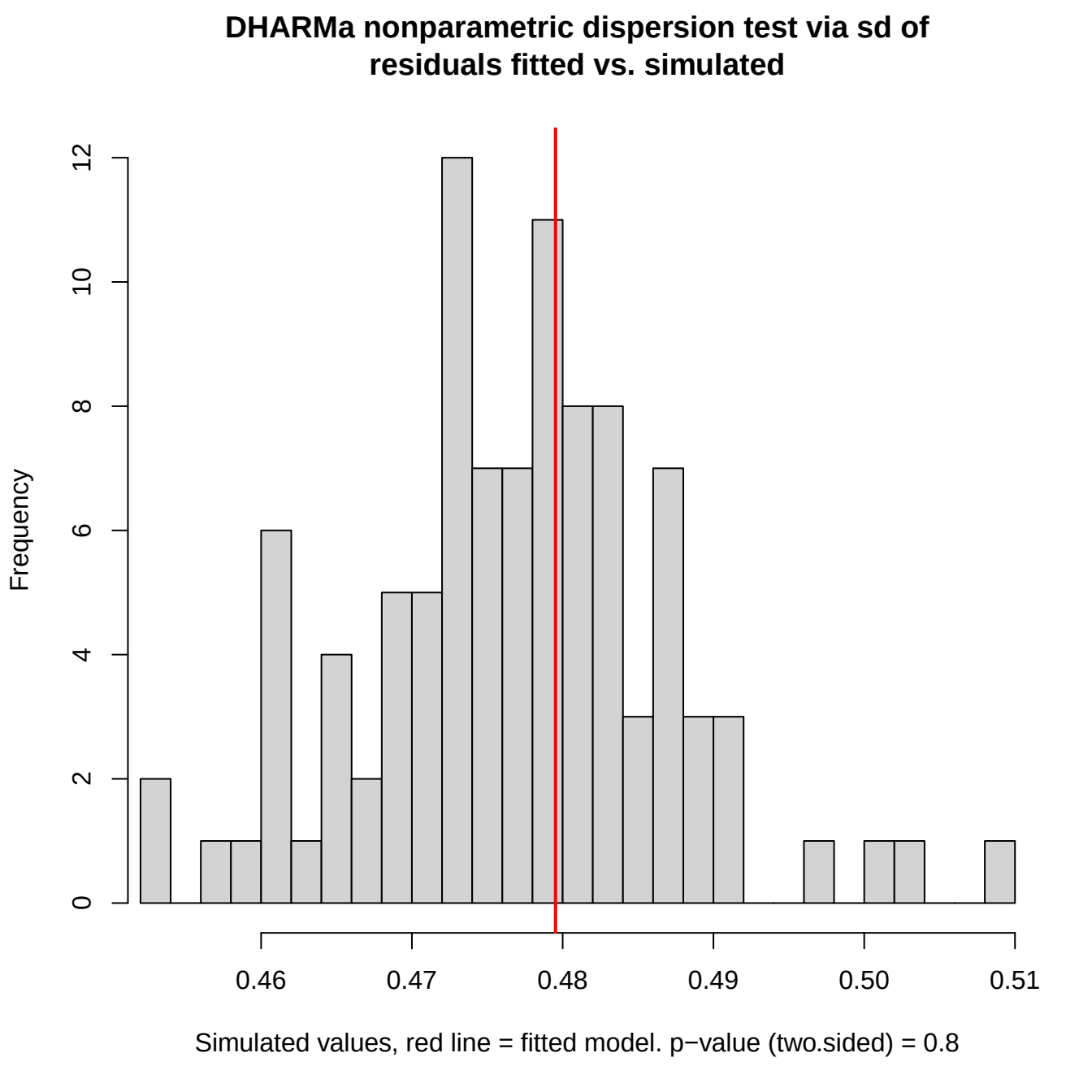

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.46
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

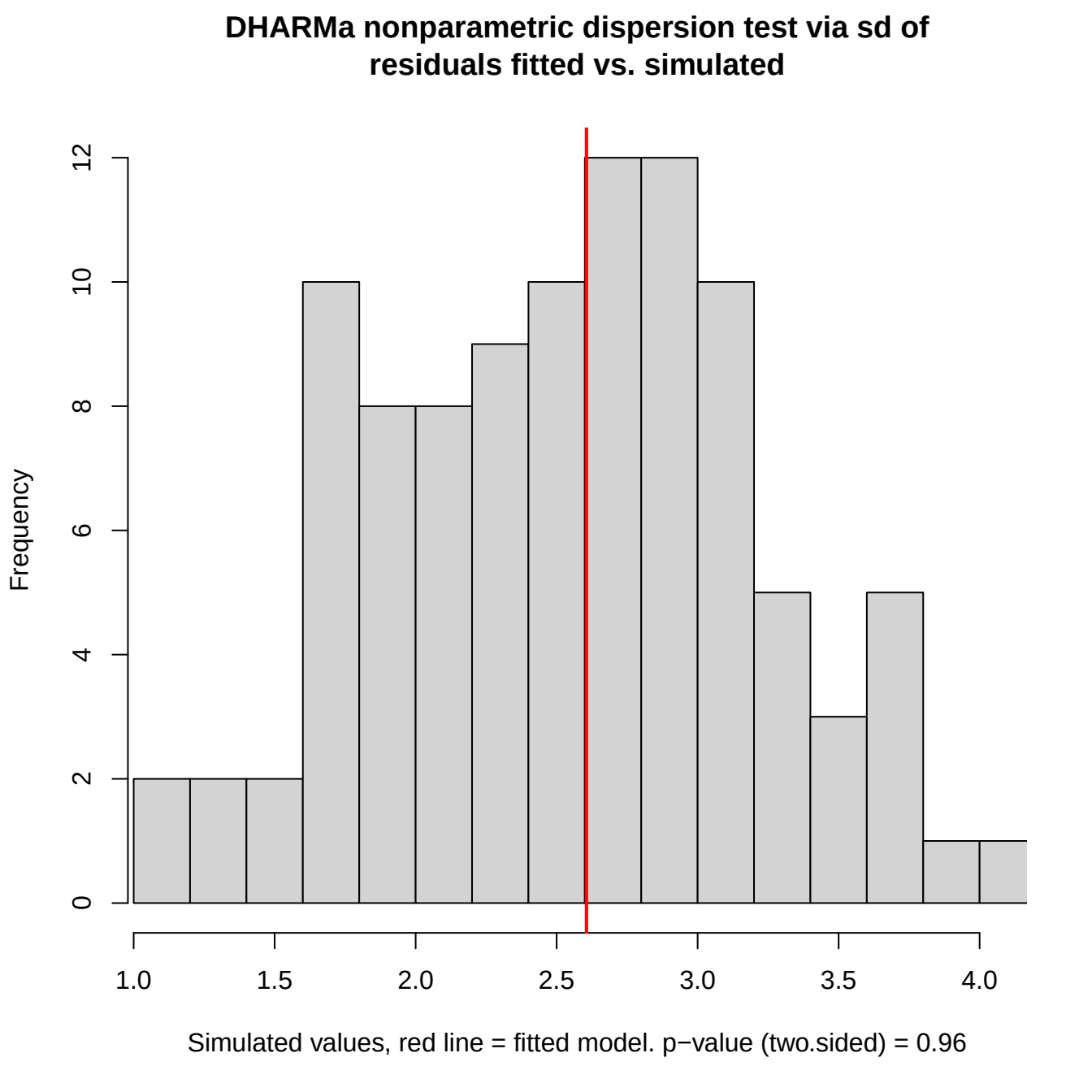

QQ plot residuals
KS test: p= 0.57535
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

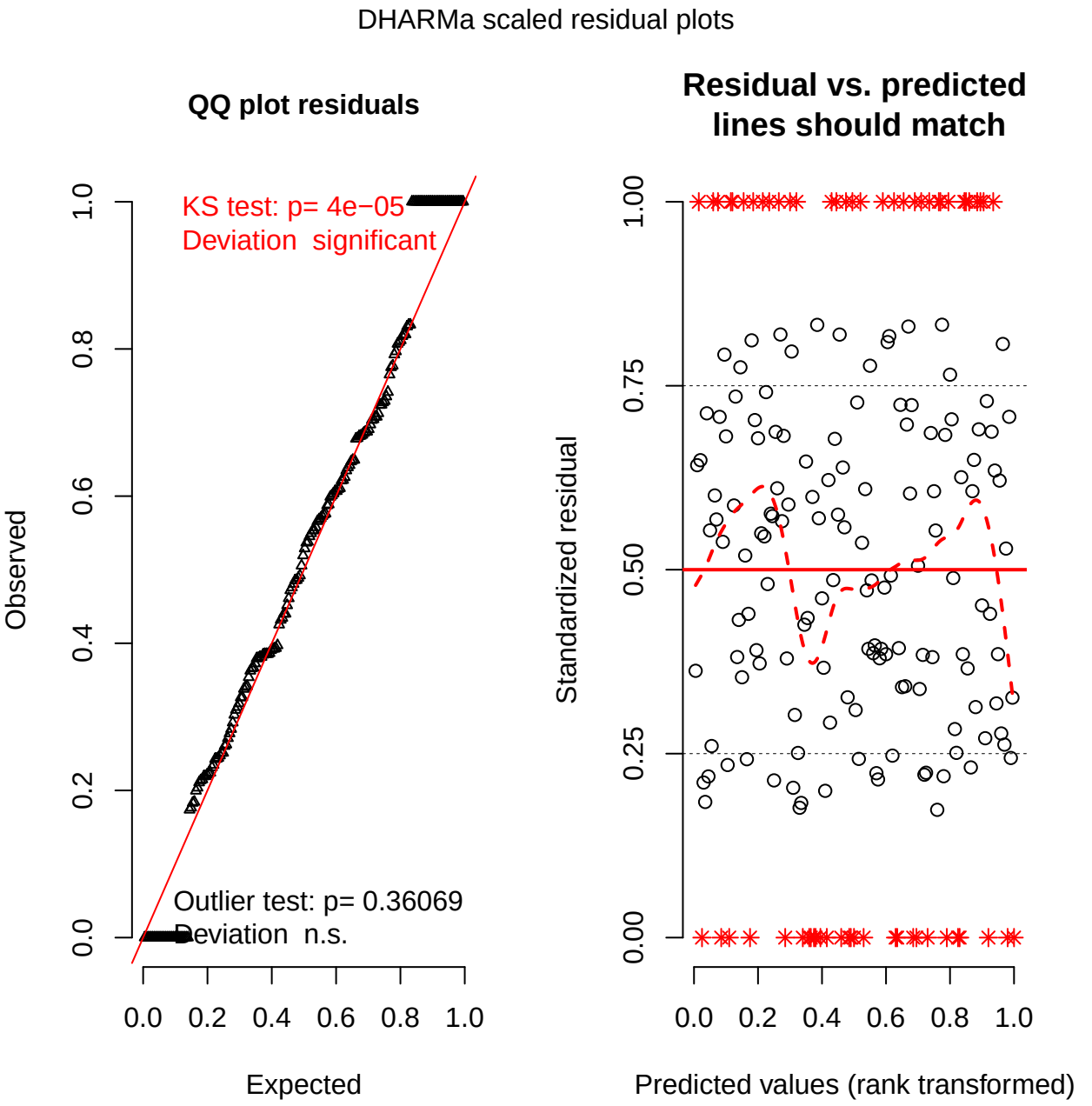

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

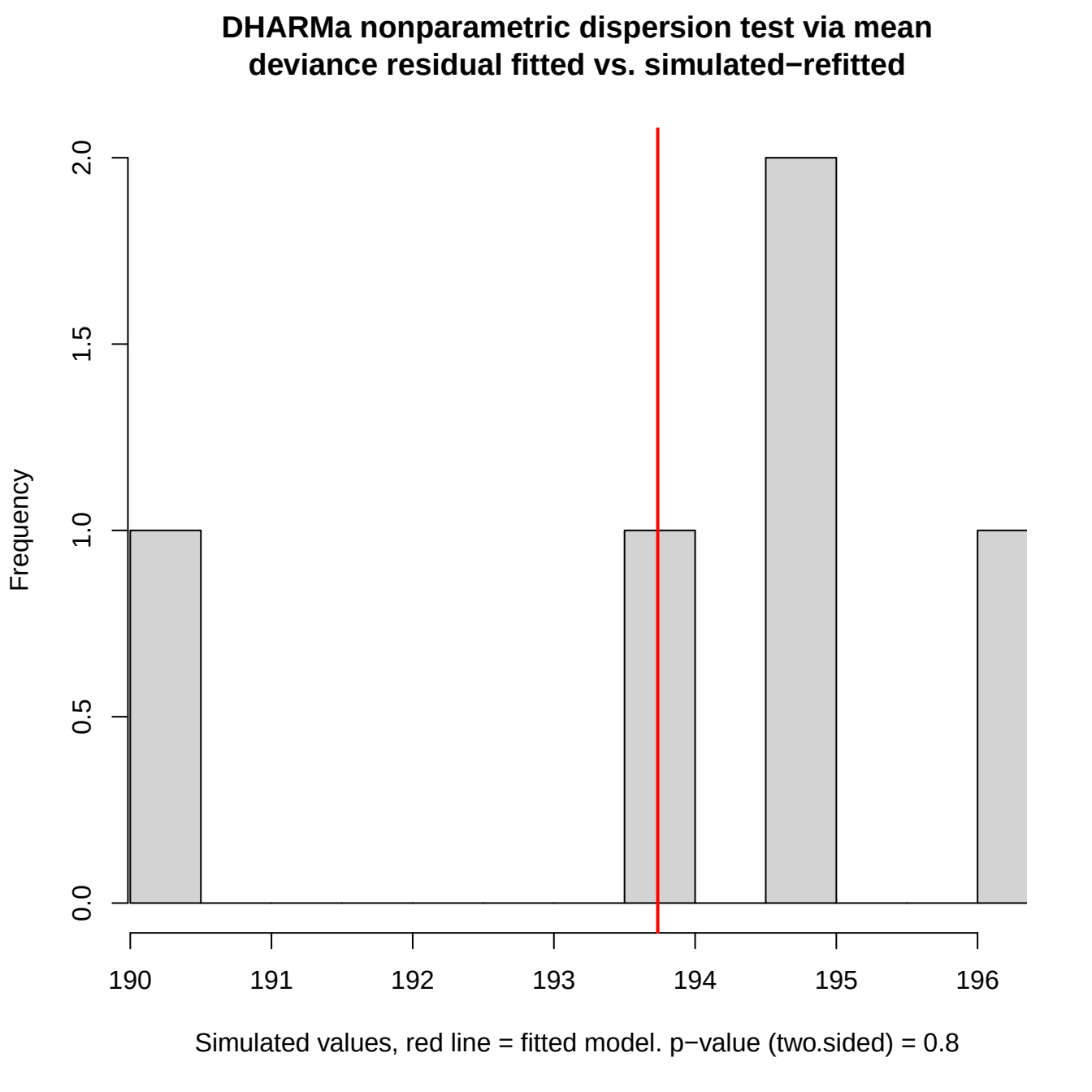

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

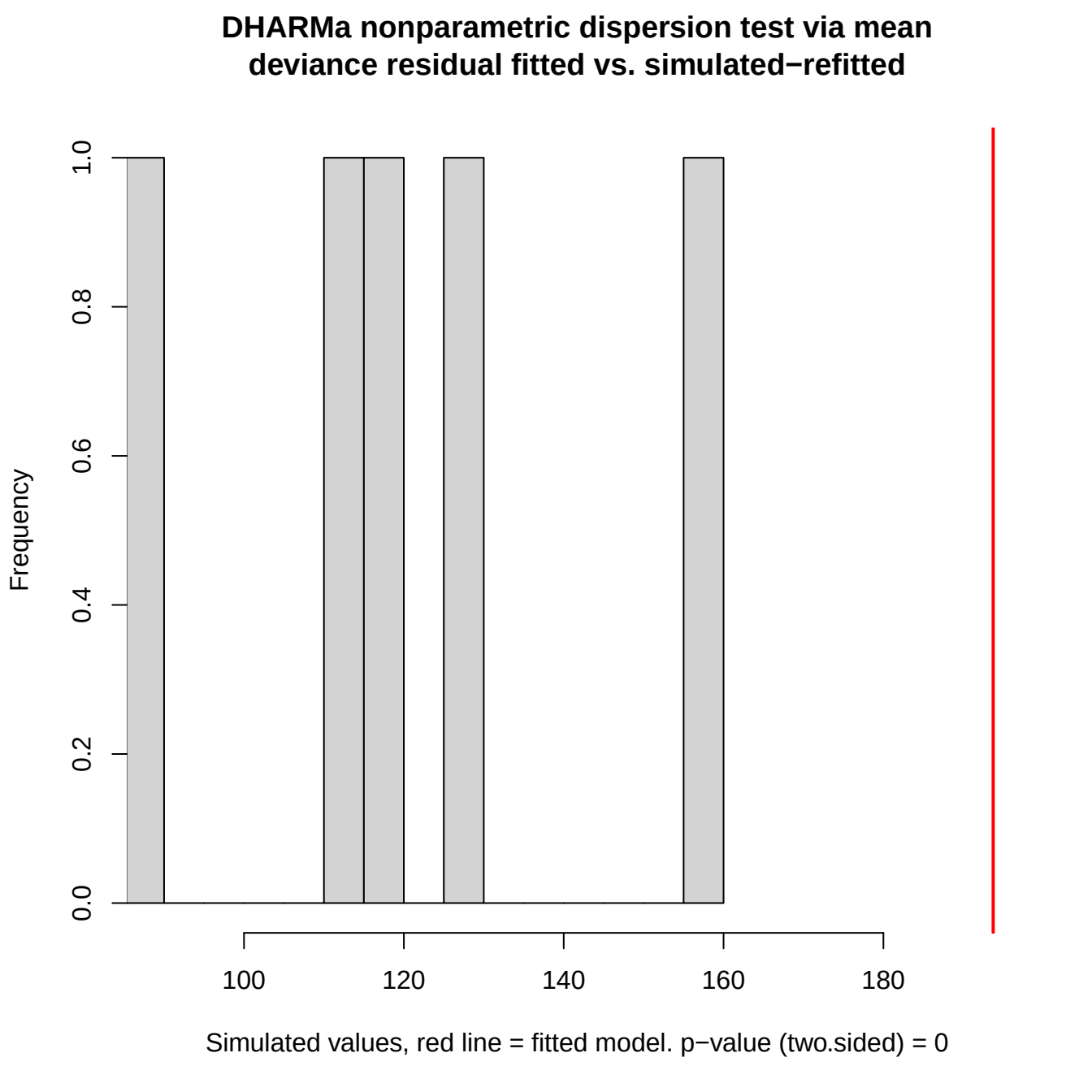

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

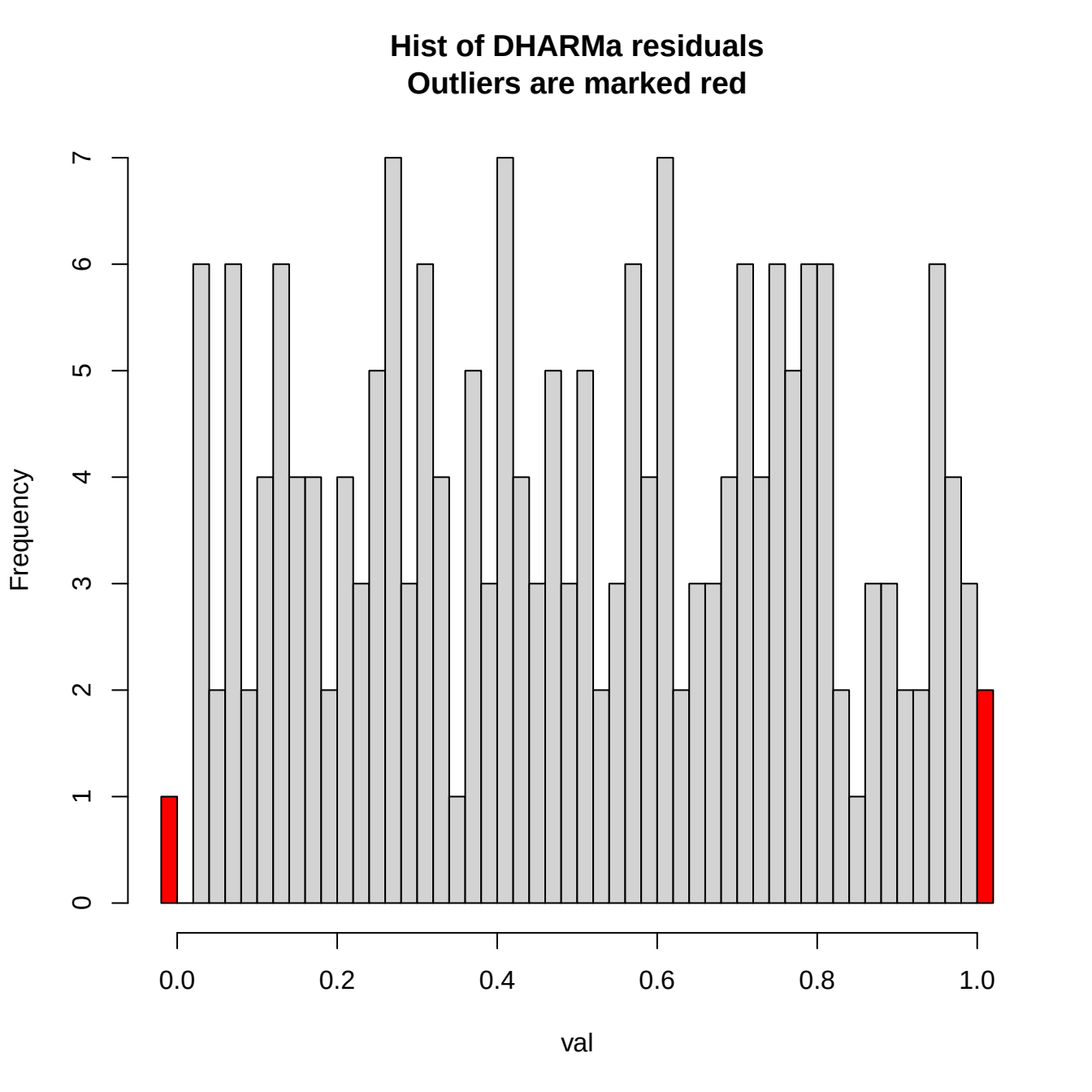

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.46
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

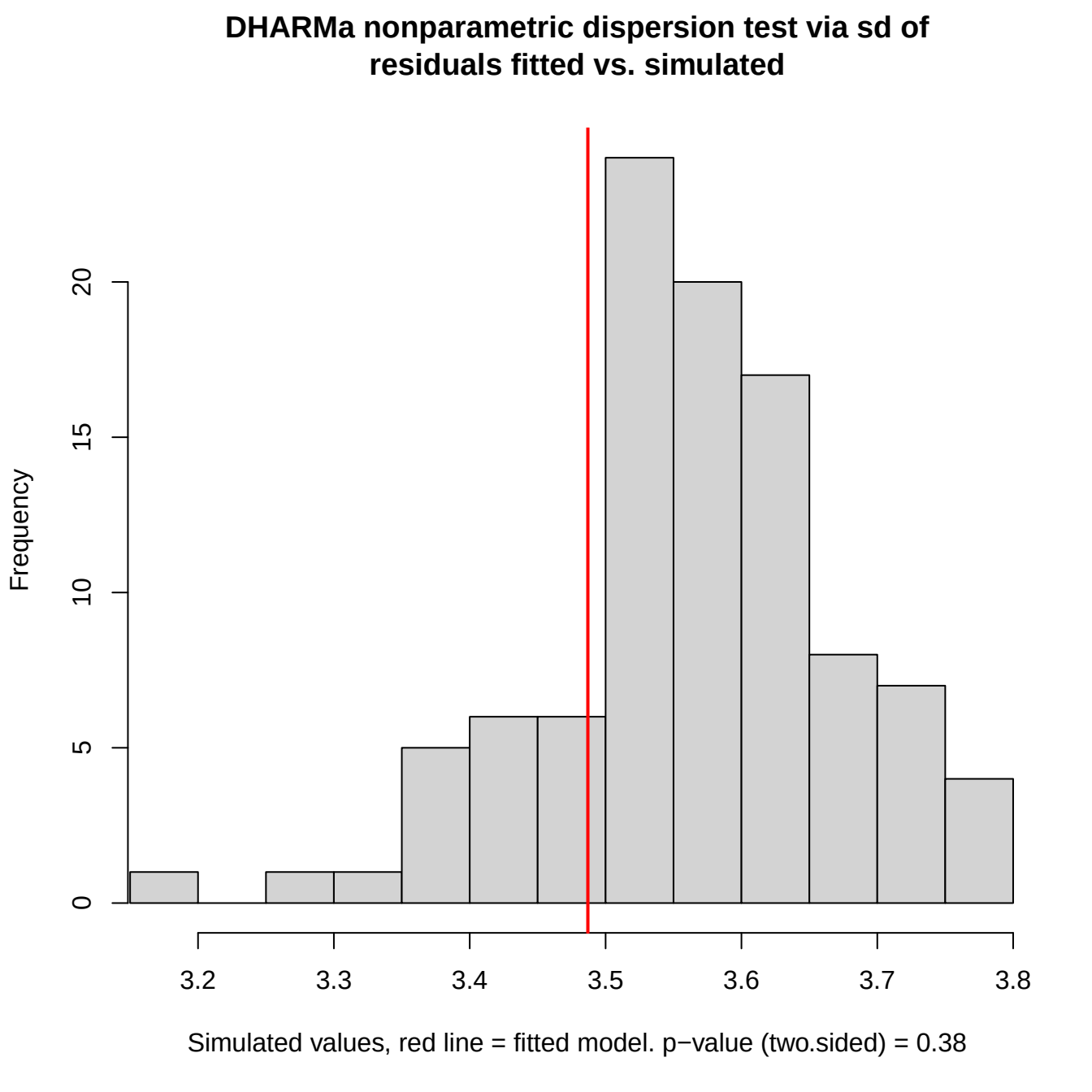

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

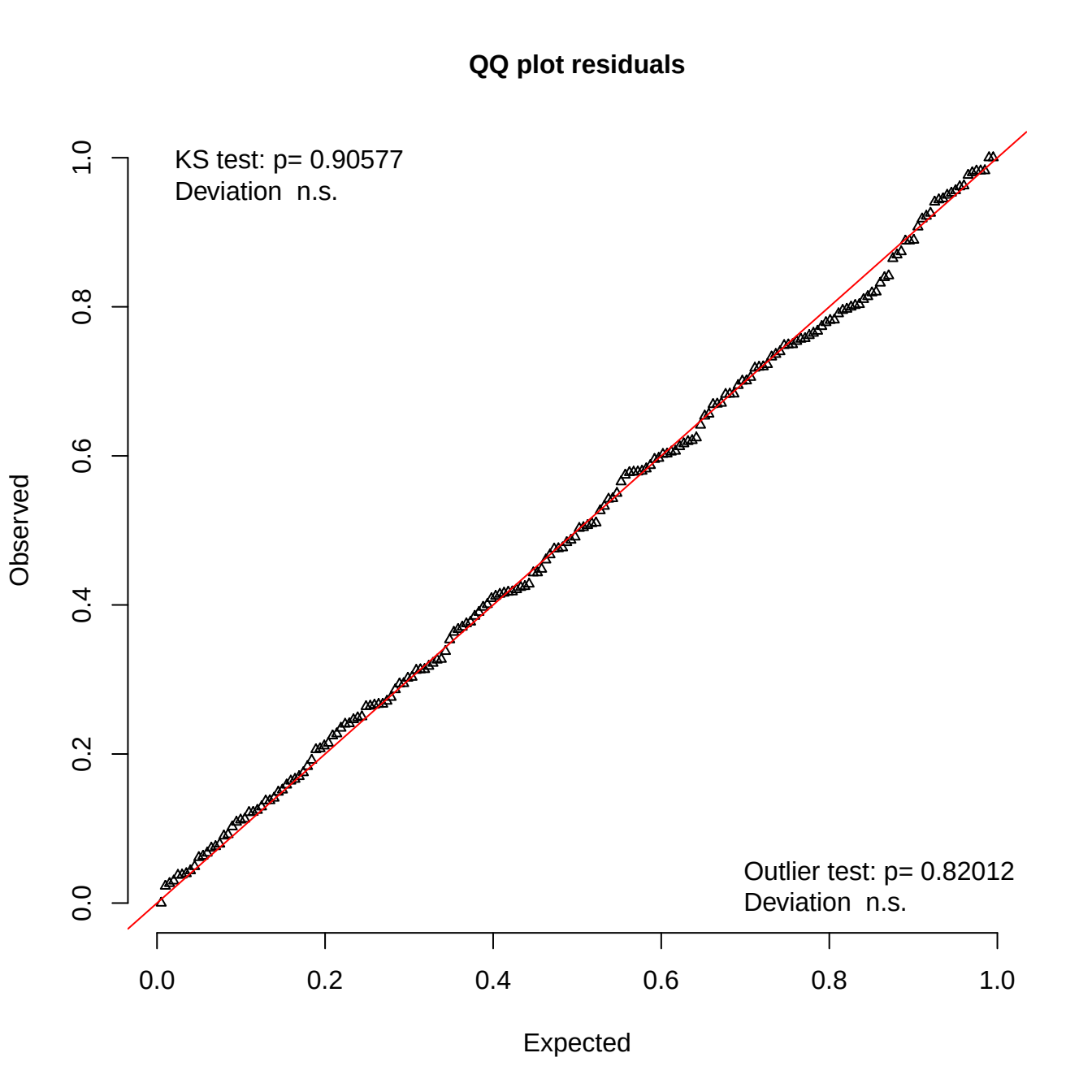

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.36069
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

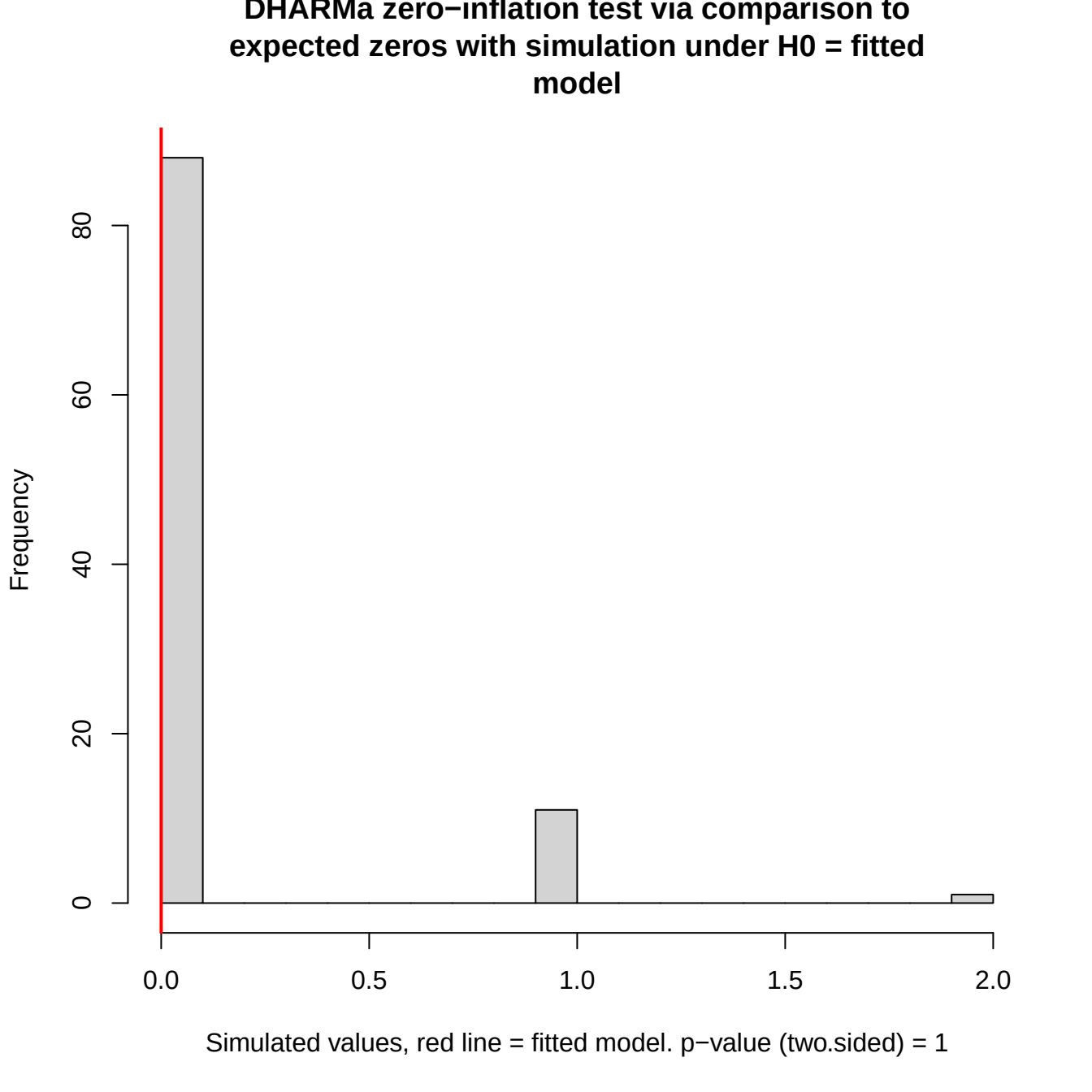

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
190
191
192
193
194
195
196
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

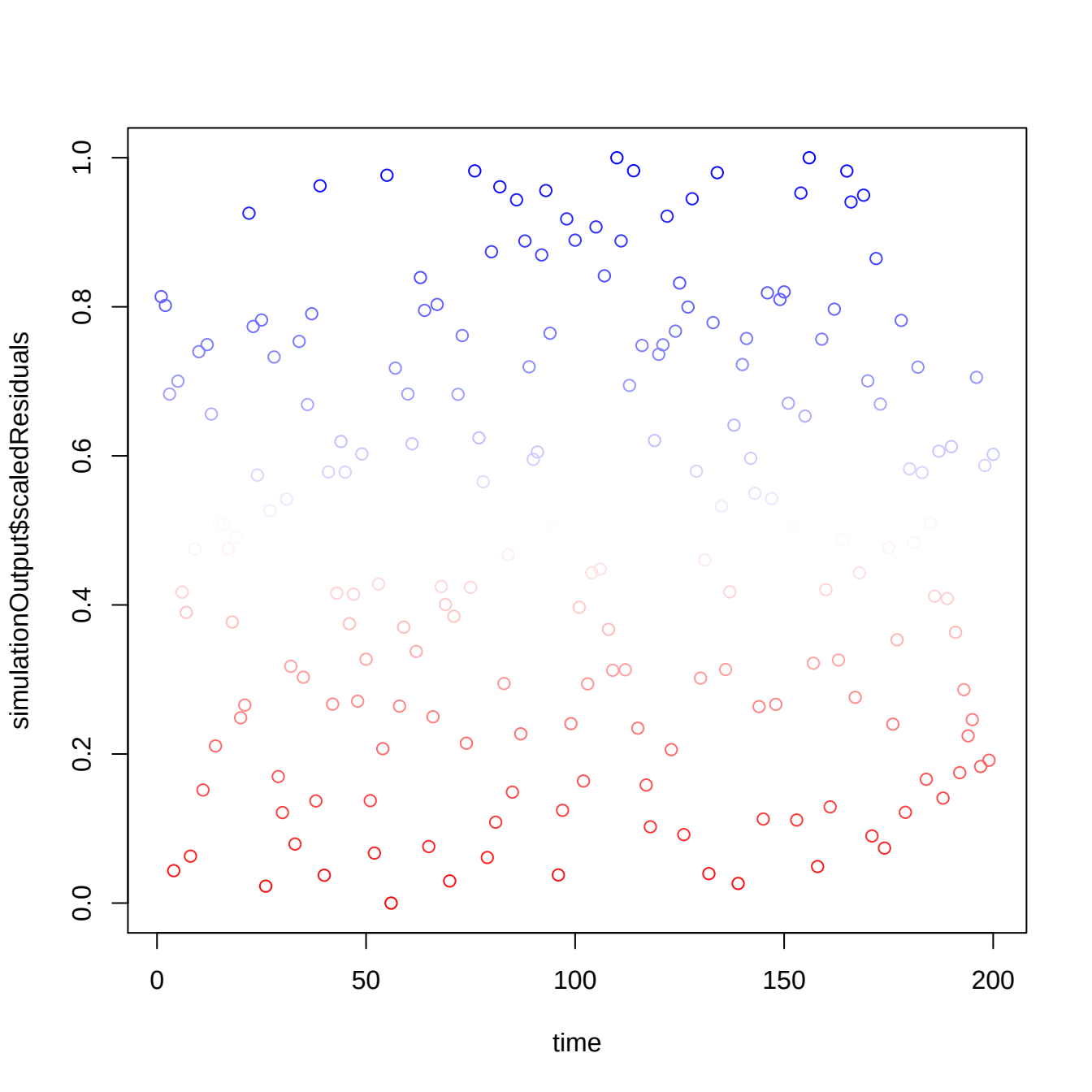

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

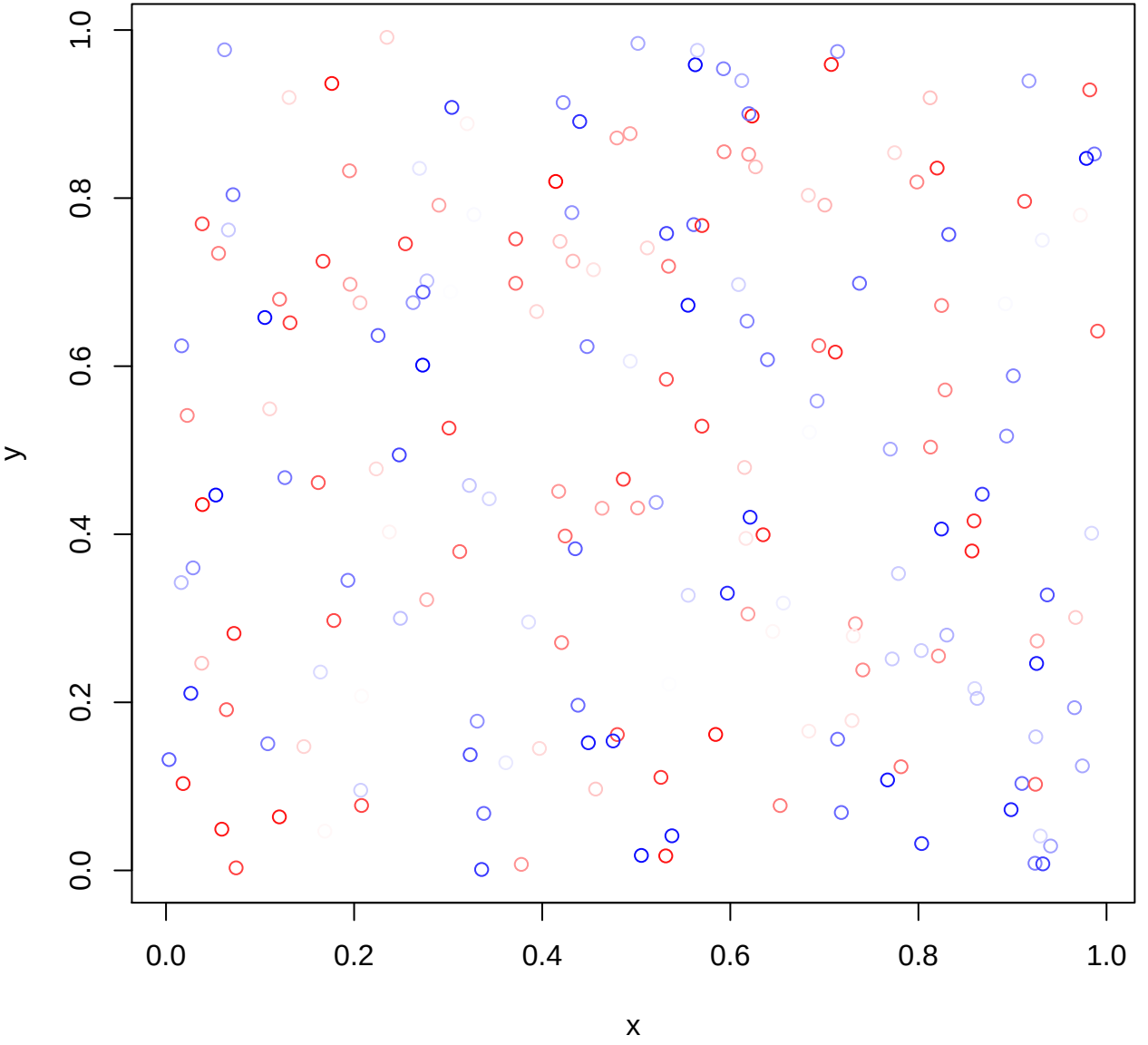

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
val

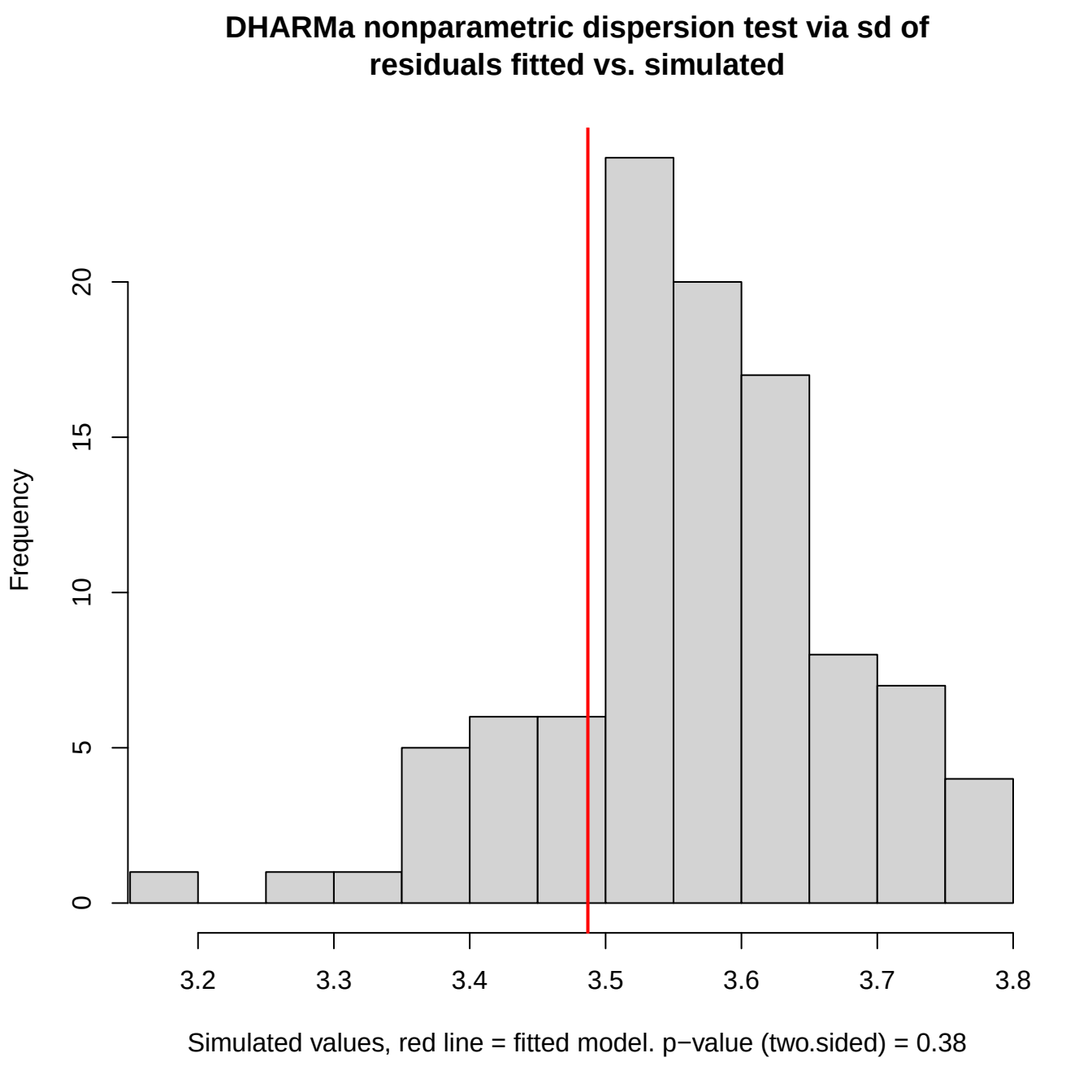

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.38

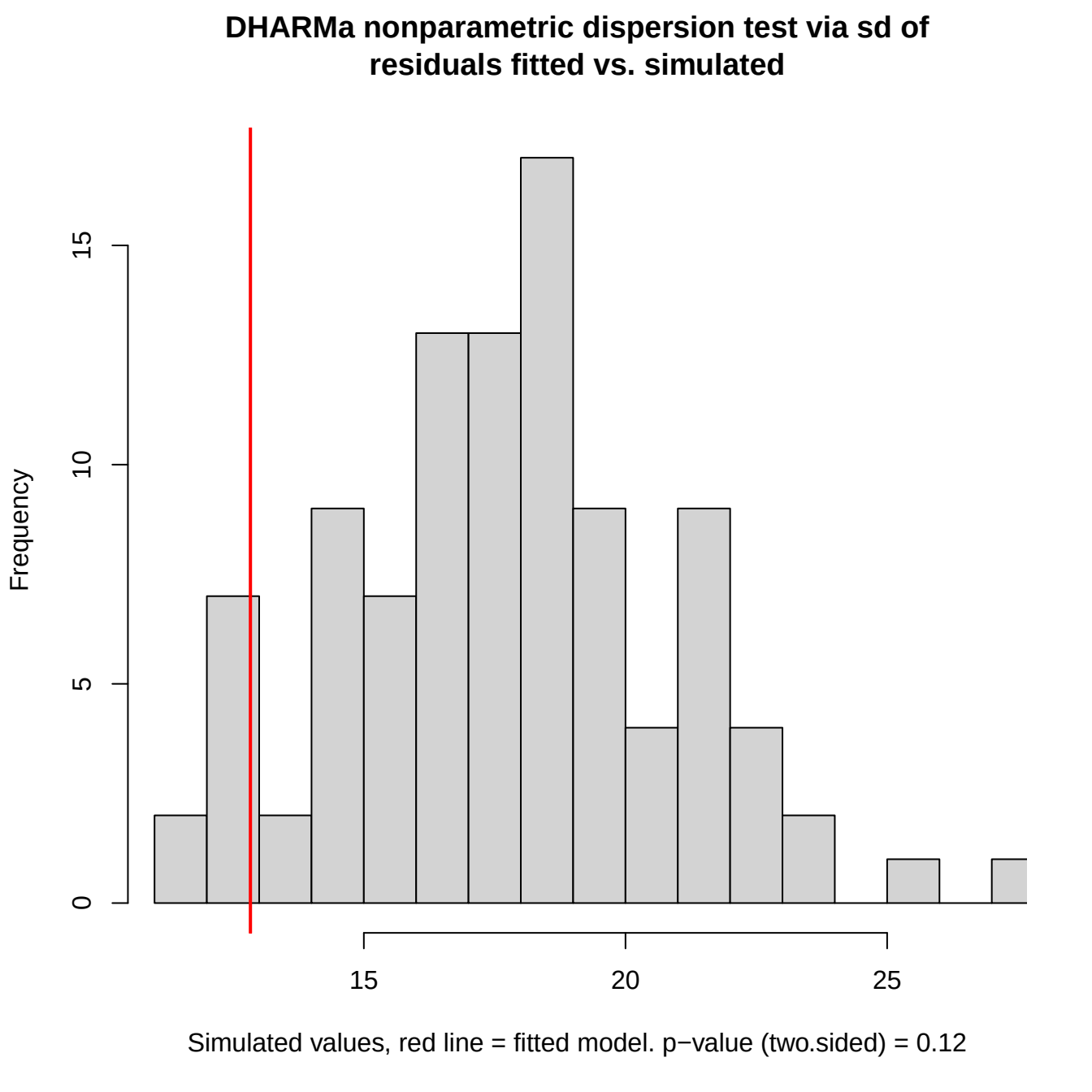

QQ plot residuals
KS test: p= 0.90577
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

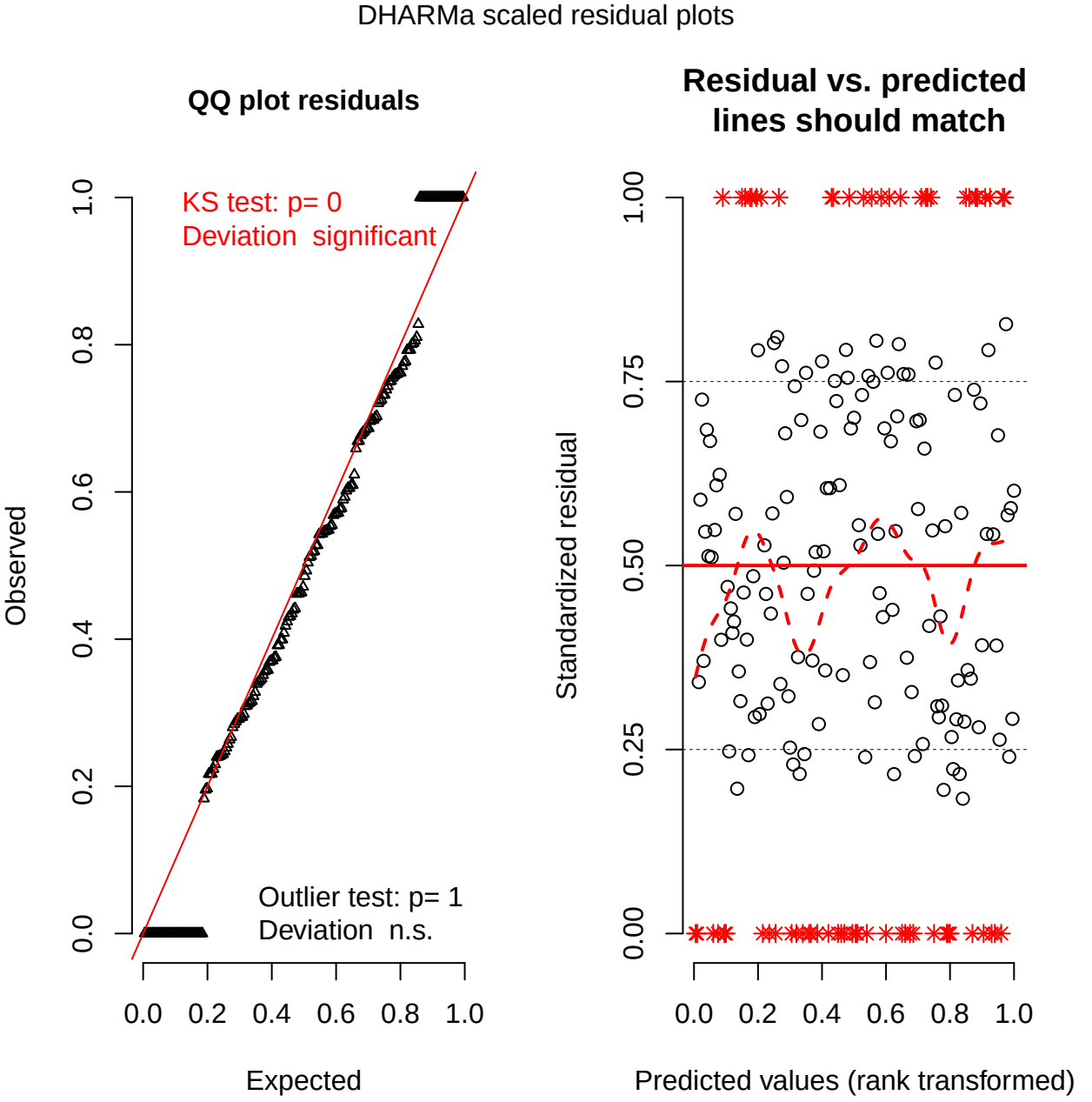

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.5
1.0
1.5
2.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

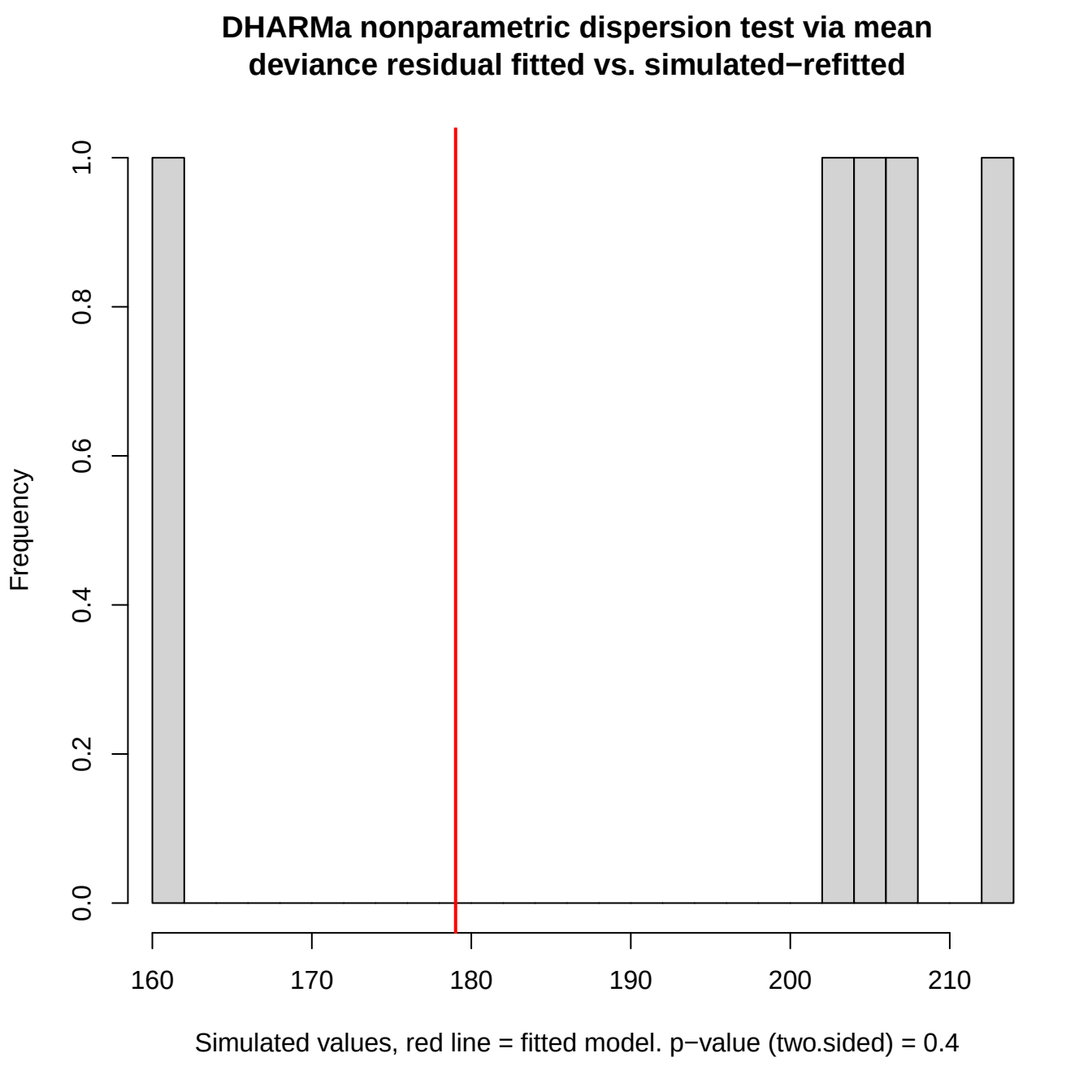

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

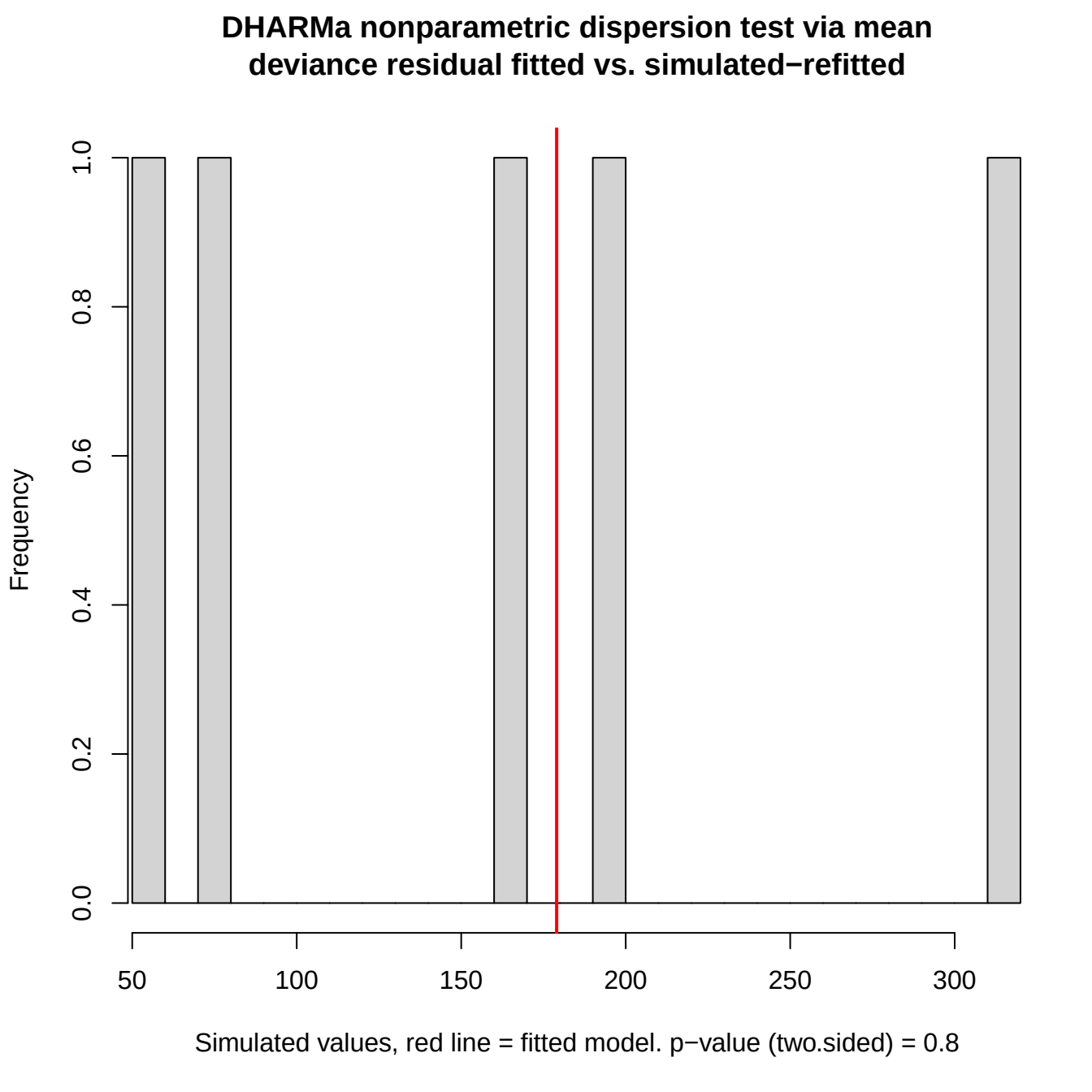

y
x
0.0
0.2
0.4
0.6
0.8
1.0

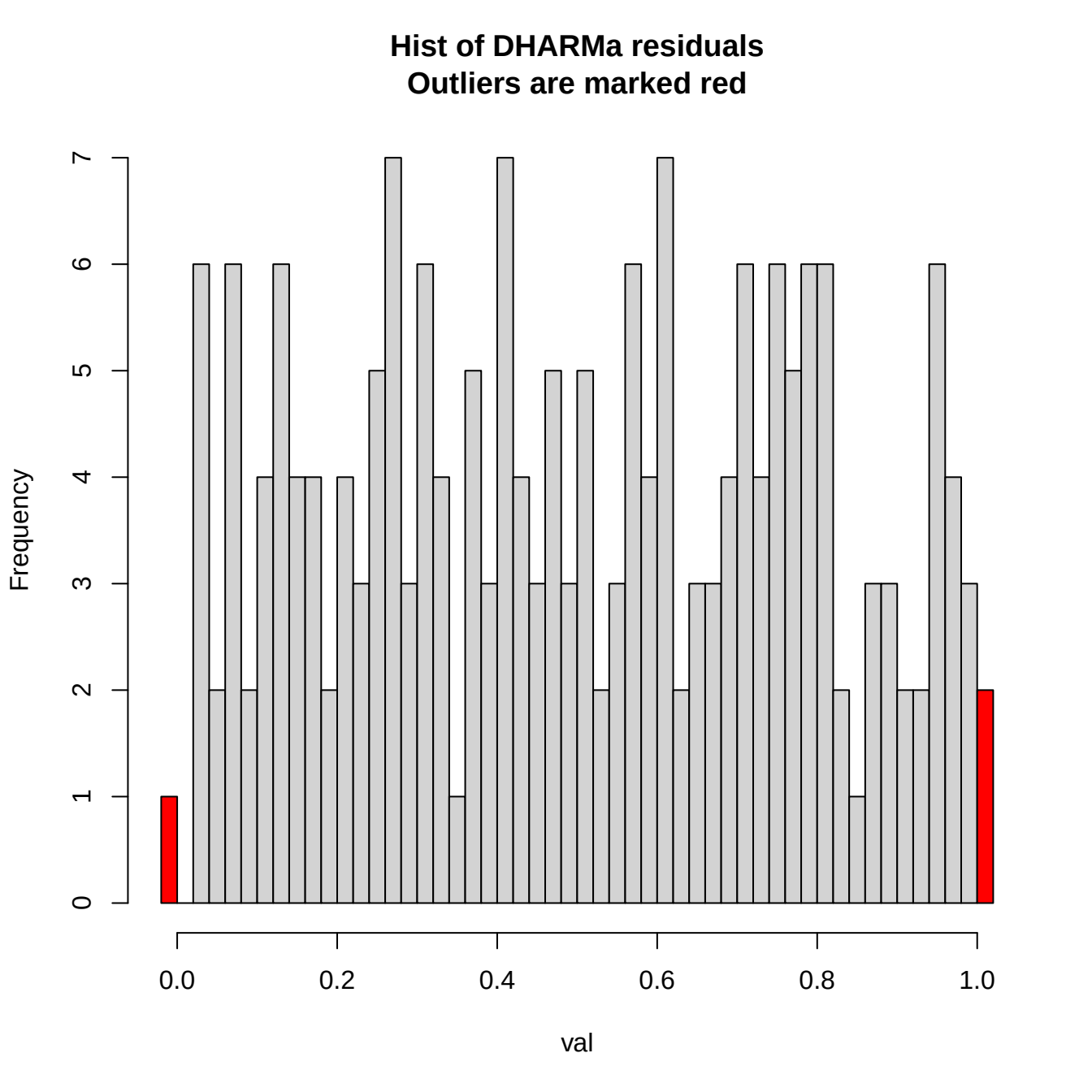

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.38

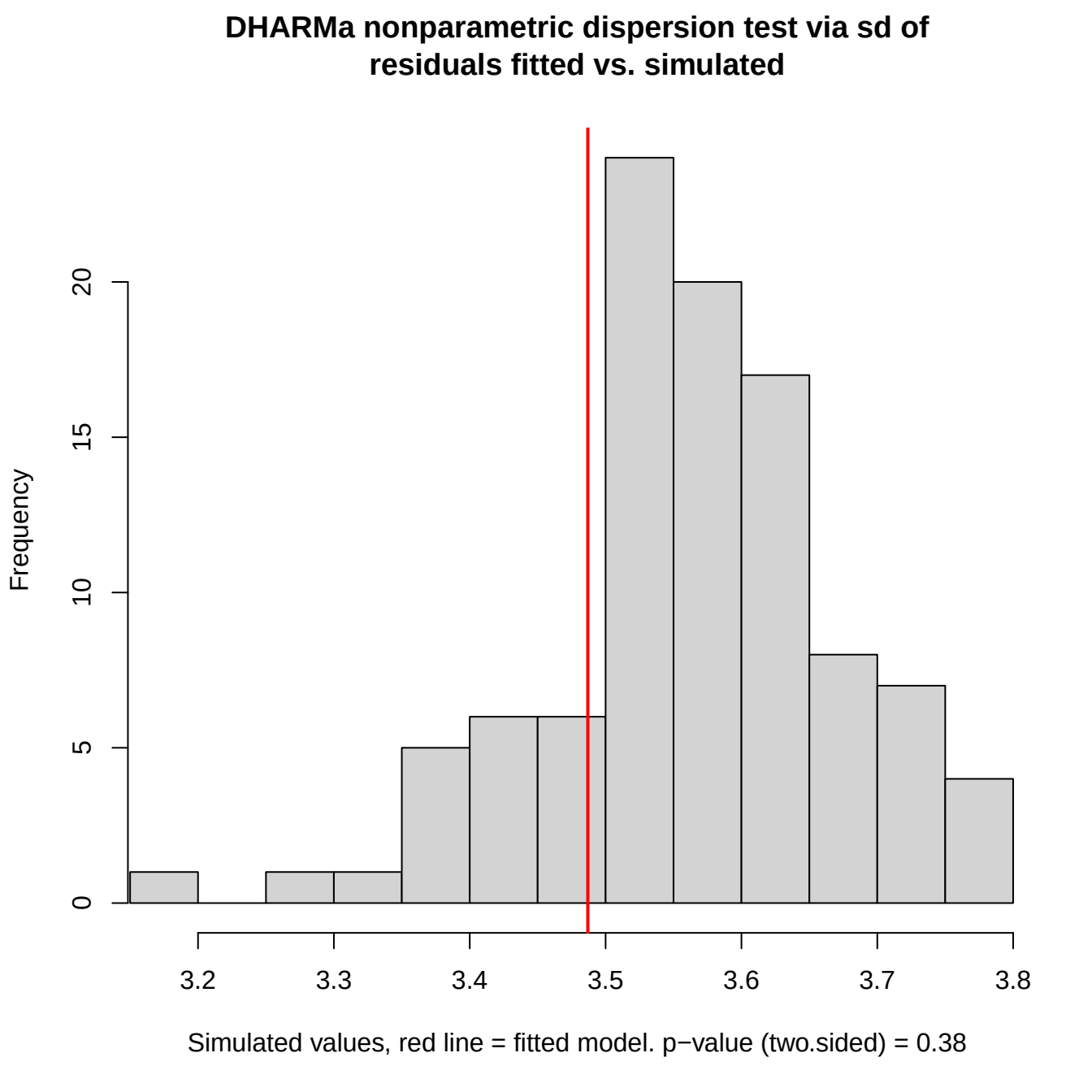

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
15
20
25
Simulated values, red line = fitted model. p−value (two.sided) = 0.12

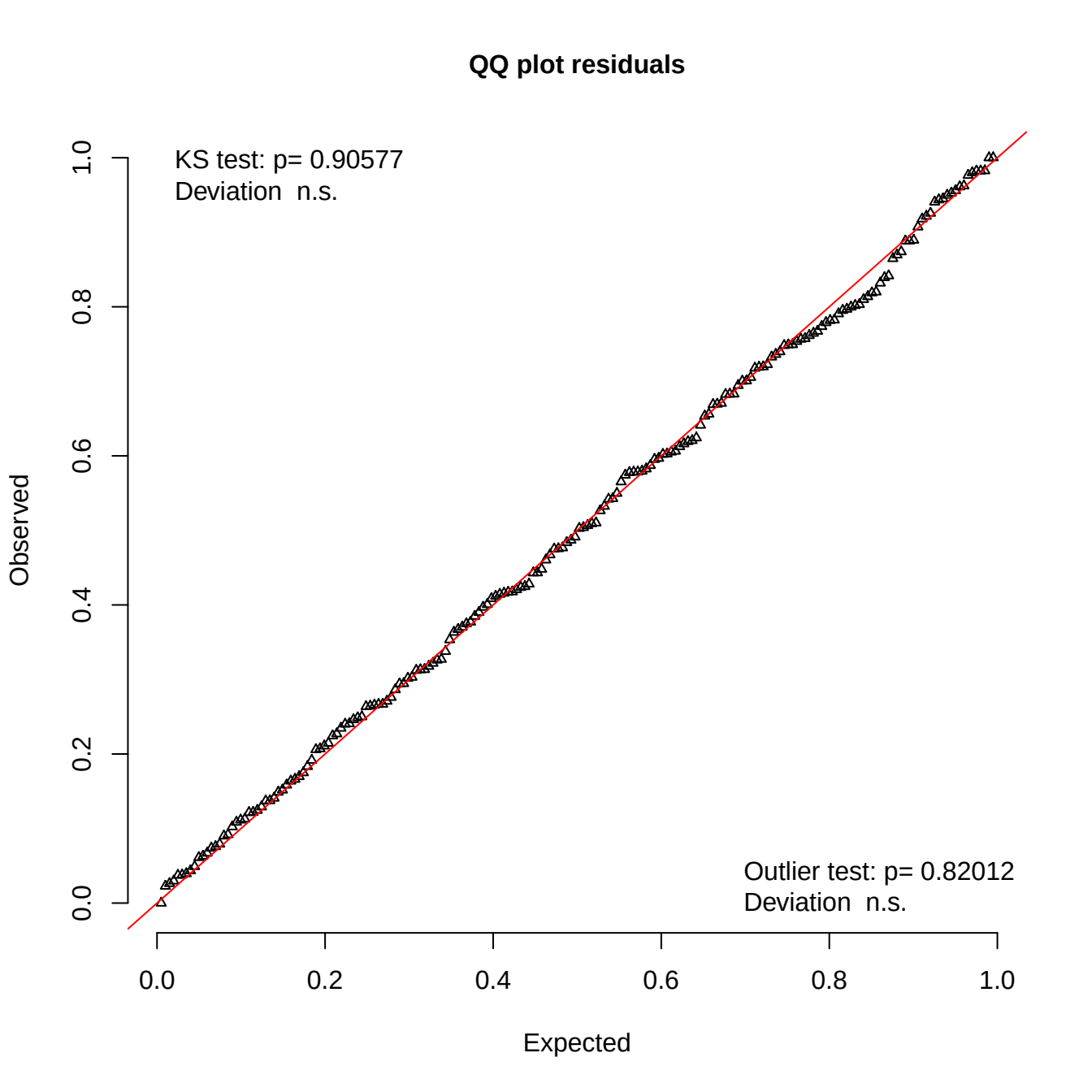

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

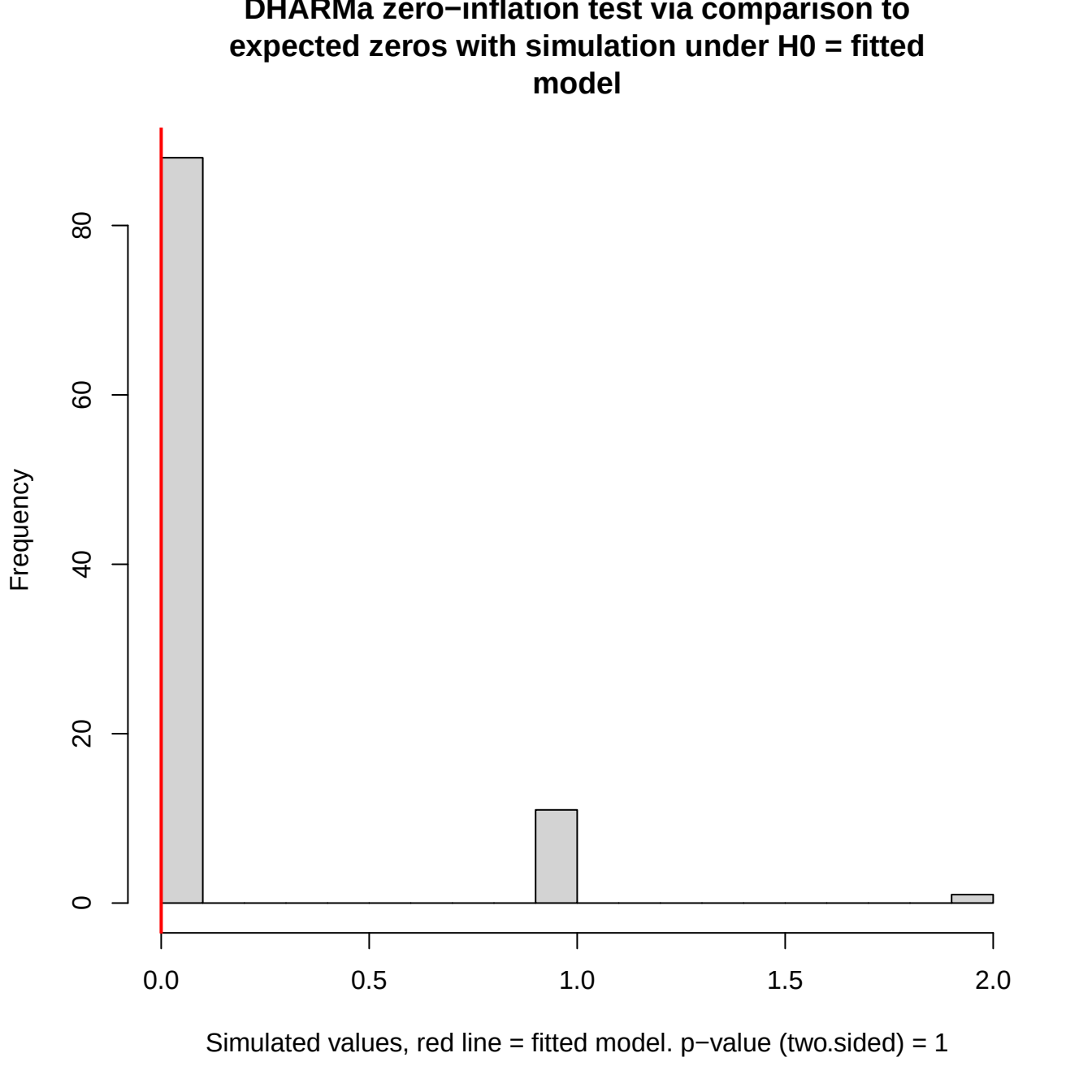

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
160
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

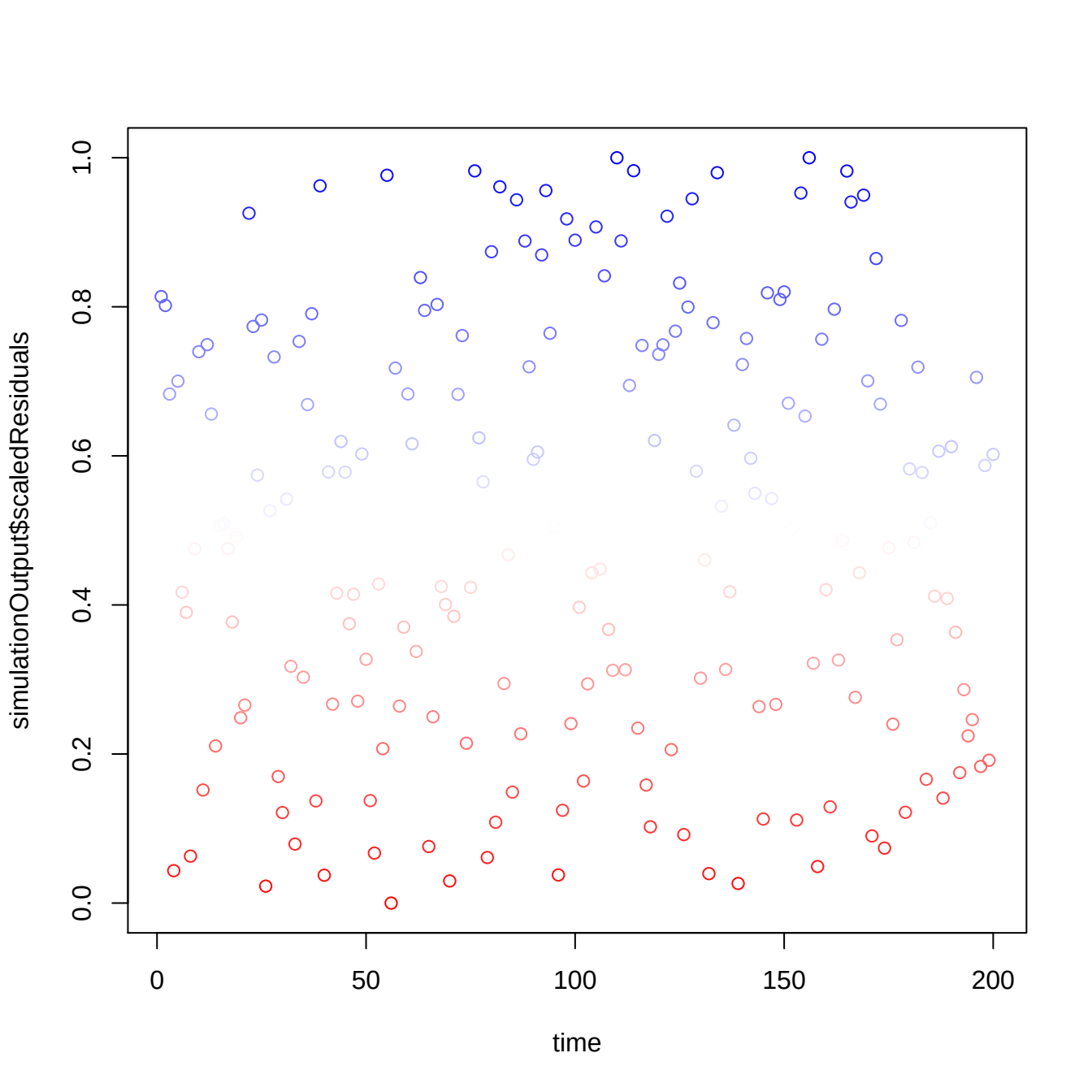

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
200
250
300
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

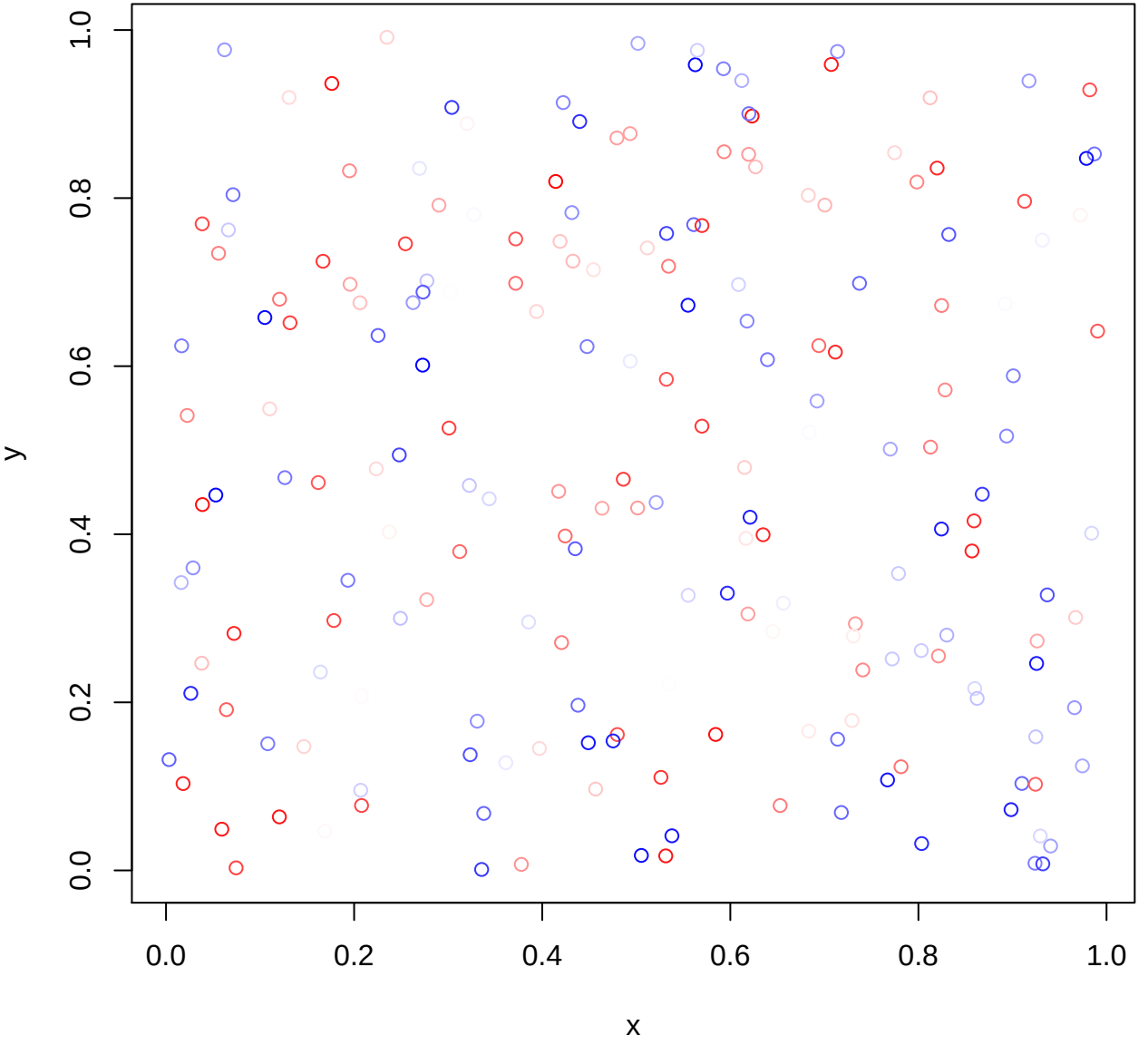

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
val

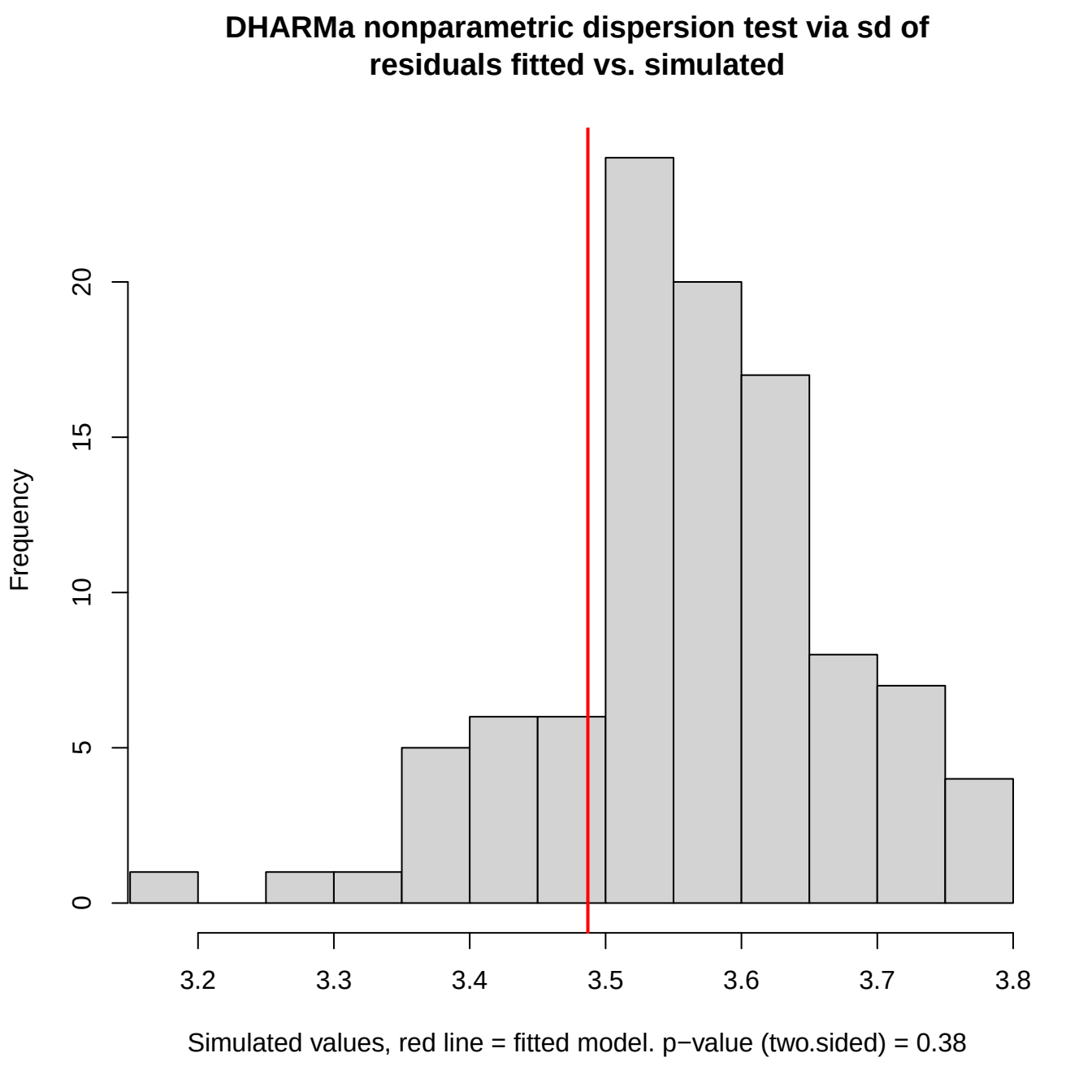

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.38

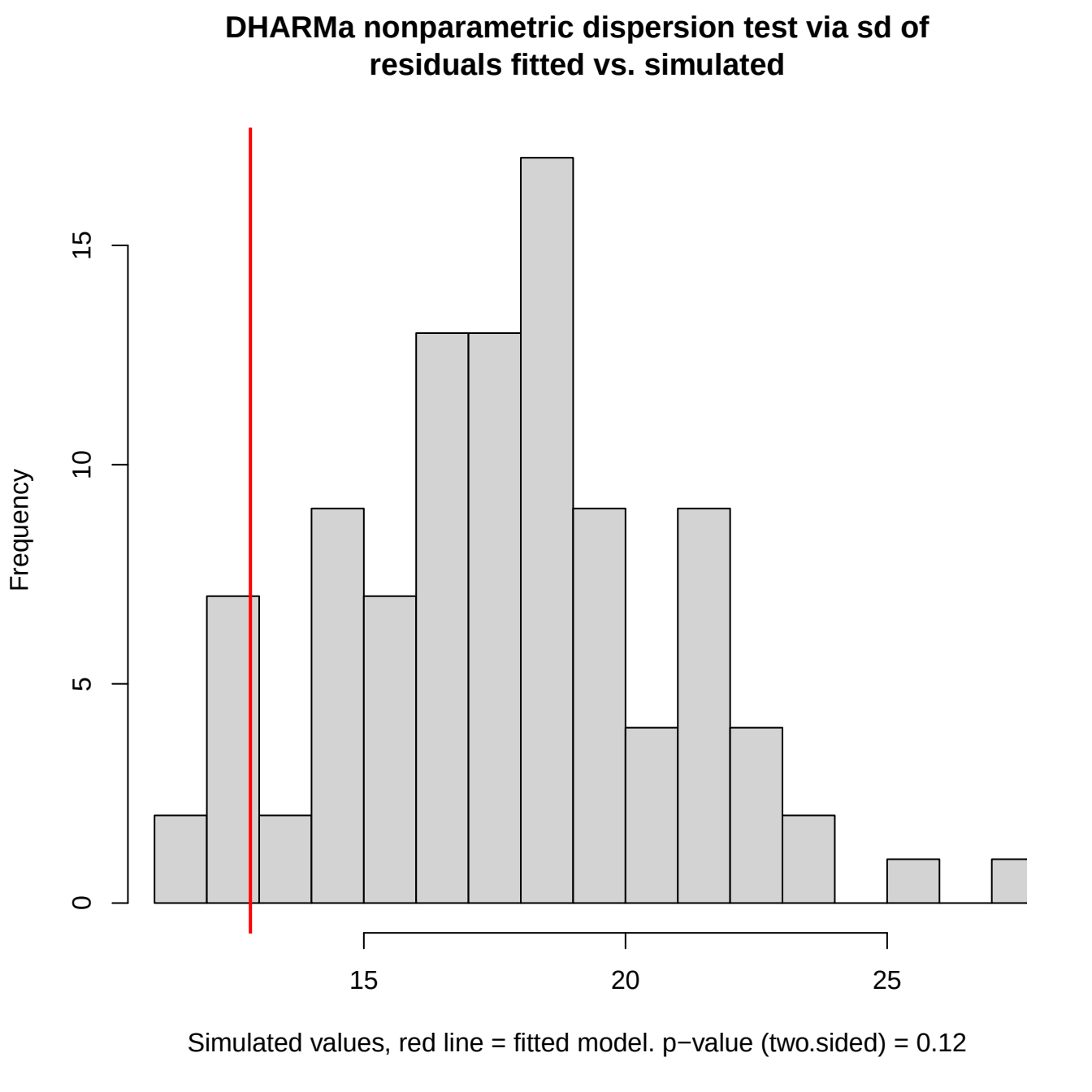

QQ plot residuals
KS test: p= 0.90577
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

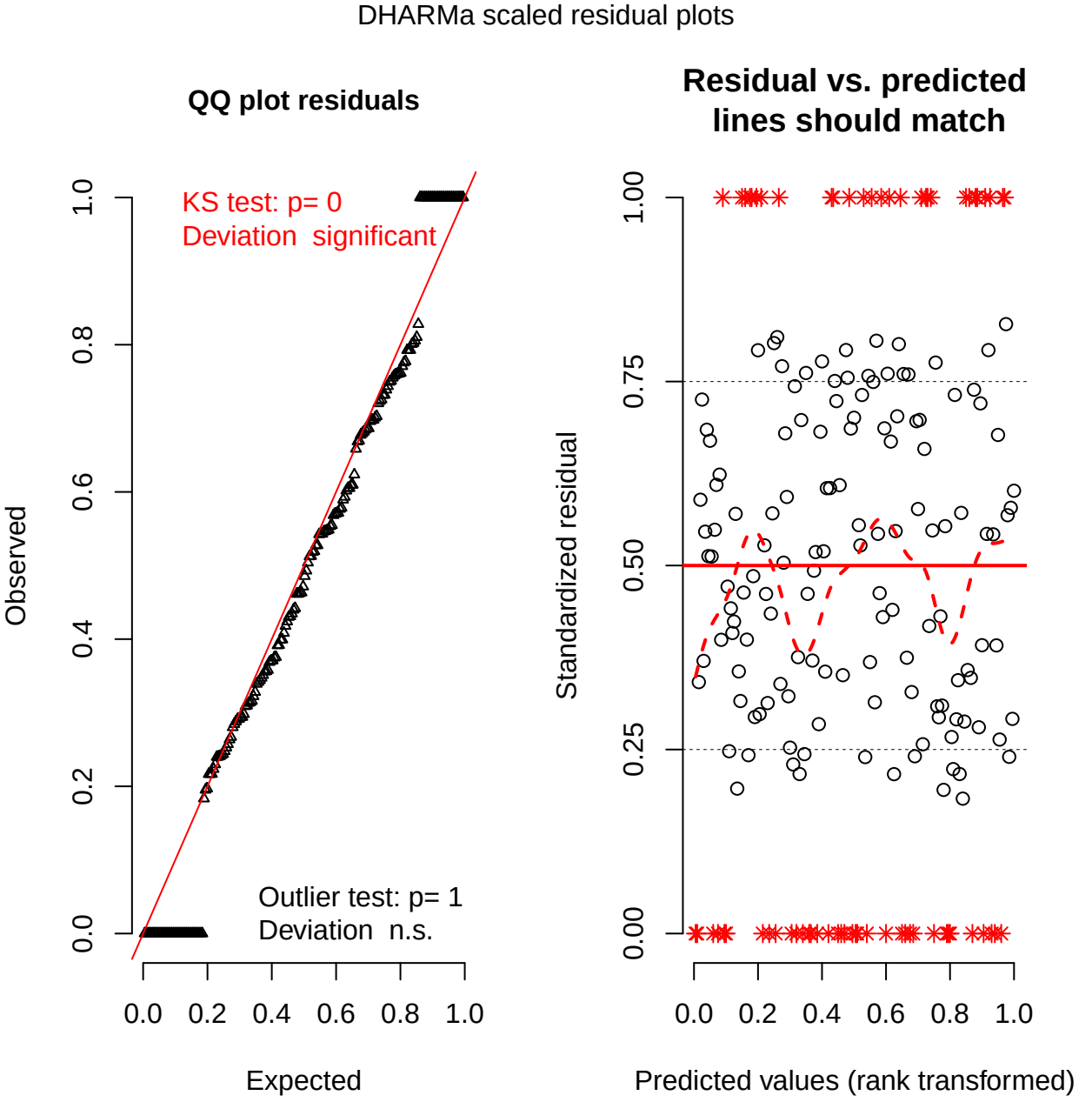

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.5
1.0
1.5
2.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

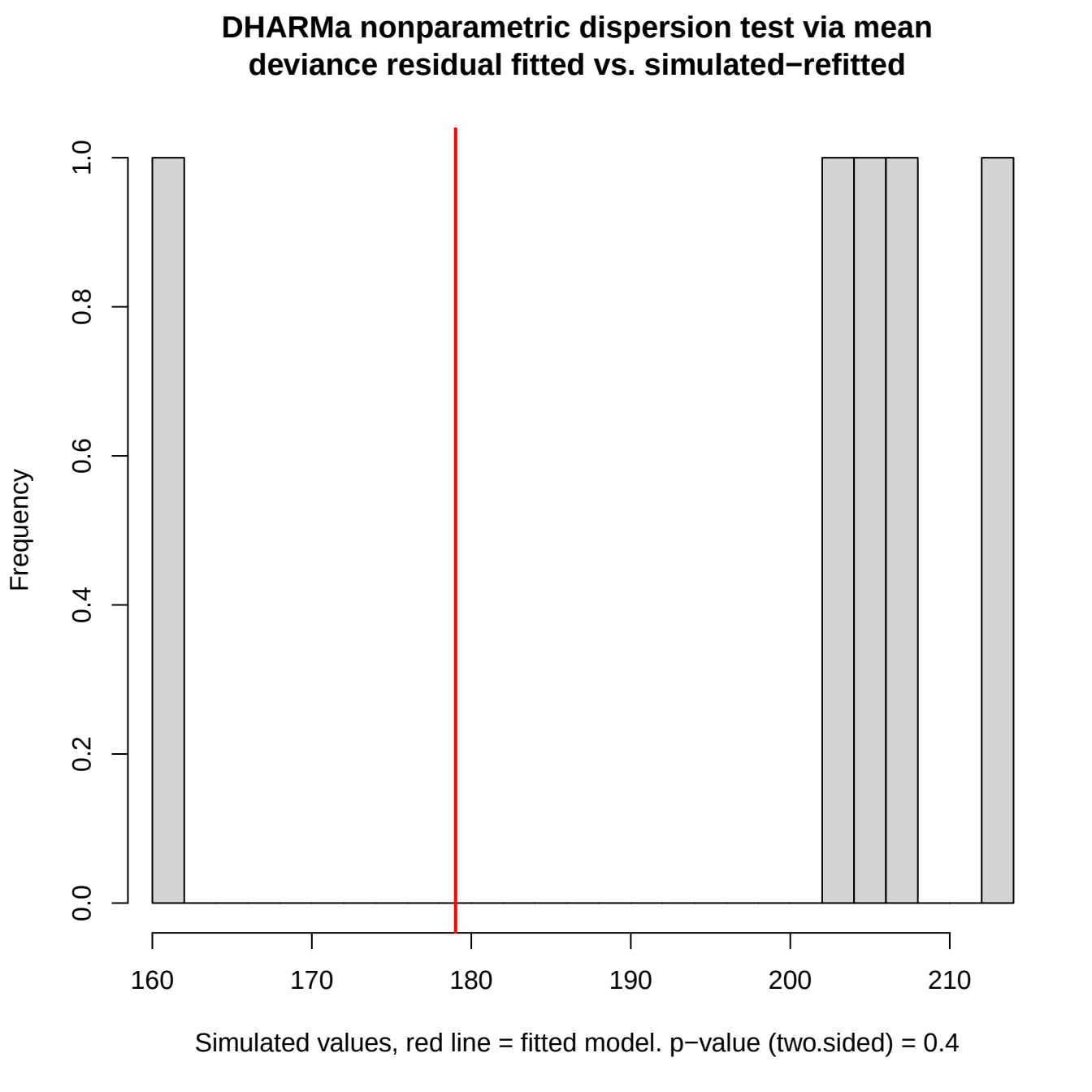

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

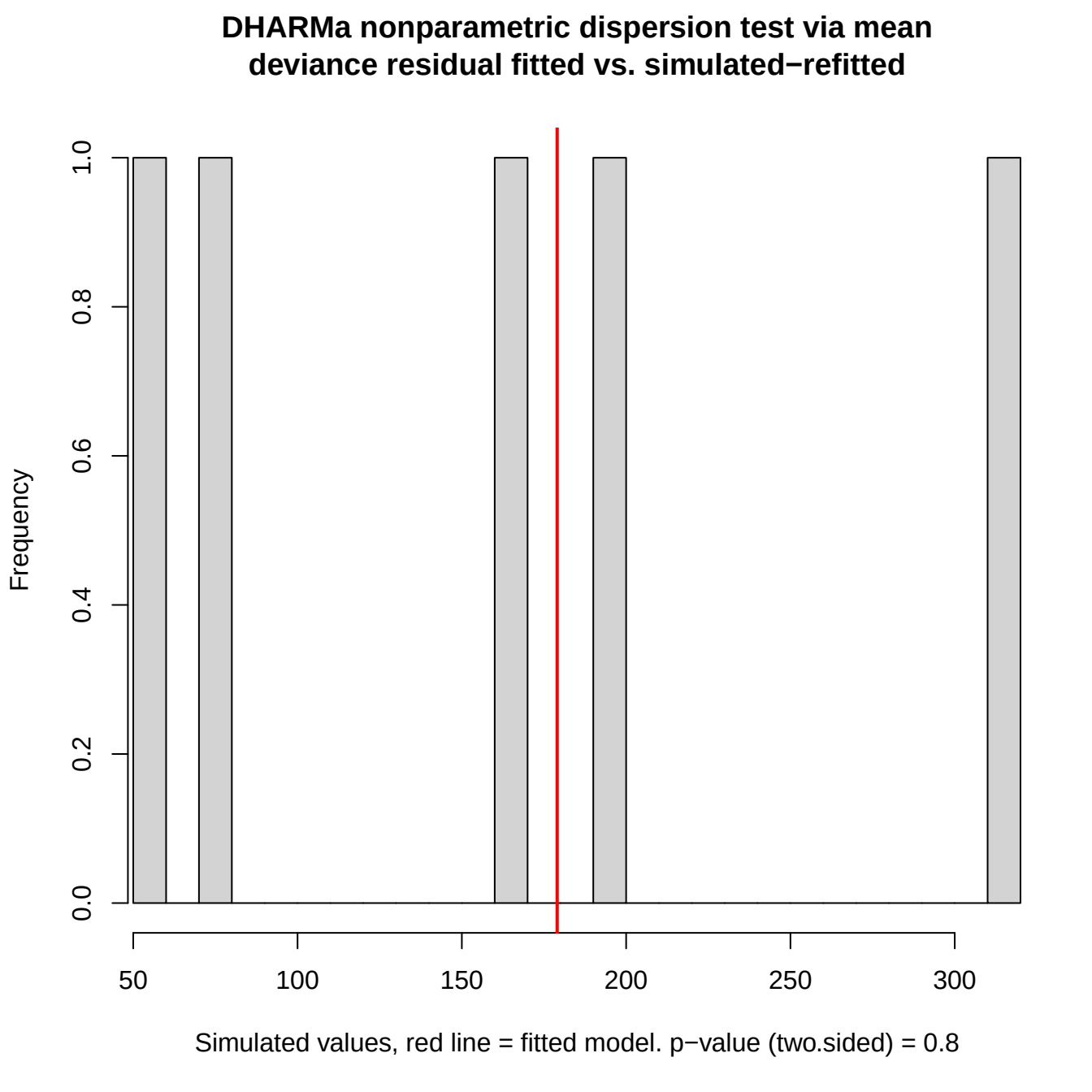

y
x
0.0
0.2
0.4
0.6
0.8
1.0

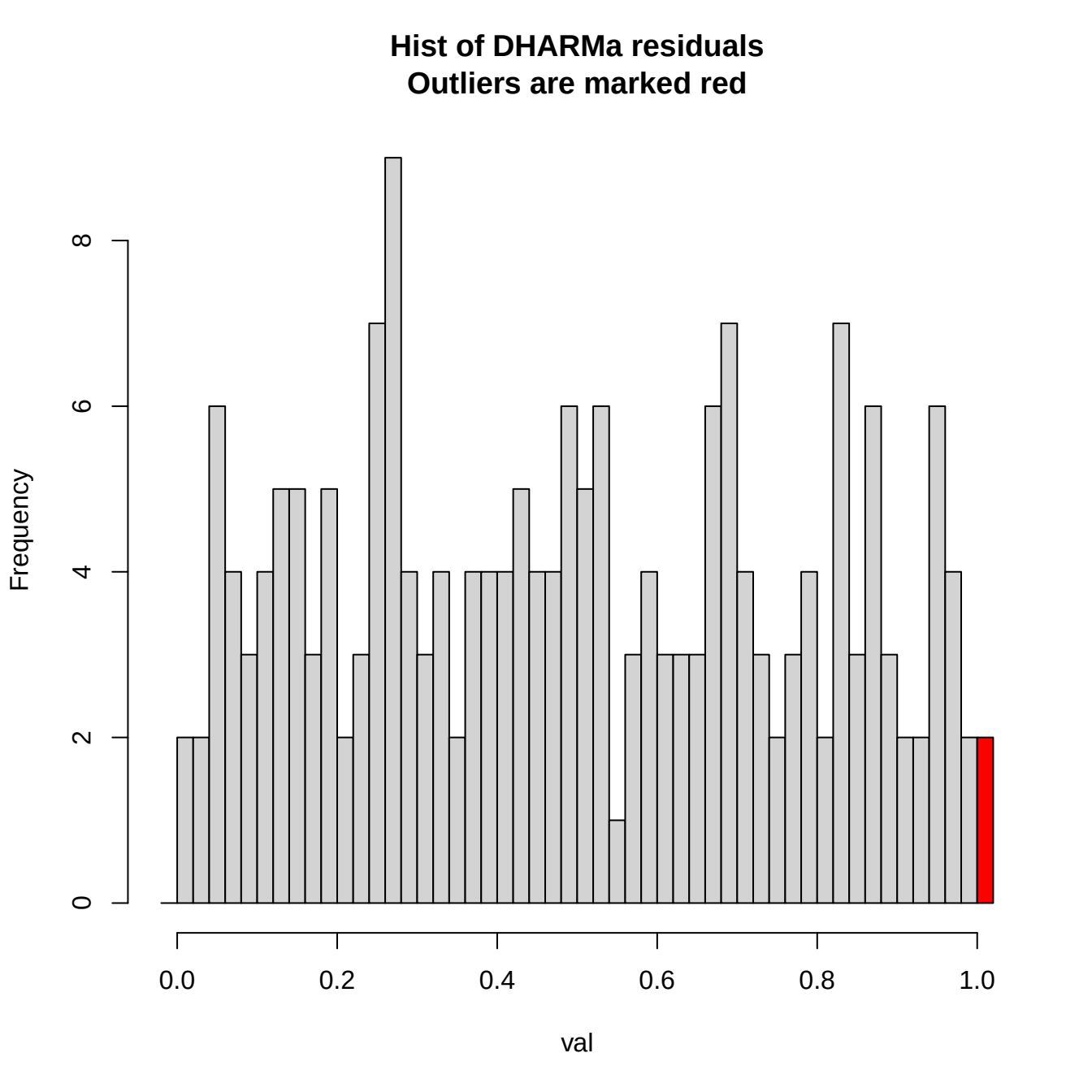

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.38

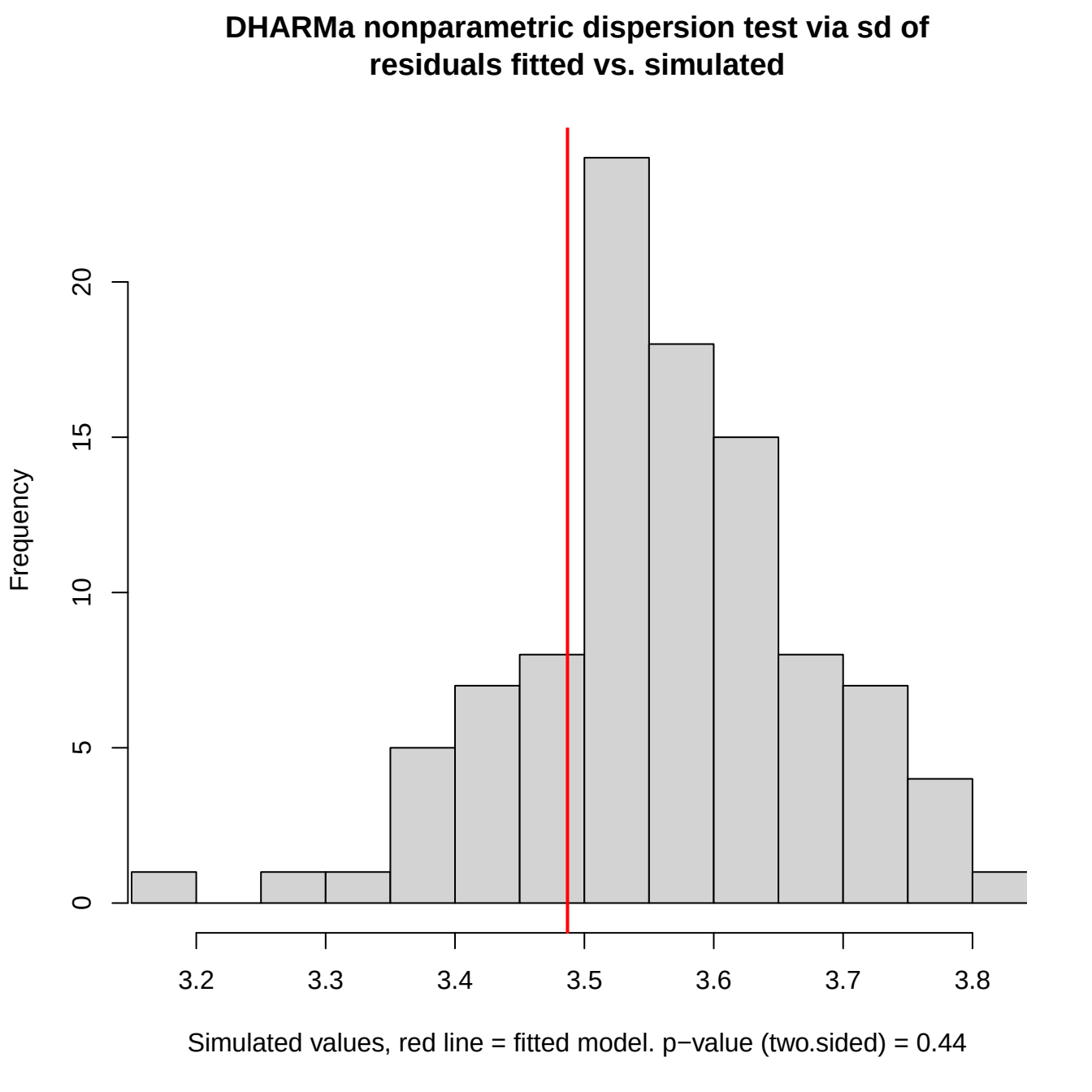

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
15
20
25
Simulated values, red line = fitted model. p−value (two.sided) = 0.12

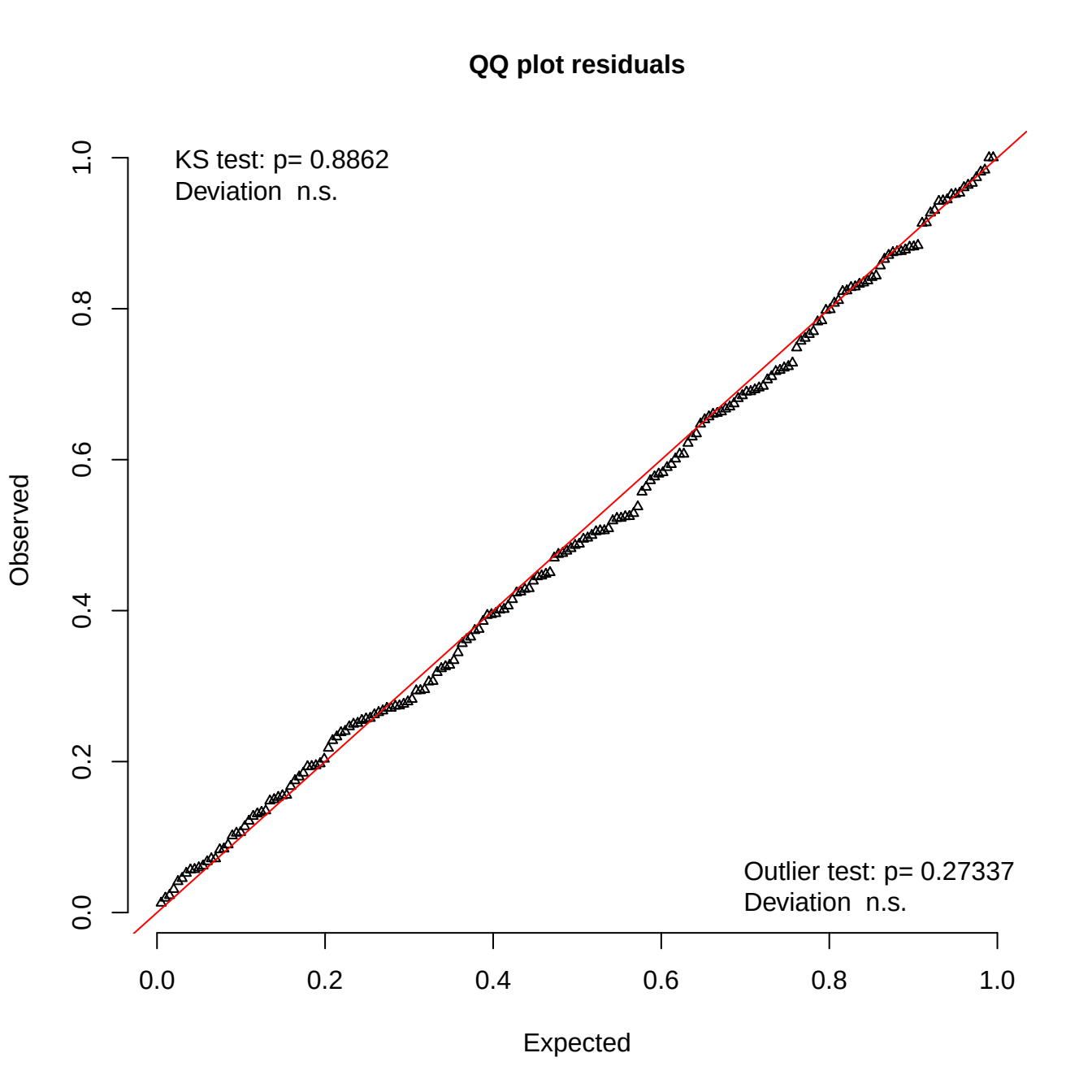

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

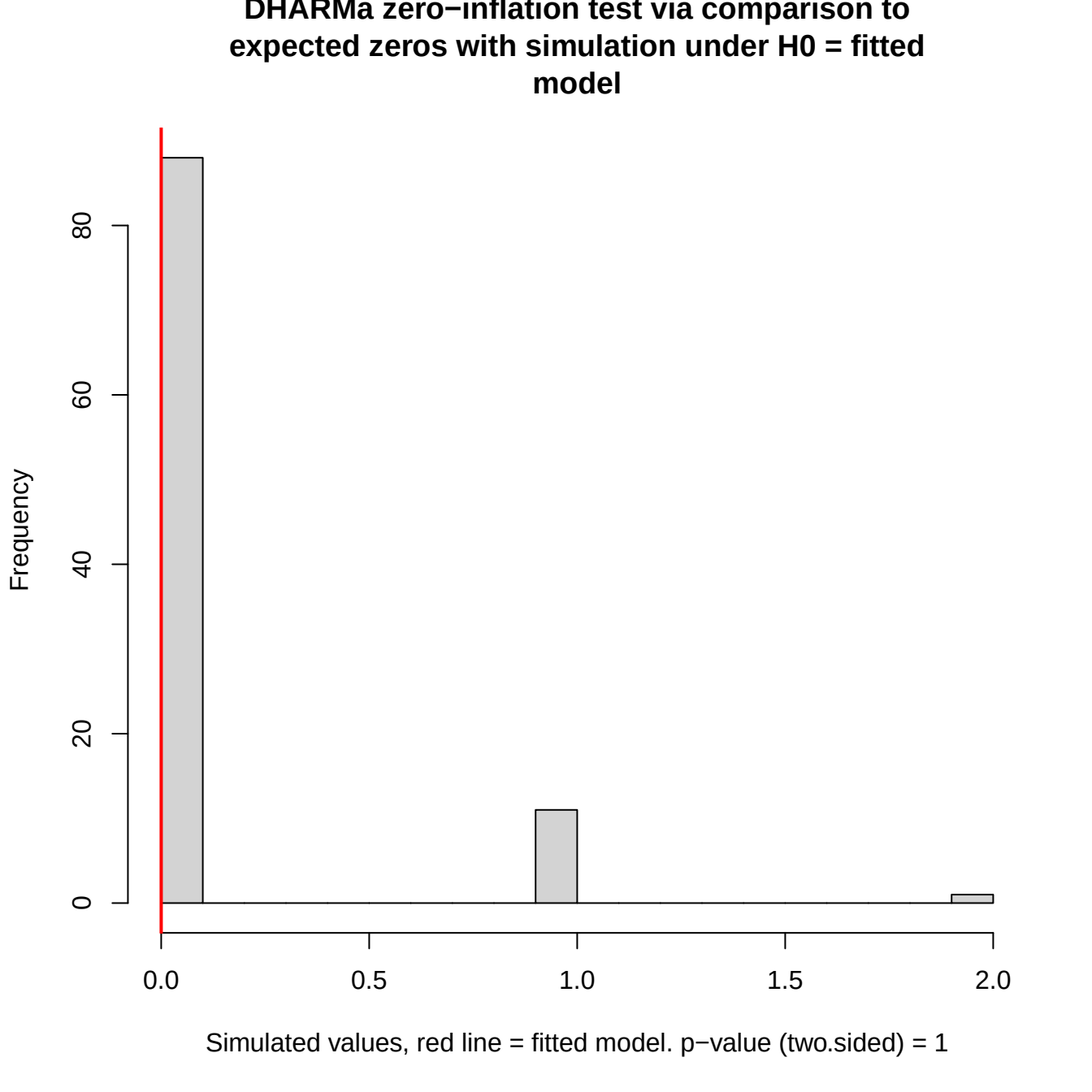

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
160
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

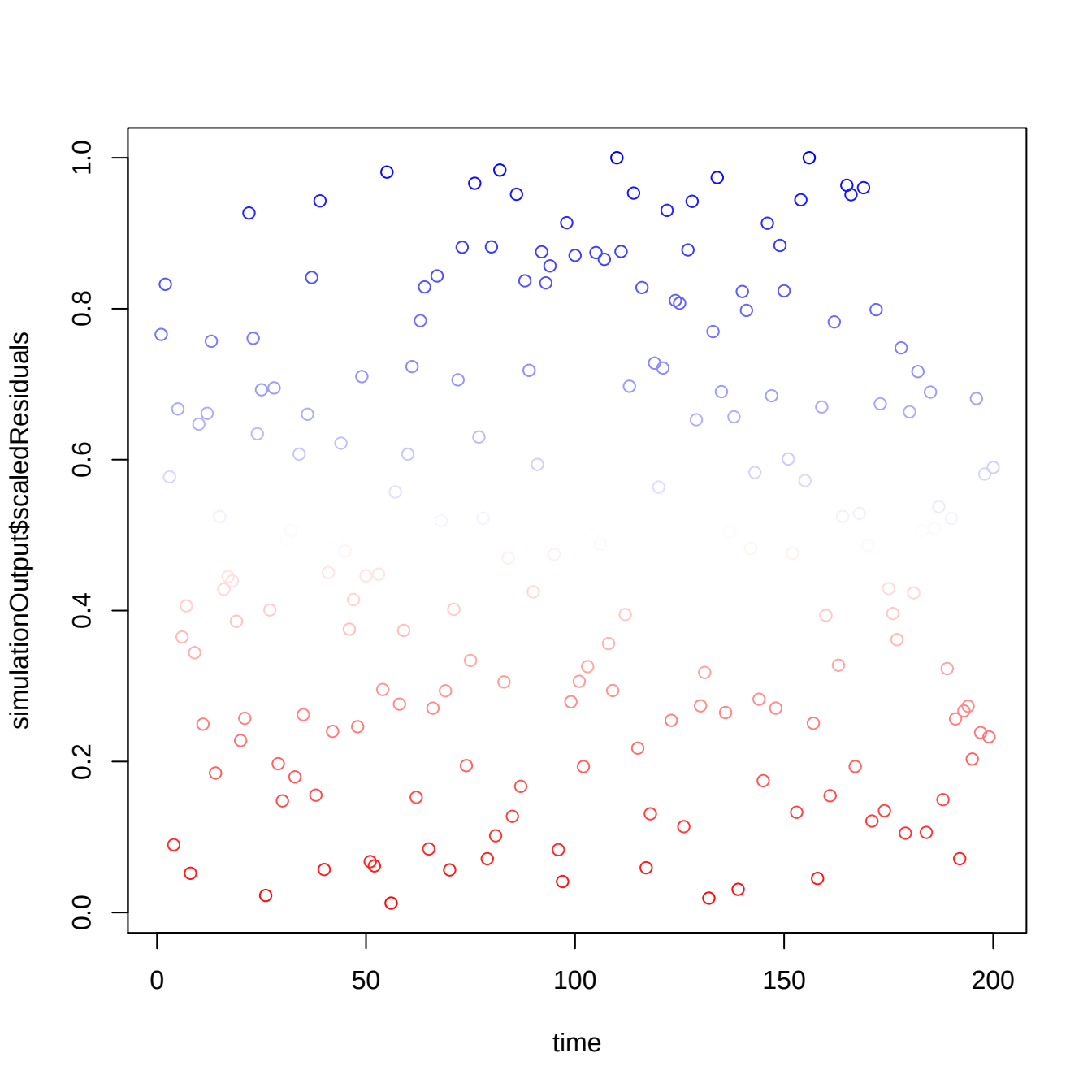

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
200
250
300
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

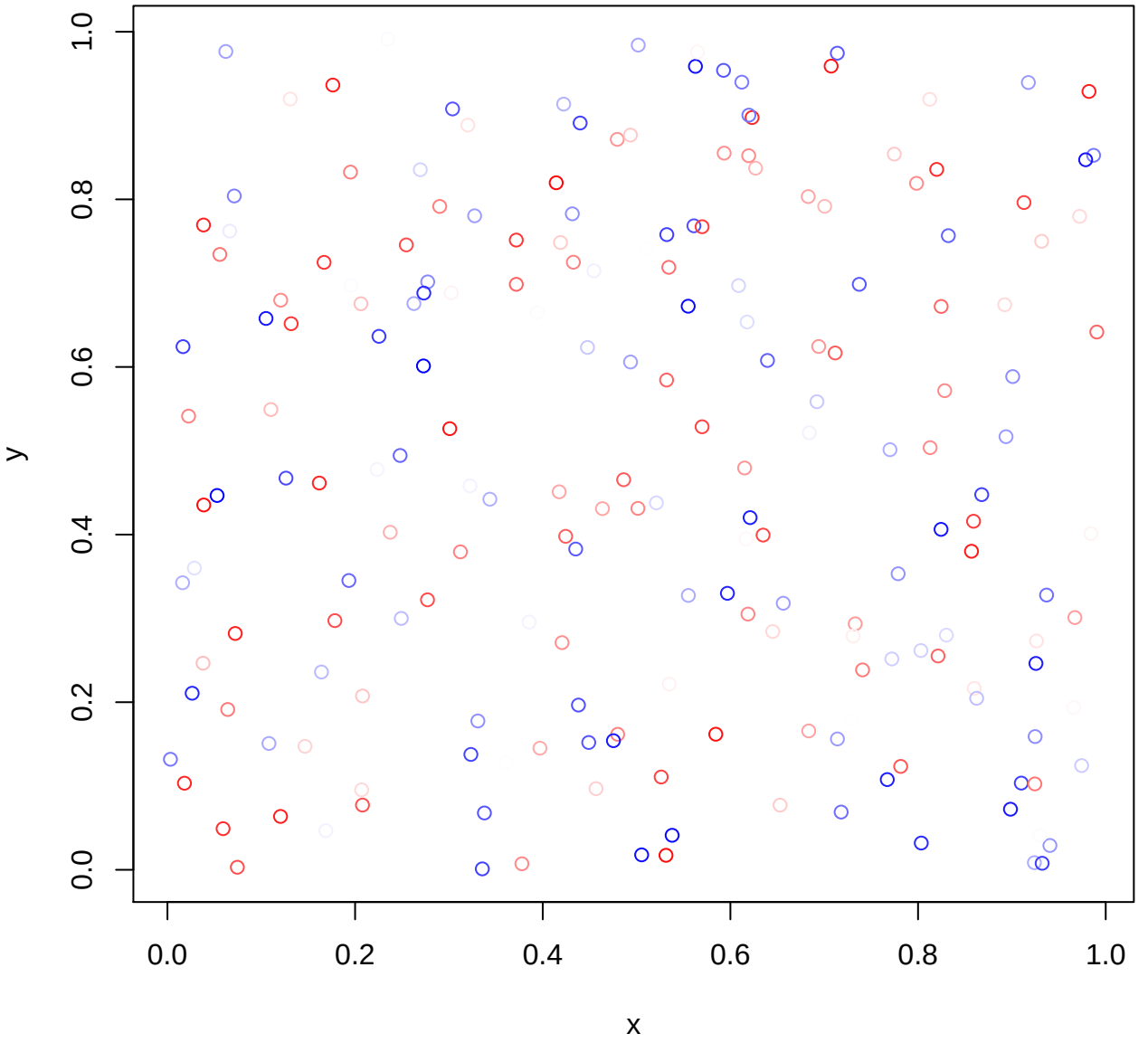

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

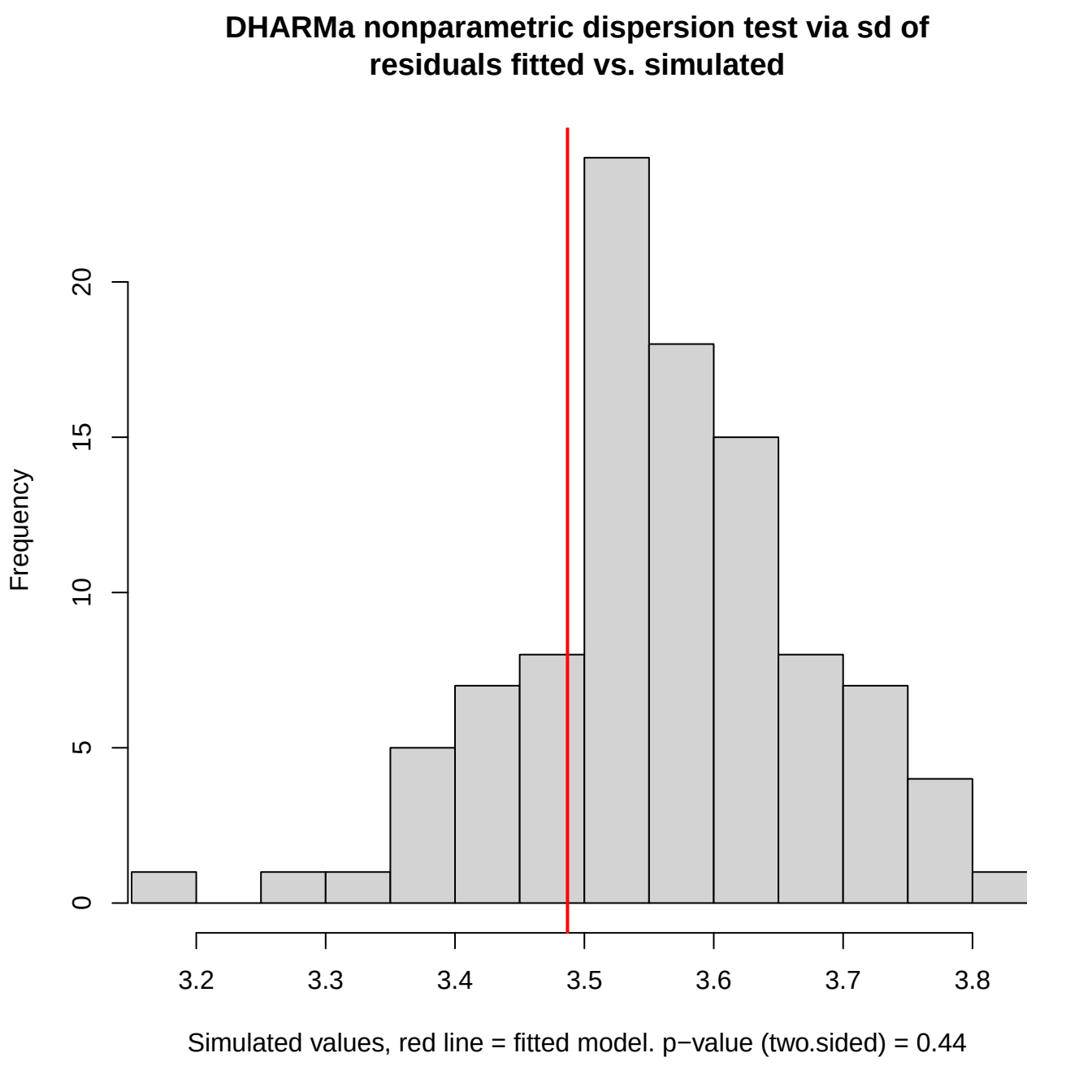

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

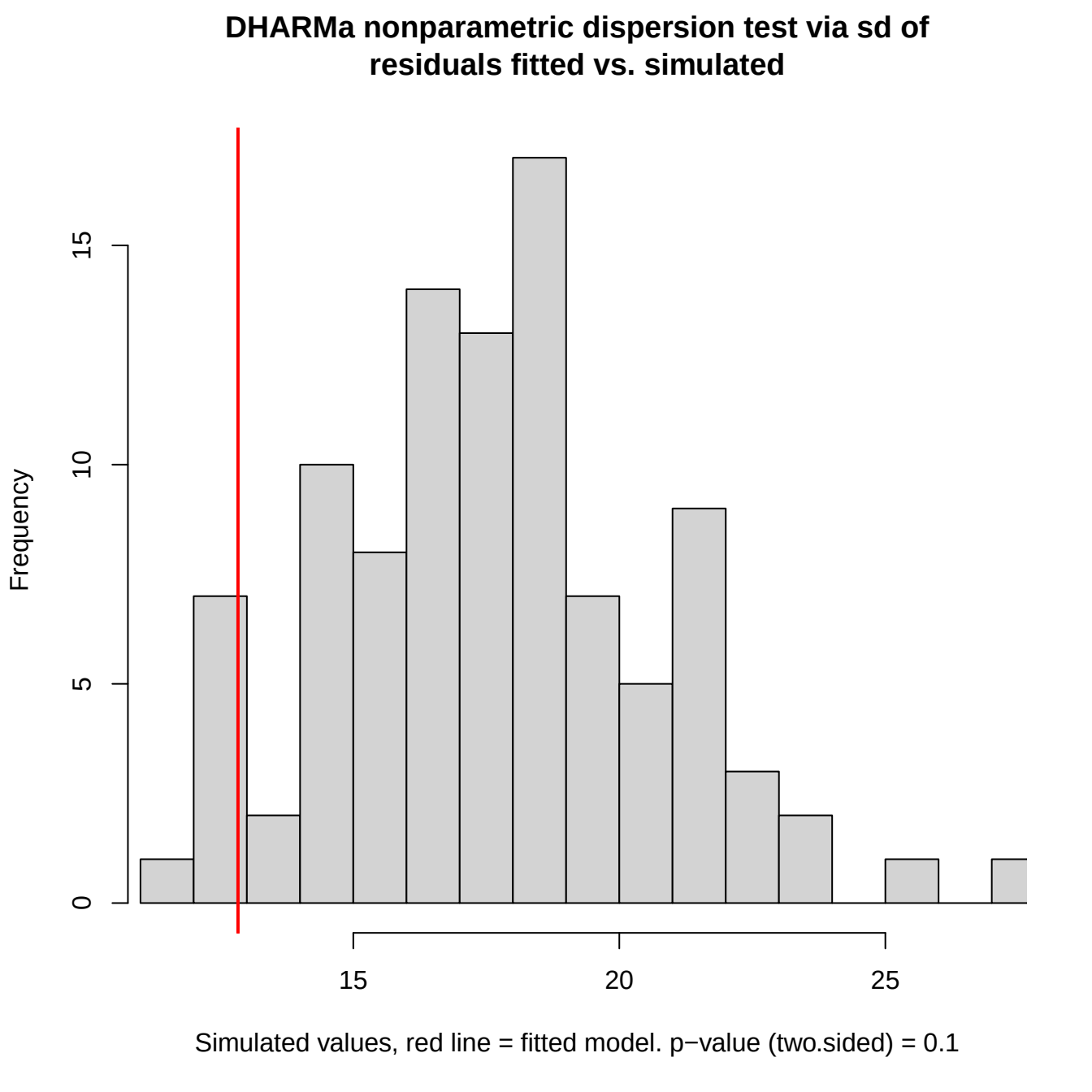

QQ plot residuals
KS test: p= 0.8862
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

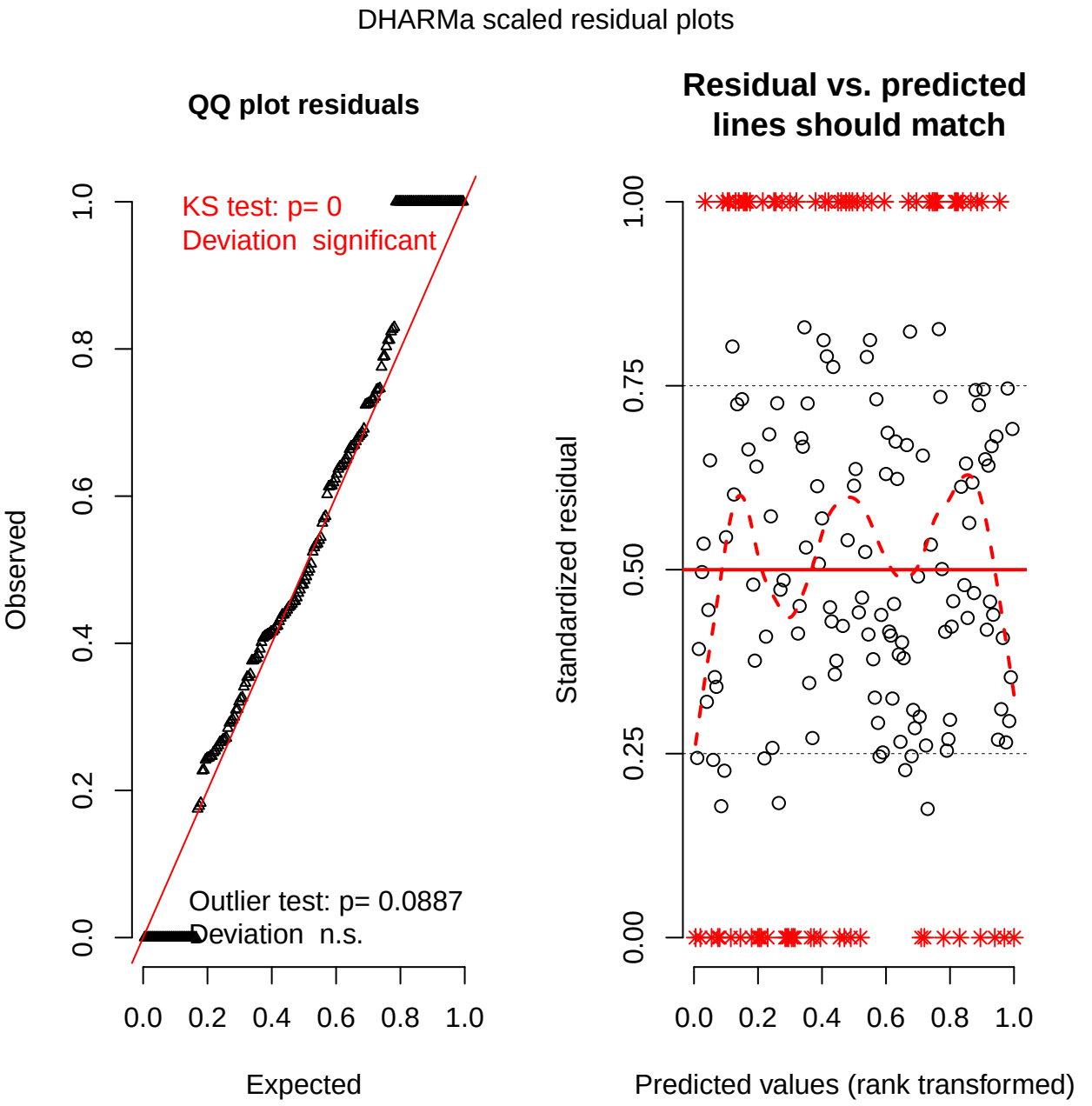

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.5
1.0
1.5
2.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

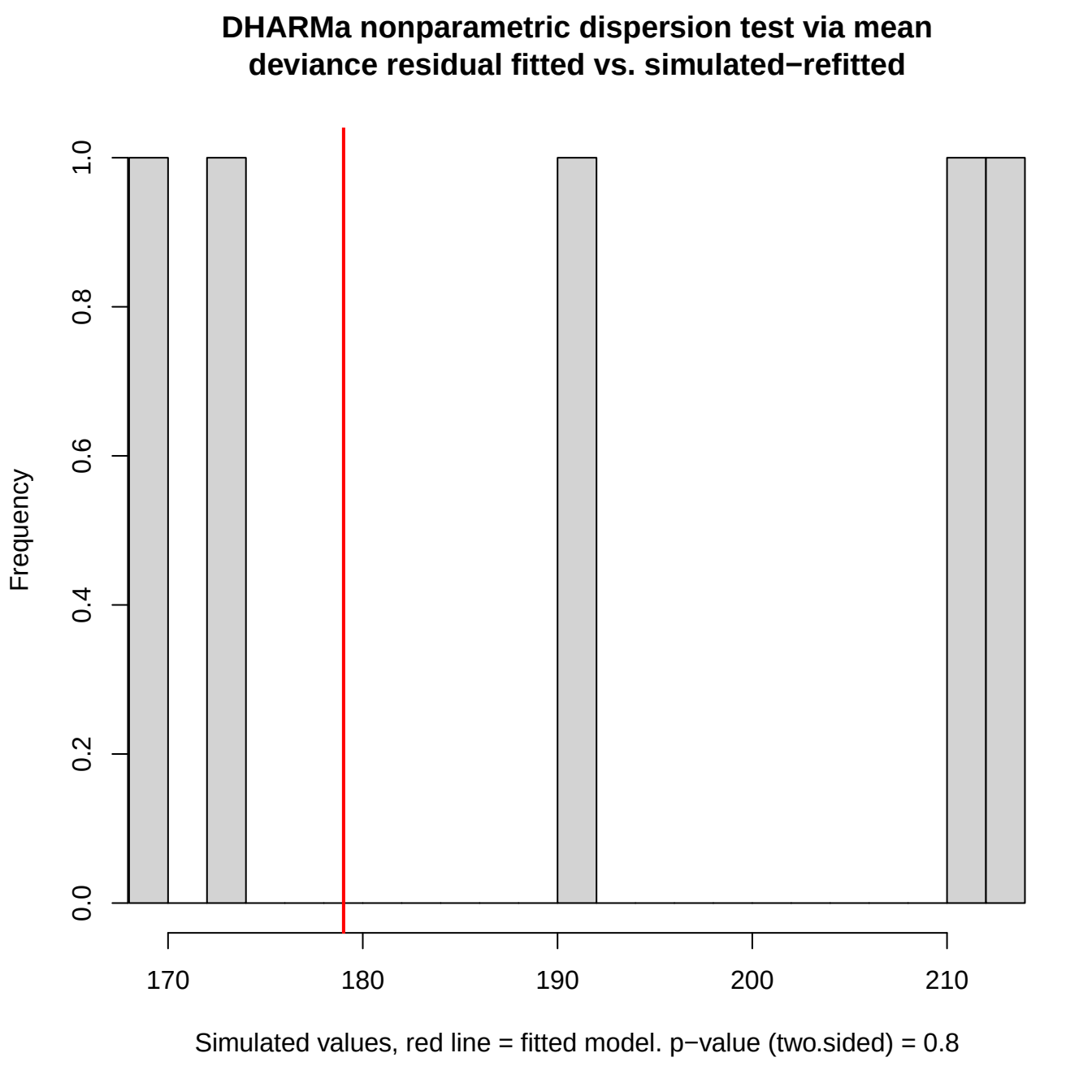

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

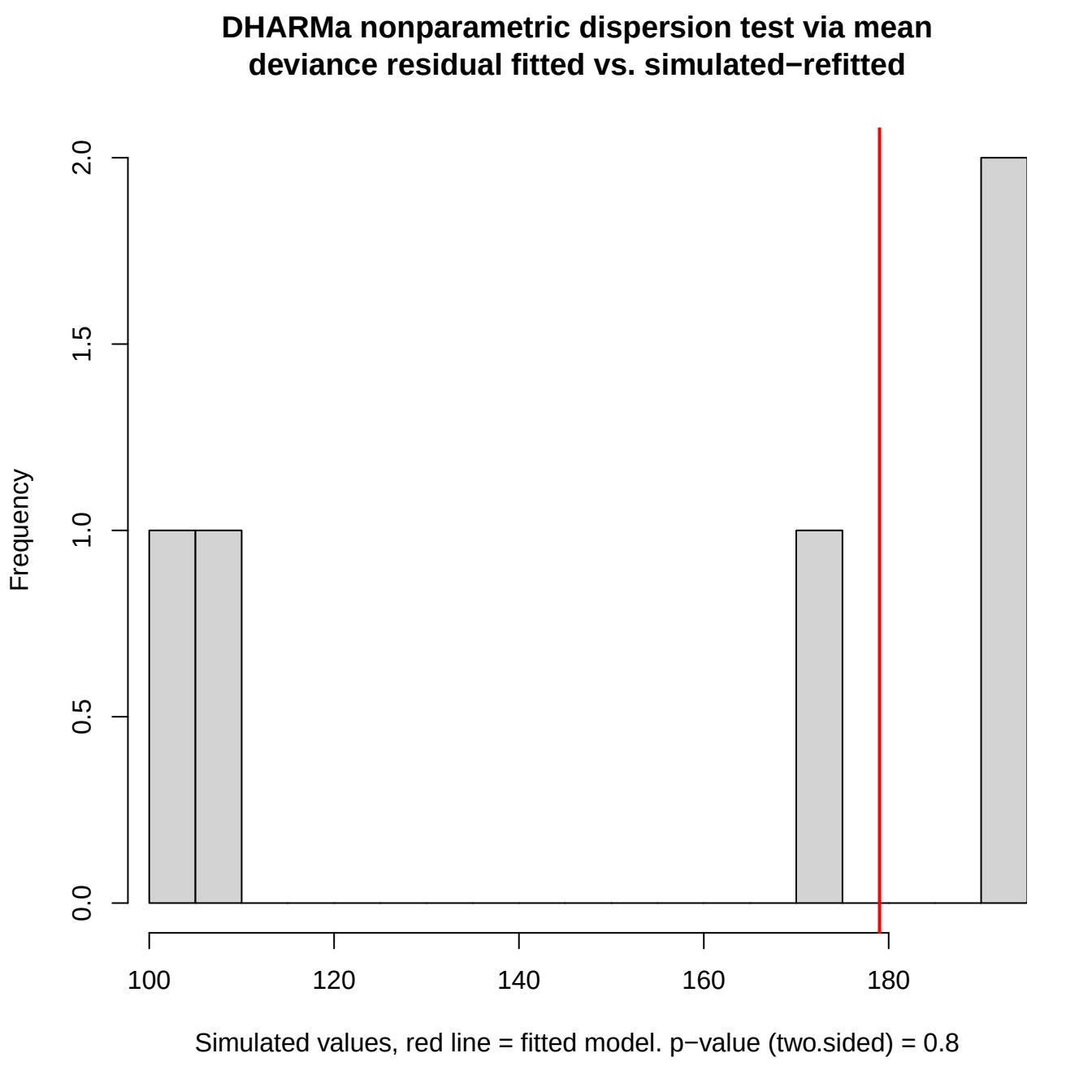

y
x
0.0
0.2
0.4
0.6
0.8
1.0

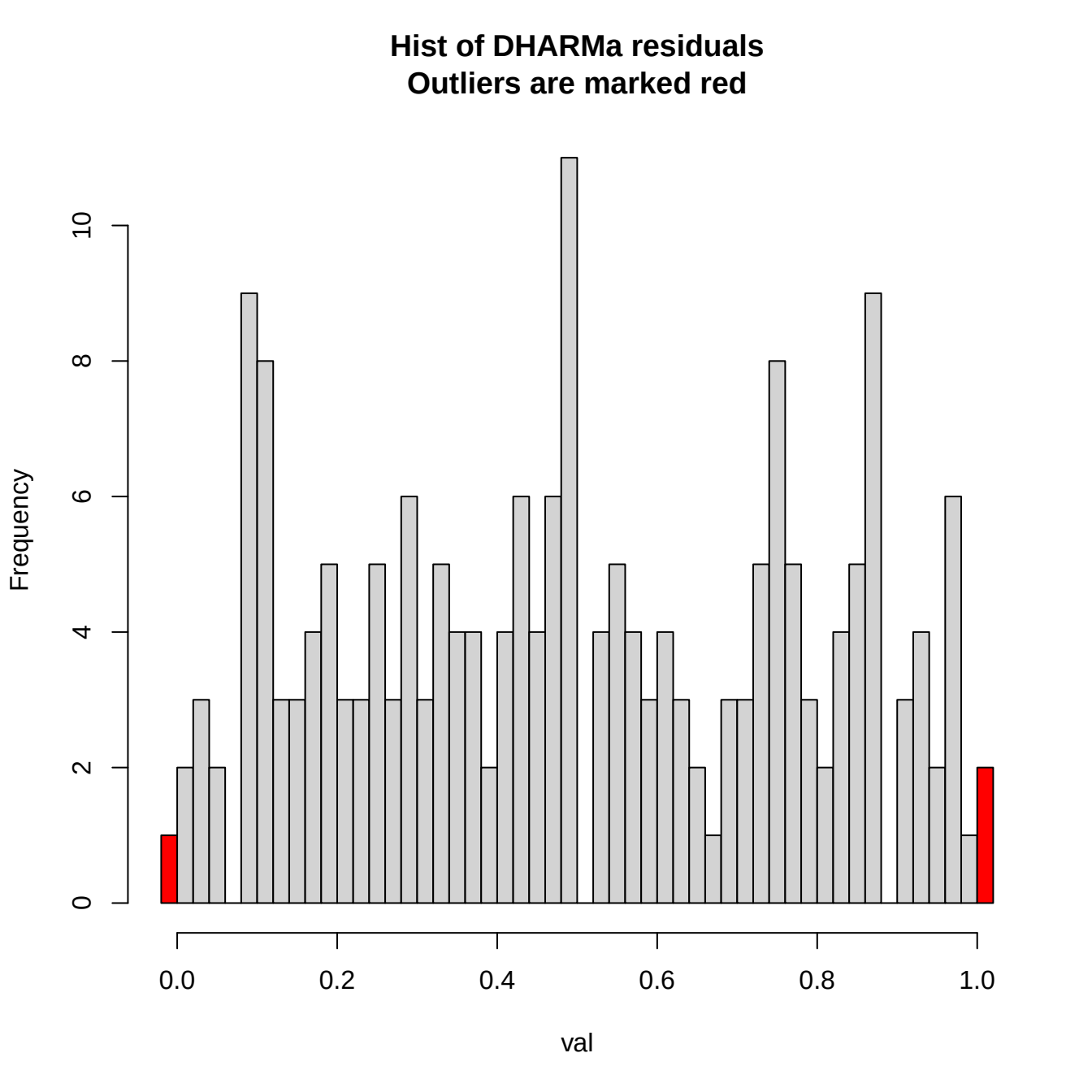

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

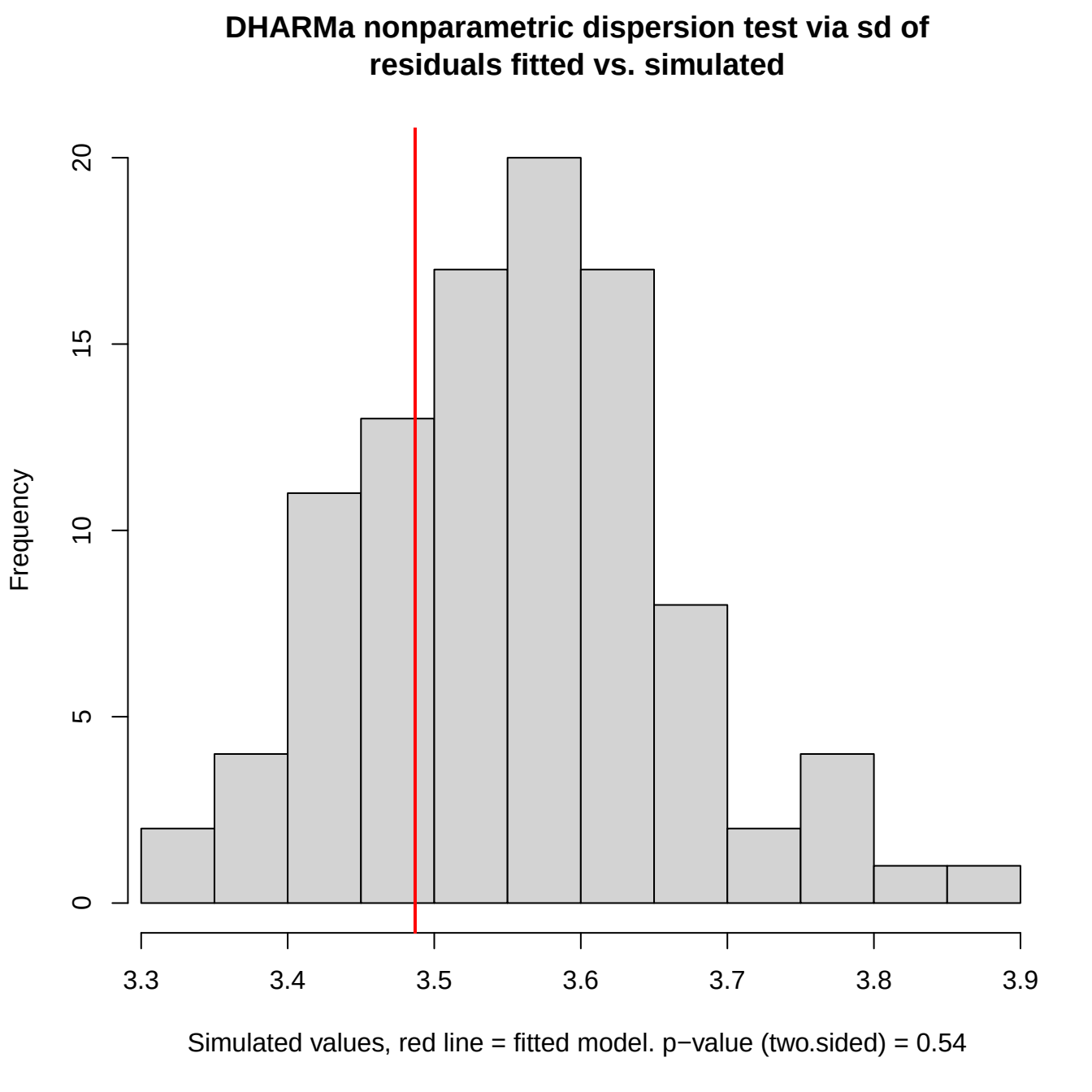

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
15
20
25
Simulated values, red line = fitted model. p−value (two.sided) = 0.1

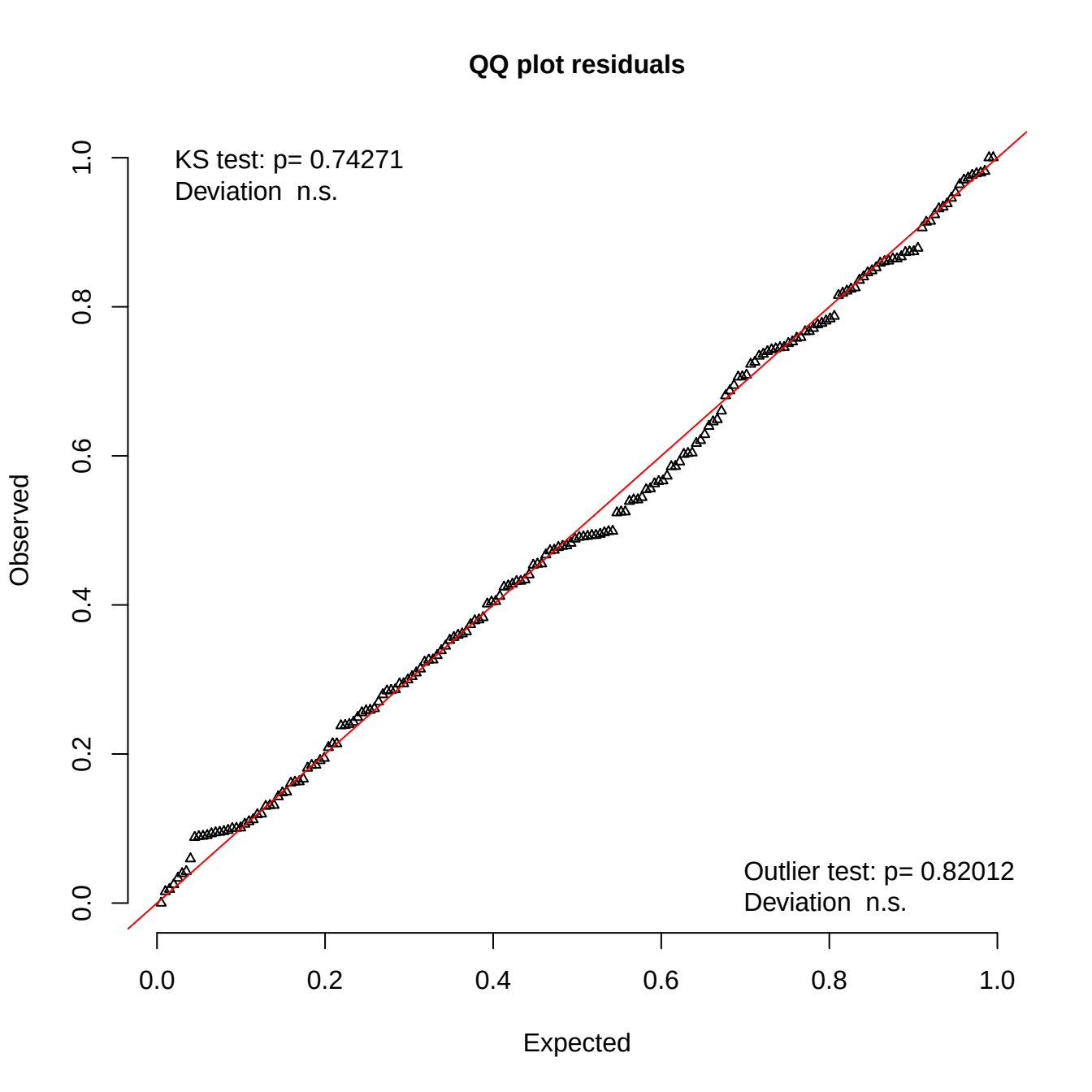

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.0887
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

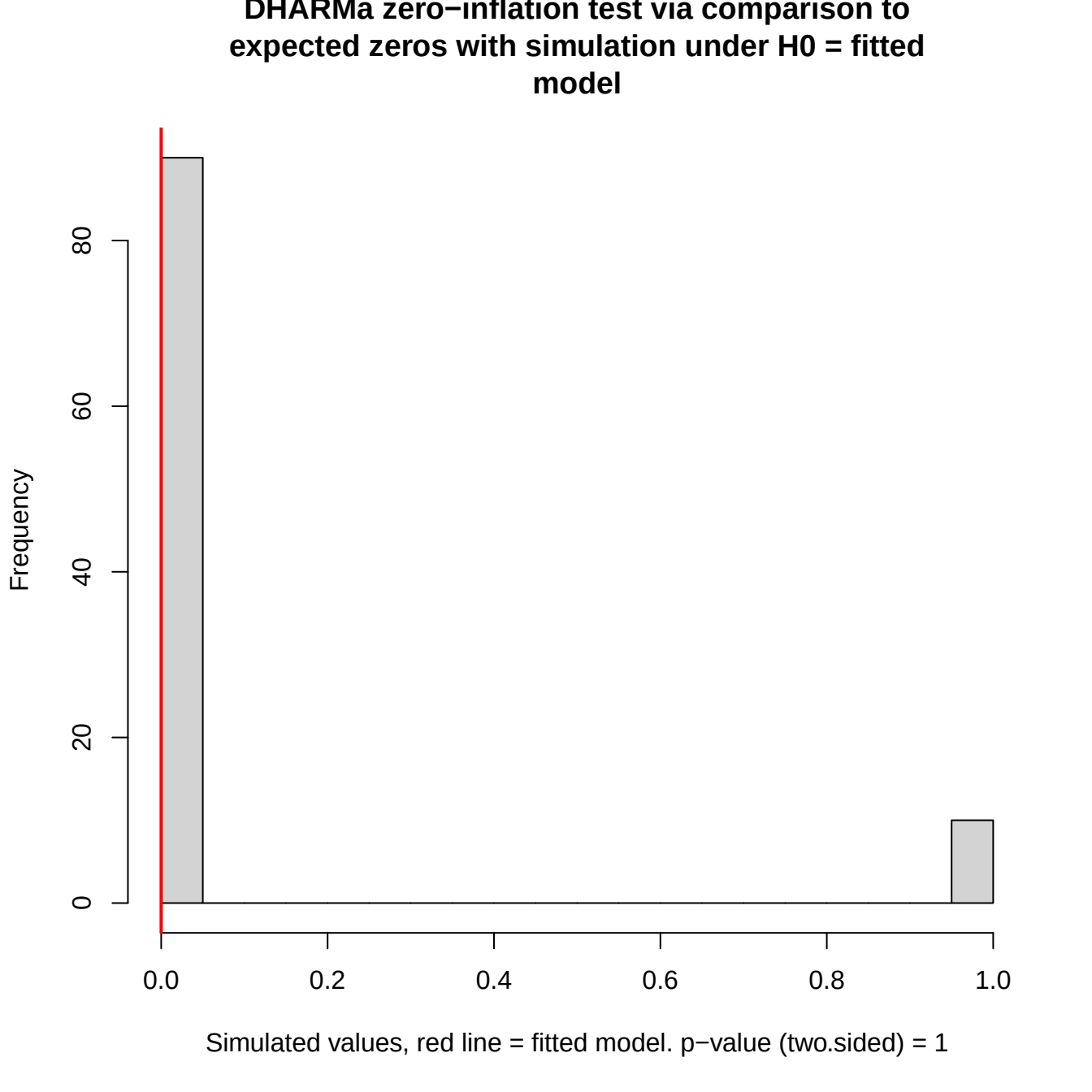

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

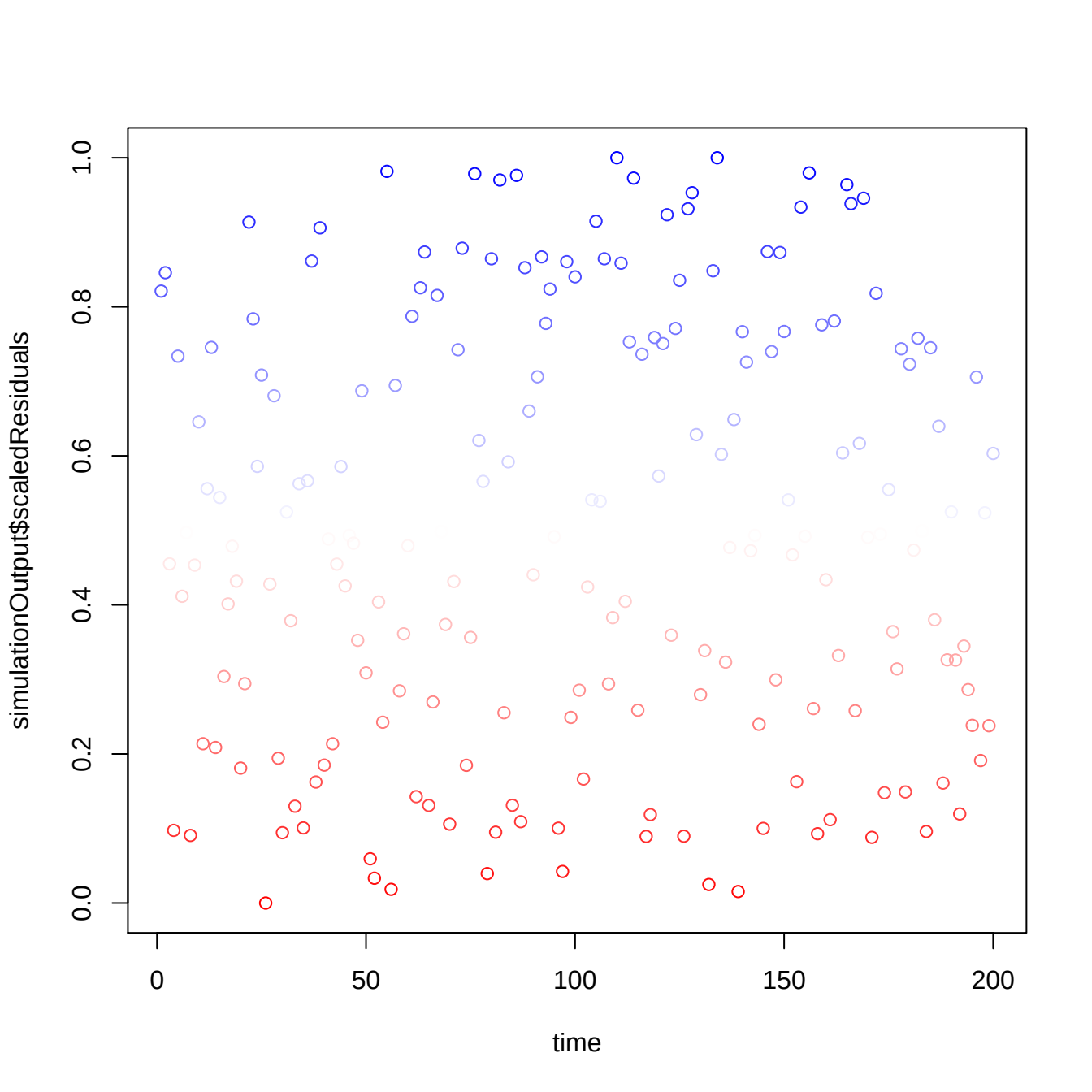

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

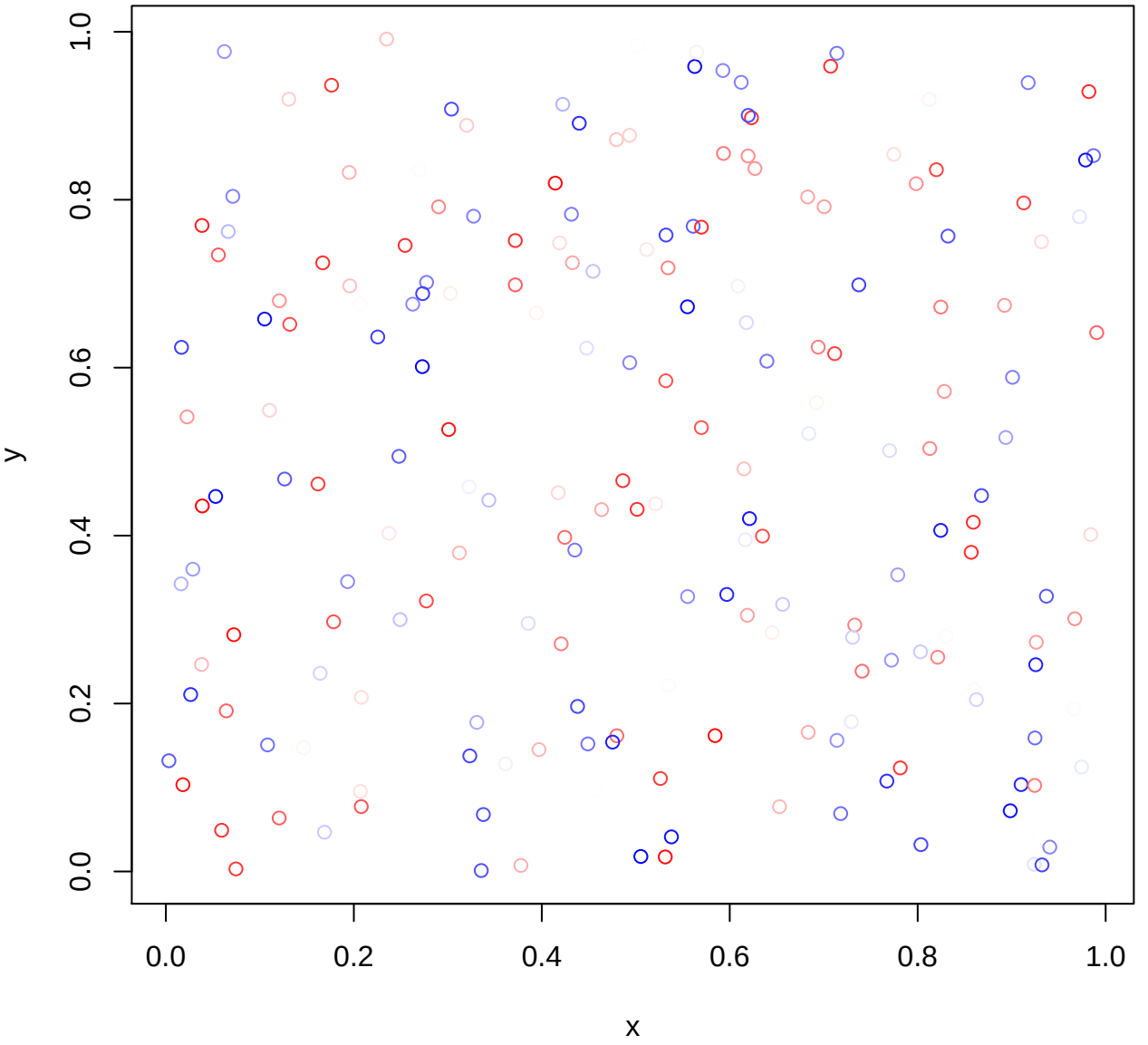

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

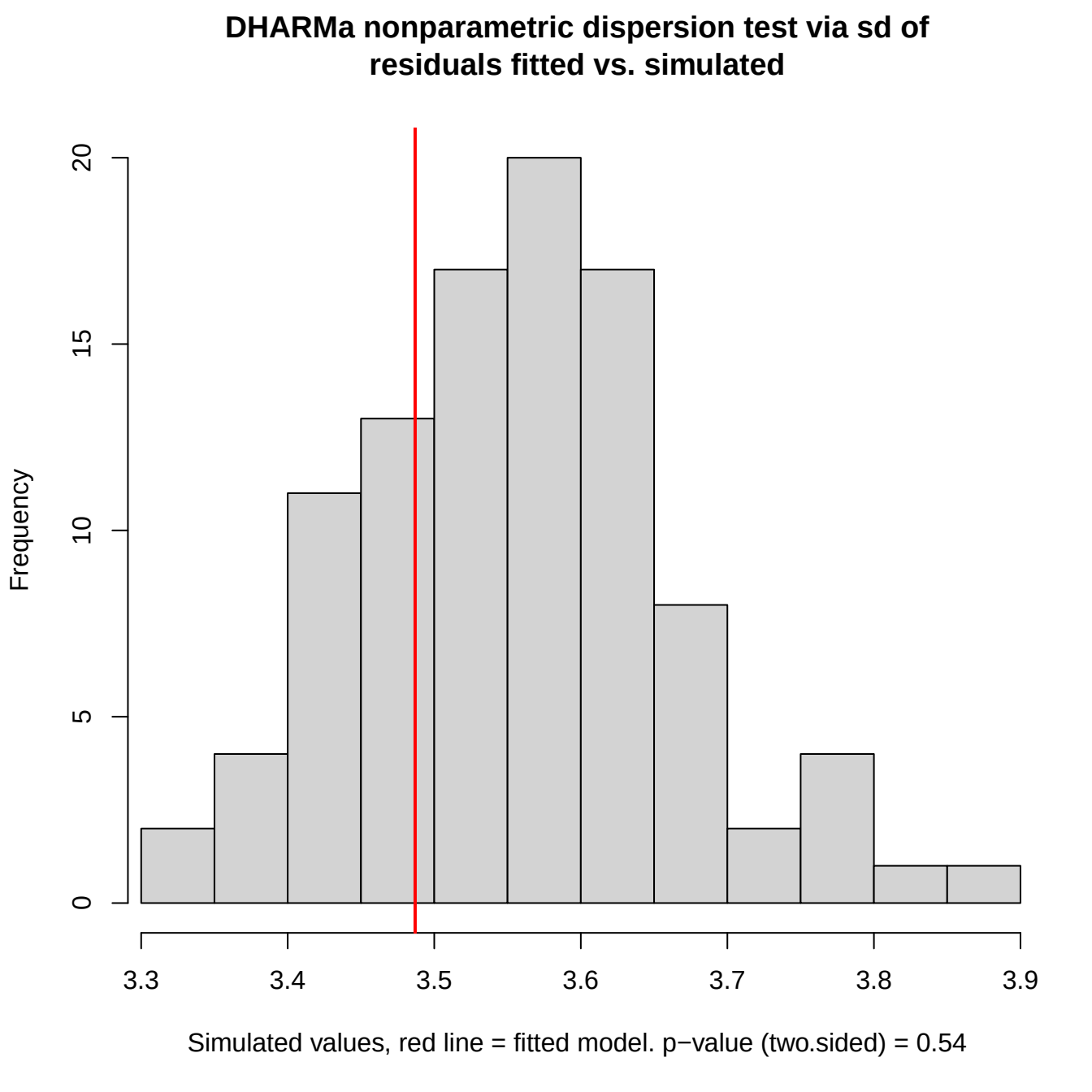

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.3
3.4
3.5
3.6
3.7
3.8
3.9
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

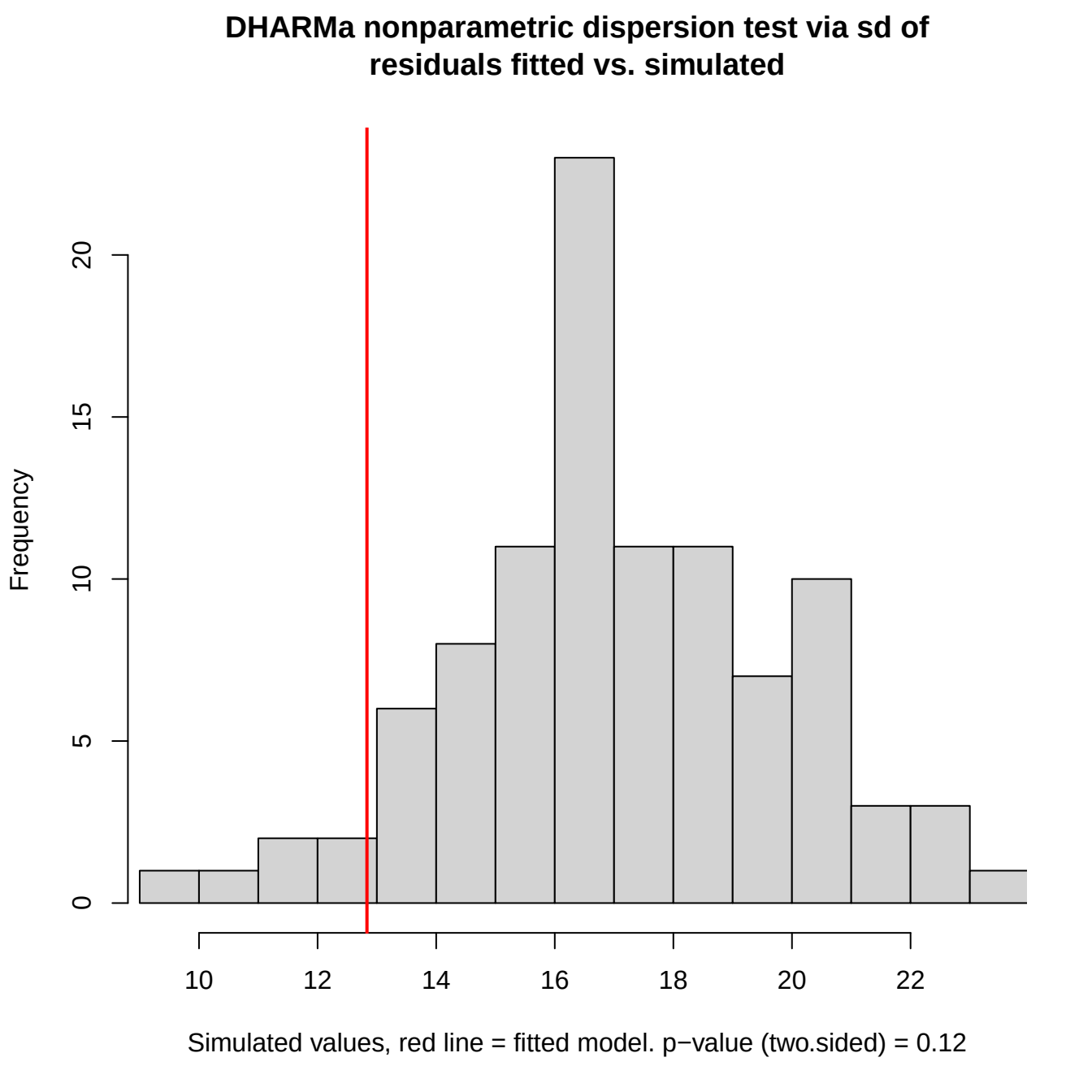

QQ plot residuals
KS test: p= 0.74271
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

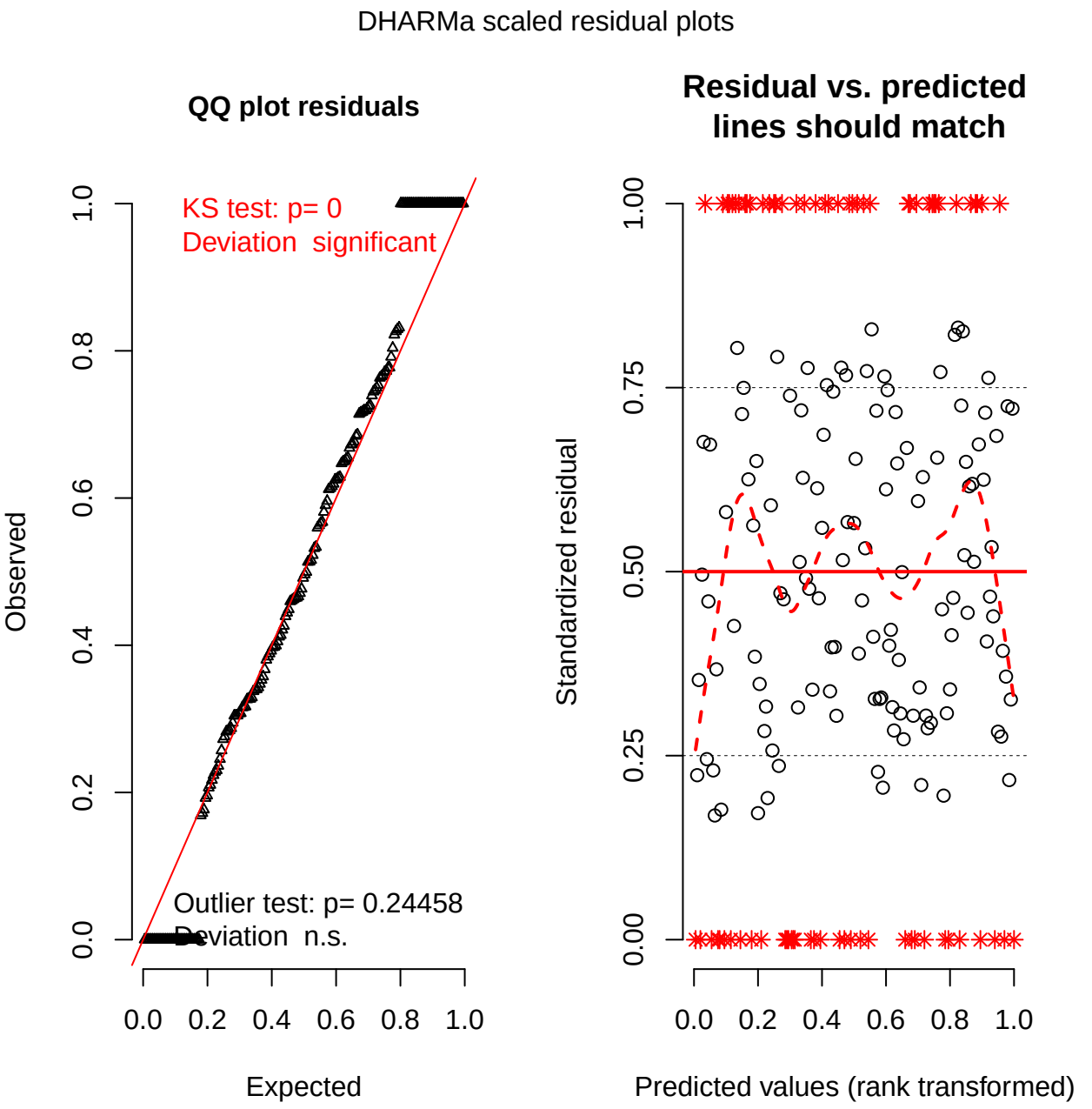

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

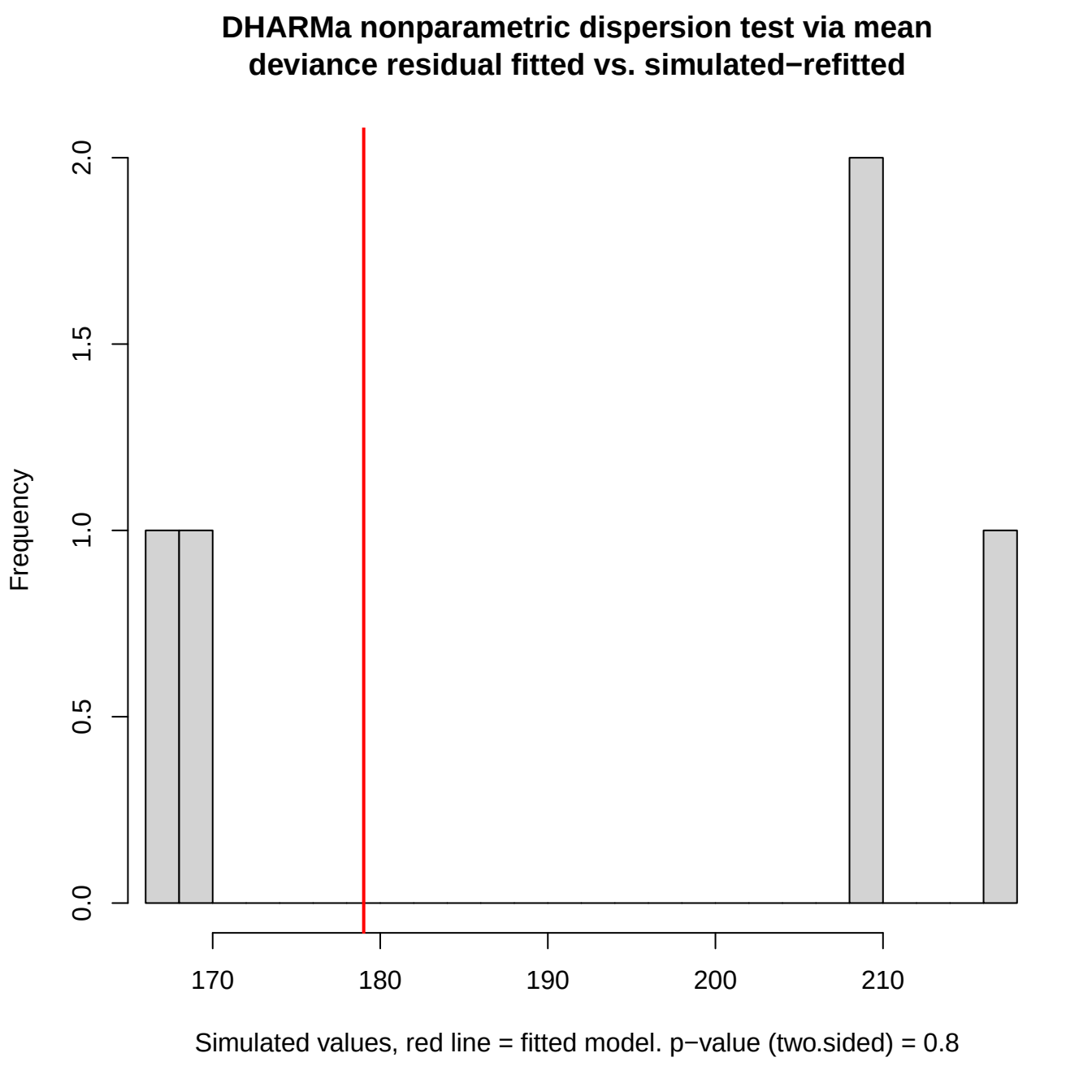

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

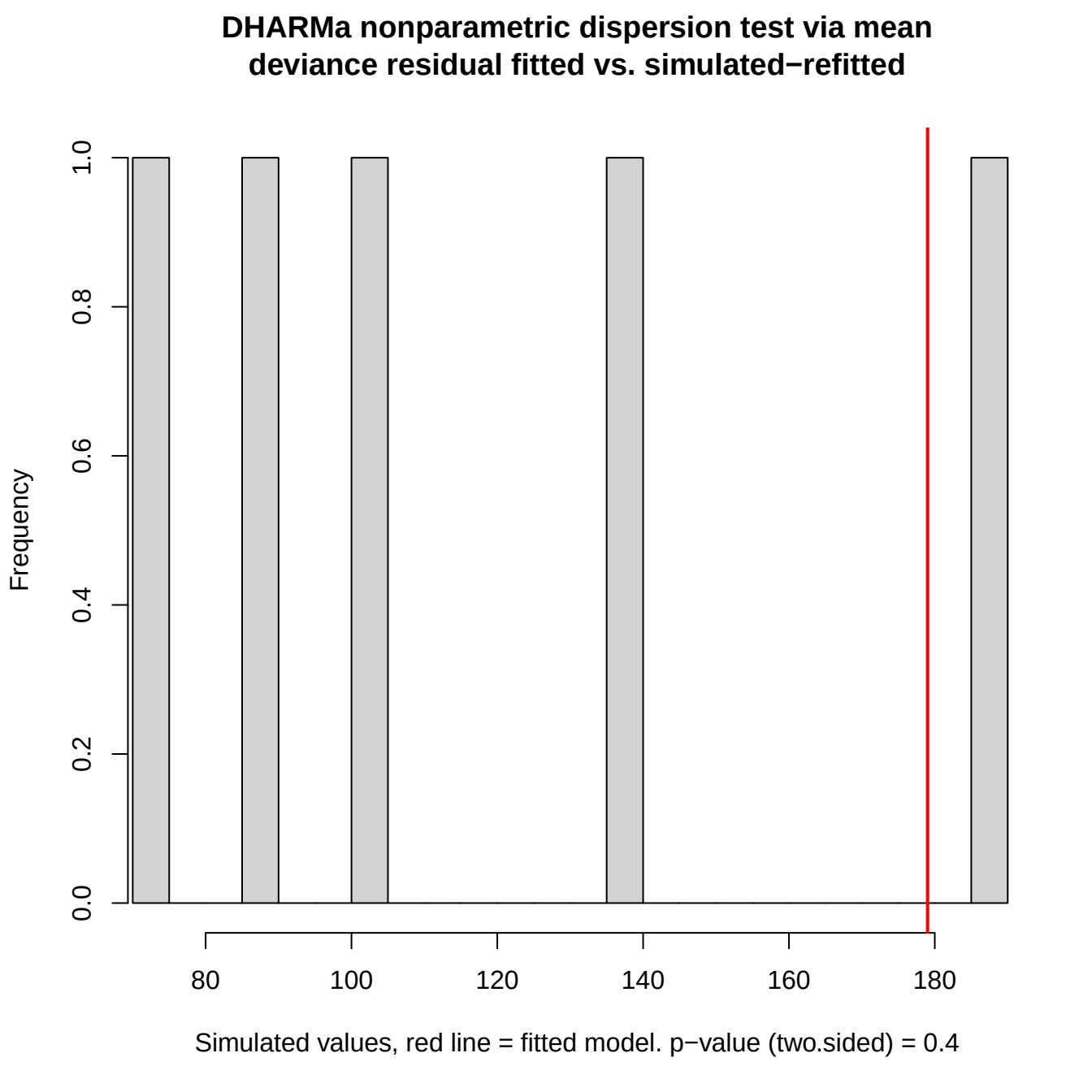

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

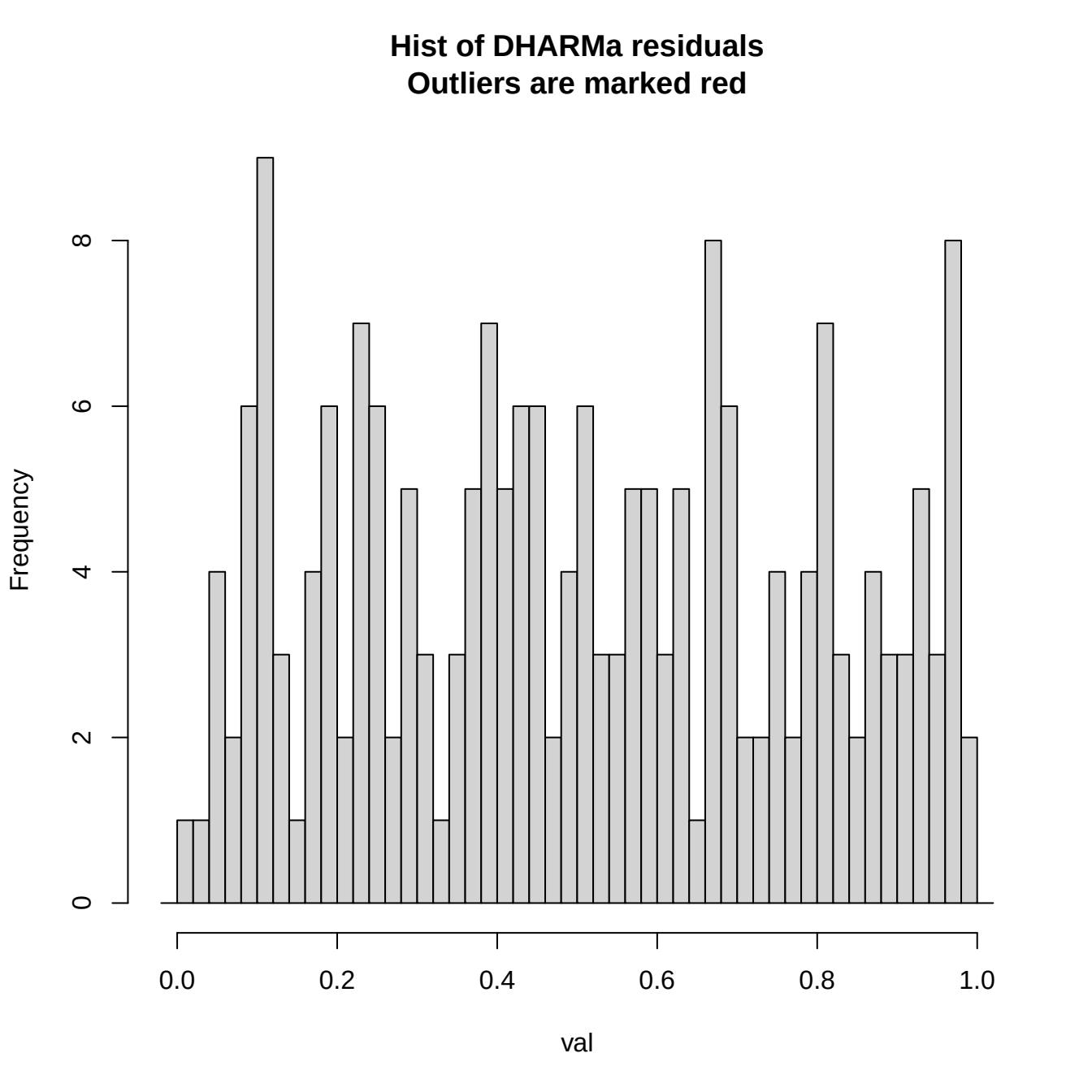

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.3
3.4
3.5
3.6
3.7
3.8
3.9
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

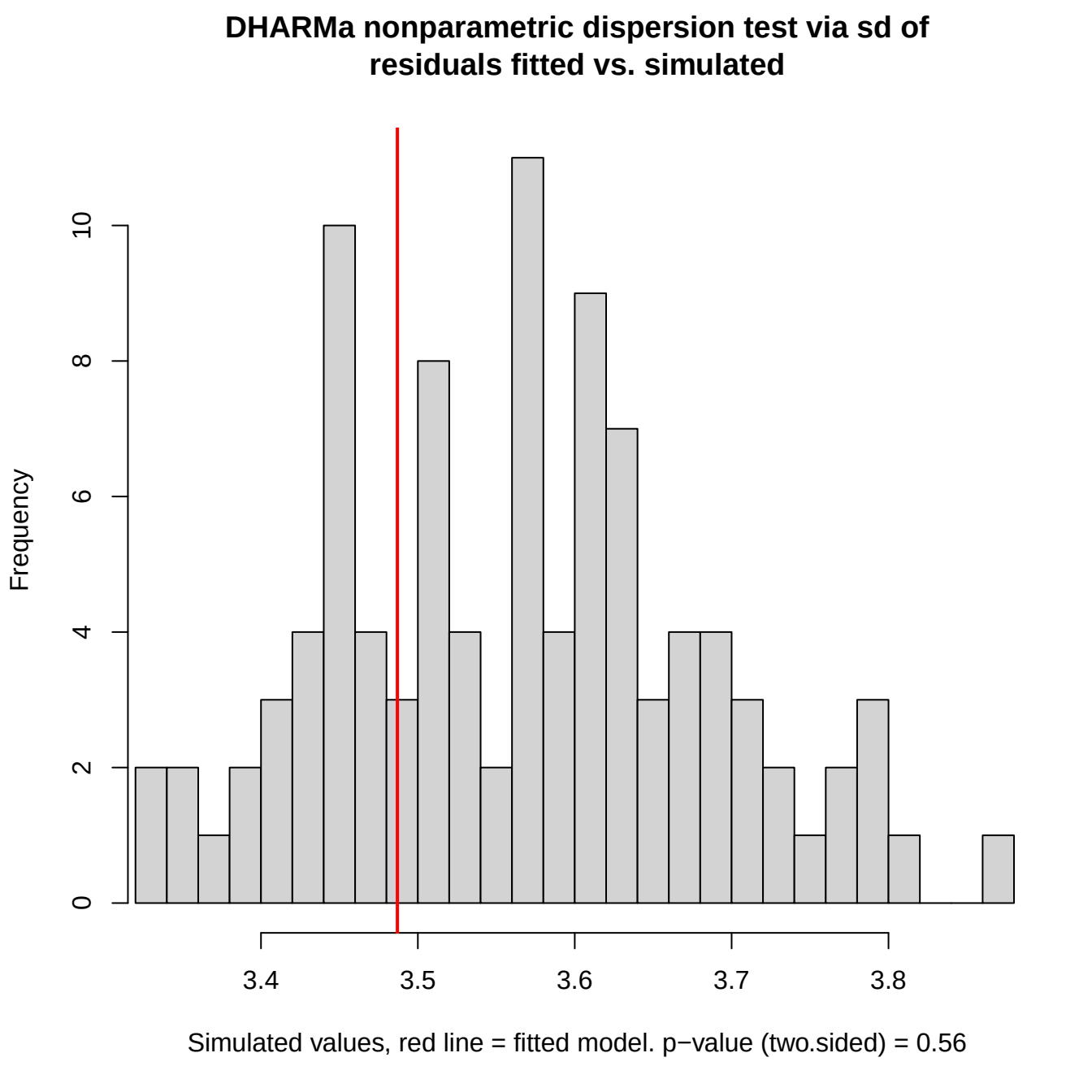

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
10
12
14
16
18
20
22
Simulated values, red line = fitted model. p−value (two.sided) = 0.12

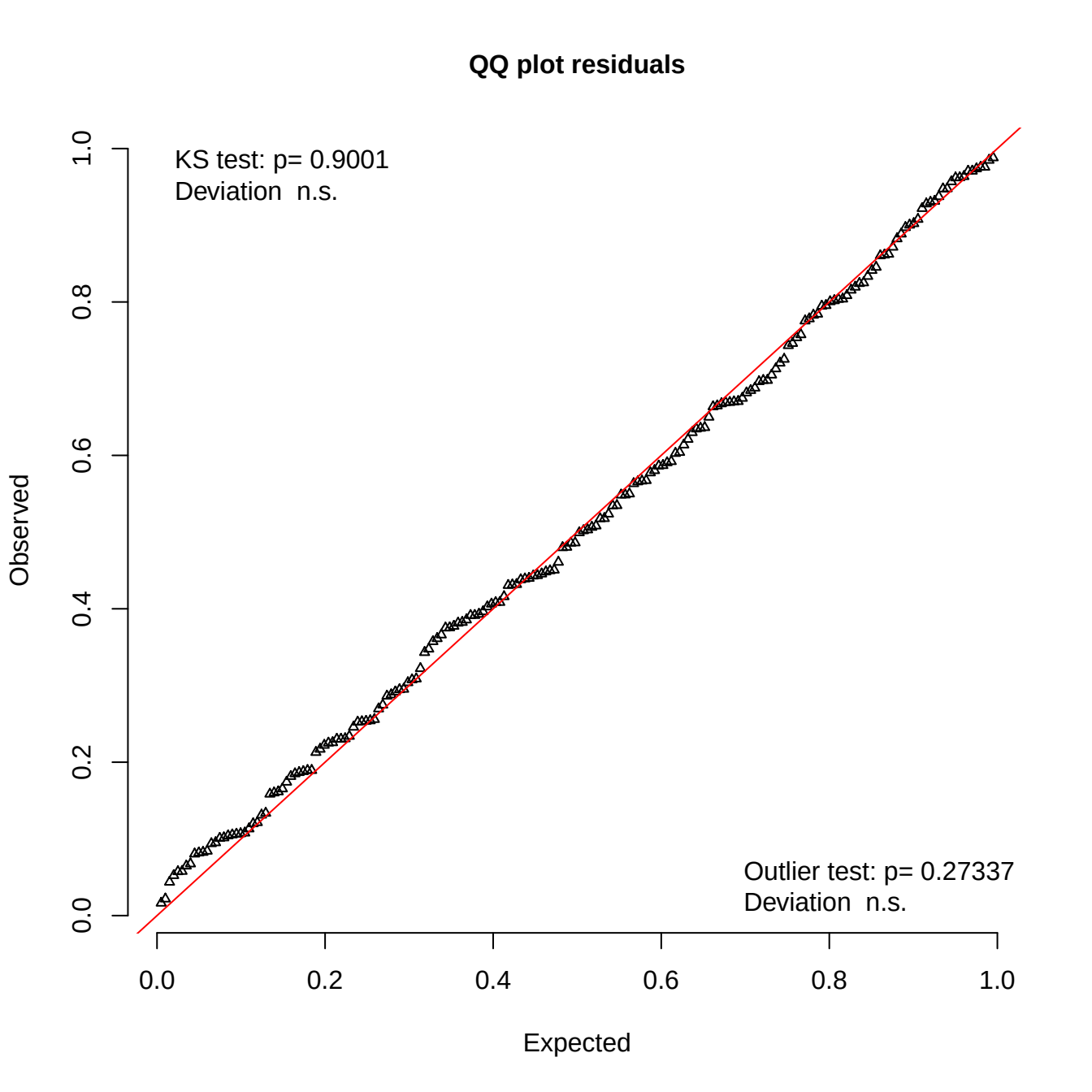

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.24458
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

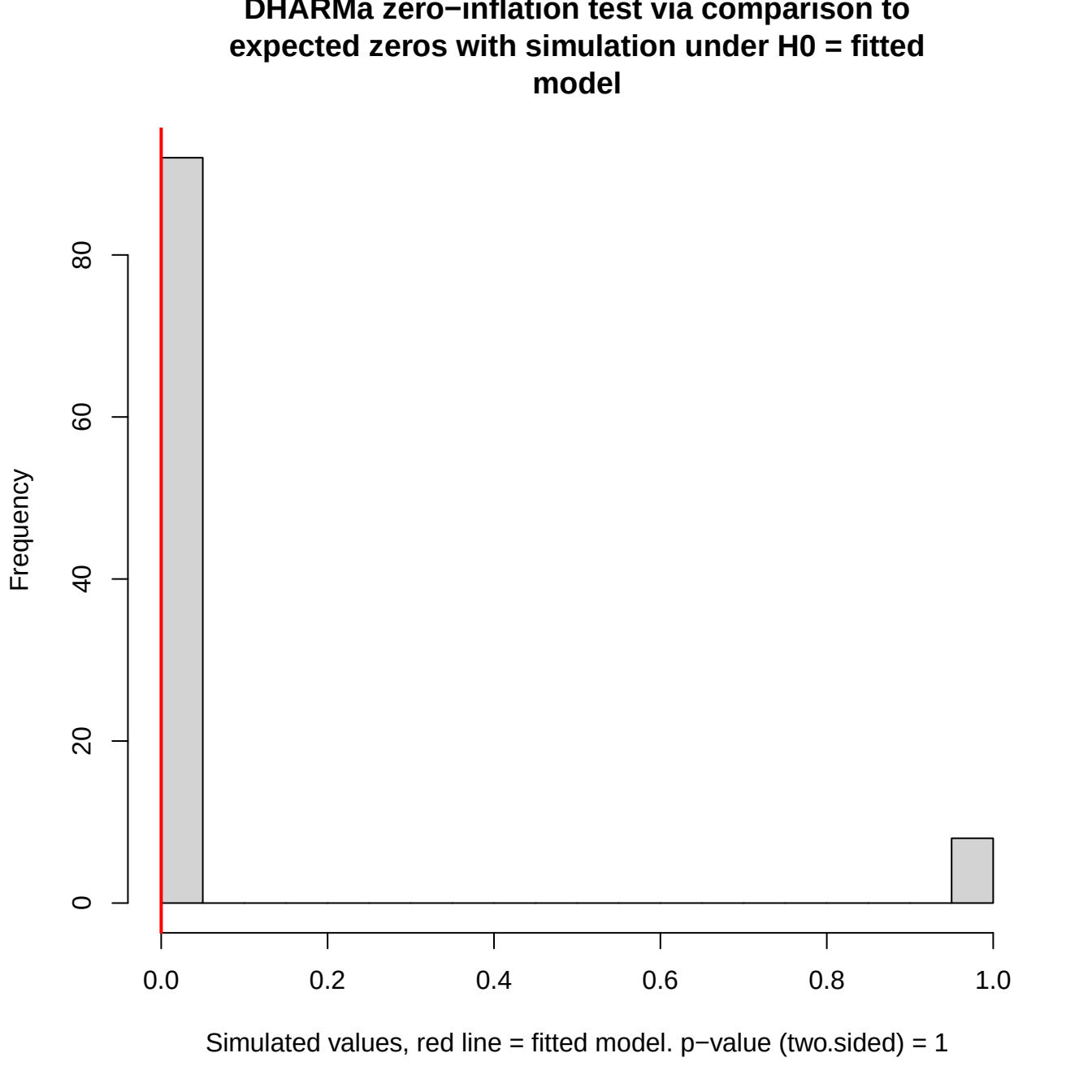

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

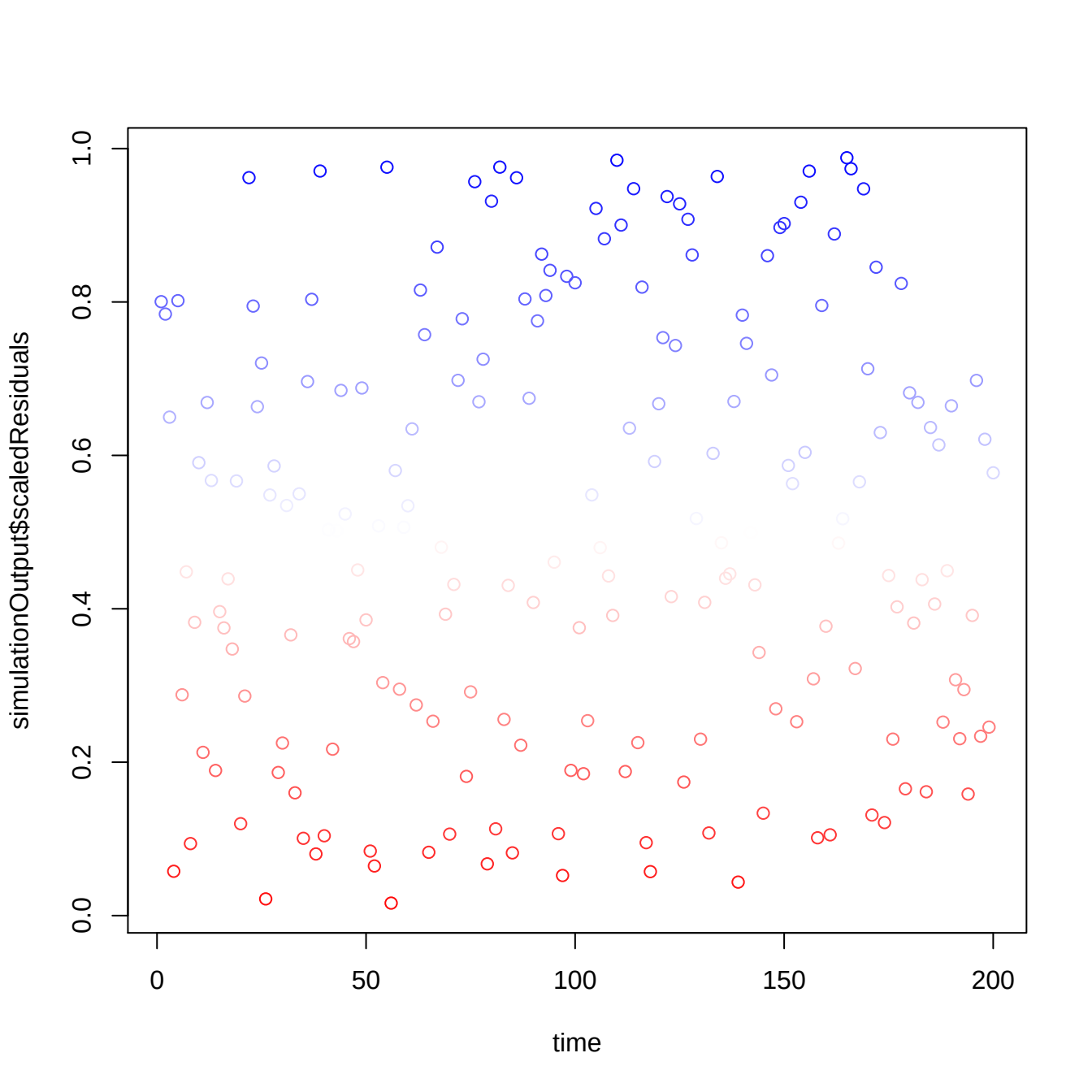

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

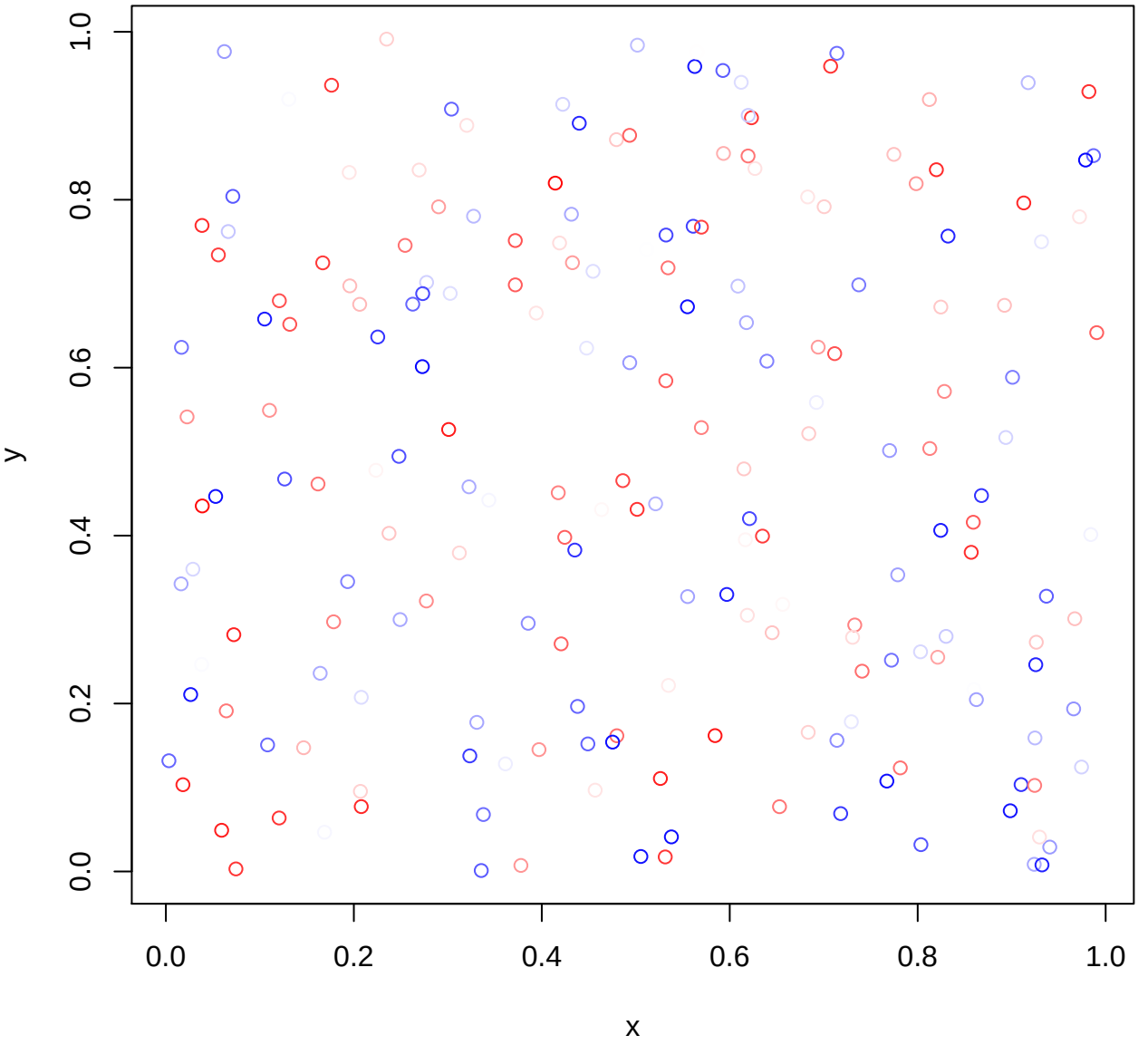

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

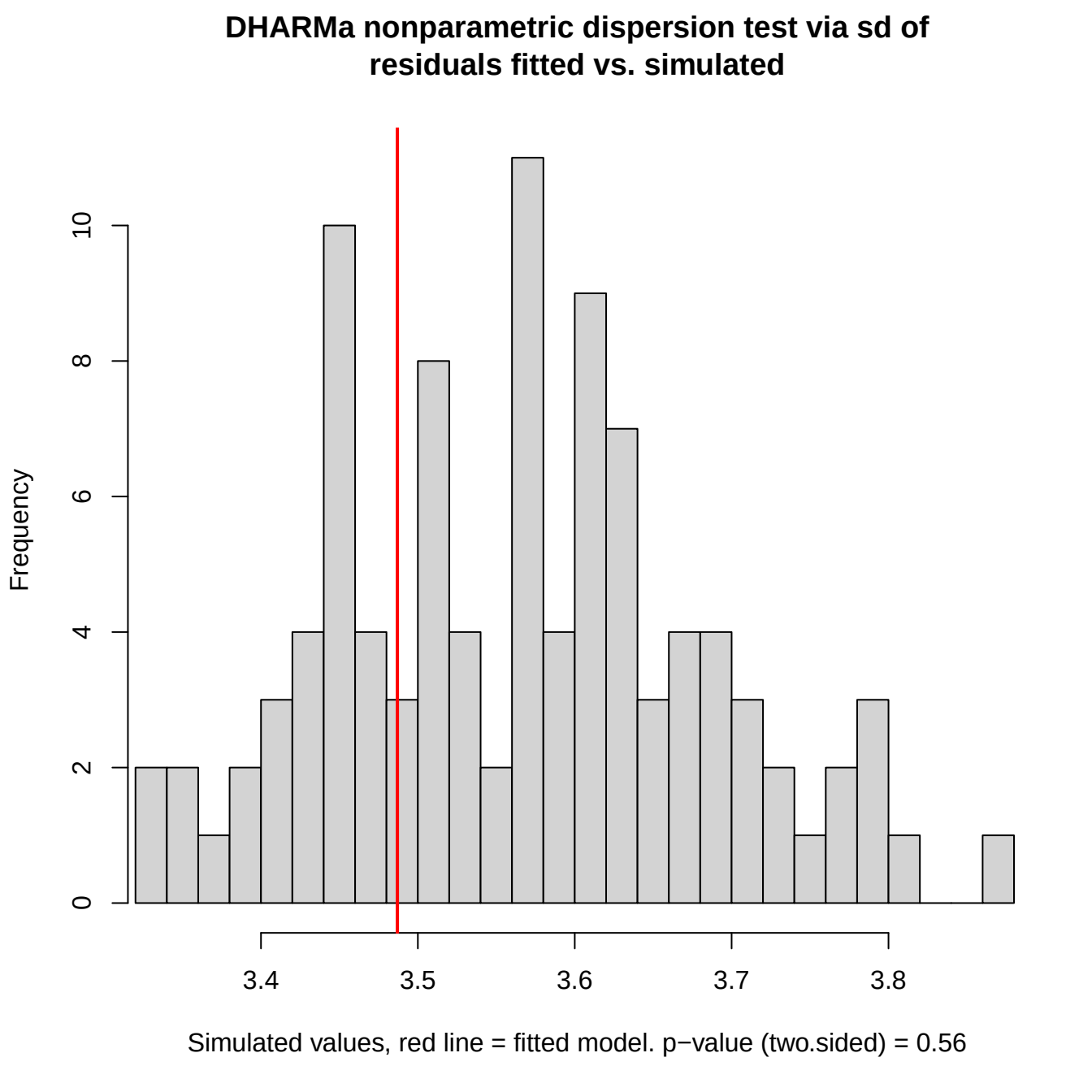

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

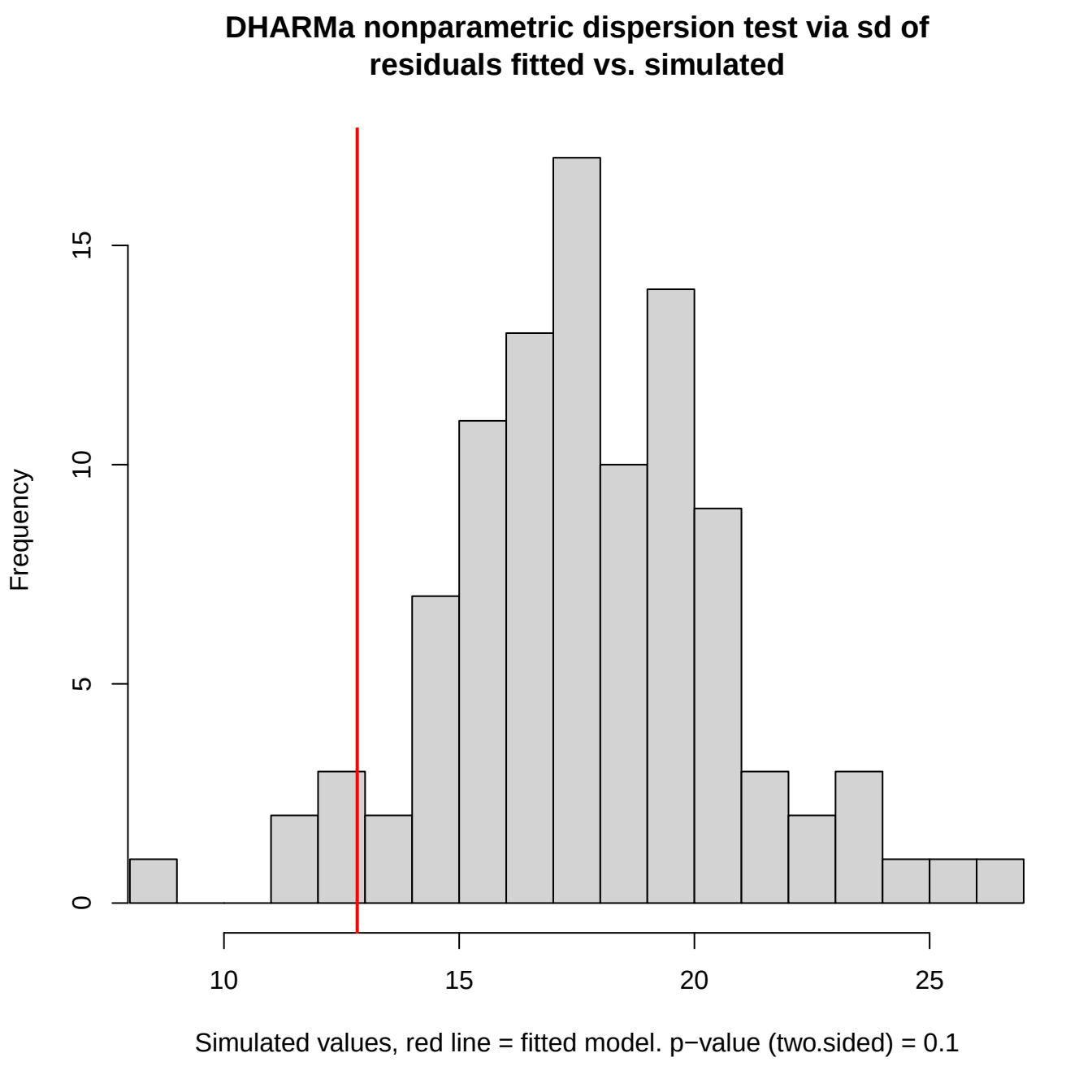

QQ plot residuals
KS test: p= 0.9001
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

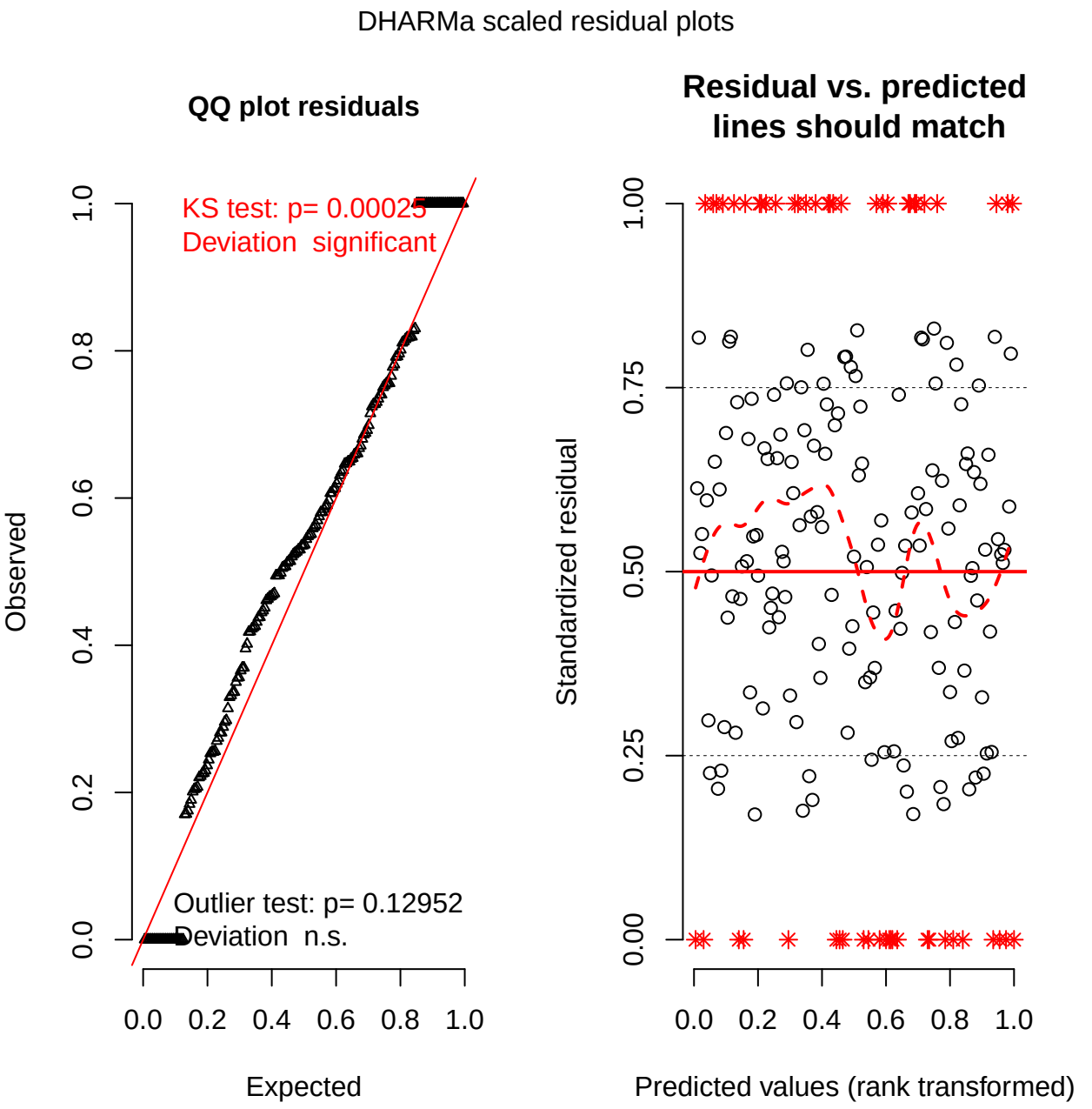

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

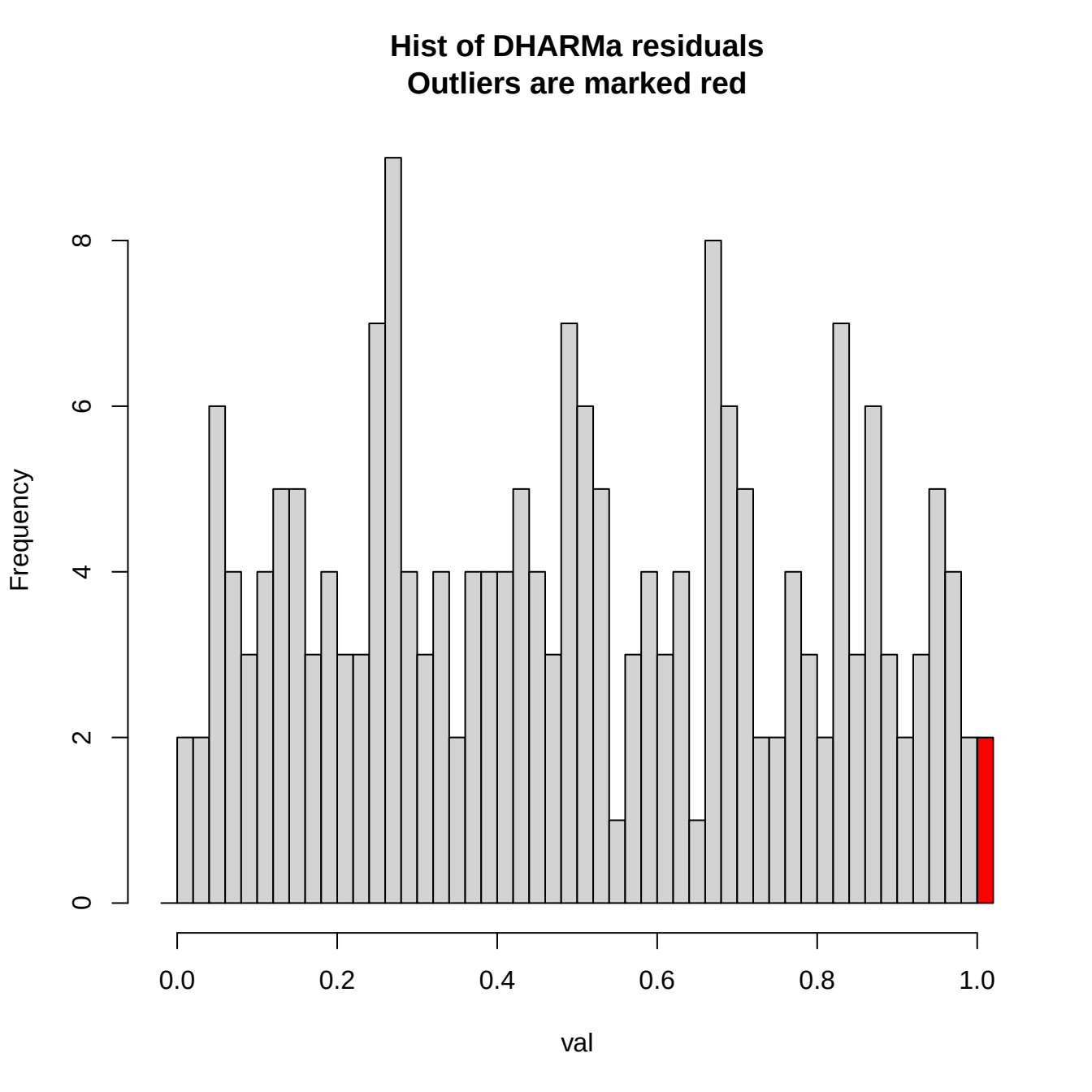

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

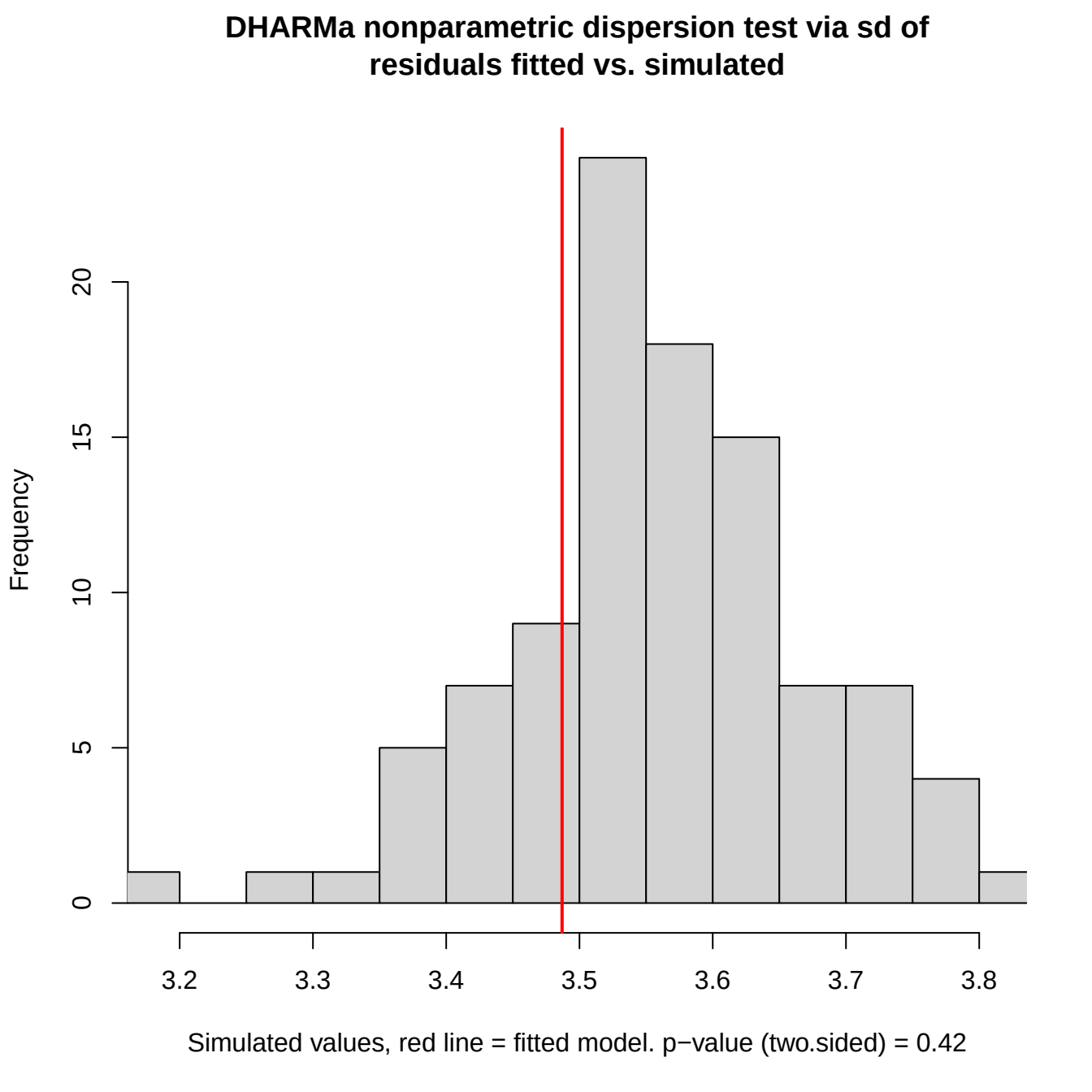

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

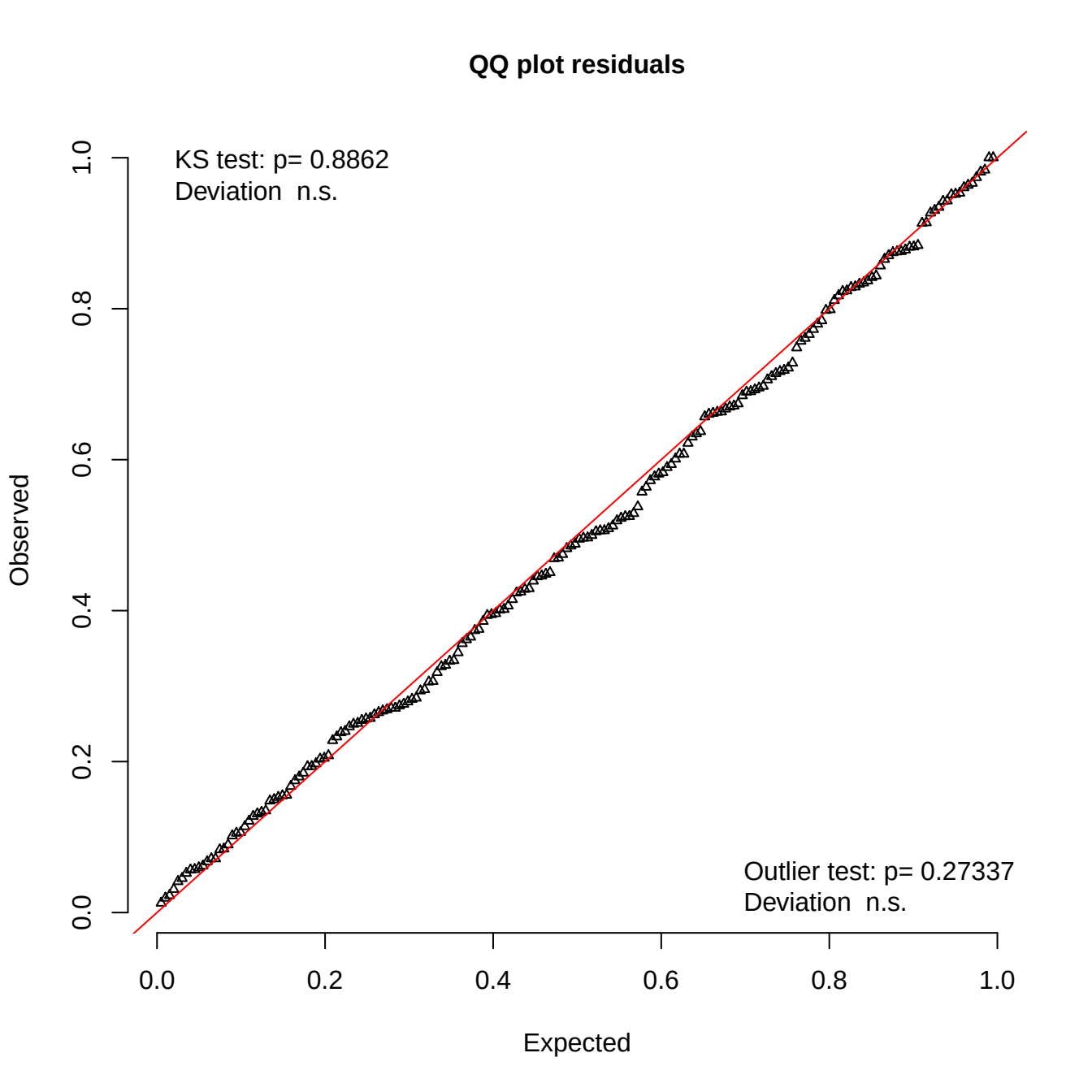

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

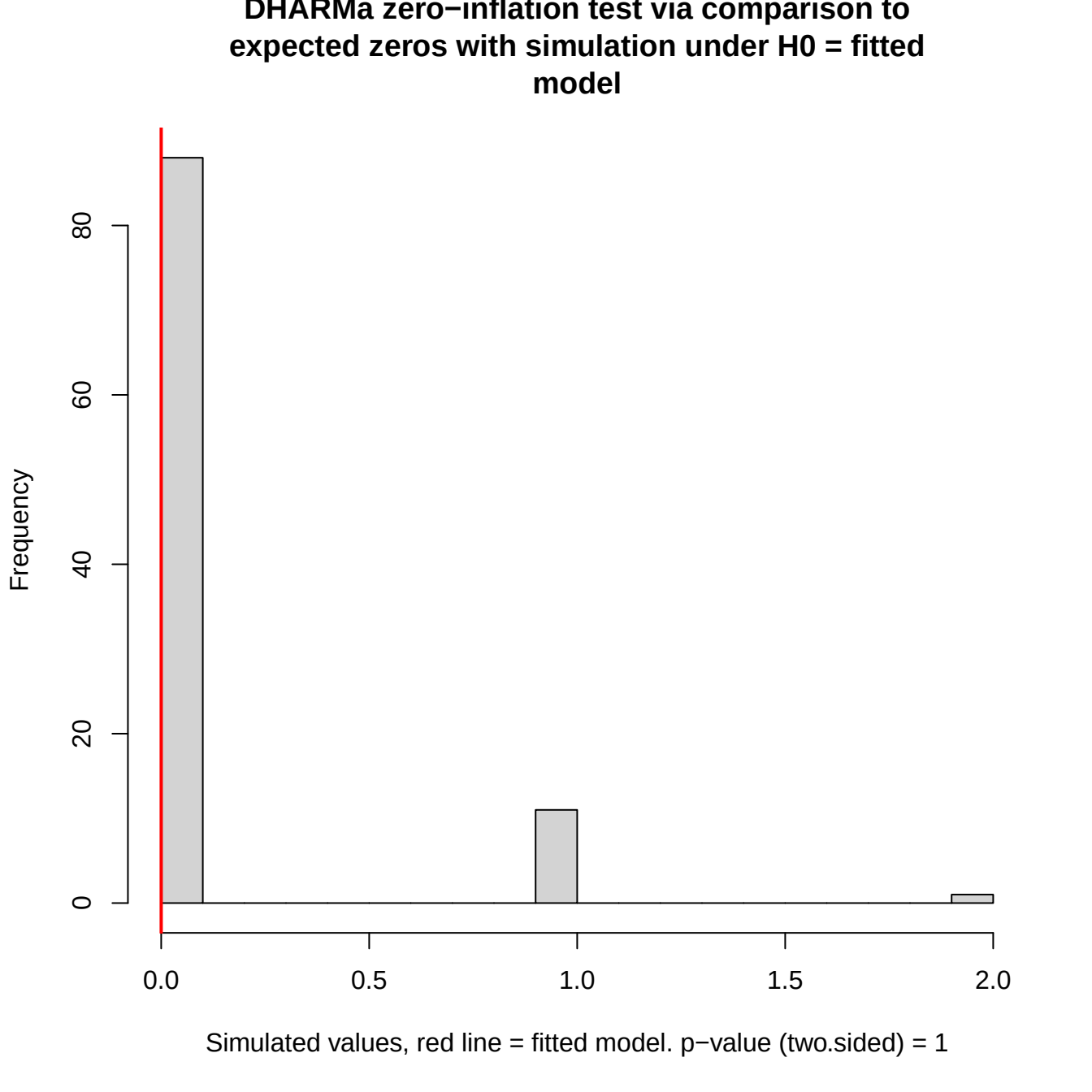

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
10
15
20
25
Simulated values, red line = fitted model. p−value (two.sided) = 0.1

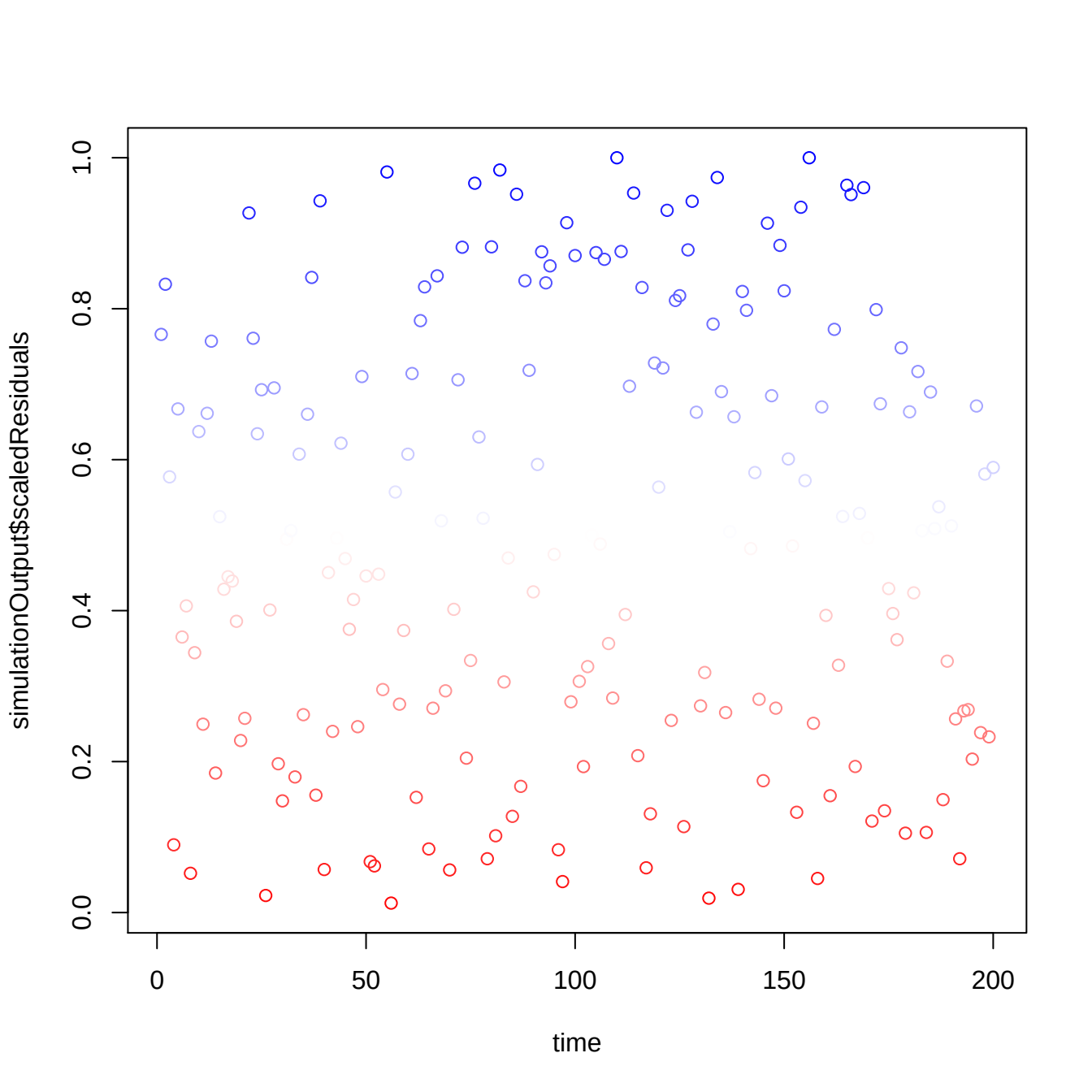

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00025
Deviation significant
Outlier test: p= 0.12952
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

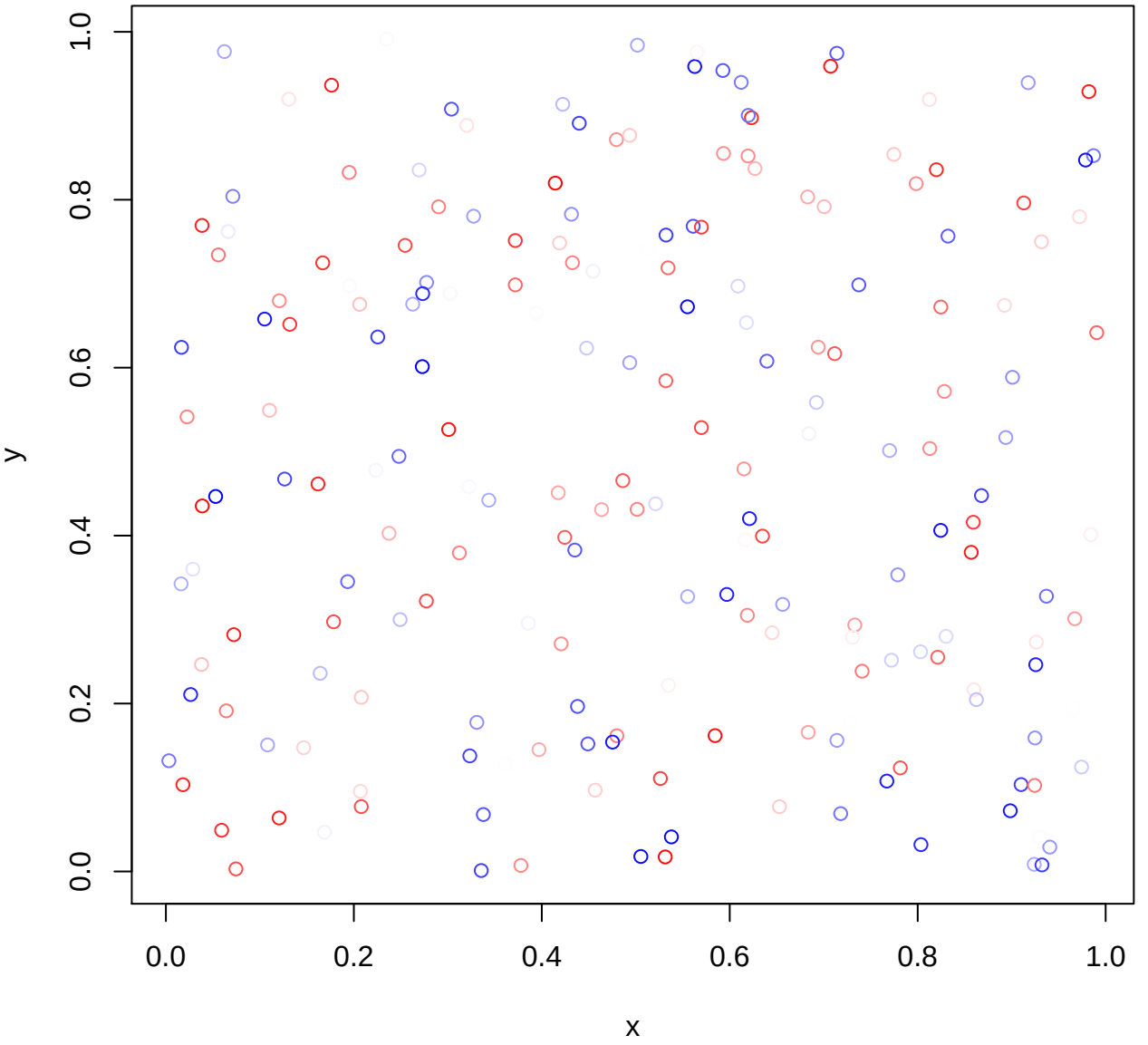

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

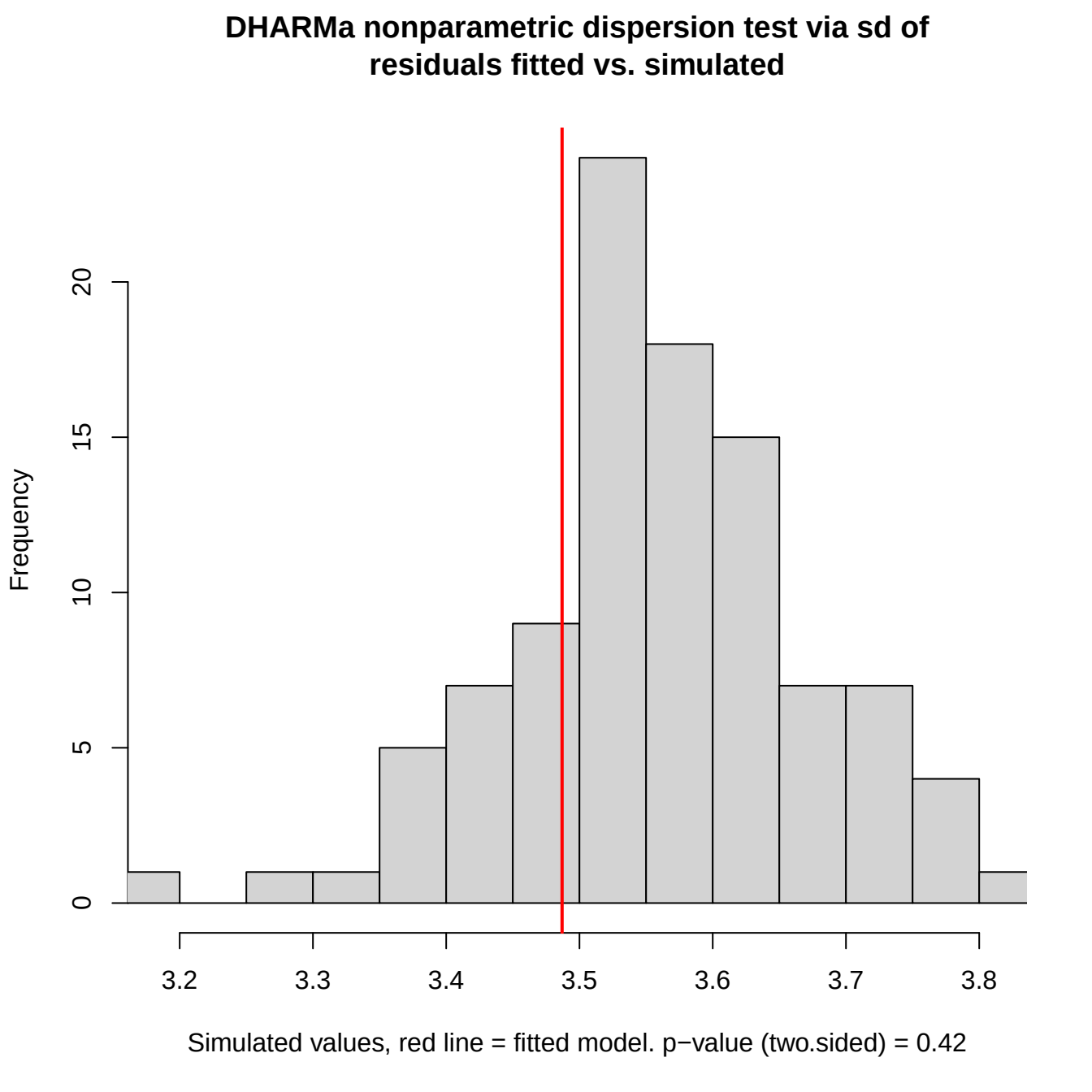

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.42

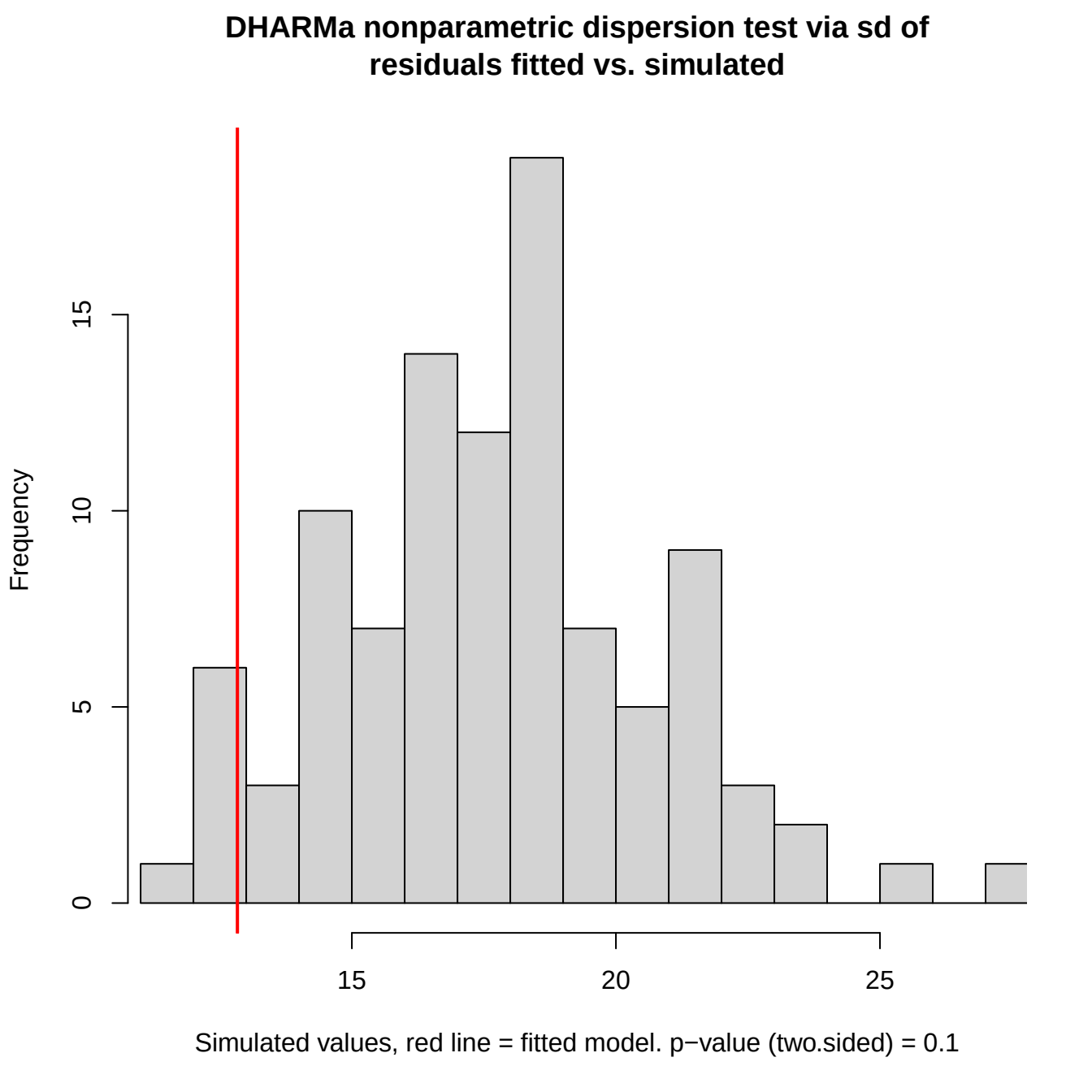

QQ plot residuals
KS test: p= 0.8862
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

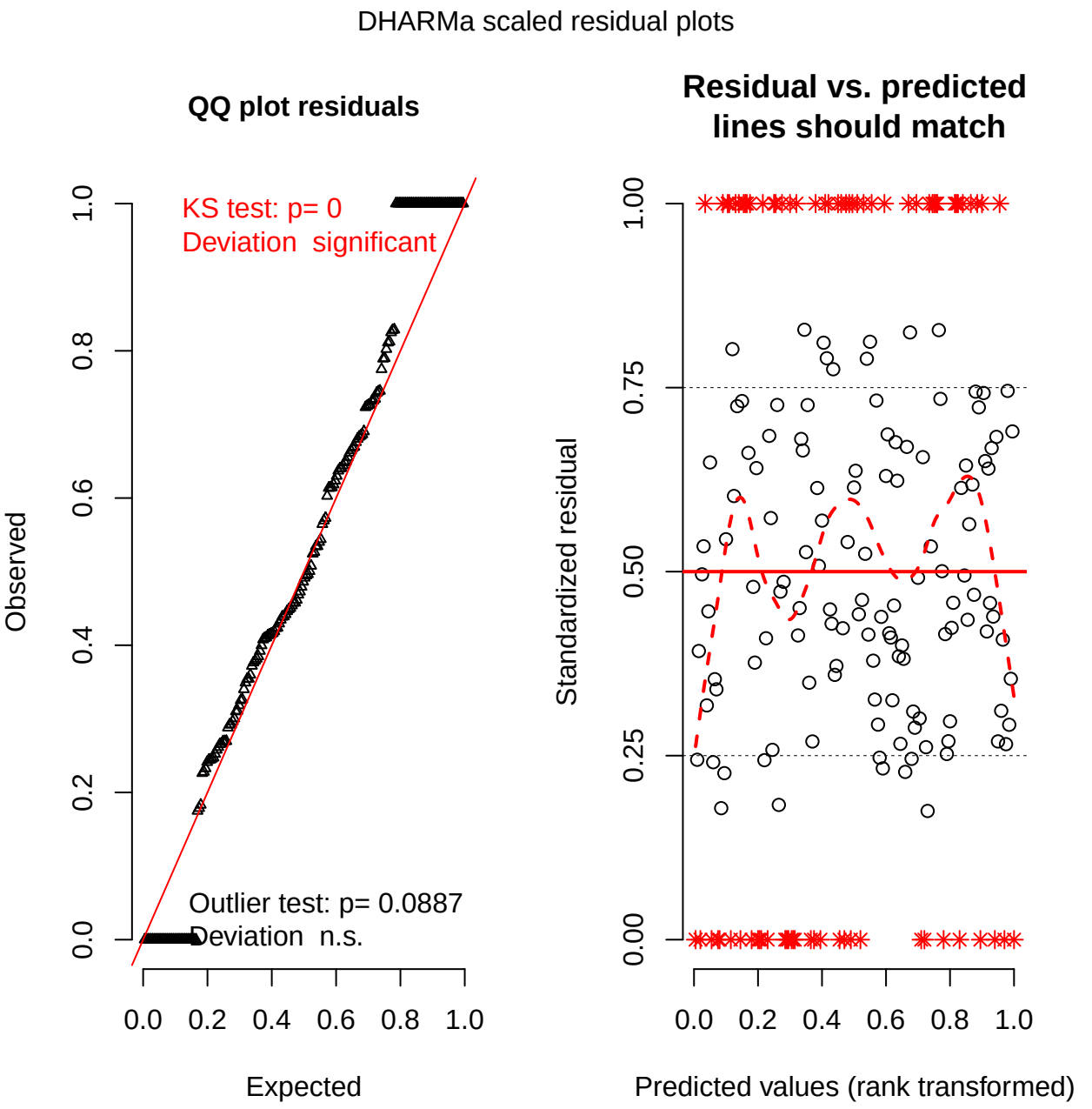

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
0.0
0.5
1.0
1.5
2.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

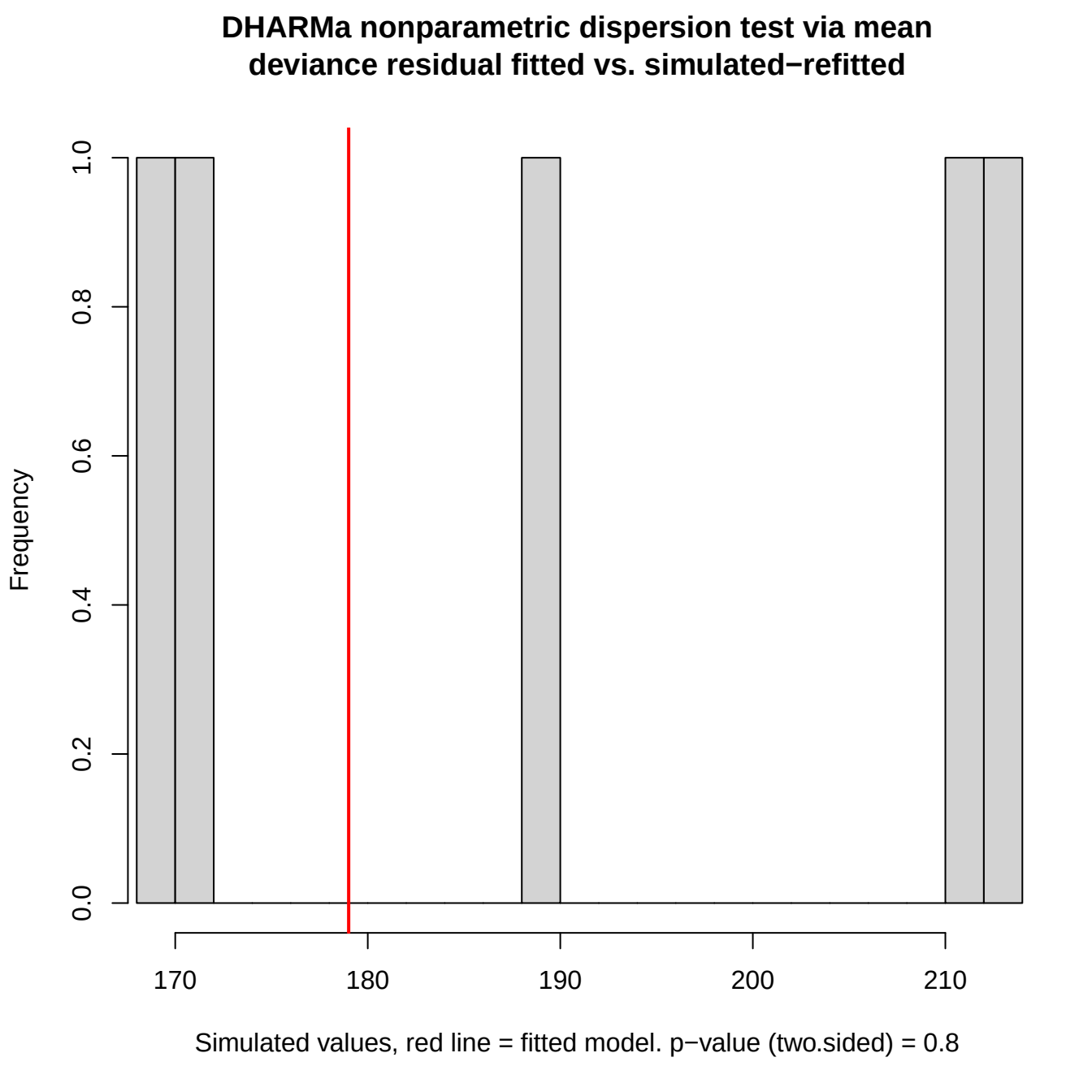

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

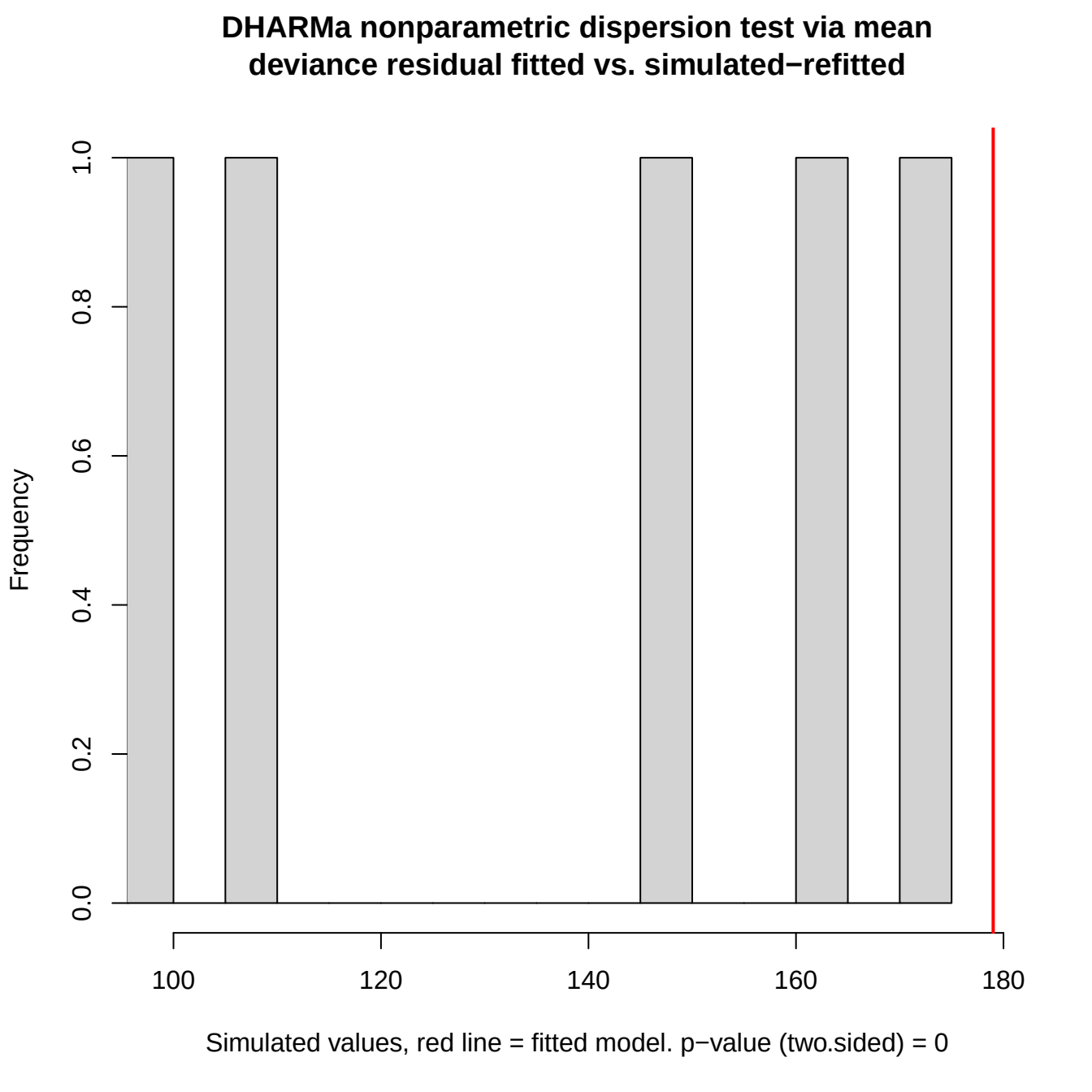

y
x
0.0
0.2
0.4
0.6
0.8
1.0

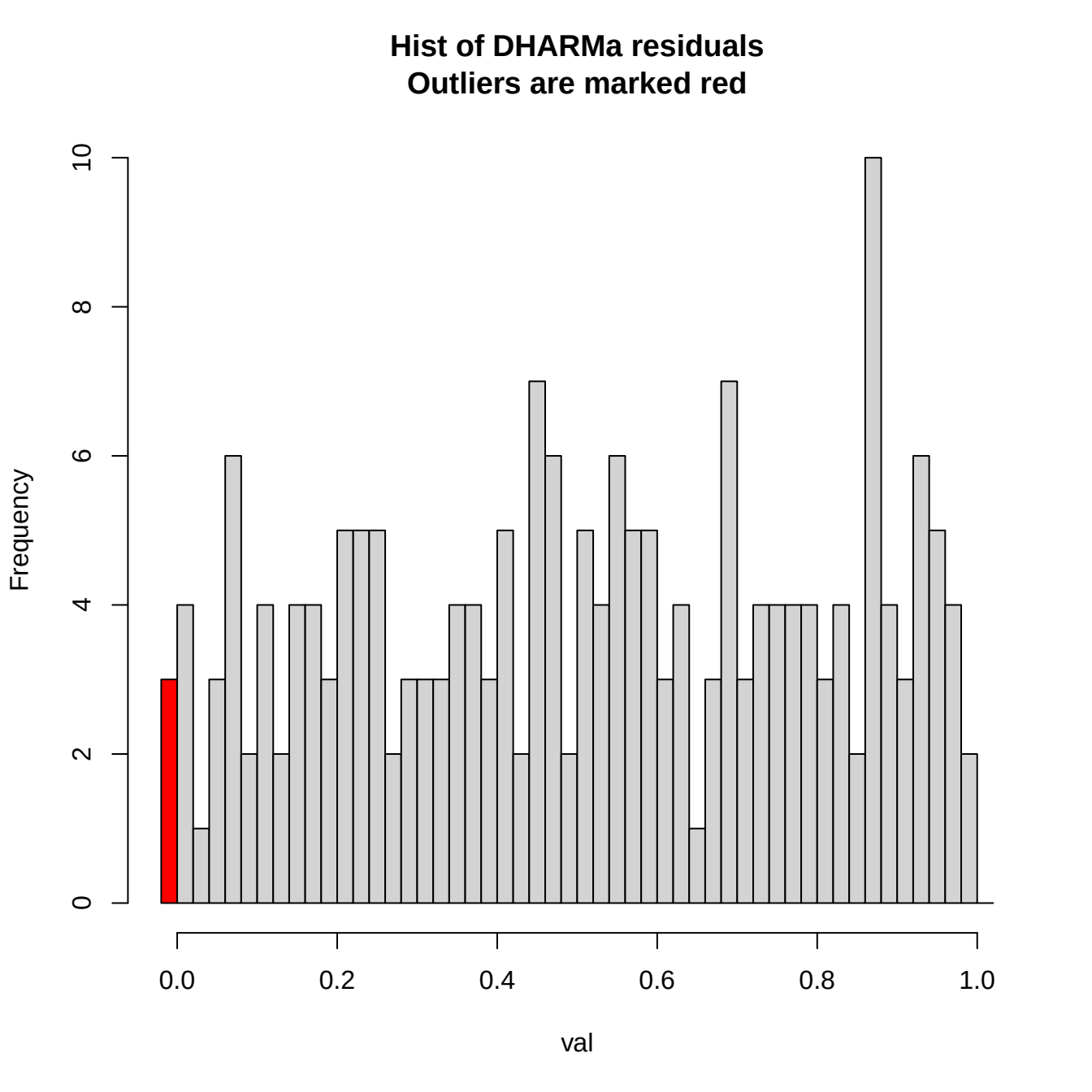

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.2
3.3
3.4
3.5
3.6
3.7
3.8
Simulated values, red line = fitted model. p−value (two.sided) = 0.42

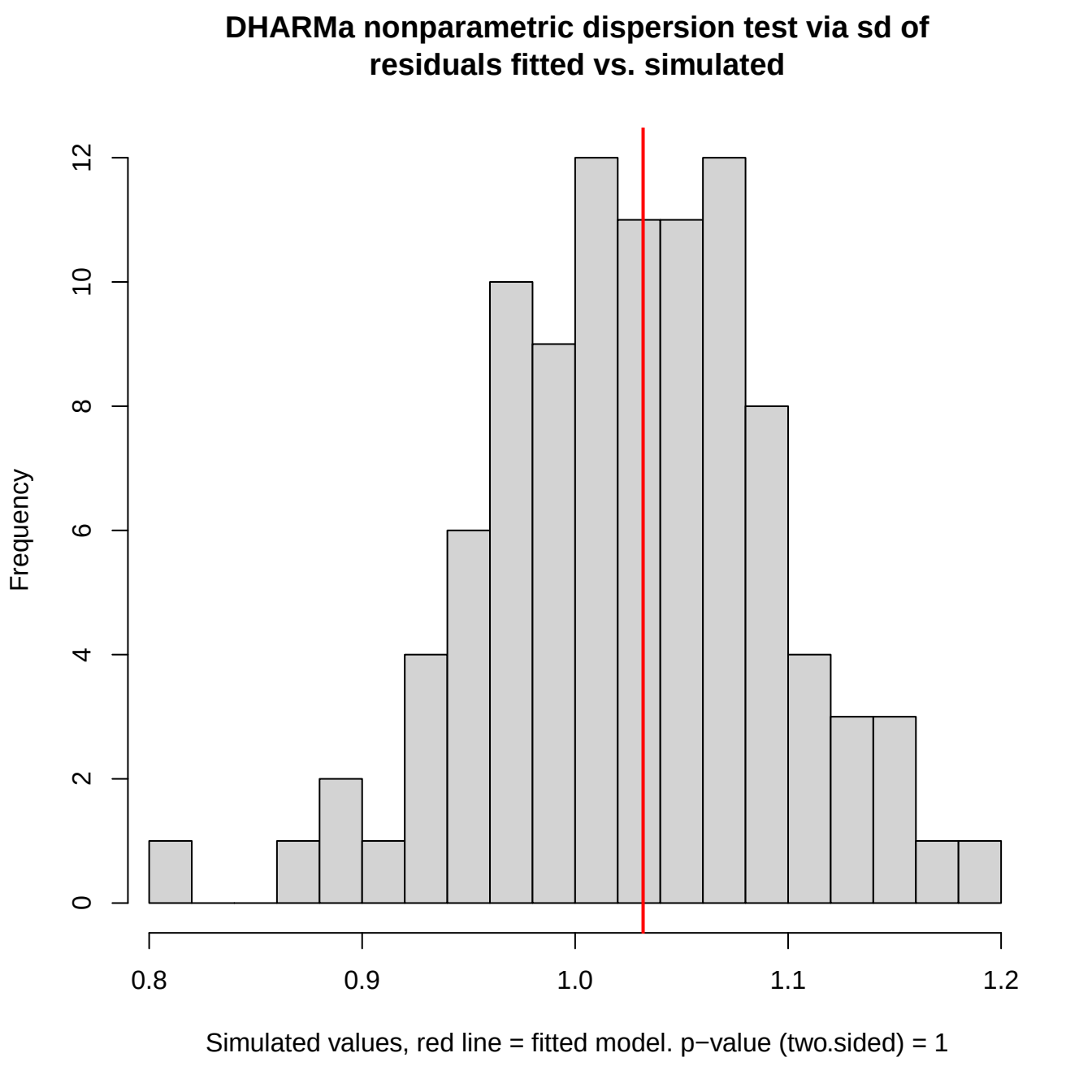

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
15
20
25
Simulated values, red line = fitted model. p−value (two.sided) = 0.1

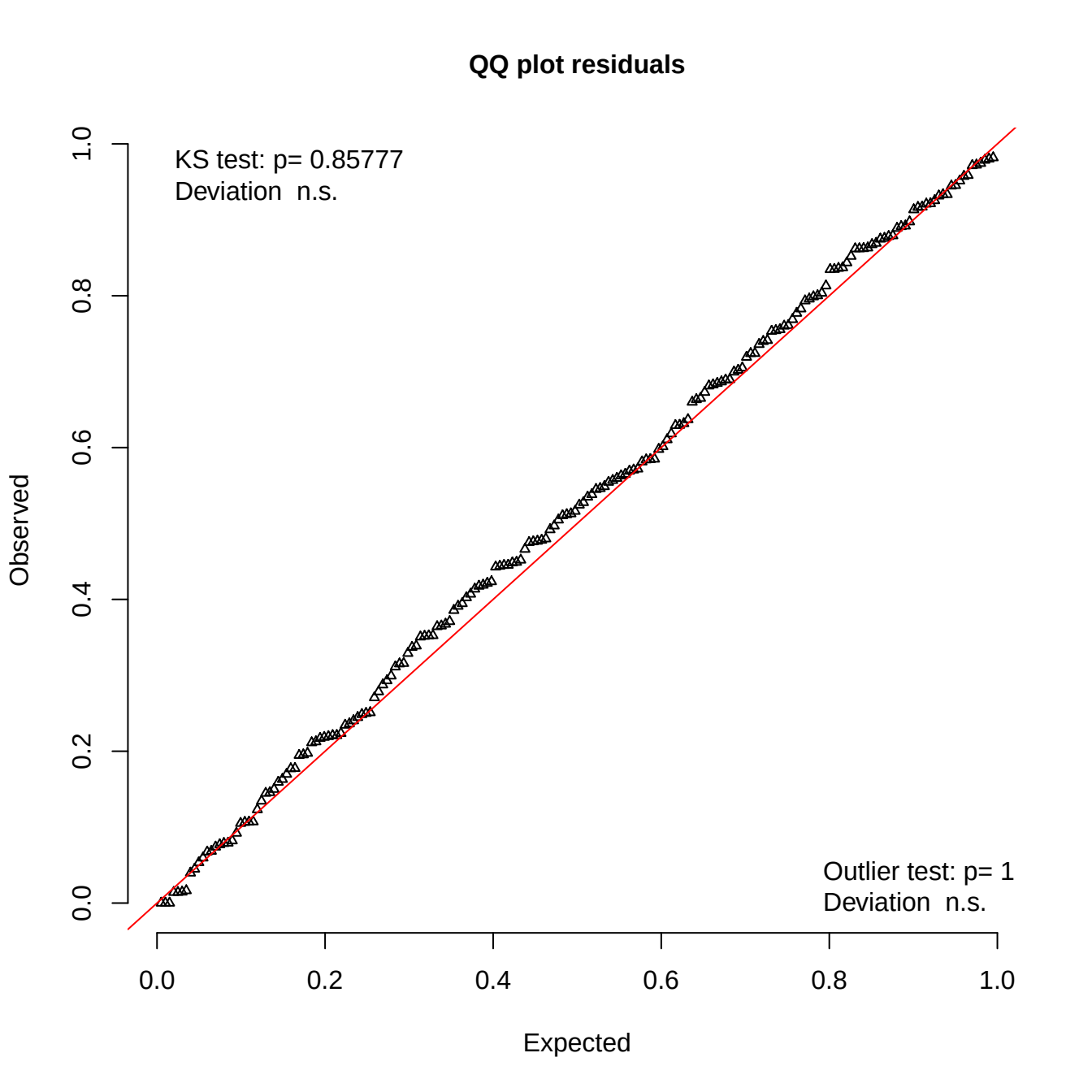

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.0887
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

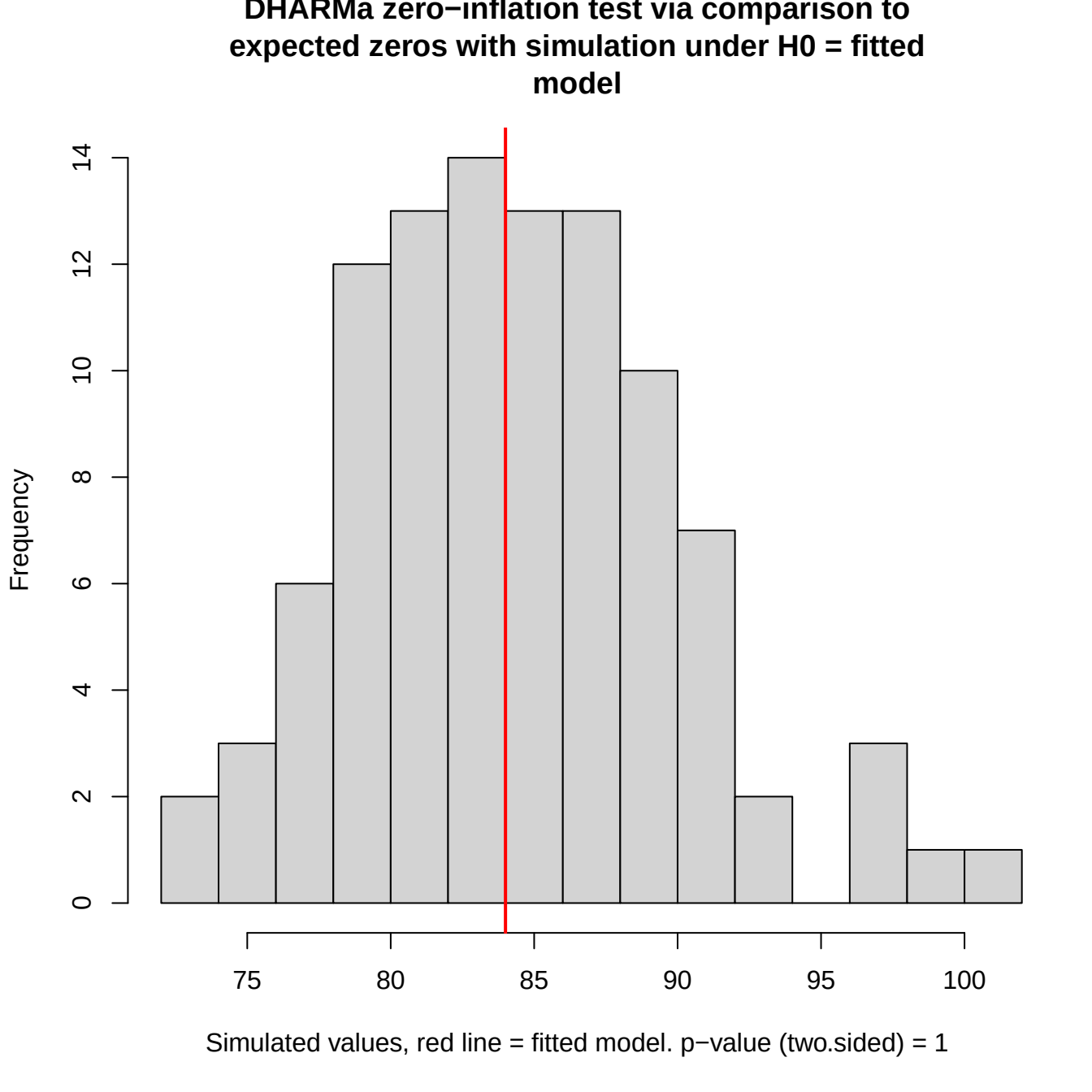

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

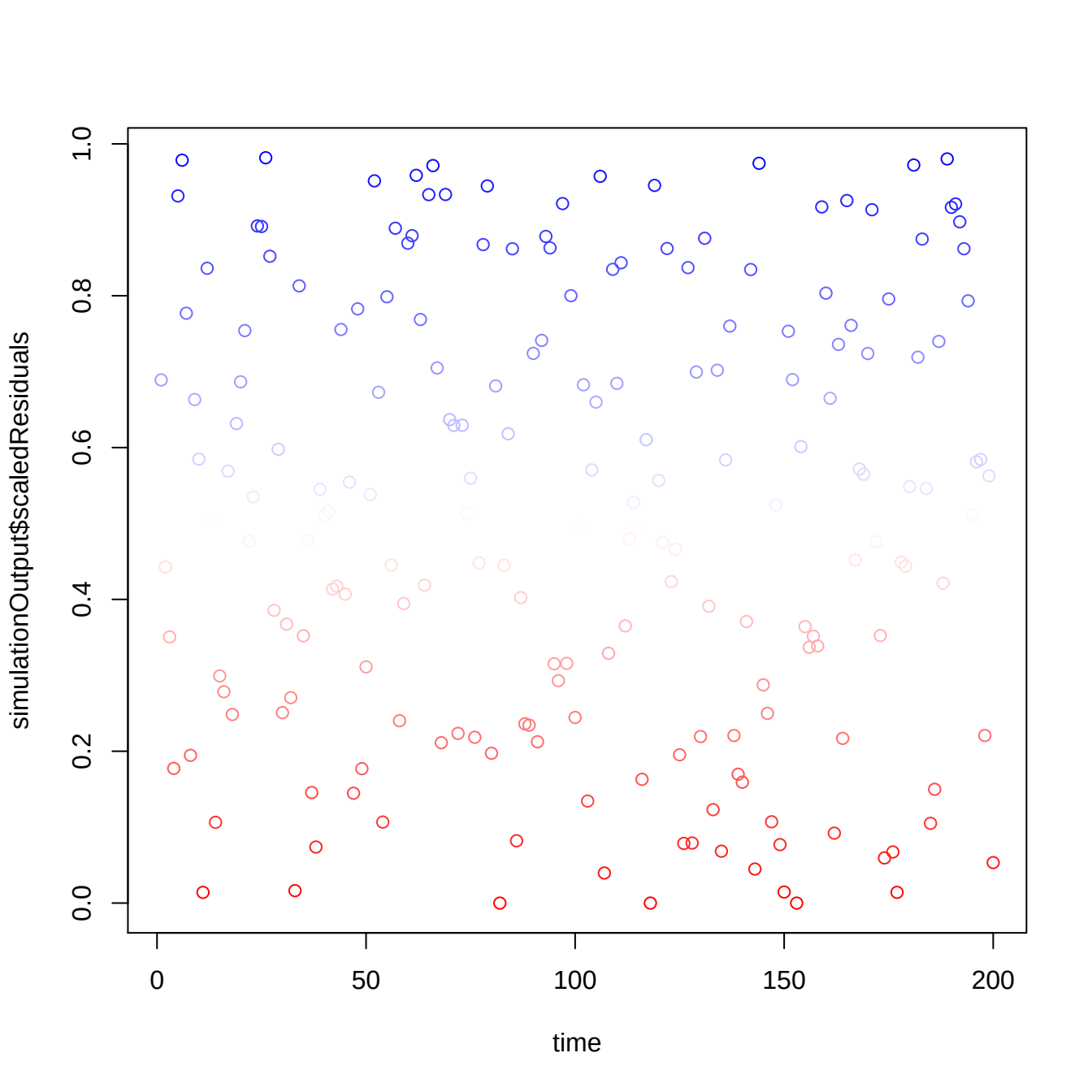

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

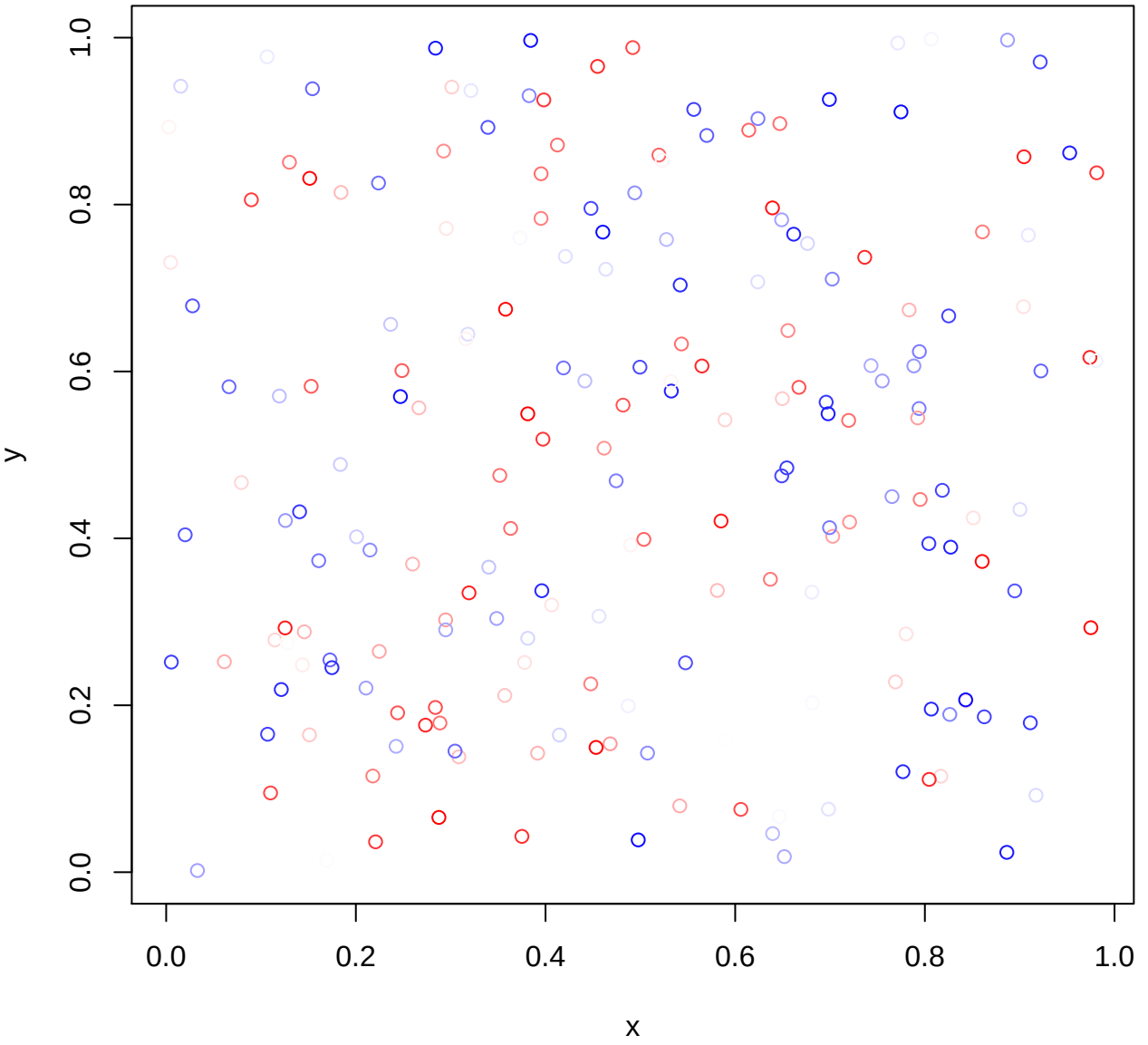

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

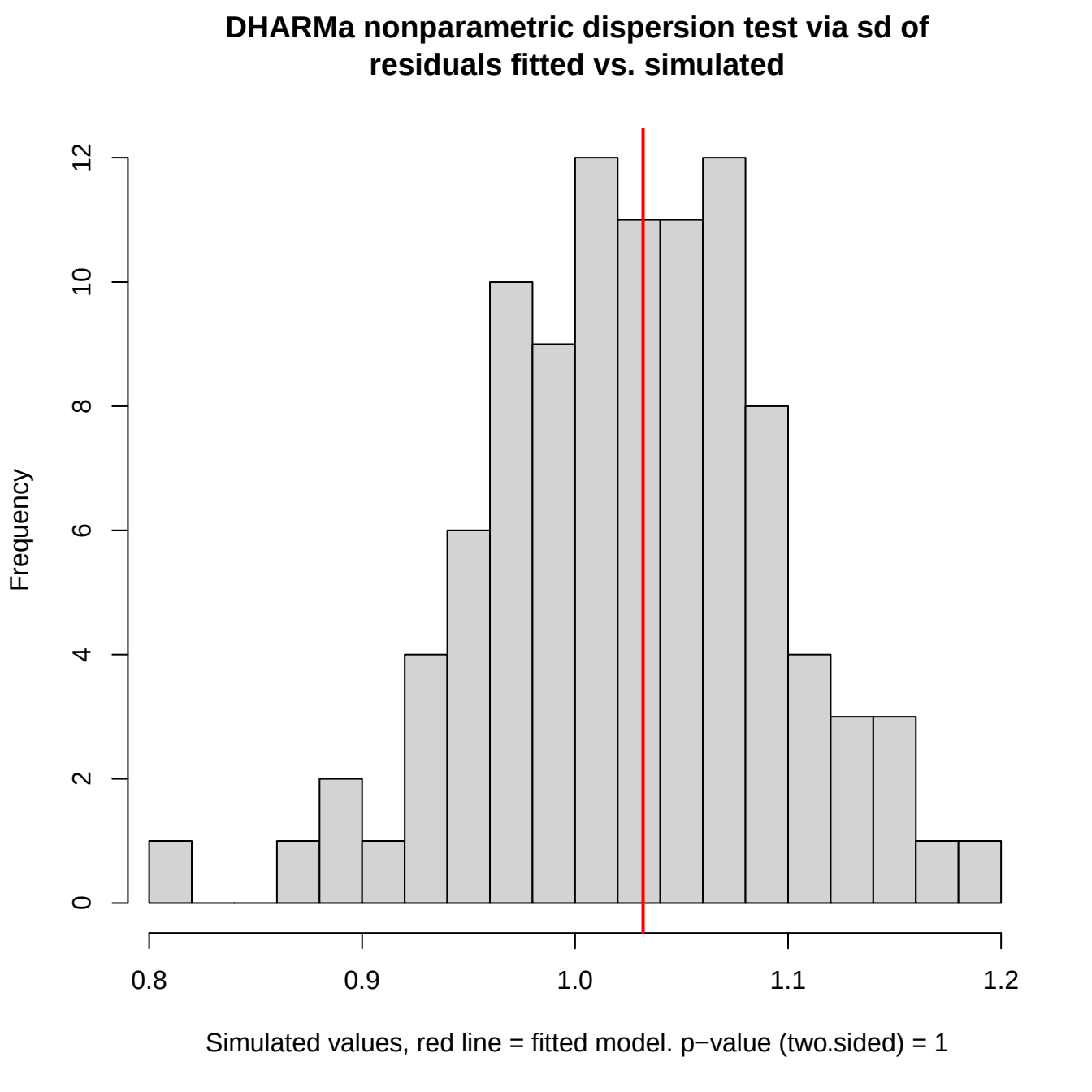

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

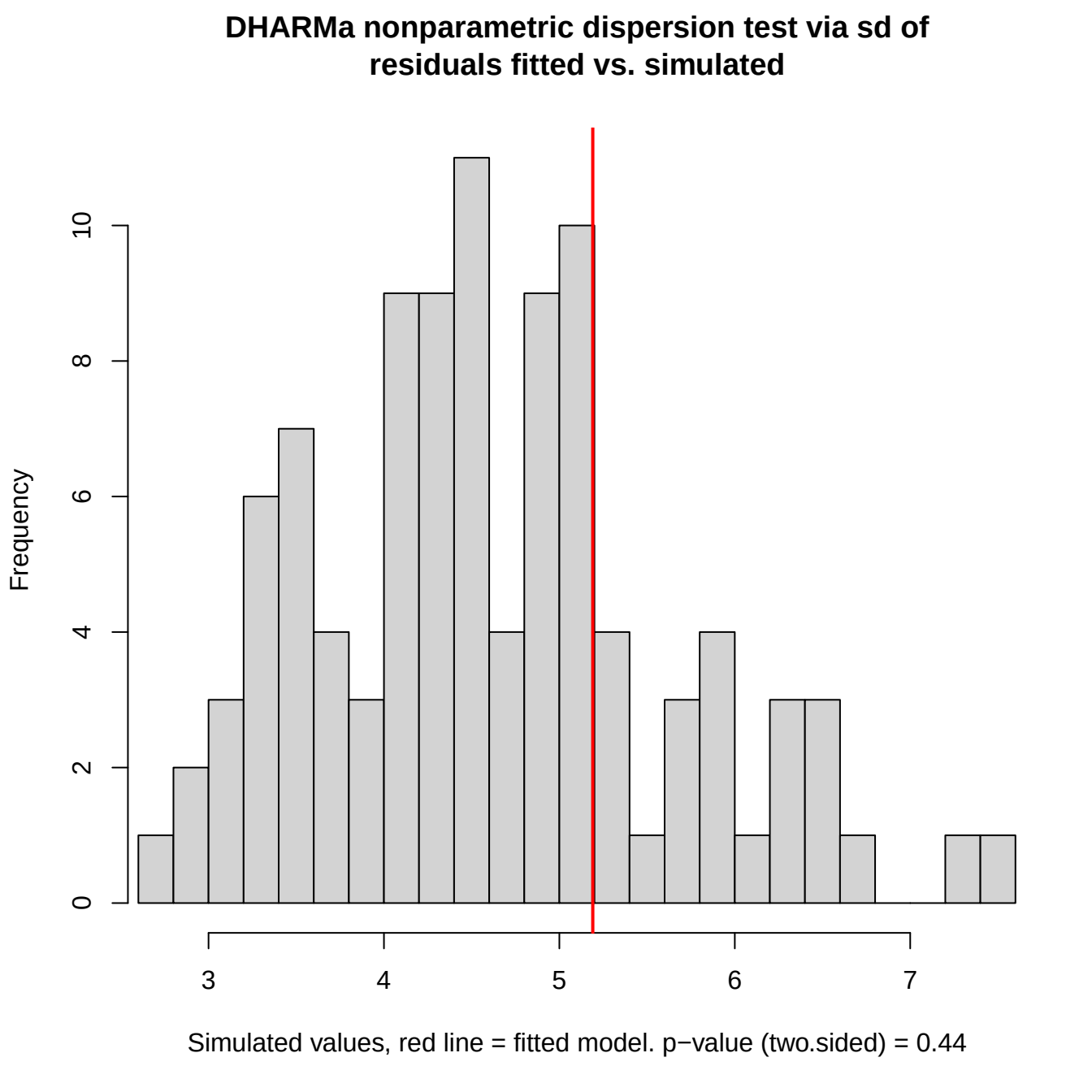

QQ plot residuals
KS test: p= 0.85777
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

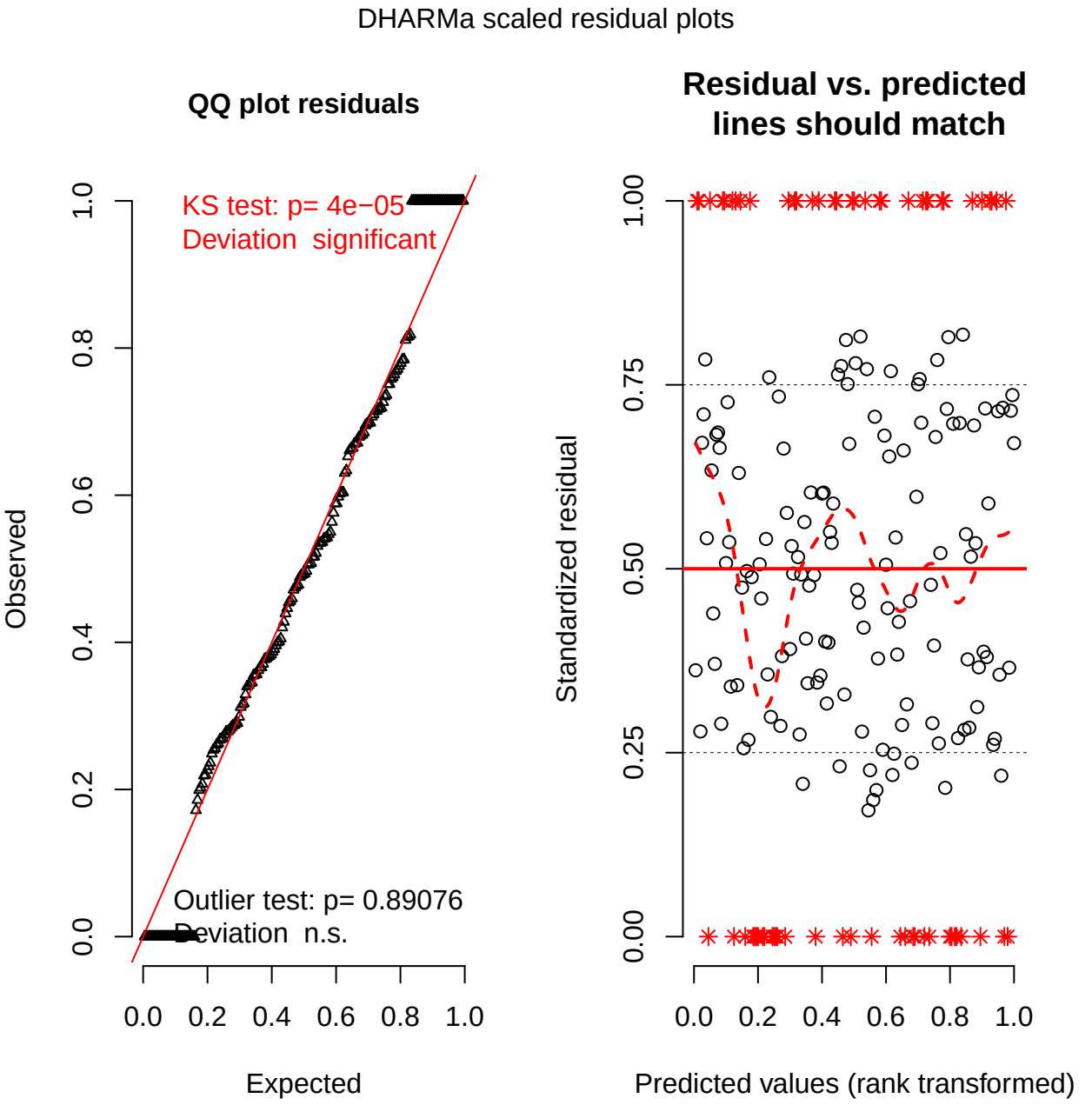

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
75
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 1

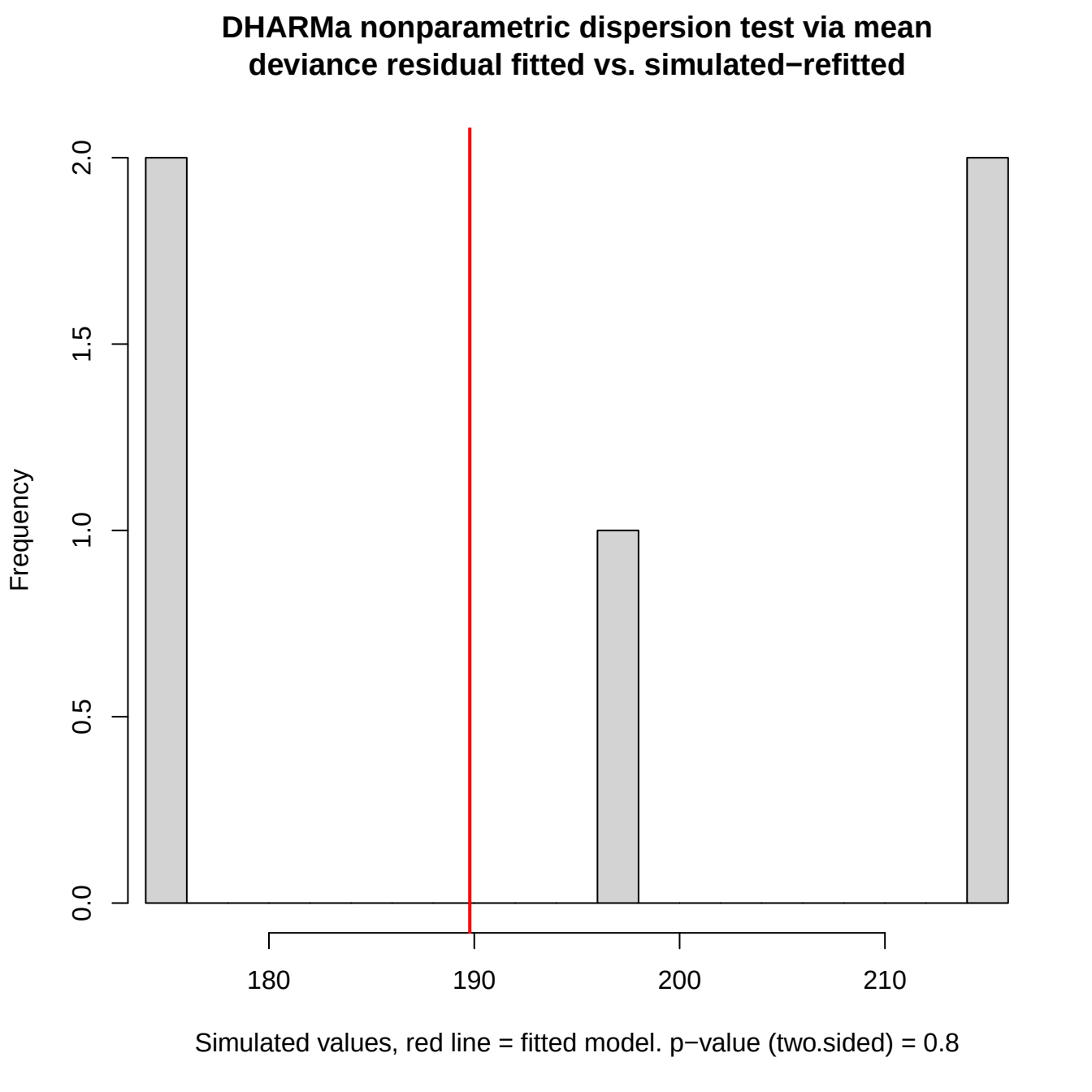

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

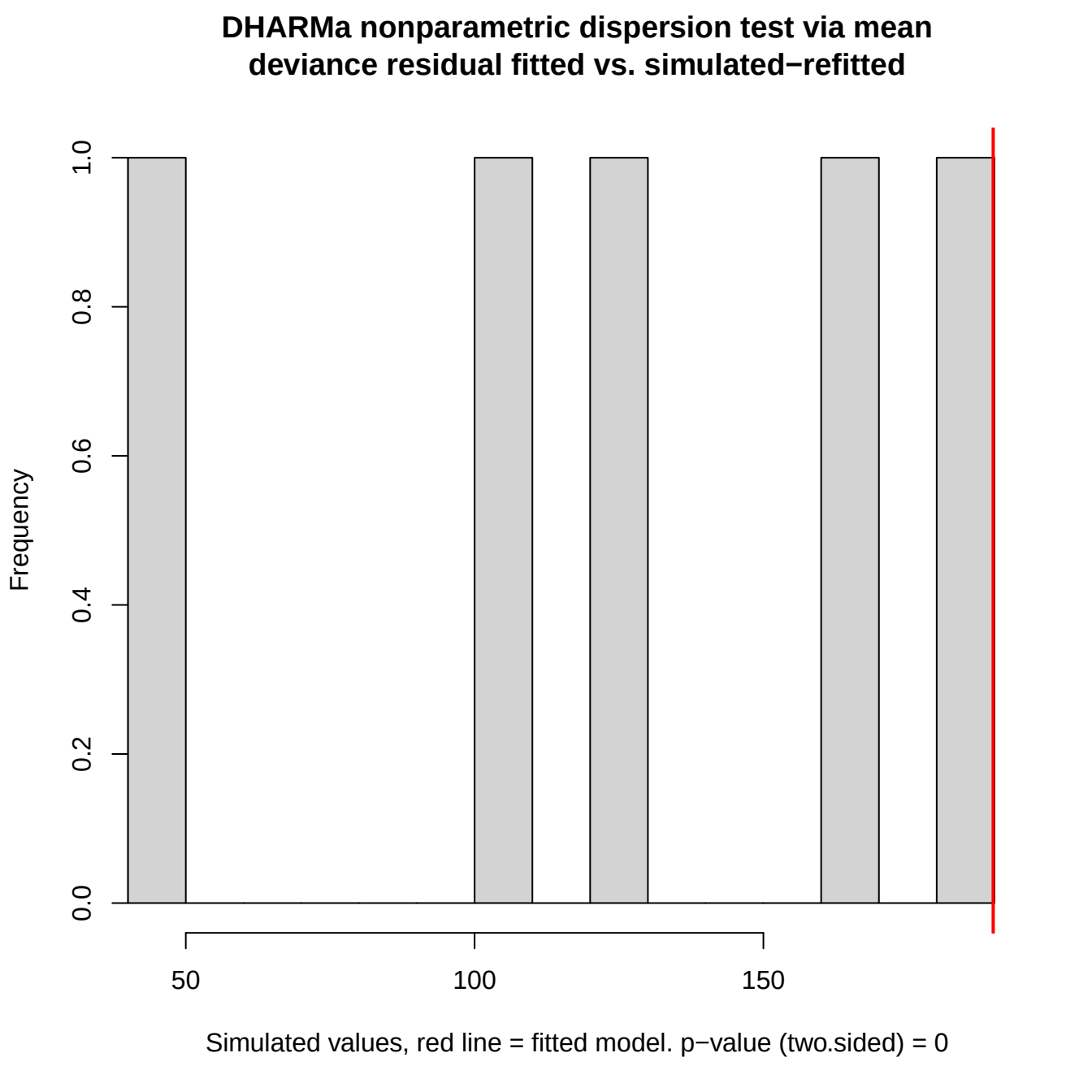

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

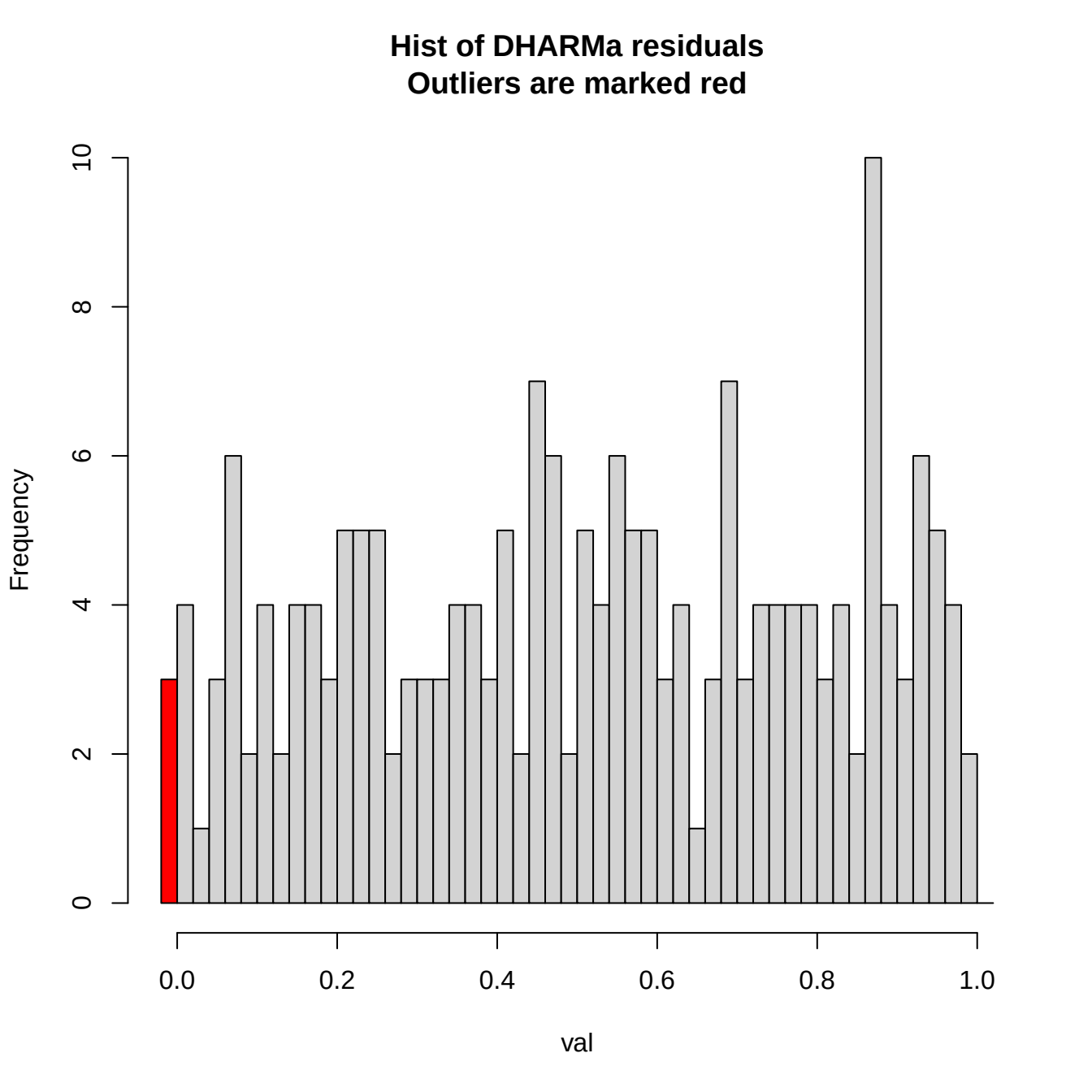

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

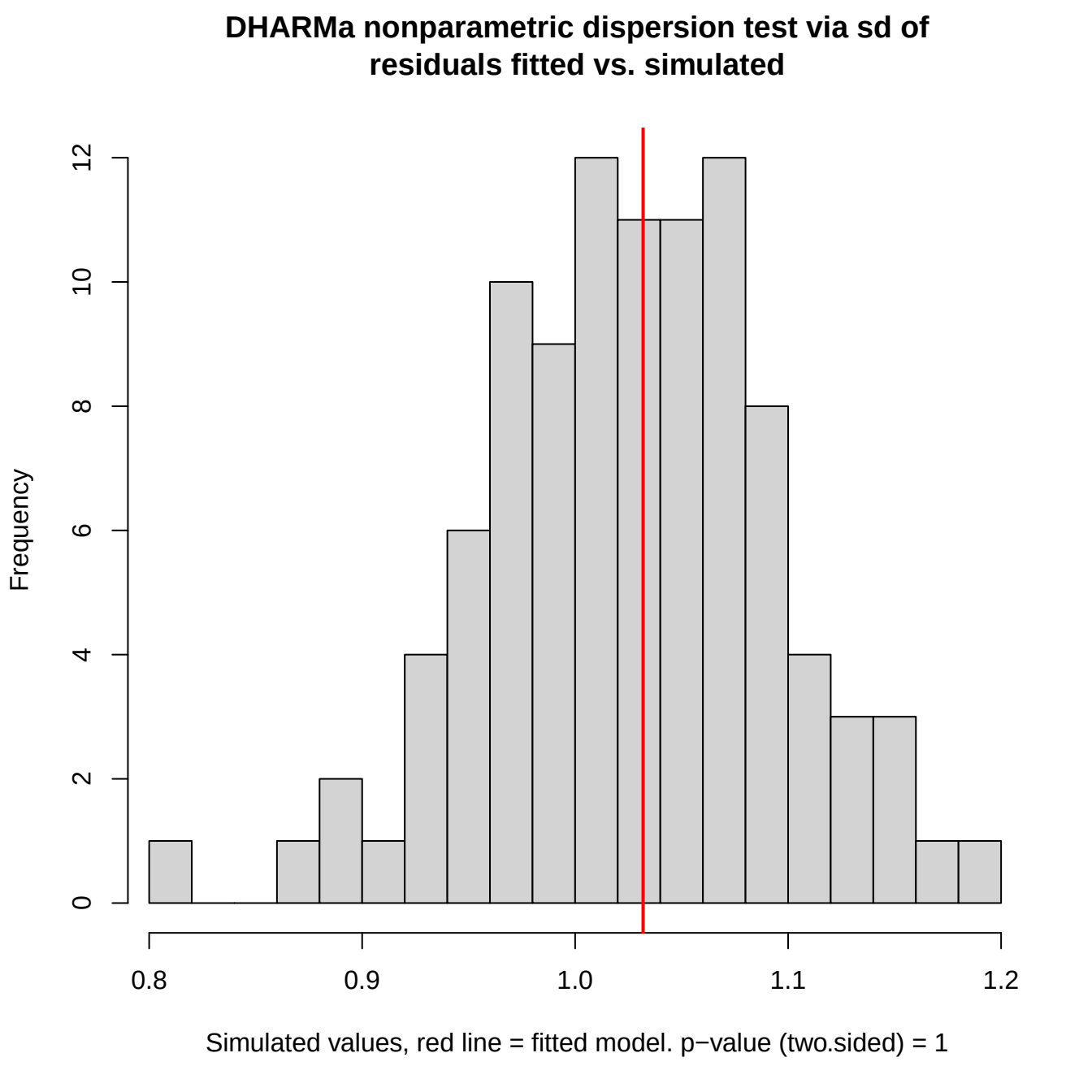

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

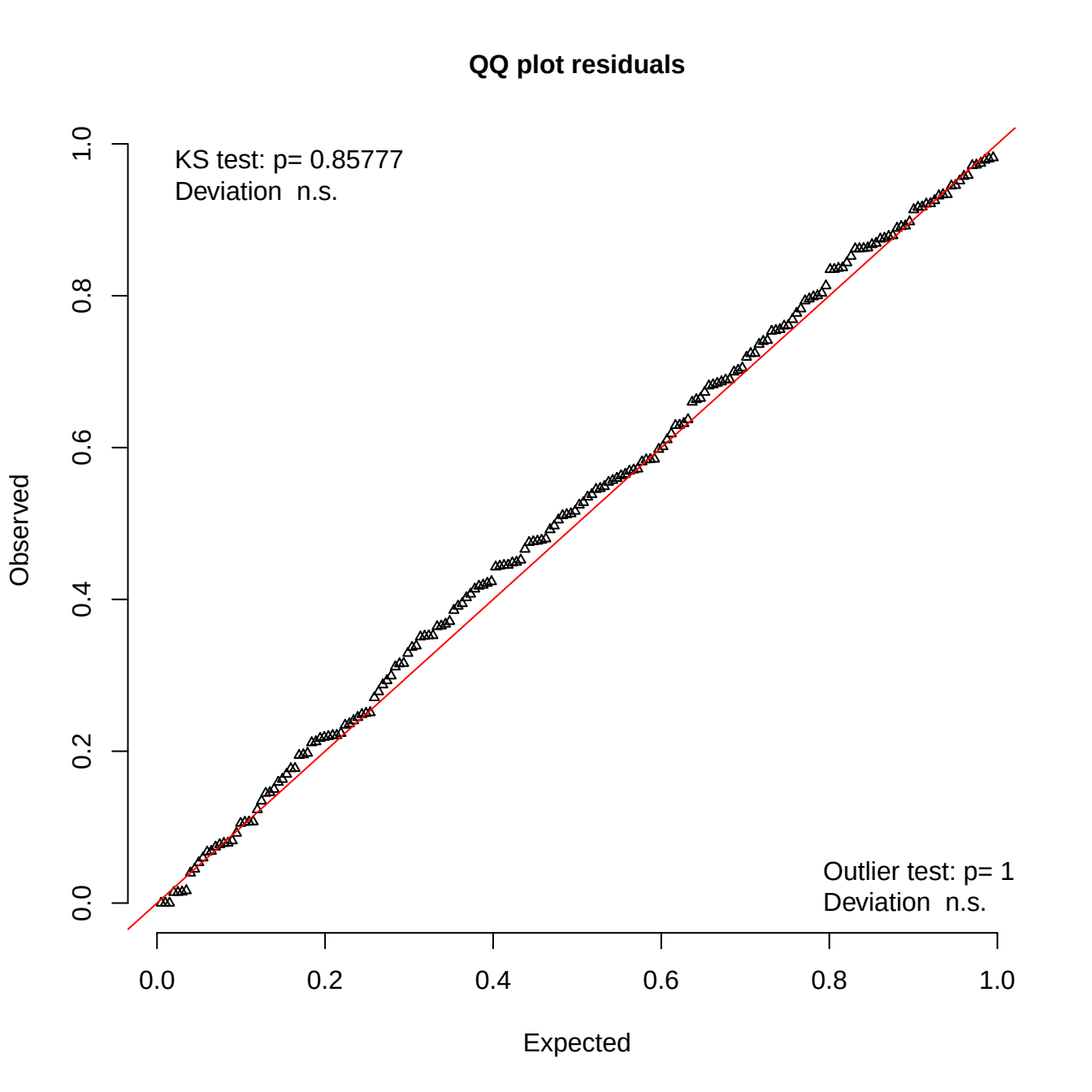

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

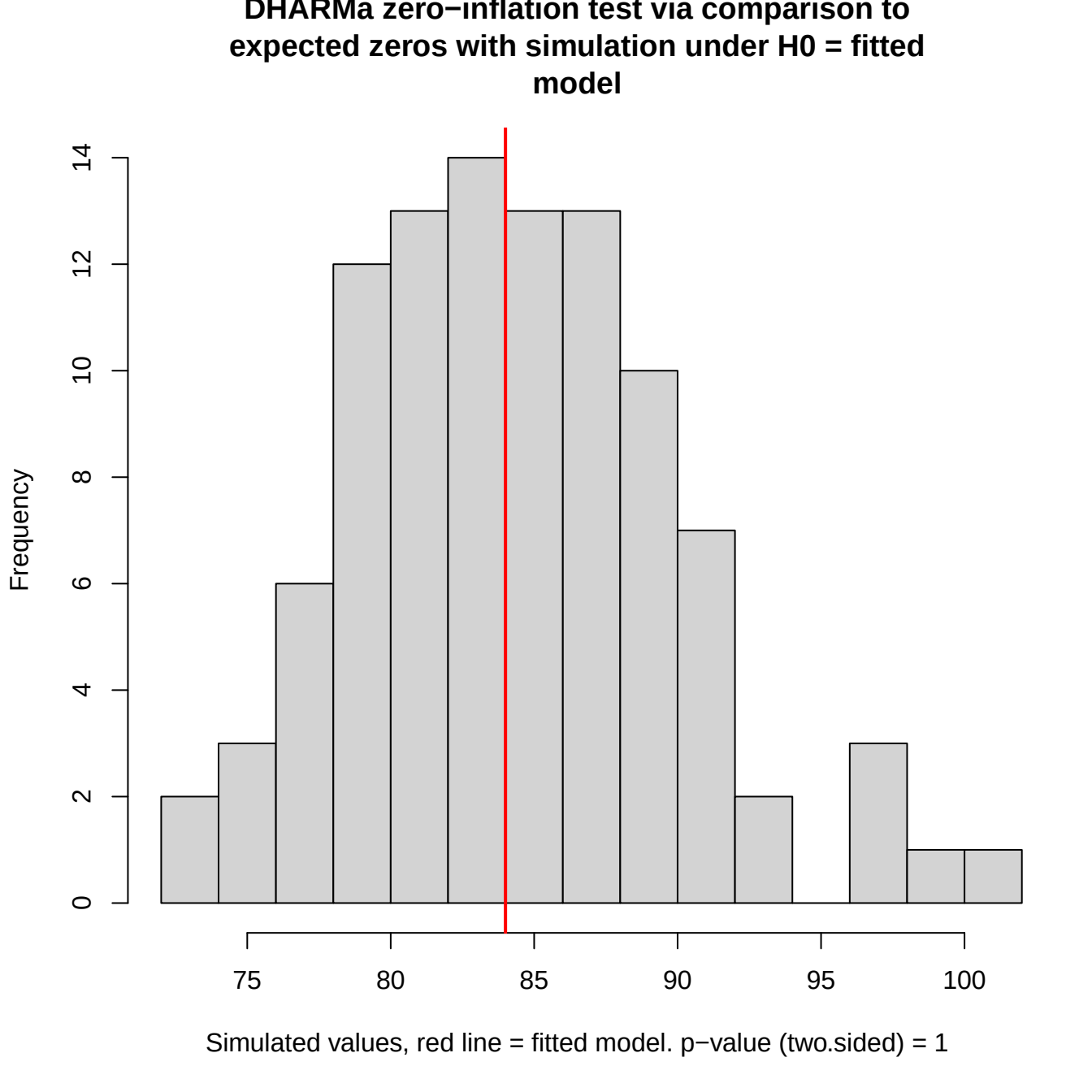

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

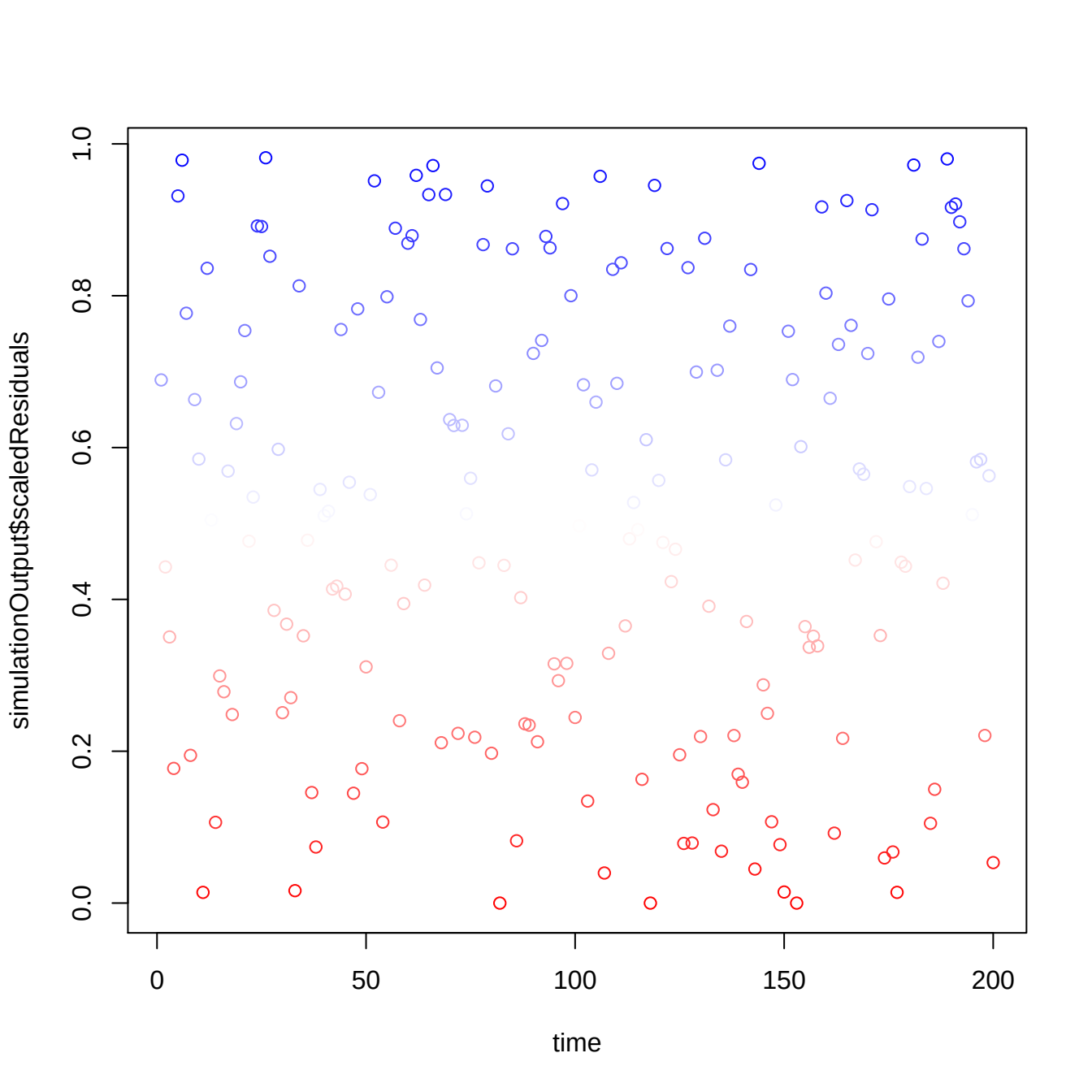

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
Simulated values, red line = fitted model. p−value (two.sided) = 0

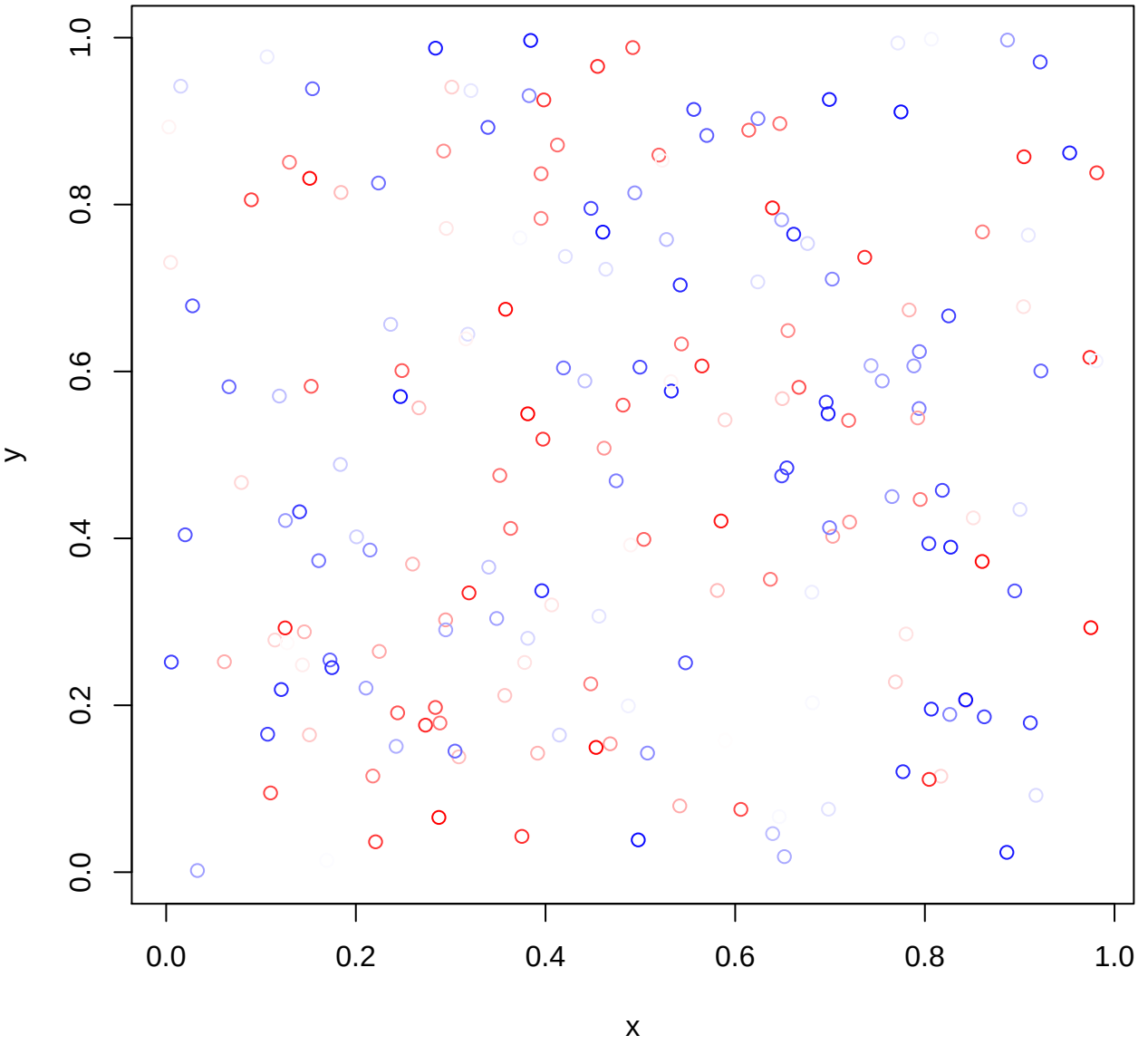

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

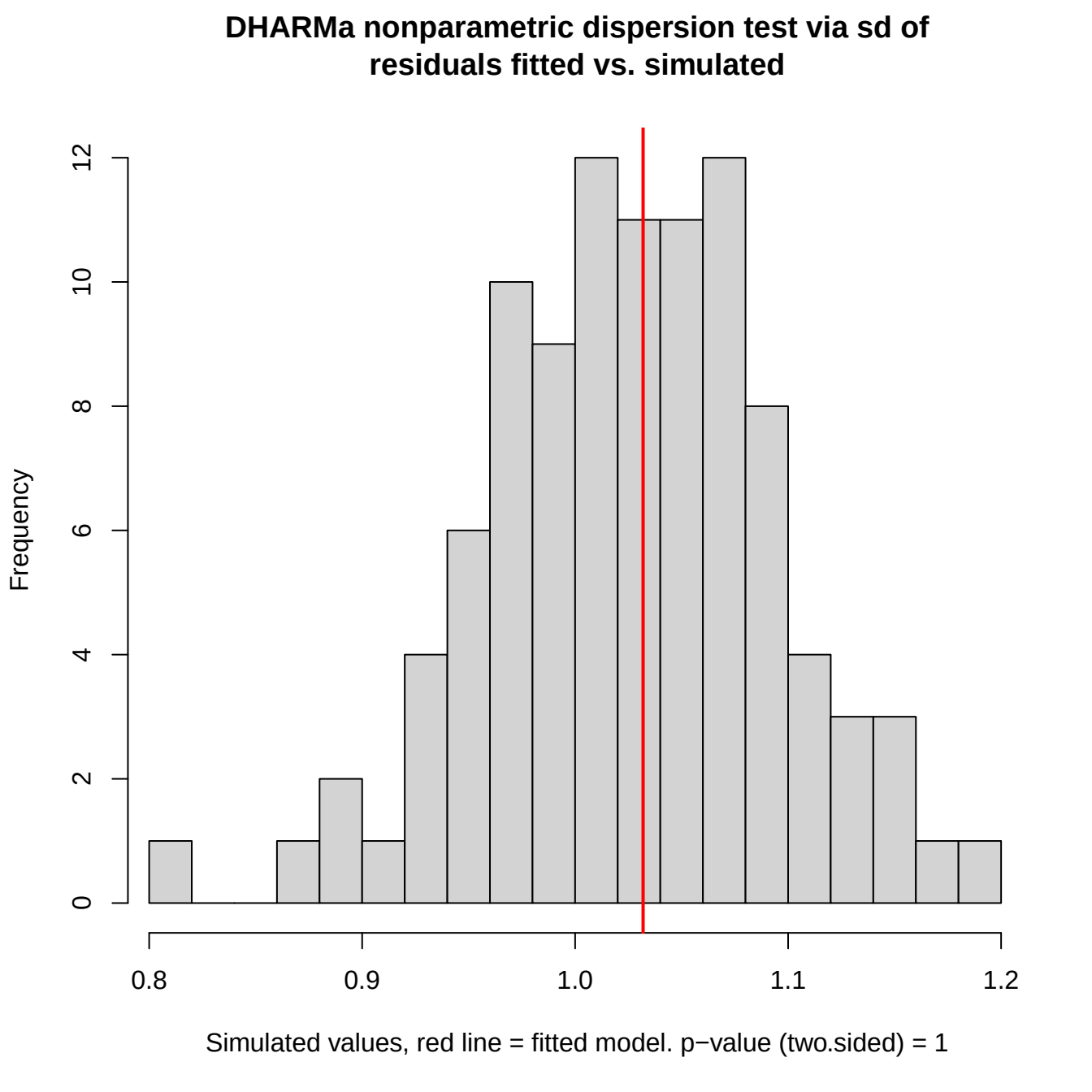

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

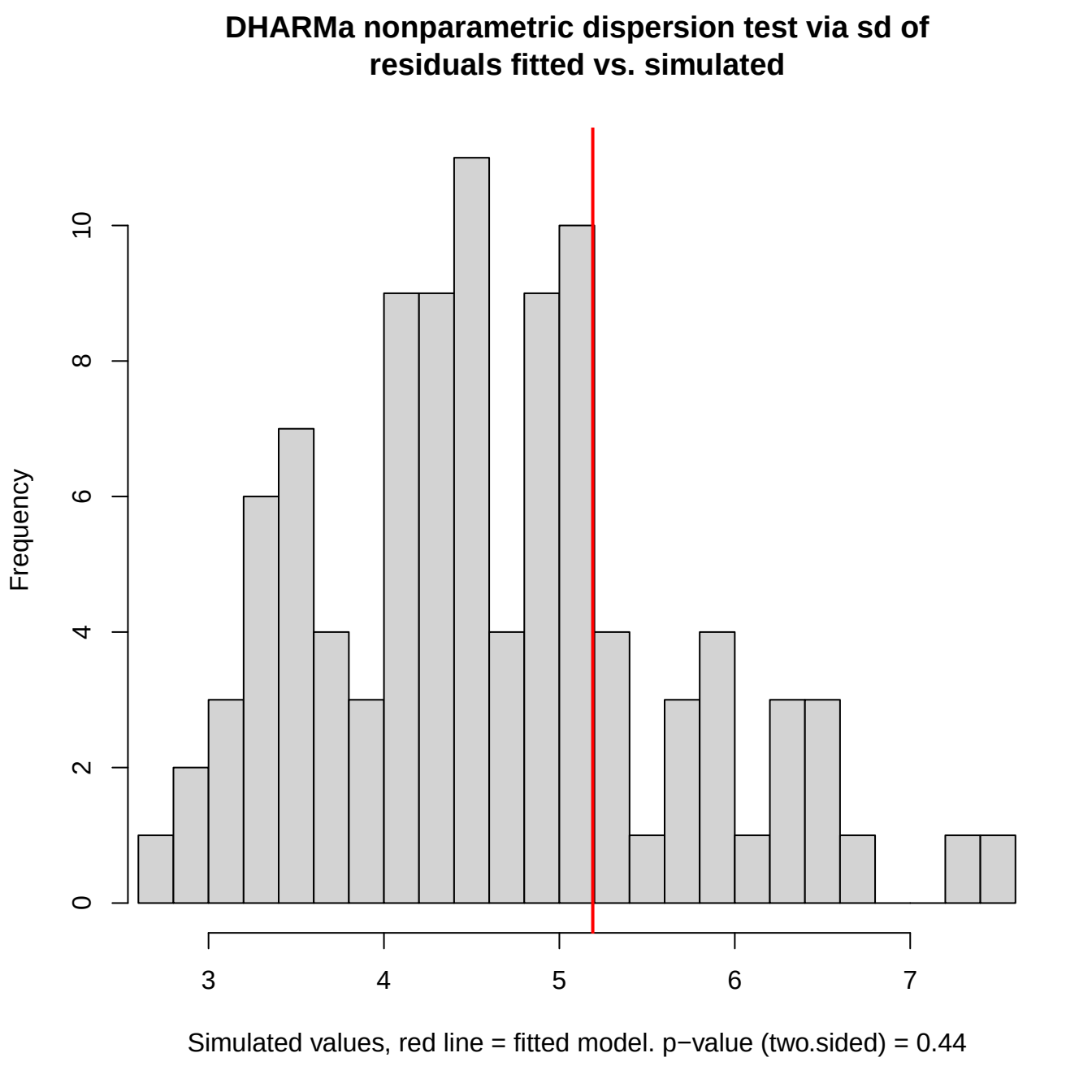

QQ plot residuals
KS test: p= 0.85777
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

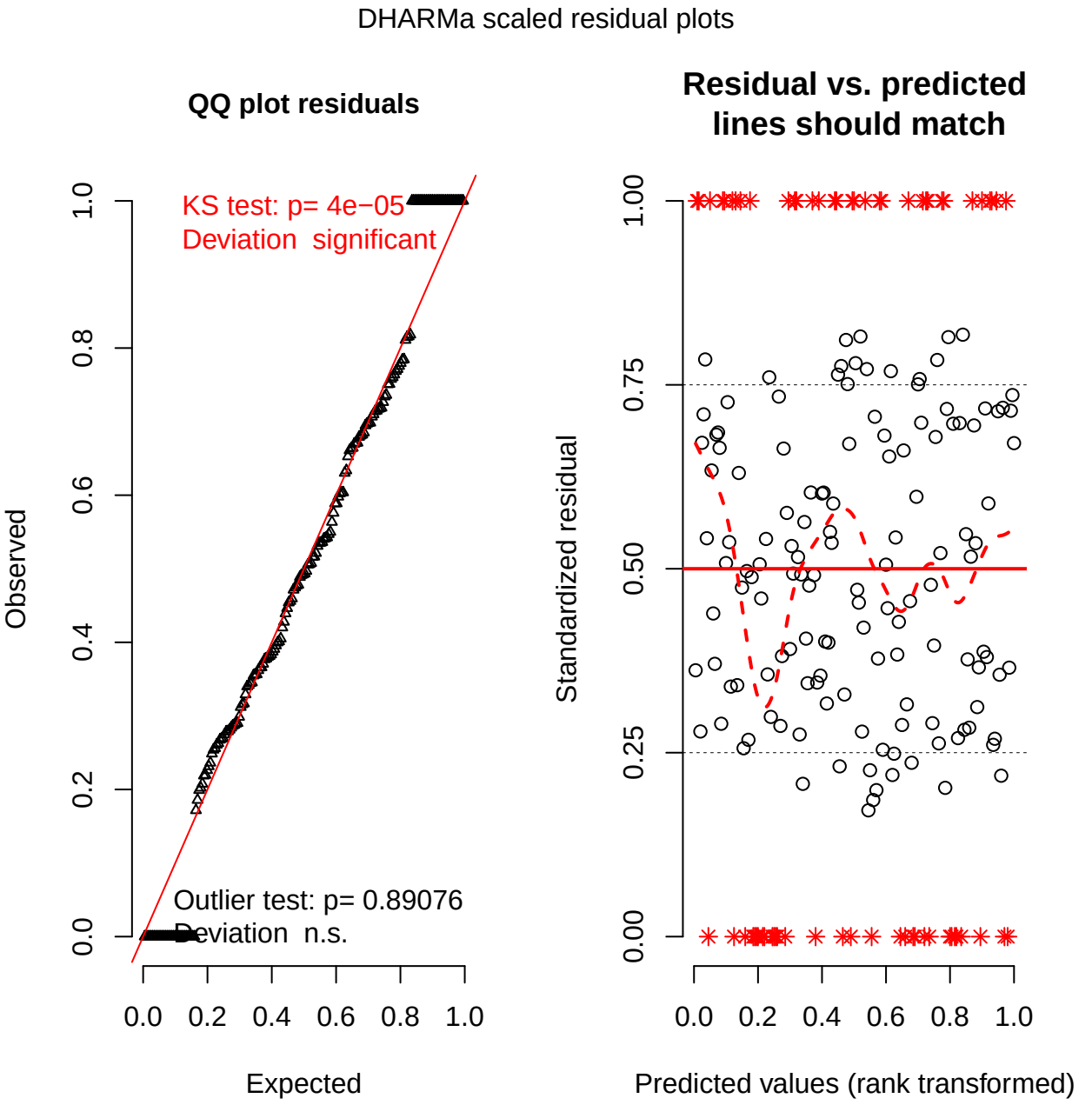

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
75
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 1

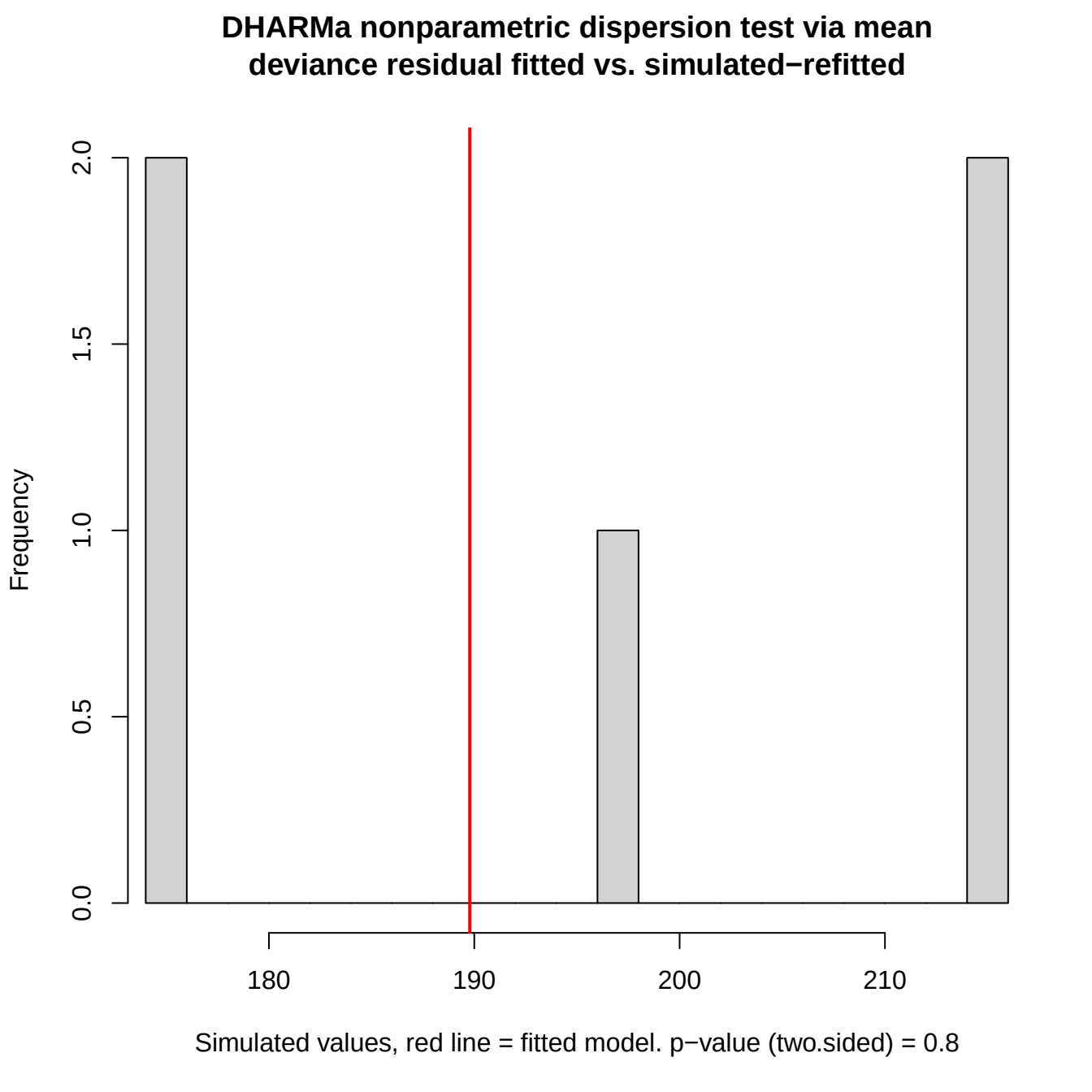

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

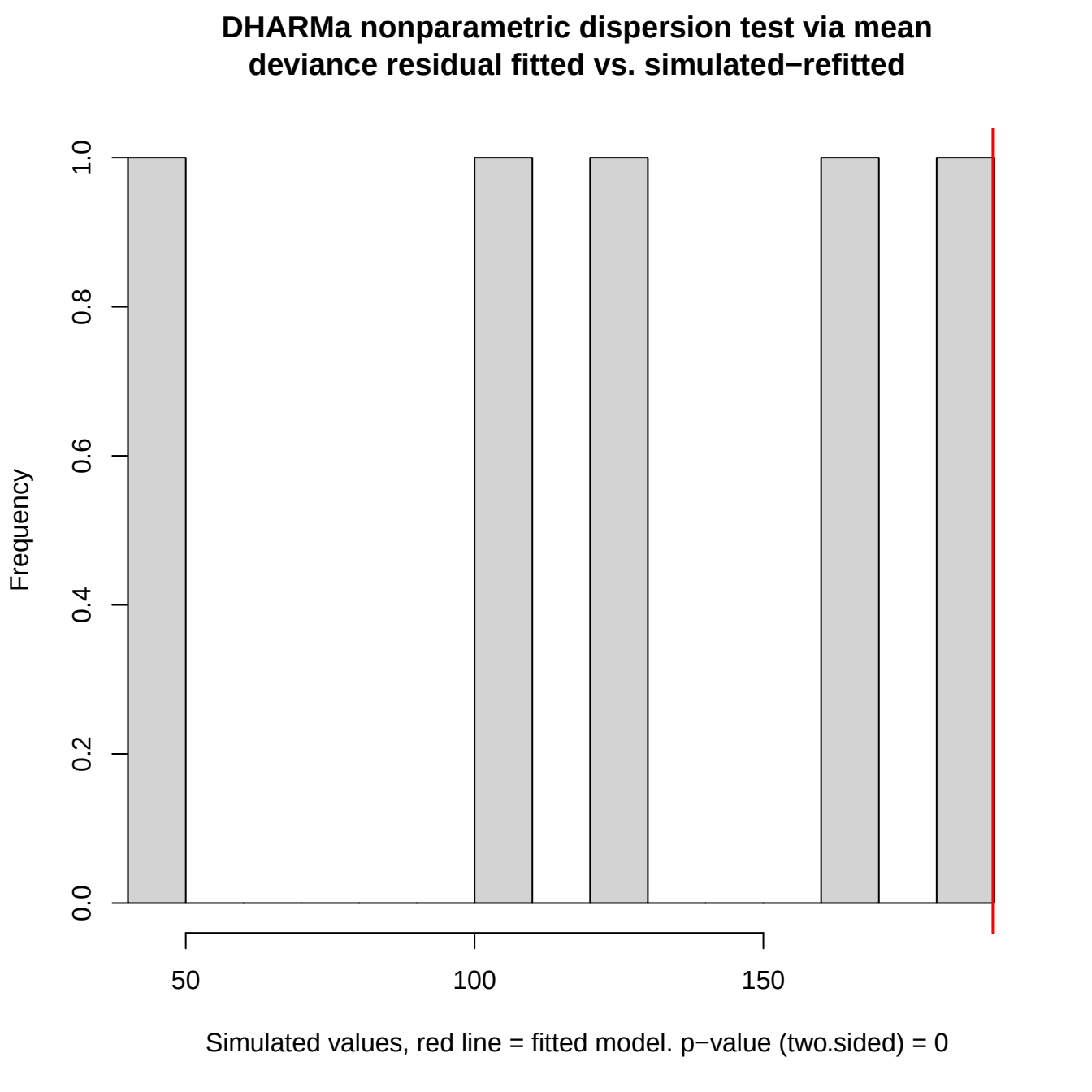

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

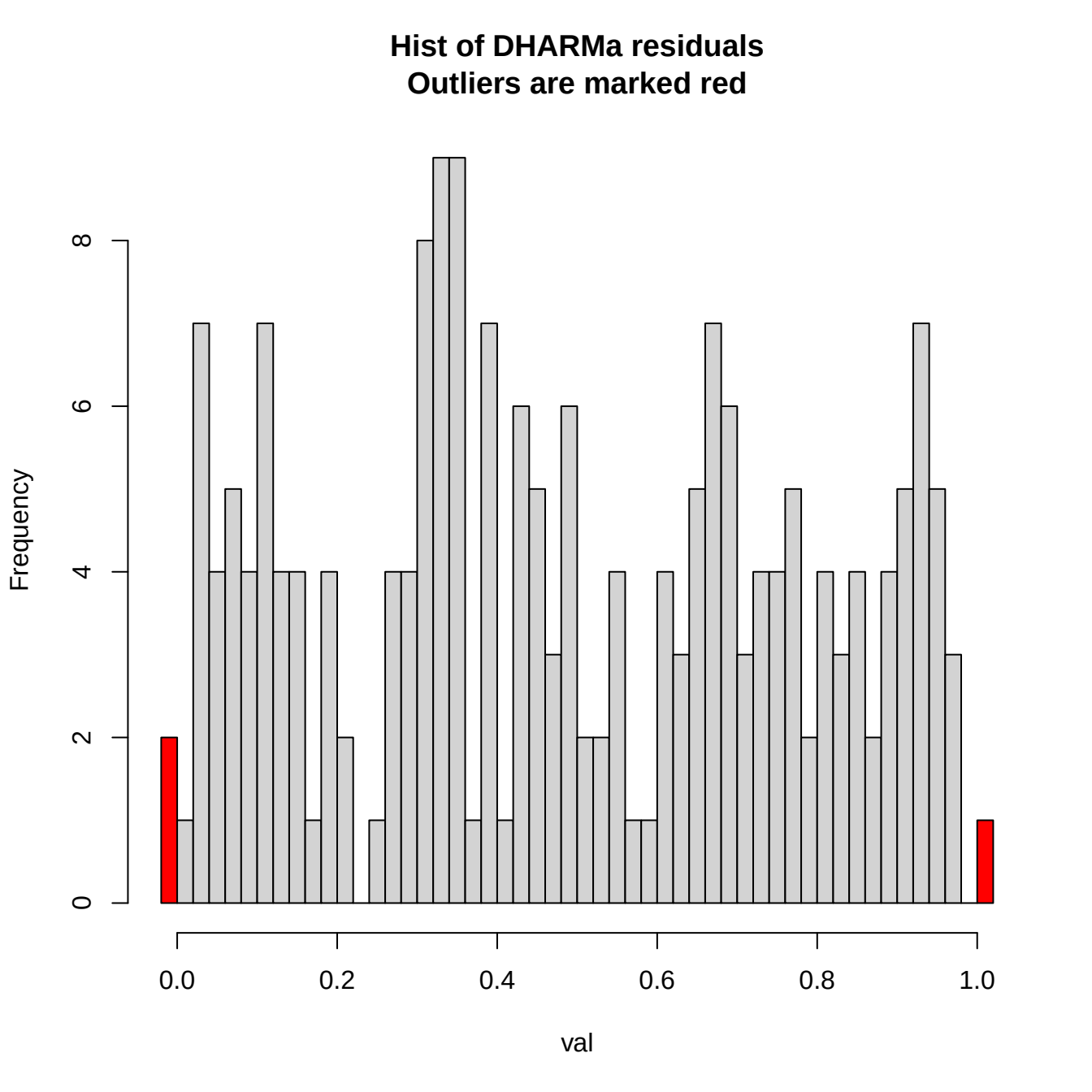

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

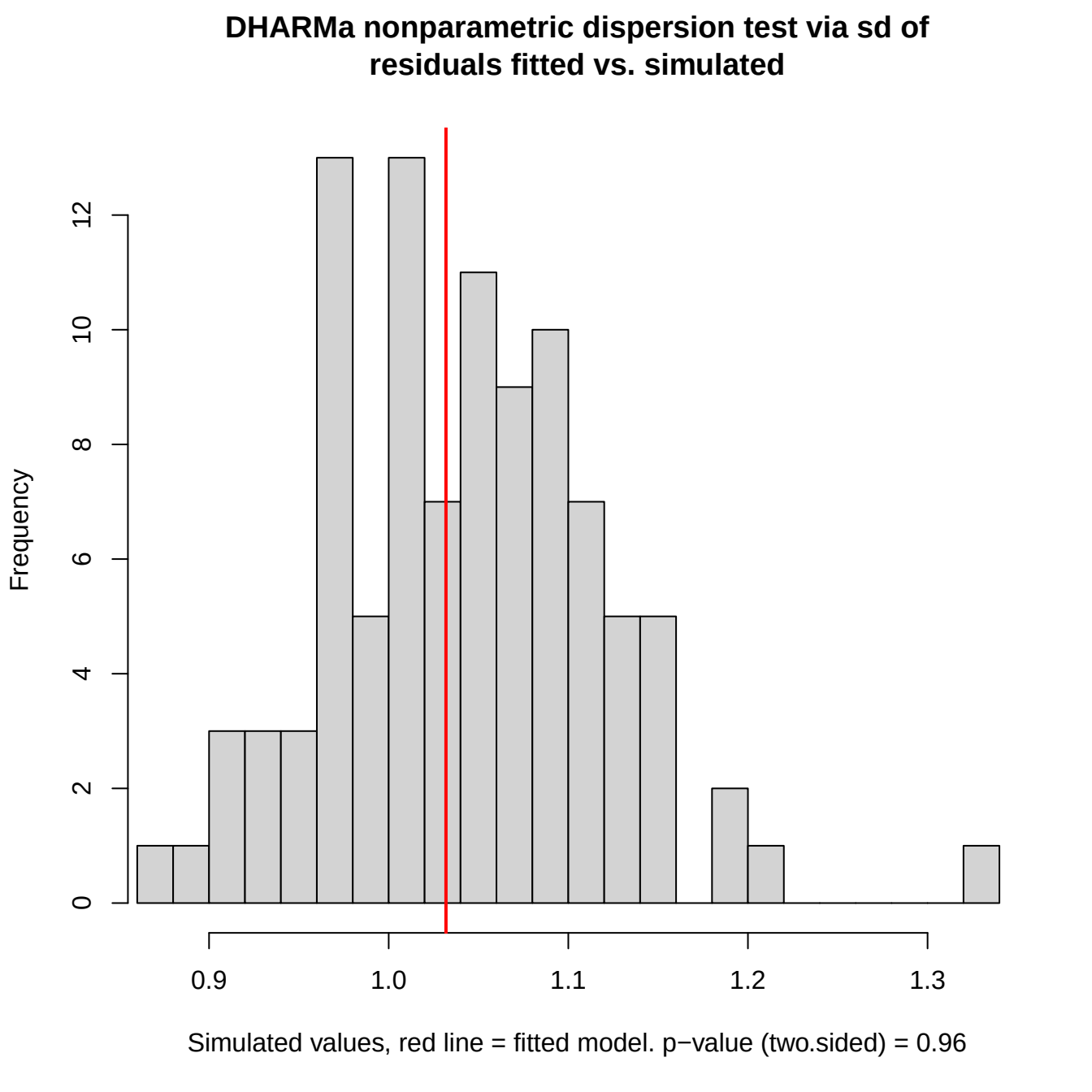

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

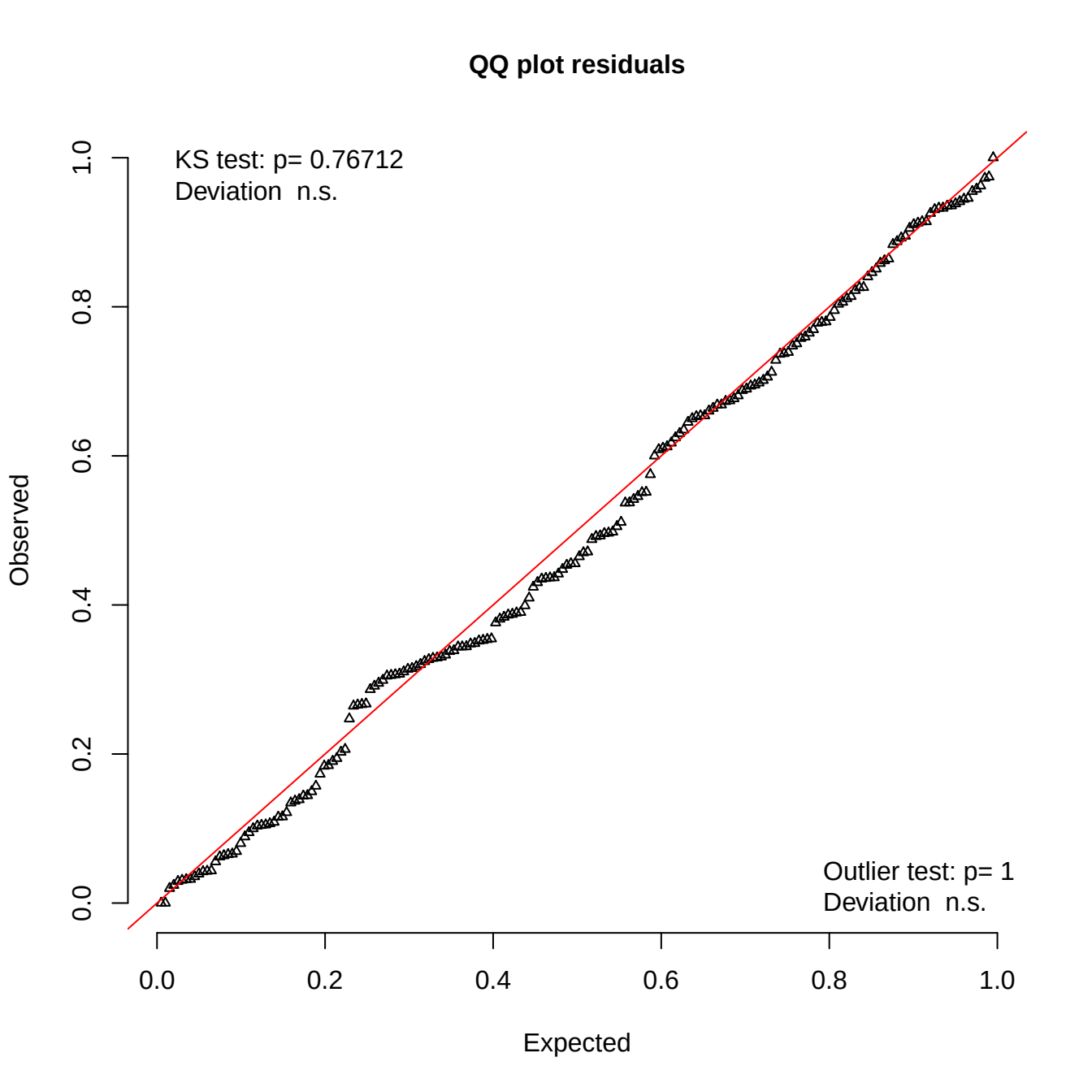

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

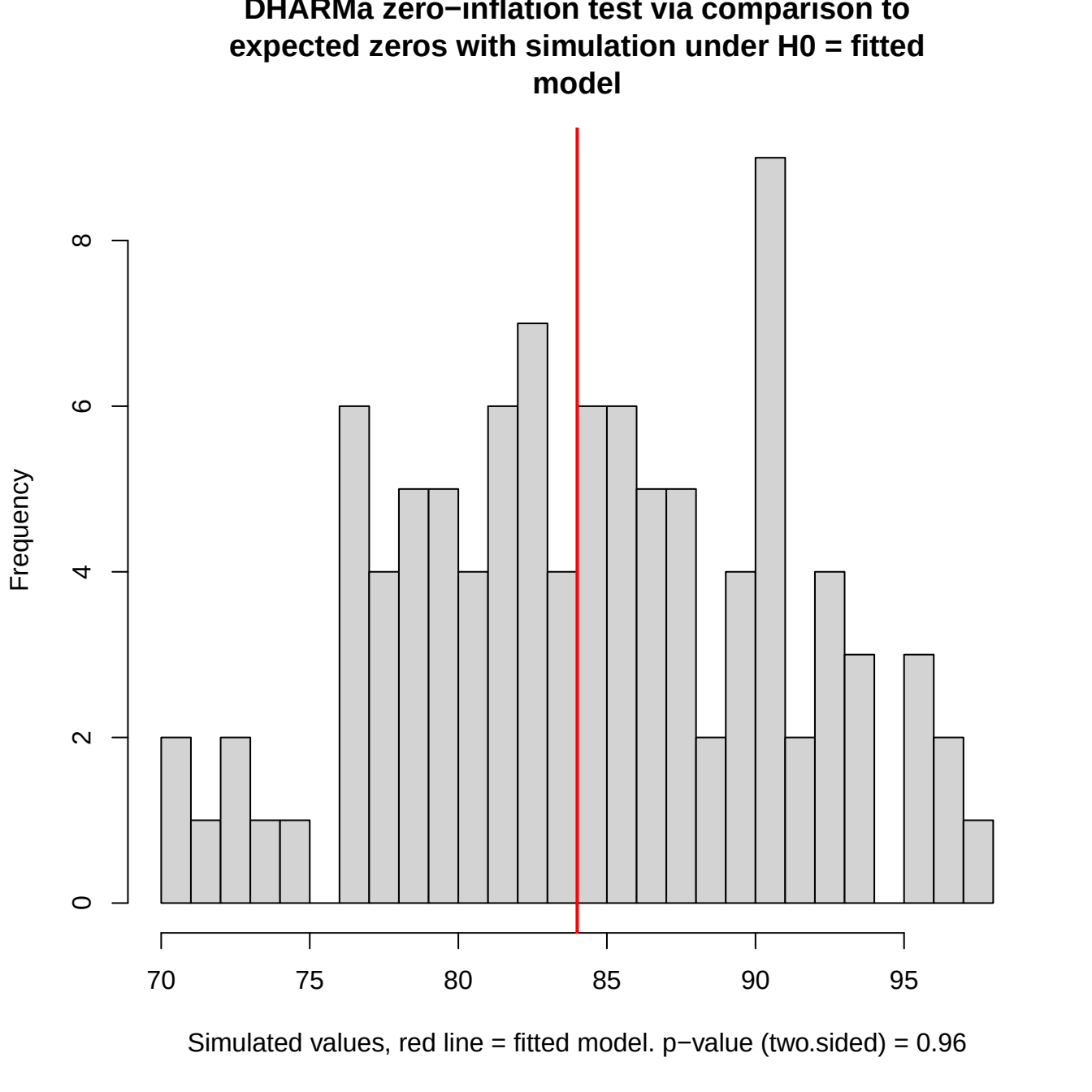

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

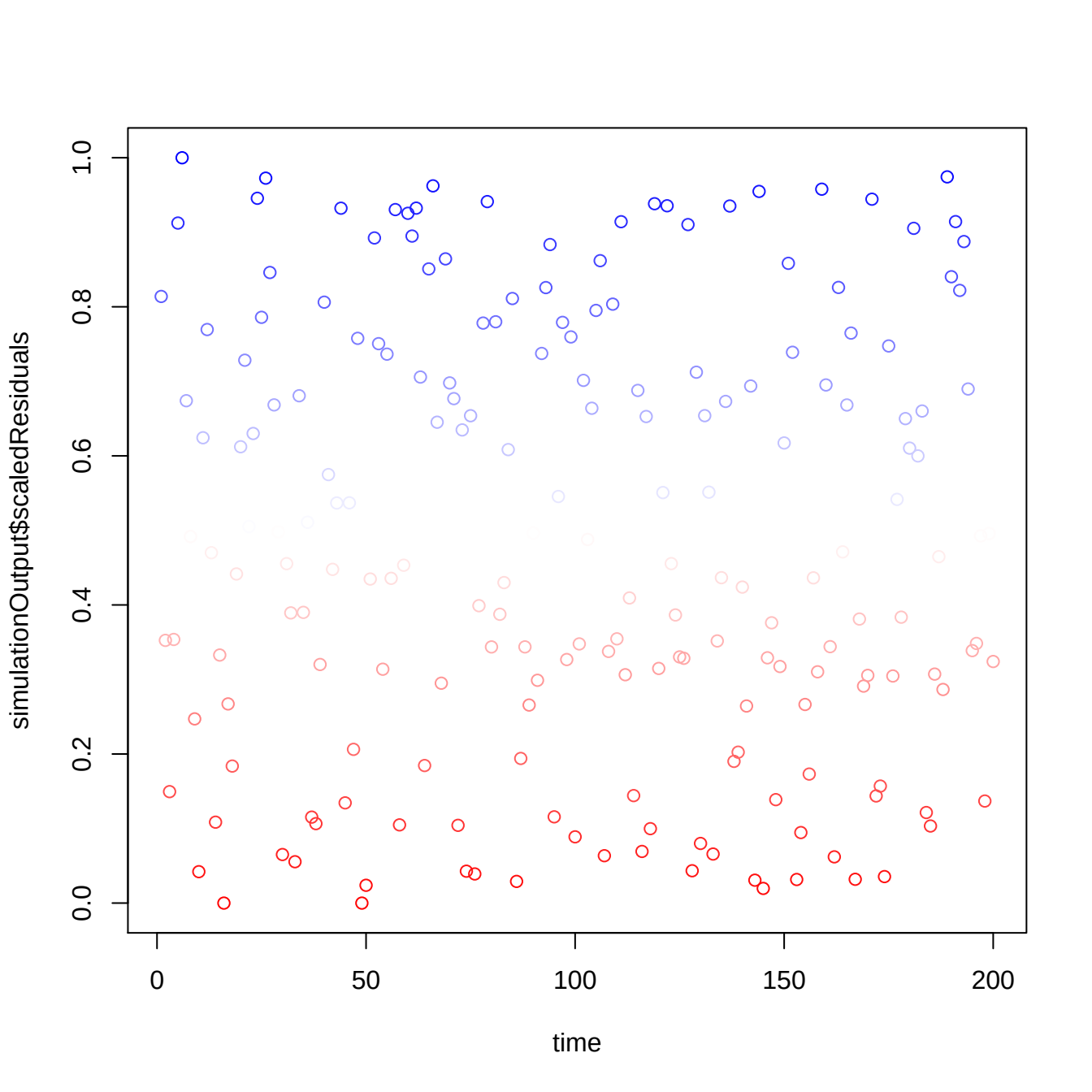

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
Simulated values, red line = fitted model. p−value (two.sided) = 0

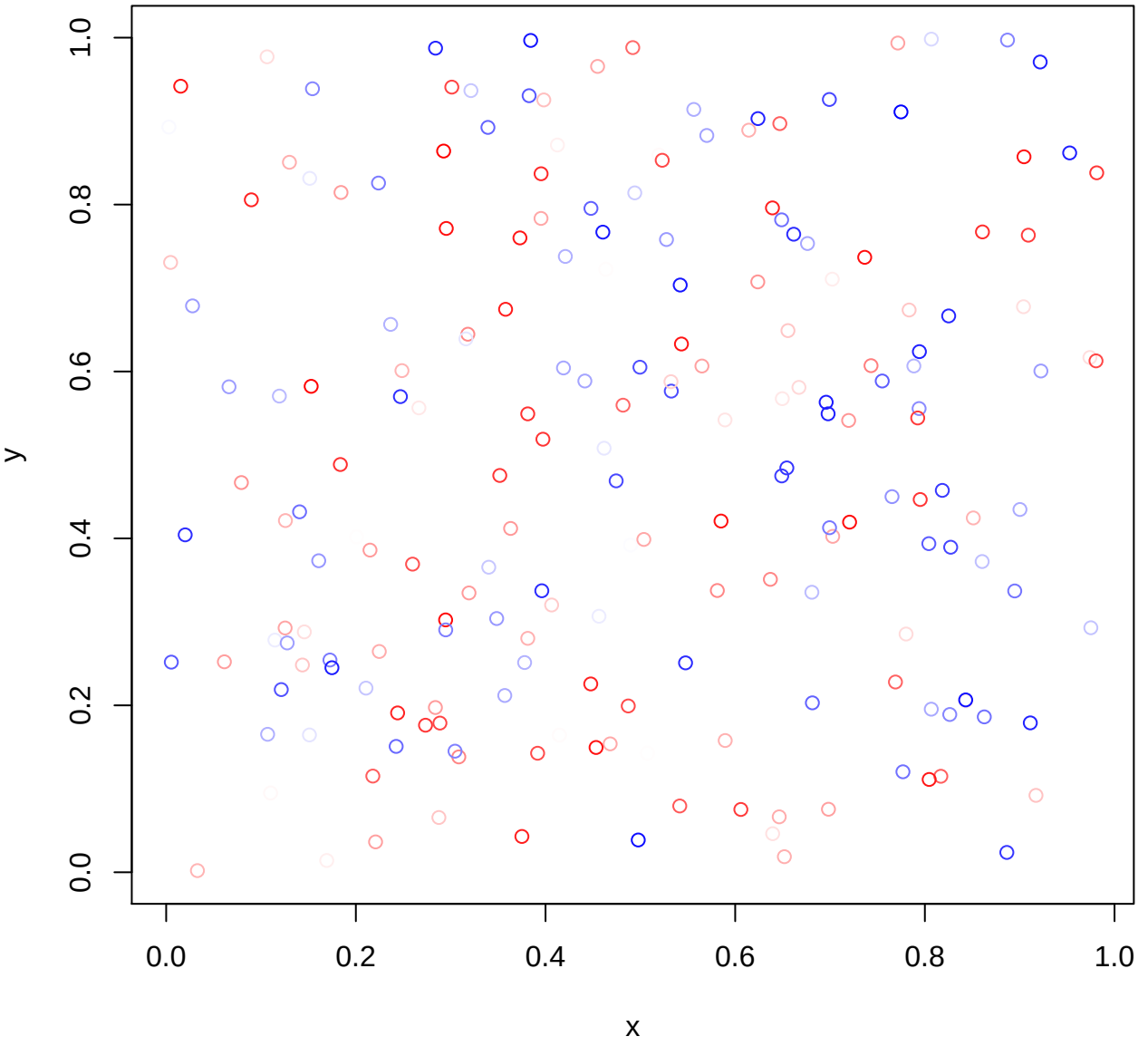

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

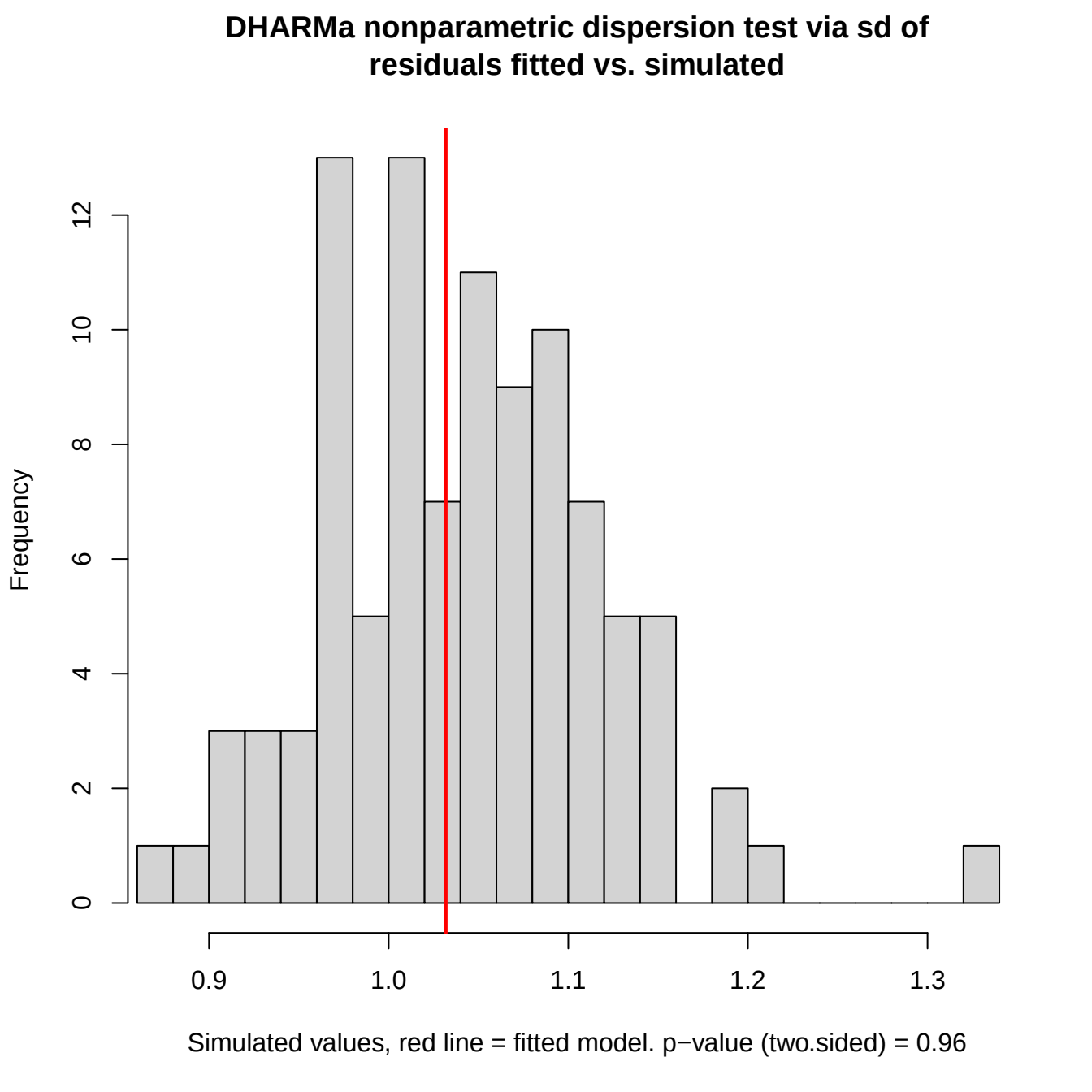

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

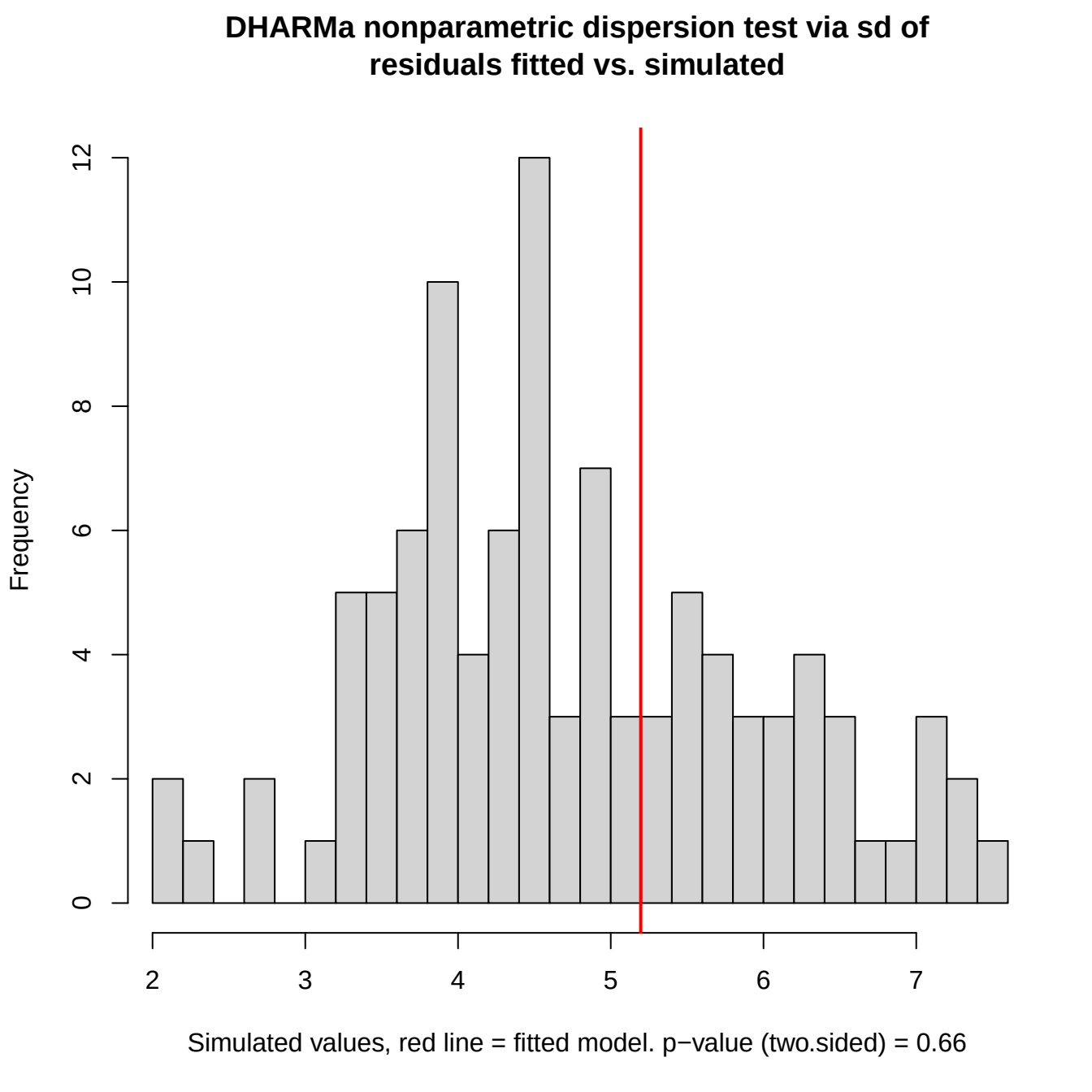

QQ plot residuals
KS test: p= 0.76712
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

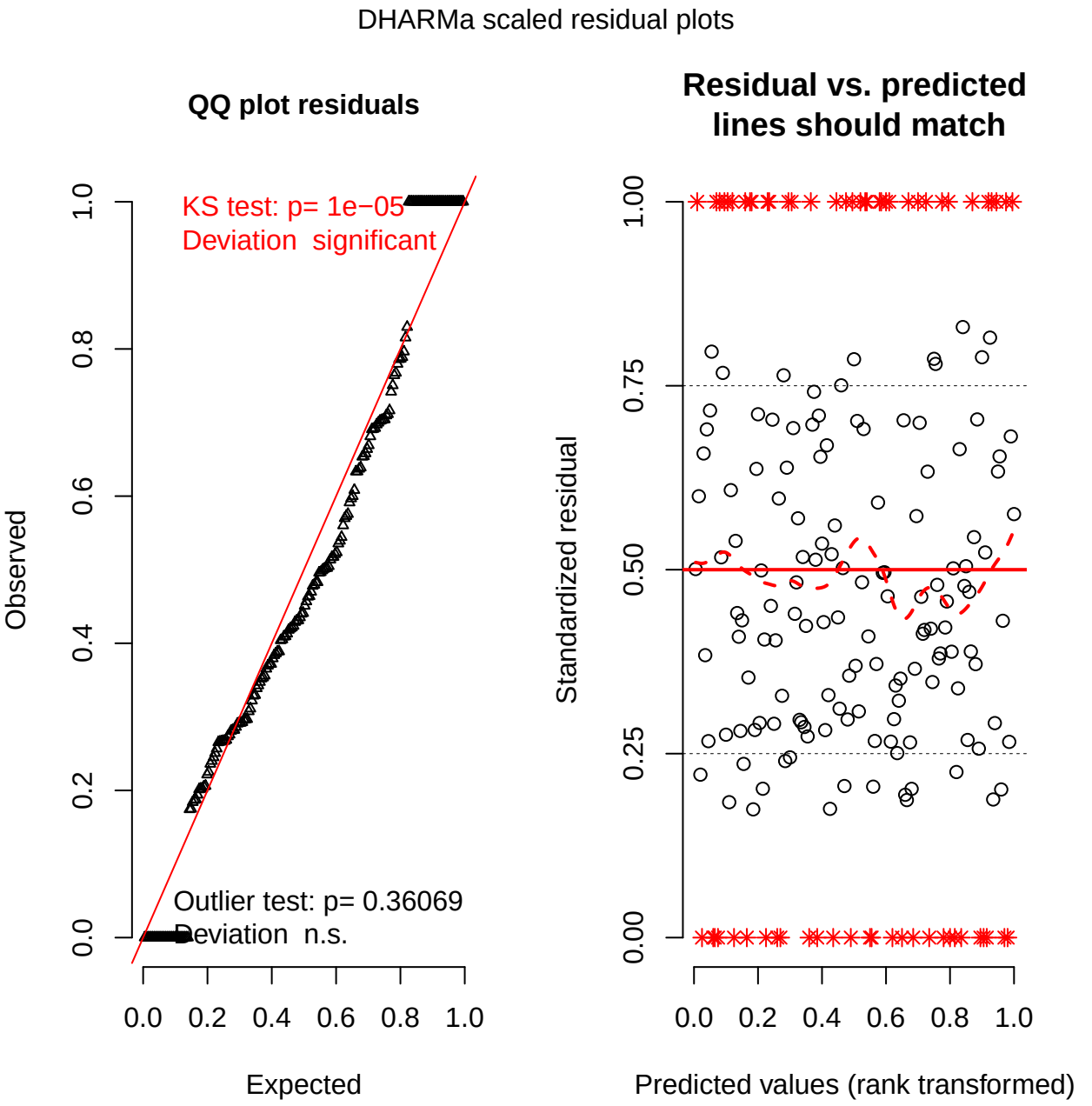

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
70
75
80
85
90
95
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

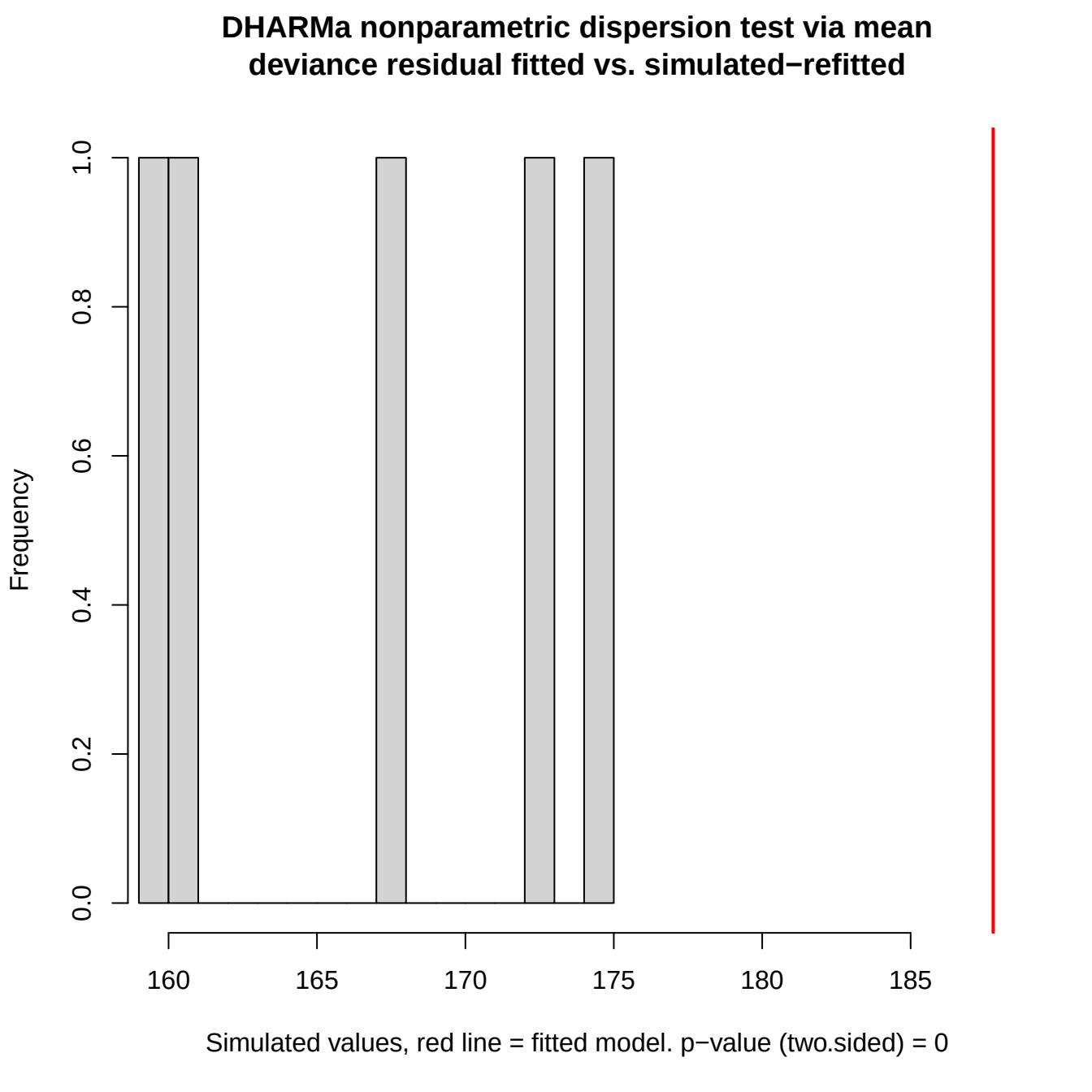

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

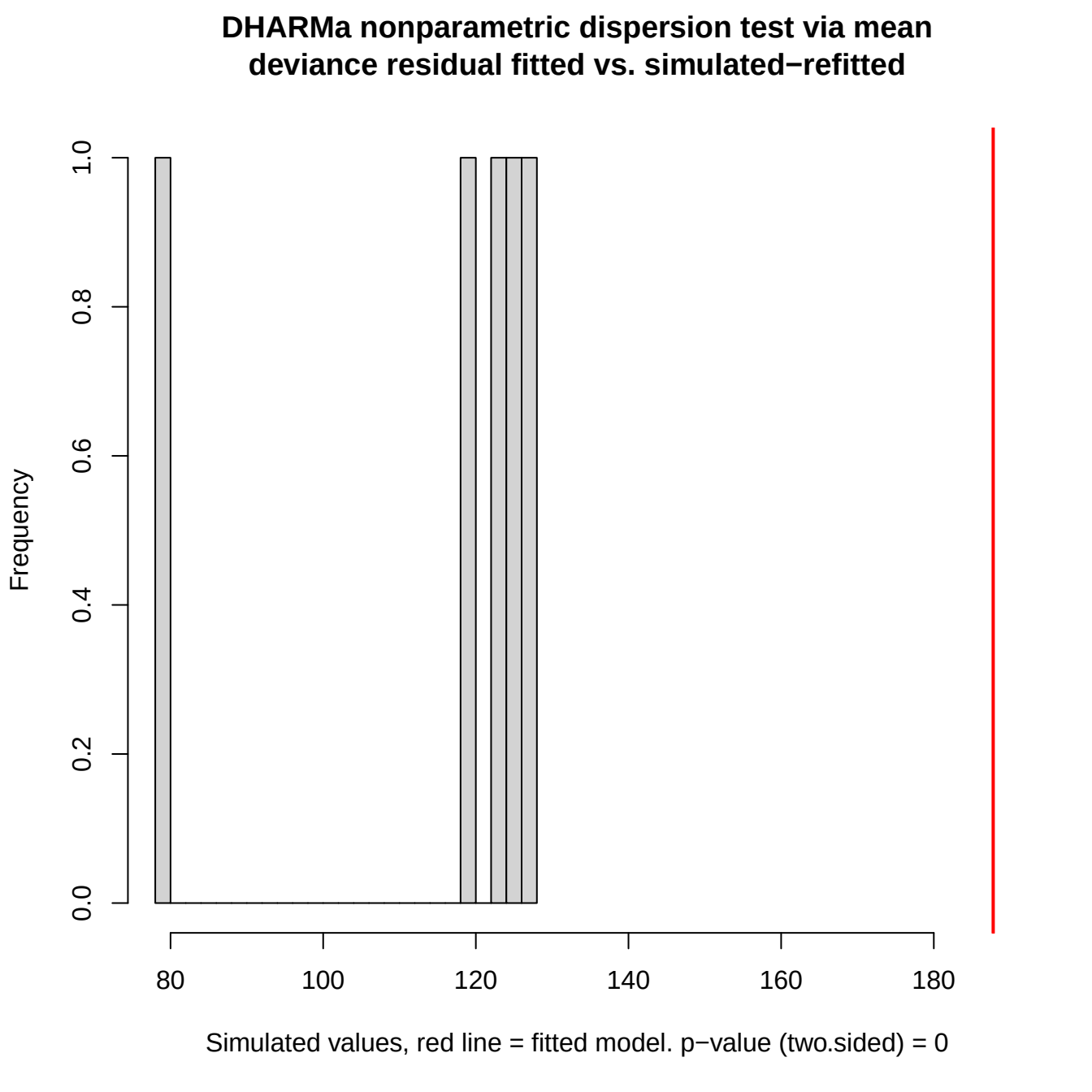

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

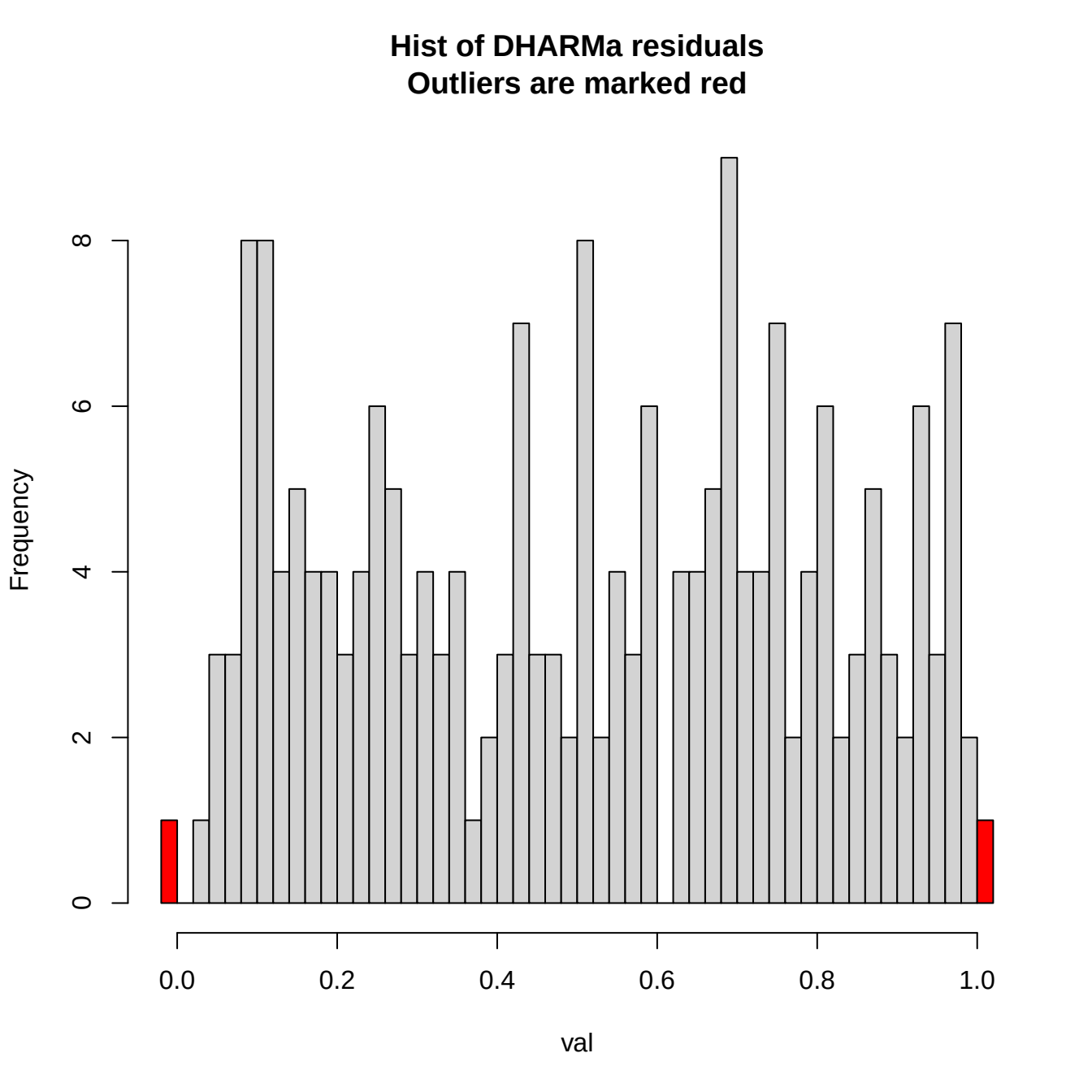

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

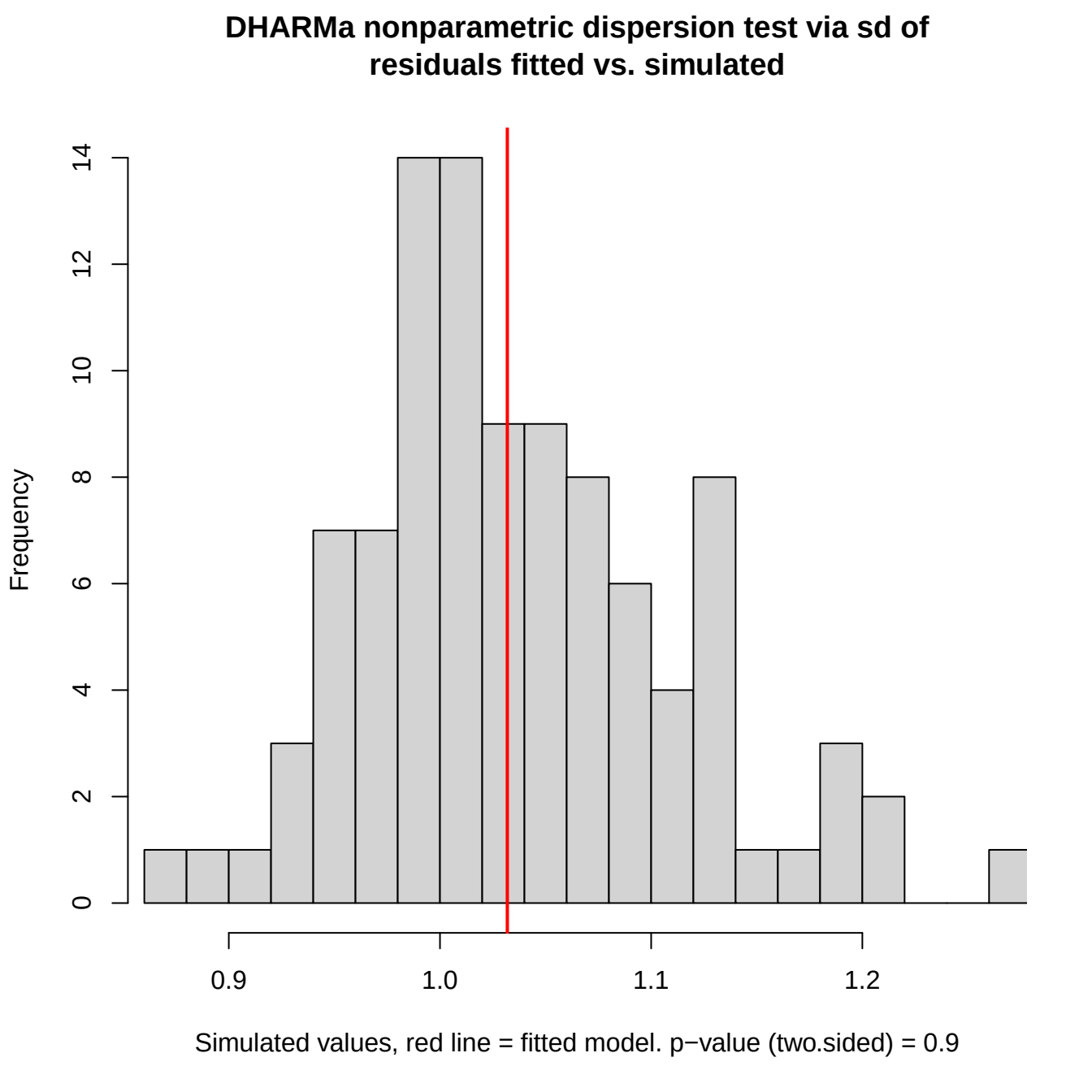

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.66

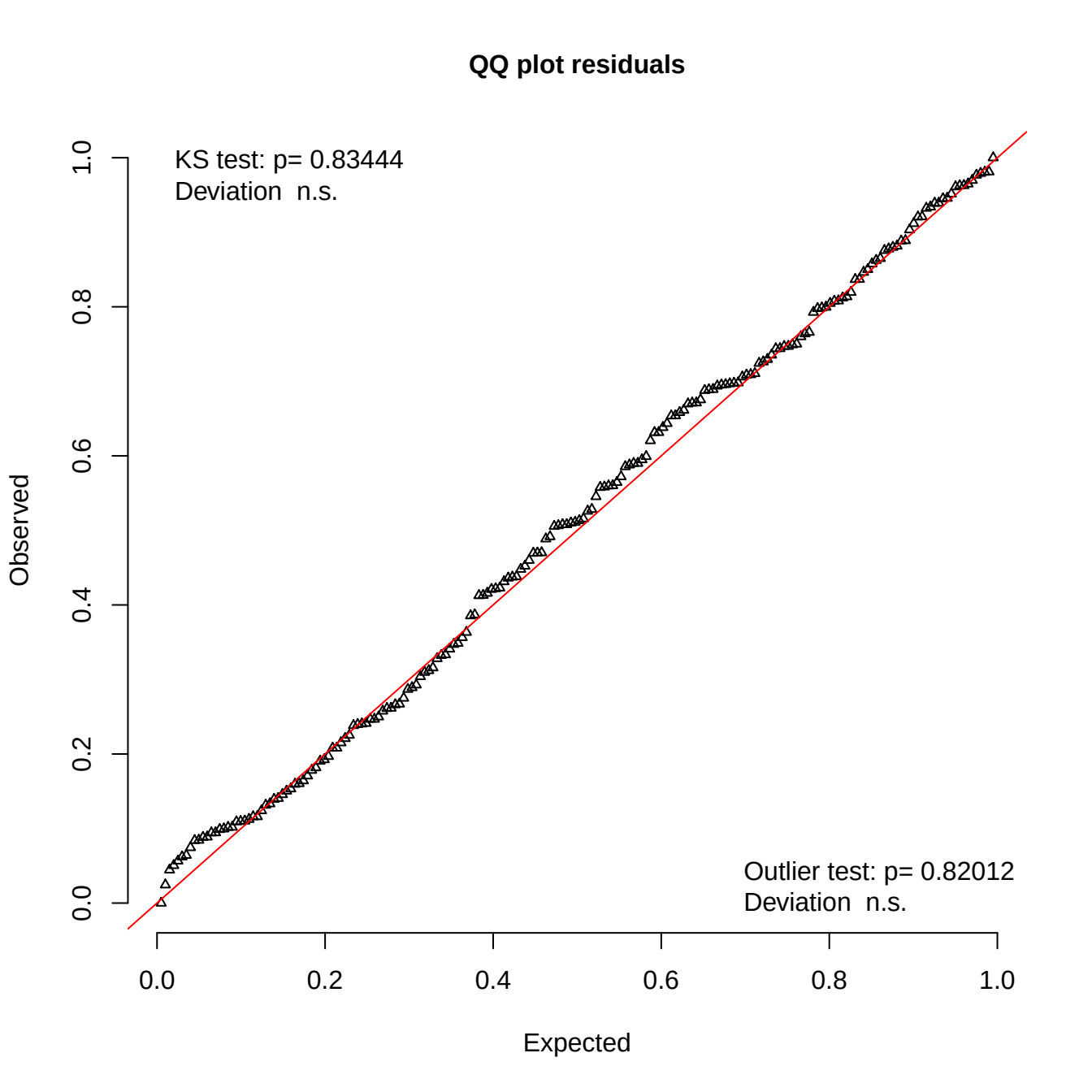

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 1e−05
Deviation significant
Outlier test: p= 0.36069
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

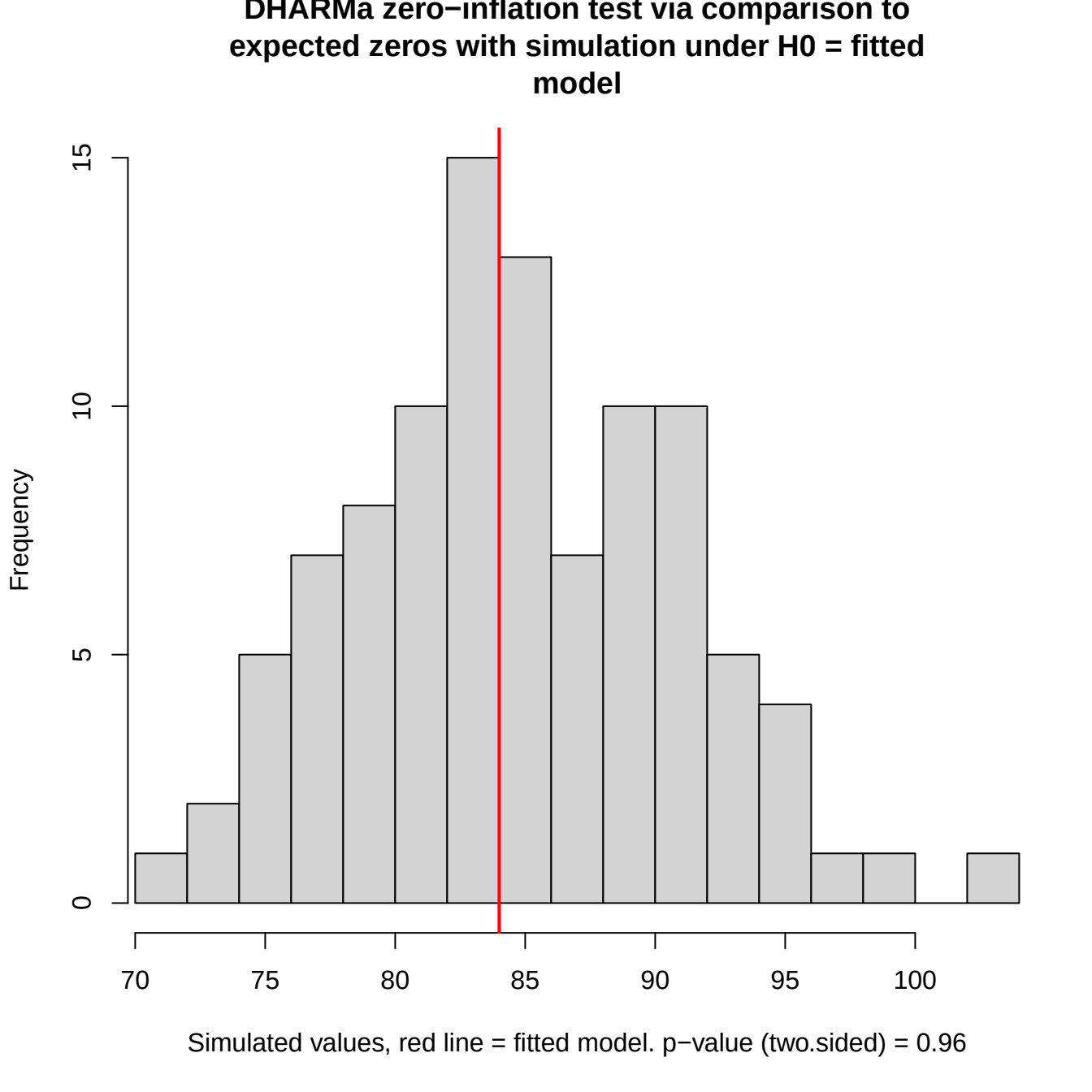

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
160
165
170
175
180
185
Simulated values, red line = fitted model. p−value (two.sided) = 0

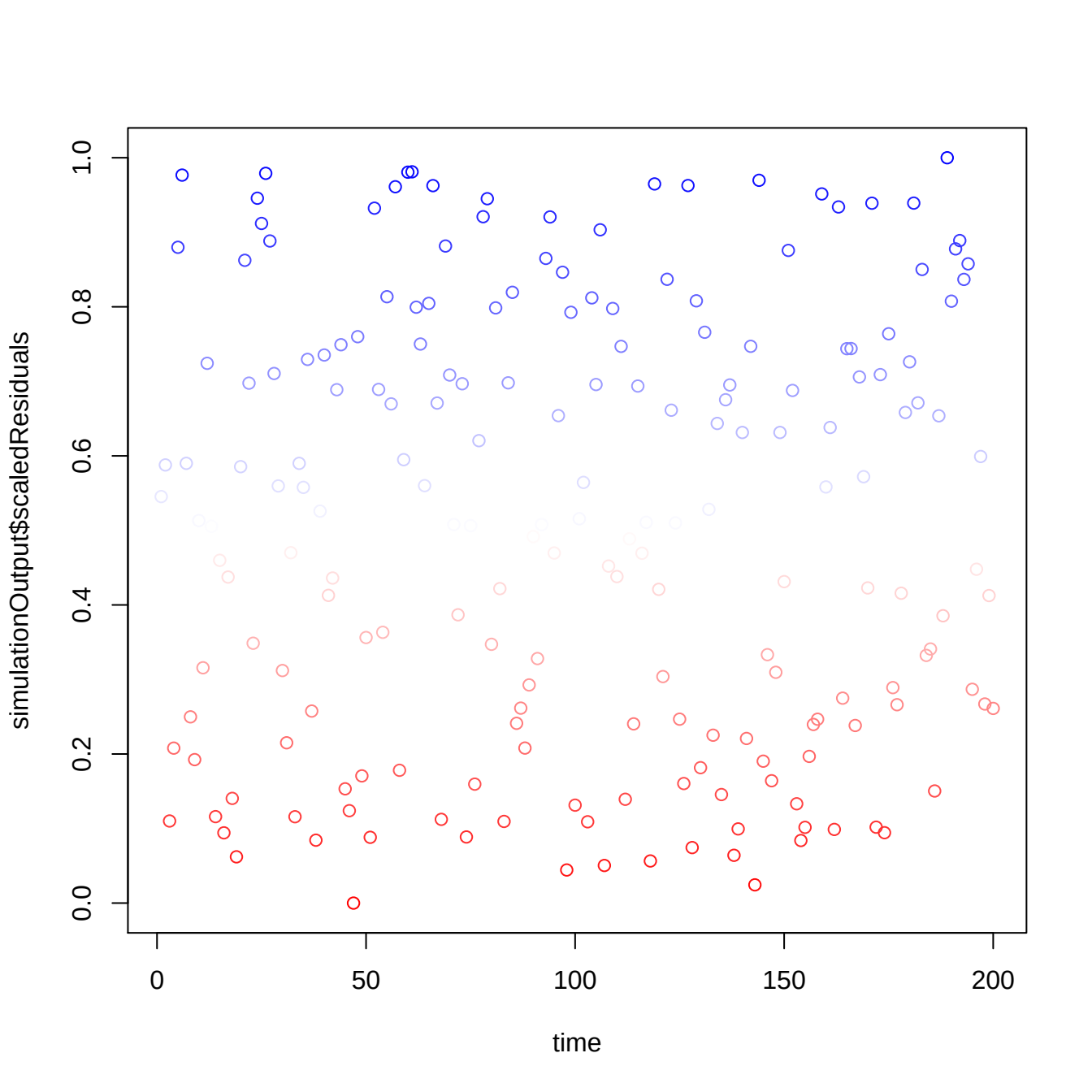

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

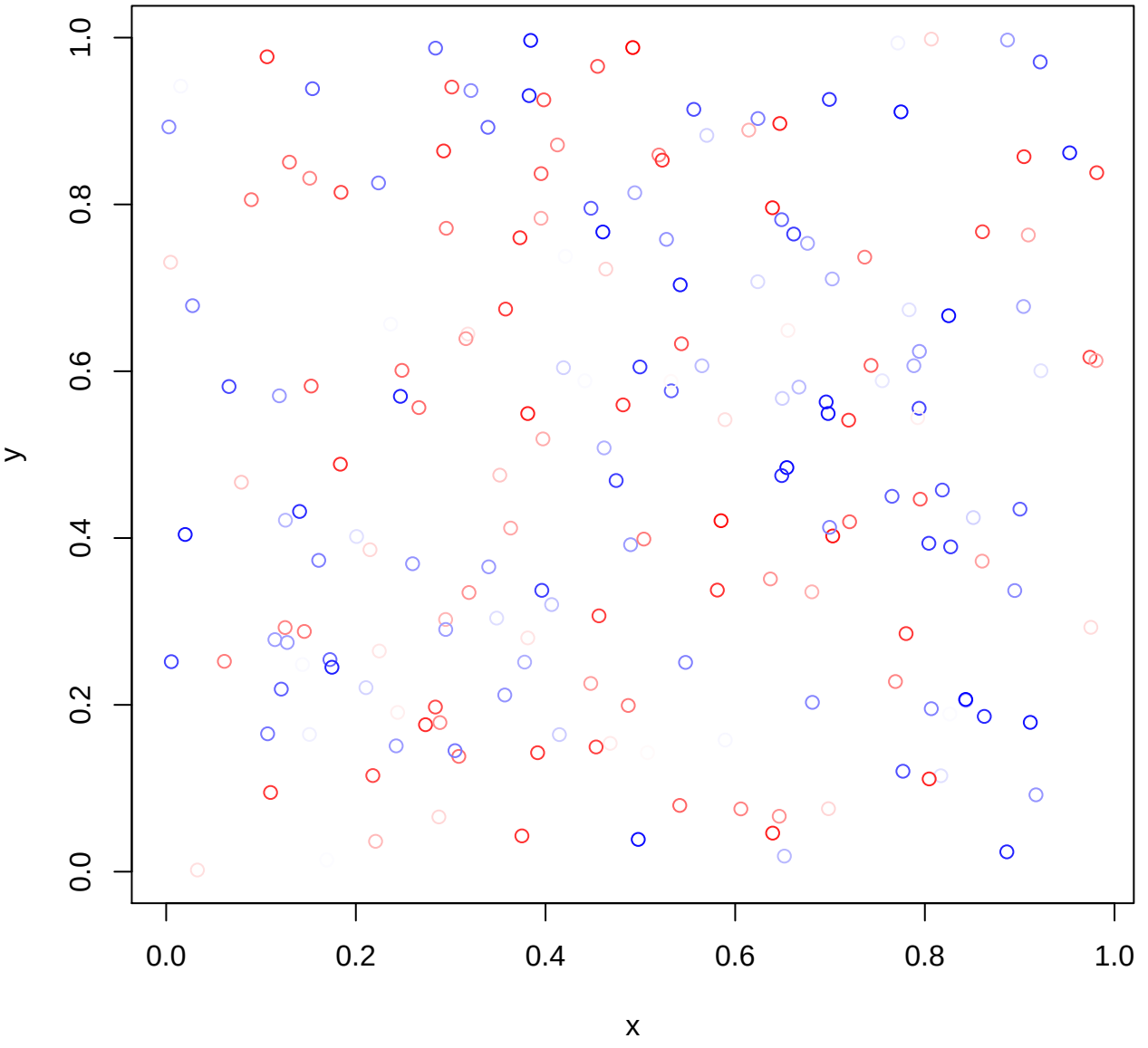

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

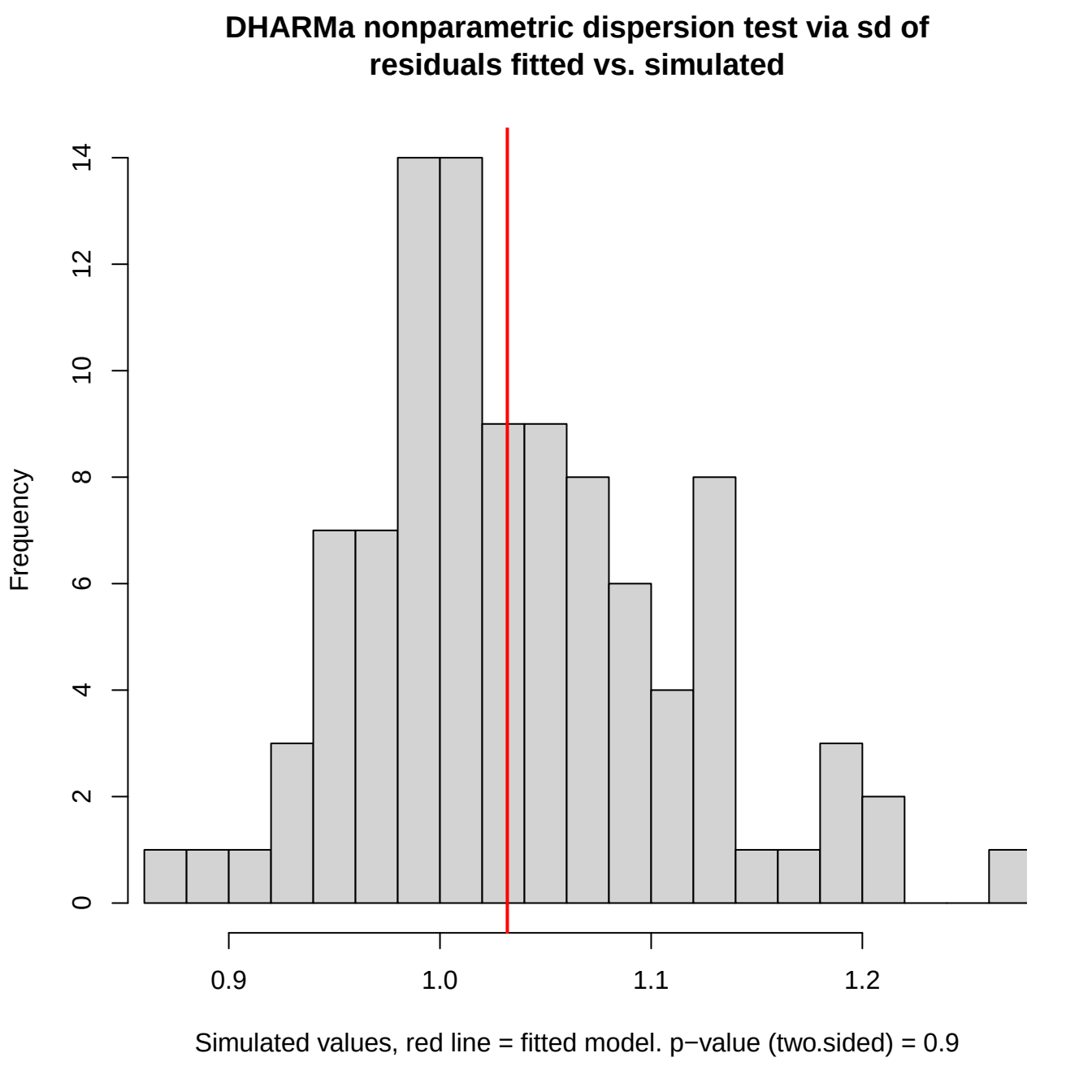

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

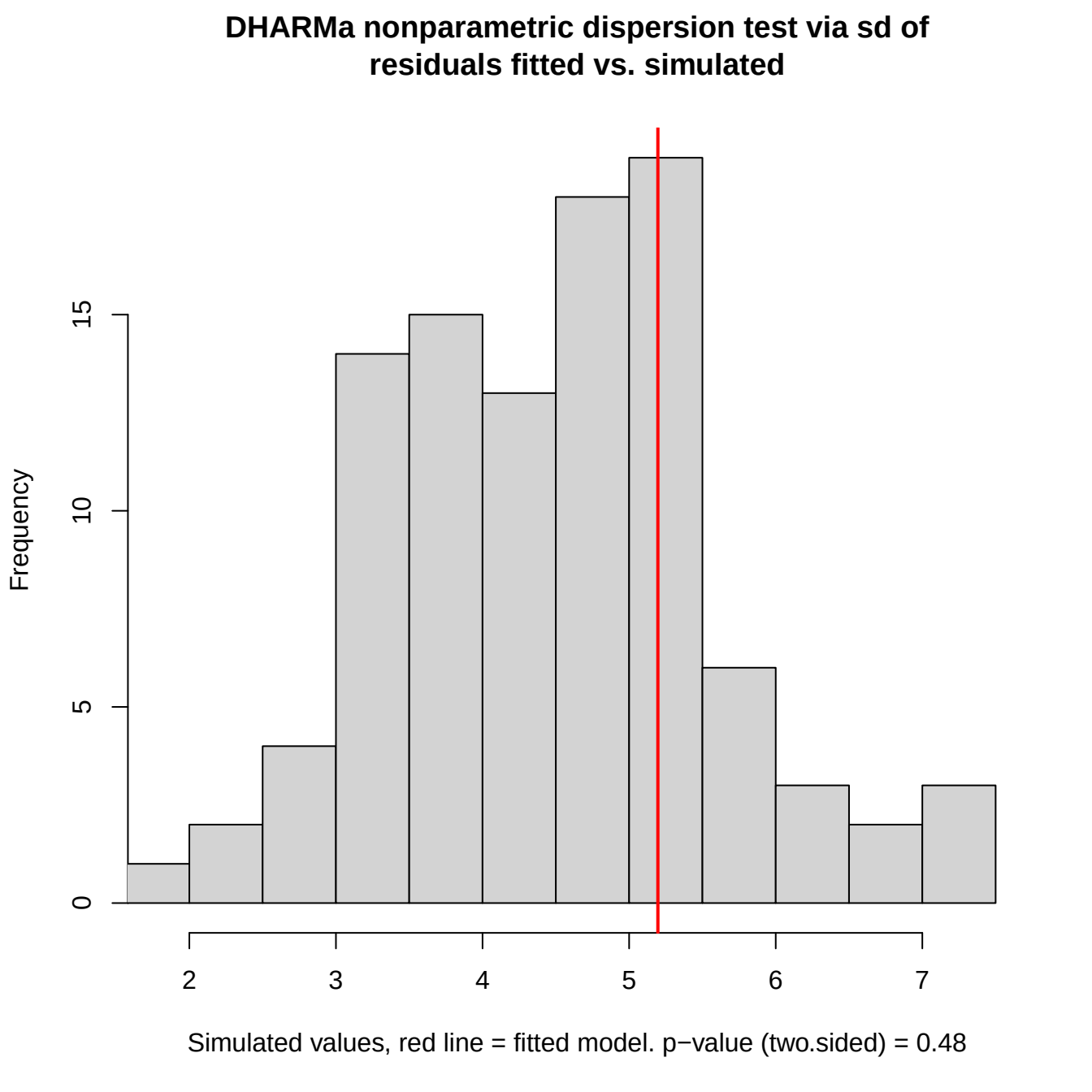

QQ plot residuals
KS test: p= 0.83444
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

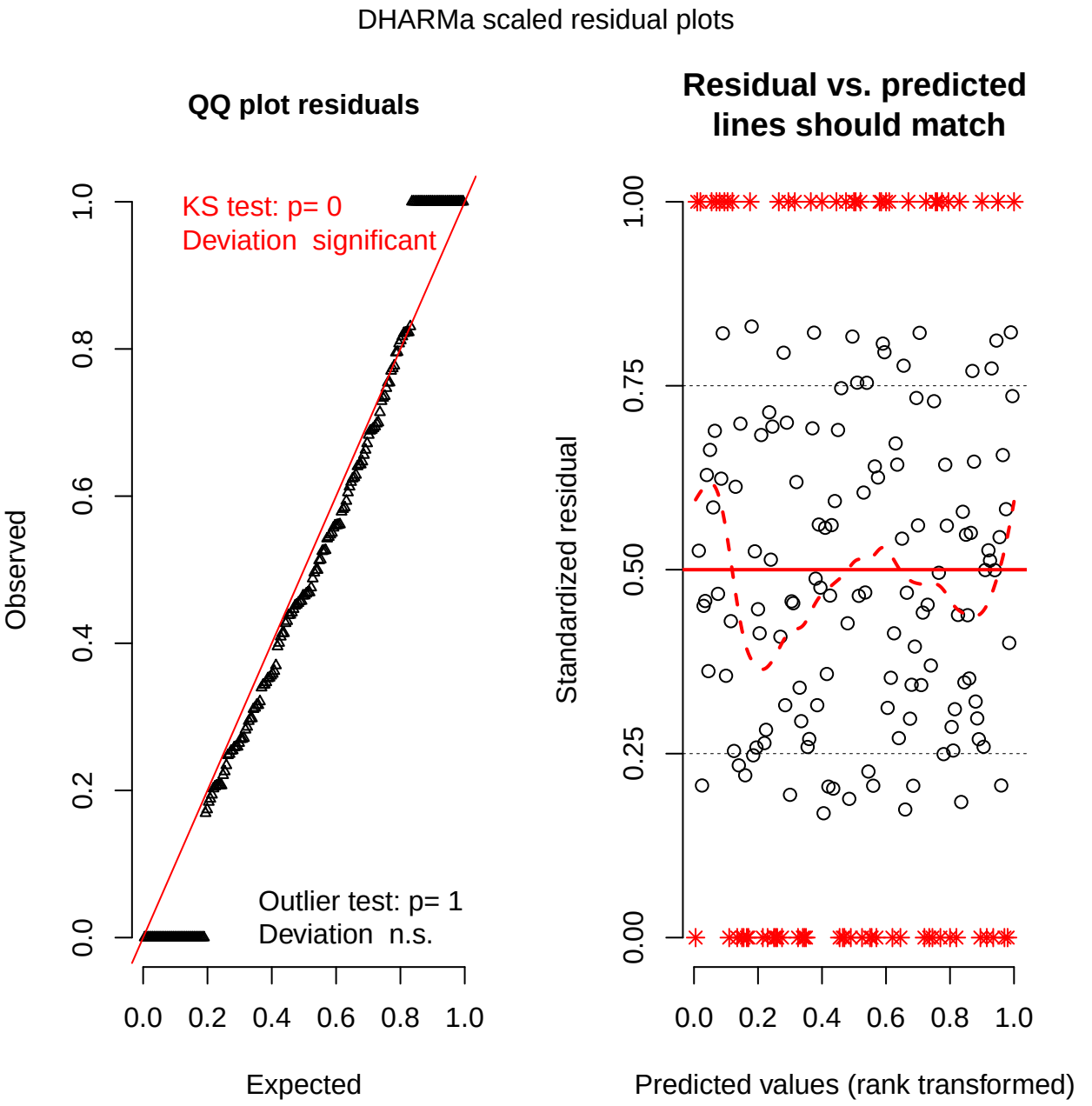

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
70
75
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

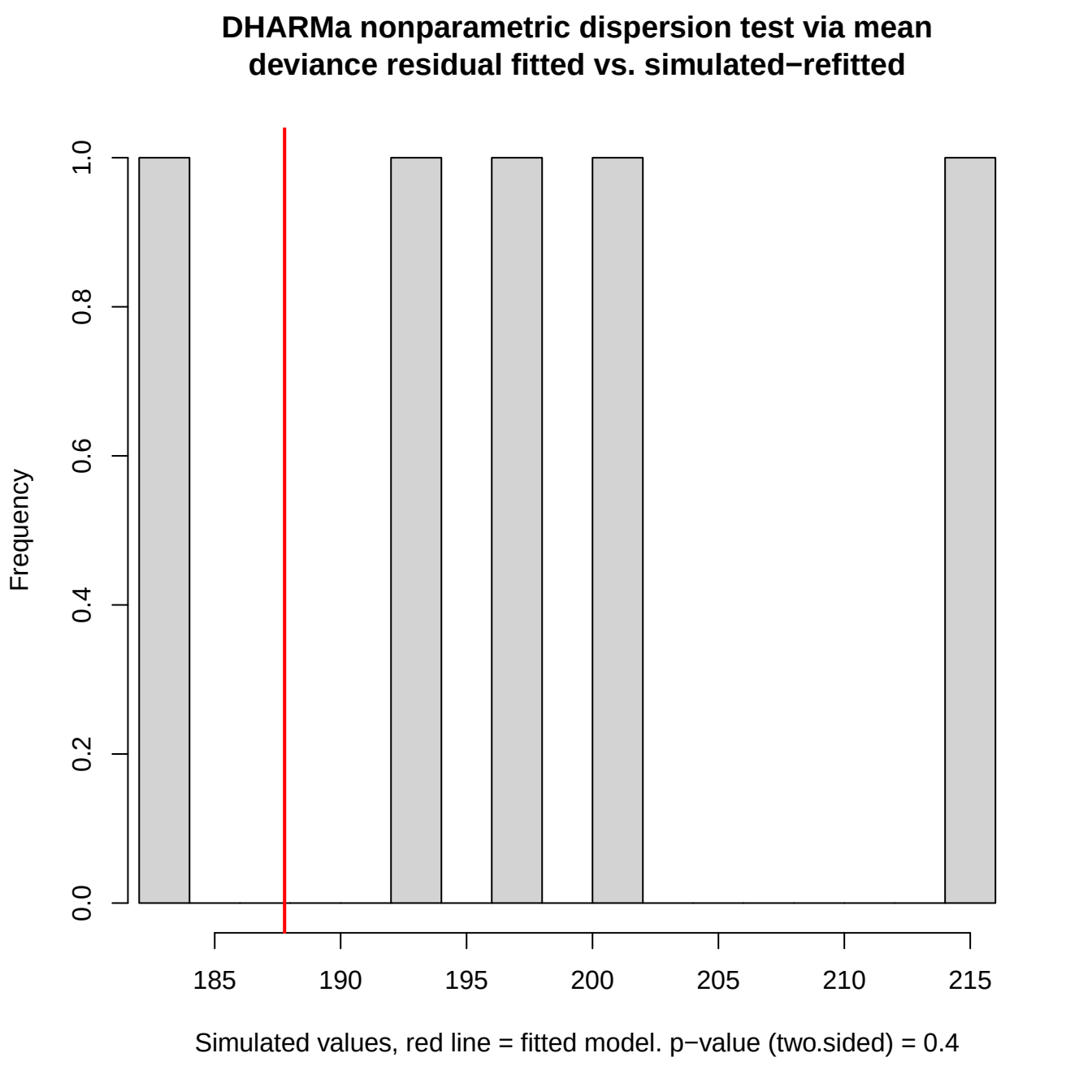

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

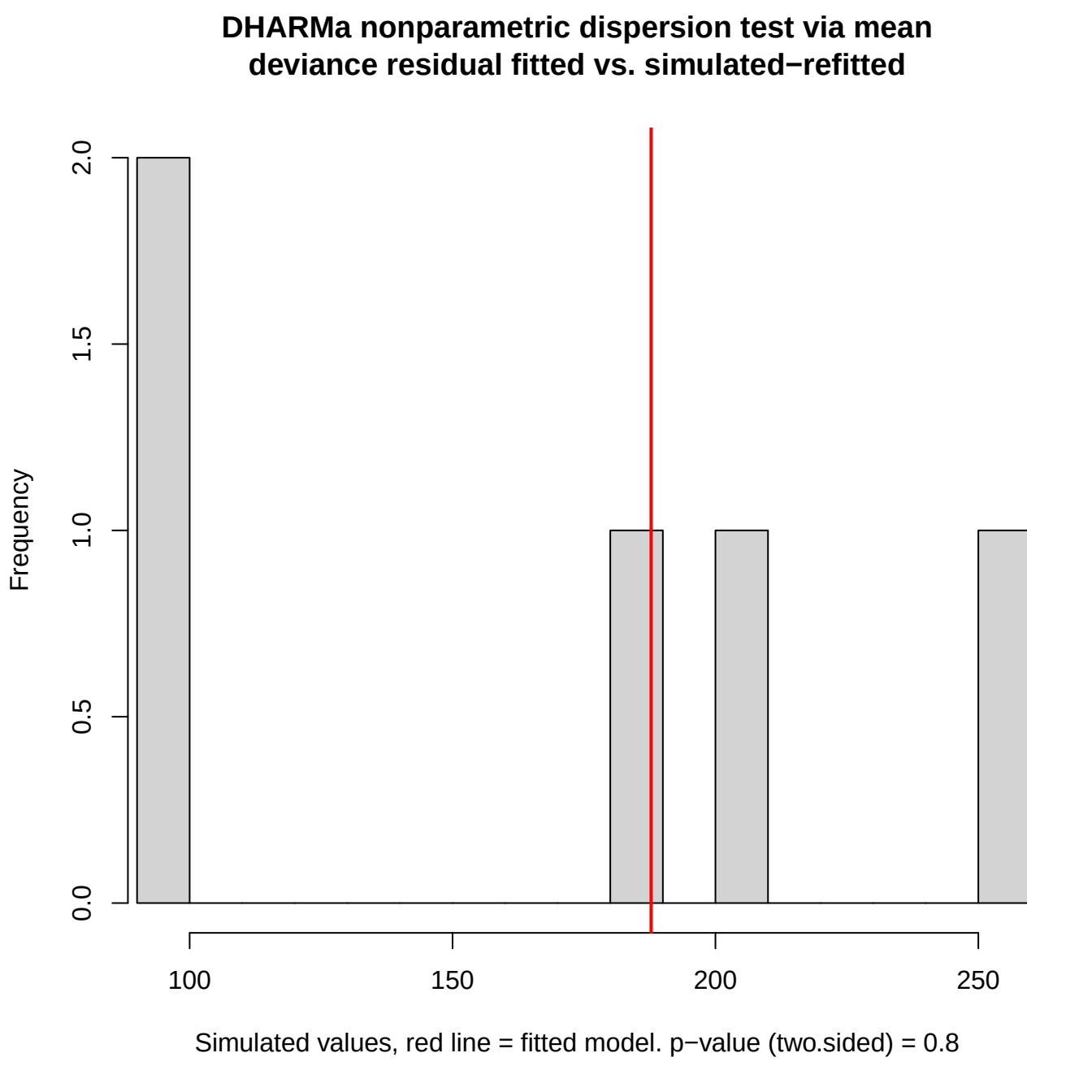

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

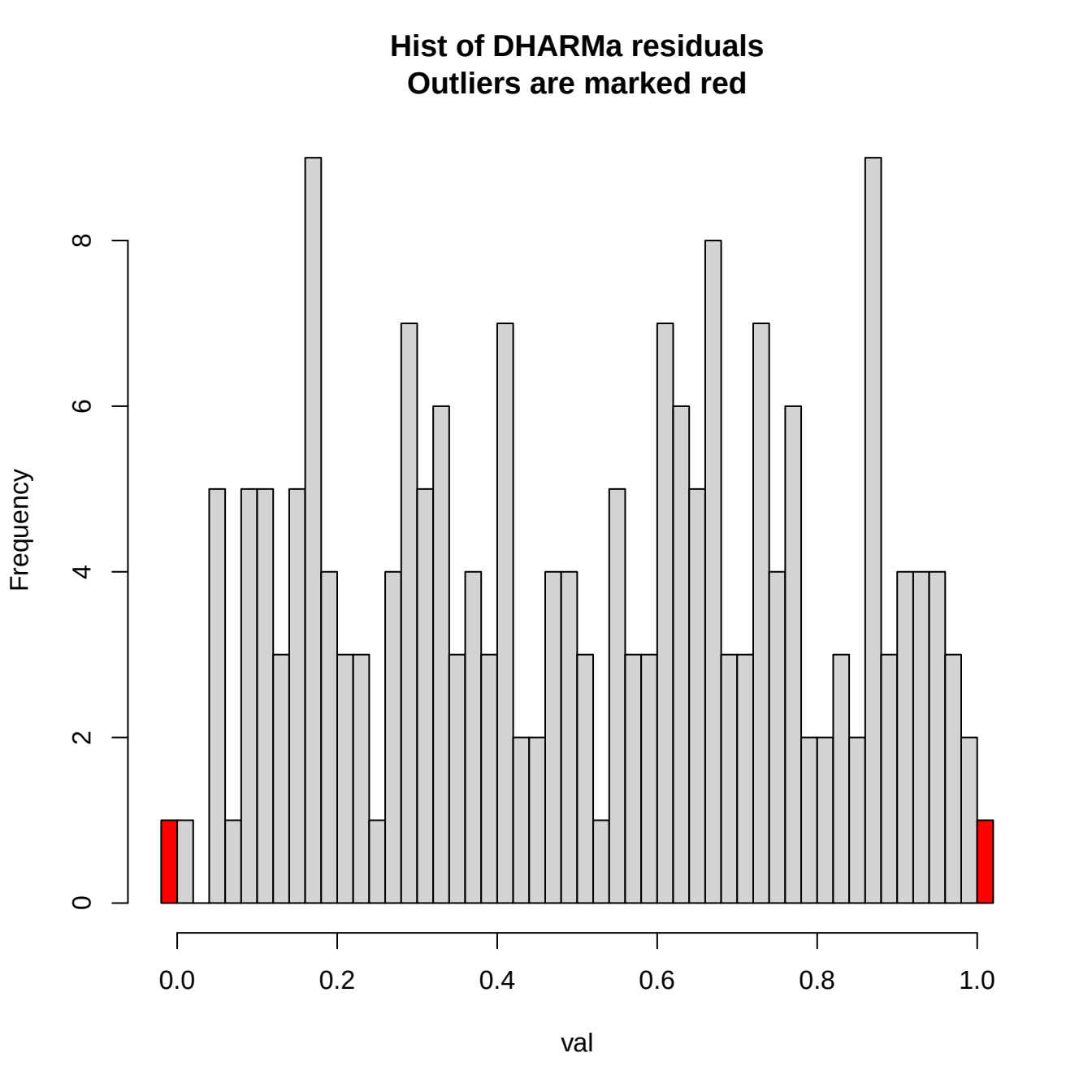

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

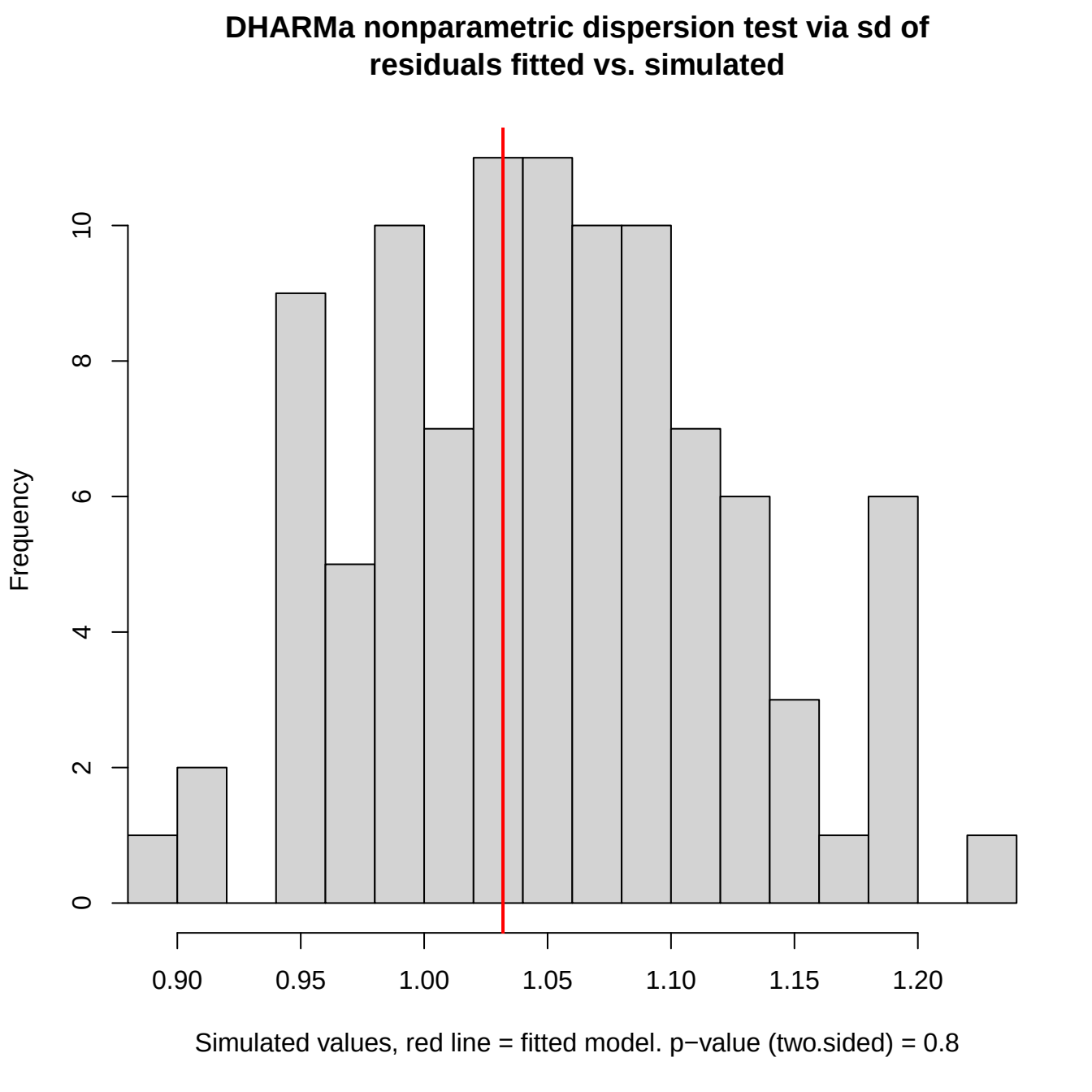

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
2
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.48

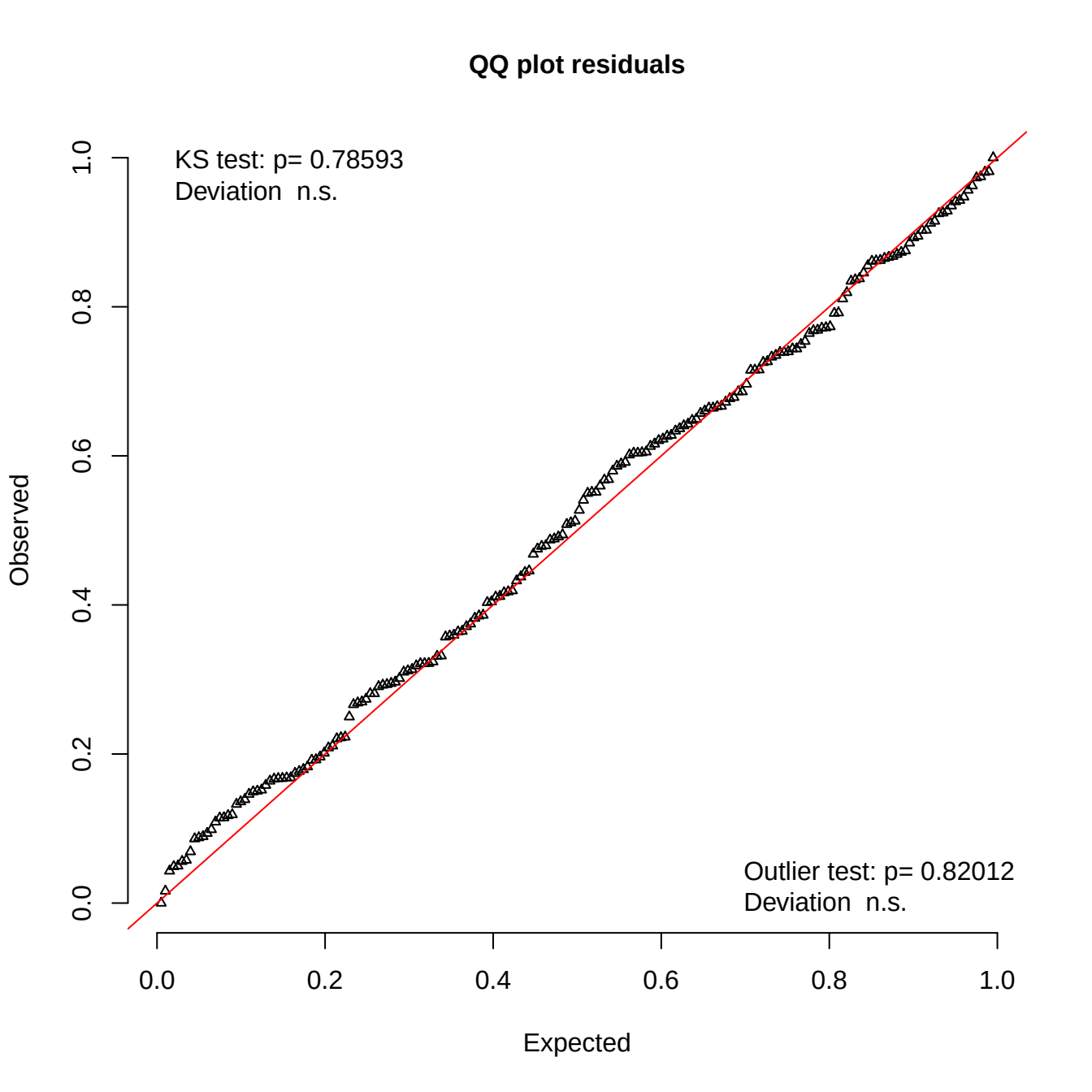

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

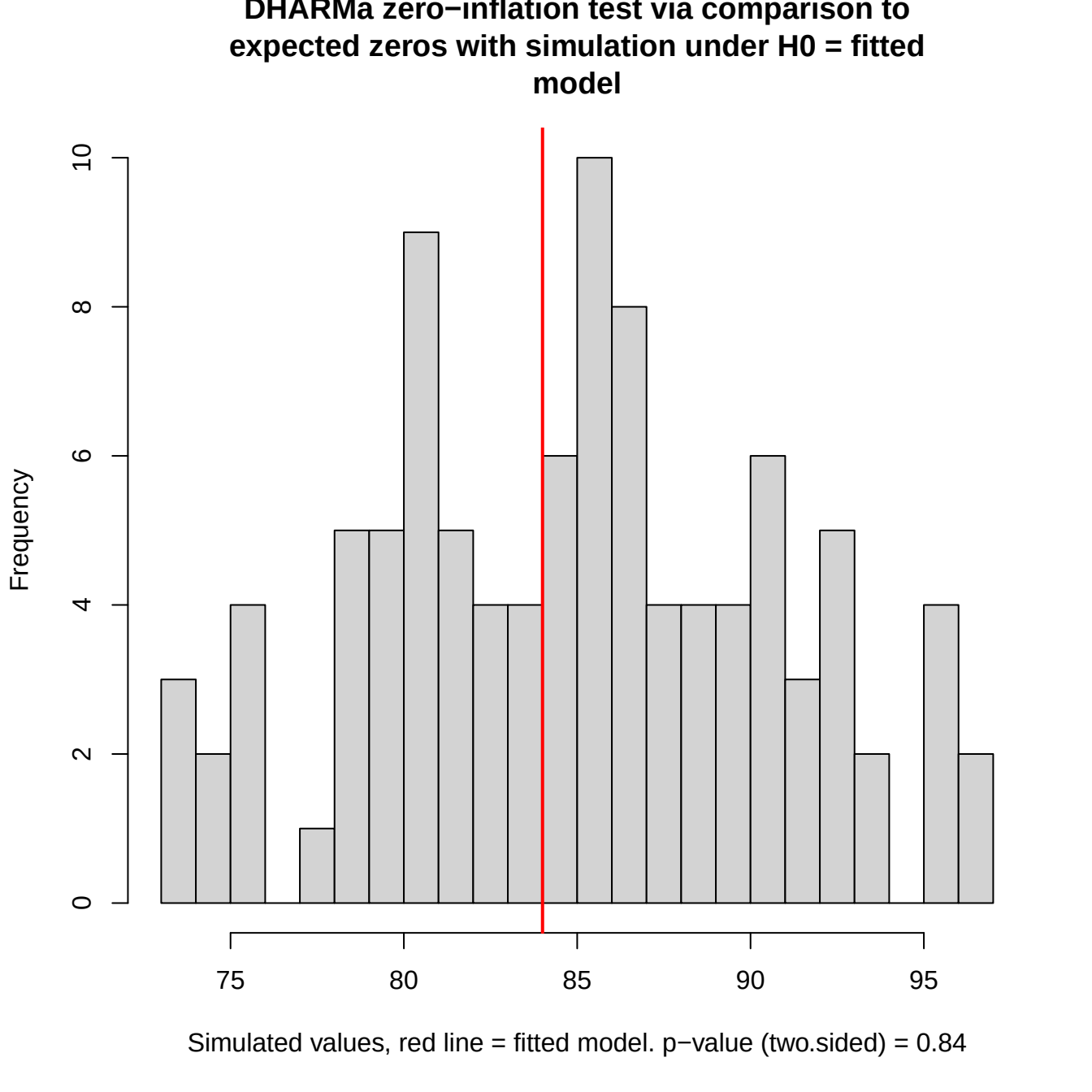

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
185
190
195
200
205
210
215
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

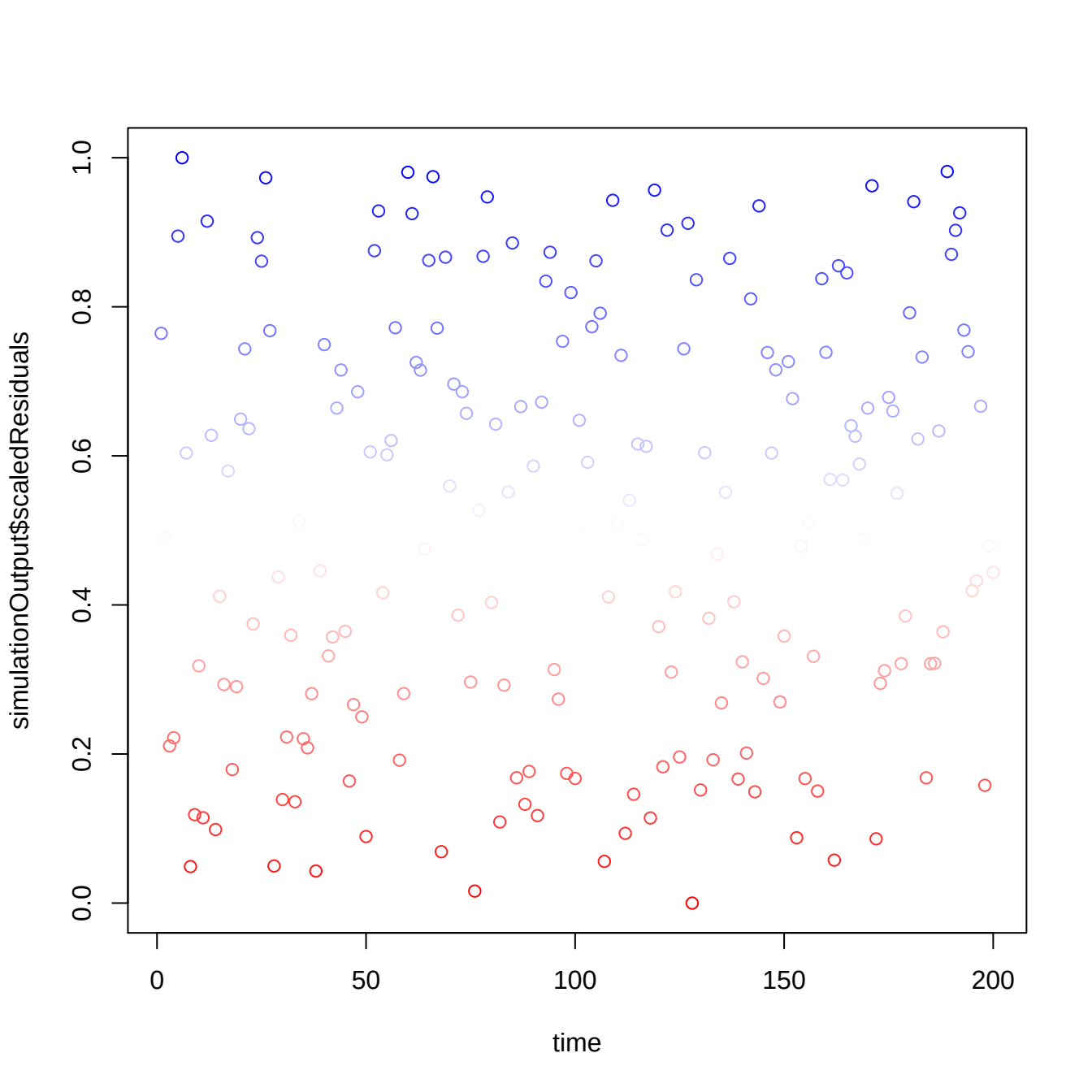

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
150
200
250
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

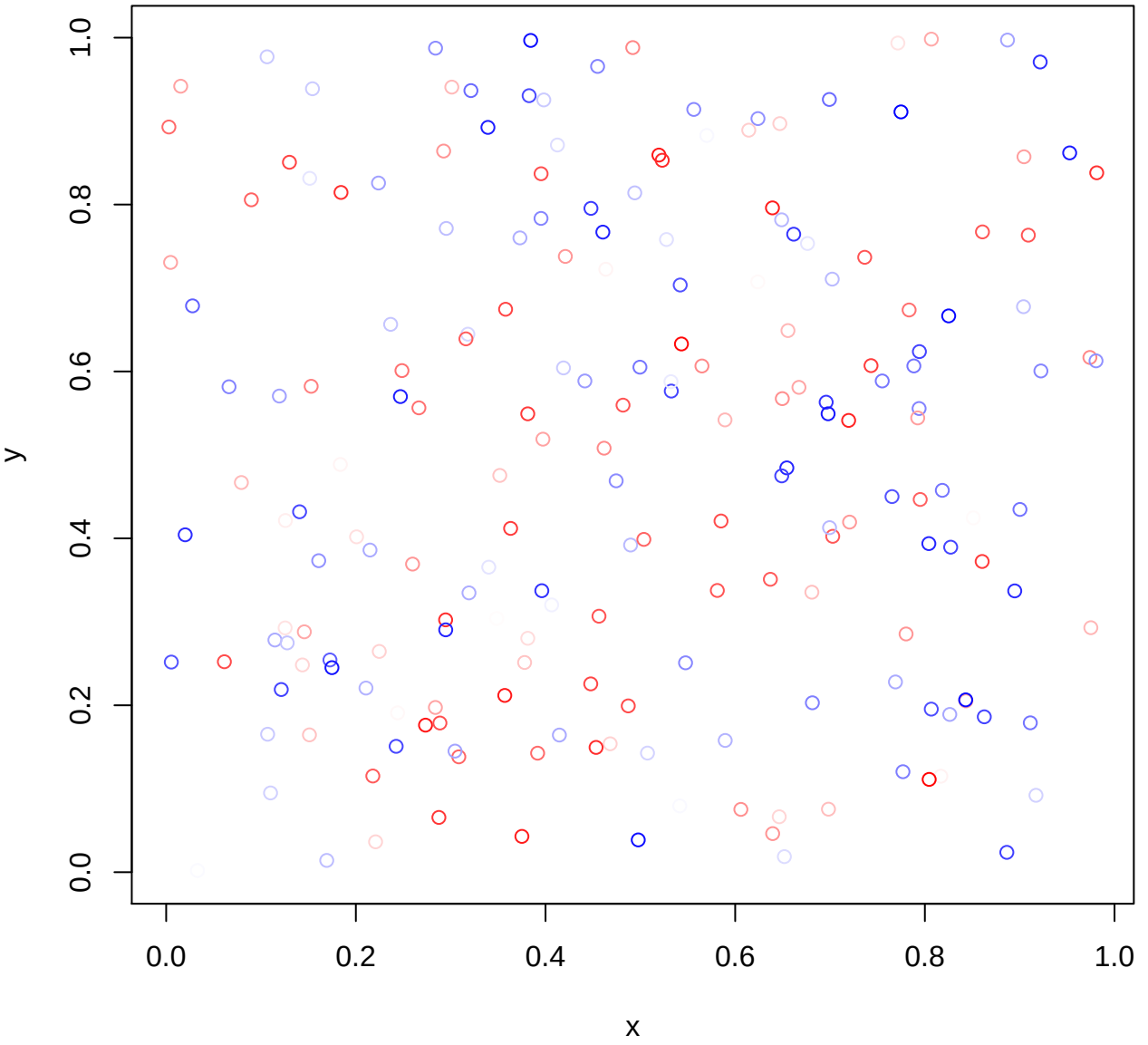

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

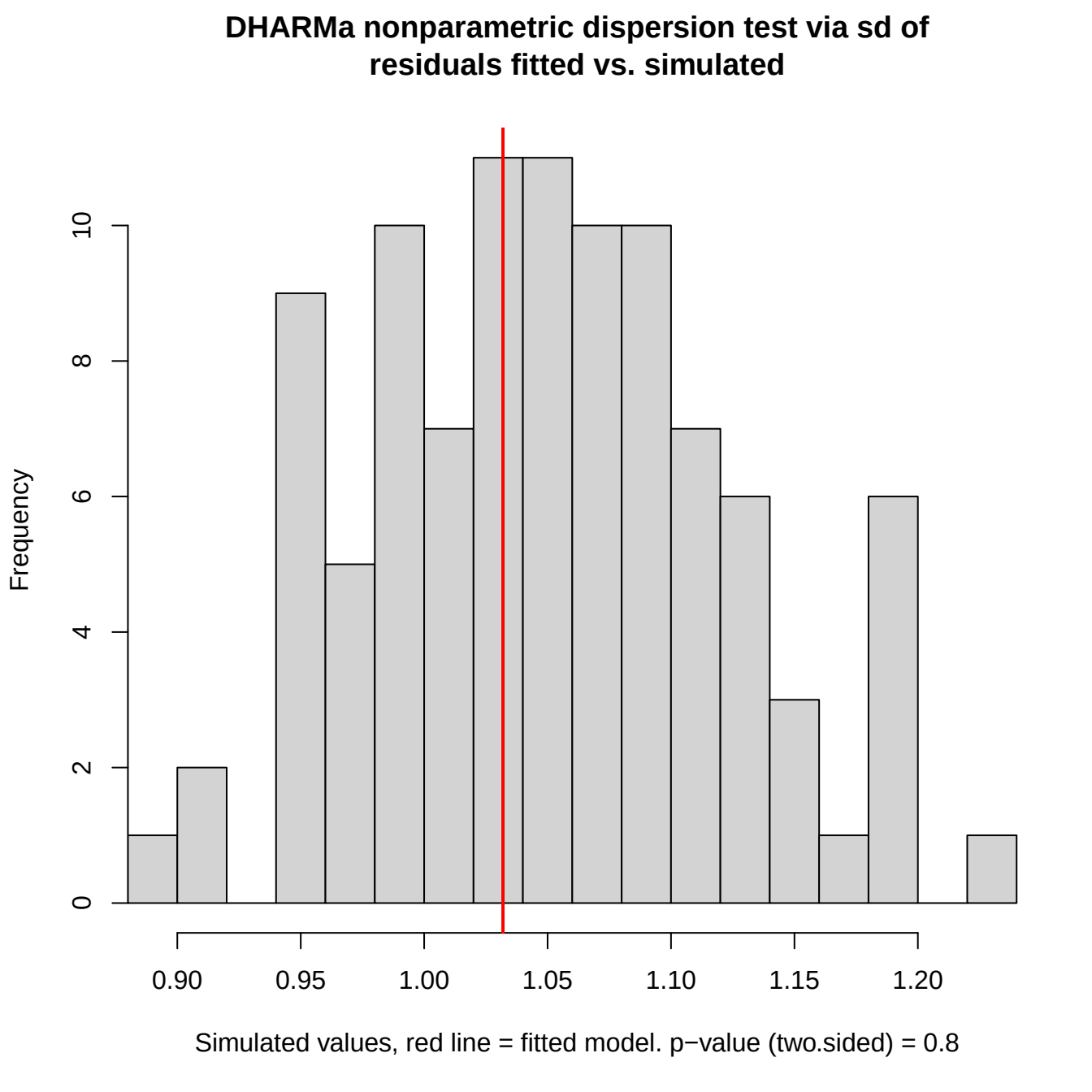

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.90
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

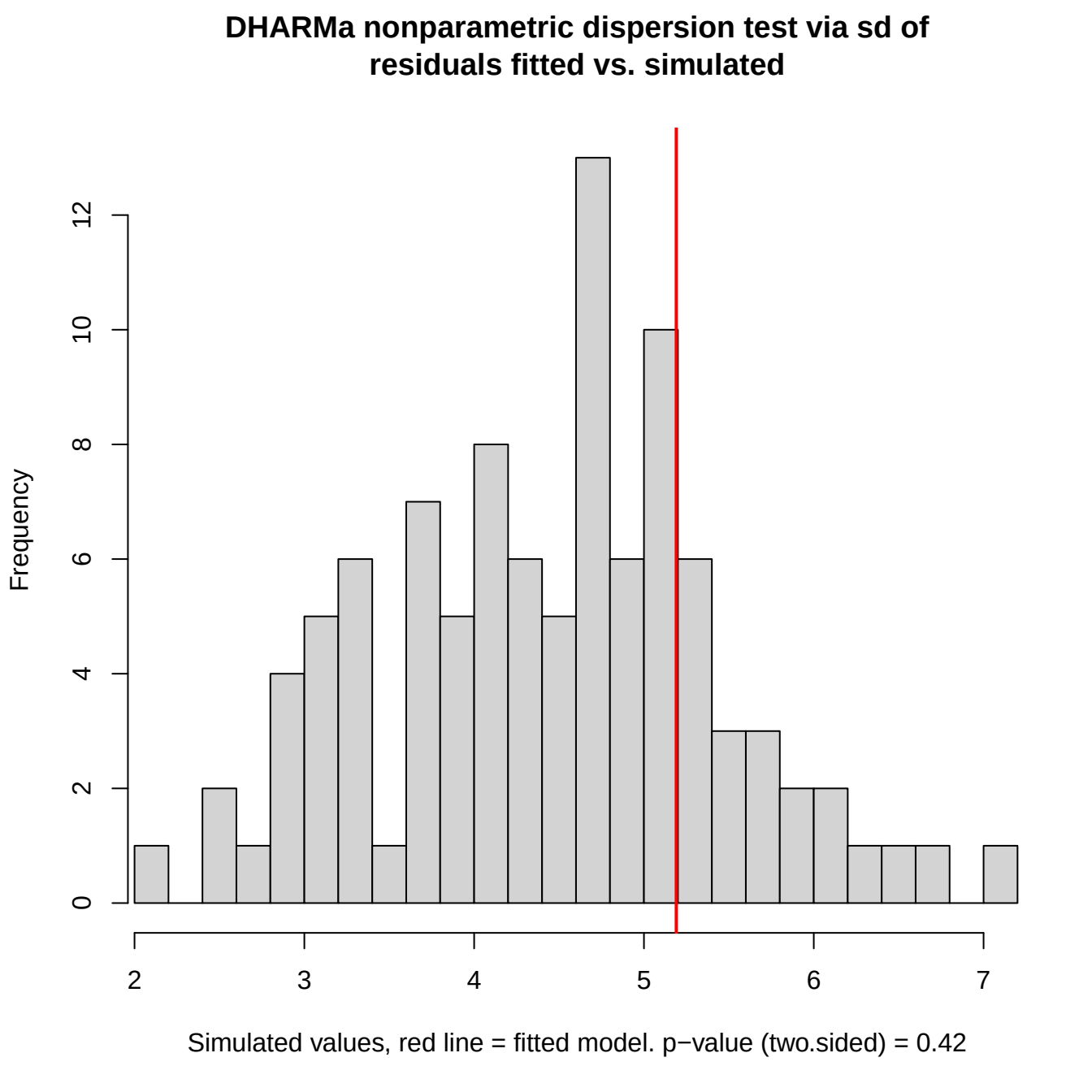

QQ plot residuals
KS test: p= 0.78593
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

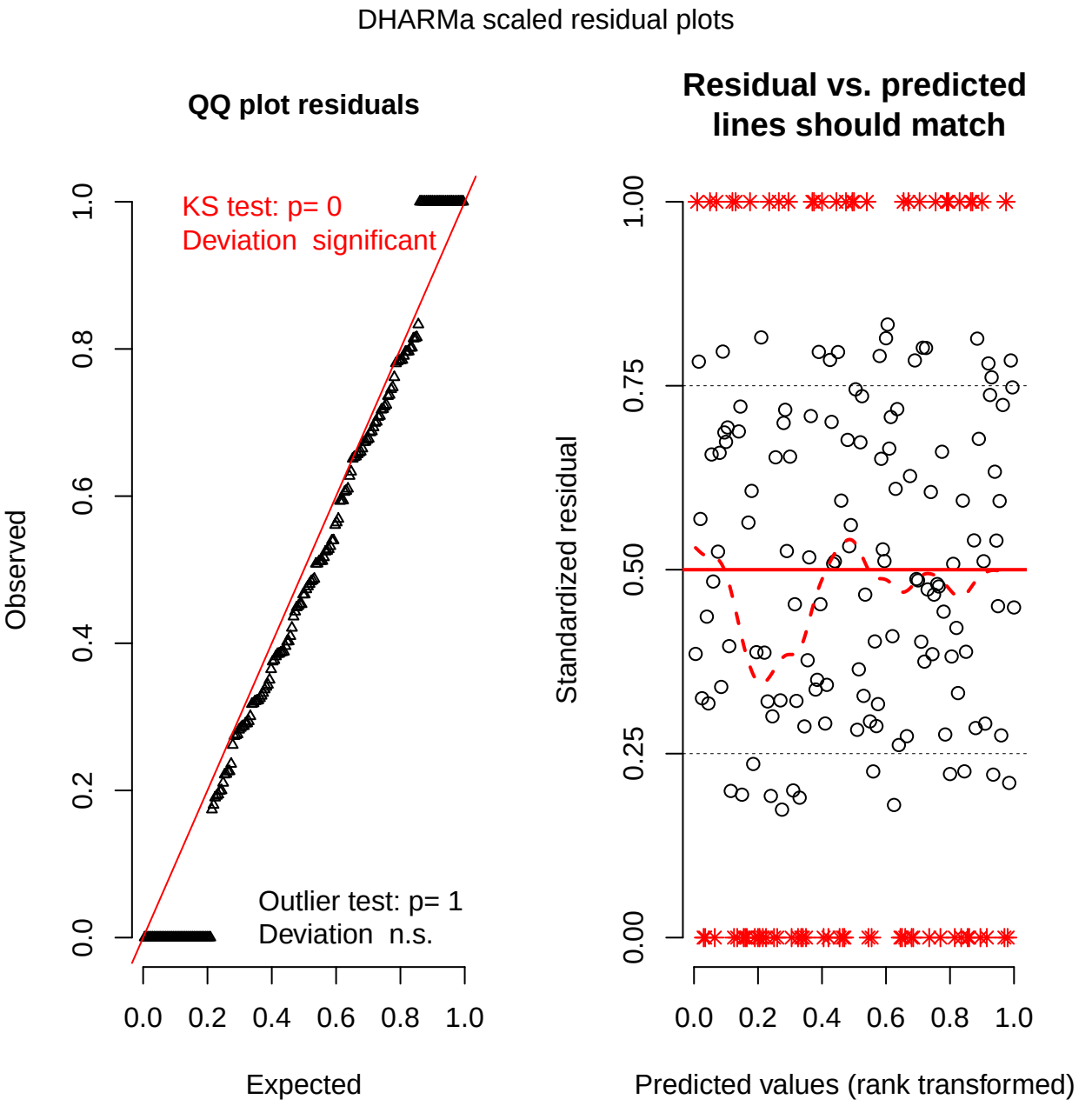

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
75
80
85
90
95
Simulated values, red line = fitted model. p−value (two.sided) = 0.84

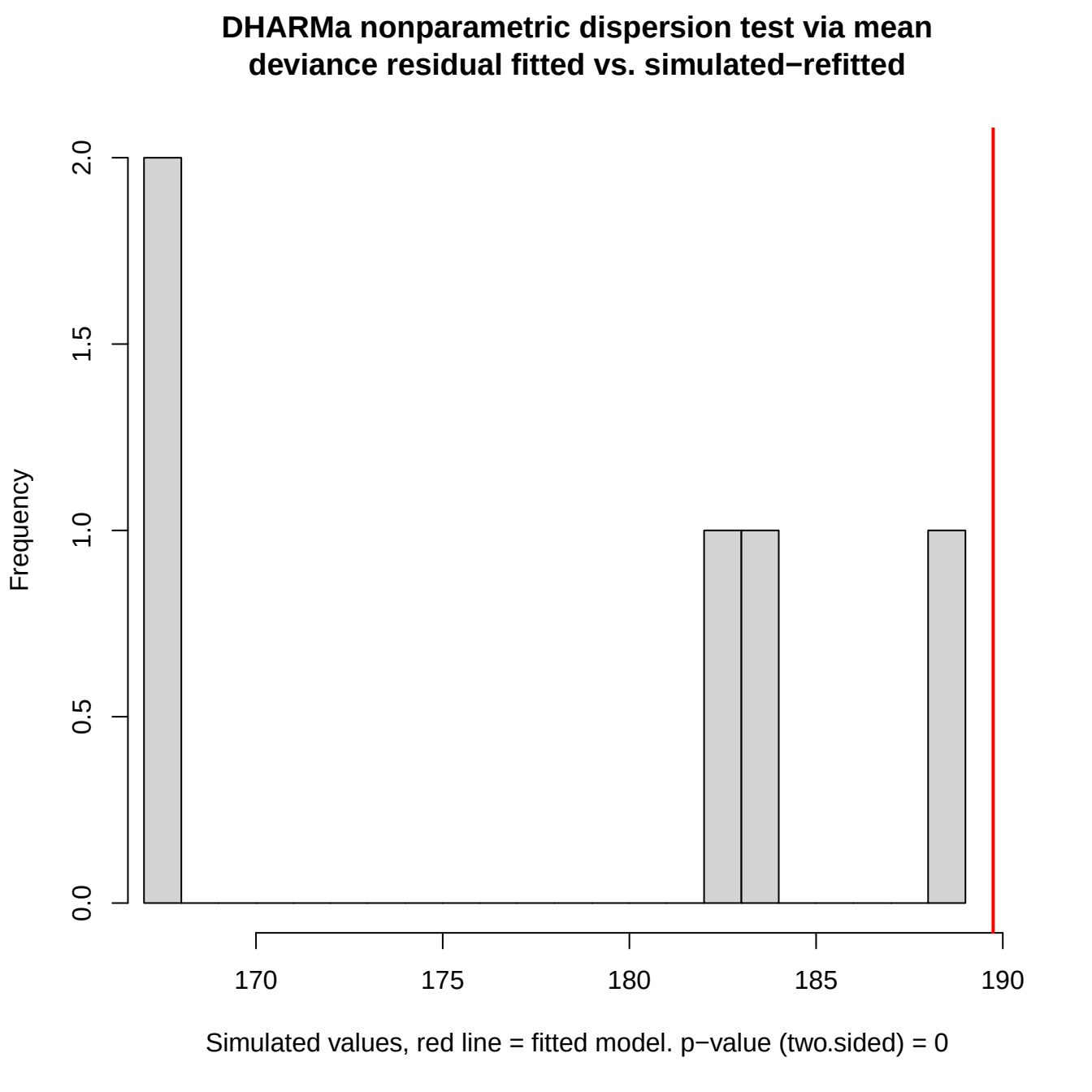

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

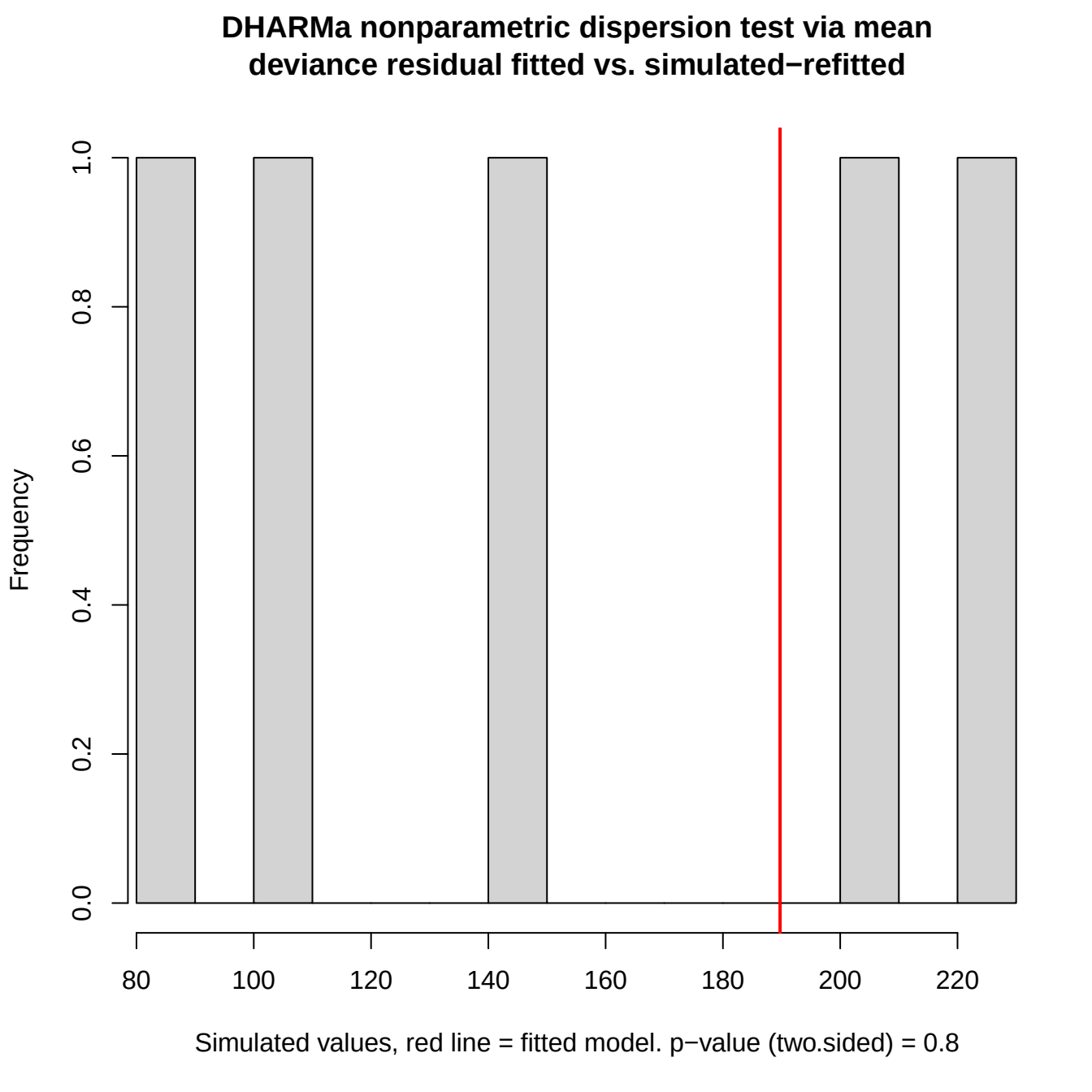

y
x
0.0
0.2
0.4
0.6
0.8
1.0

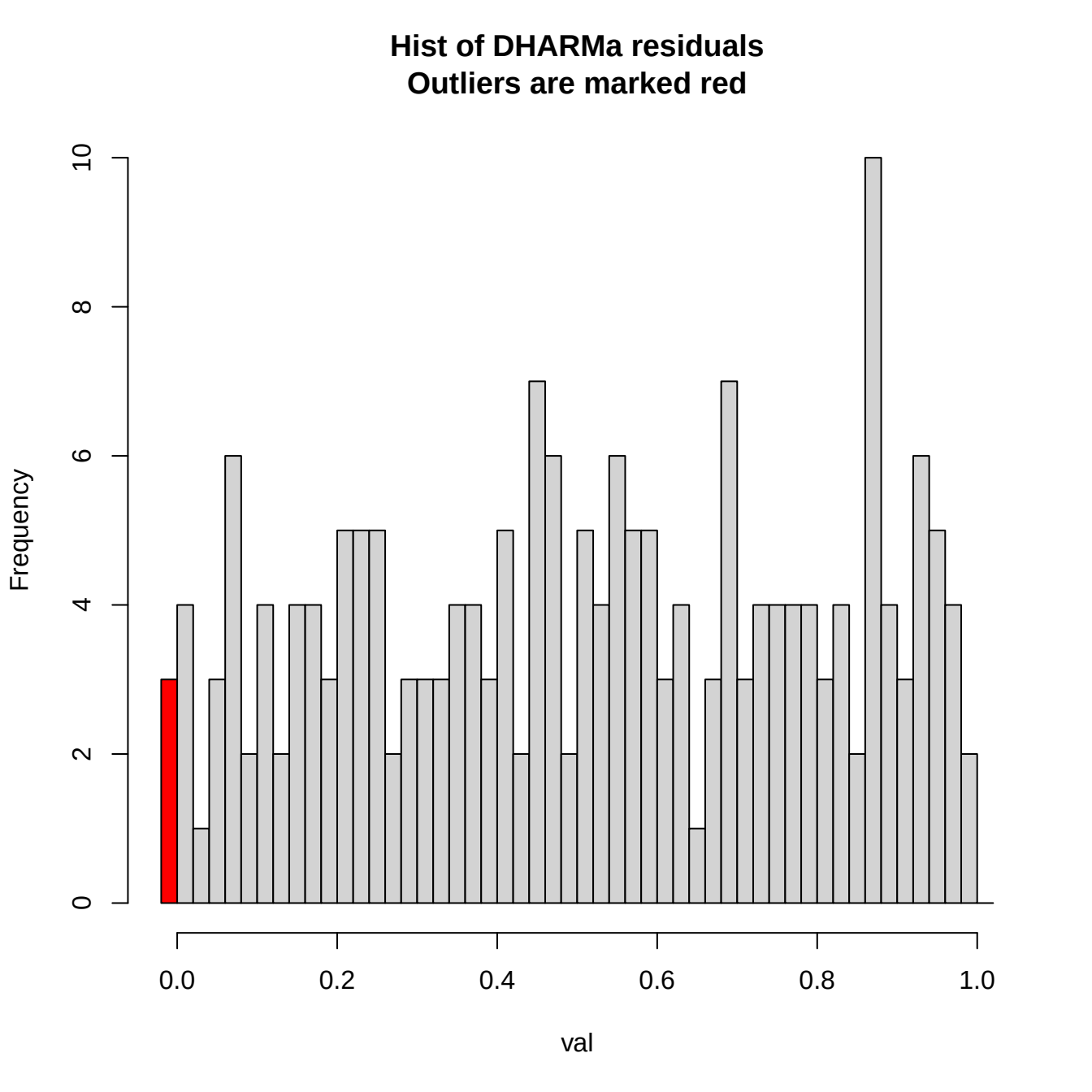

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
0.90
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

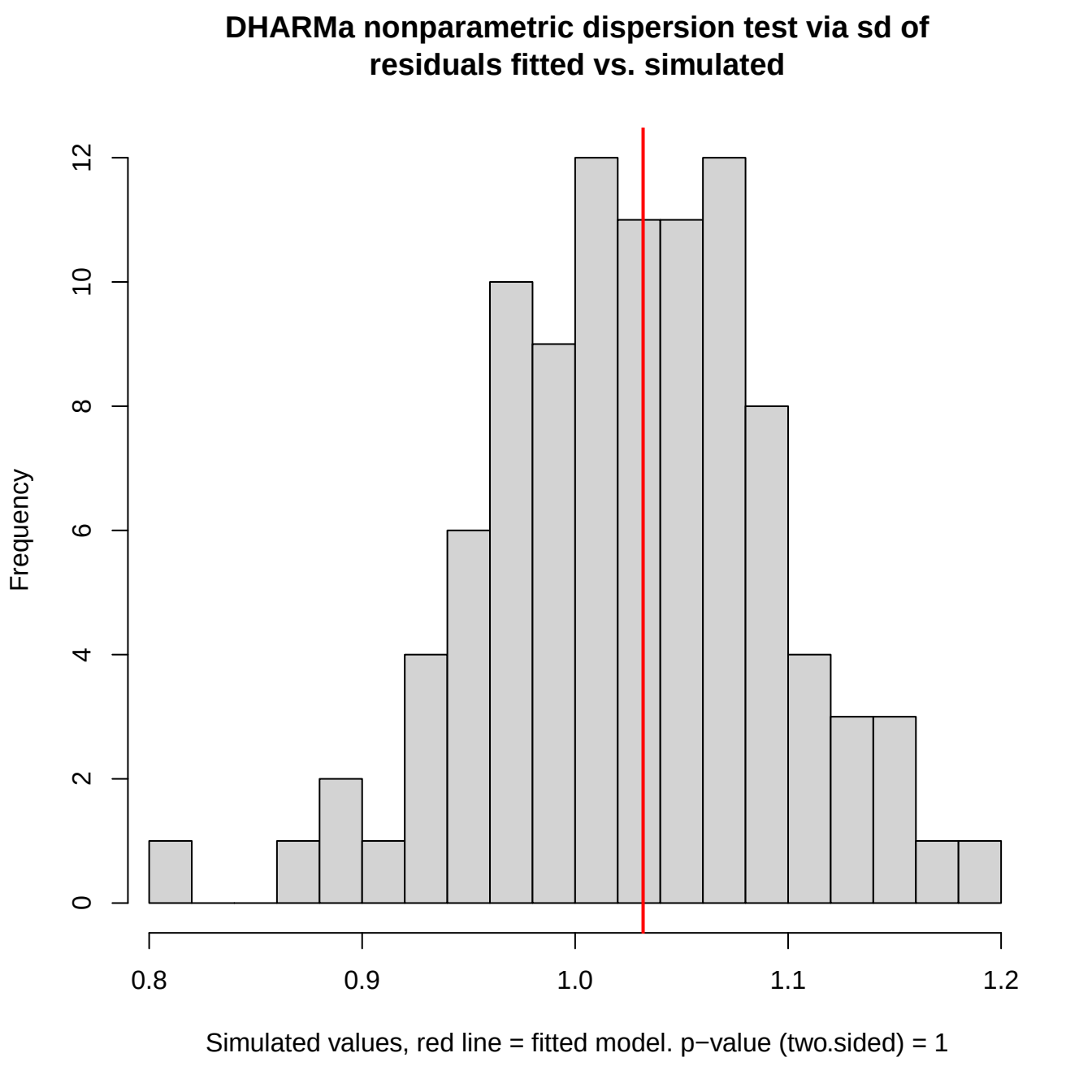

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.42

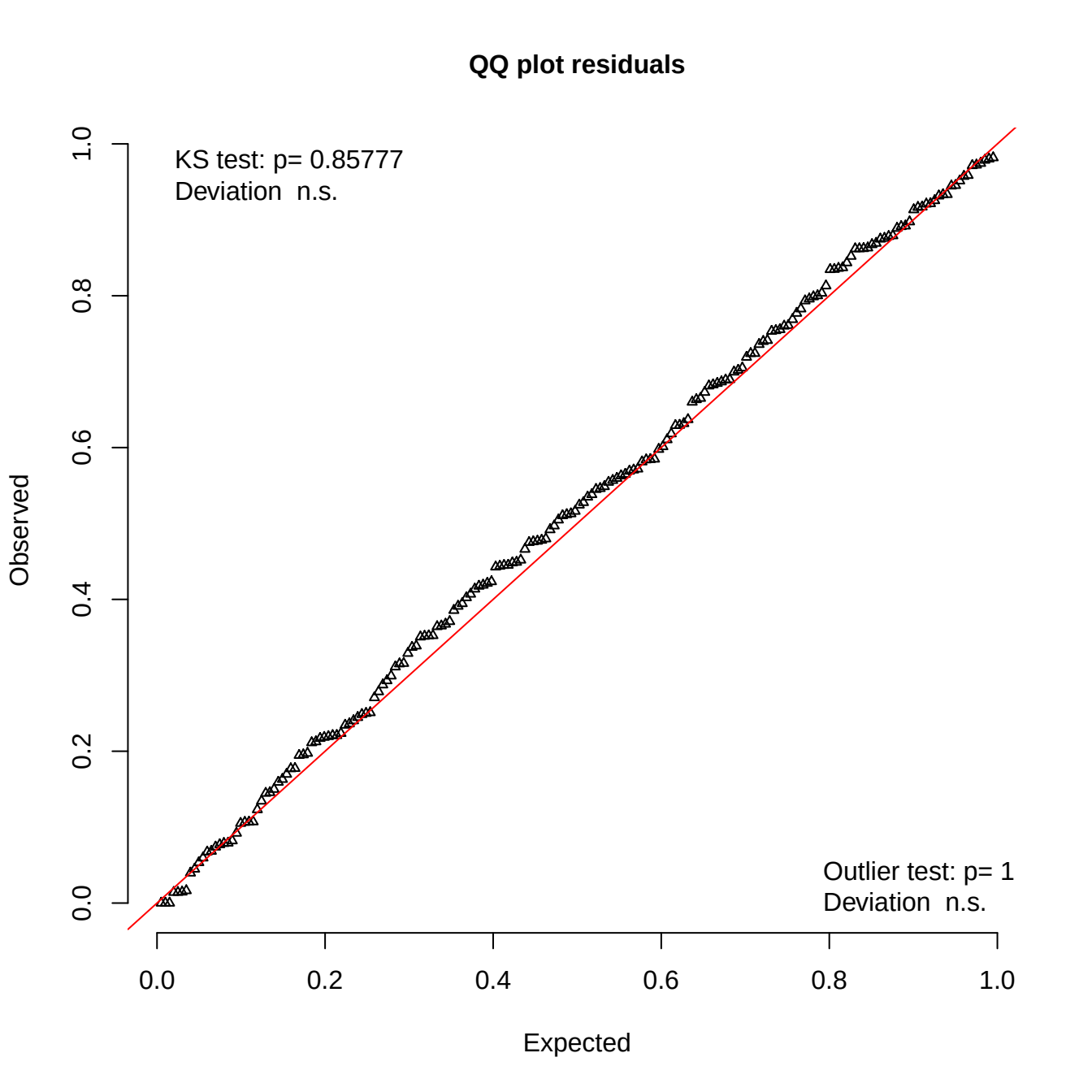

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

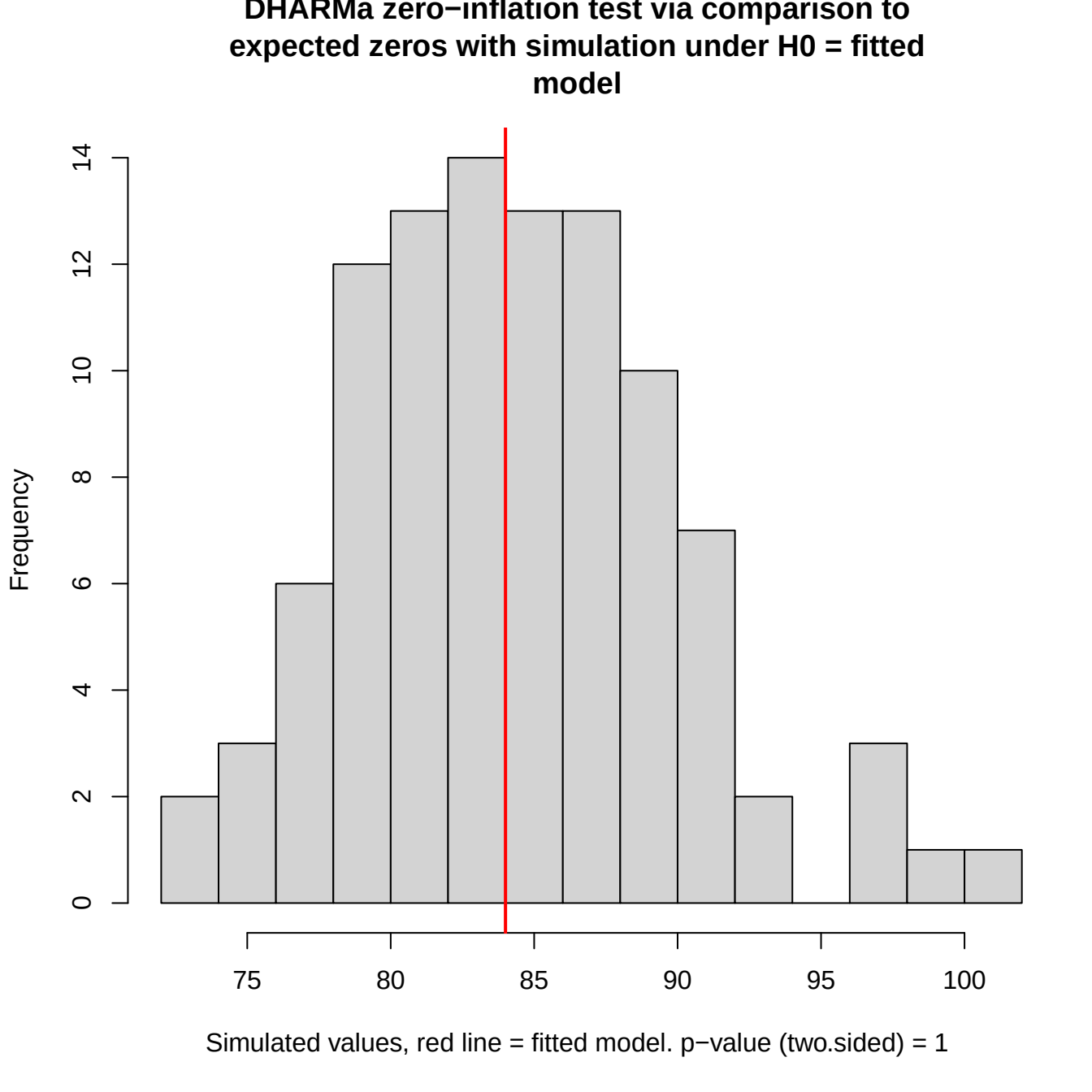

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
170
175
180
185
190
Simulated values, red line = fitted model. p−value (two.sided) = 0

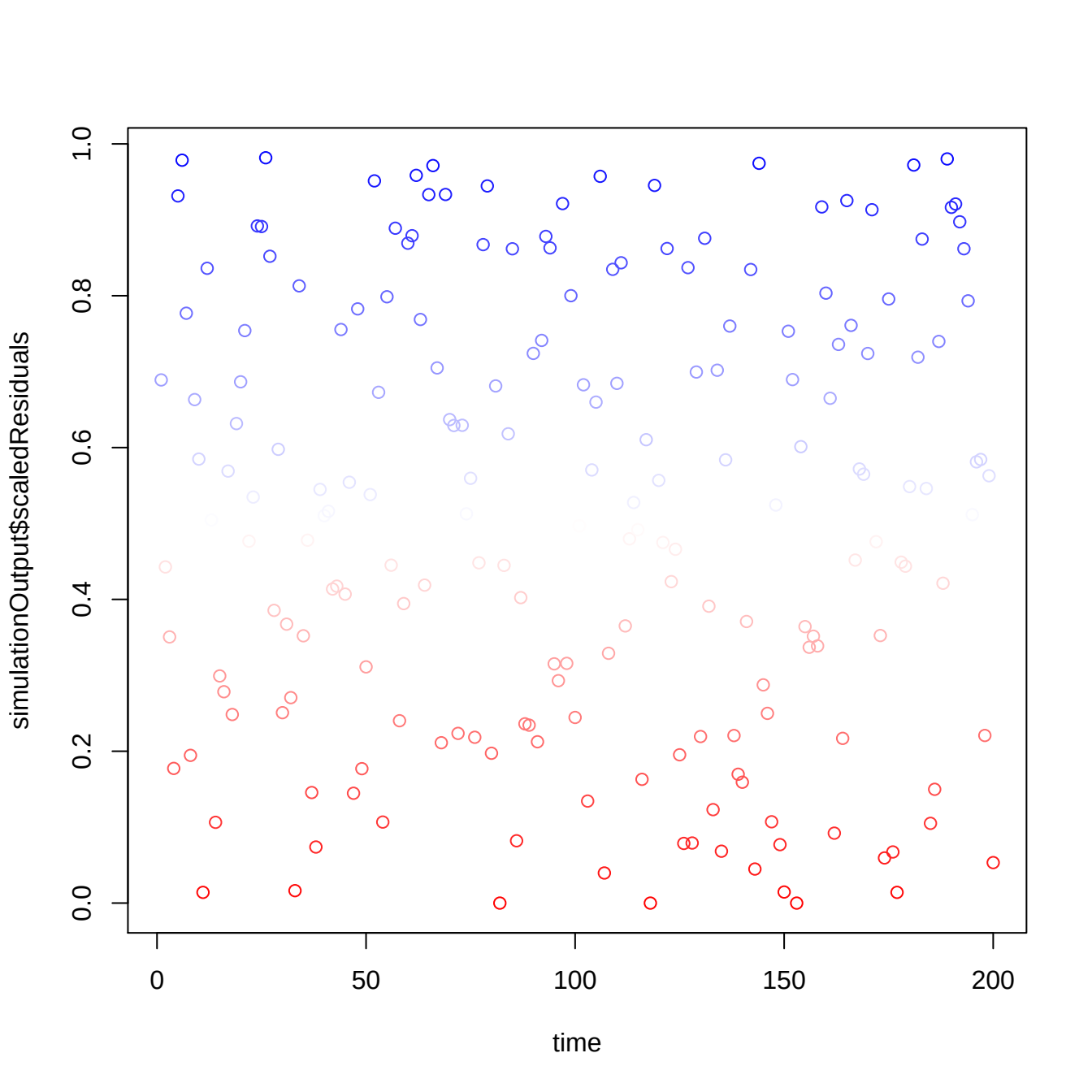

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

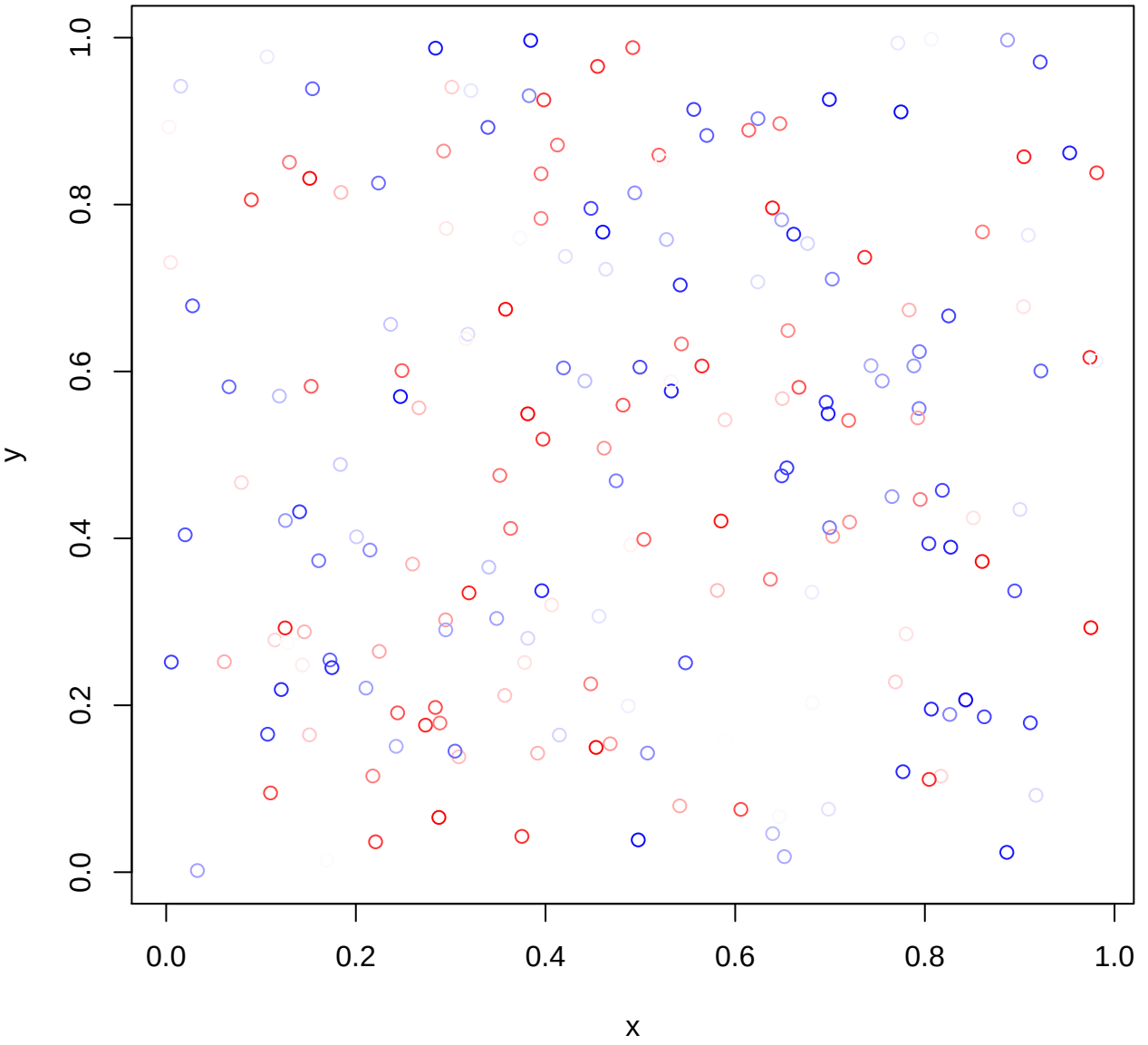

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

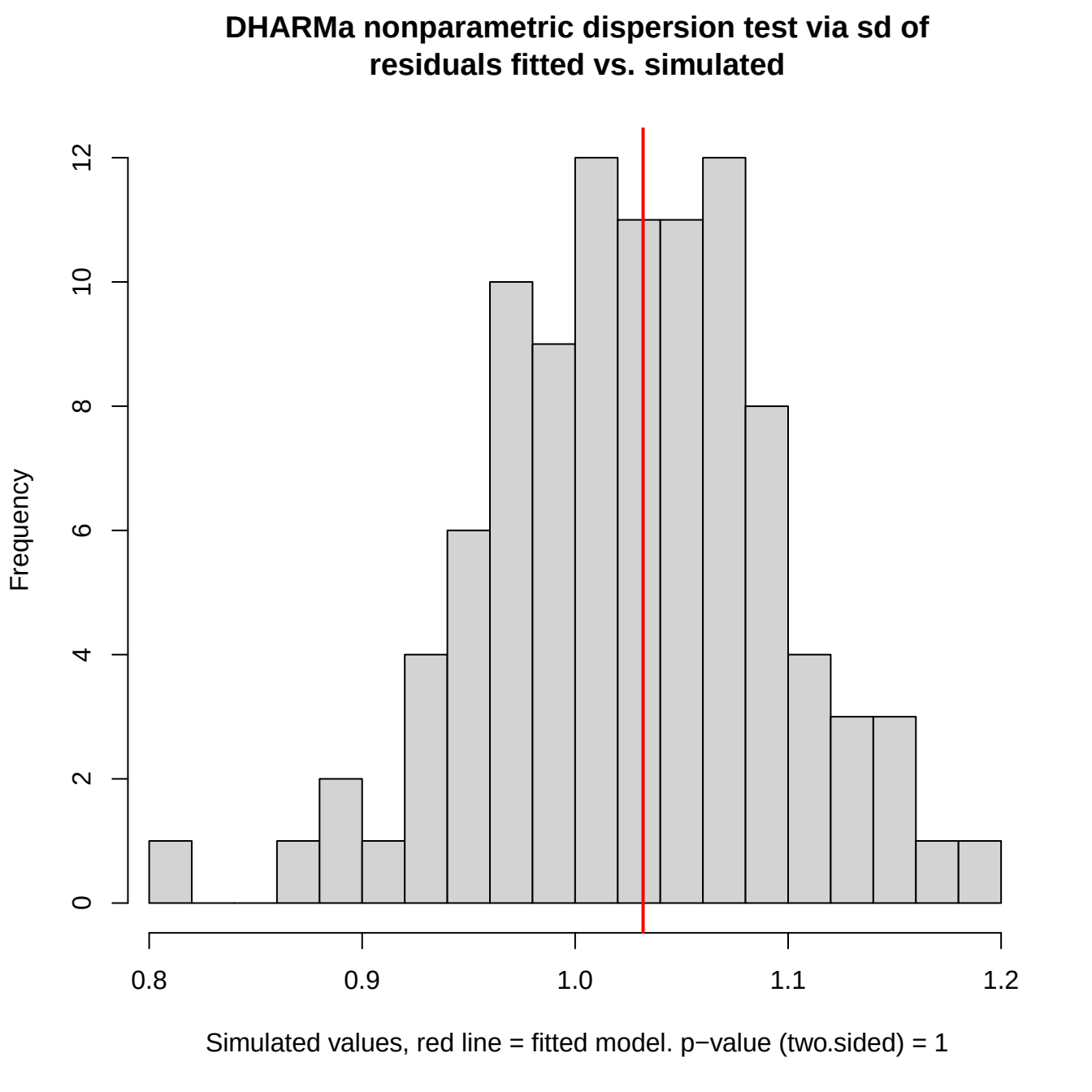

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

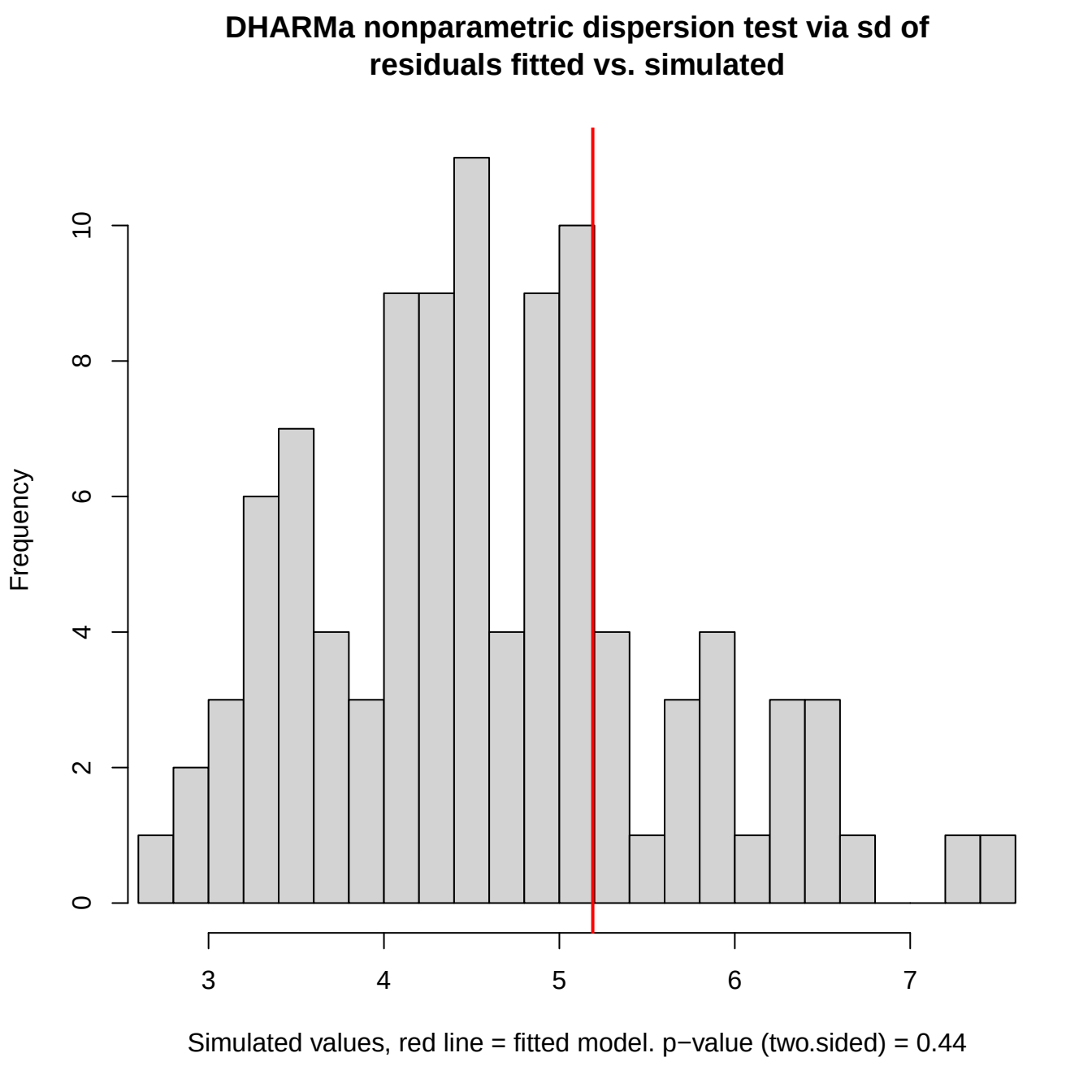

QQ plot residuals
KS test: p= 0.85777
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

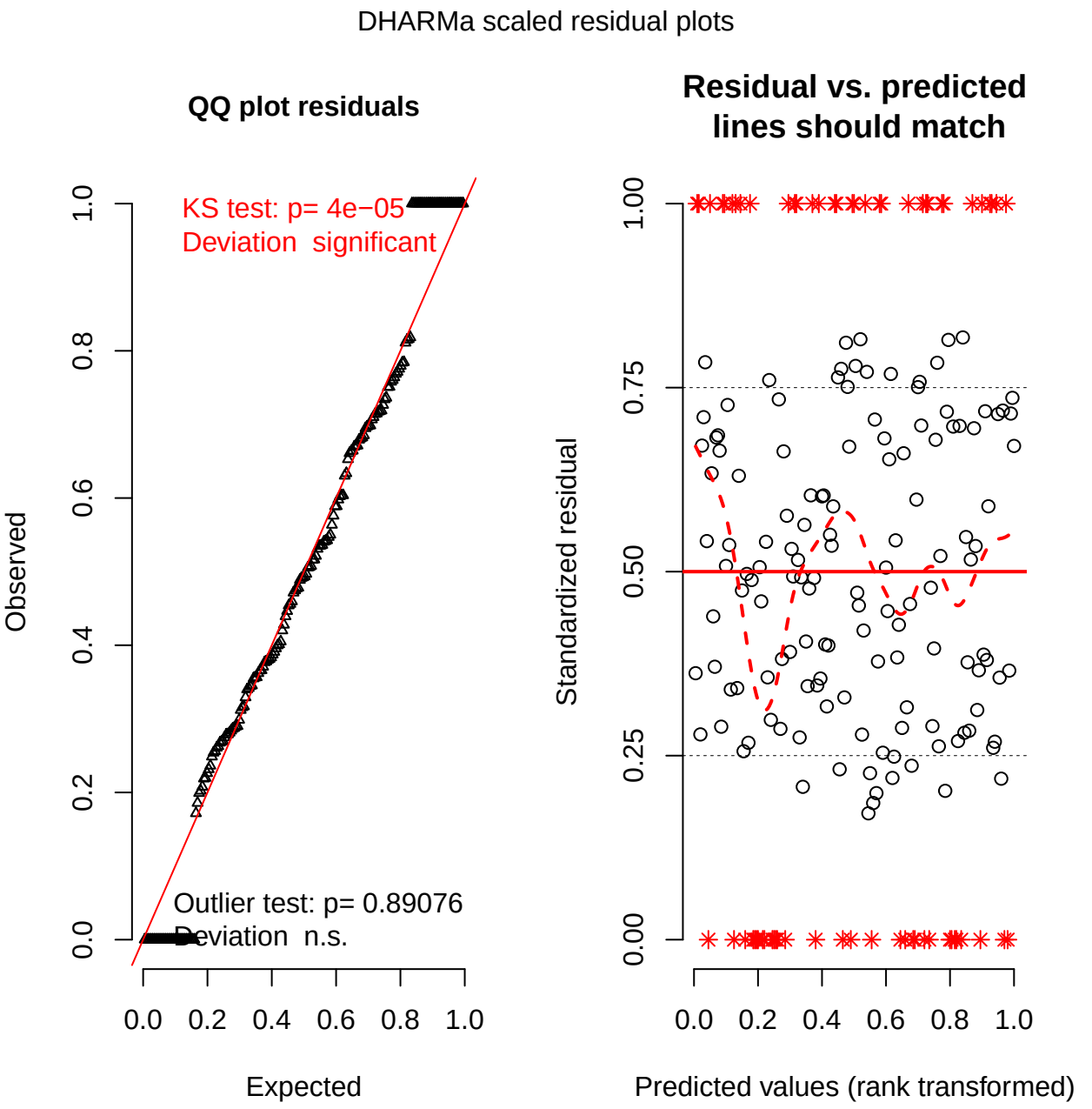

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
75
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 1

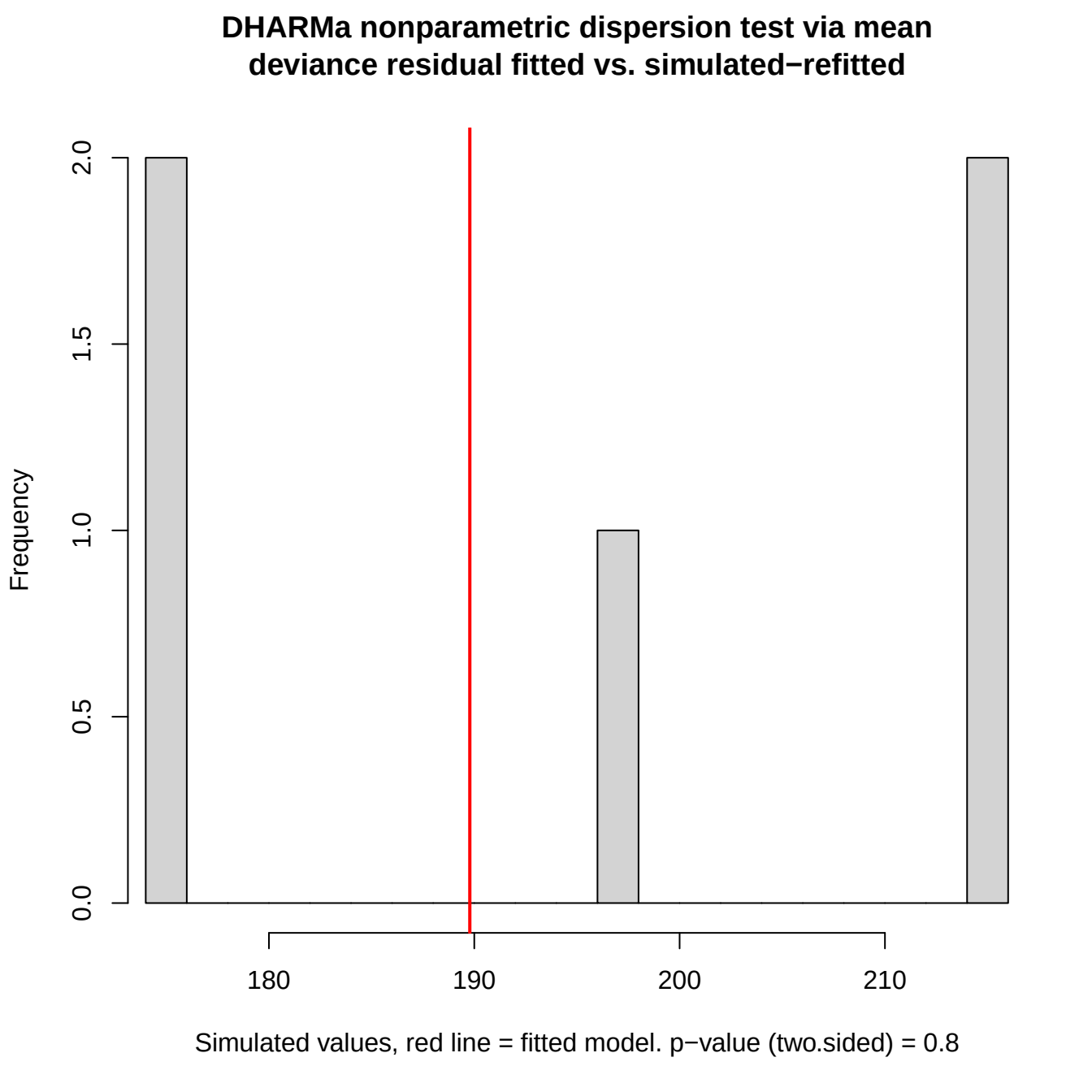

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

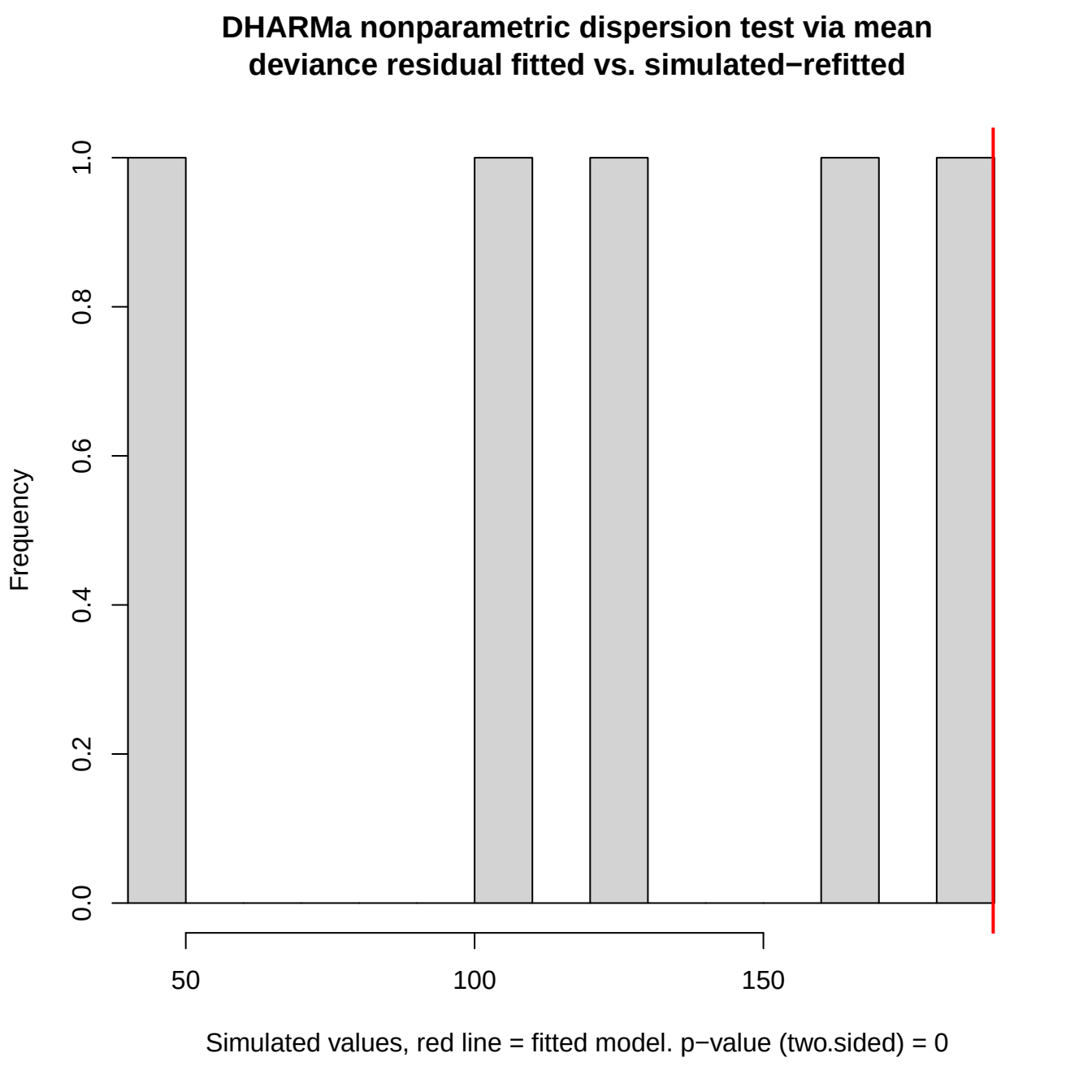

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

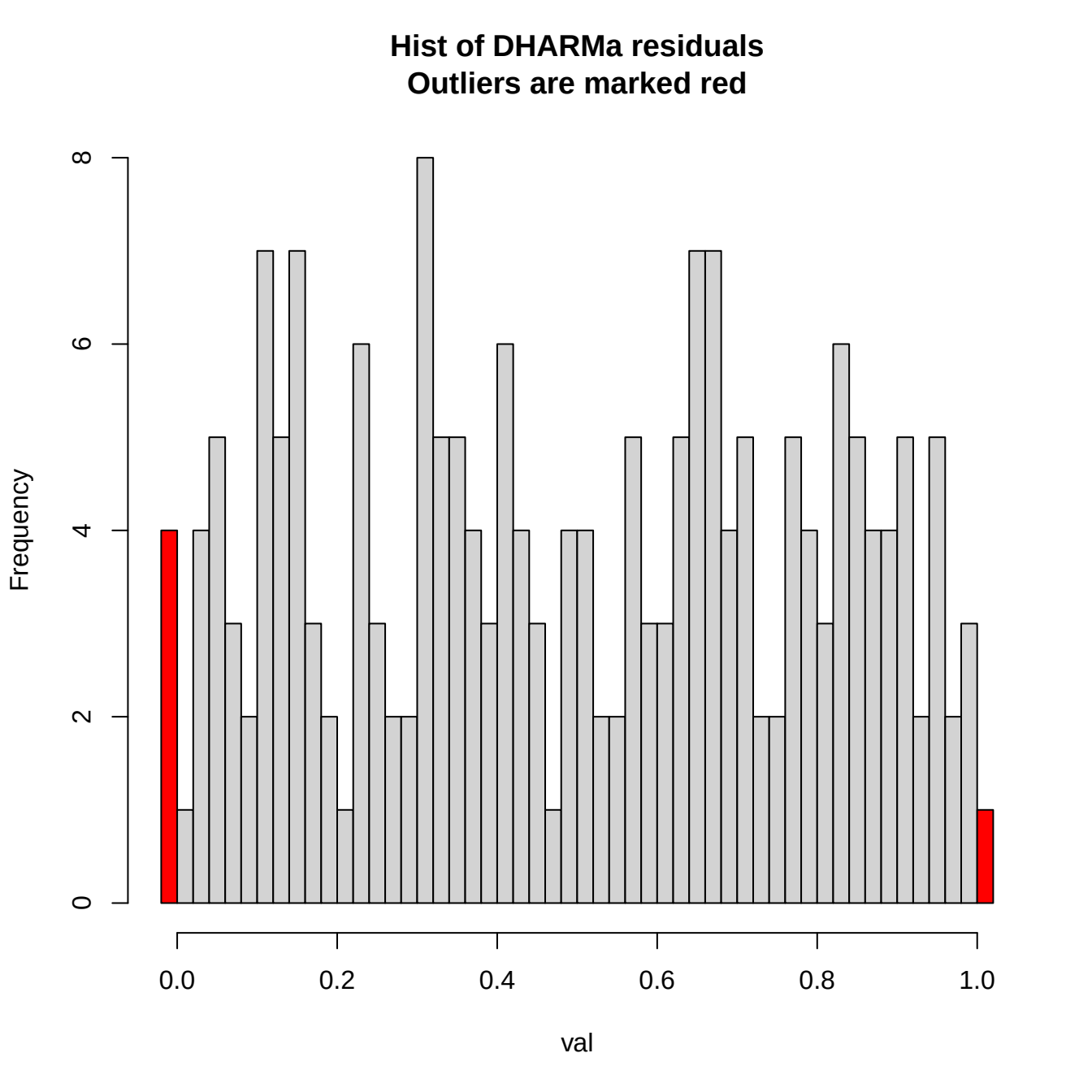

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

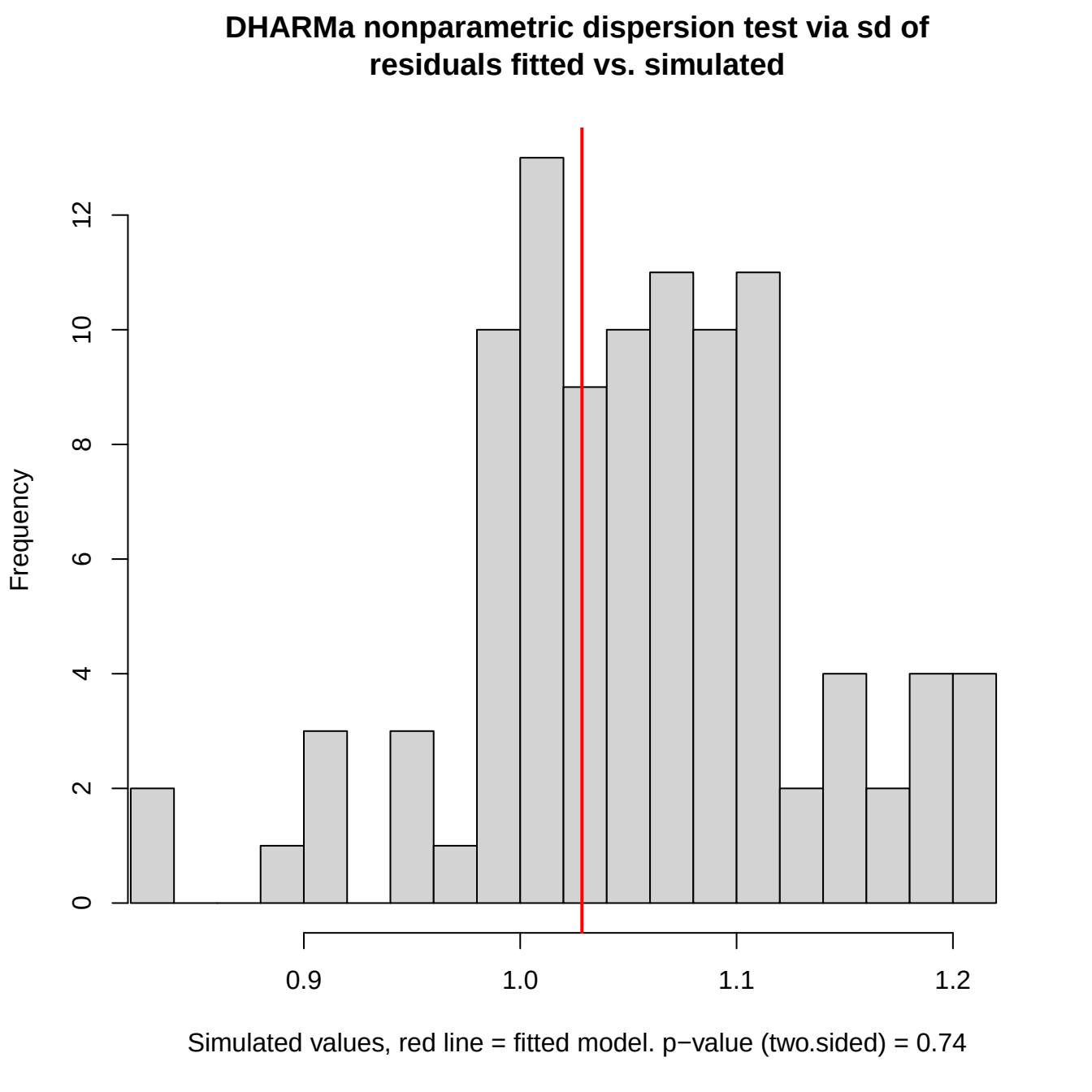

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

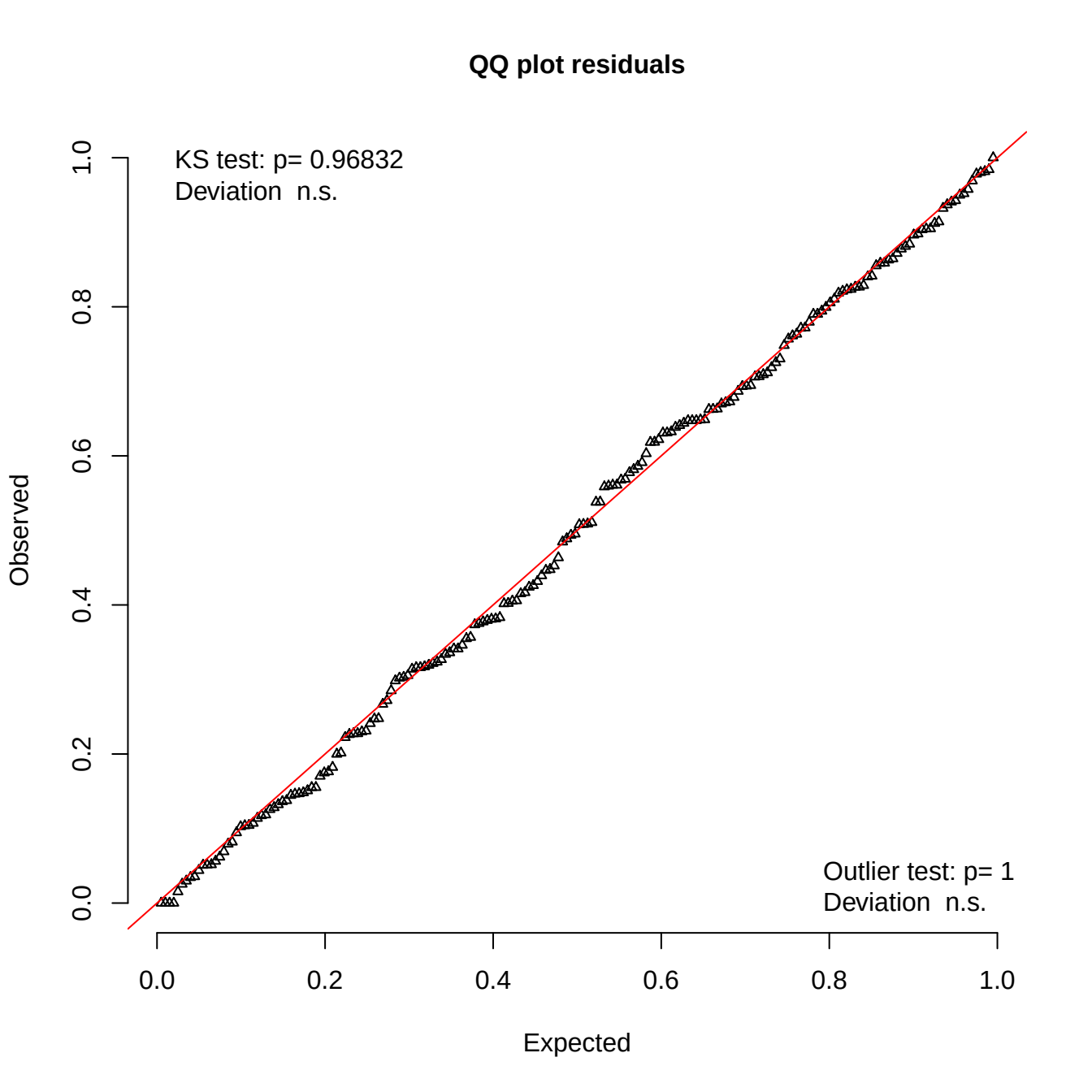

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

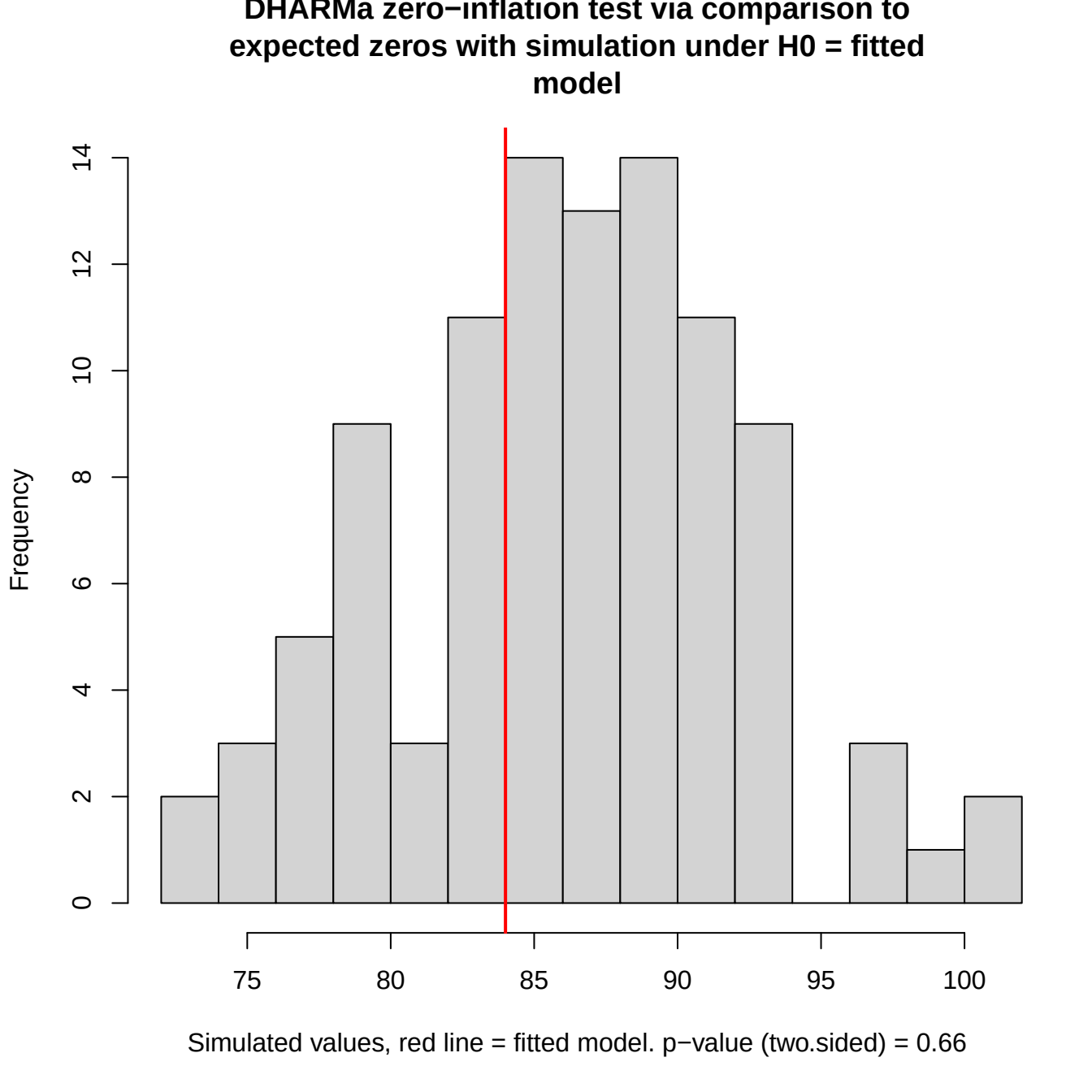

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

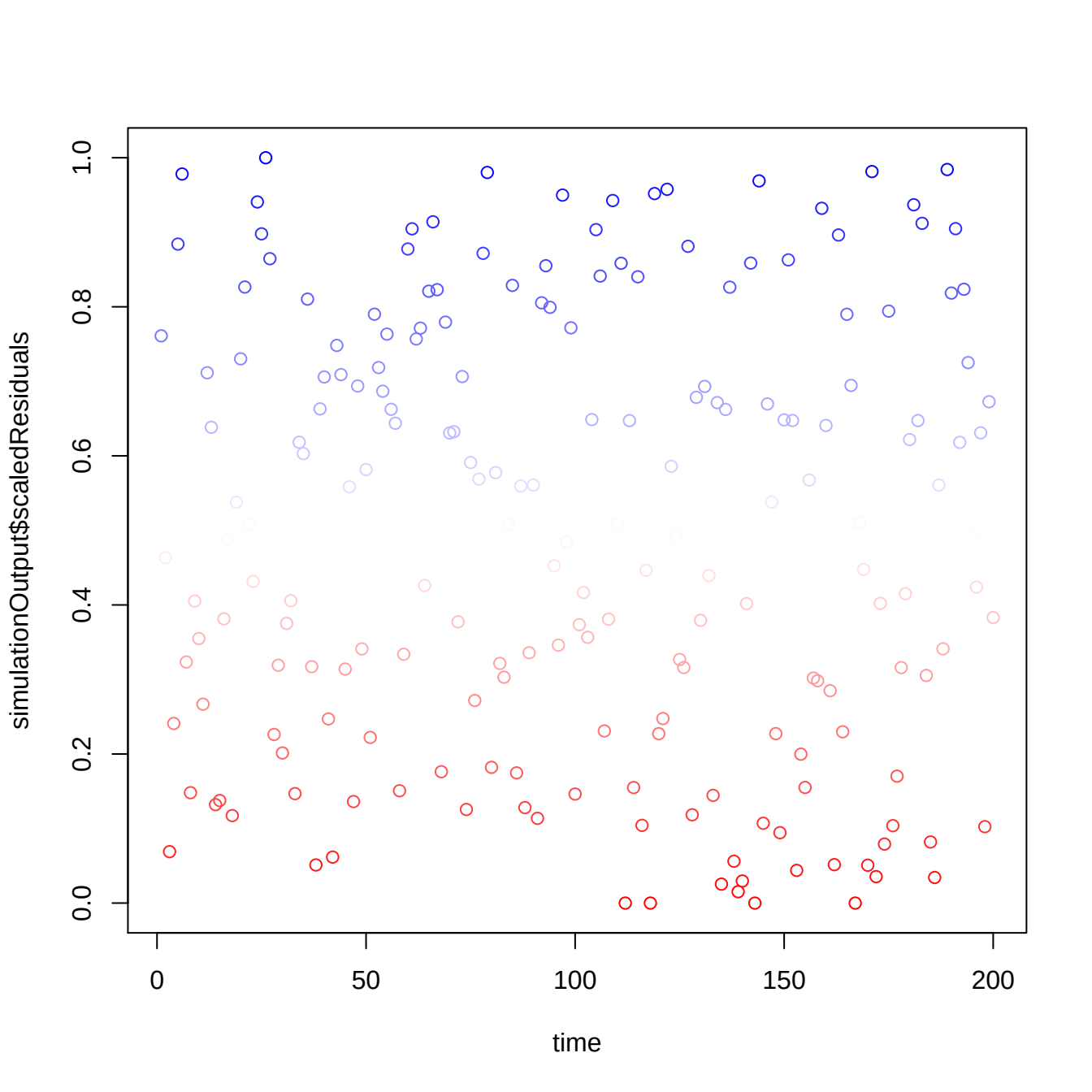

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
50
100
150
Simulated values, red line = fitted model. p−value (two.sided) = 0

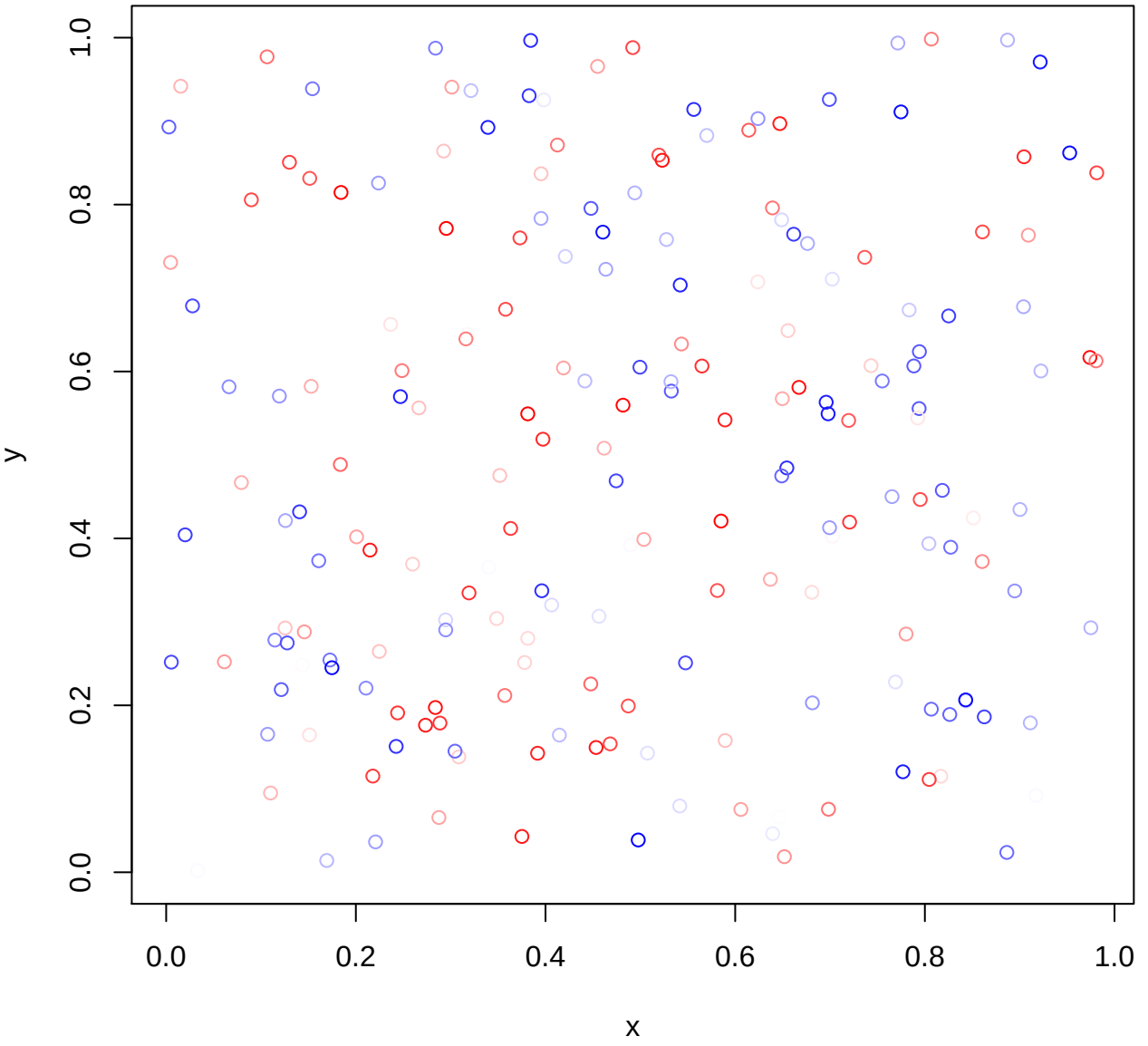

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

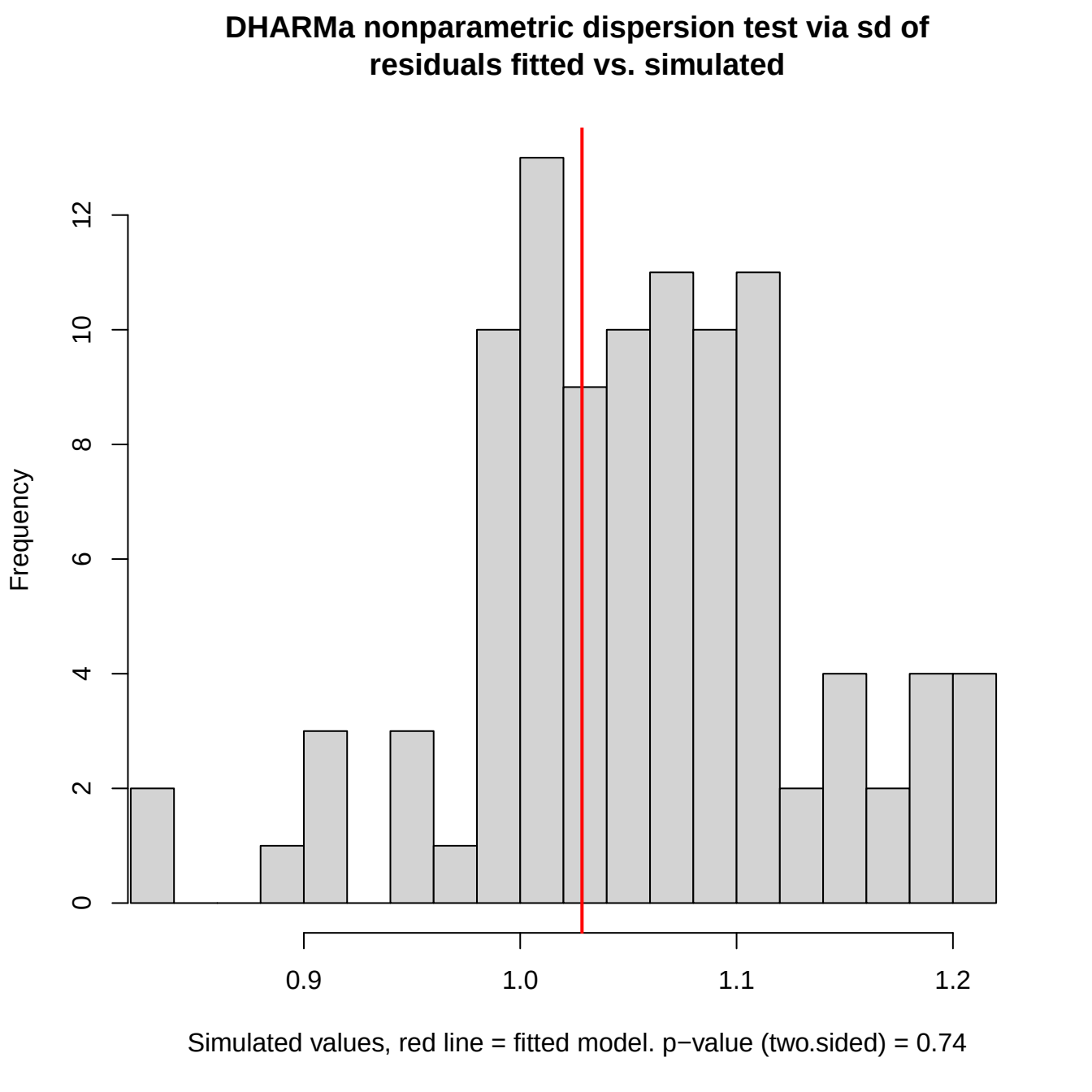

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

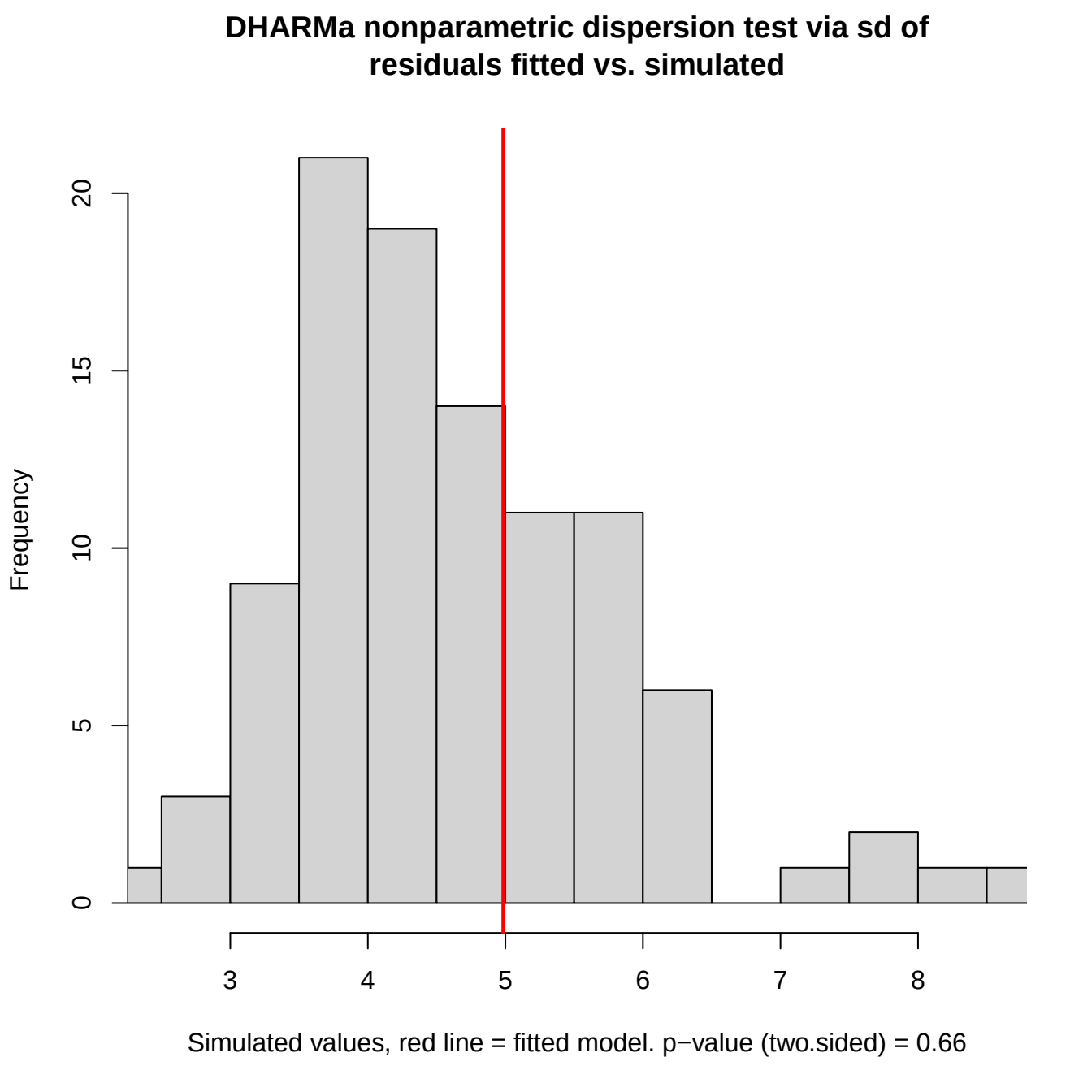

QQ plot residuals
KS test: p= 0.96832
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

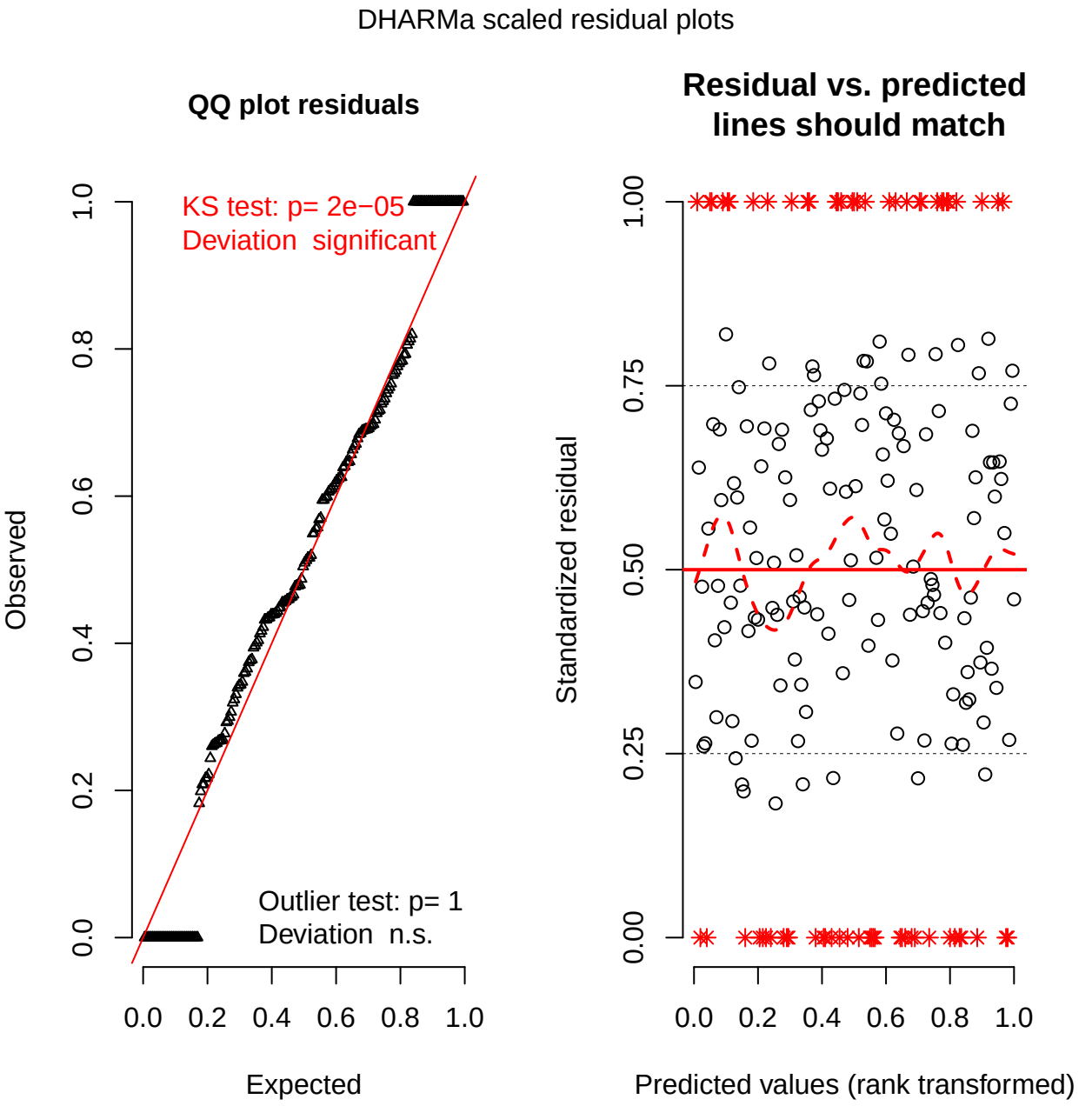

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
75
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 0.66

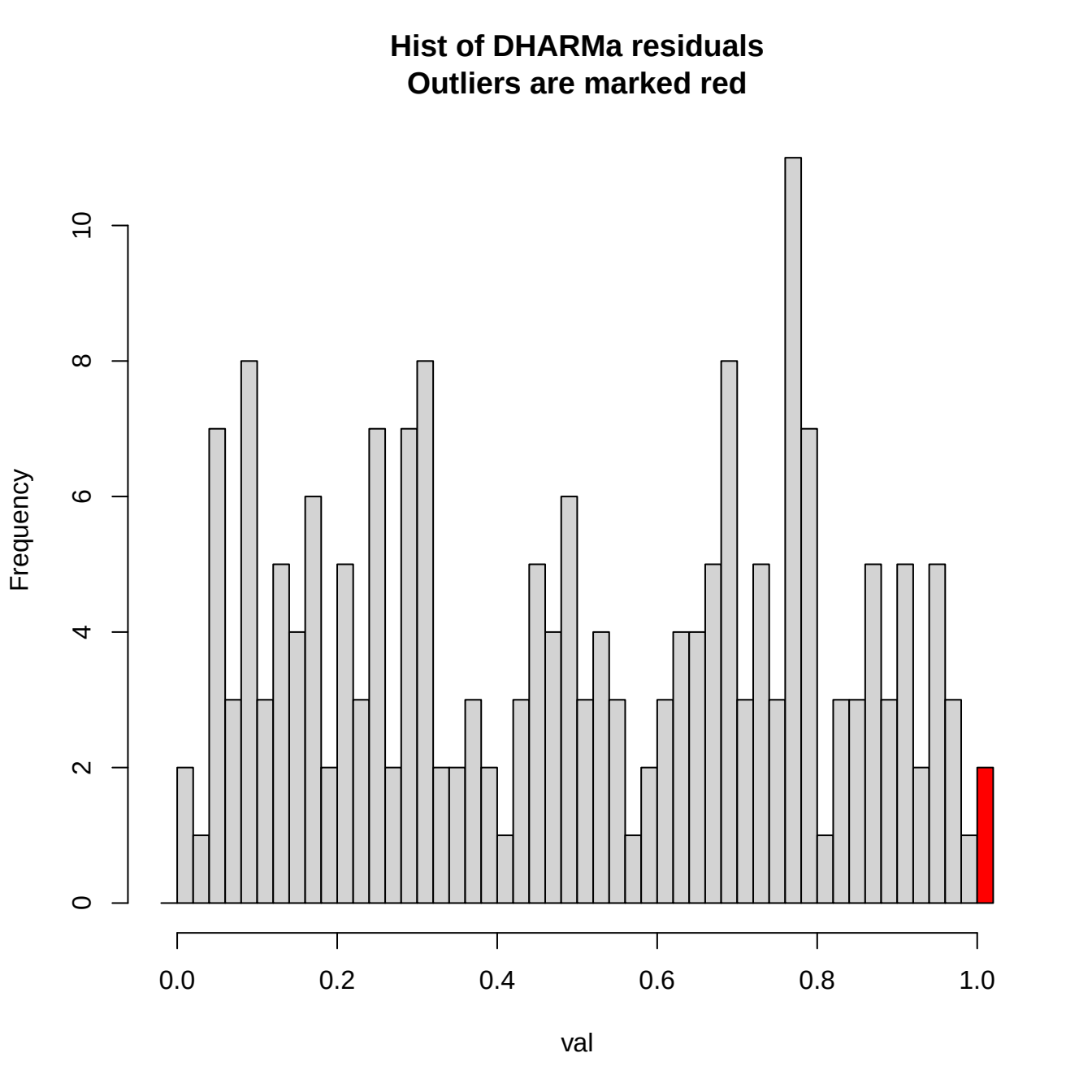

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

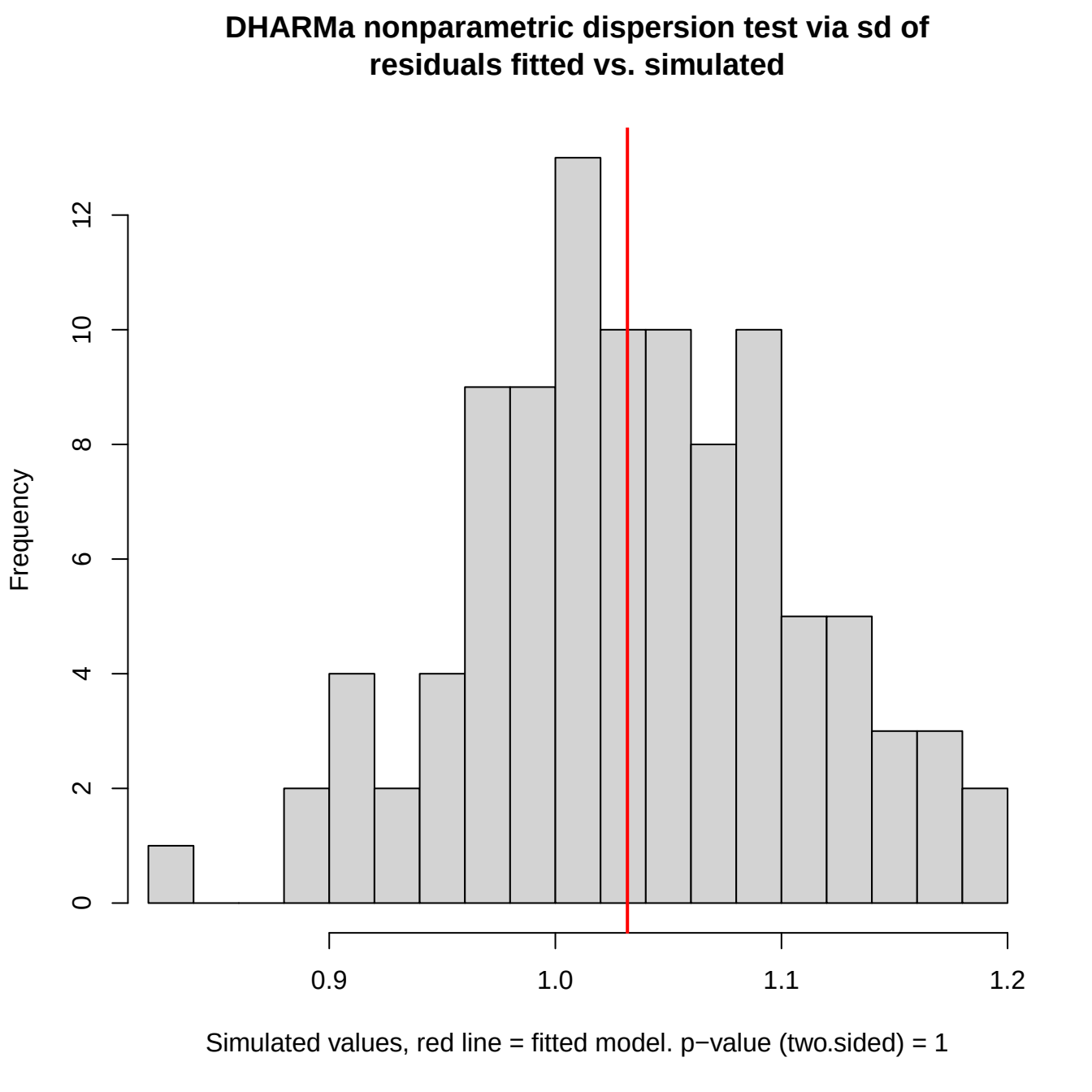

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

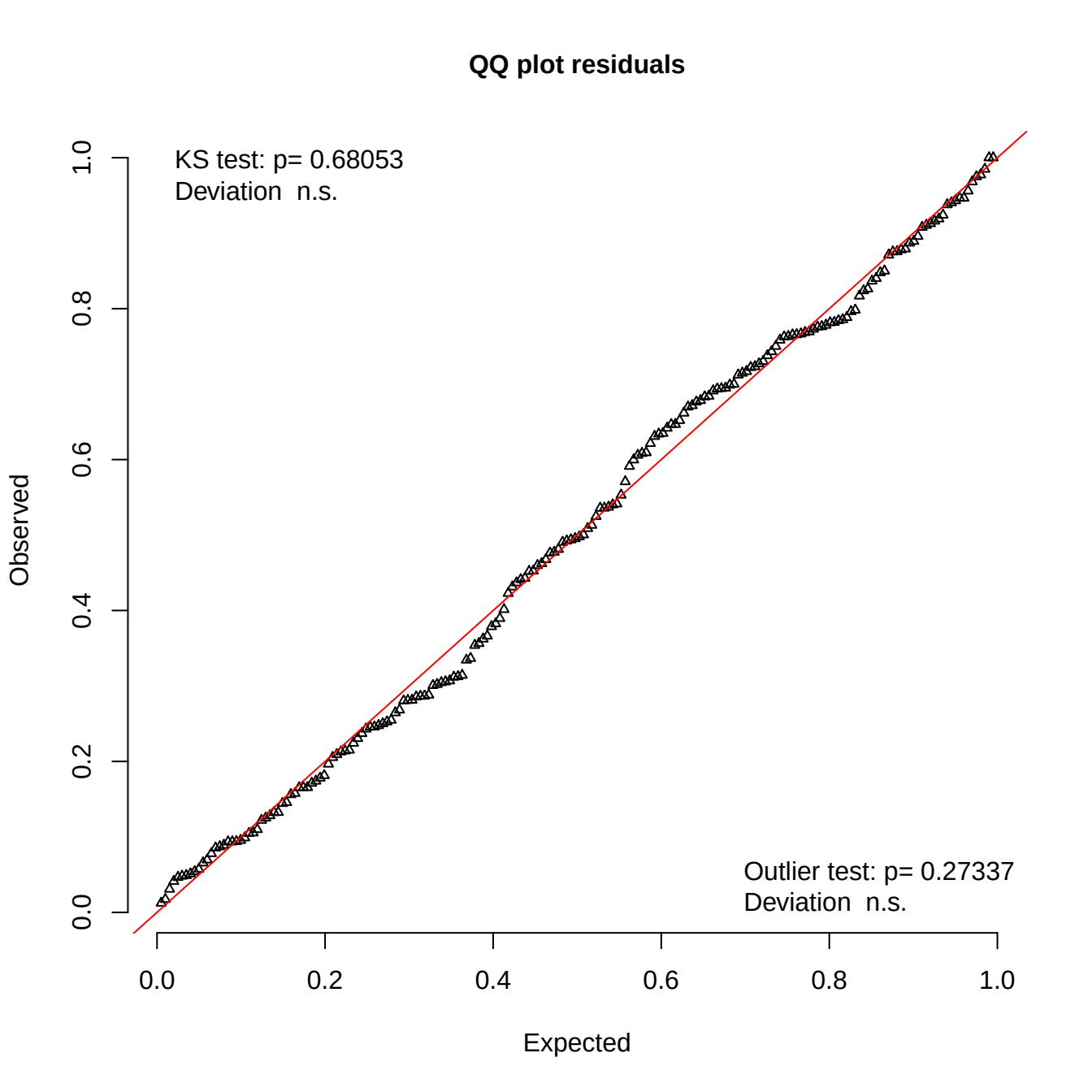

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

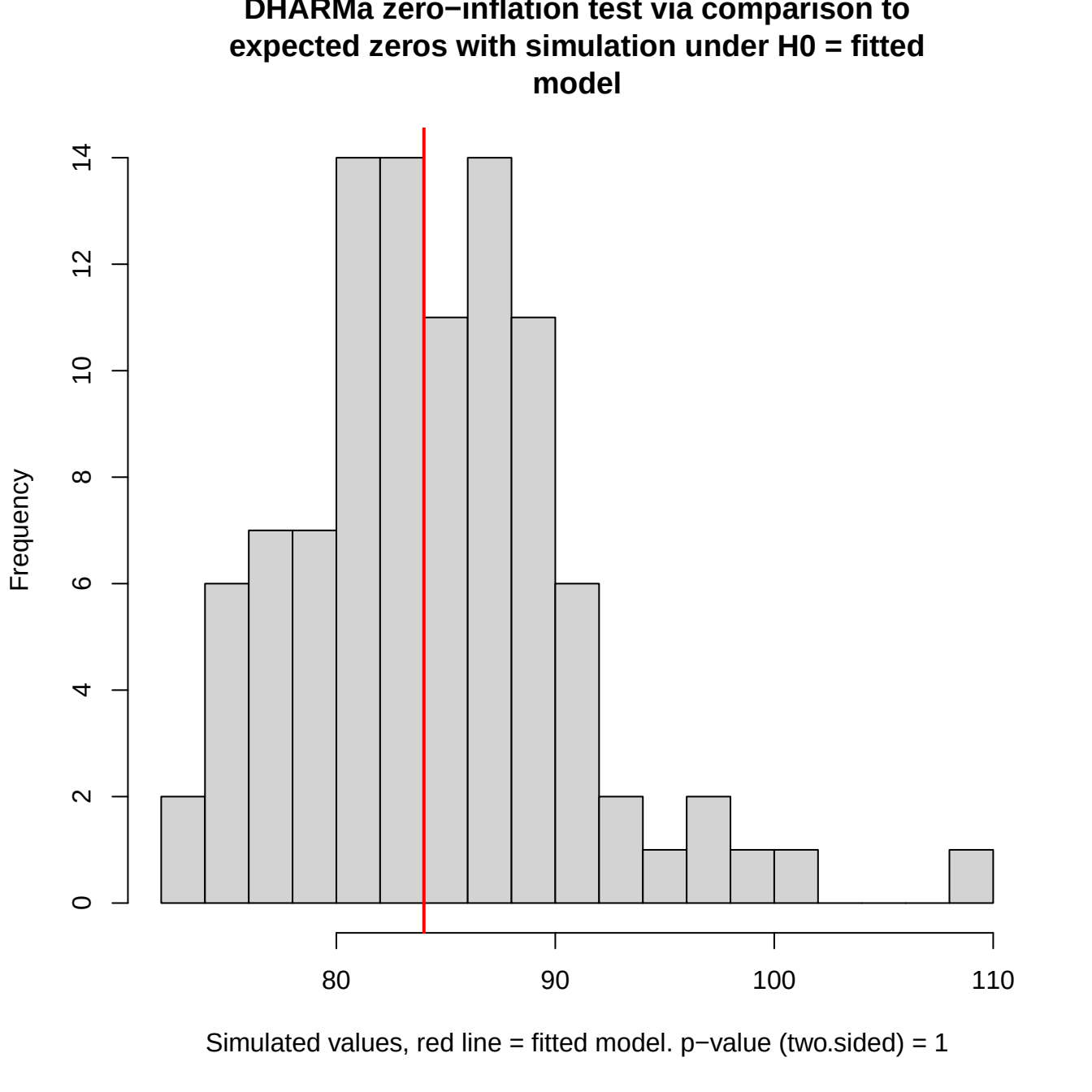

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.66

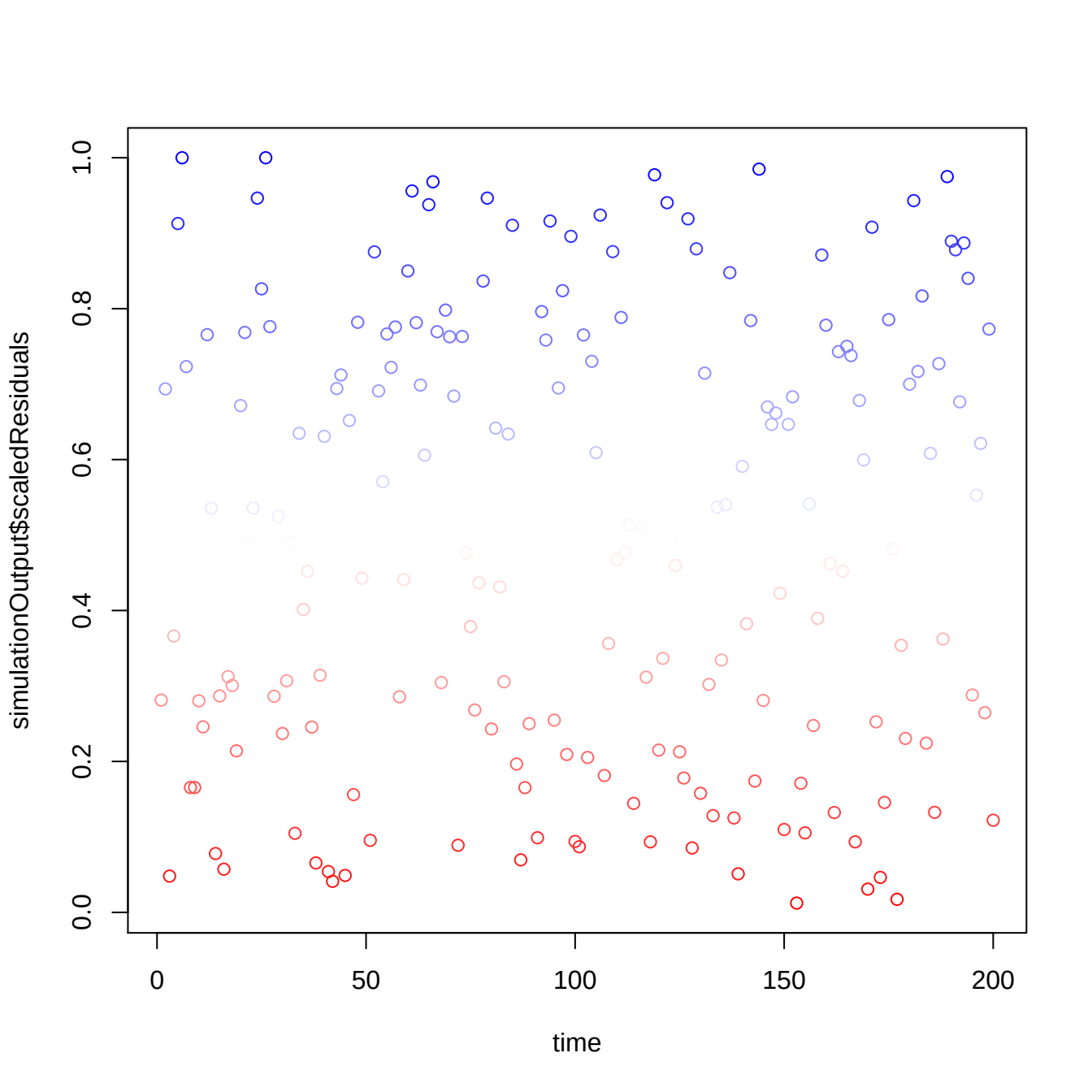

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 2e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

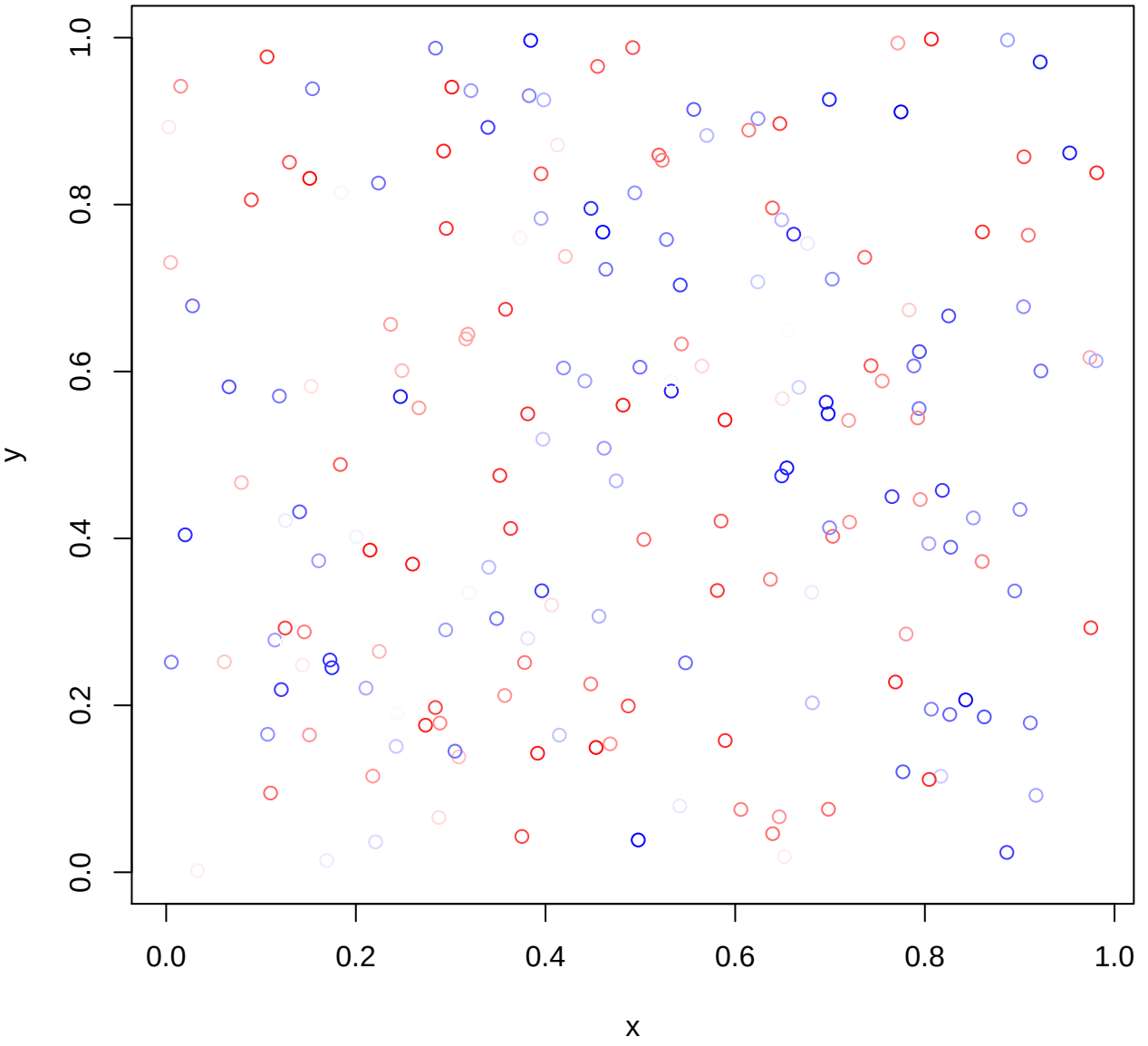

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

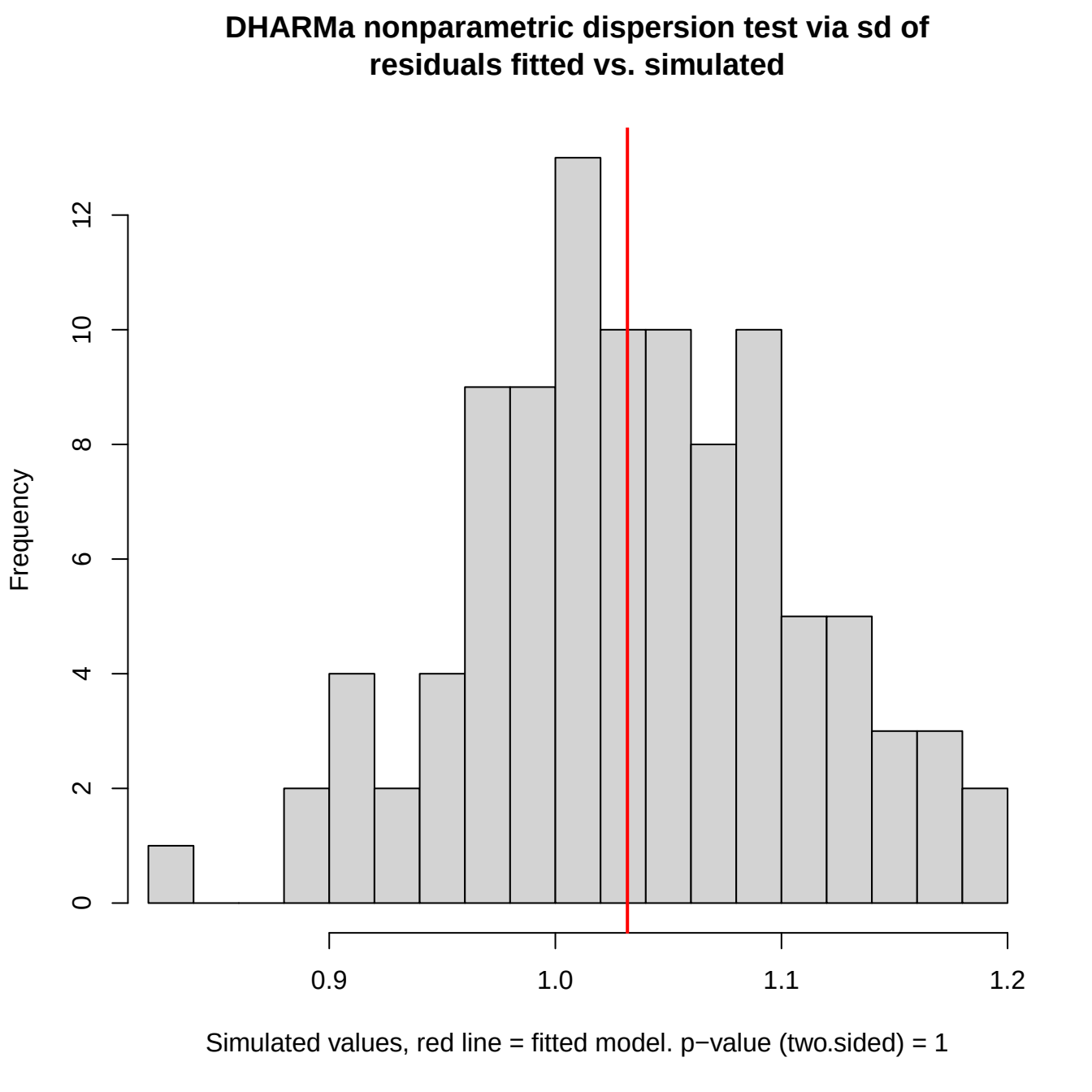

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

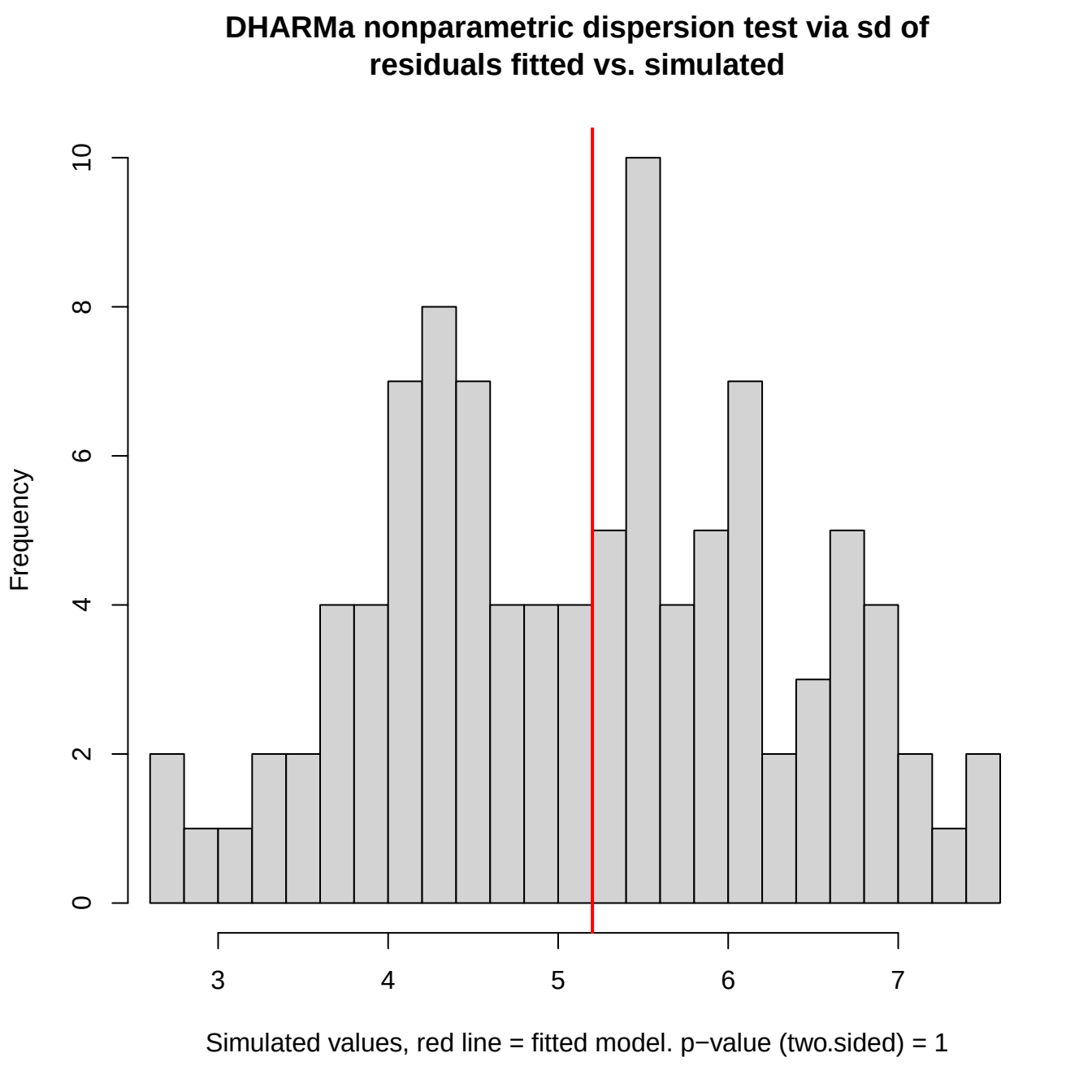

QQ plot residuals
KS test: p= 0.68053
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

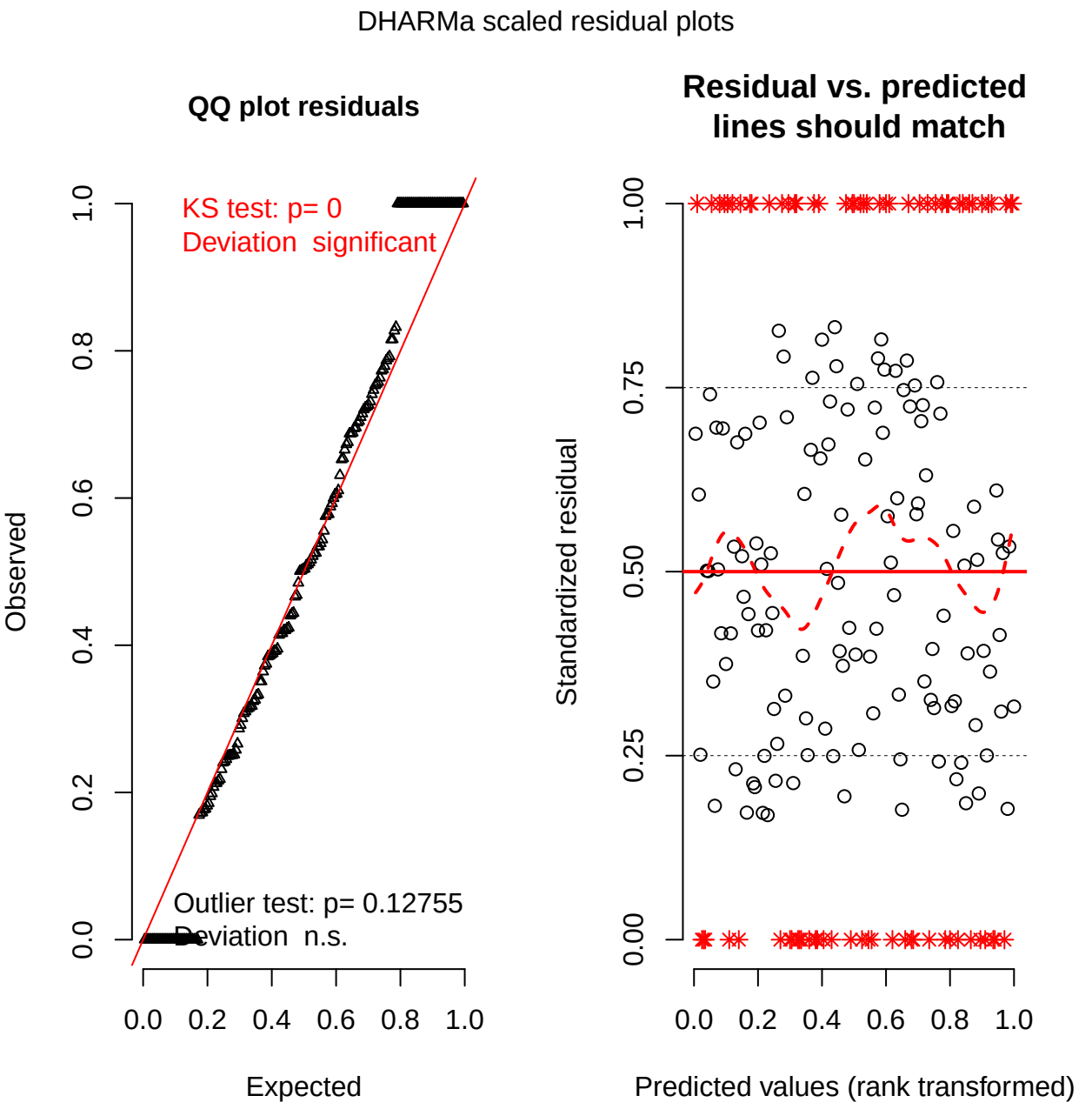

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
80
90
100
110
Simulated values, red line = fitted model. p−value (two.sided) = 1

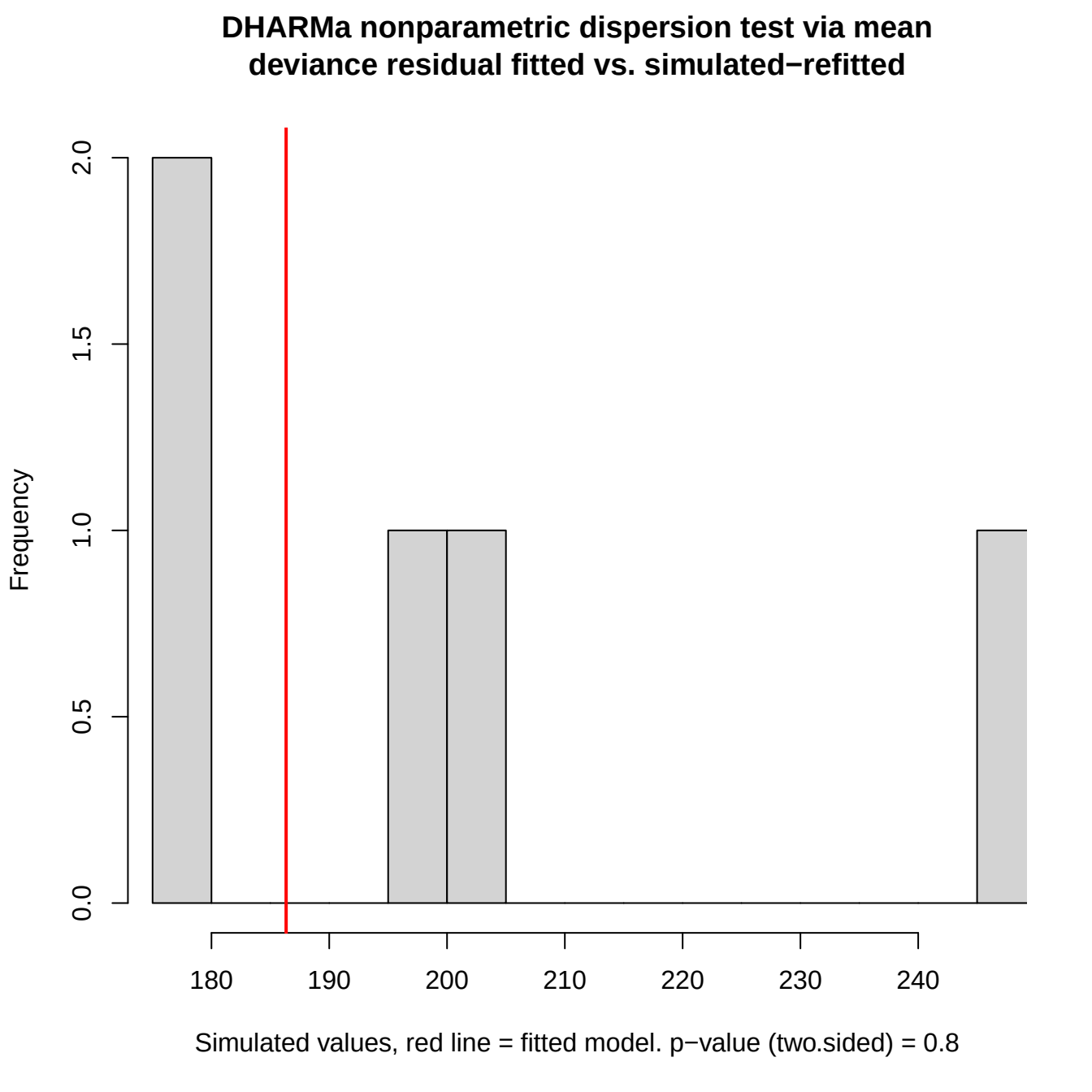

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

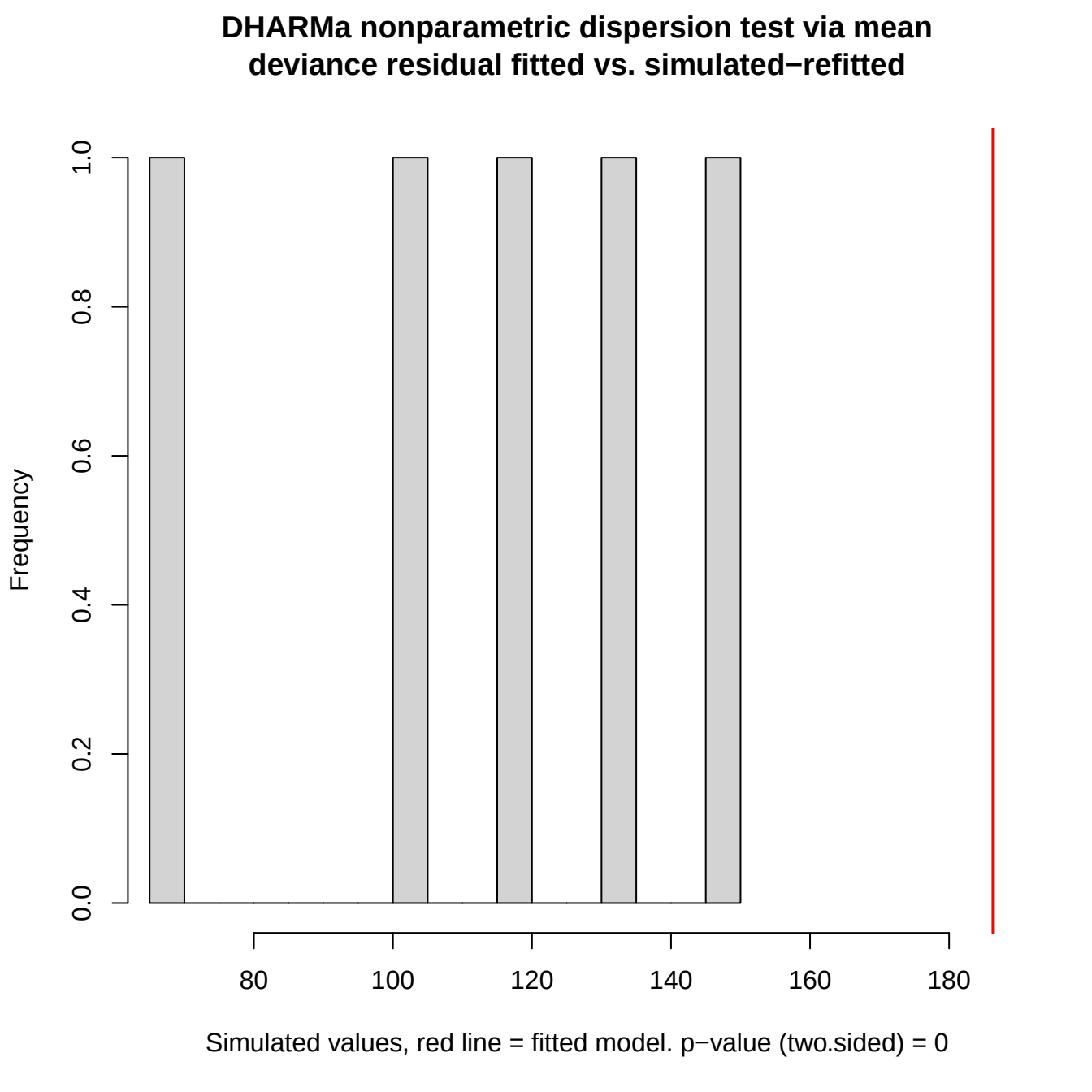

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

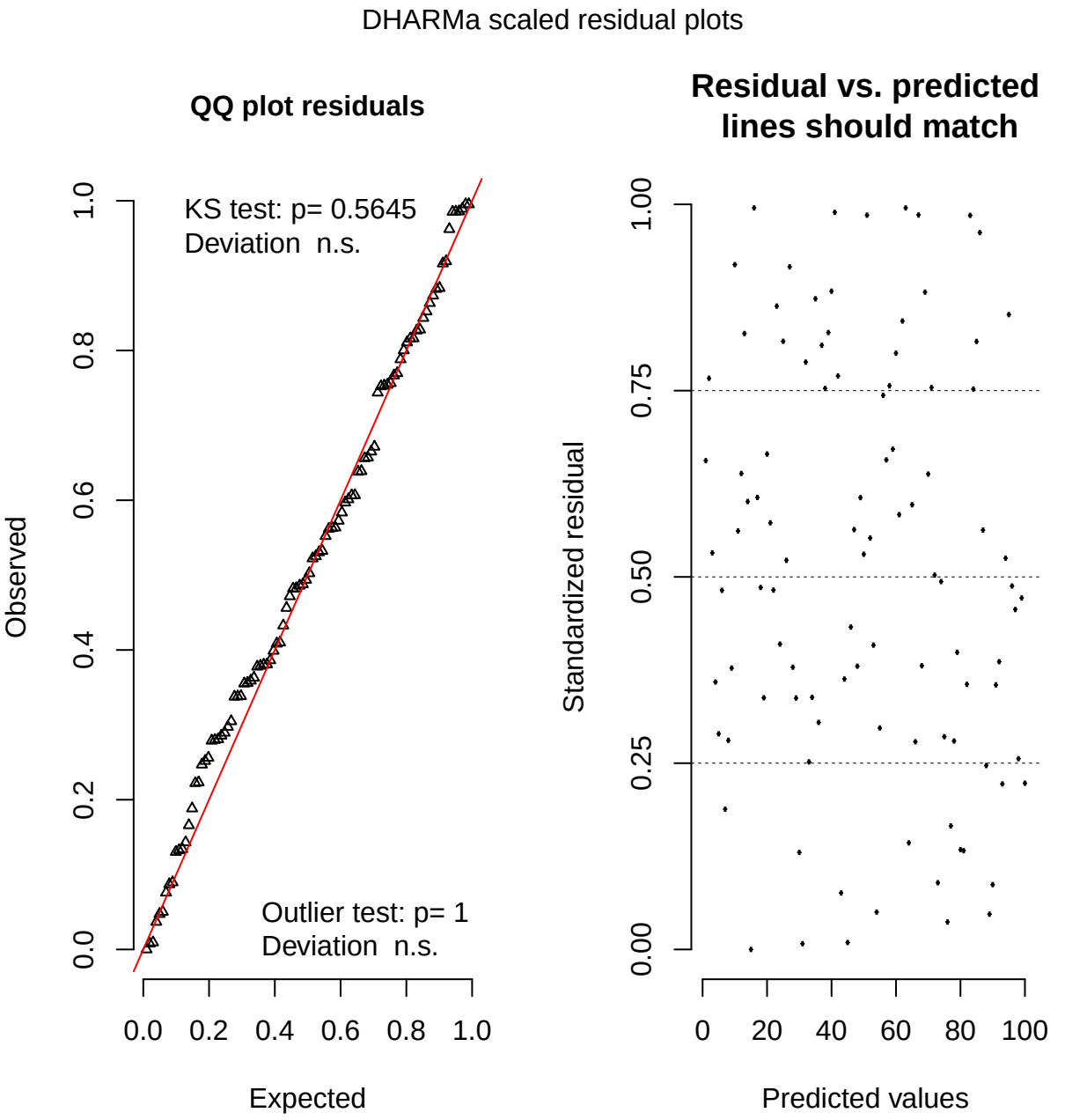

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 1

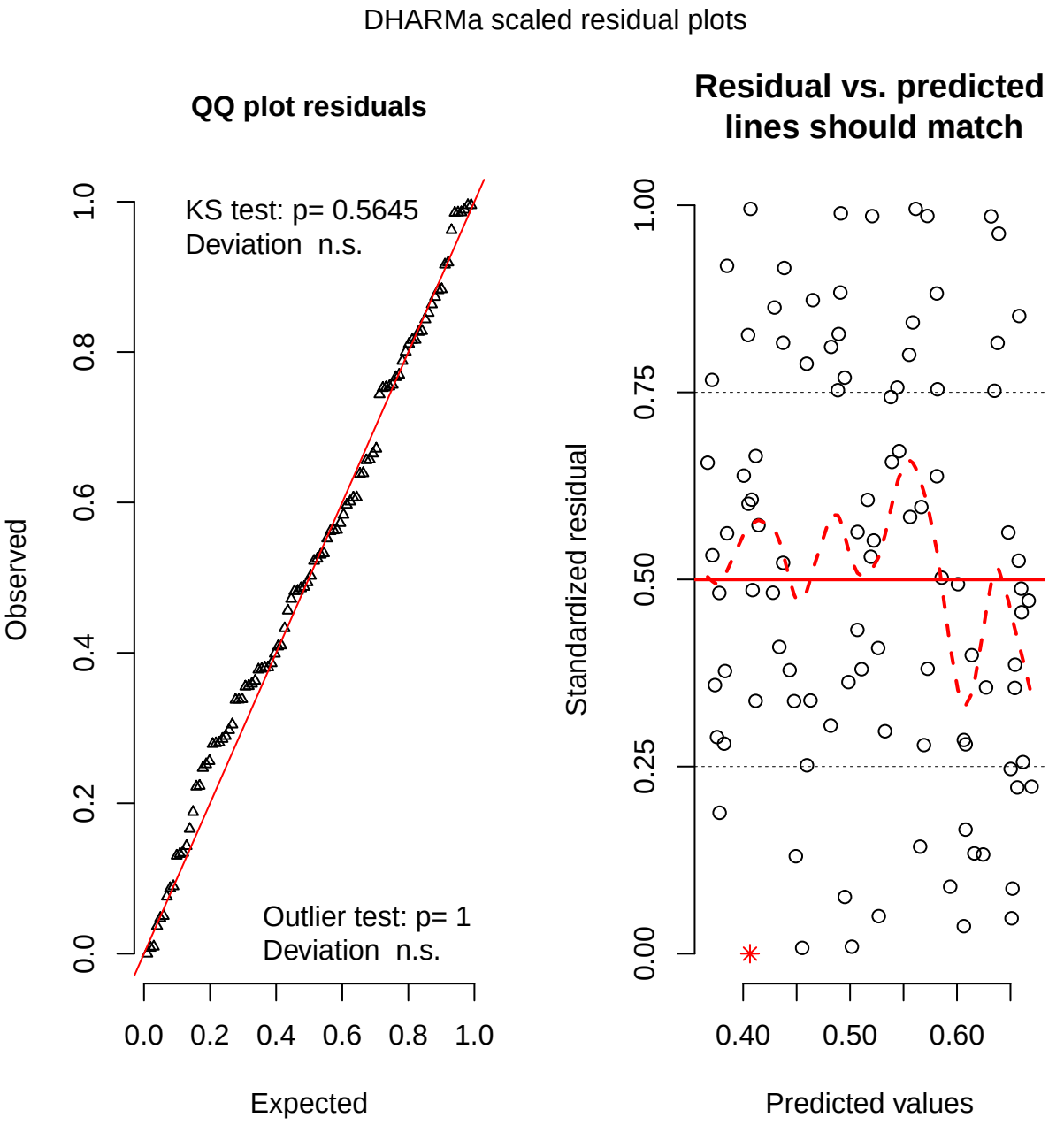

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 1

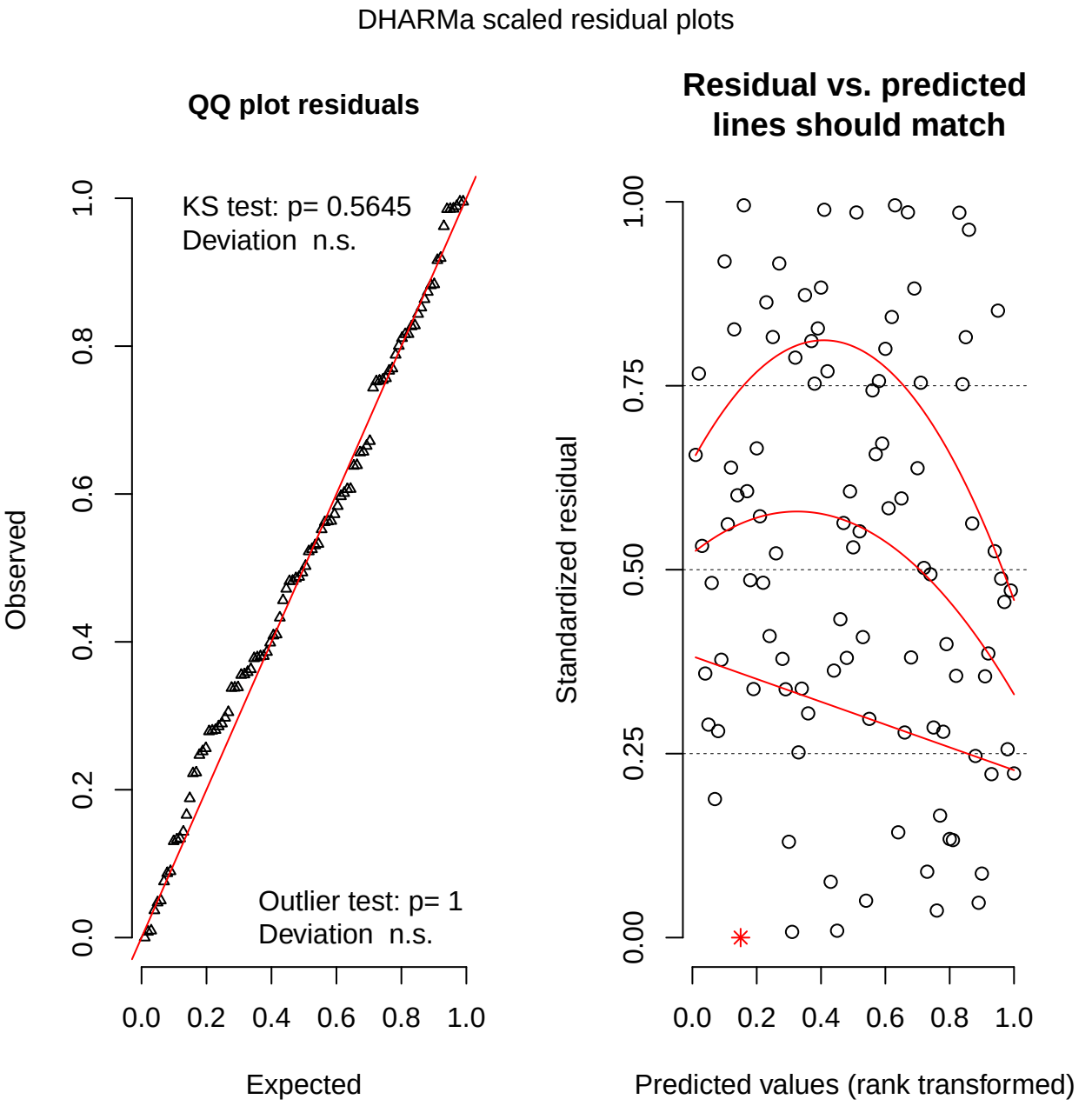

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.12755
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

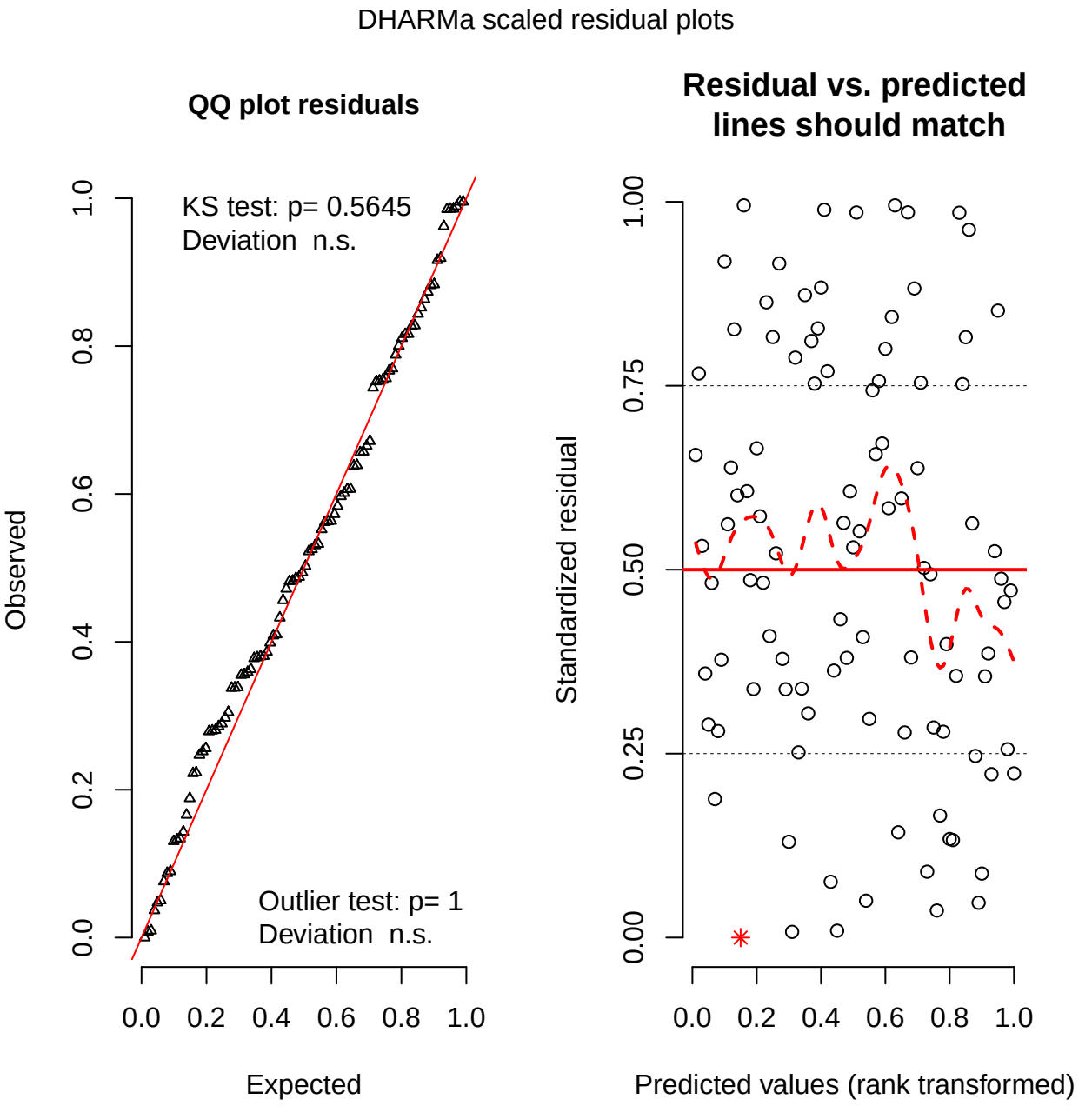

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
180
190
200
210
220
230
240
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

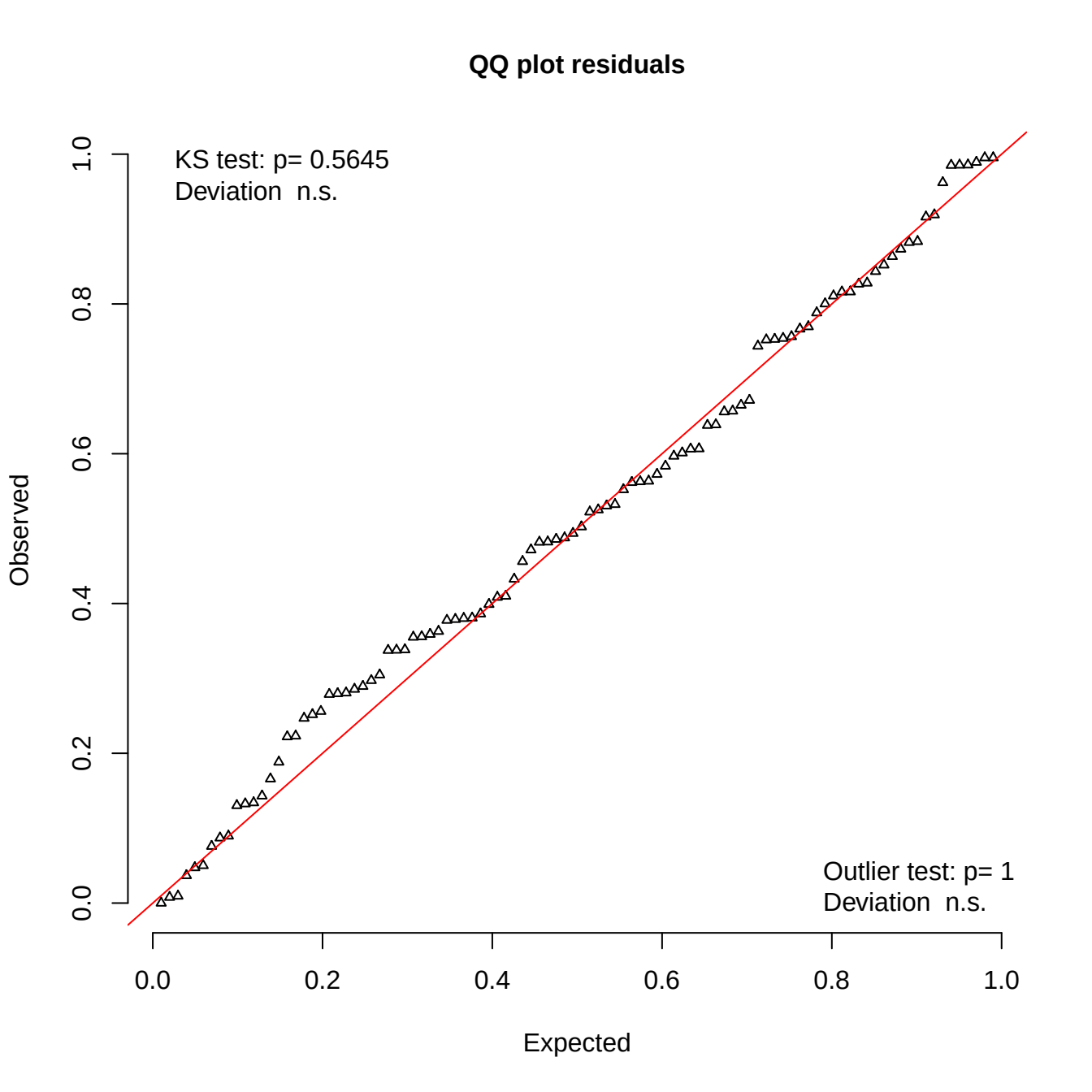

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

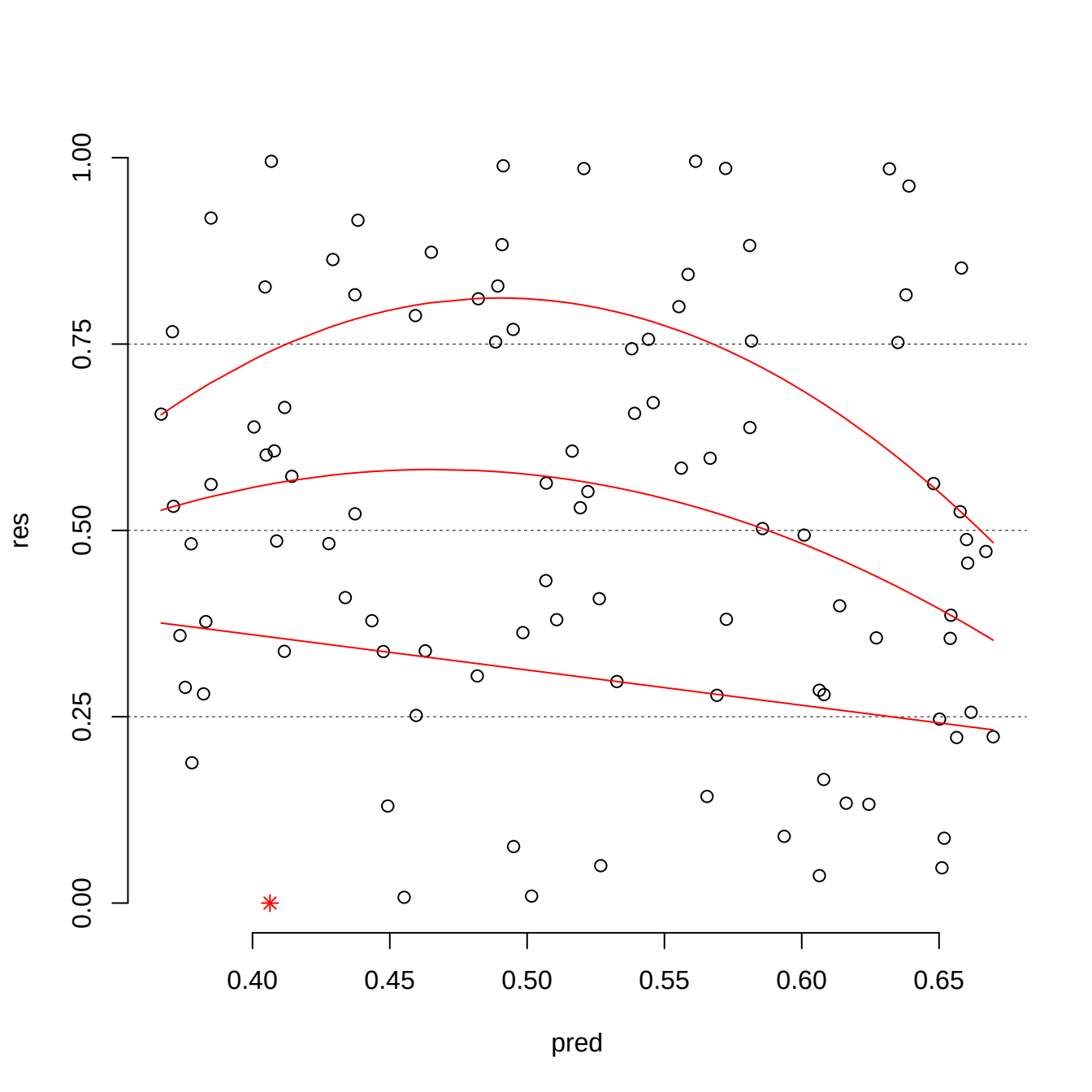

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.5645
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
0
20
40
60
80
100

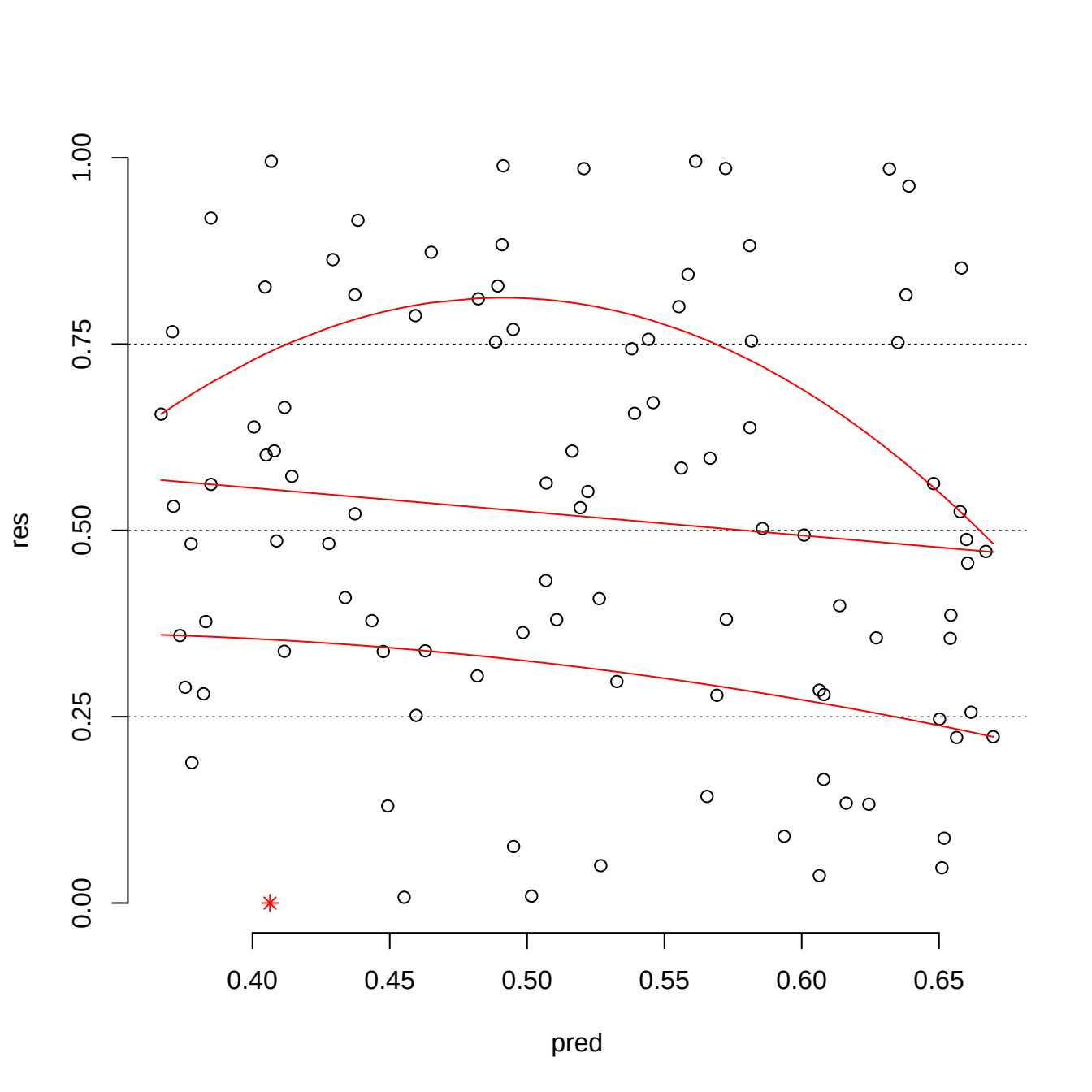

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.5645
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
0.40
0.50
0.60

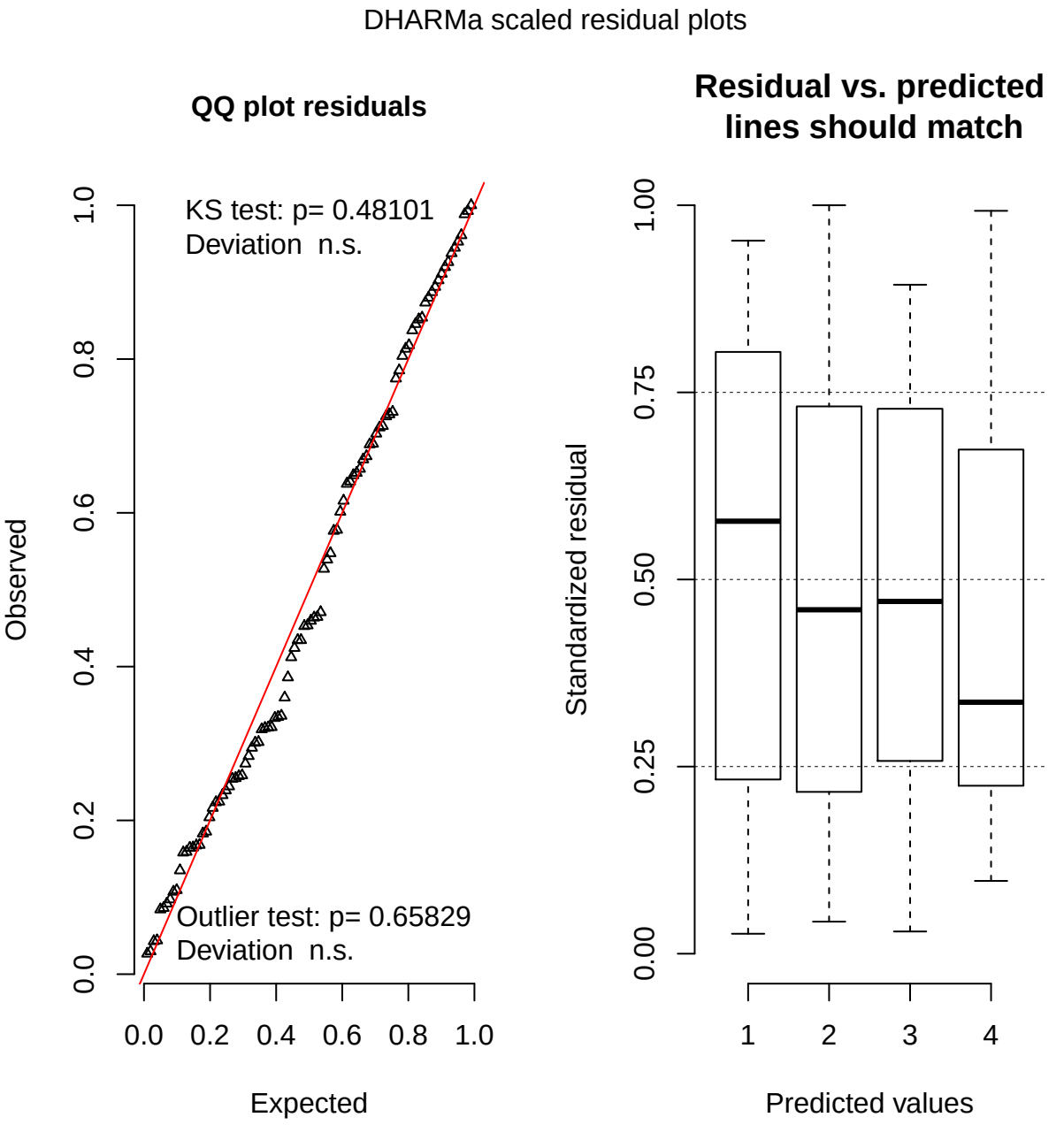

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.5645
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

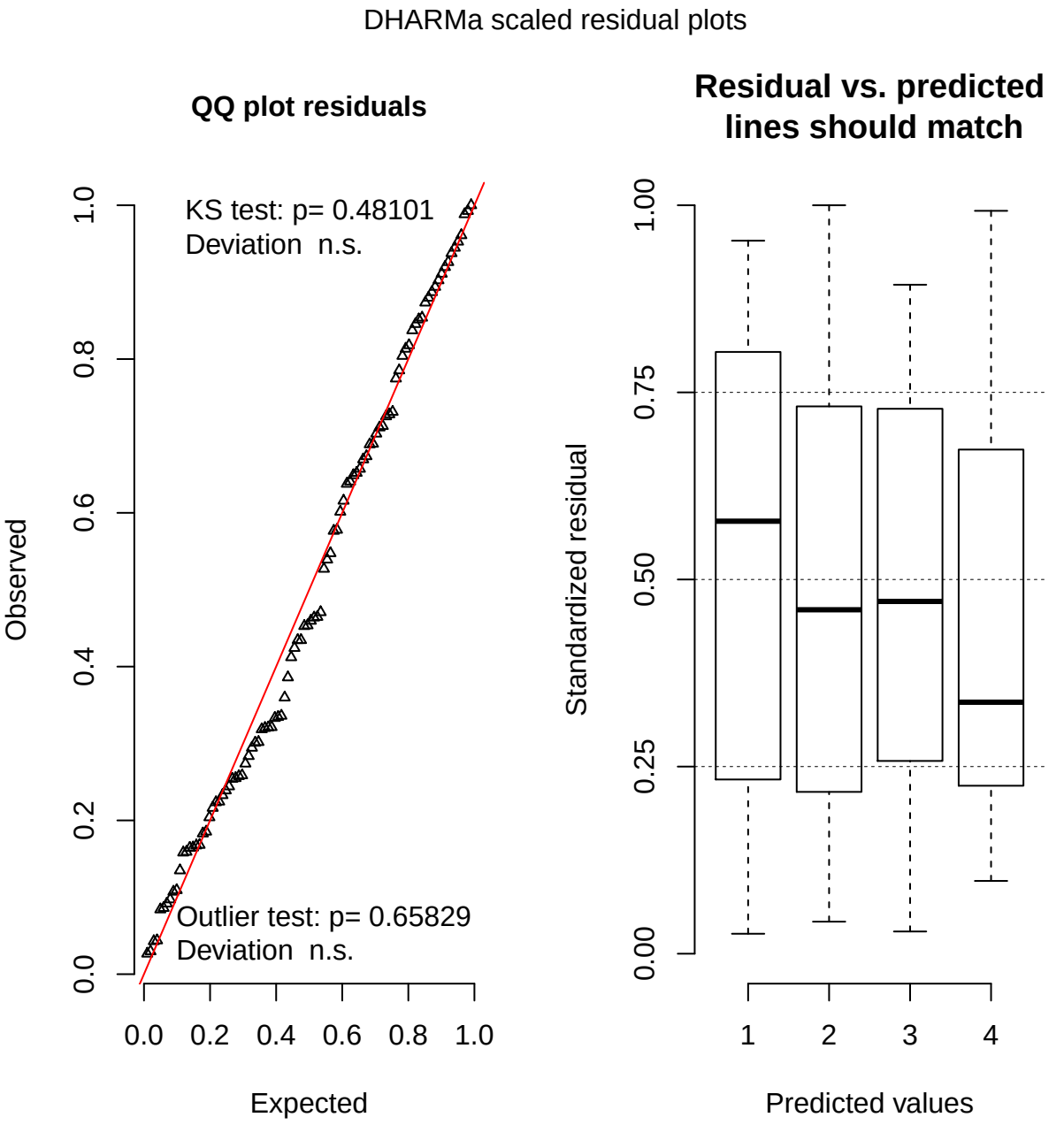

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.5645
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

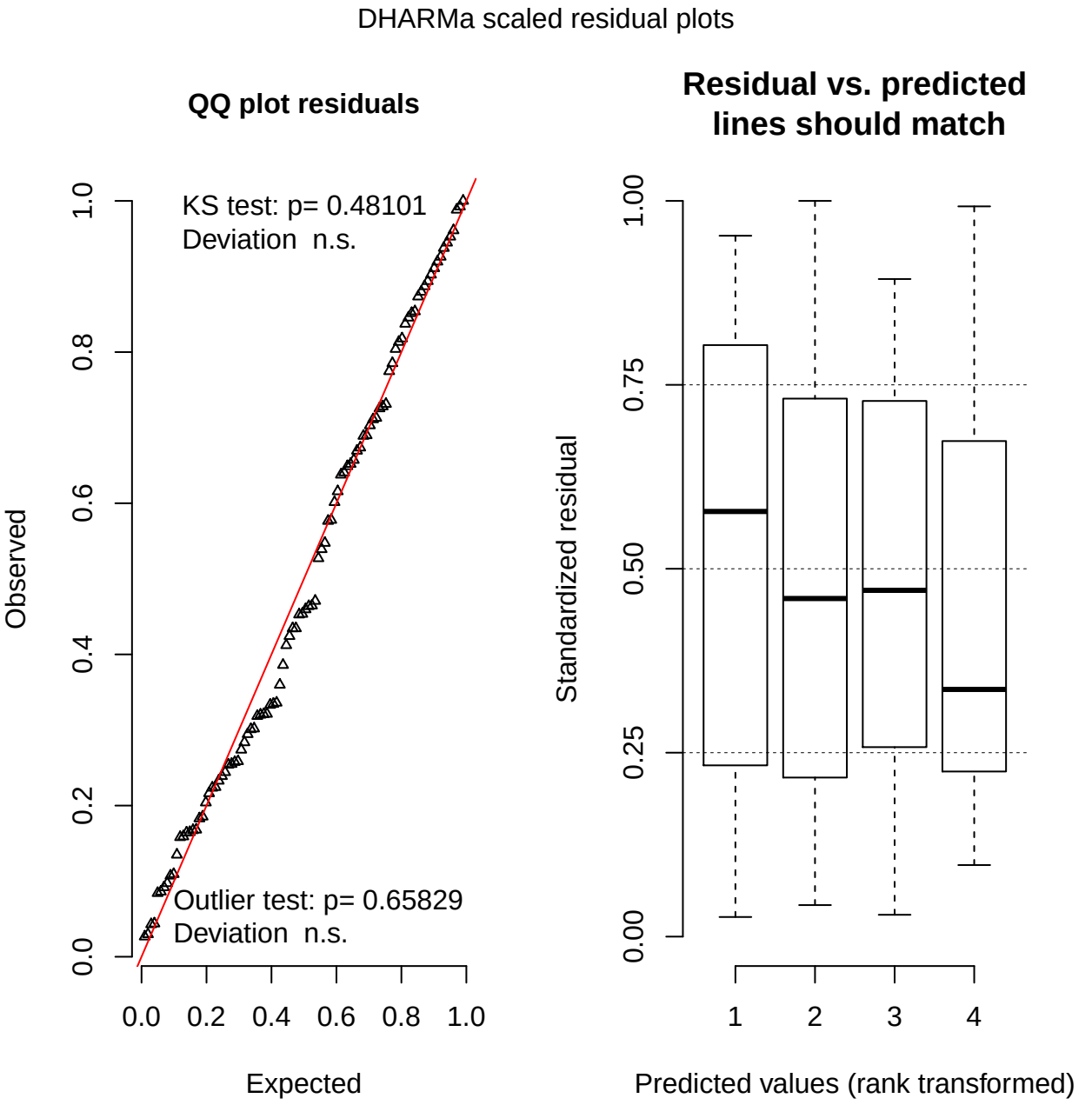

QQ plot residuals
KS test: p= 0.5645
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

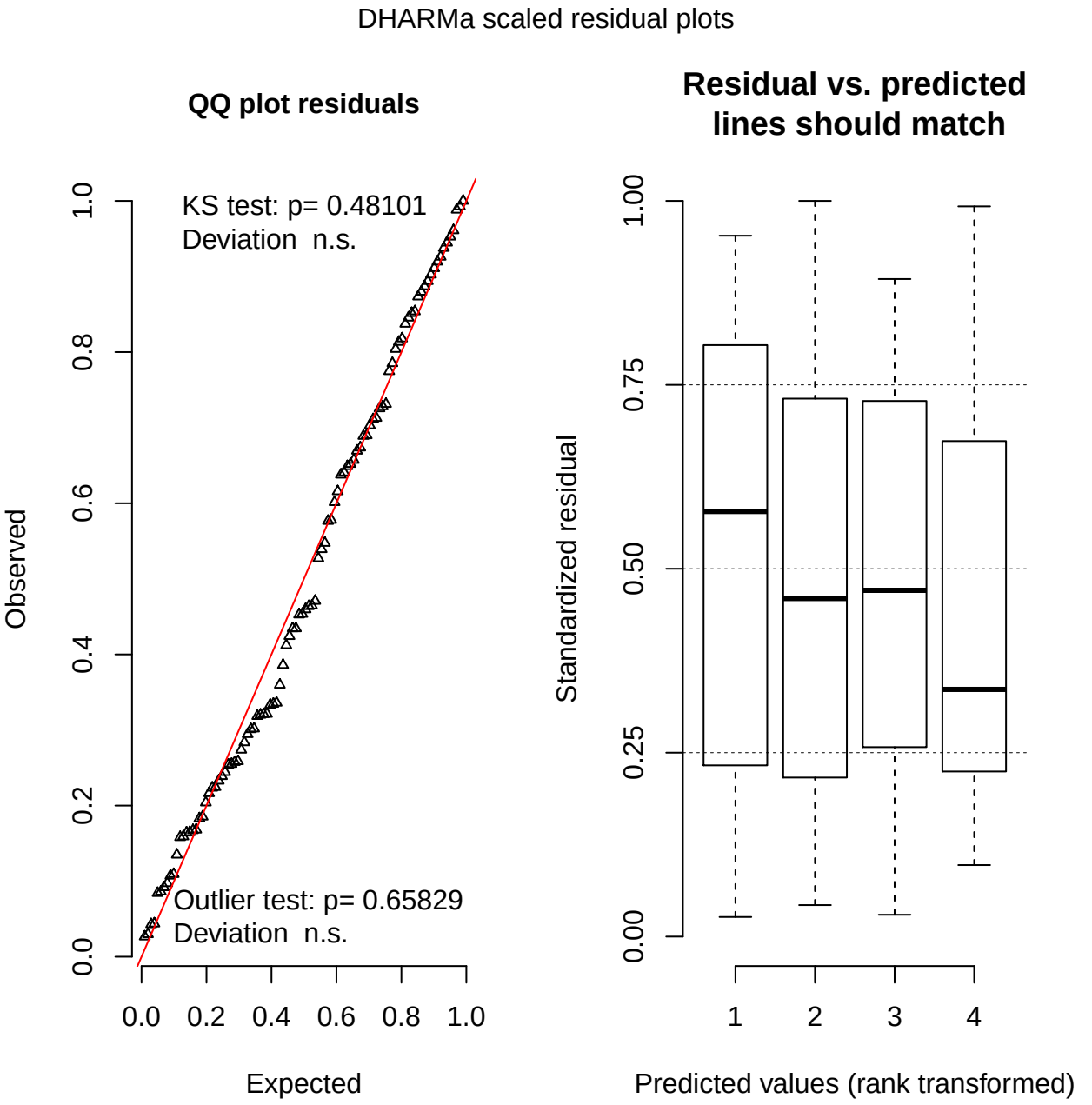

res
1.00
0.75
0.50
0.25
0.00
0.40
0.45
0.50
0.55
0.60
0.65
pred

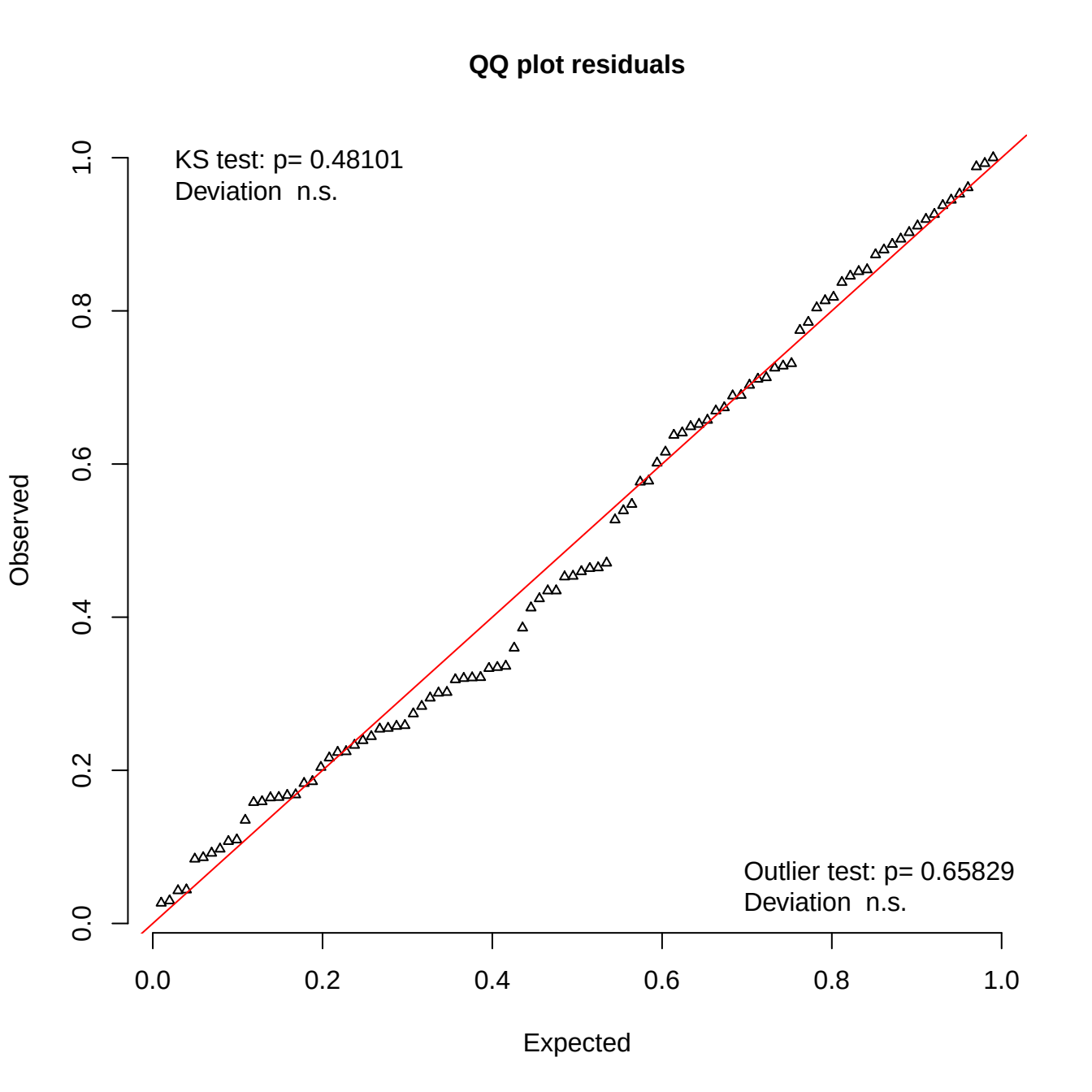

res
1.00
0.75
0.50
0.25
0.00
0.40
0.45
0.50
0.55
0.60
0.65
pred

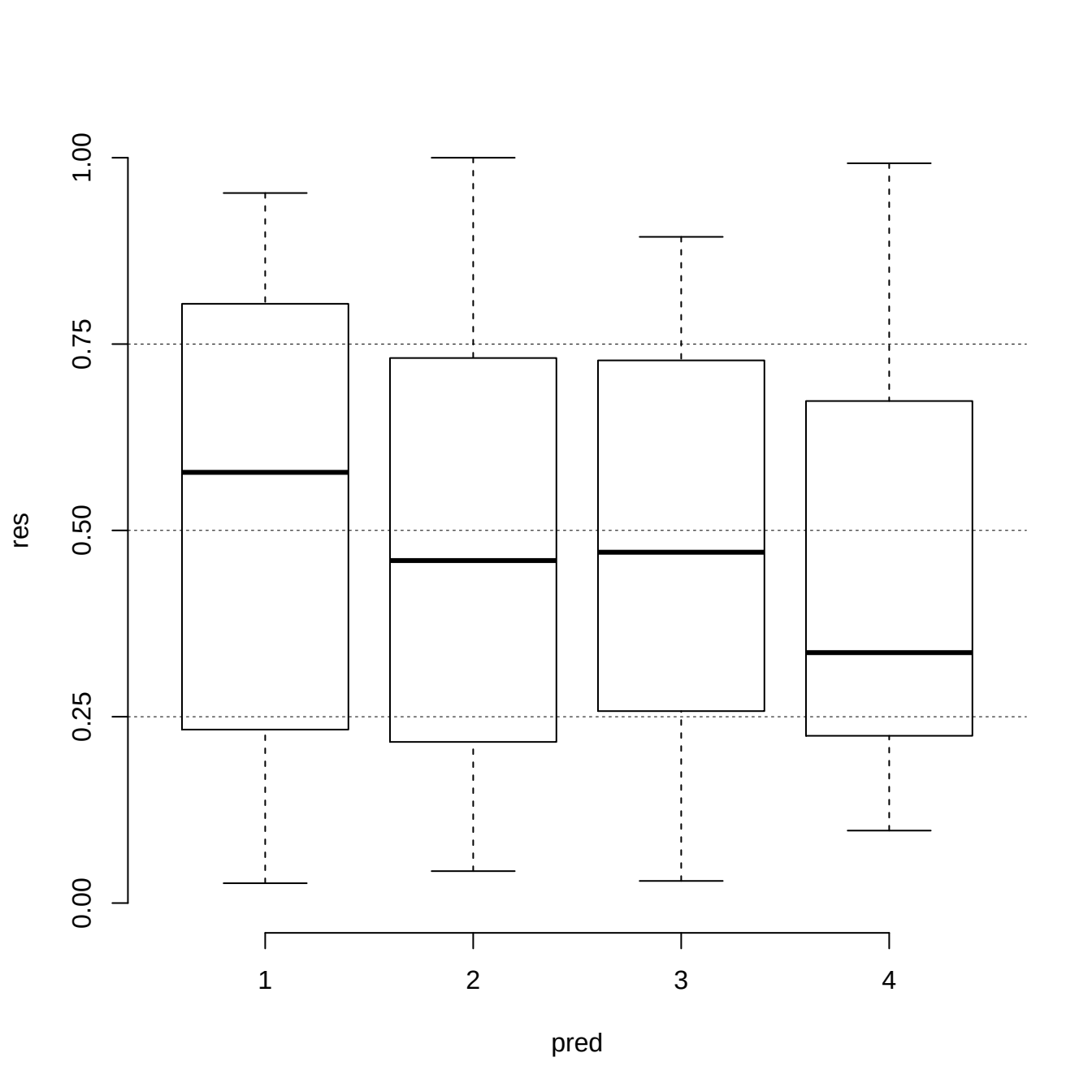

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.48101
Deviation n.s.
Outlier test: p= 0.65829
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
1
2
3
4

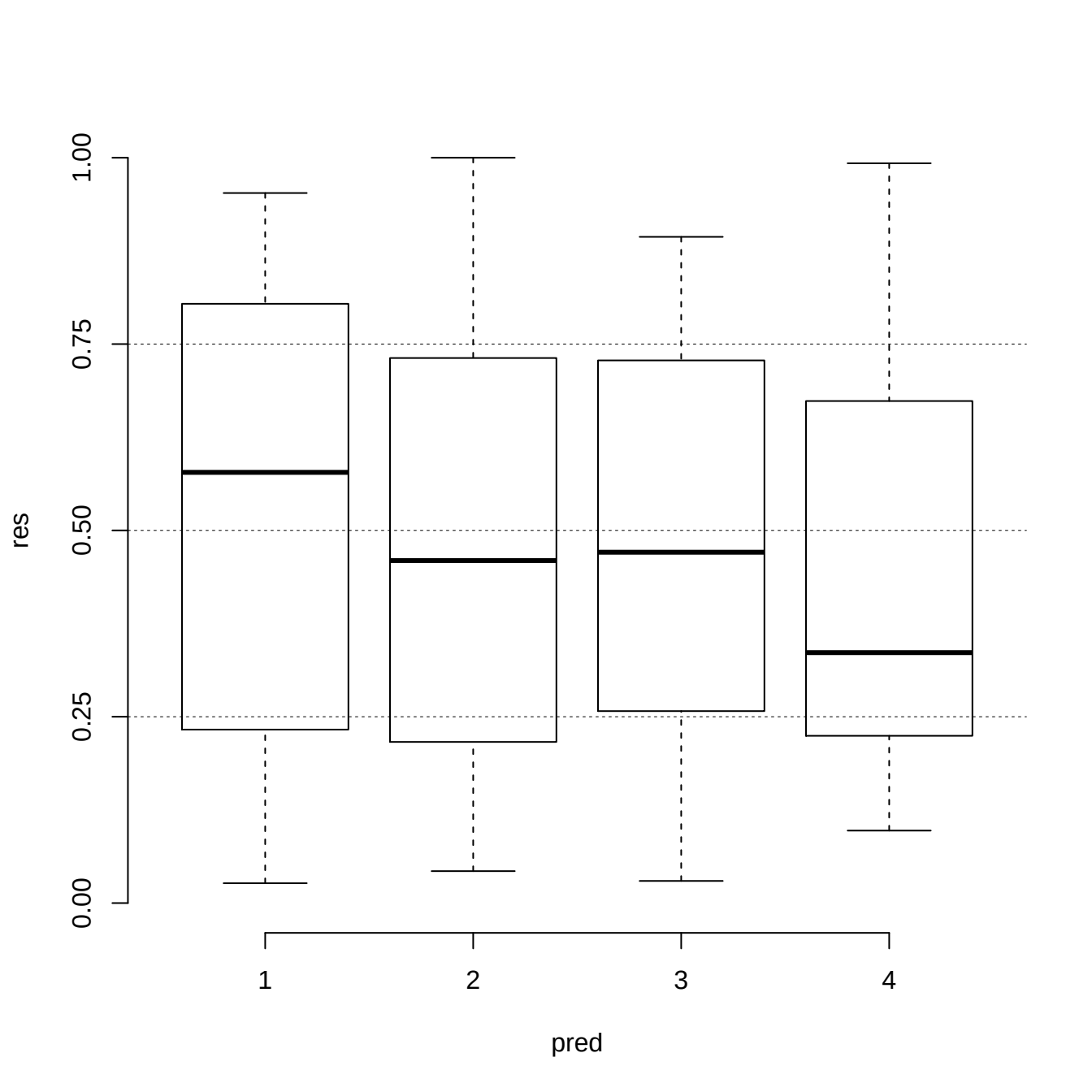

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.48101
Deviation n.s.
Outlier test: p= 0.65829
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
1
2
3
4

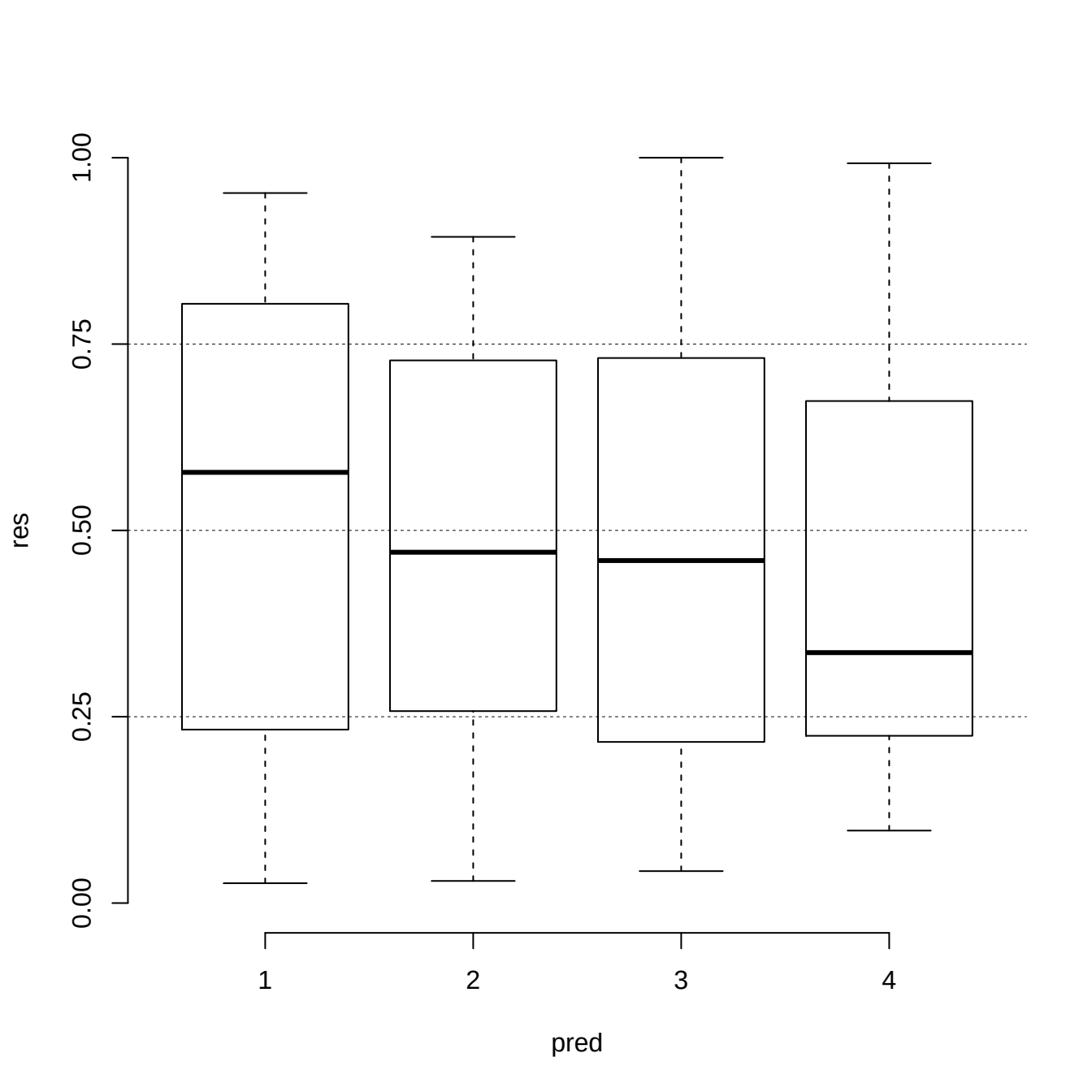

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.48101
Deviation n.s.
Outlier test: p= 0.65829
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00
1
2
3
4

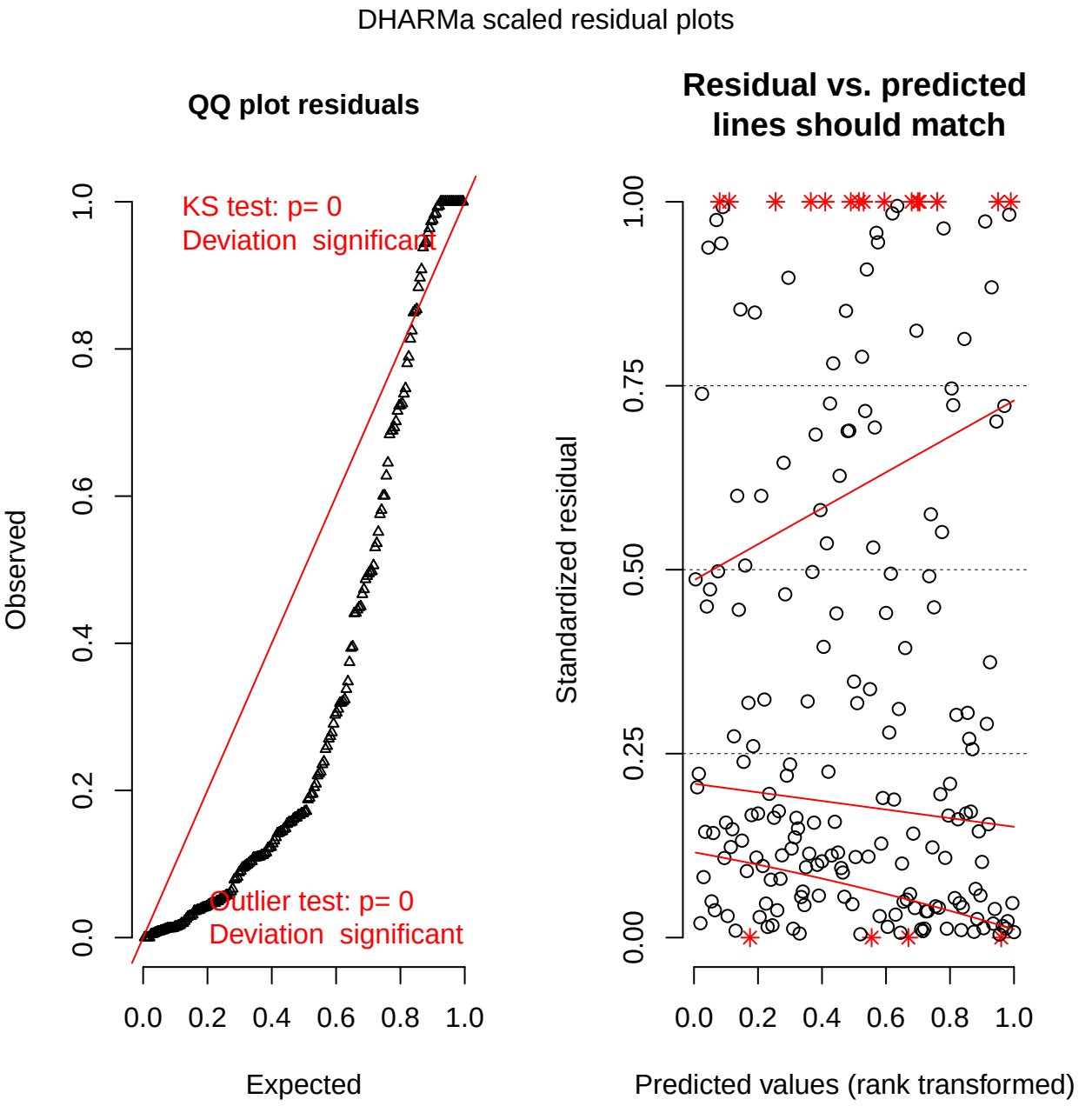

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.48101
Deviation n.s.
Outlier test: p= 0.65829
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00
1
2
3
4

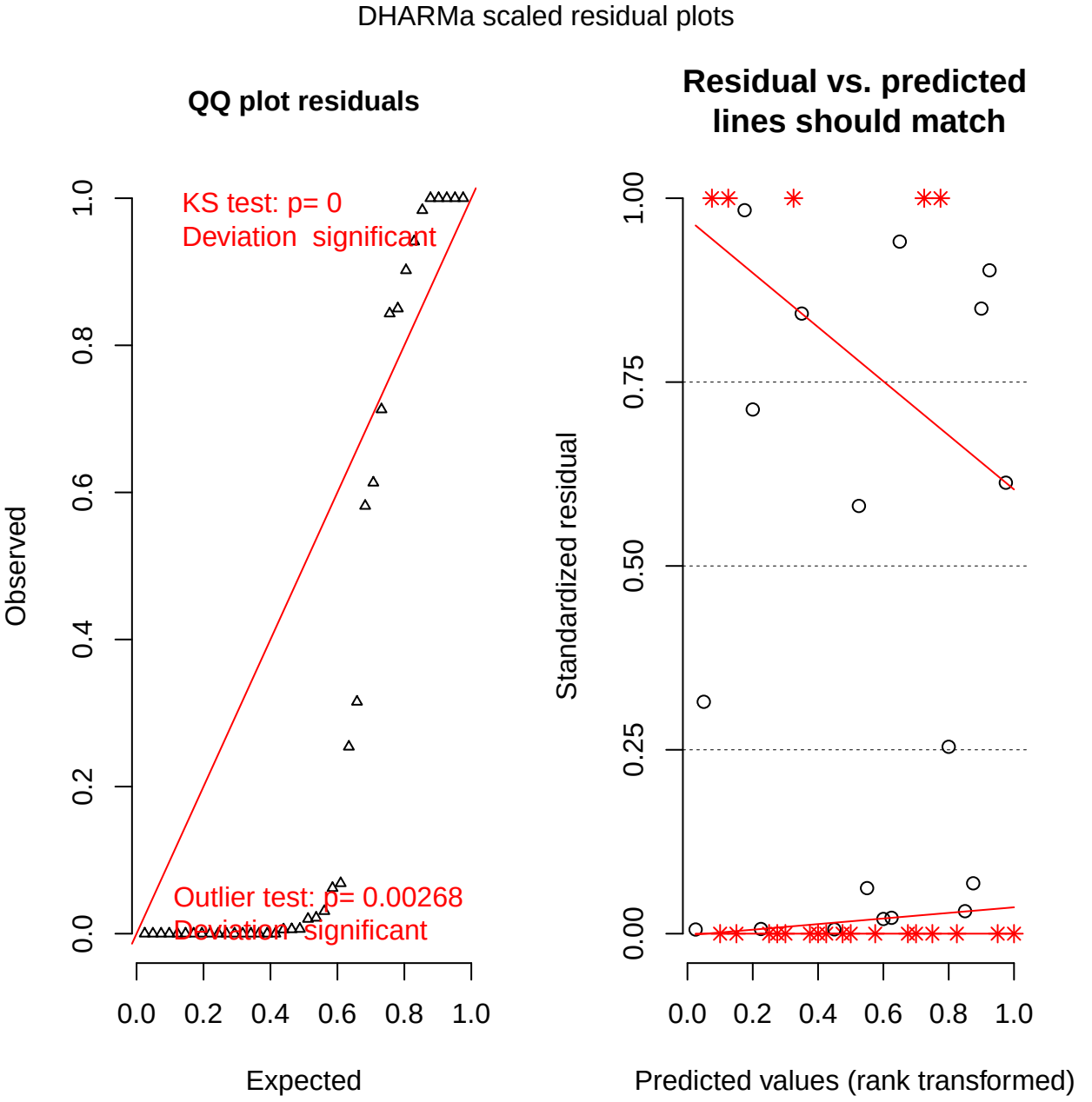

QQ plot residuals
KS test: p= 0.48101
Deviation n.s.
Outlier test: p= 0.65829
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

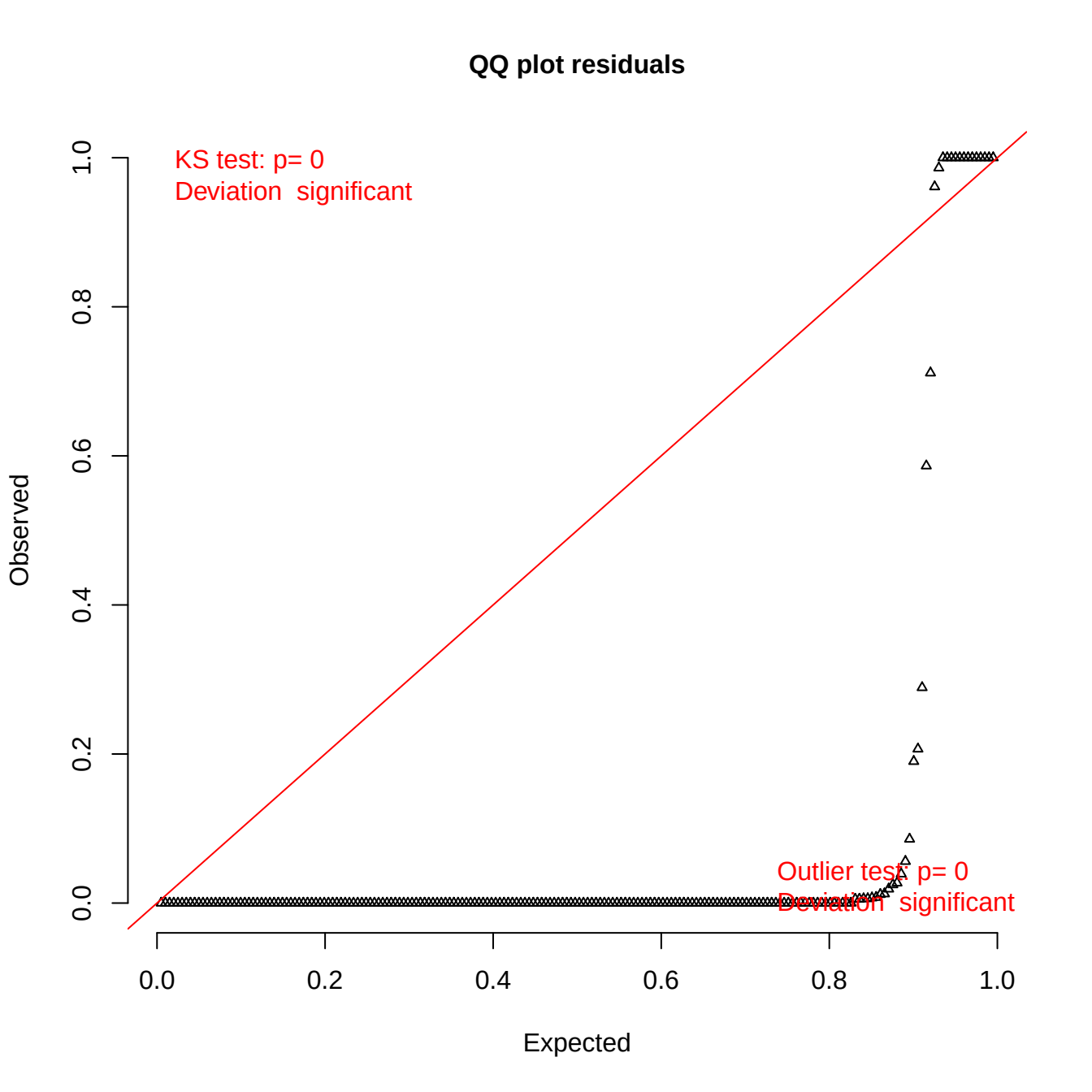

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

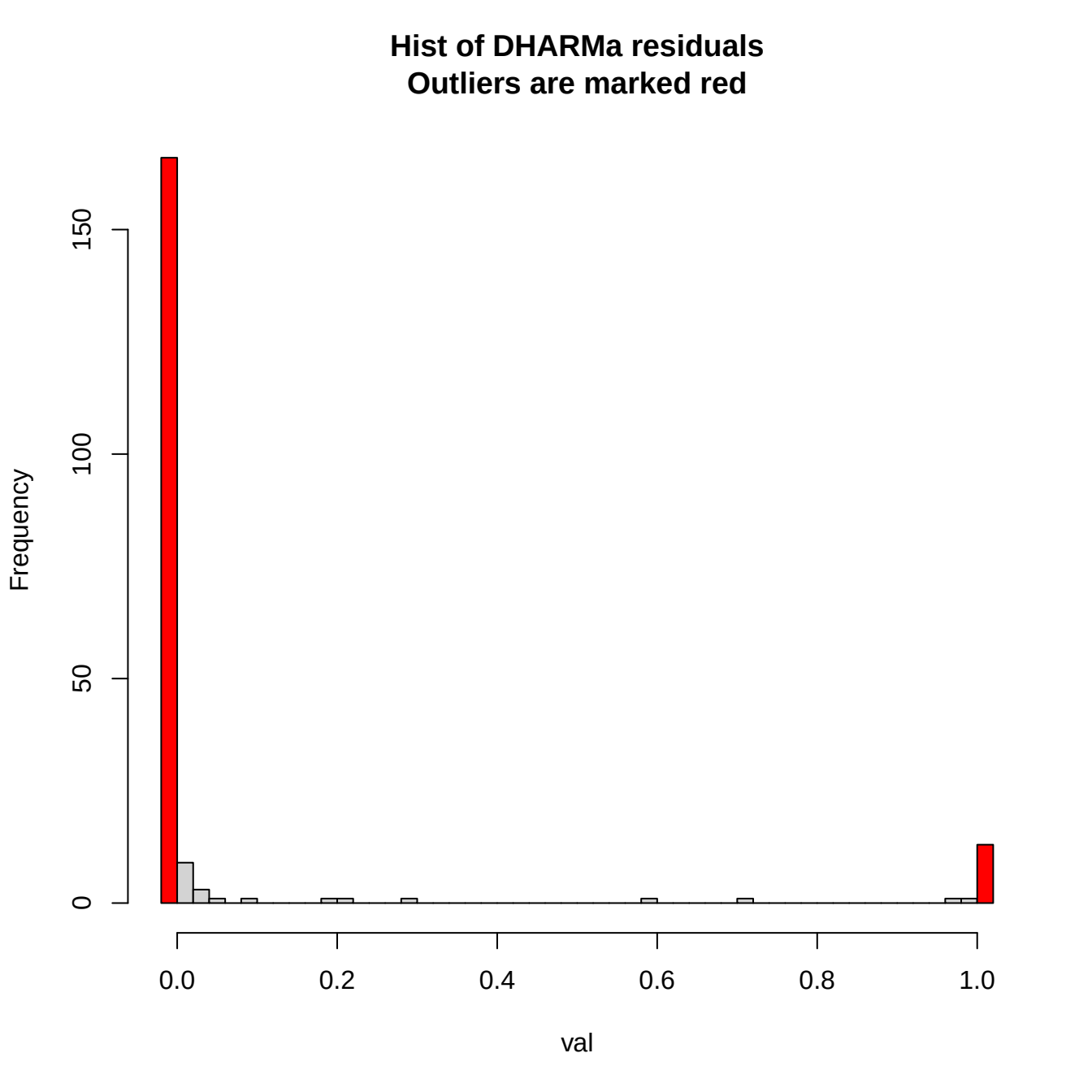

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

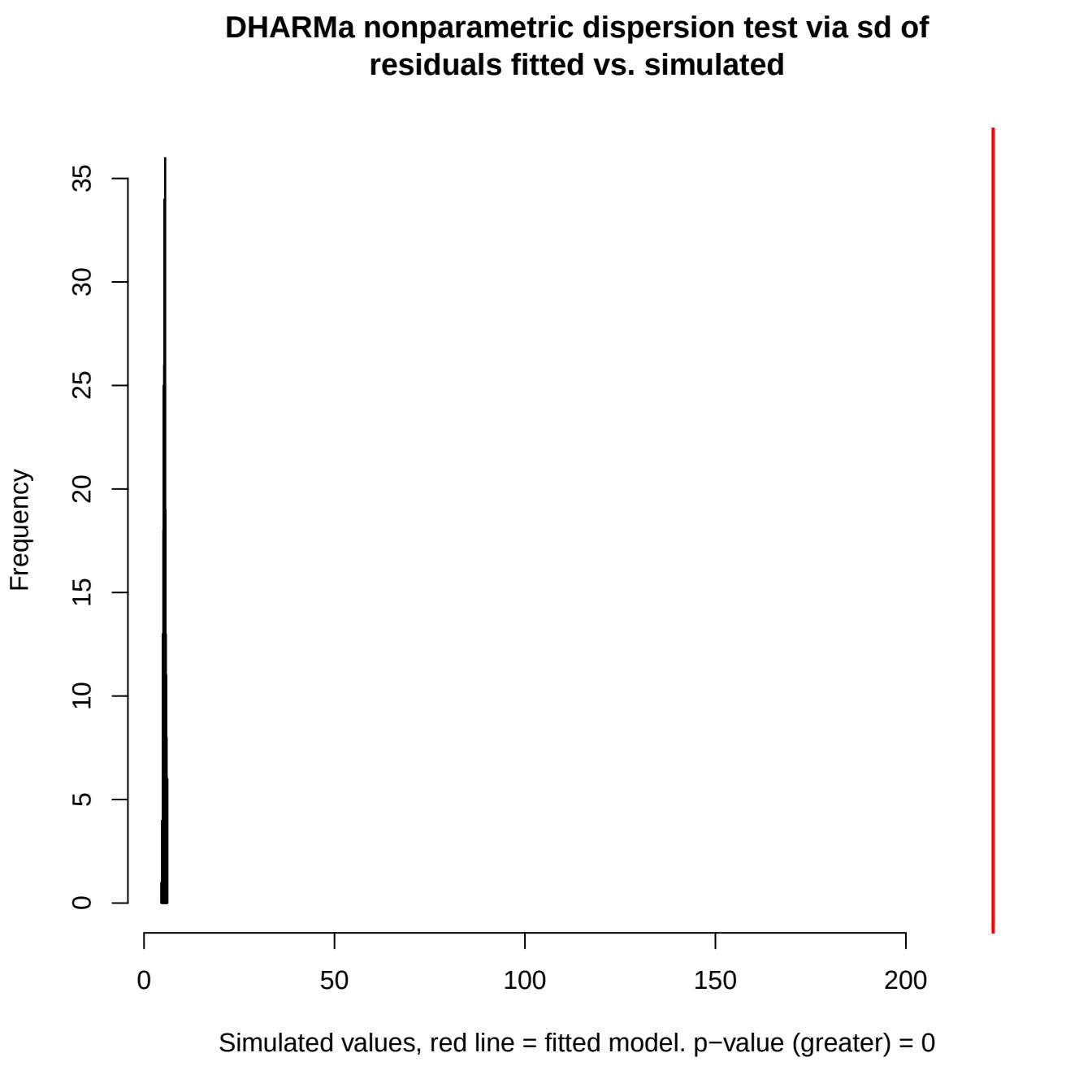

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

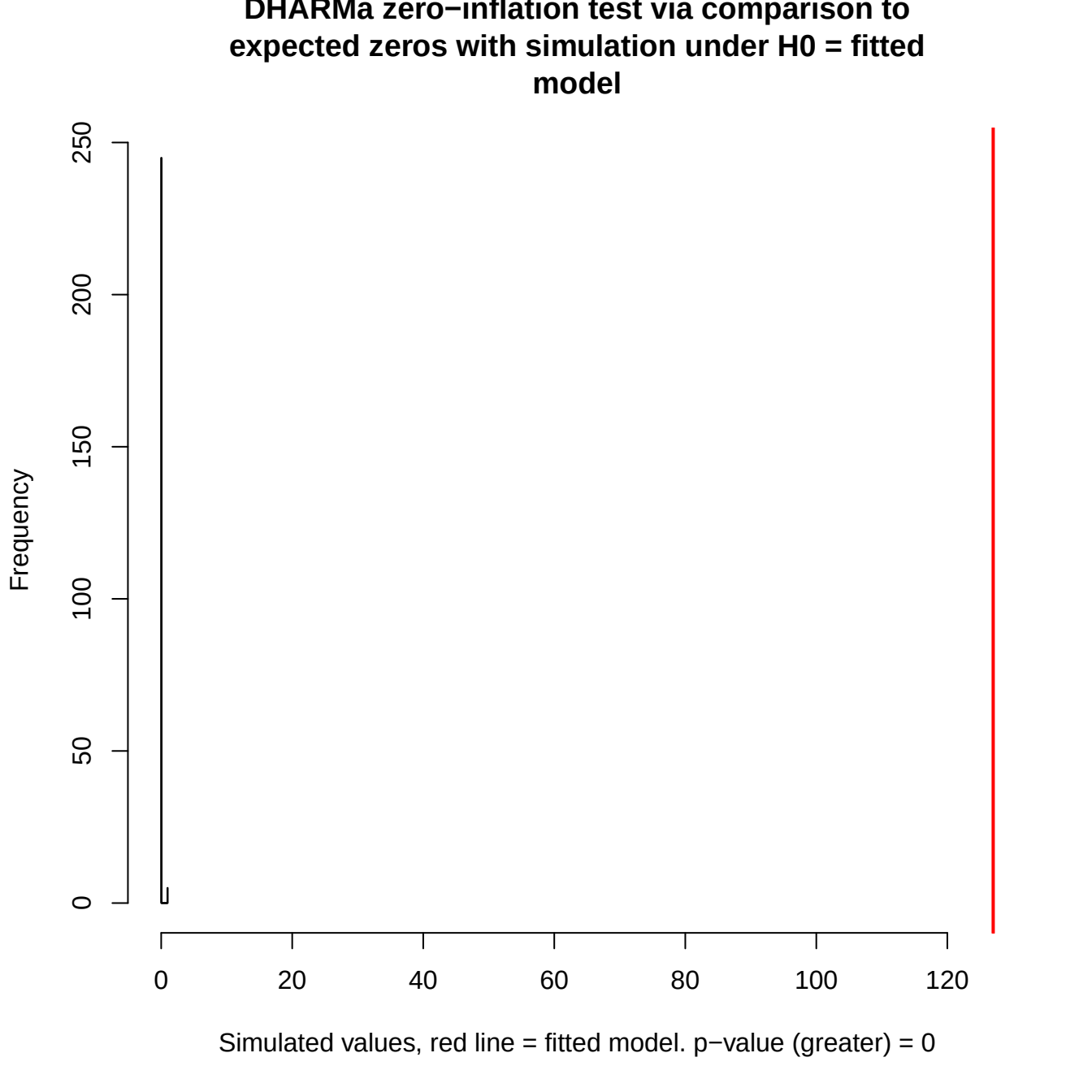

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

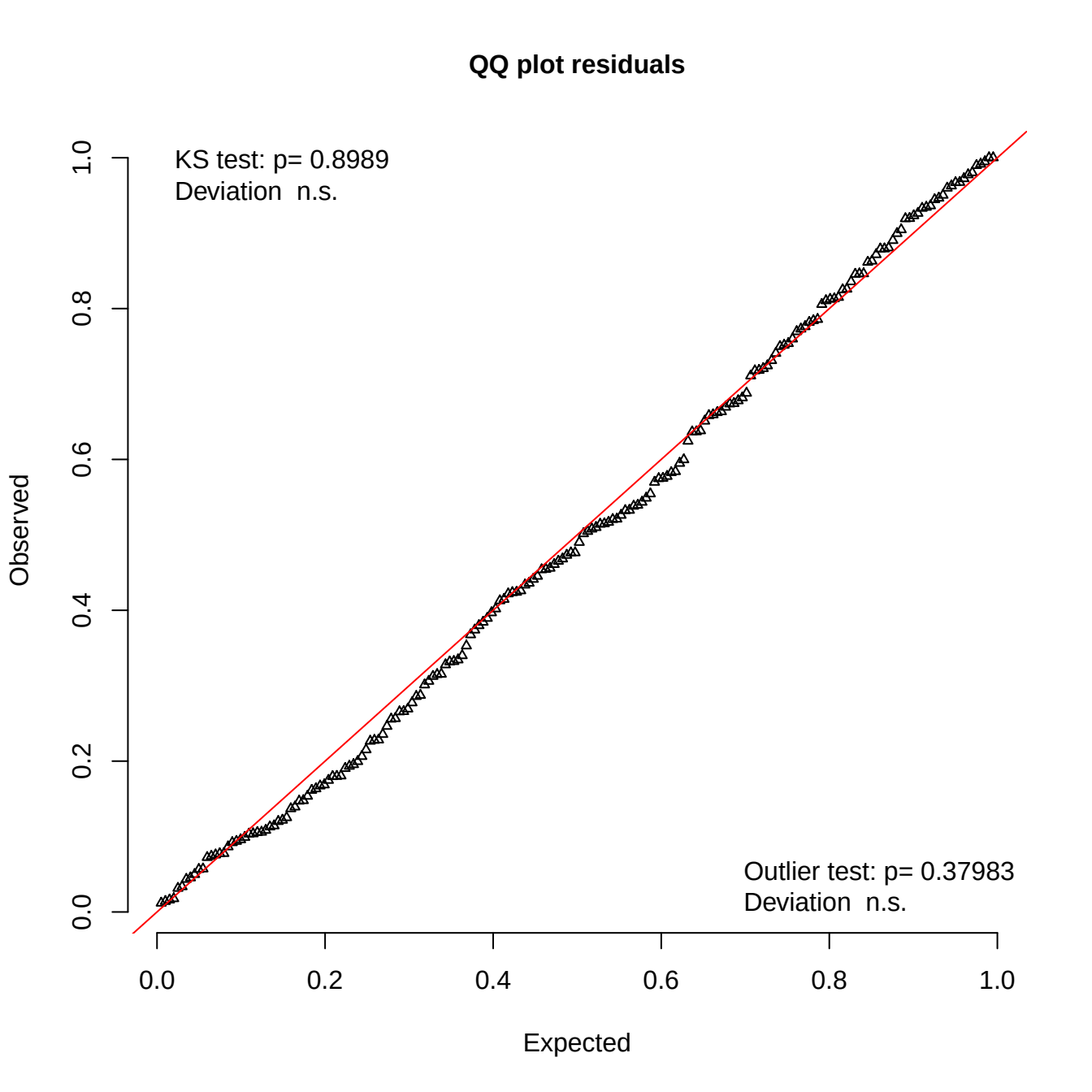

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.00268
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

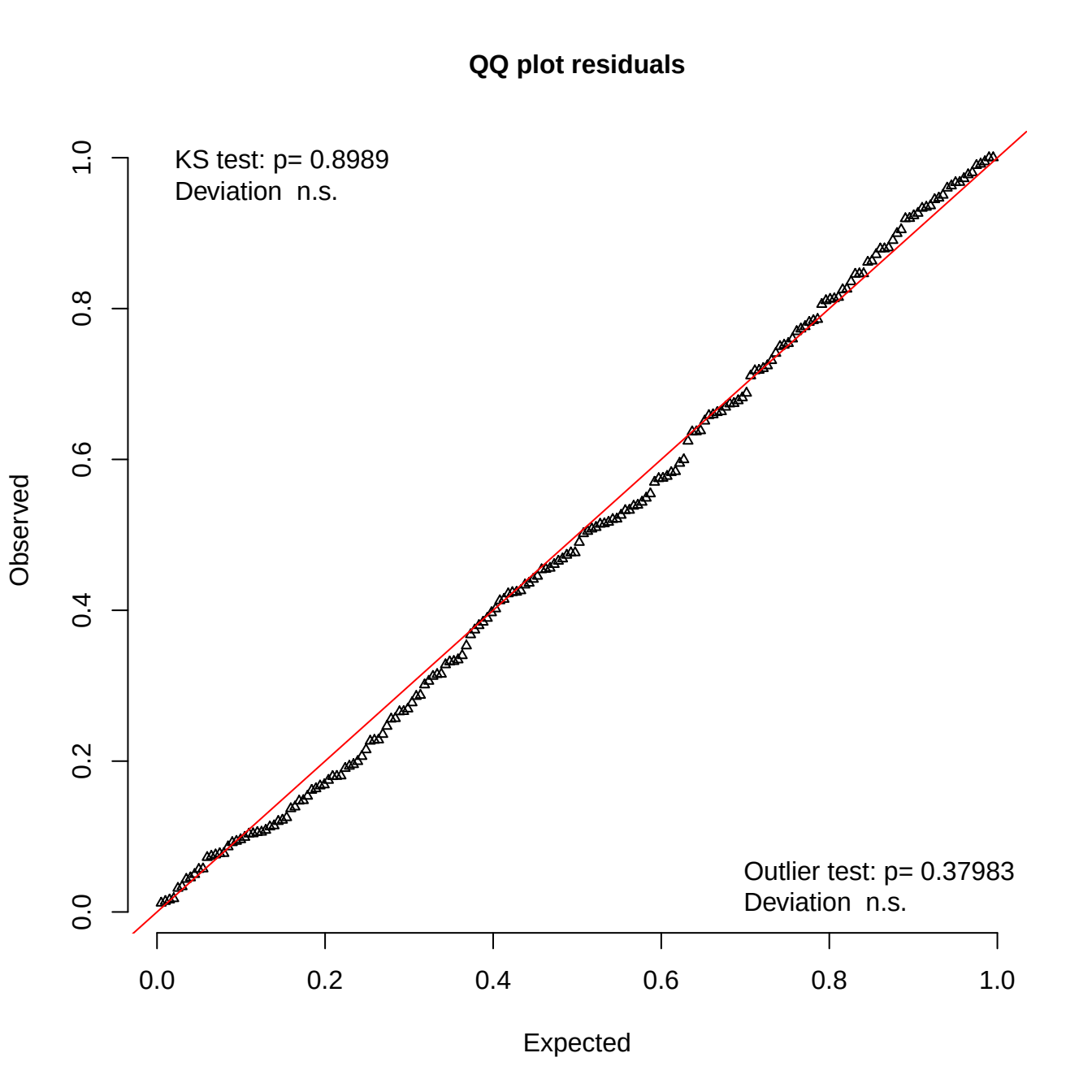

QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

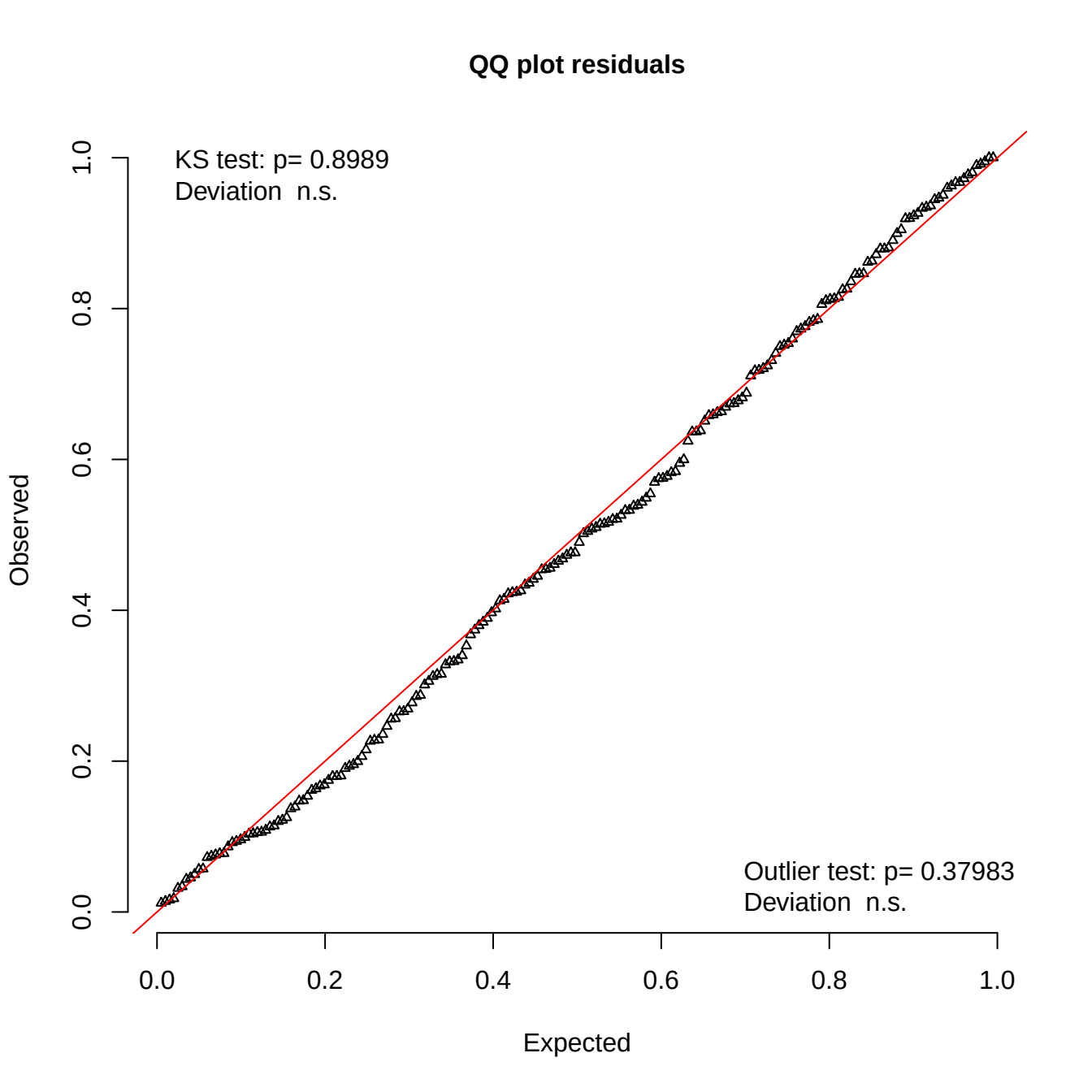

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
50
100
150
0.0
0.2
0.4
0.6
0.8
1.0
val

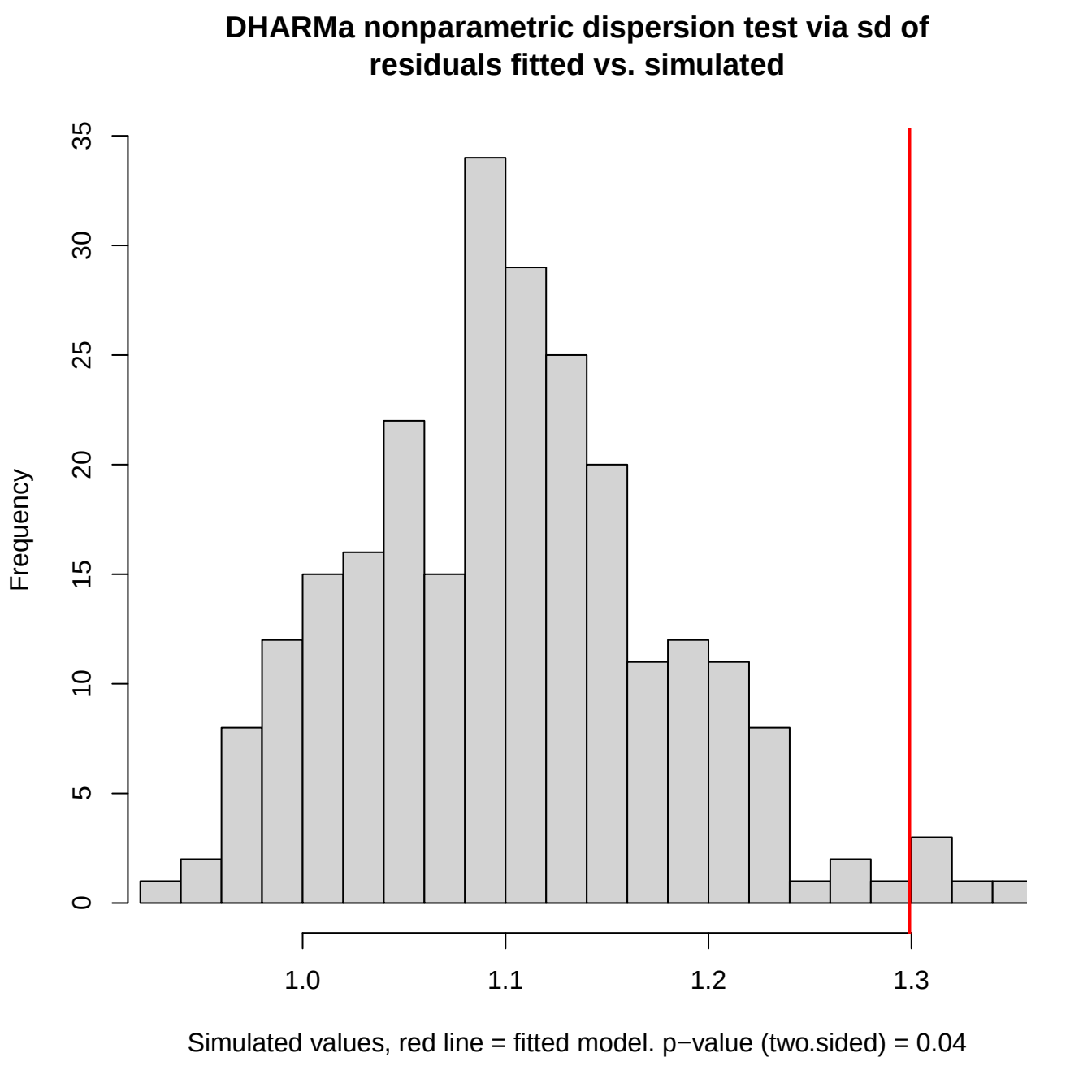

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
0
50
100
150
200
Simulated values, red line = fitted model. p−value (greater) = 0

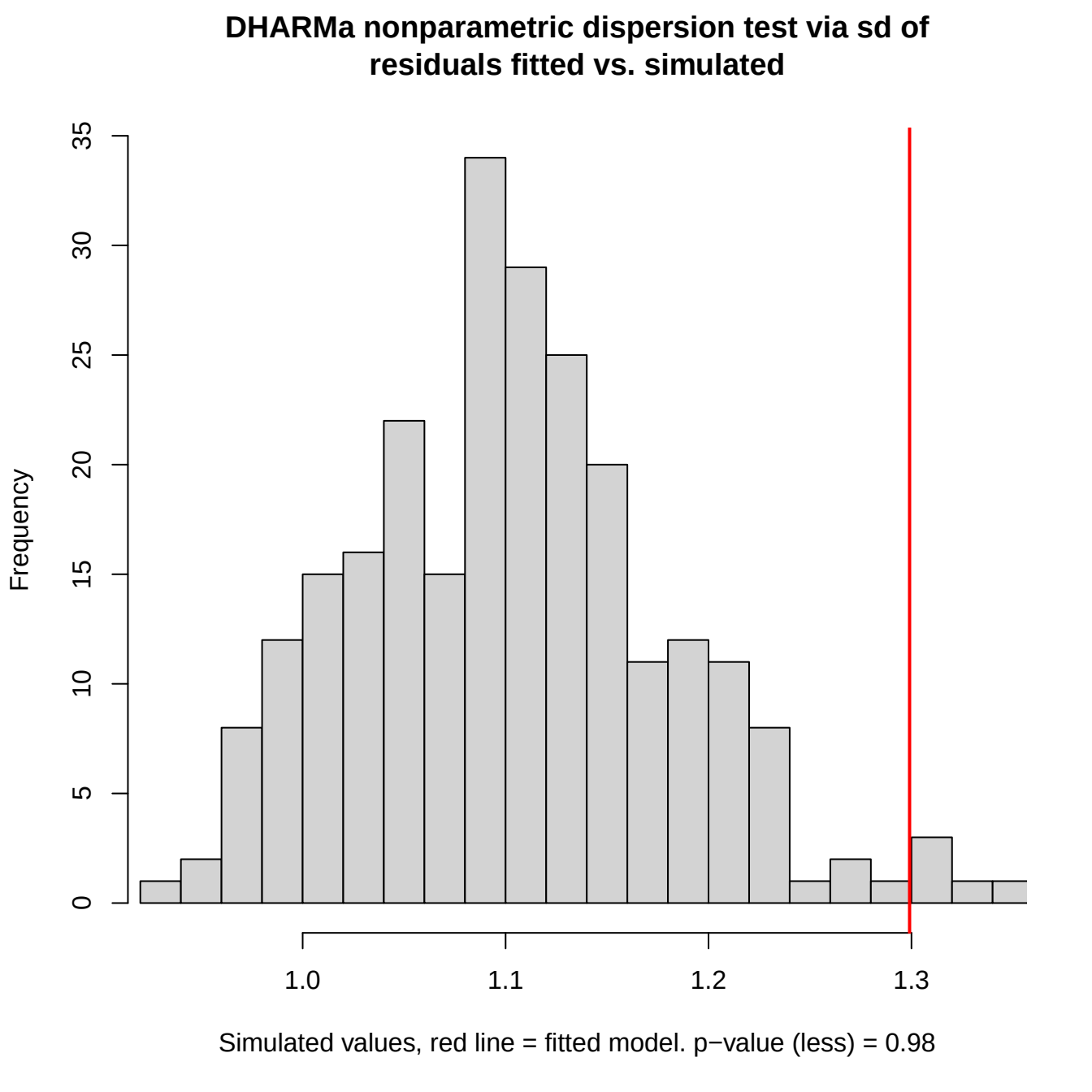

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
0
20
40
60
80
100
120
Simulated values, red line = fitted model. p−value (greater) = 0

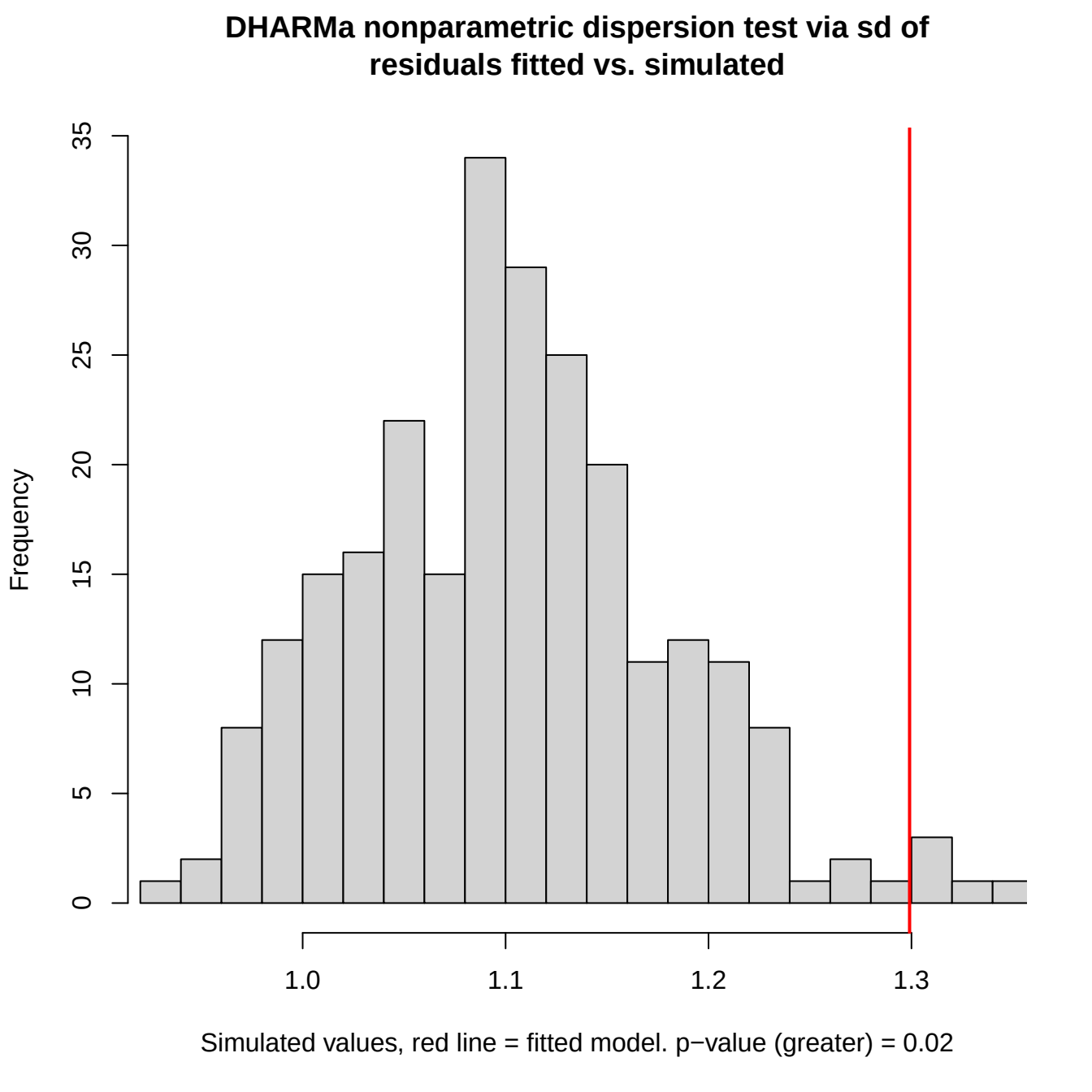

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

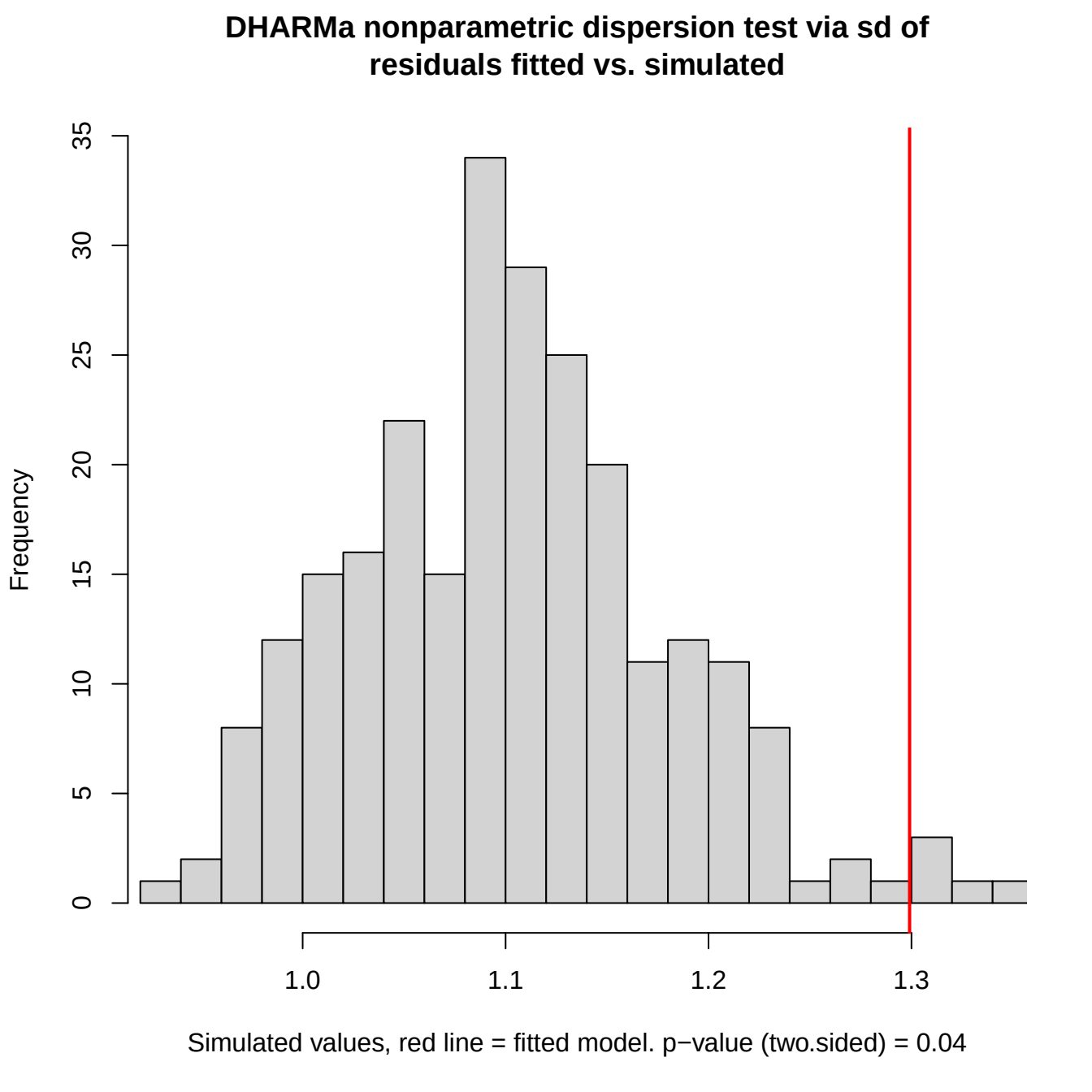

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

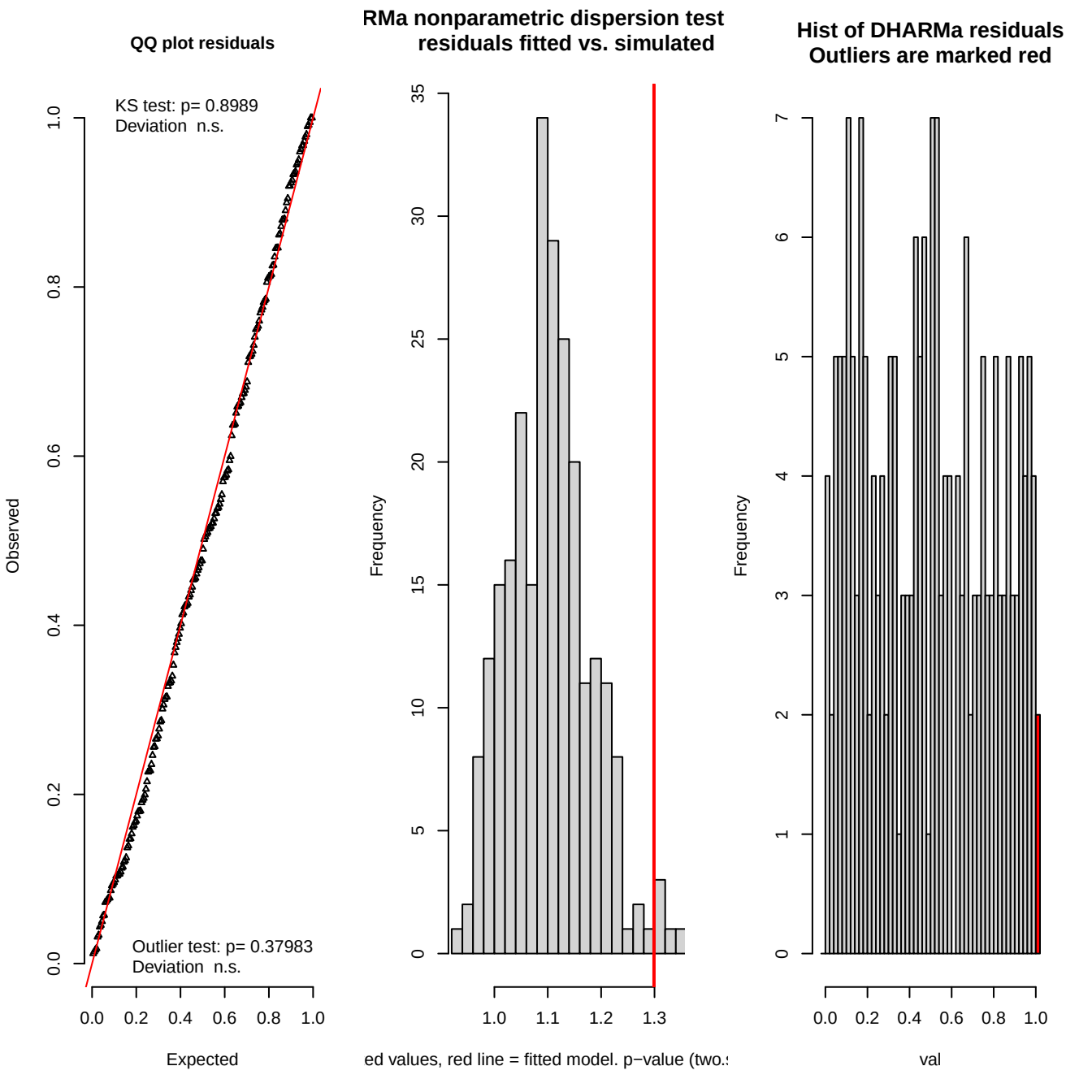

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

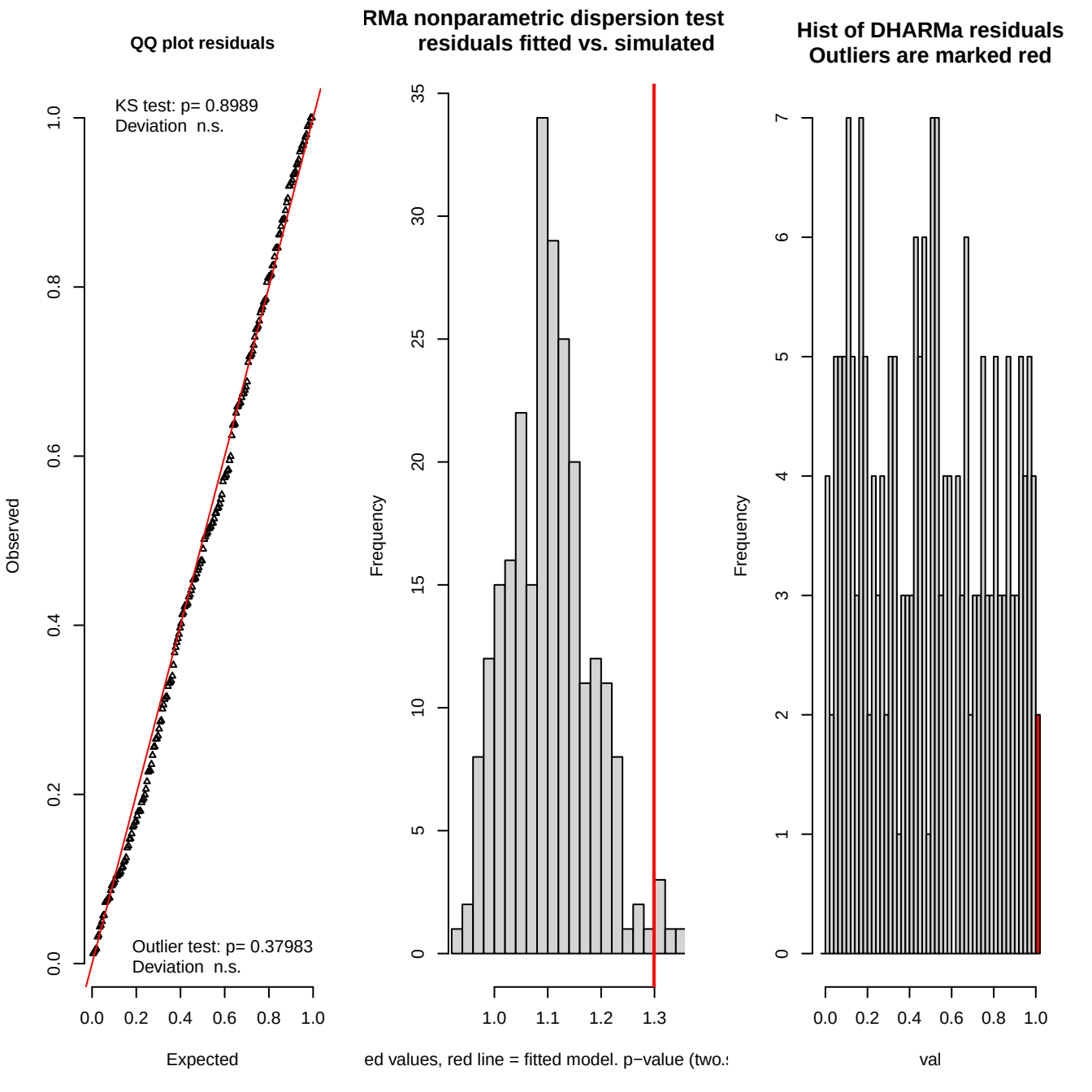

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.04

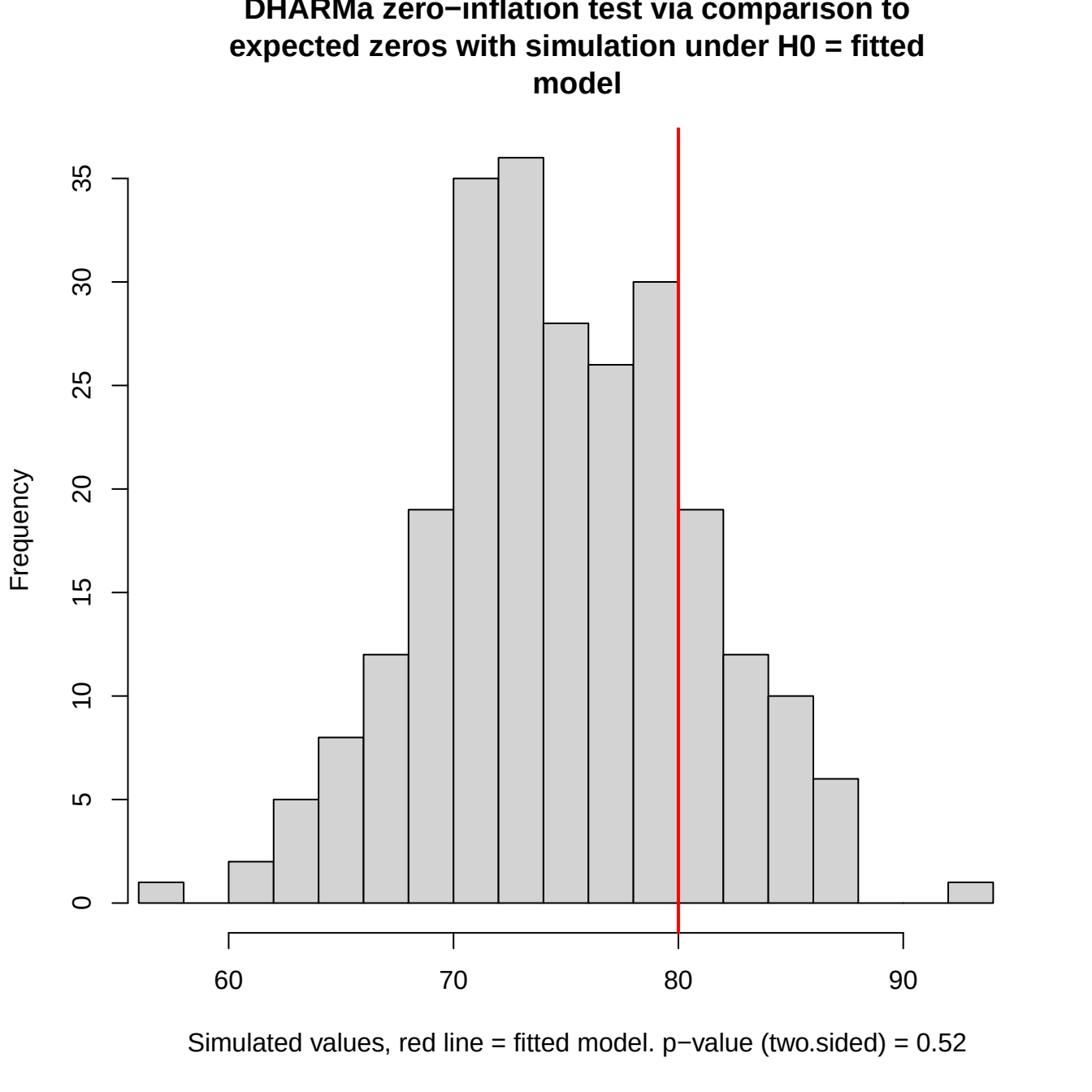

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (less) = 0.98

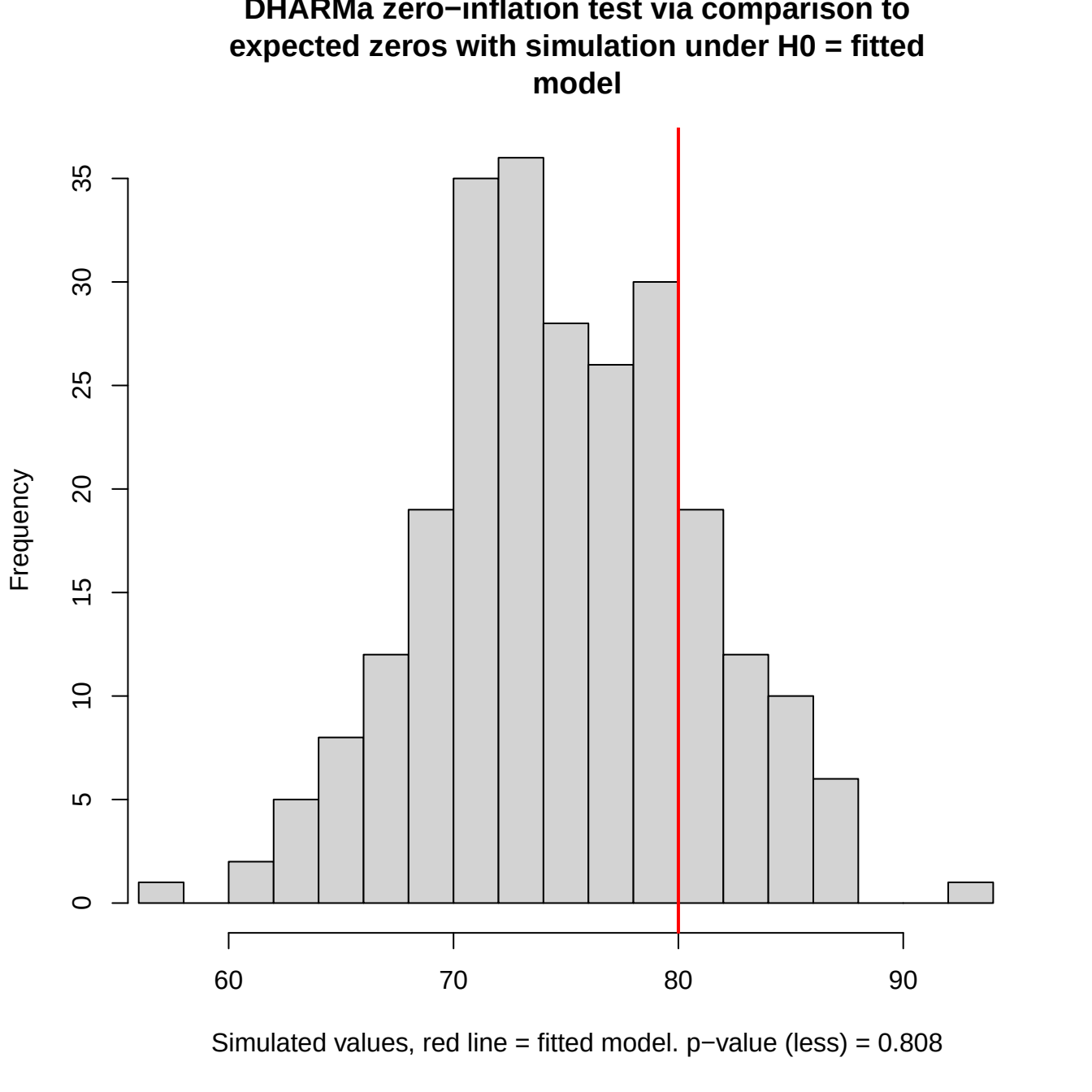

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (greater) = 0.02

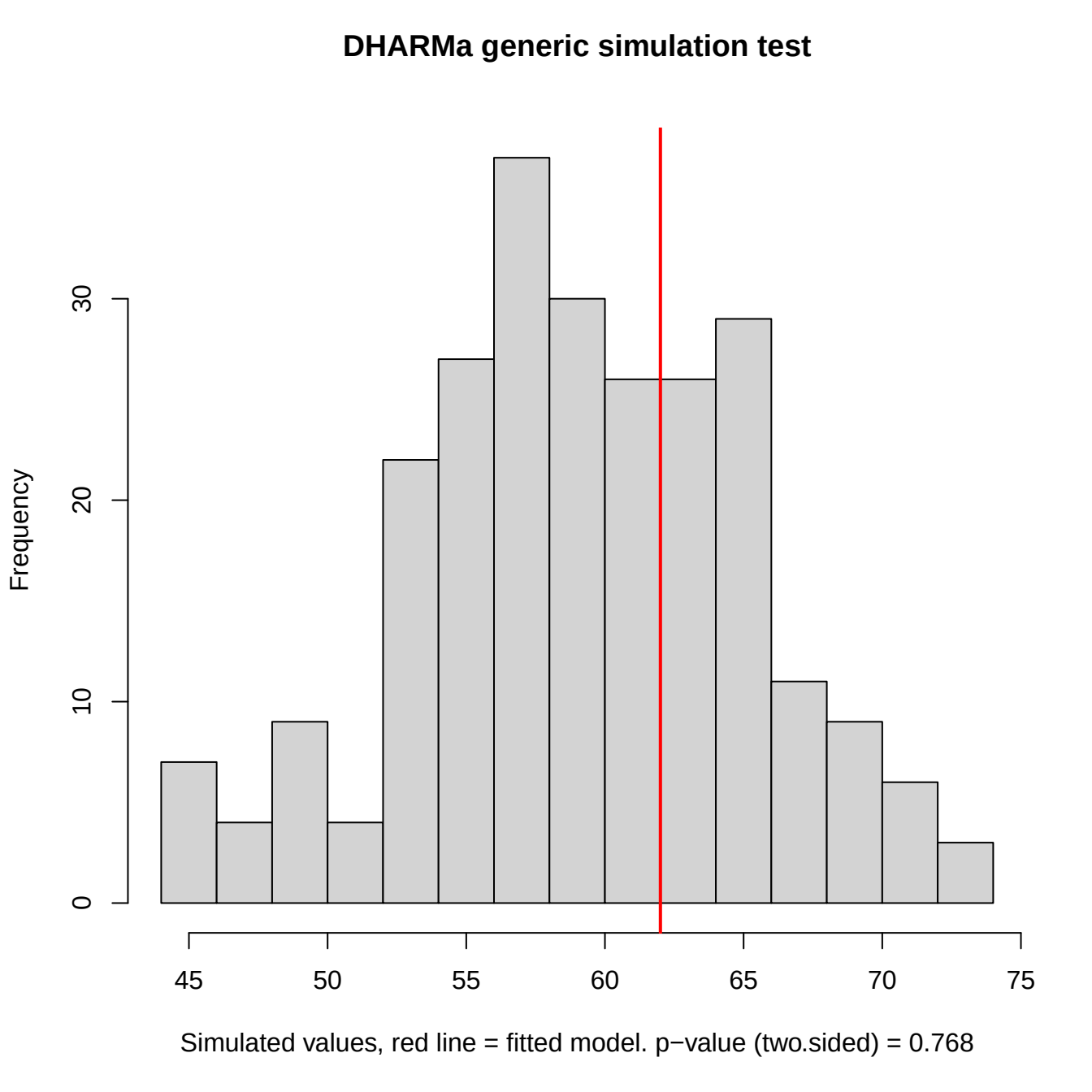

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.04

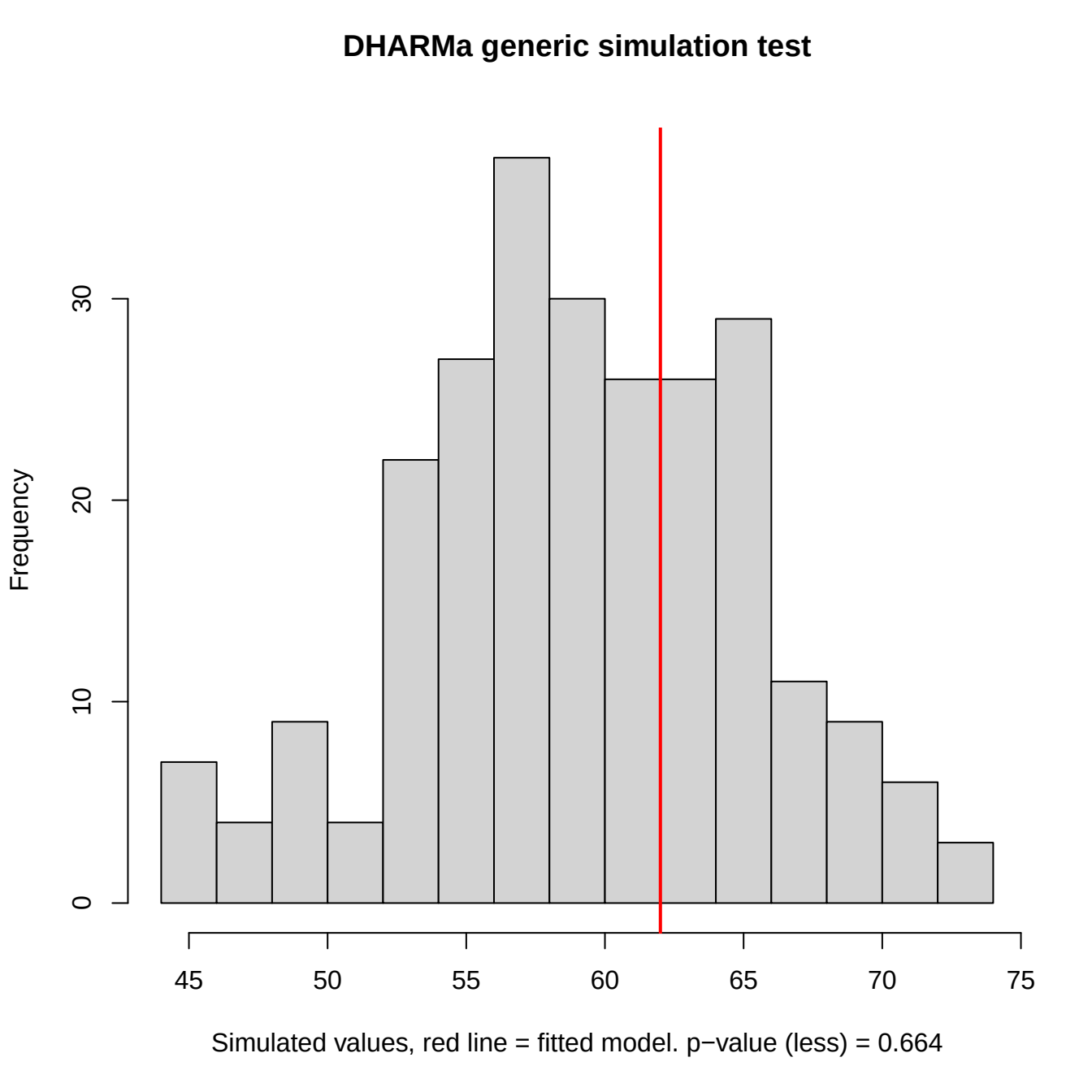

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

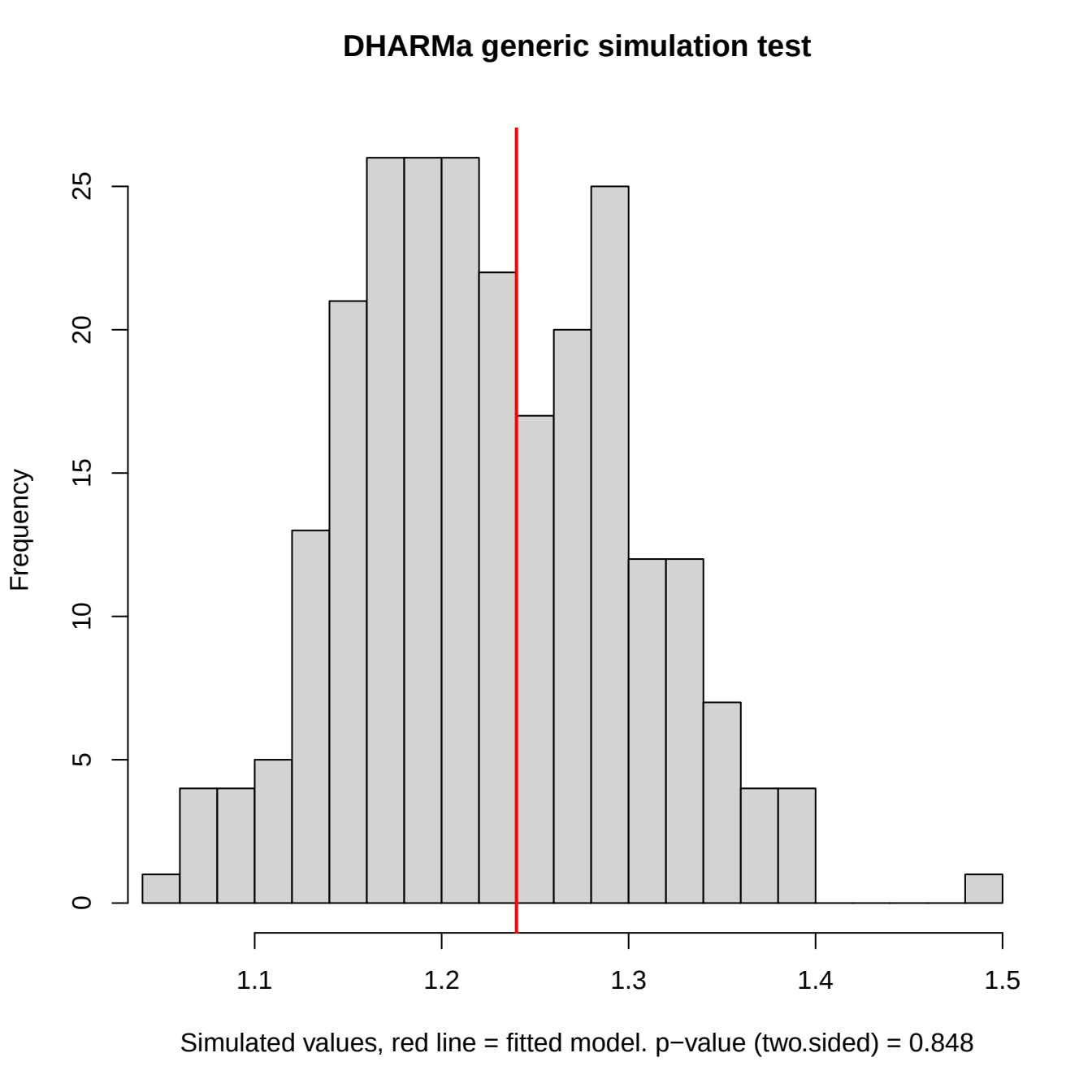

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

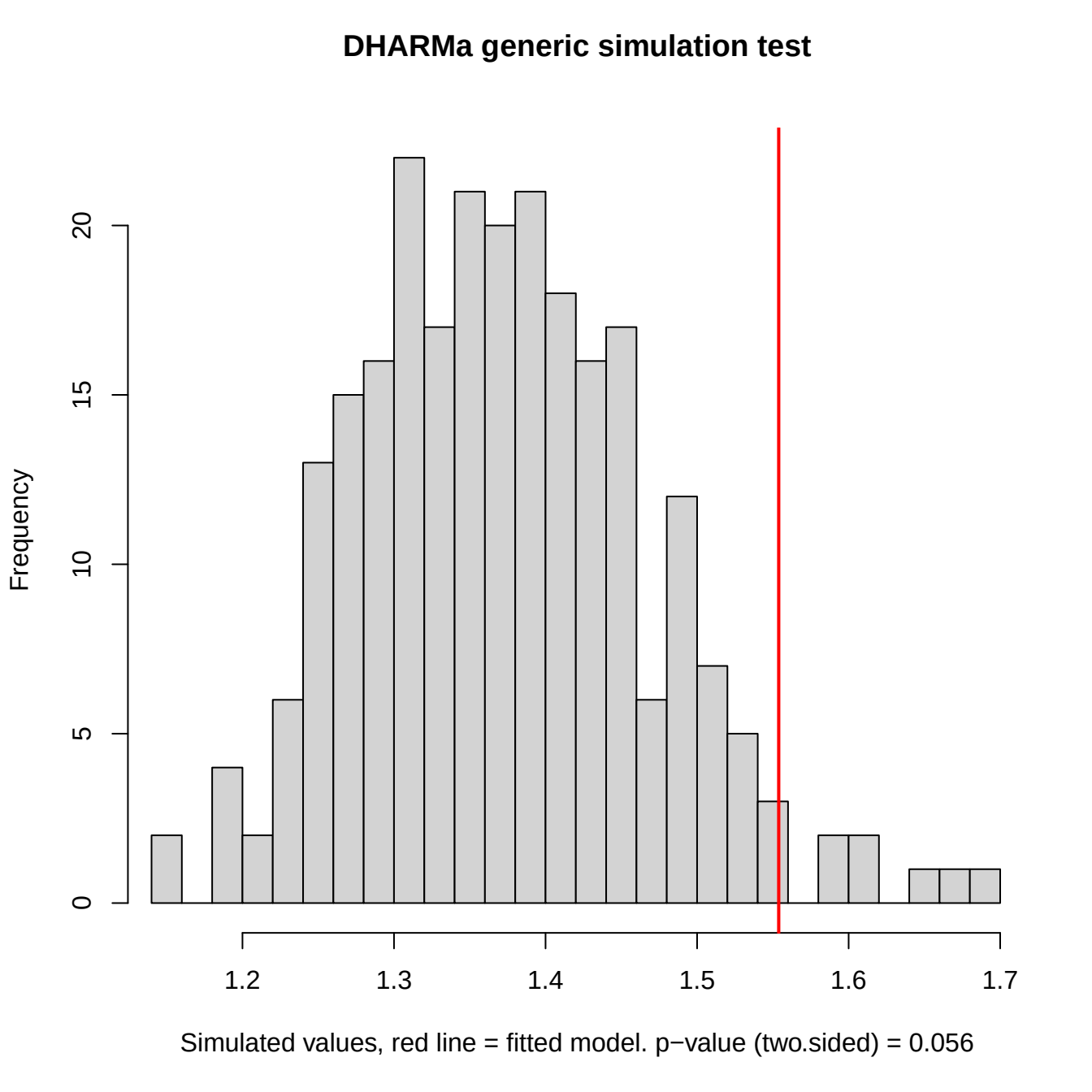

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
20
25
30
35
60
70
80
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

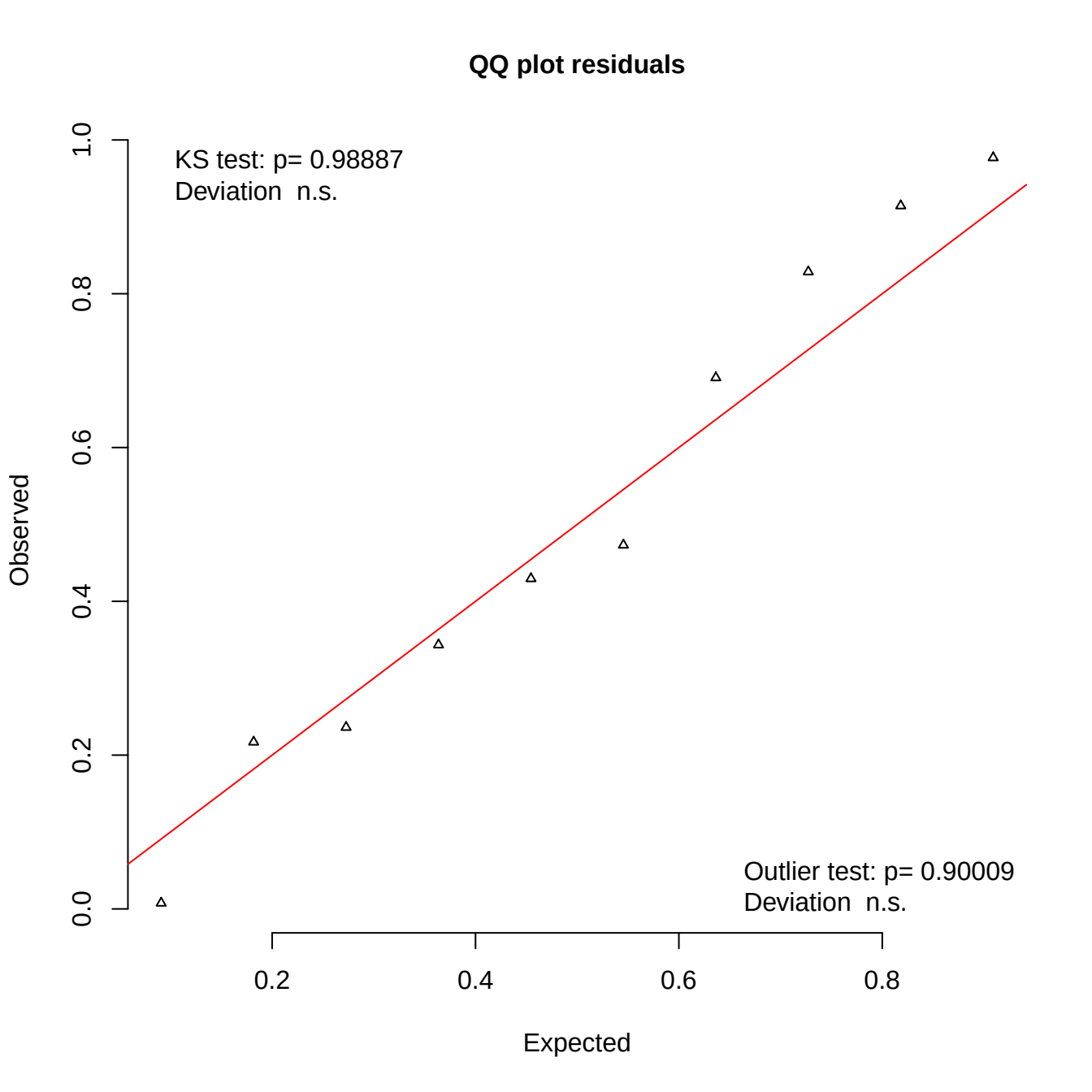

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
20
25
30
35
60
70
80
90
Simulated values, red line = fitted model. p−value (less) = 0.808

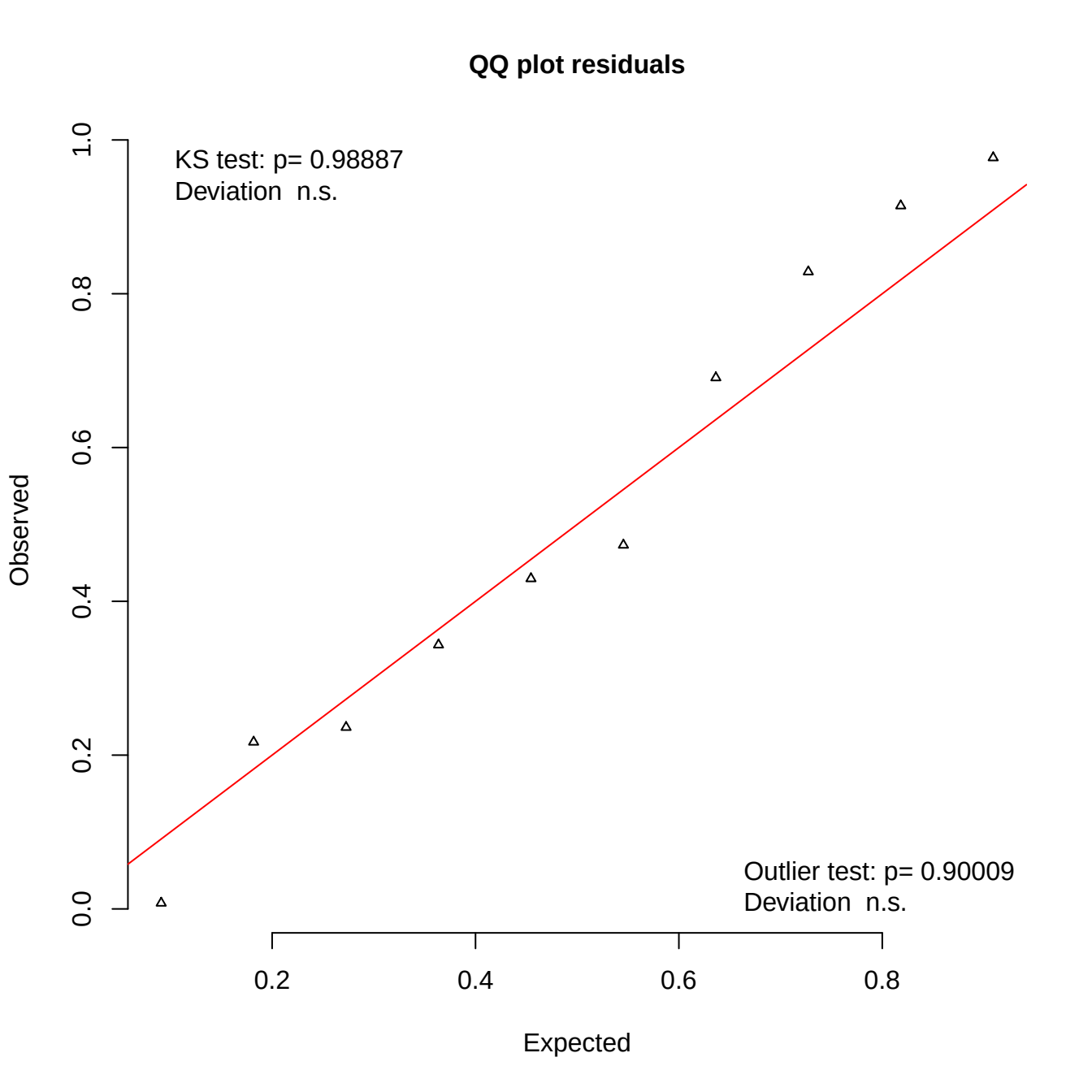

DHARMa generic simulation test
Frequency
0
10
20
30
45
50
55
60
65
70
75
Simulated values, red line = fitted model. p−value (two.sided) = 0.768

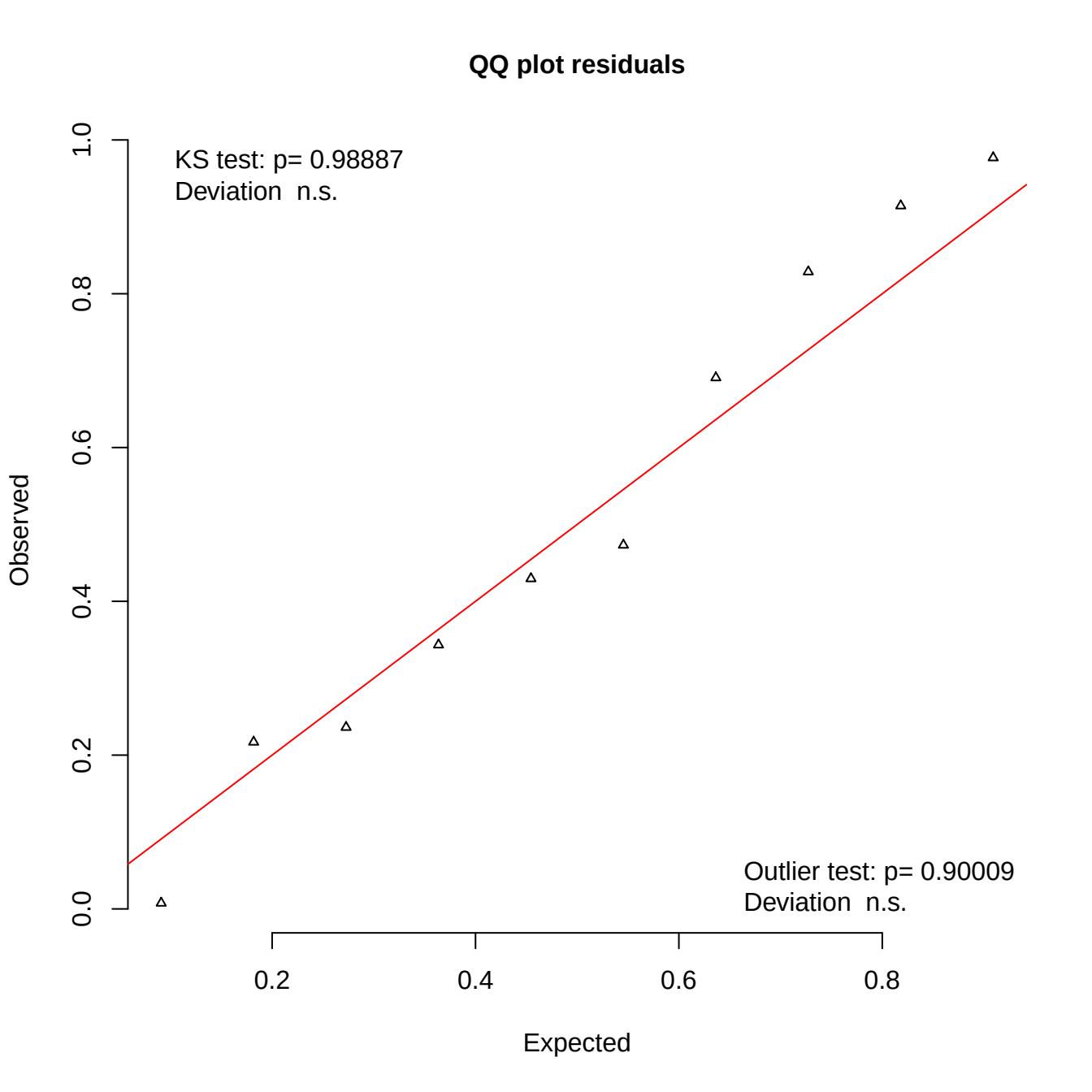

DHARMa generic simulation test
Frequency
0
10
20
30
45
50
55
60
65
70
75
Simulated values, red line = fitted model. p−value (less) = 0.664

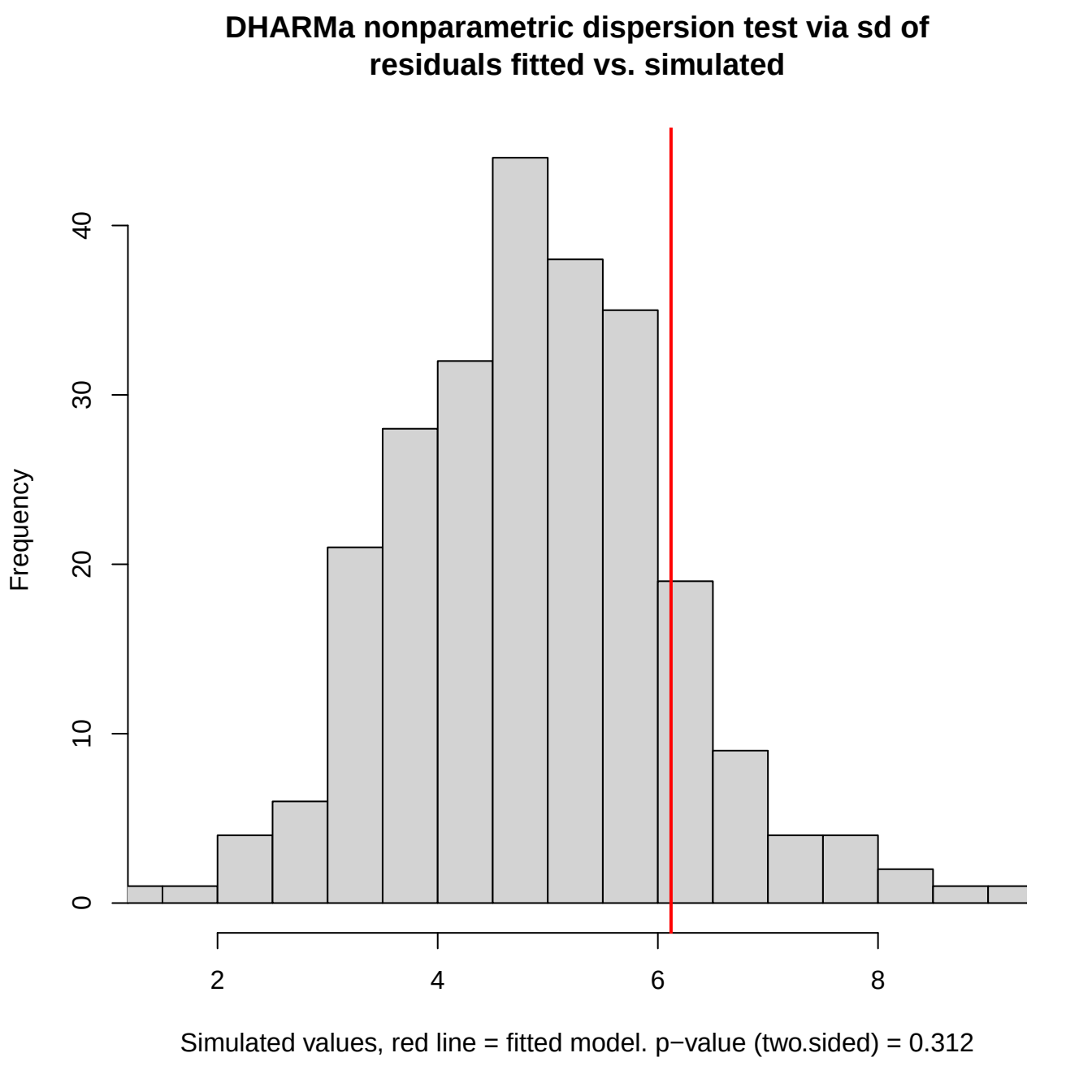

DHARMa generic simulation test
Frequency
0
5
10
15
20
25
1.1
1.2
1.3
1.4
1.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.848

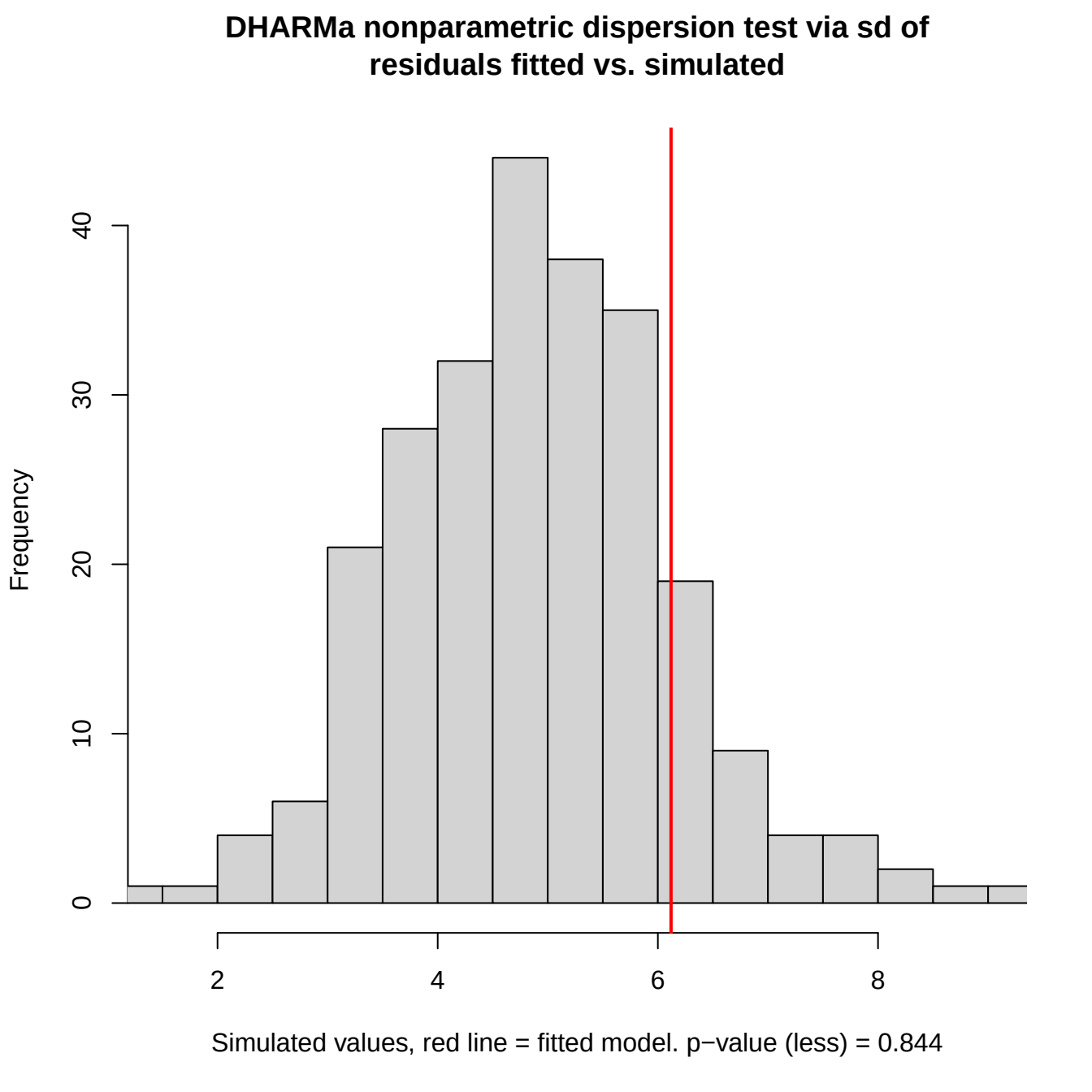

DHARMa generic simulation test
Frequency
0
5
10
15
20
1.2
1.3
1.4
1.5
1.6
1.7
Simulated values, red line = fitted model. p−value (two.sided) = 0.056

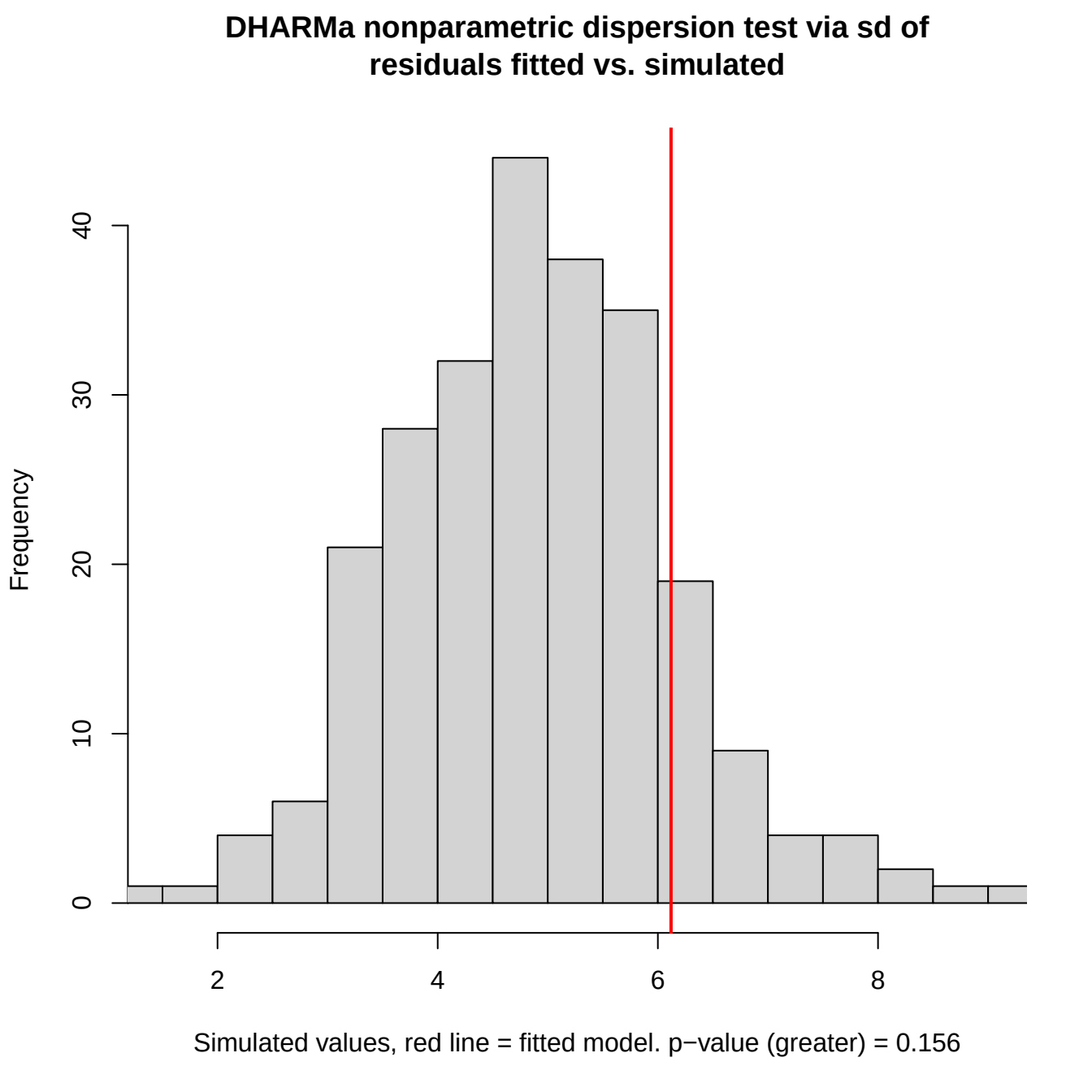

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

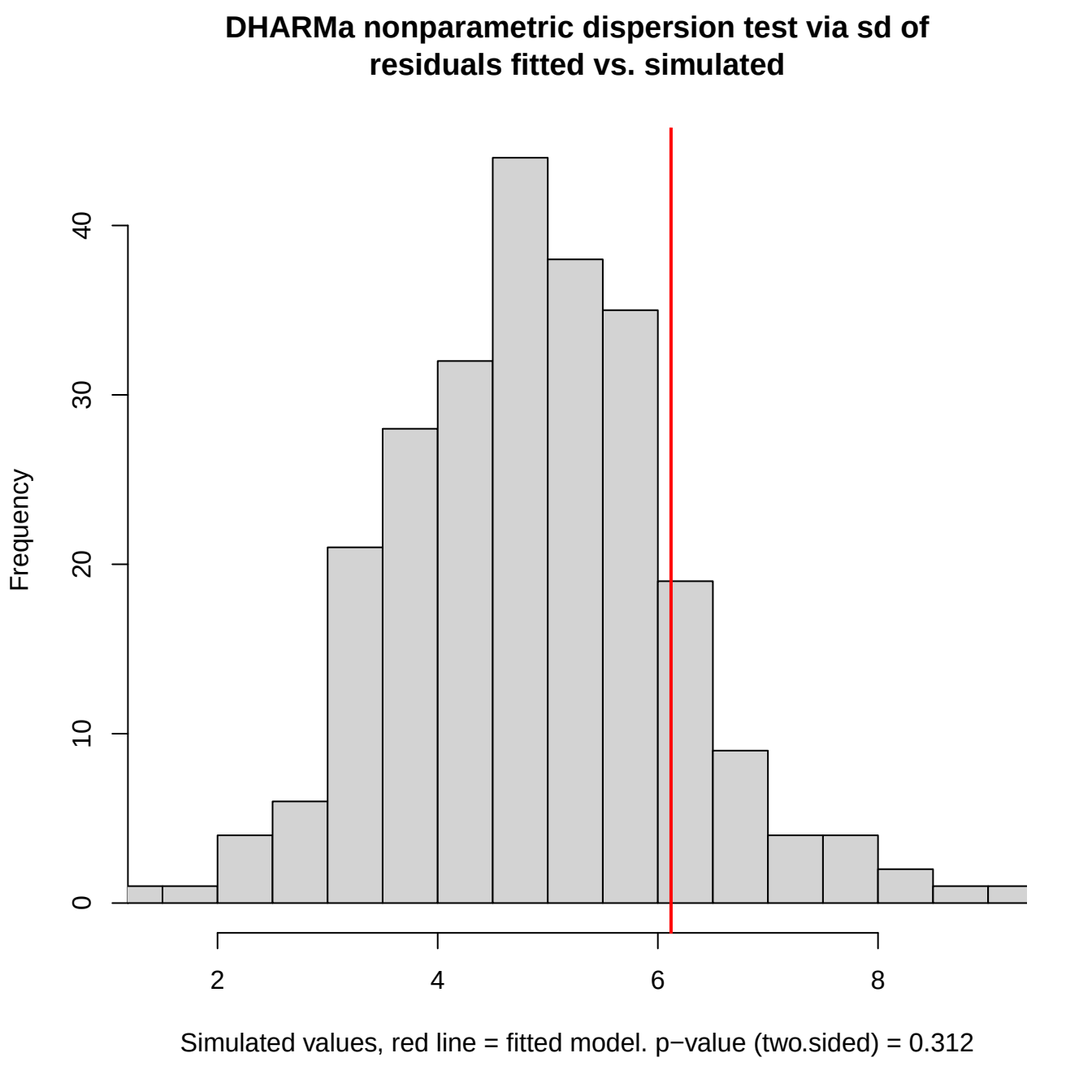

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

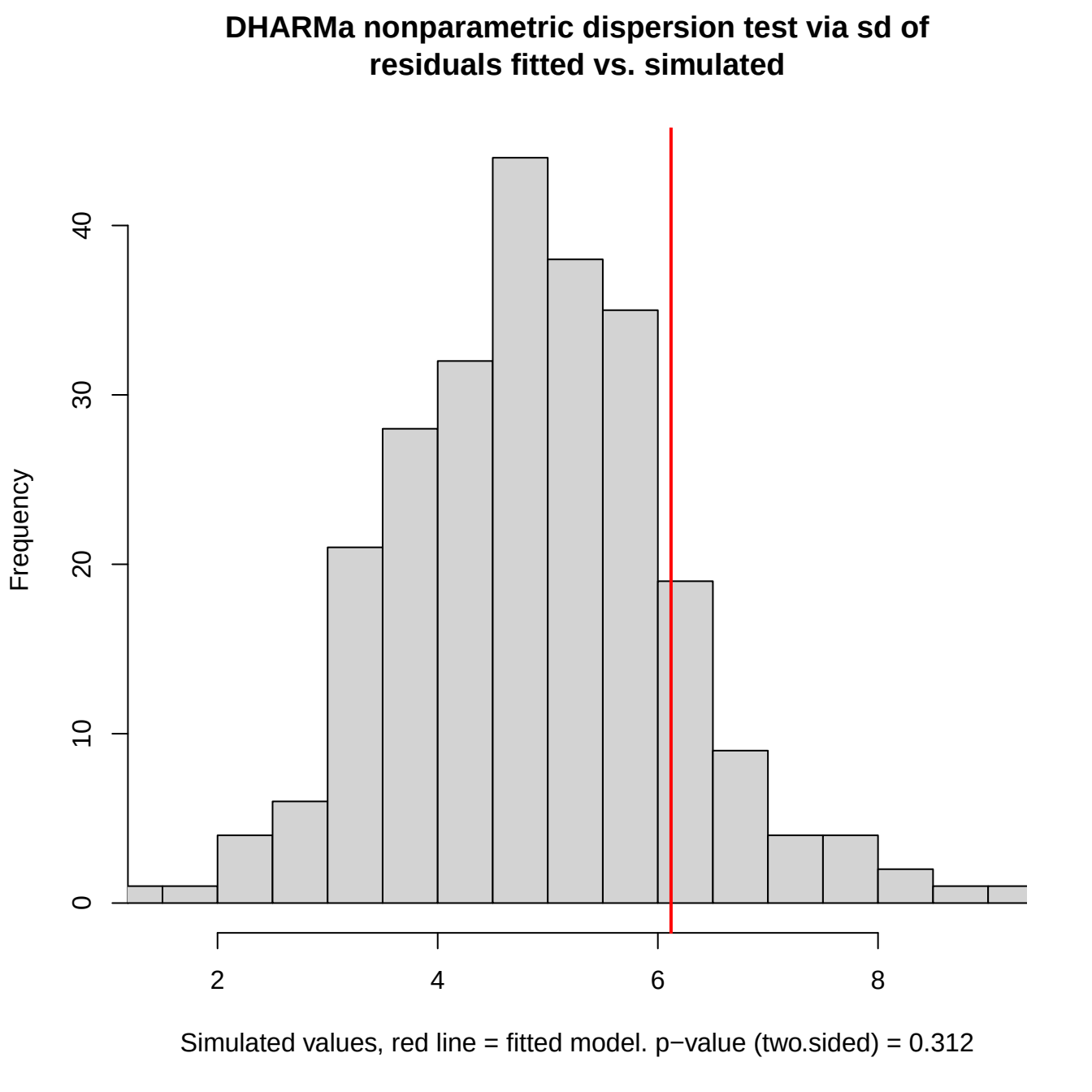

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

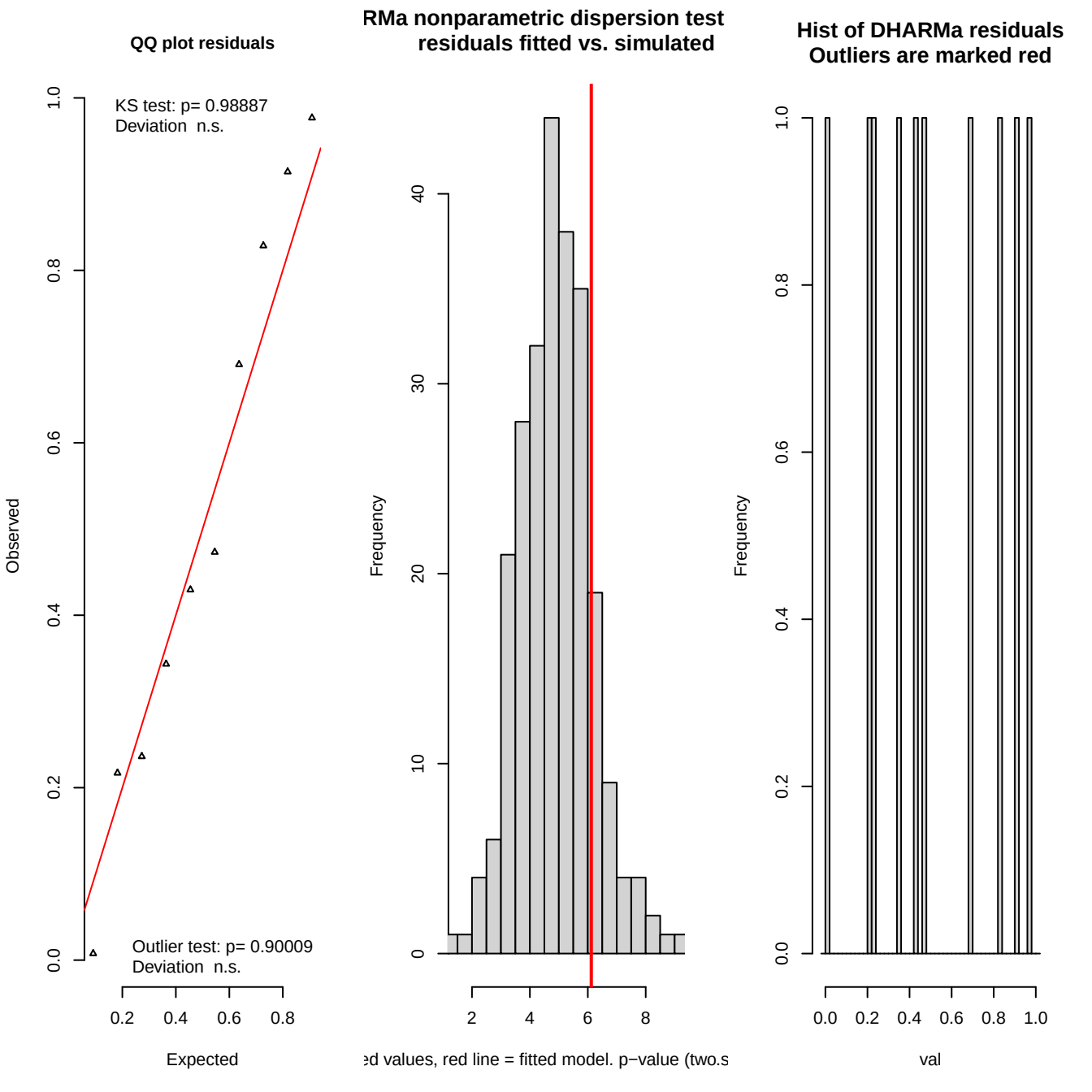

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

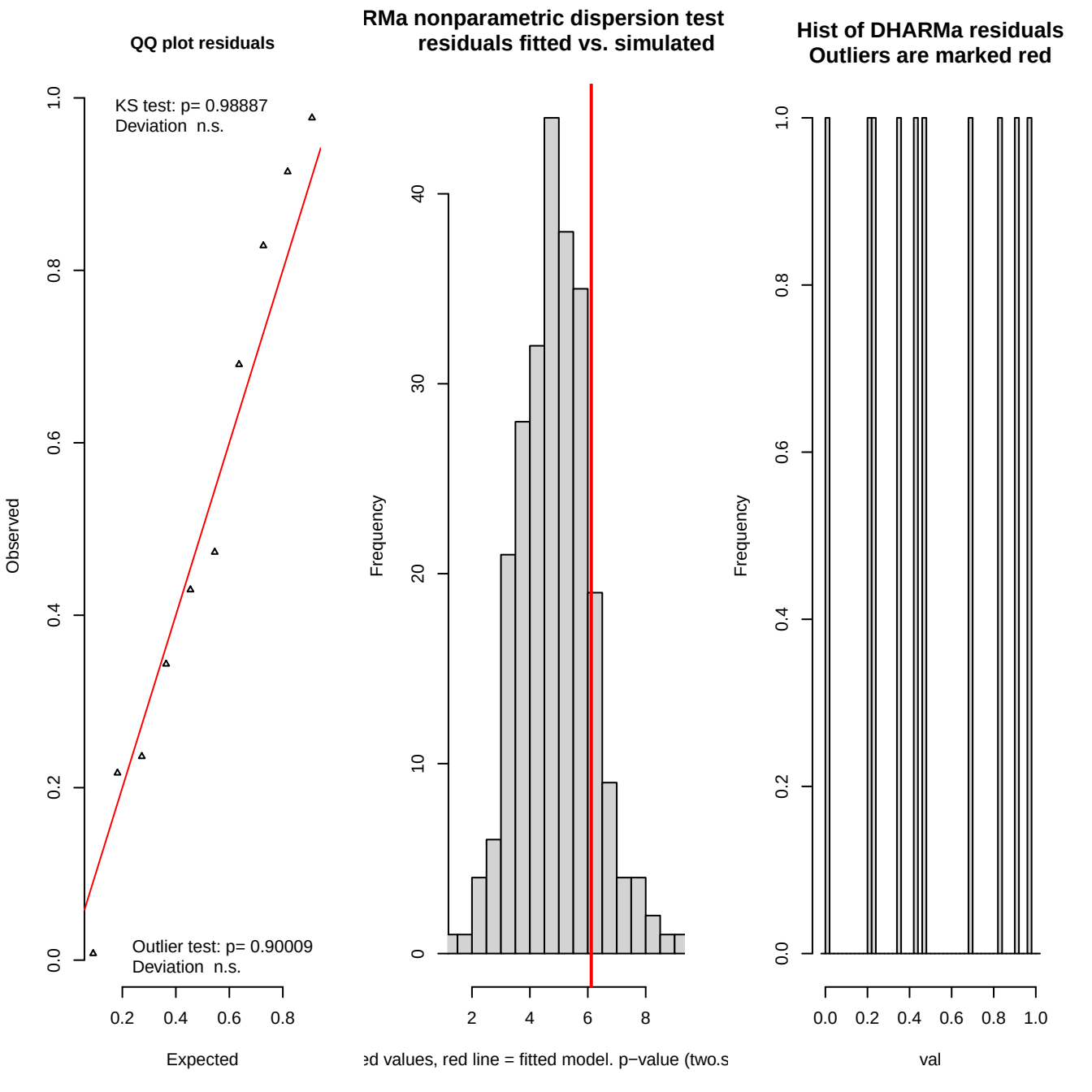

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (less) = 0.844

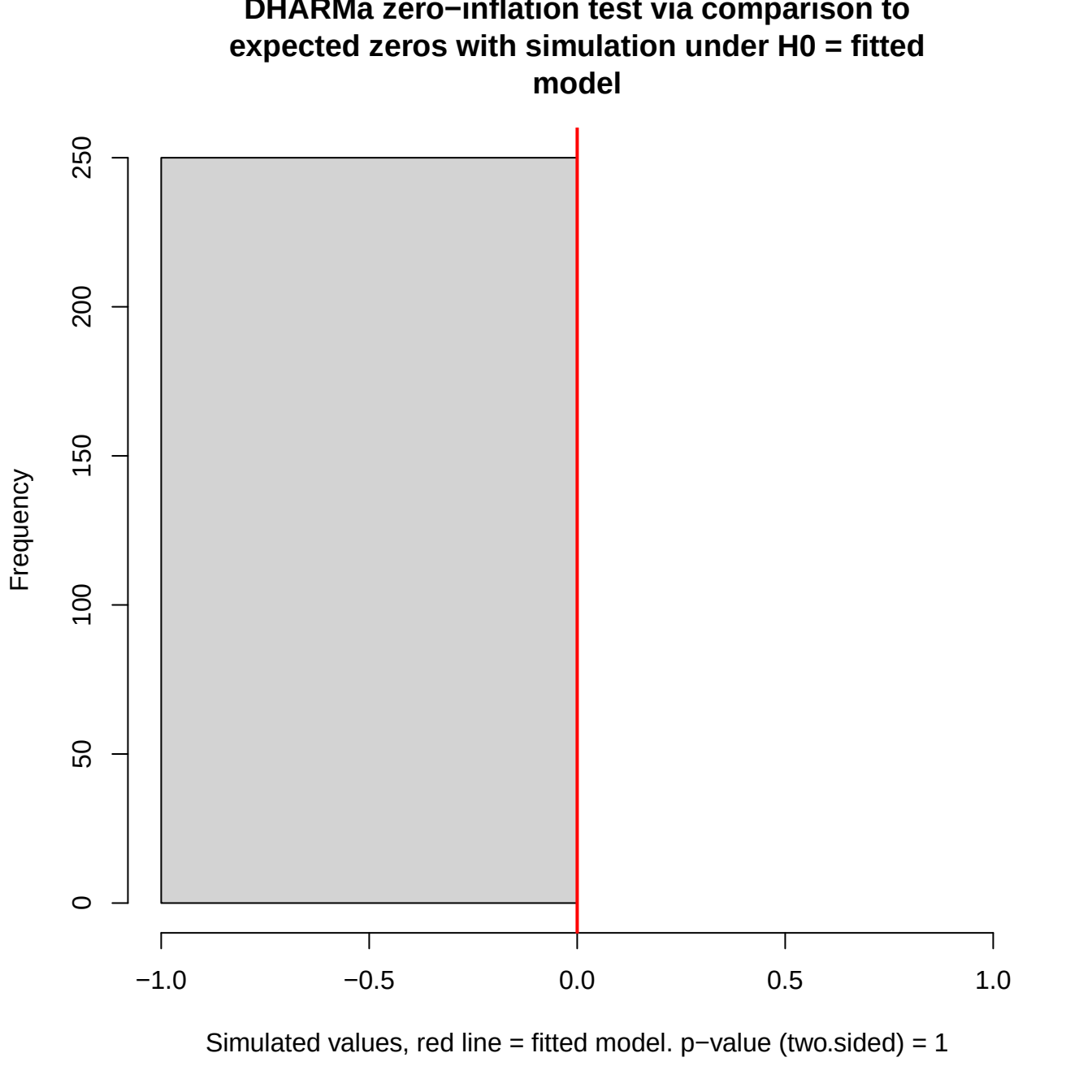

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (greater) = 0.156

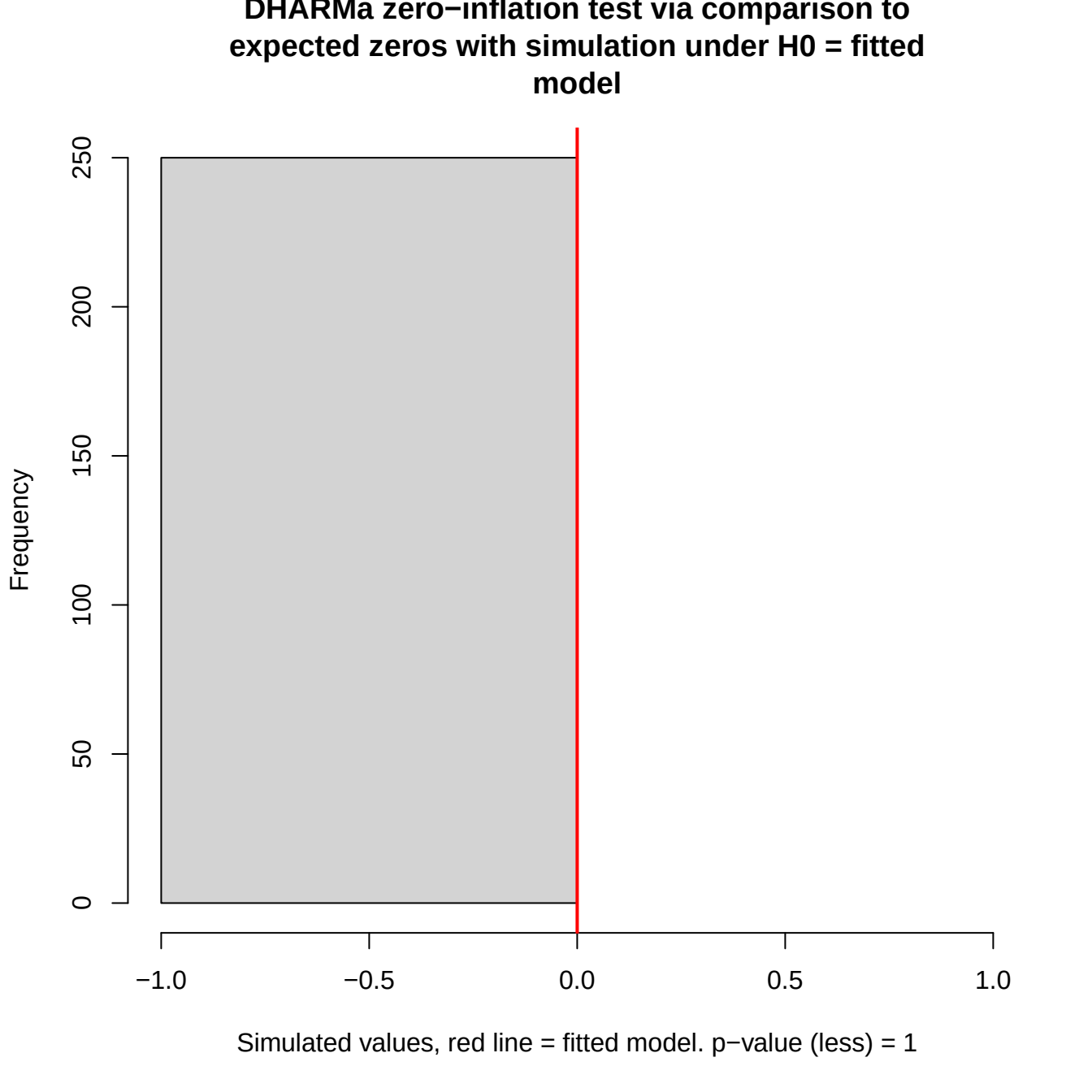

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

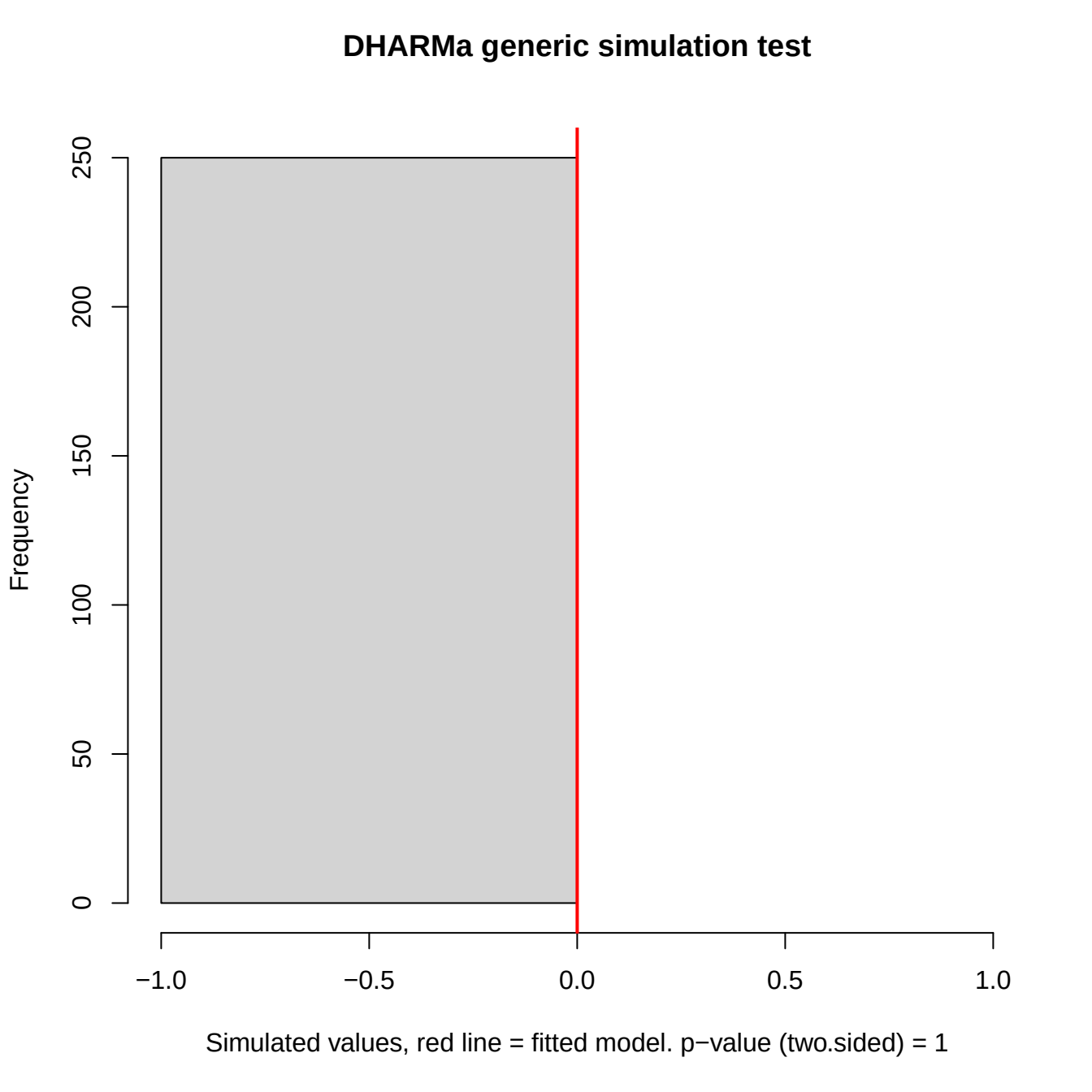

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

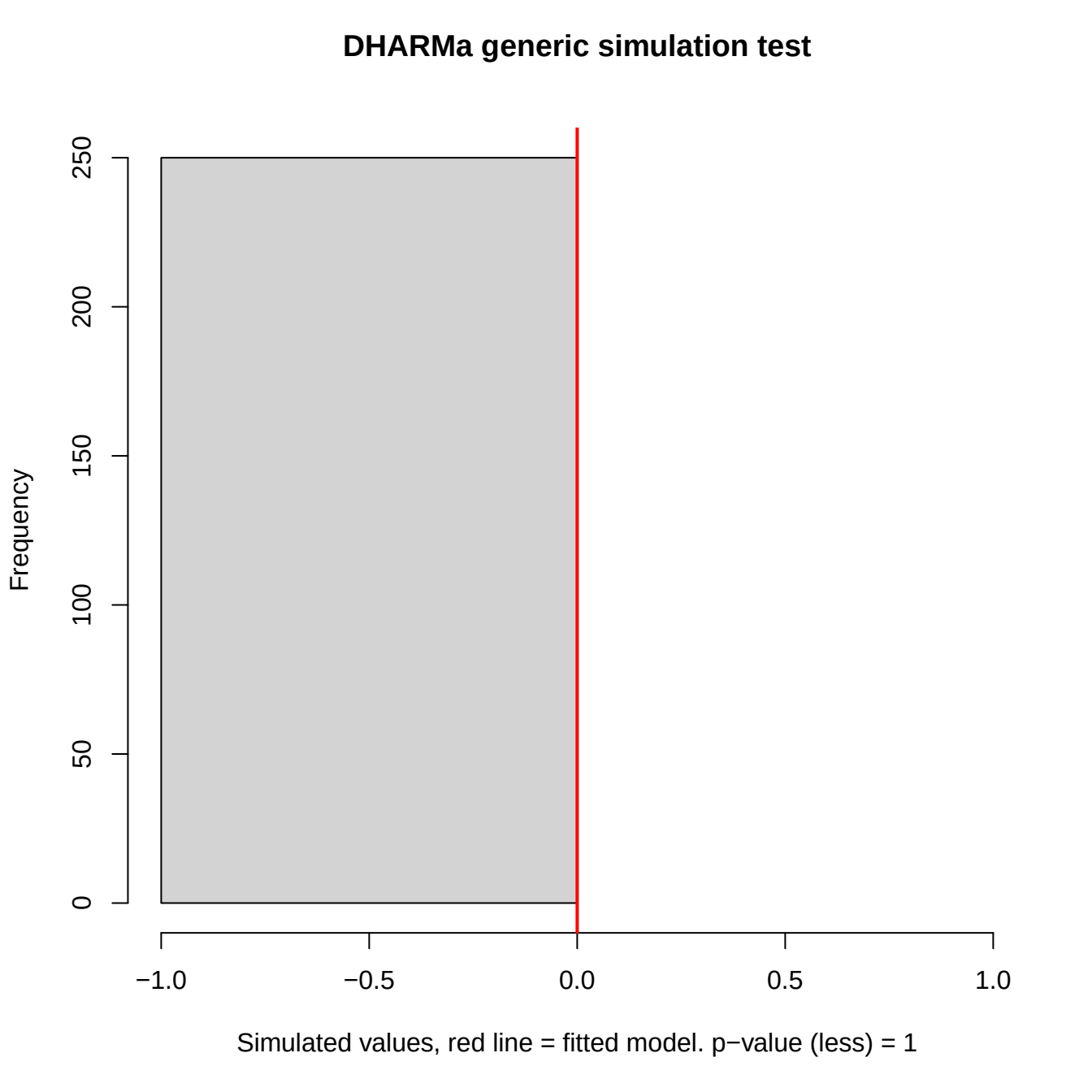

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.s
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

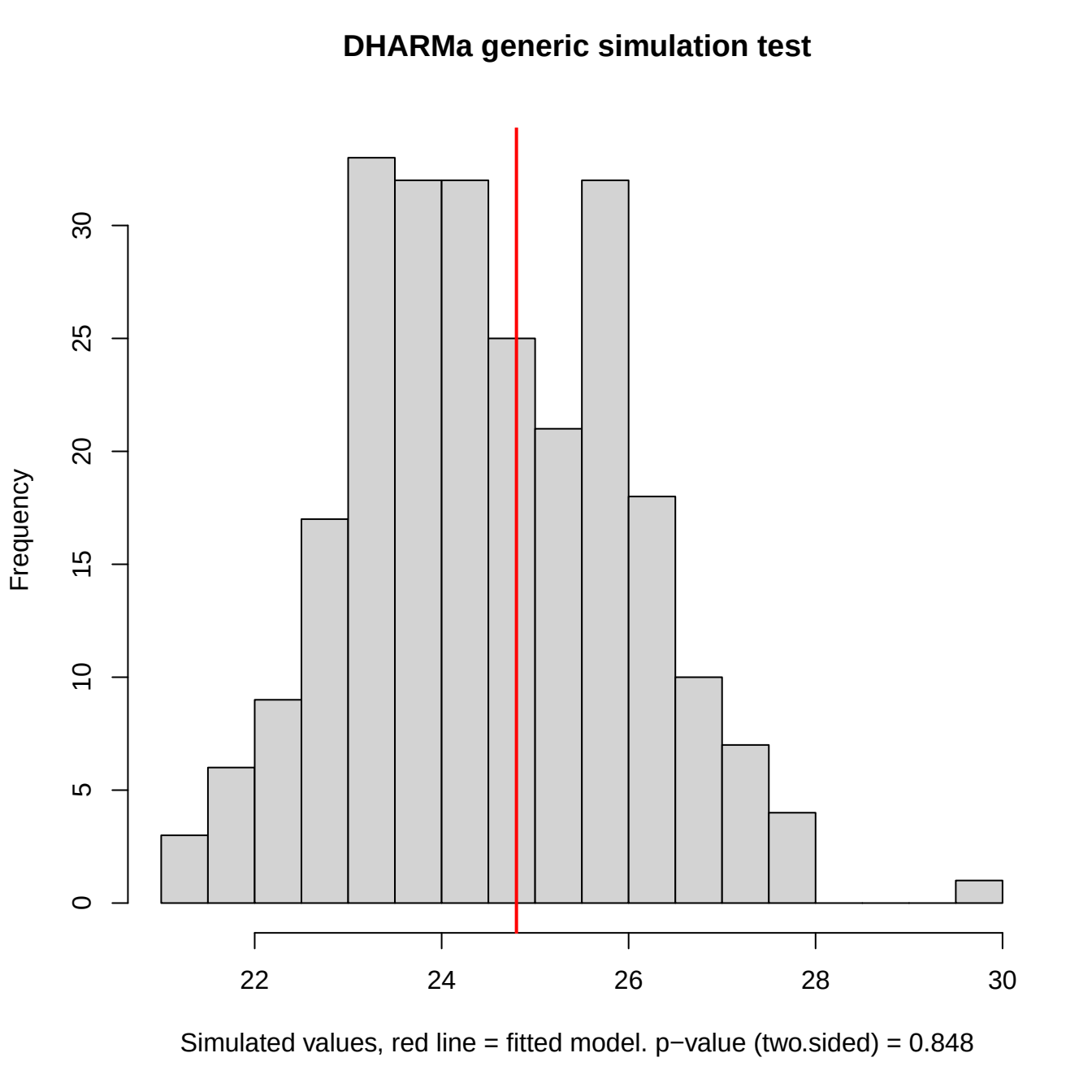

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.s
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

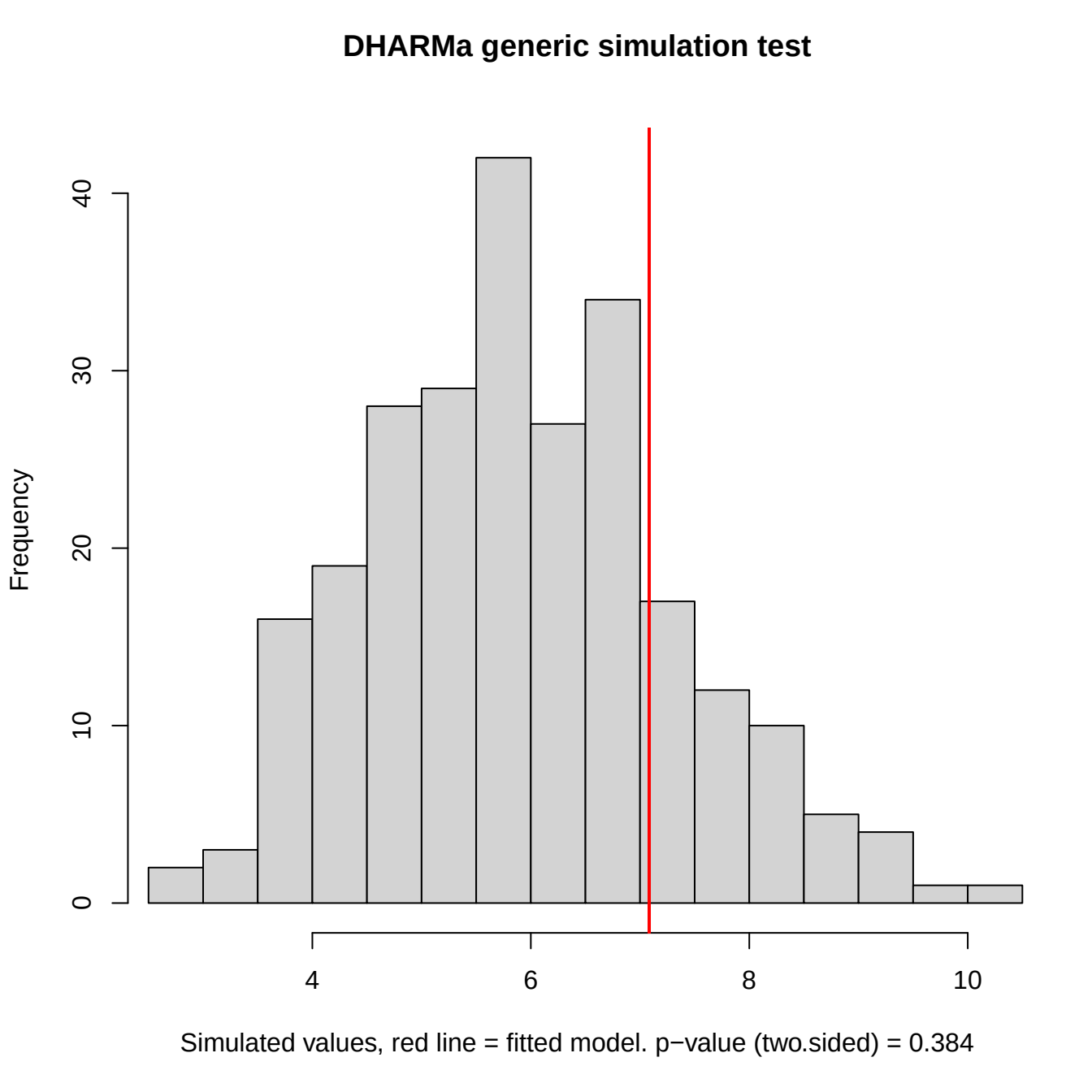

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

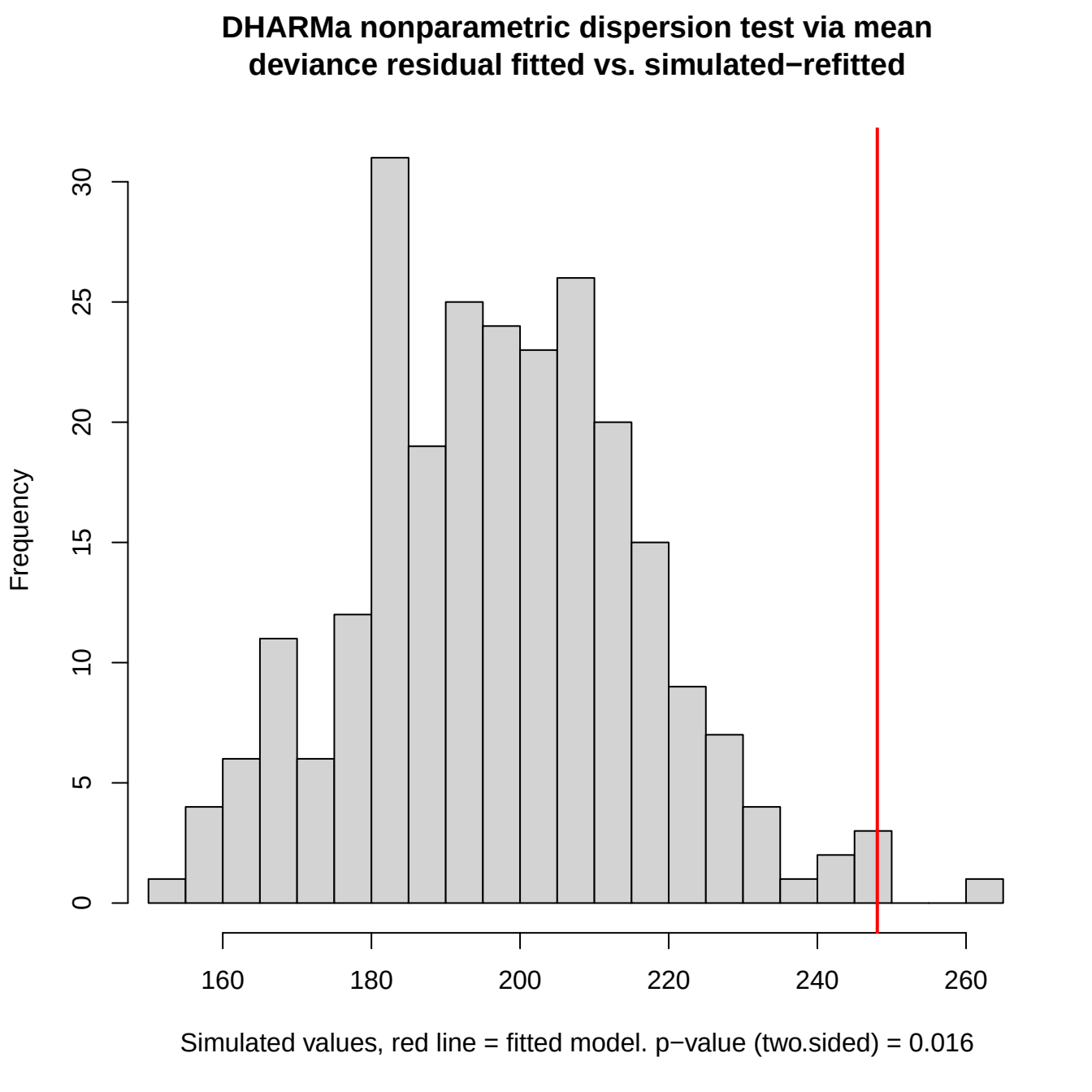

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (less) = 1

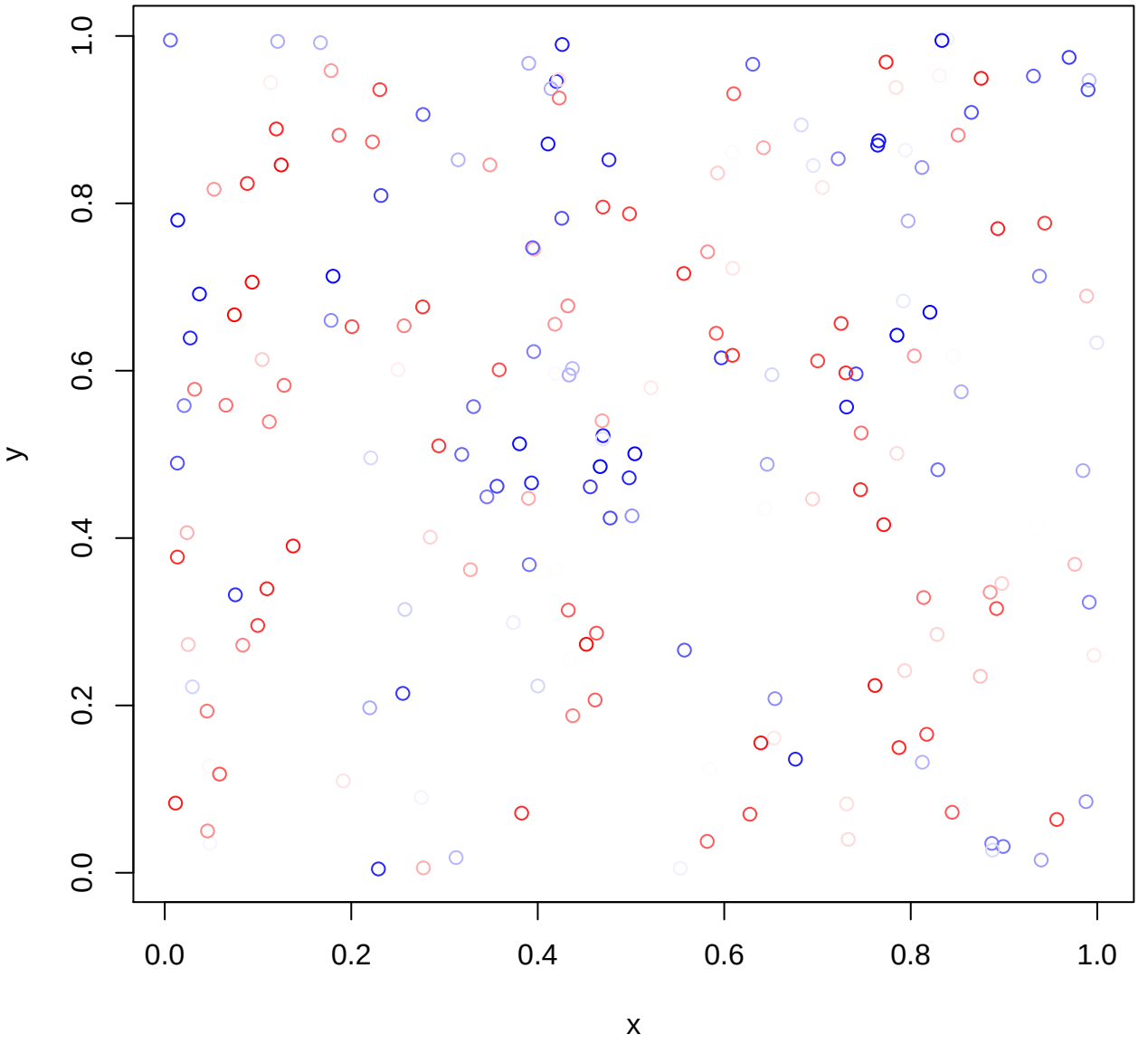

DHARMa generic simulation test
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

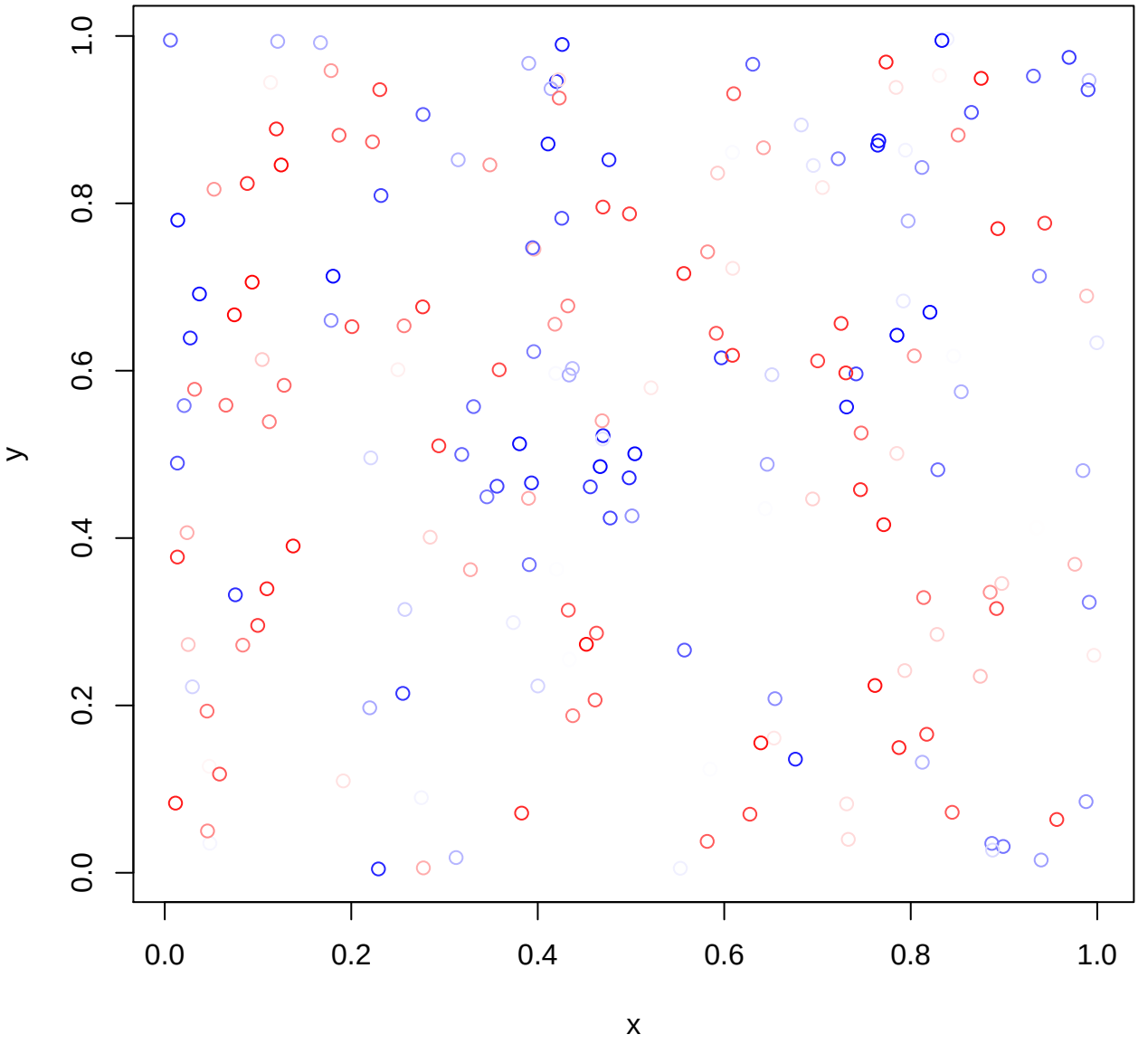

DHARMa generic simulation test
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (less) = 1

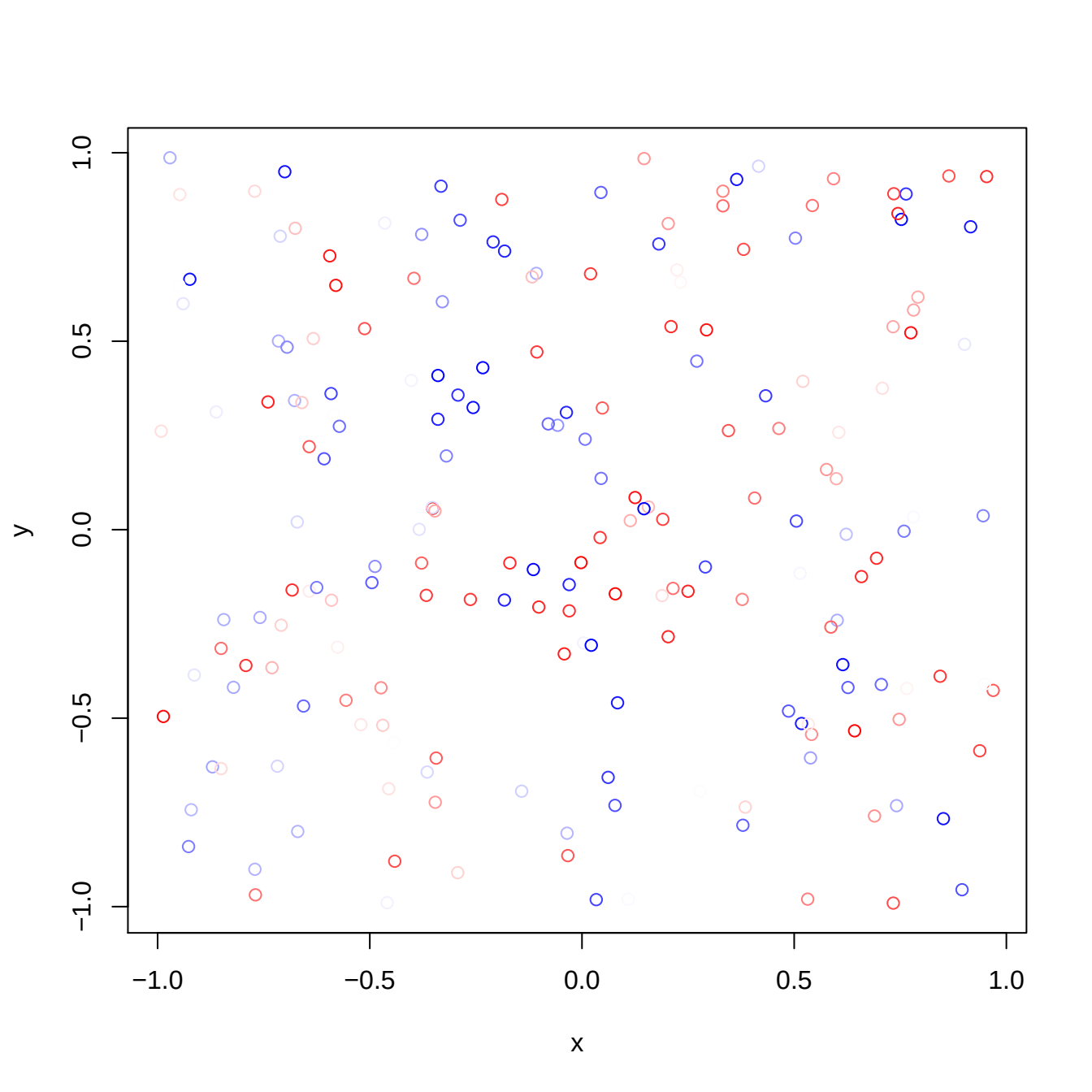

DHARMa generic simulation test
Frequency
0
5
10
15
20
25
30
22
24
26
28
30
Simulated values, red line = fitted model. p−value (two.sided) = 0.848

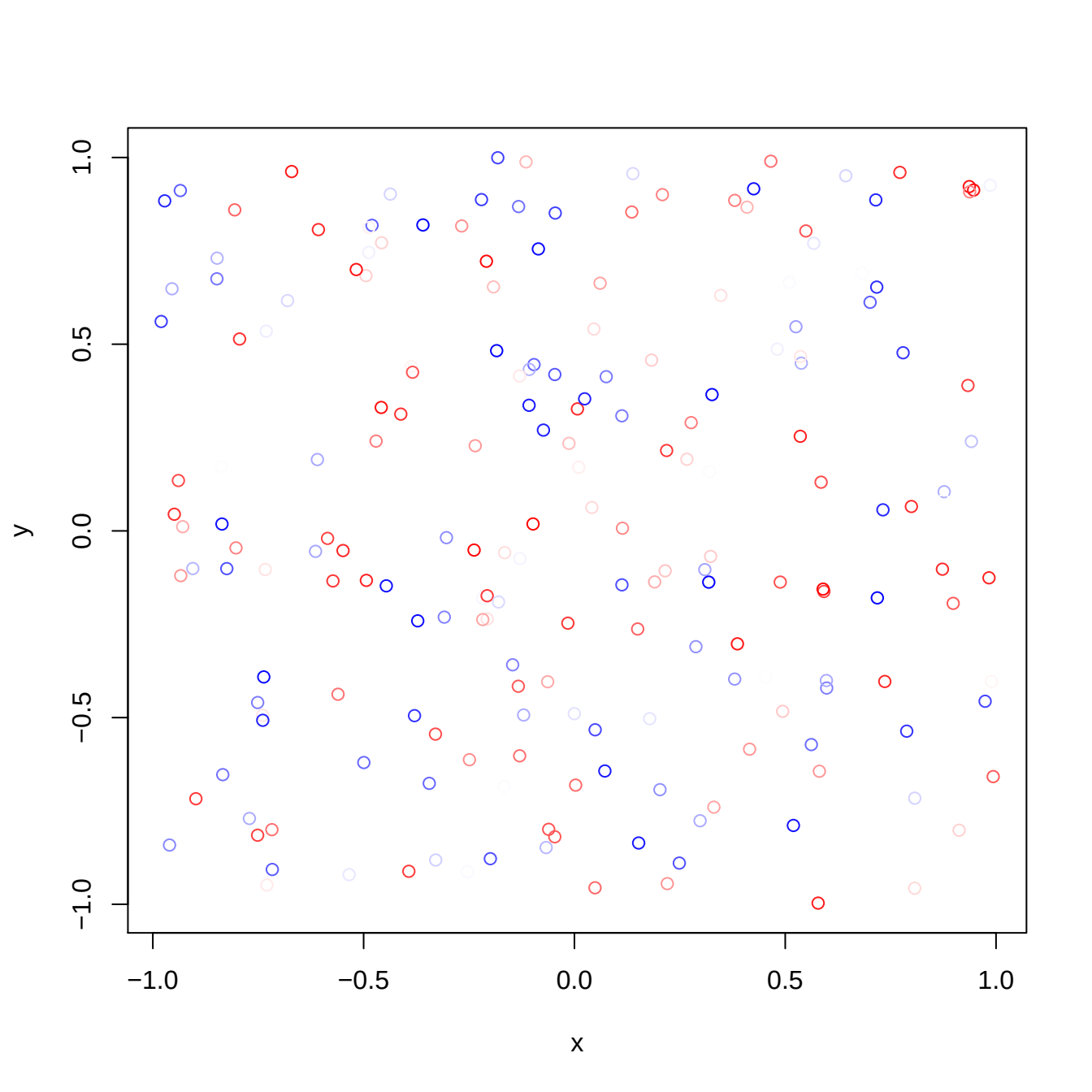

DHARMa generic simulation test
Frequency
0
10
20
30
40
4
6
8
10
Simulated values, red line = fitted model. p−value (two.sided) = 0.384

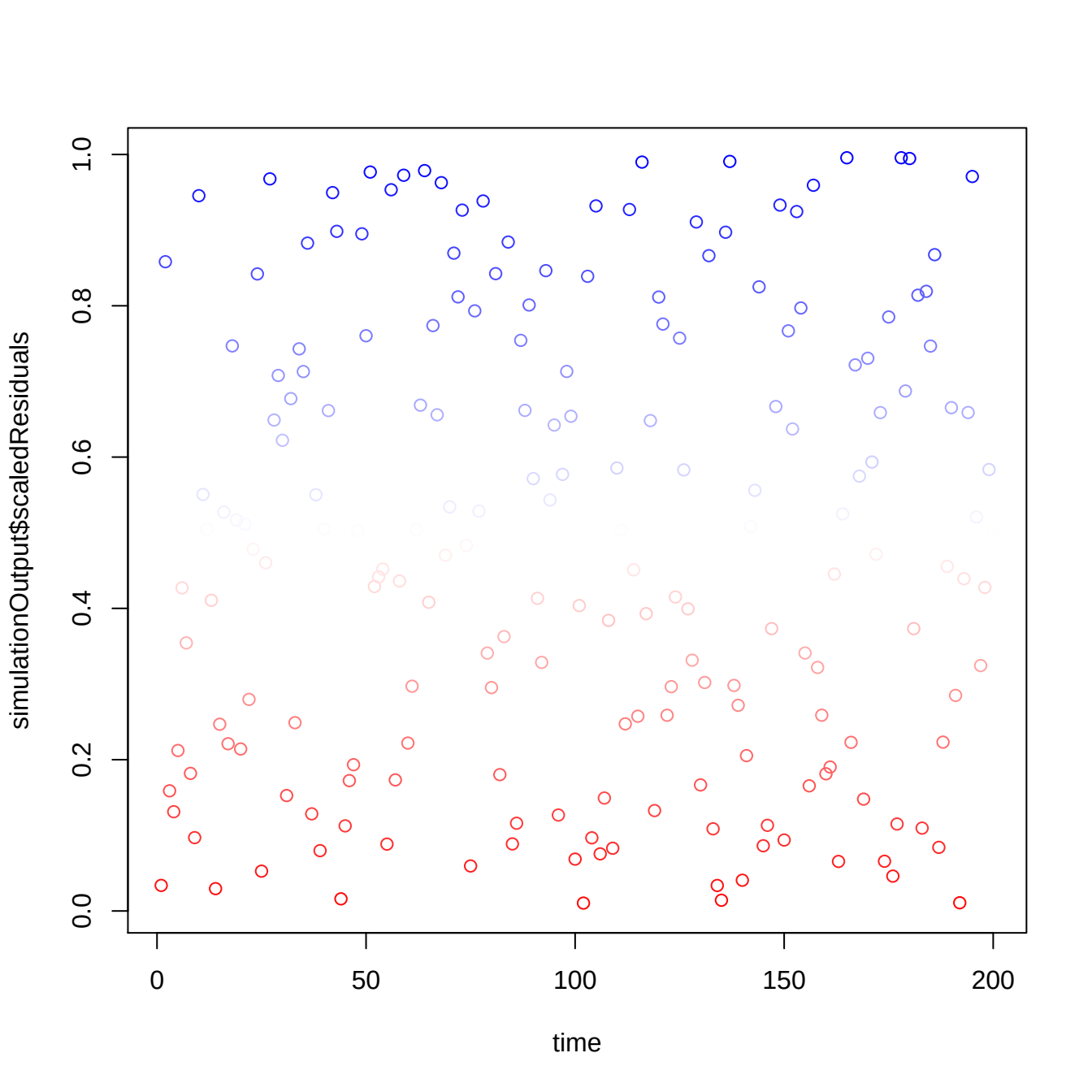

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0
5
10
15
20
25
30
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.016

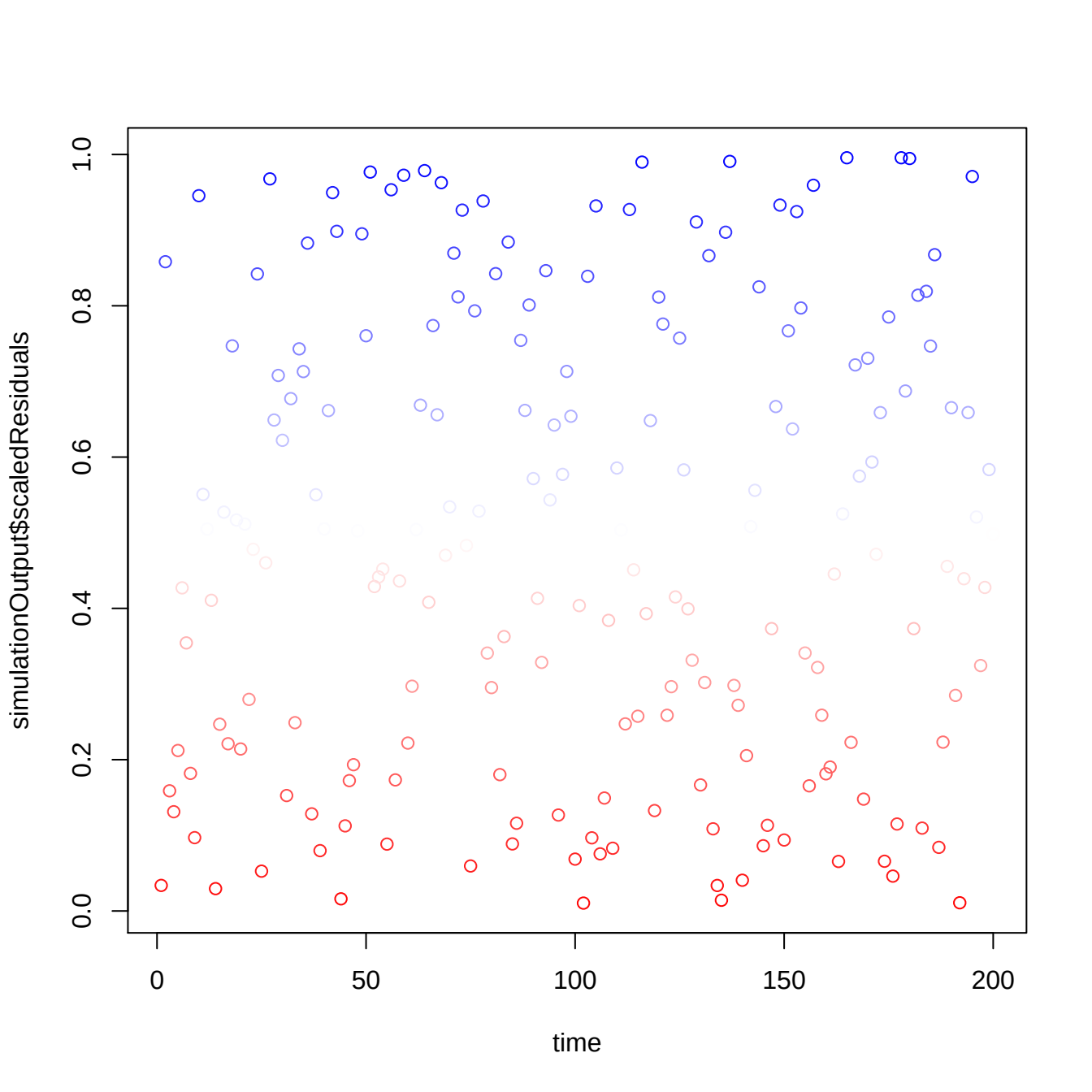

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

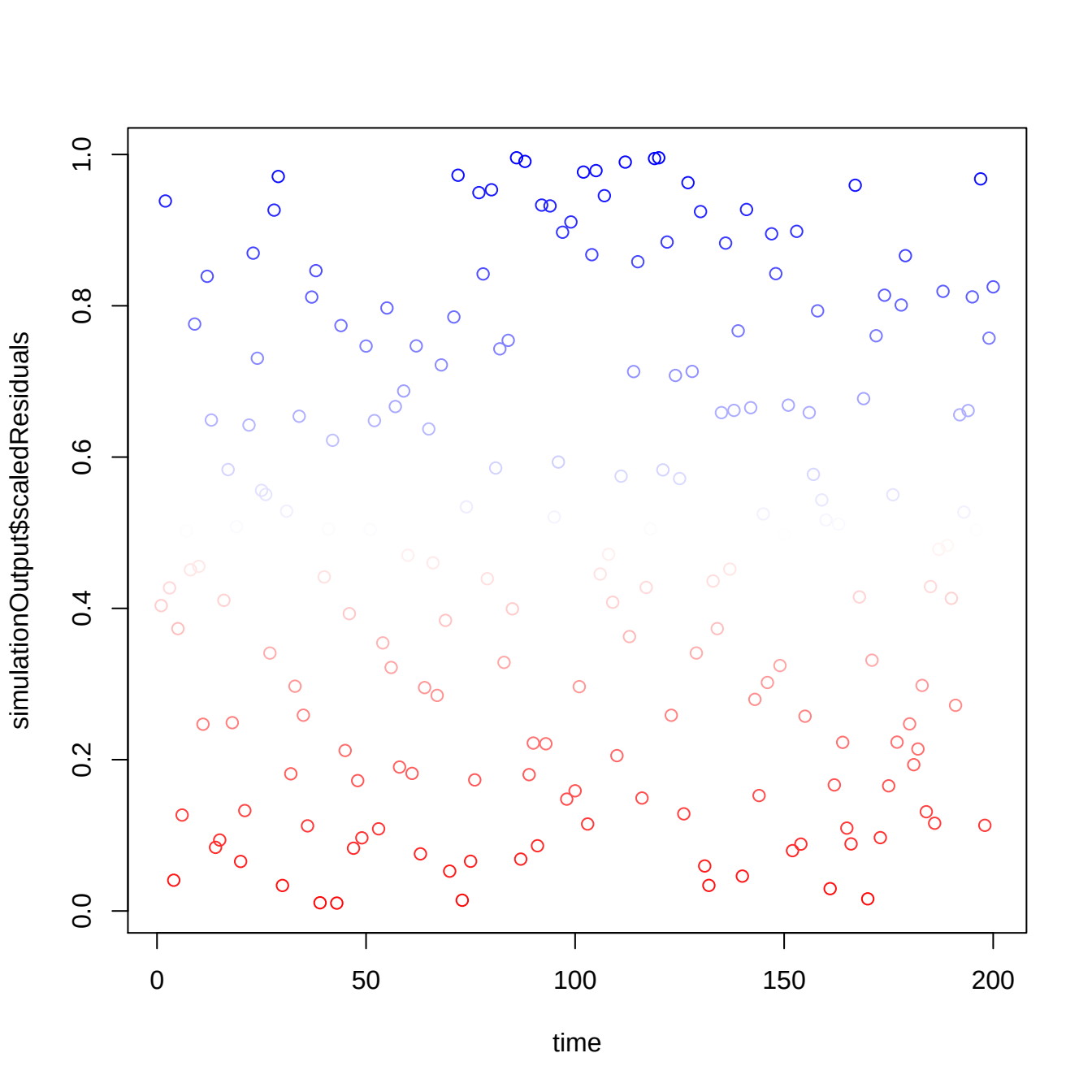

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

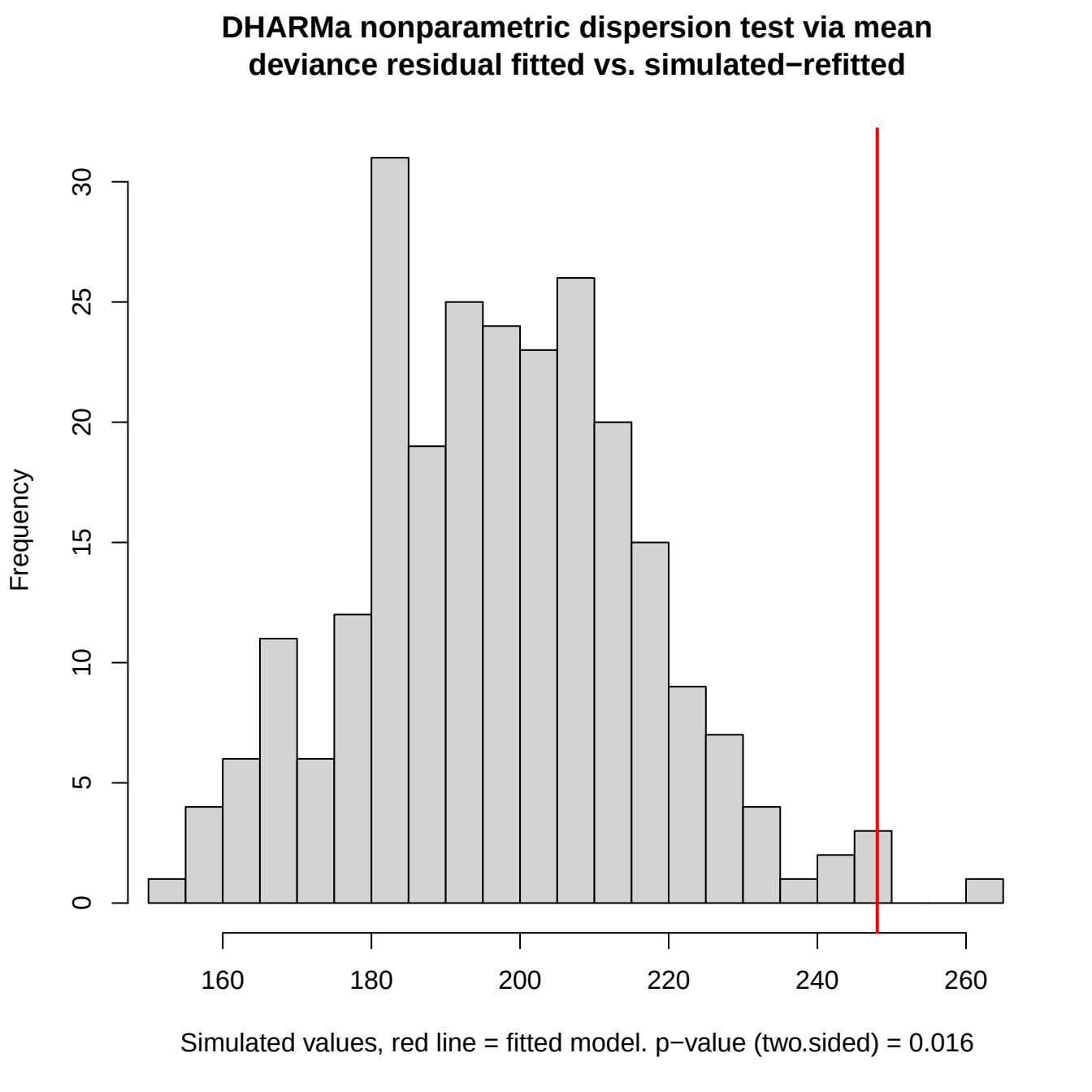

1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x

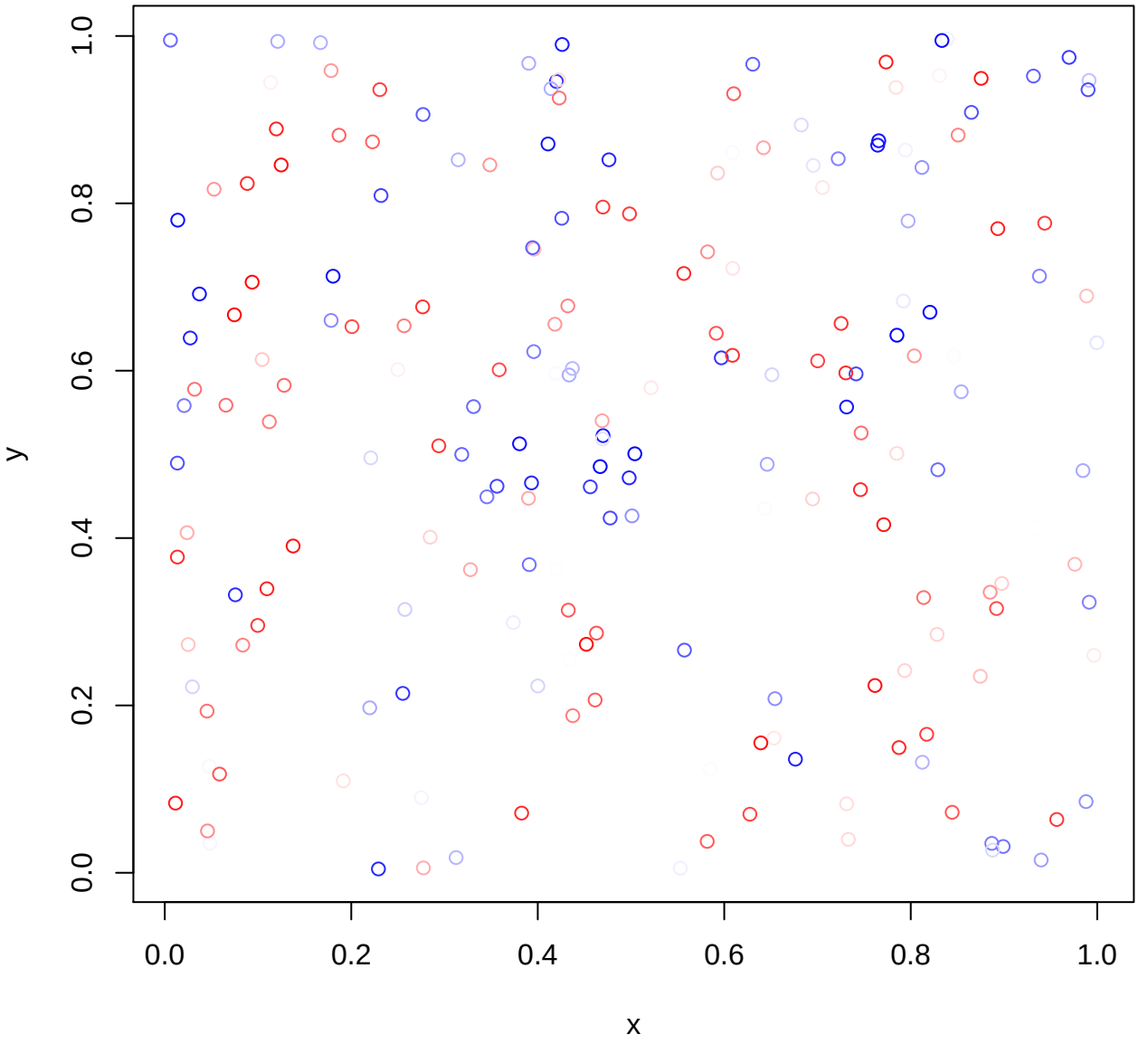

1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x

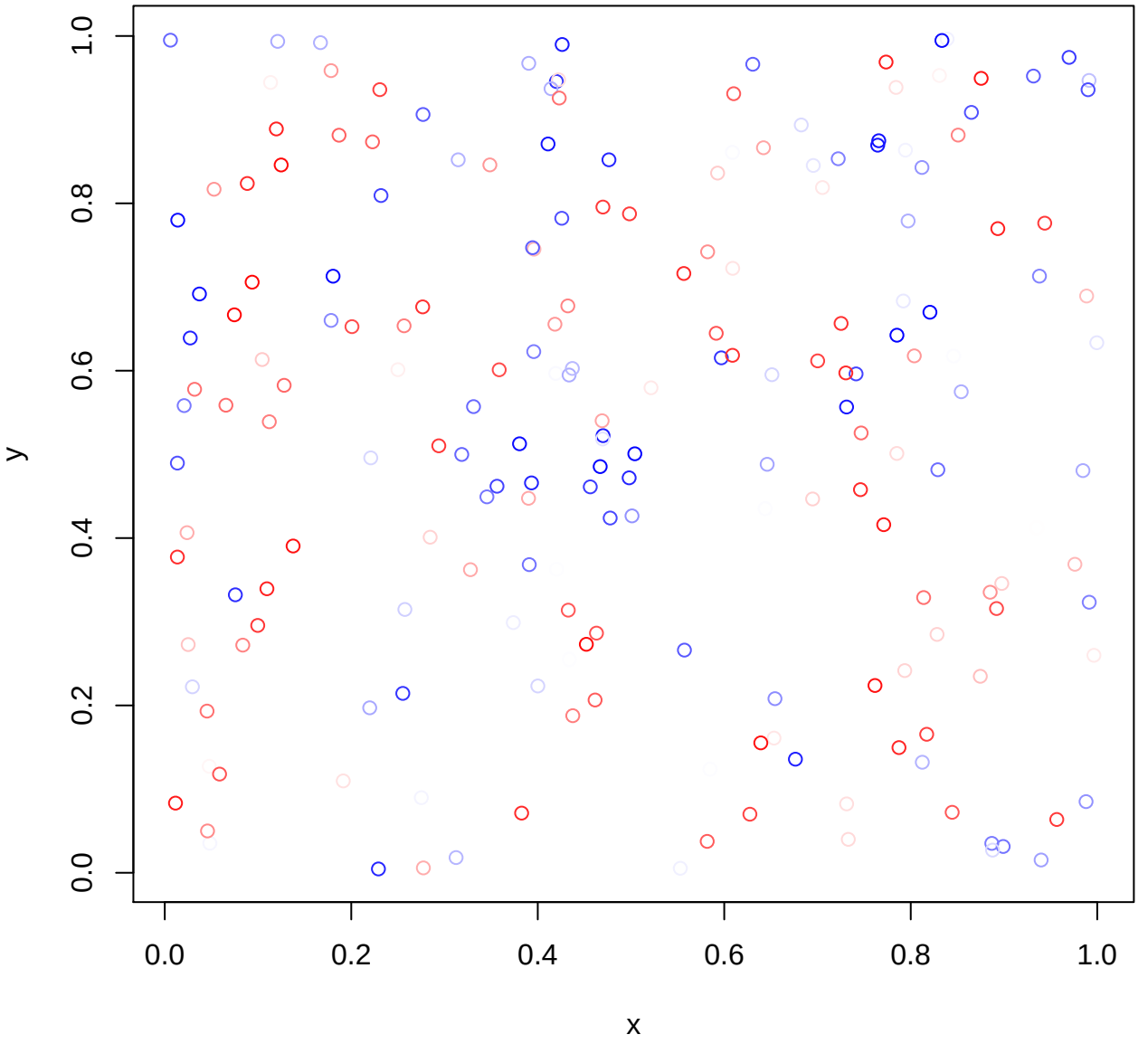

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

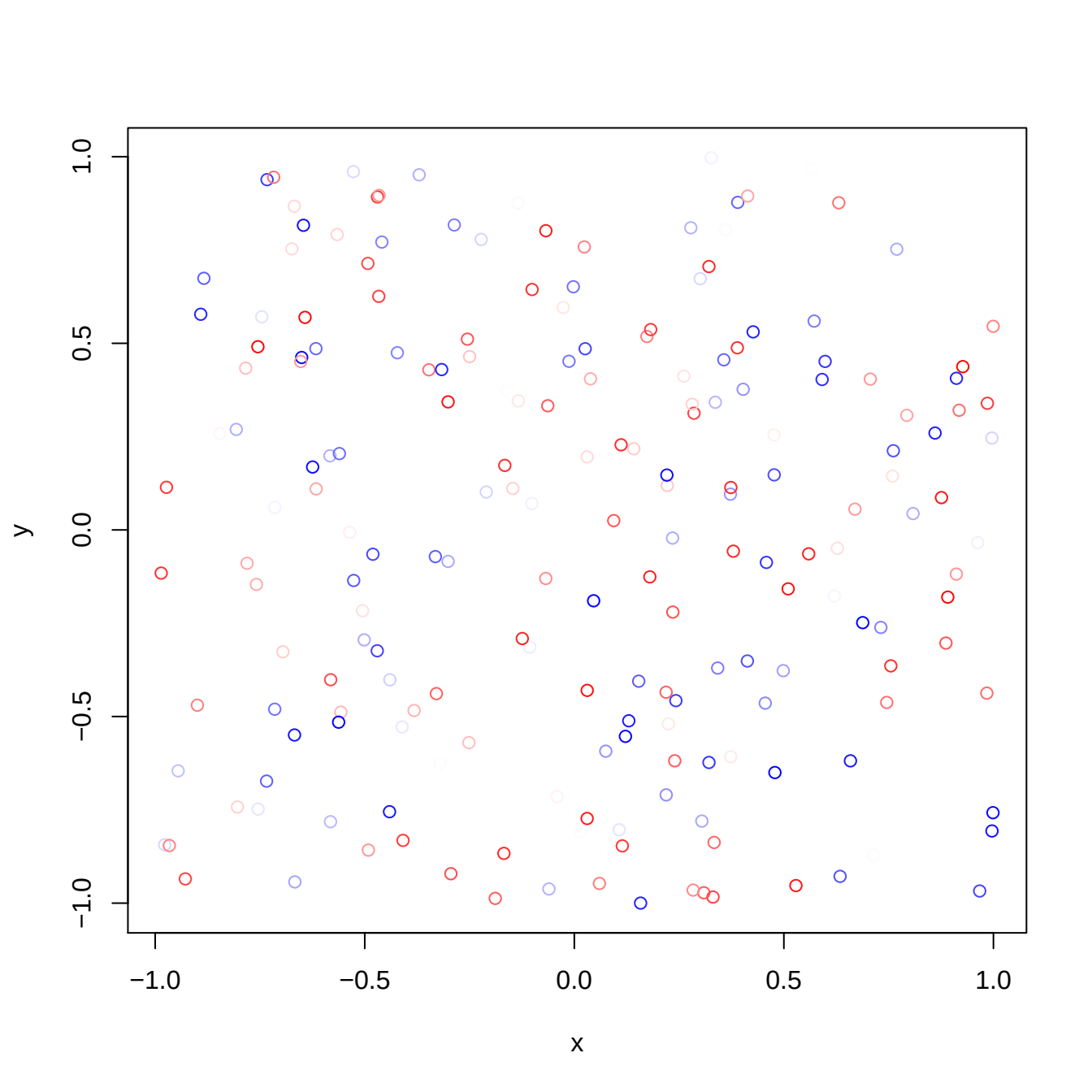

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

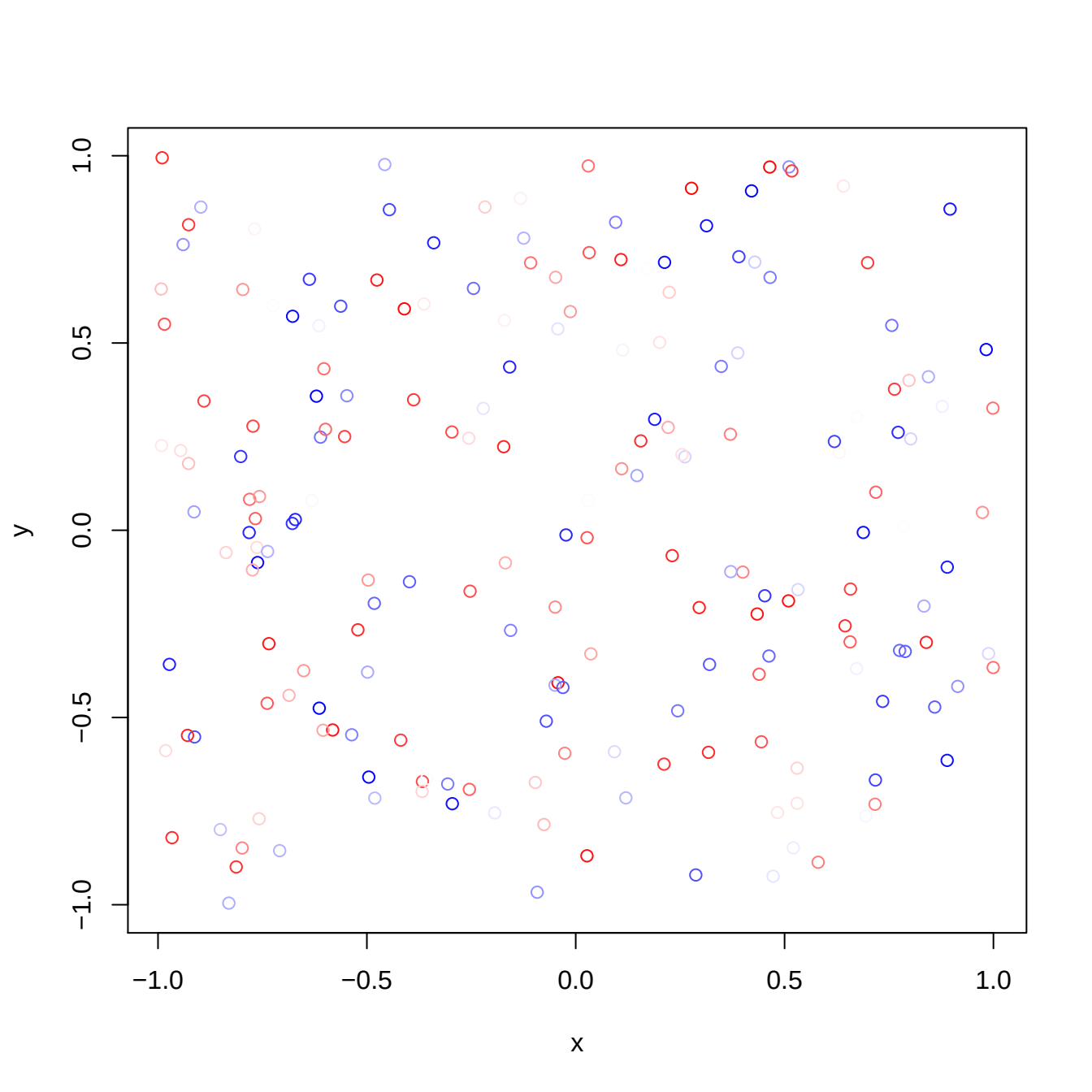

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

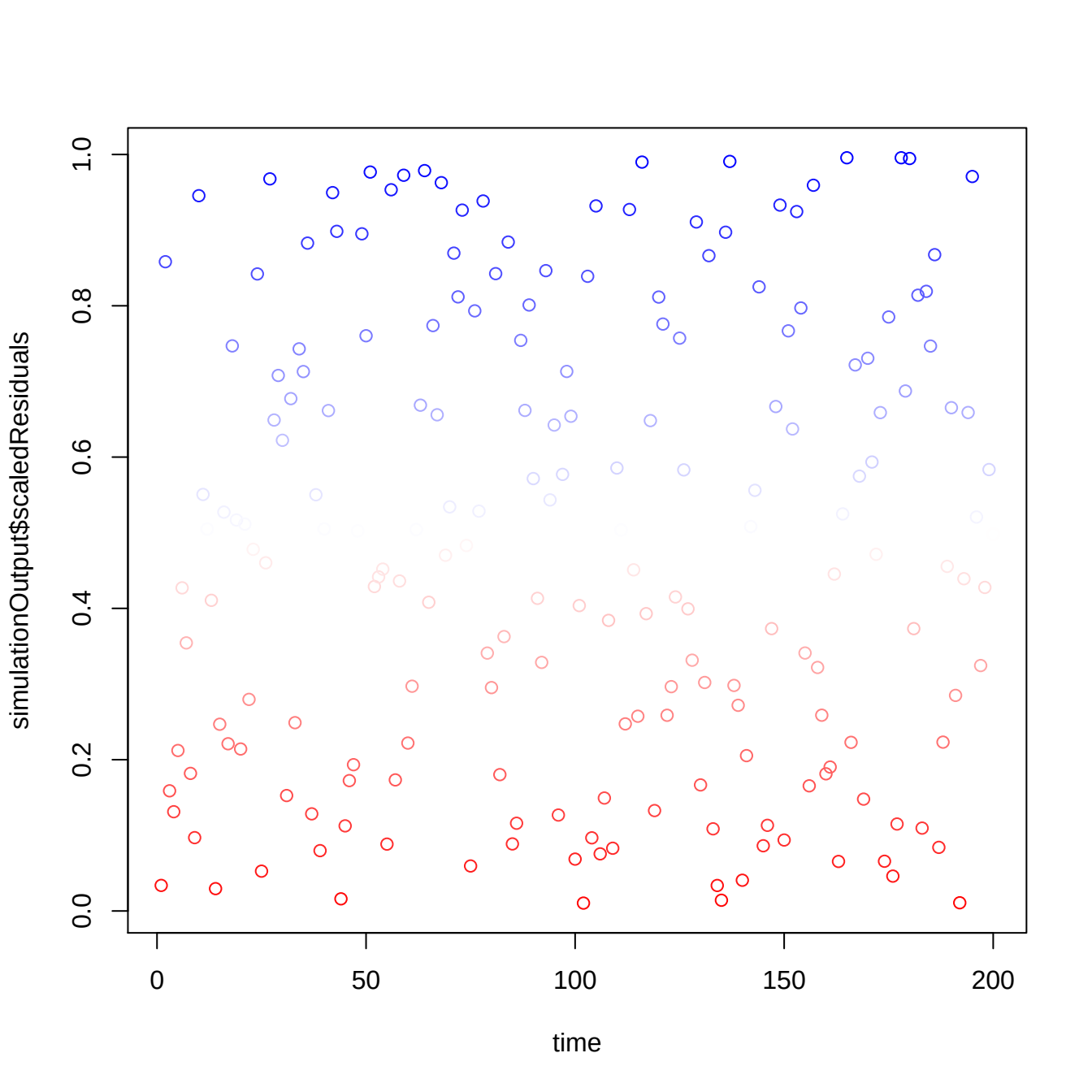

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0
5
10
15
20
25
30
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.016

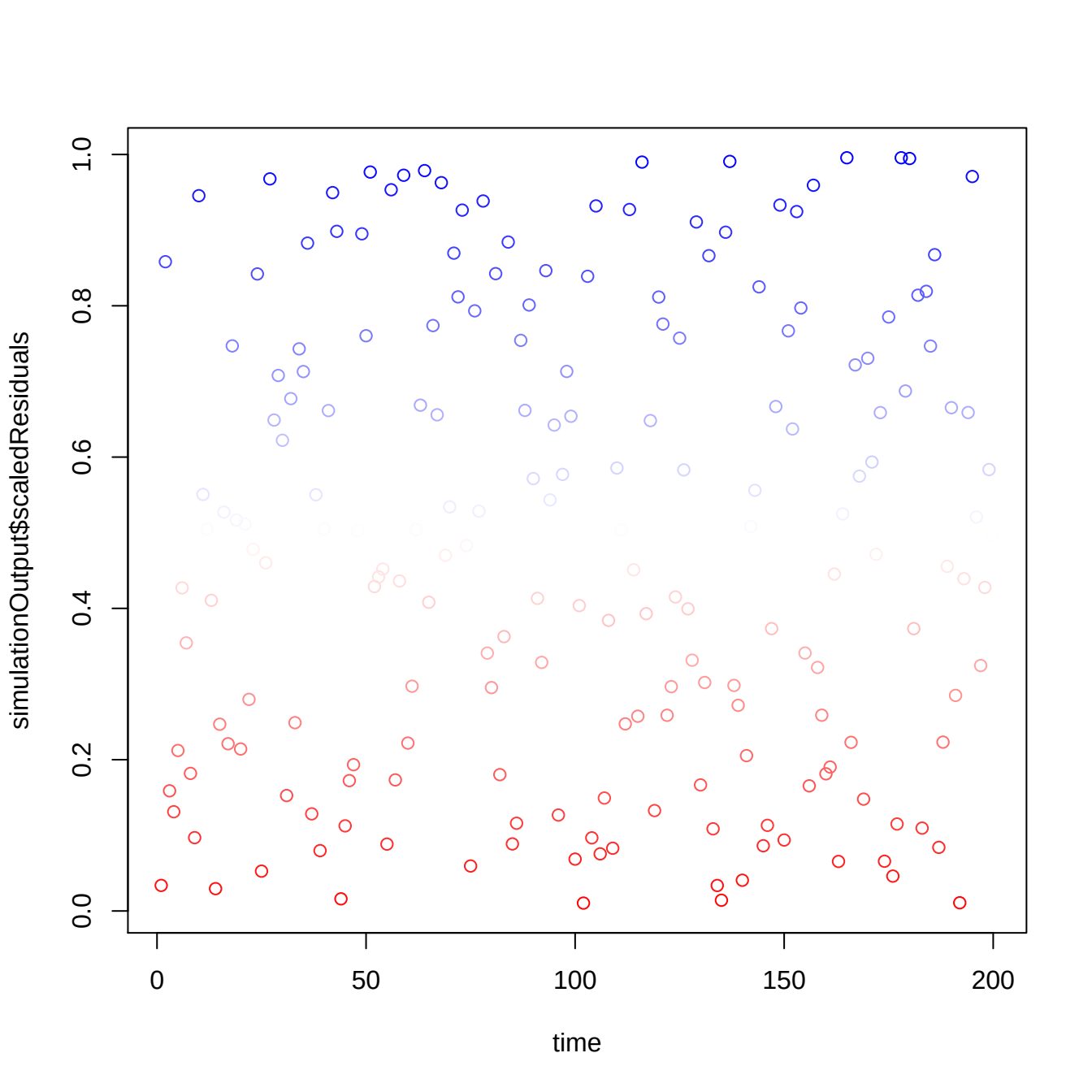

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

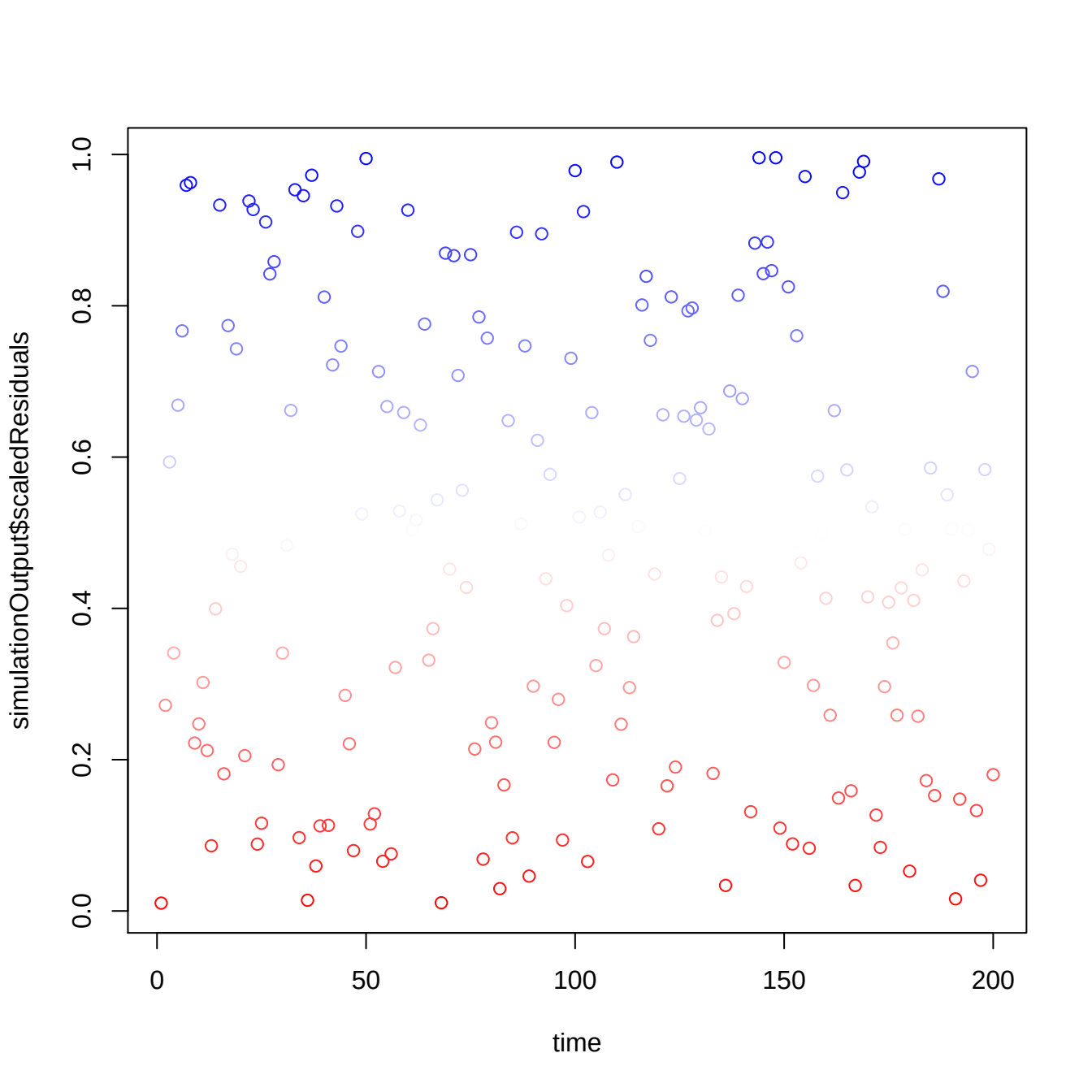

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0


1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x


1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x


simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time


simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time


simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time