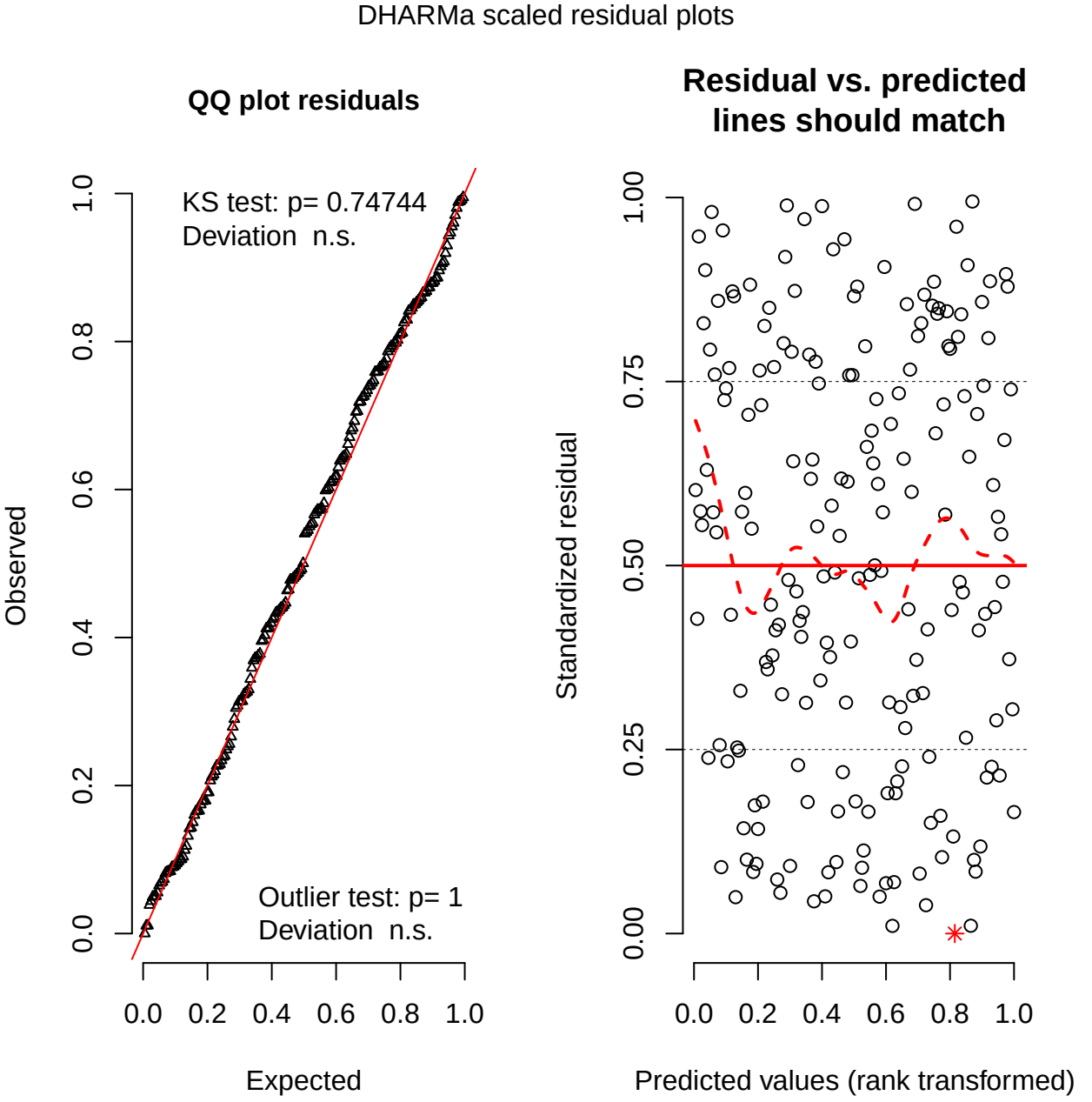
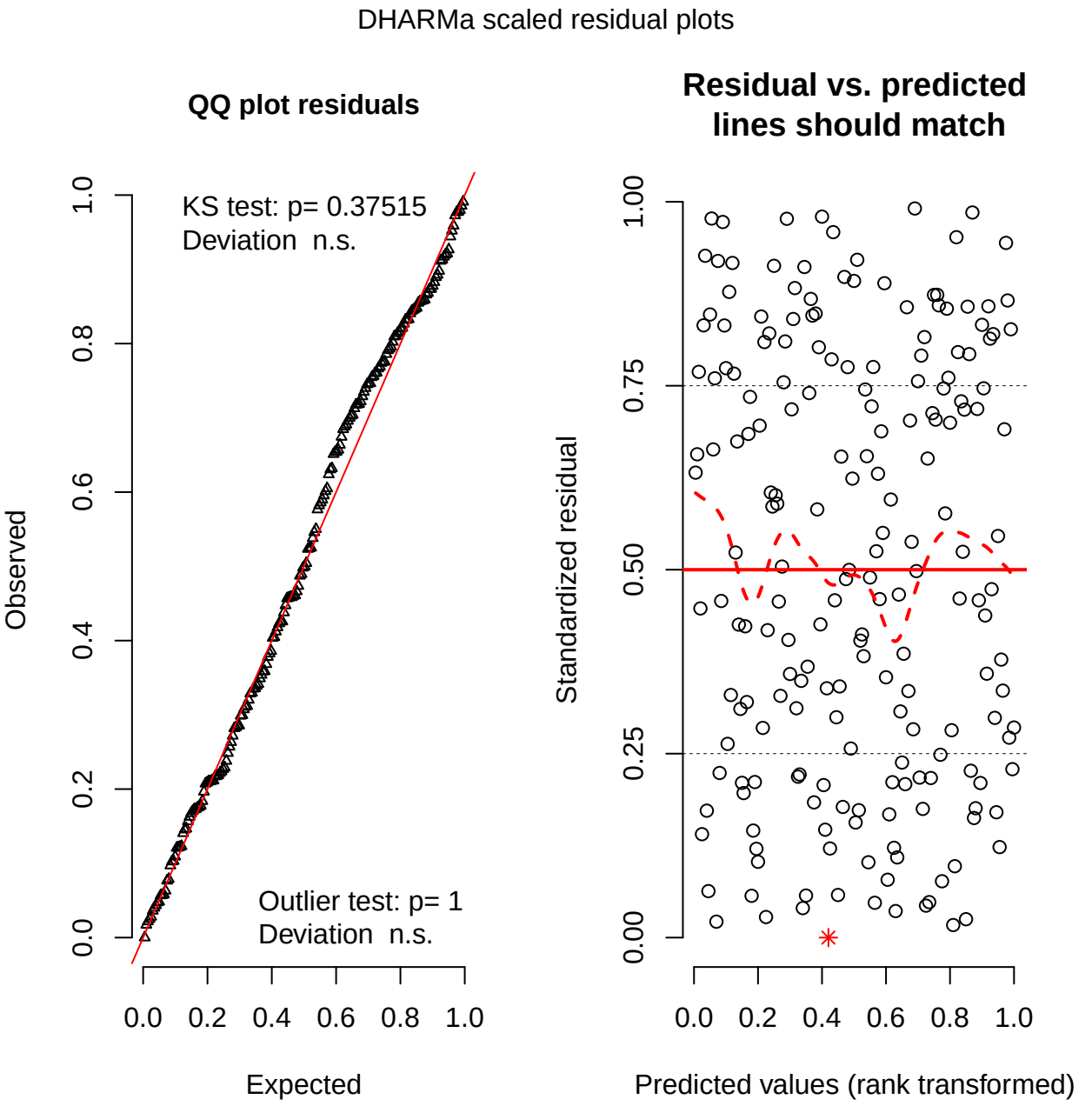
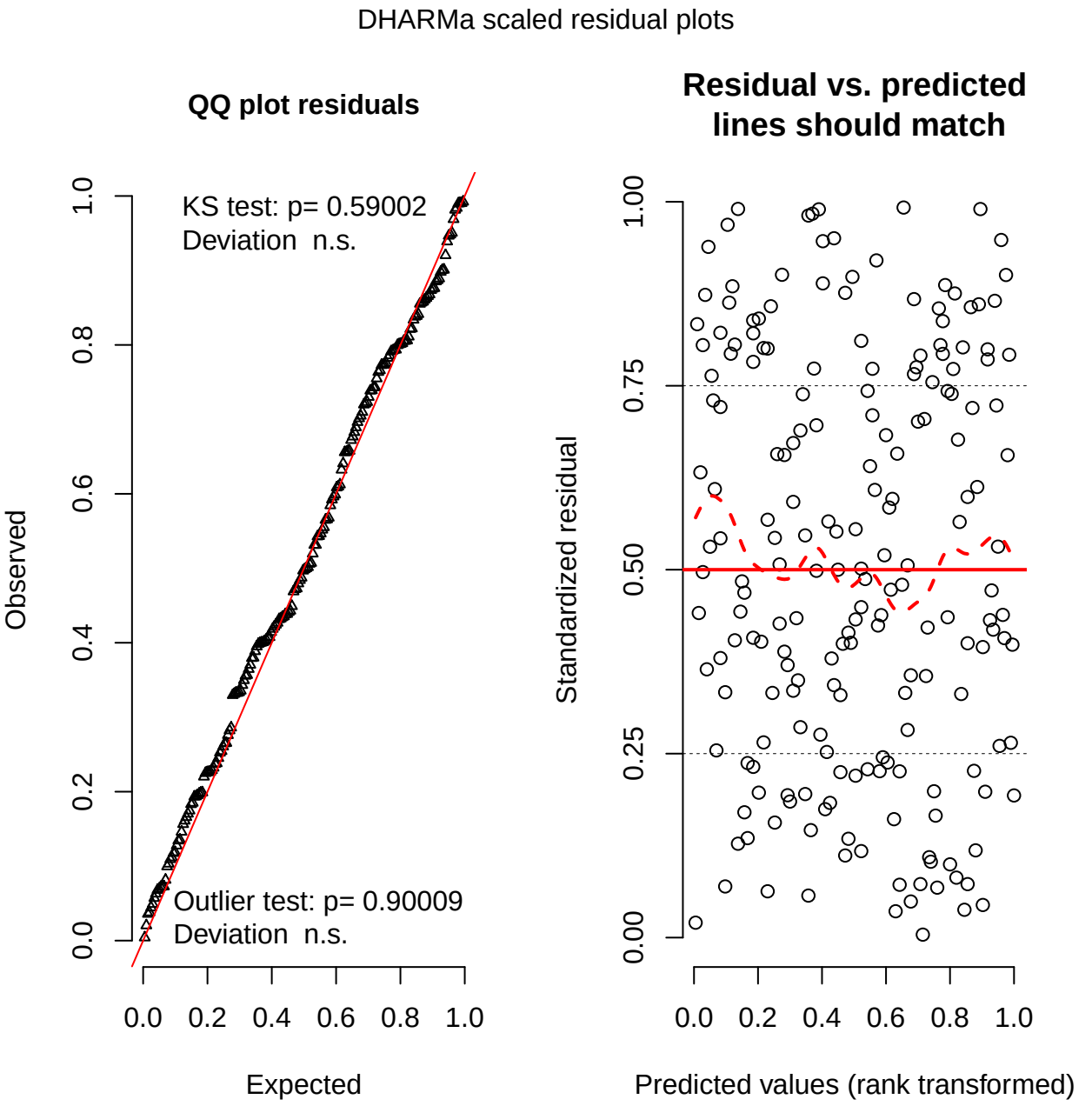
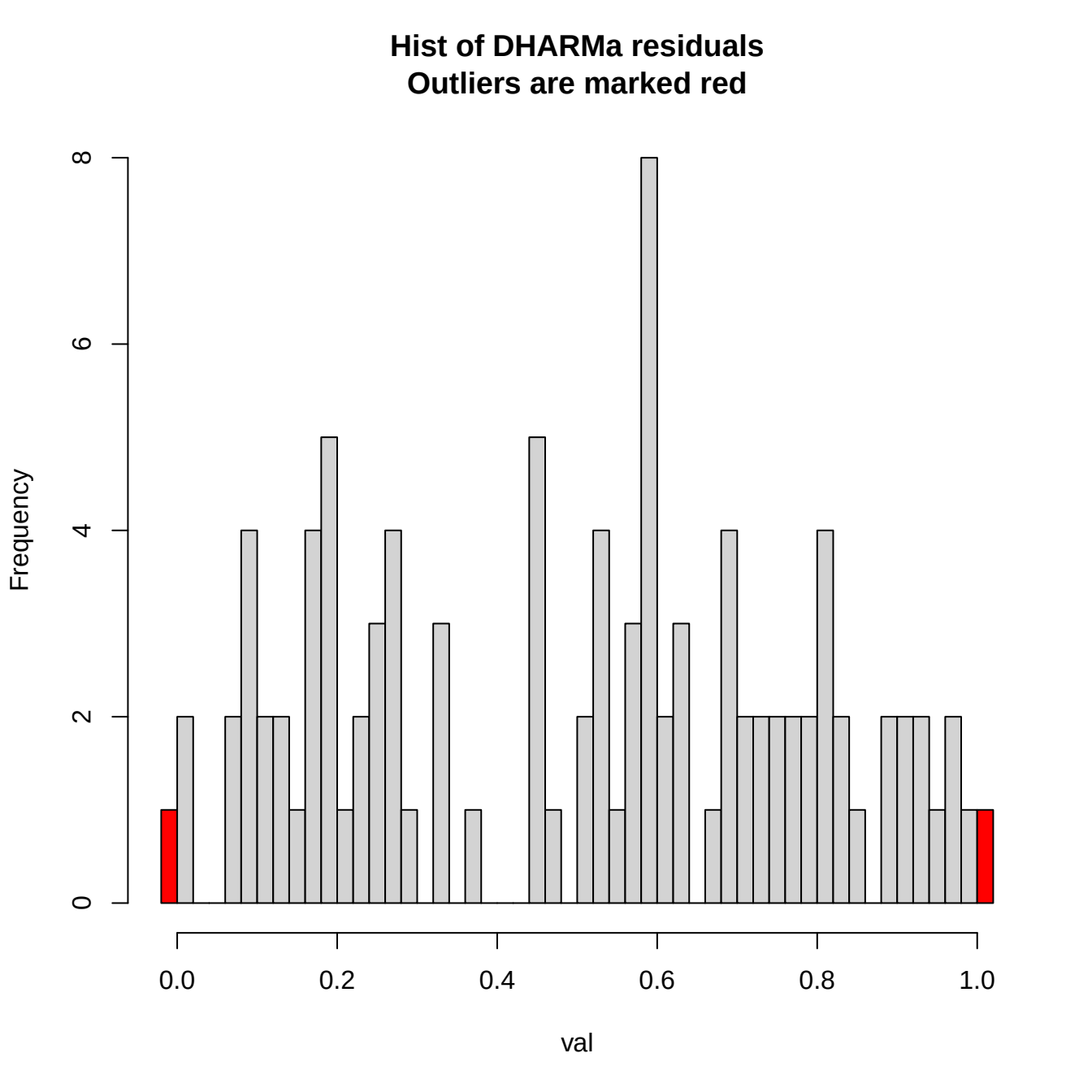
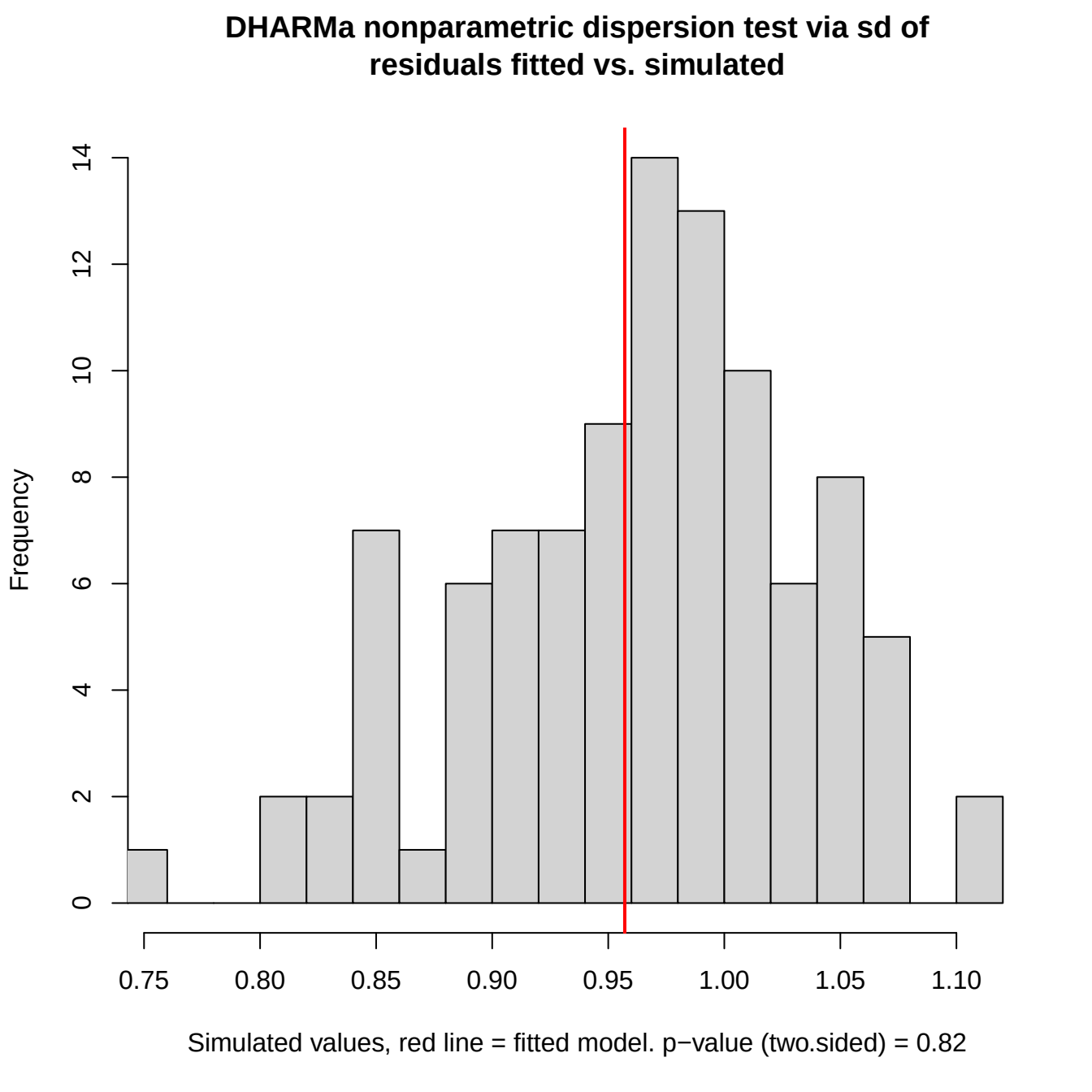
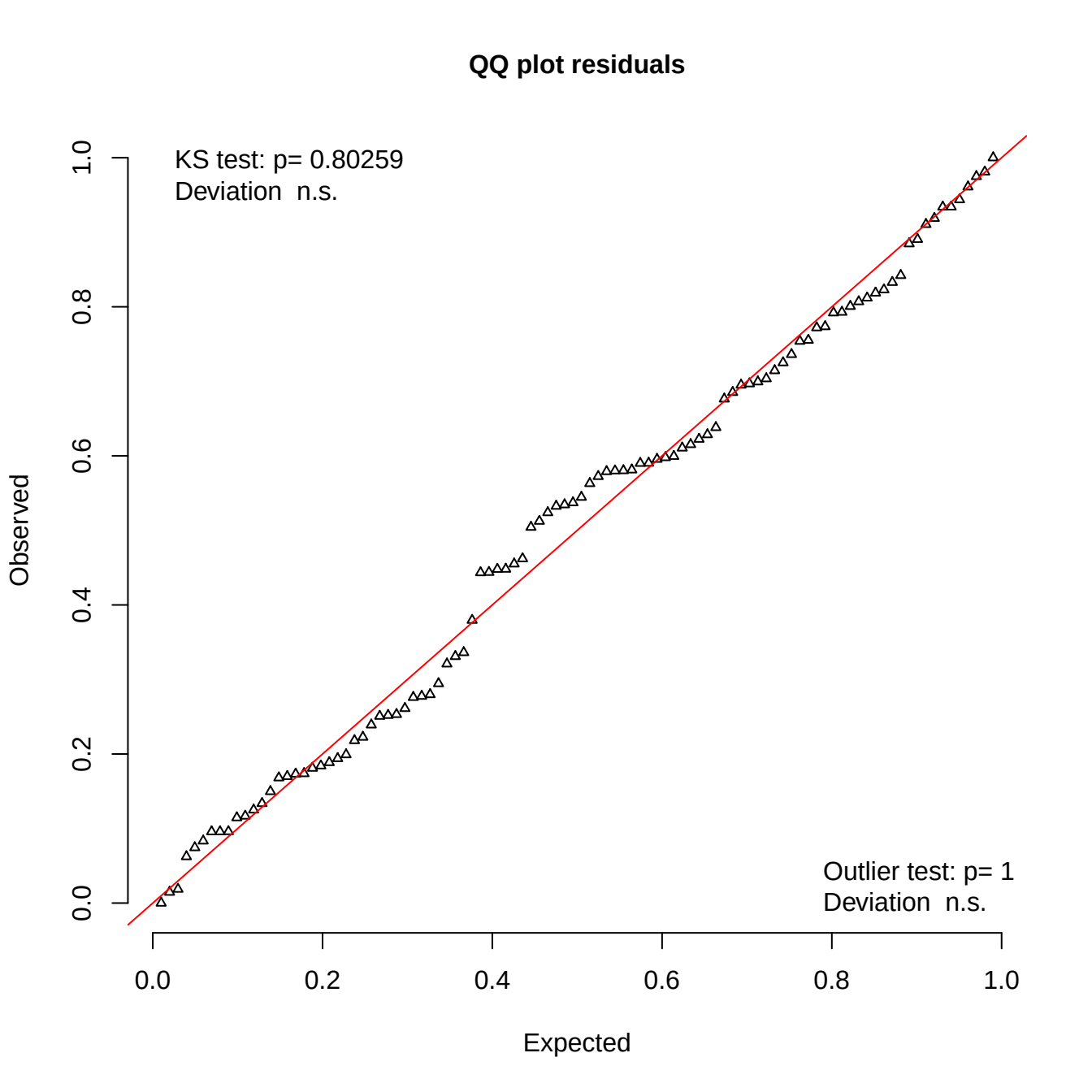

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.74744
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

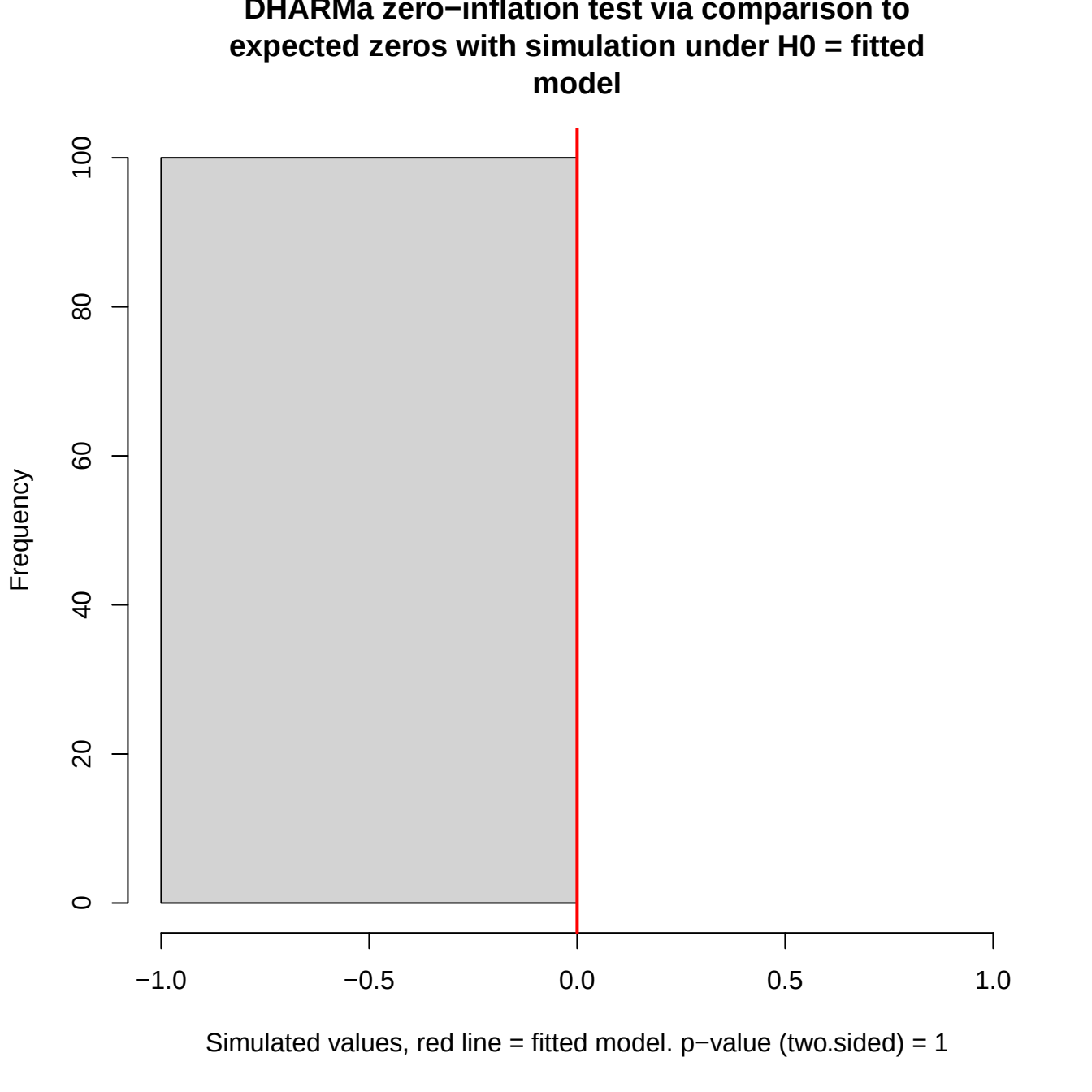

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.37515
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

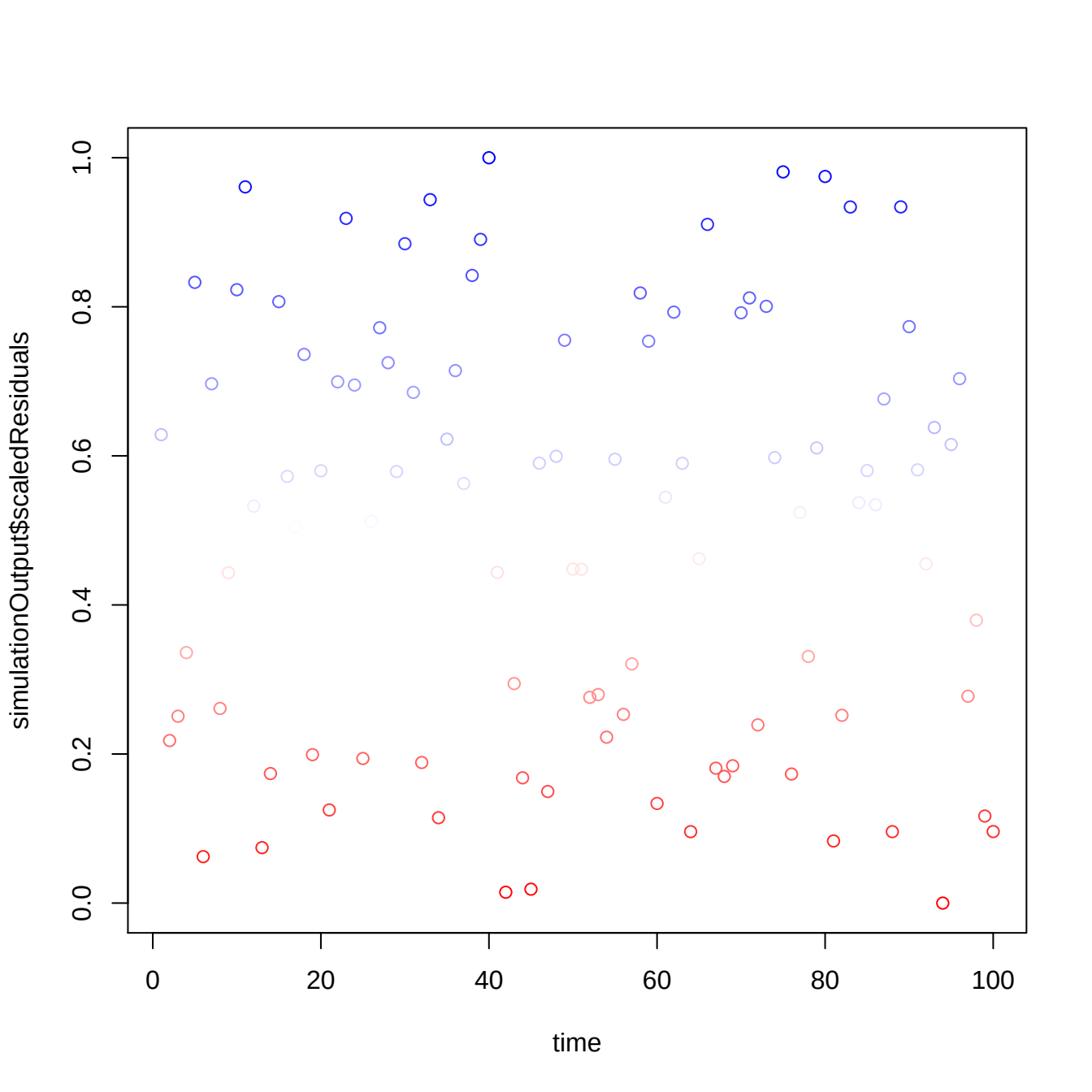

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.59002
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

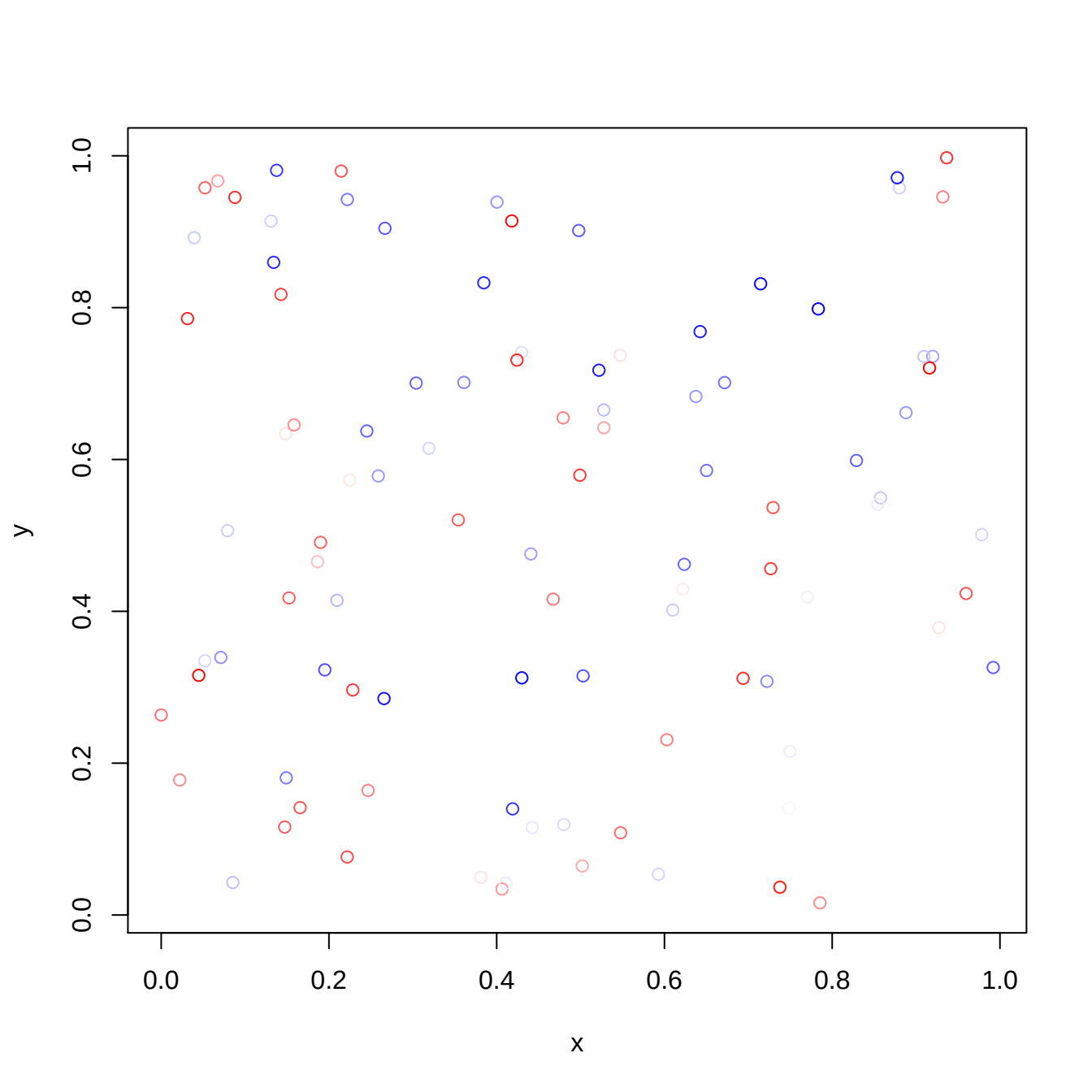

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

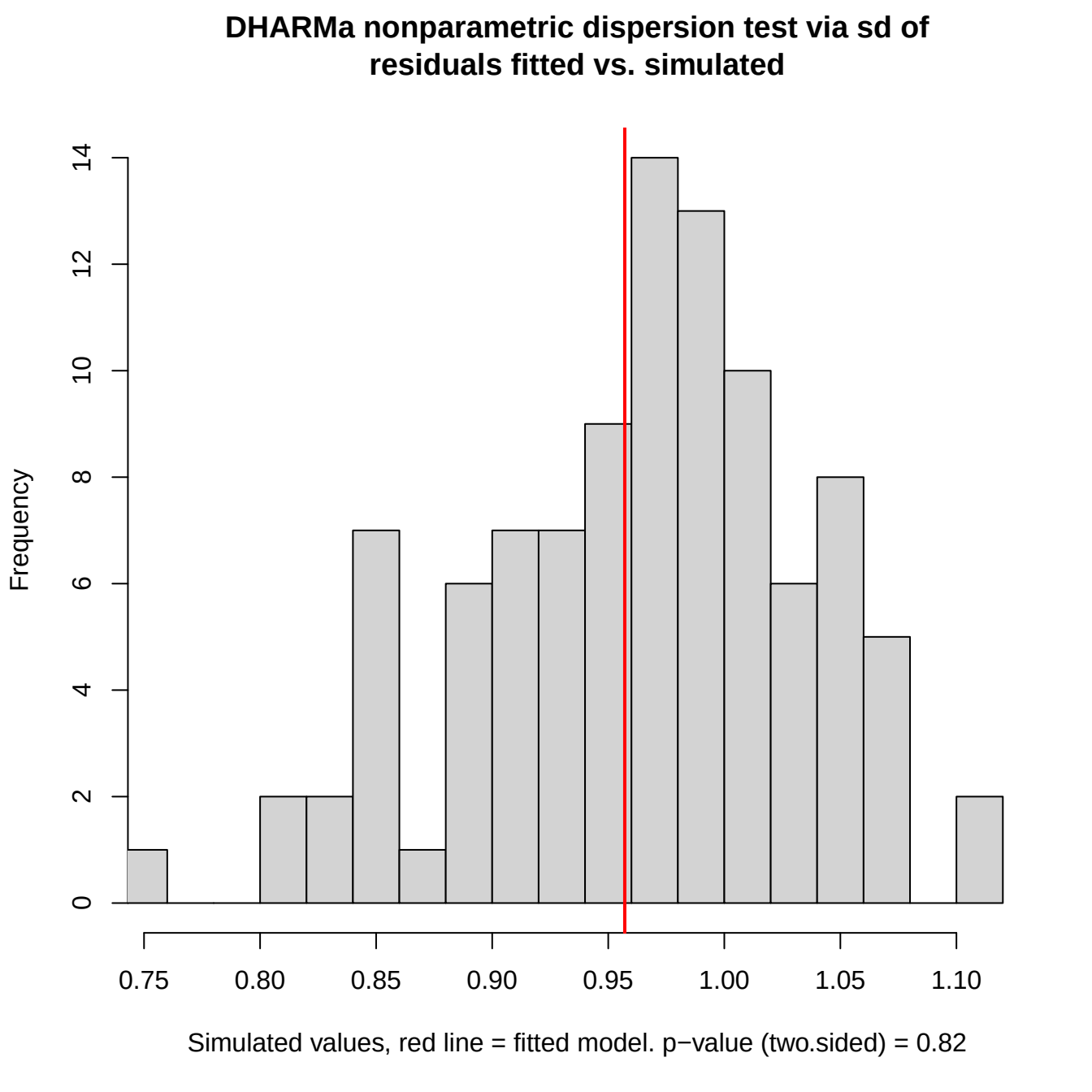

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.82

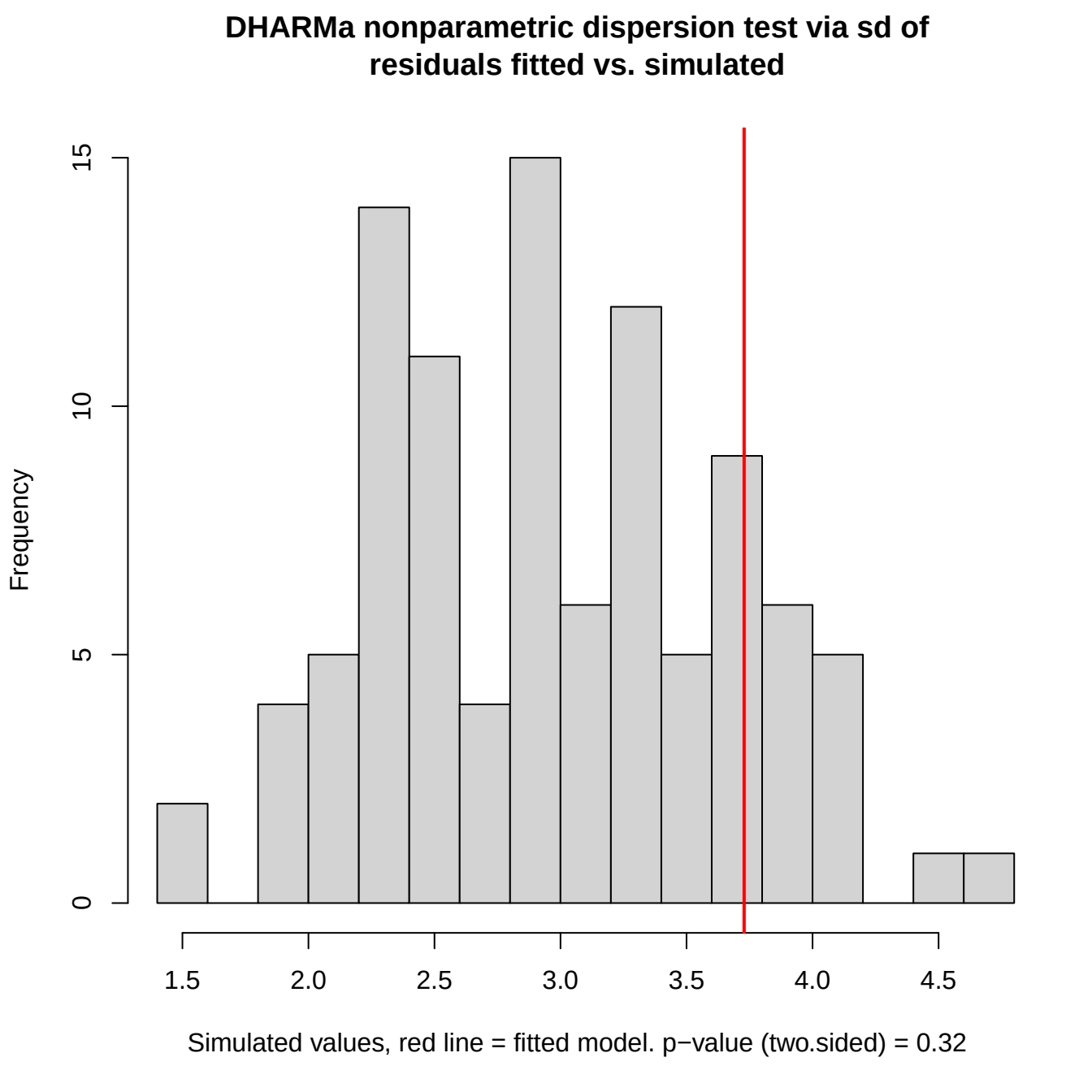

QQ plot residuals
KS test: p= 0.80259
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

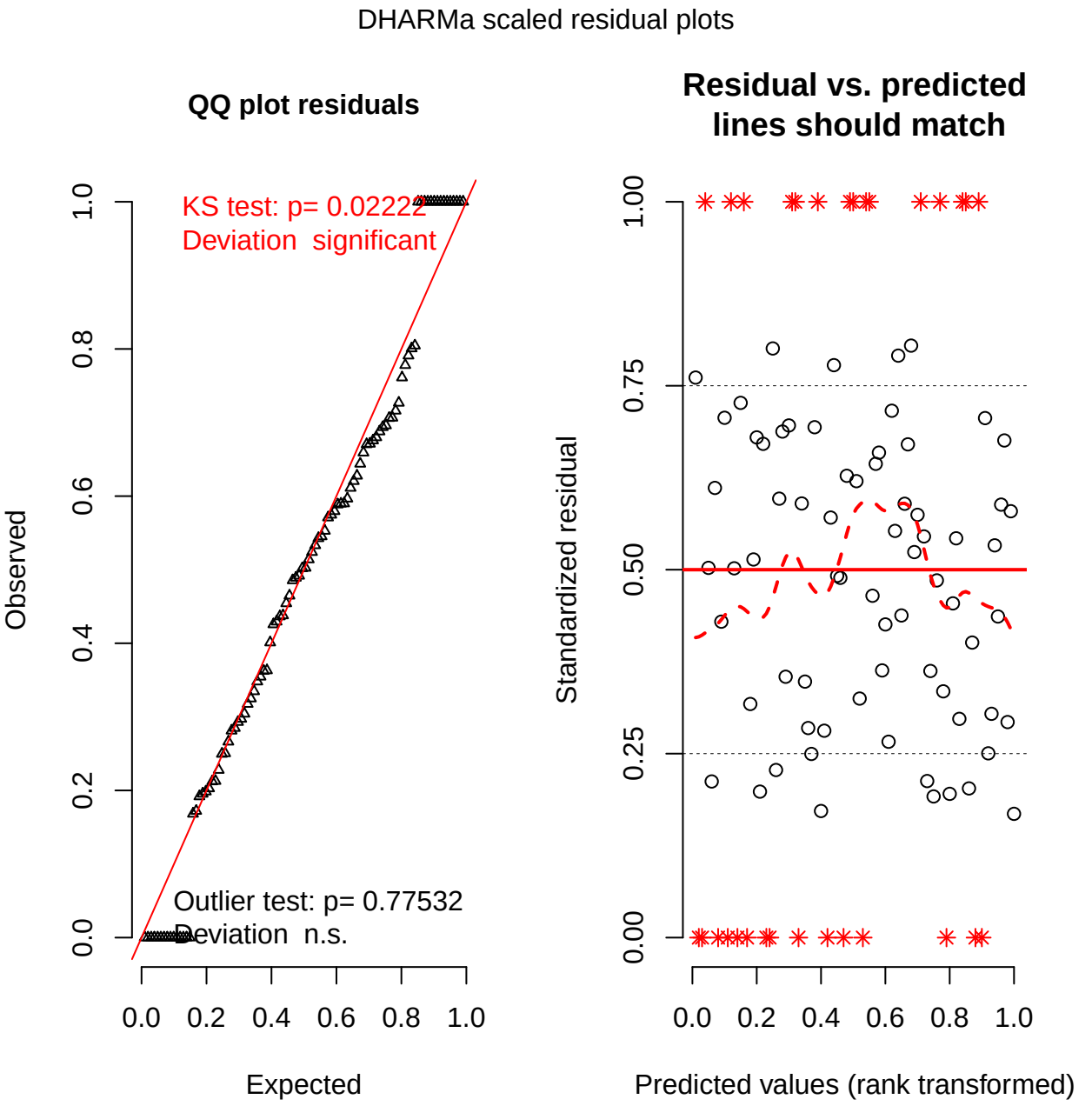

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

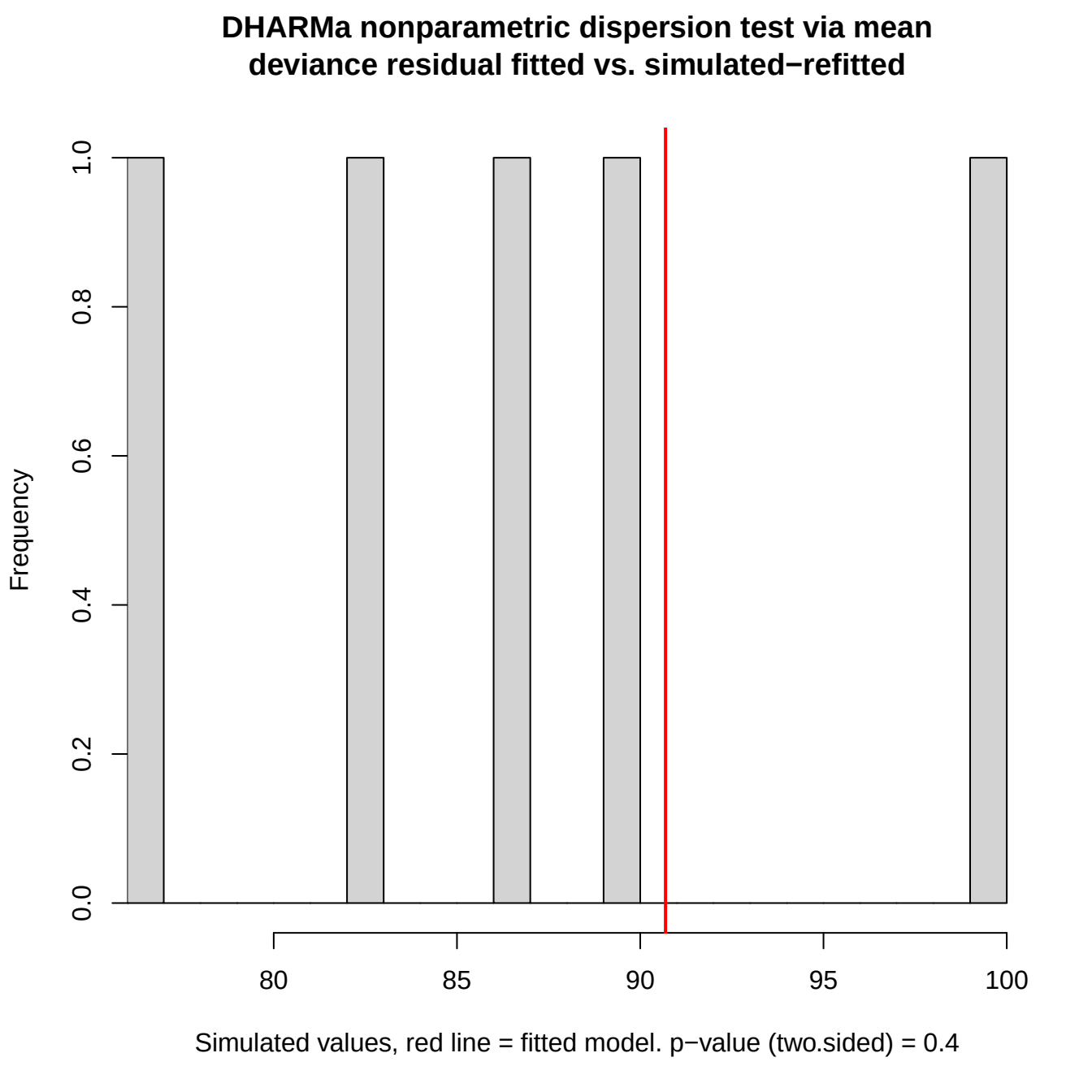

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

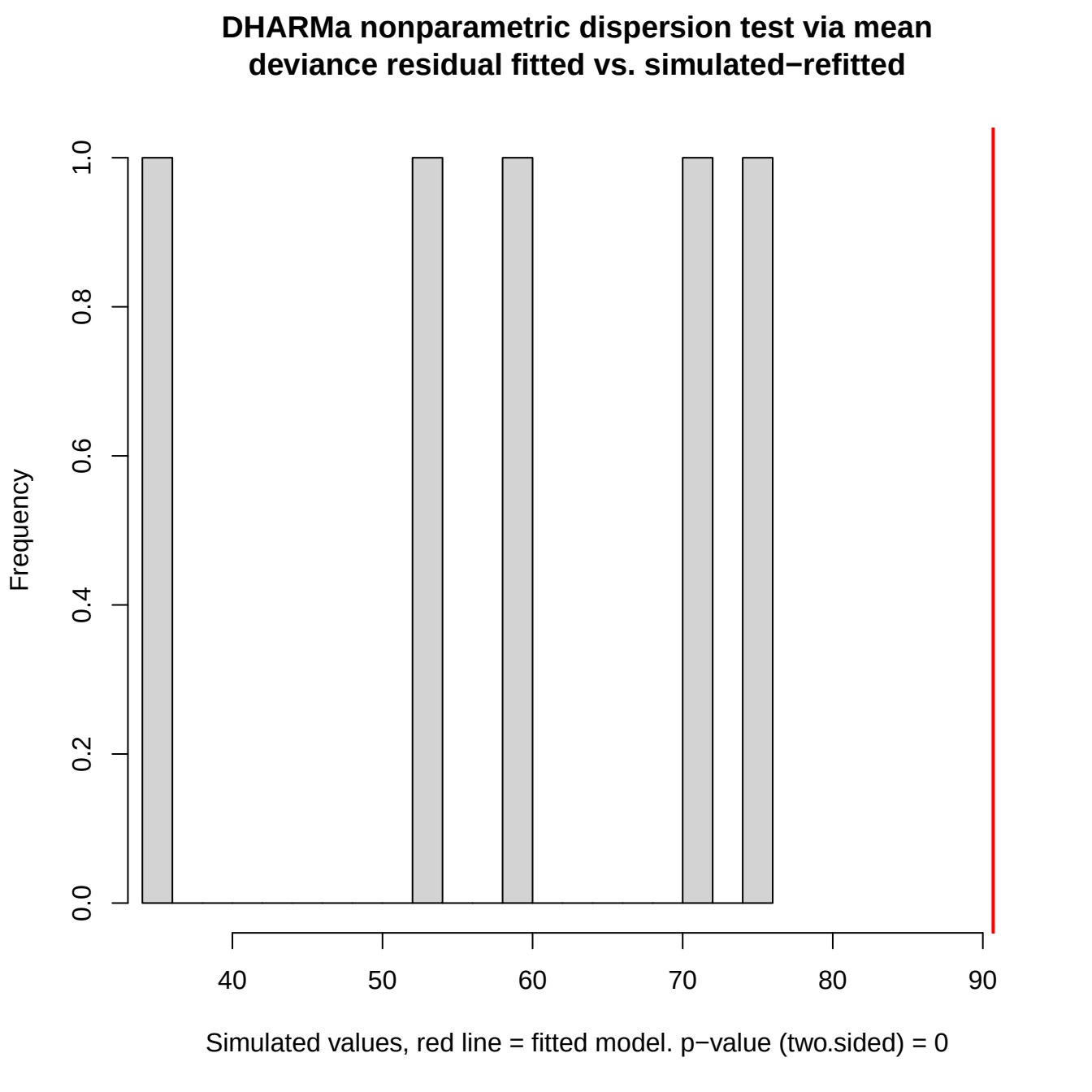

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

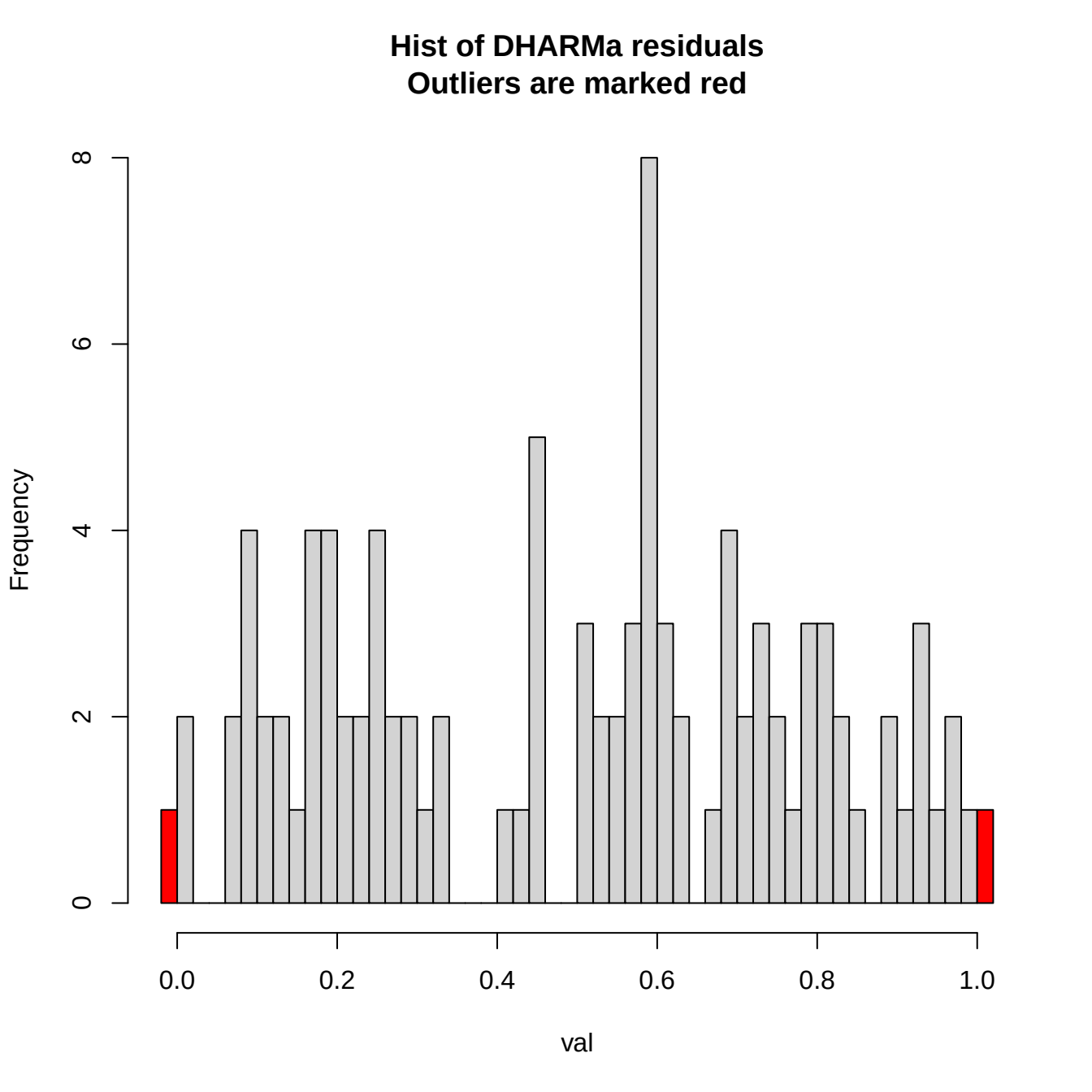

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.82

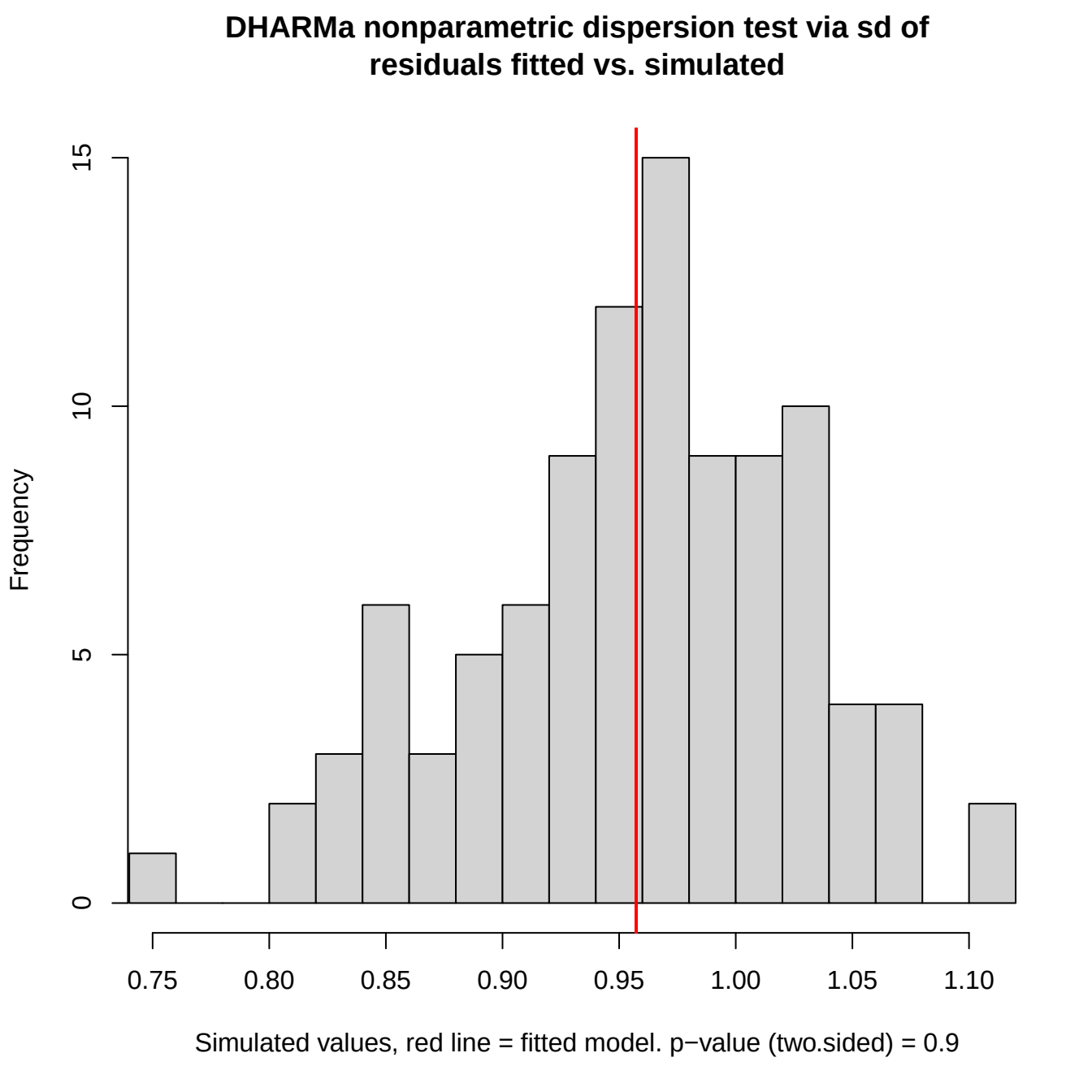

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.32

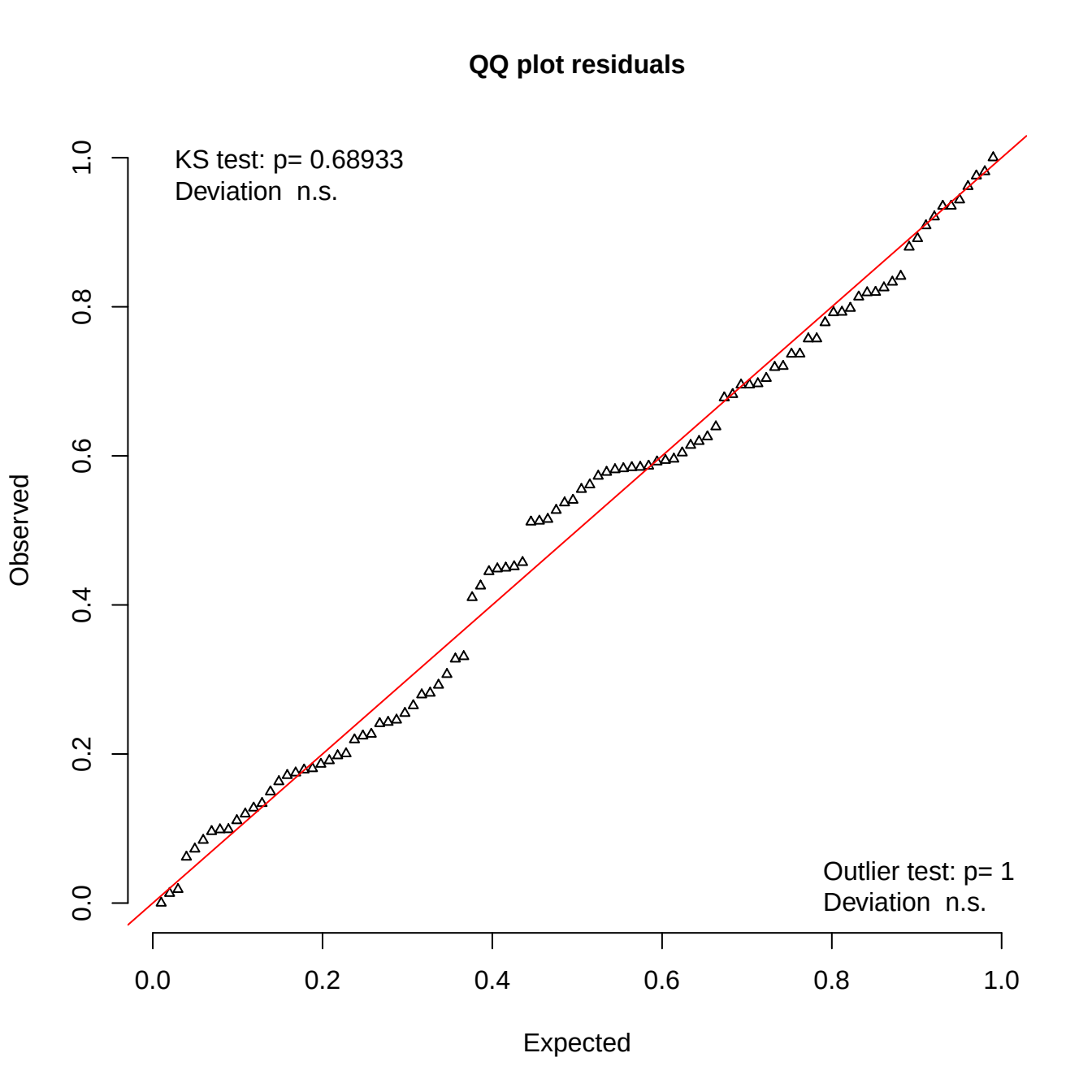

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.02222
Deviation significant
Outlier test: p= 0.77532
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

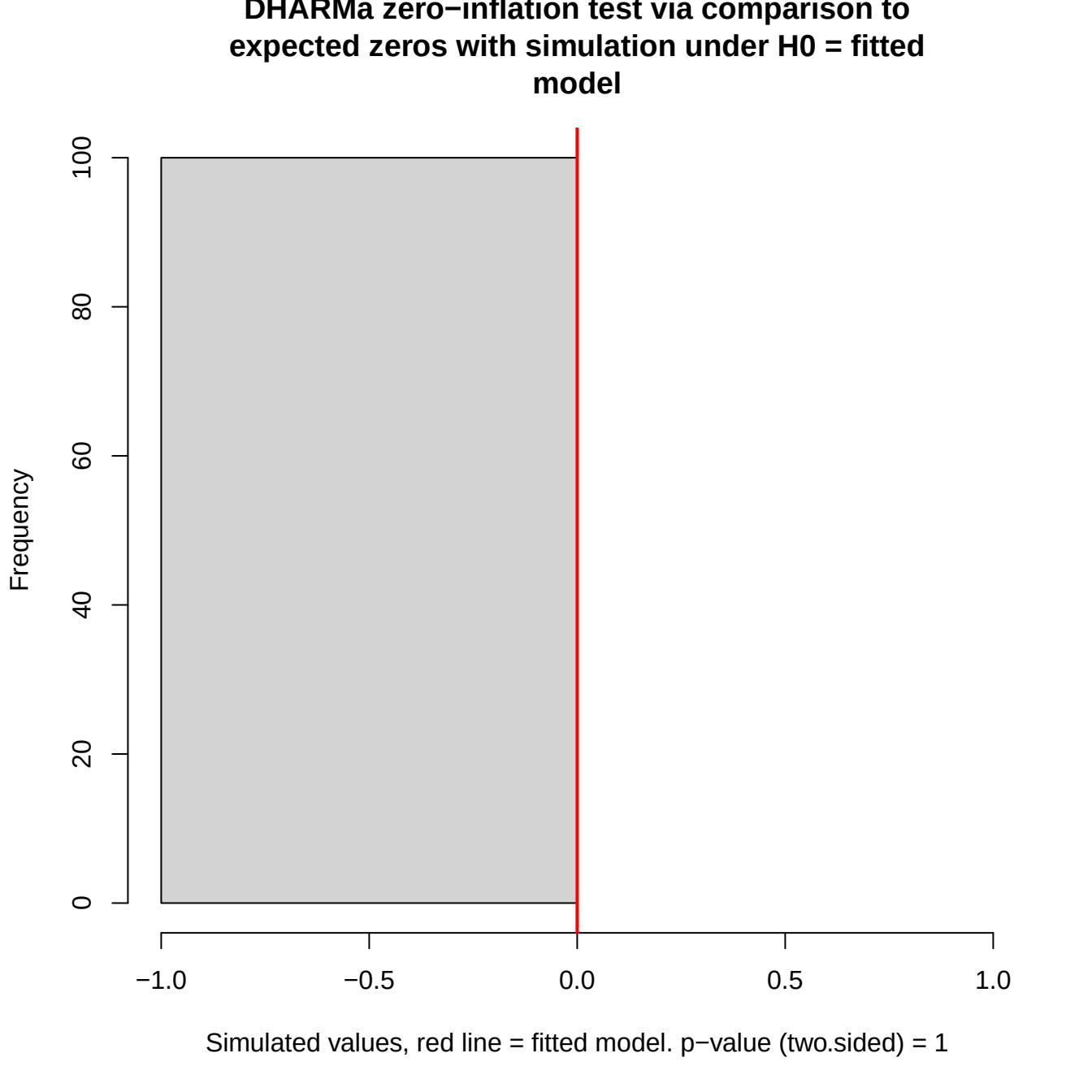

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
85
90
95
100
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

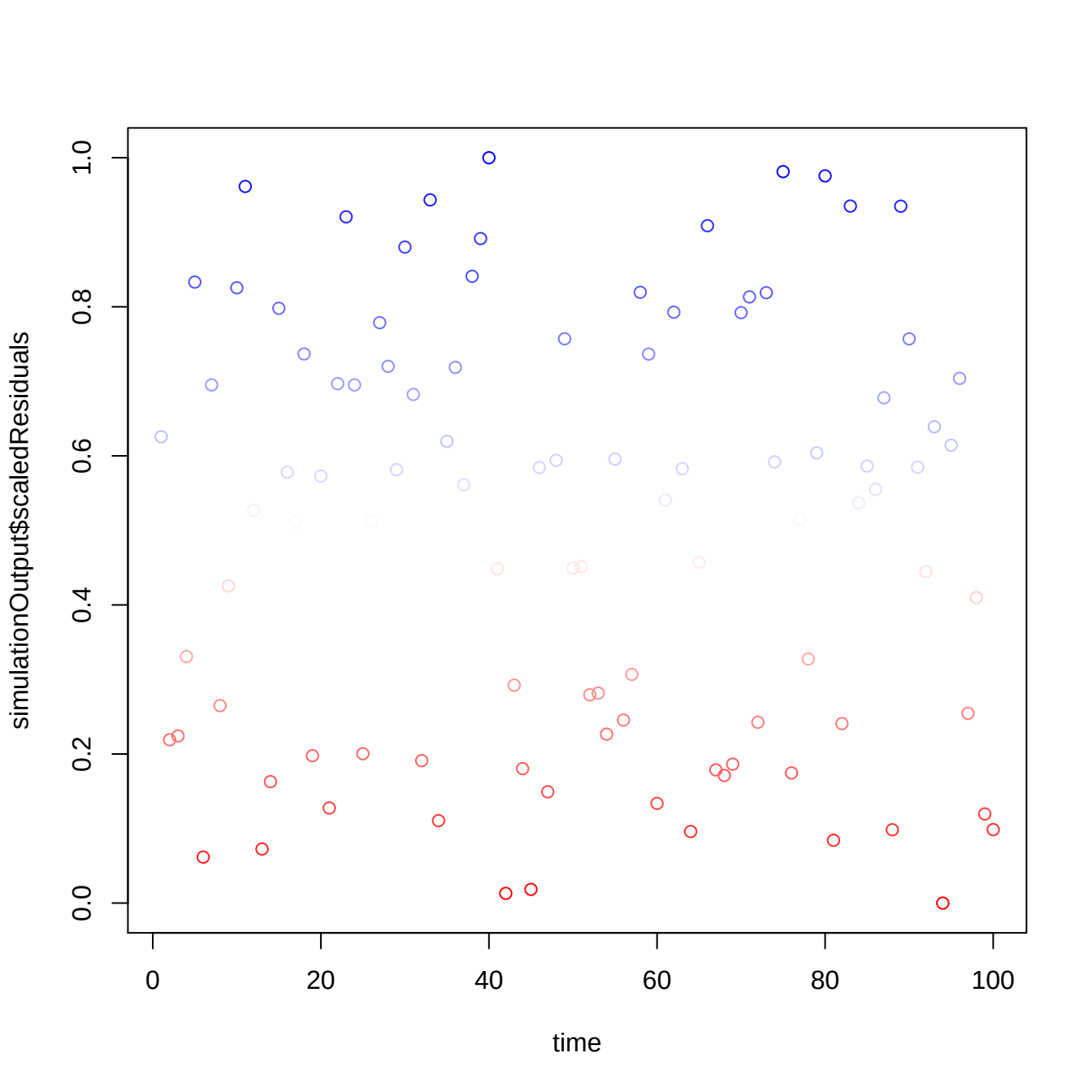

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
40
50
60
70
80
90
Simulated values, red line = fitted model. p−value (two.sided) = 0

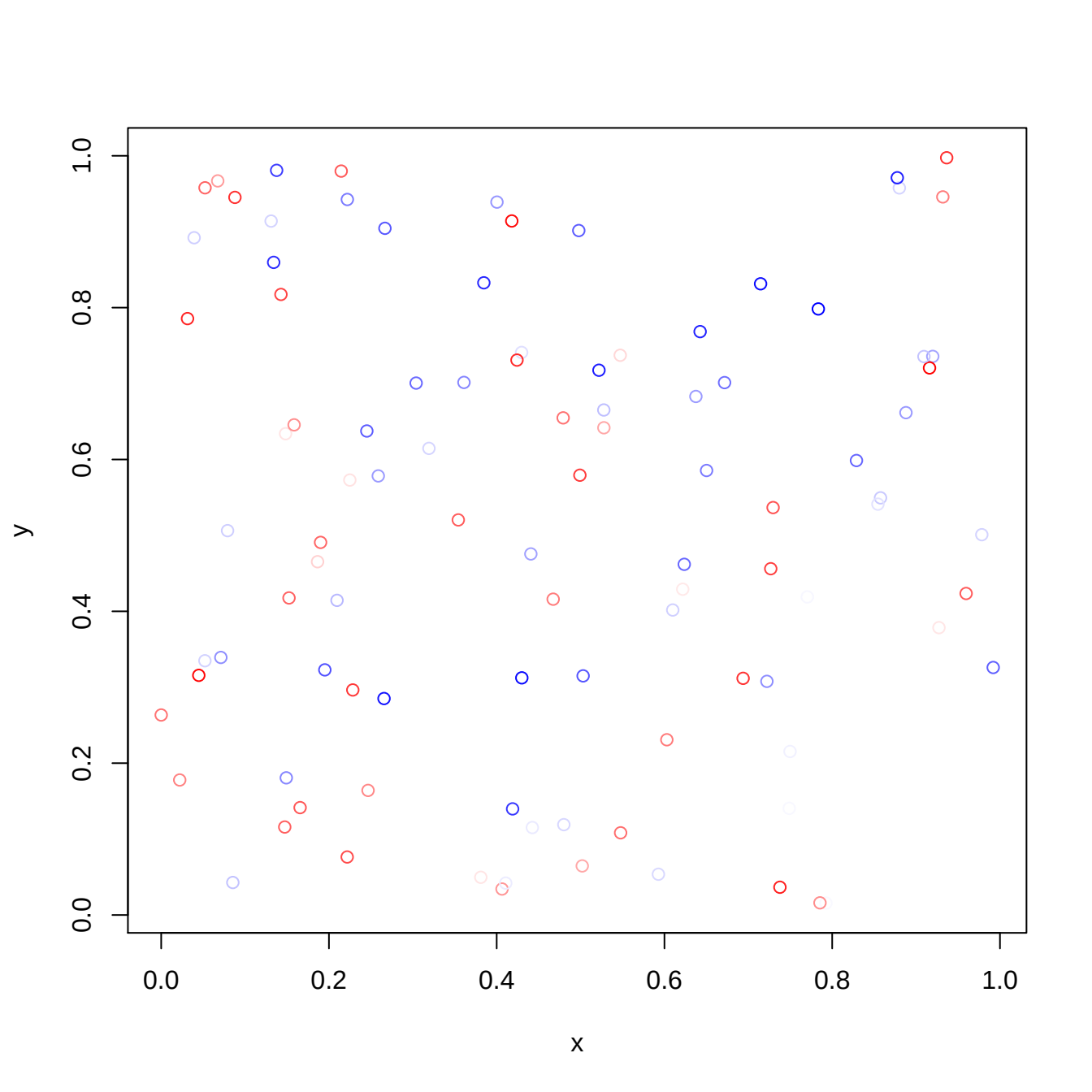

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

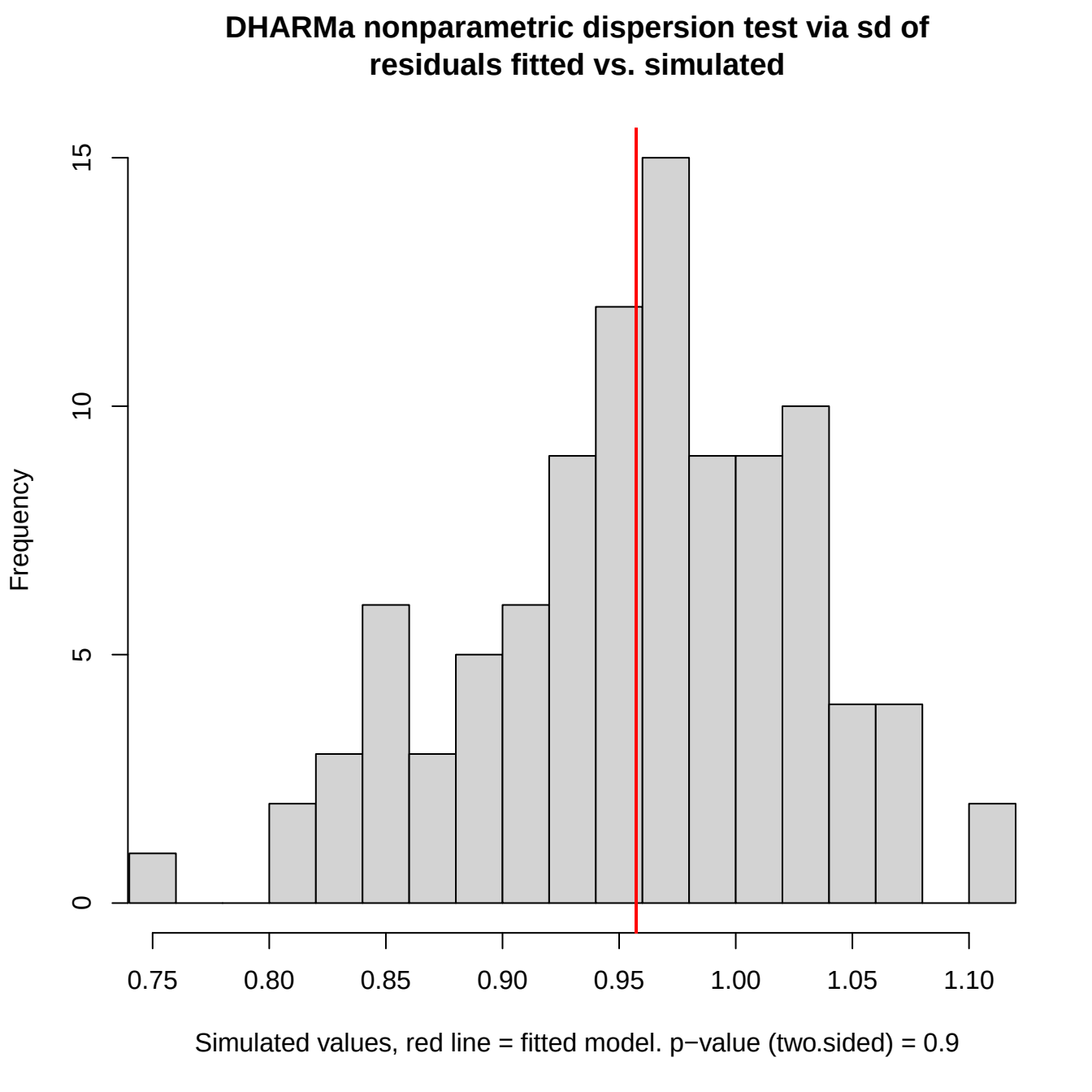

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

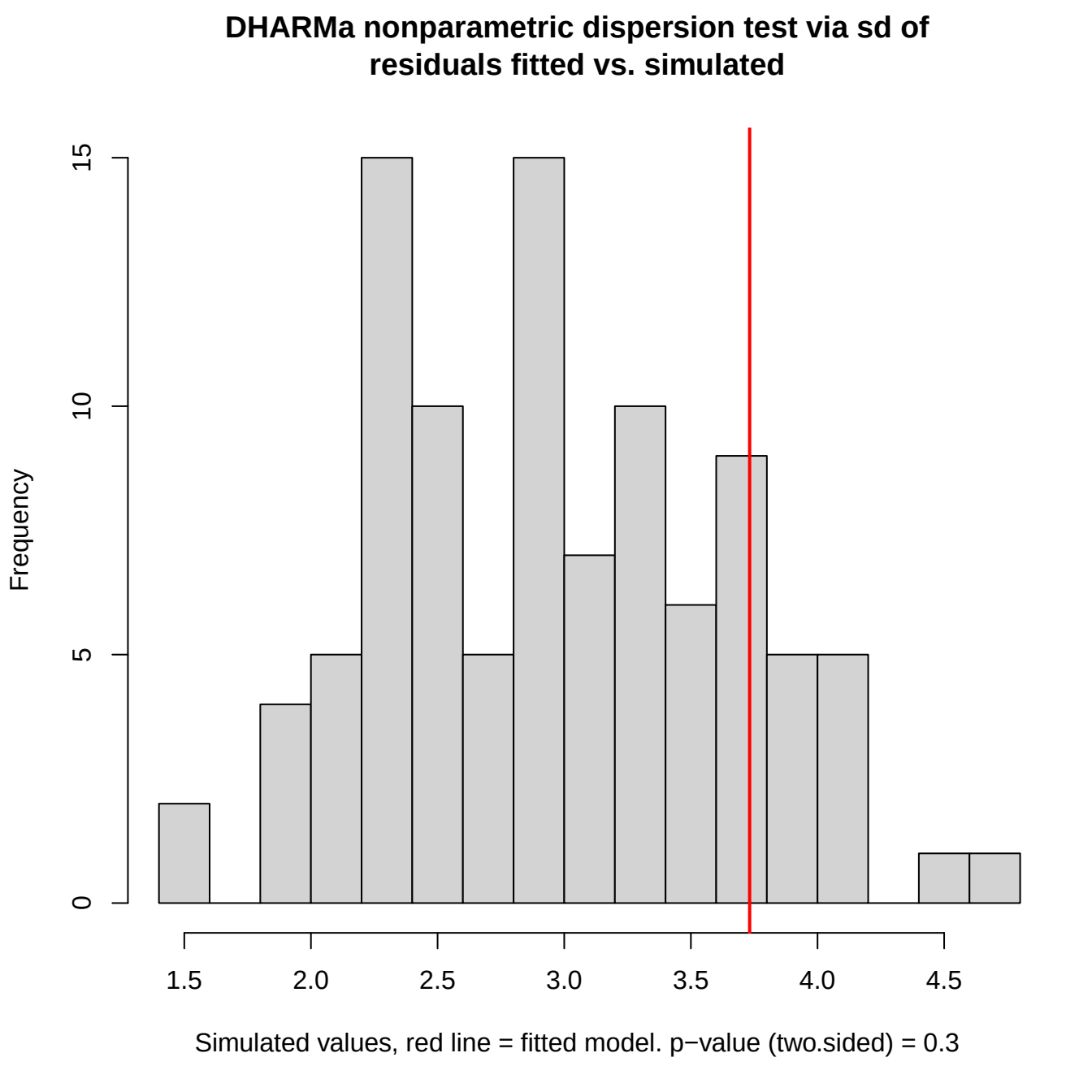

QQ plot residuals
KS test: p= 0.68933
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

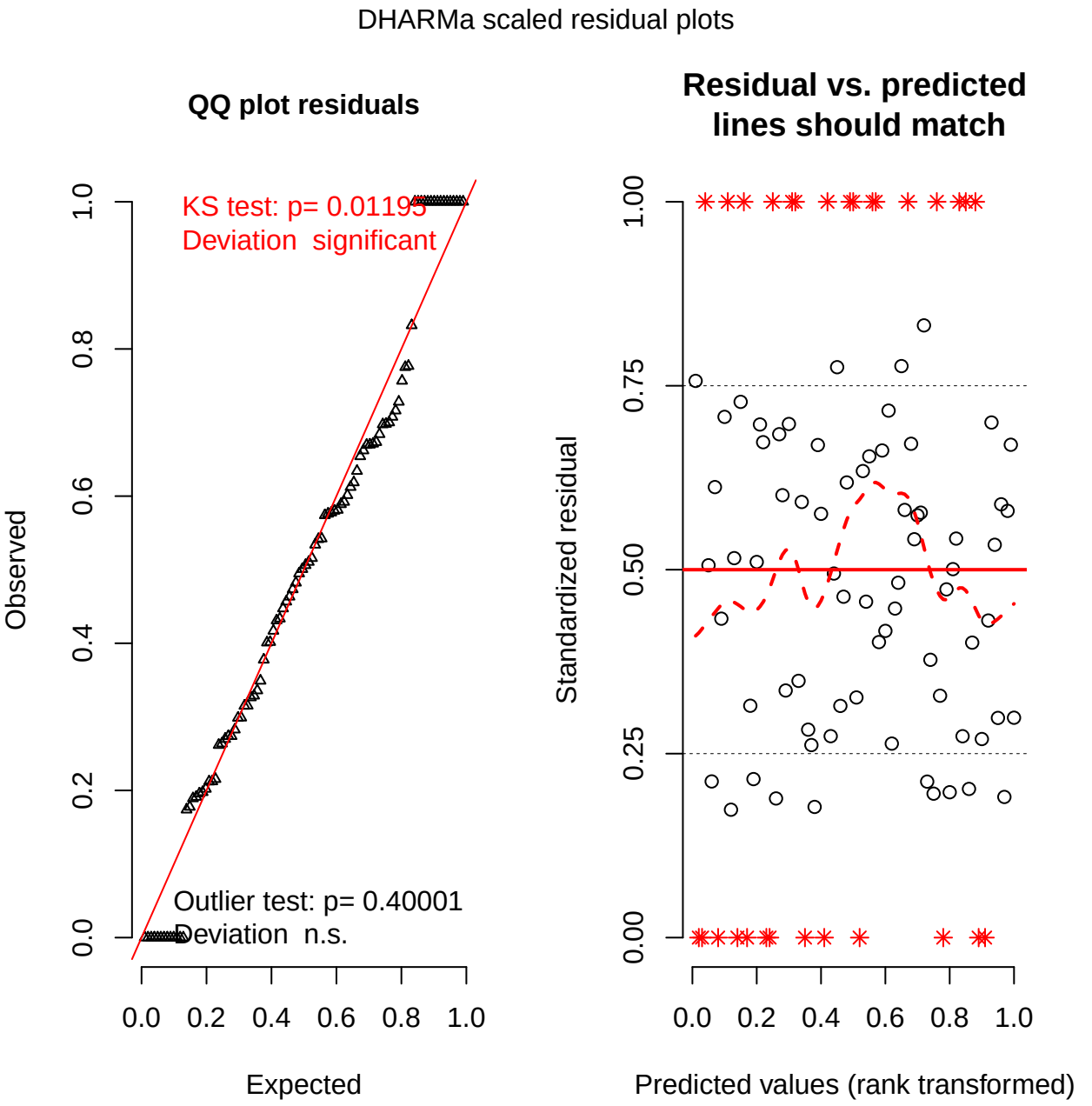

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

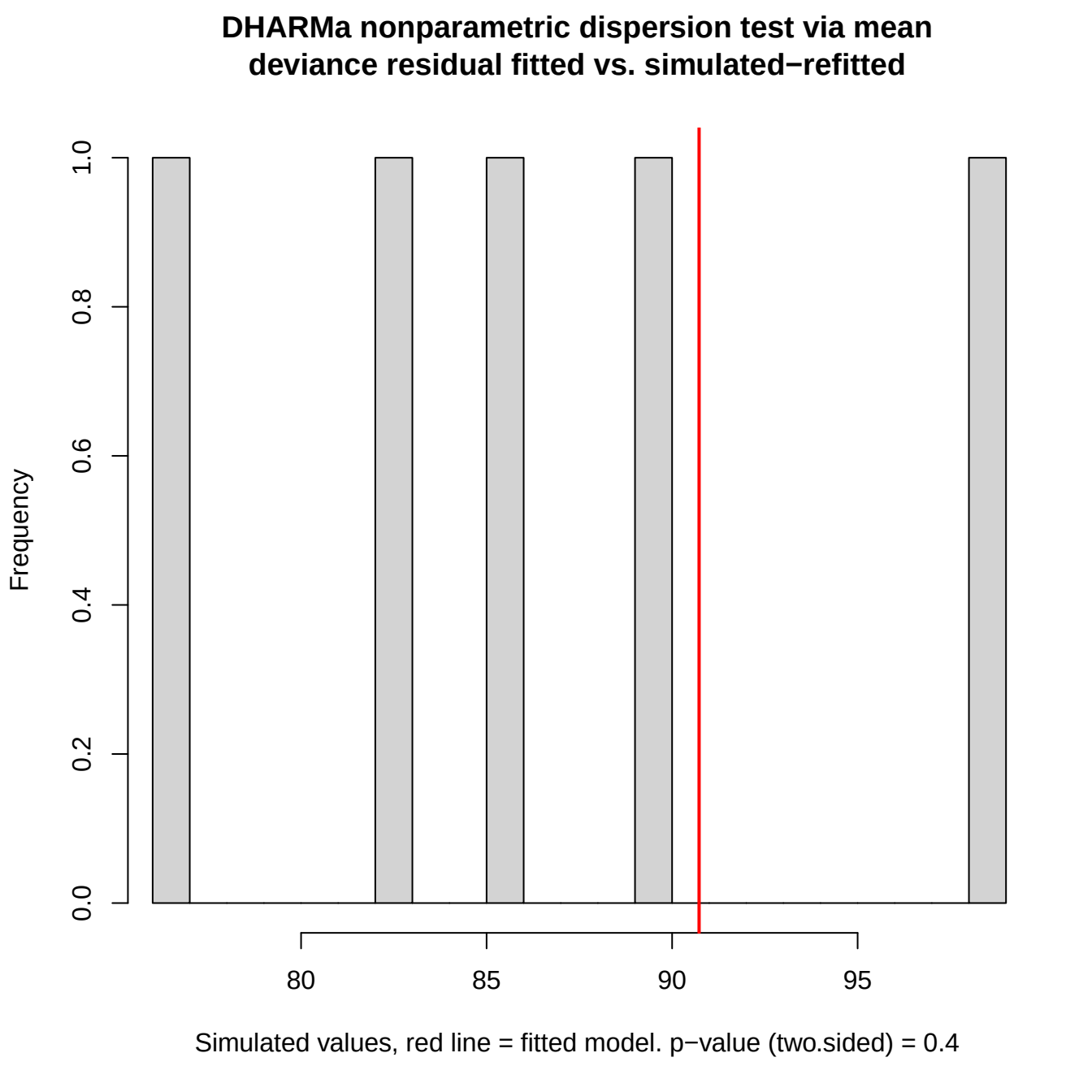

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

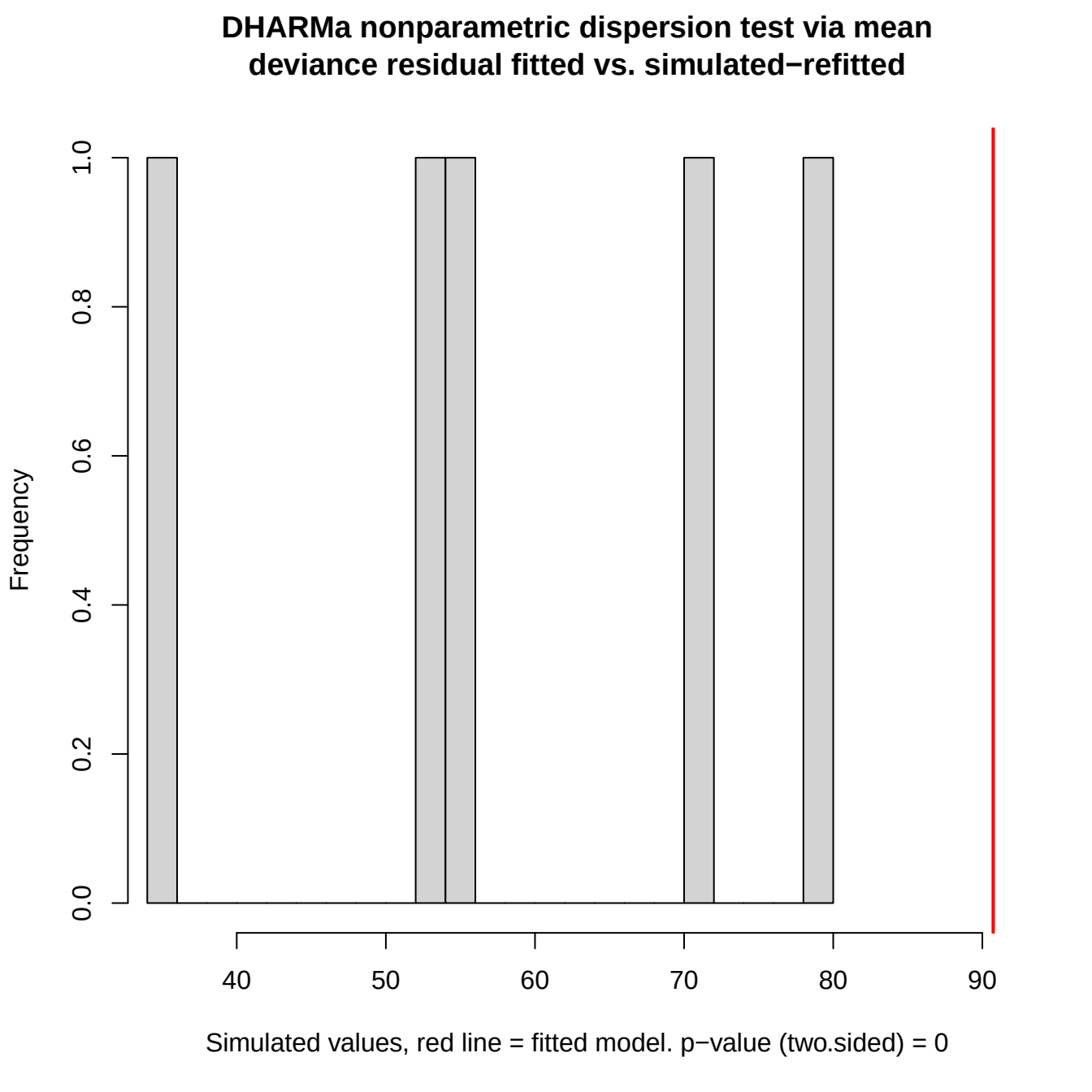

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

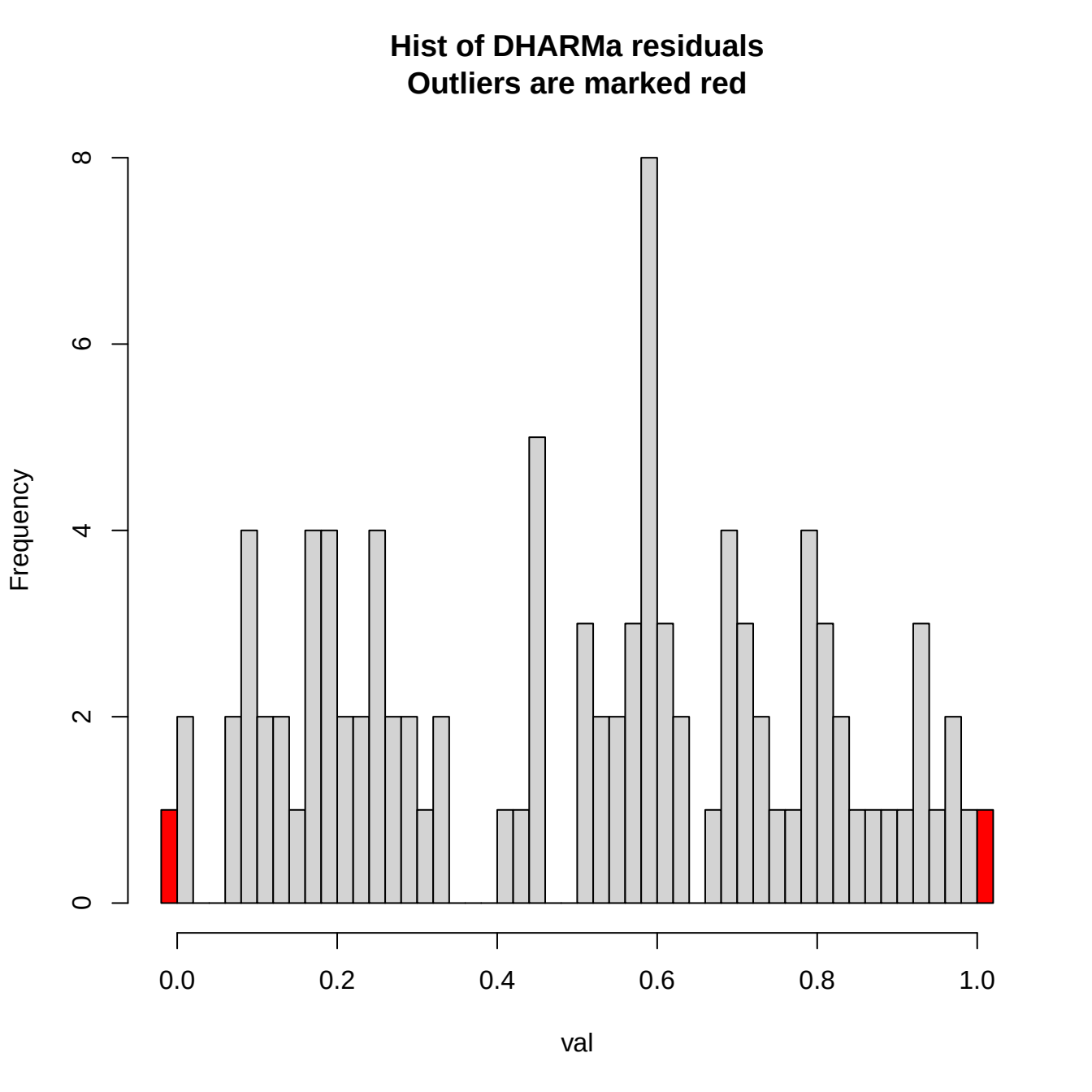

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

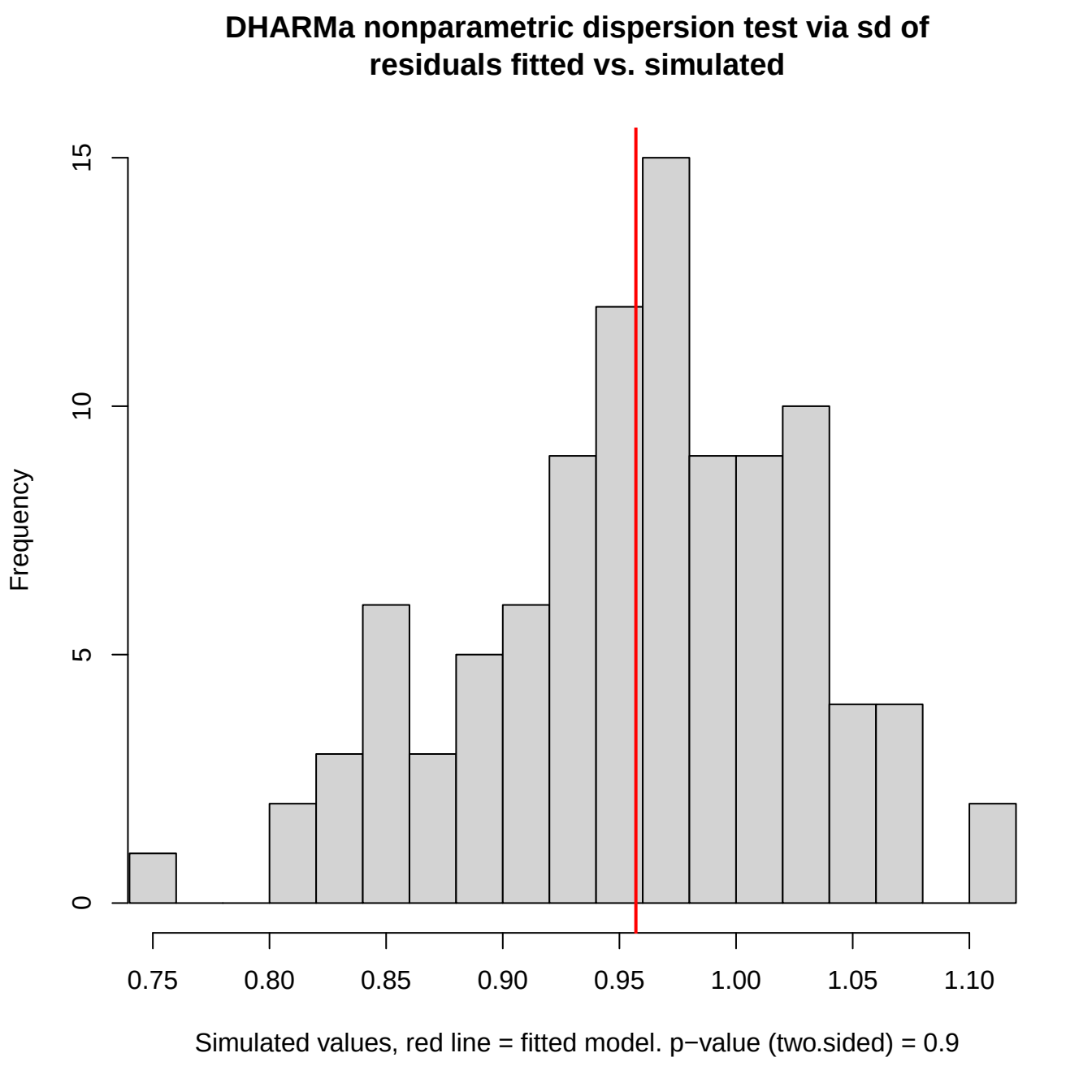

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.3

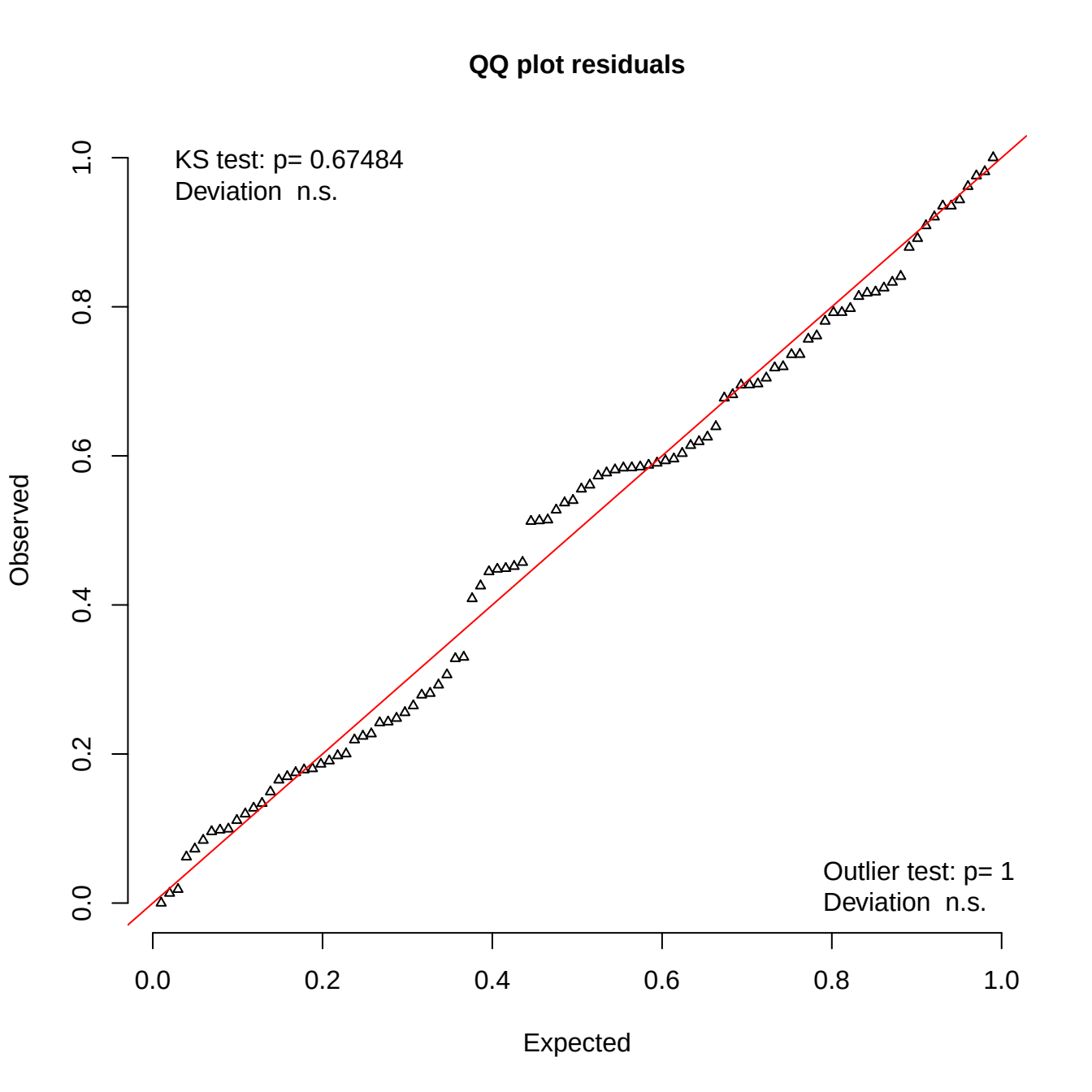

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.01195
Deviation significant
Outlier test: p= 0.40001
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

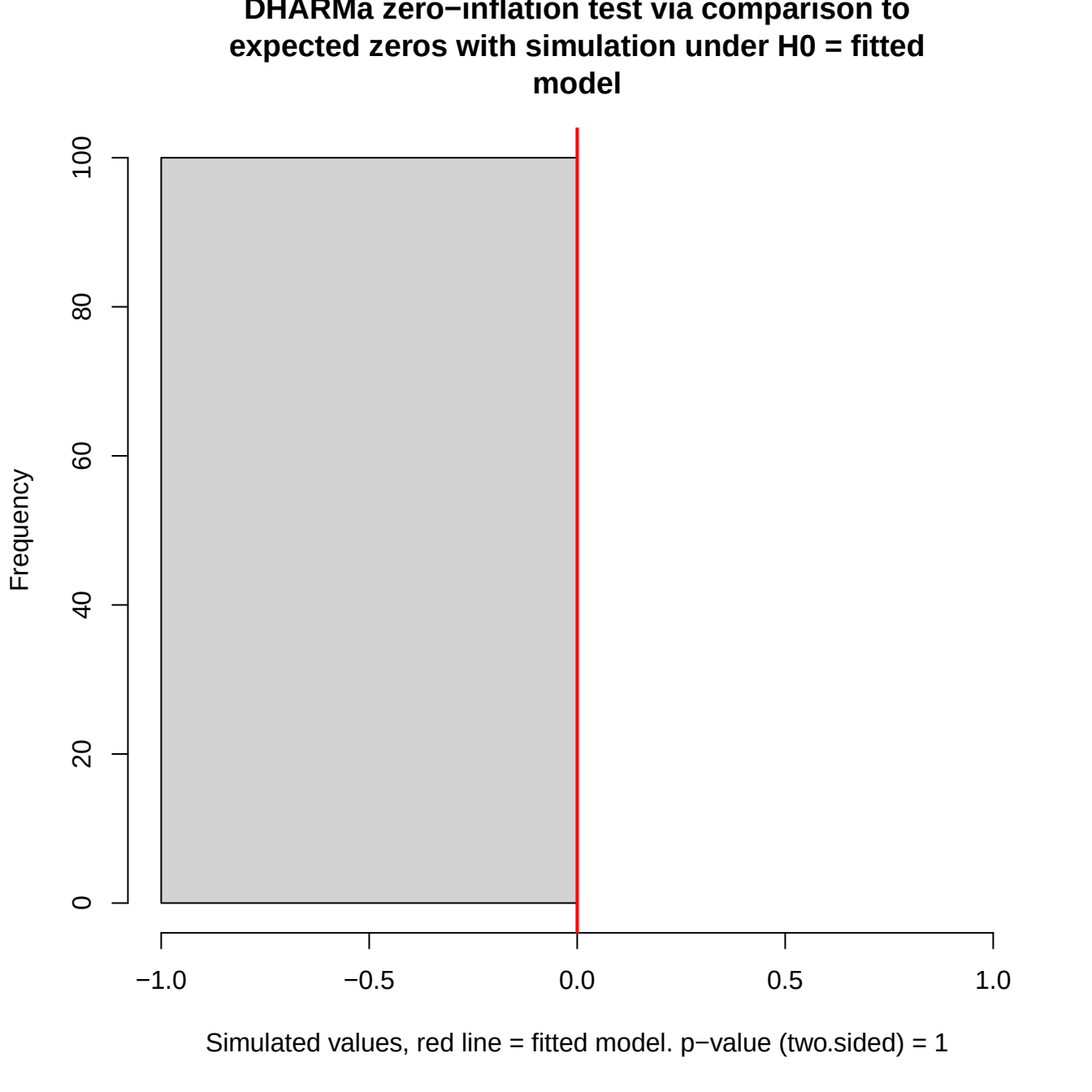

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
85
90
95
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

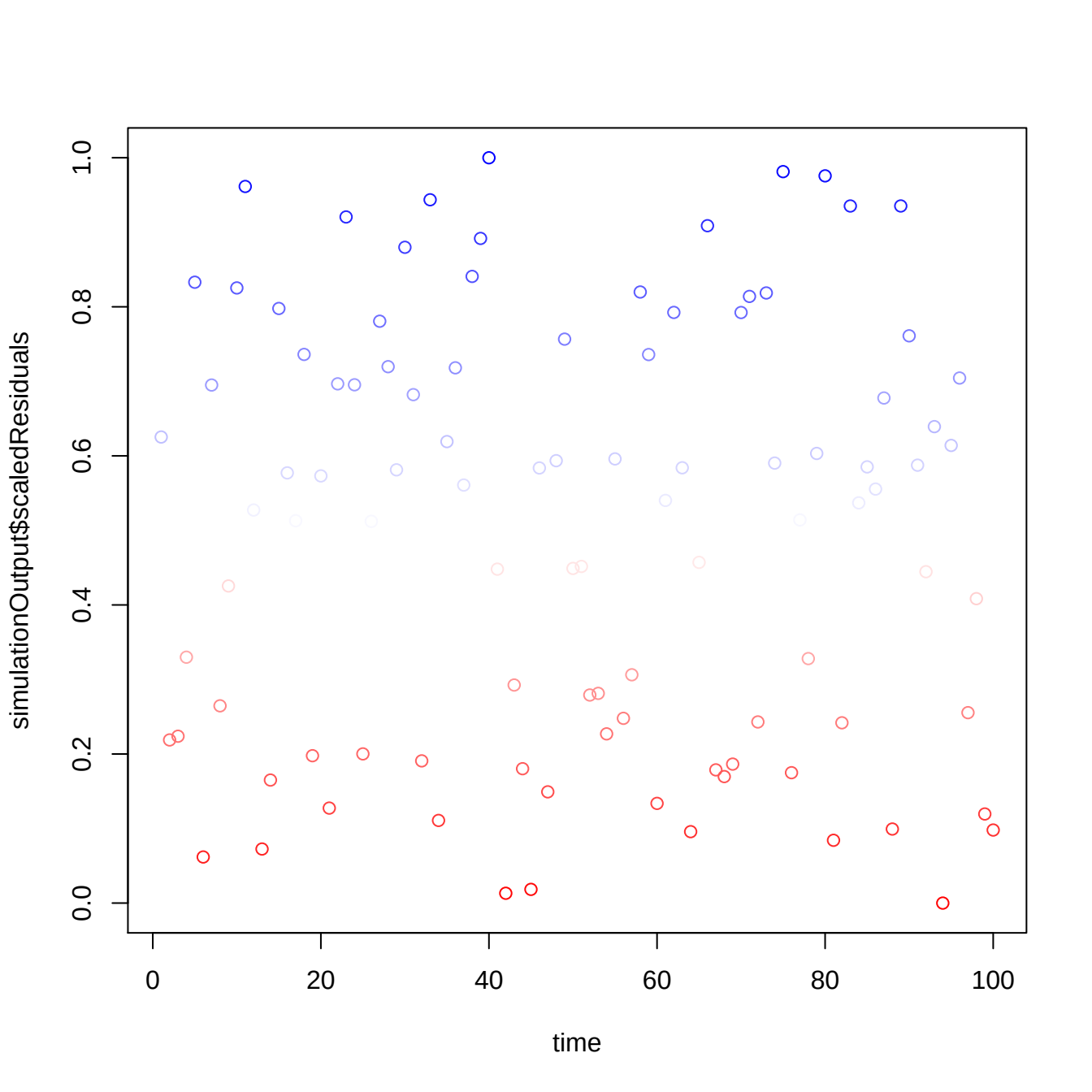

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
40
50
60
70
80
90
Simulated values, red line = fitted model. p−value (two.sided) = 0

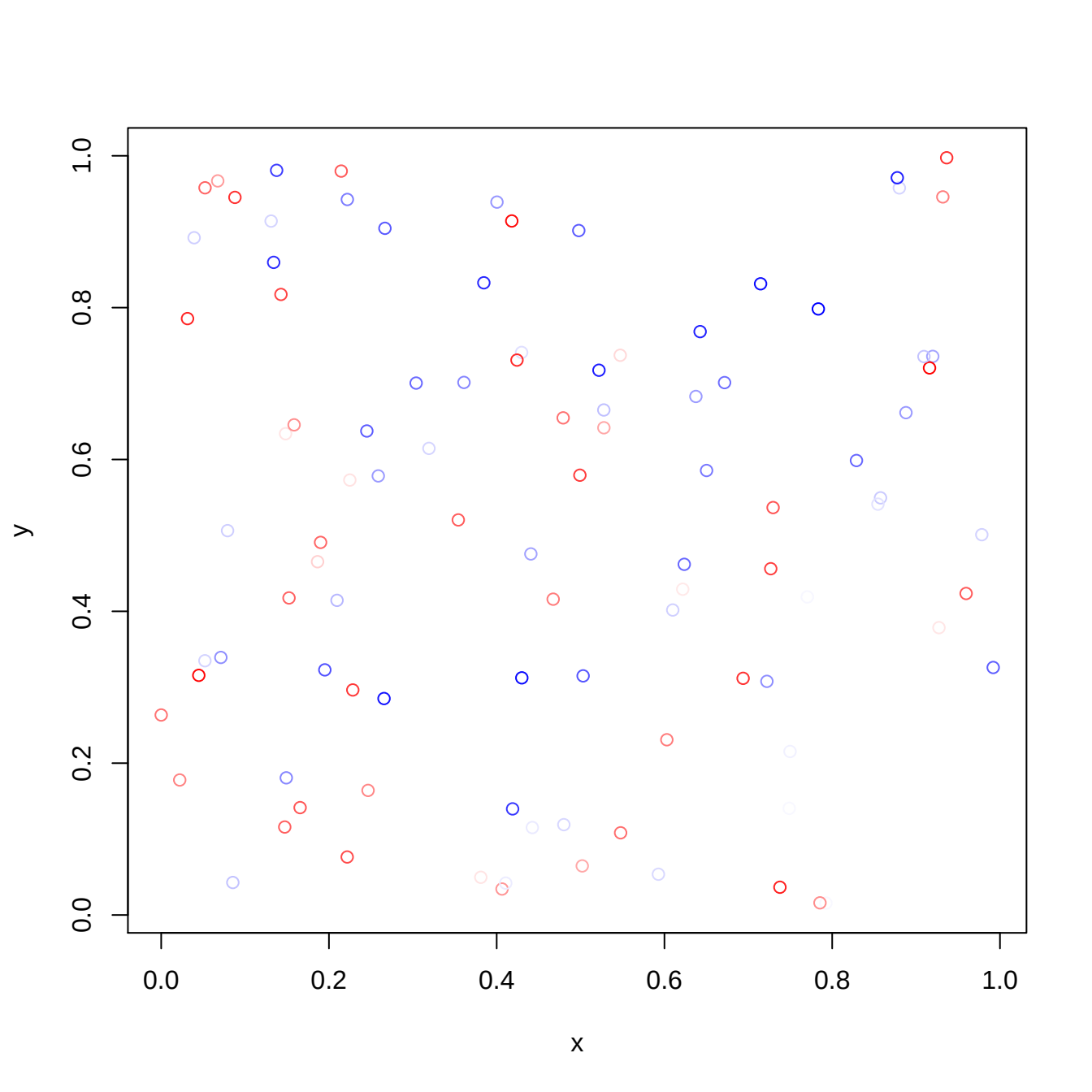

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

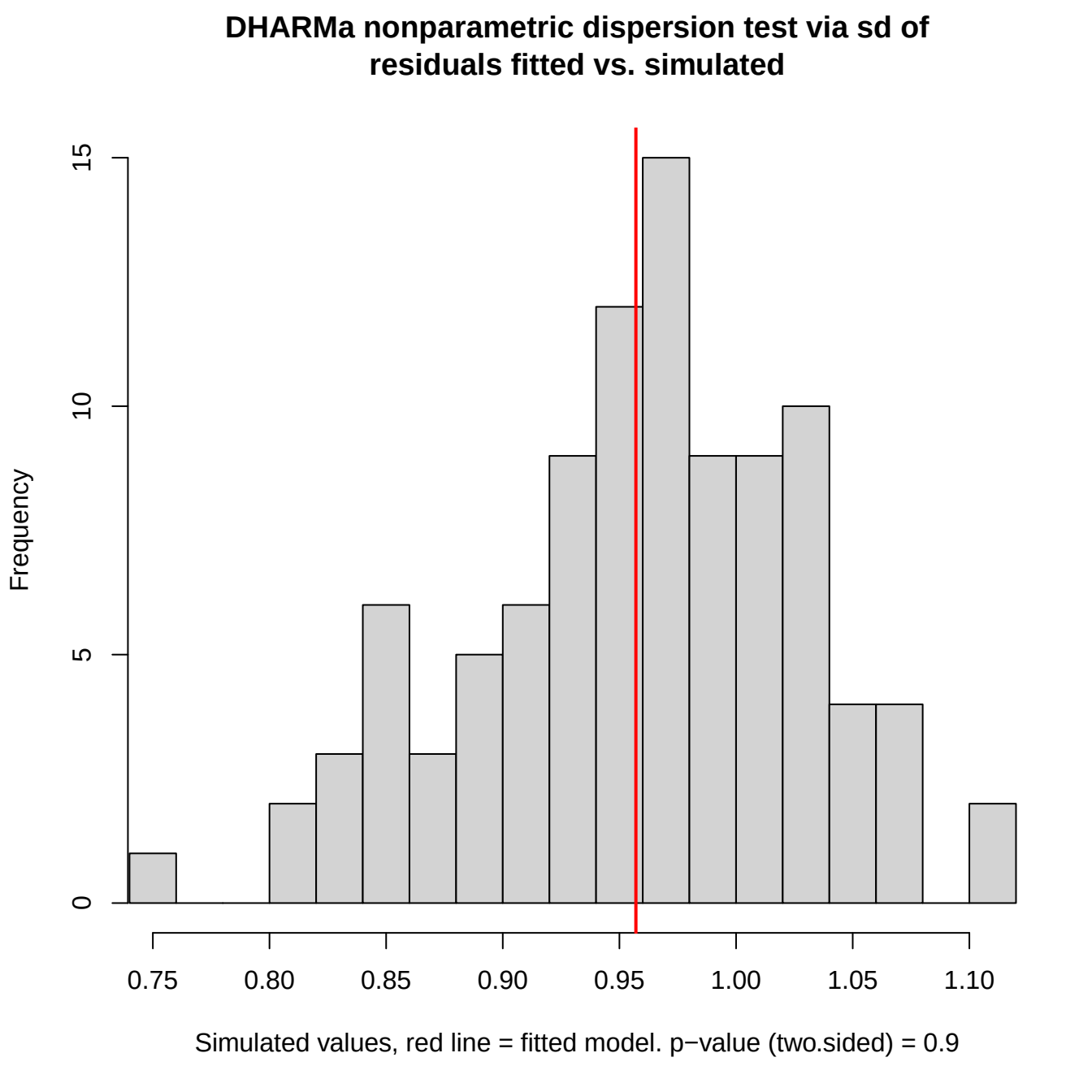

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

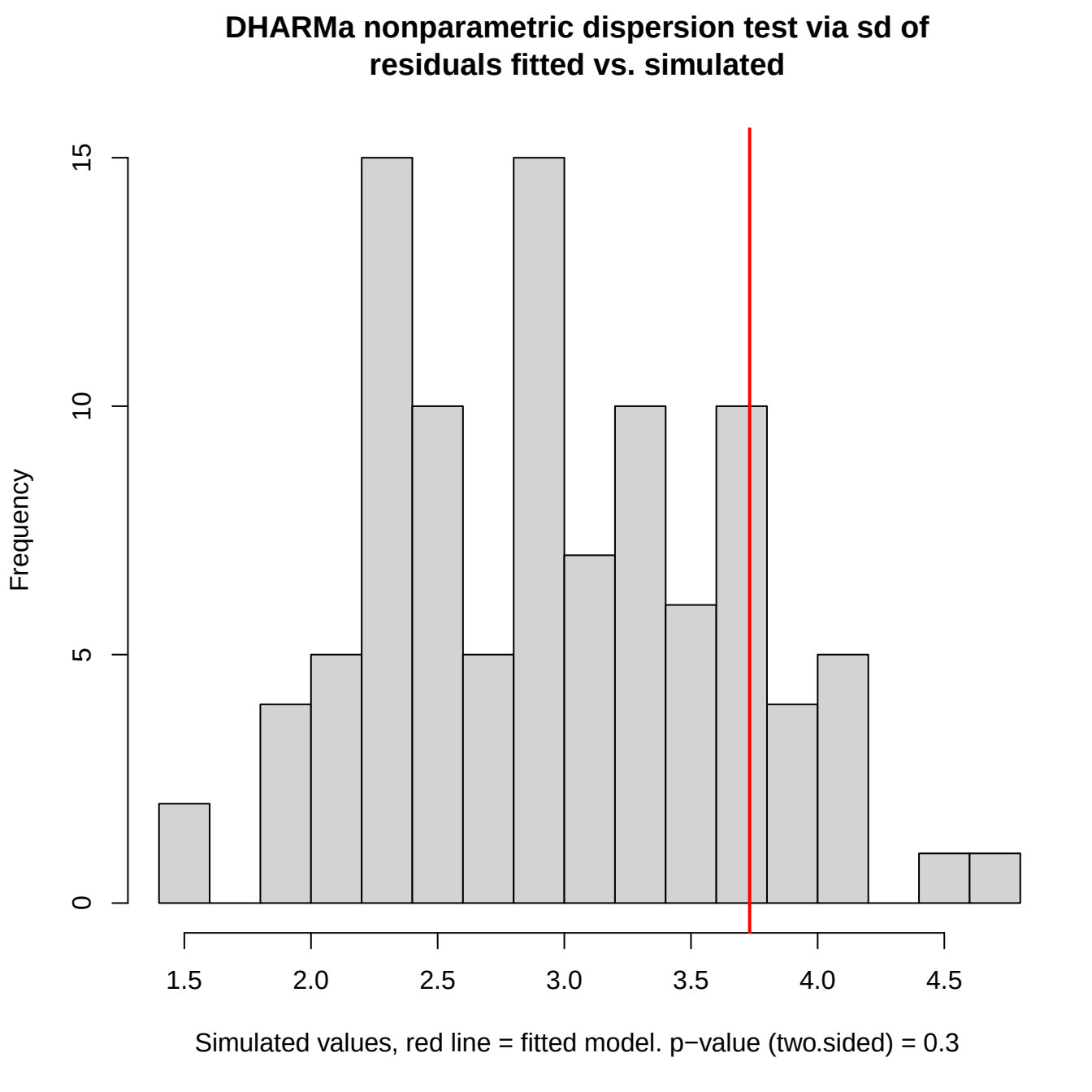

QQ plot residuals
KS test: p= 0.67484
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

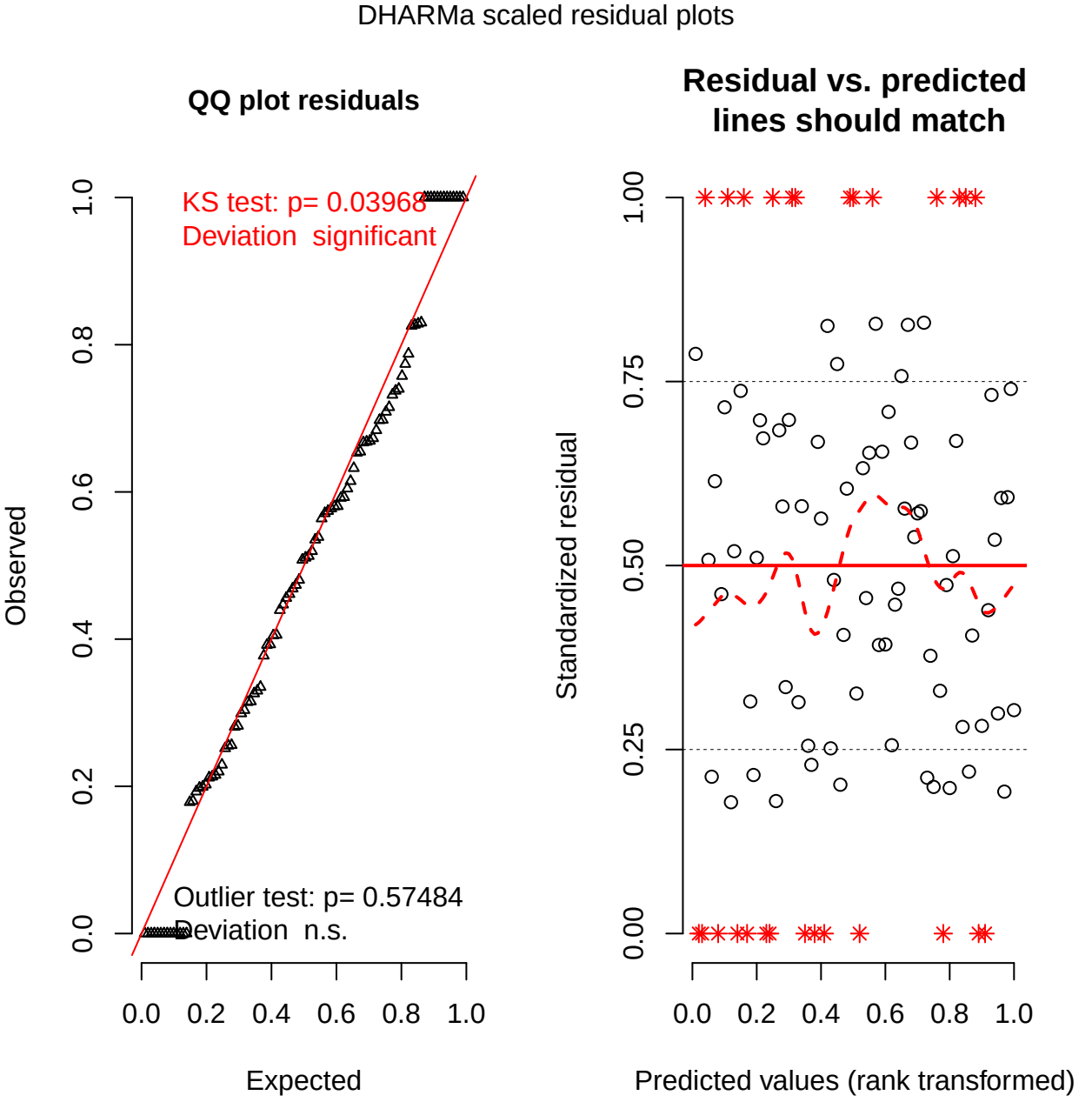

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

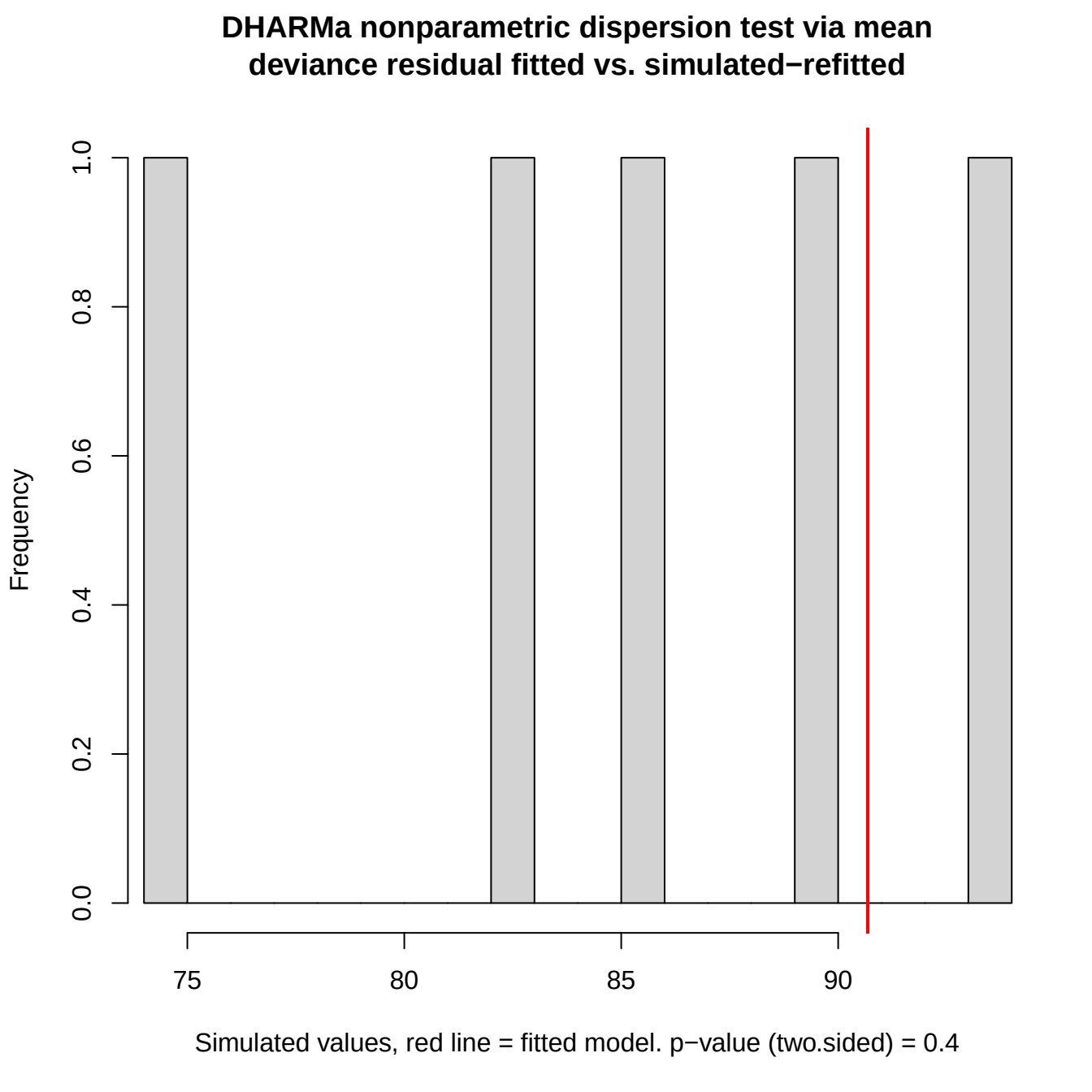

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

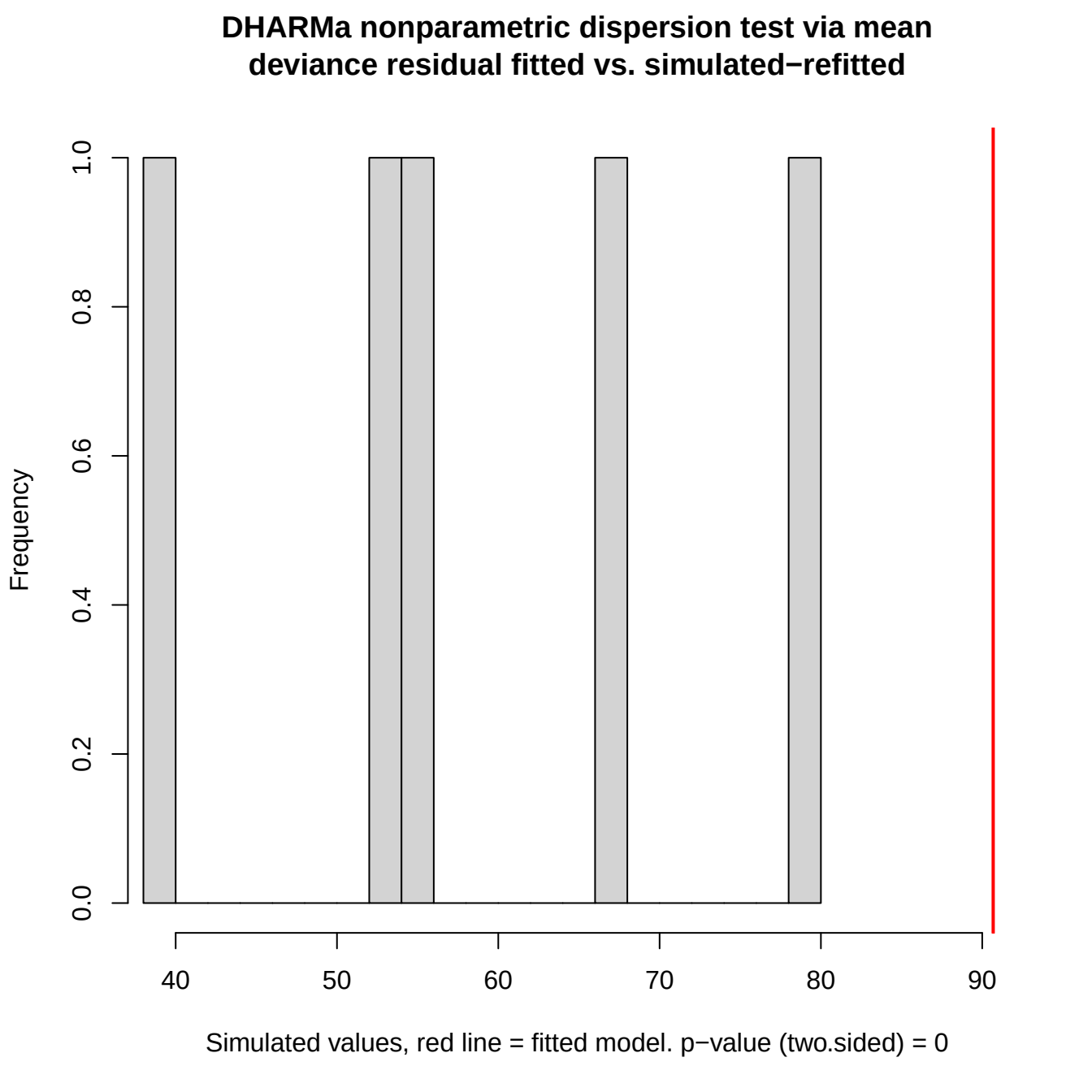

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

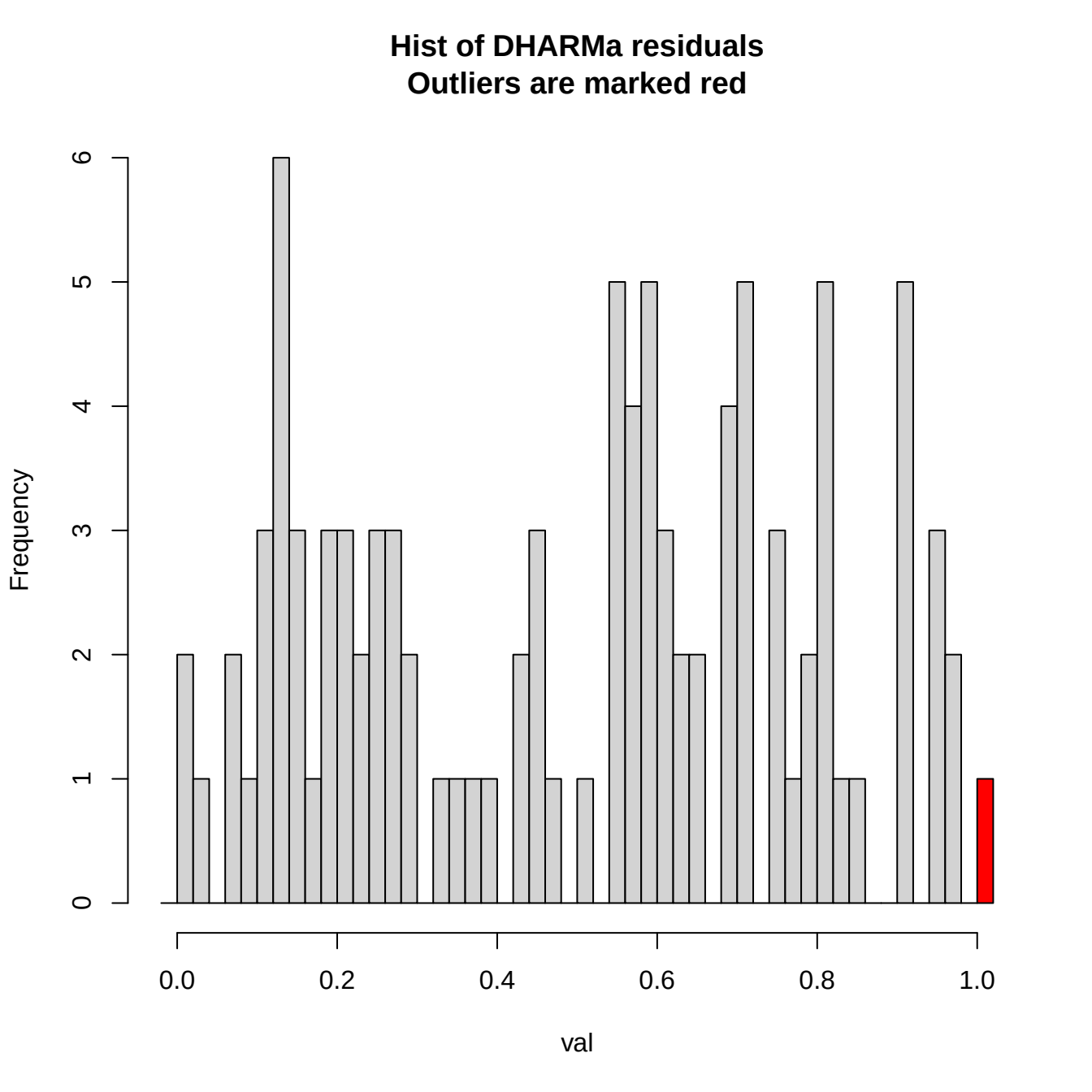

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.75
0.80
0.85
0.90
0.95
1.00
1.05
1.10
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

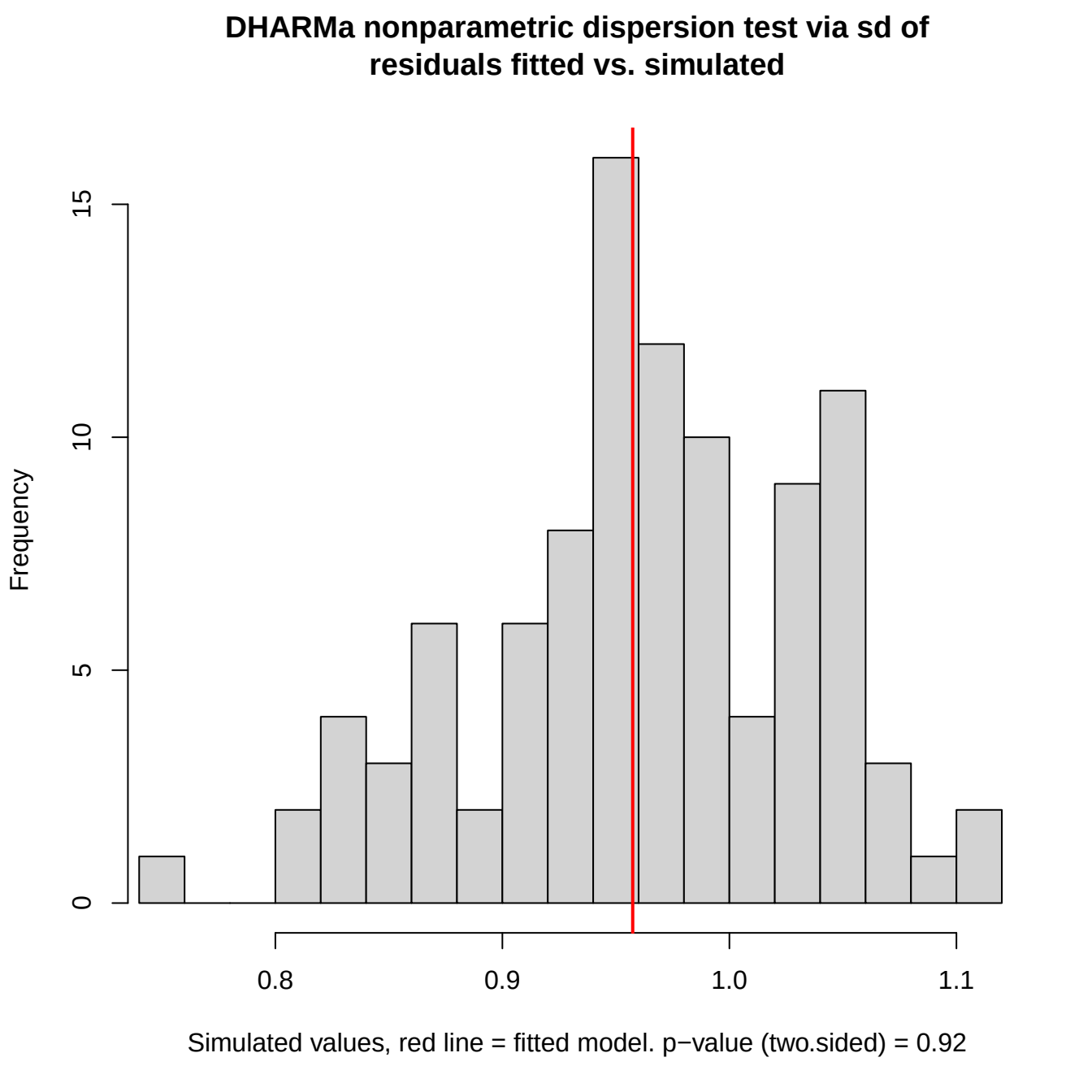

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.5
2.0
2.5
3.0
3.5
4.0
4.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.3

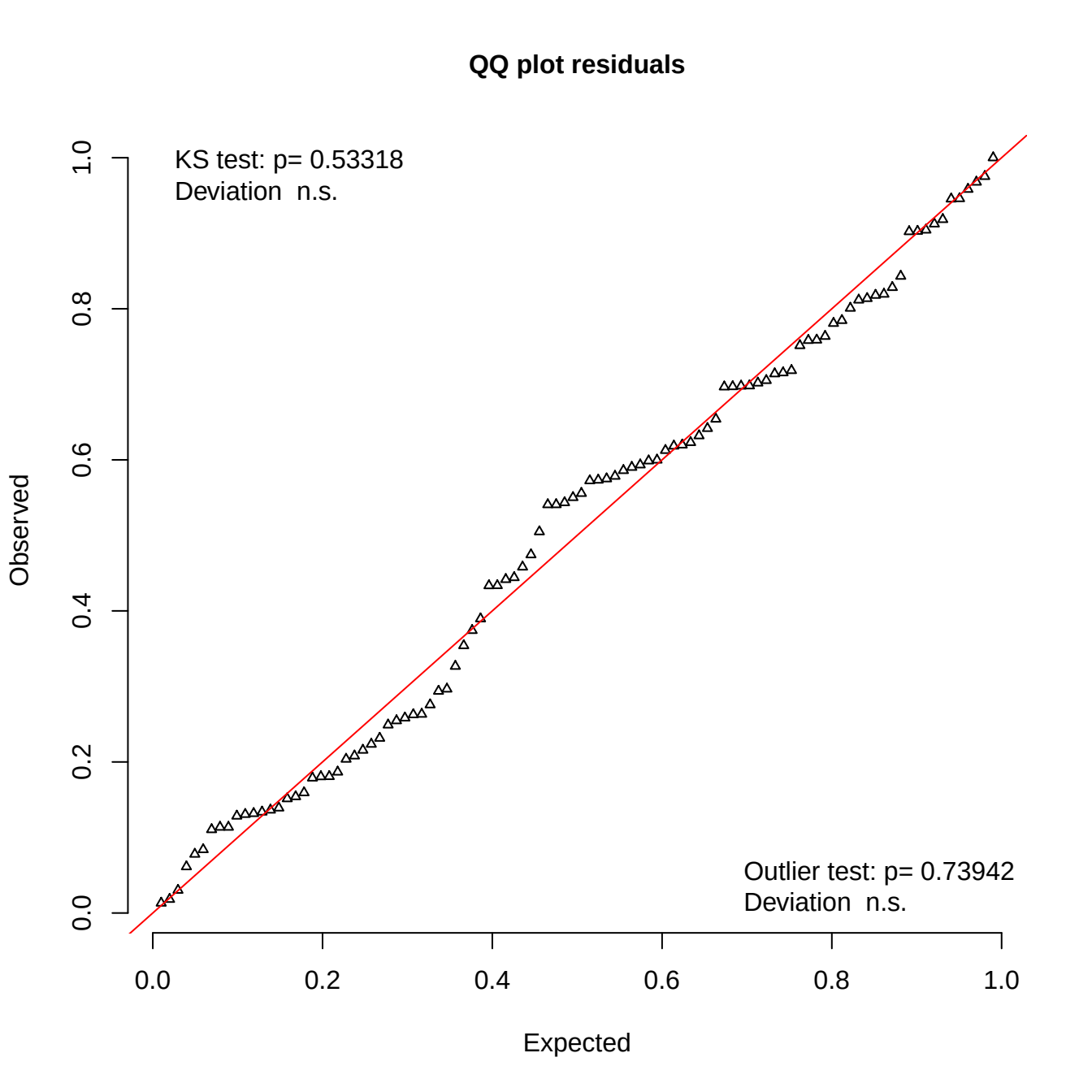

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.03968
Deviation significant
Outlier test: p= 0.57484
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

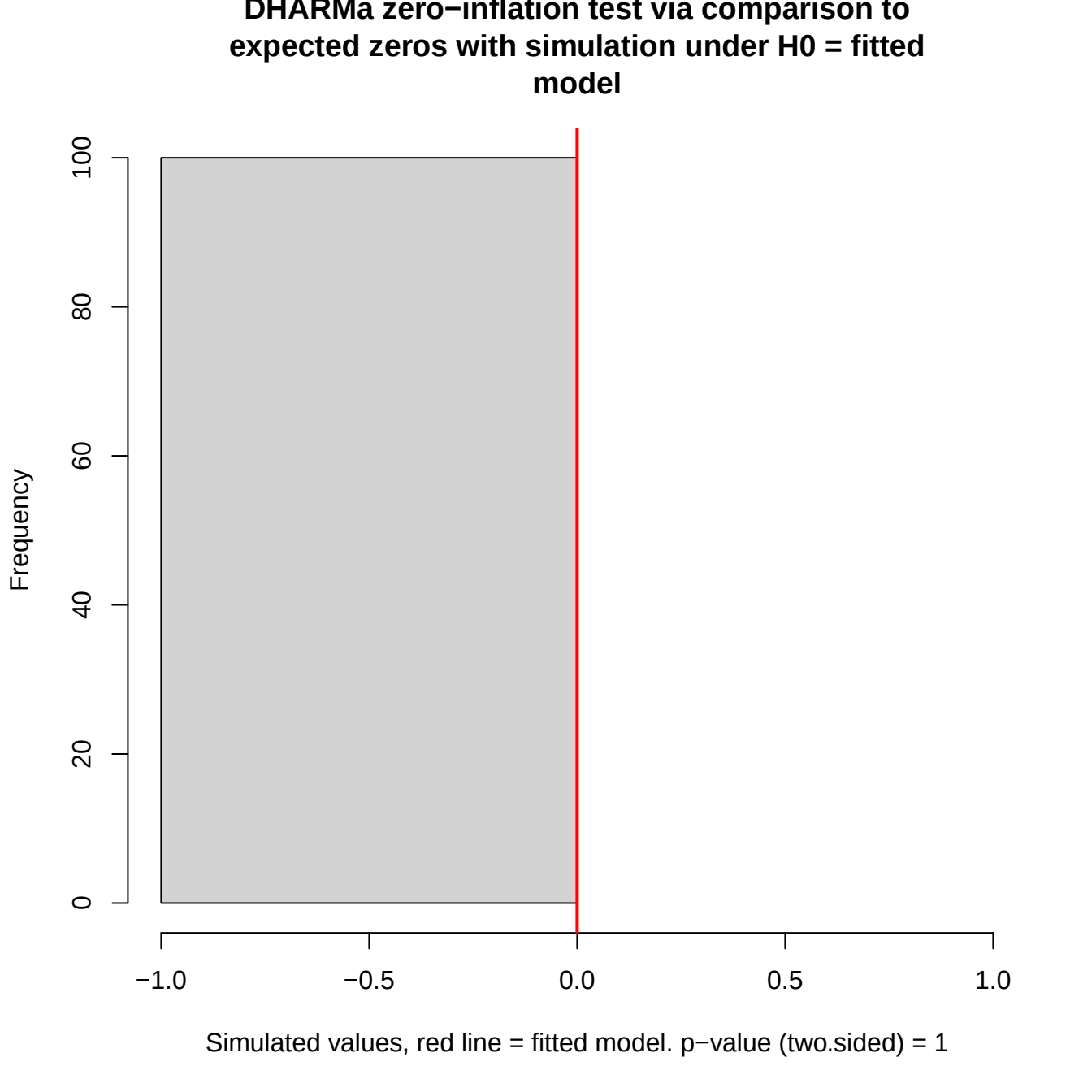

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
75
80
85
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

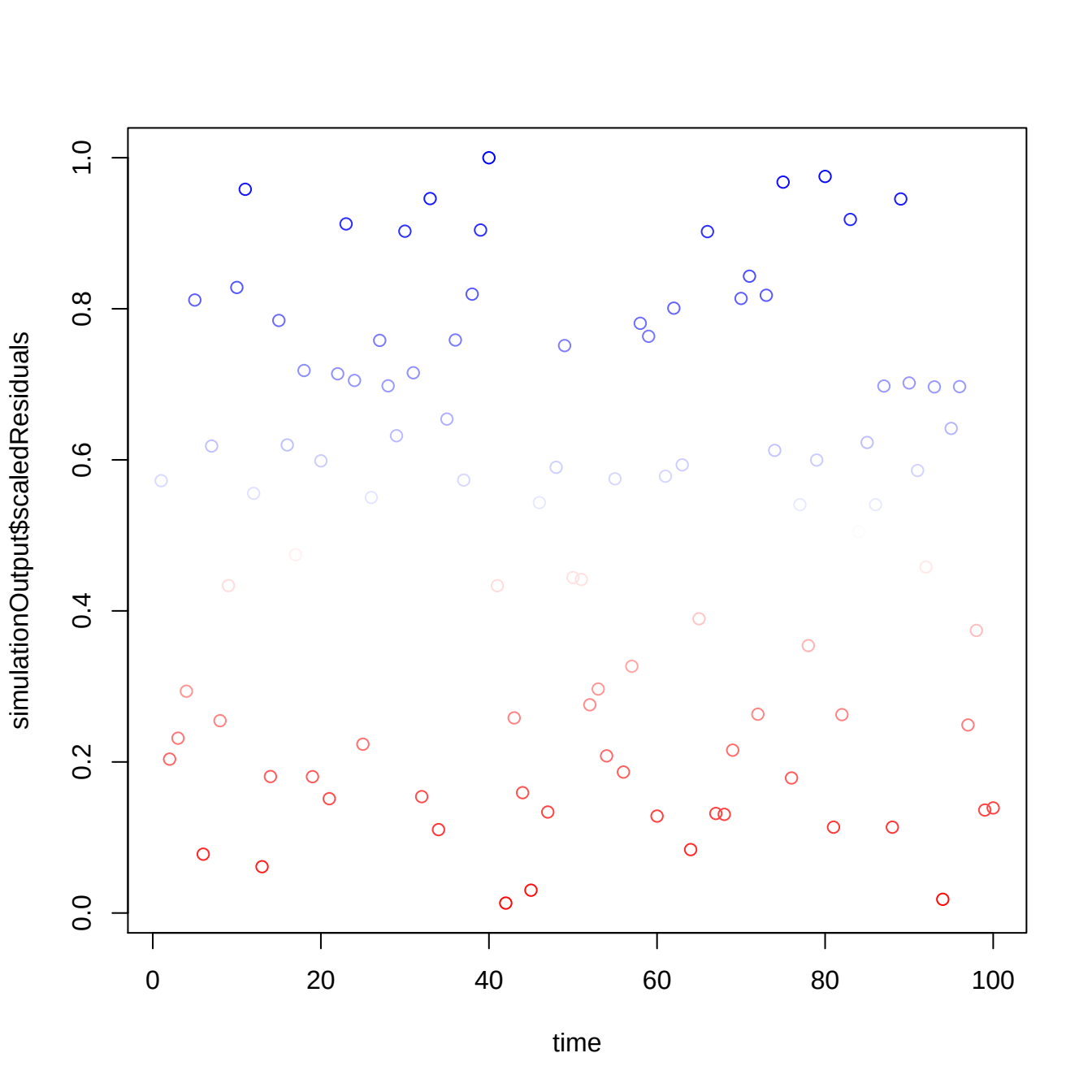

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
40
50
60
70
80
90
Simulated values, red line = fitted model. p−value (two.sided) = 0

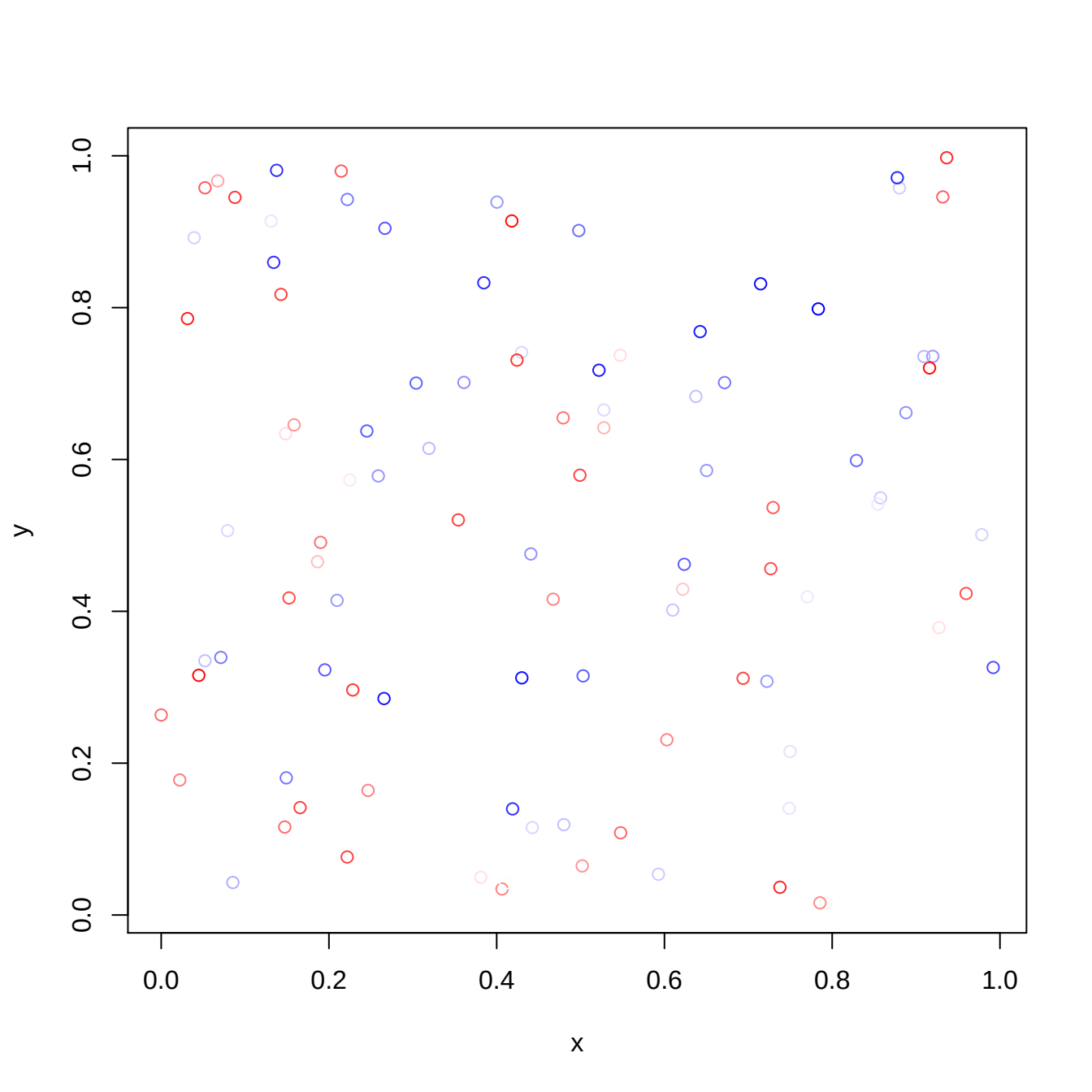

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
0.0
0.2
0.4
0.6
0.8
1.0
val

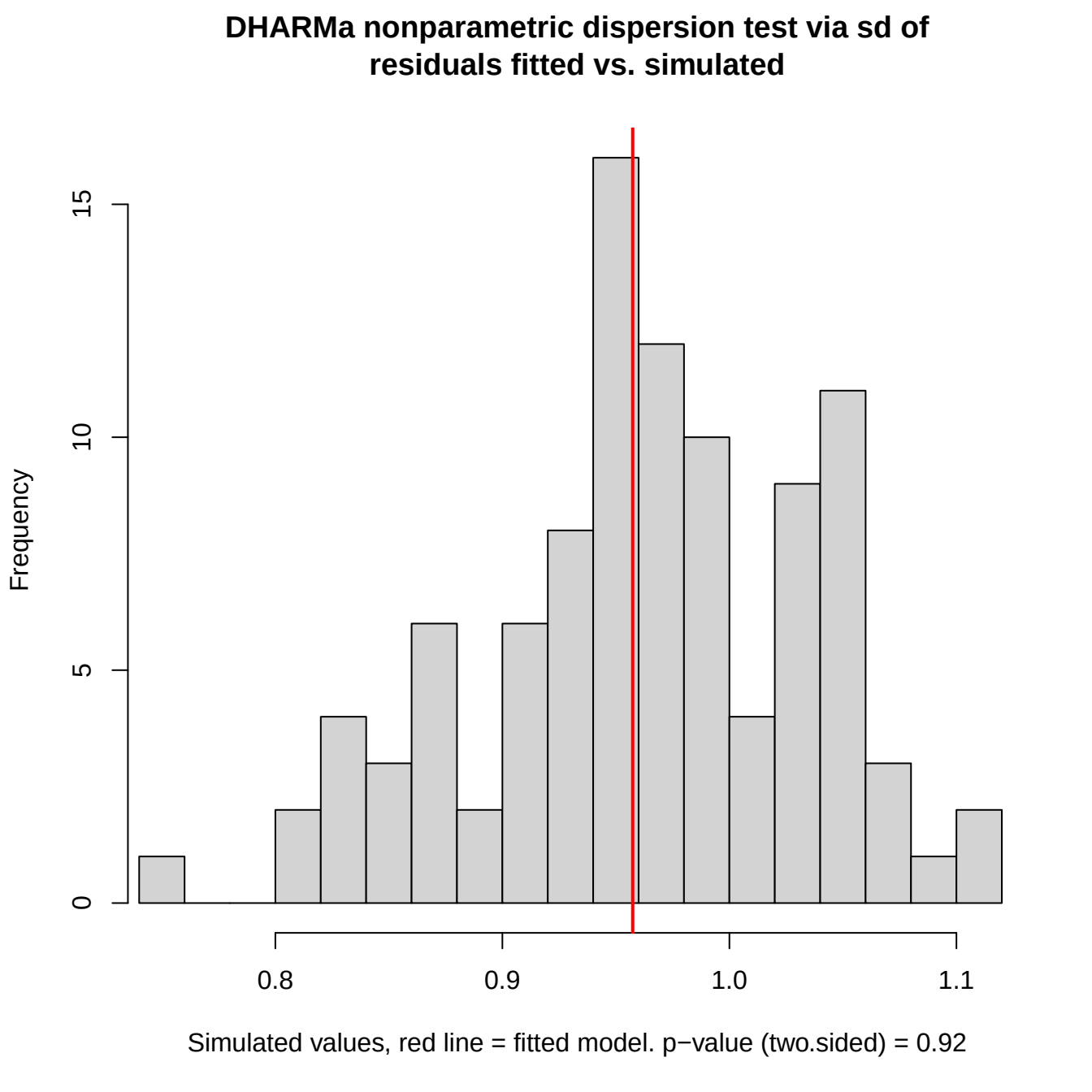

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

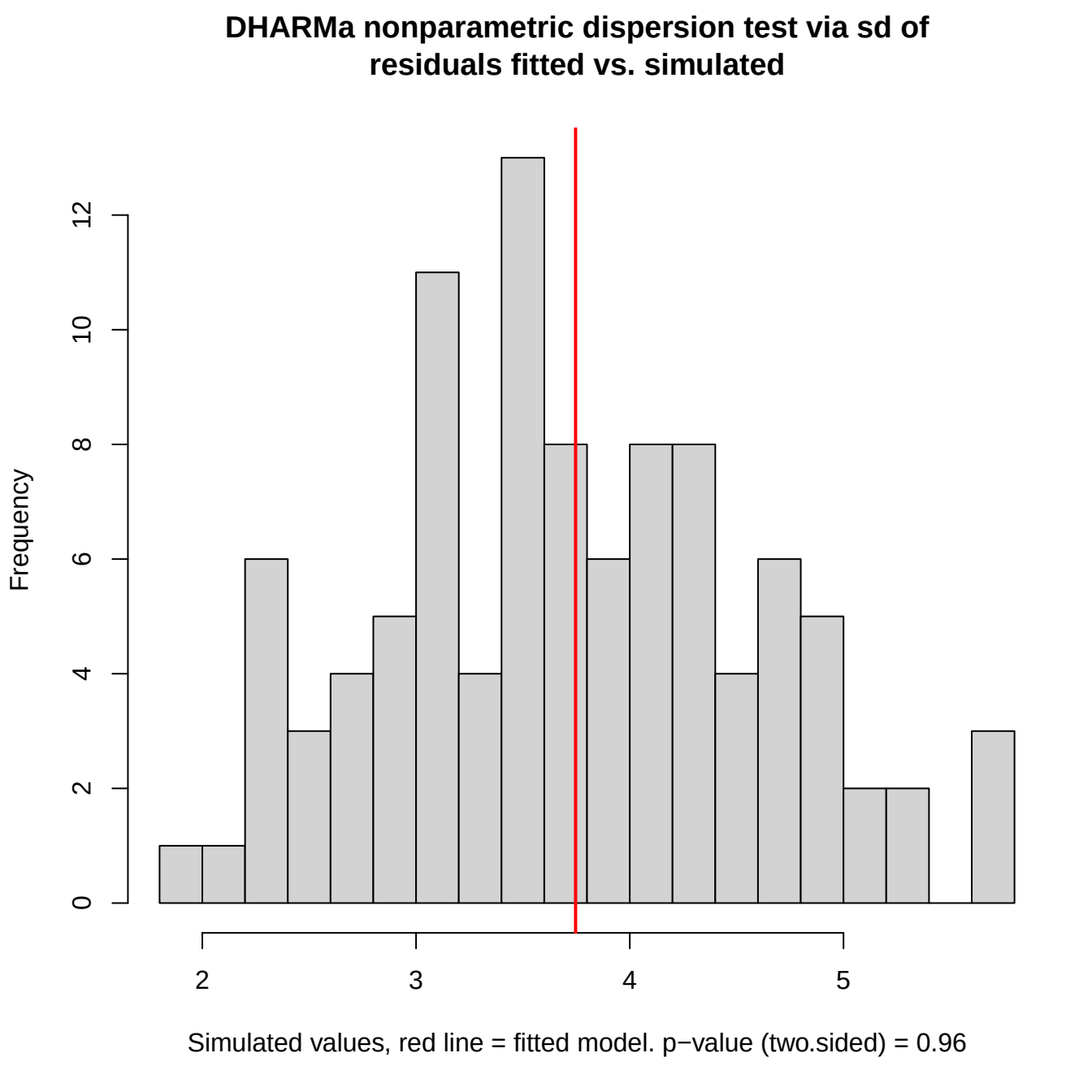

QQ plot residuals
KS test: p= 0.53318
Deviation n.s.
Outlier test: p= 0.73942
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

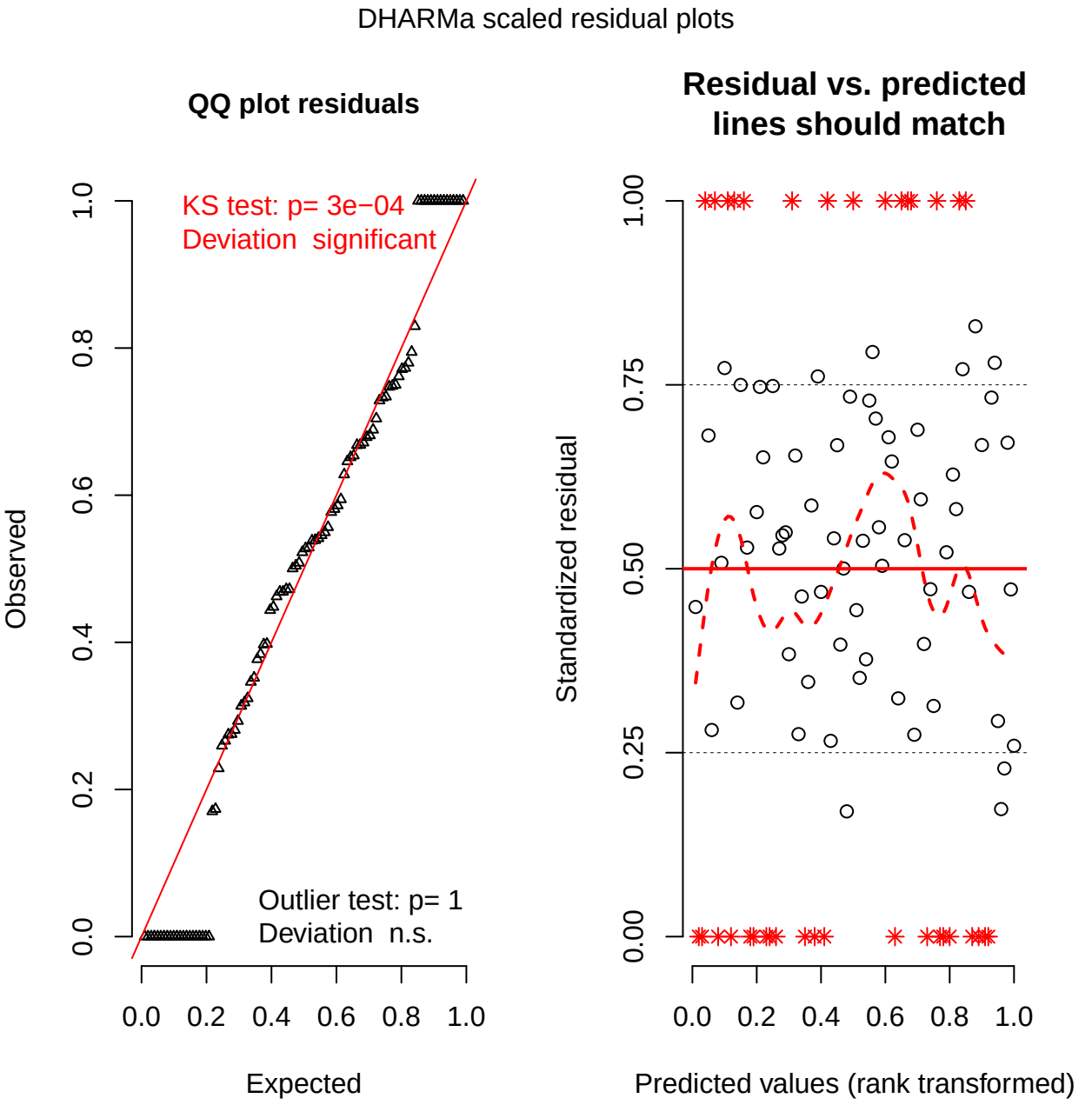

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

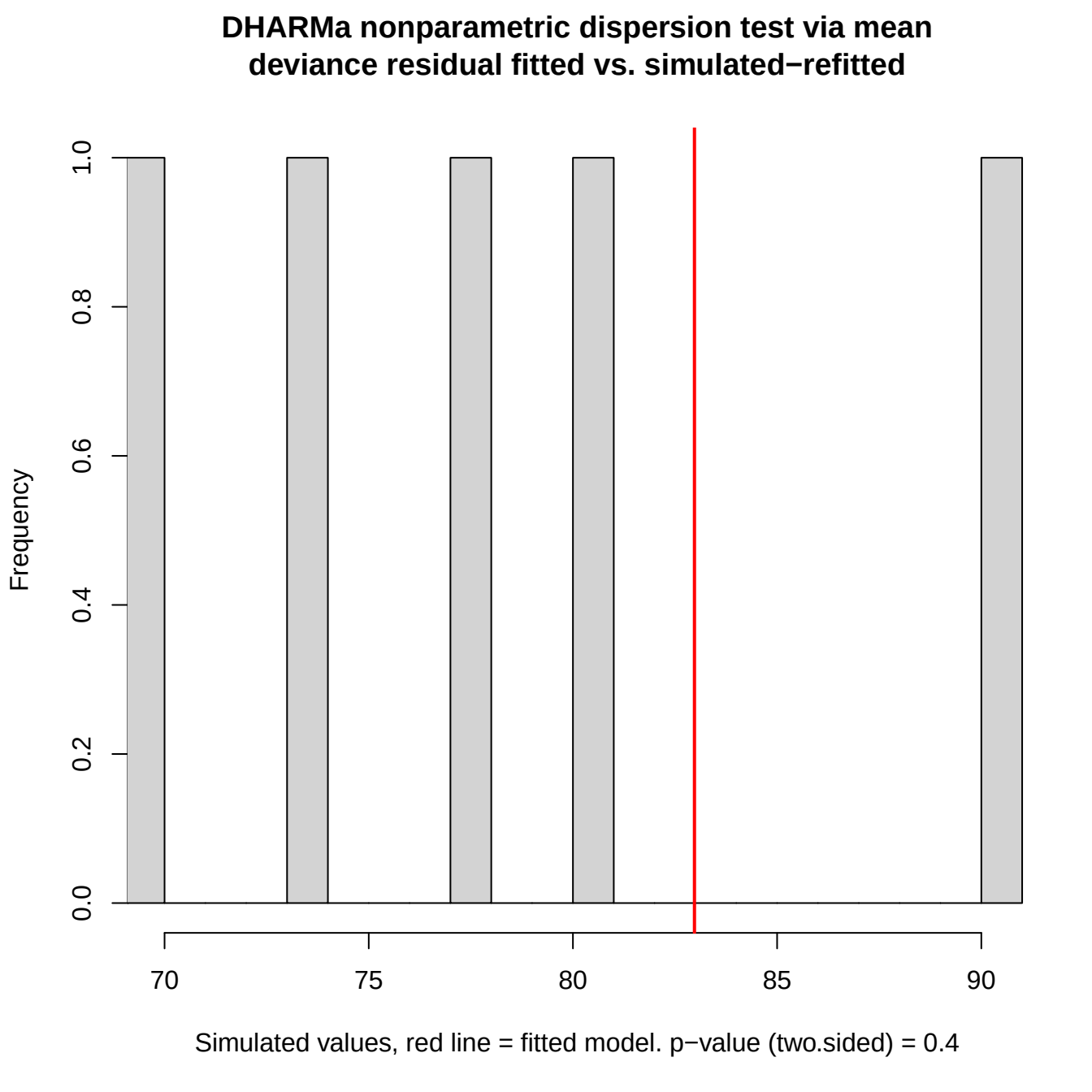

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

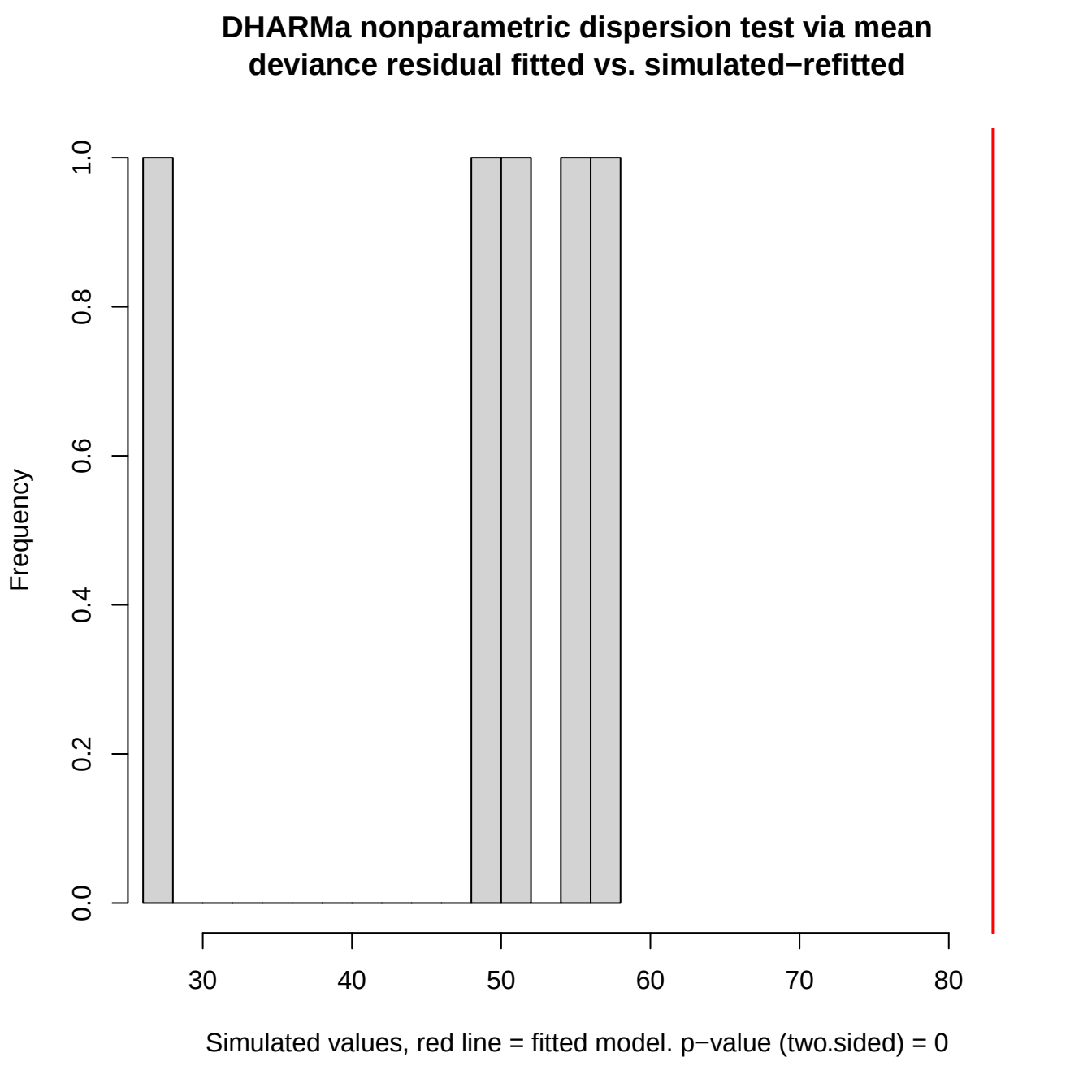

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

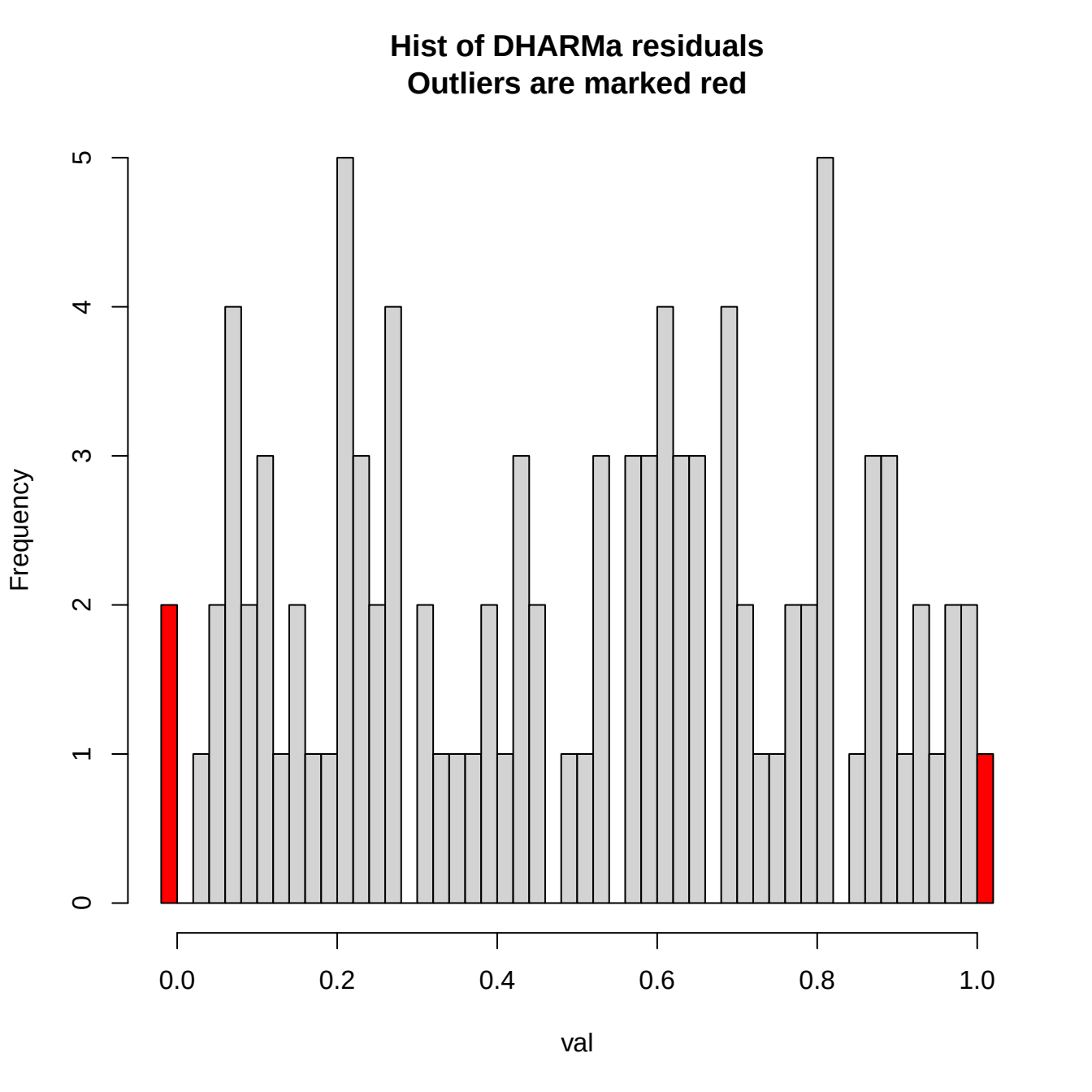

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

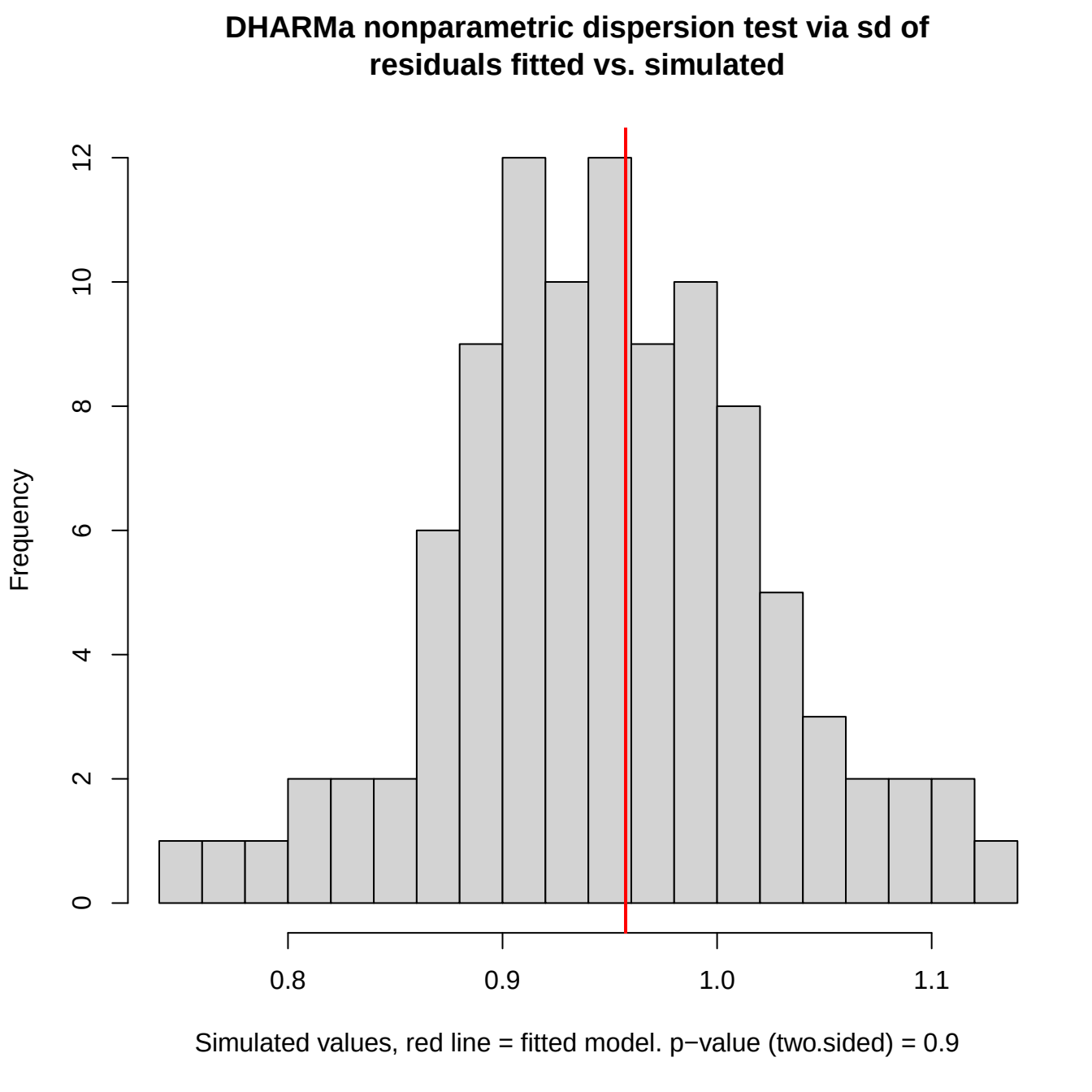

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

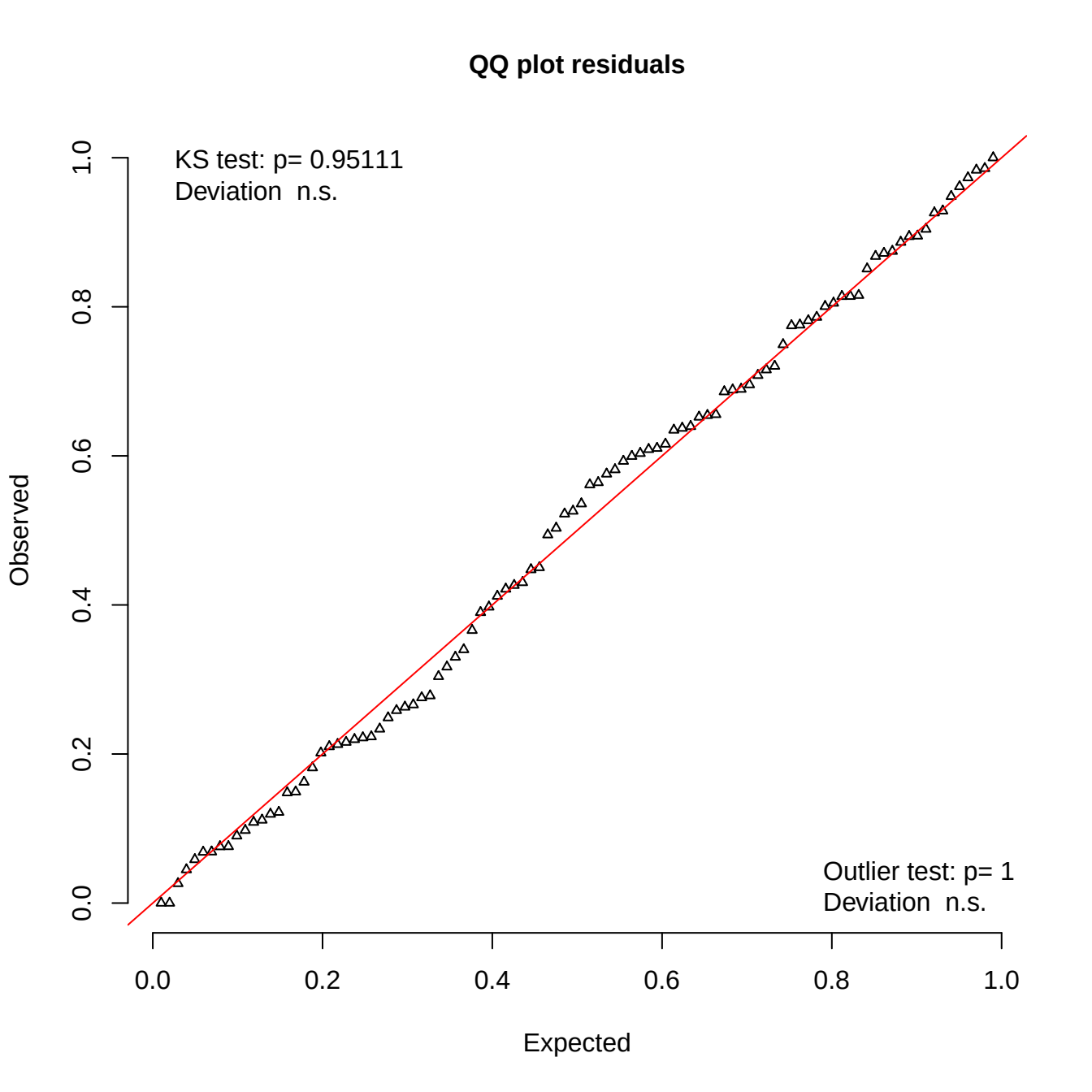

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 3e−04
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

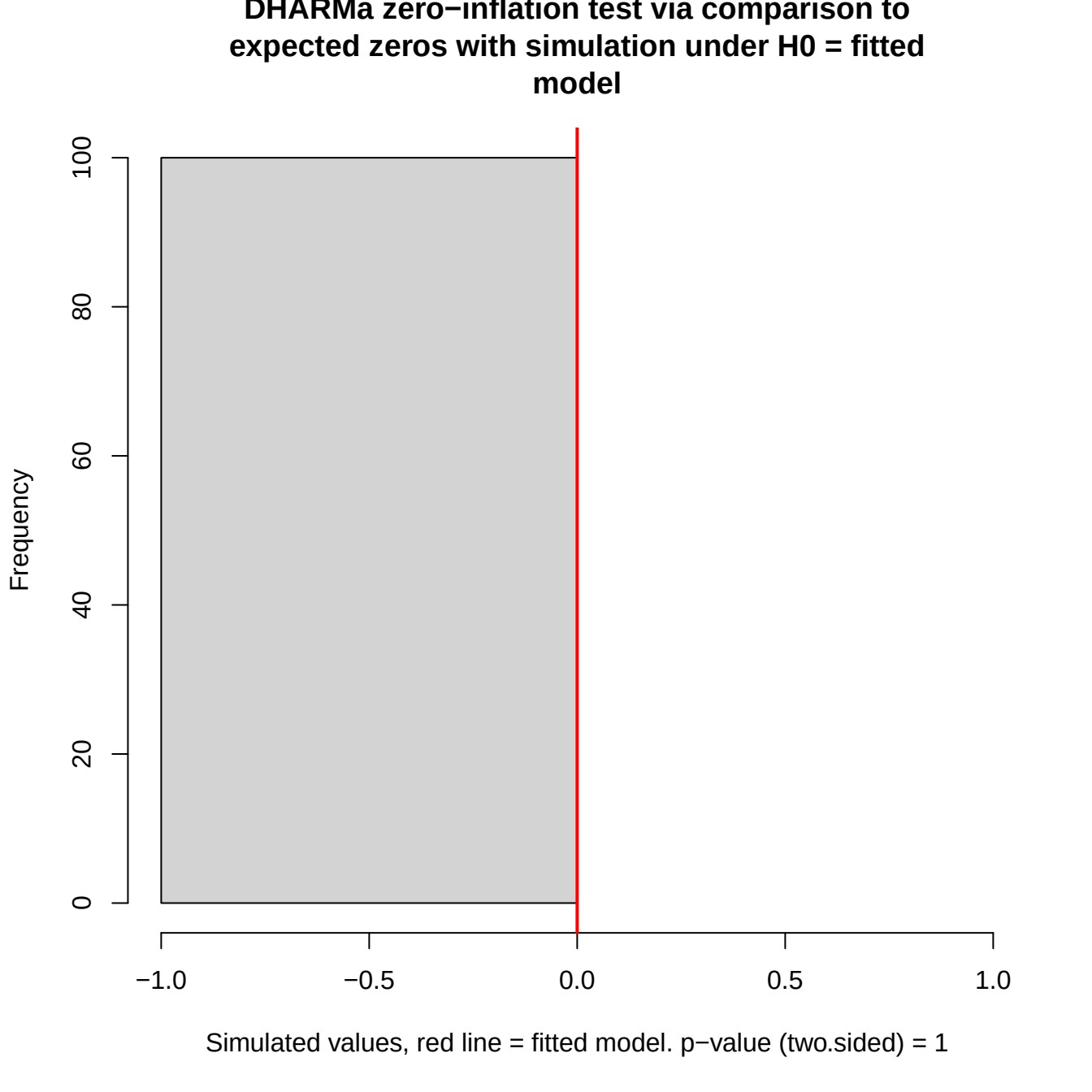

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
70
75
80
85
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

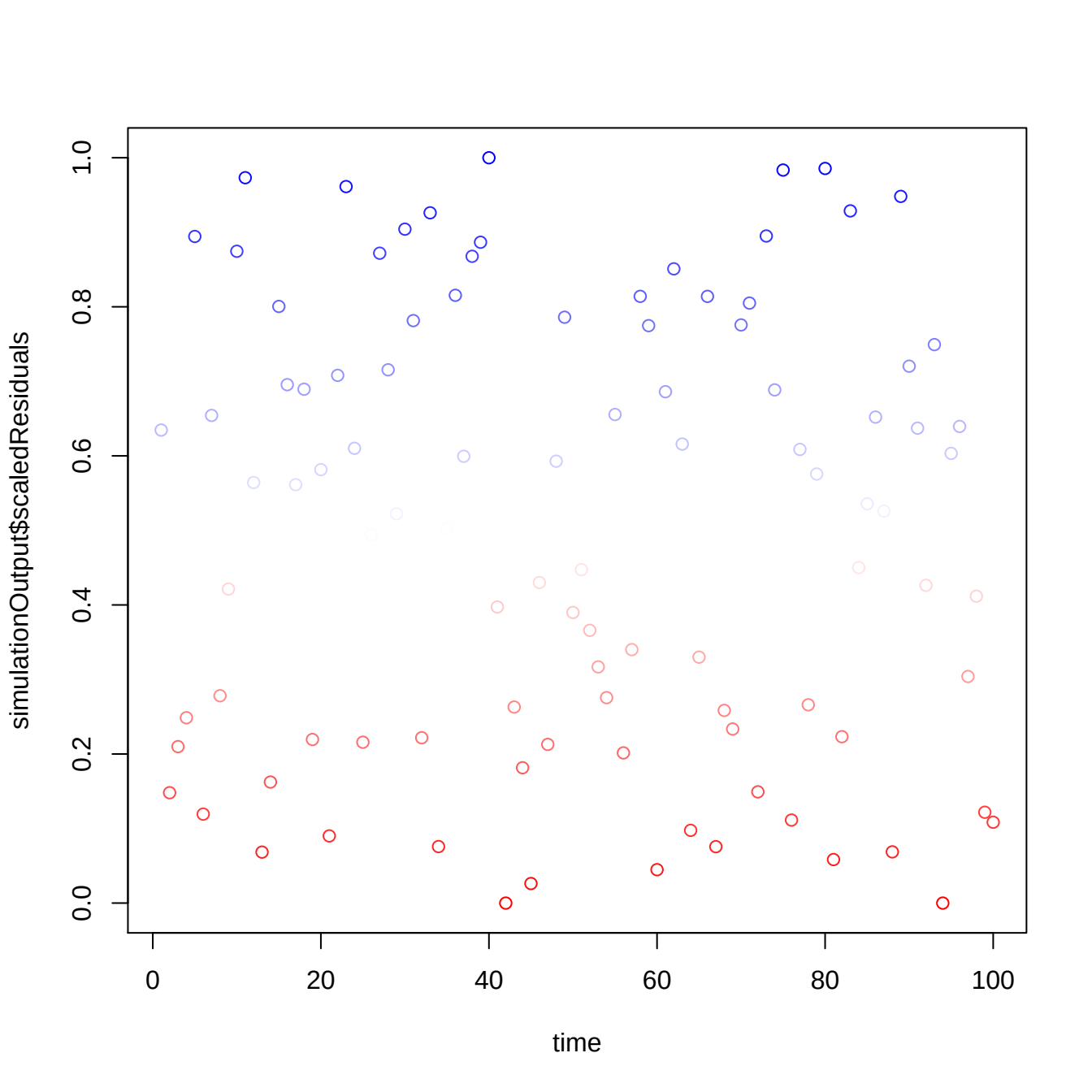

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
30
40
50
60
70
80
Simulated values, red line = fitted model. p−value (two.sided) = 0

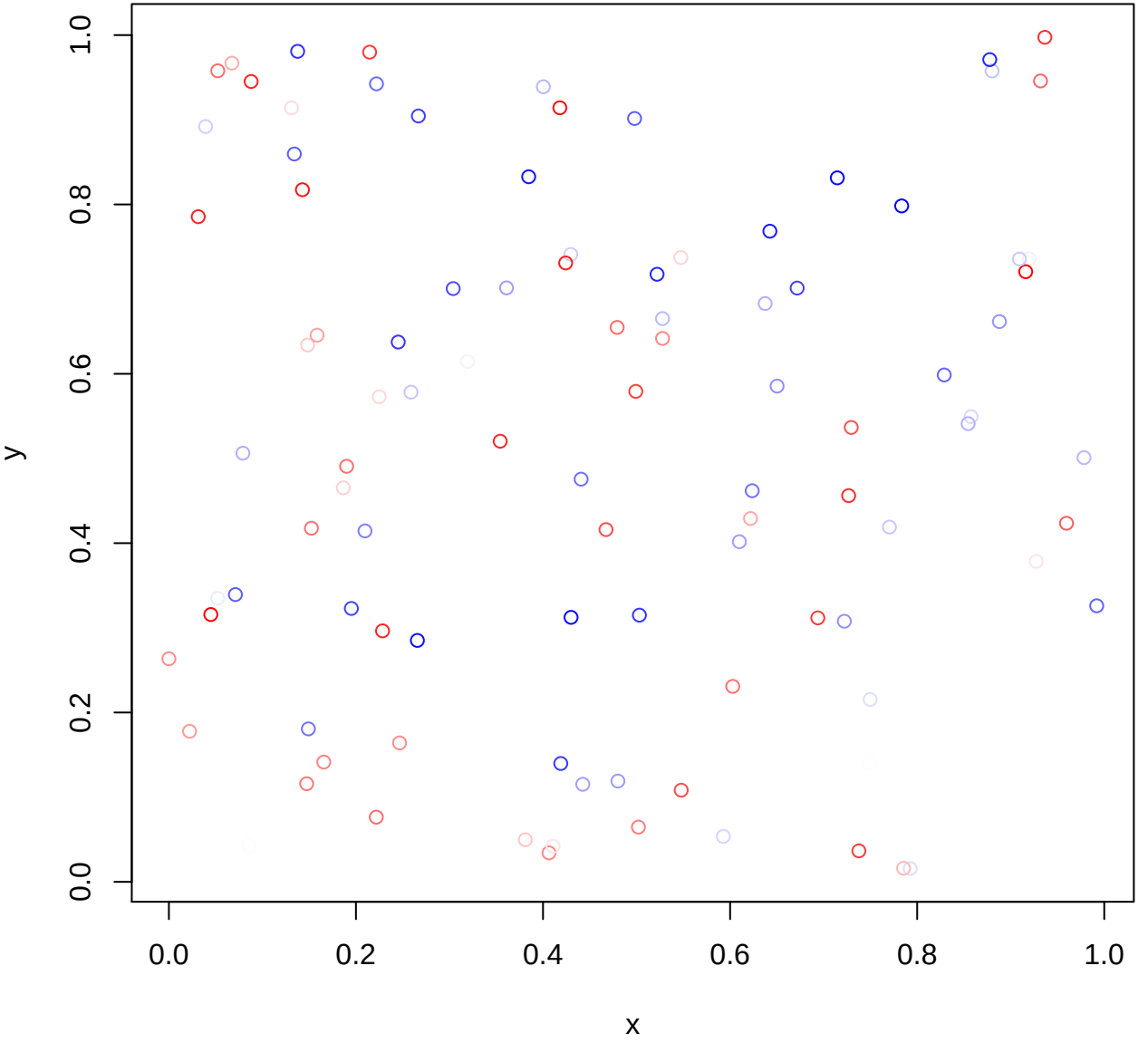

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
0.0
0.2
0.4
0.6
0.8
1.0
val

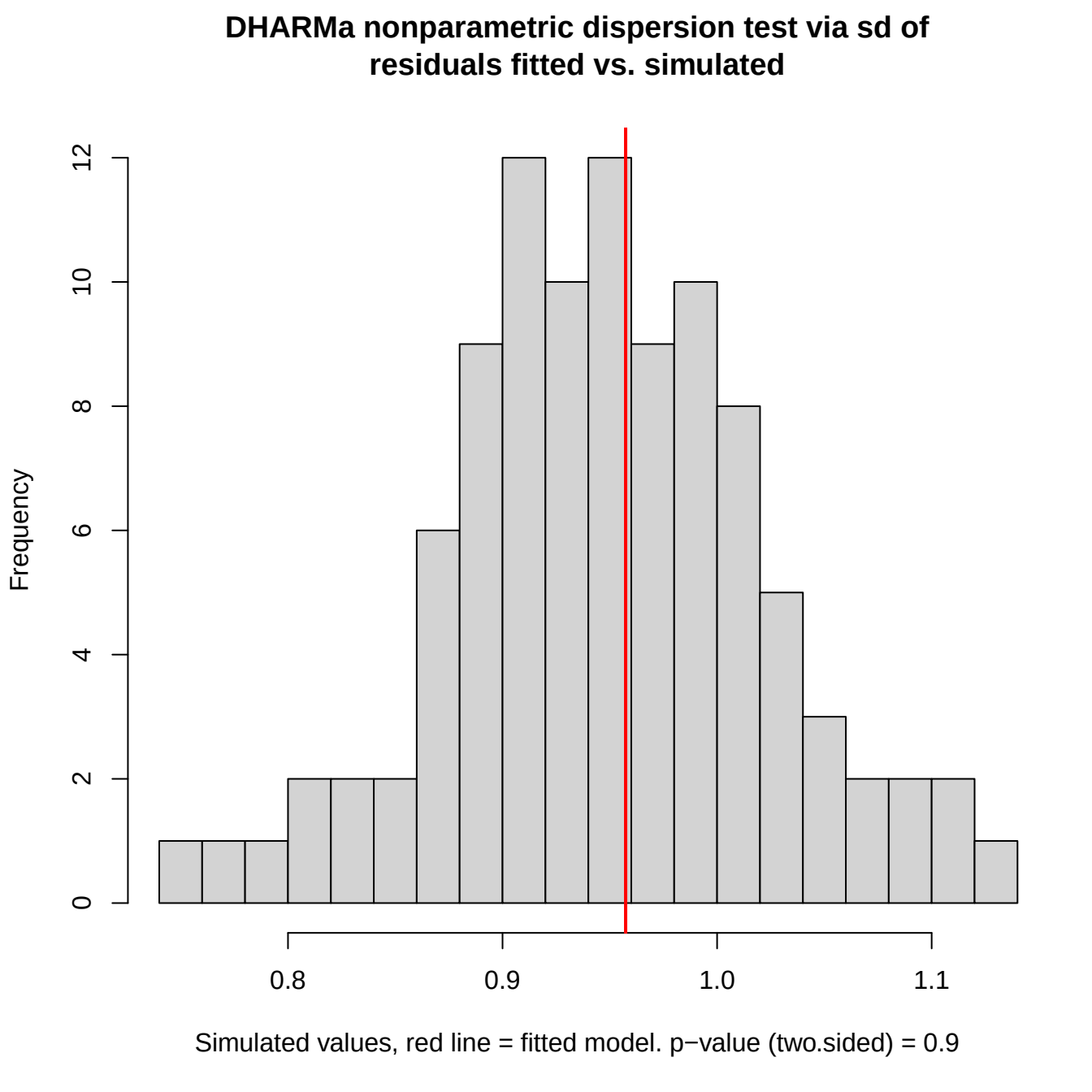

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

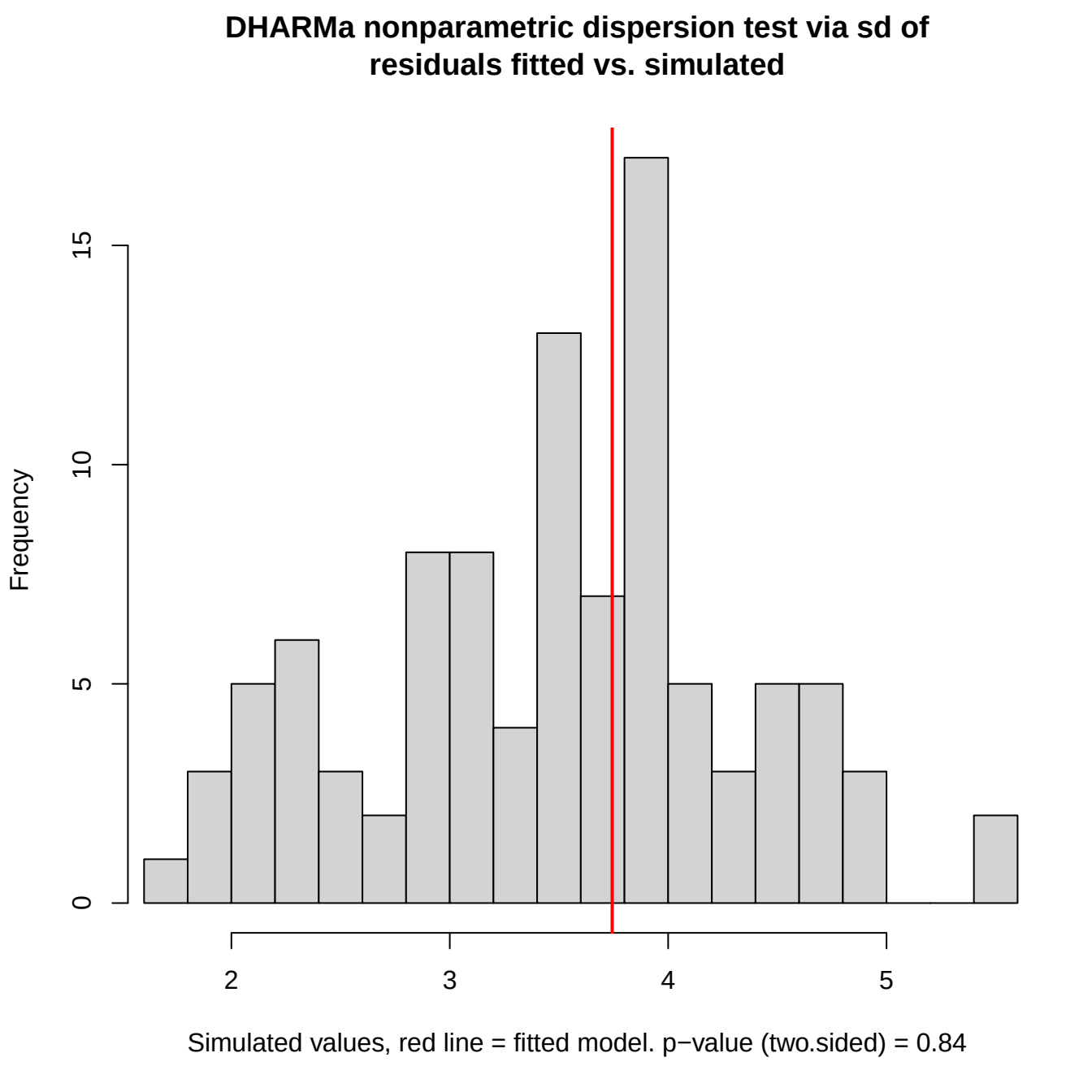

QQ plot residuals
KS test: p= 0.95111
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

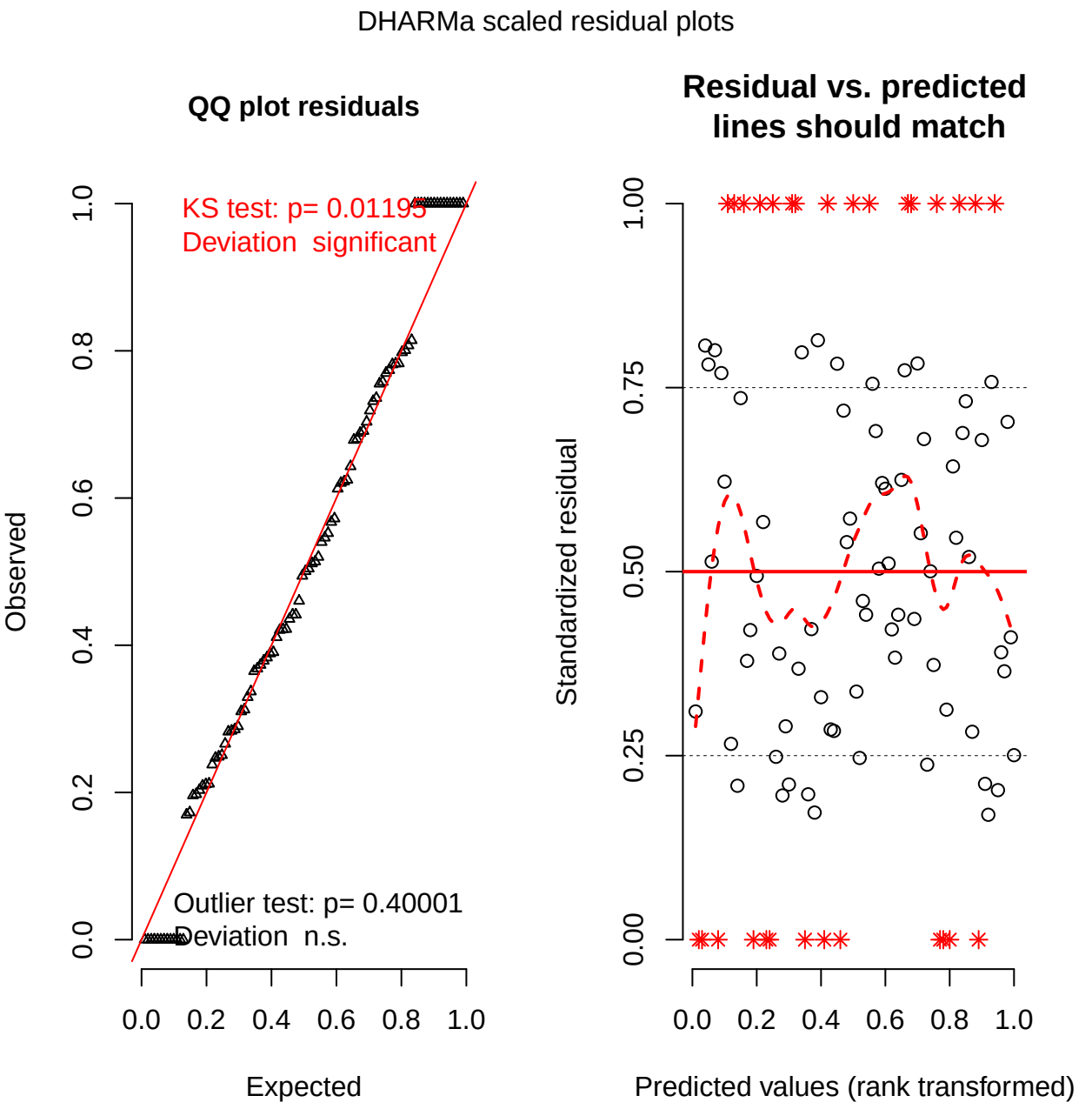

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

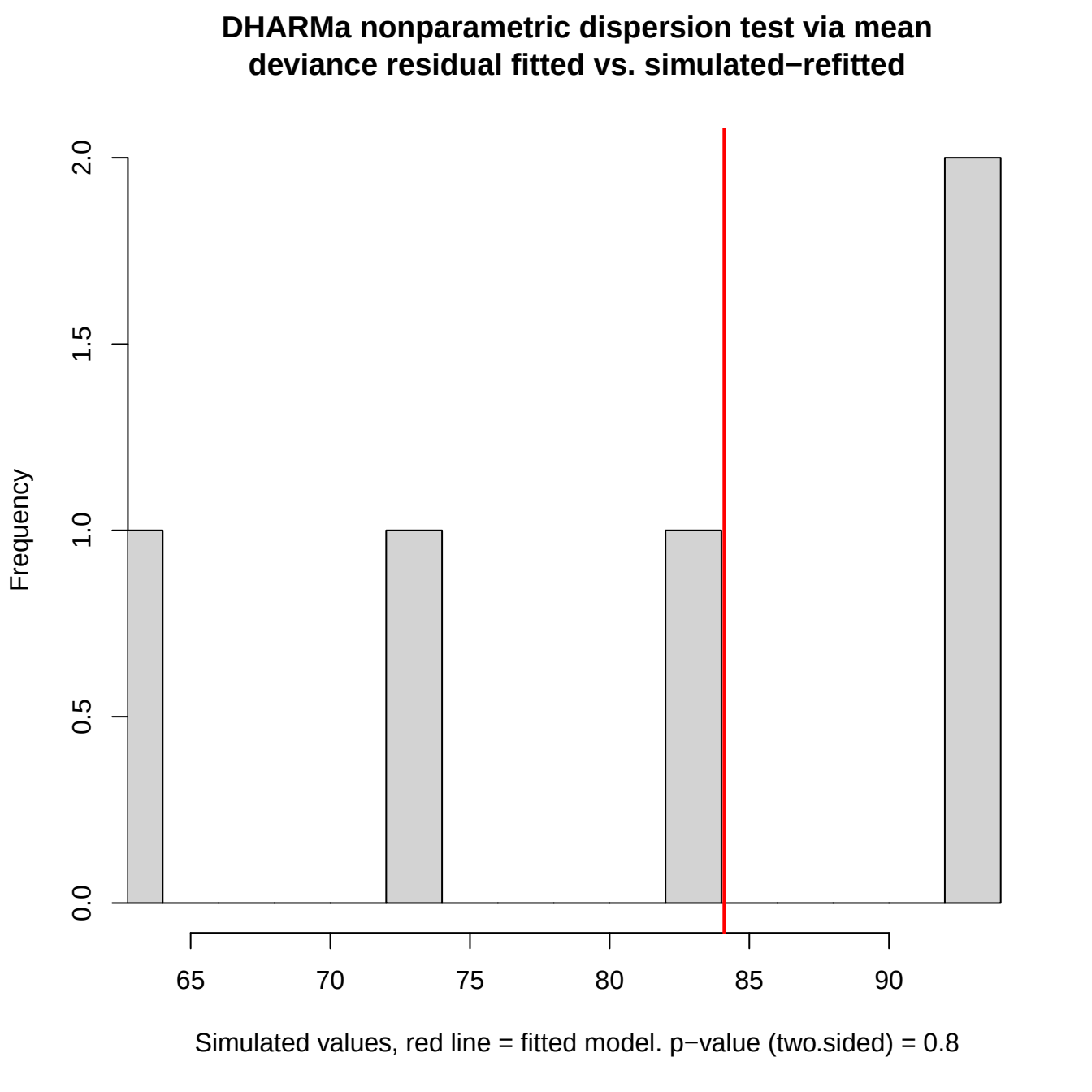

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

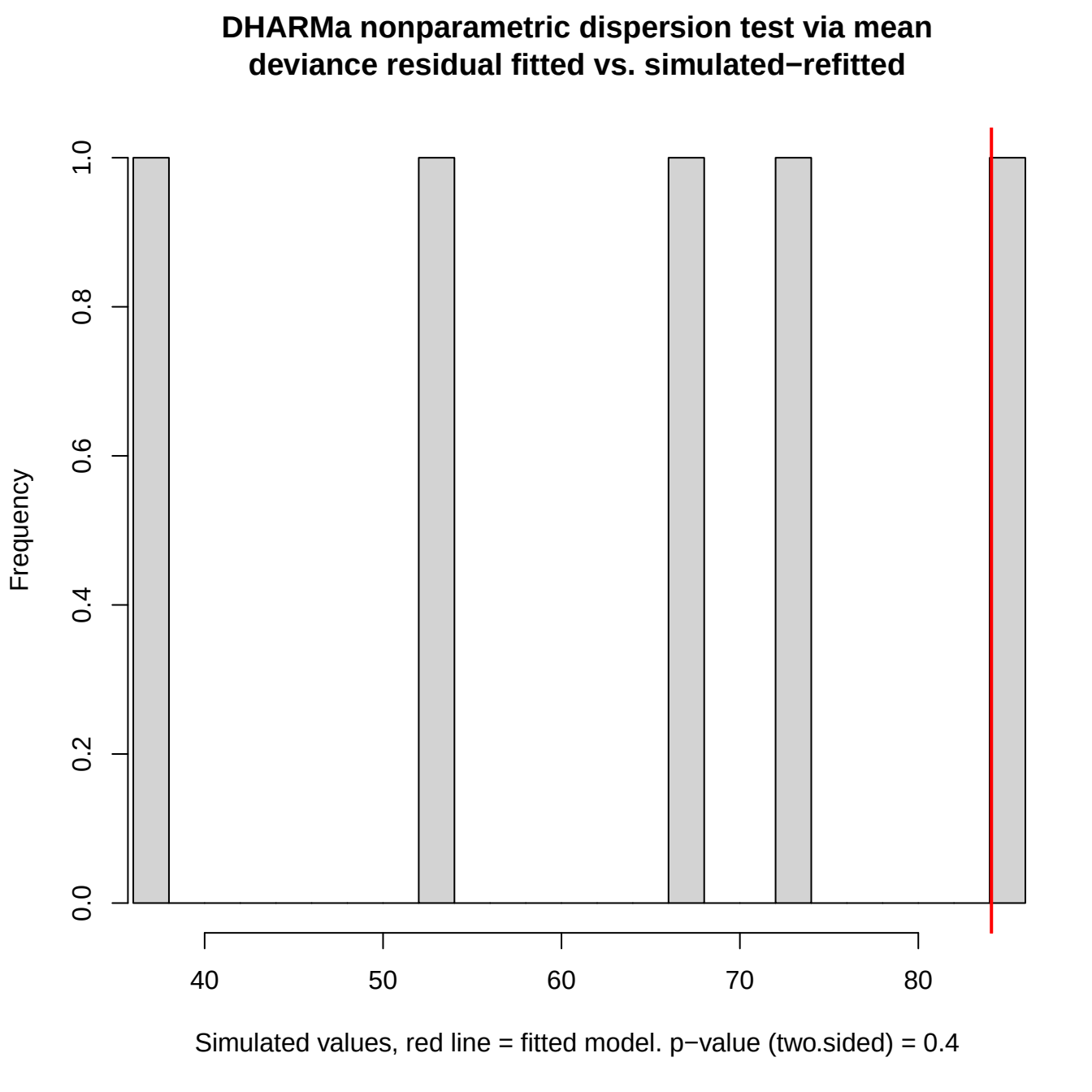

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

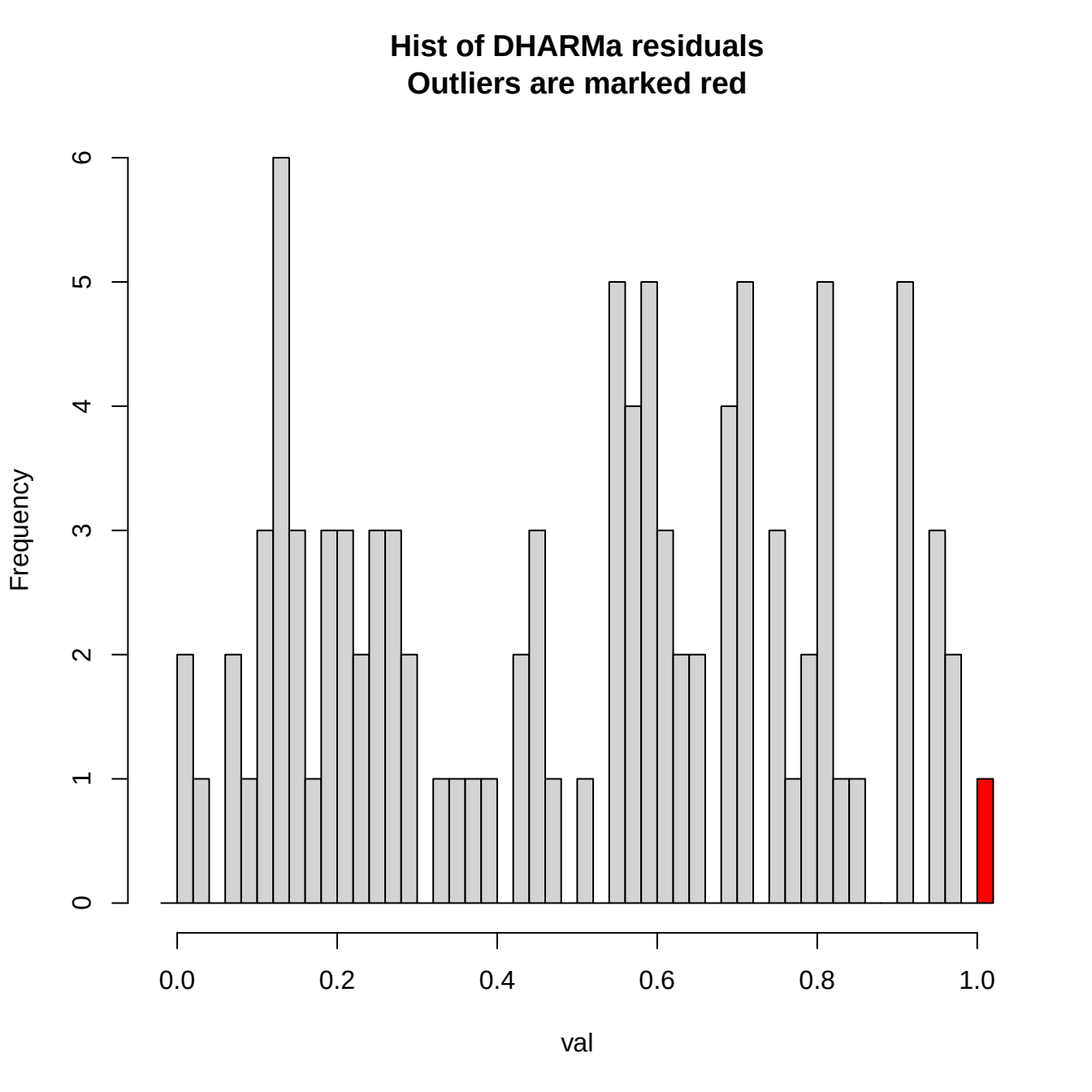

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

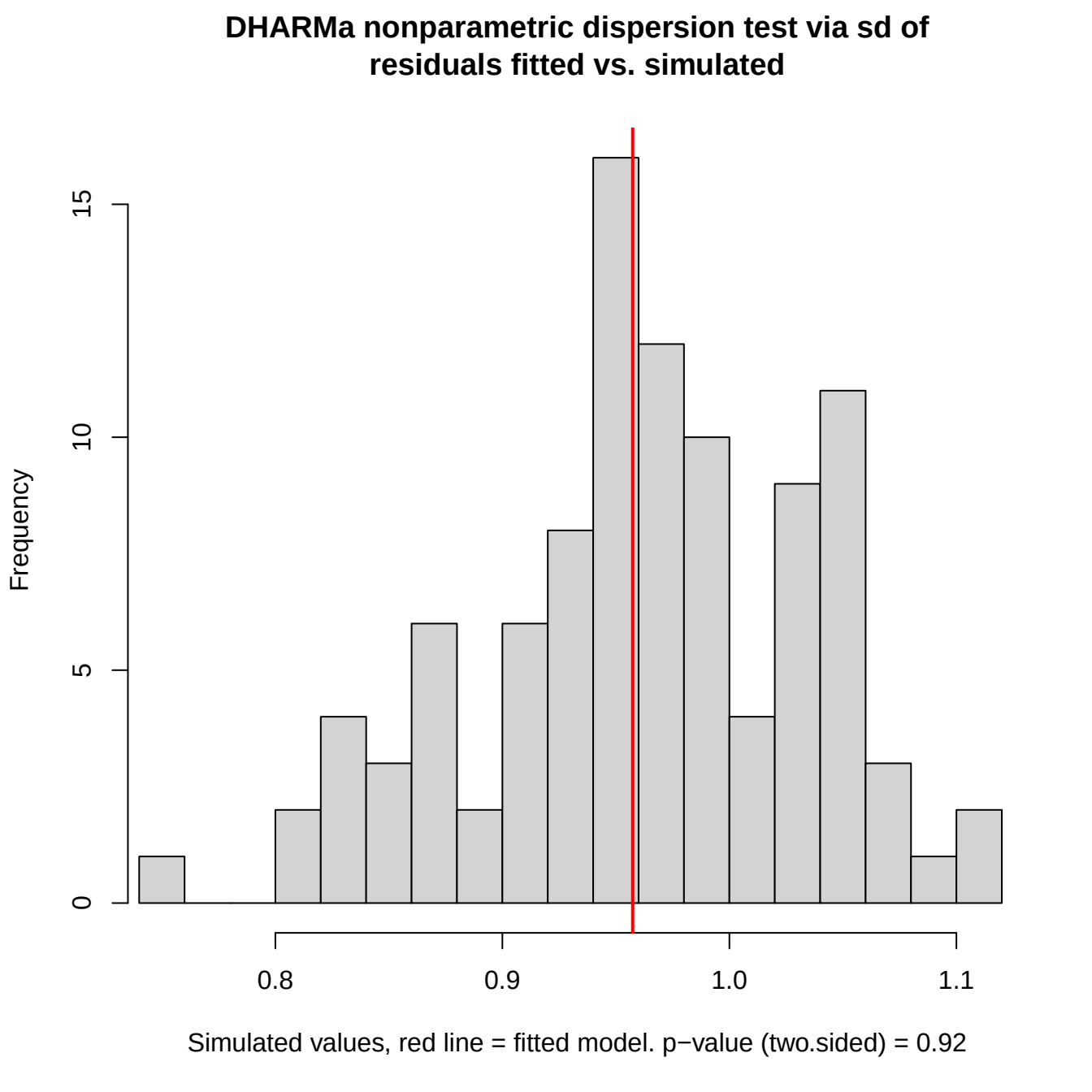

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.84

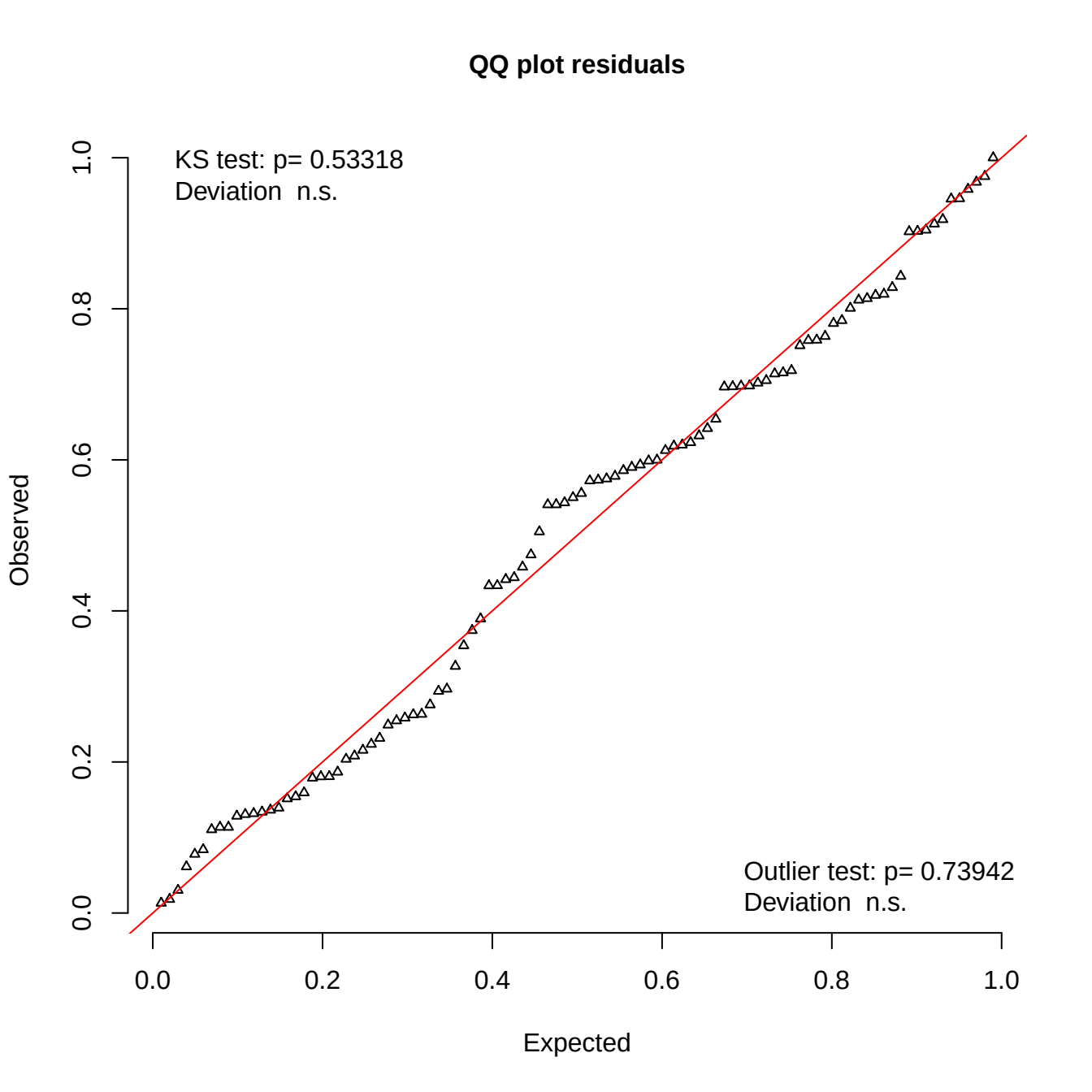

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.01195
Deviation significant
Outlier test: p= 0.40001
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

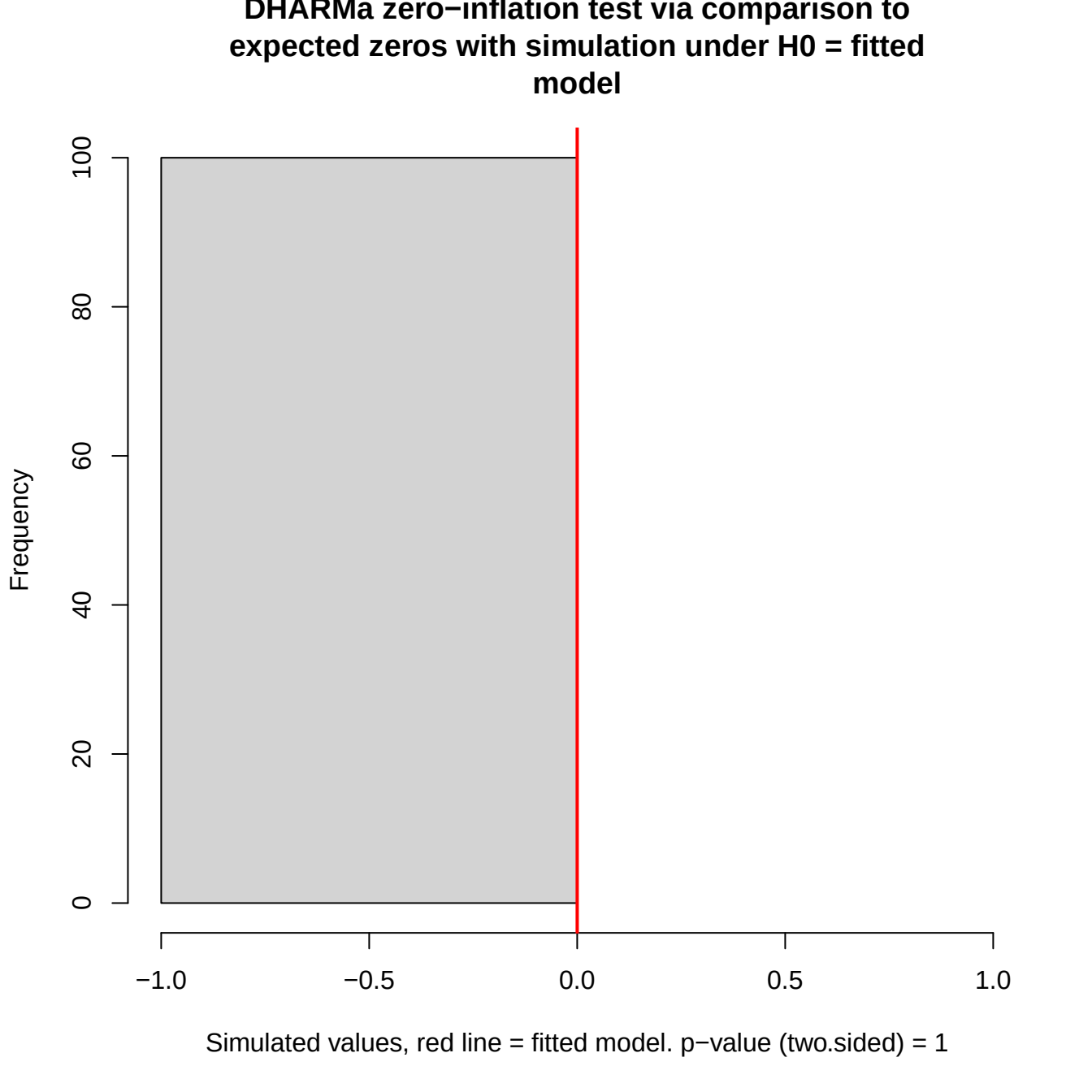

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
65
70
75
80
85
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

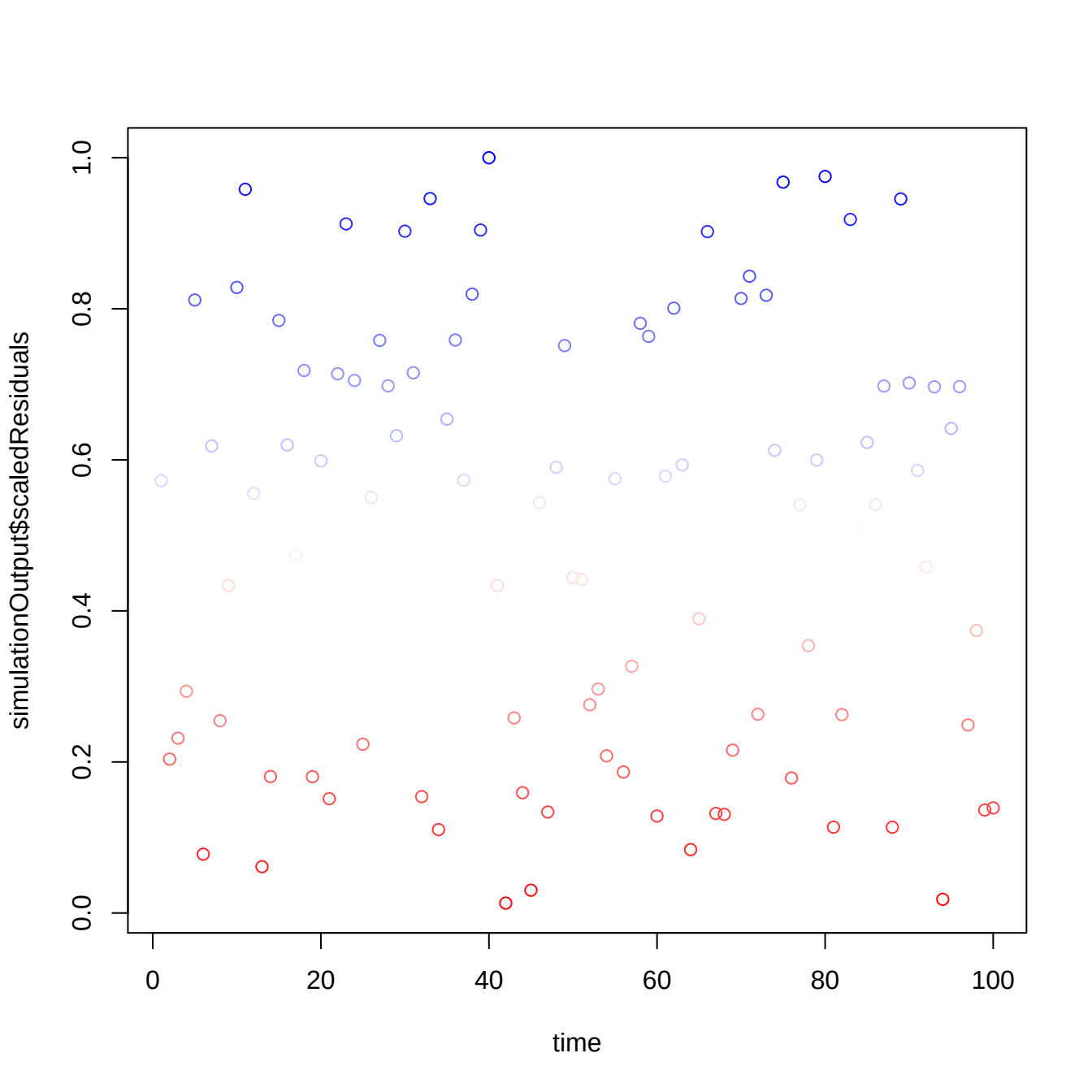

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
40
50
60
70
80
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

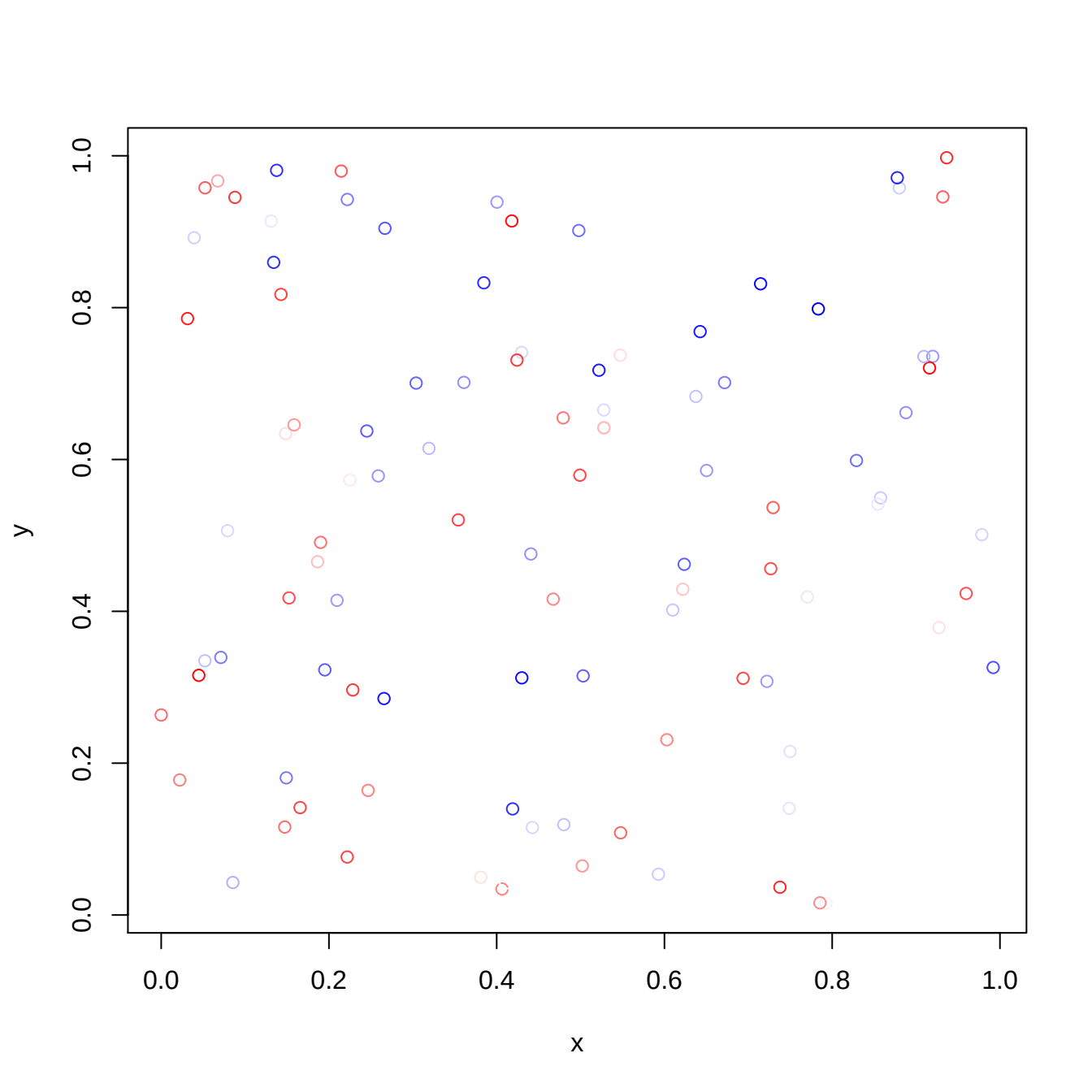

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
0.0
0.2
0.4
0.6
0.8
1.0
val

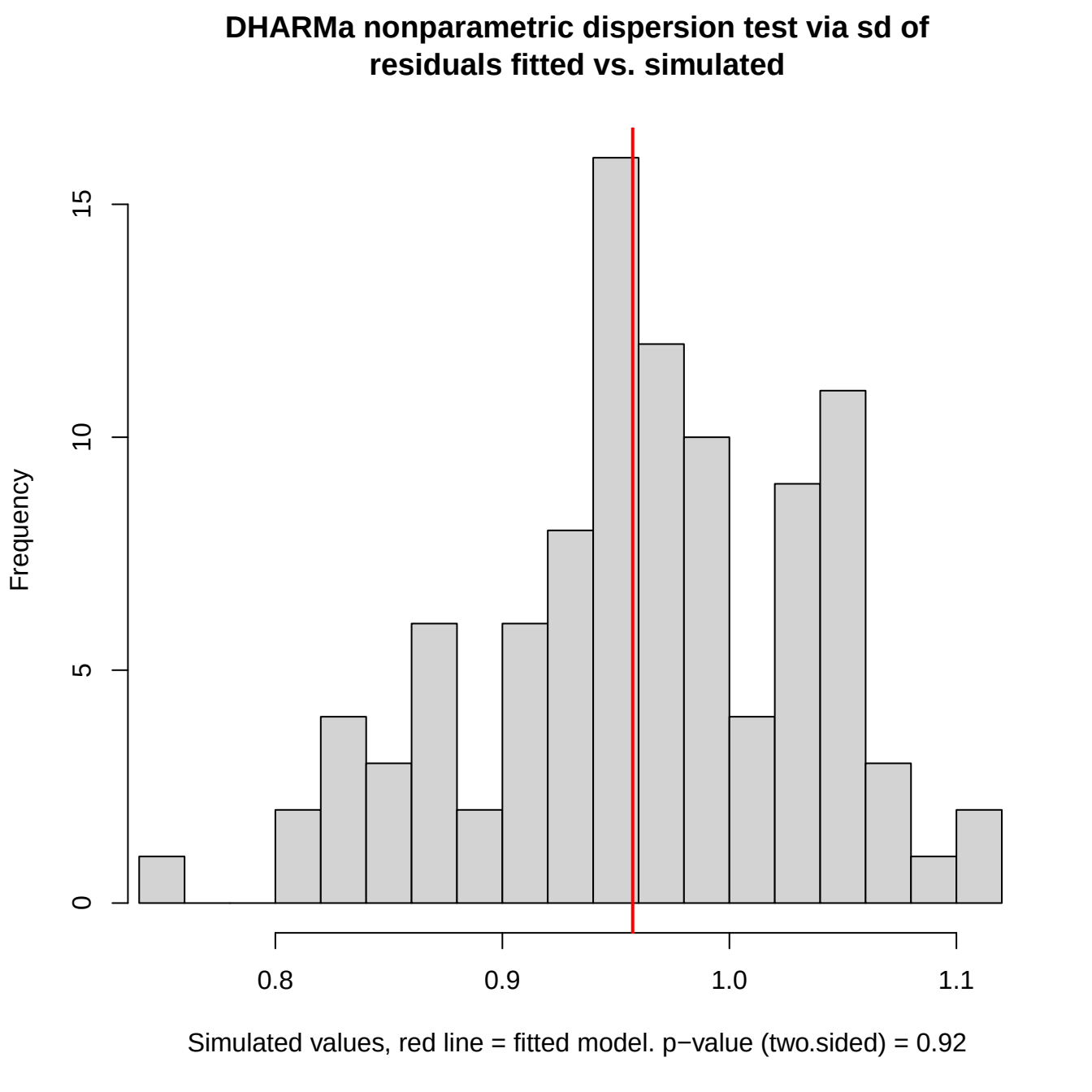

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

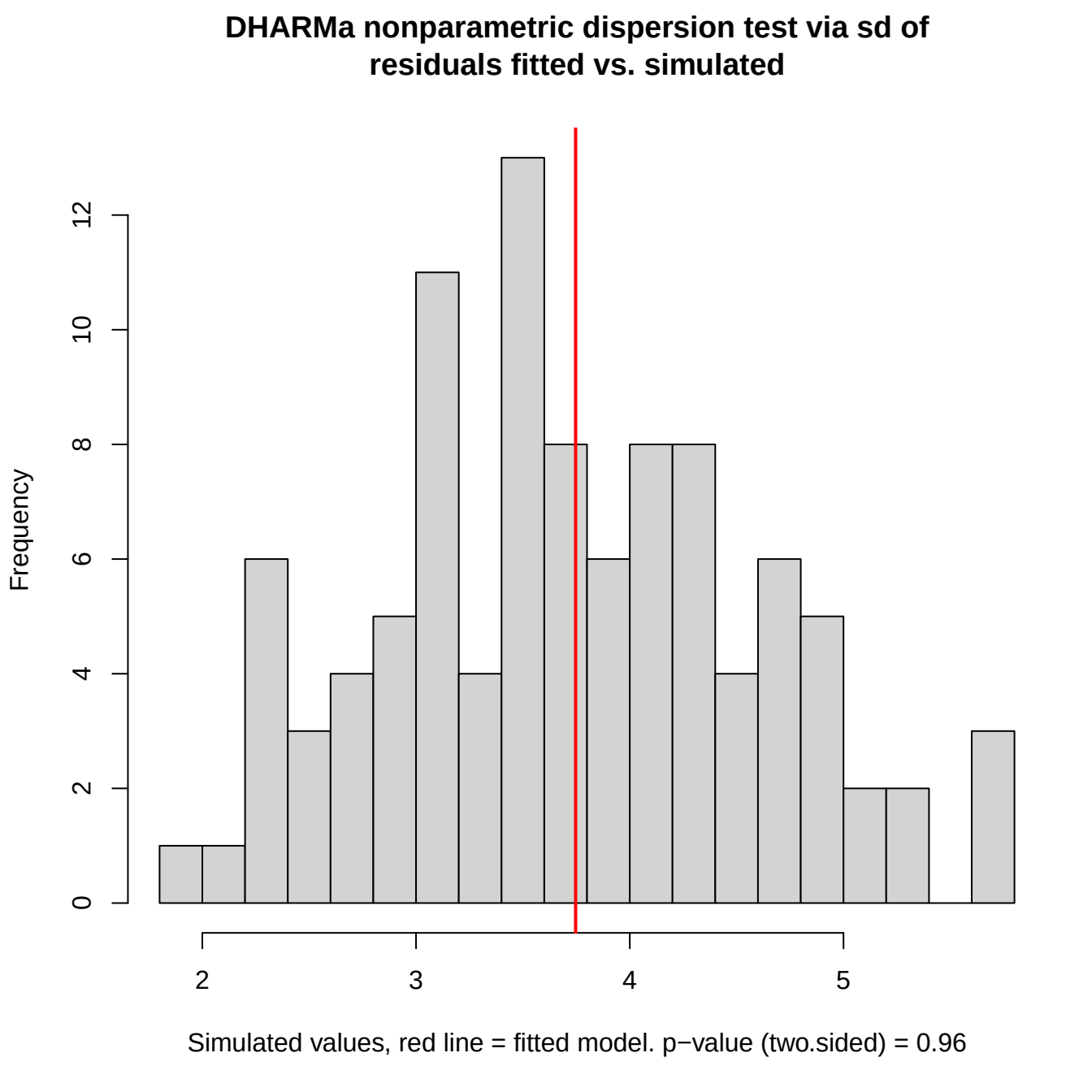

QQ plot residuals
KS test: p= 0.53318
Deviation n.s.
Outlier test: p= 0.73942
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

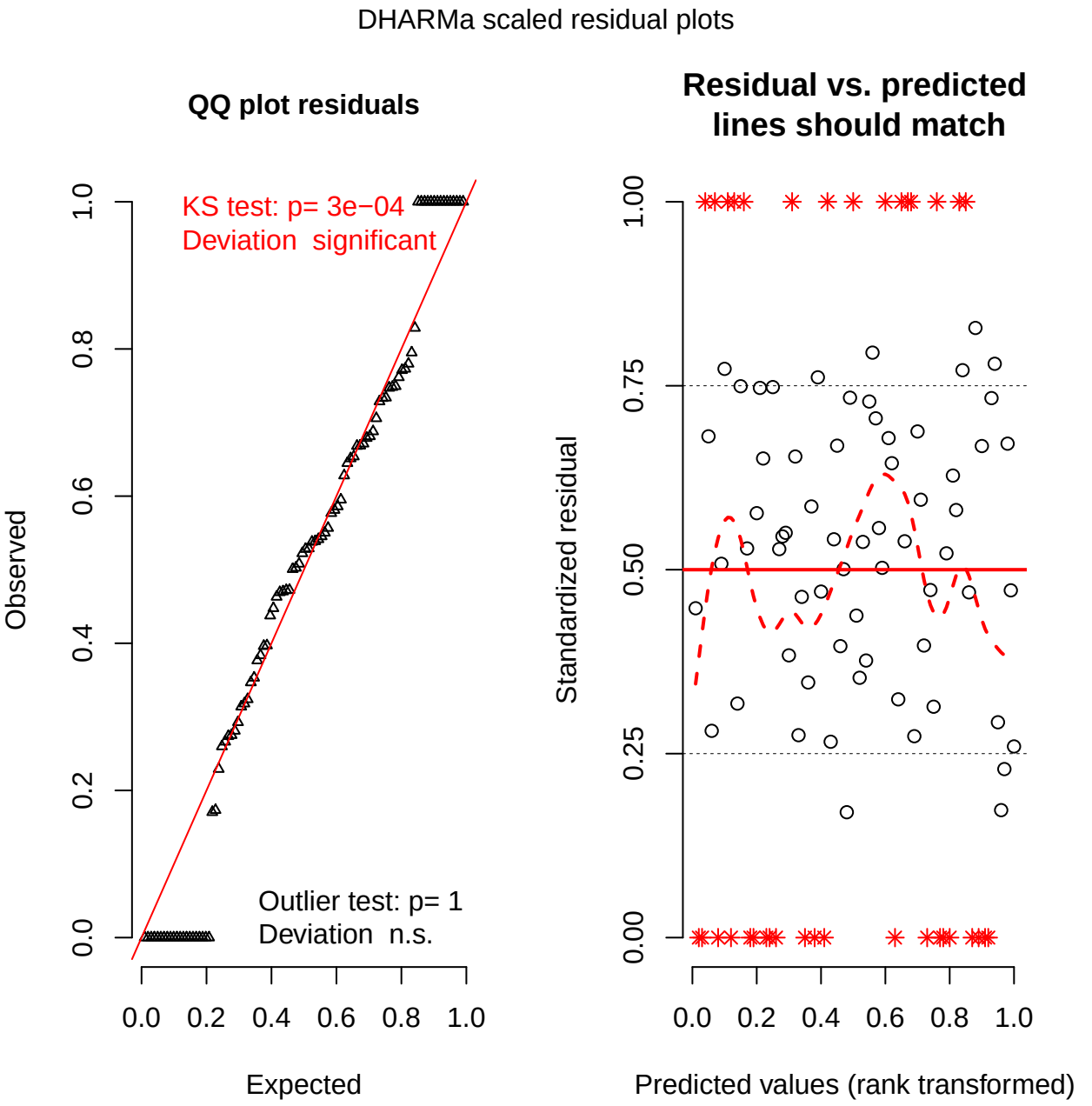

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

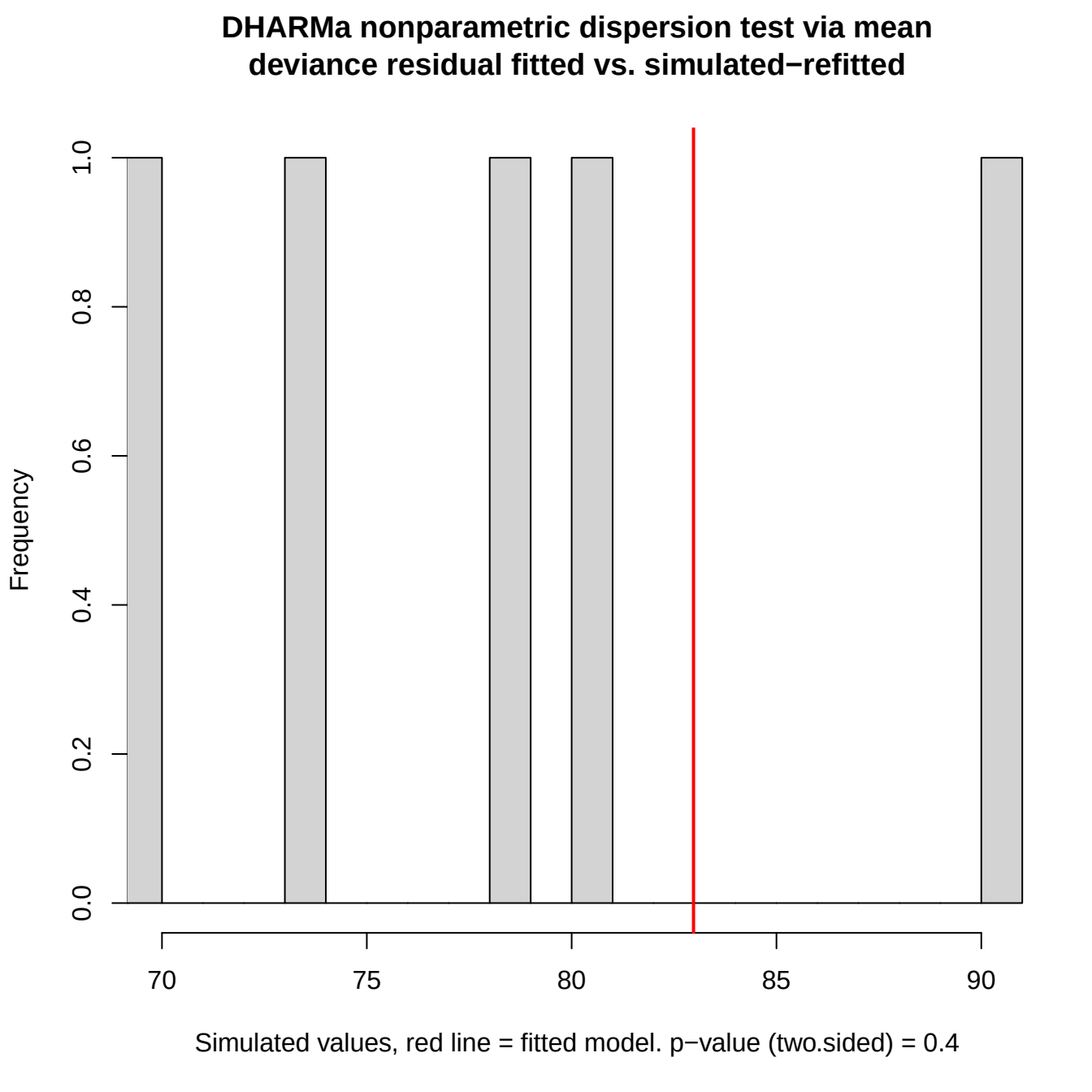

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
time

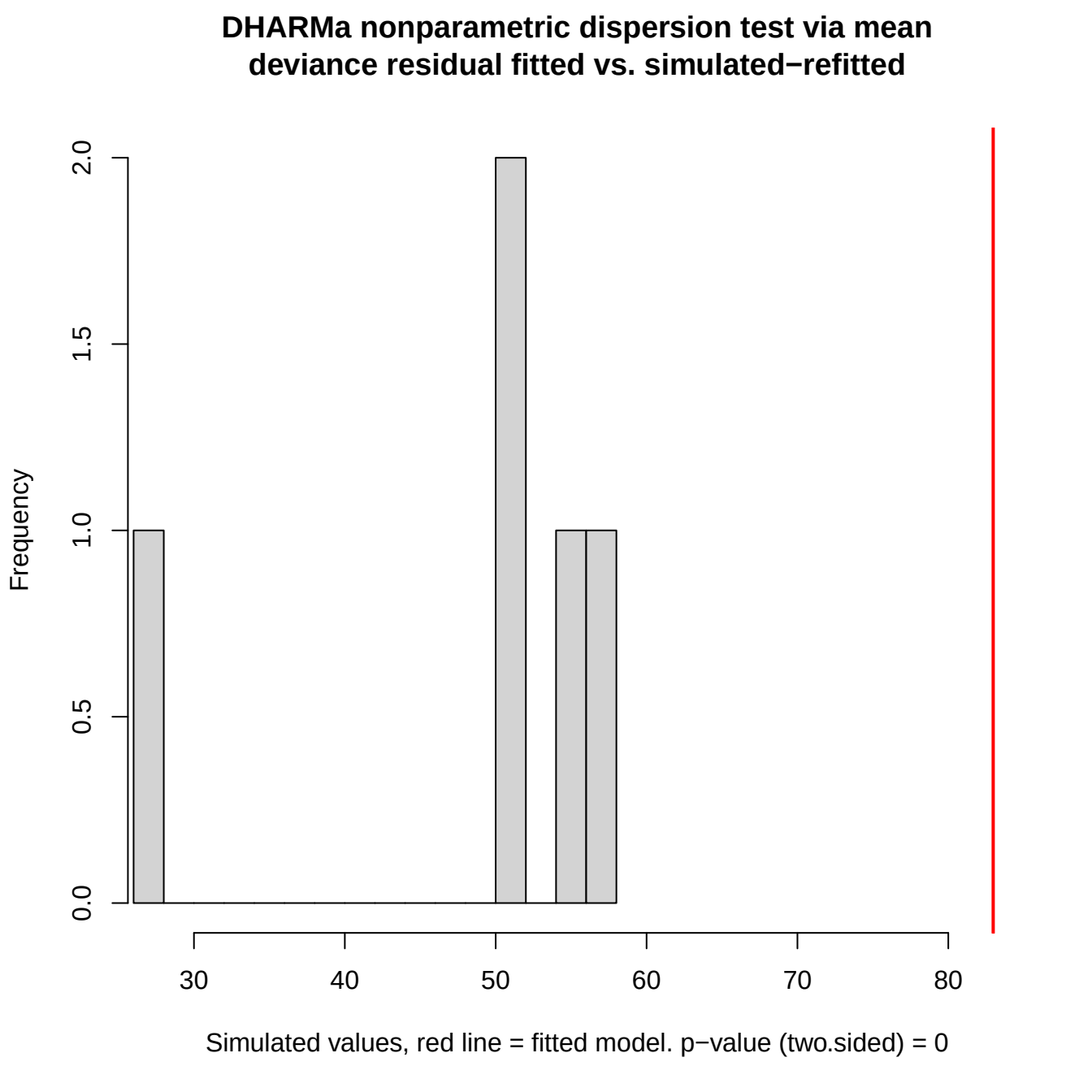

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

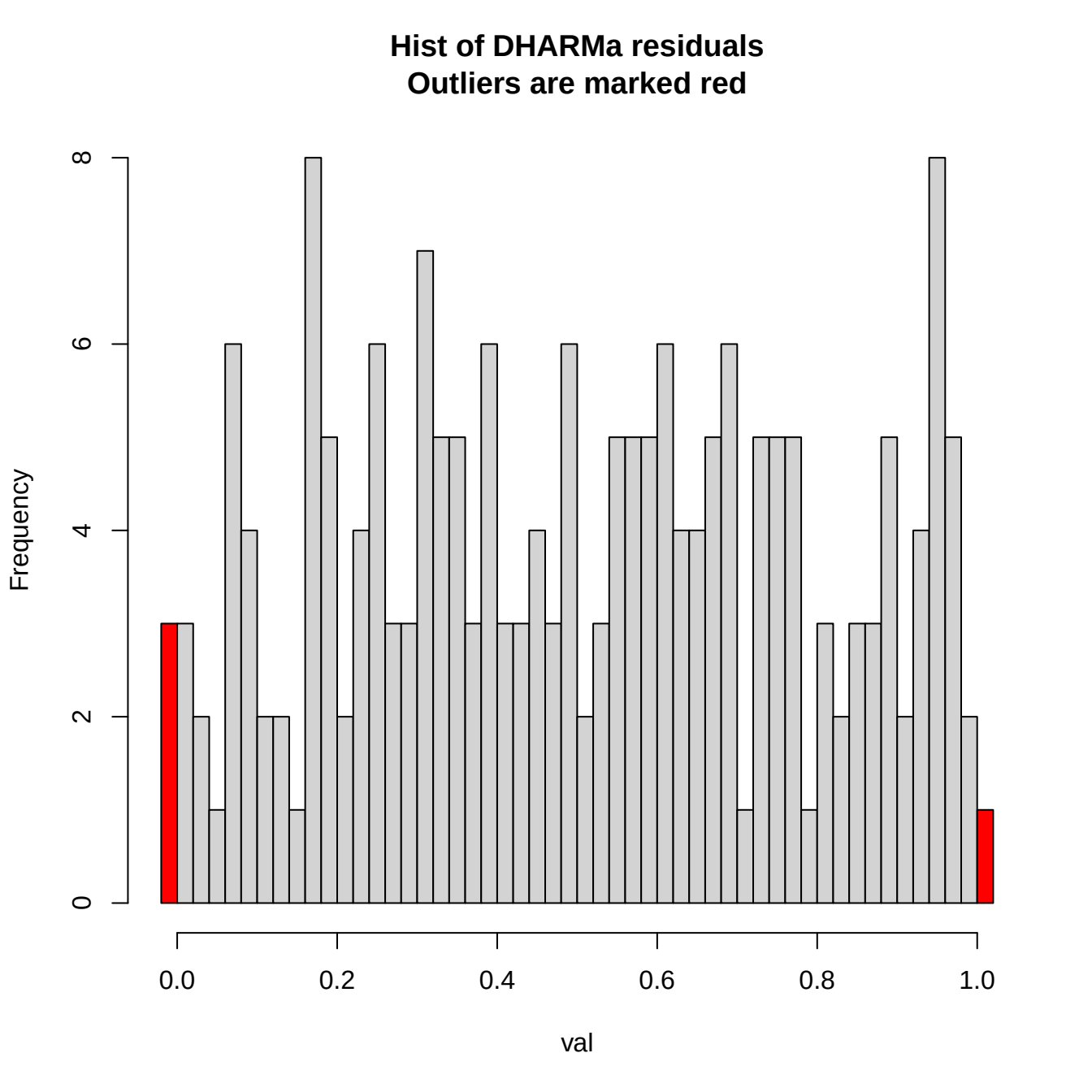

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.8
0.9
1.0
1.1
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

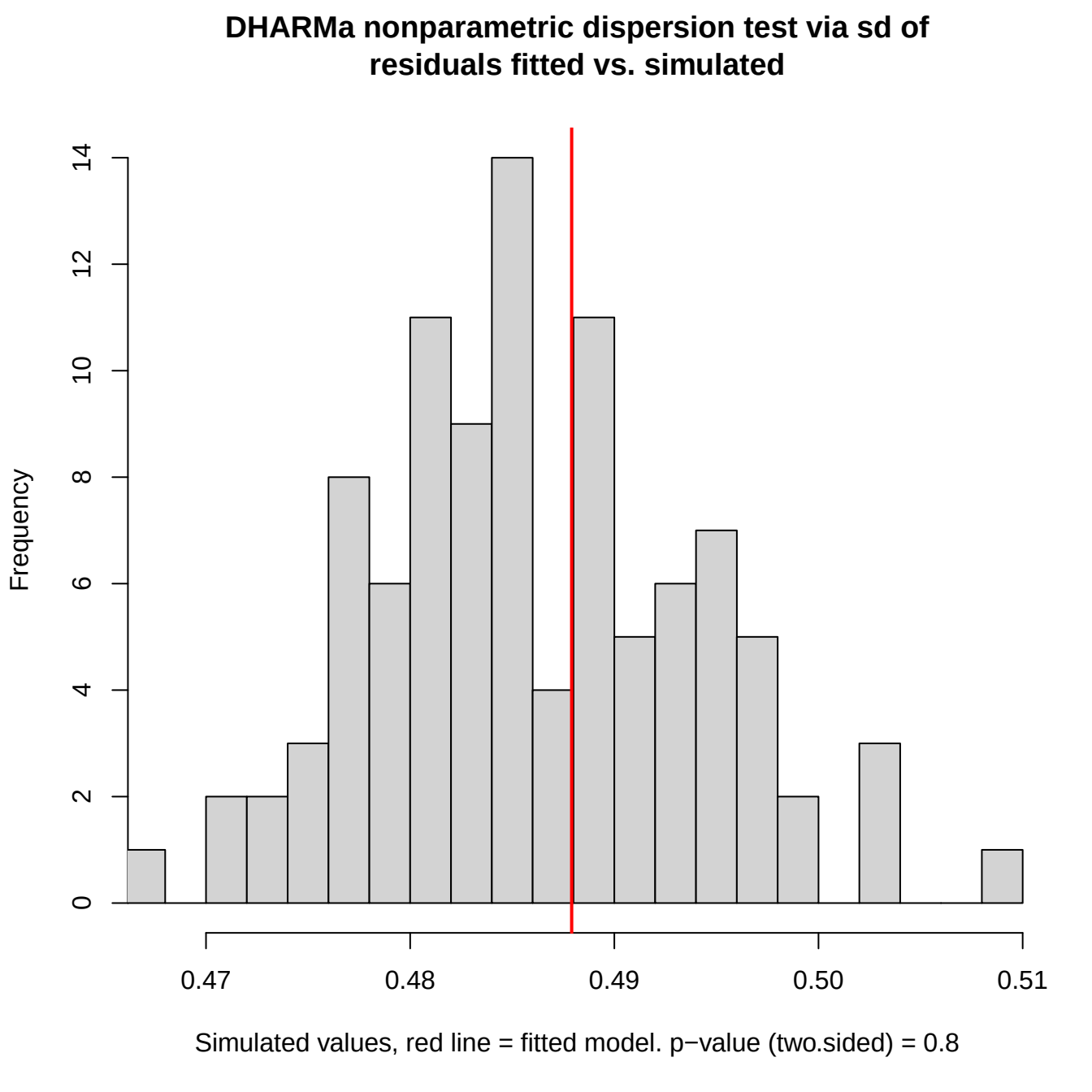

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

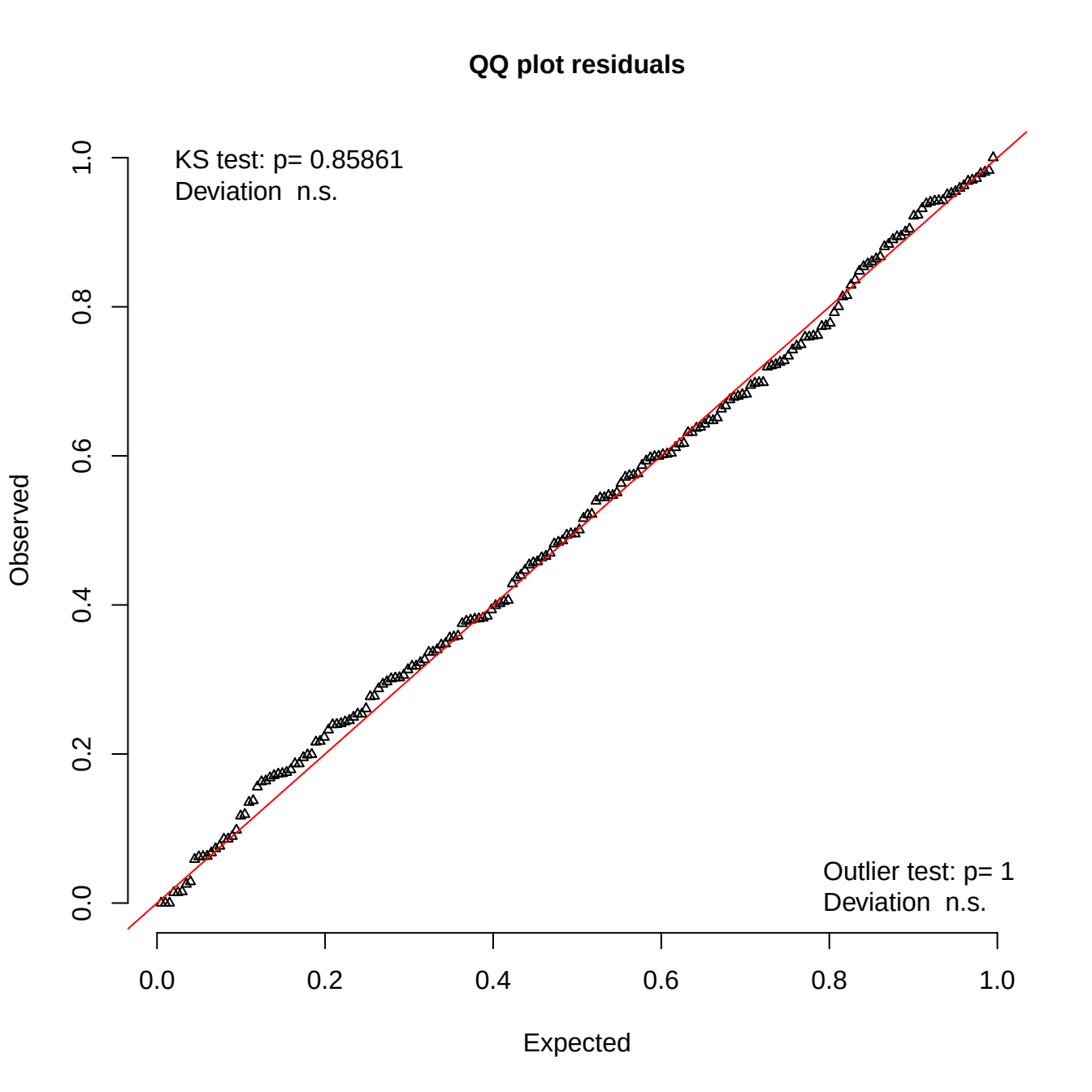

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 3e−04
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

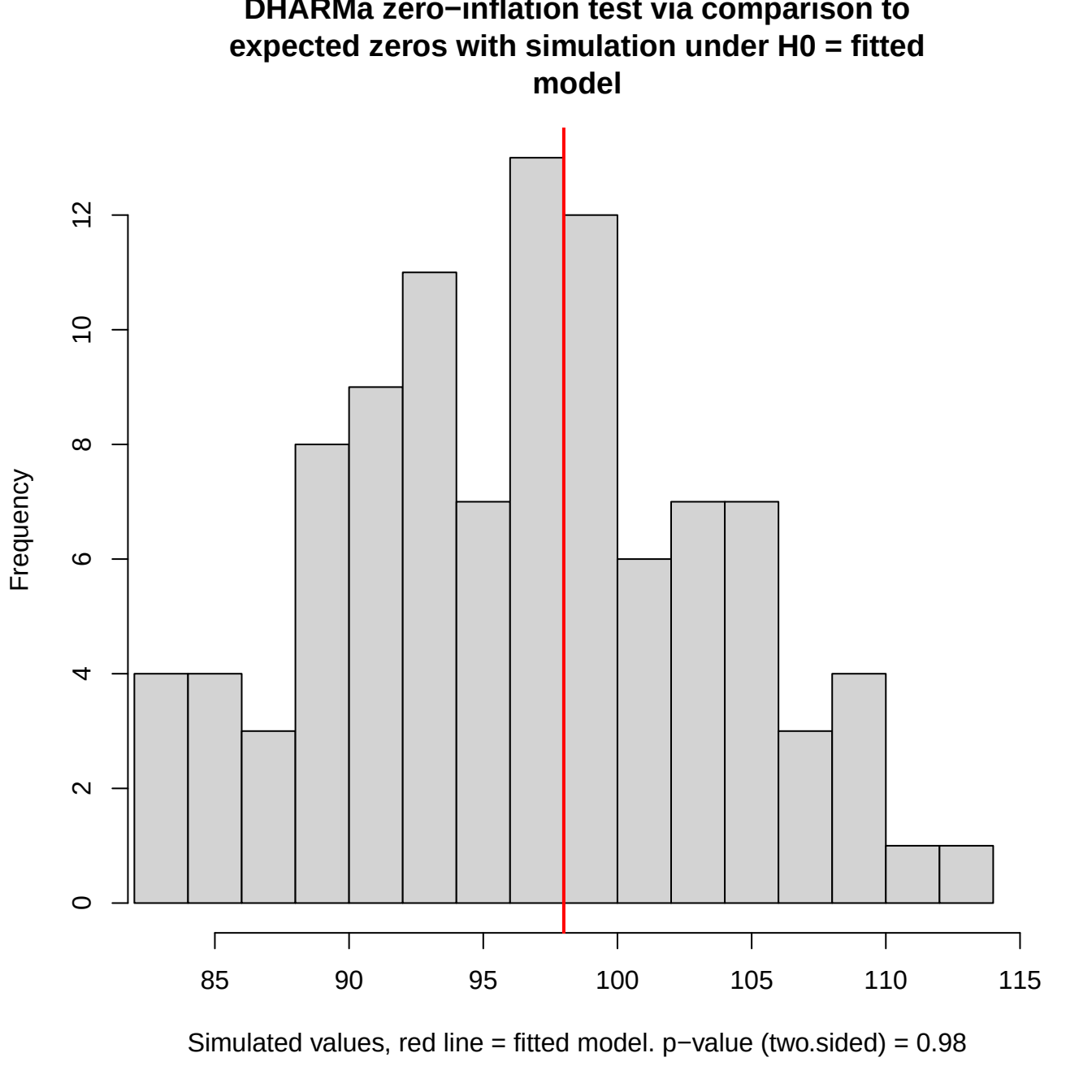

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
70
75
80
85
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

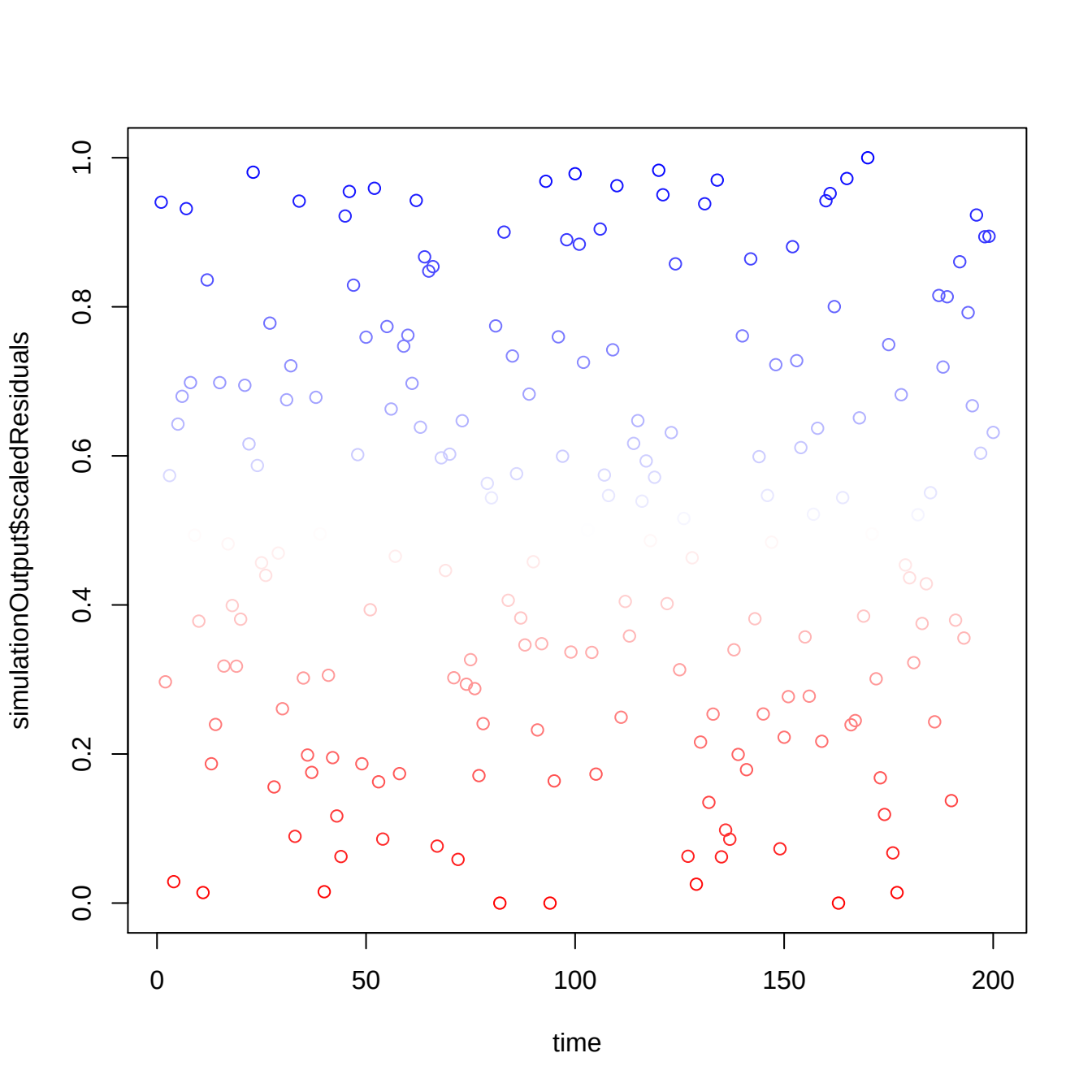

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
30
40
50
60
70
80
Simulated values, red line = fitted model. p−value (two.sided) = 0

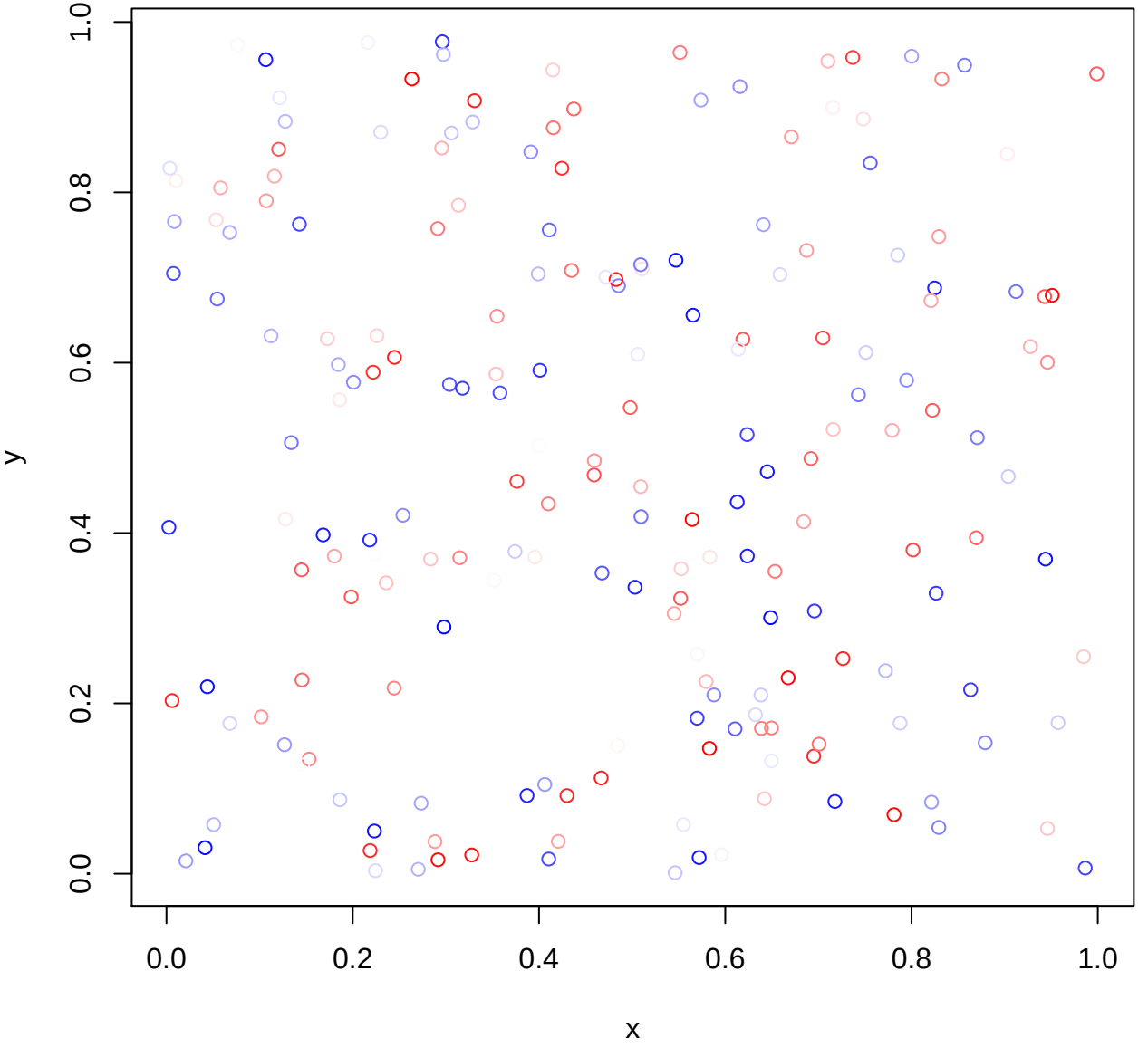

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

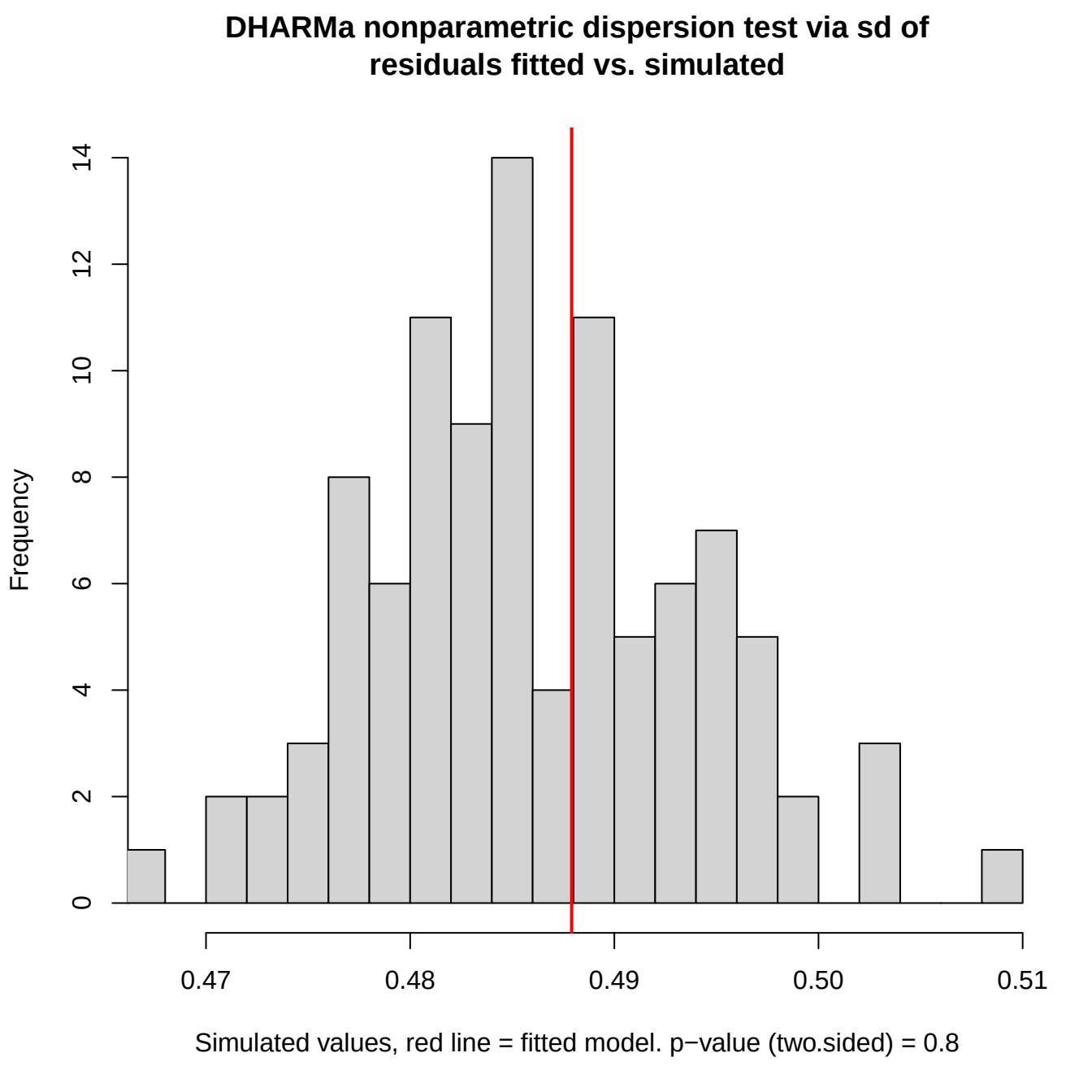

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

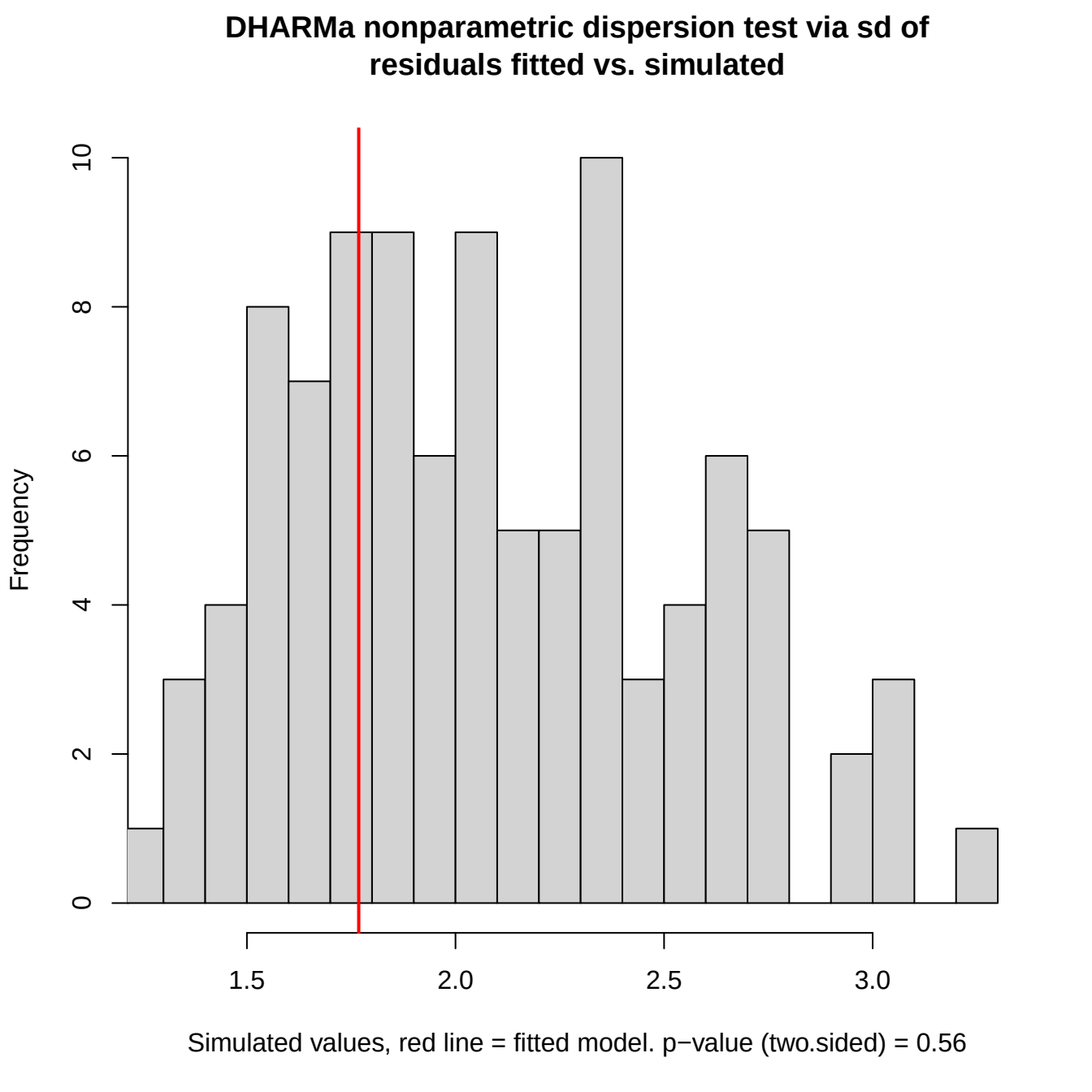

QQ plot residuals
KS test: p= 0.85861
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0


DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
85
90
95
100
105
110
115
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

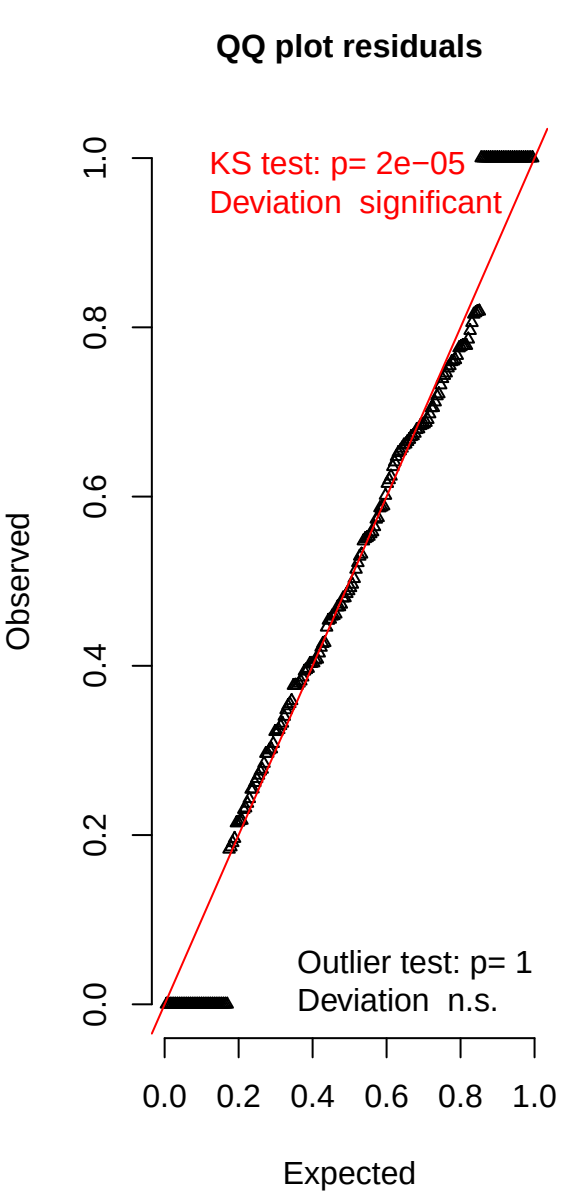

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

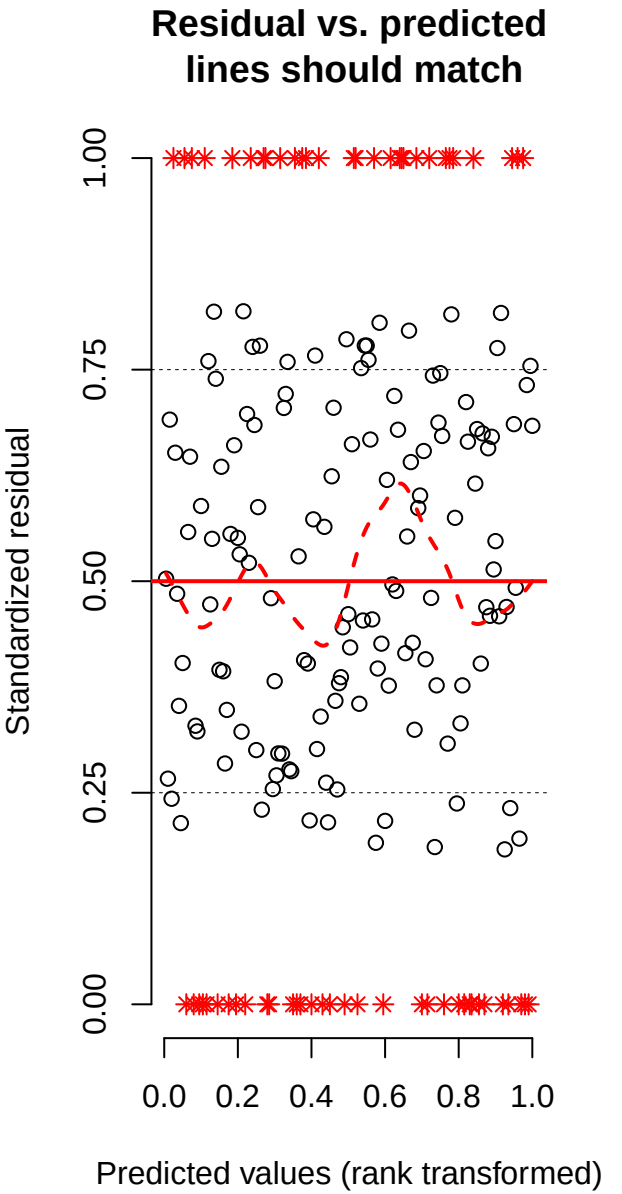

y
x
0.0
0.2
0.4
0.6
0.8
1.0

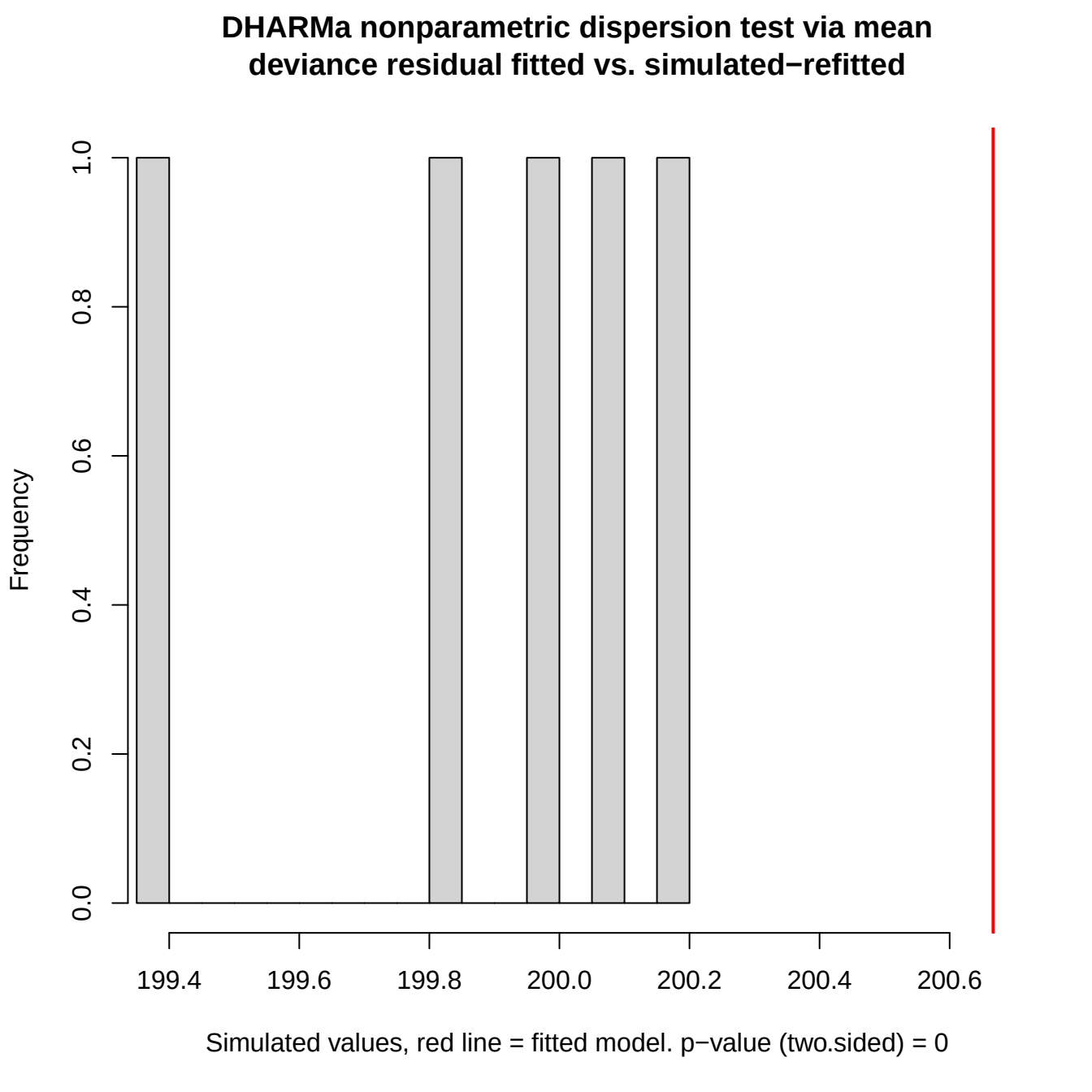

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

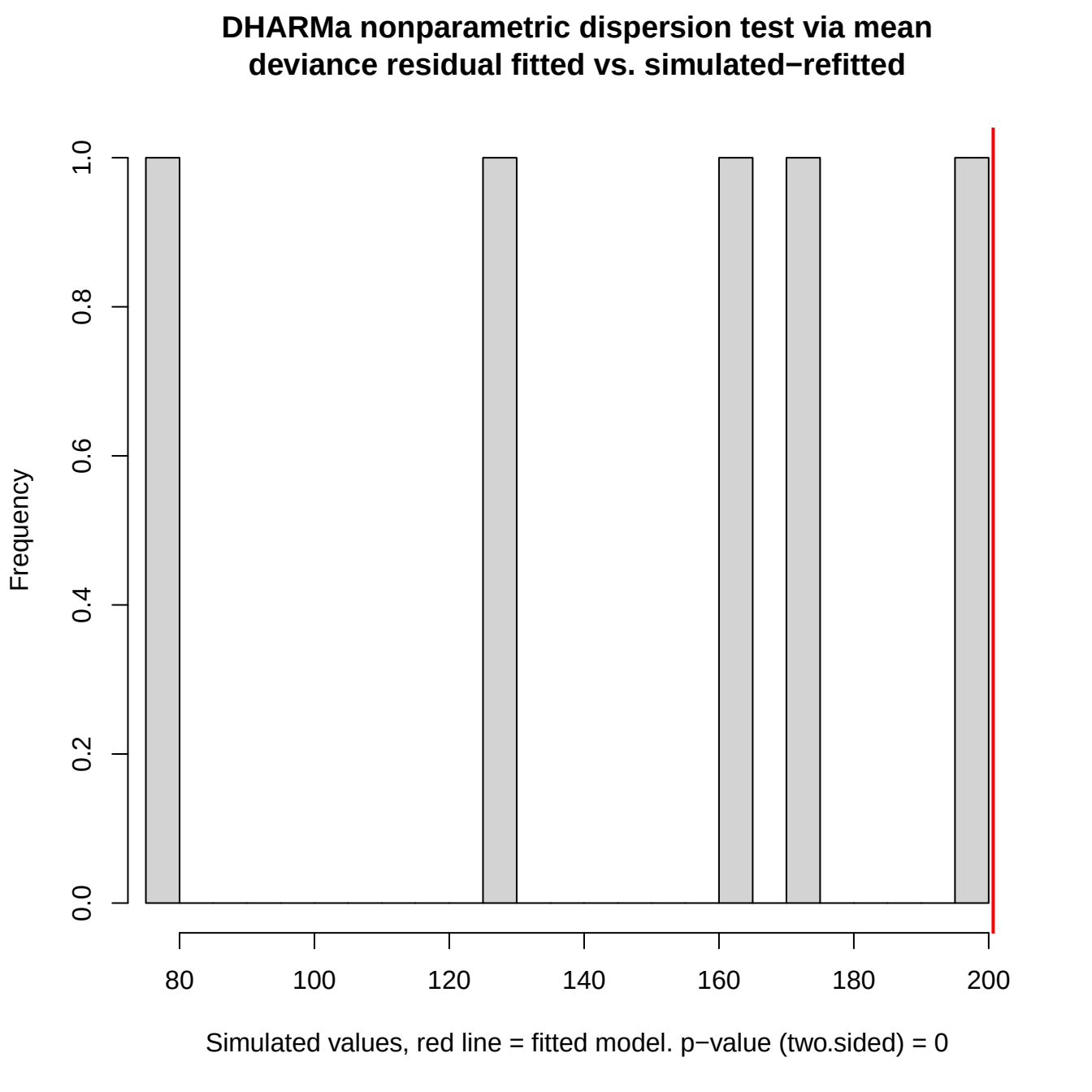

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

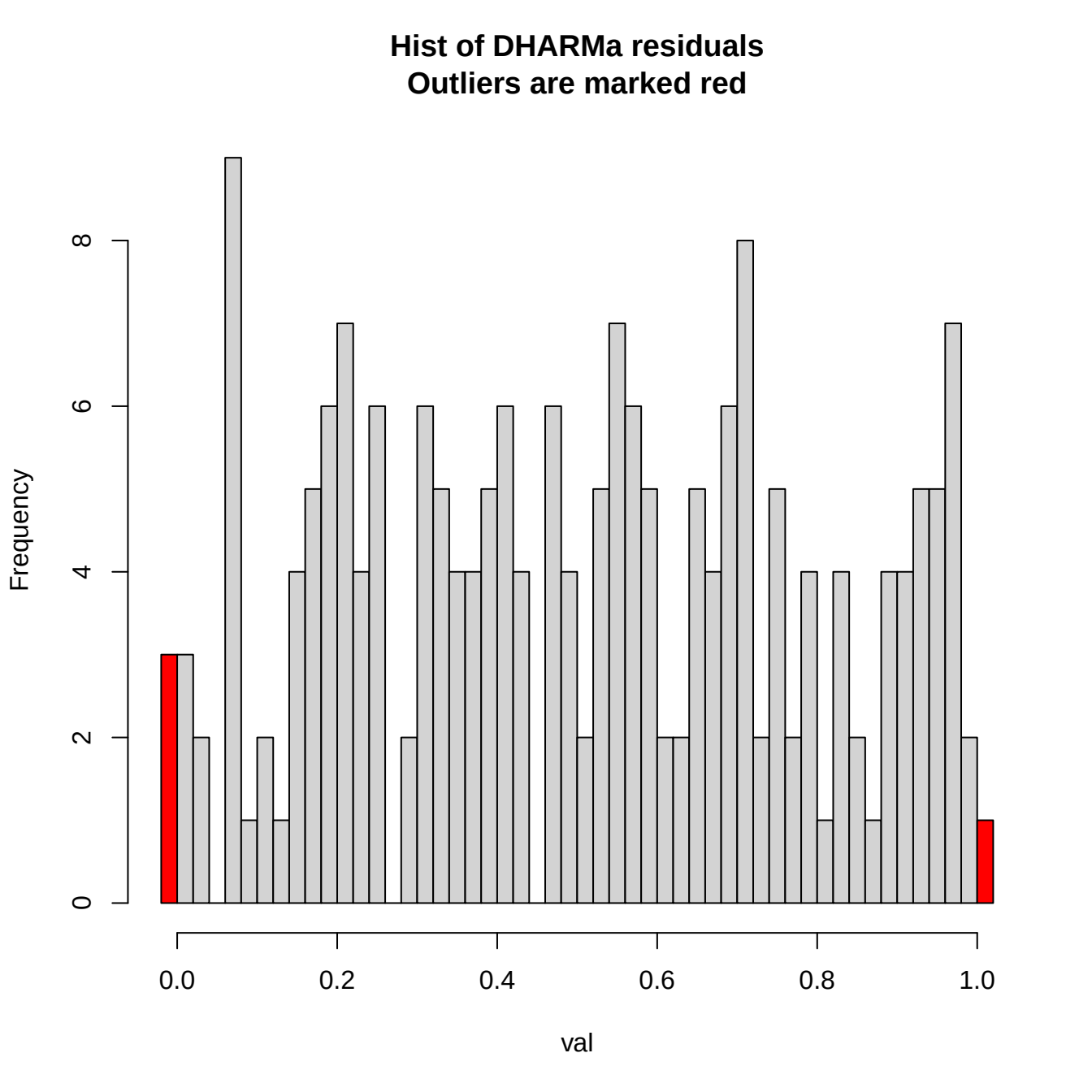
DHARMa scaled residual plots

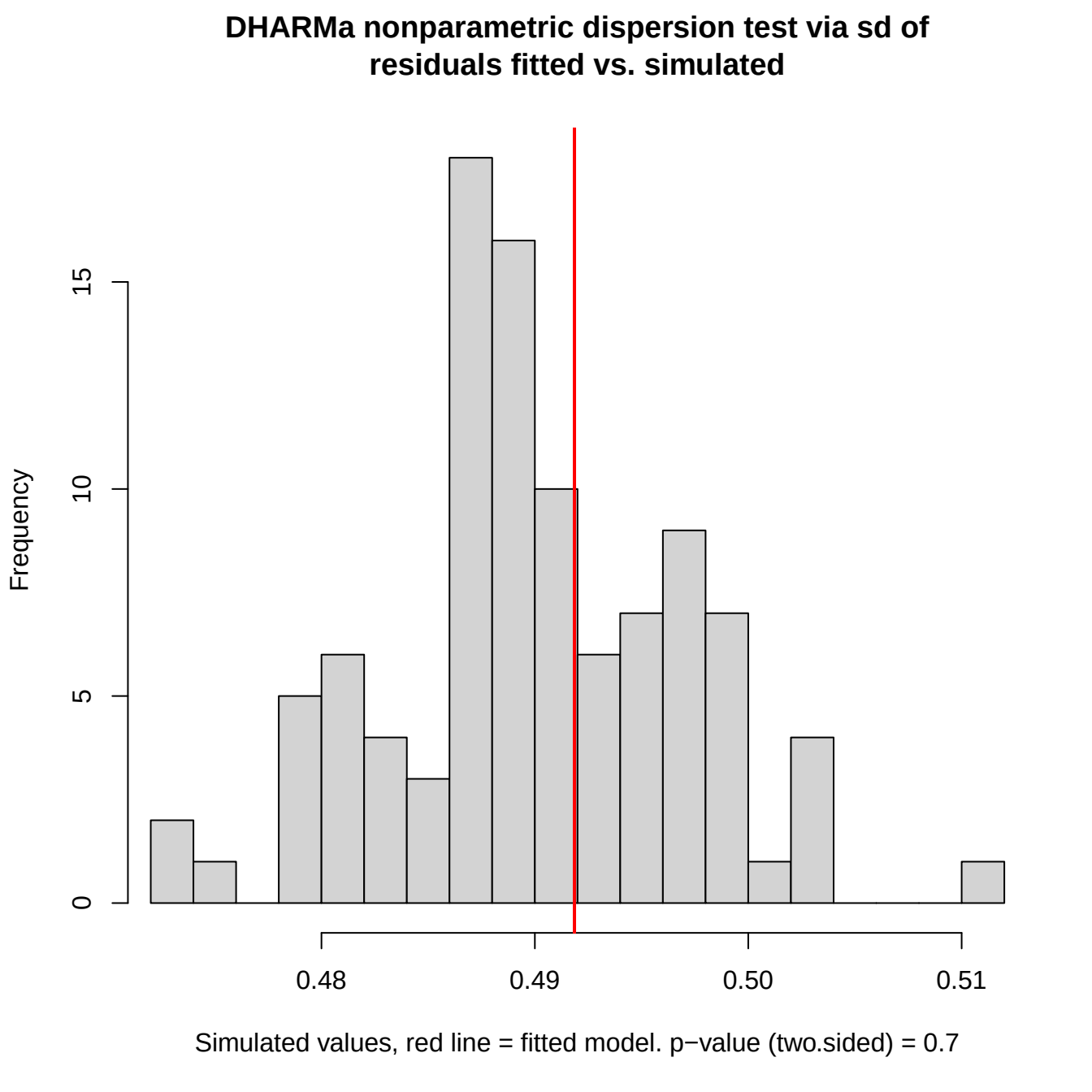


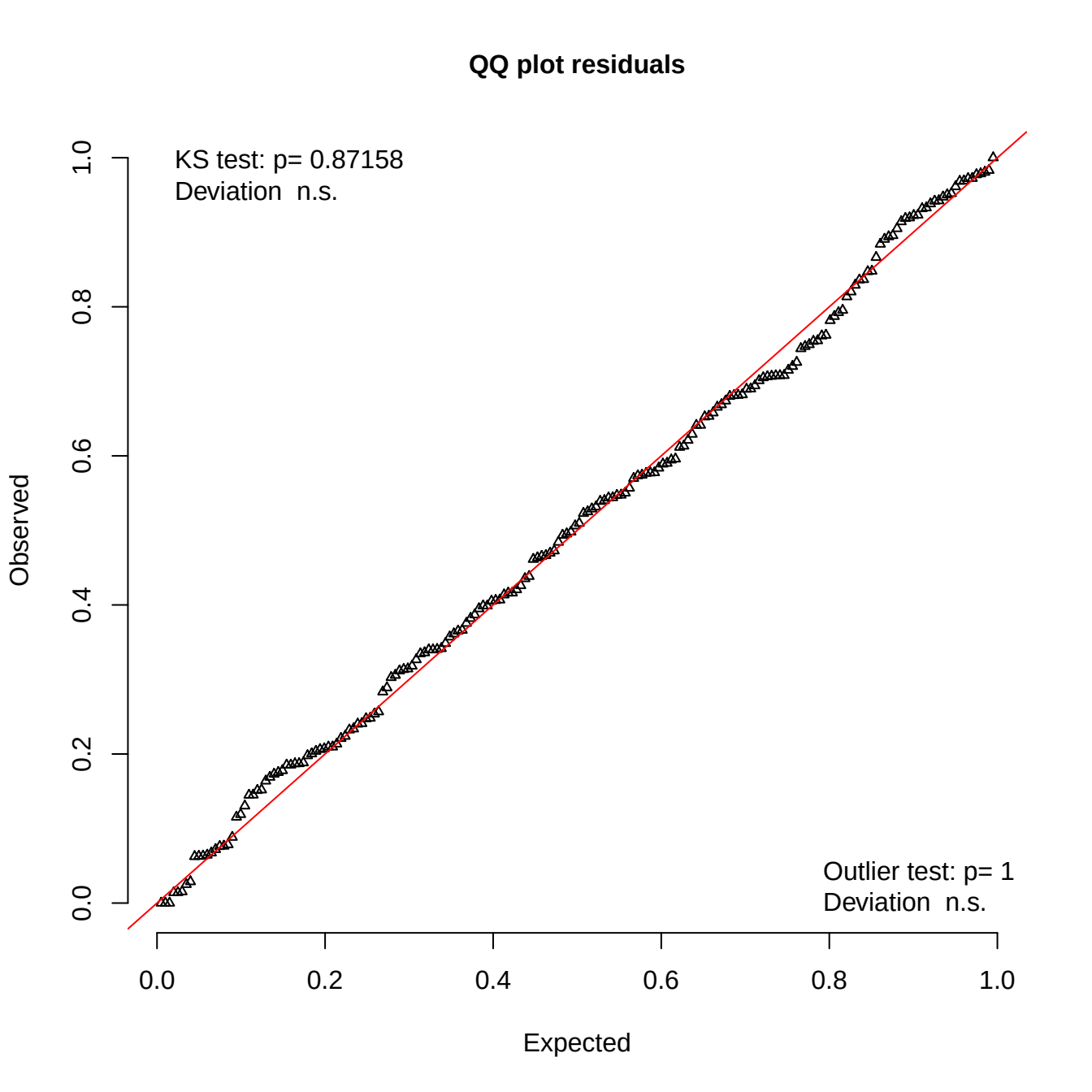



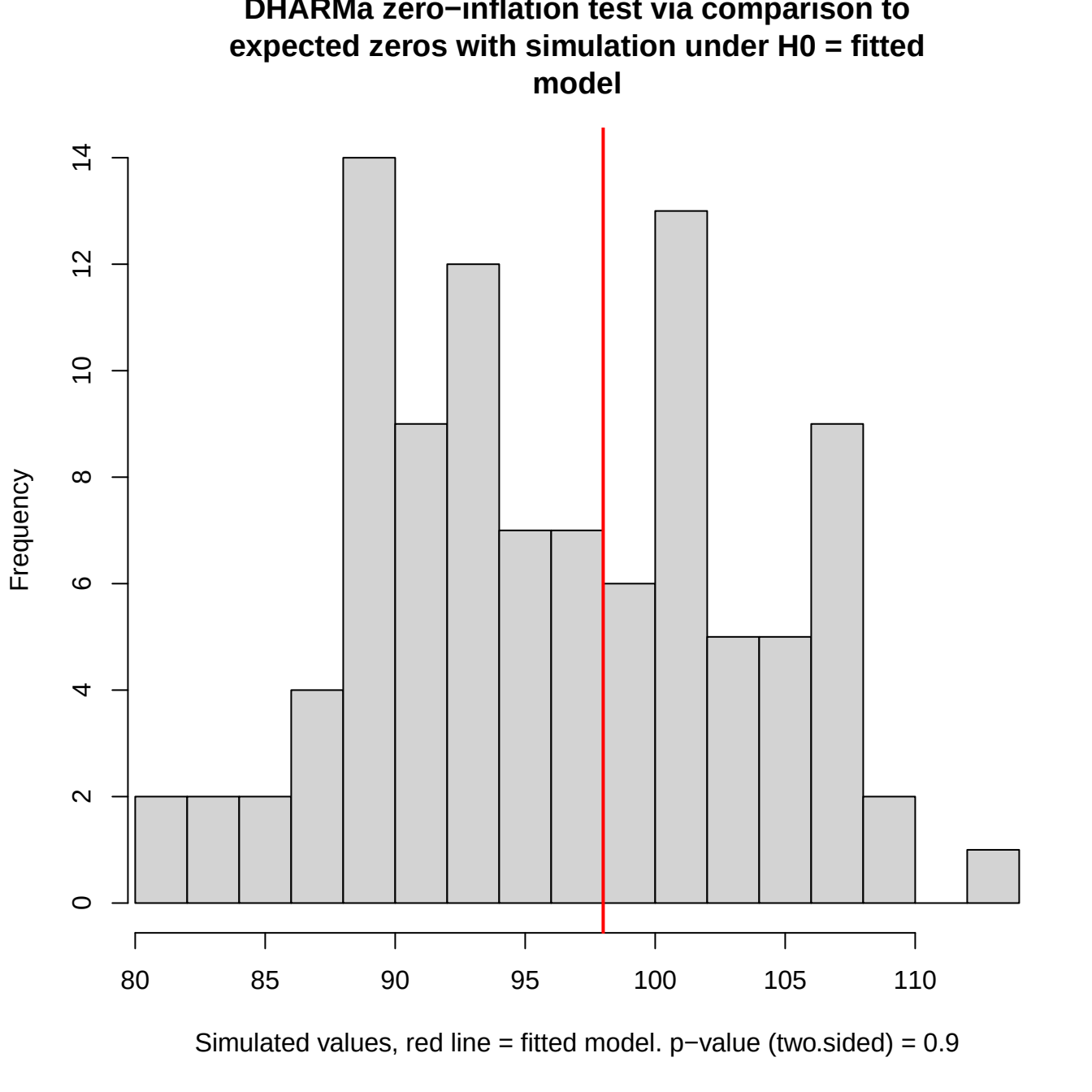

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
199.4
199.6
199.8
200.0
200.2
200.4
200.6
Simulated values, red line = fitted model. p−value (two.sided) = 0

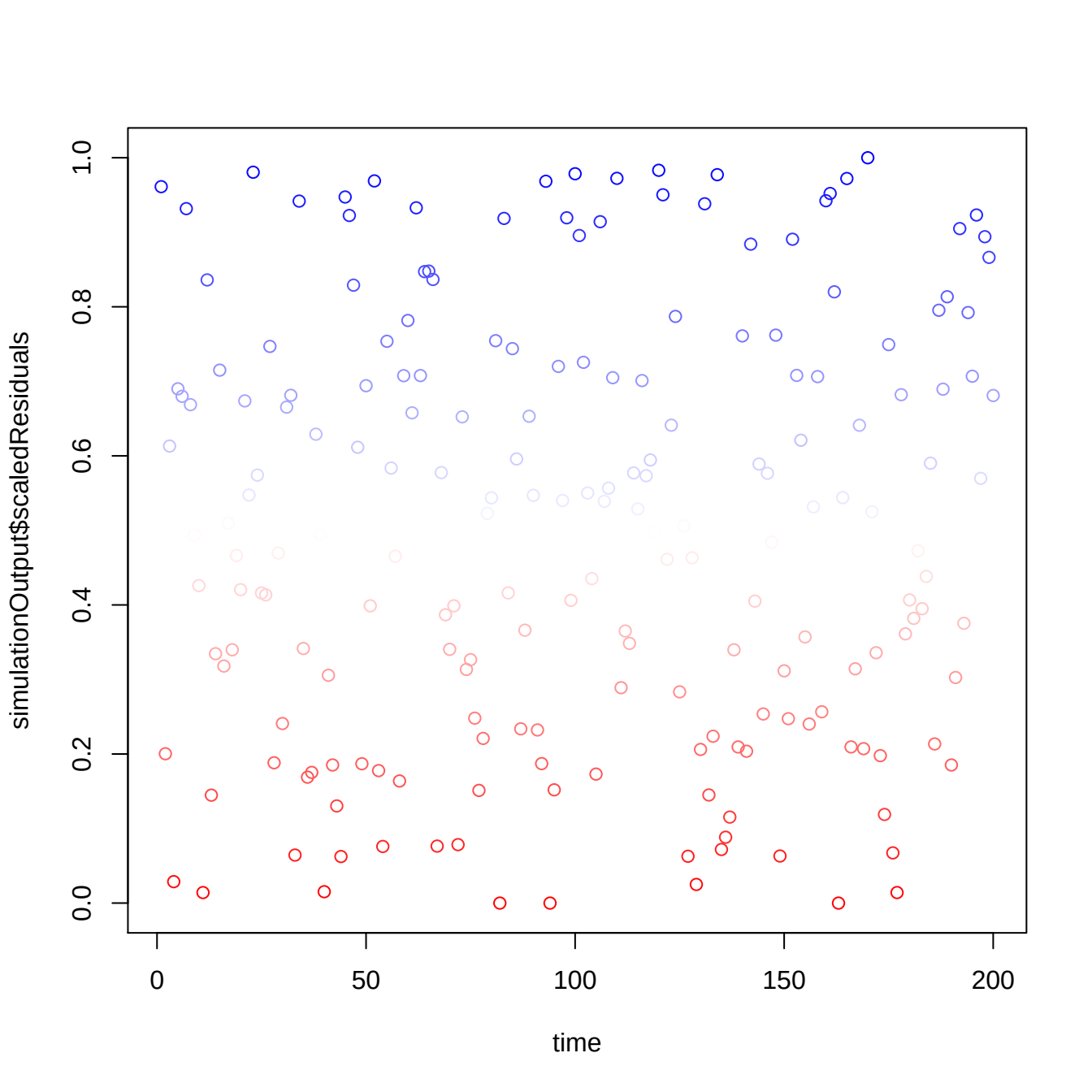

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

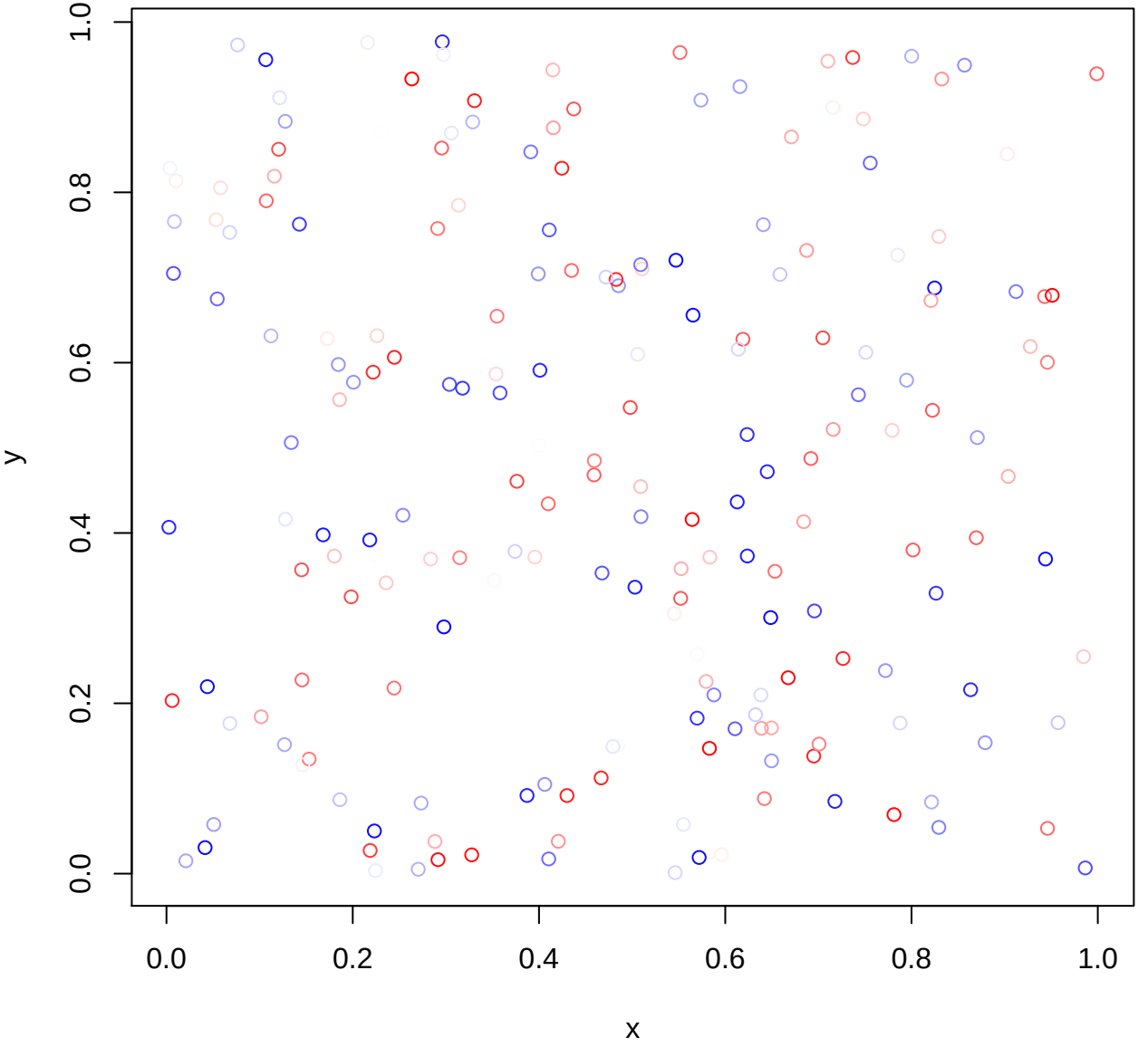

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

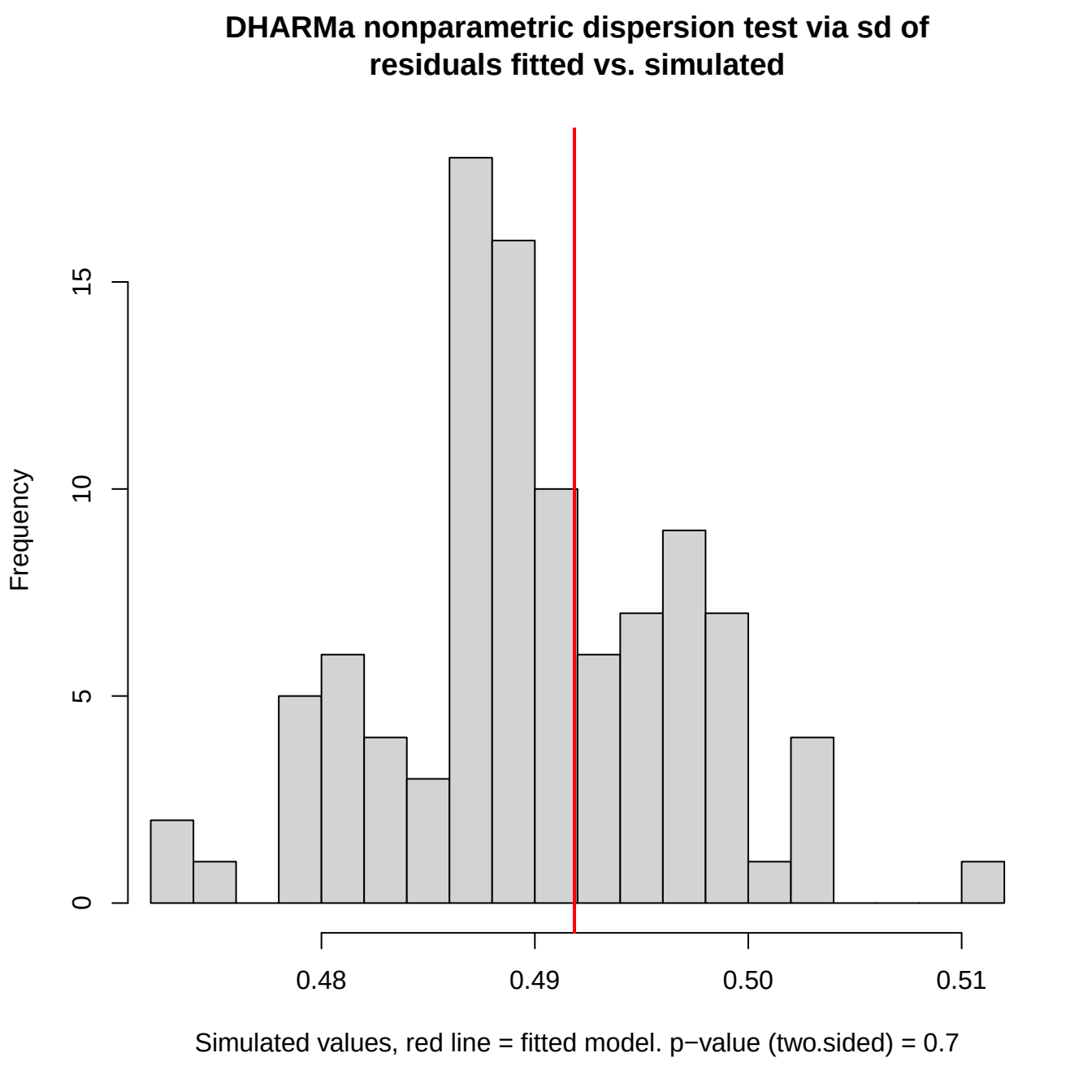

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.7

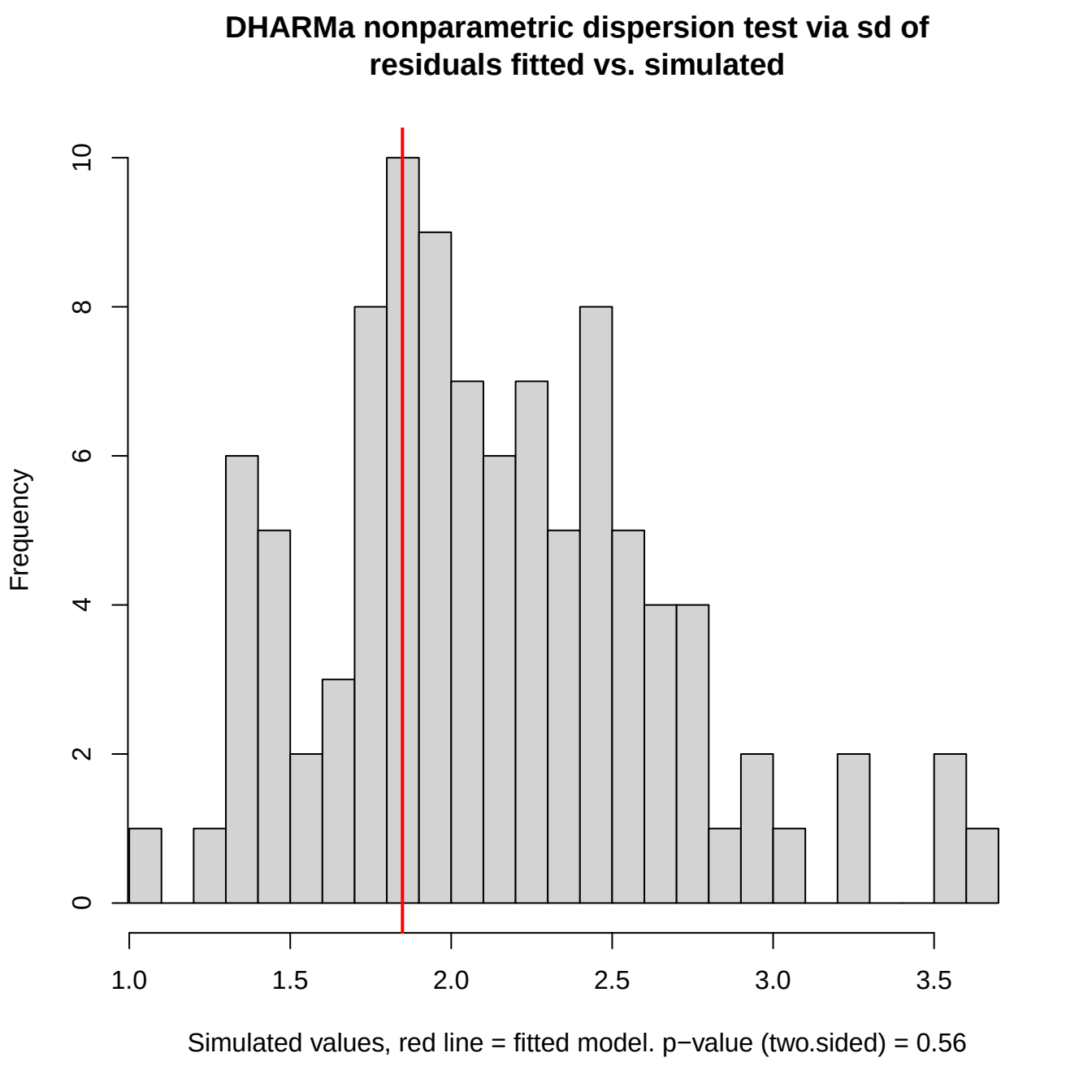

QQ plot residuals
KS test: p= 0.87158
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

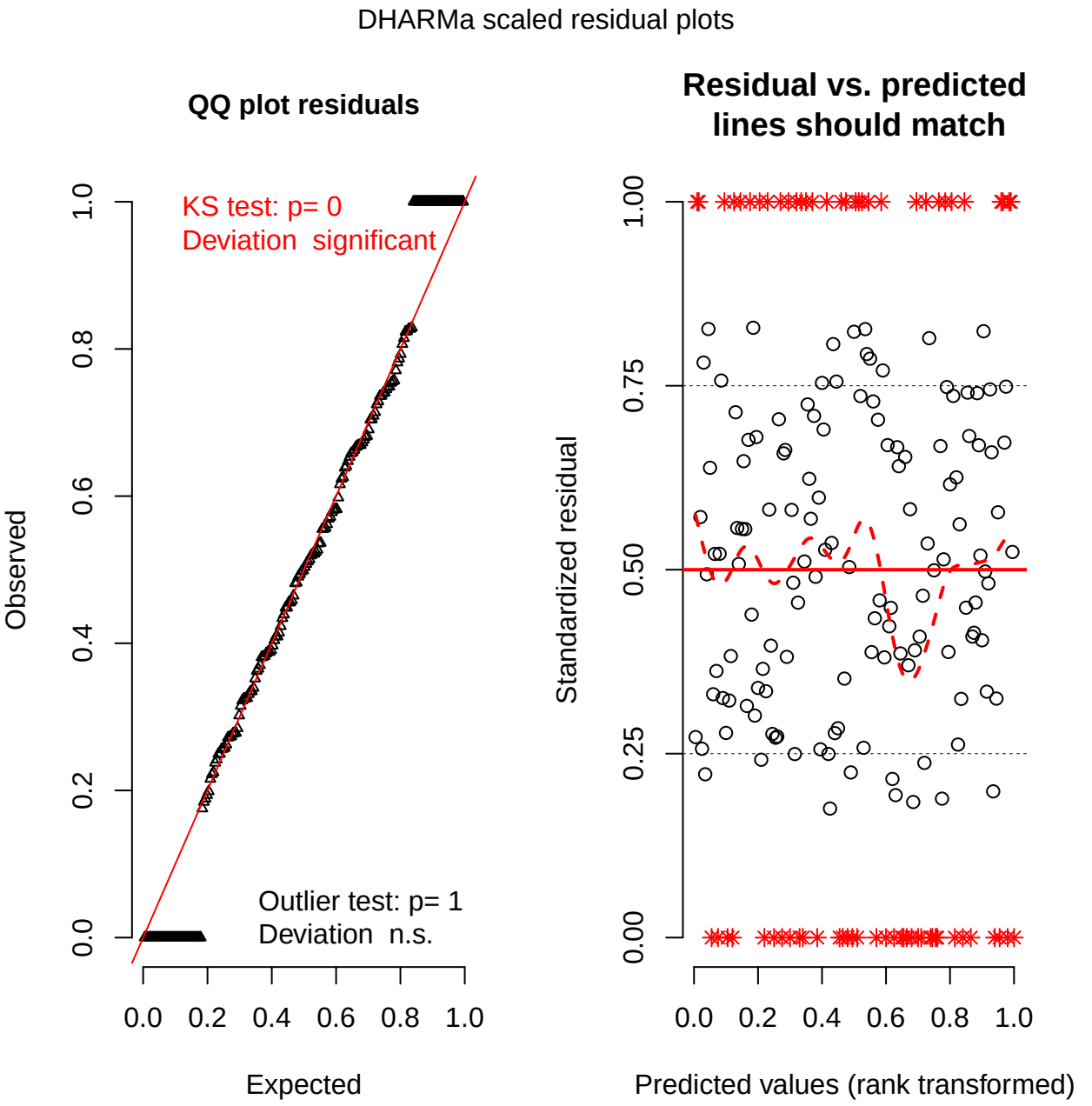

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
14
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

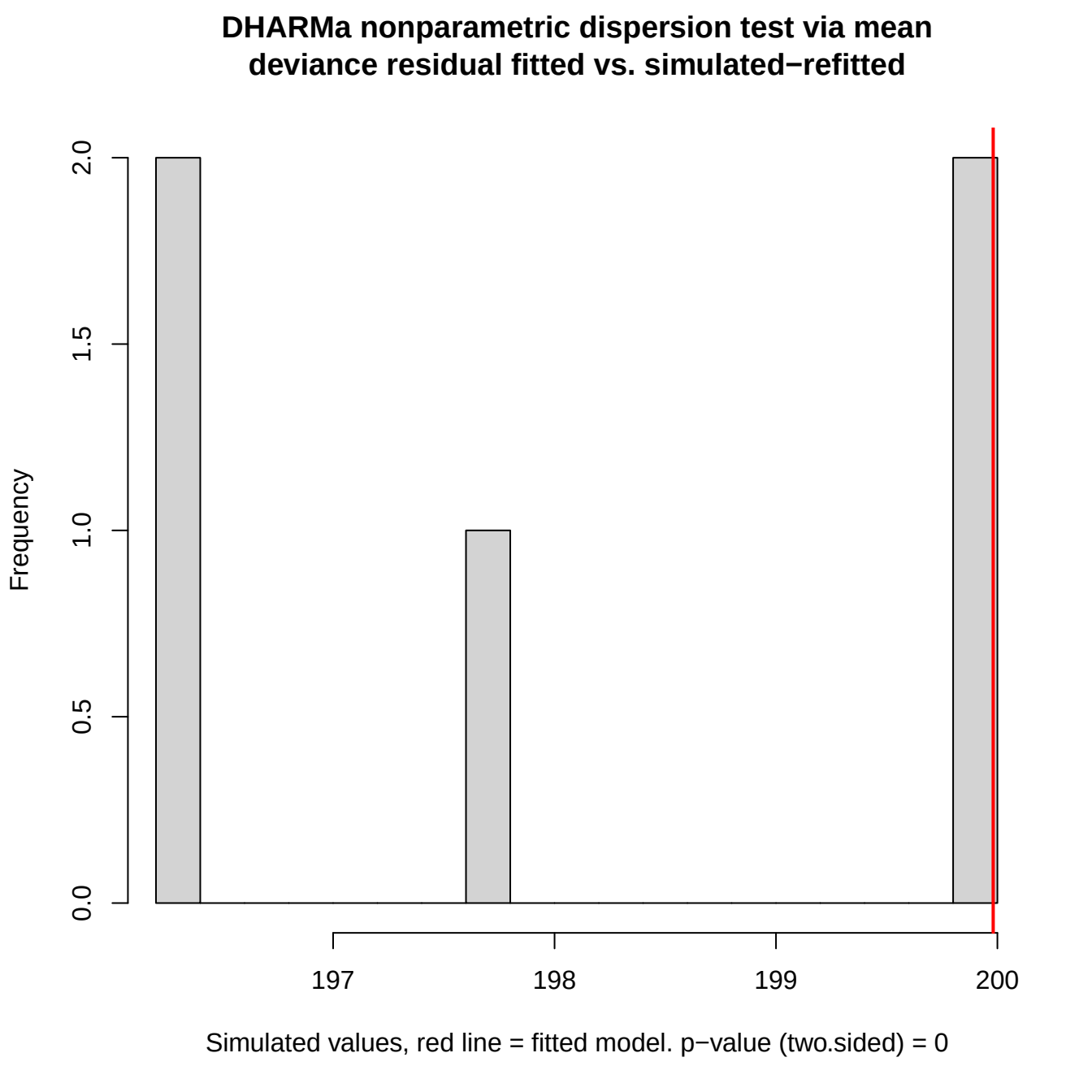

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

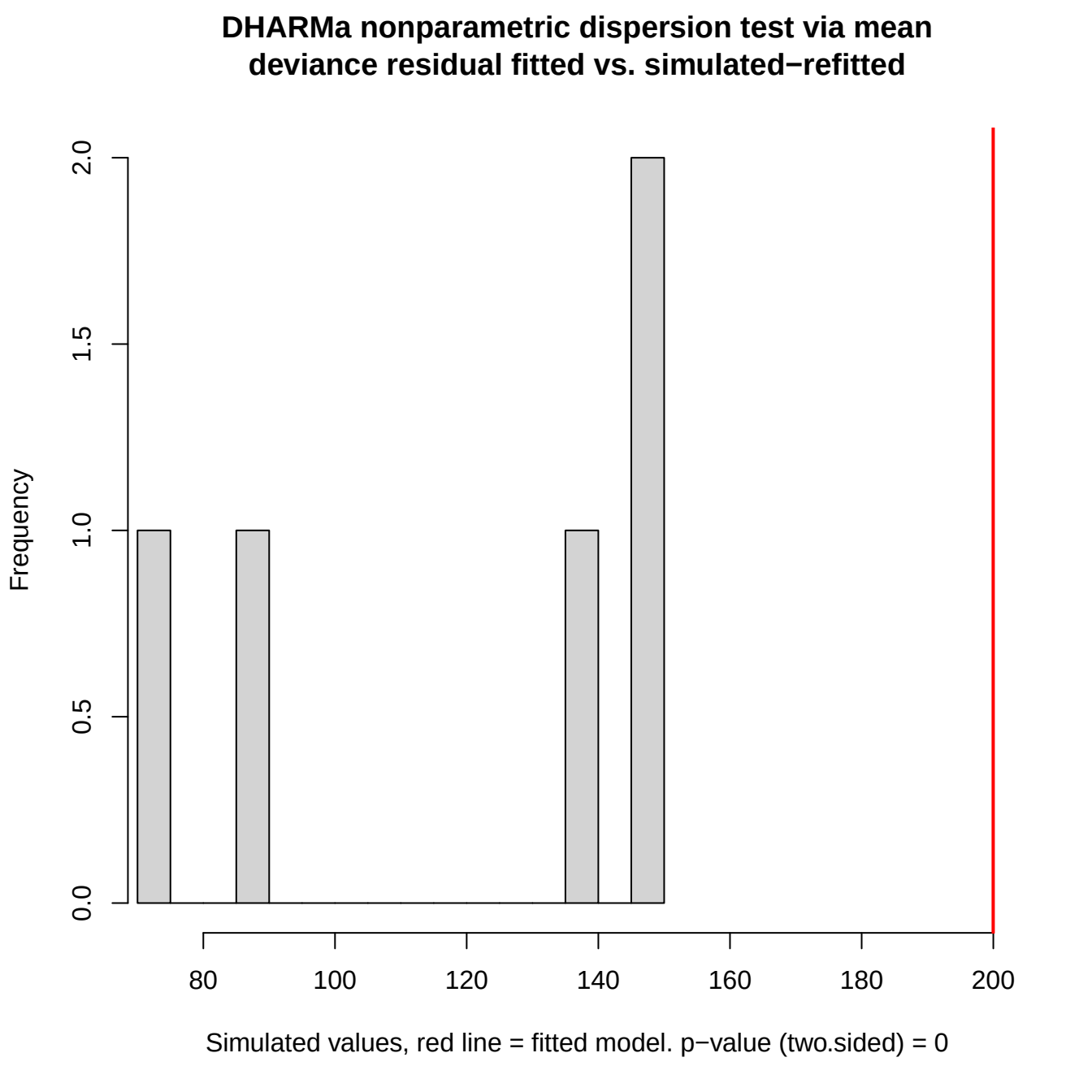

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

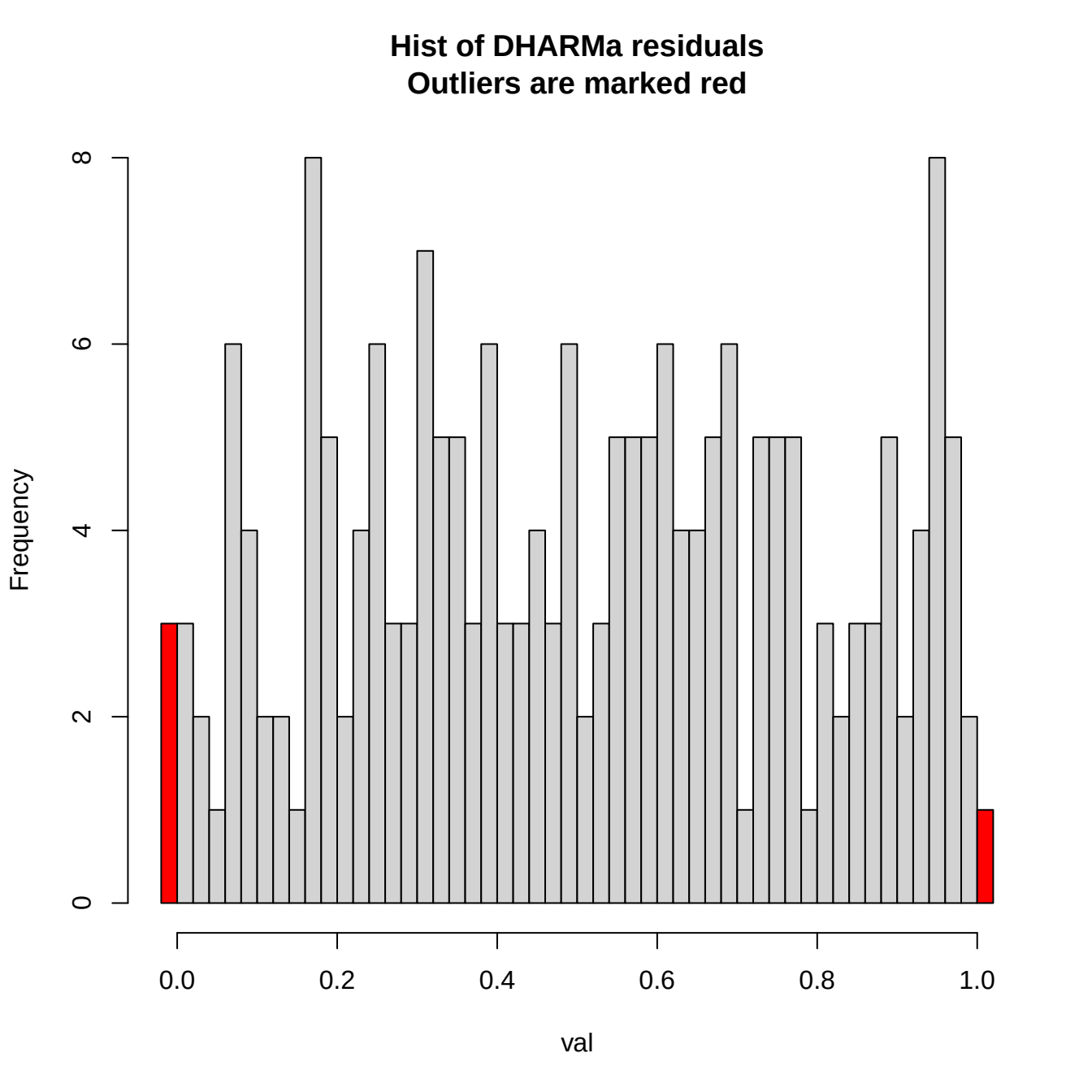

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.7

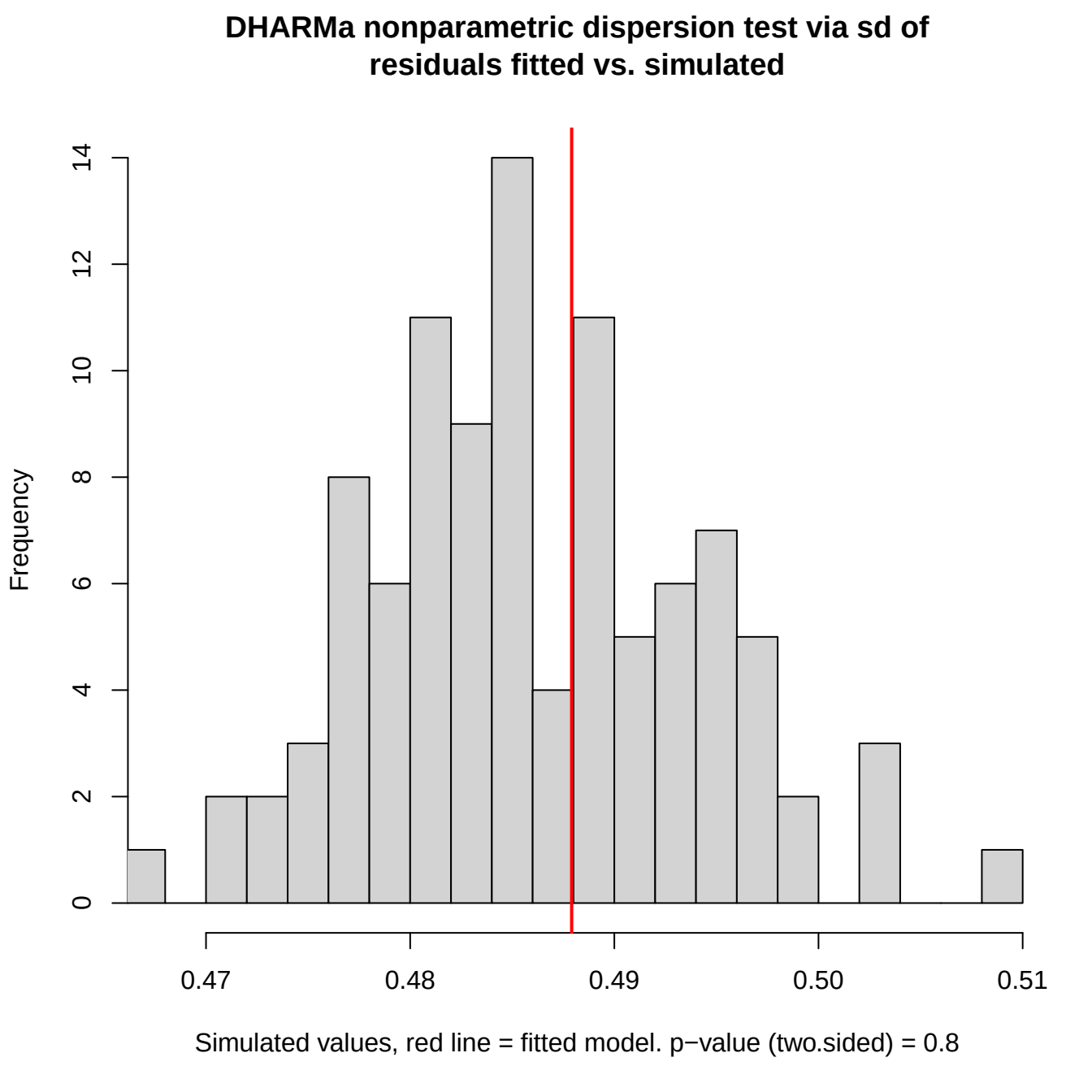

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

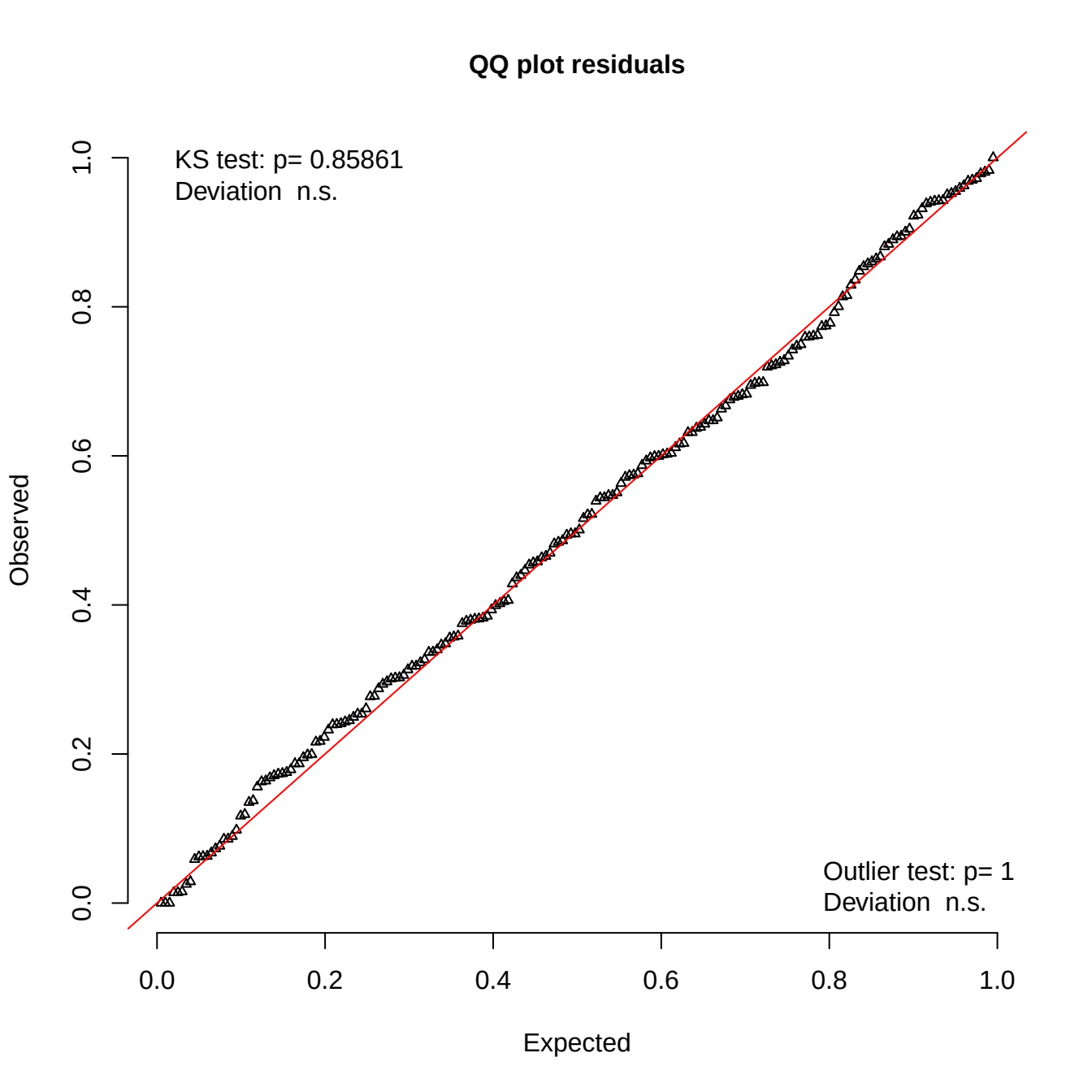

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

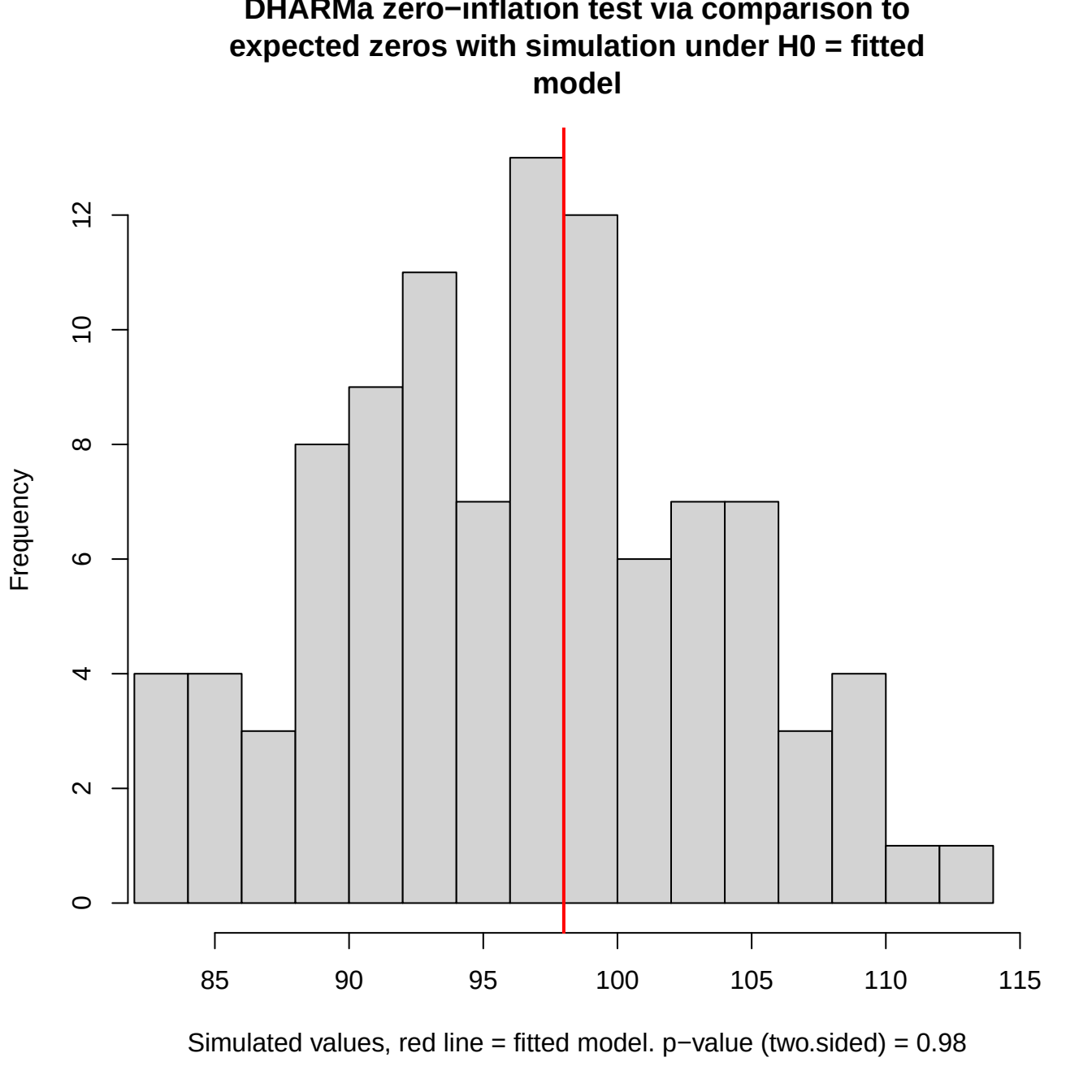

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
197
198
199
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

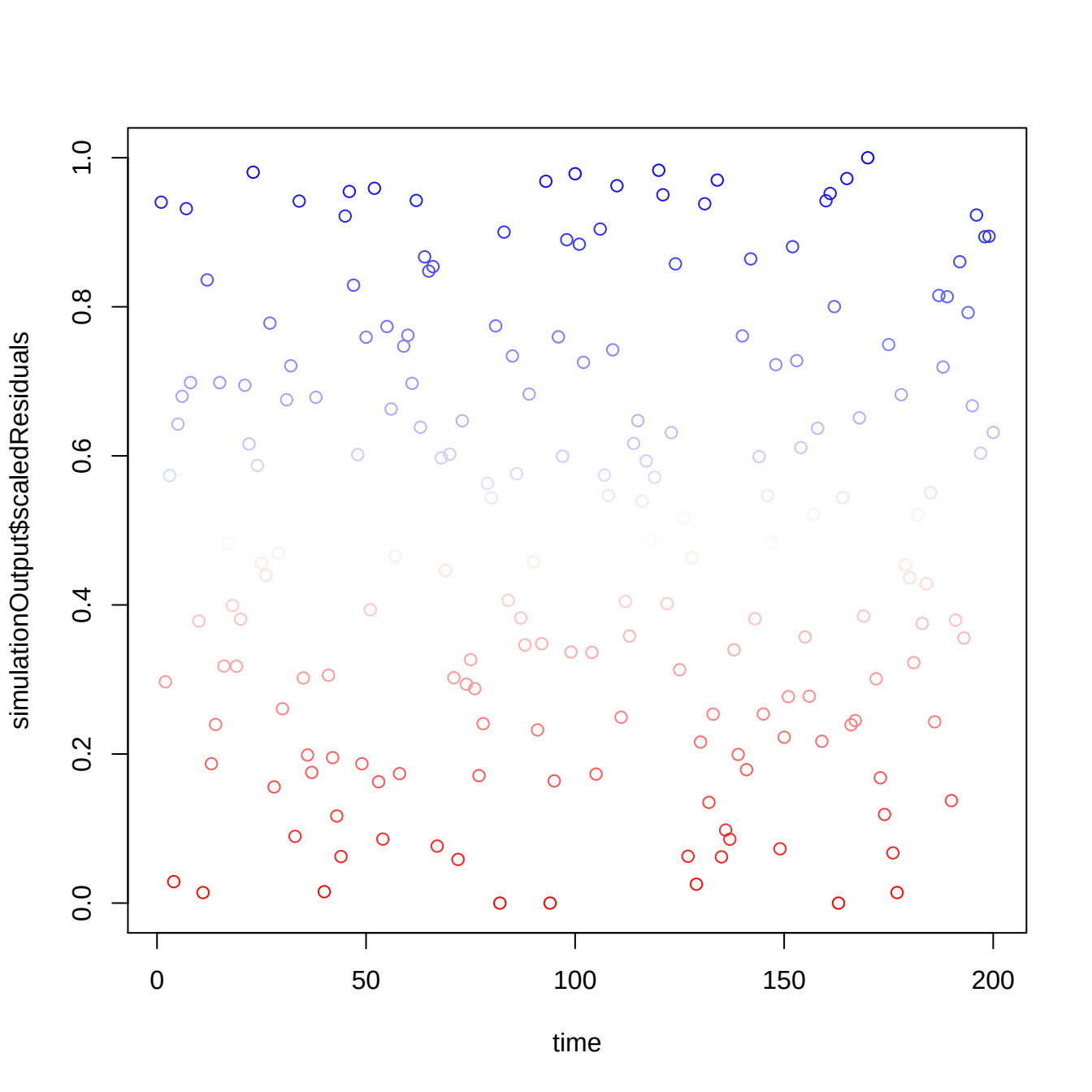

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

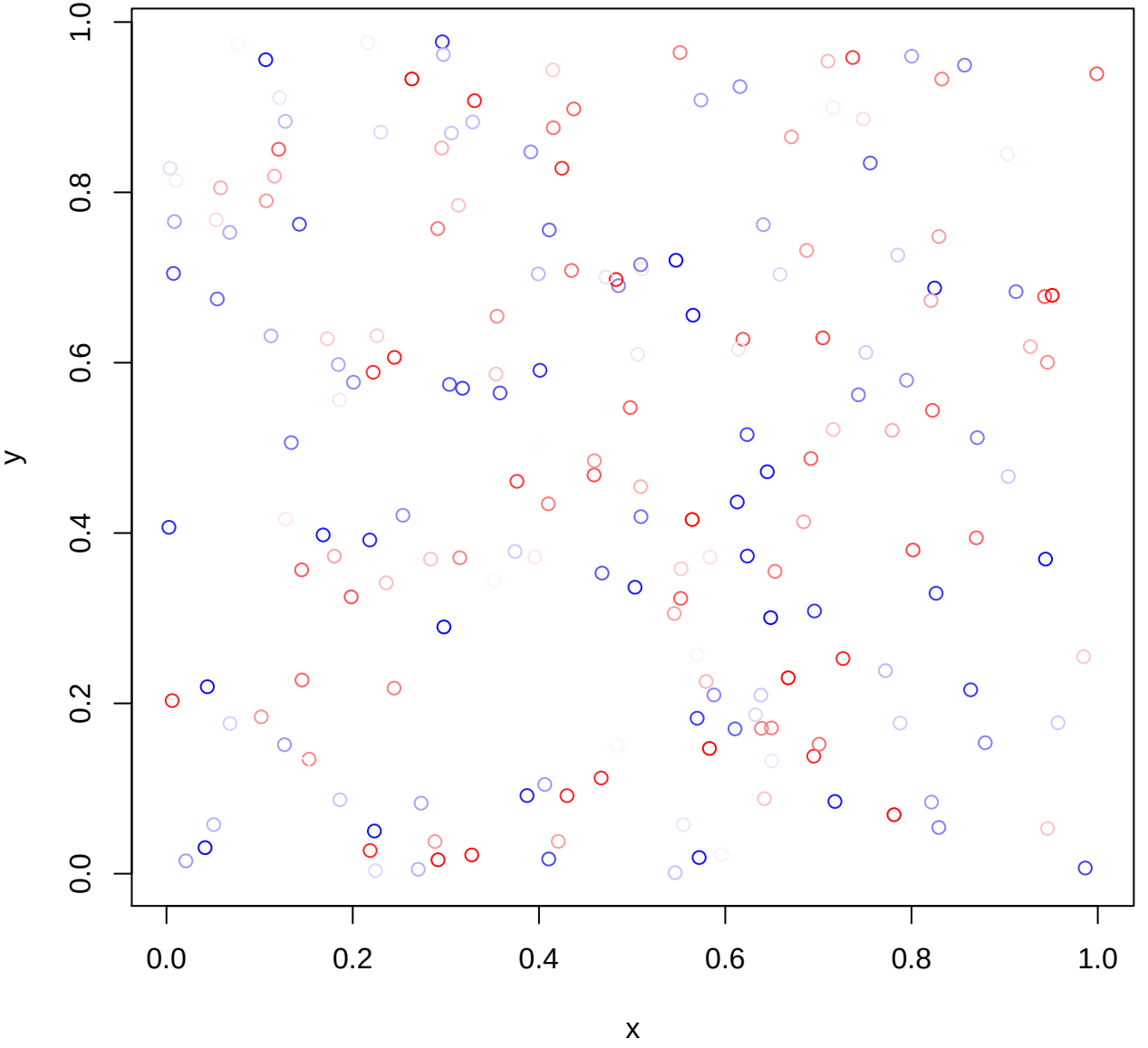

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

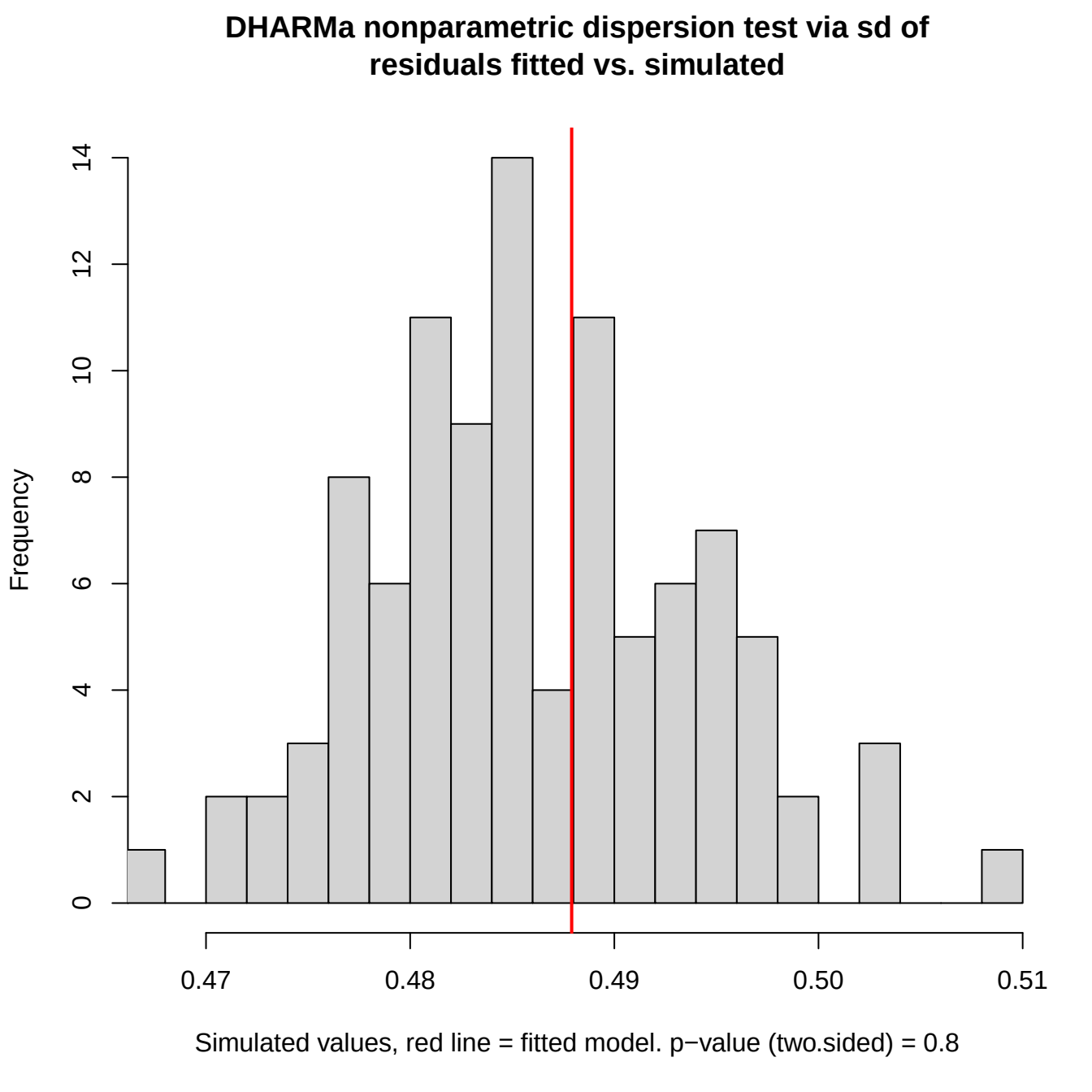

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

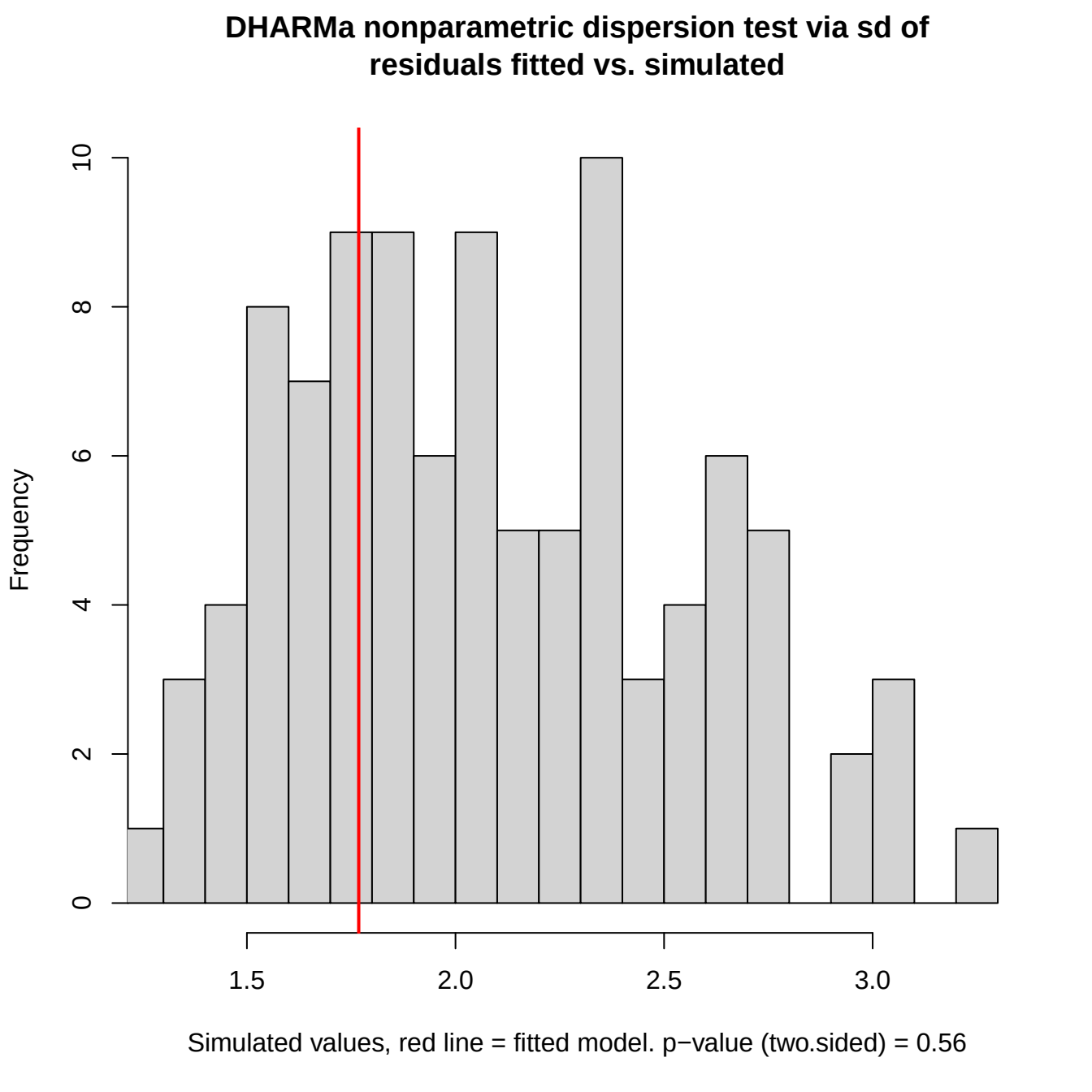

QQ plot residuals
KS test: p= 0.85861
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0


DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
85
90
95
100
105
110
115
Simulated values, red line = fitted model. p−value (two.sided) = 0.98

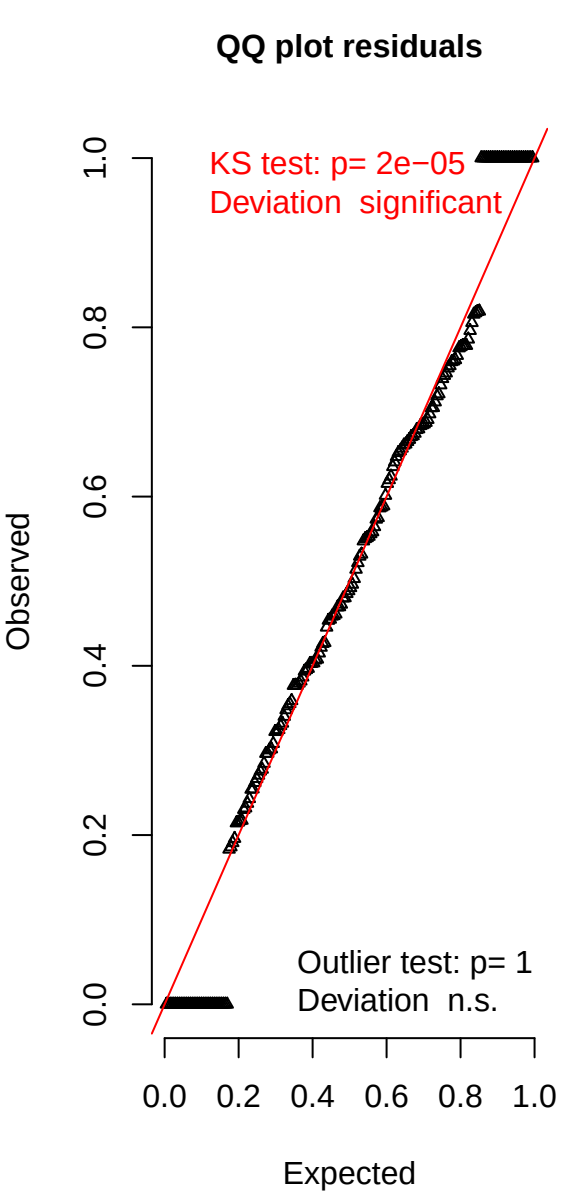

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

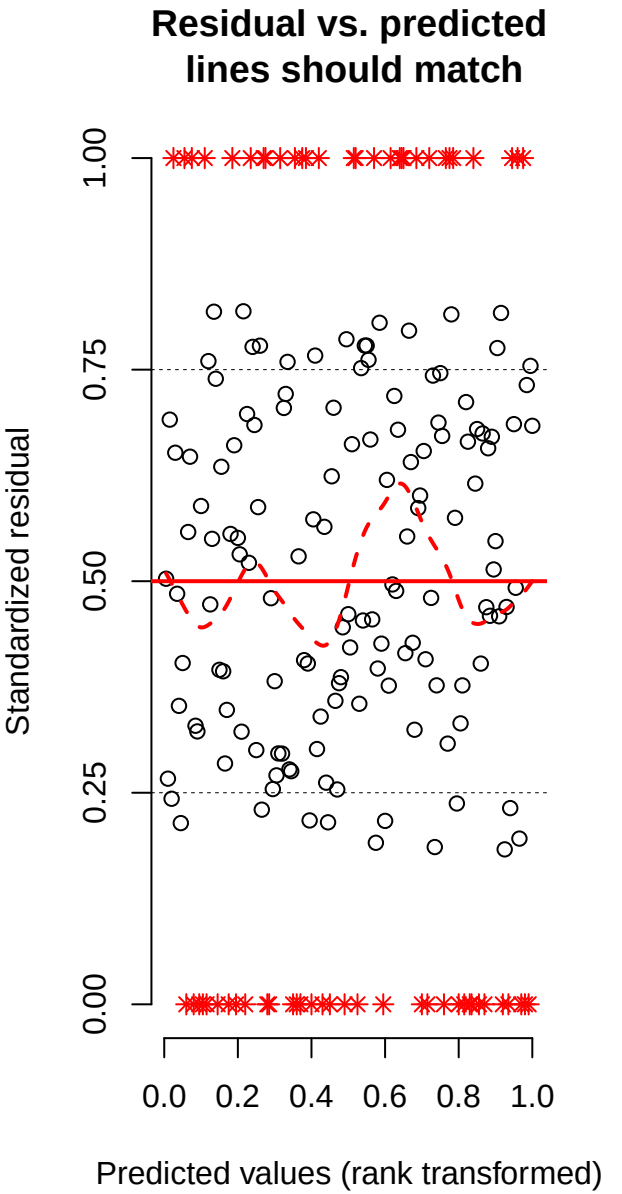

y
x
0.0
0.2
0.4
0.6
0.8
1.0

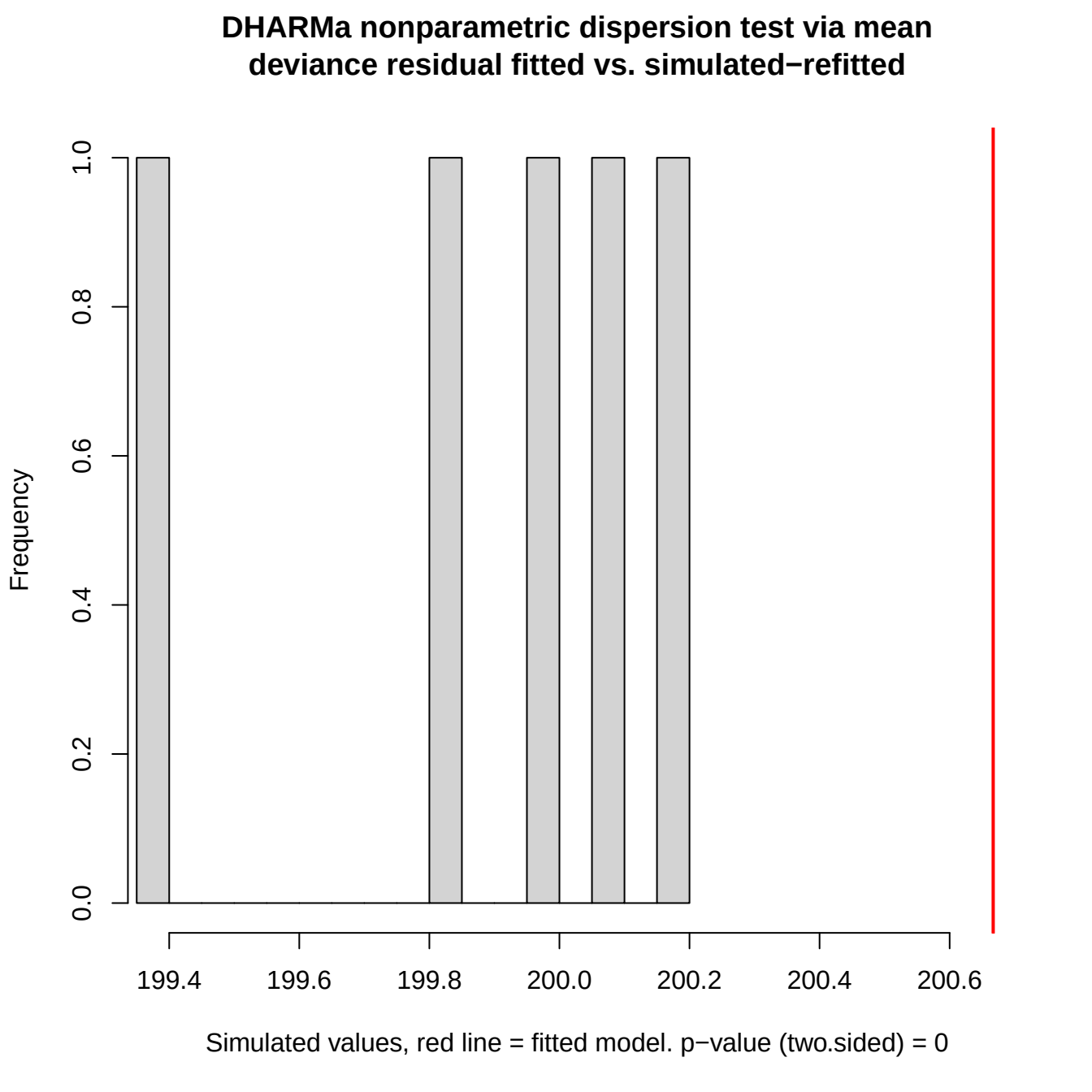

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.47
0.48
0.49
0.50
0.51
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

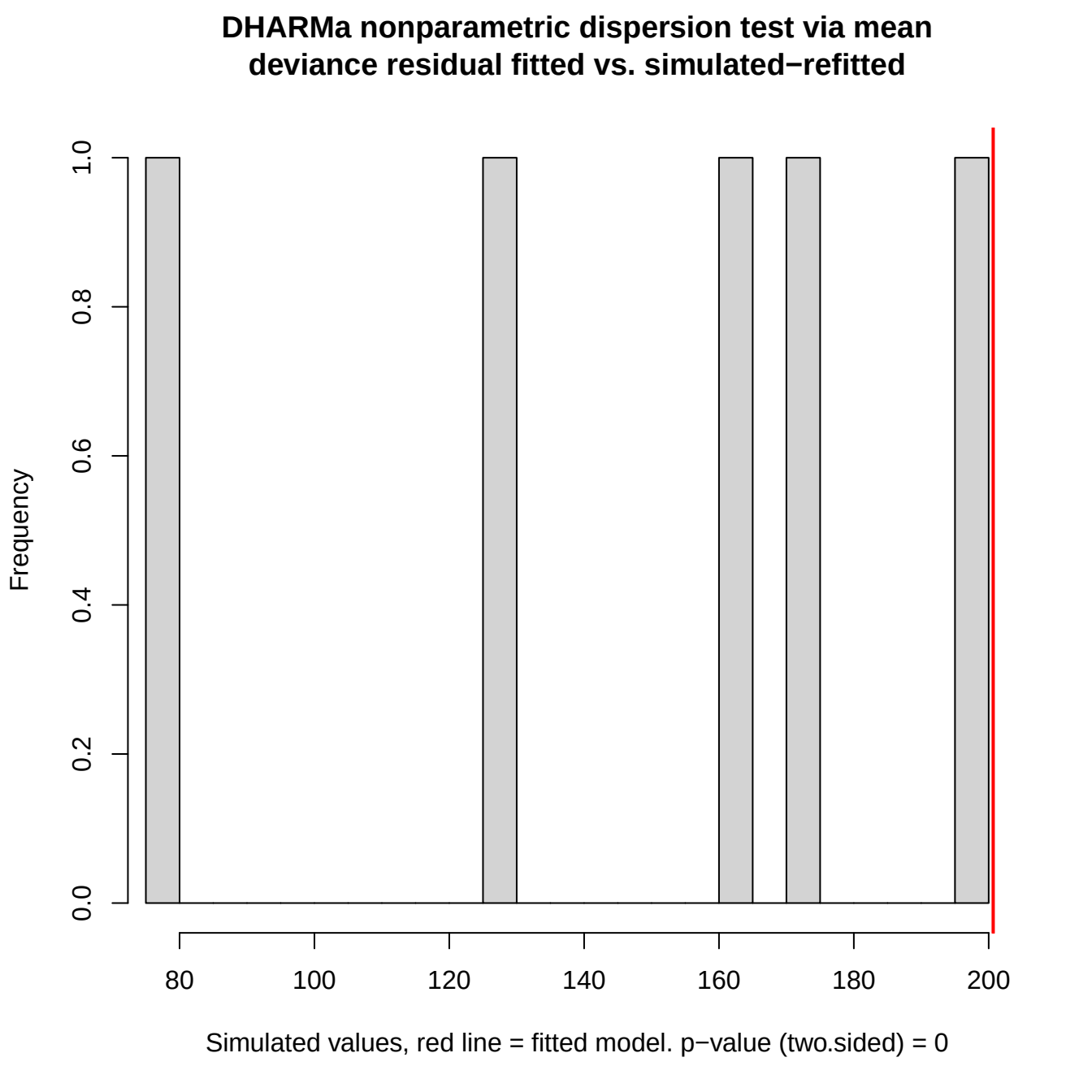

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

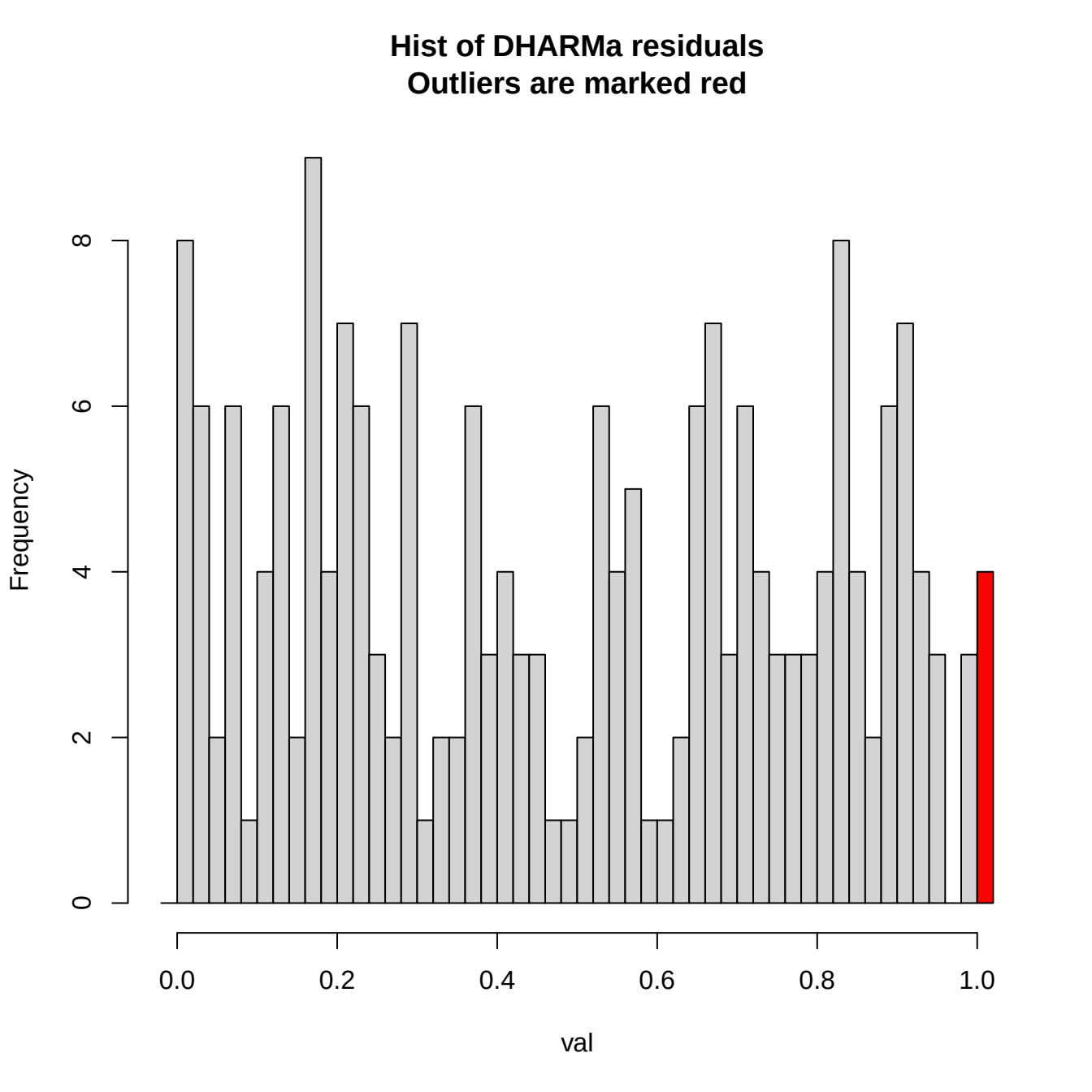
DHARMa scaled residual plots

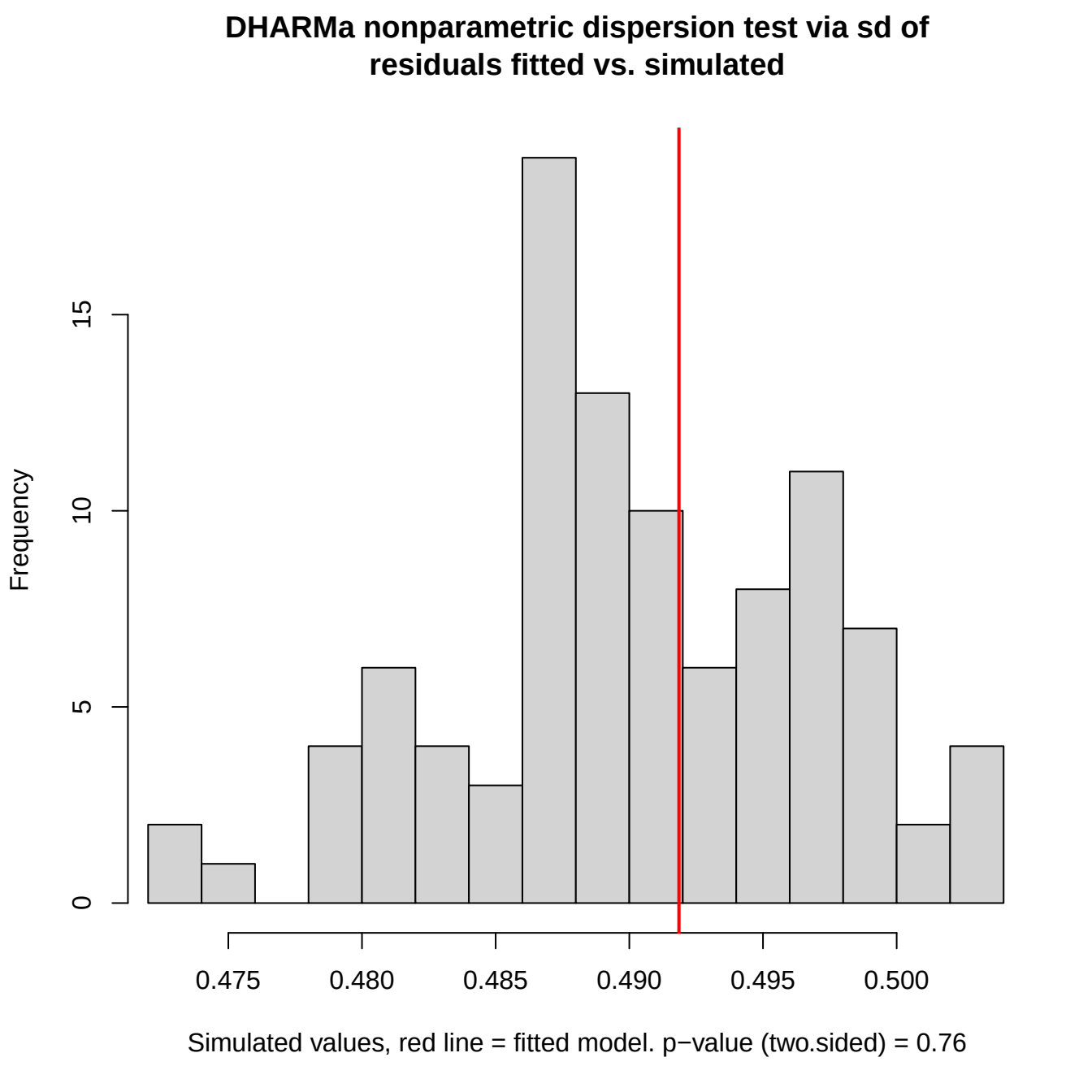


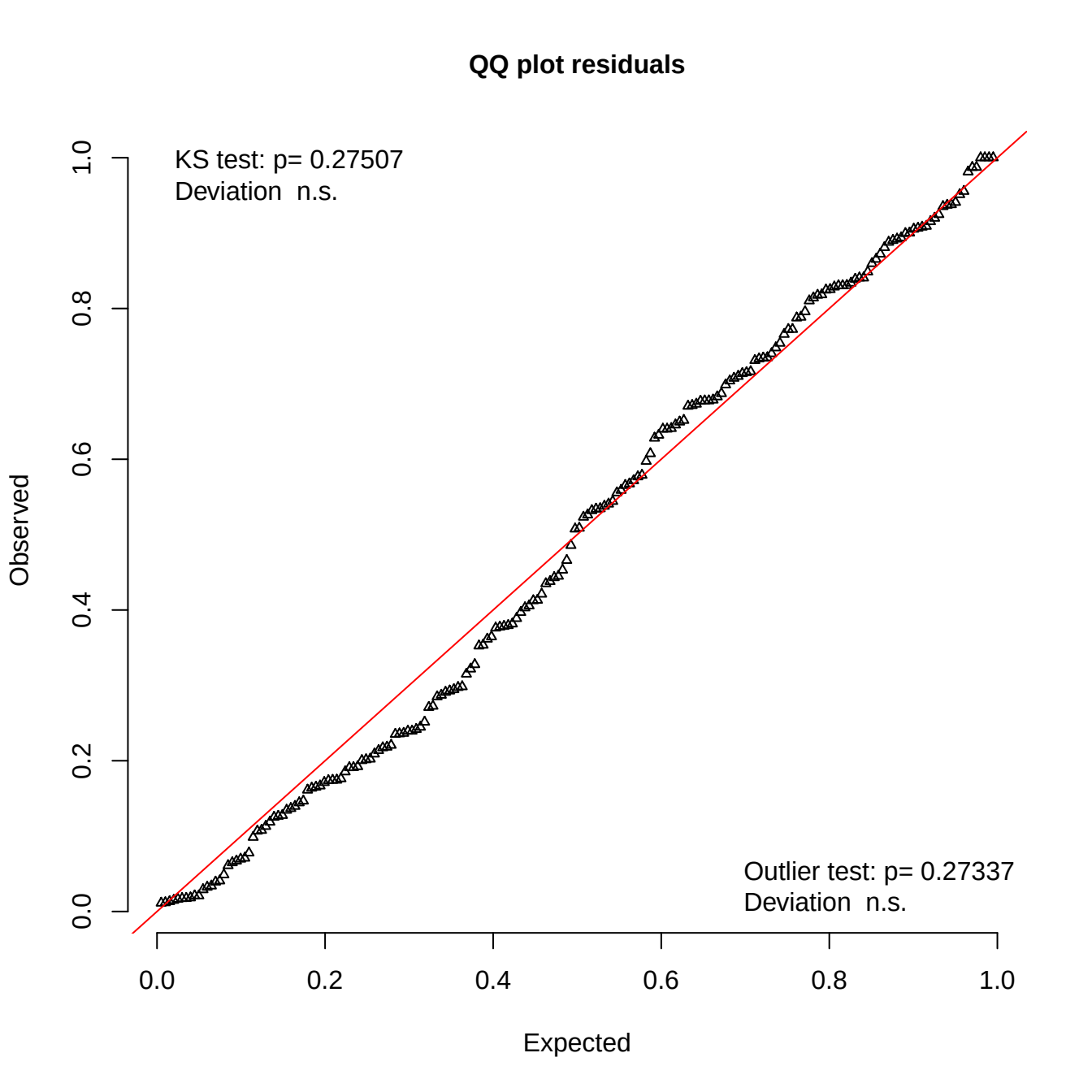



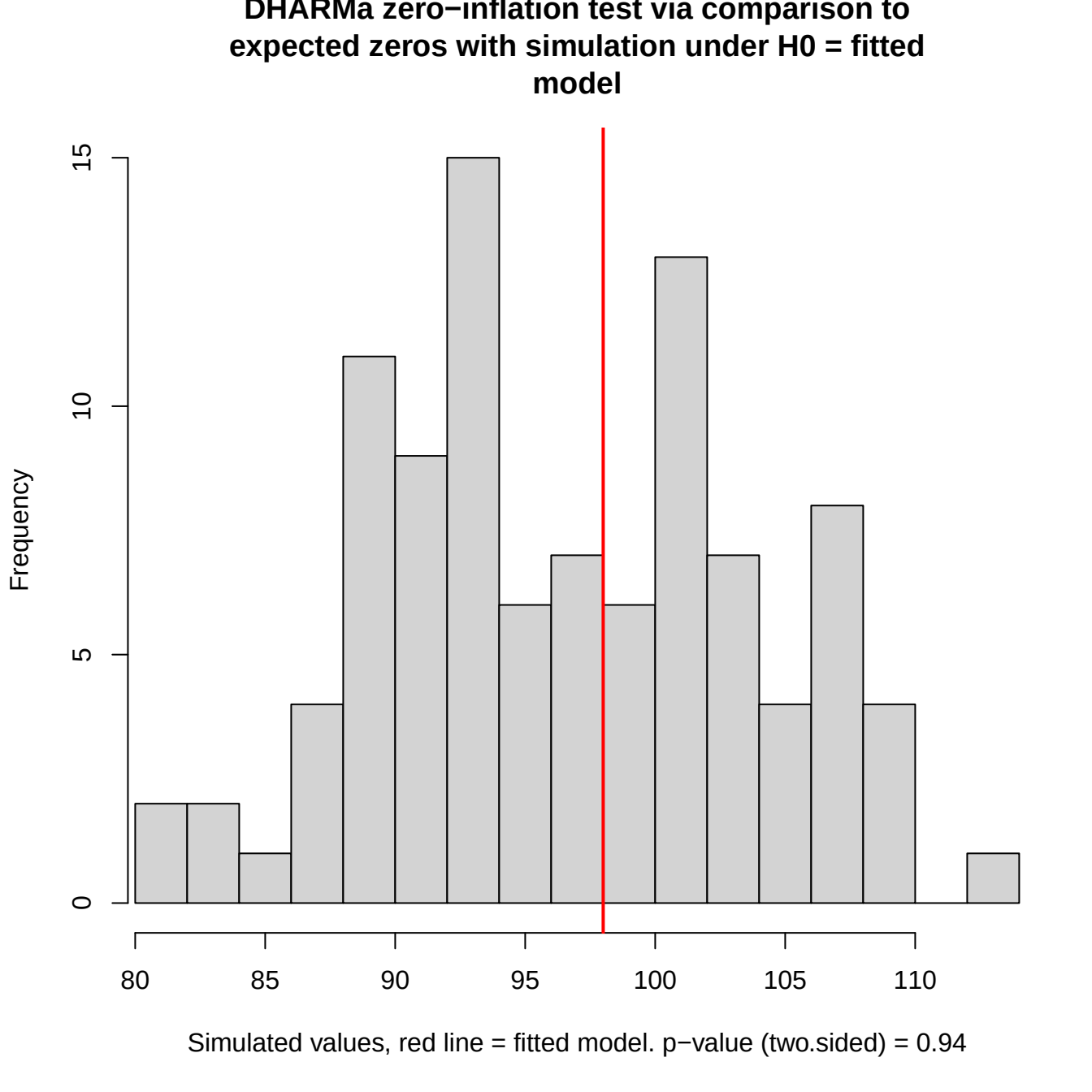

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
199.4
199.6
199.8
200.0
200.2
200.4
200.6
Simulated values, red line = fitted model. p−value (two.sided) = 0

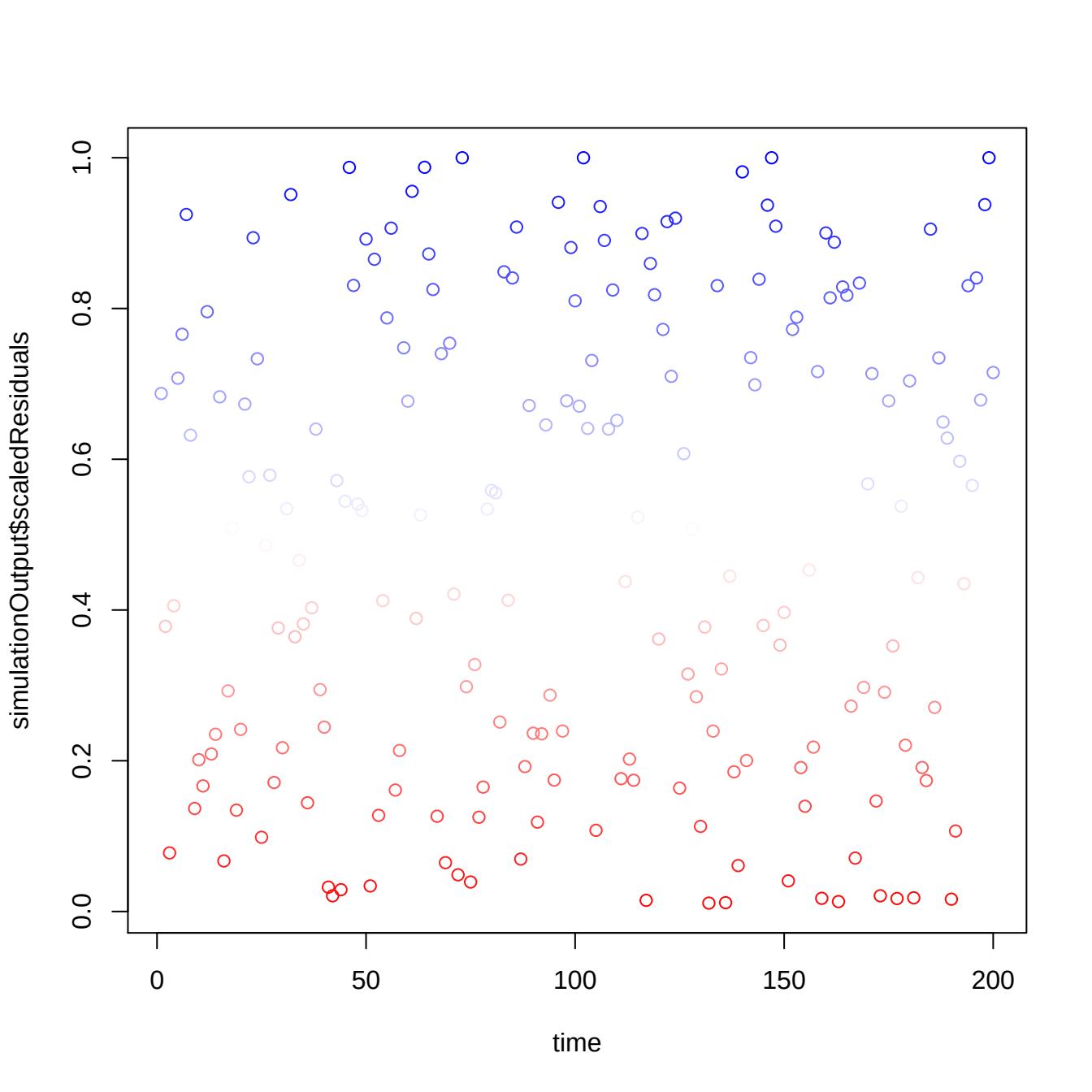

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

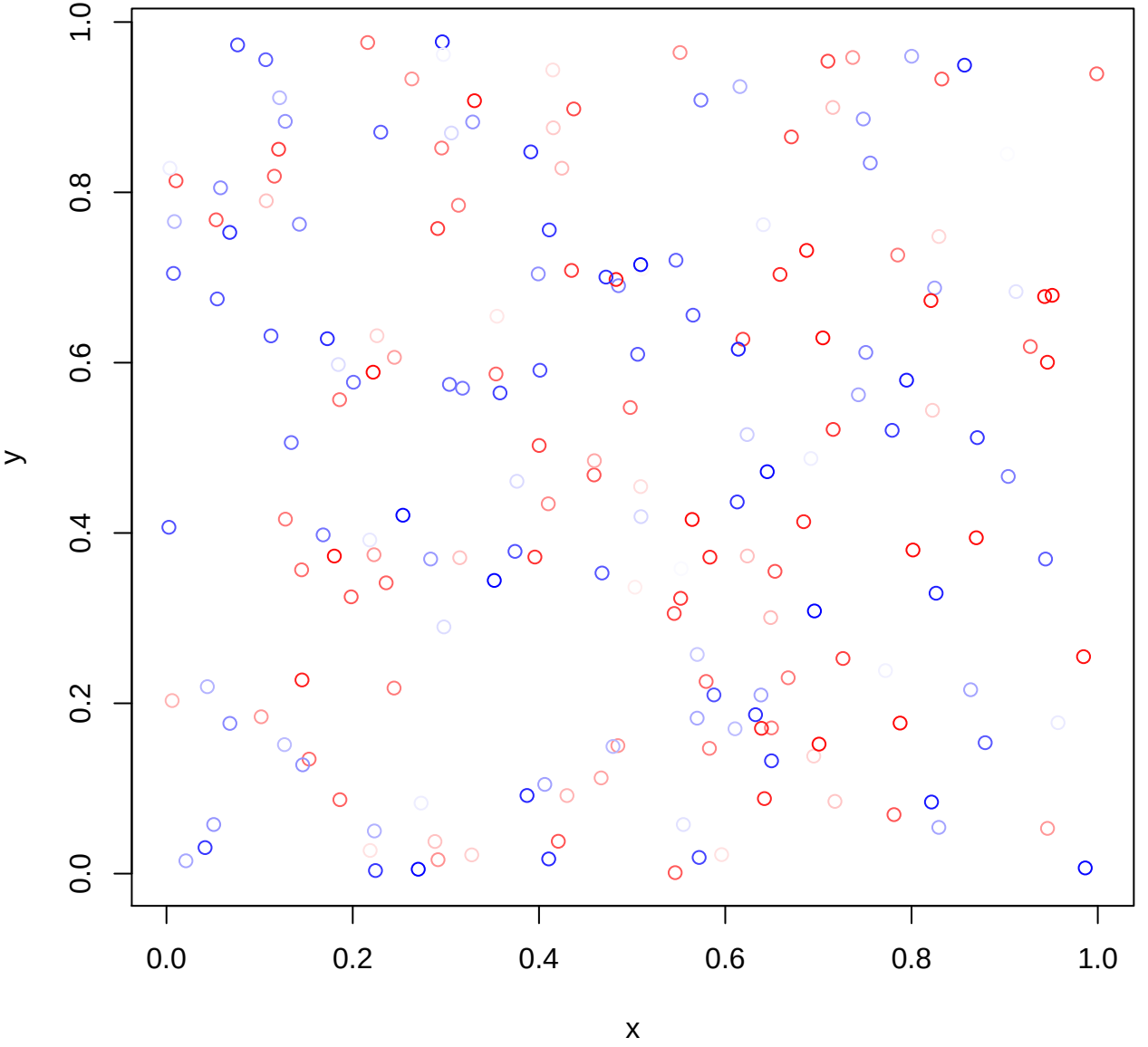

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

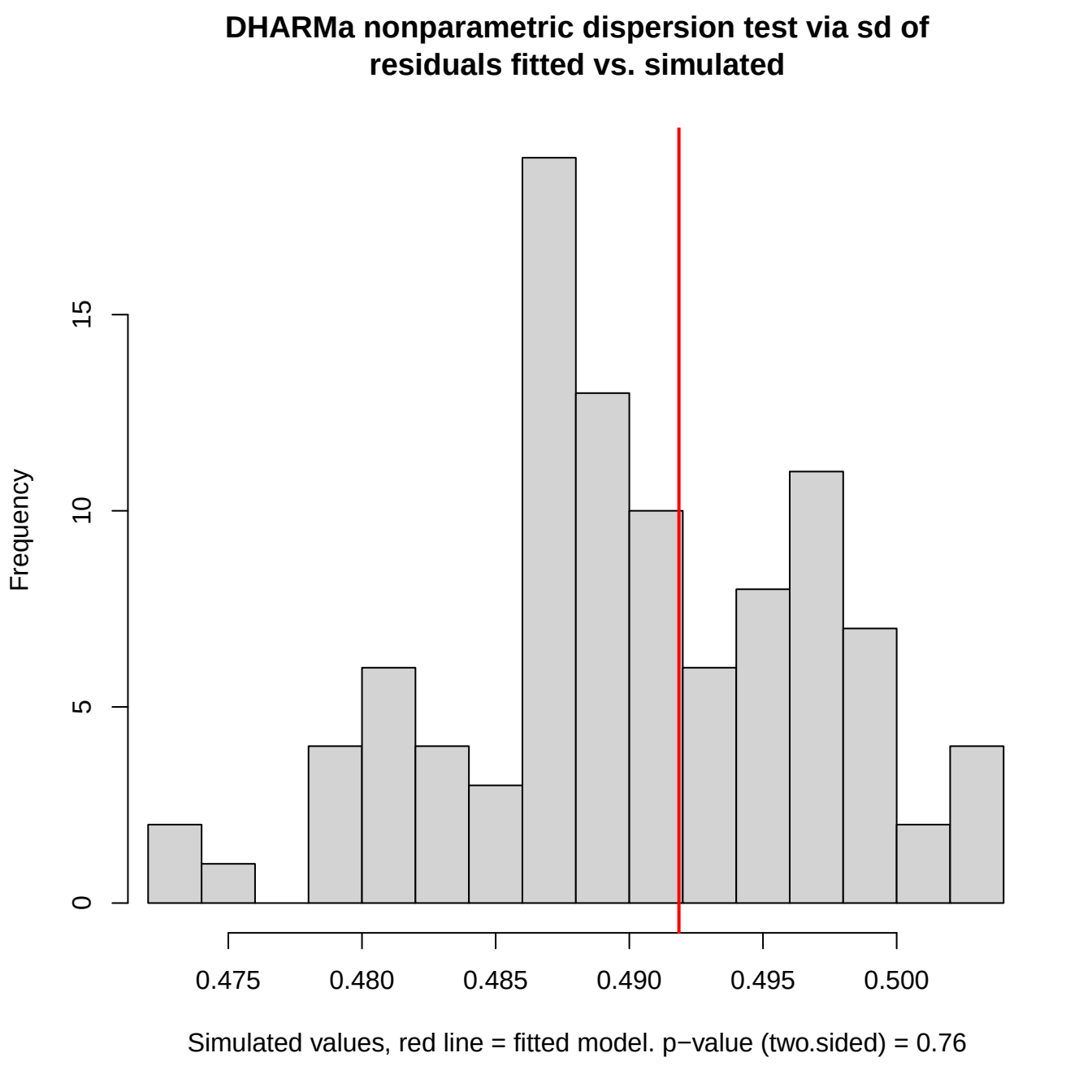

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

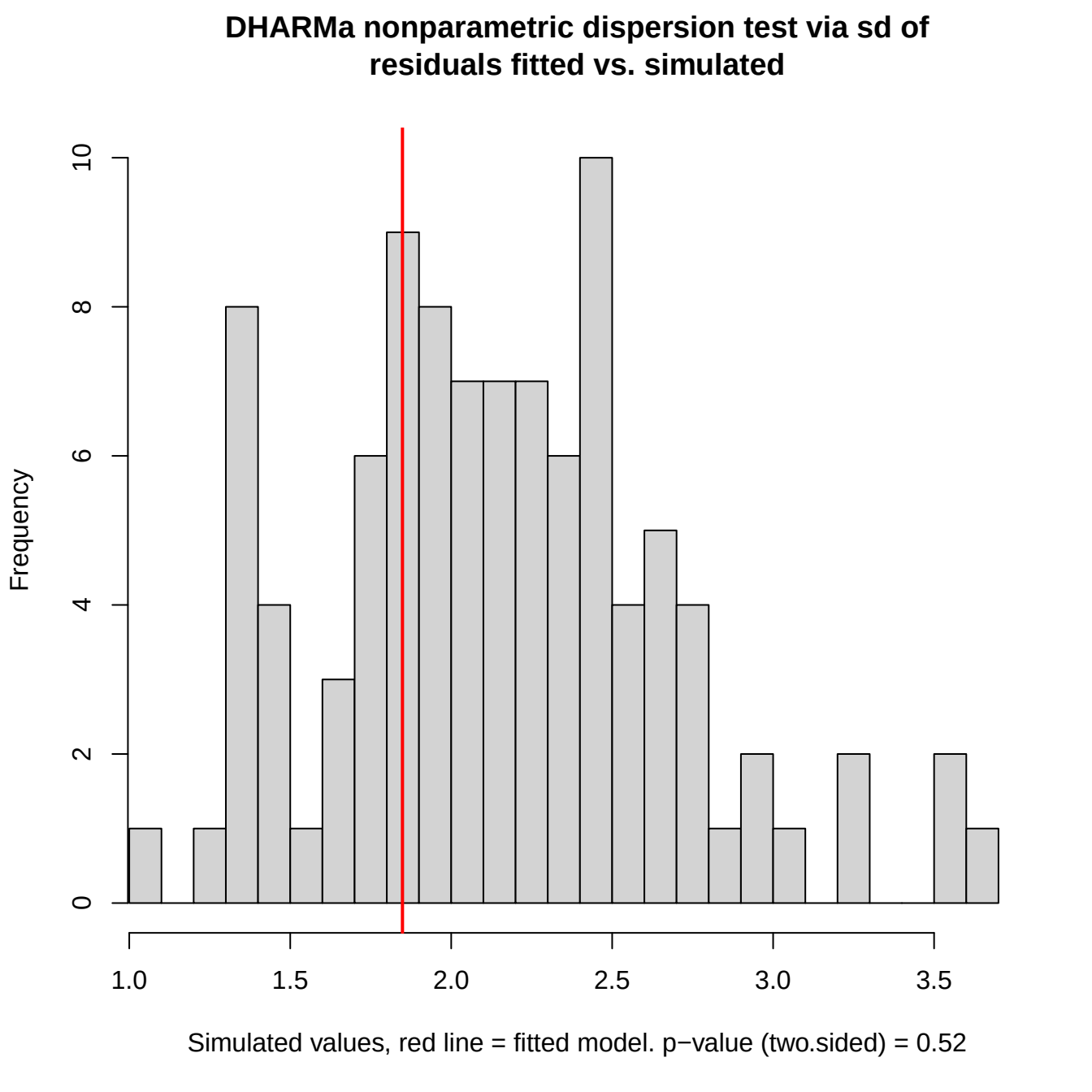

QQ plot residuals
KS test: p= 0.27507
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

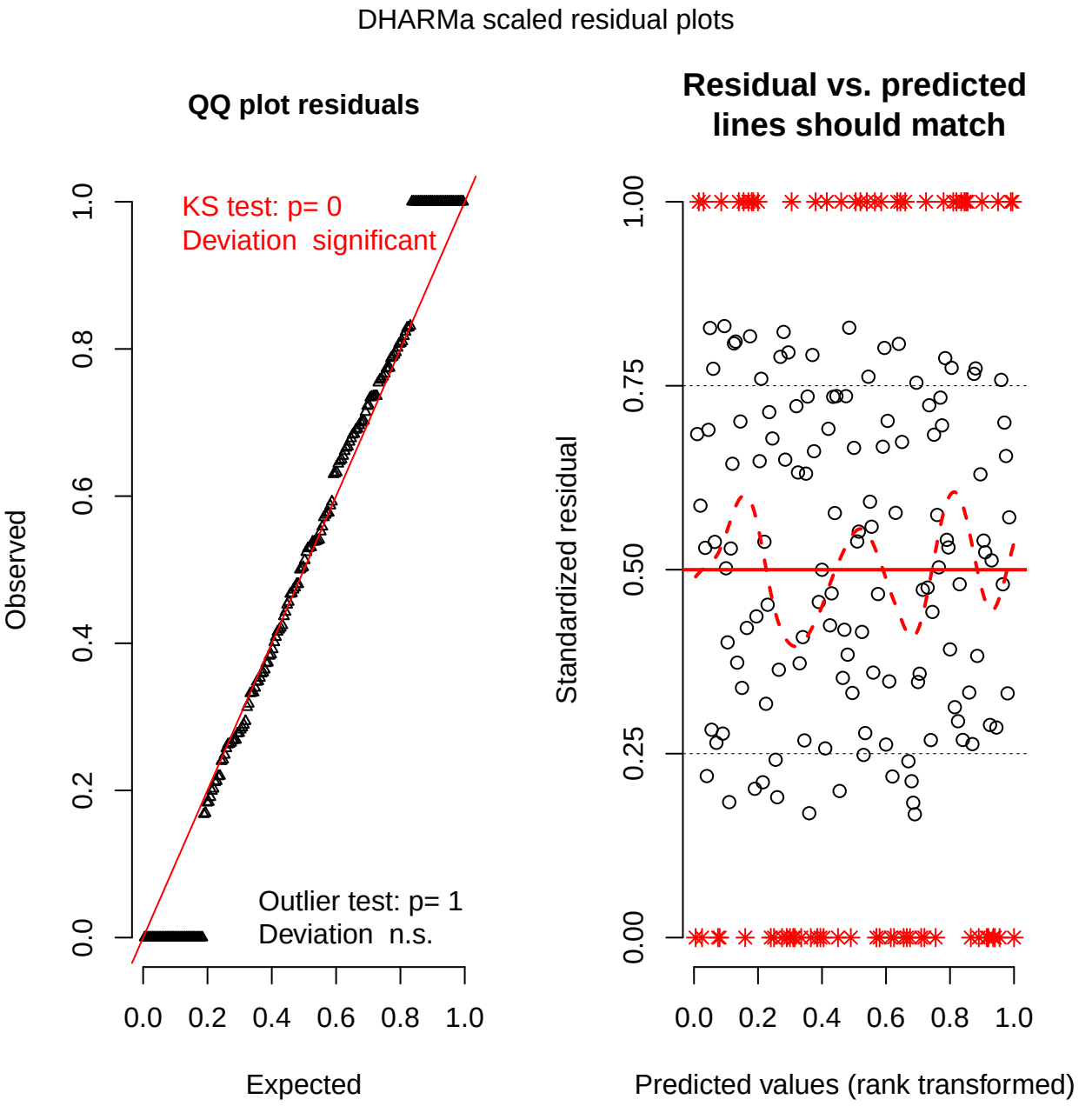

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

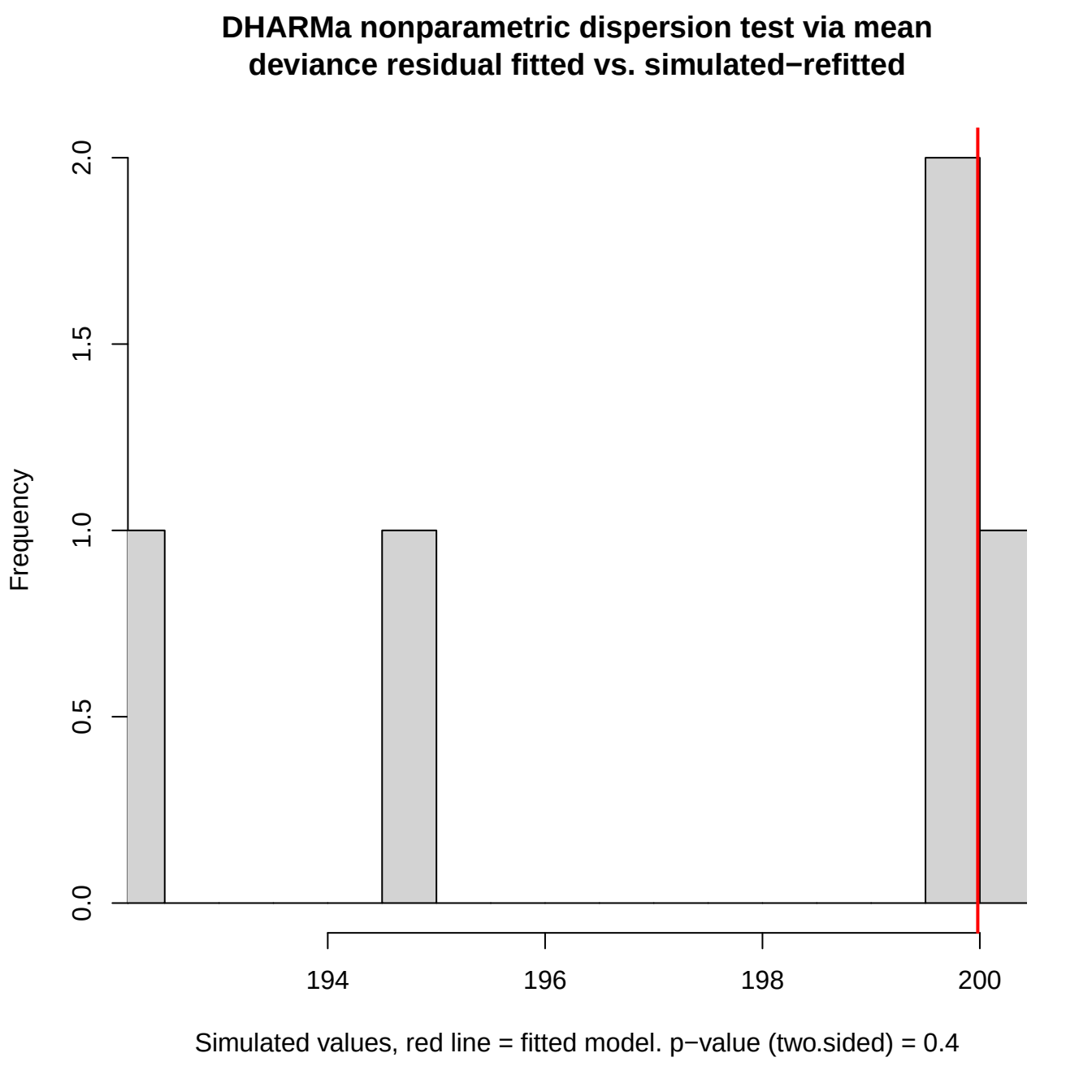

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

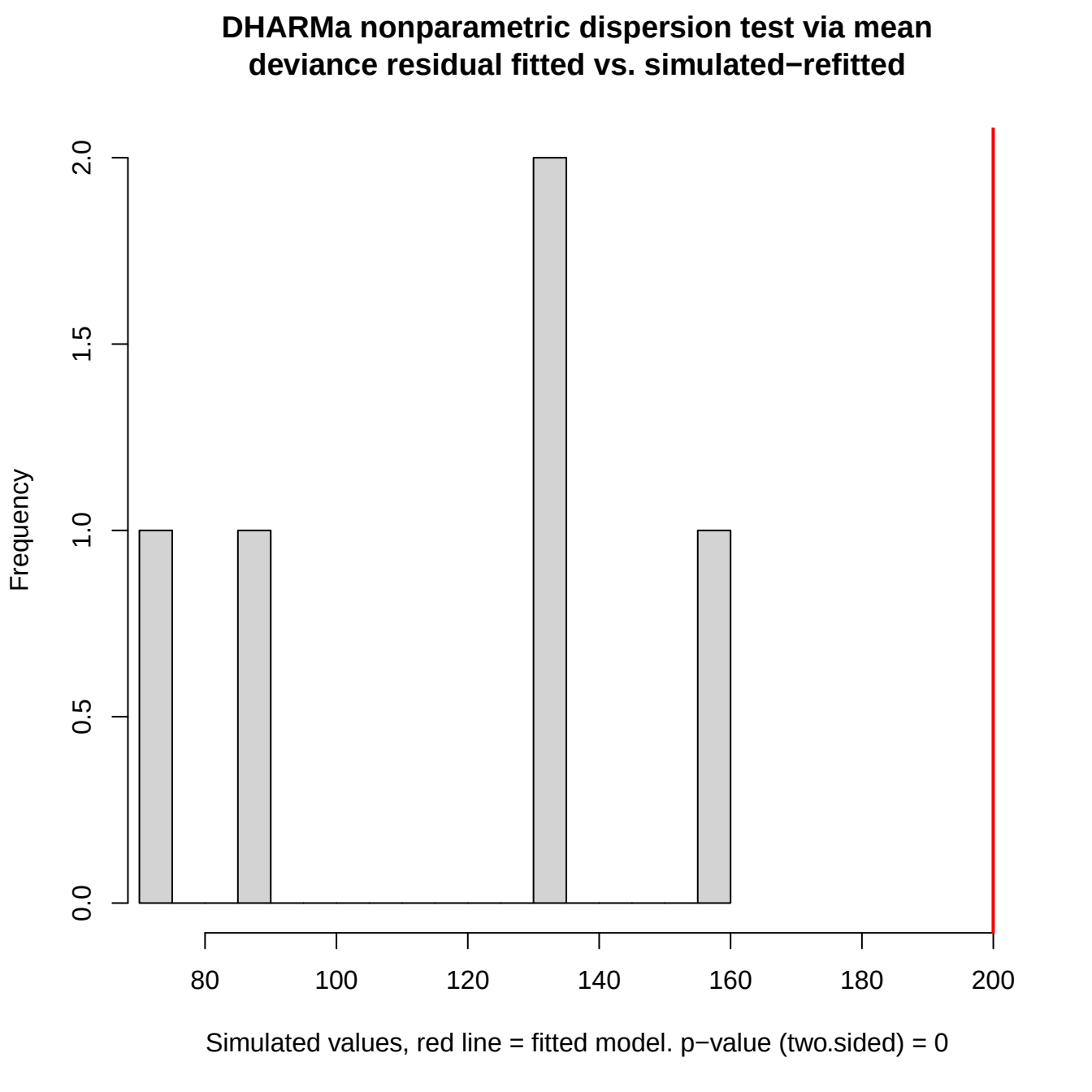

y
x
0.0
0.2
0.4
0.6
0.8
1.0

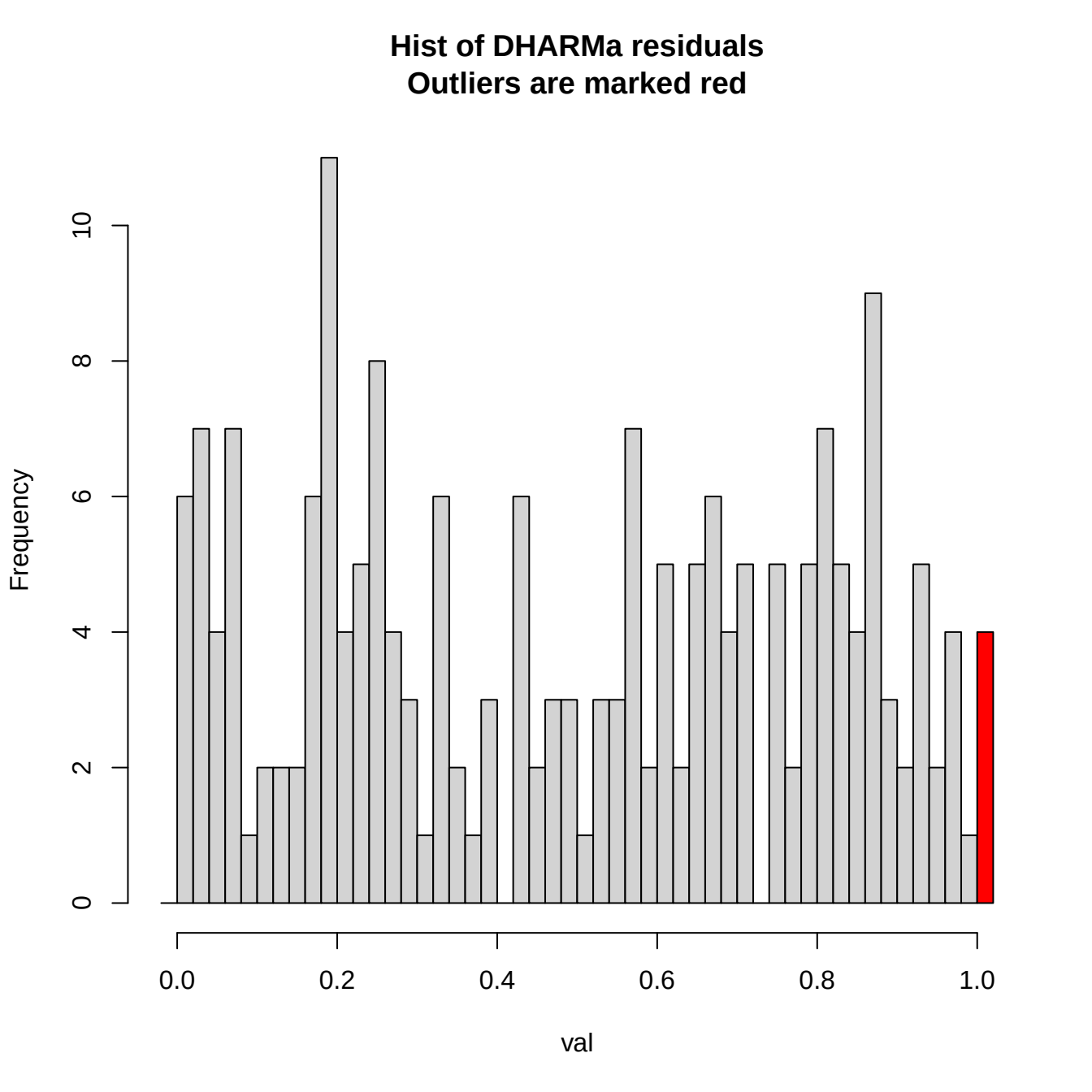

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

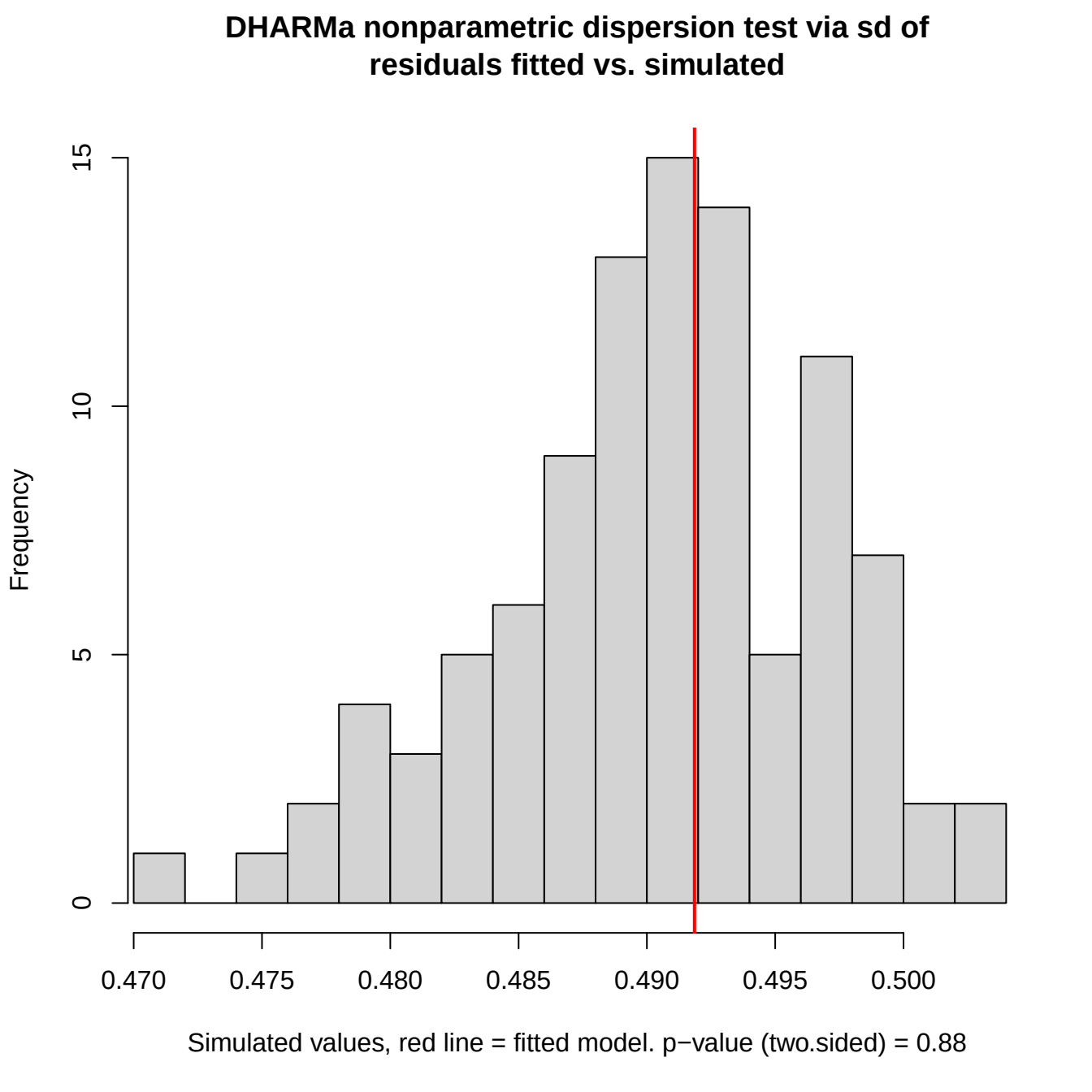

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

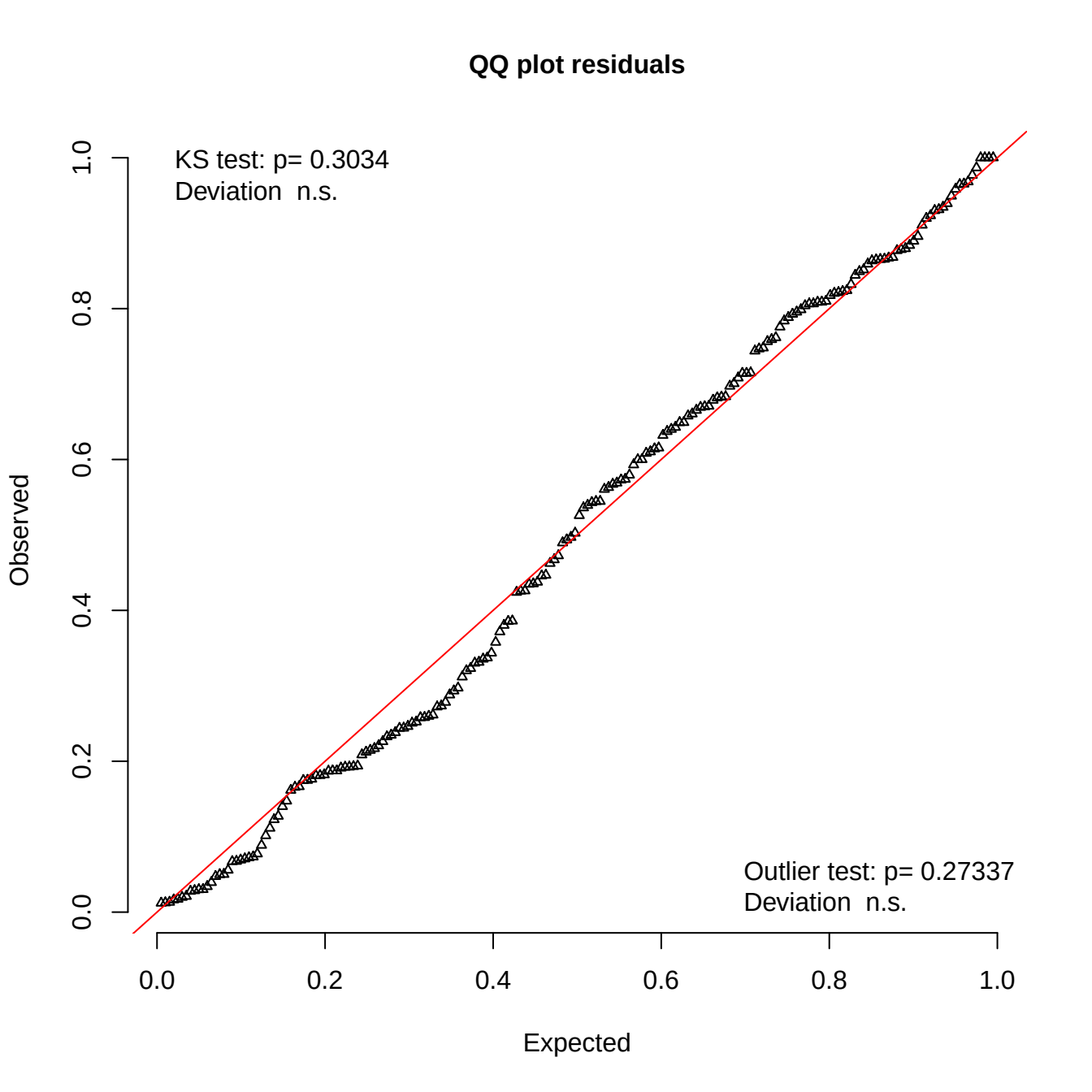

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

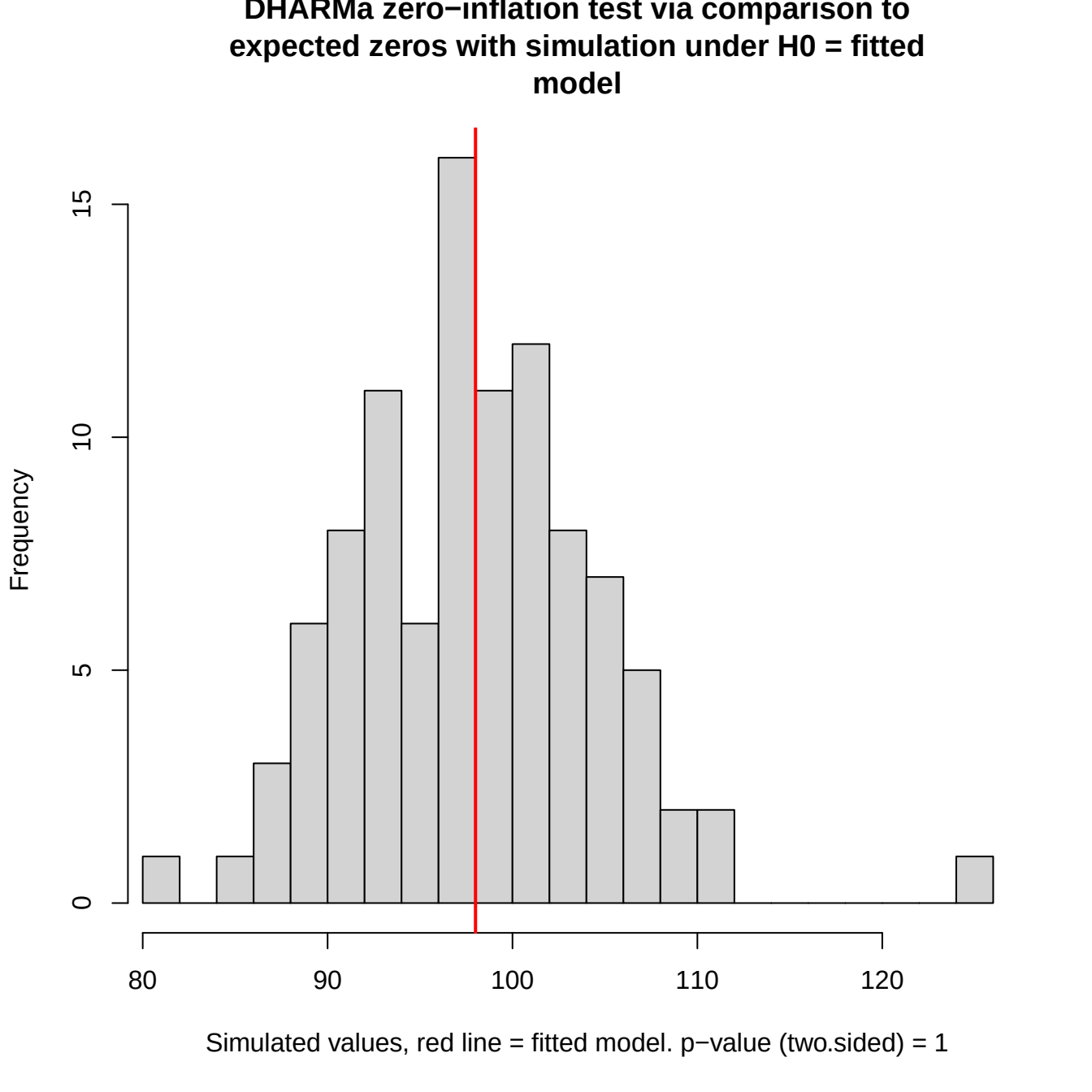

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

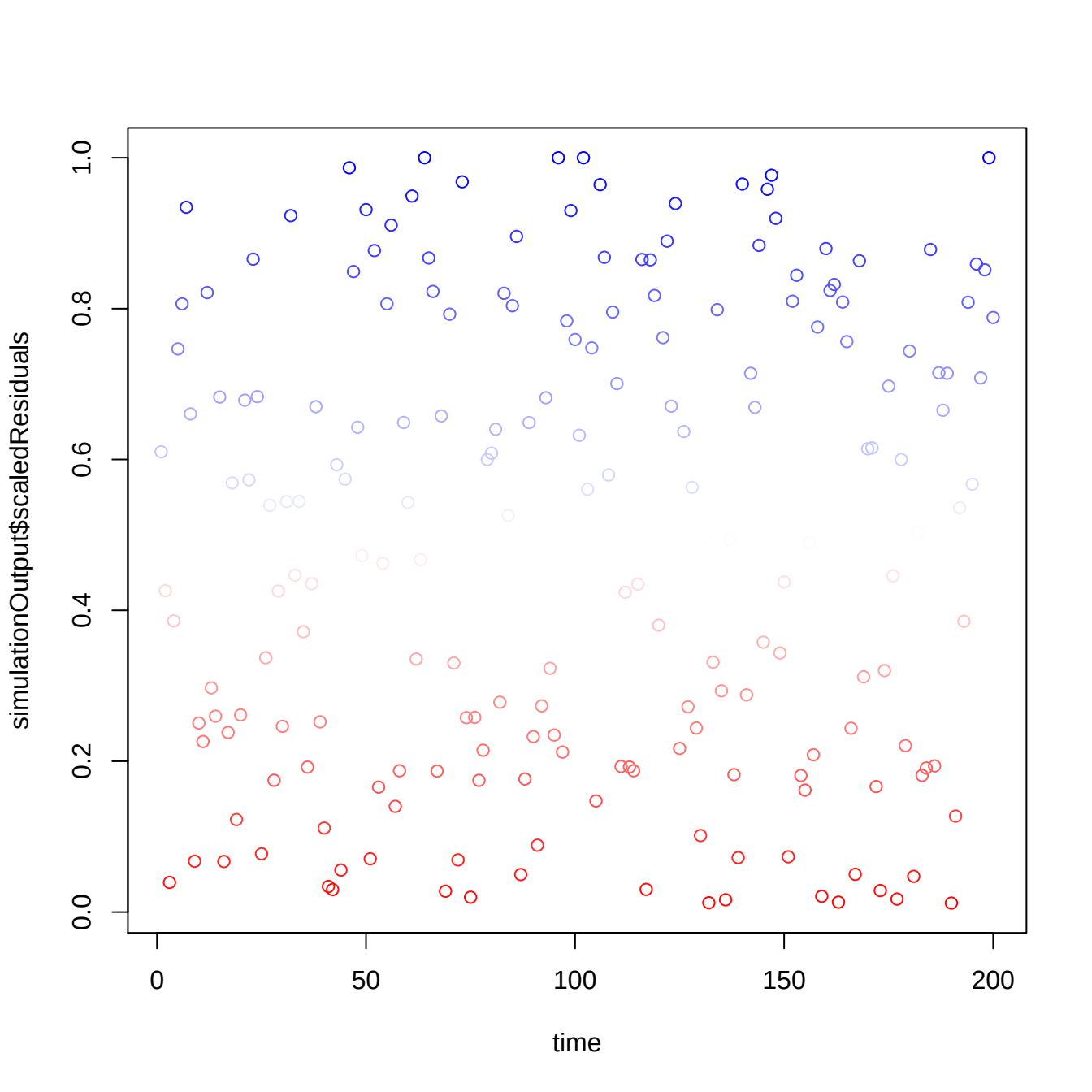

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

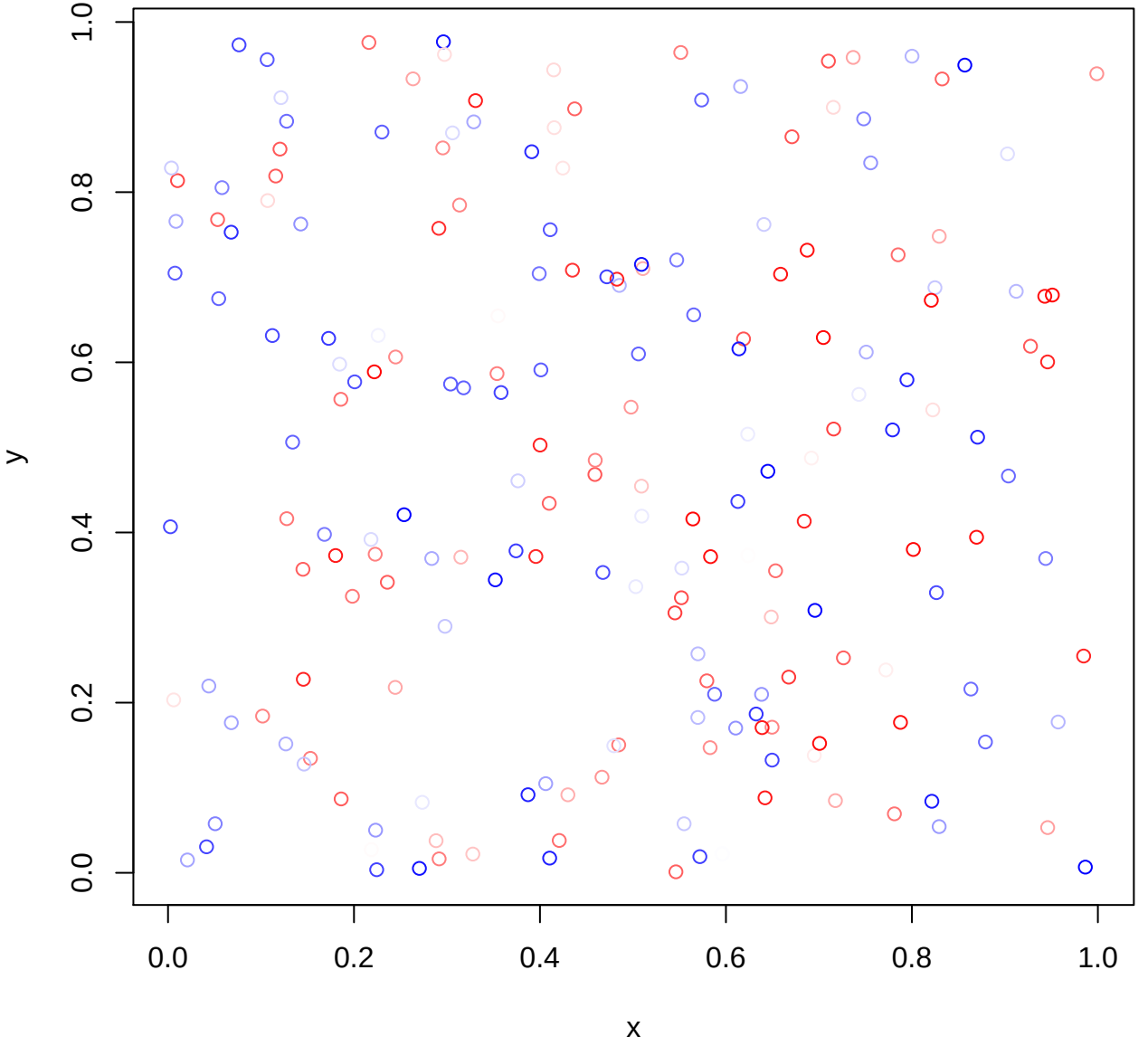

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

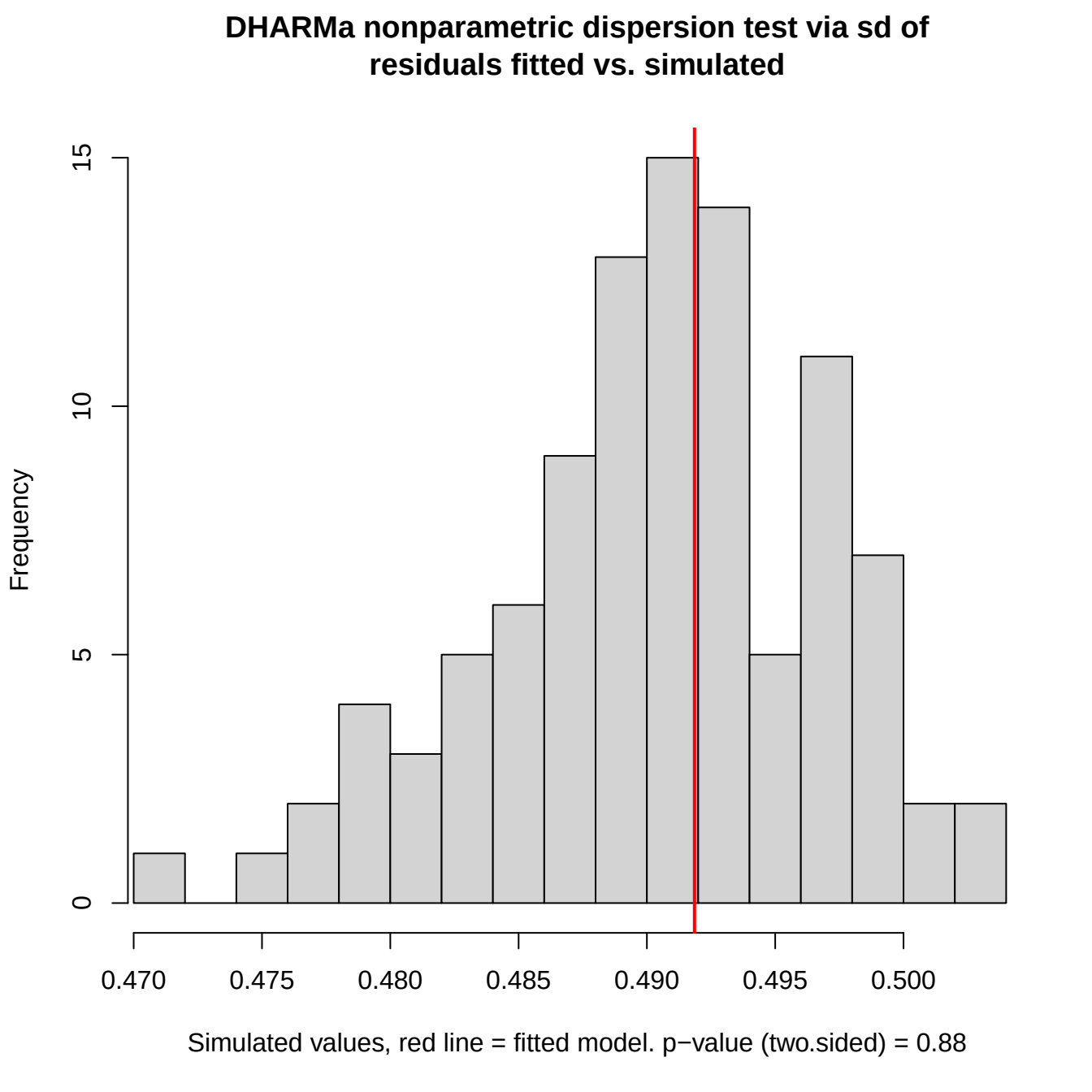

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.470
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.88

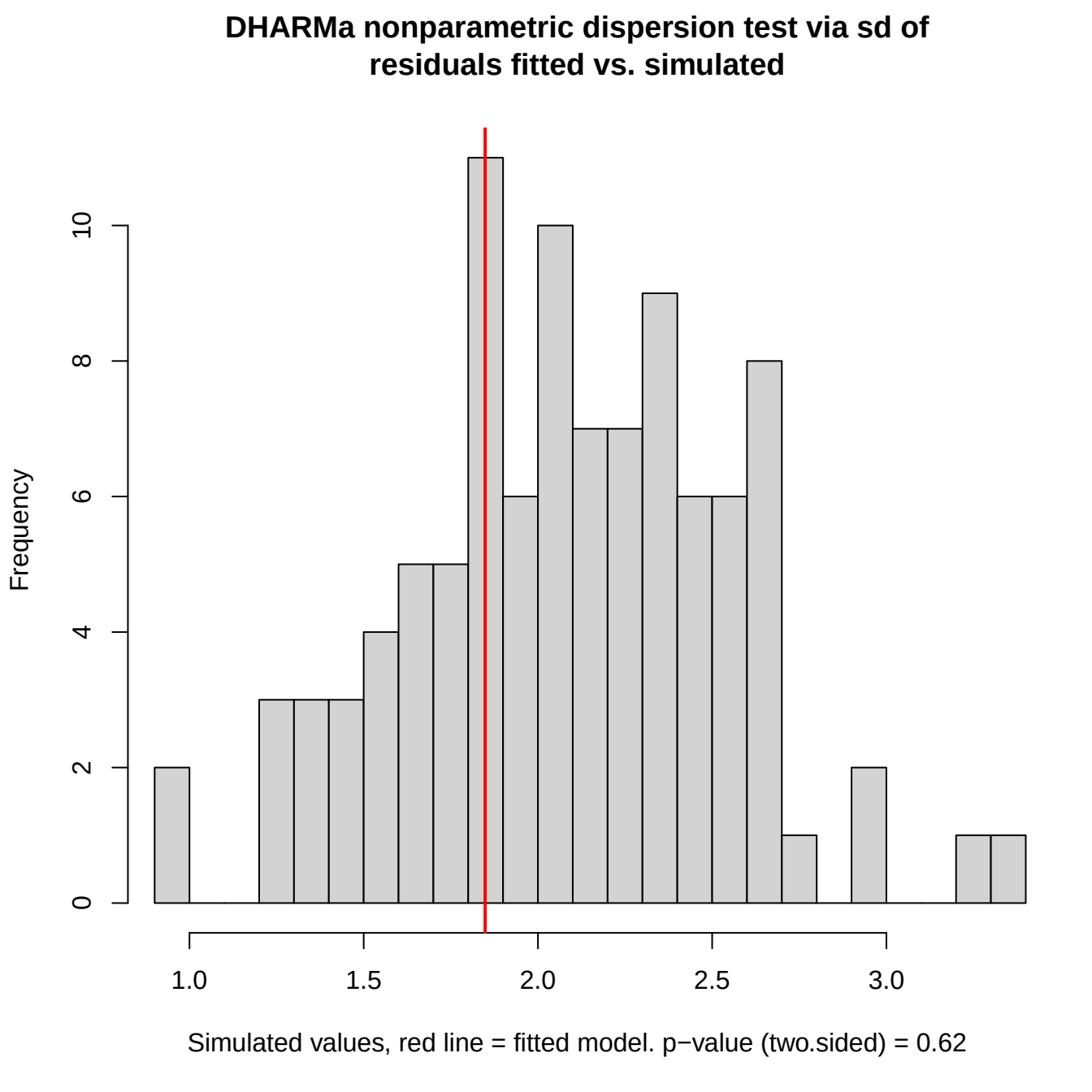

QQ plot residuals
KS test: p= 0.3034
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

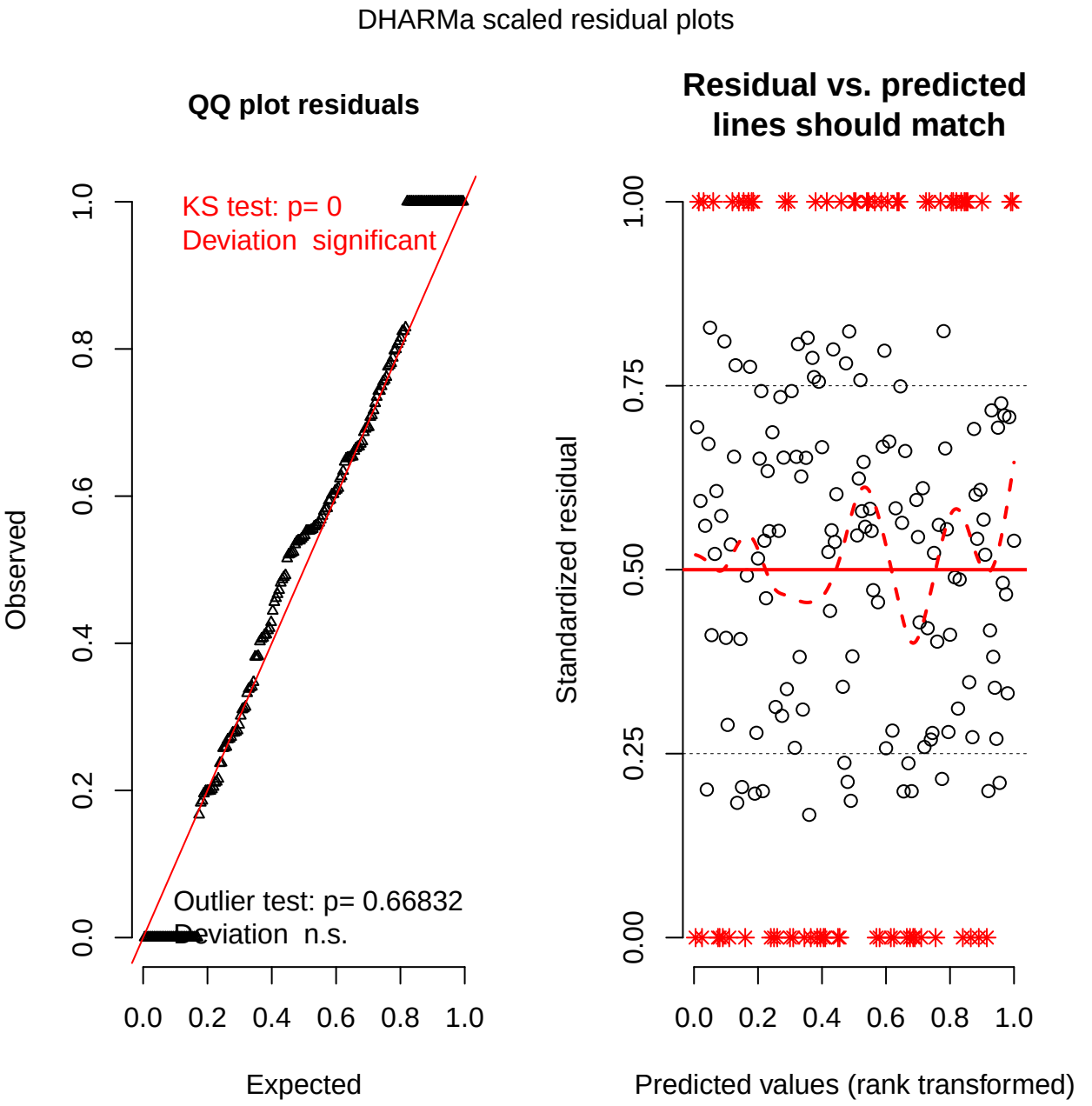

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
80
90
100
110
120
Simulated values, red line = fitted model. p−value (two.sided) = 1

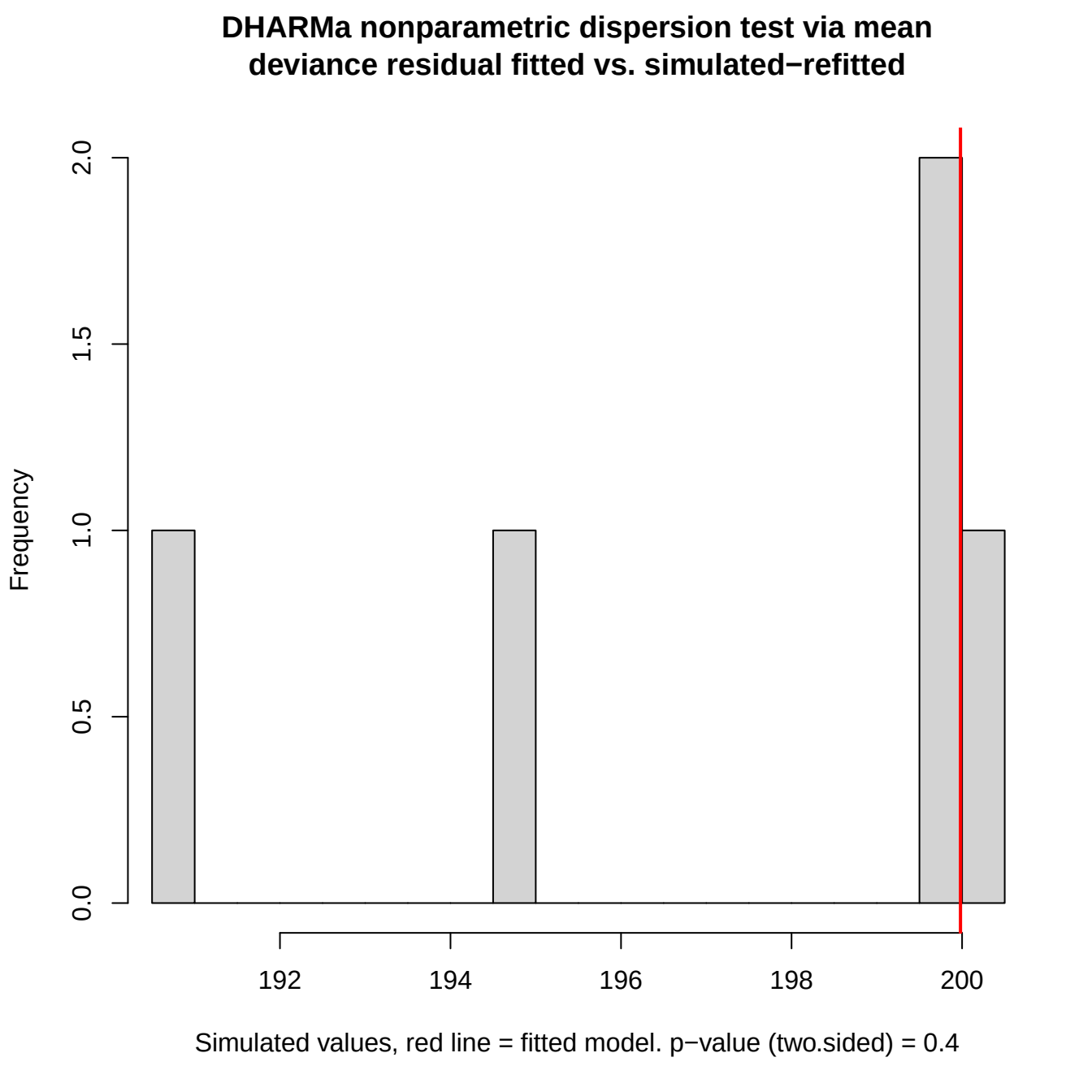

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

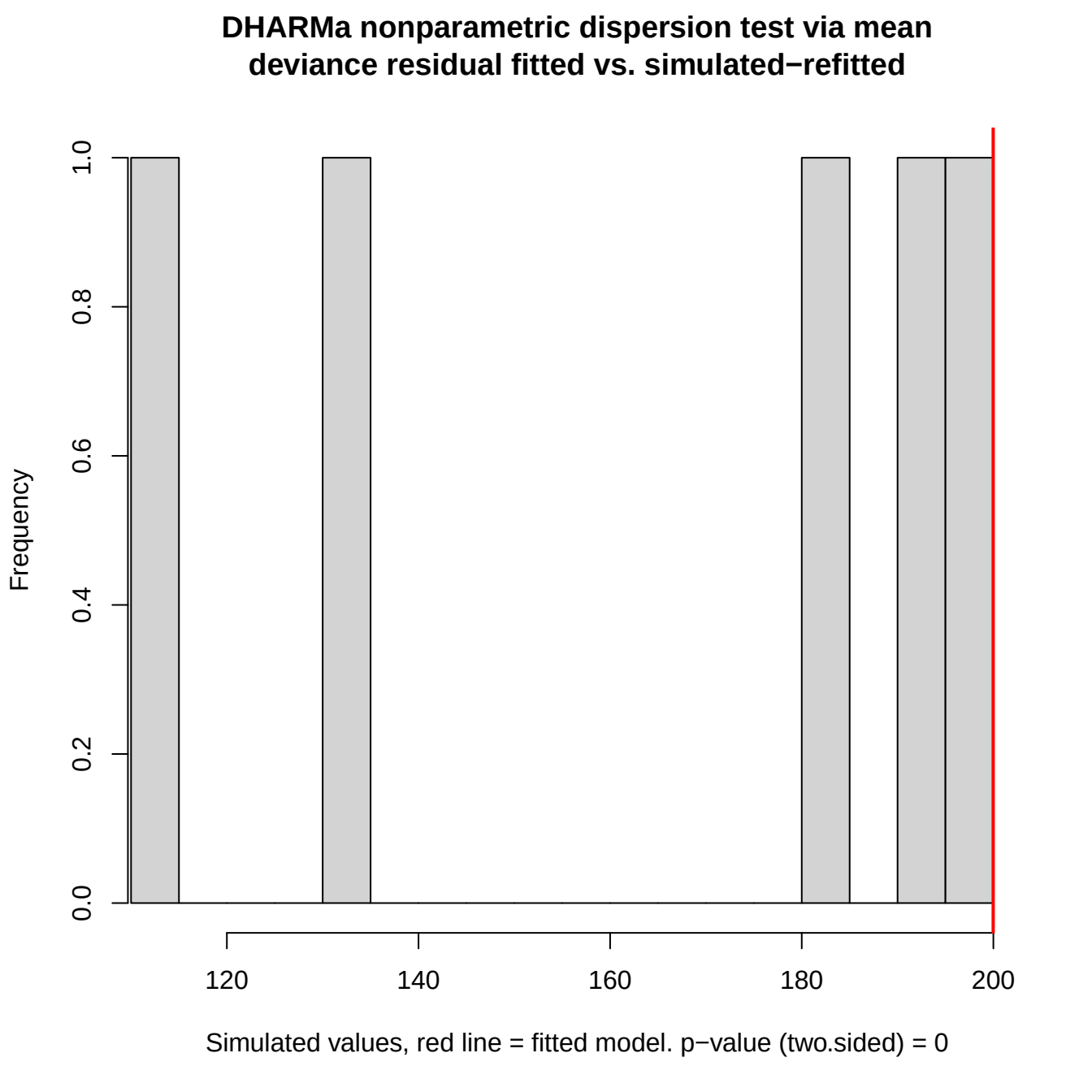

y
x
0.0
0.2
0.4
0.6
0.8
1.0

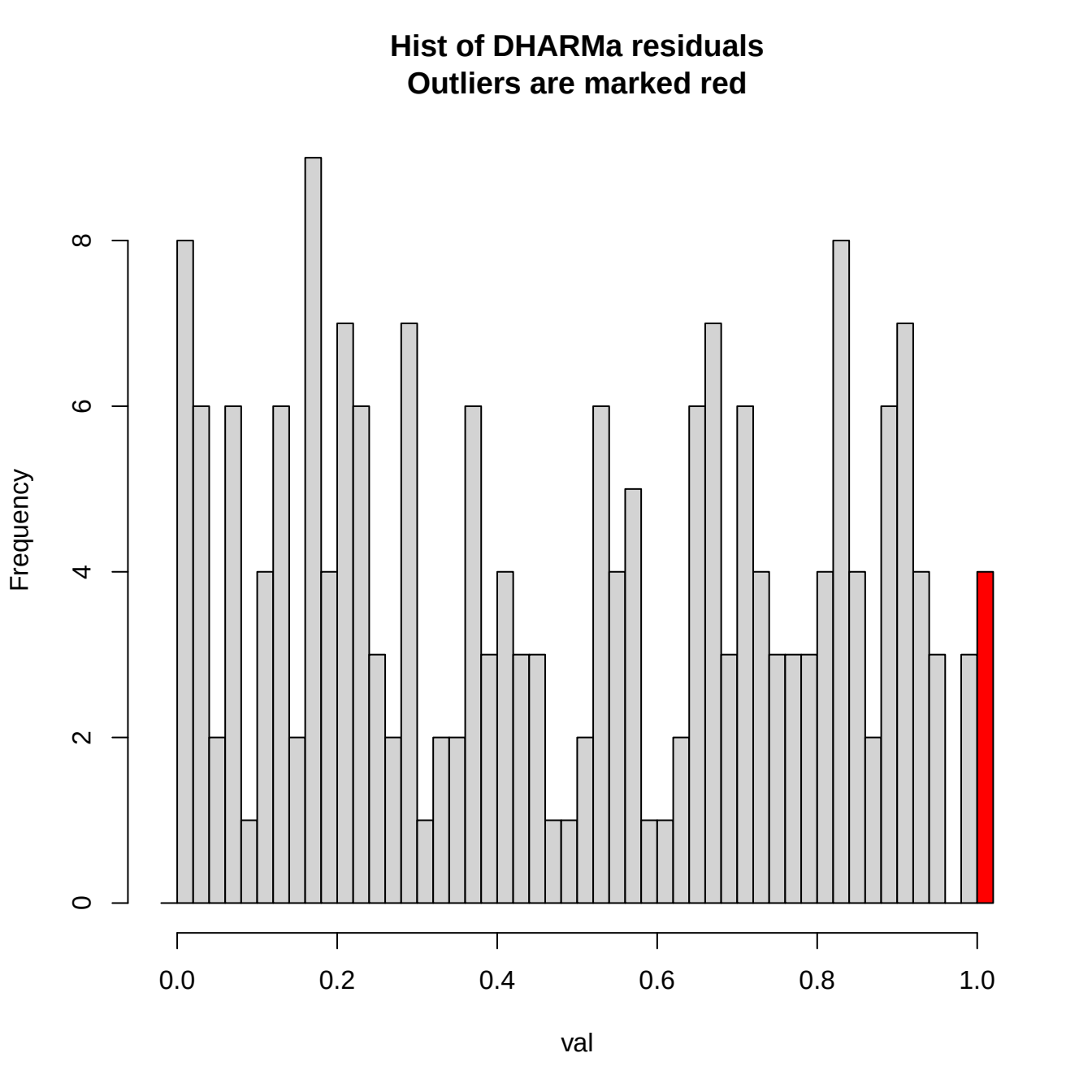

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.470
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.88

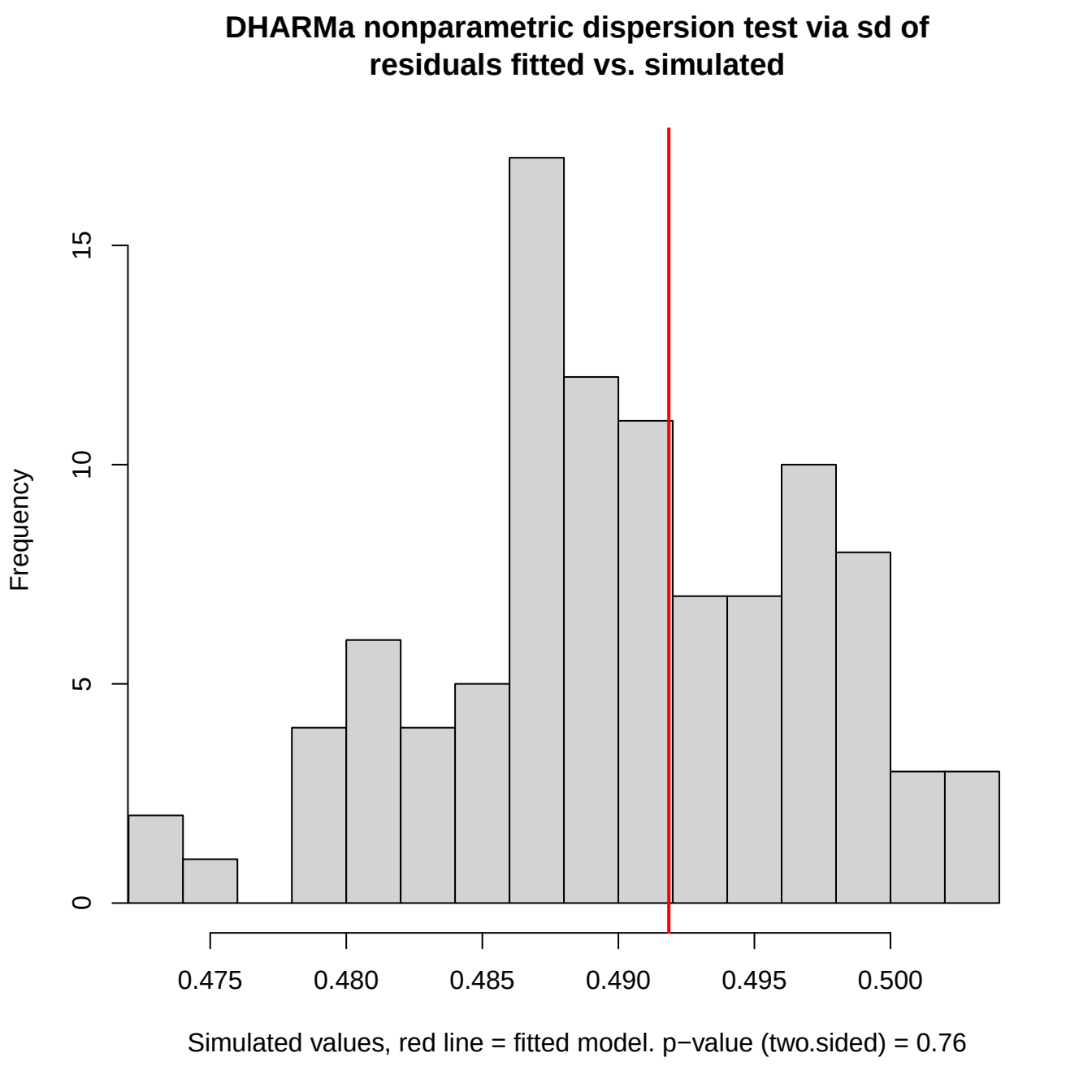

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.0
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

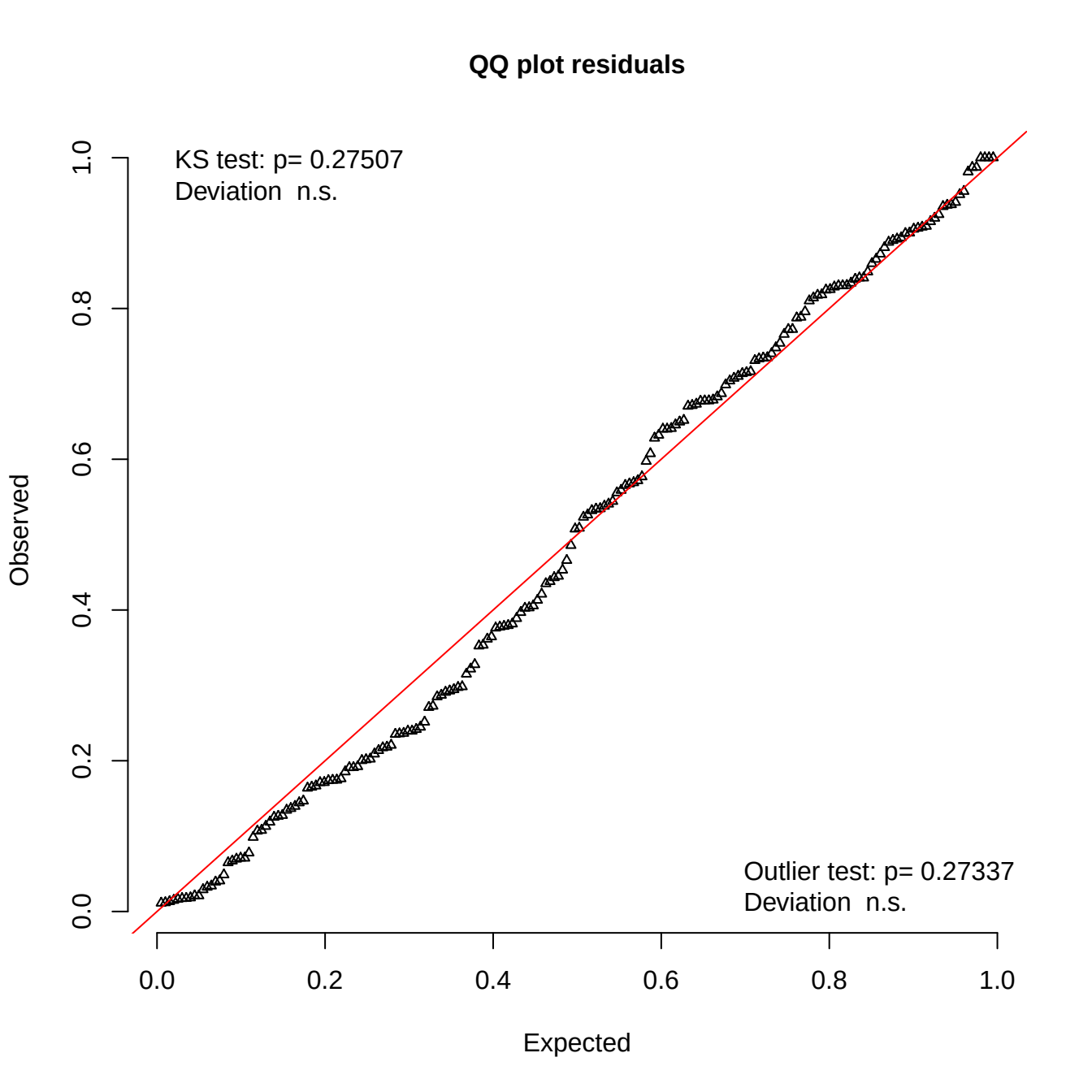

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.66832
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

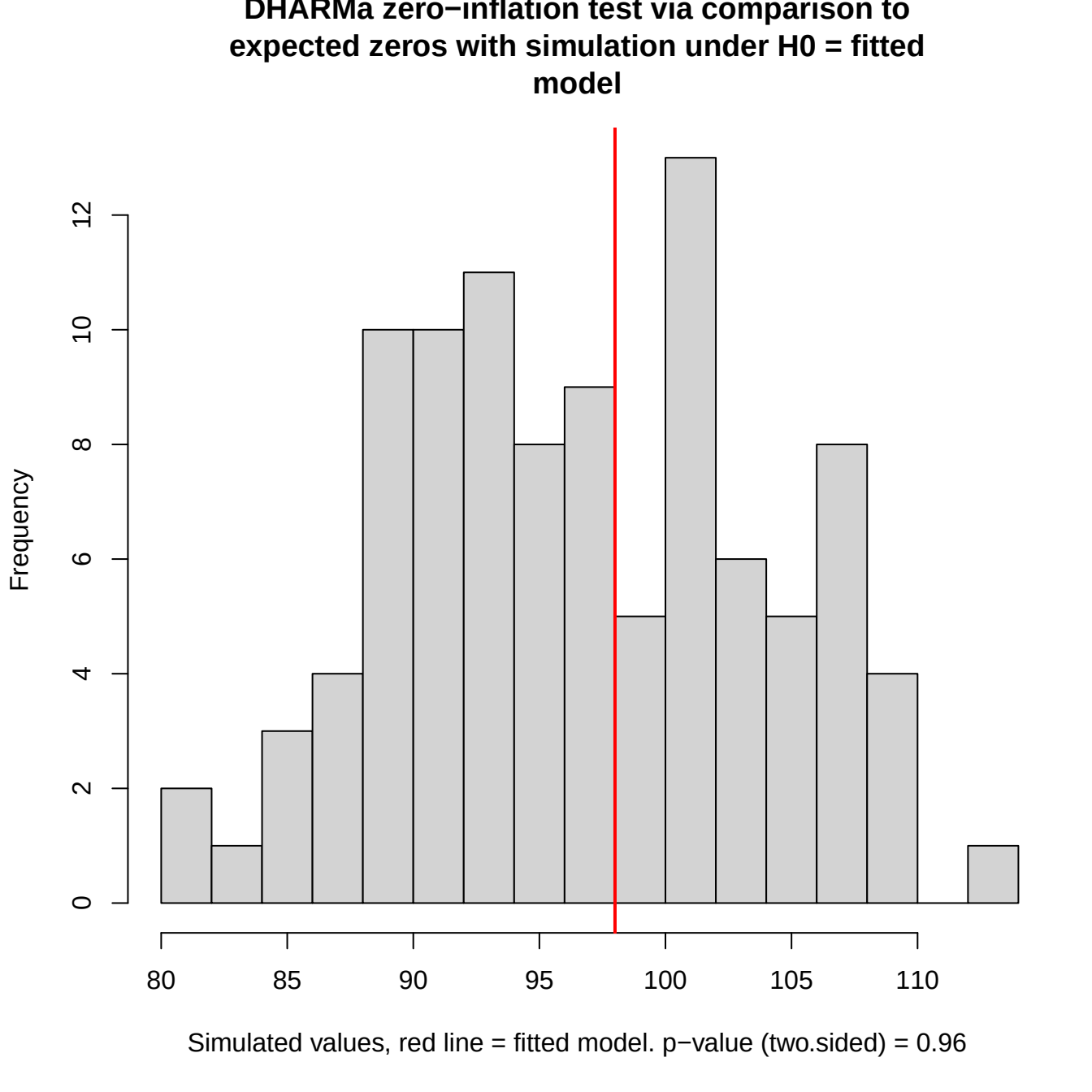

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

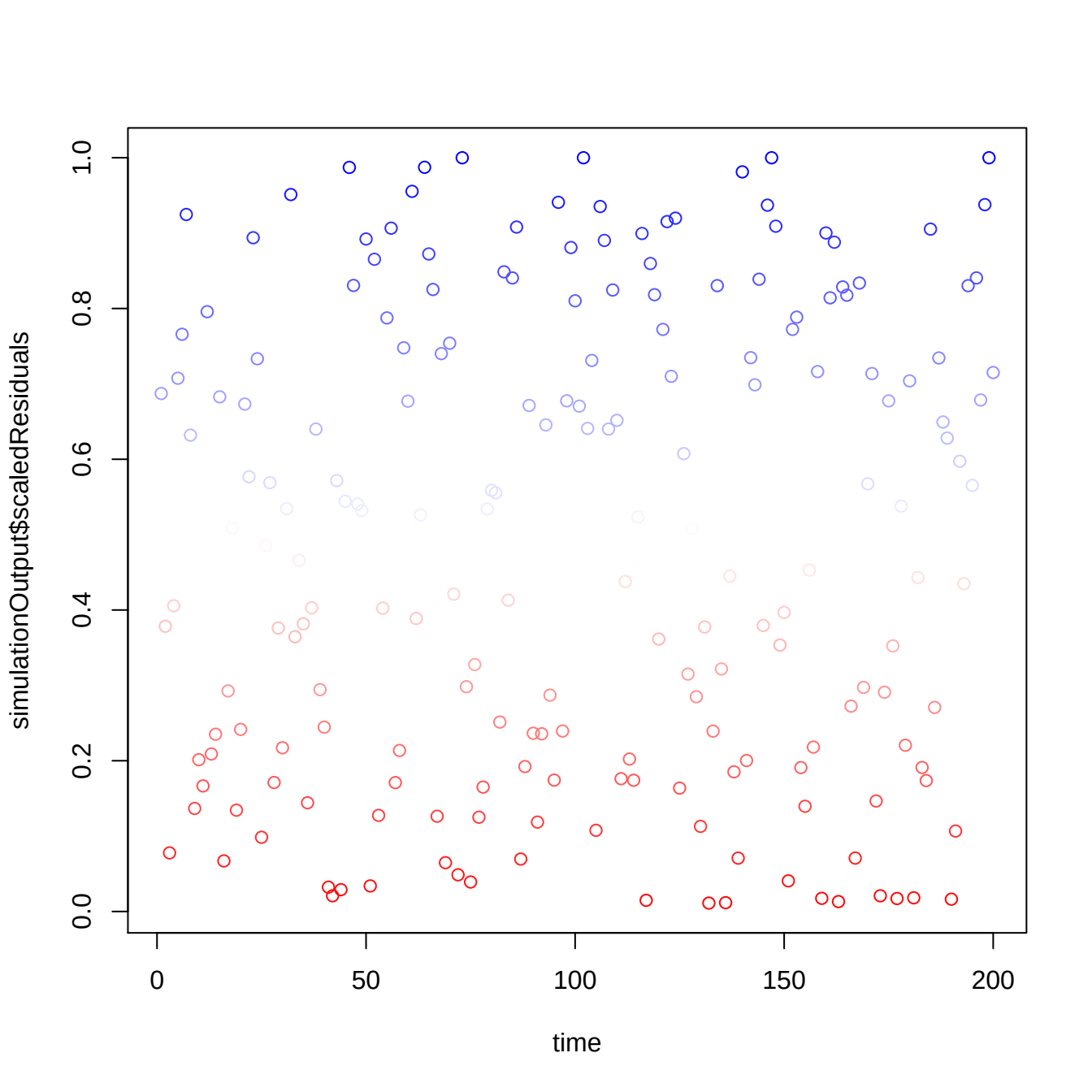

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

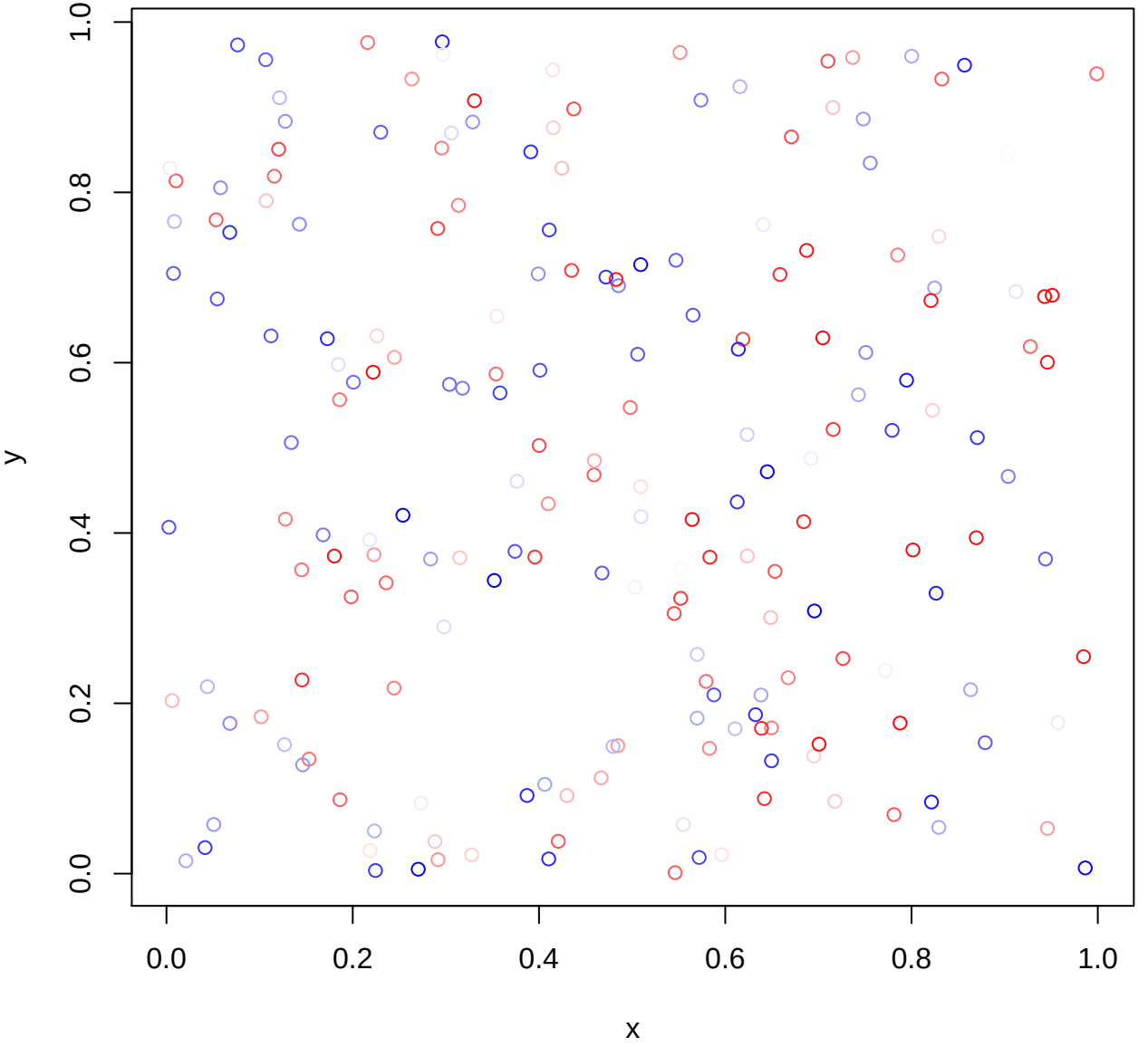

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

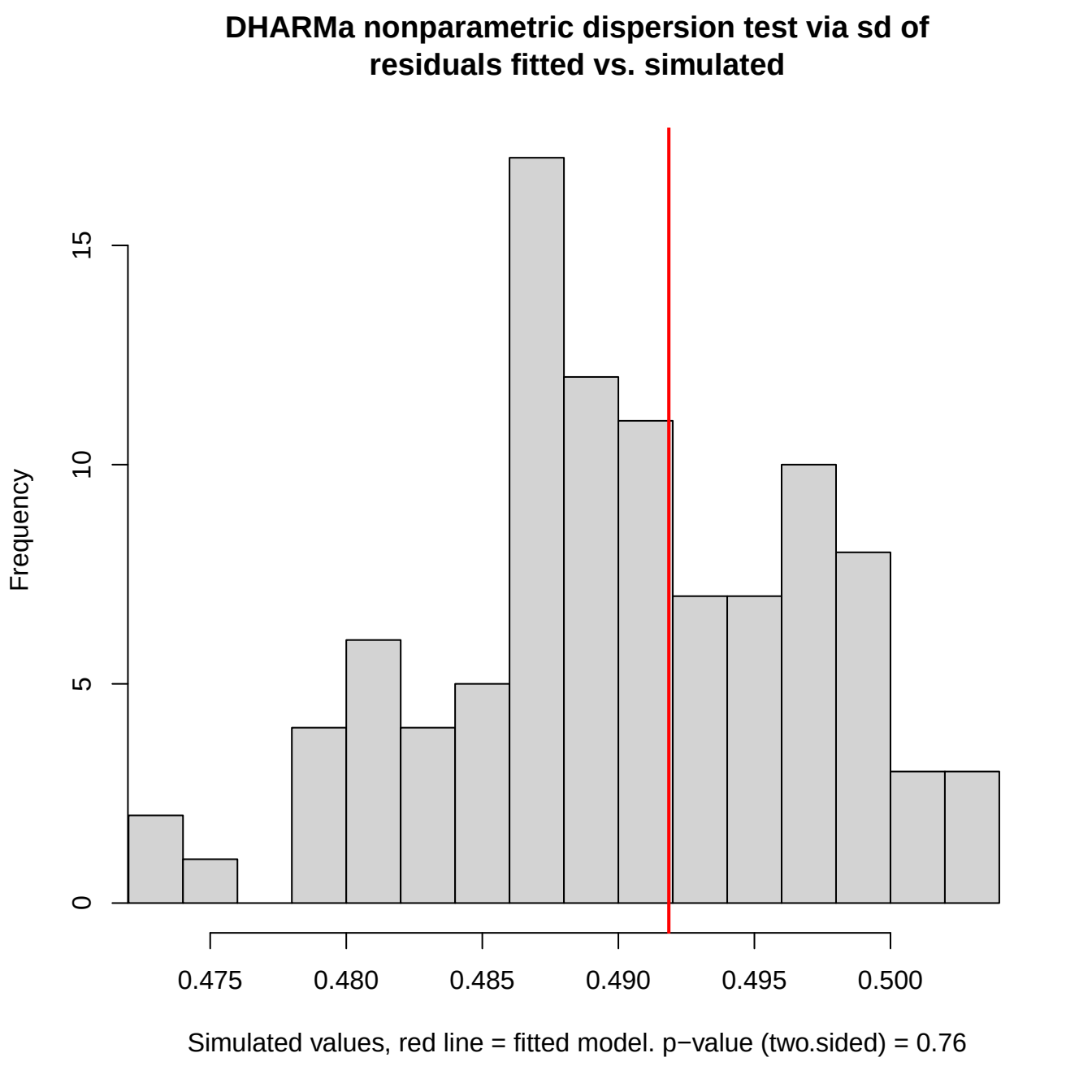

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

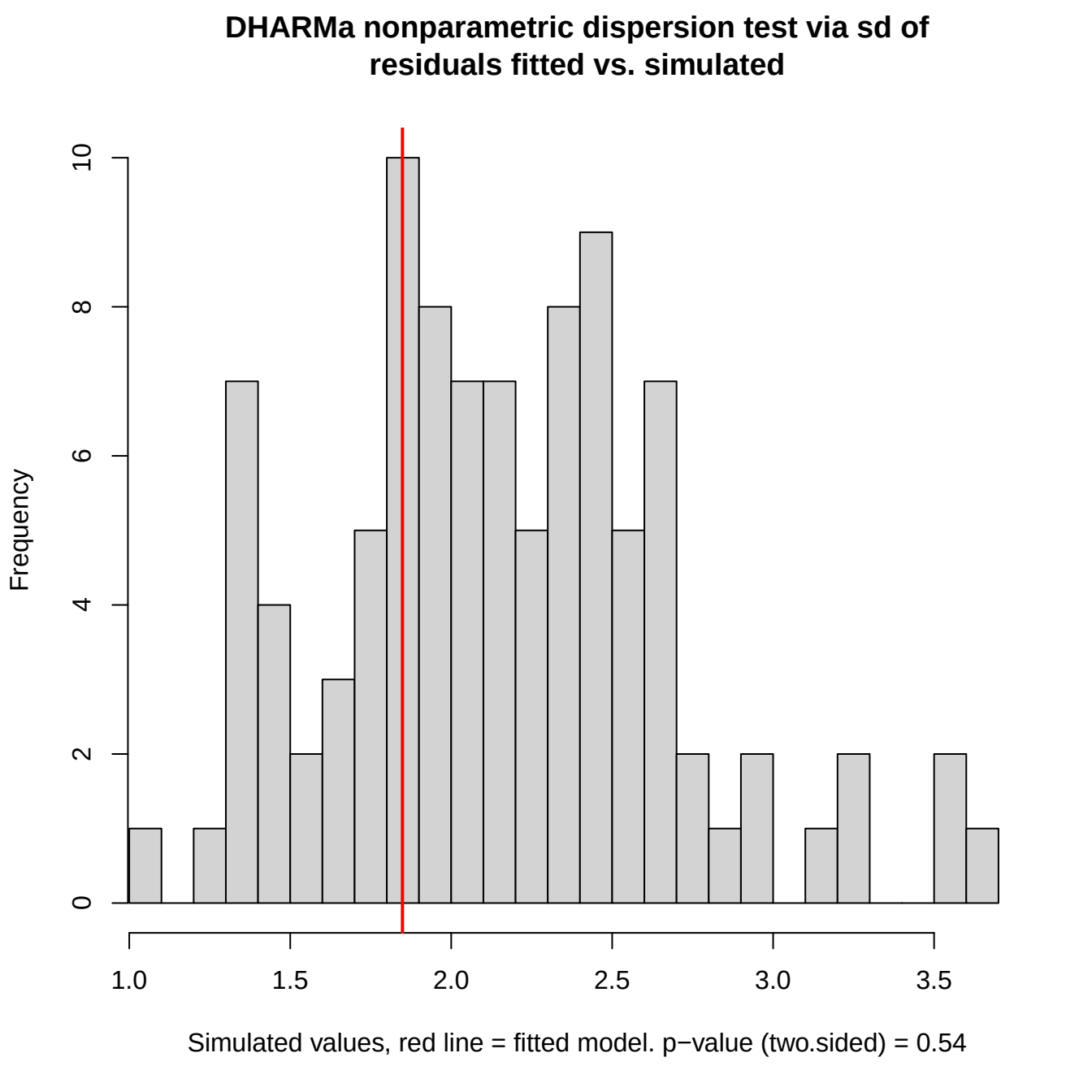

QQ plot residuals
KS test: p= 0.27507
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

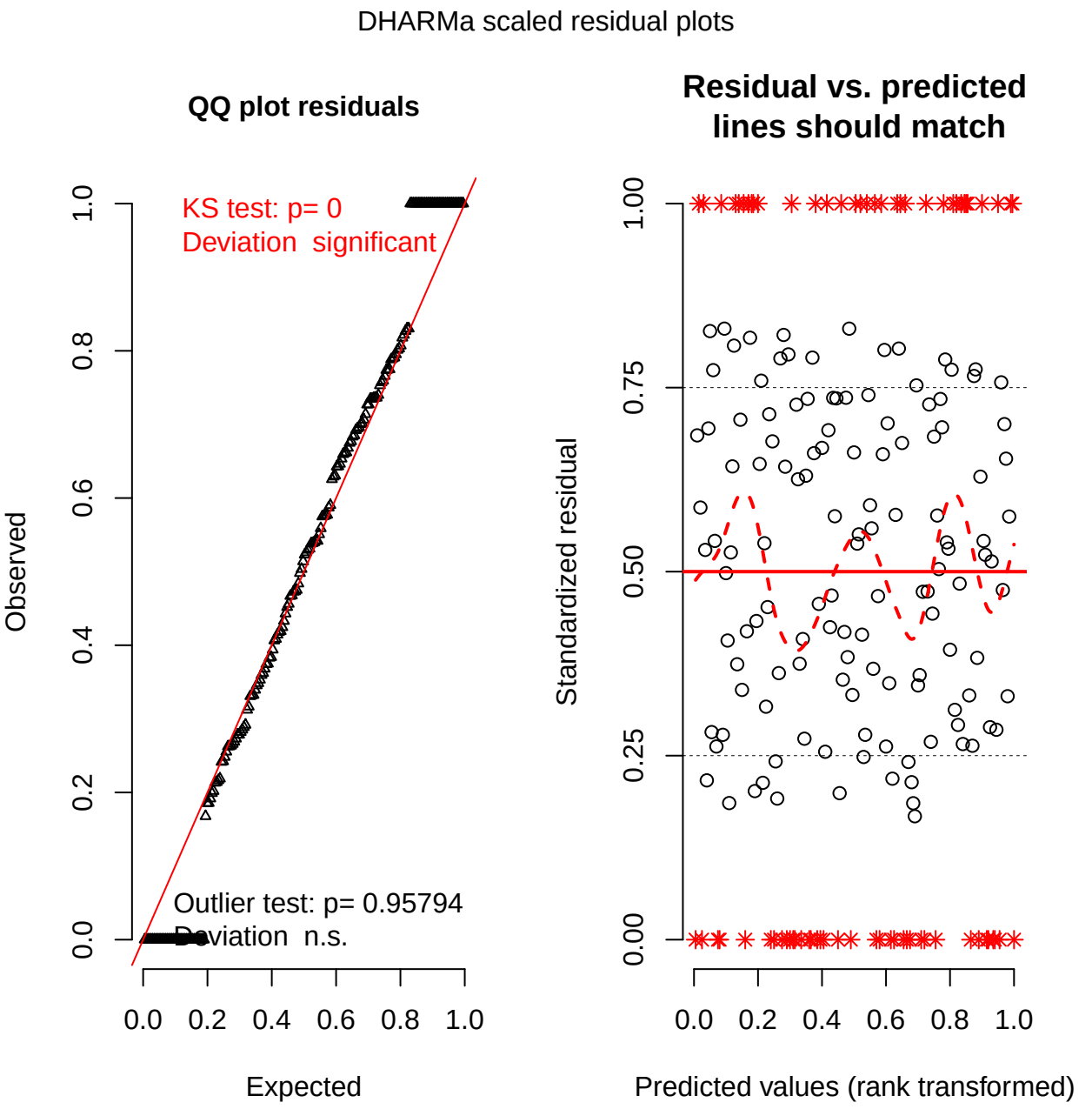

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
80
85
90
95
100
105
110
Simulated values, red line = fitted model. p−value (two.sided) = 0.96

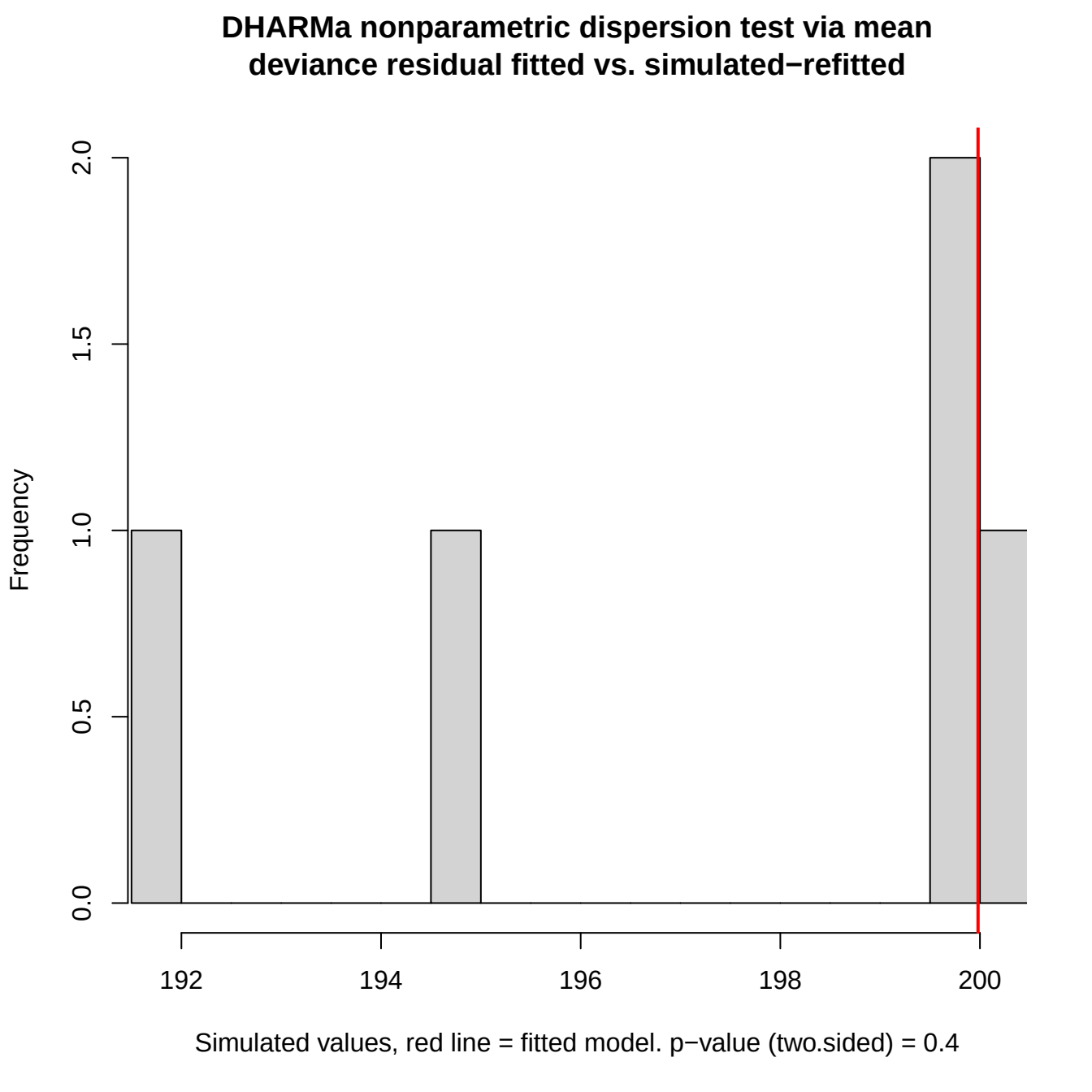

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

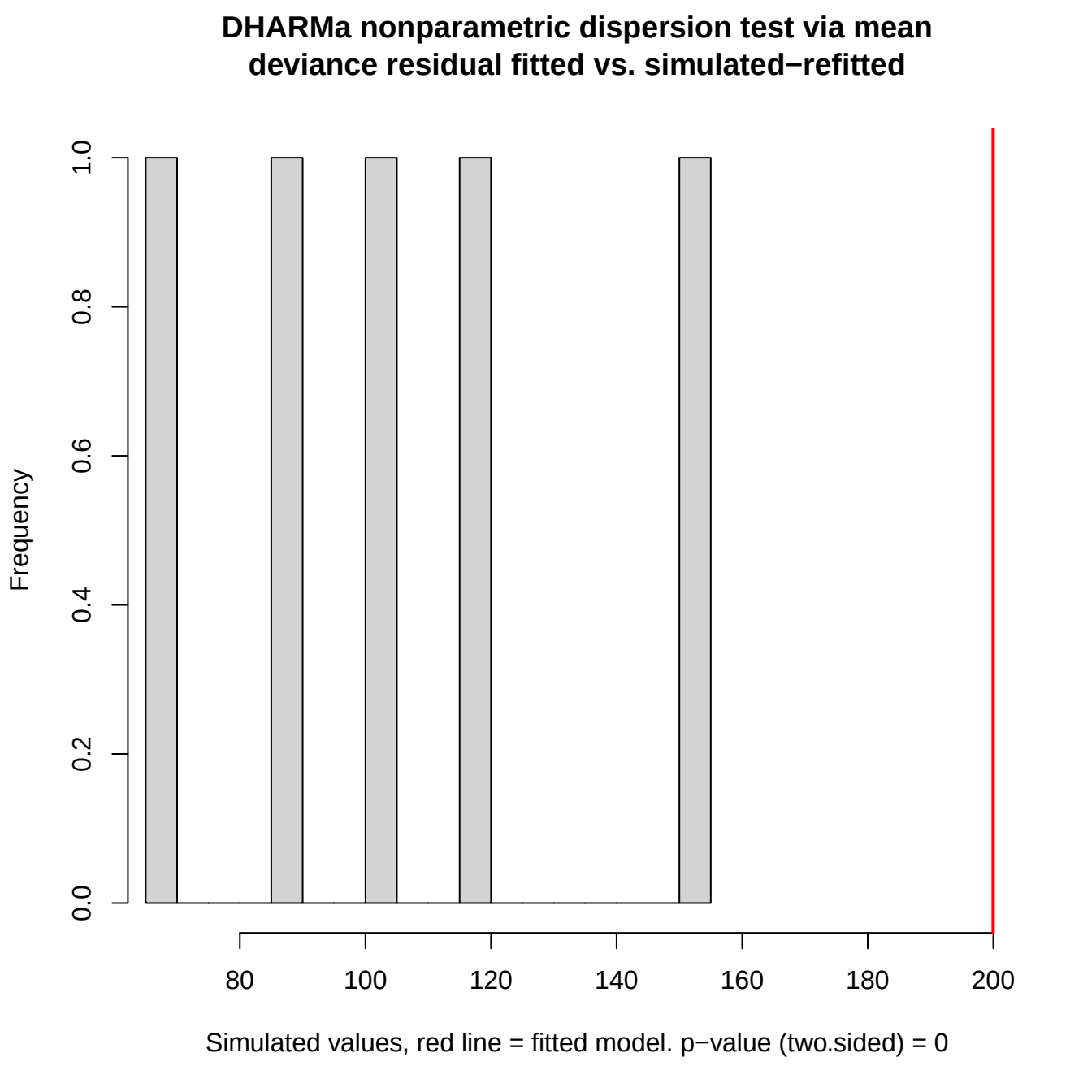

y
x
0.0
0.2
0.4
0.6
0.8
1.0

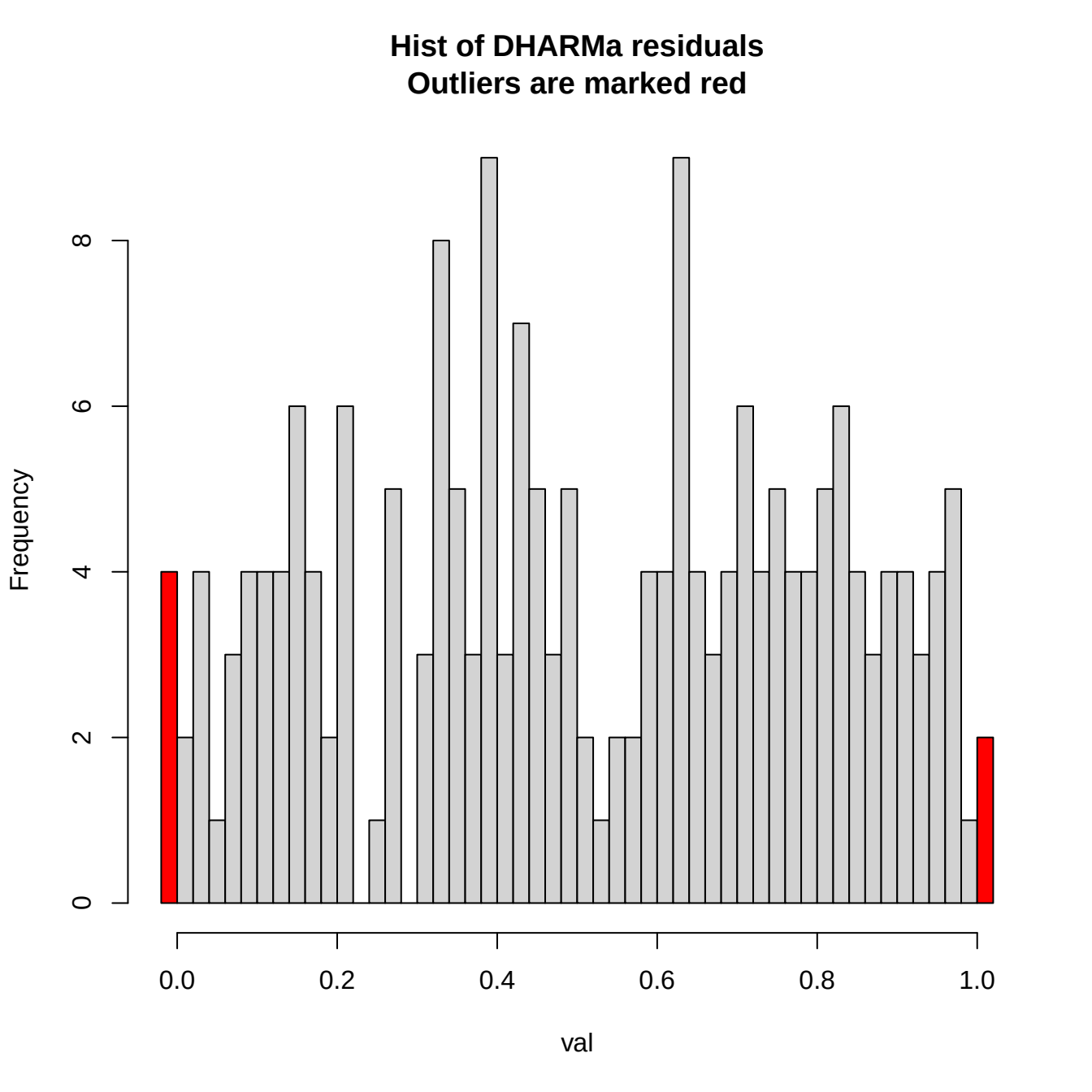

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.475
0.480
0.485
0.490
0.495
0.500
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

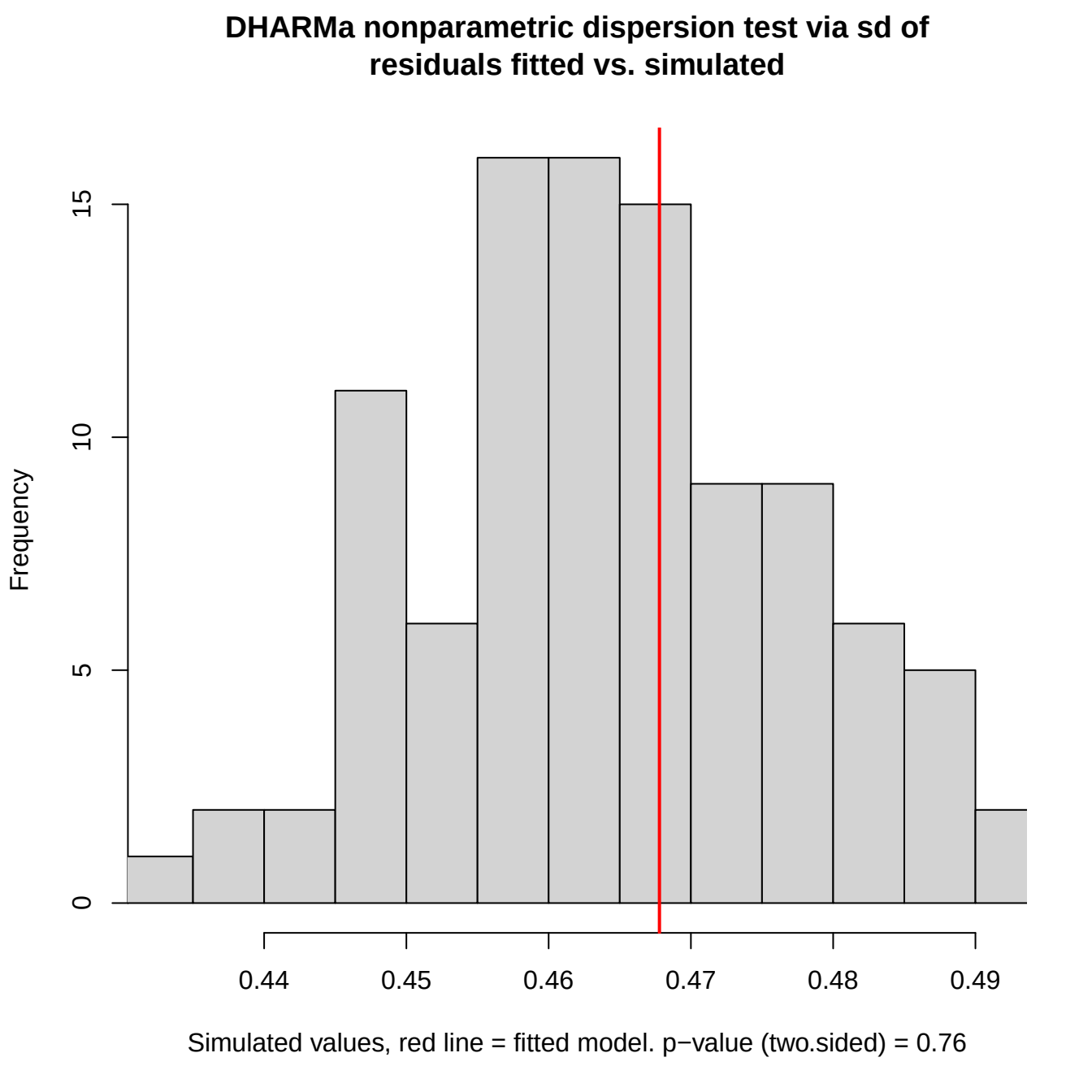

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.0
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

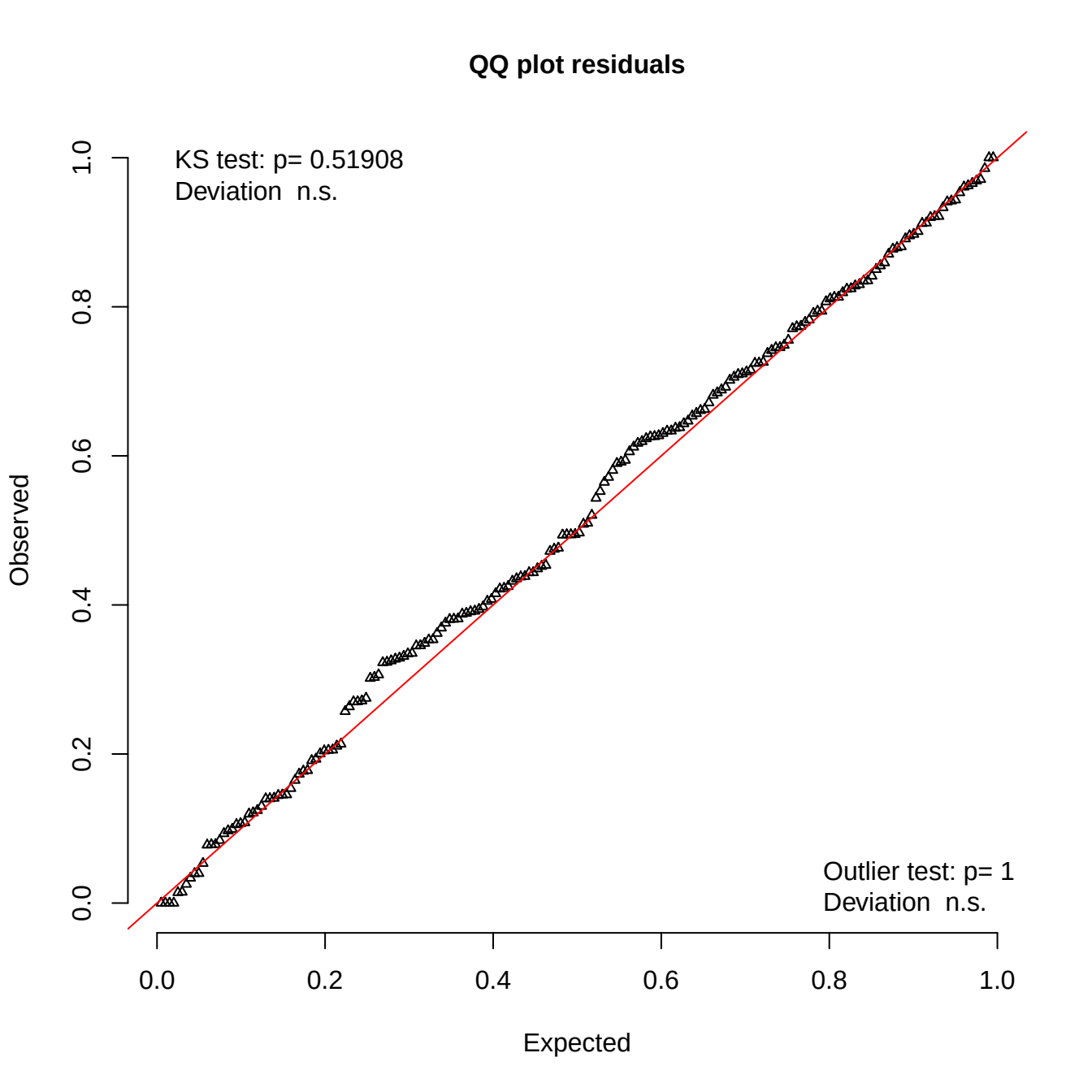

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.95794
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

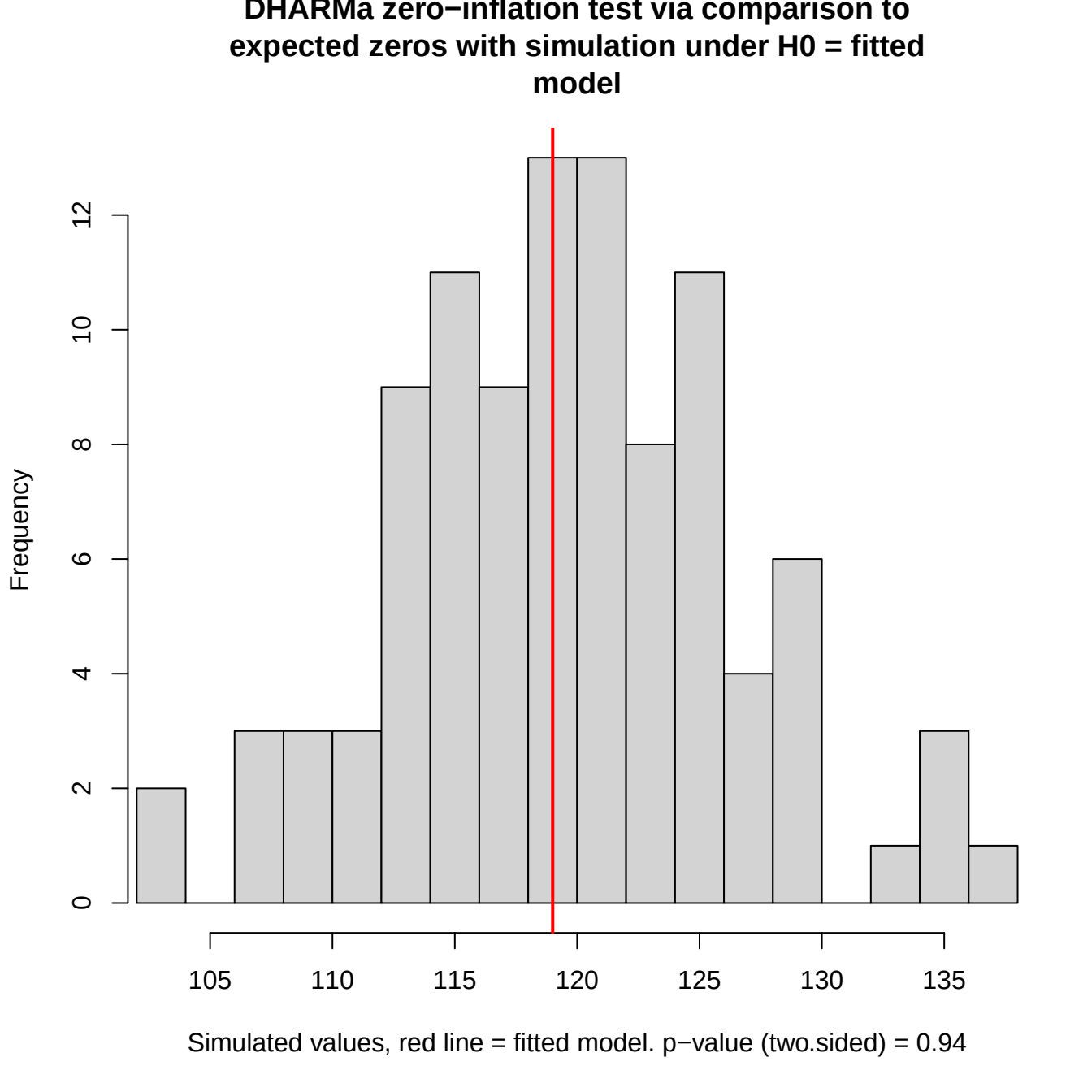

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

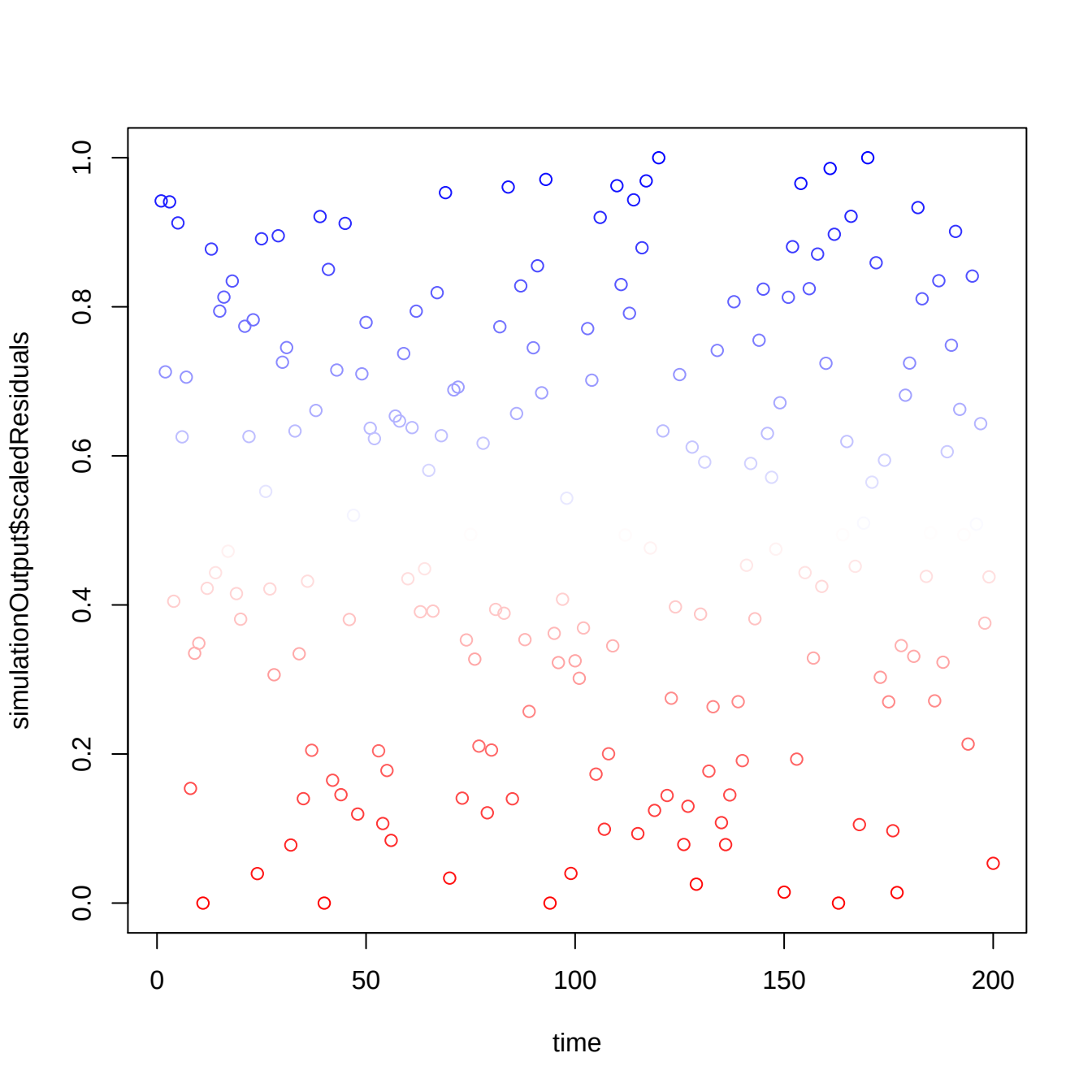

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

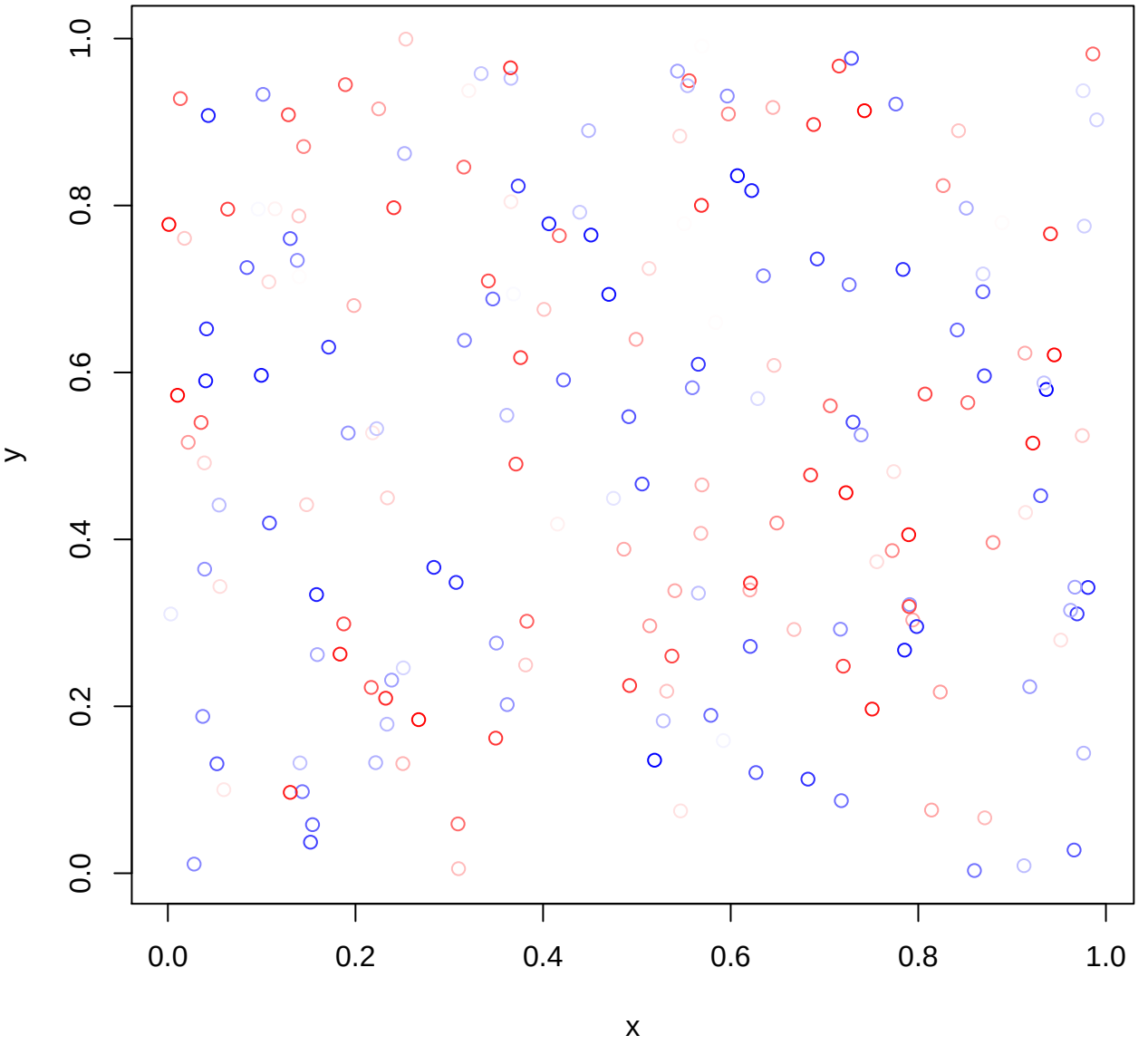

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

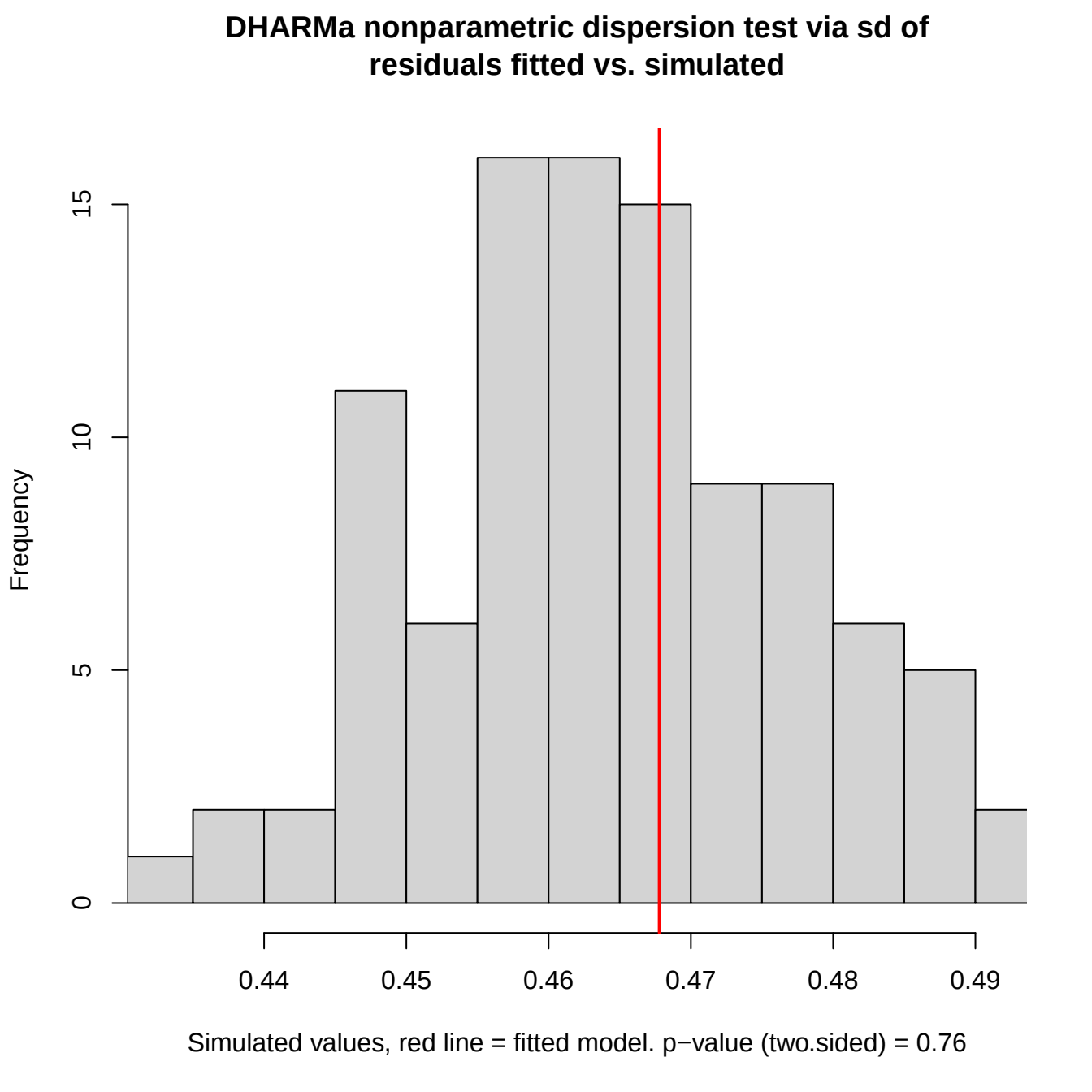

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

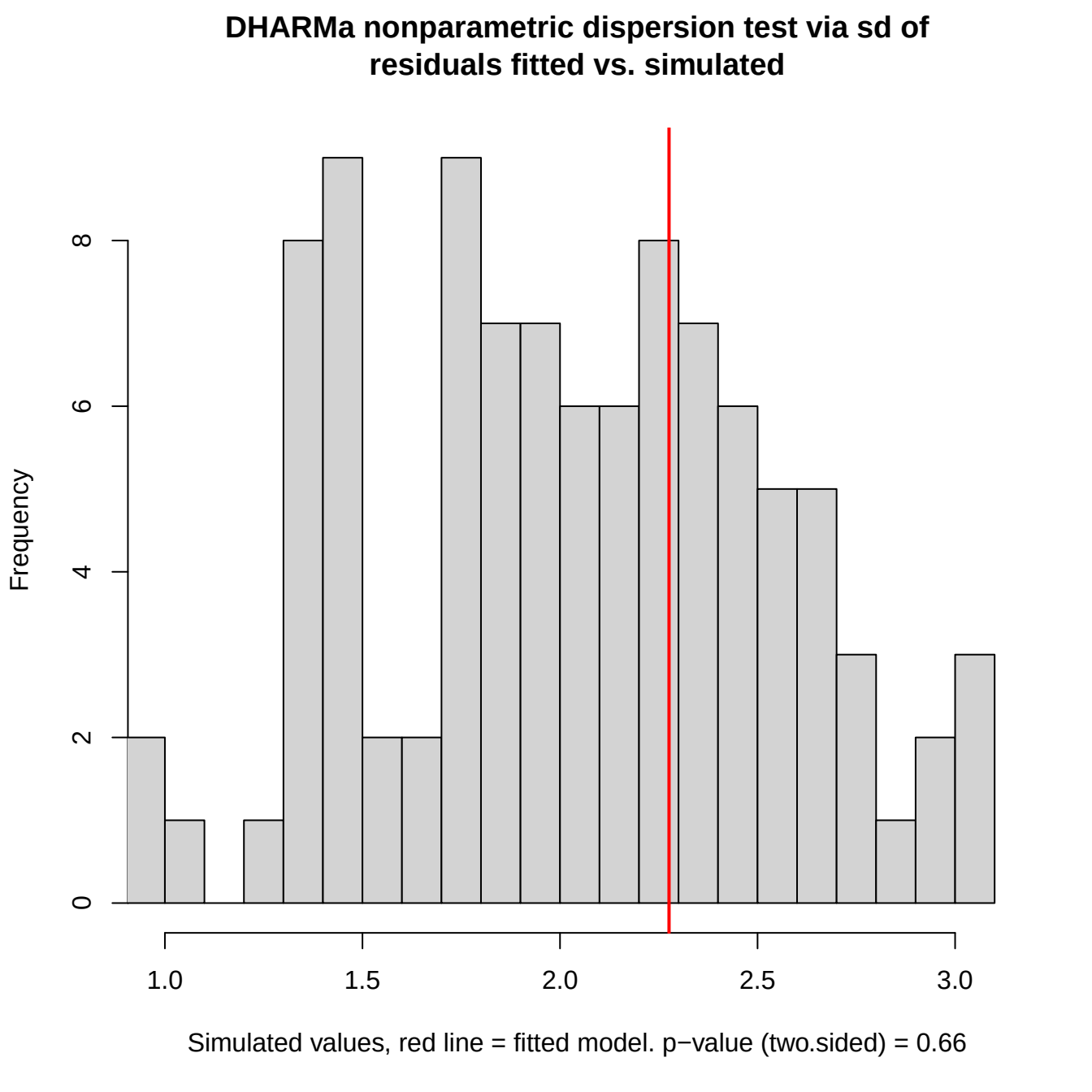

QQ plot residuals
KS test: p= 0.51908
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

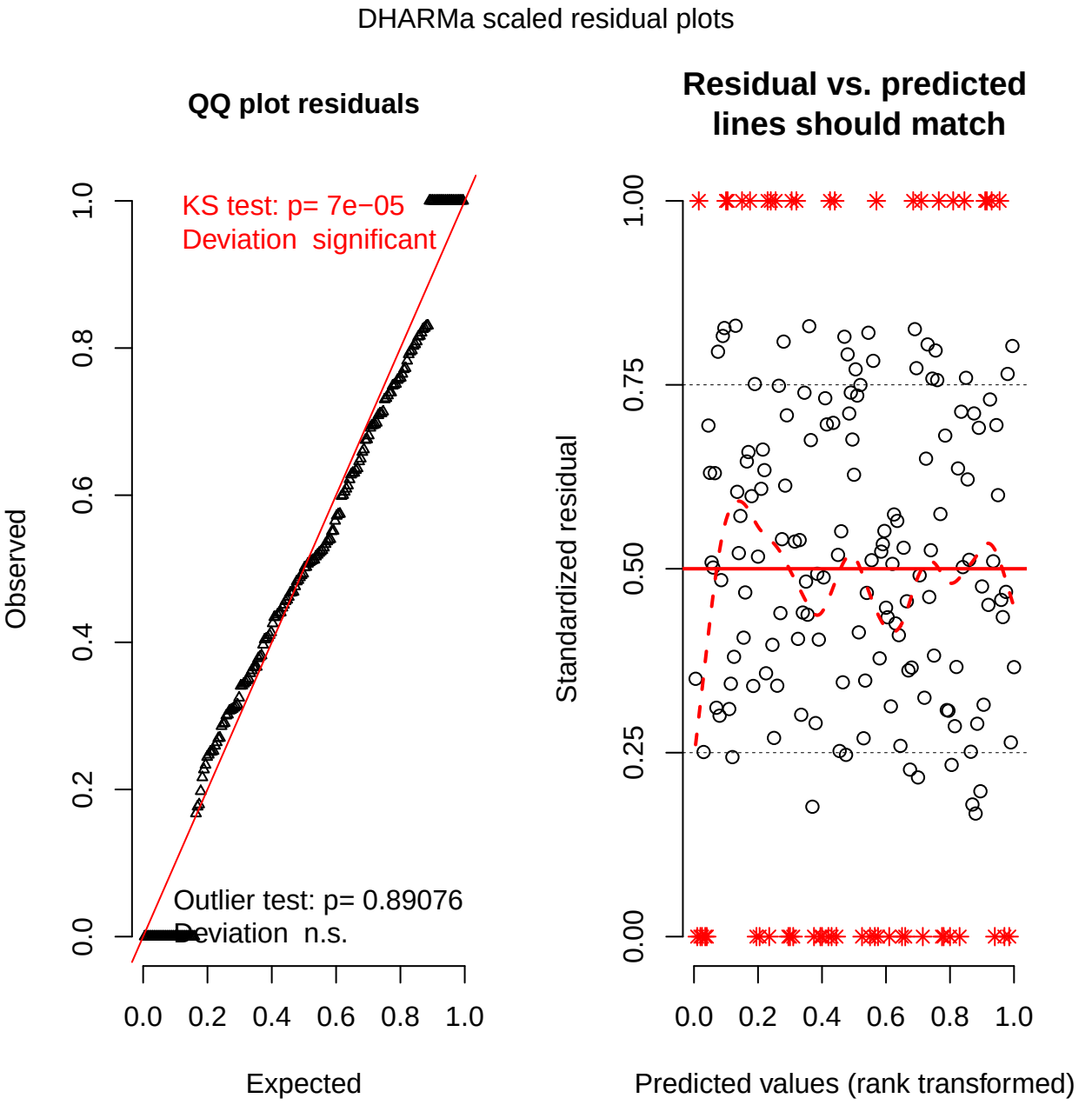

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
105
110
115
120
125
130
135
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

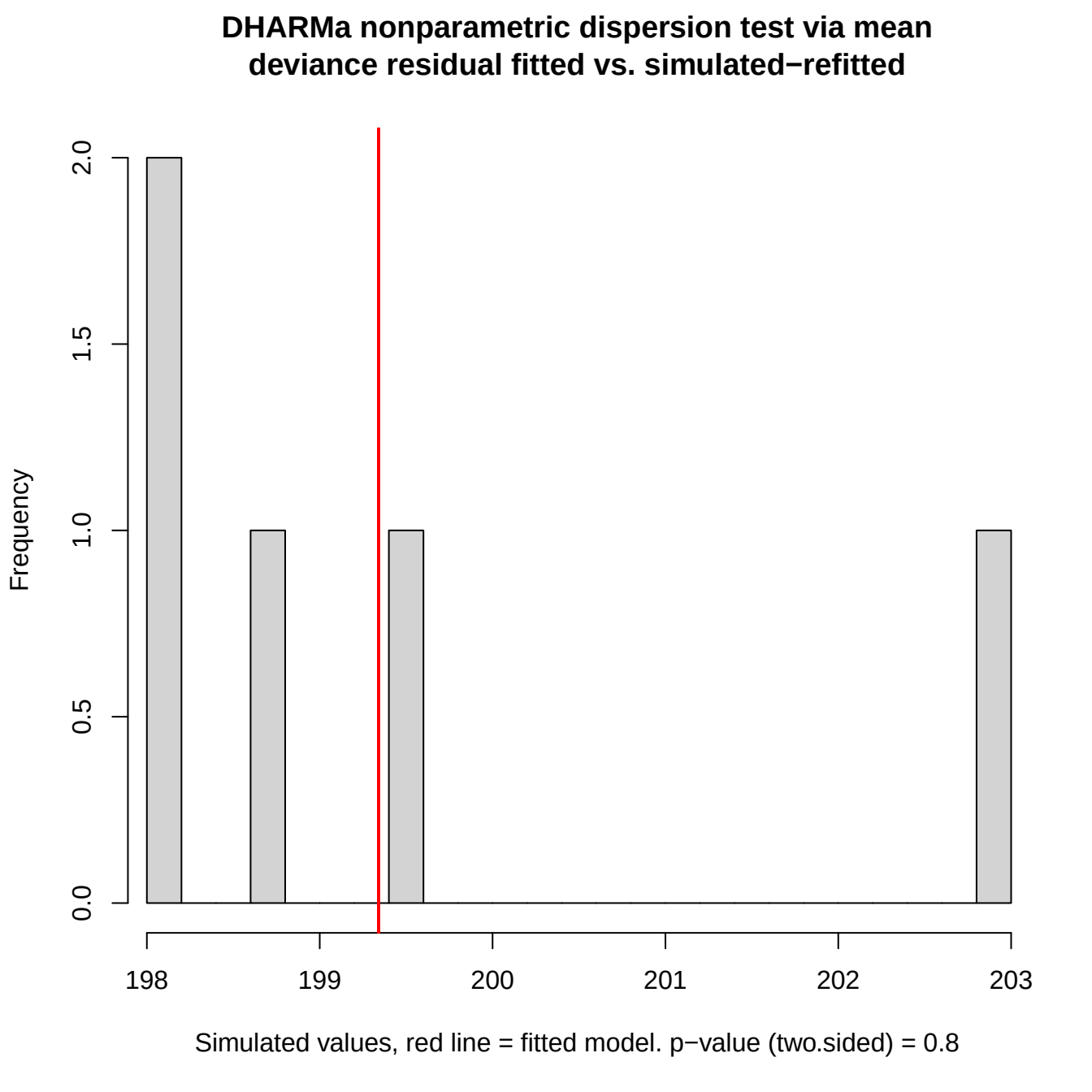

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

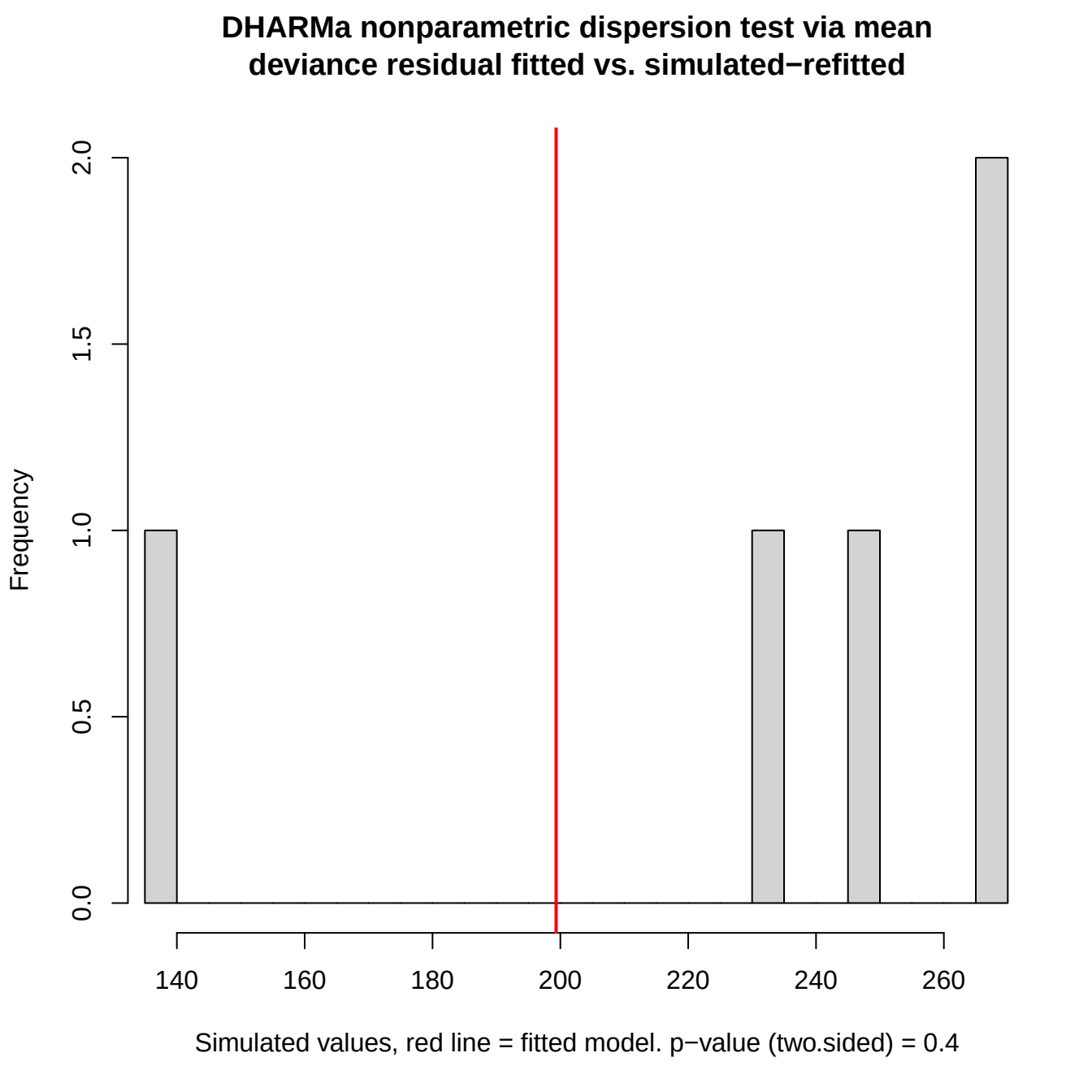

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

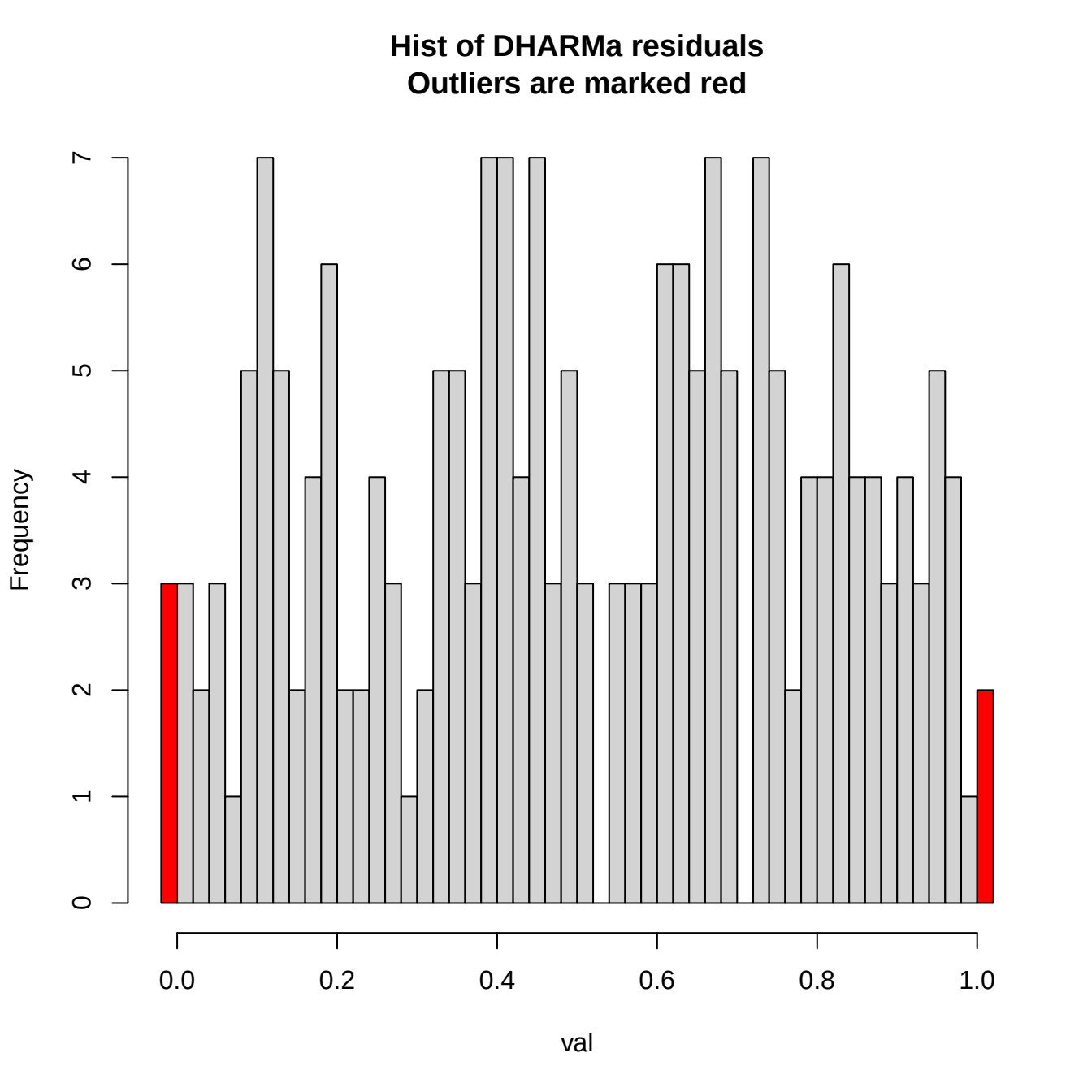

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

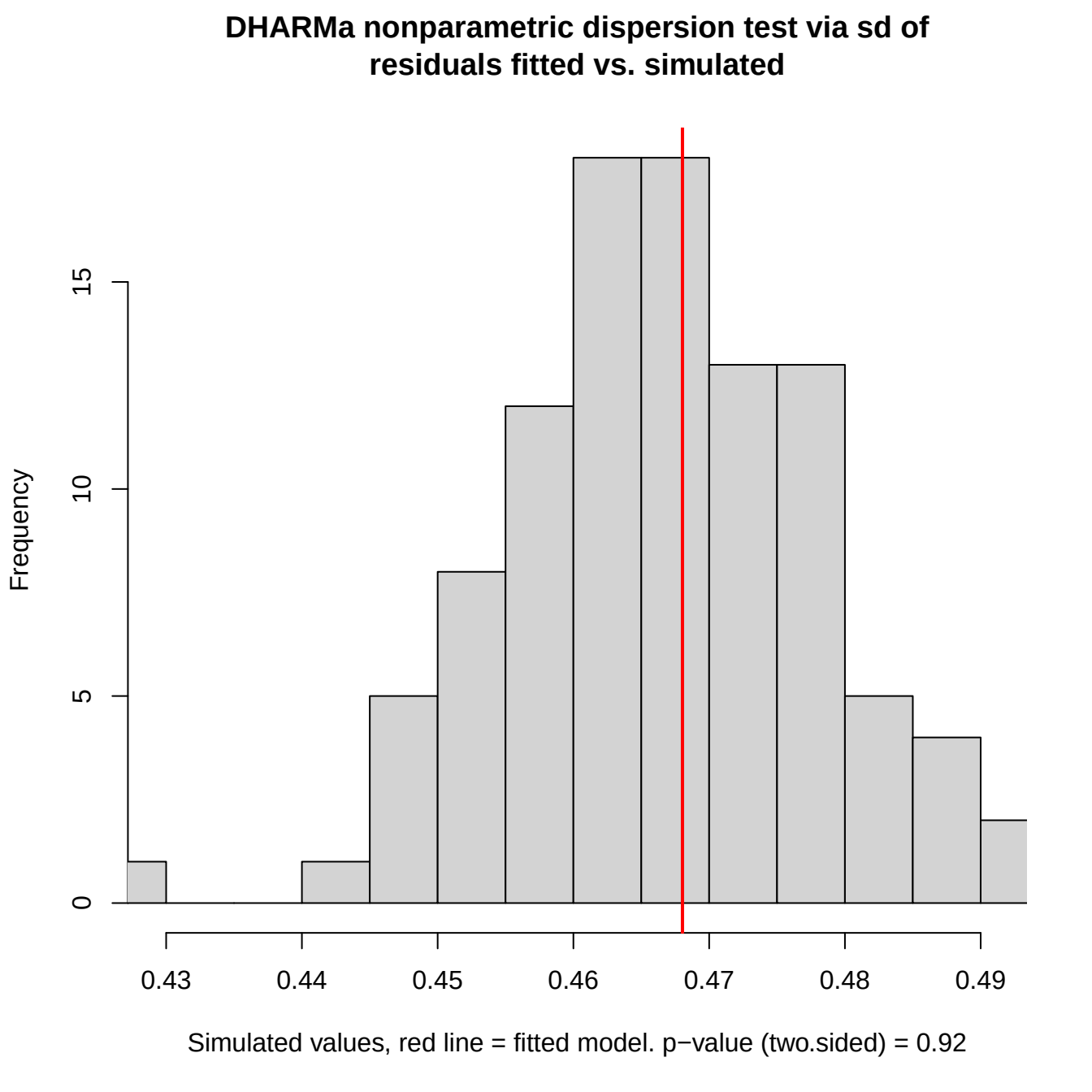

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
1.0
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.66

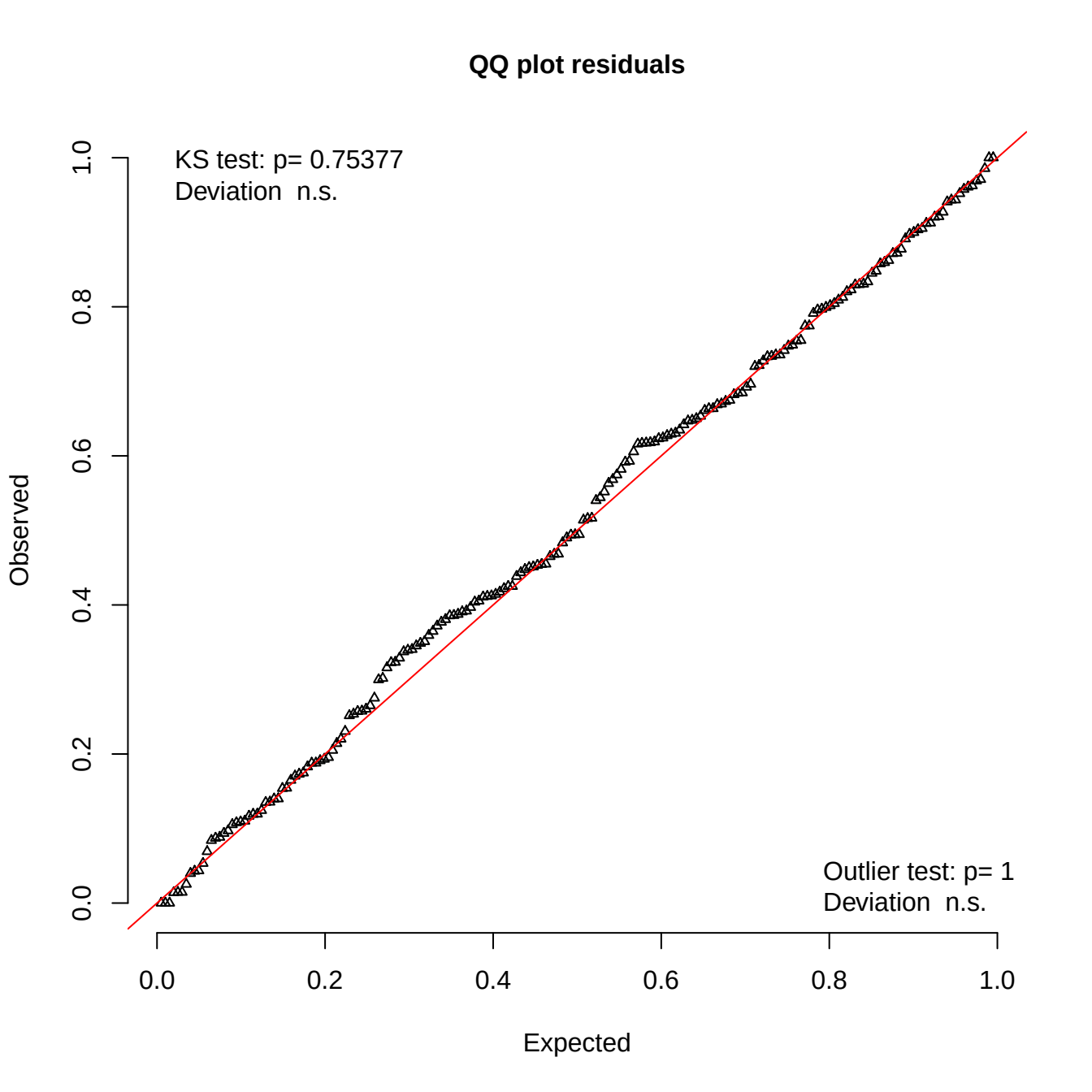

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 7e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

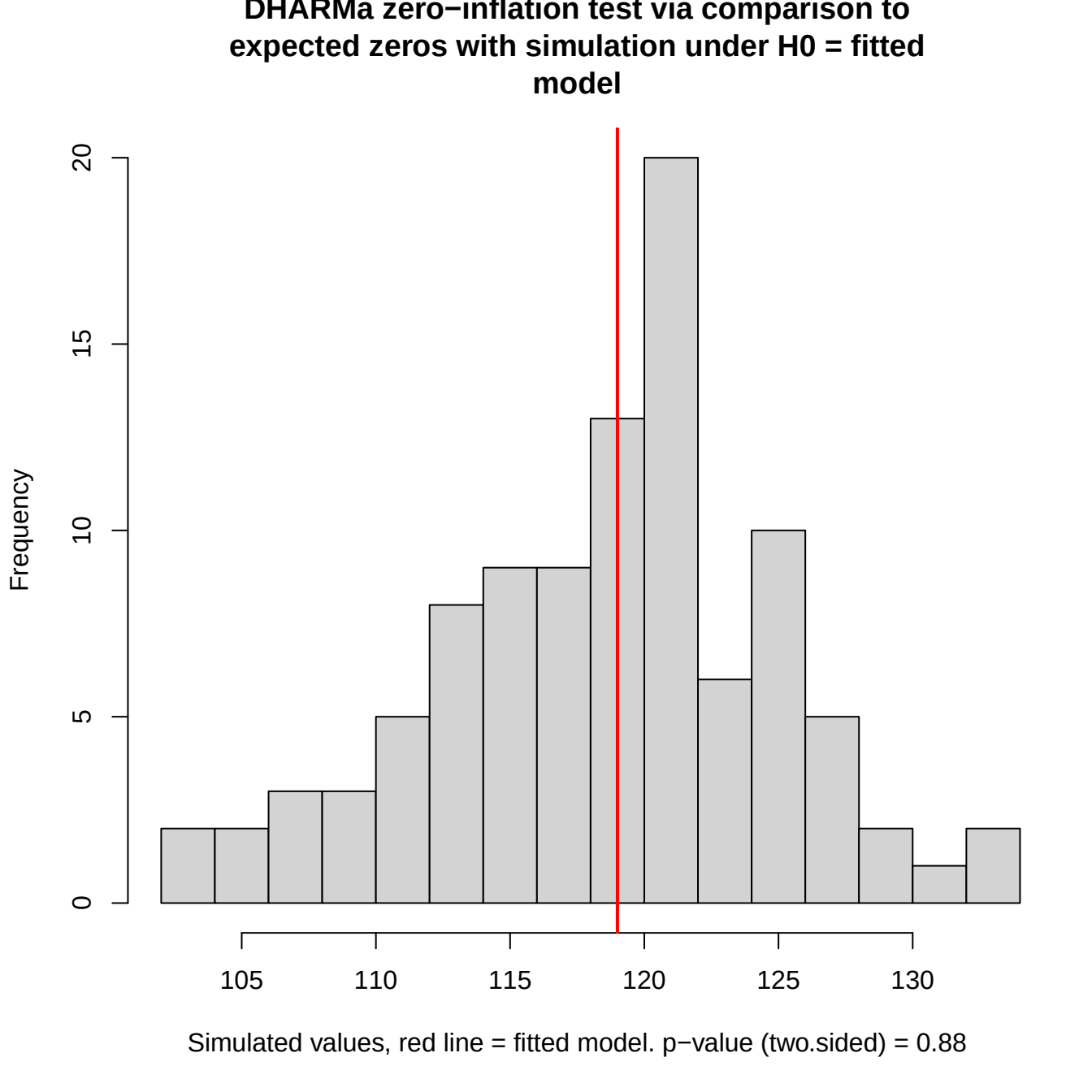

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
198
199
200
201
202
203
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

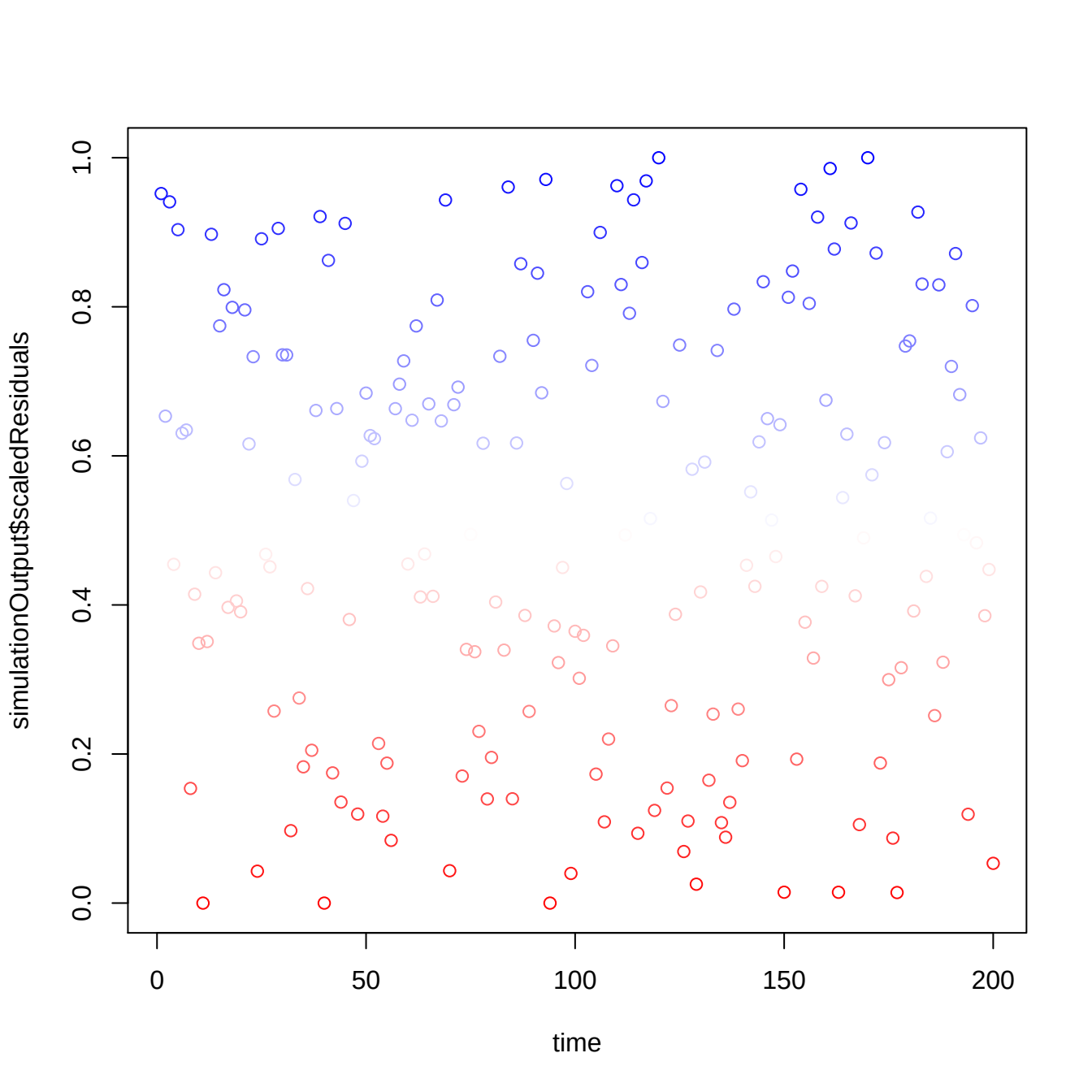

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
140
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

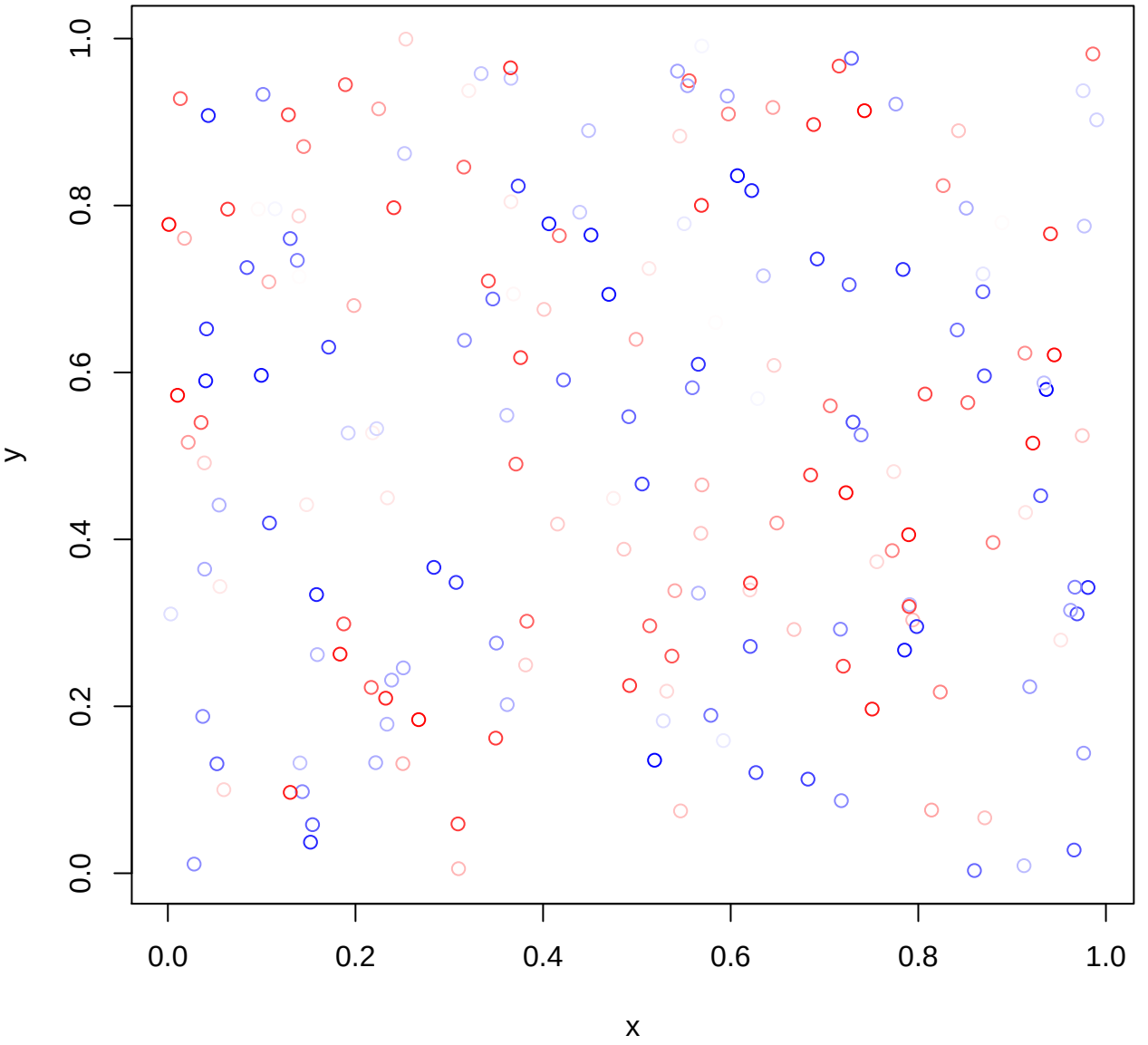

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
1
2
3
4
5
6
7
0.0
0.2
0.4
0.6
0.8
1.0
val

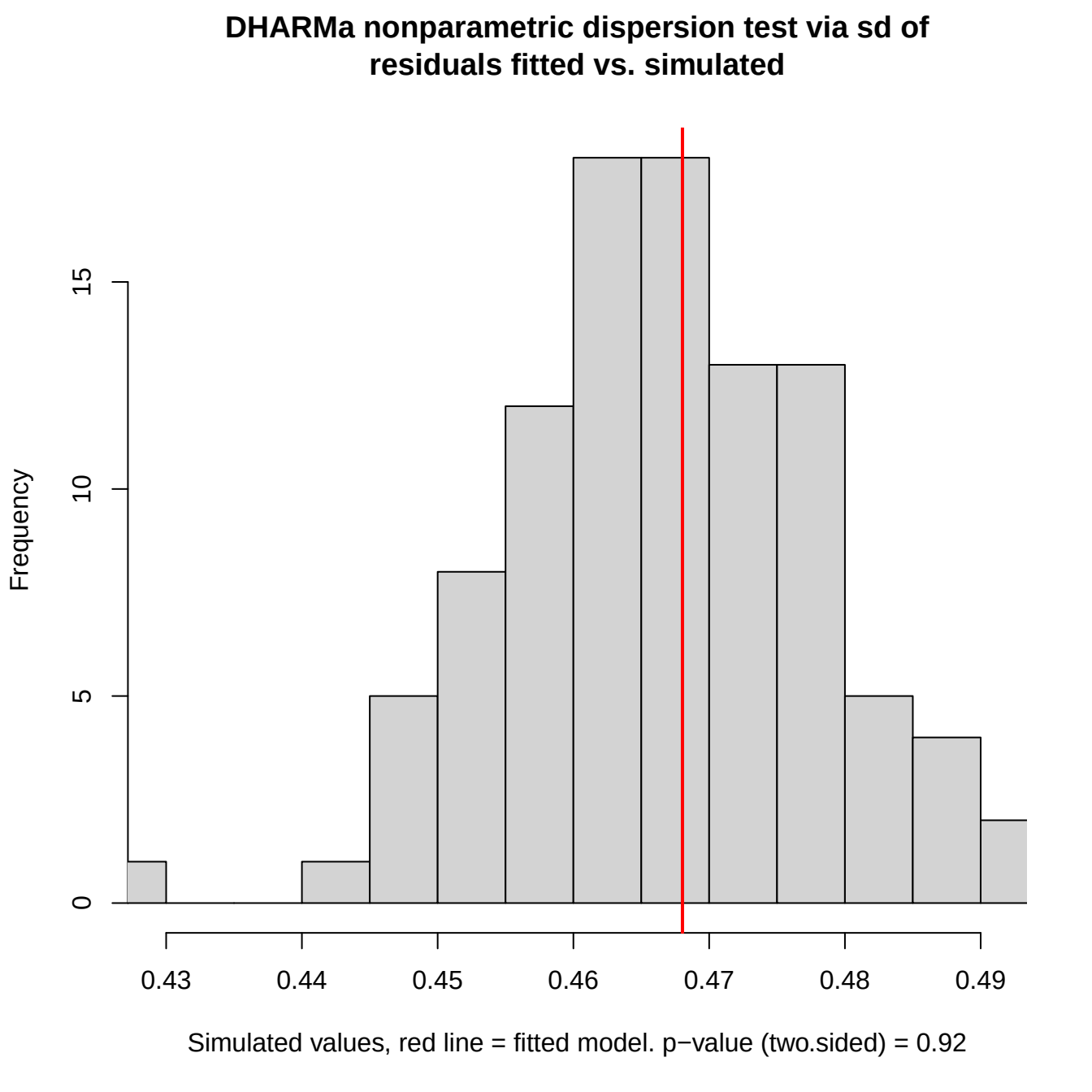

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

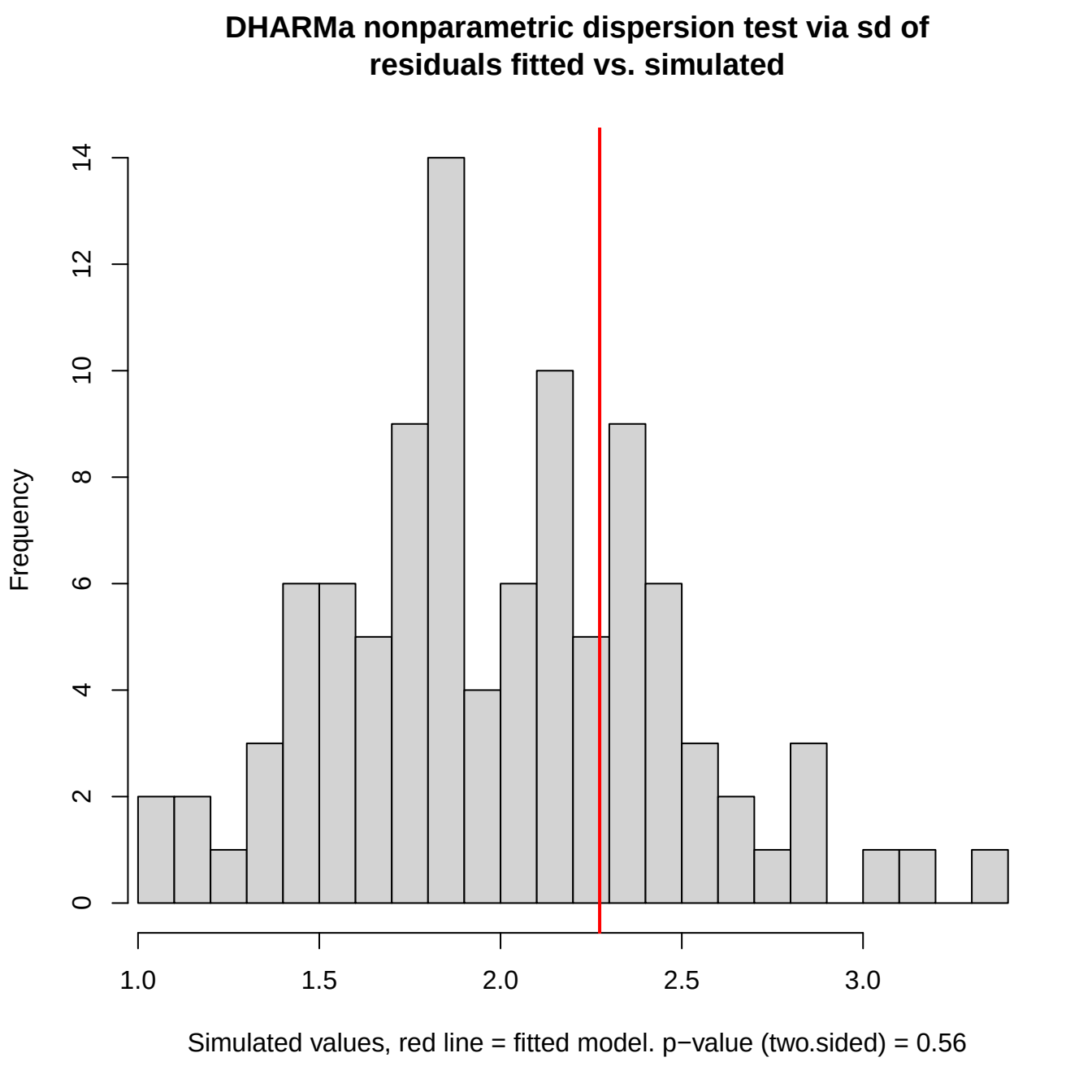

QQ plot residuals
KS test: p= 0.75377
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

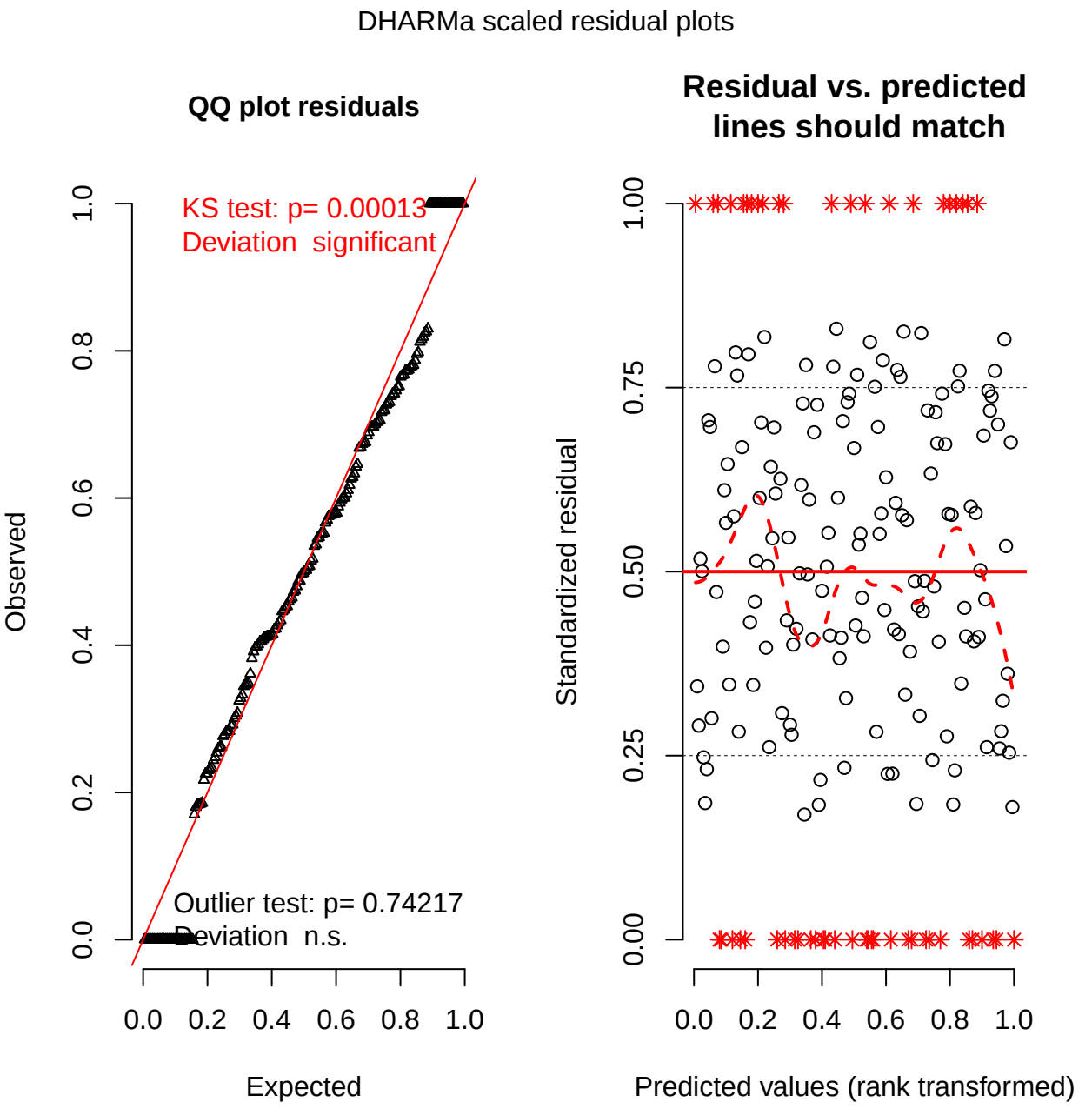

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
20
105
110
115
120
125
130
Simulated values, red line = fitted model. p−value (two.sided) = 0.88

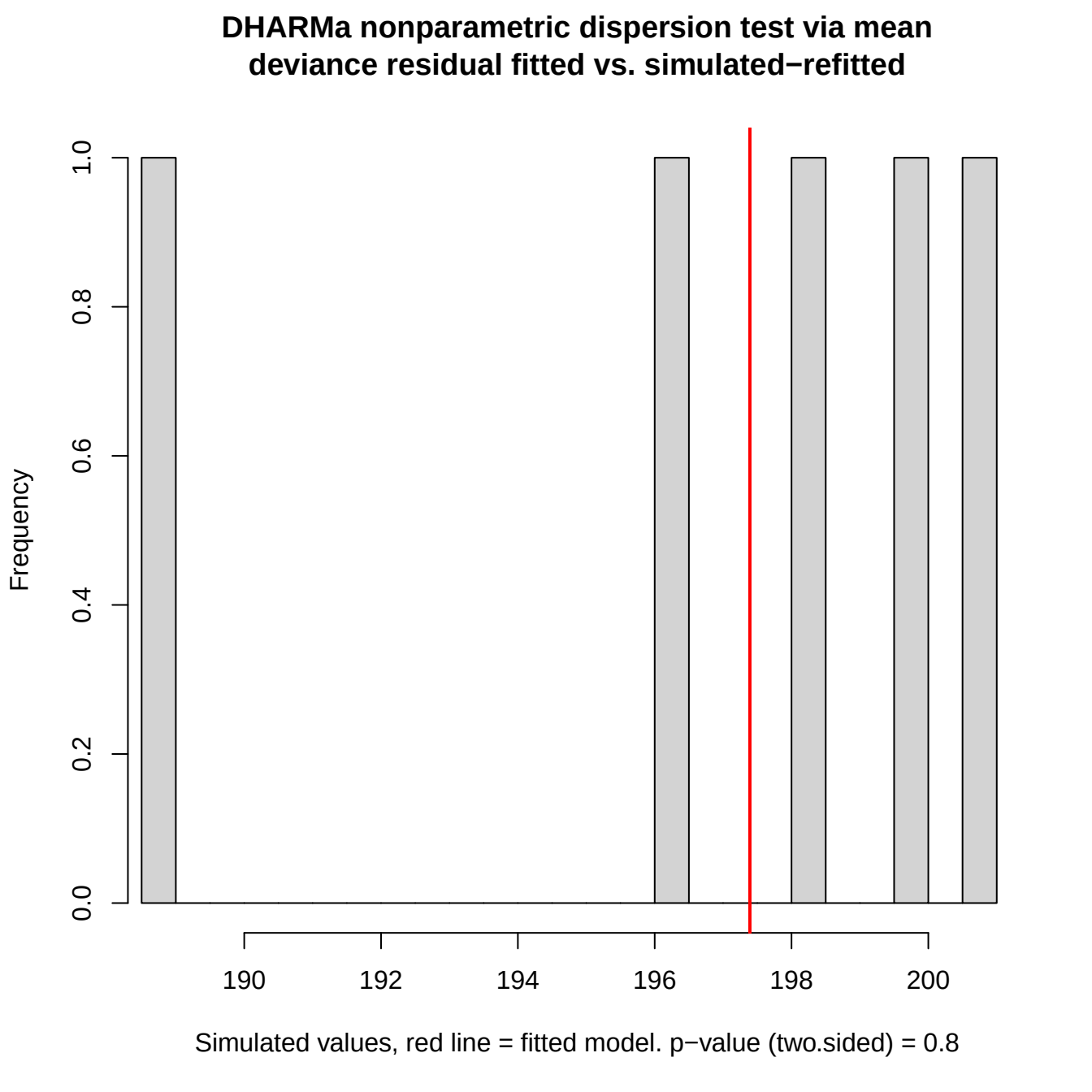

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

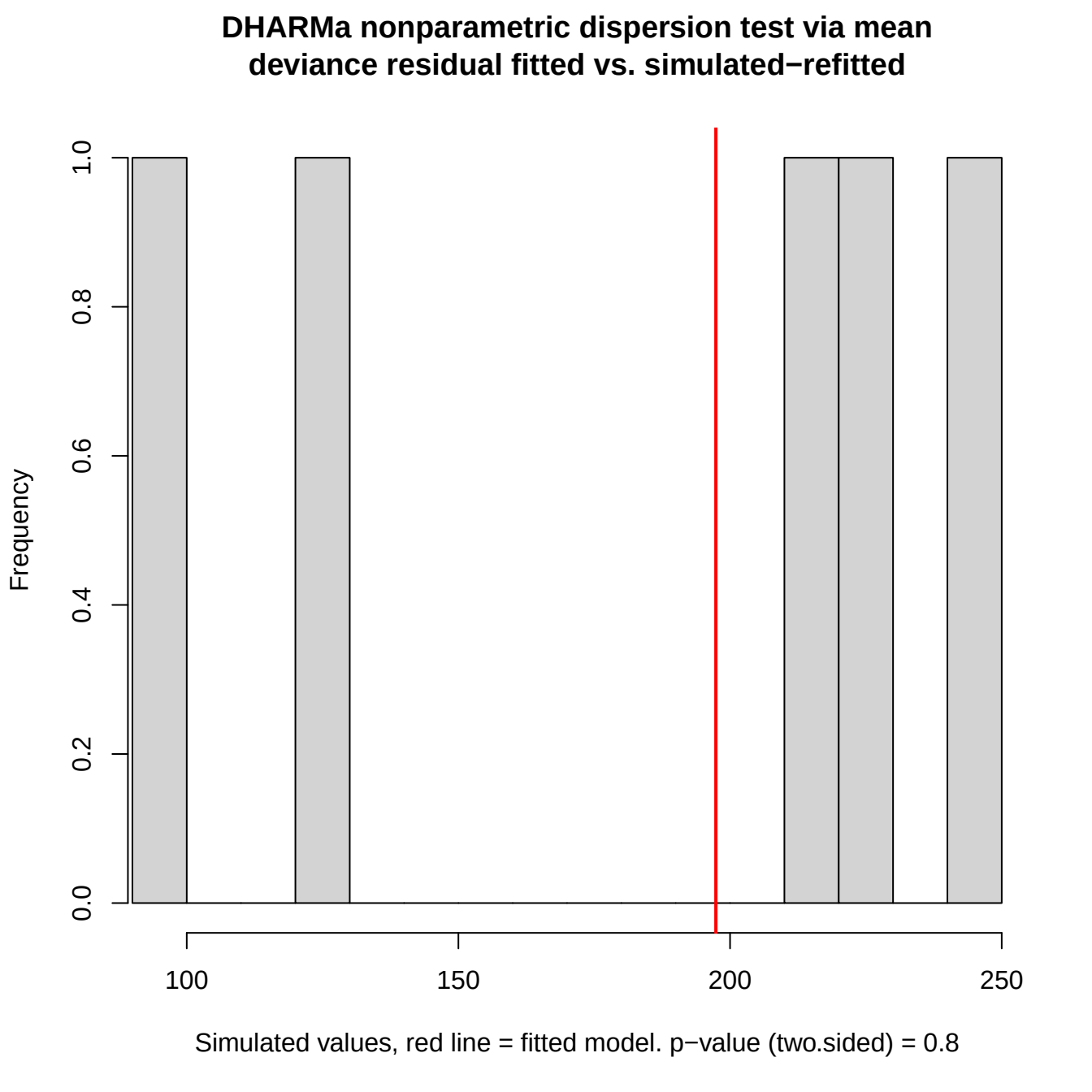

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

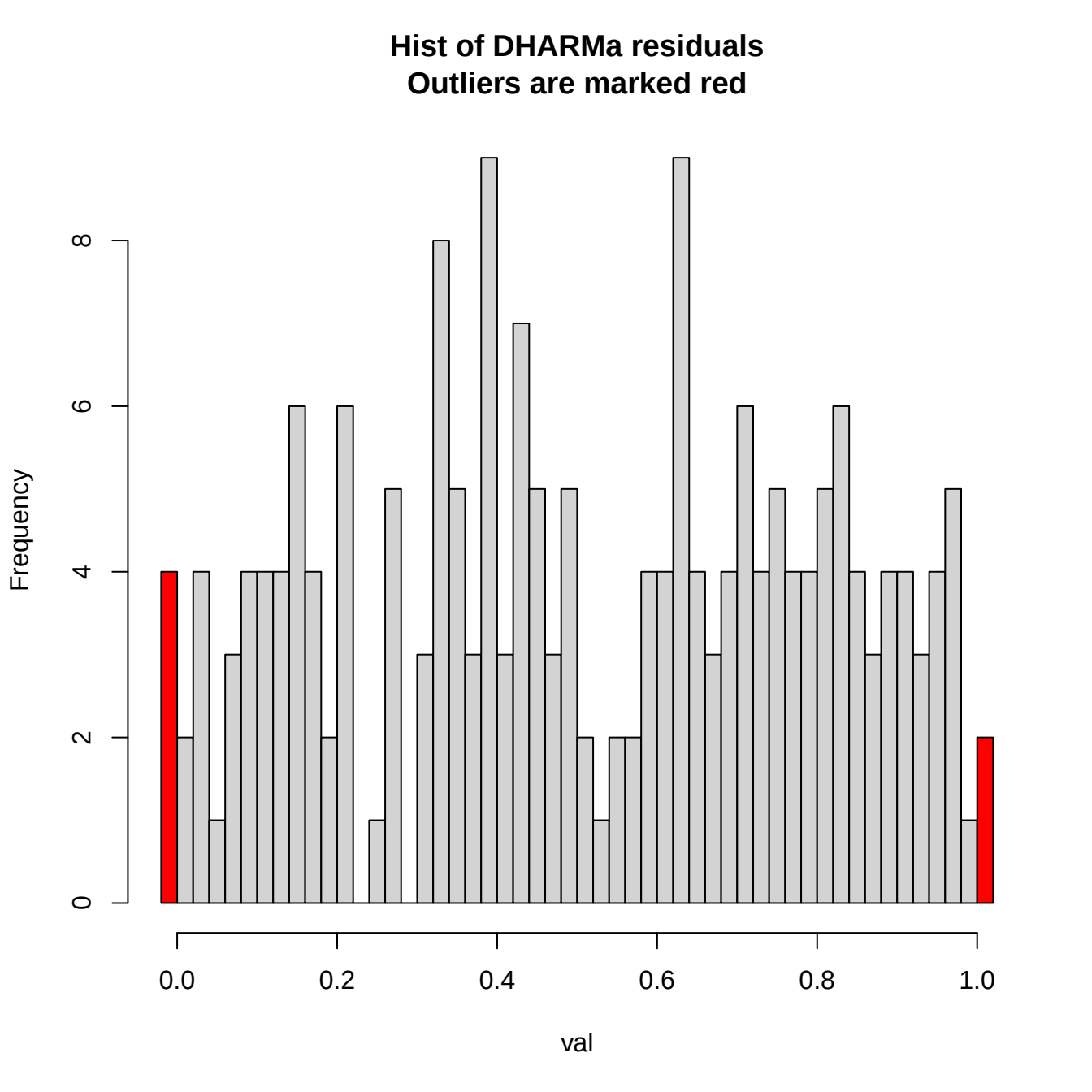

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

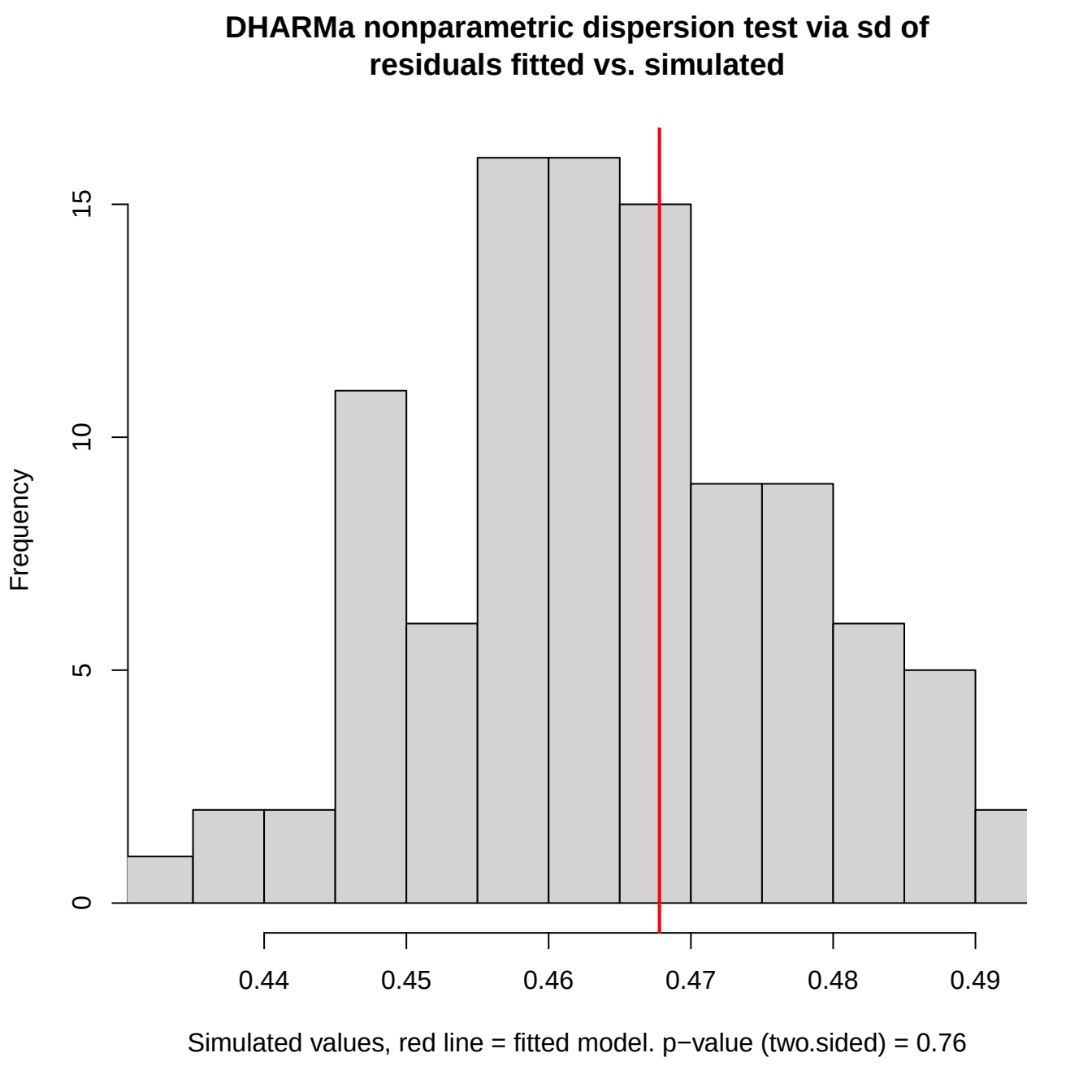

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
1.0
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

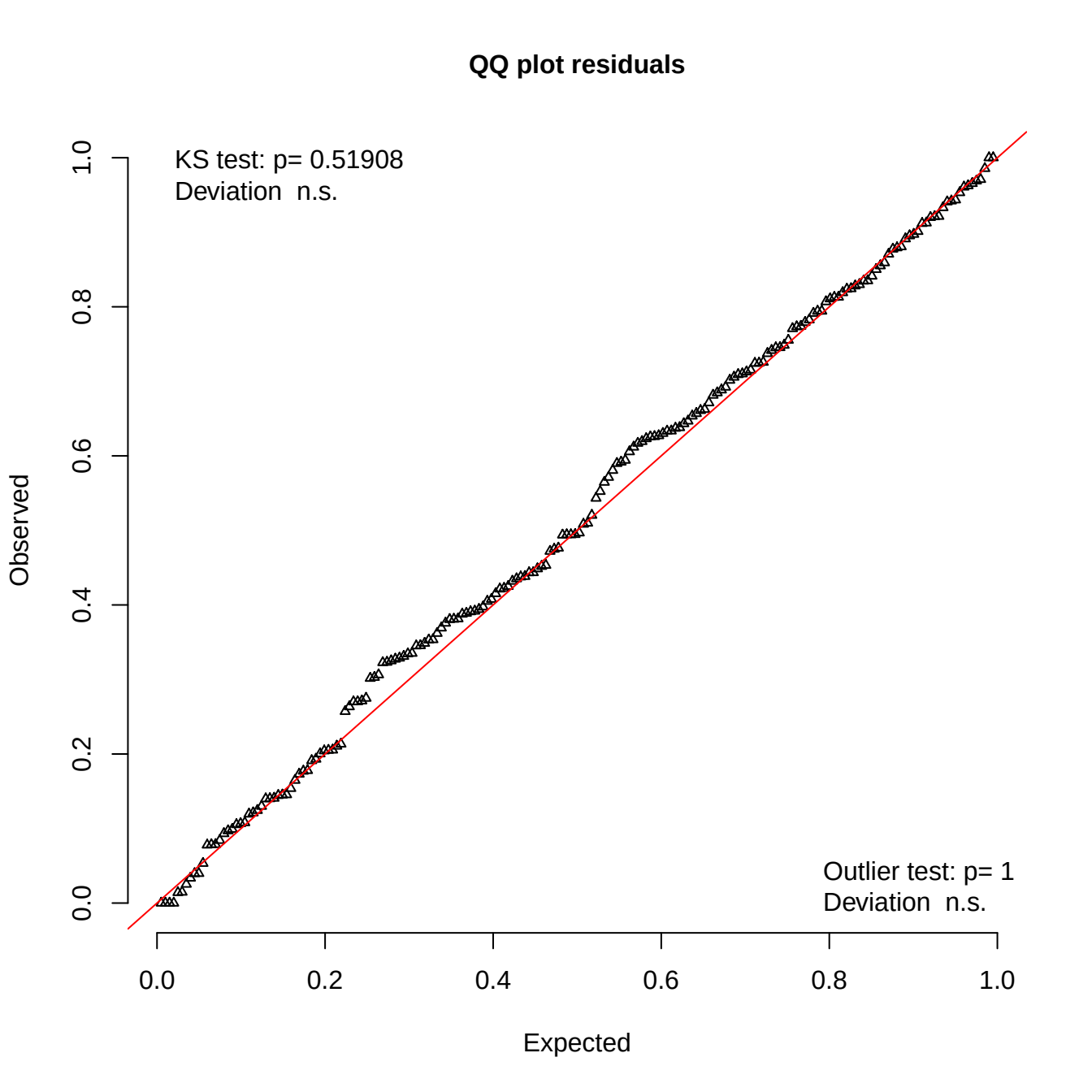

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00013
Deviation significant
Outlier test: p= 0.74217
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

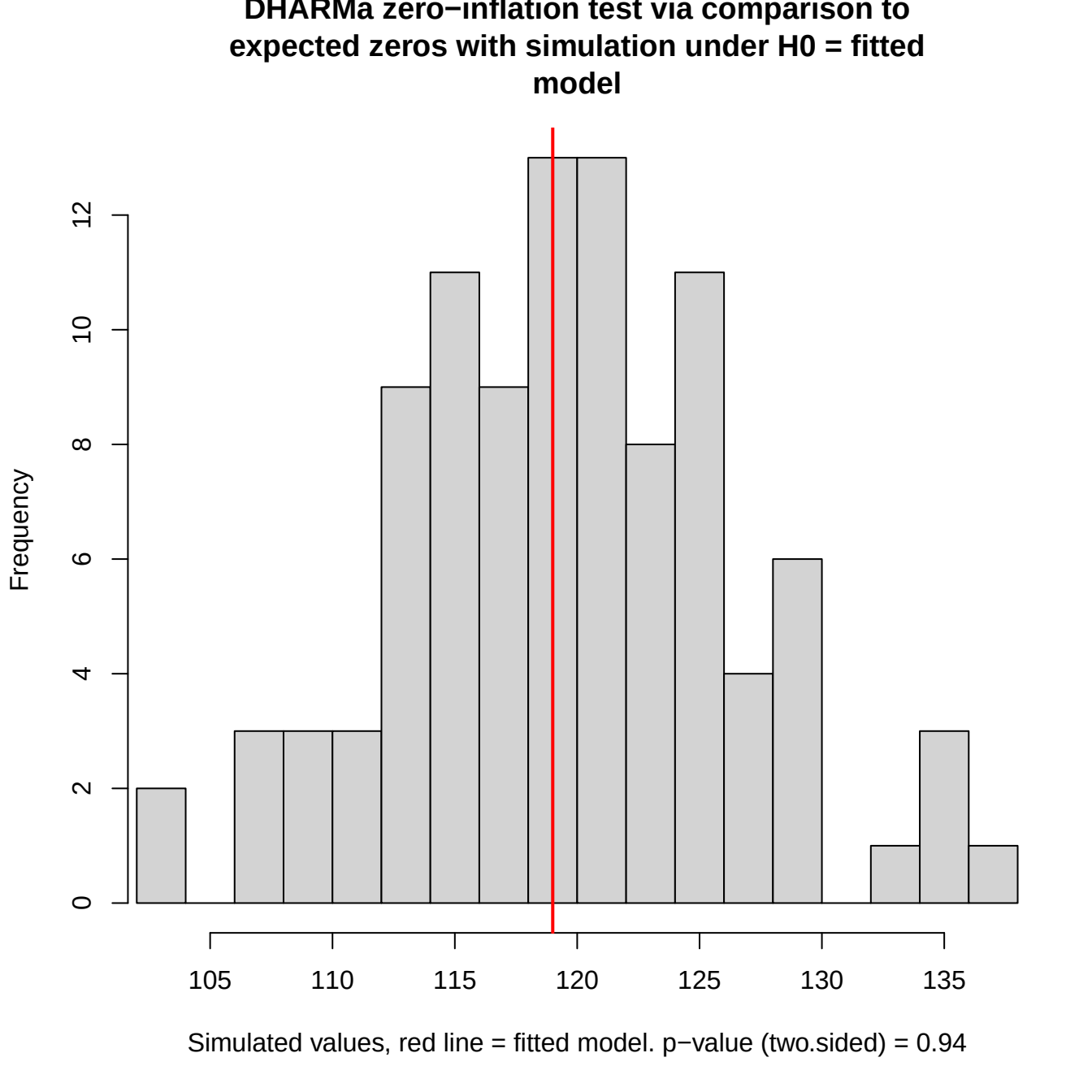

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
190
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

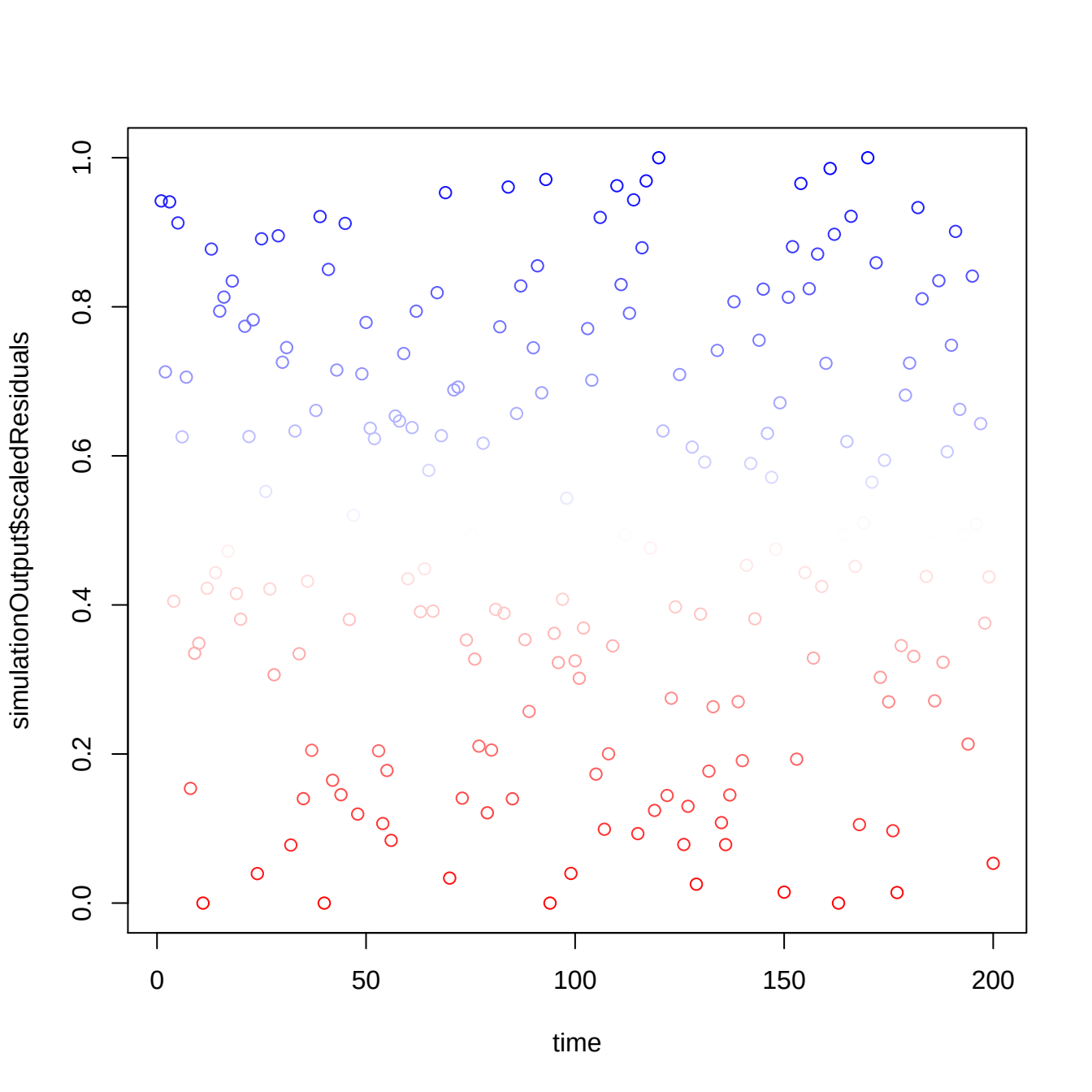

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
150
200
250
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

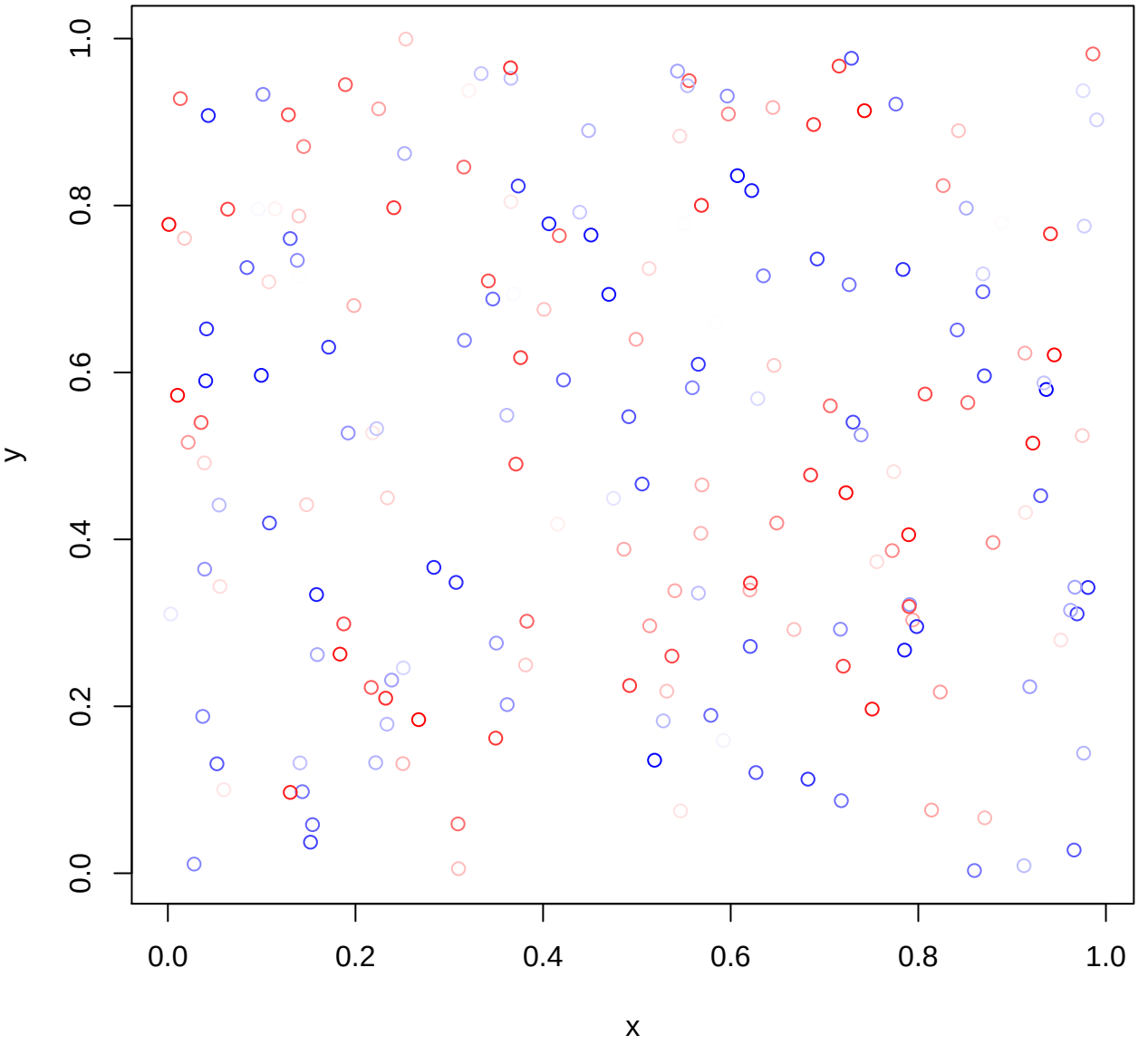

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

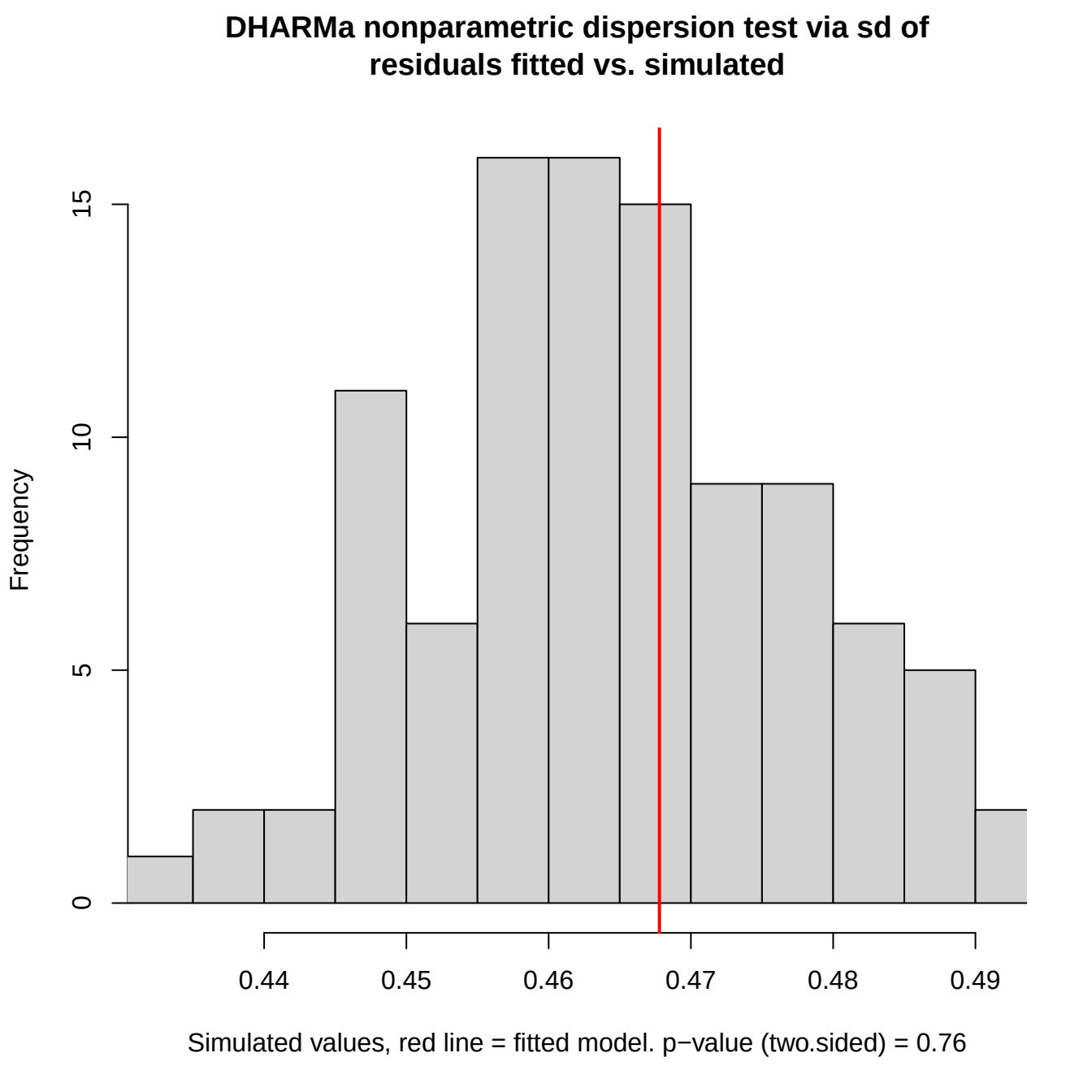

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

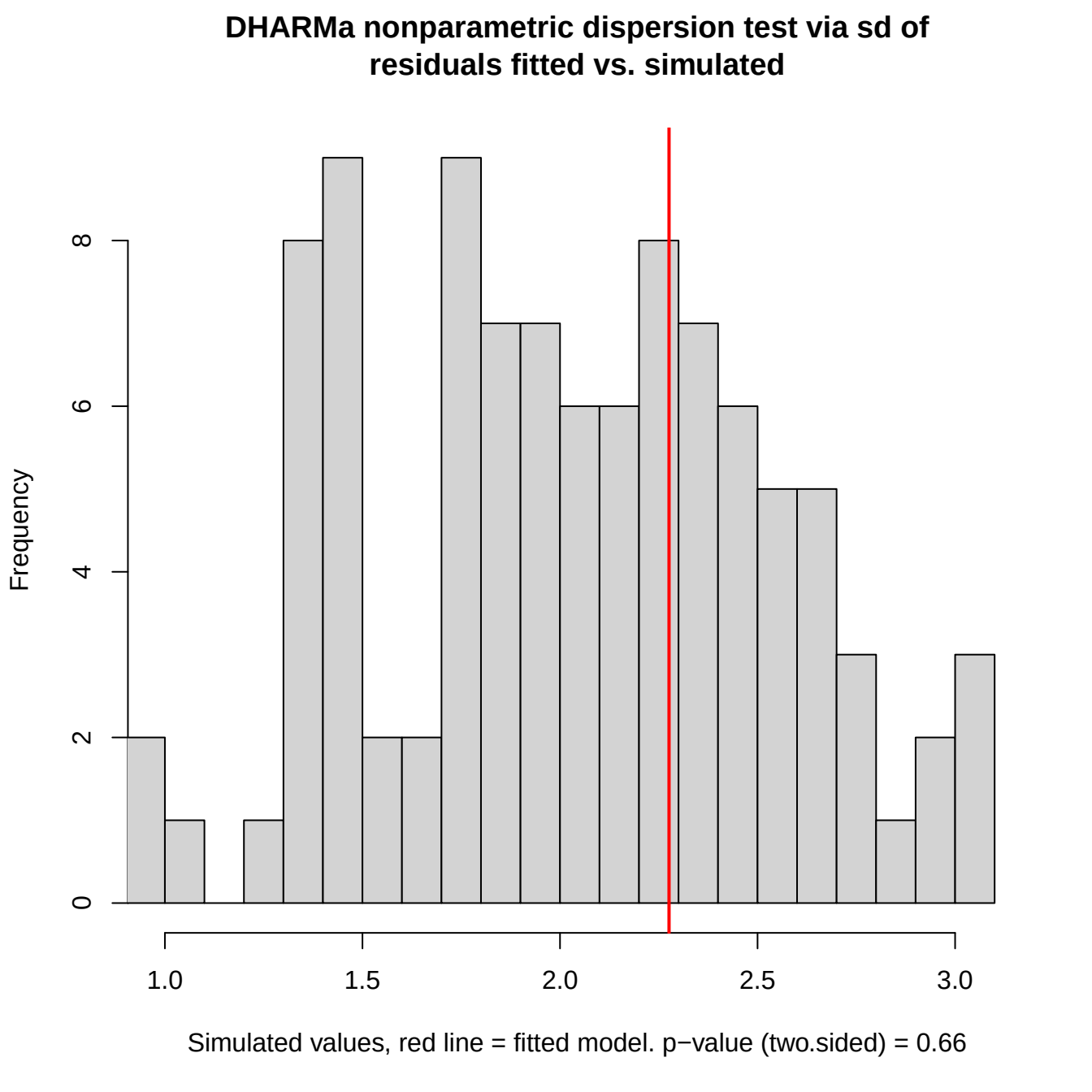

QQ plot residuals
KS test: p= 0.51908
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

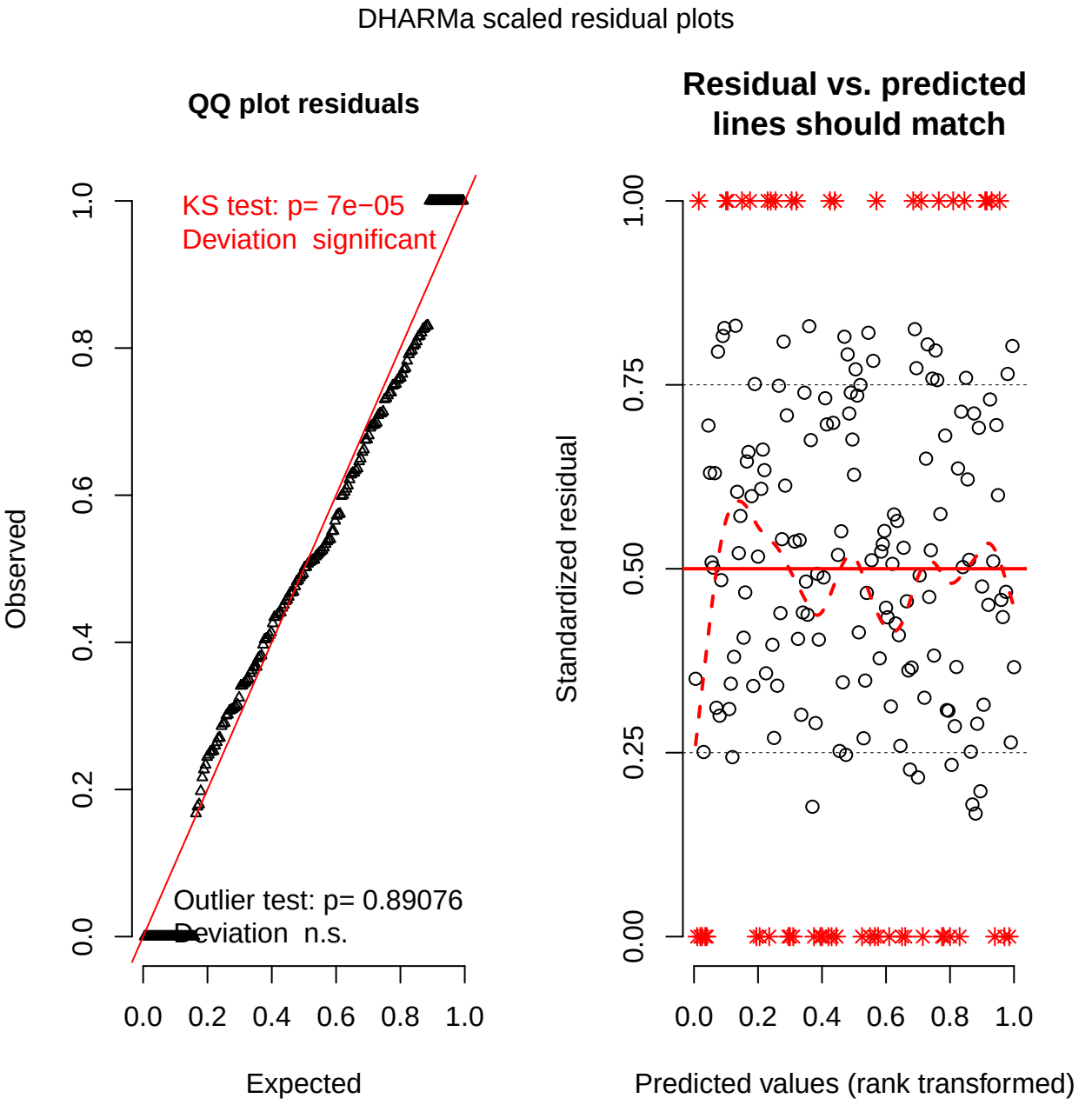

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
105
110
115
120
125
130
135
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

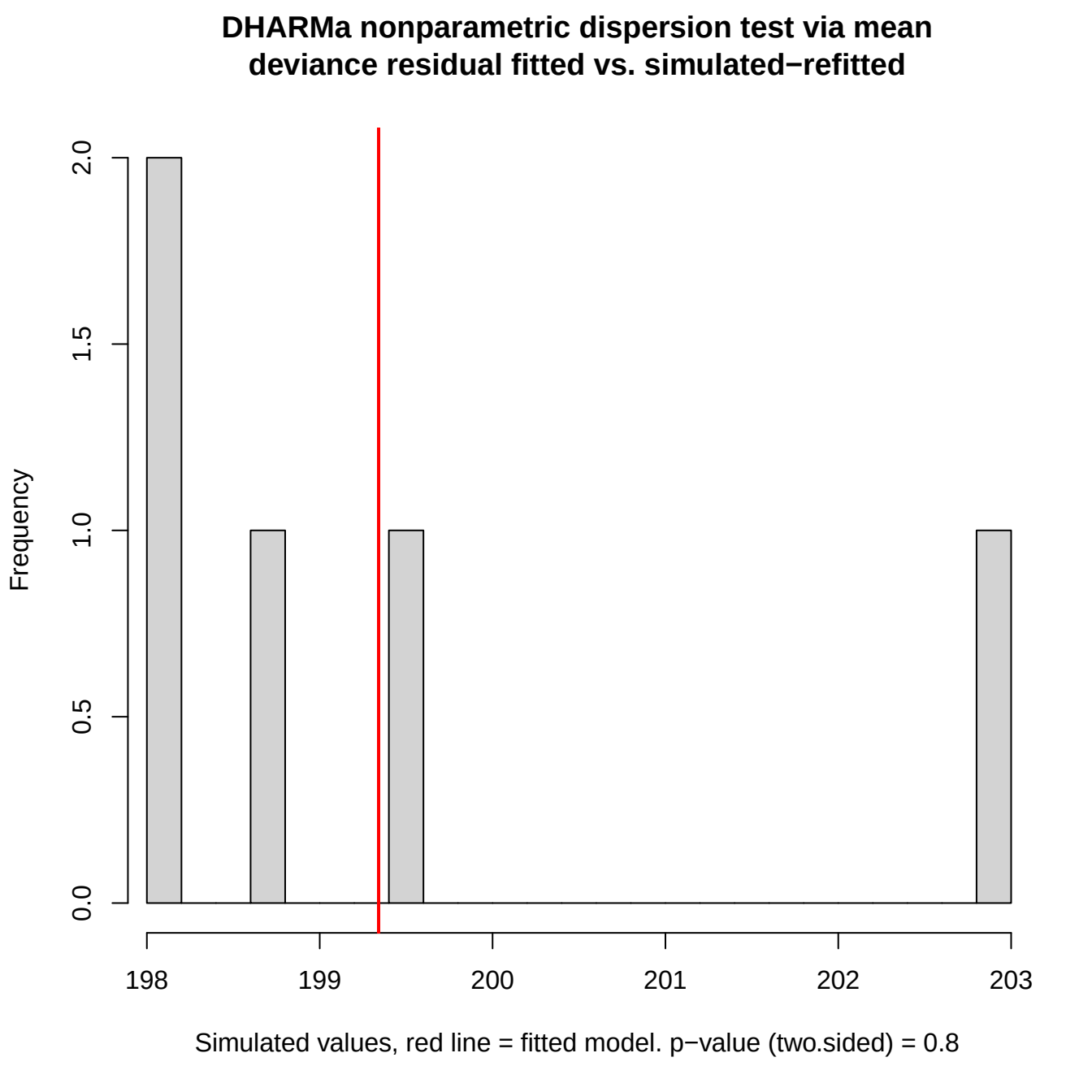

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

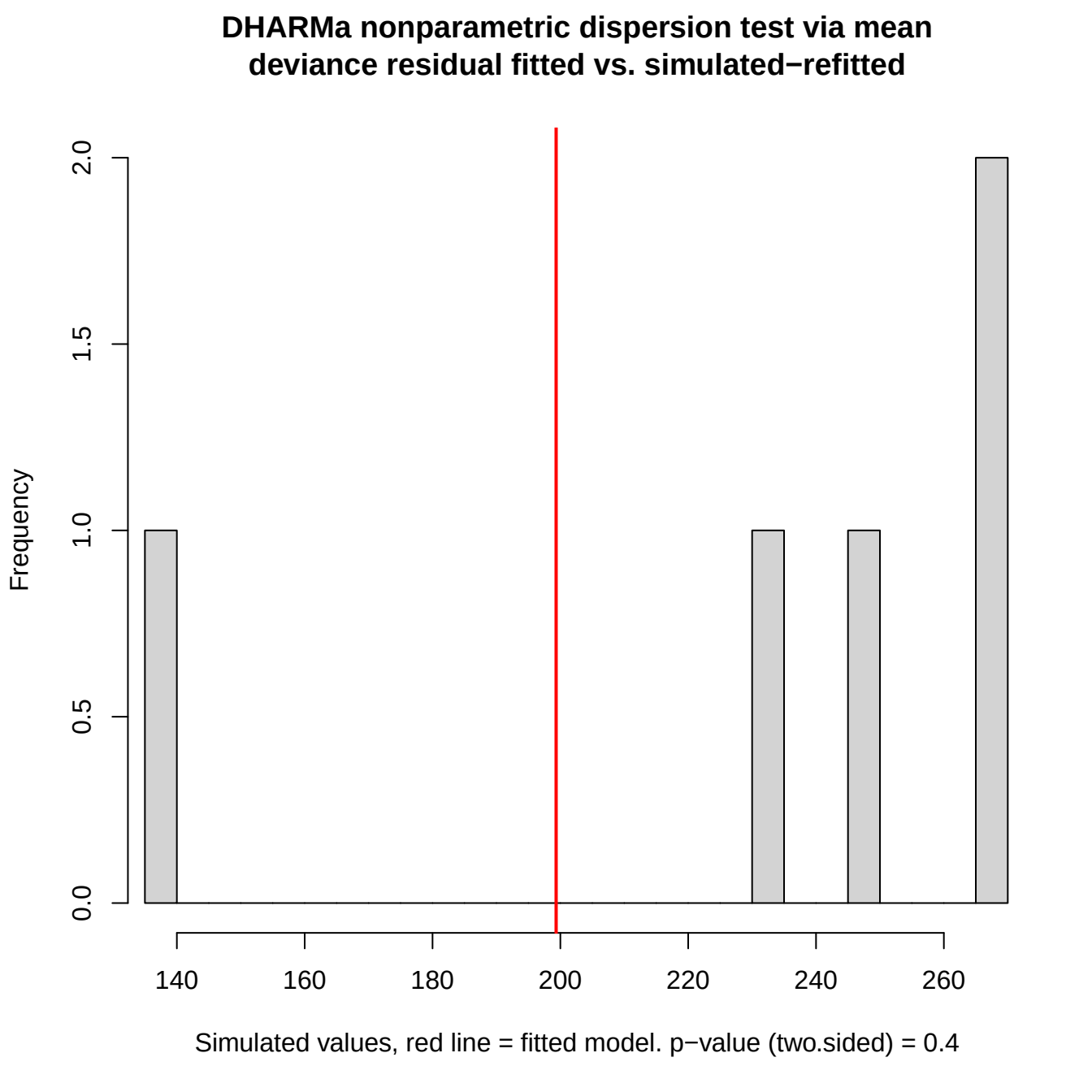

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

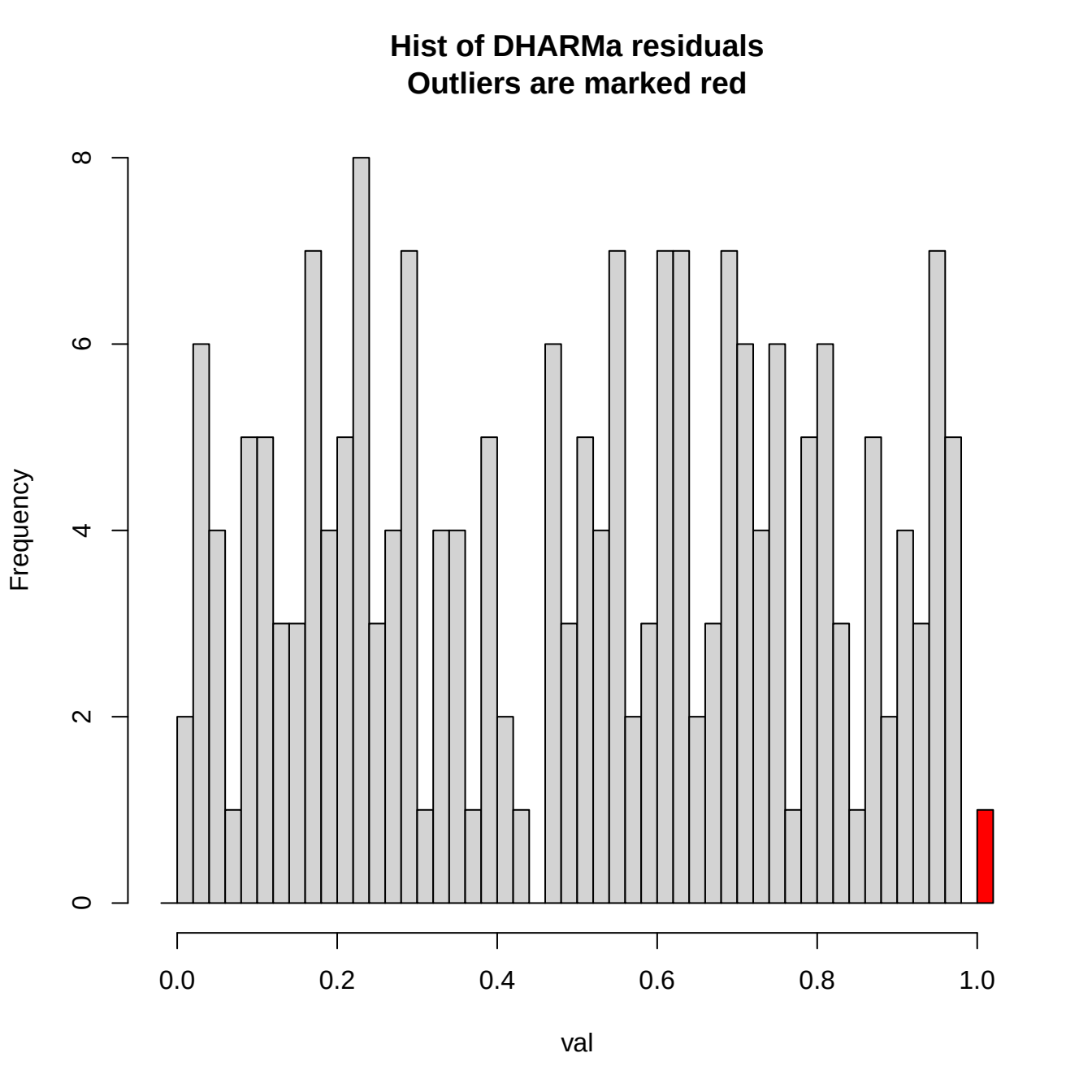

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.76

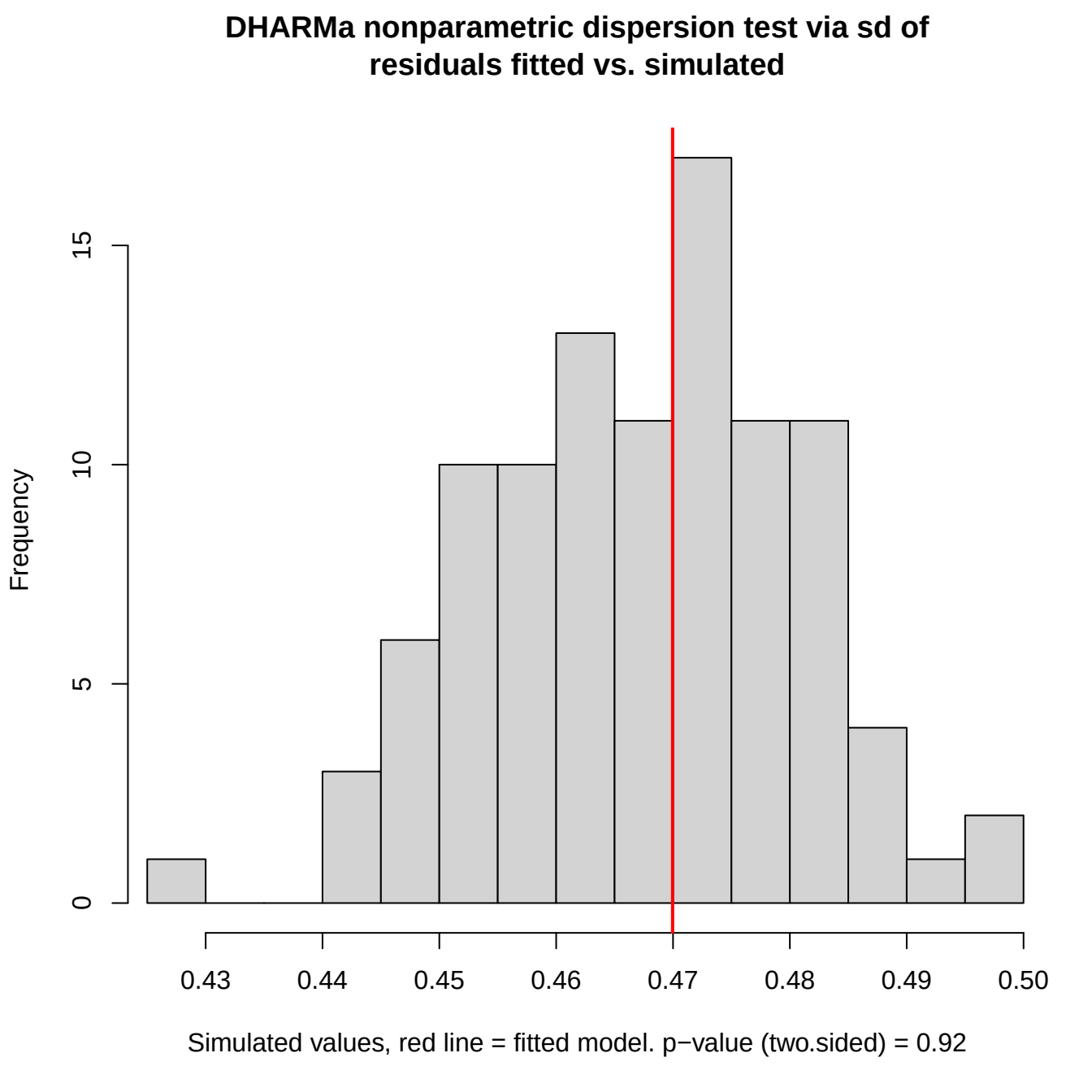

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
1.0
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.66

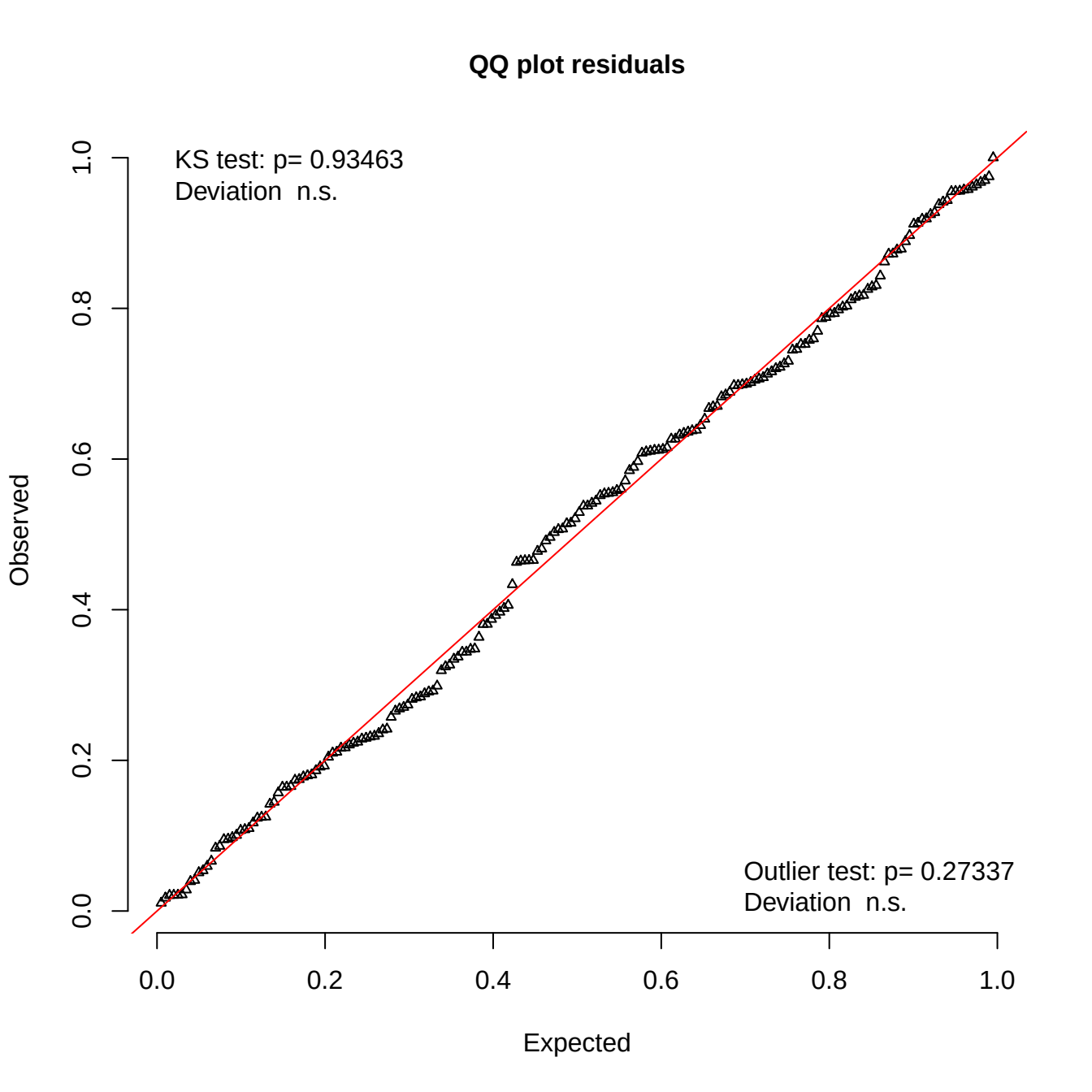

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 7e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

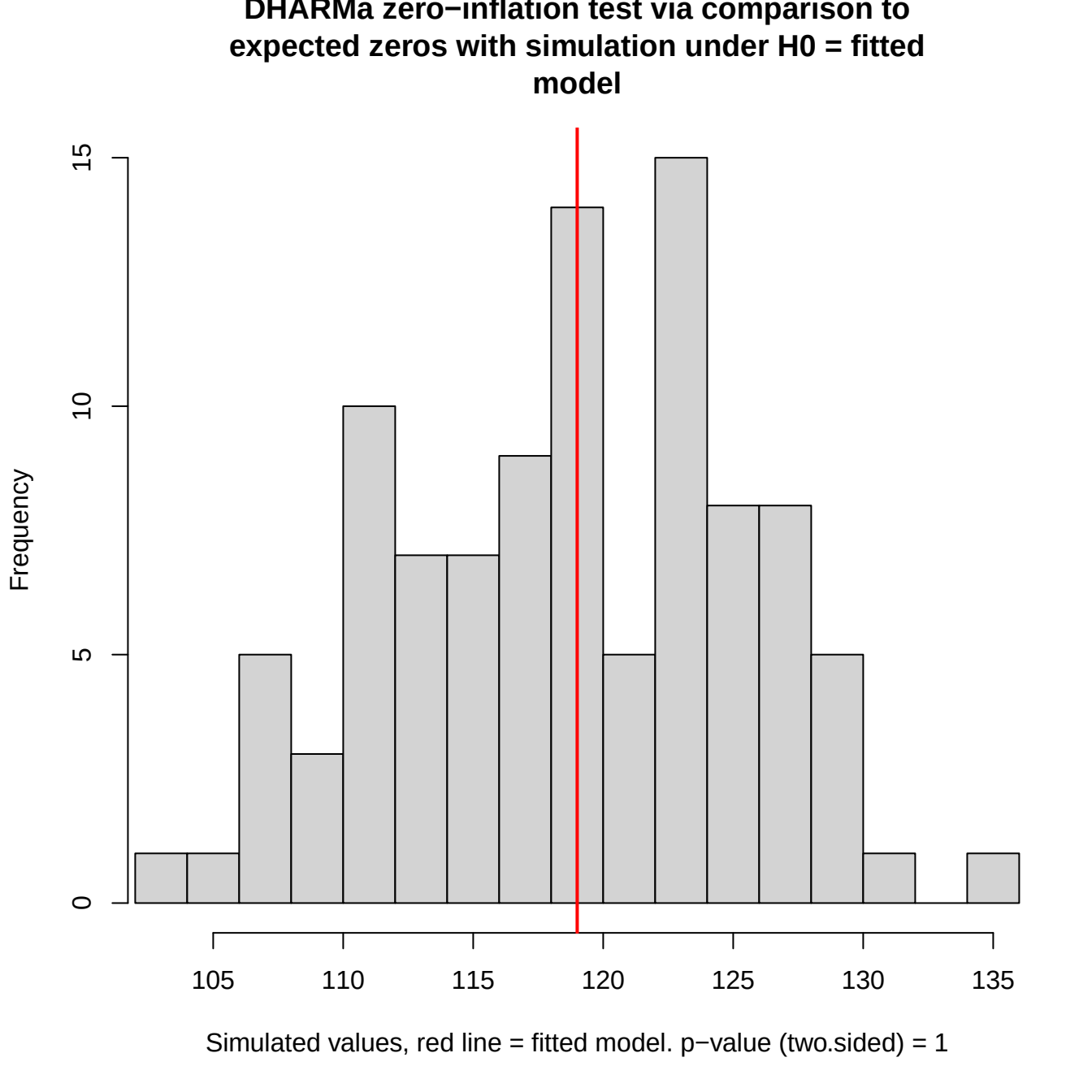

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
198
199
200
201
202
203
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

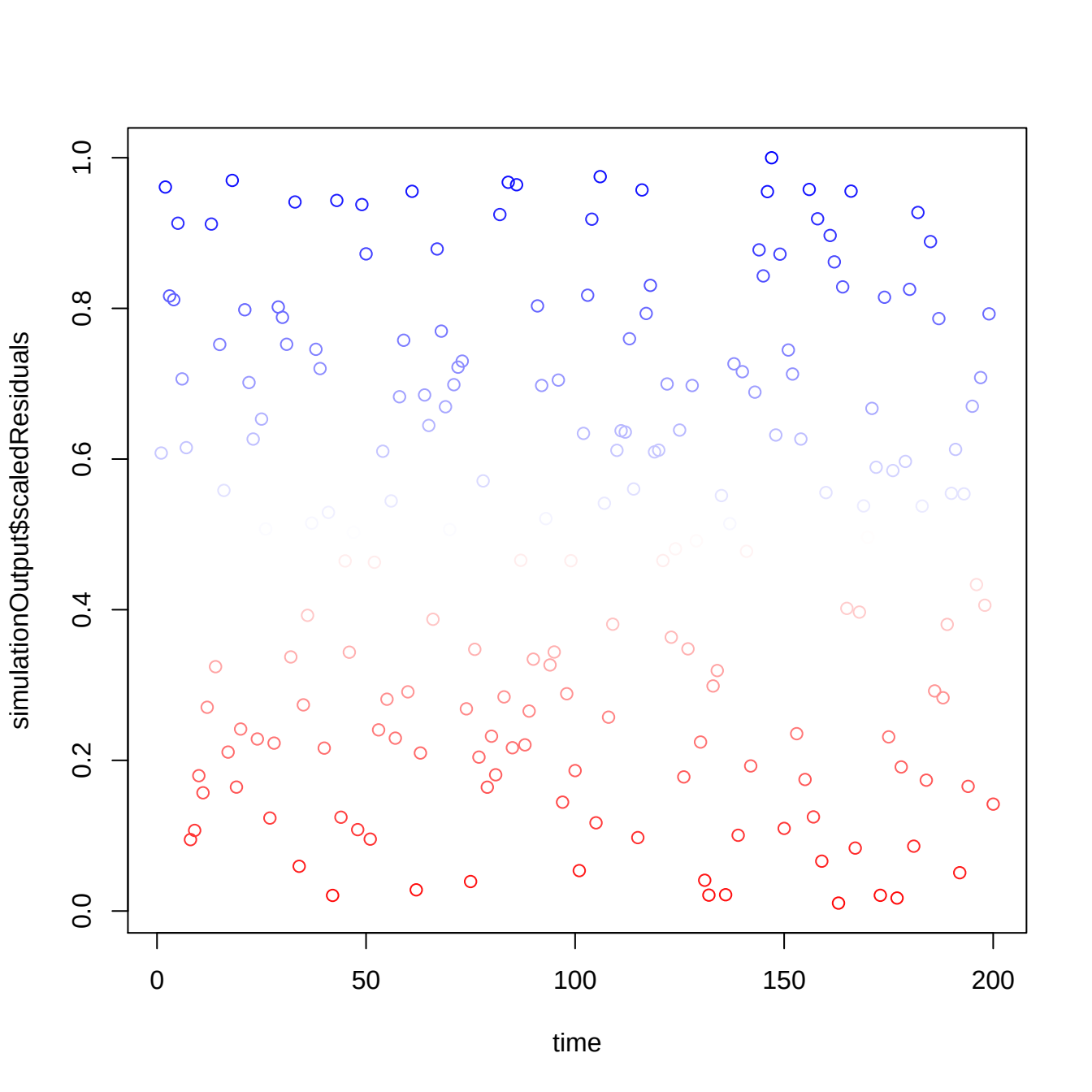

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
140
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

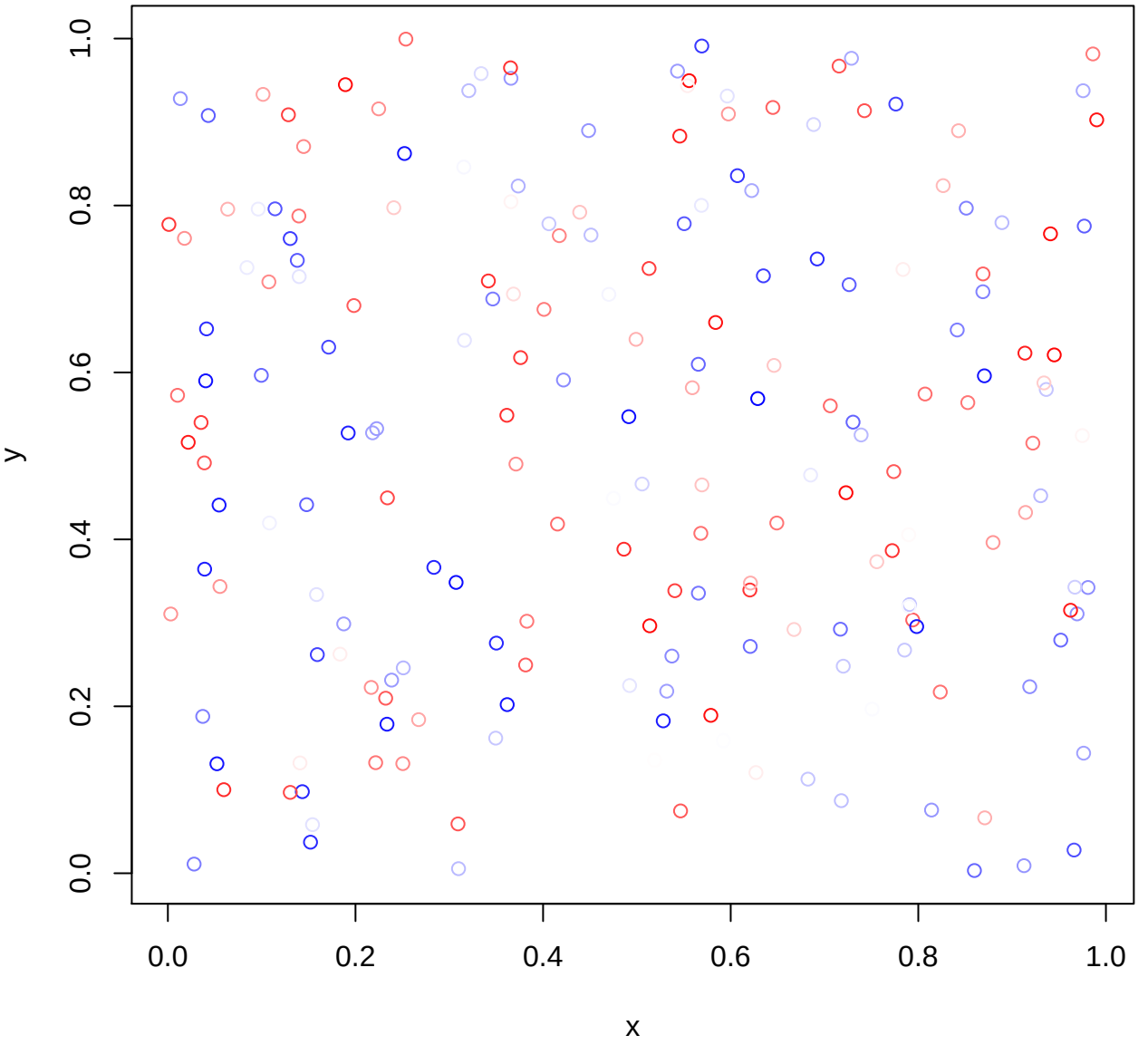

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

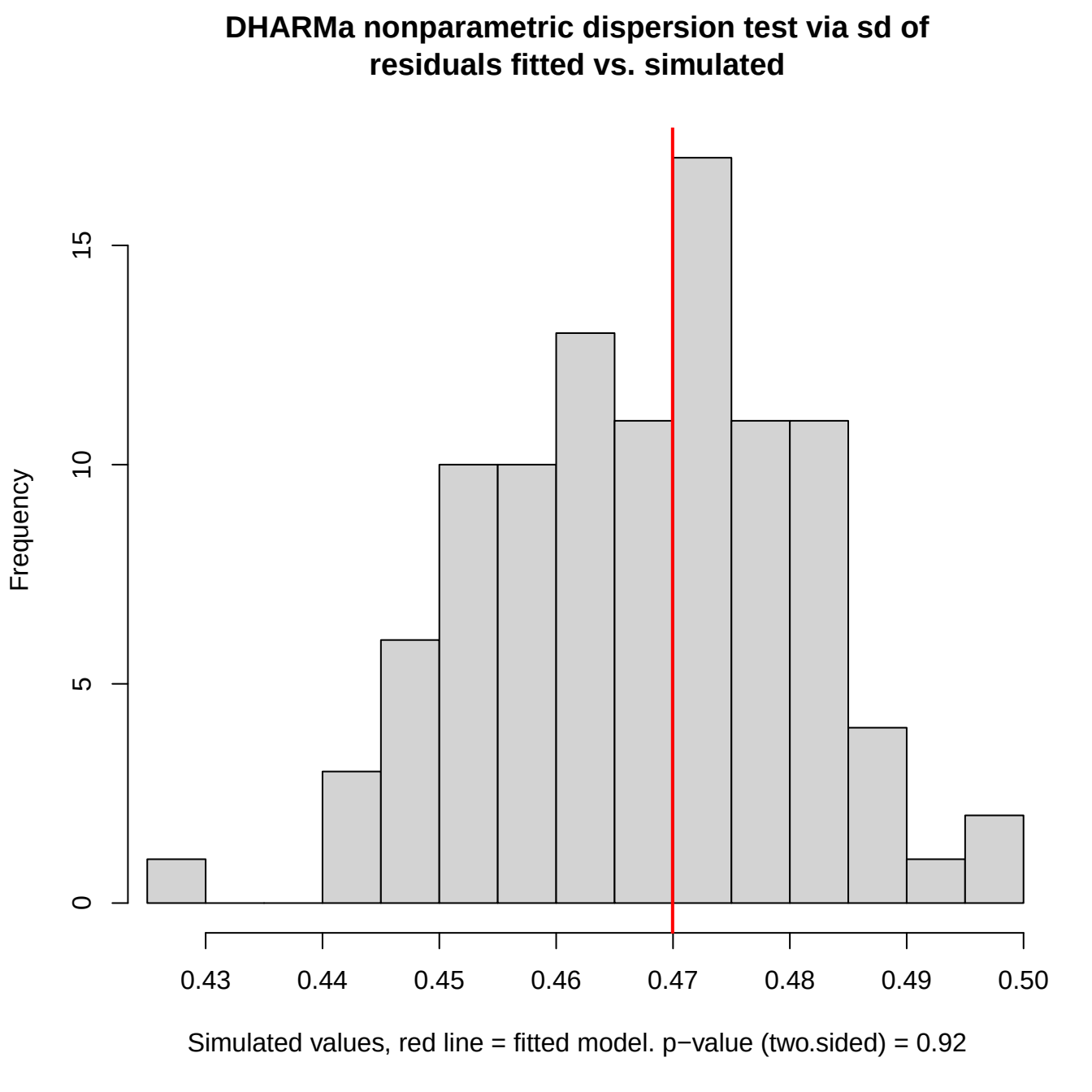

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

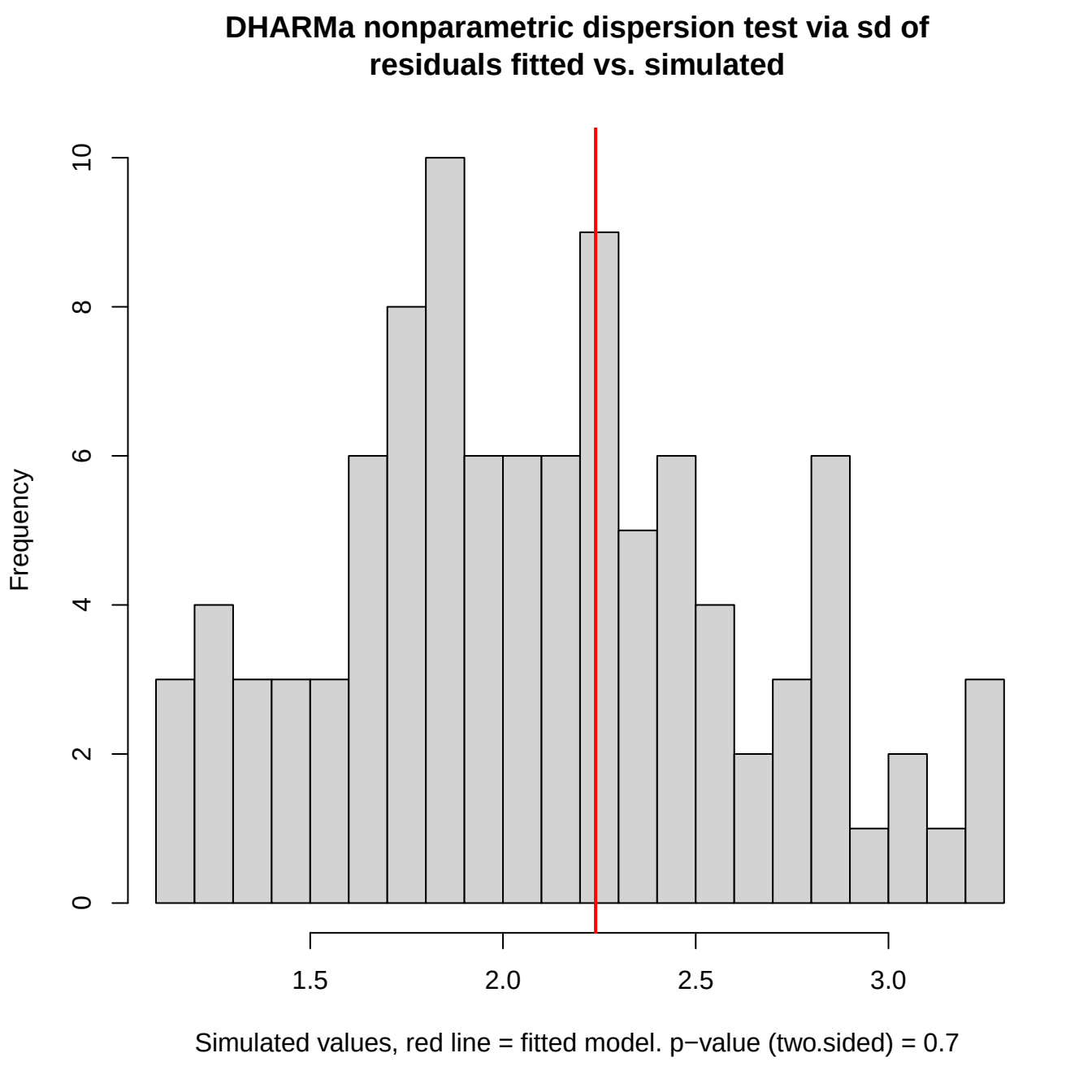

QQ plot residuals
KS test: p= 0.93463
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

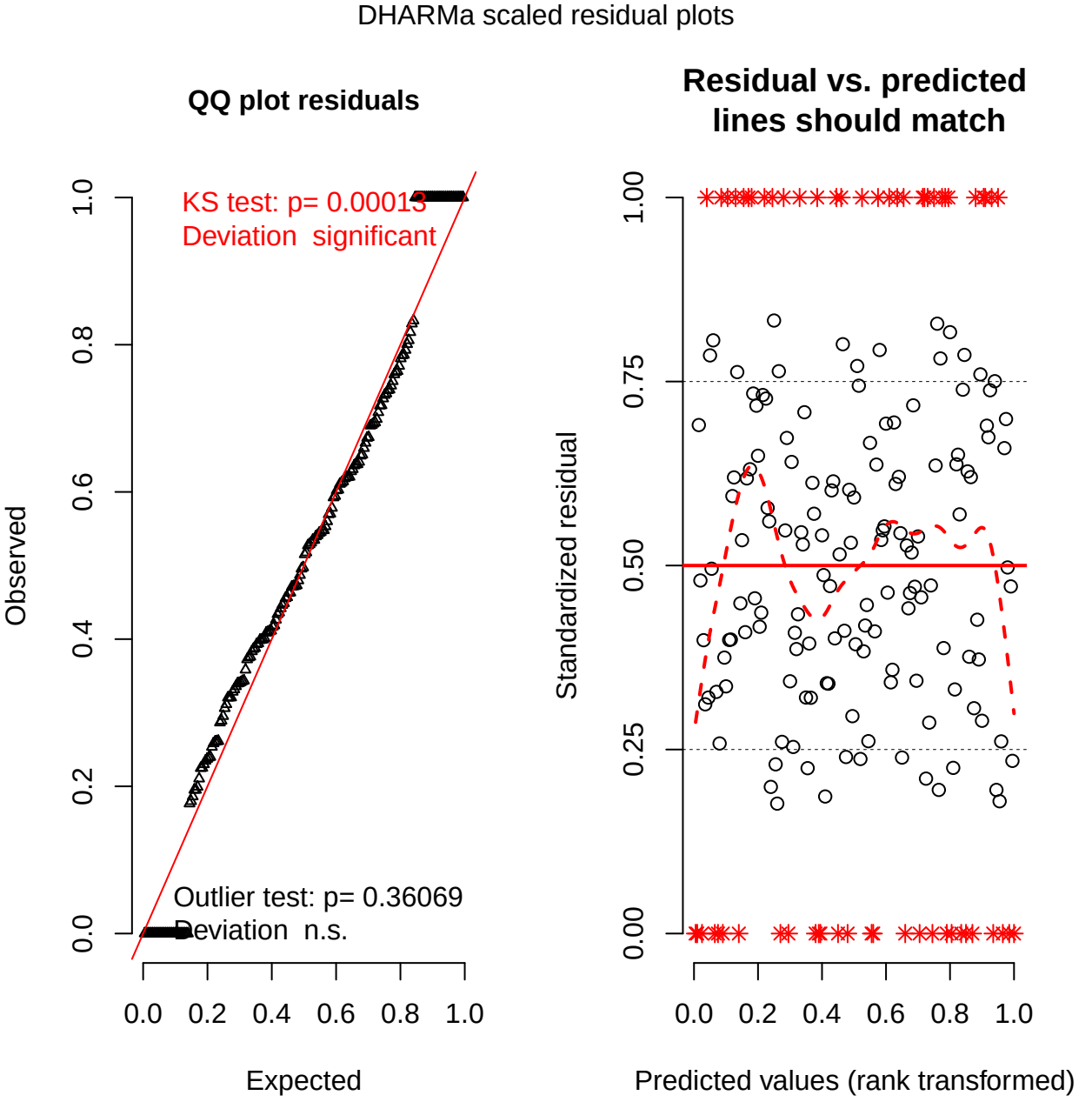

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
105
110
115
120
125
130
135
Simulated values, red line = fitted model. p−value (two.sided) = 1

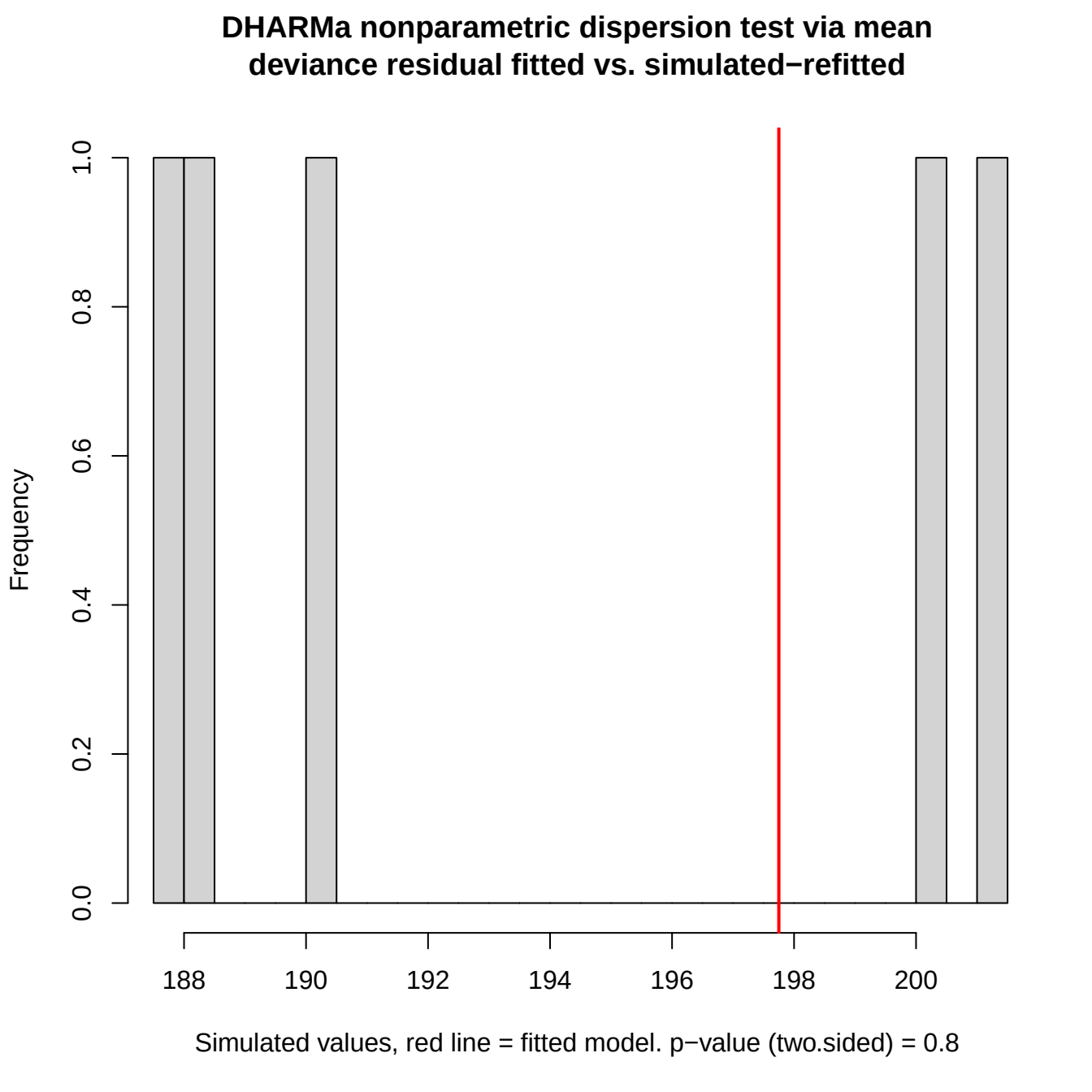

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

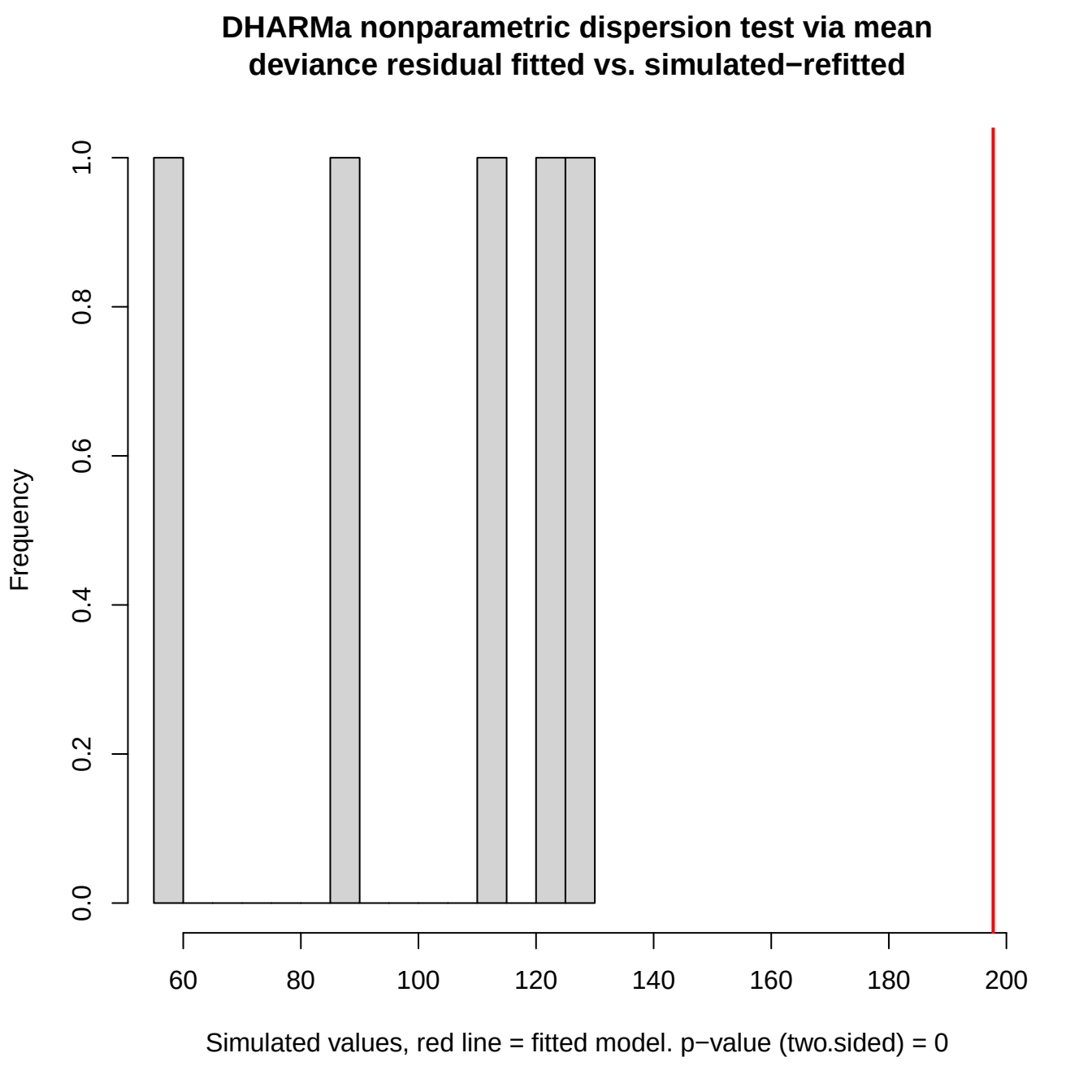

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

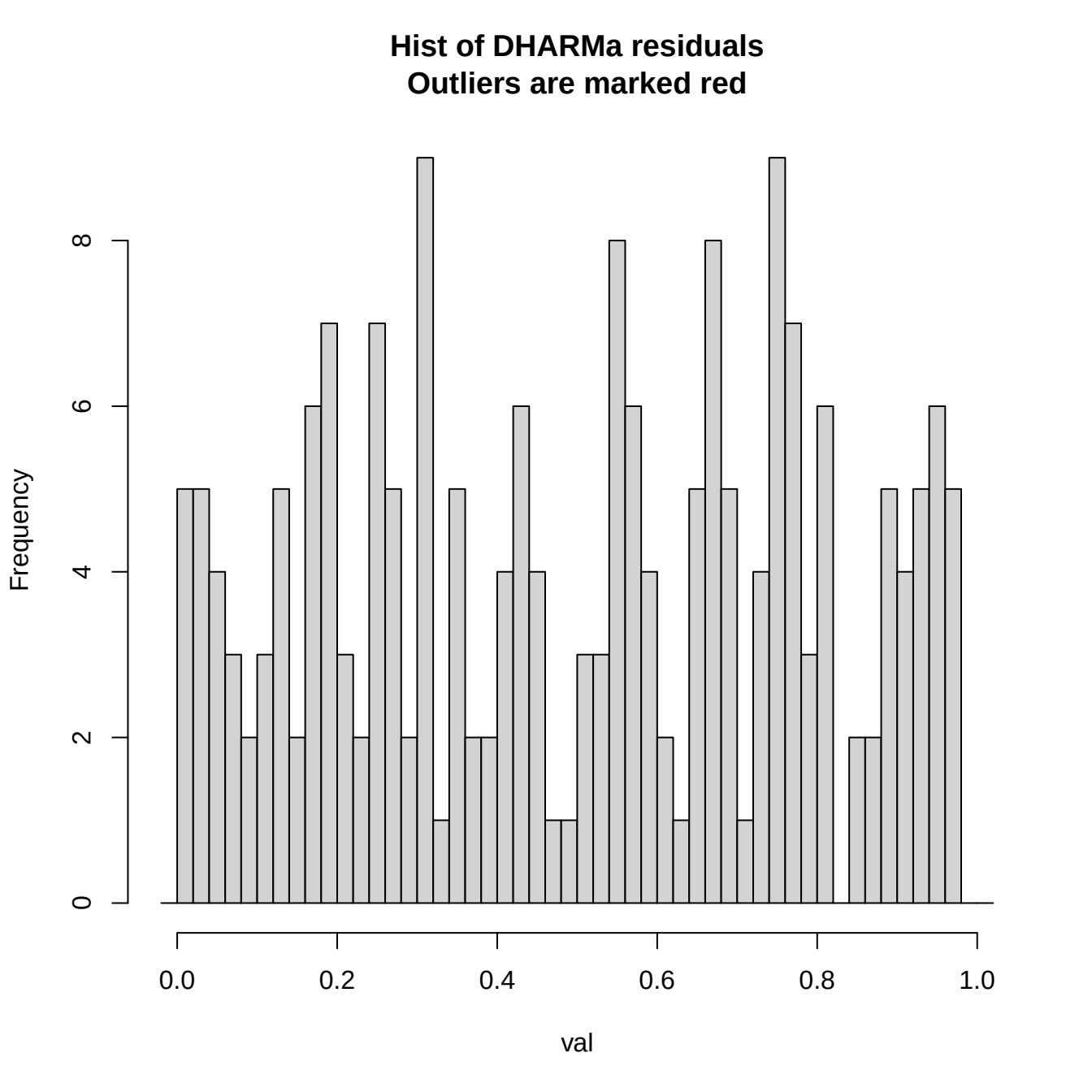

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.92

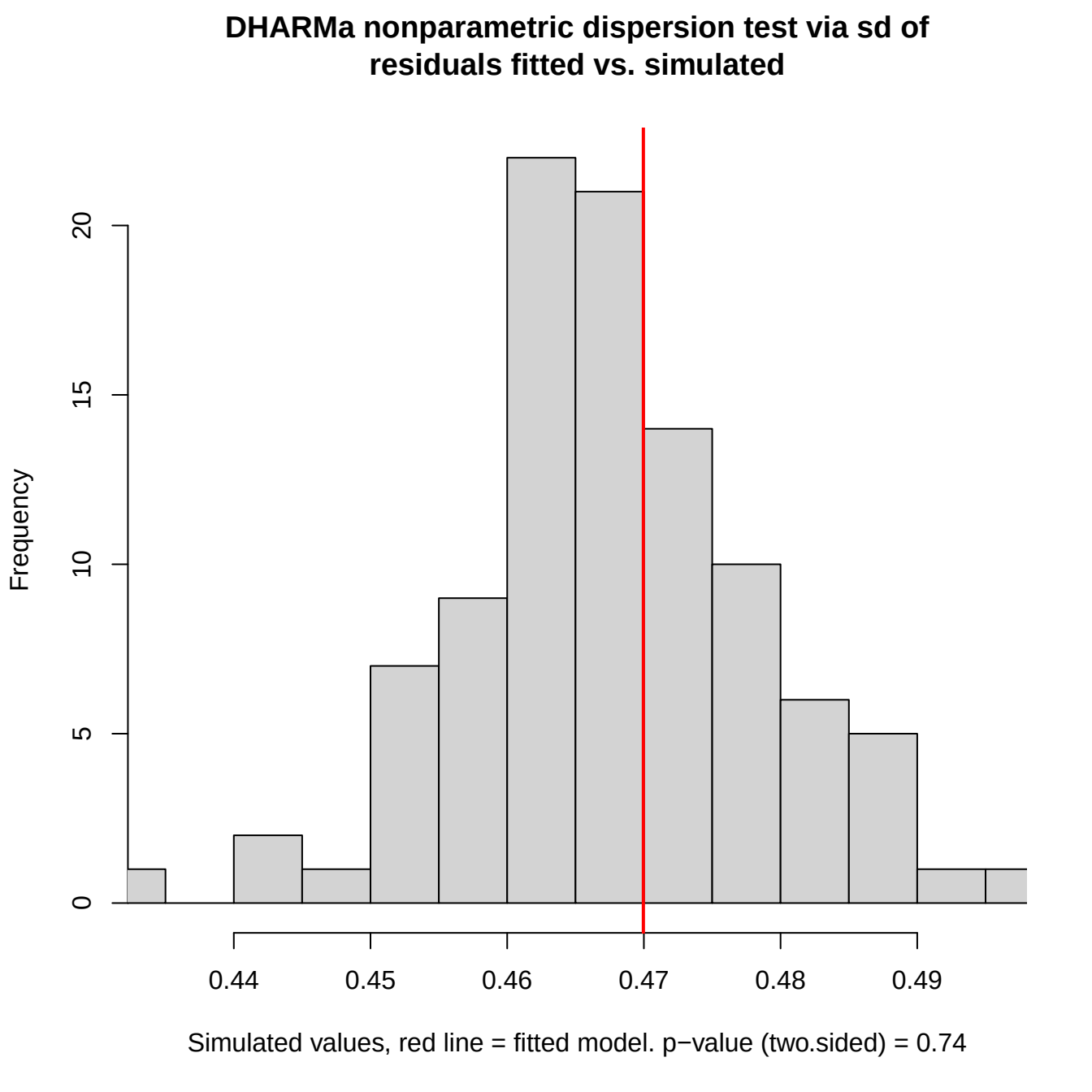

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
1.5
2.0
2.5
3.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.7

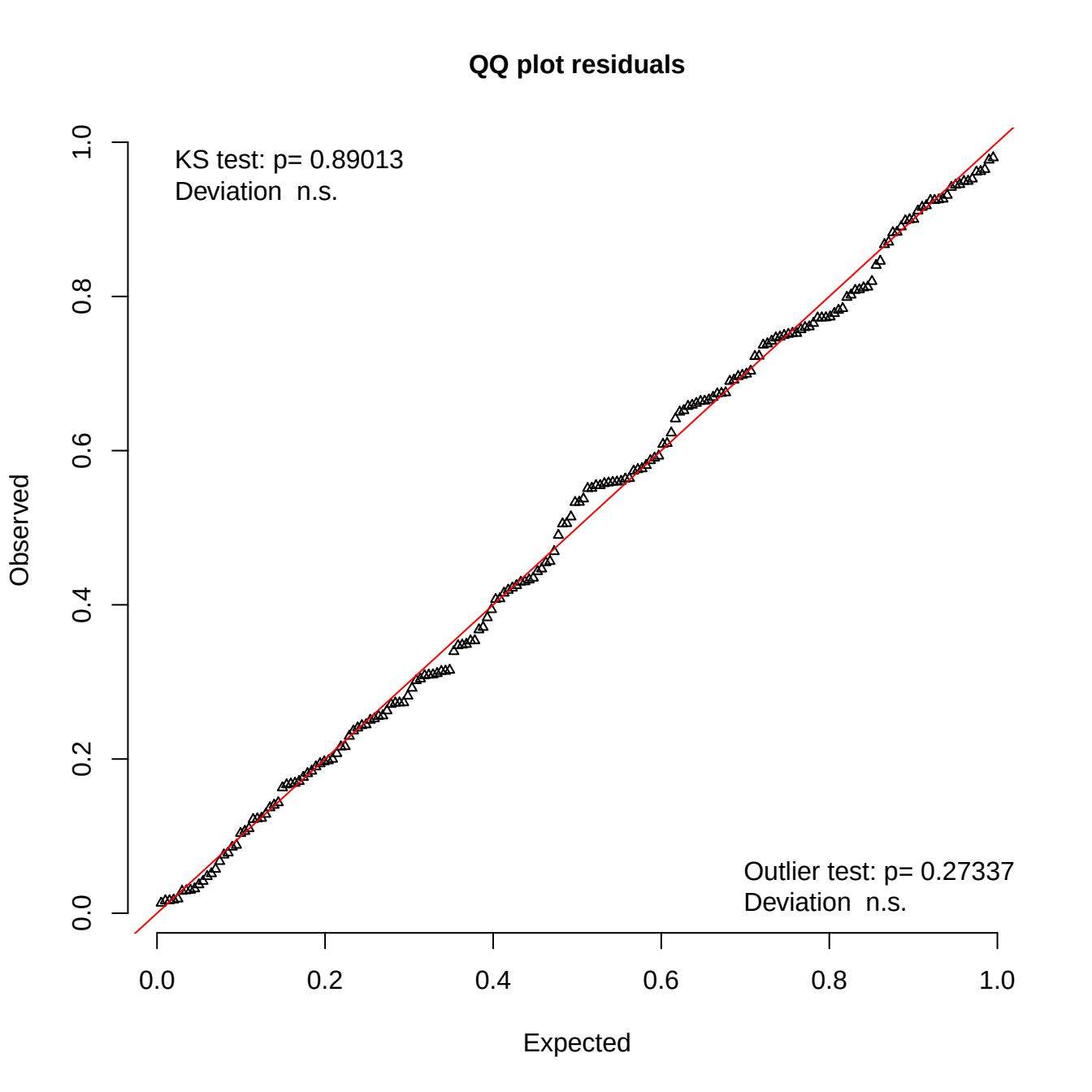

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00013
Deviation significant
Outlier test: p= 0.36069
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

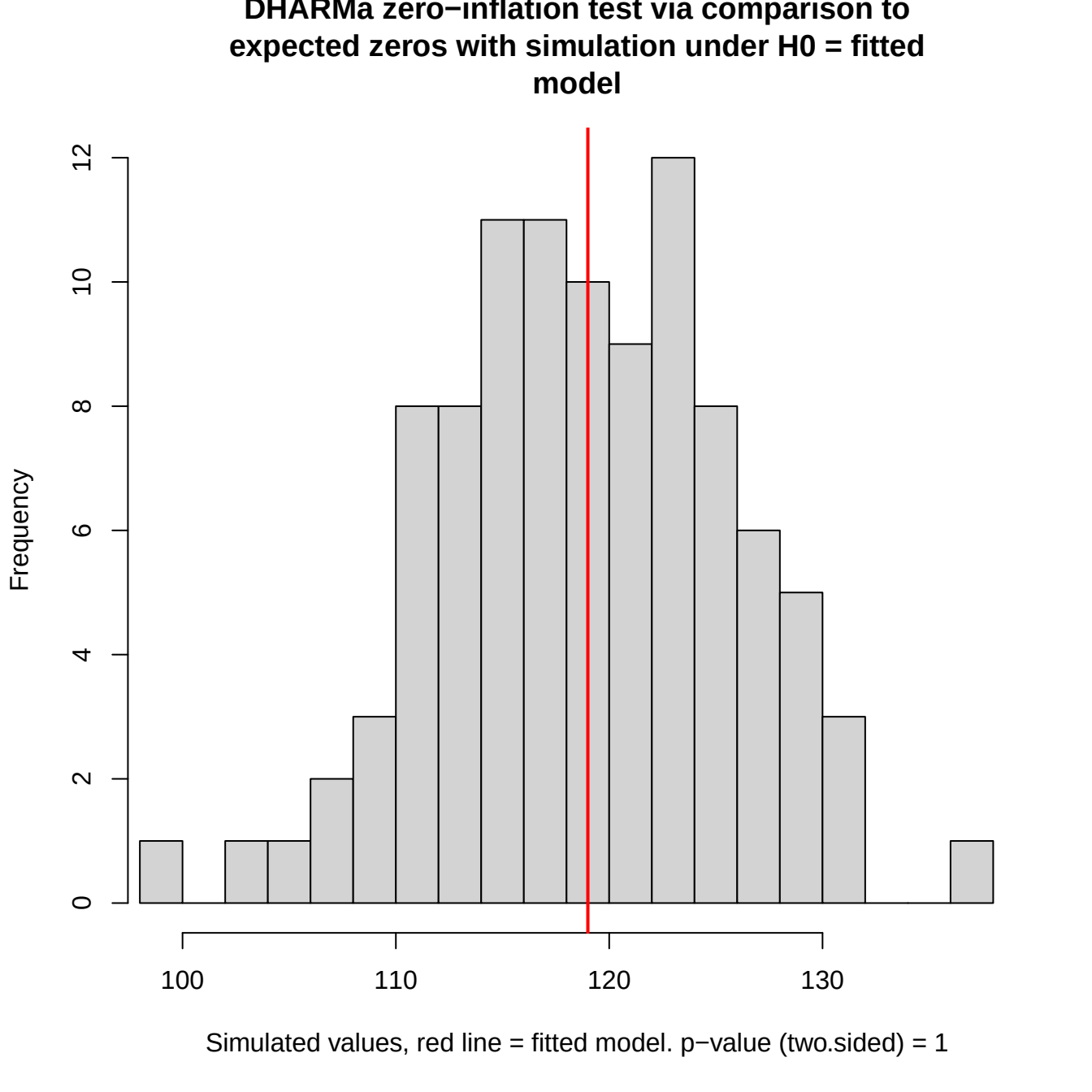

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
188
190
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

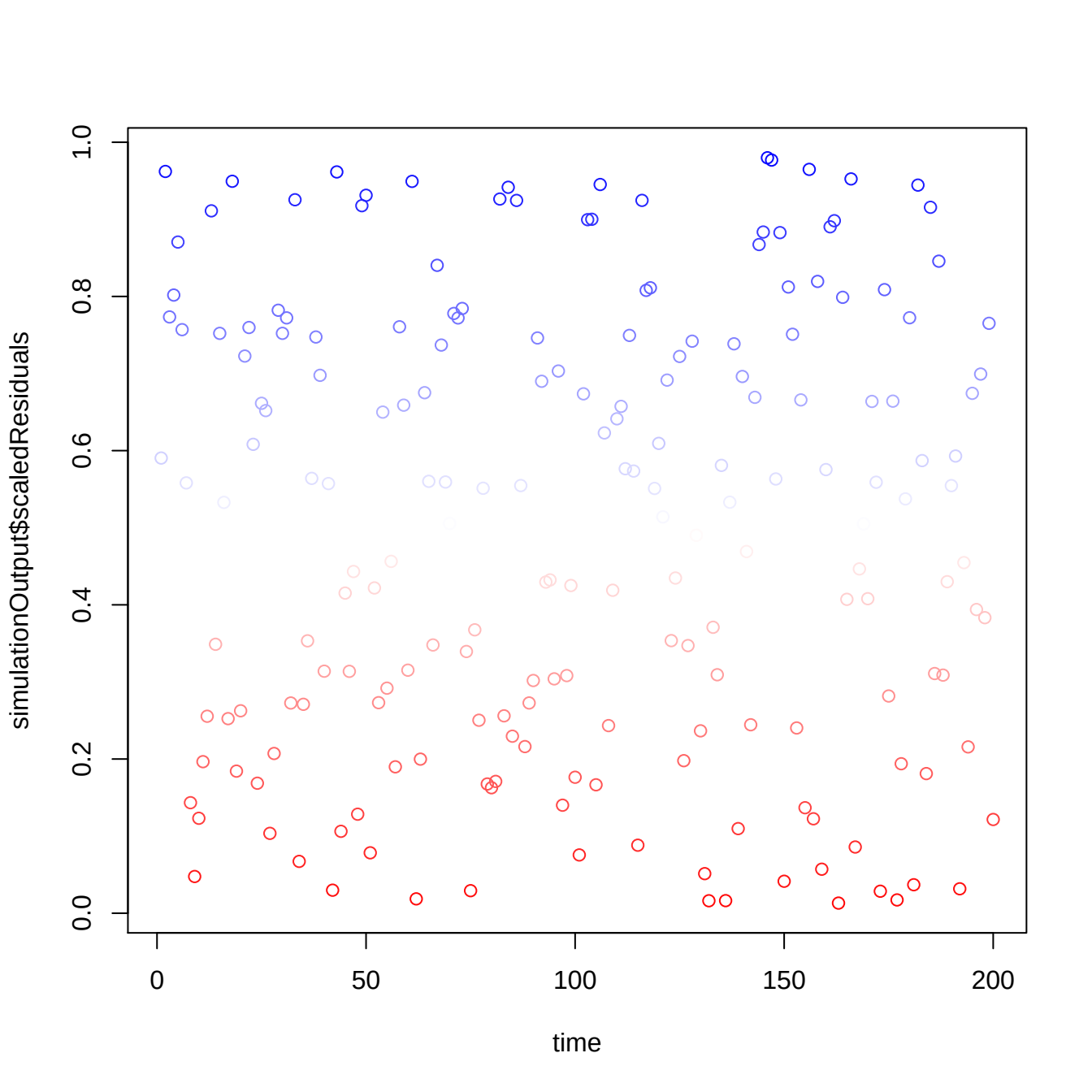

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
60
80
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

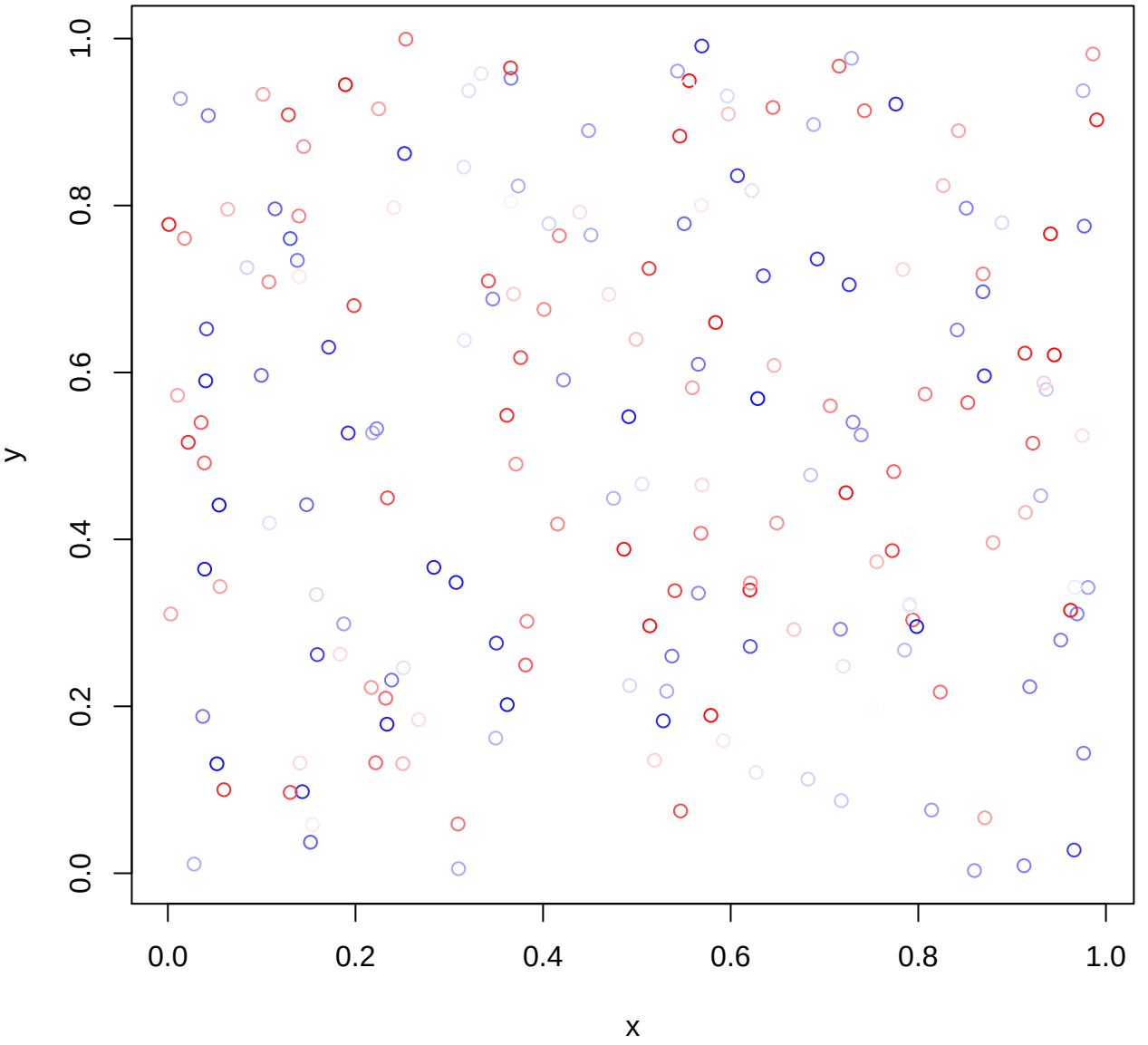

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

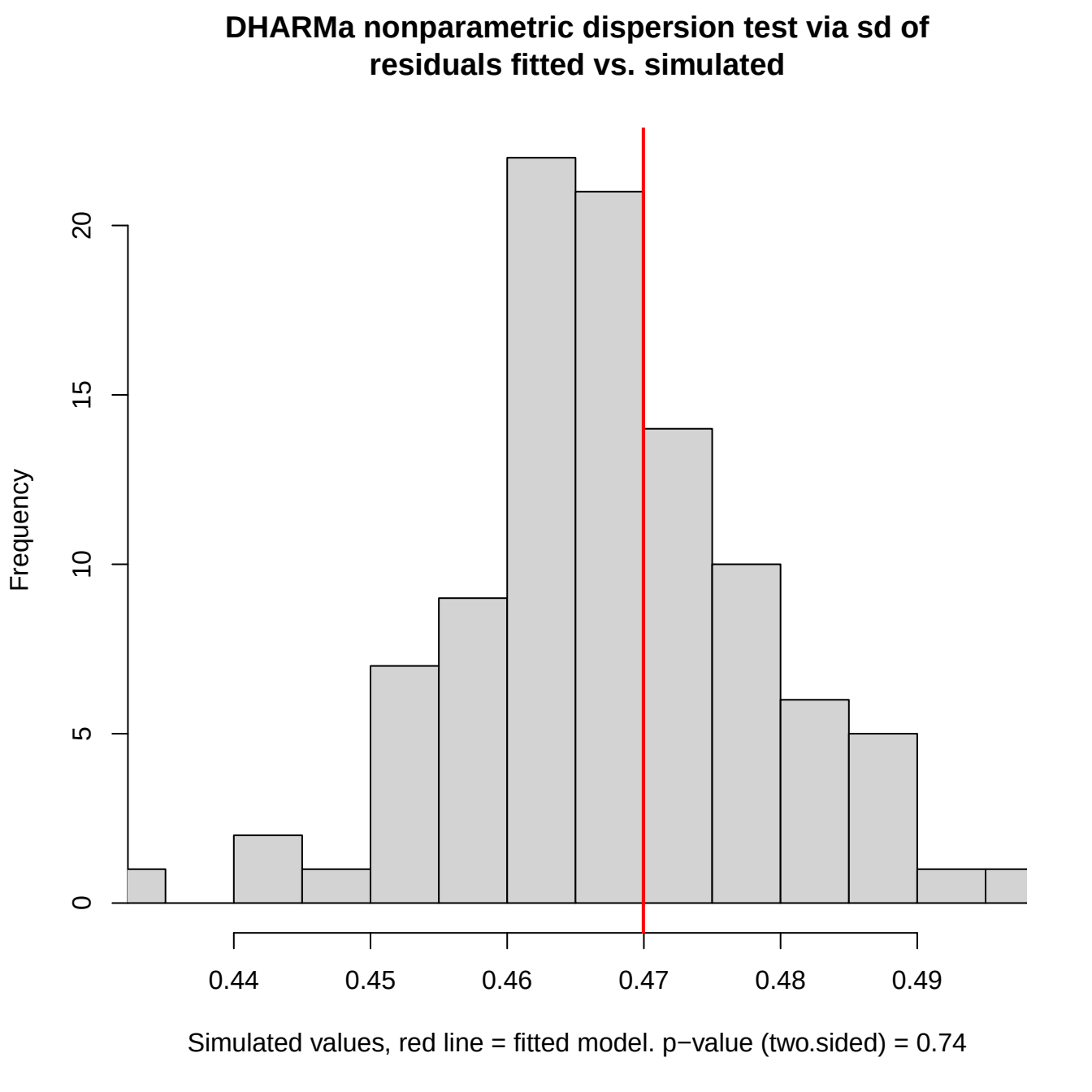

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

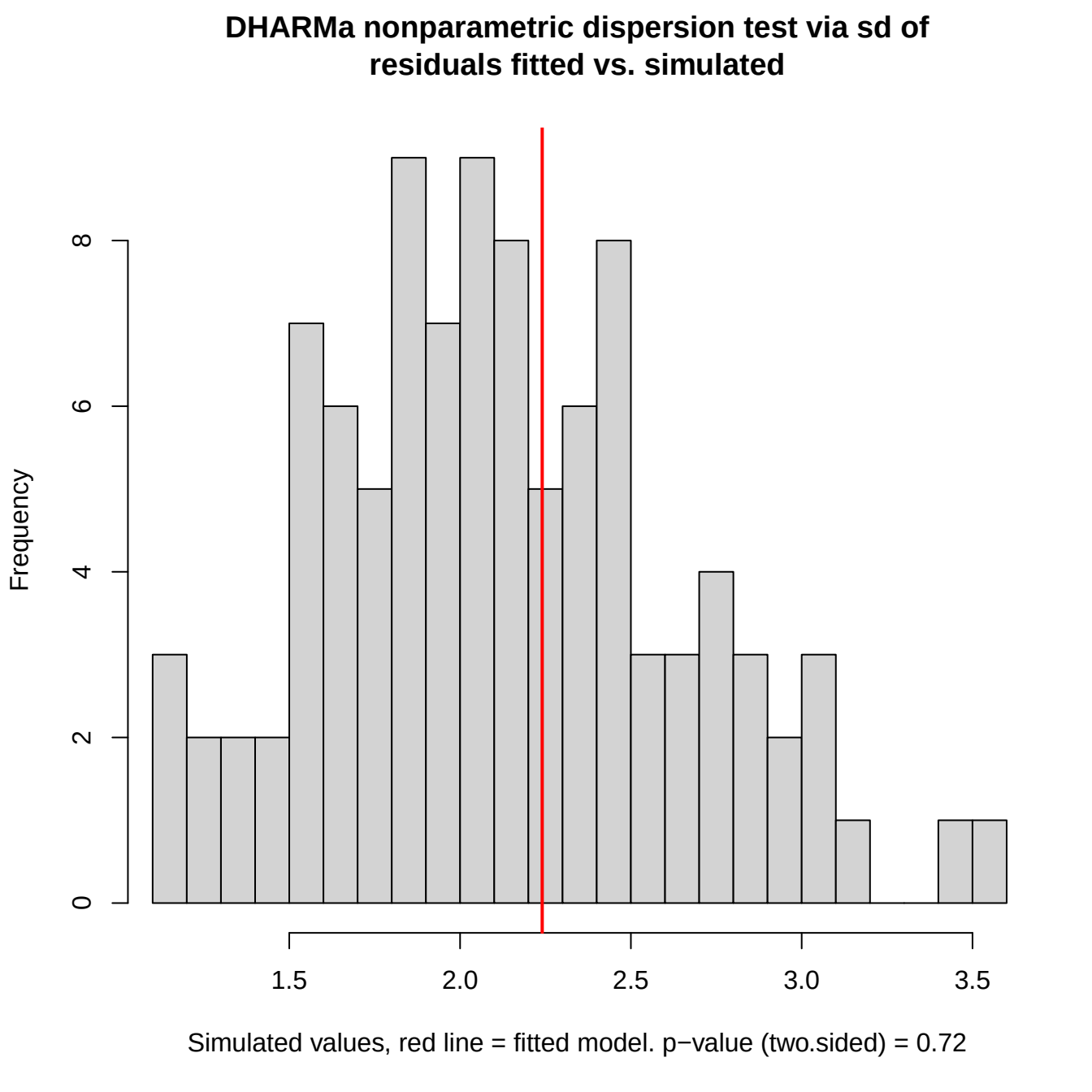

QQ plot residuals
KS test: p= 0.89013
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

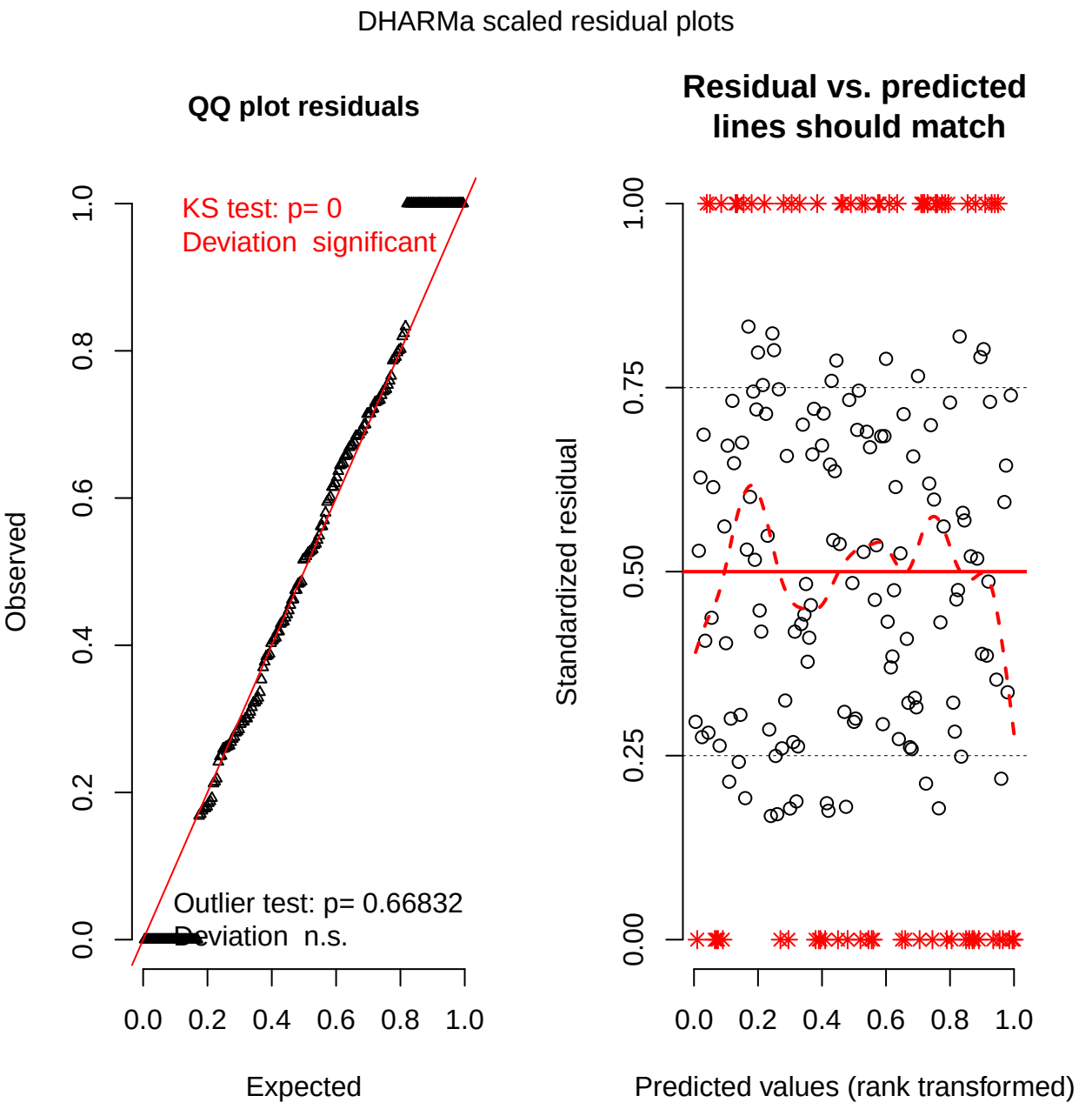

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
100
110
120
130
Simulated values, red line = fitted model. p−value (two.sided) = 1

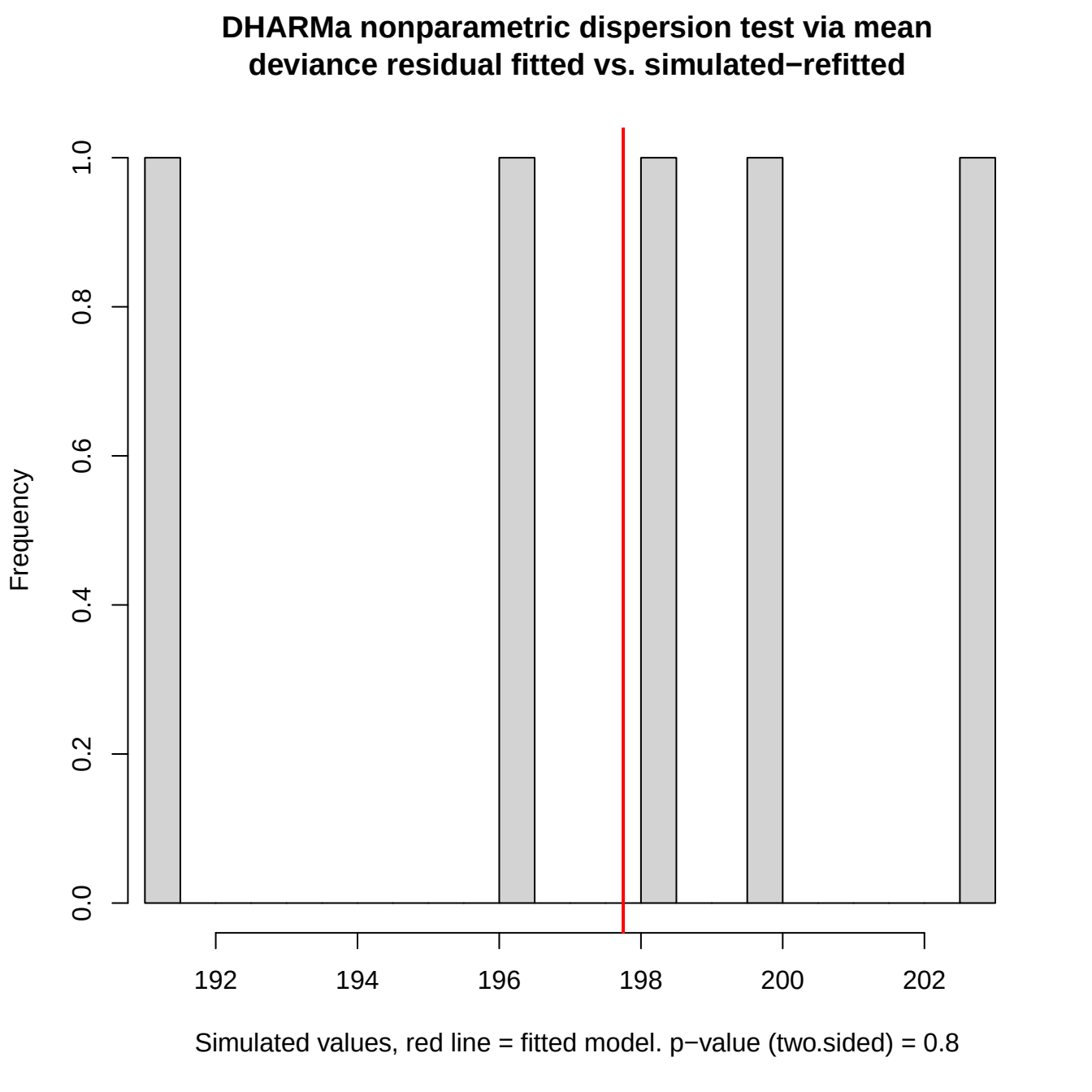

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

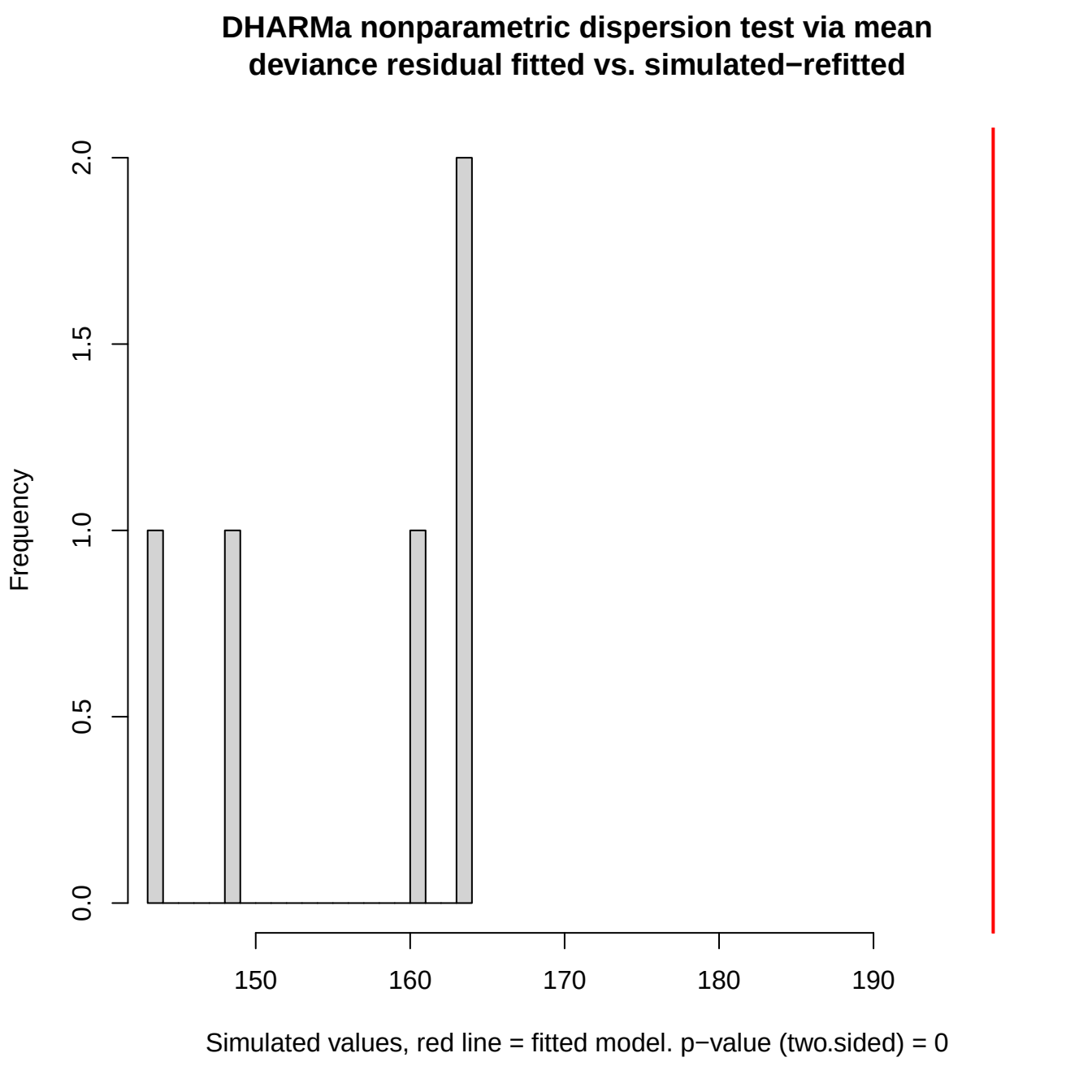

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

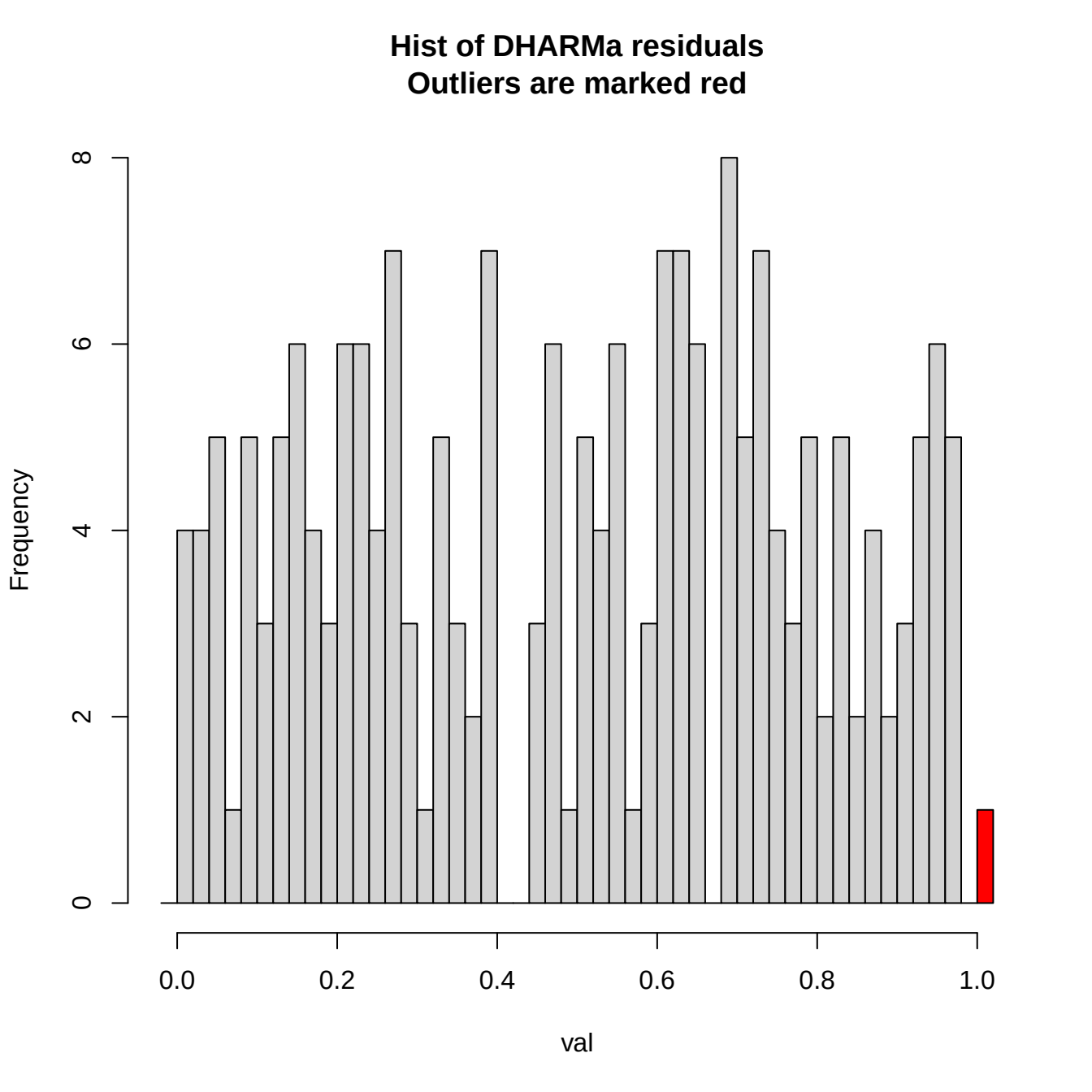

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
0.44
0.45
0.46
0.47
0.48
0.49
Simulated values, red line = fitted model. p−value (two.sided) = 0.74

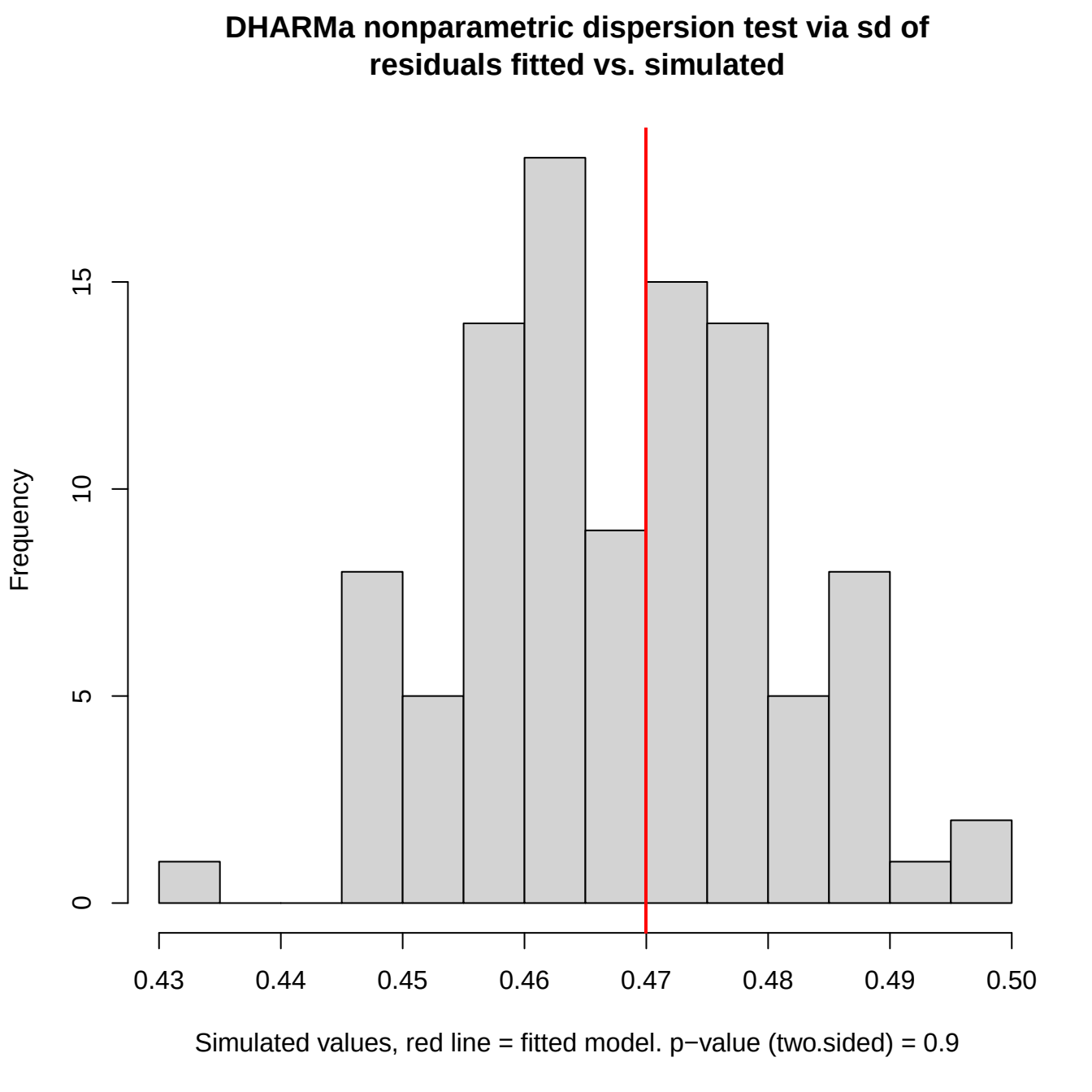

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
1.5
2.0
2.5
3.0
3.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.72

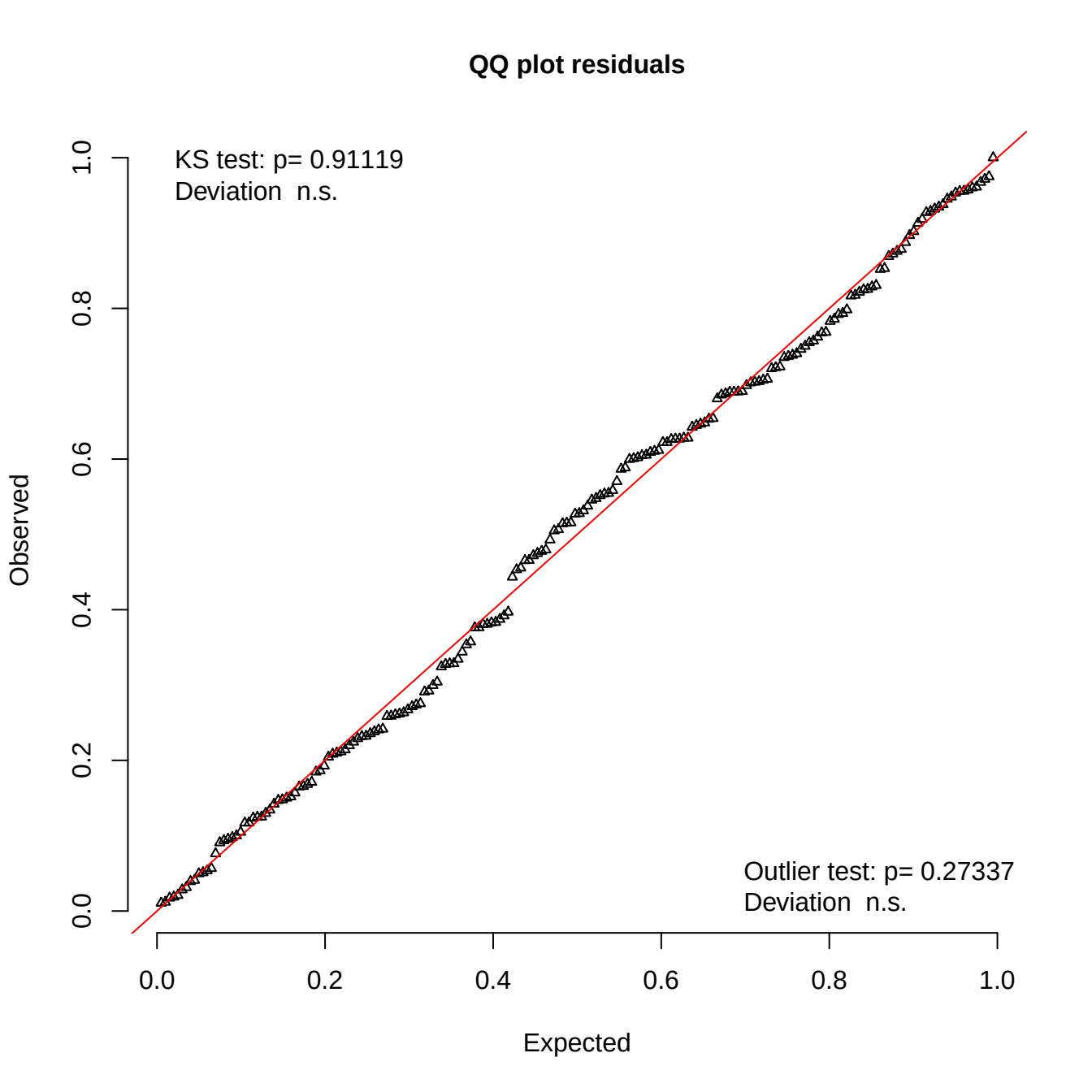

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.66832
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

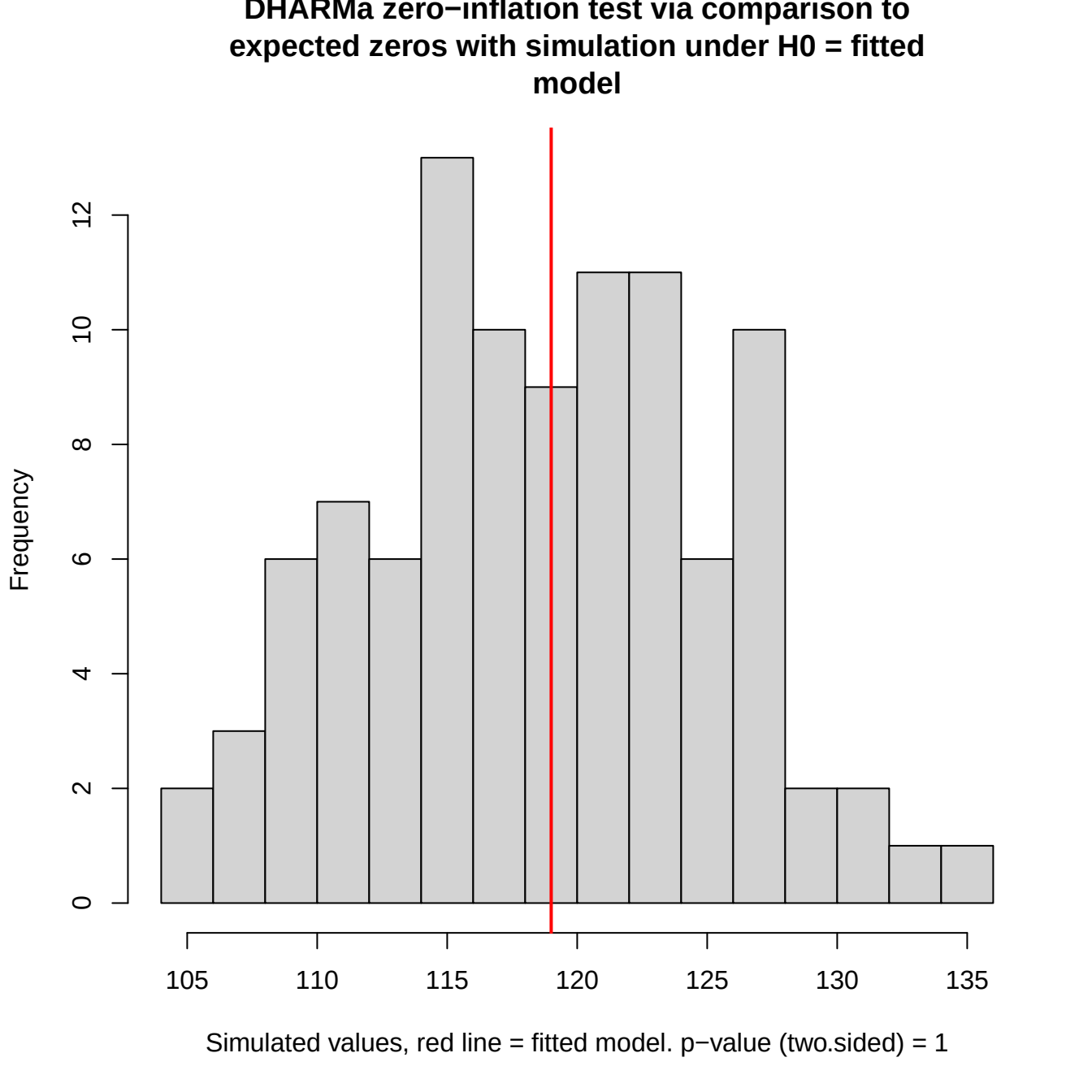

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
192
194
196
198
200
202
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

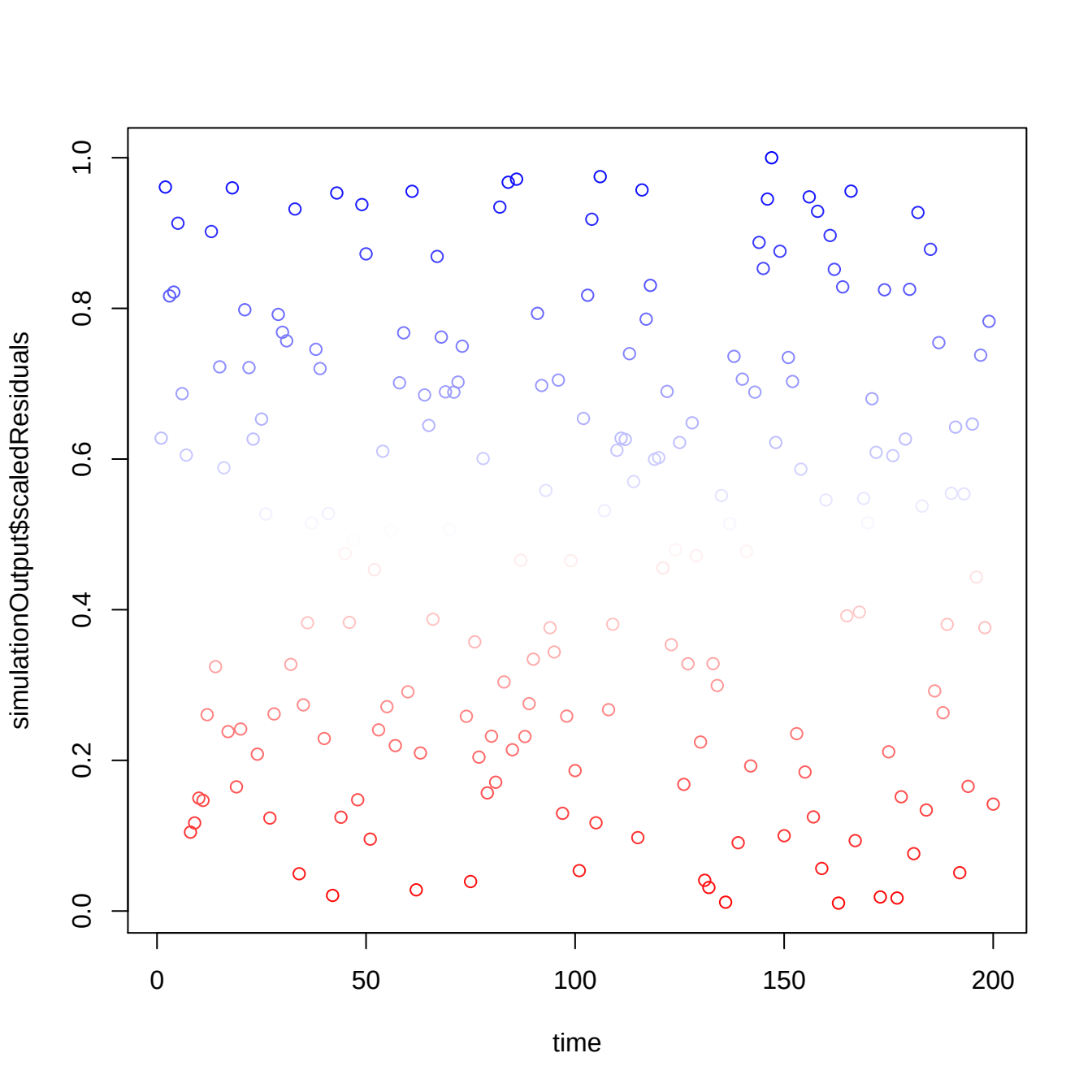

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
150
160
170
180
190
Simulated values, red line = fitted model. p−value (two.sided) = 0

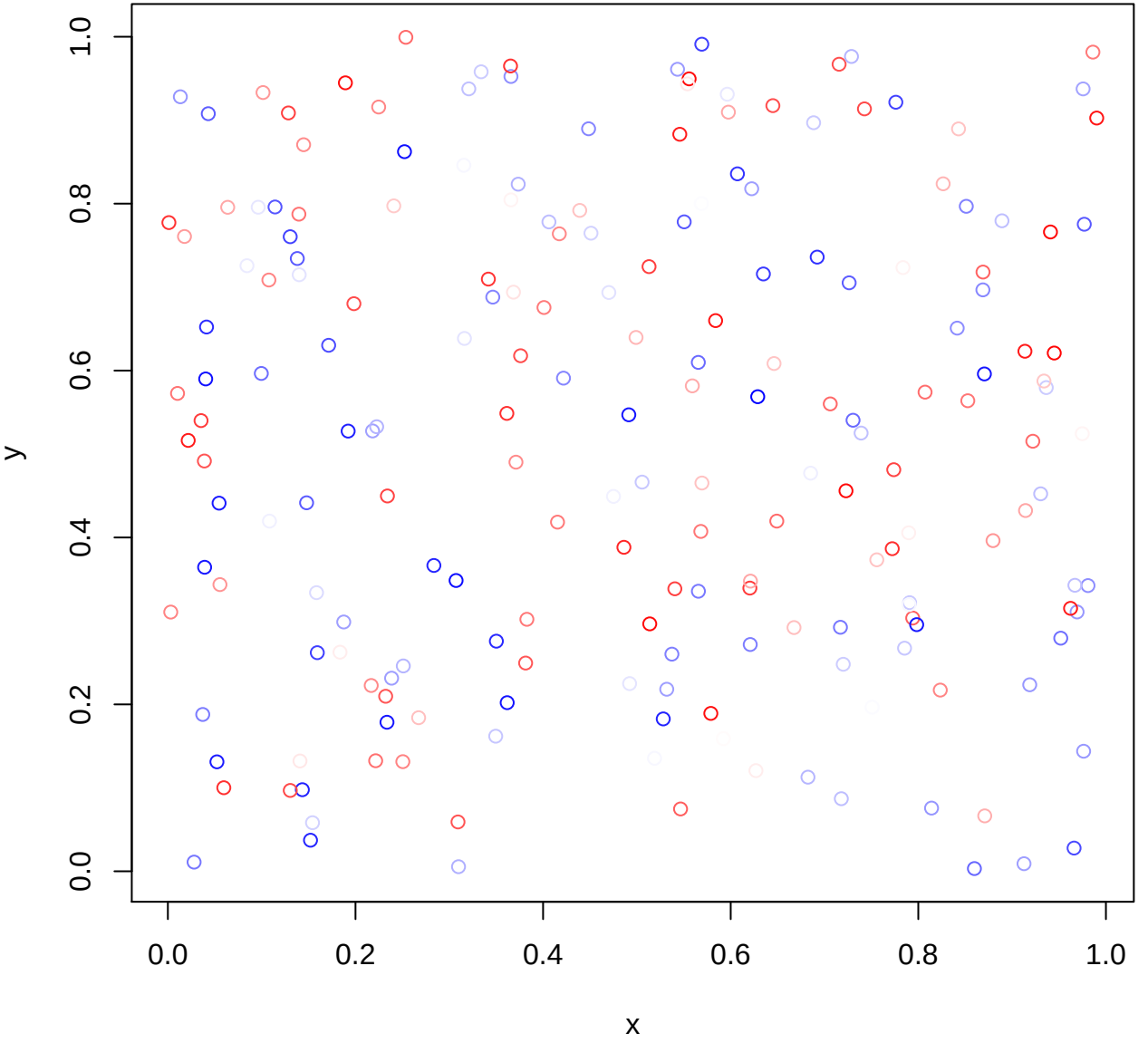

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

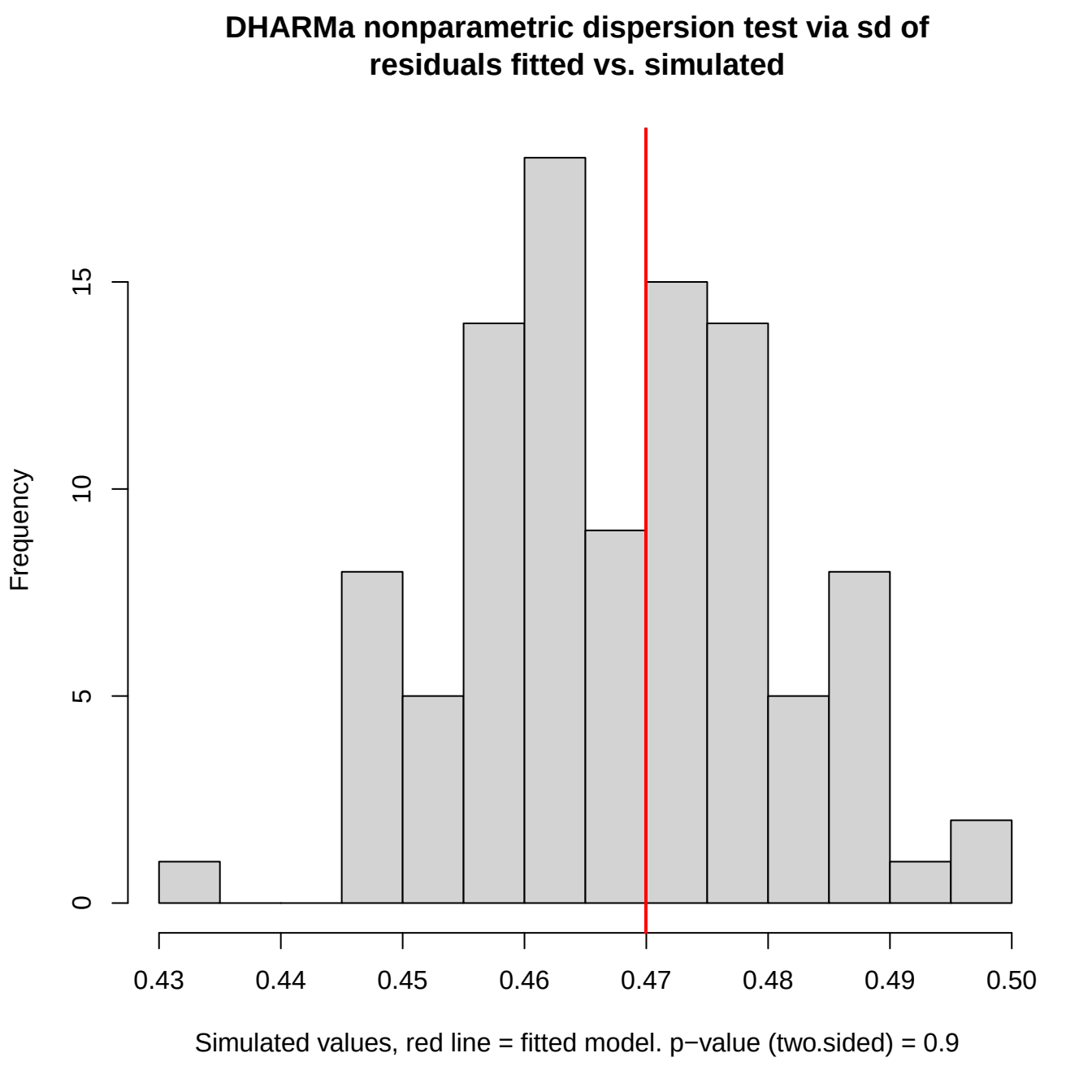

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

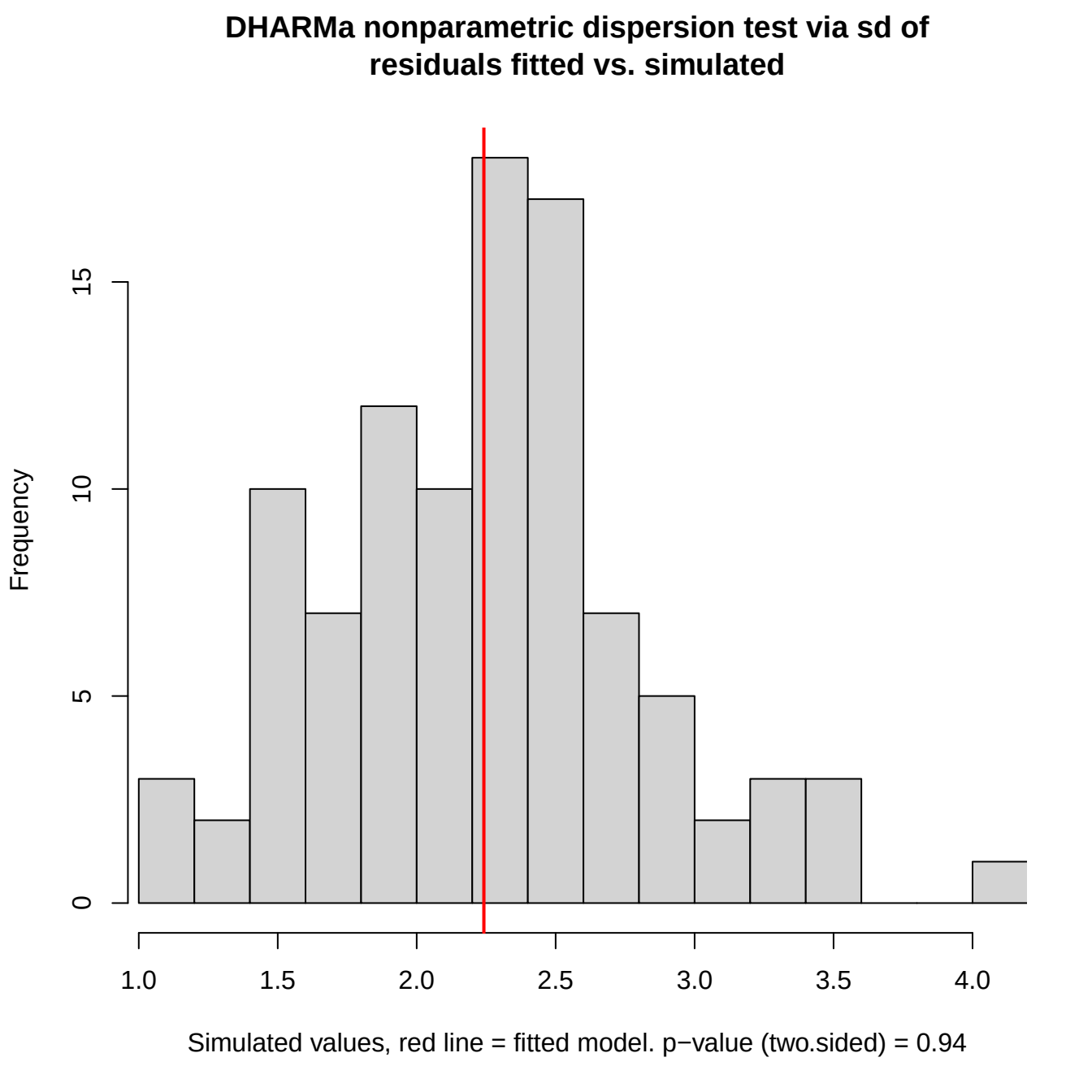

QQ plot residuals
KS test: p= 0.91119
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

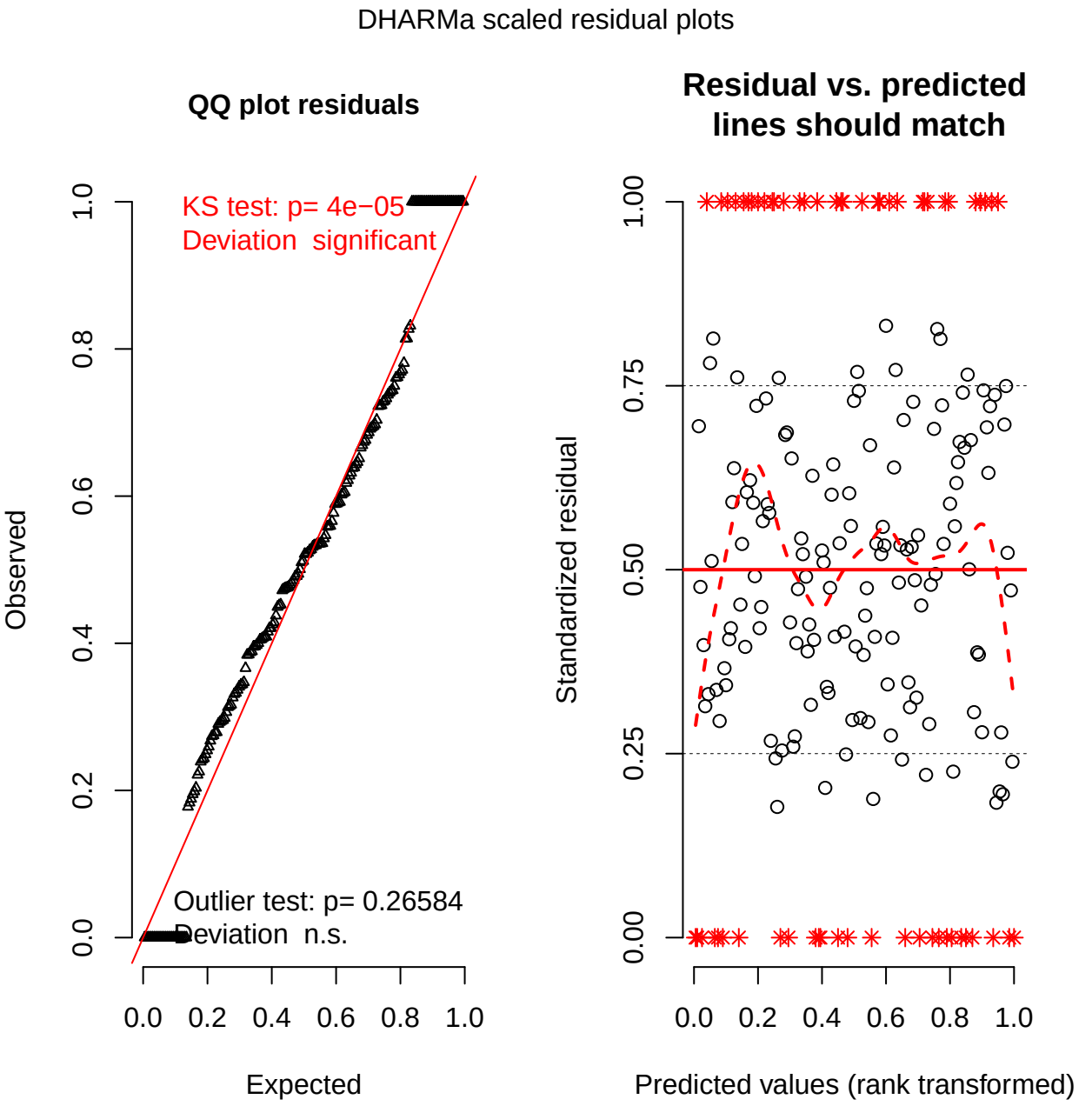

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
12
105
110
115
120
125
130
135
Simulated values, red line = fitted model. p−value (two.sided) = 1

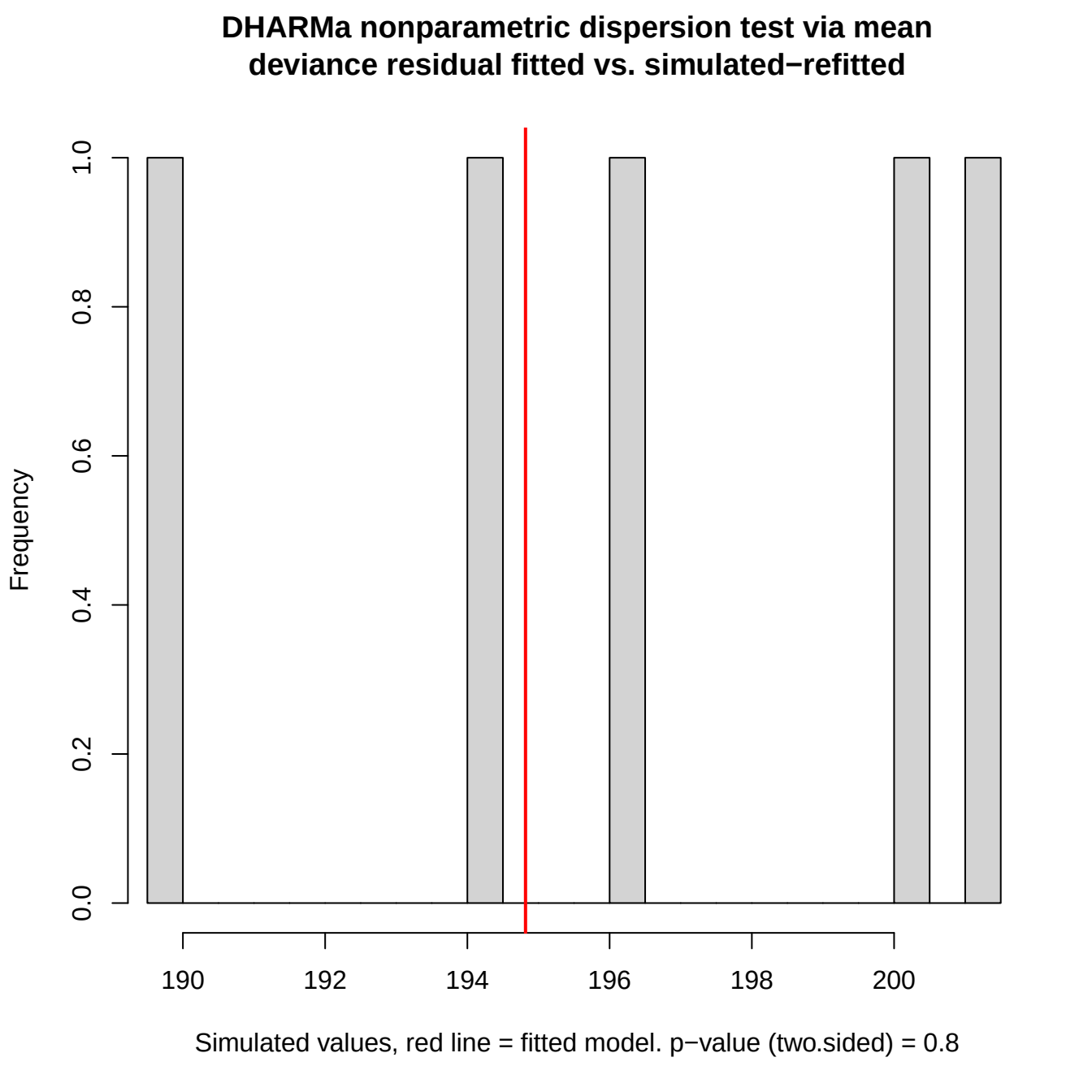

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

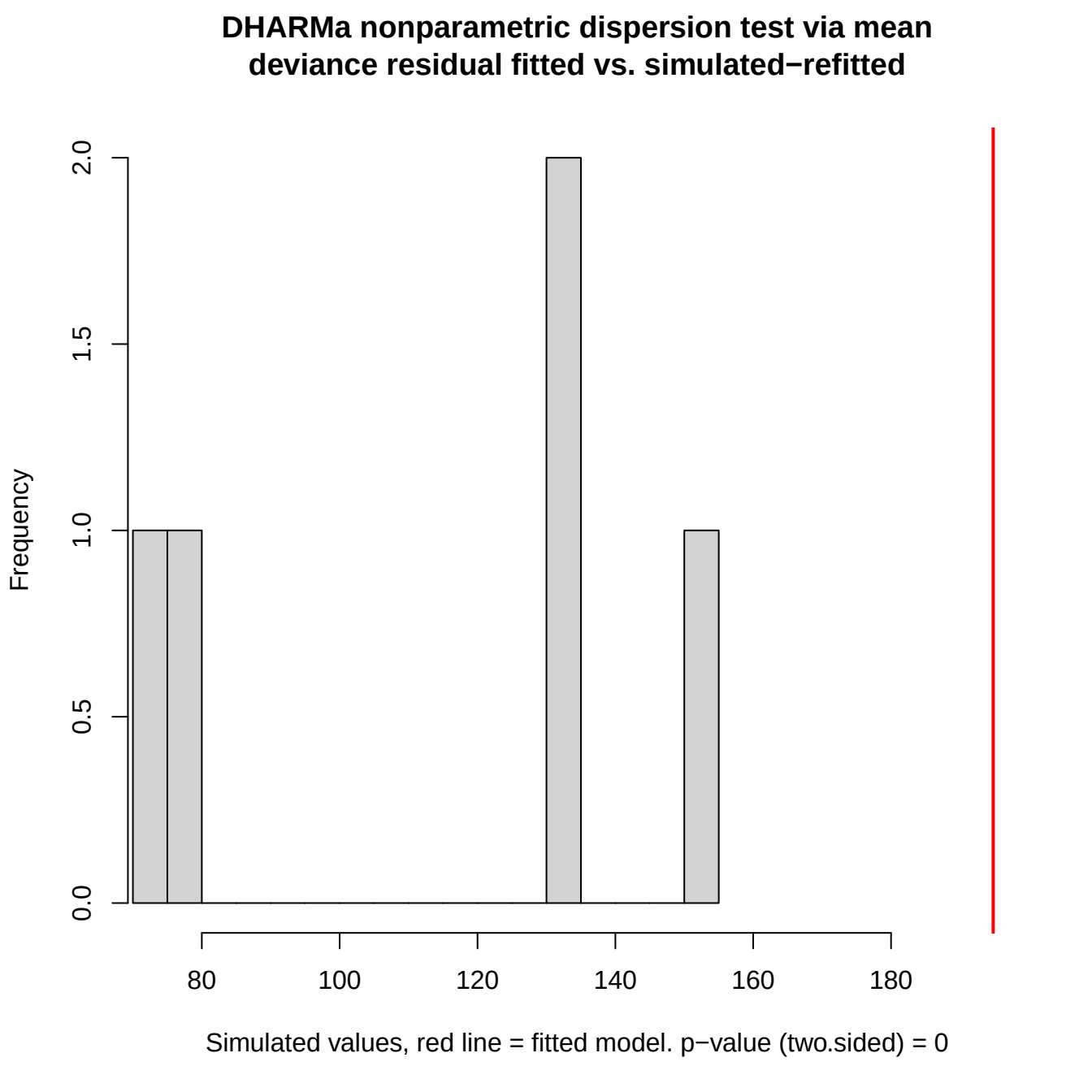

0.0
0.2
0.4
0.6
0.8
1.0
y
0.0
0.2
0.4
0.6
0.8
1.0
x

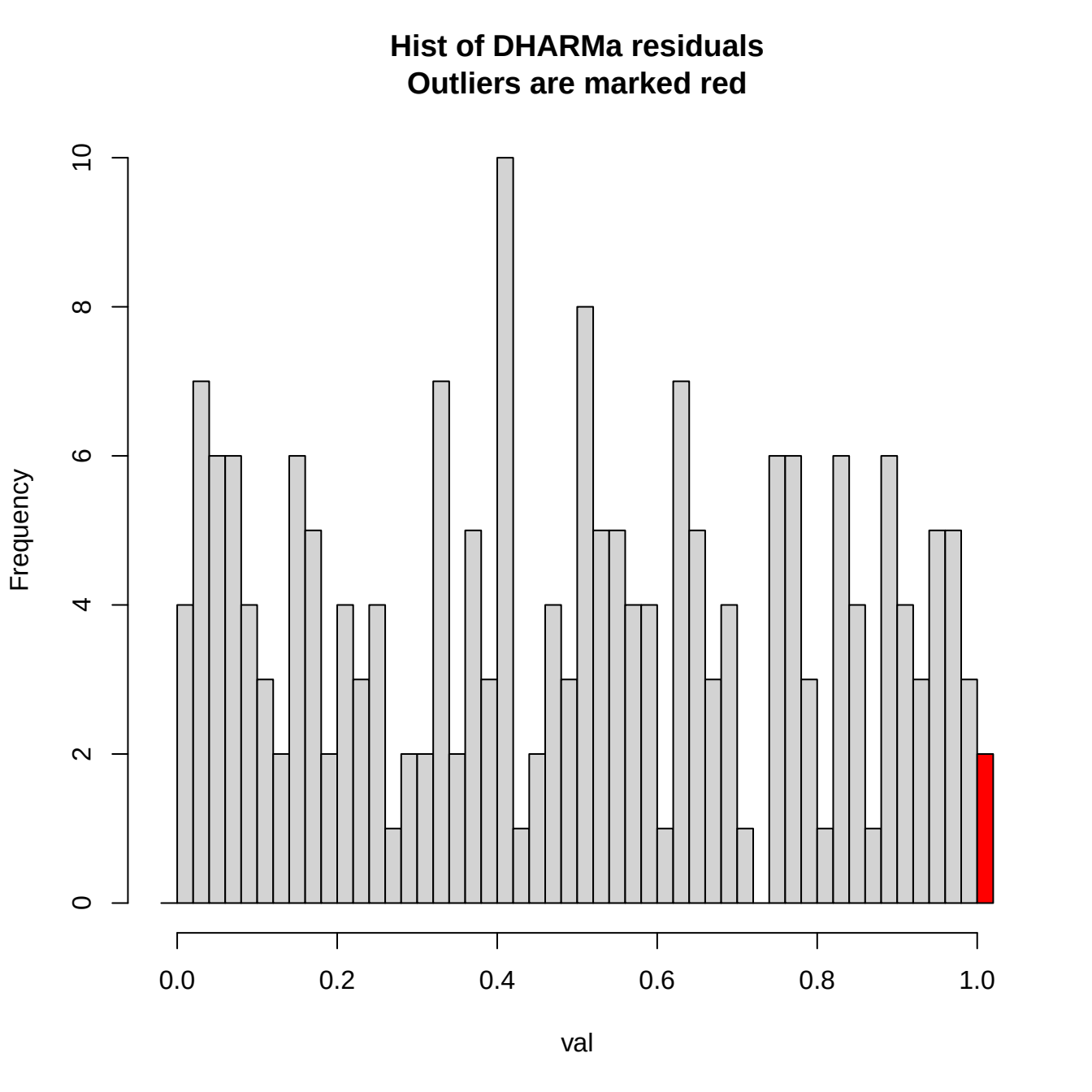

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.43
0.44
0.45
0.46
0.47
0.48
0.49
0.50
Simulated values, red line = fitted model. p−value (two.sided) = 0.9

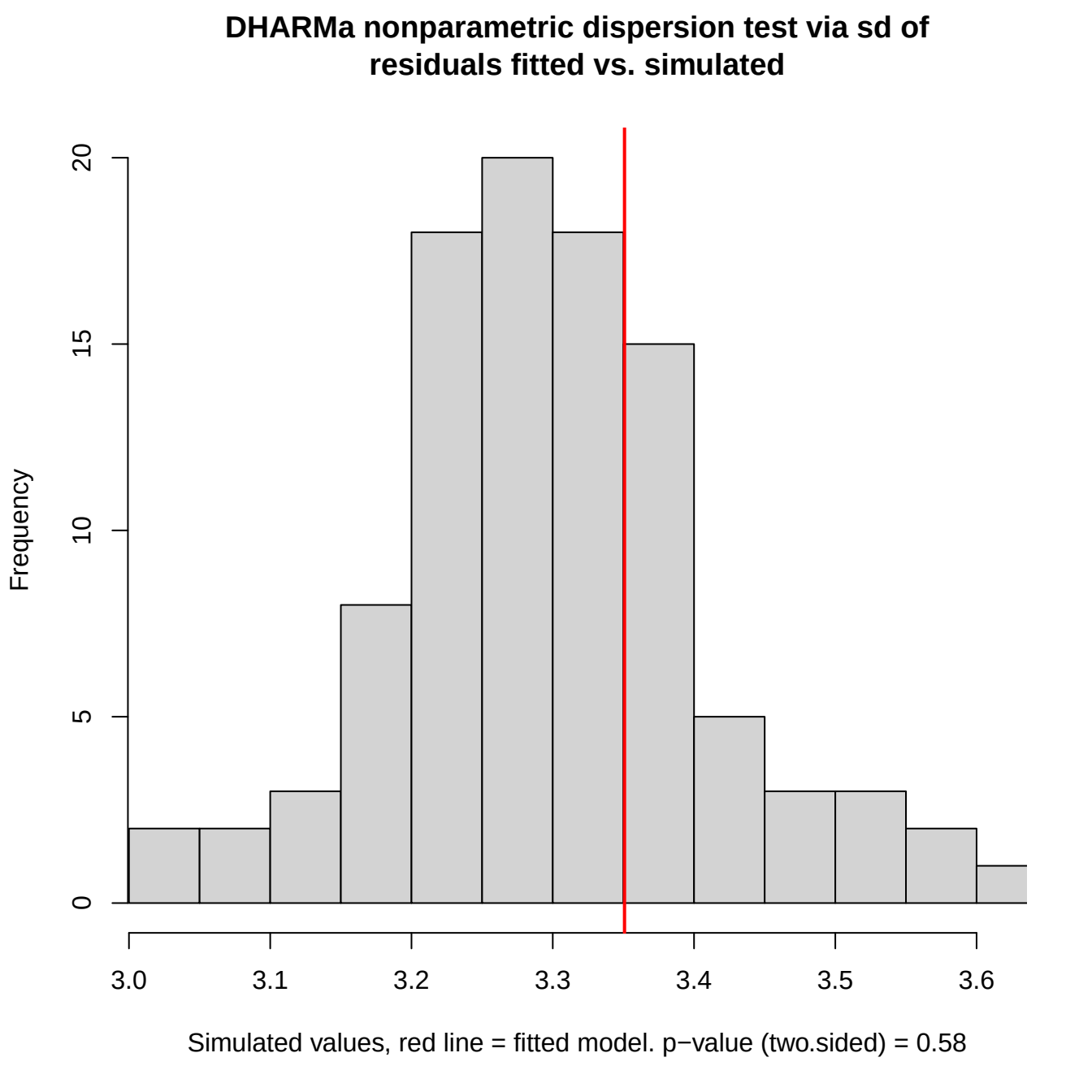

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Simulated values, red line = fitted model. p−value (two.sided) = 0.94

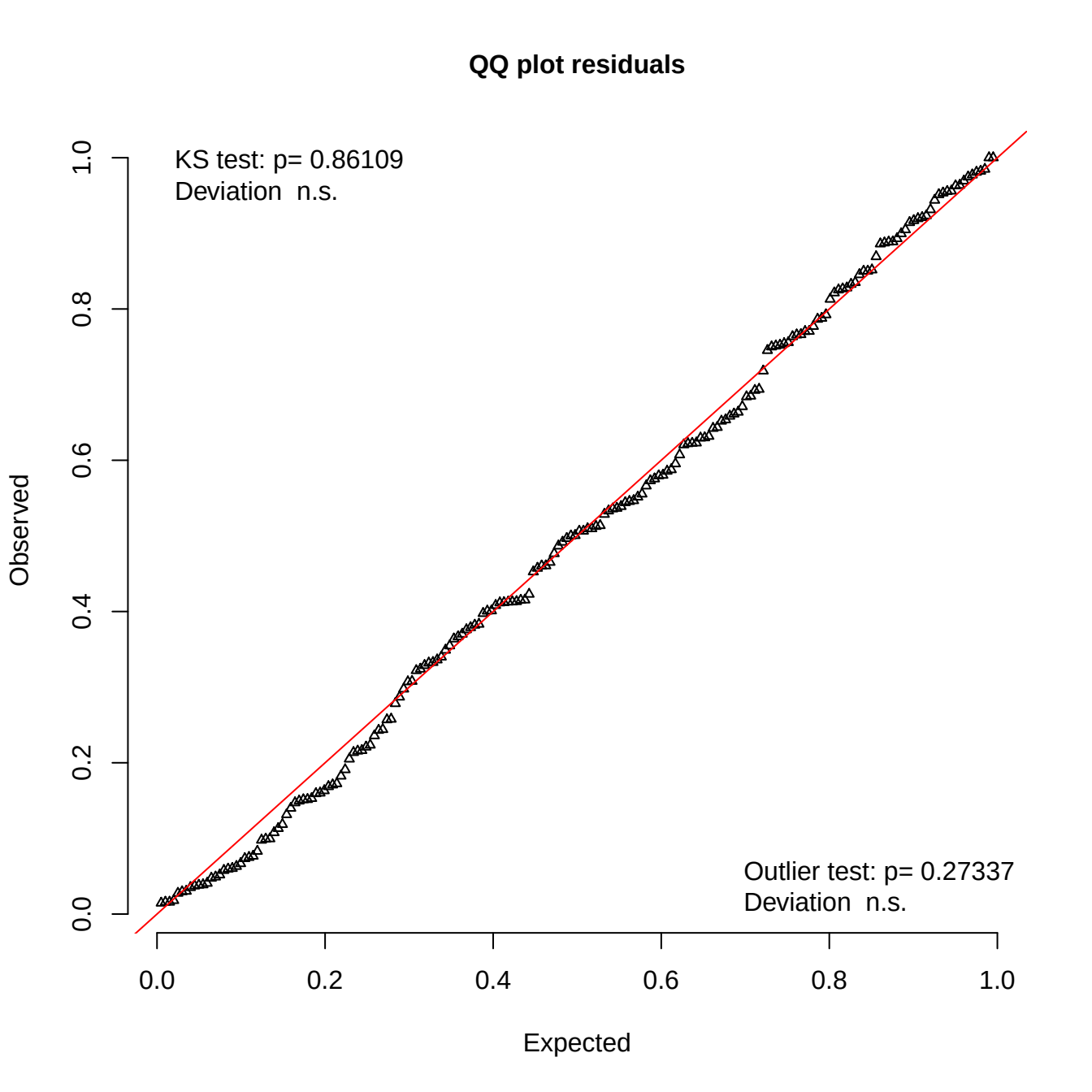

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.26584
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

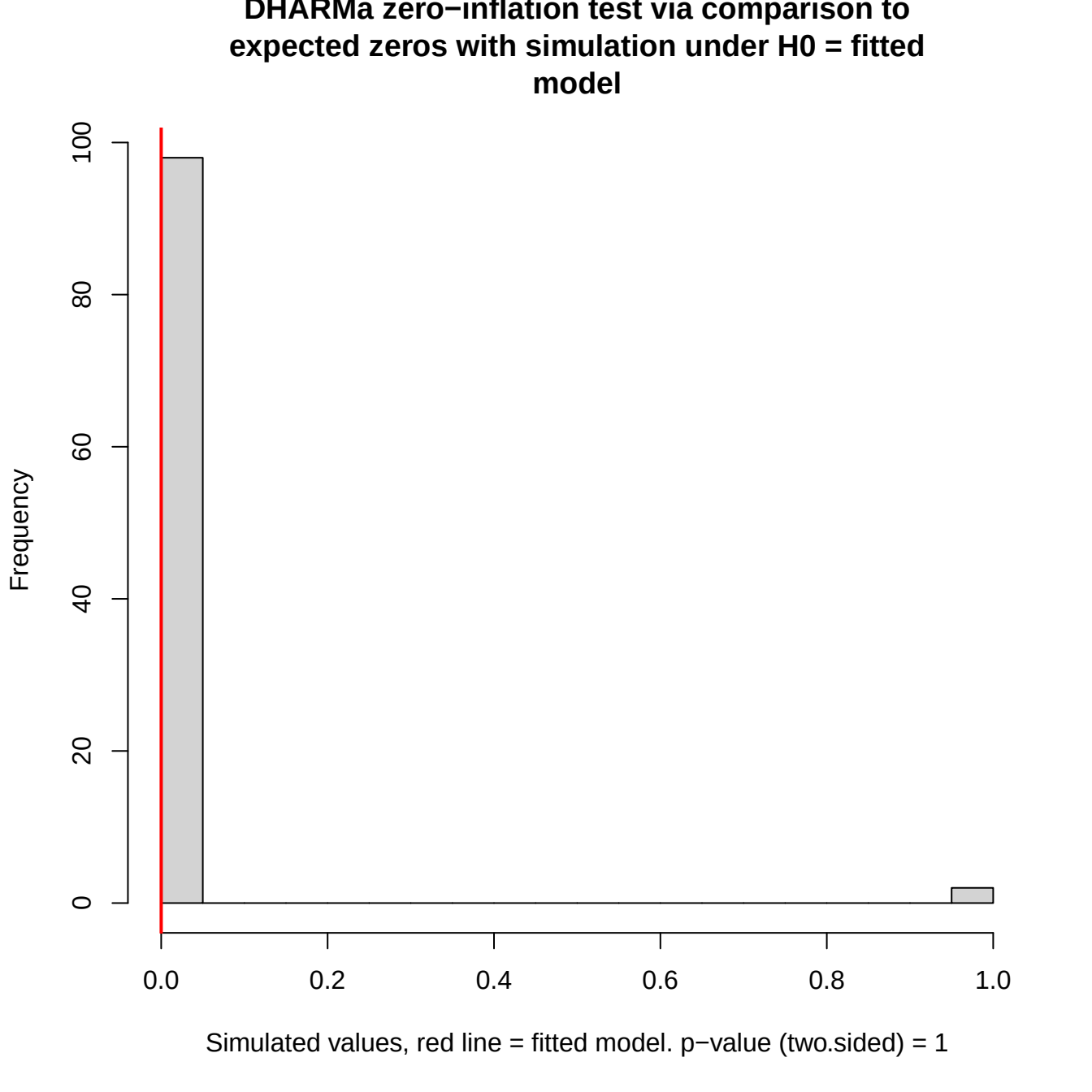

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
190
192
194
196
198
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

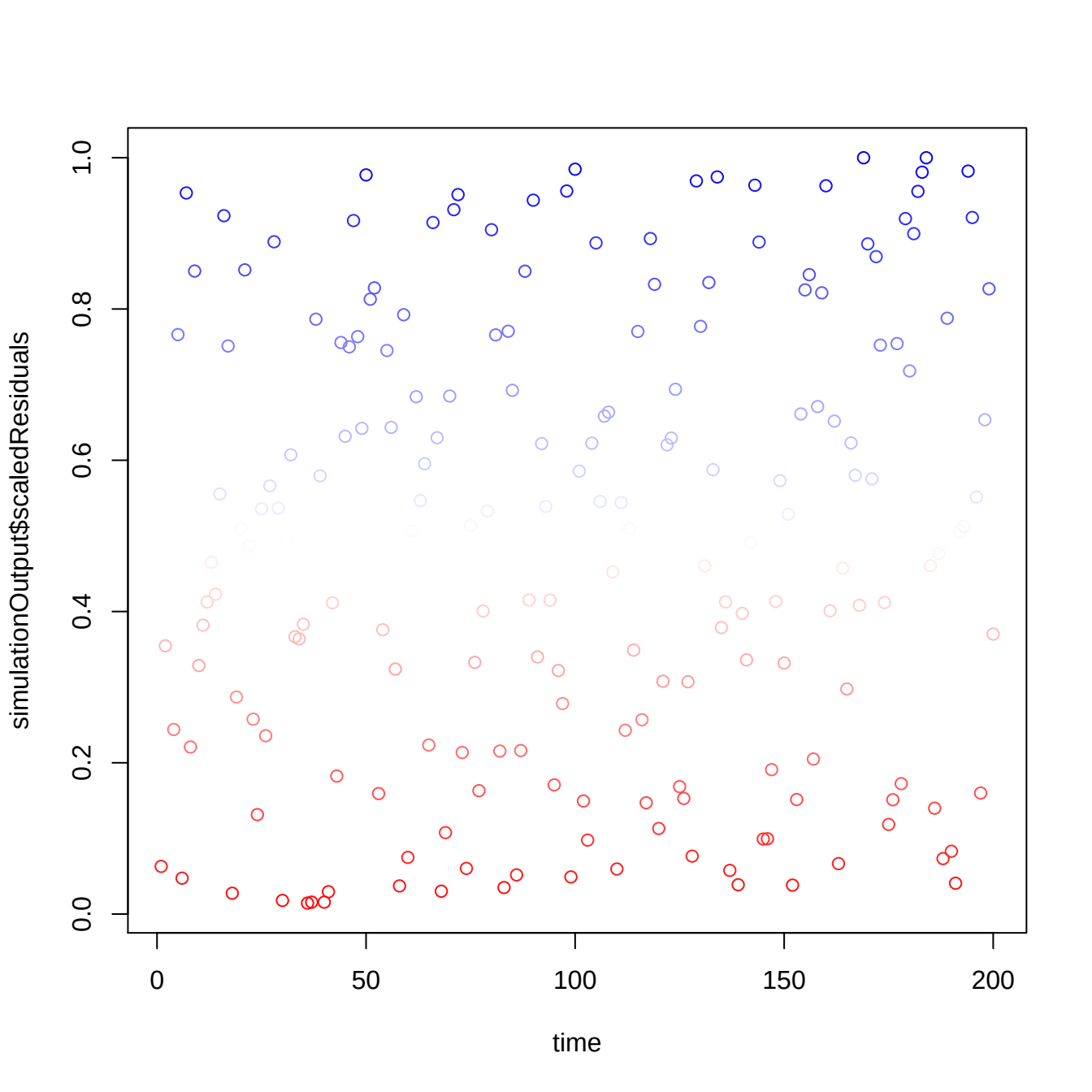

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
80
100
120
140
160
180
Simulated values, red line = fitted model. p−value (two.sided) = 0

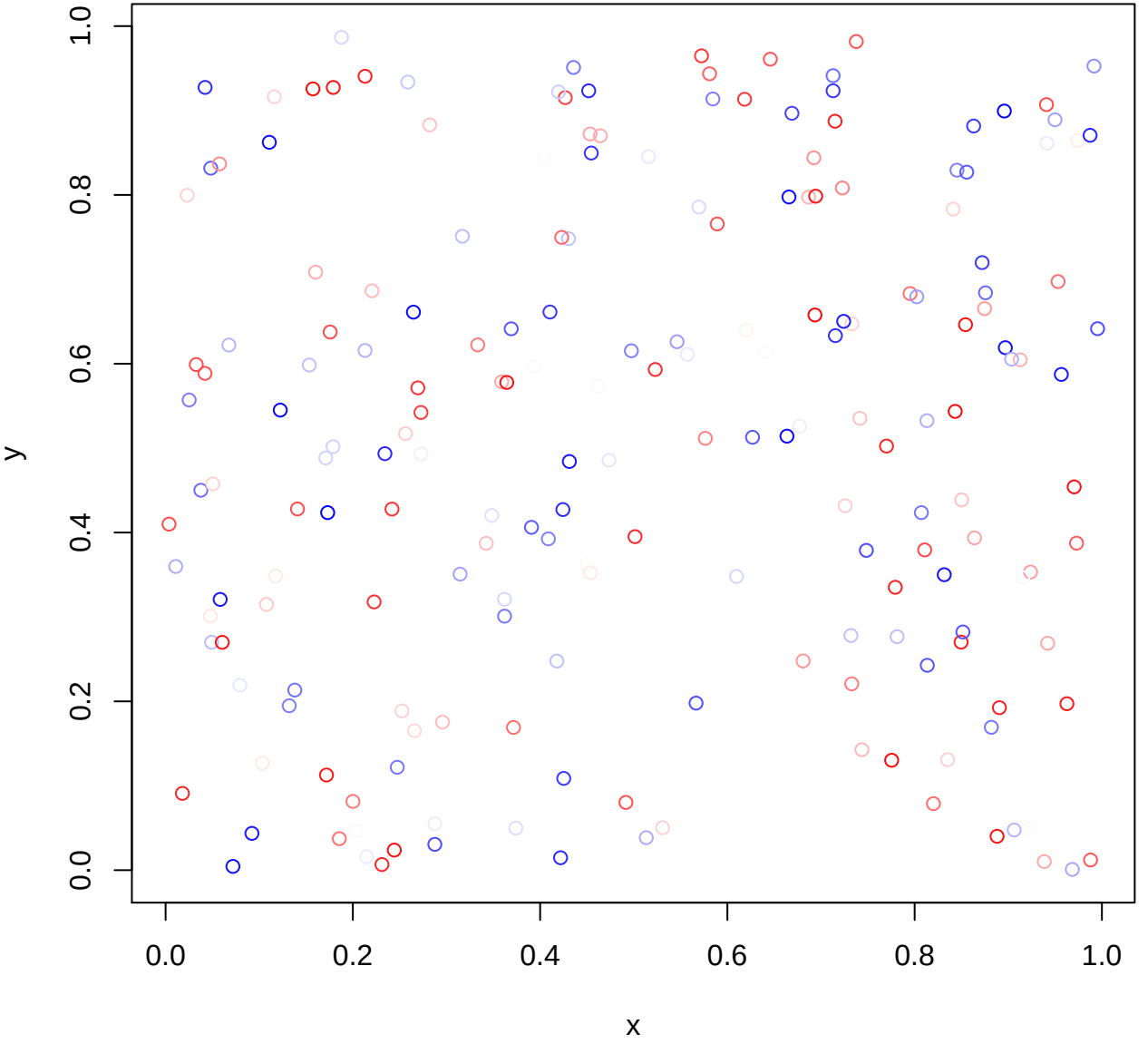

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

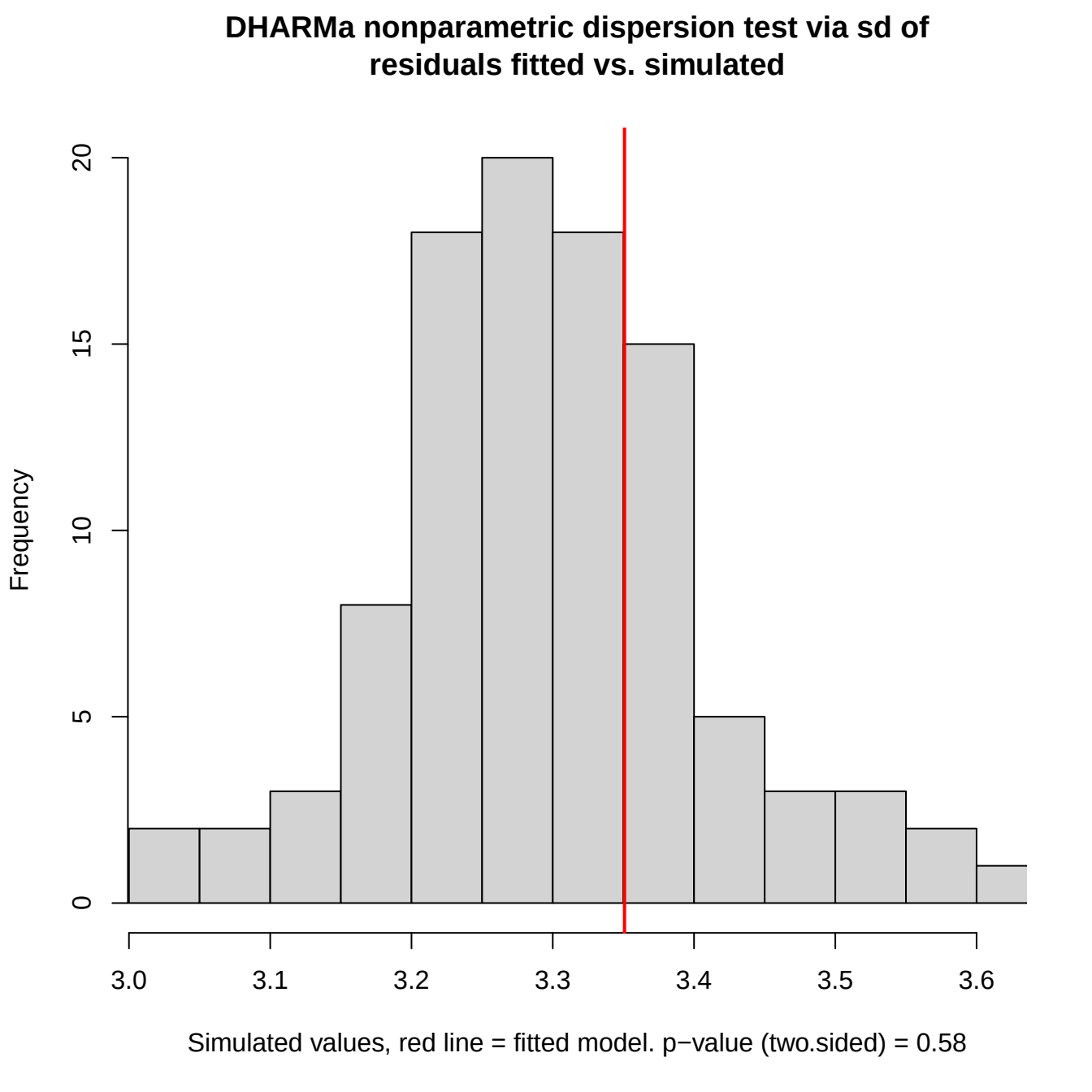

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.58

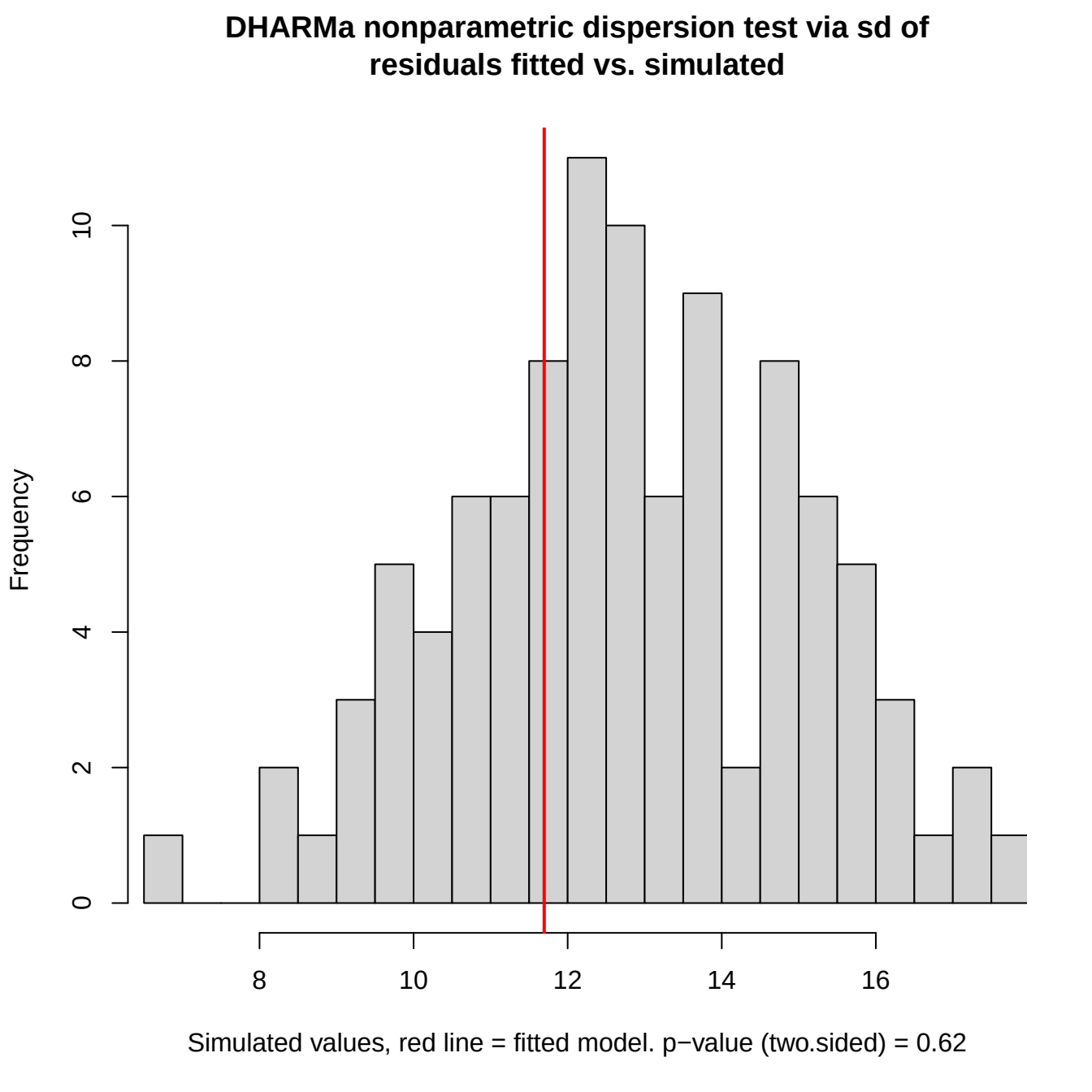

QQ plot residuals
KS test: p= 0.86109
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

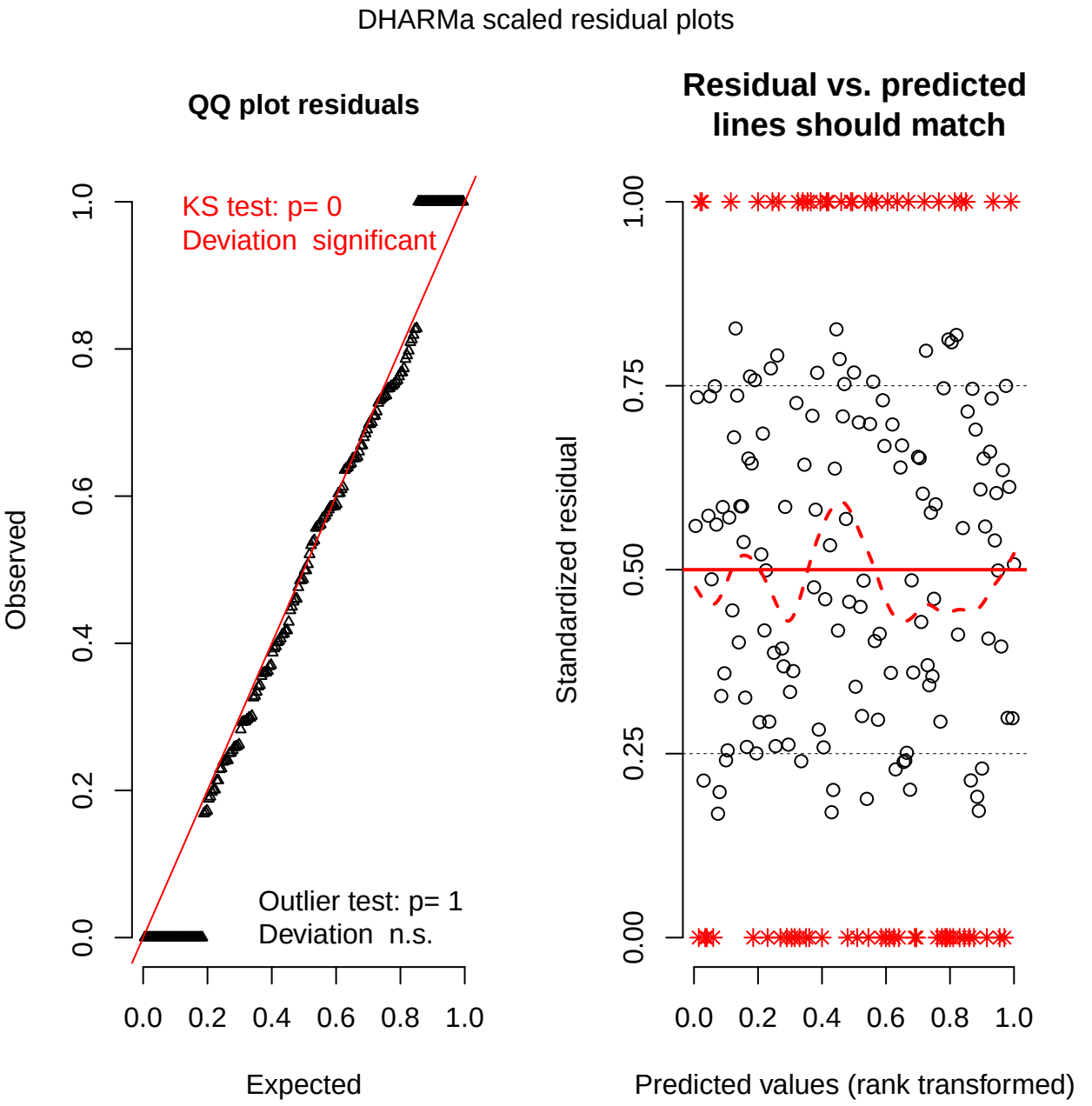

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

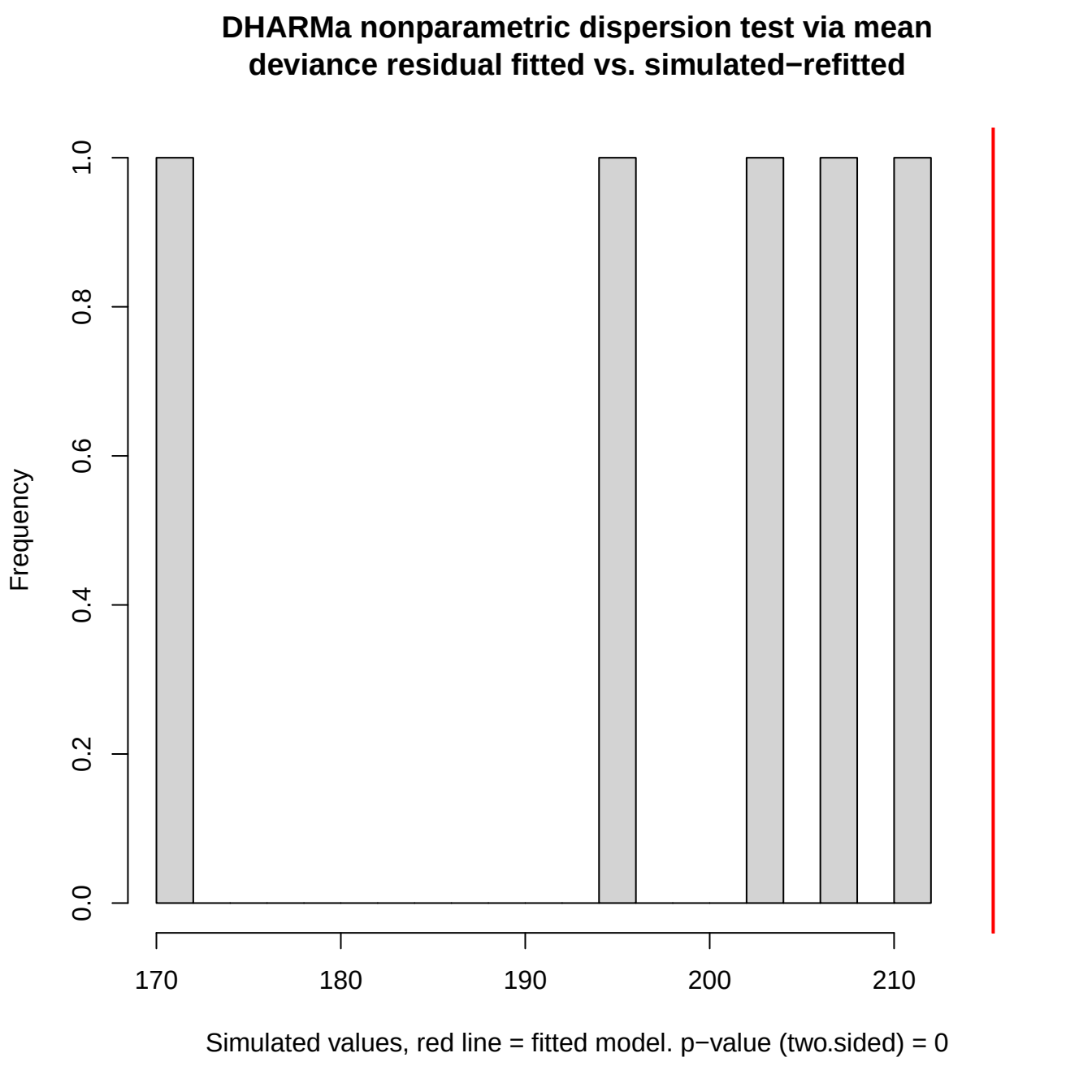

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

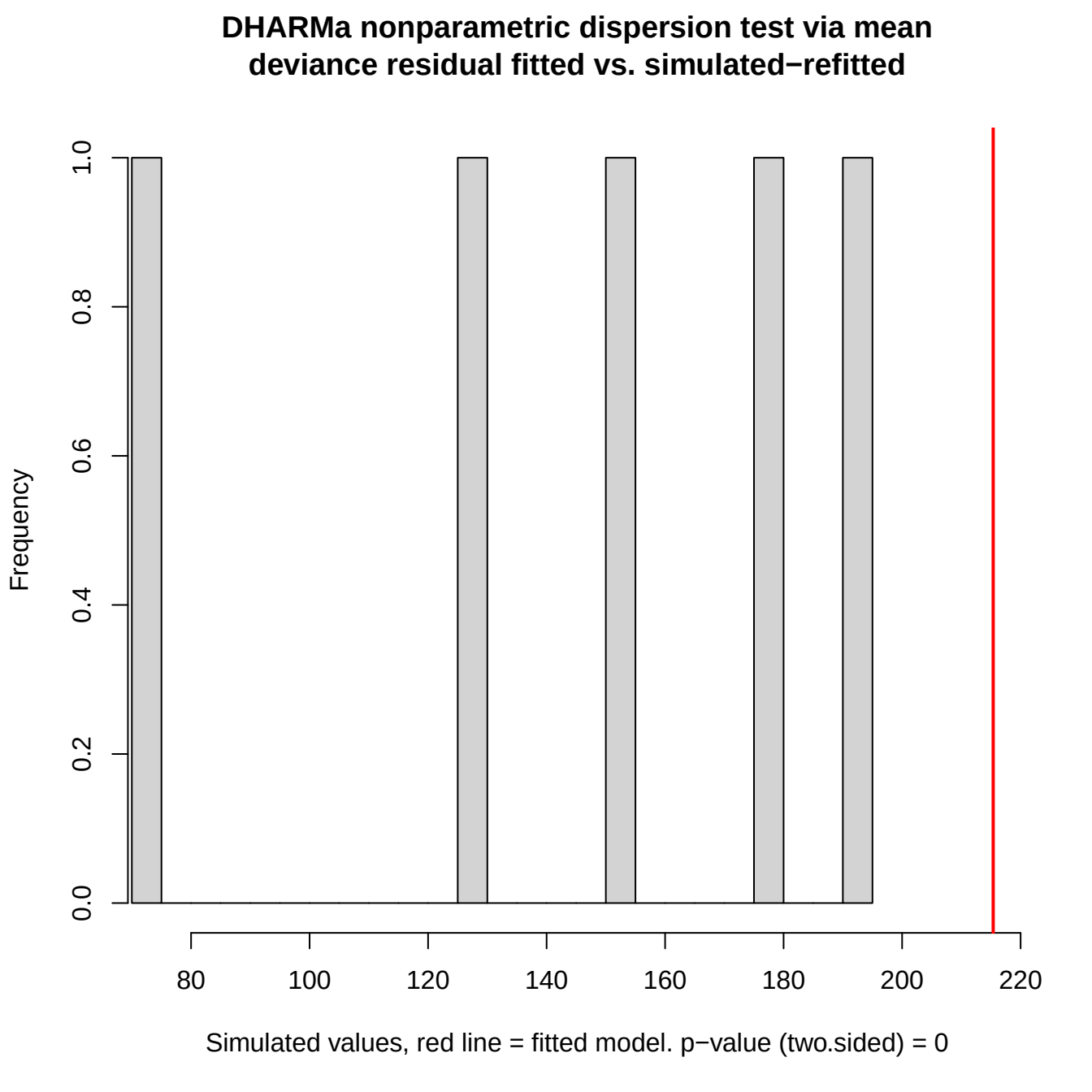

y
x
0.0
0.2
0.4
0.6
0.8
1.0

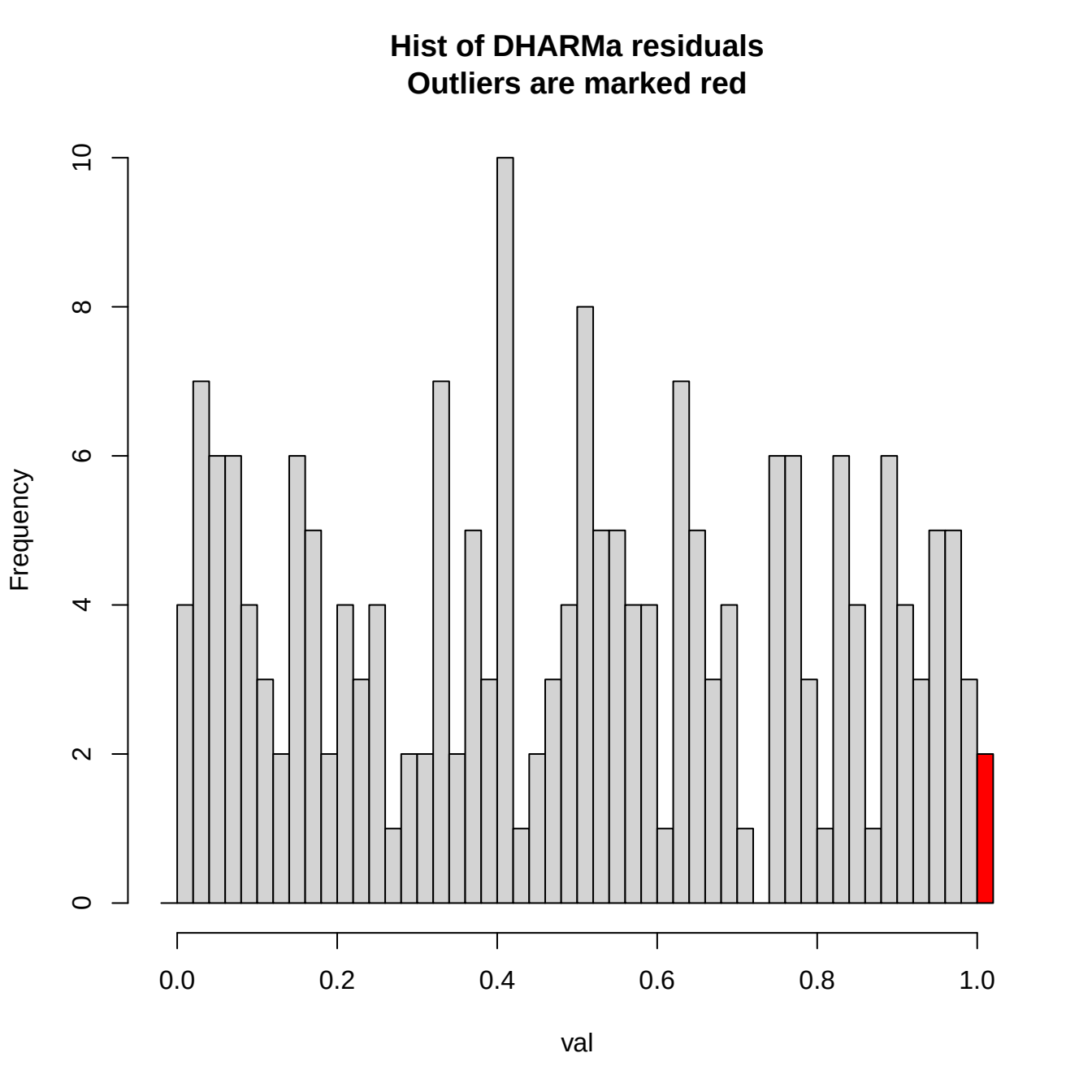

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.58

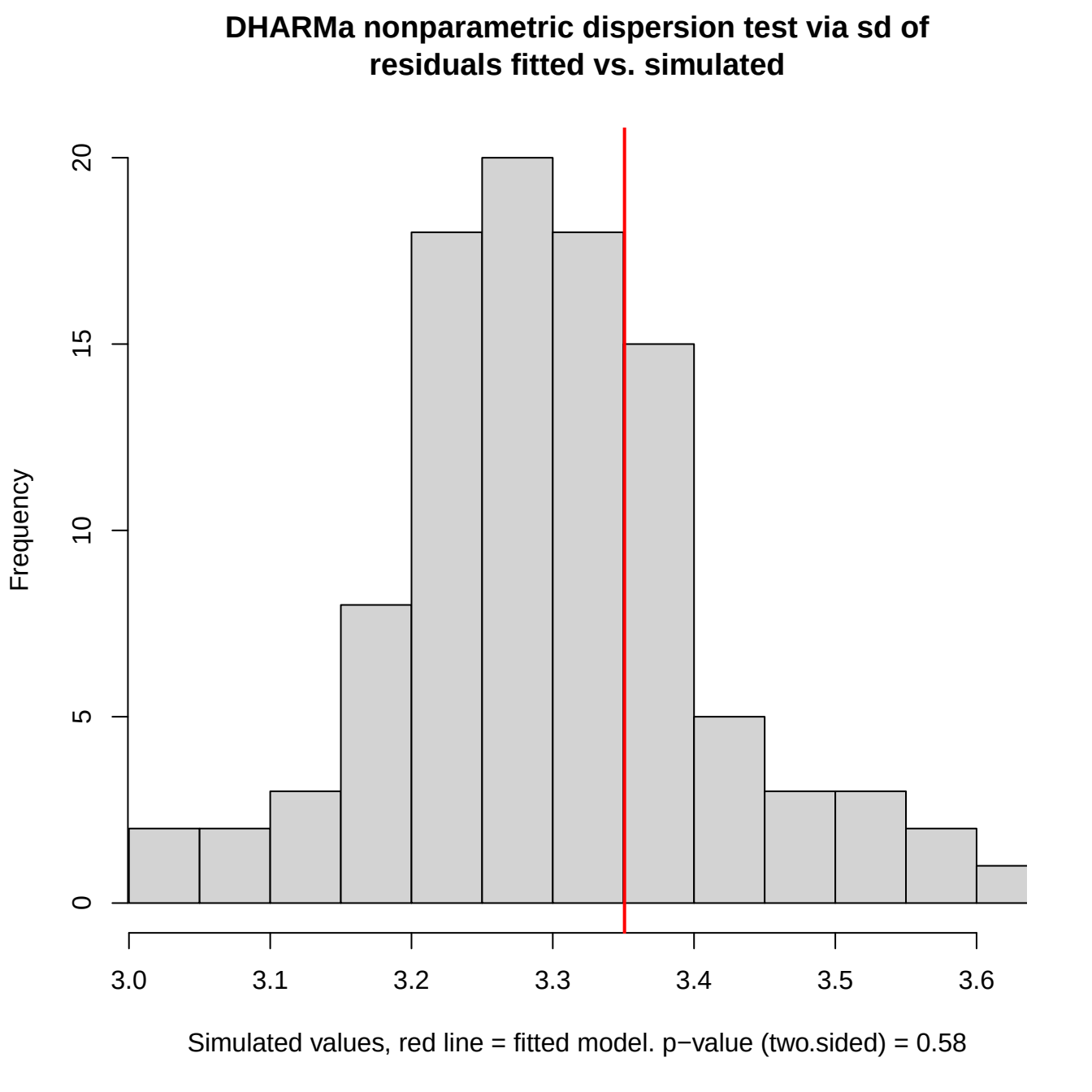

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
8
10
12
14
16
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

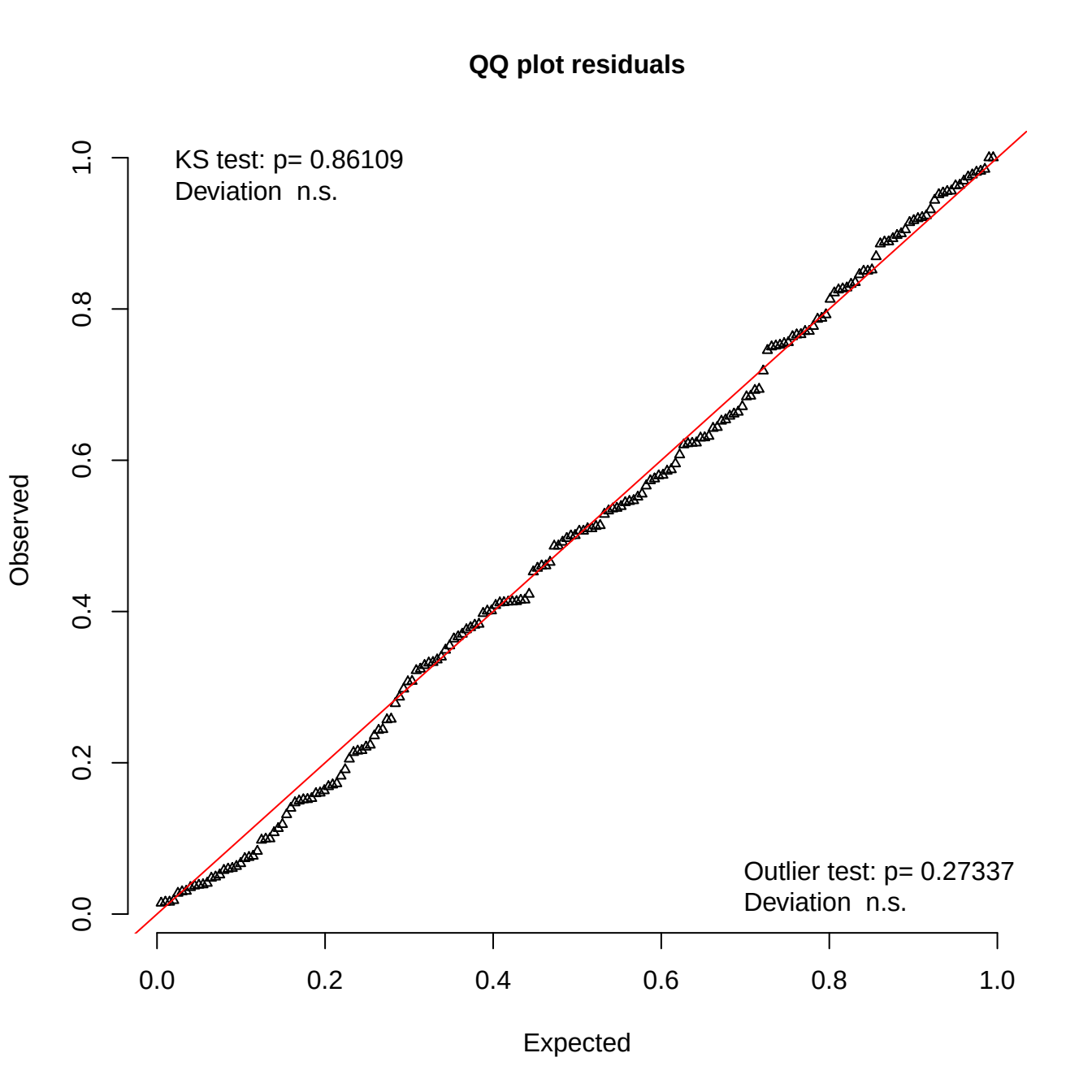

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

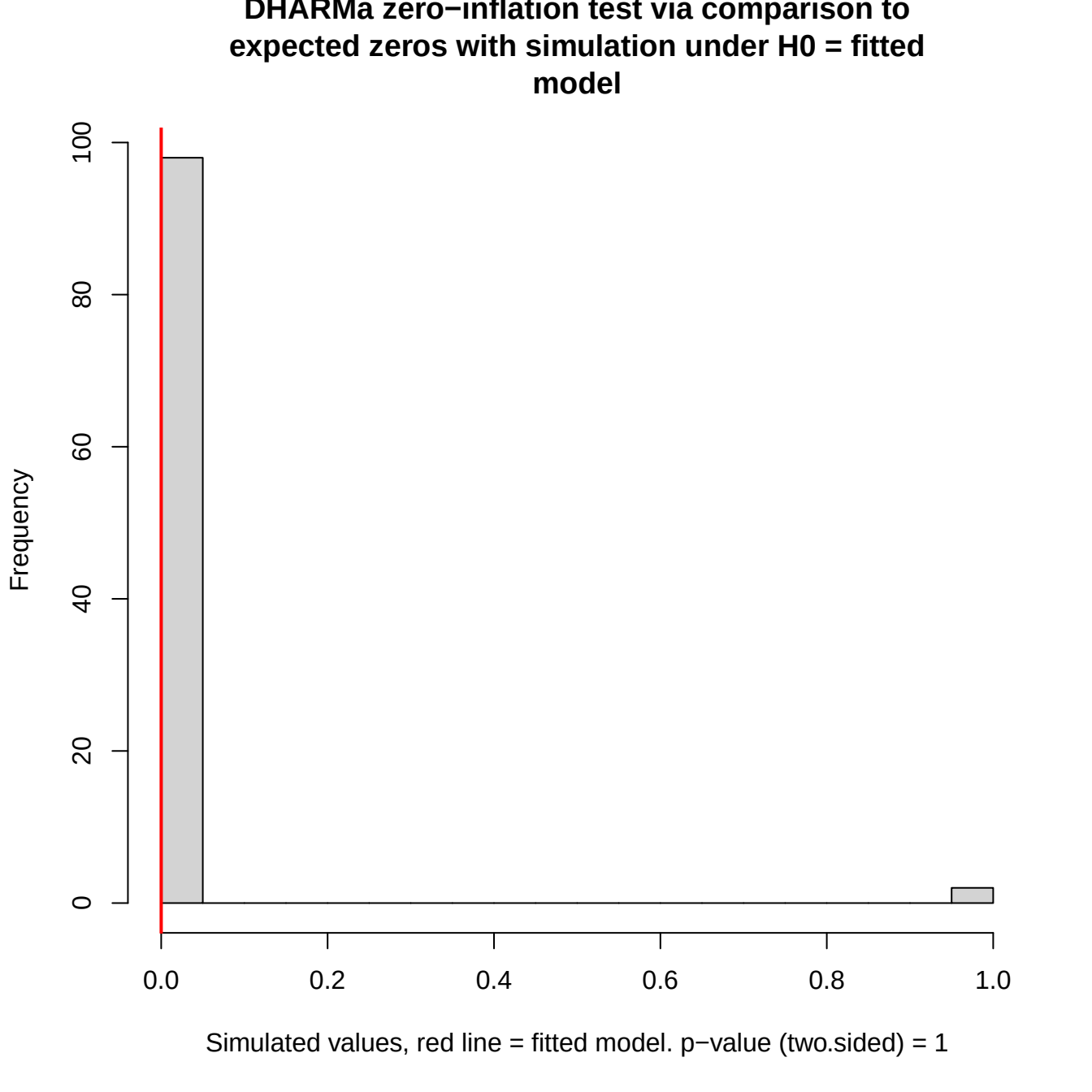

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

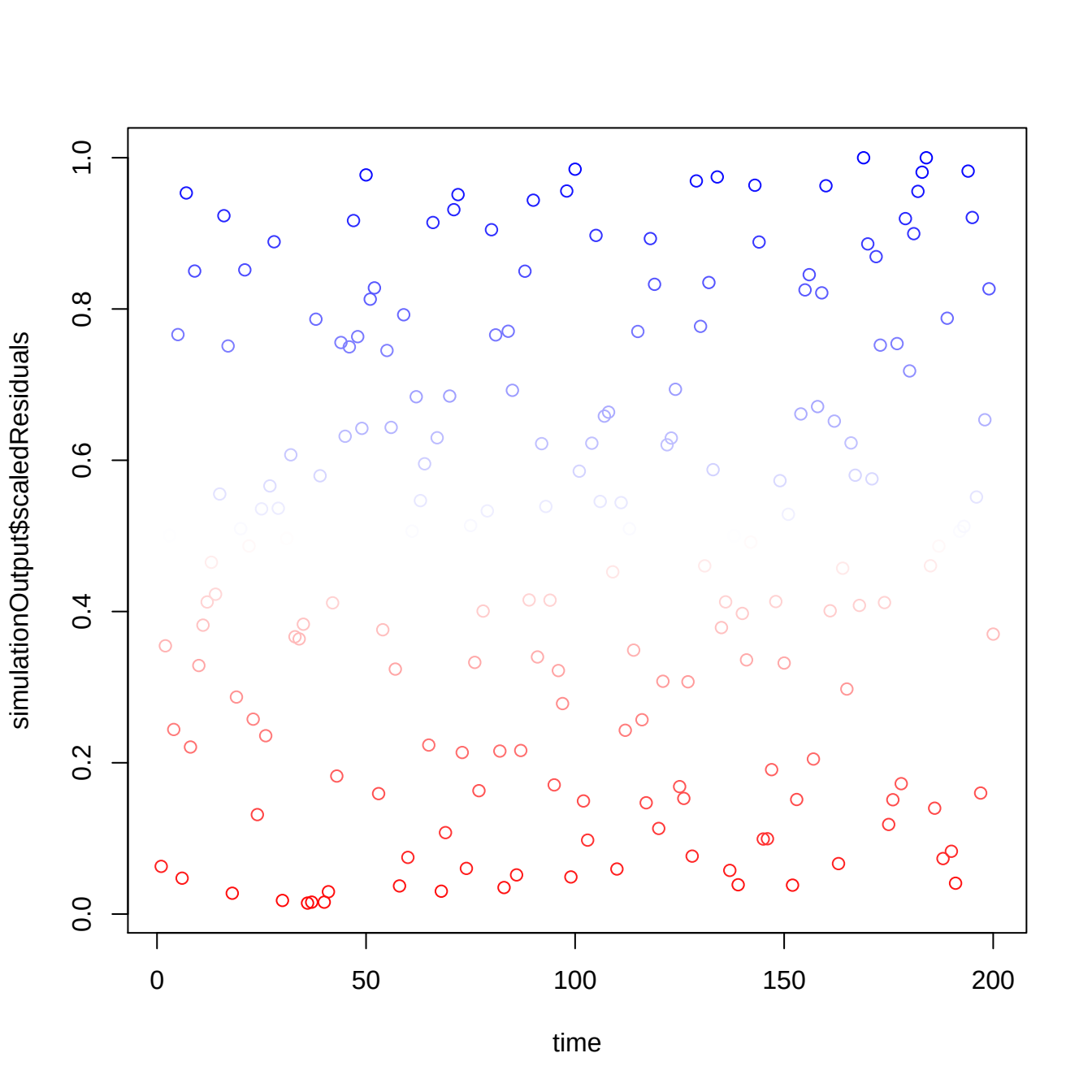

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0

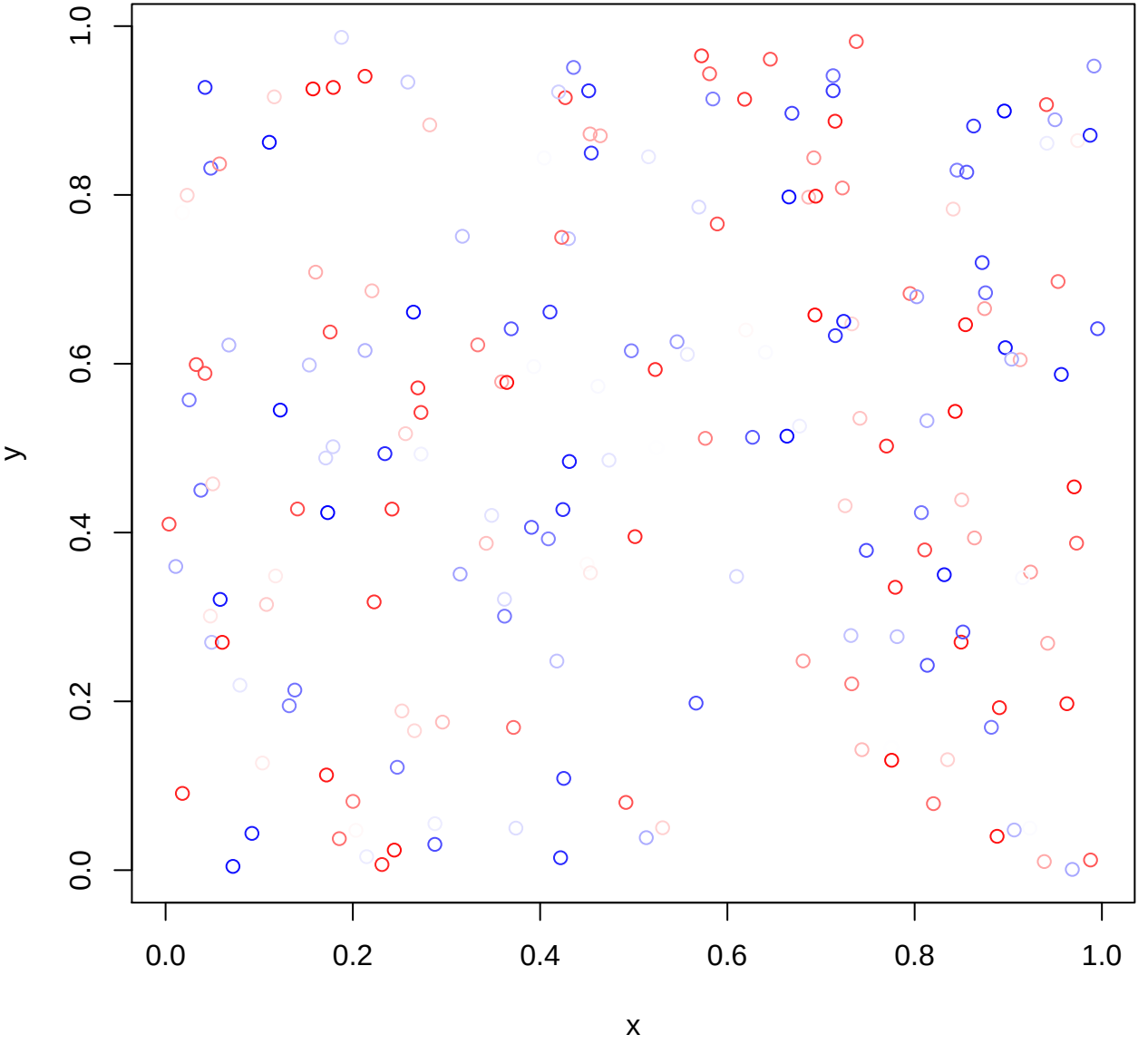

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

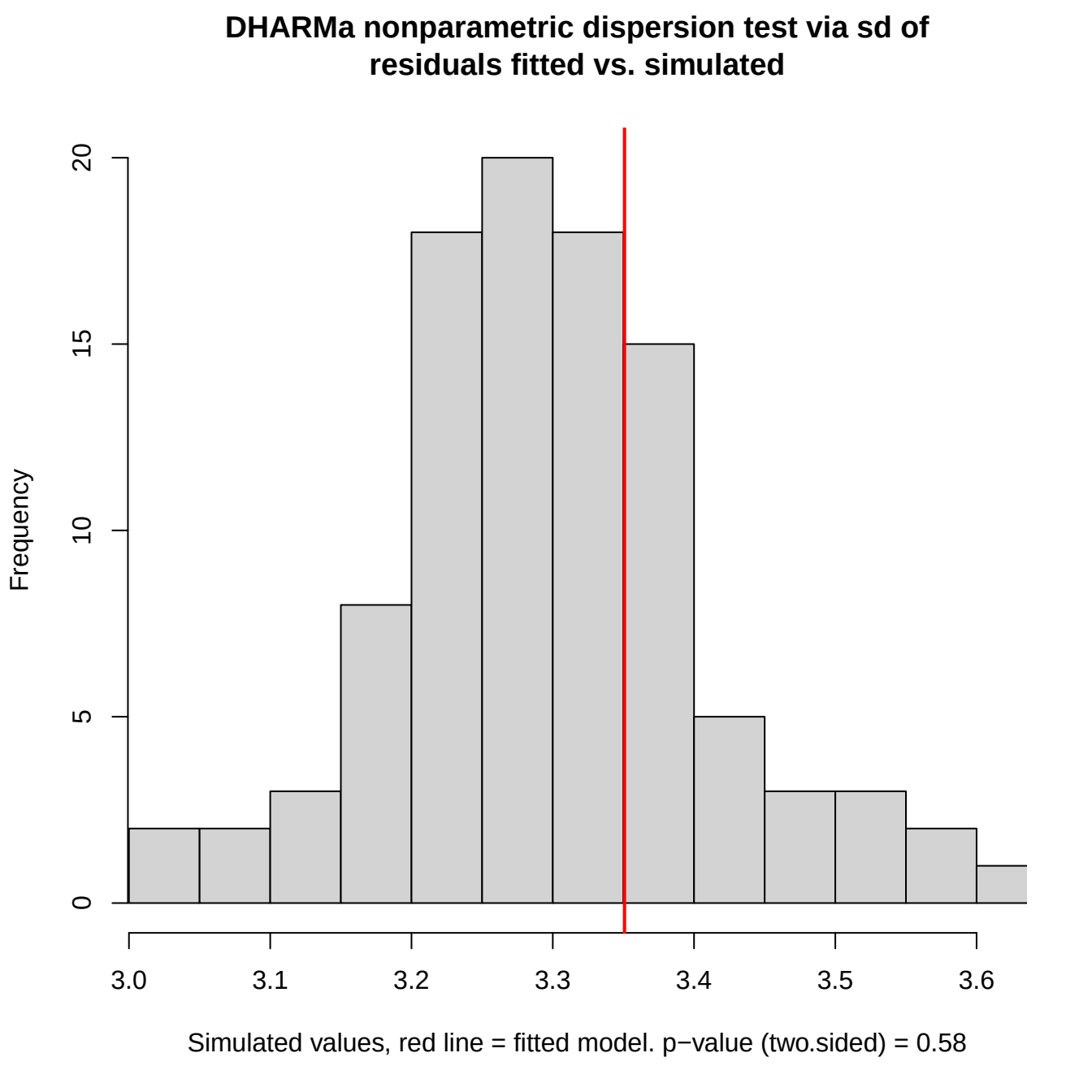

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.58

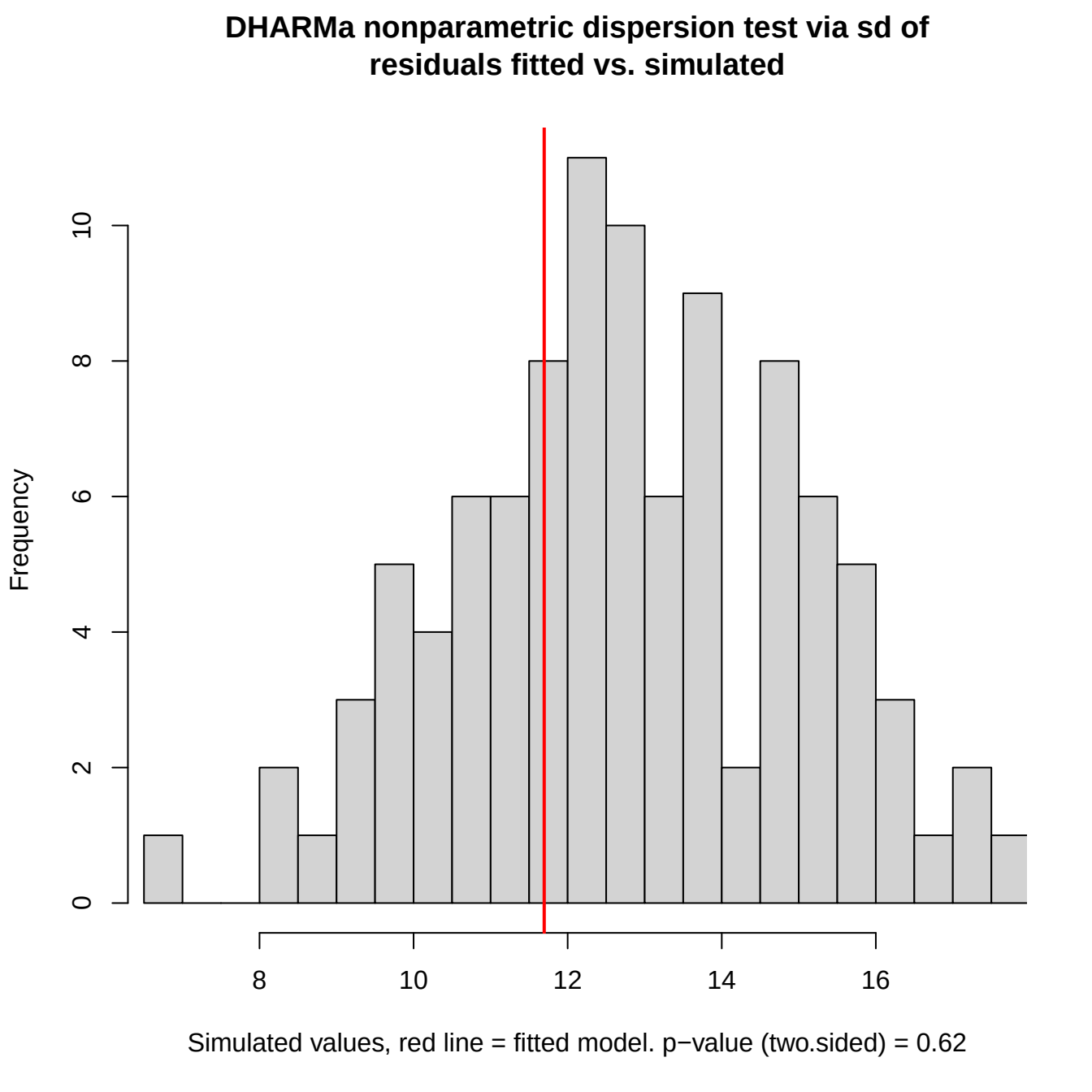

QQ plot residuals
KS test: p= 0.86109
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

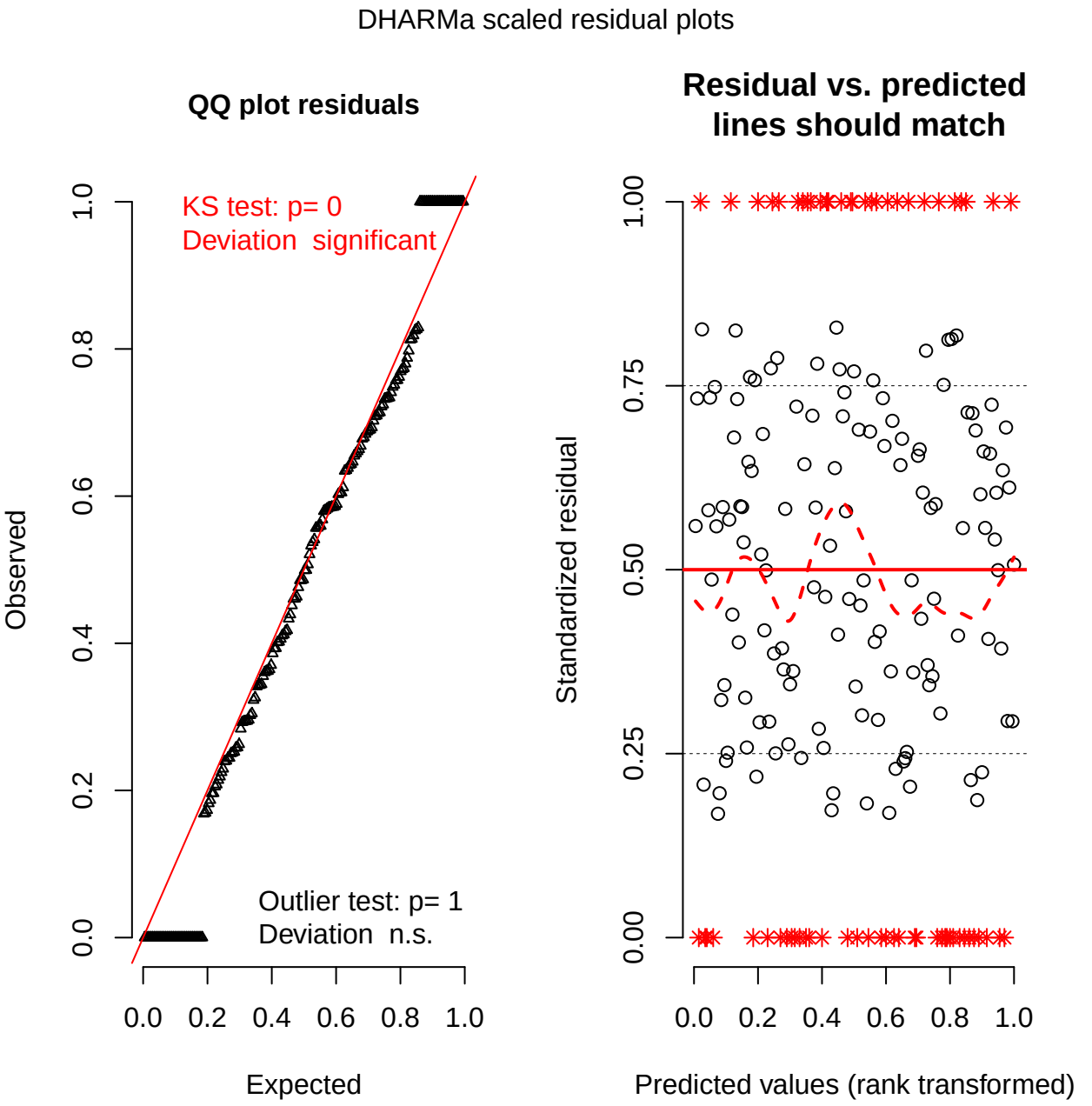

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

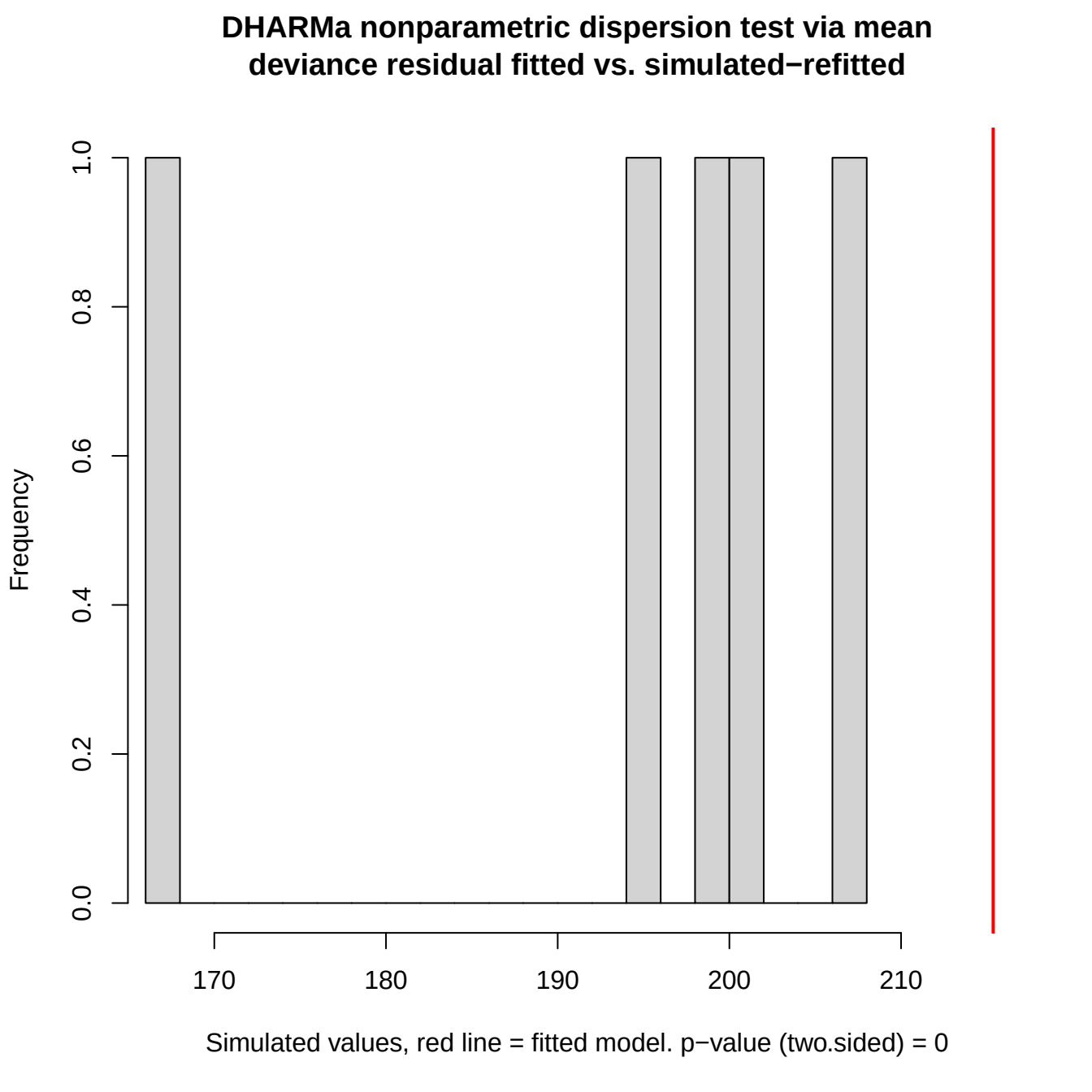

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

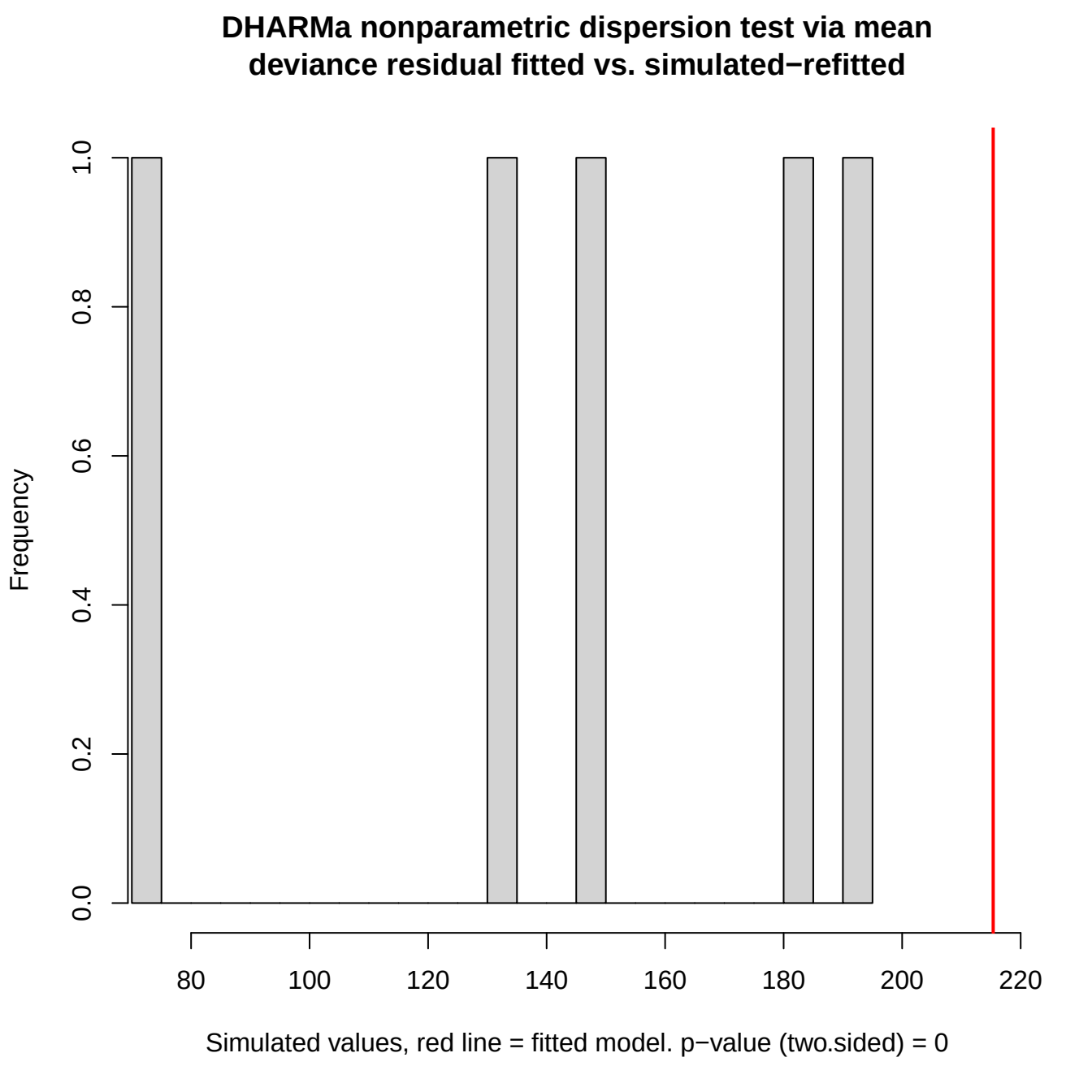

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

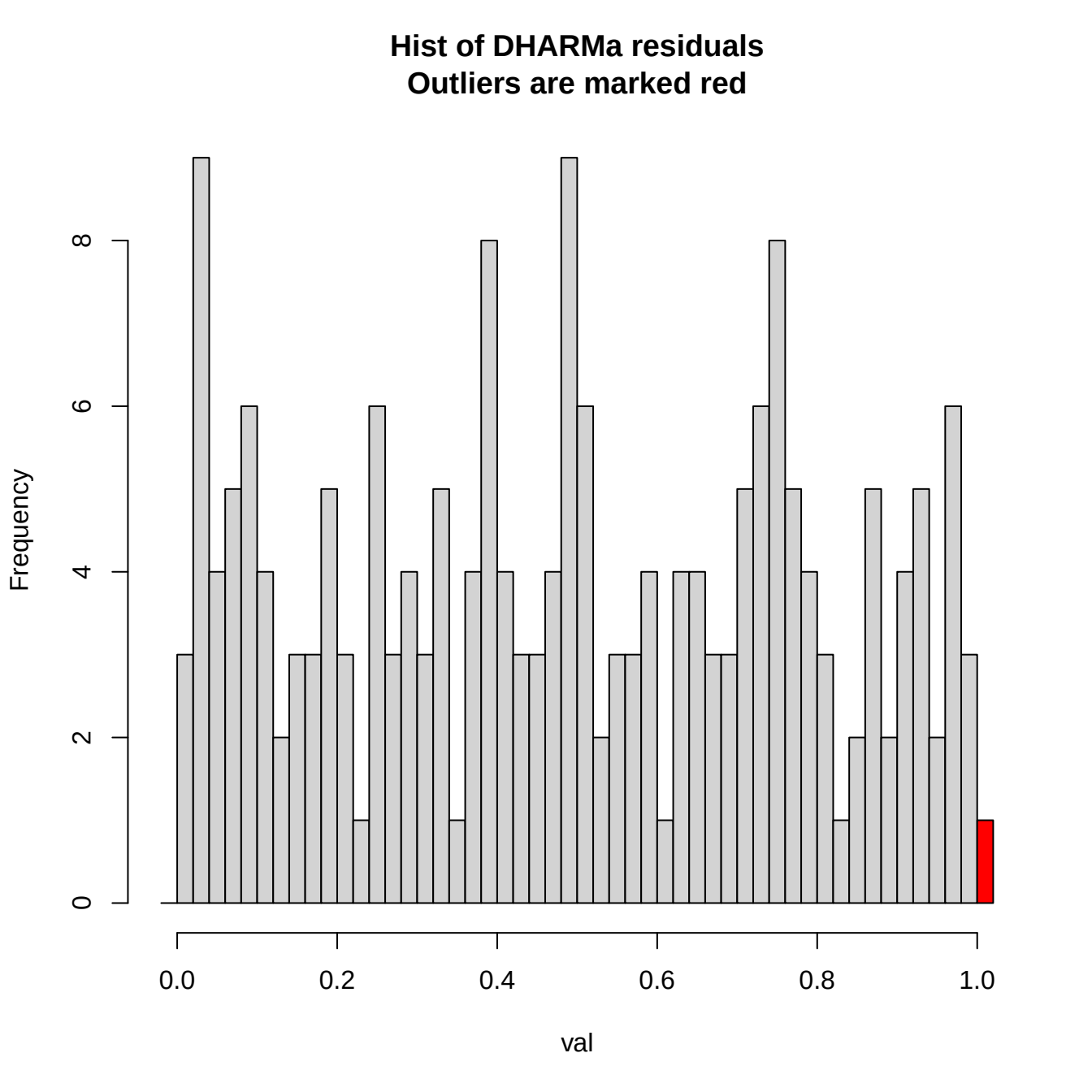

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.58

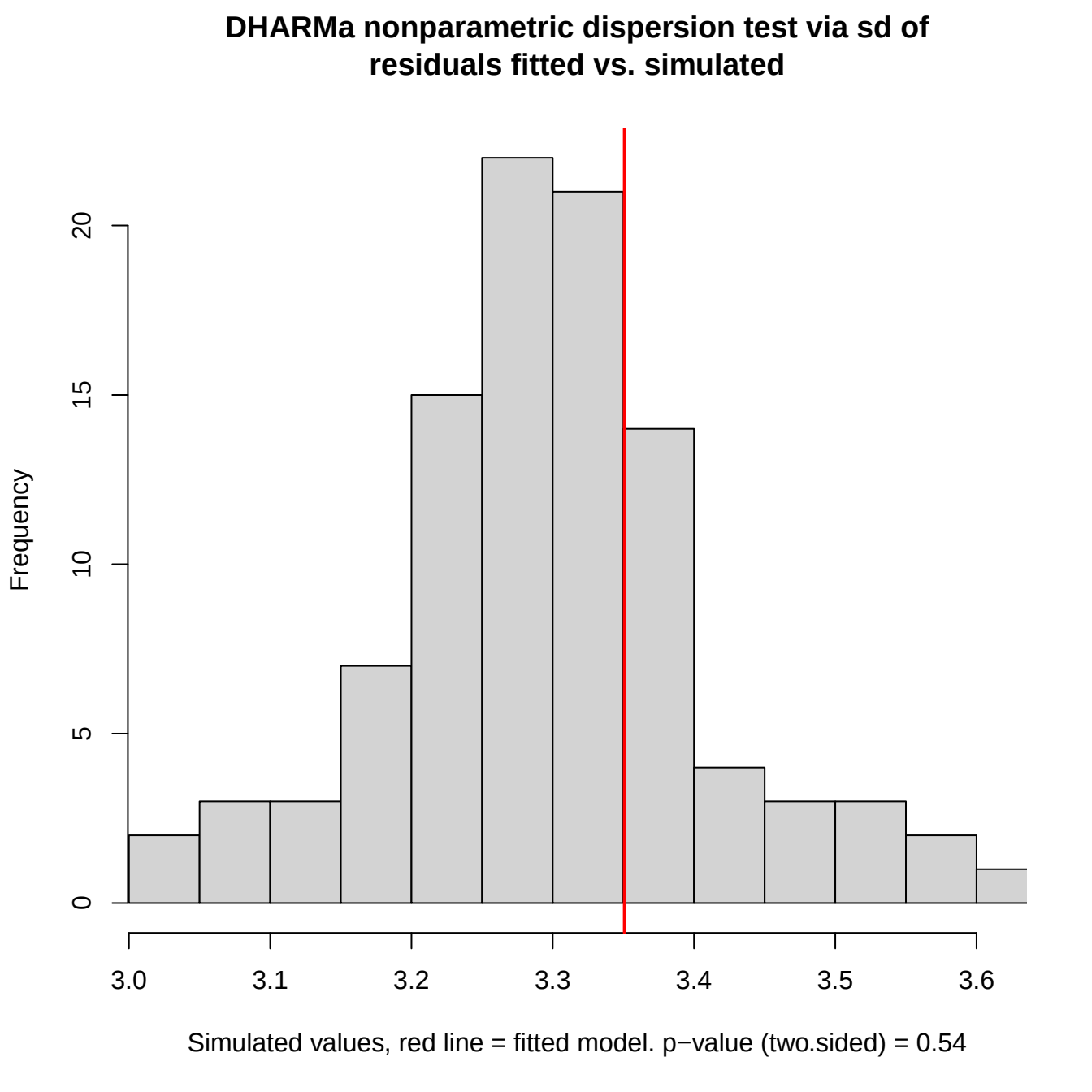

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
8
10
12
14
16
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

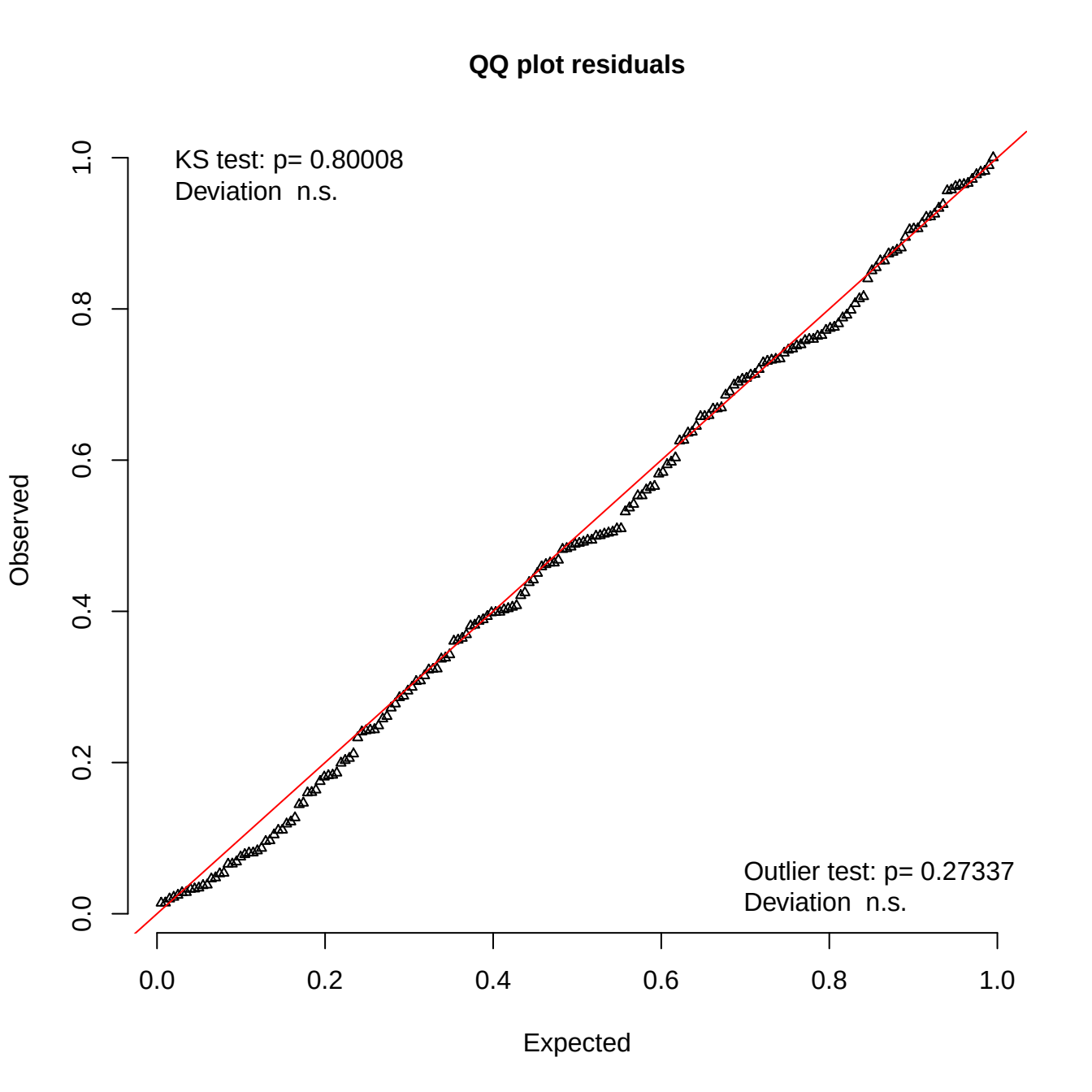

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

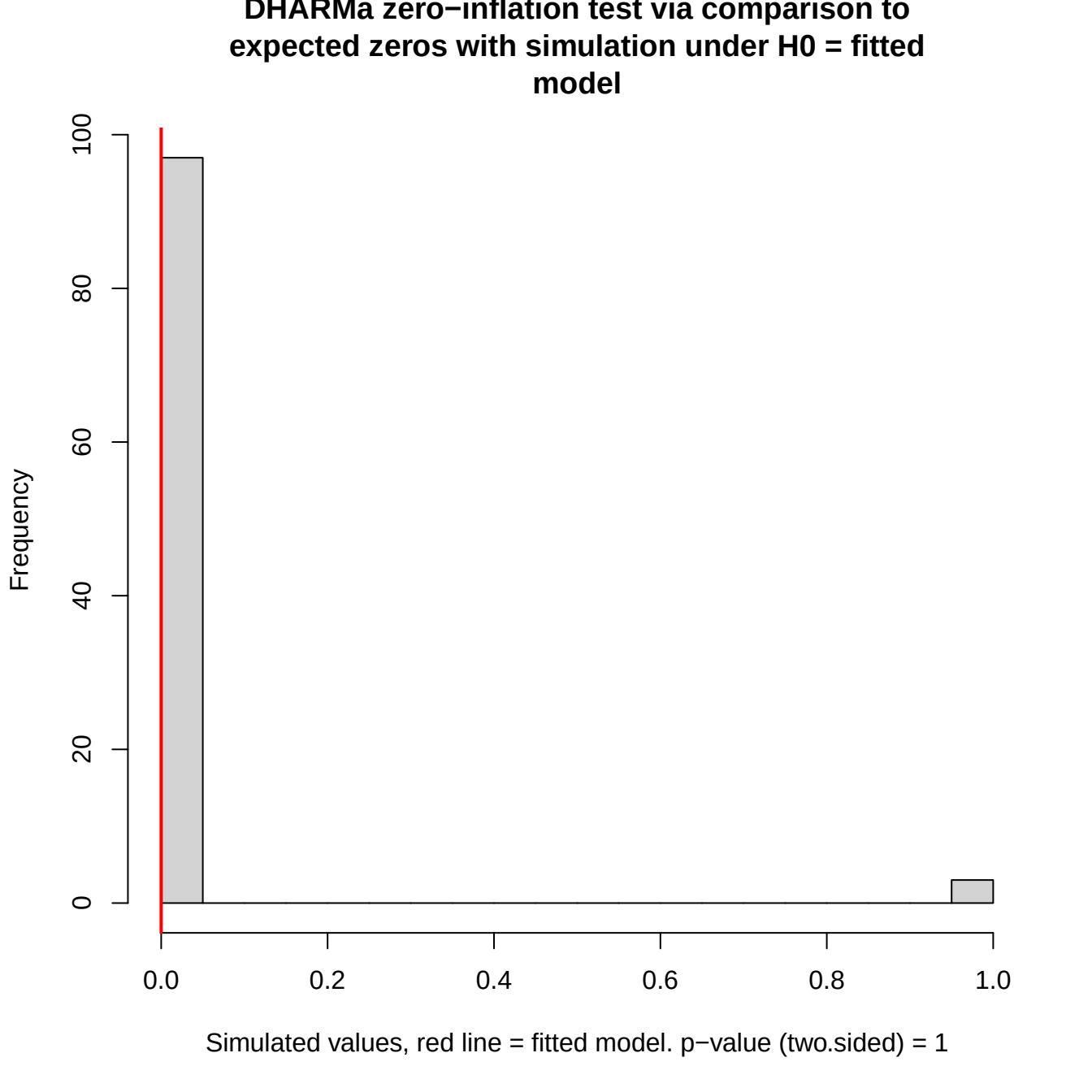

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

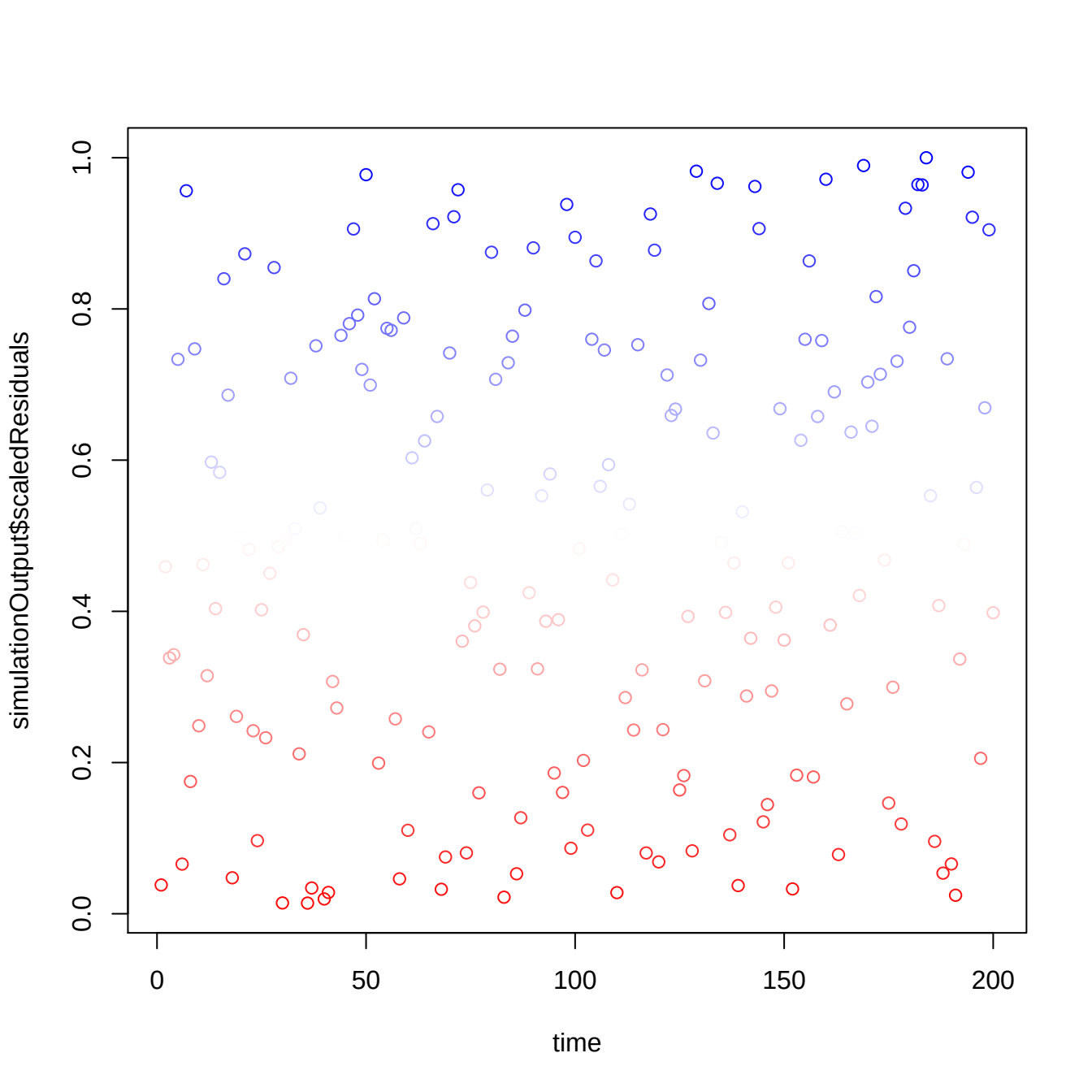

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0

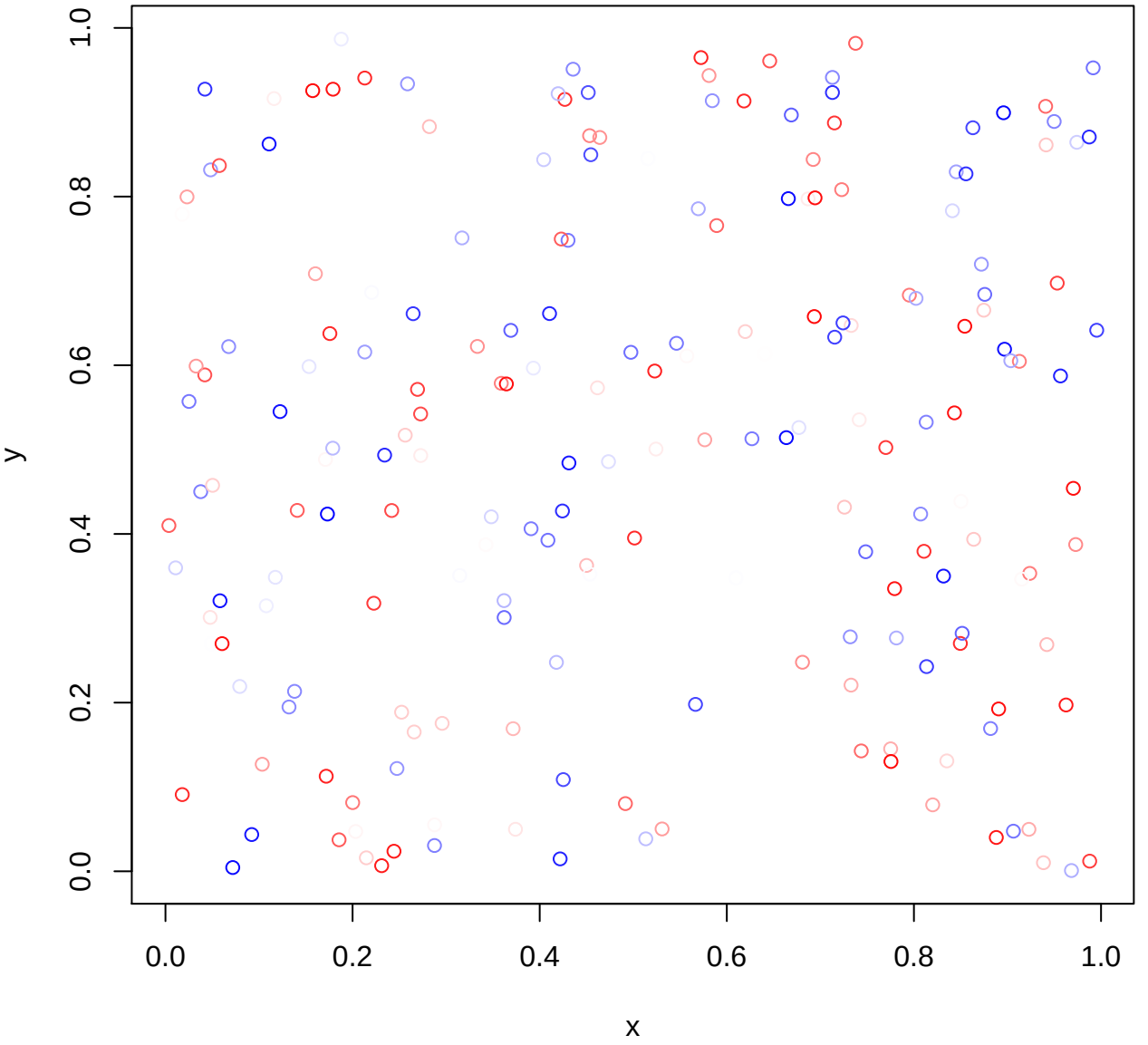

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

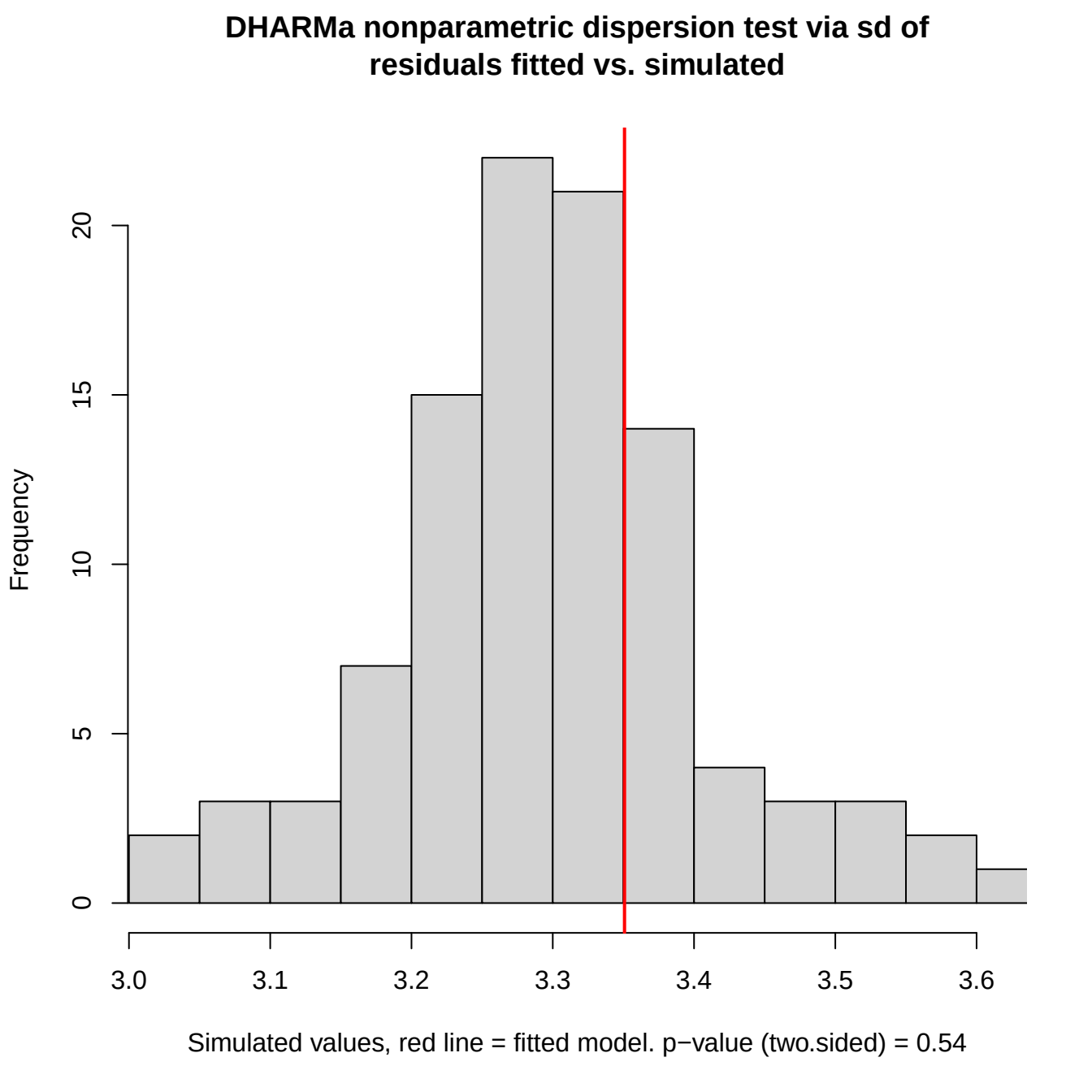

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

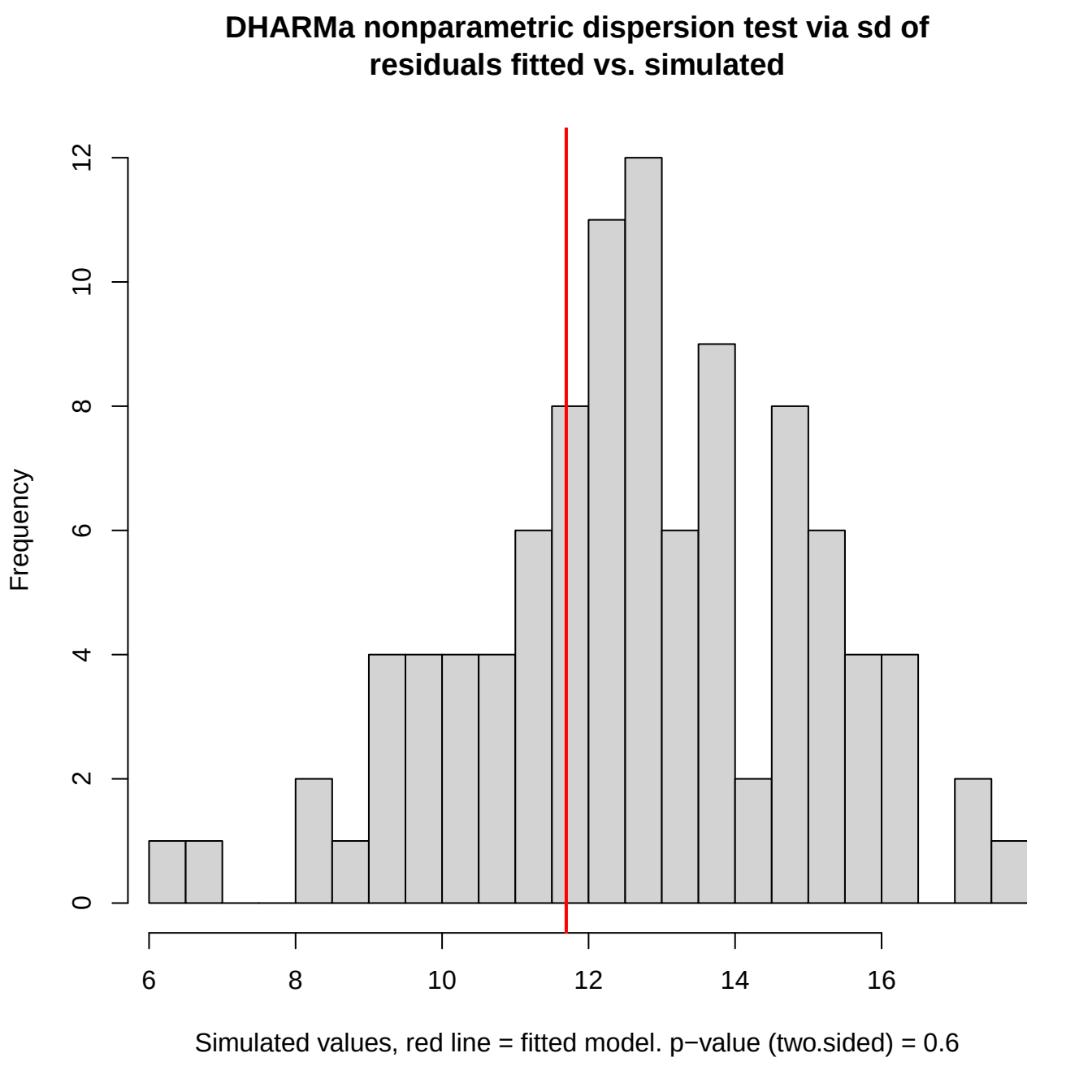

QQ plot residuals
KS test: p= 0.80008
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

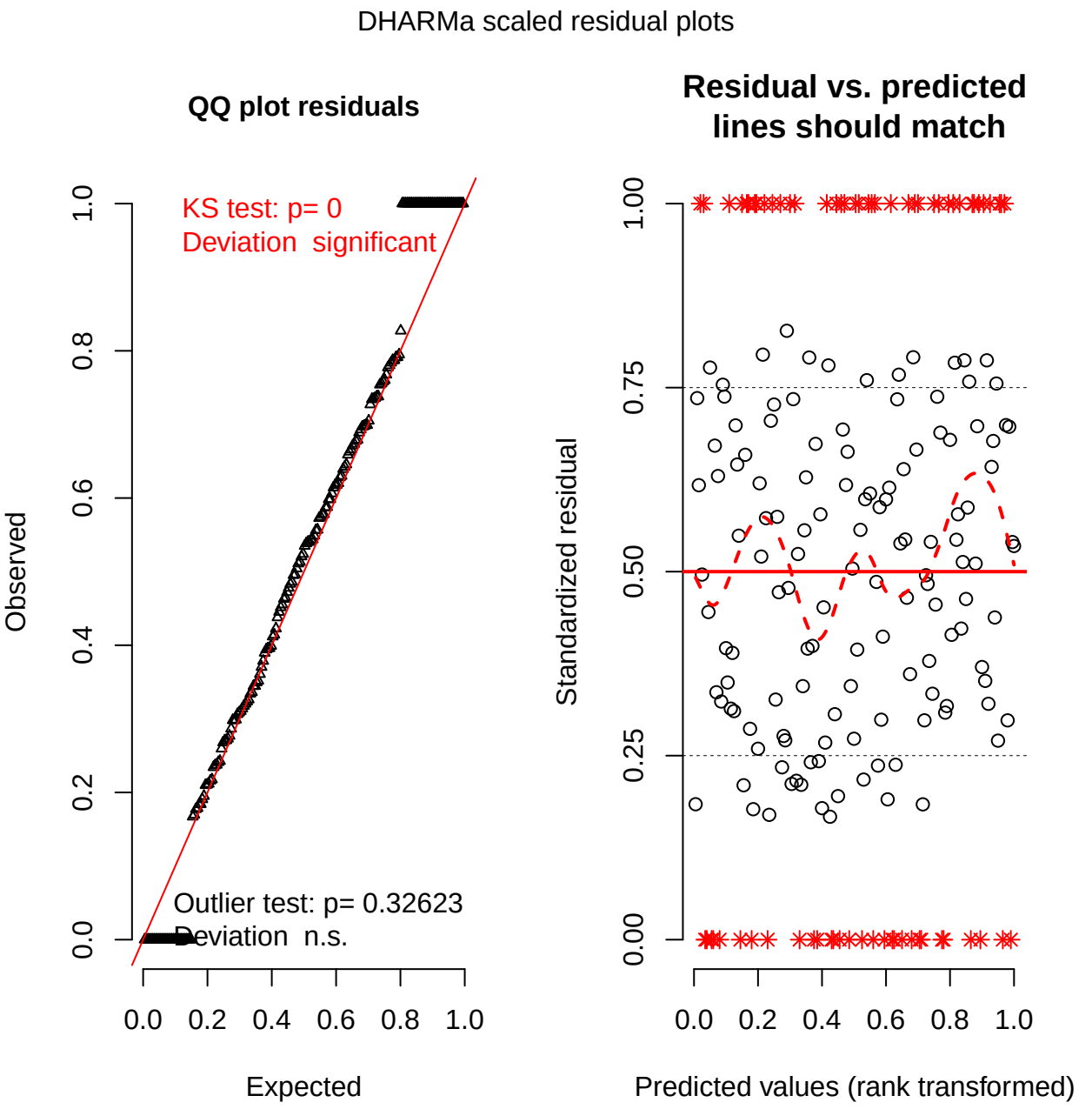

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

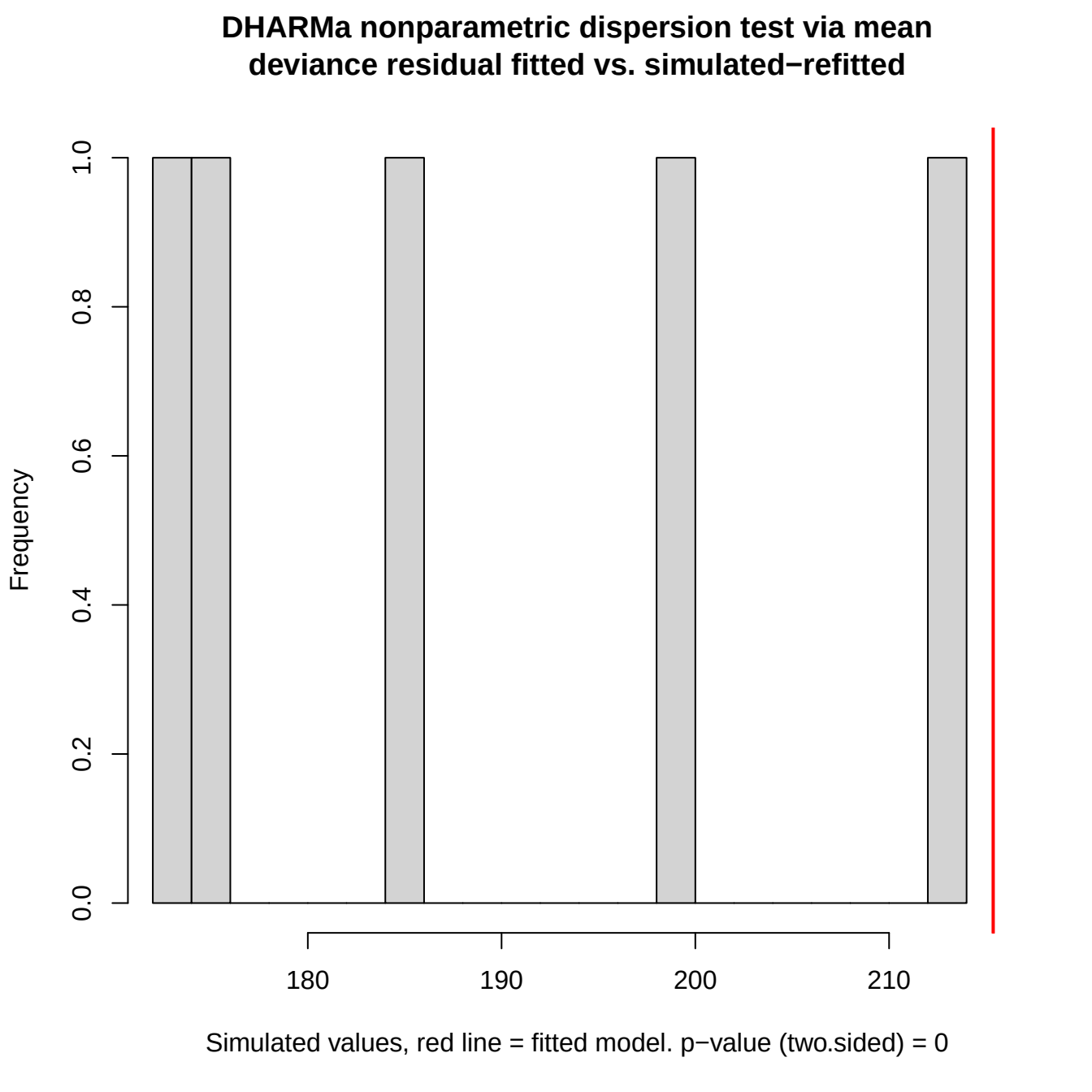

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

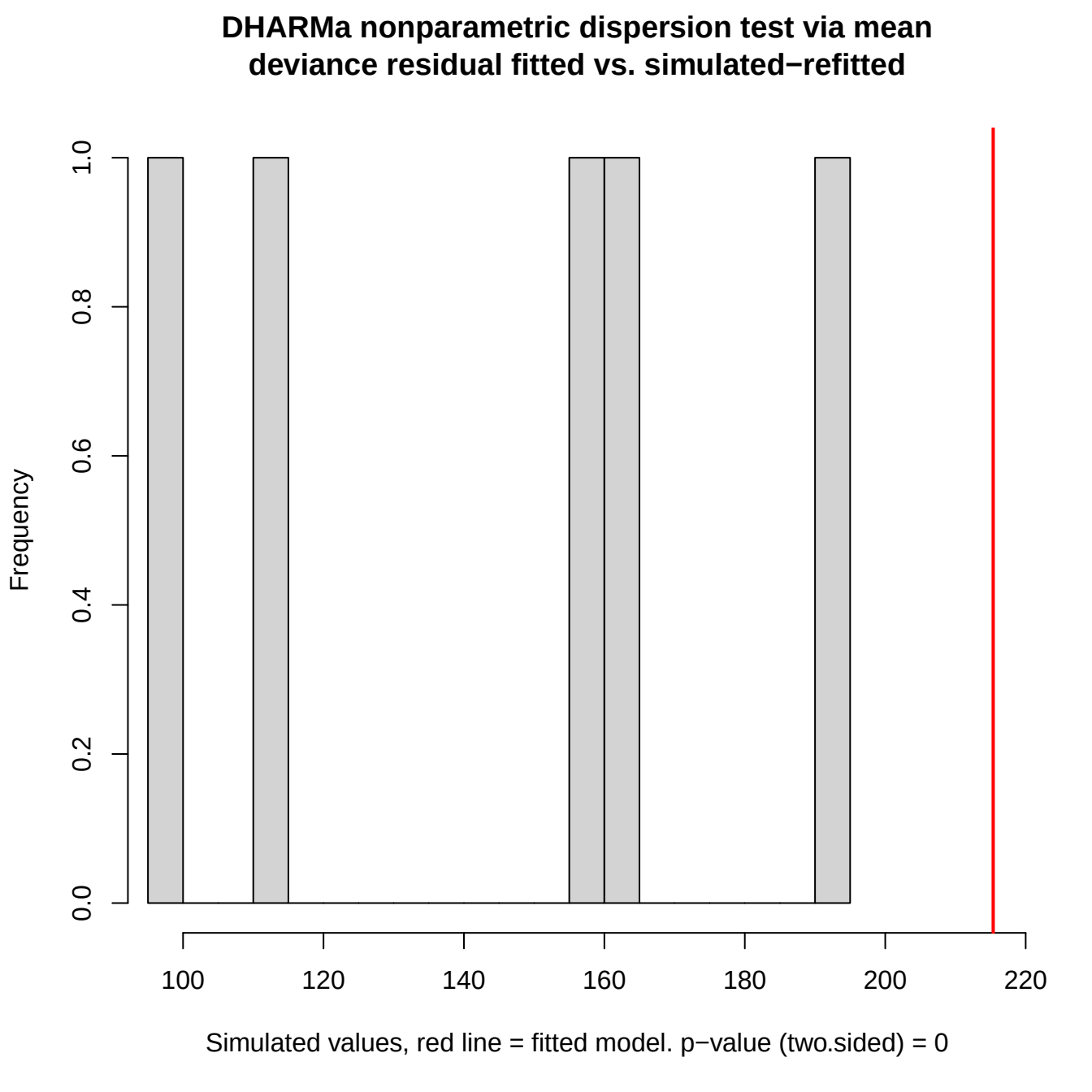

y
x
0.0
0.2
0.4
0.6
0.8
1.0

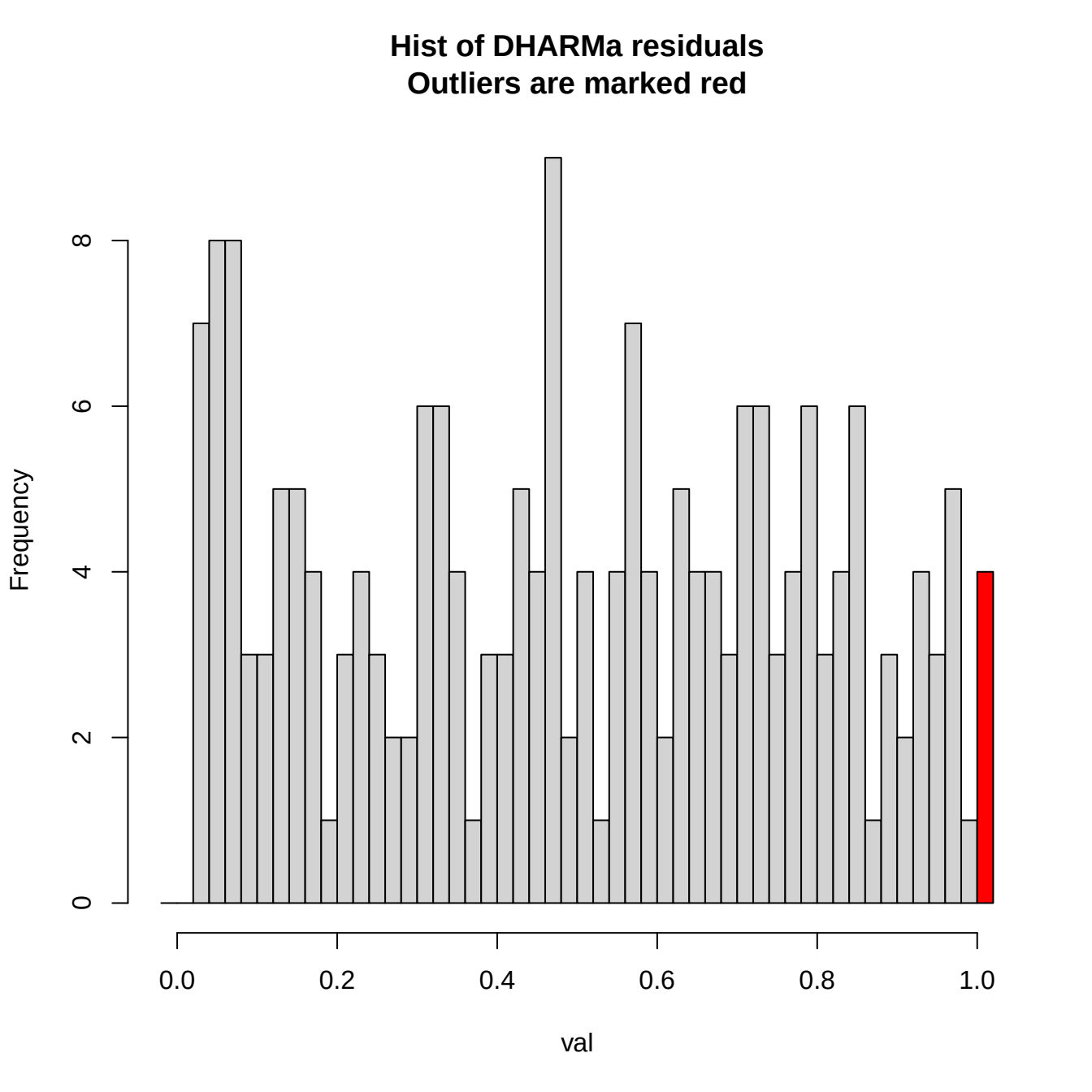

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

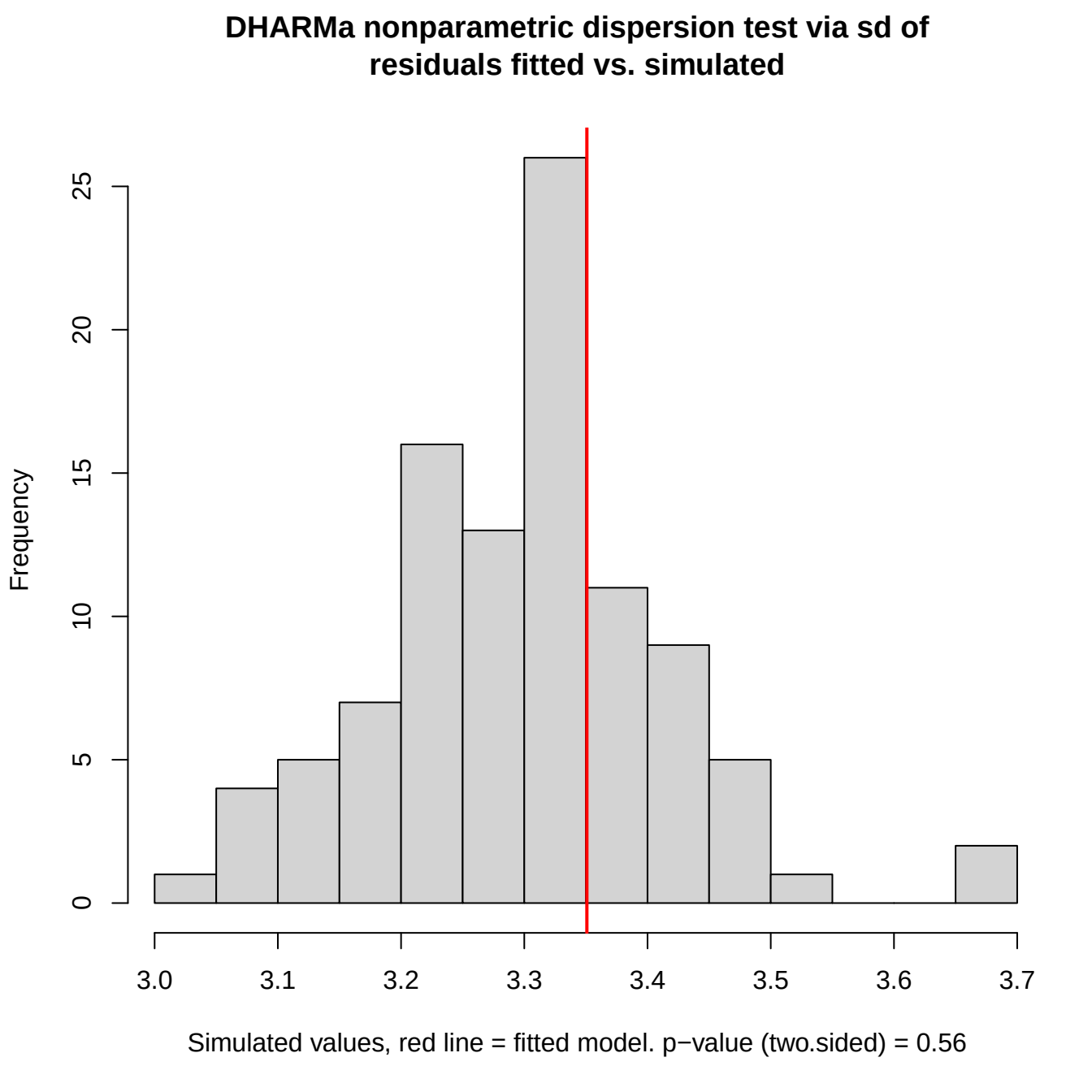

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
6
8
10
12
14
16
Simulated values, red line = fitted model. p−value (two.sided) = 0.6

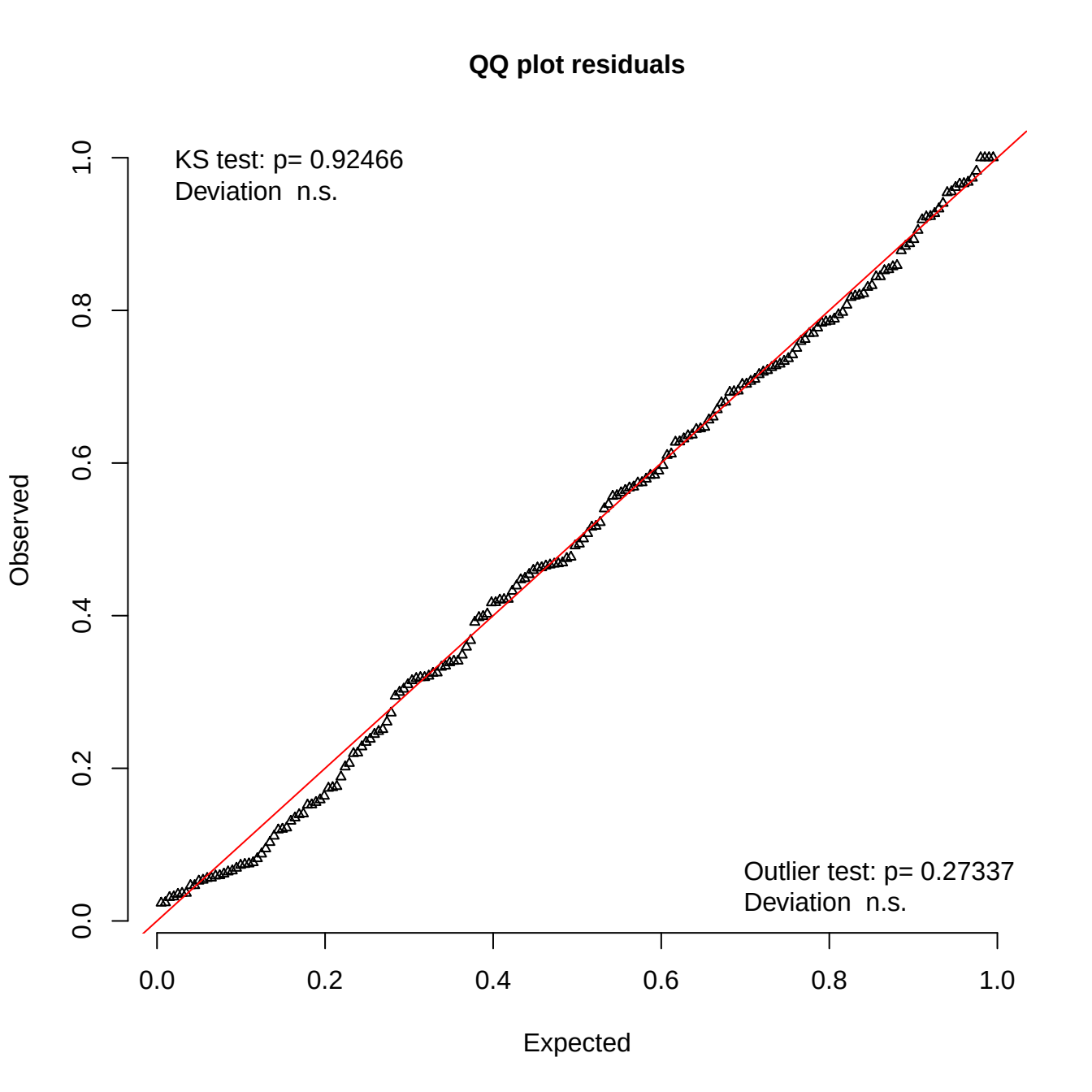

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.32623
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

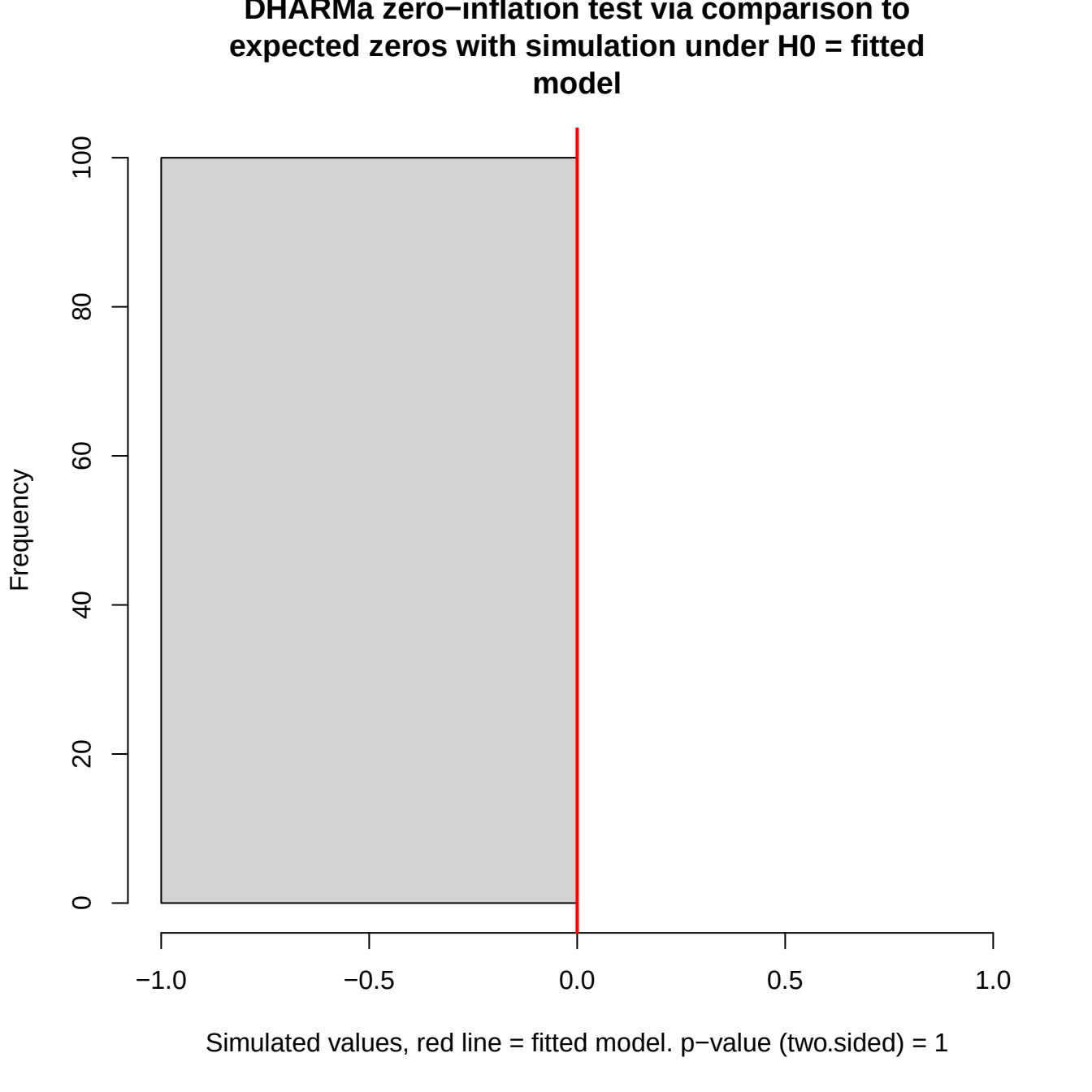

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

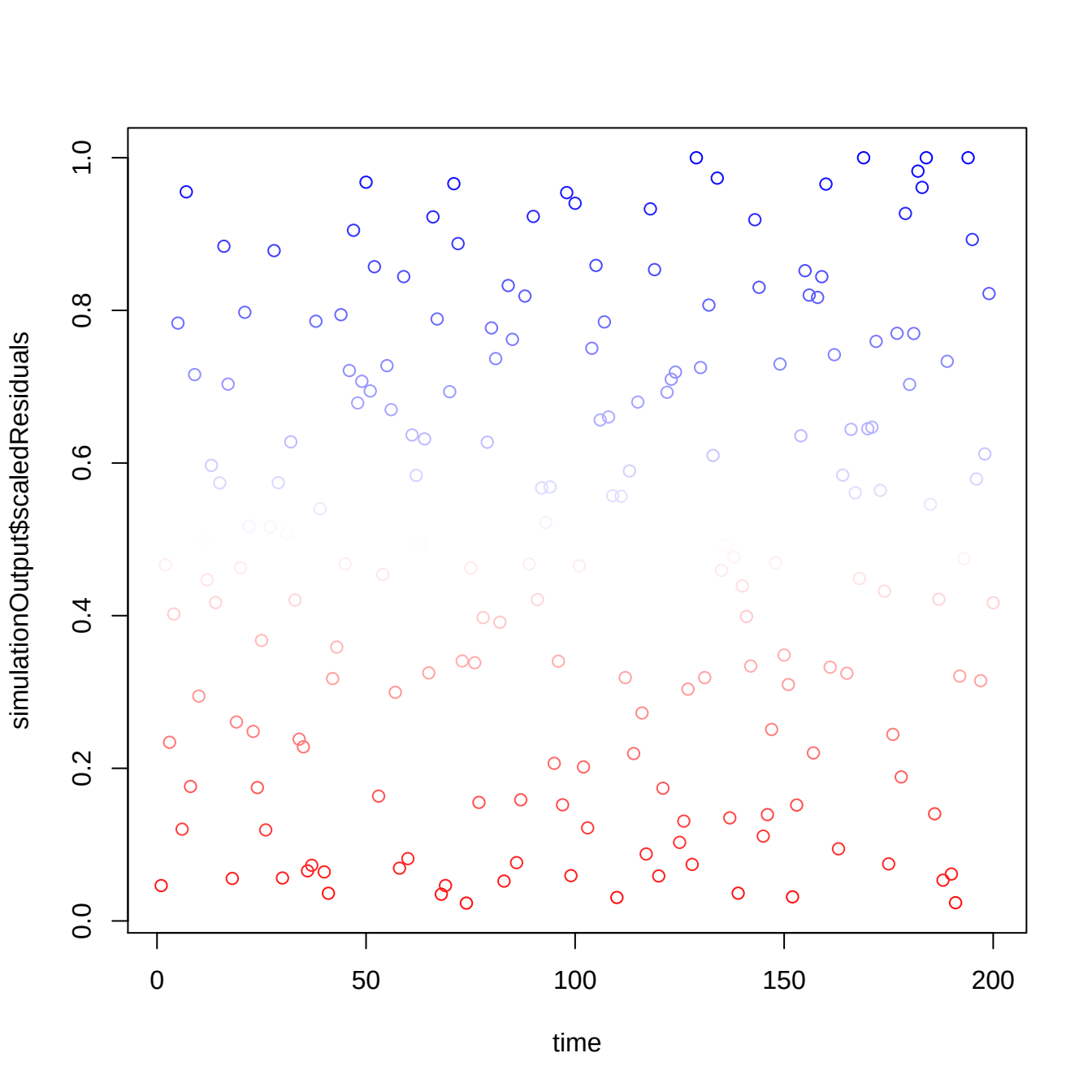

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0

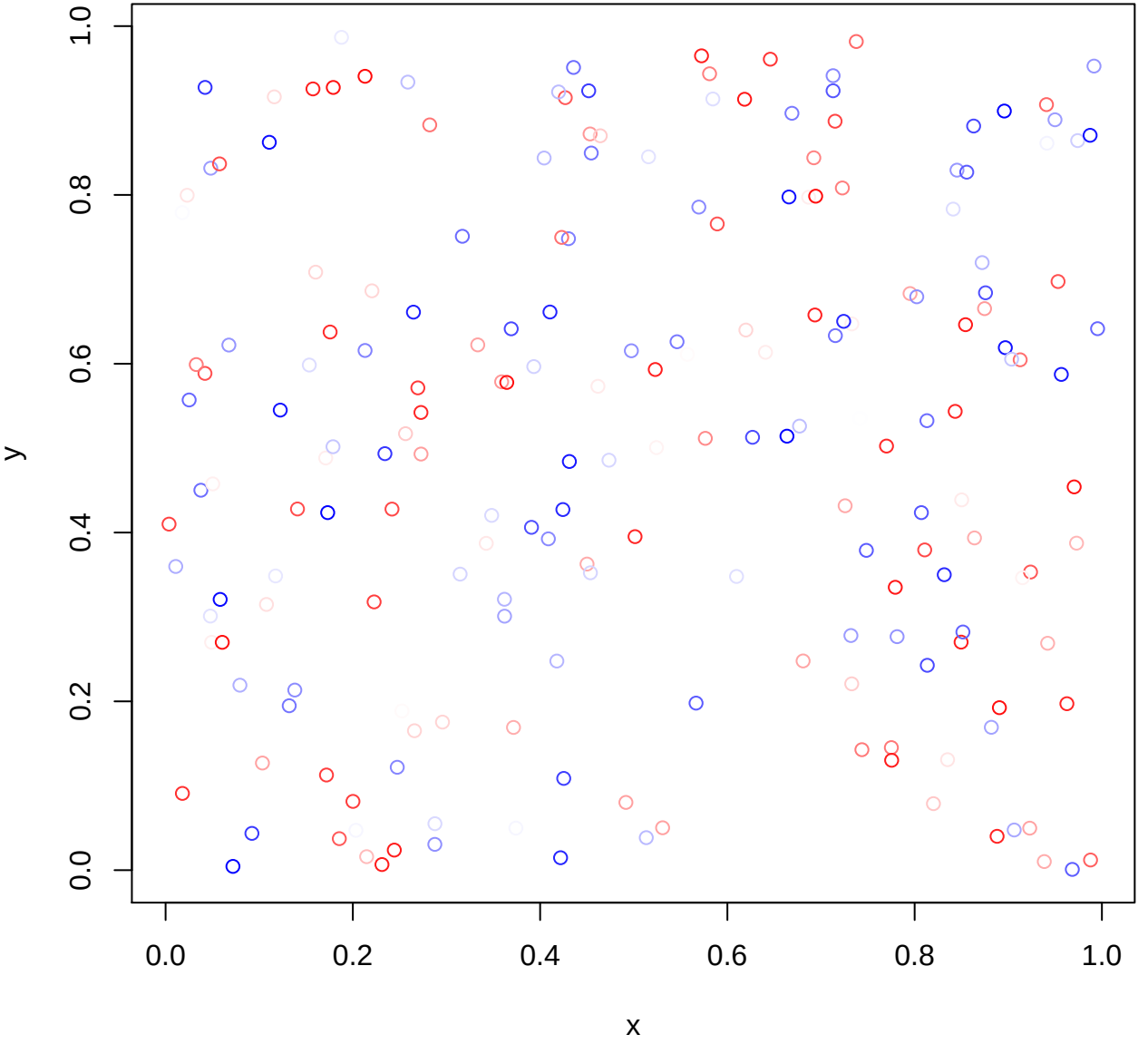

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

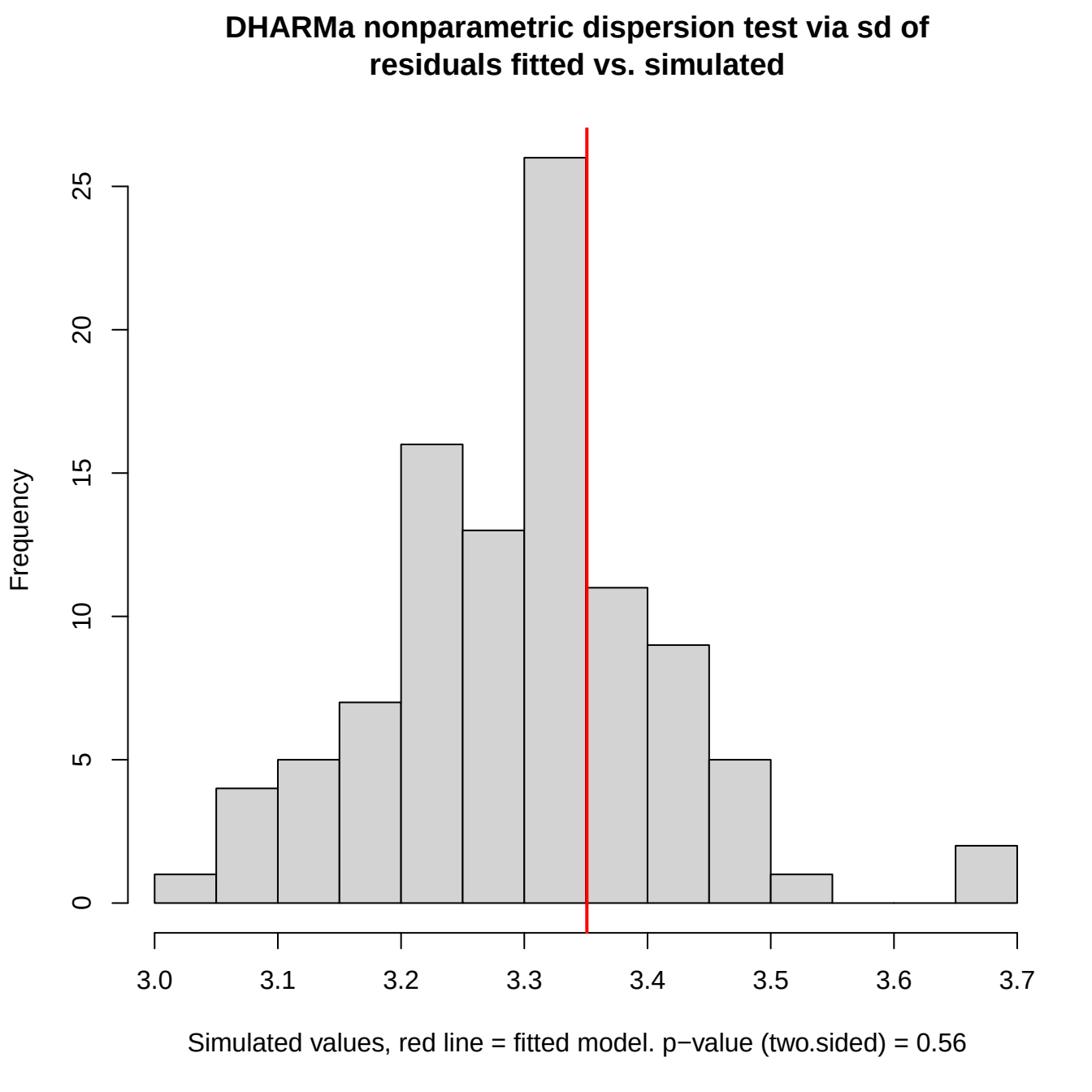

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
3.0
3.1
3.2
3.3
3.4
3.5
3.6
3.7
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

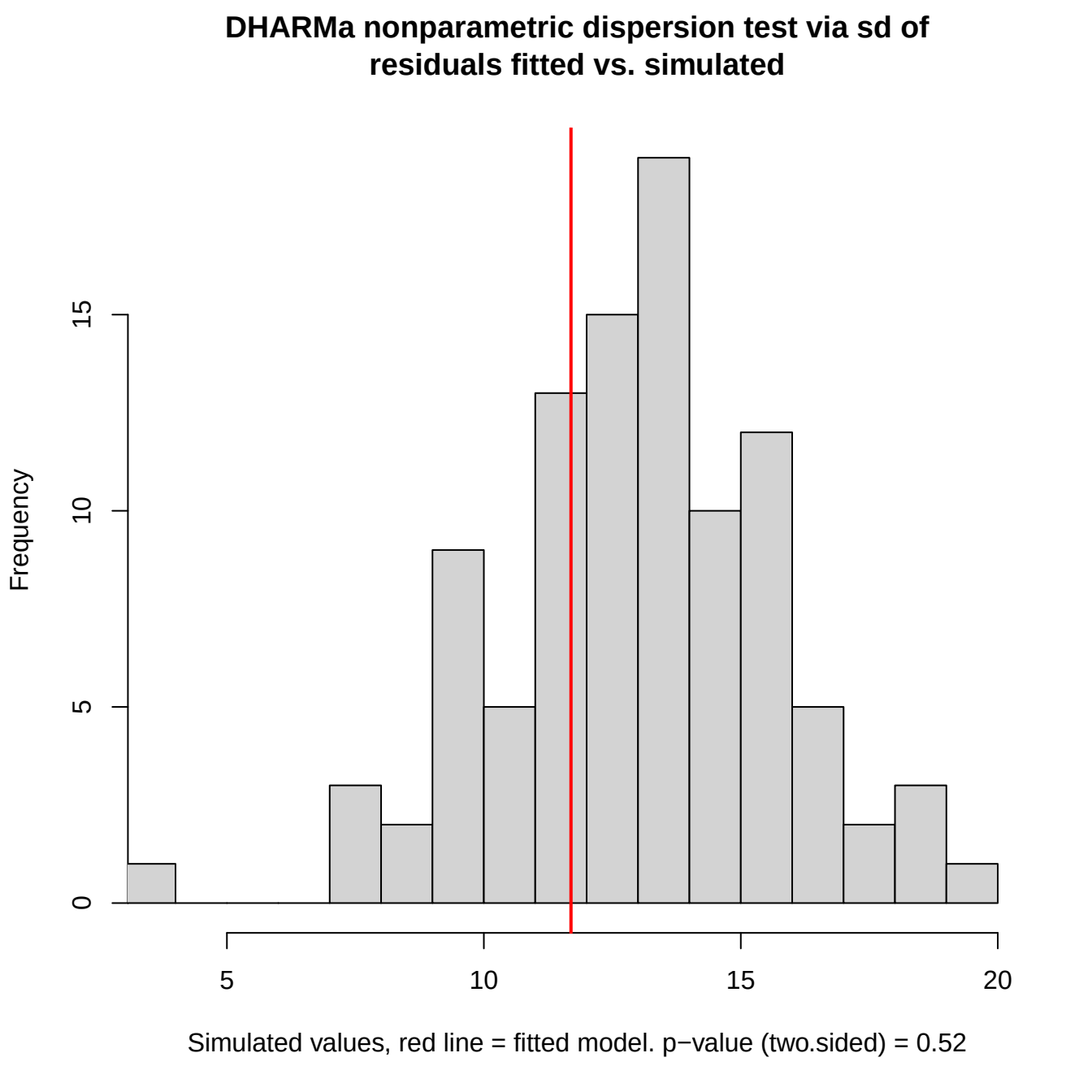

QQ plot residuals
KS test: p= 0.92466
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

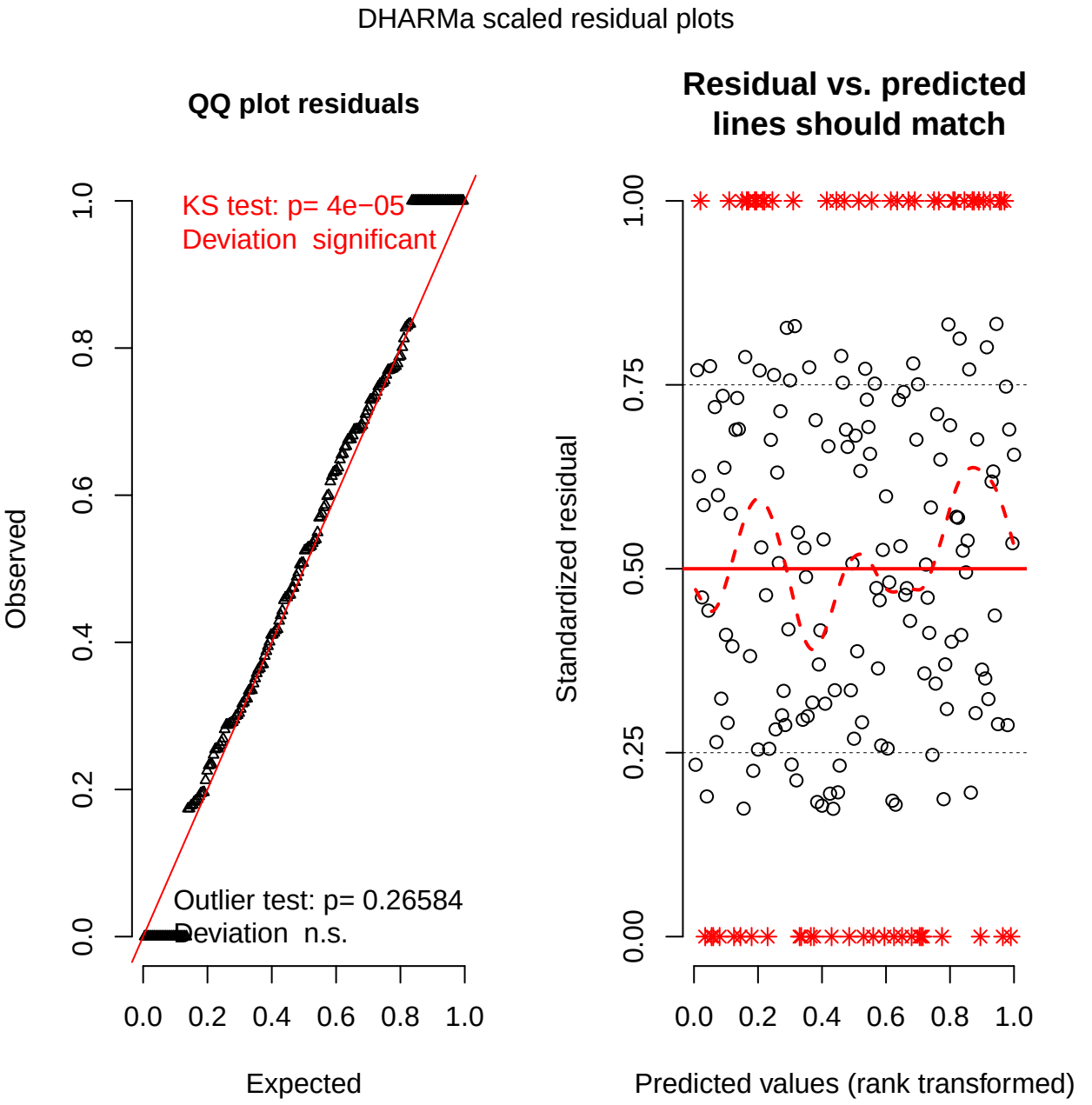

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

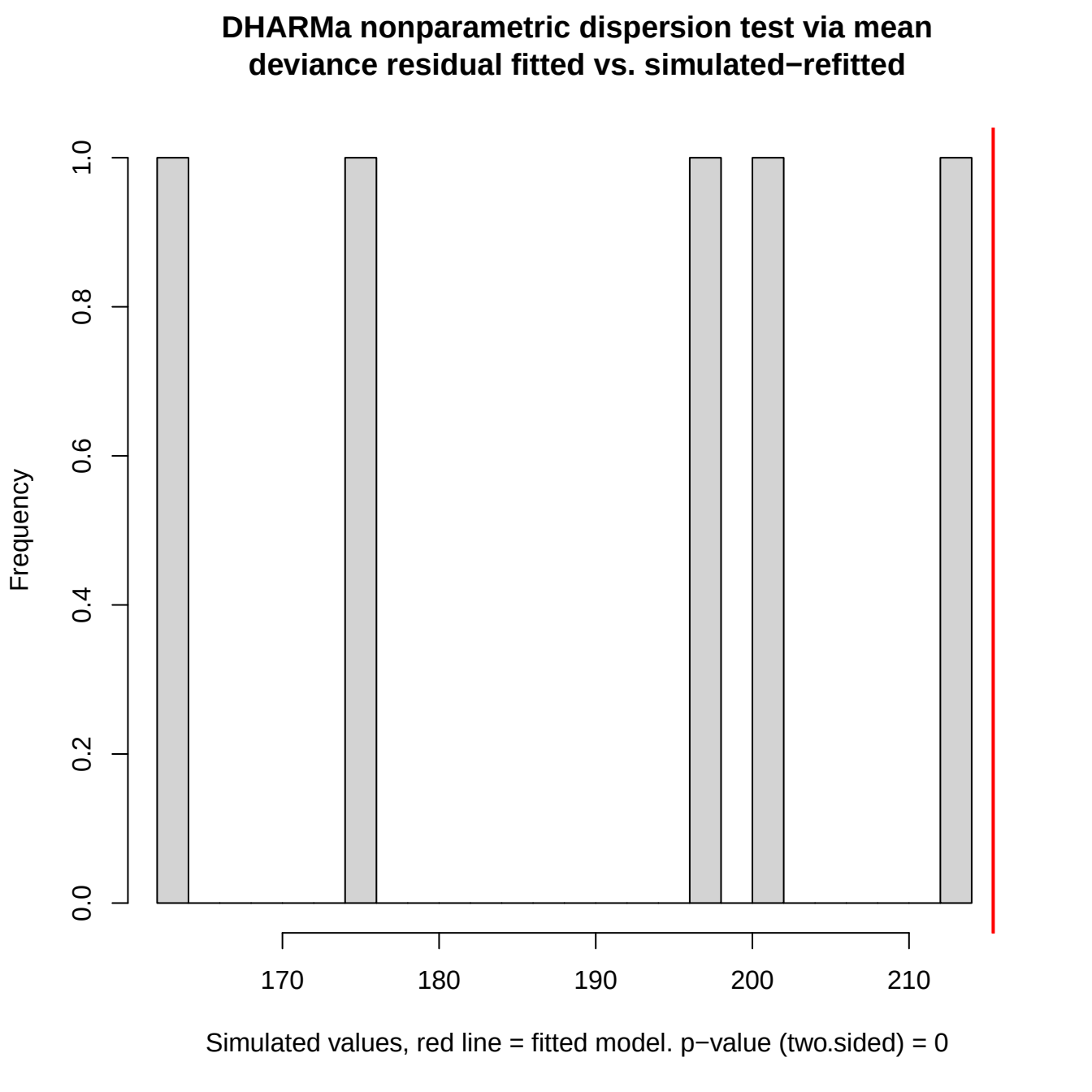

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

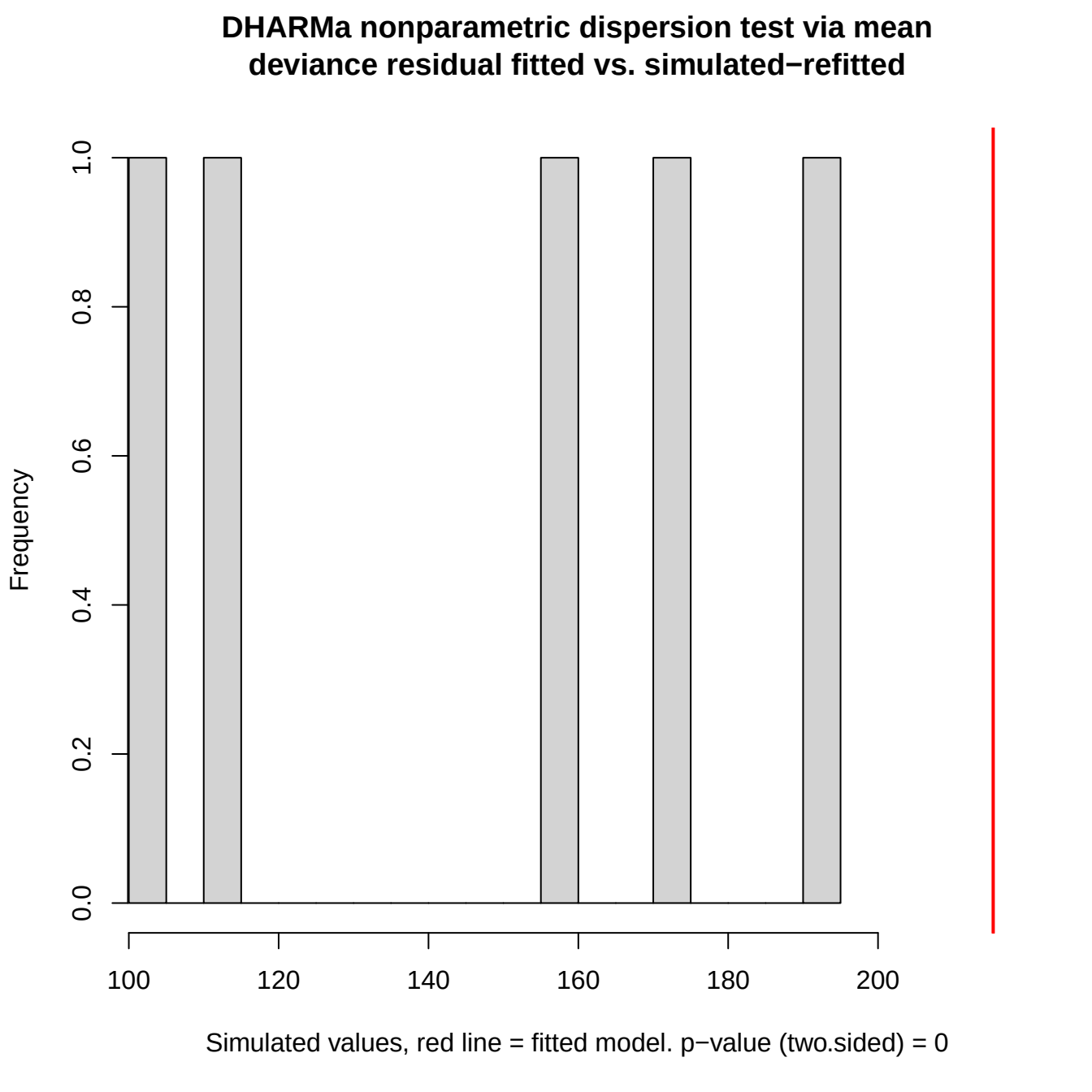

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

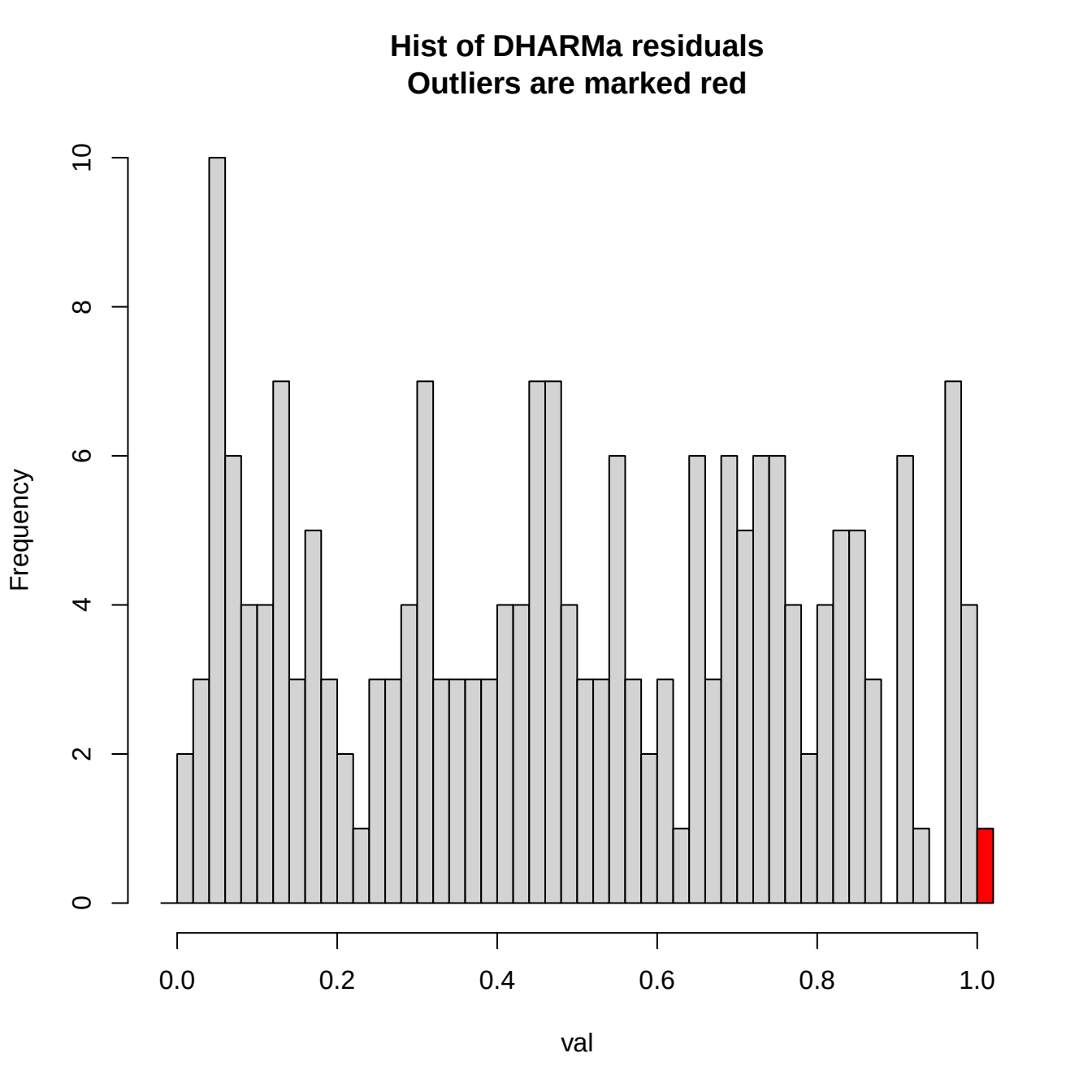

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
3.0
3.1
3.2
3.3
3.4
3.5
3.6
3.7
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

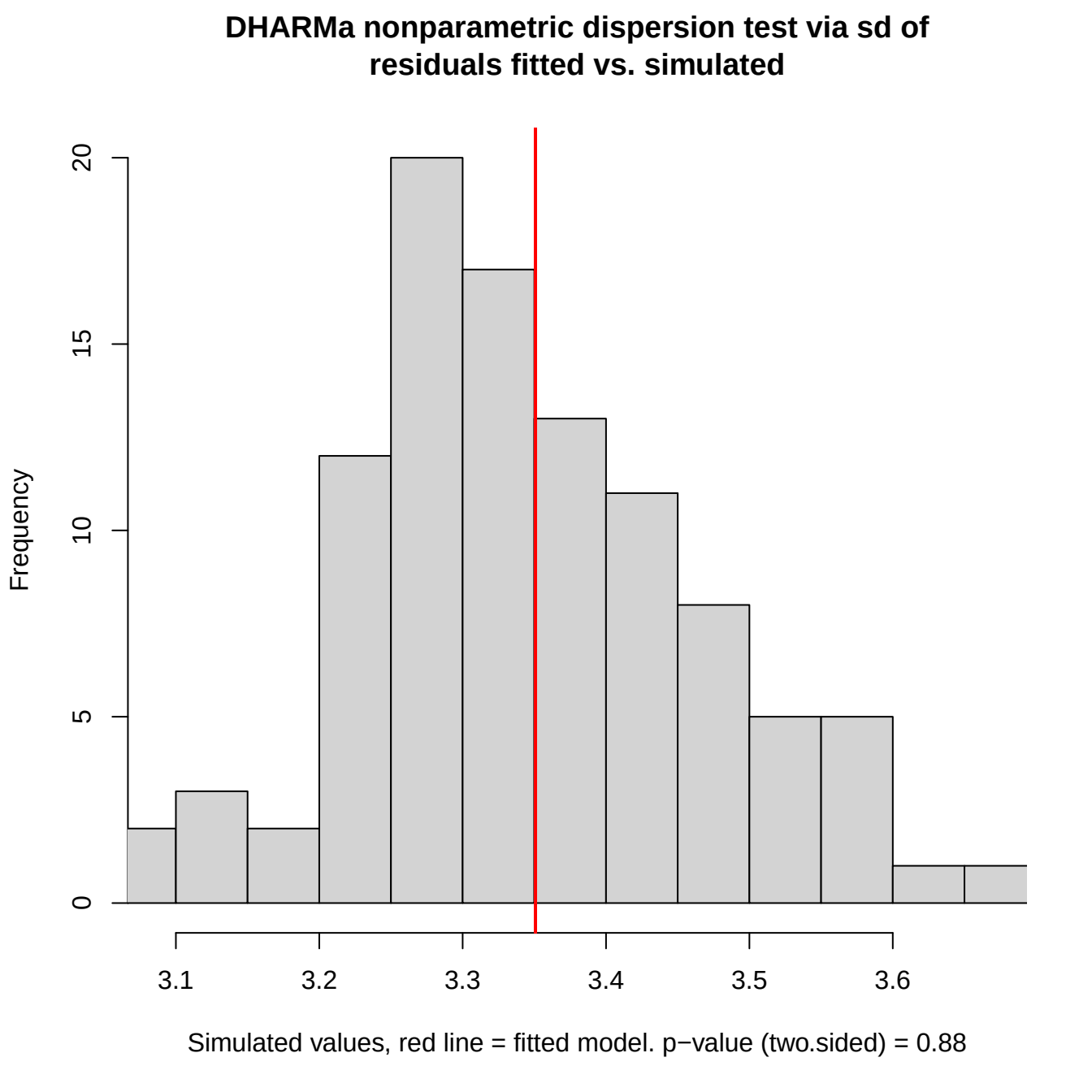

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
5
10
15
20
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

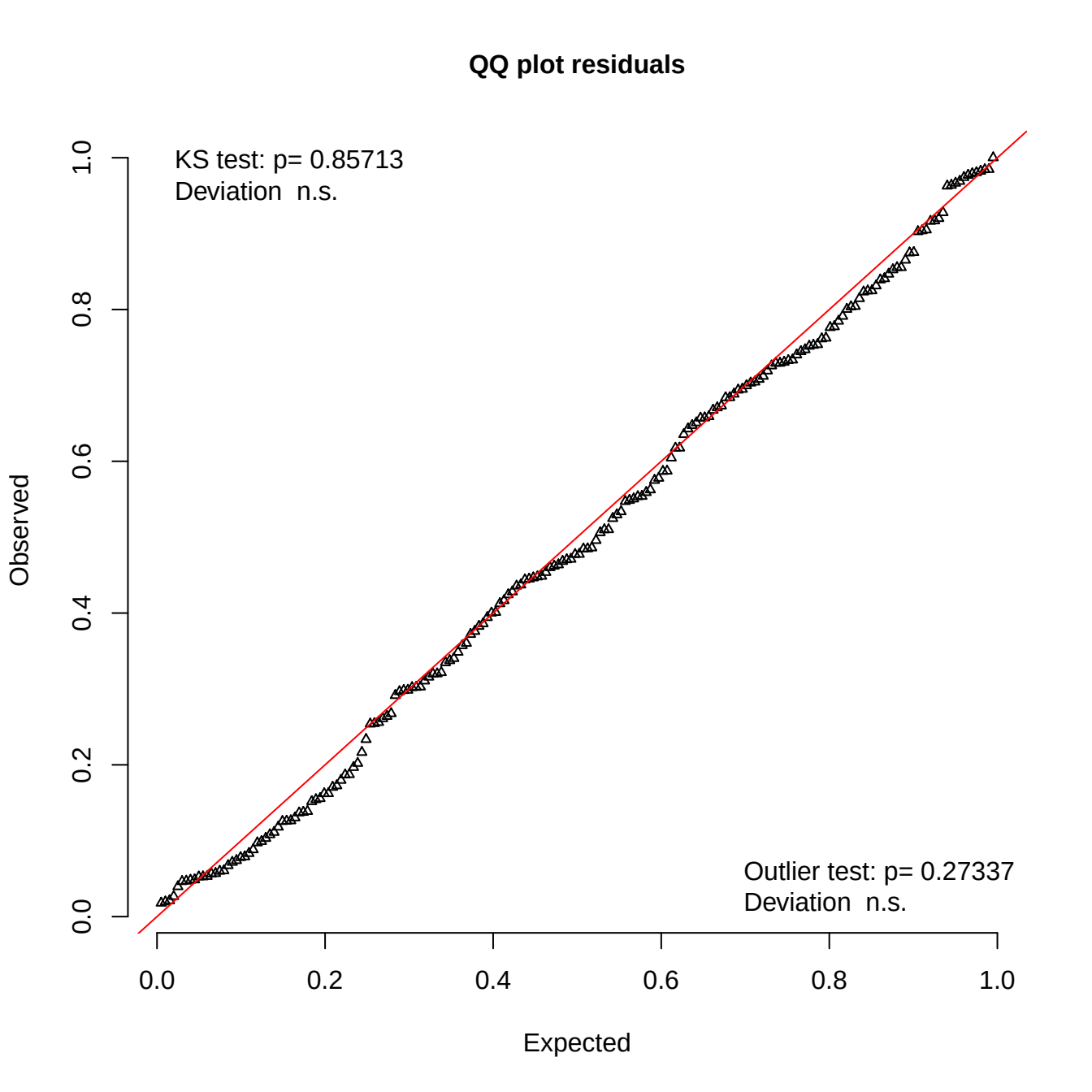

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 0.26584
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

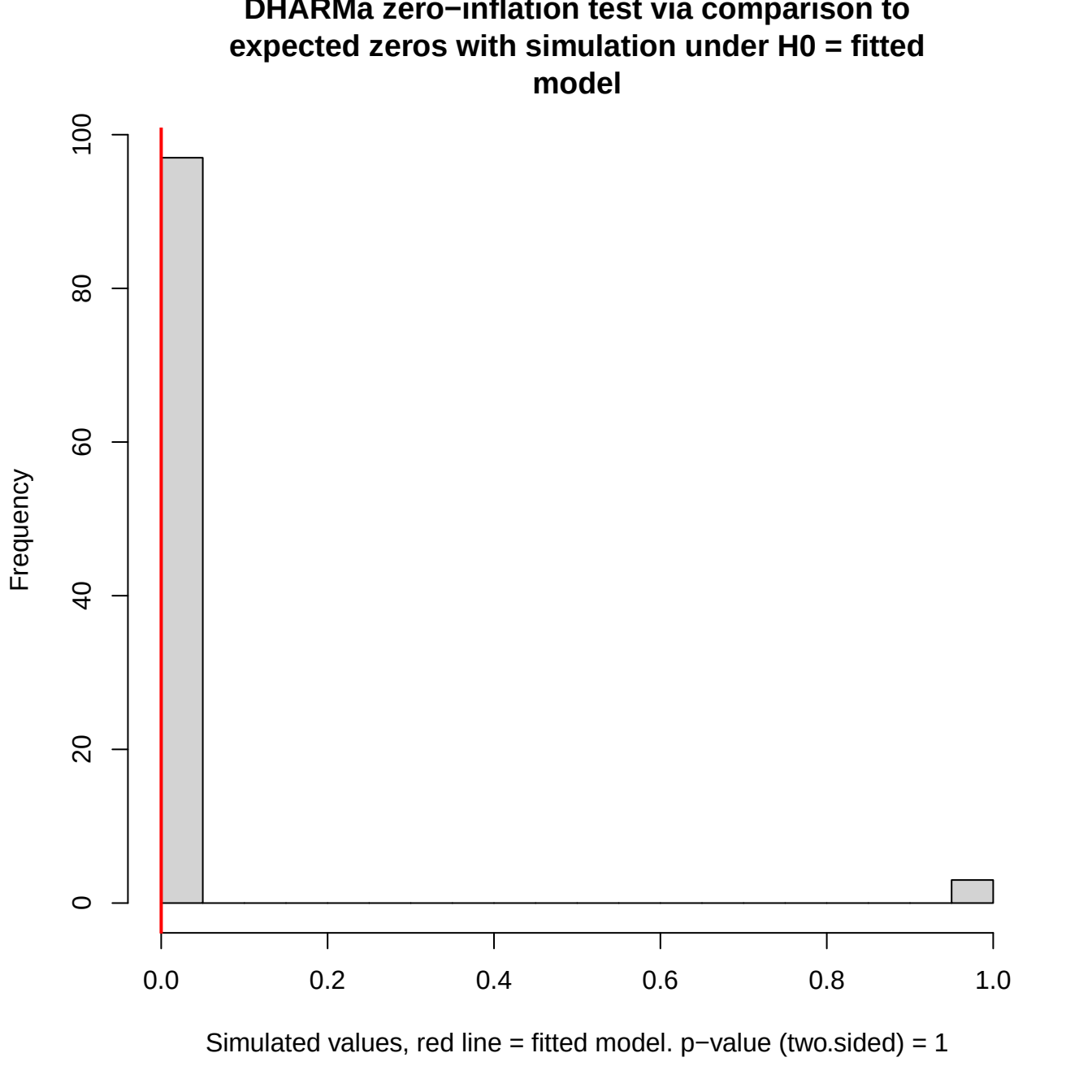

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

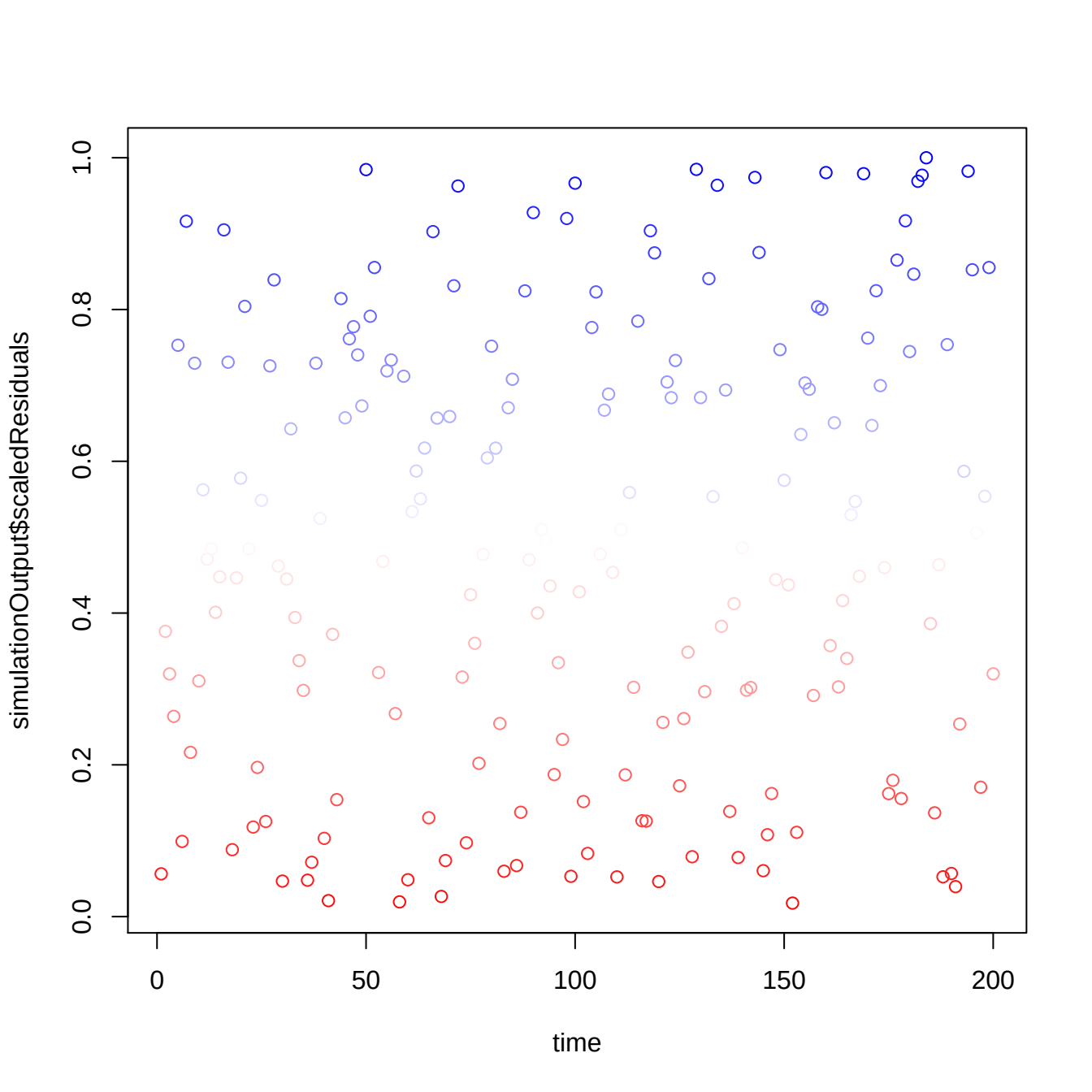

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

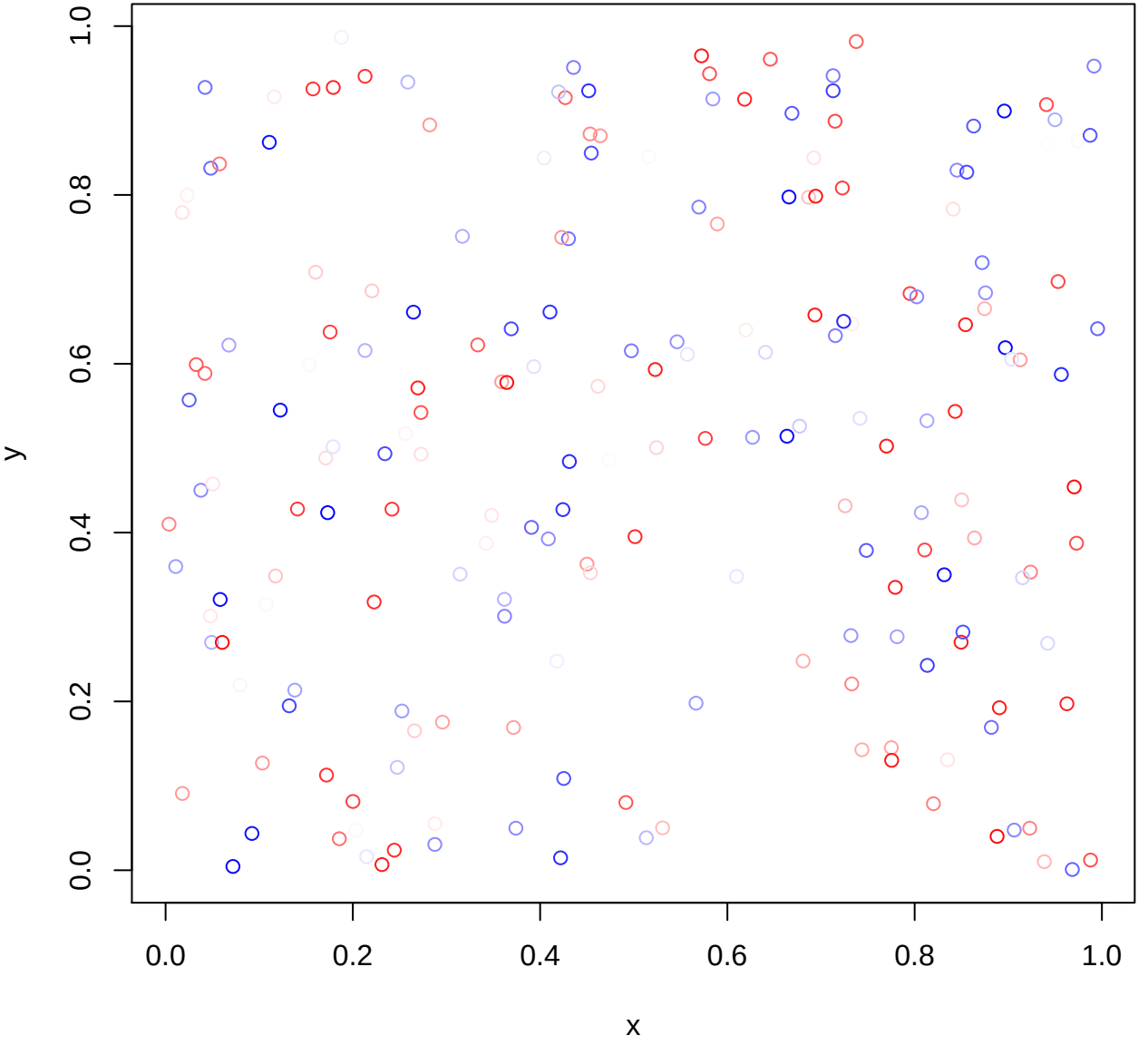

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

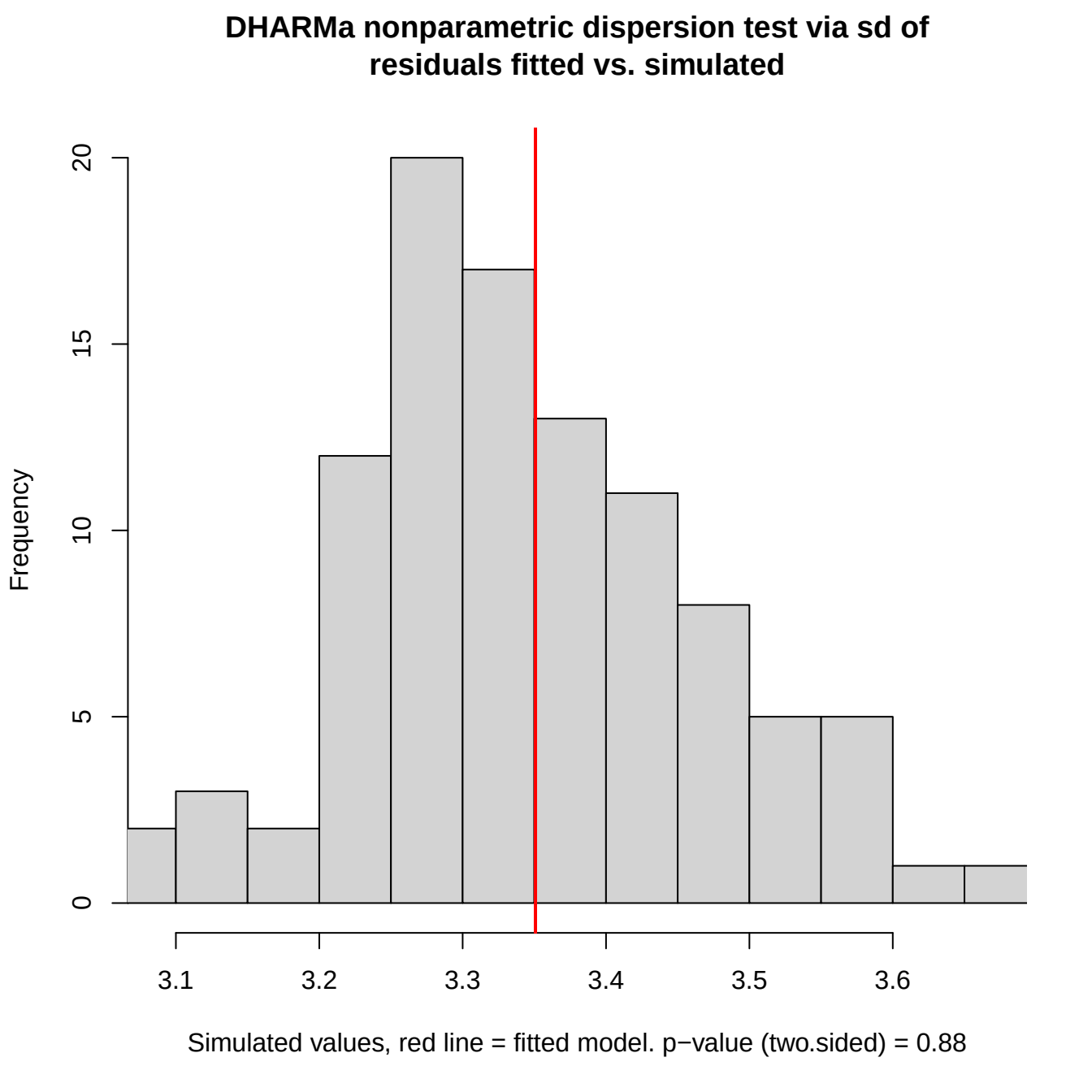

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.88

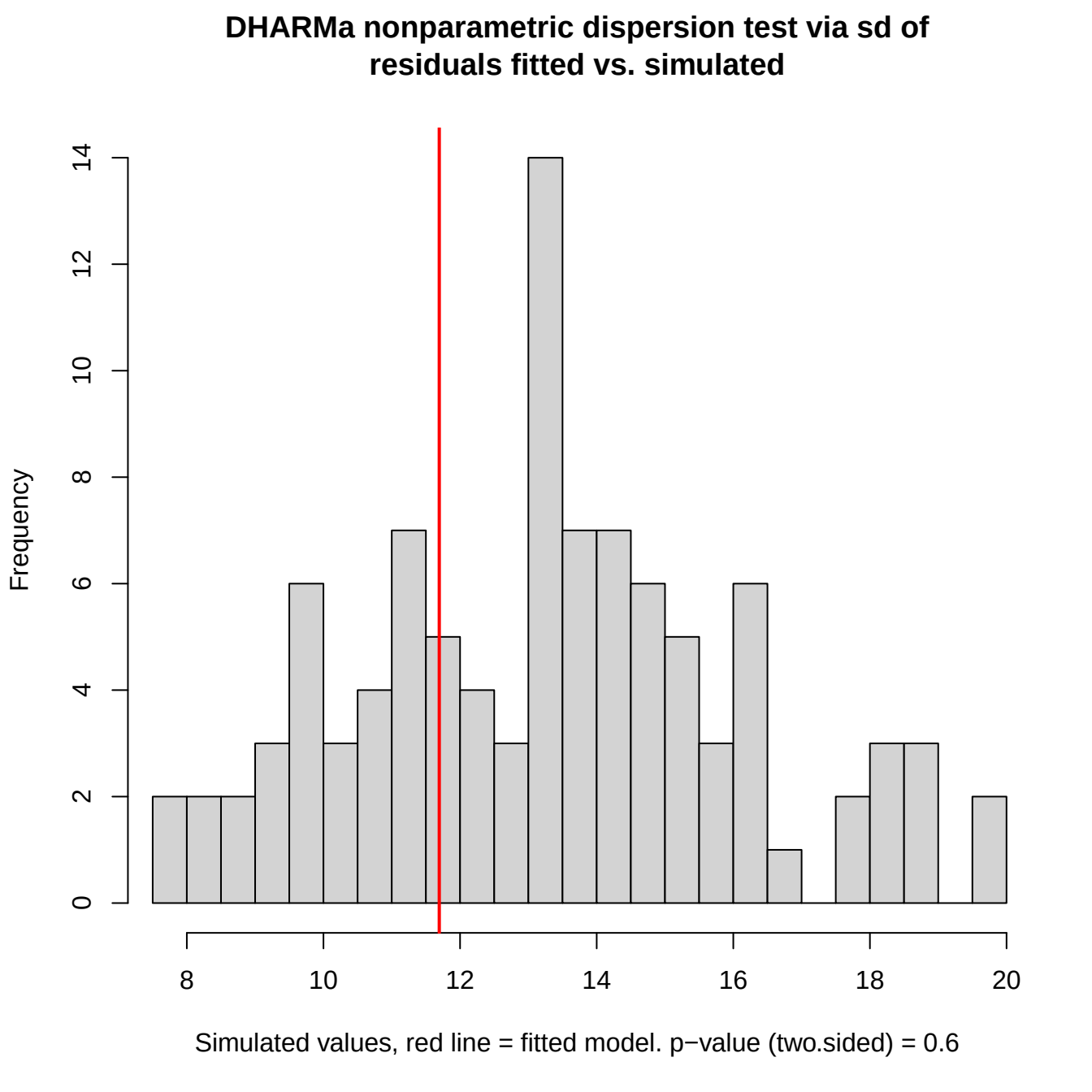

QQ plot residuals
KS test: p= 0.85713
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

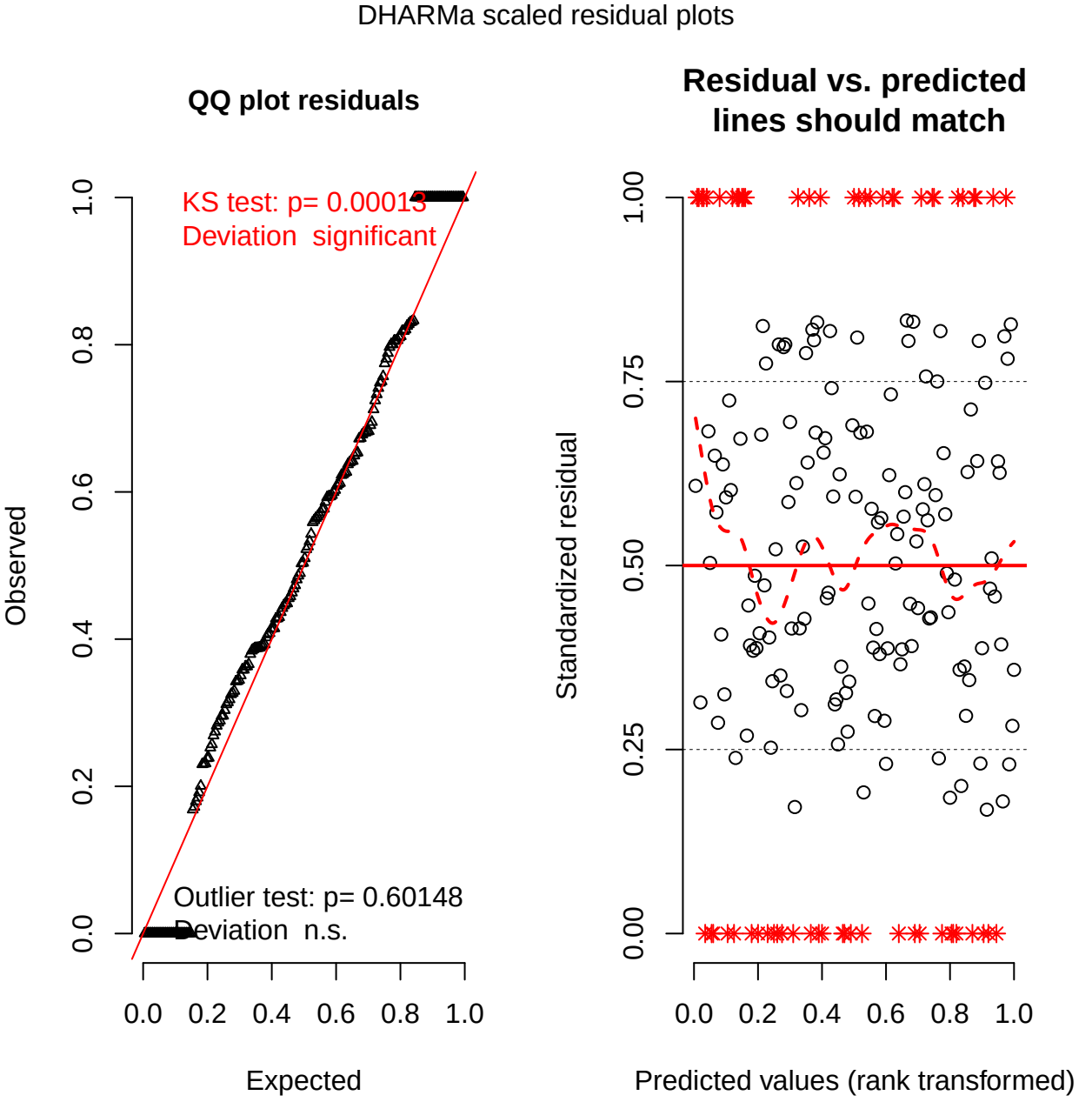

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

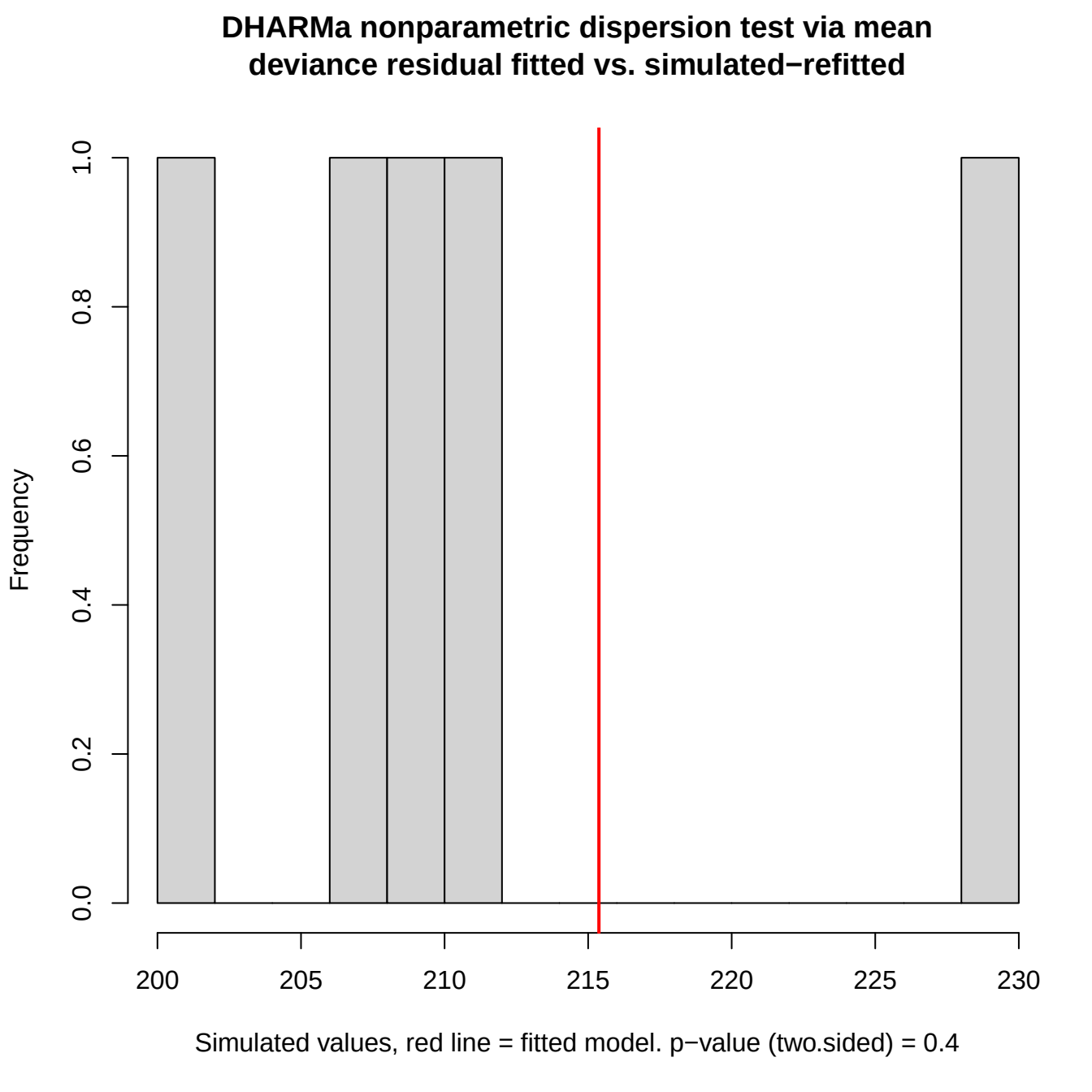

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

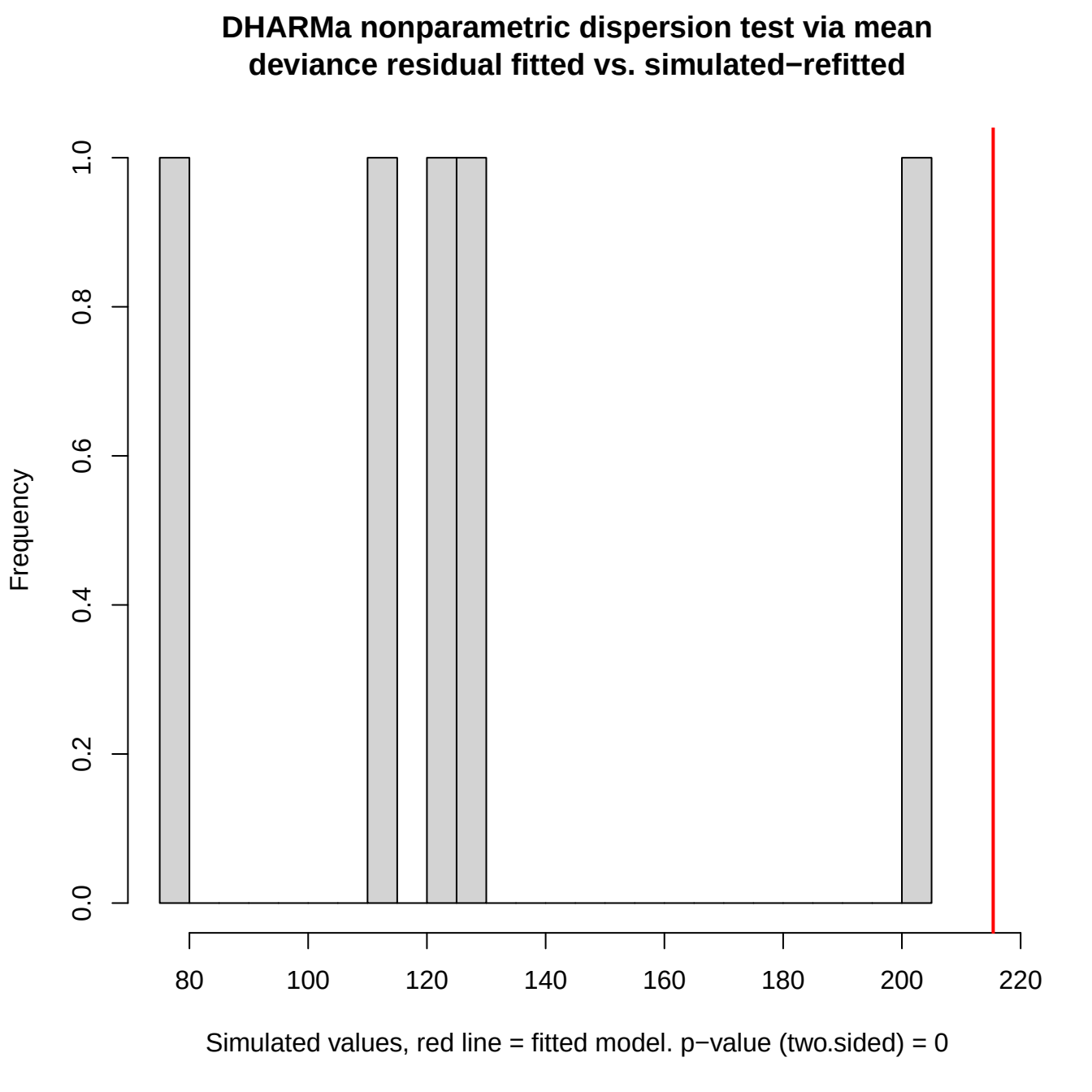

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

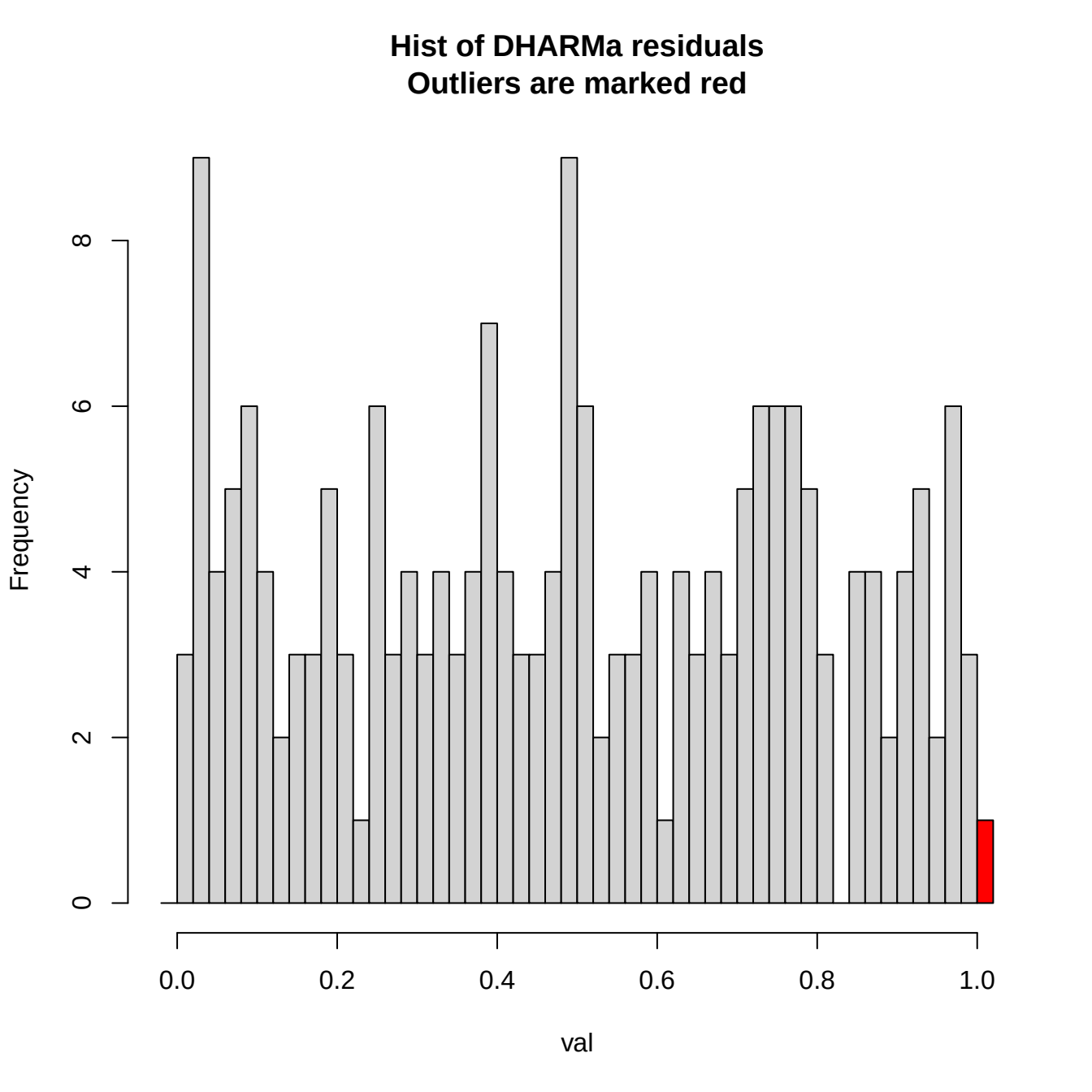

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.88

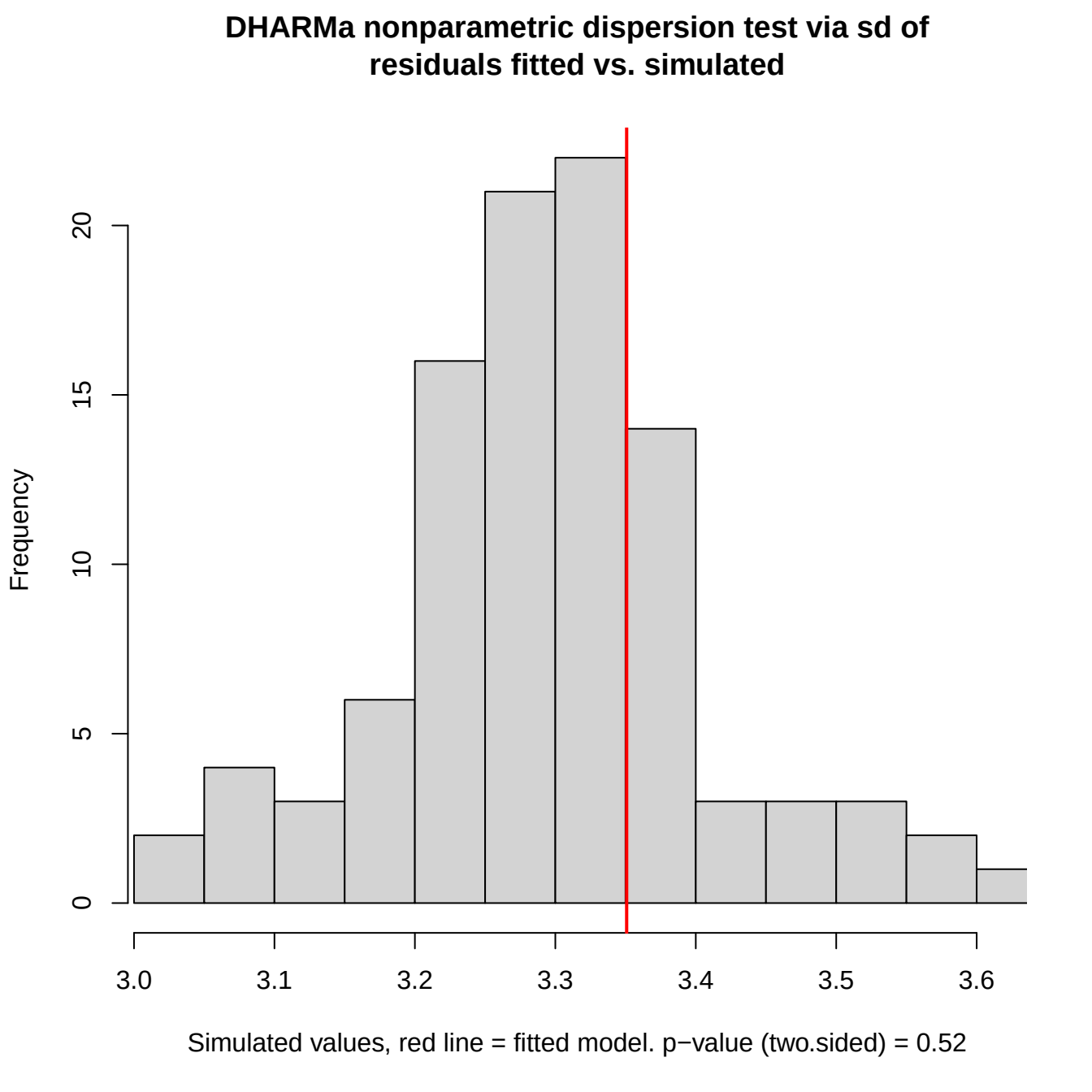

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
8
10
12
14
16
18
20
Simulated values, red line = fitted model. p−value (two.sided) = 0.6

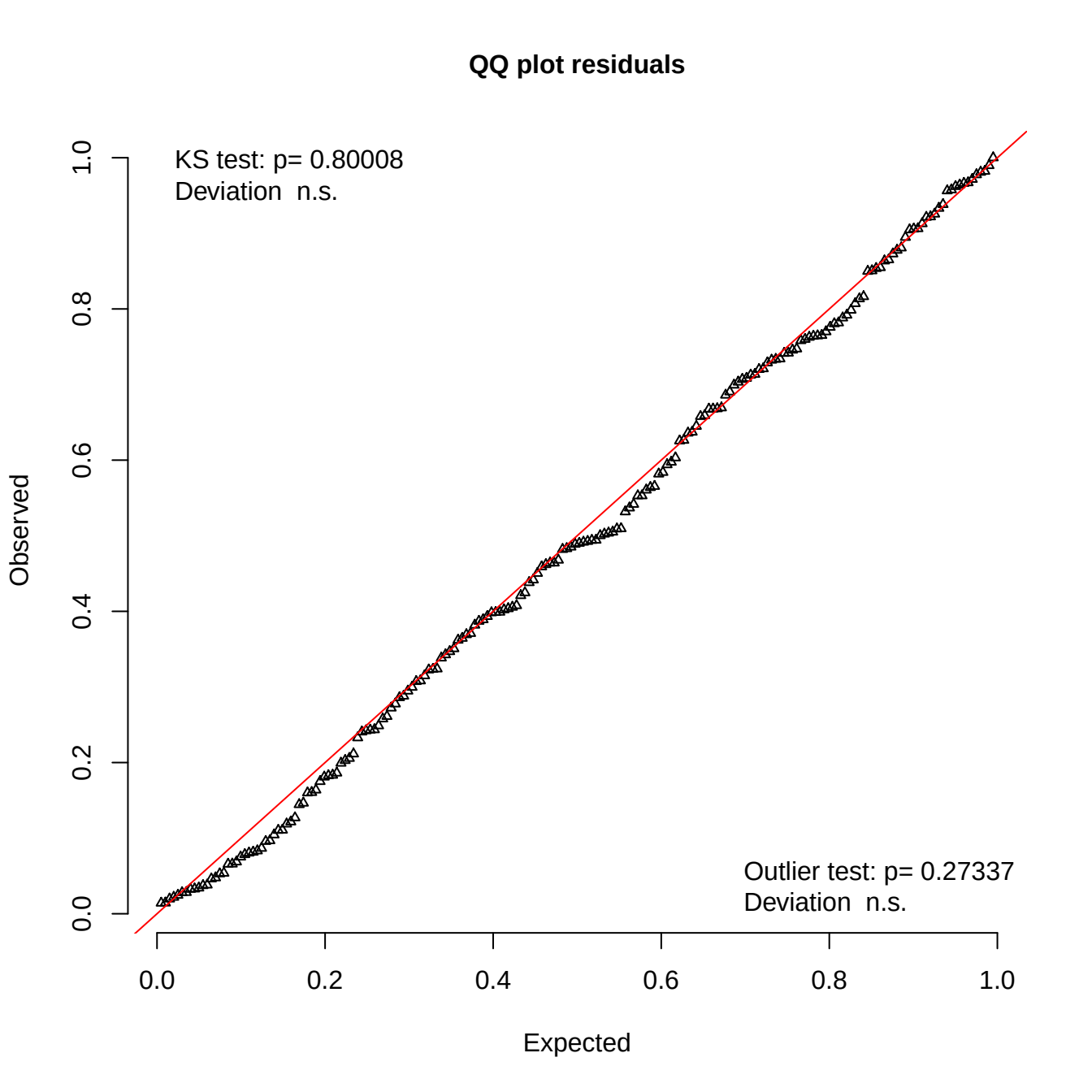

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.00013
Deviation significant
Outlier test: p= 0.60148
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

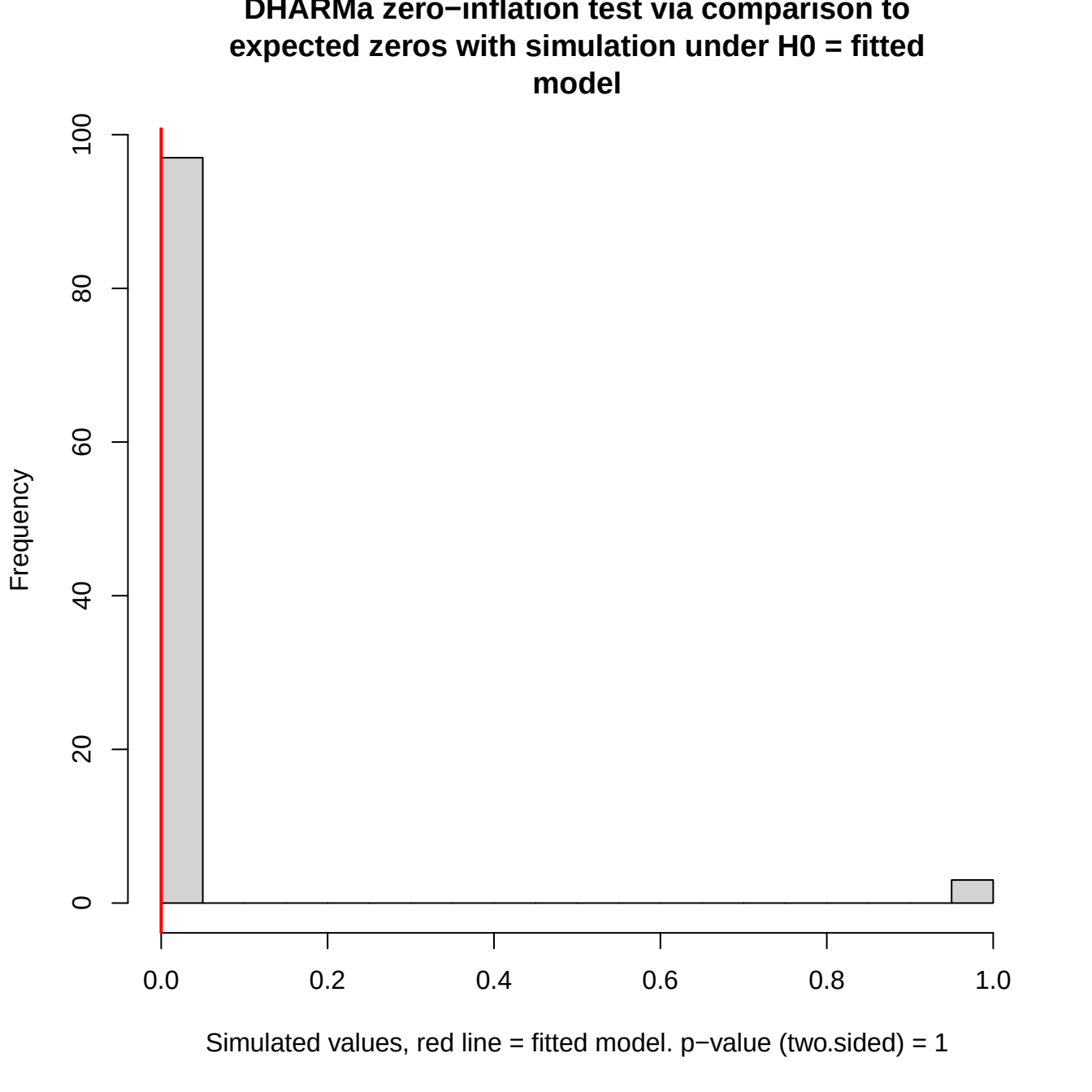

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
200
205
210
215
220
225
230
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

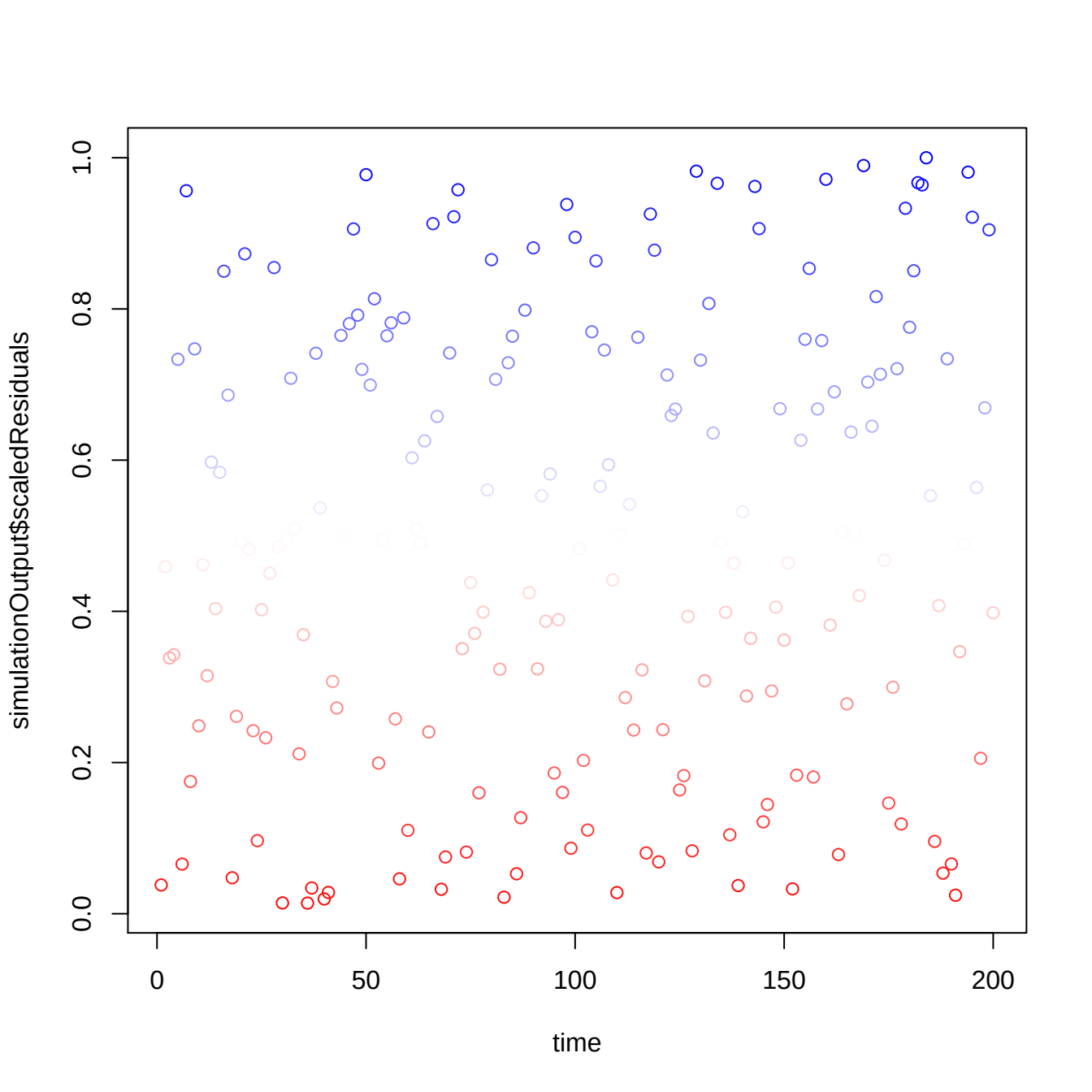

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0

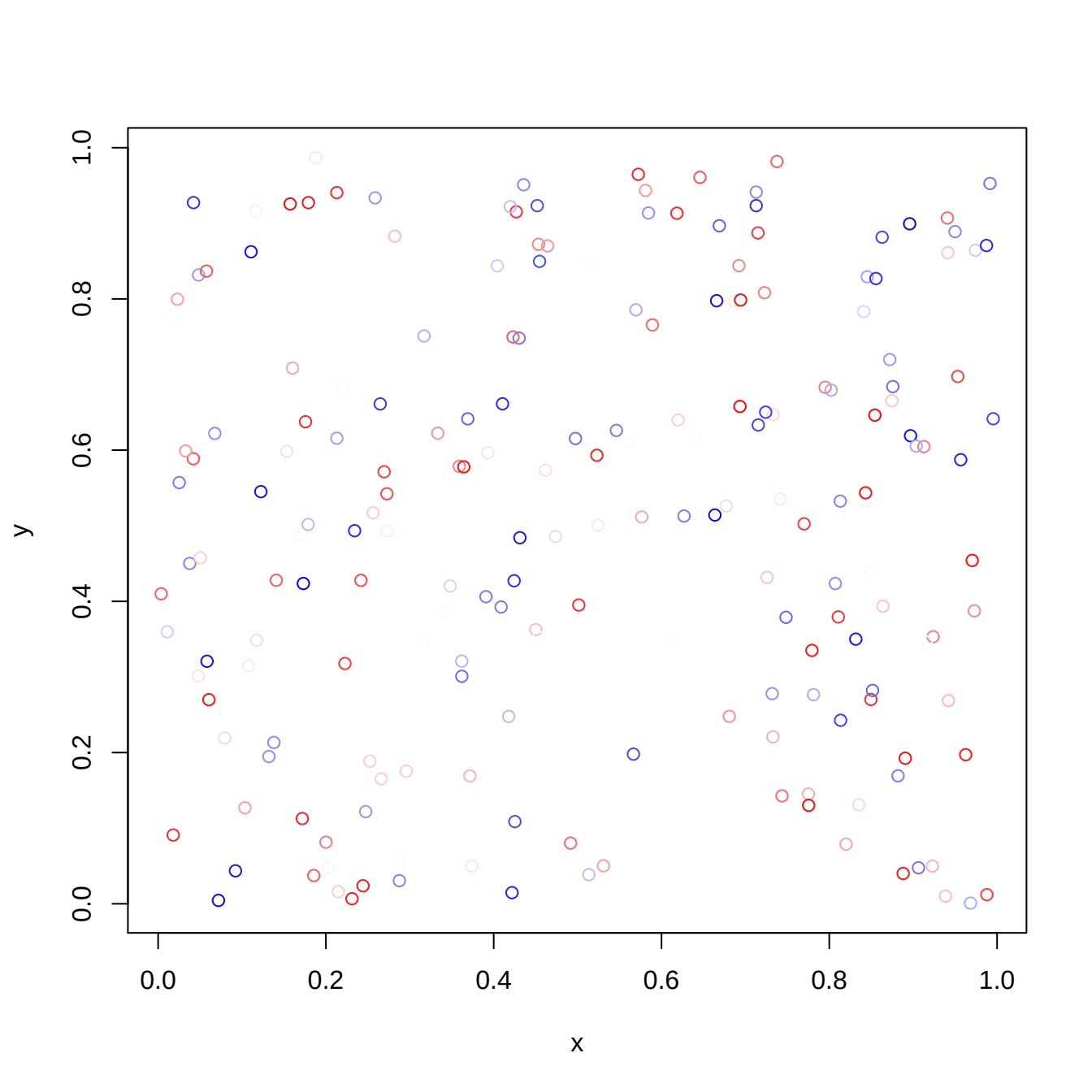

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

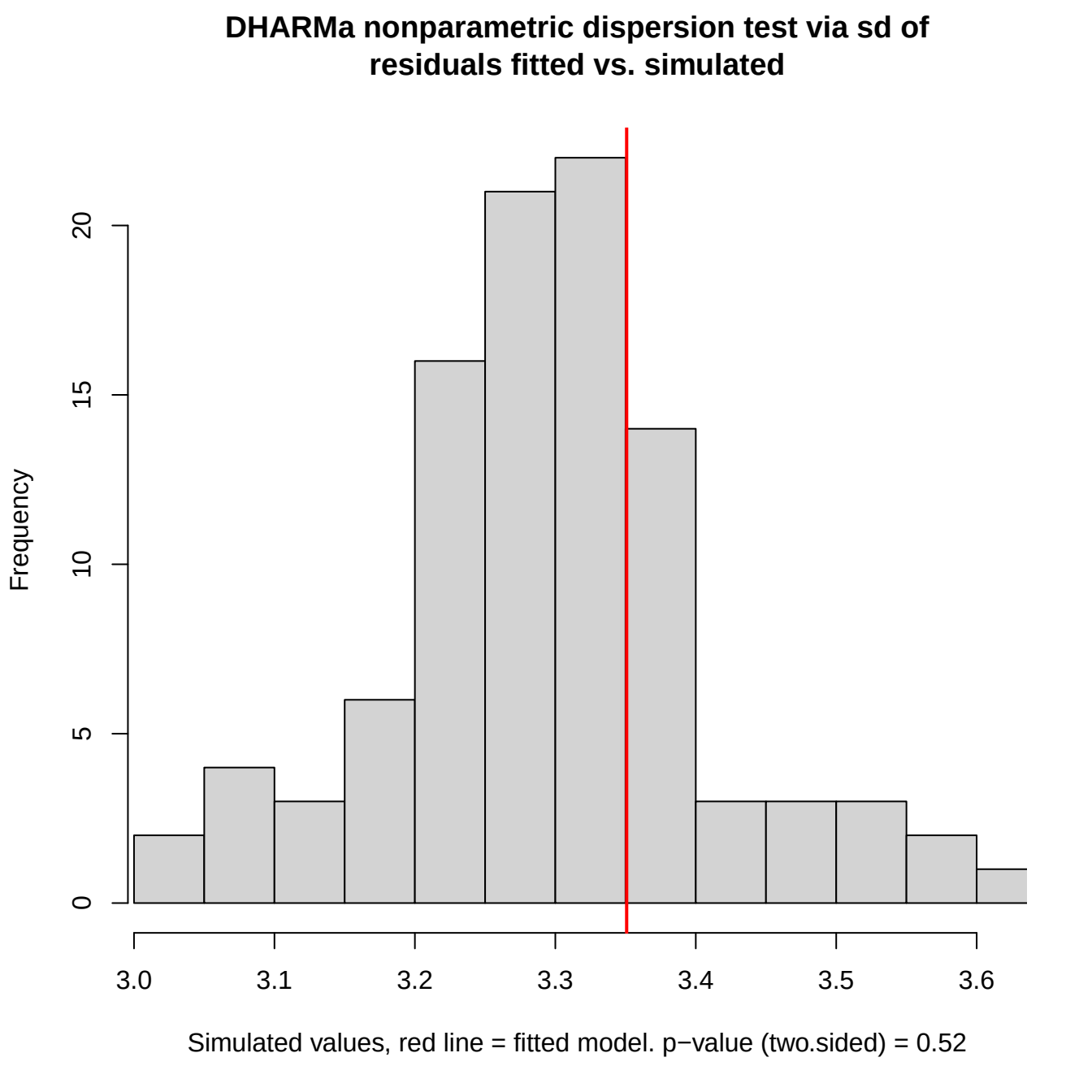

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

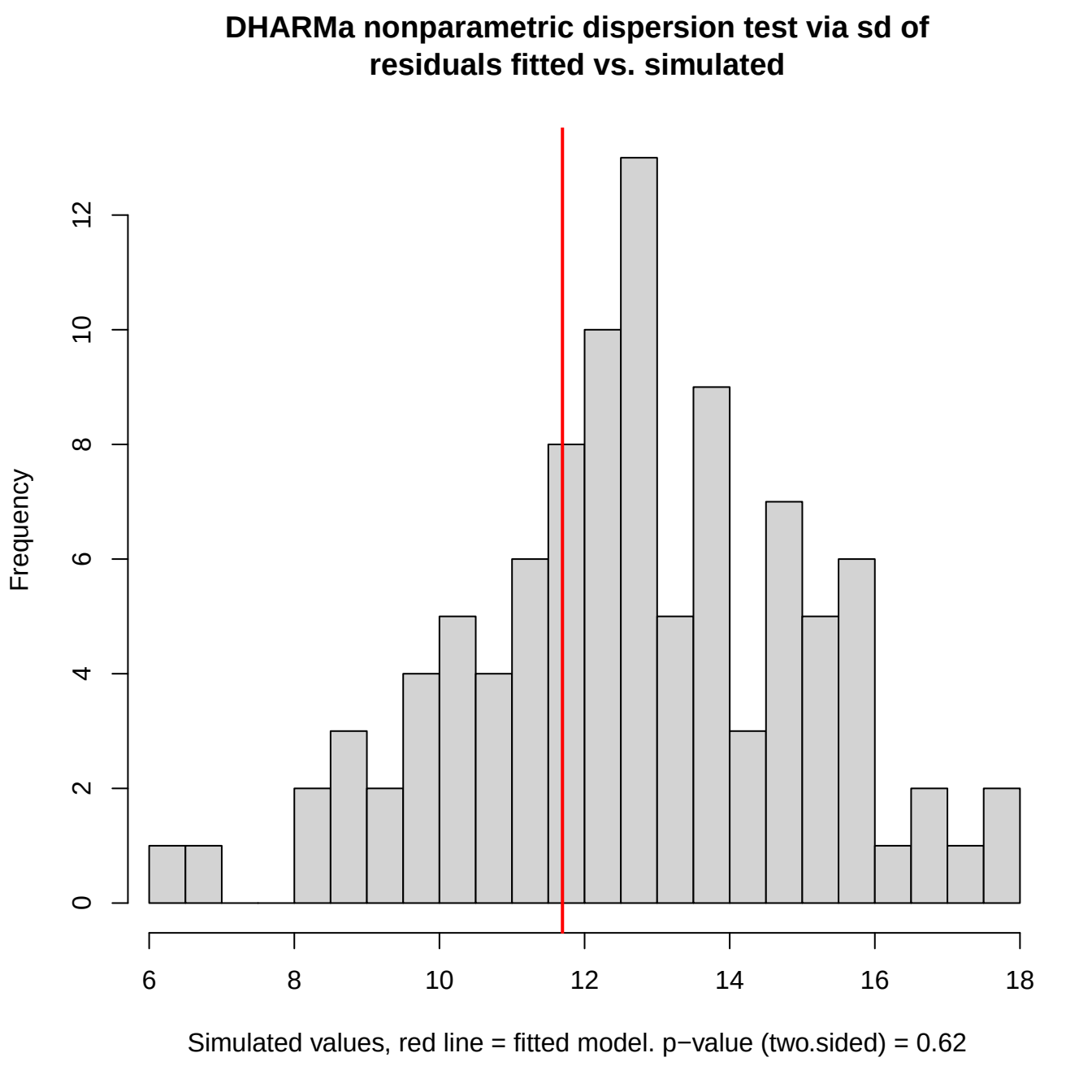

QQ plot residuals
KS test: p= 0.80008
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

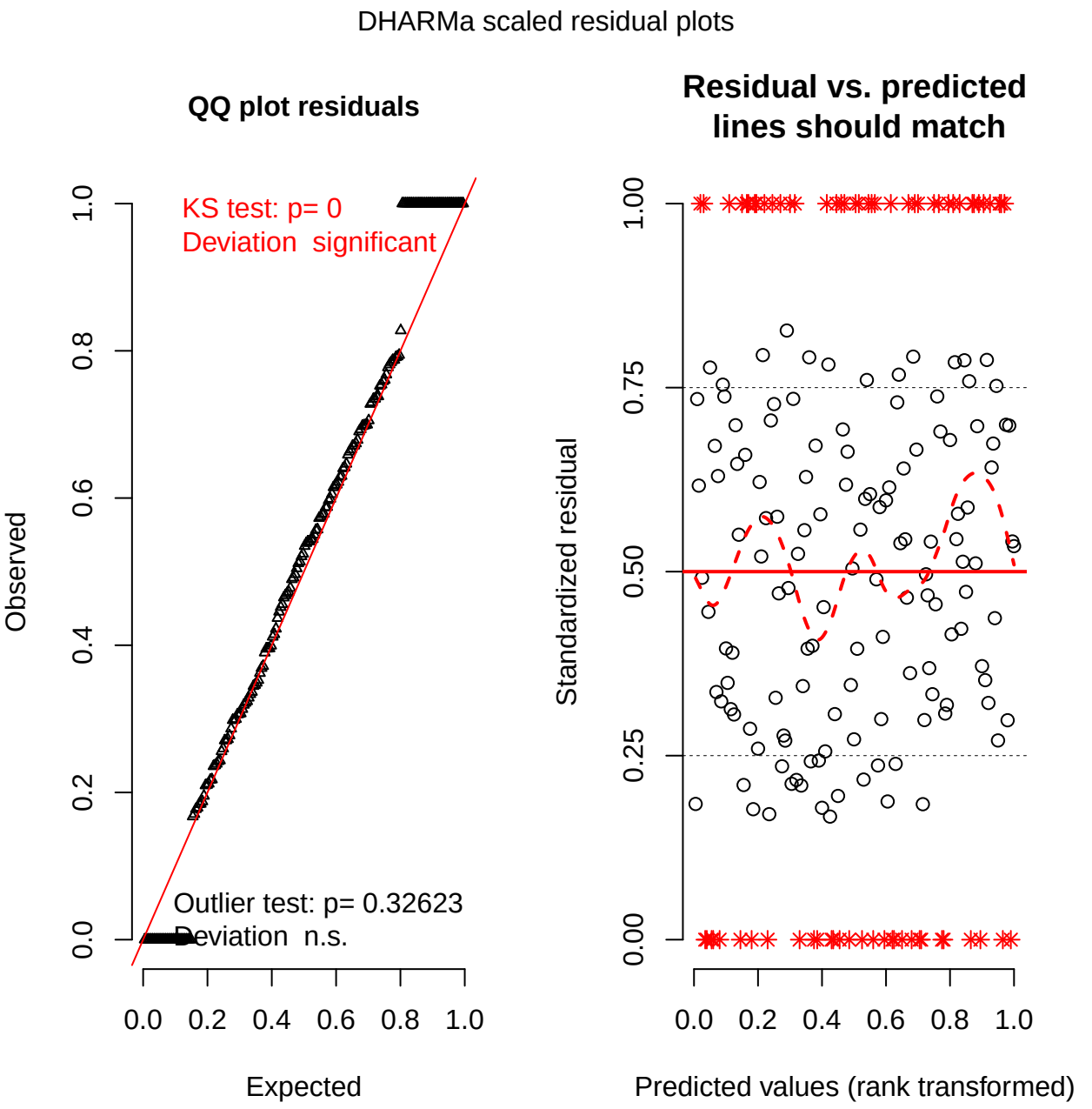

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
20
40
60
80
100
0.0
0.2
0.4
0.6
0.8
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

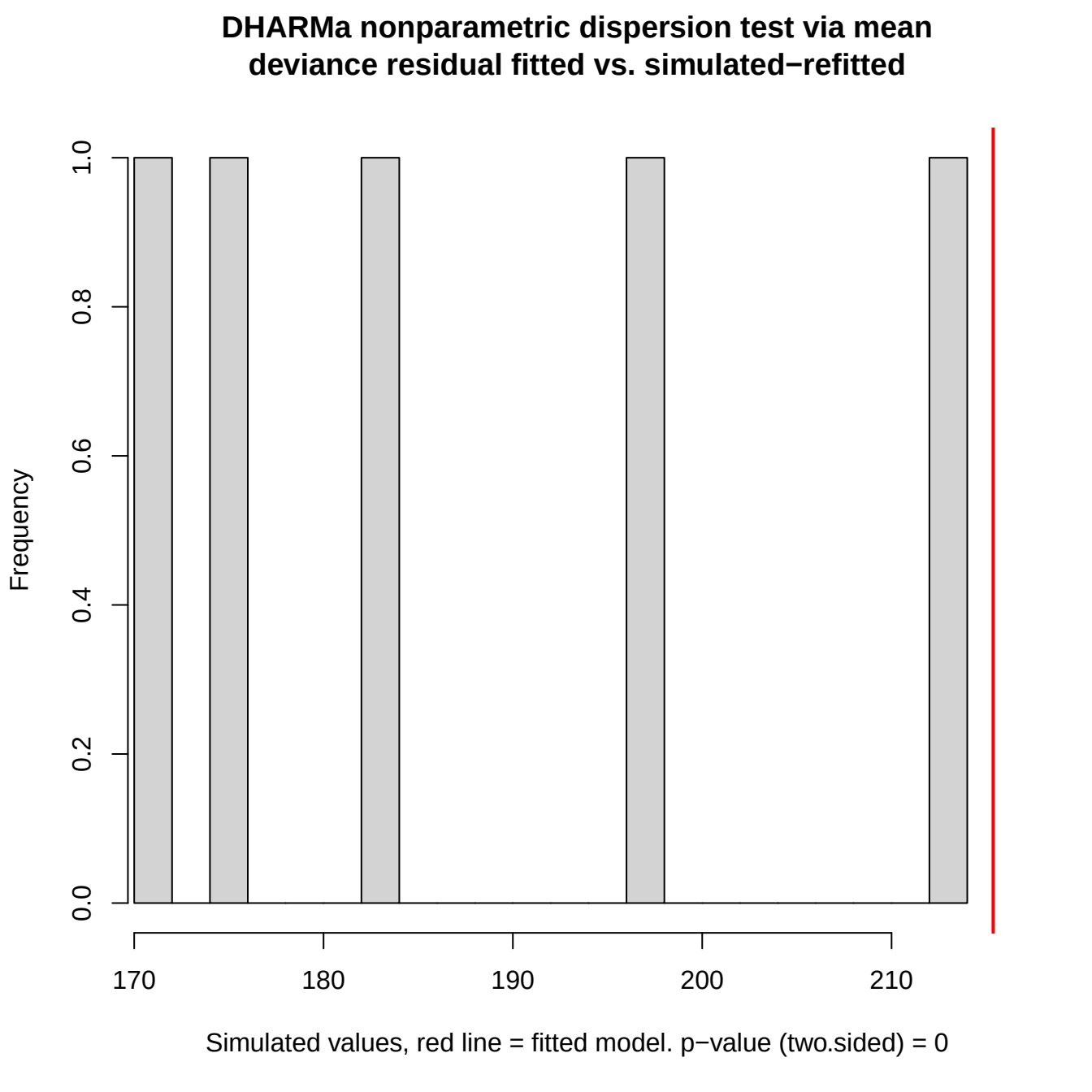

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

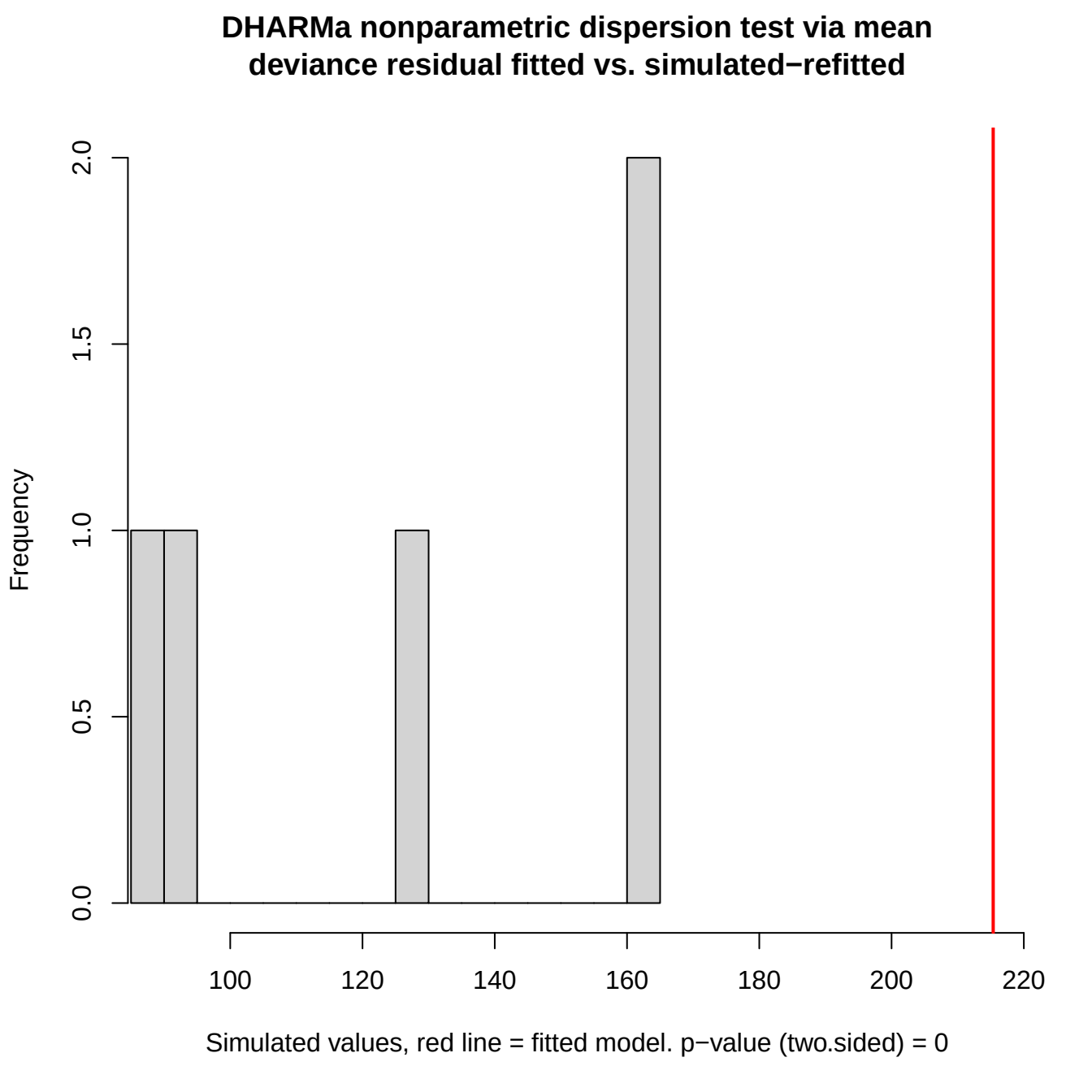

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

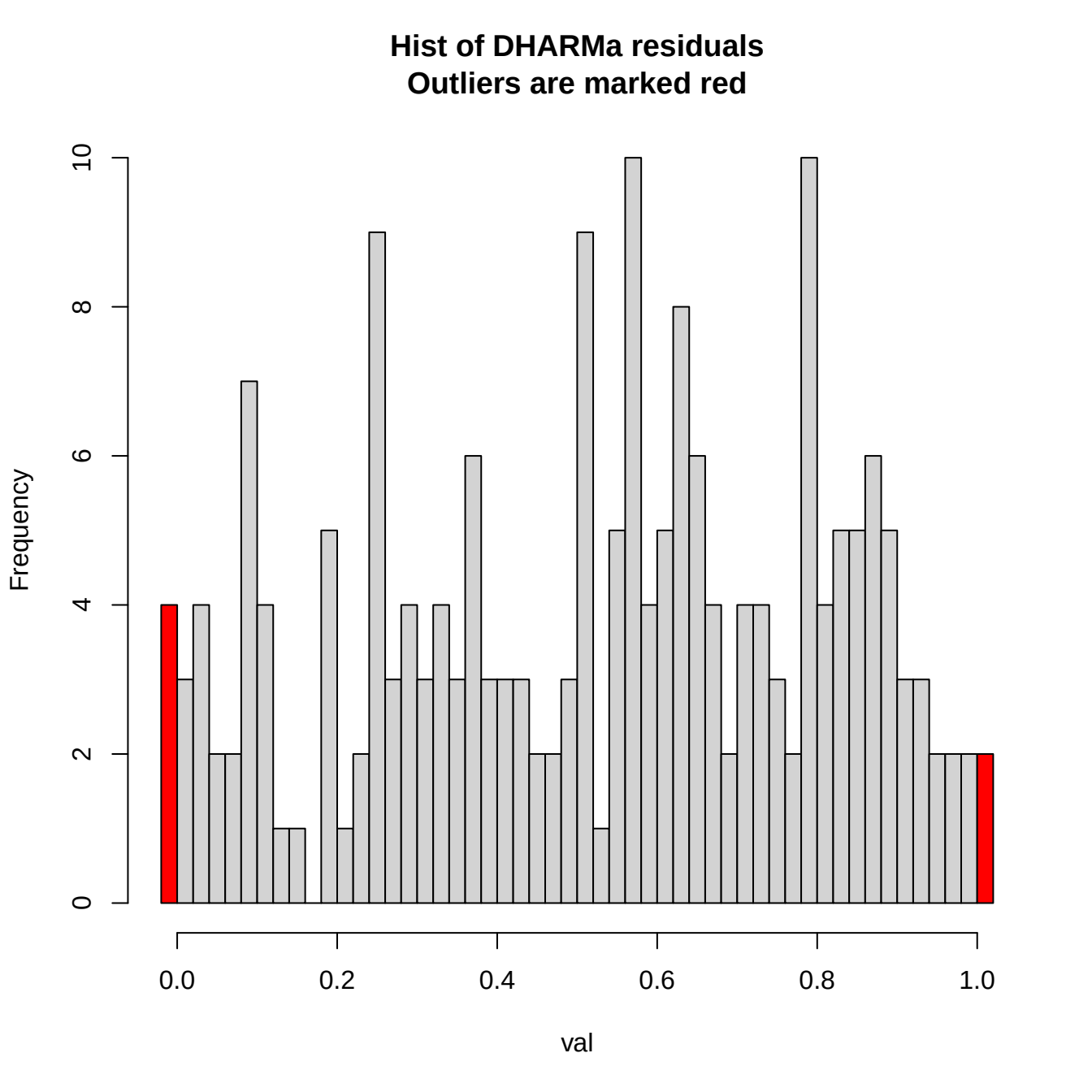

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
3.0
3.1
3.2
3.3
3.4
3.5
3.6
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

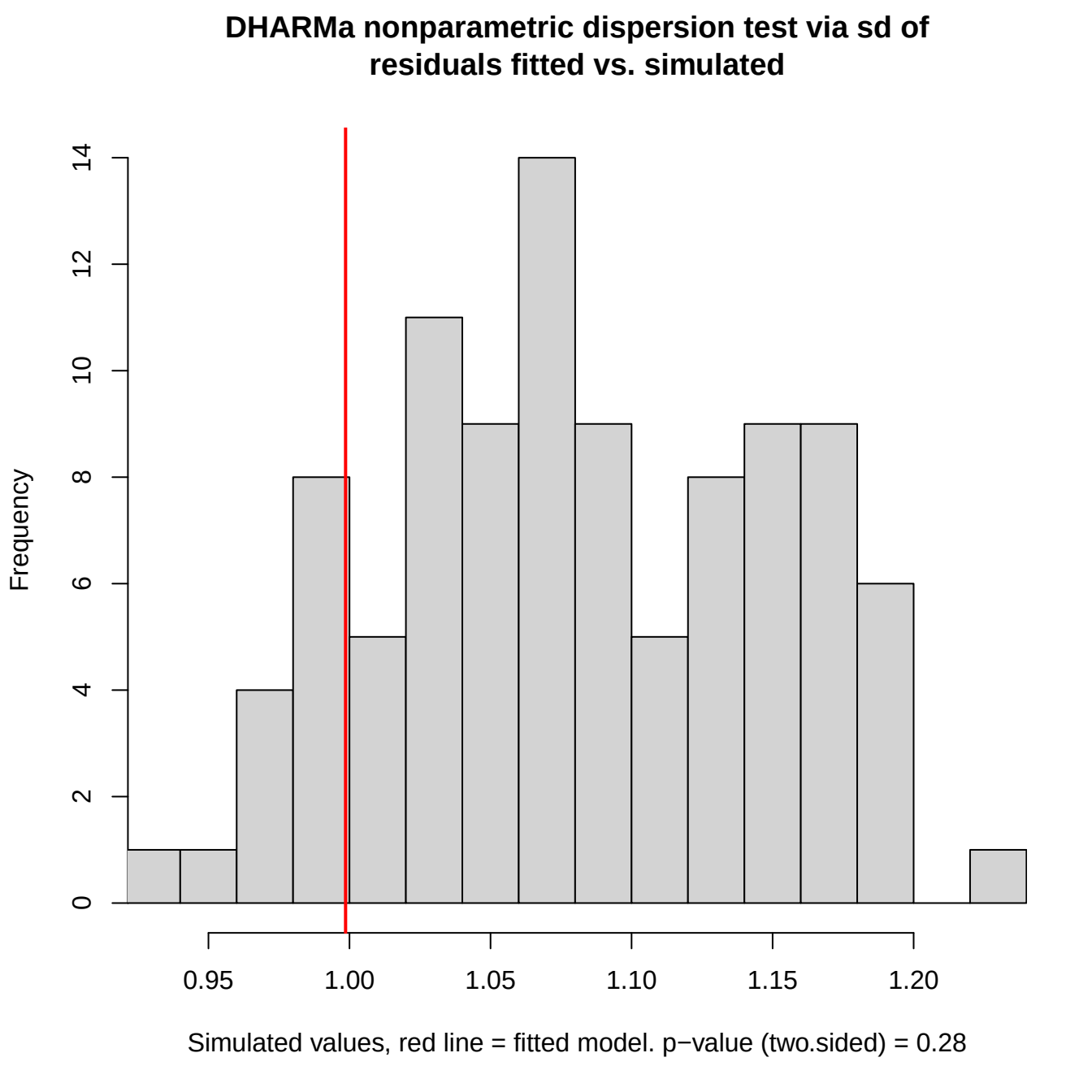

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
6
8
10
12
14
16
18
Simulated values, red line = fitted model. p−value (two.sided) = 0.62

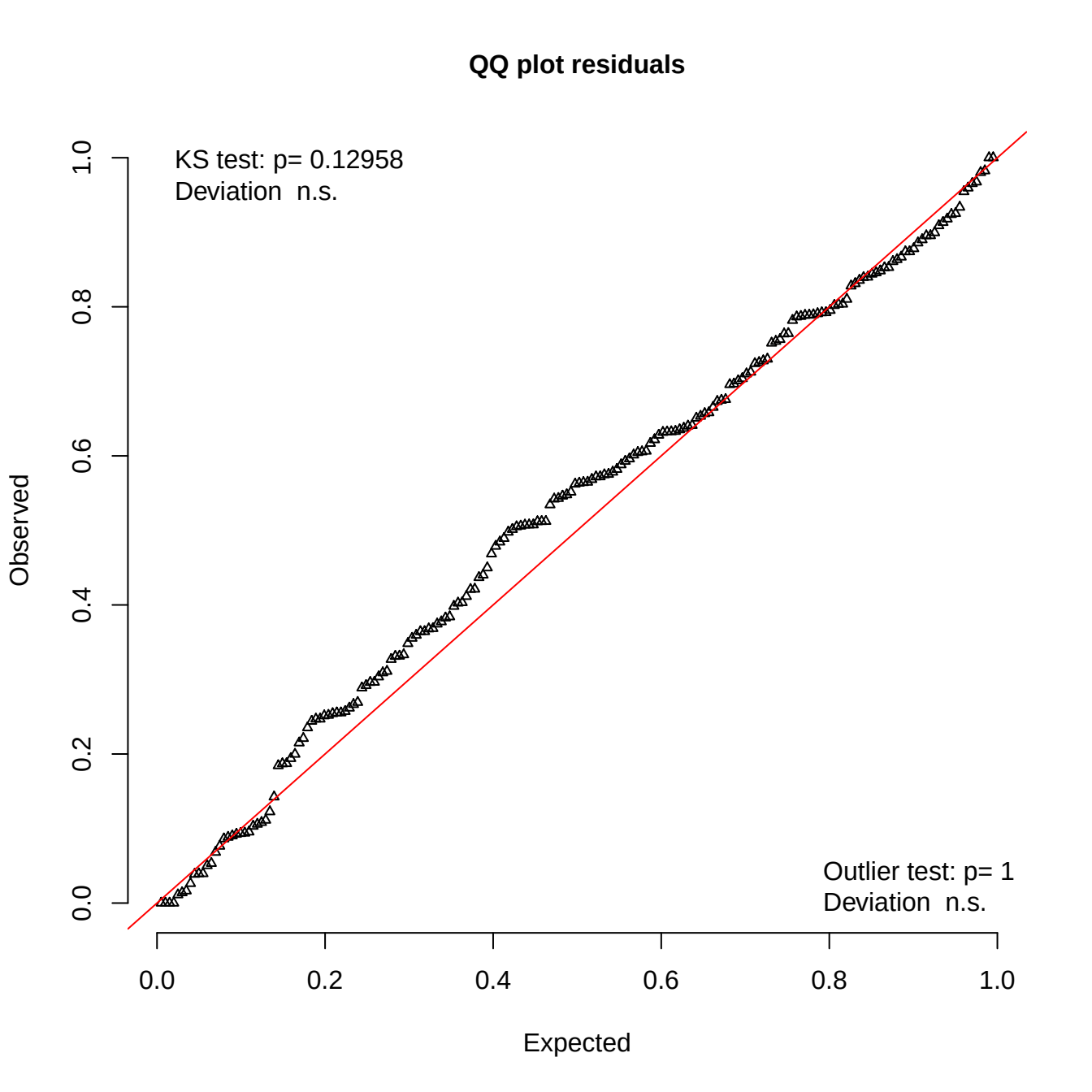

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.32623
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

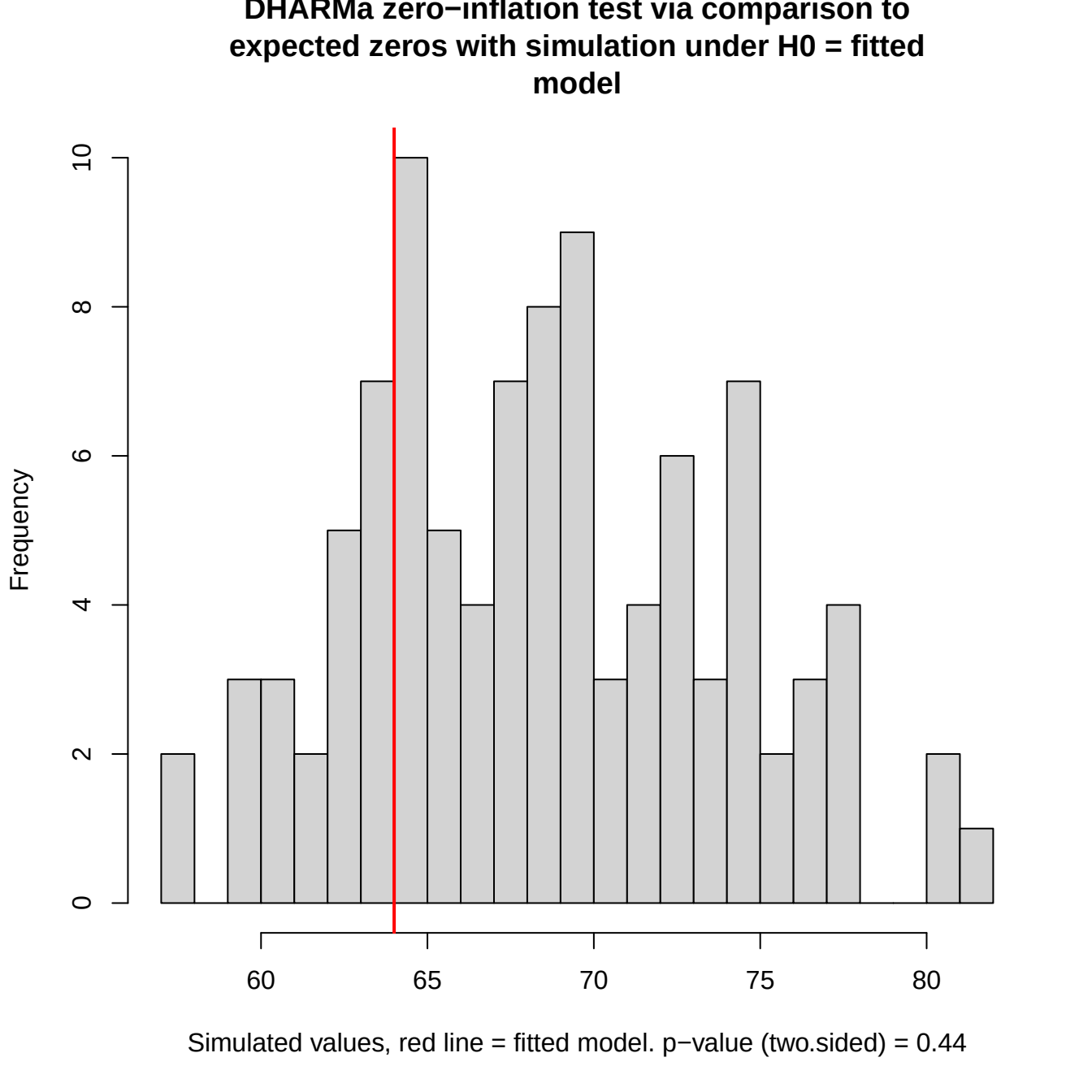

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

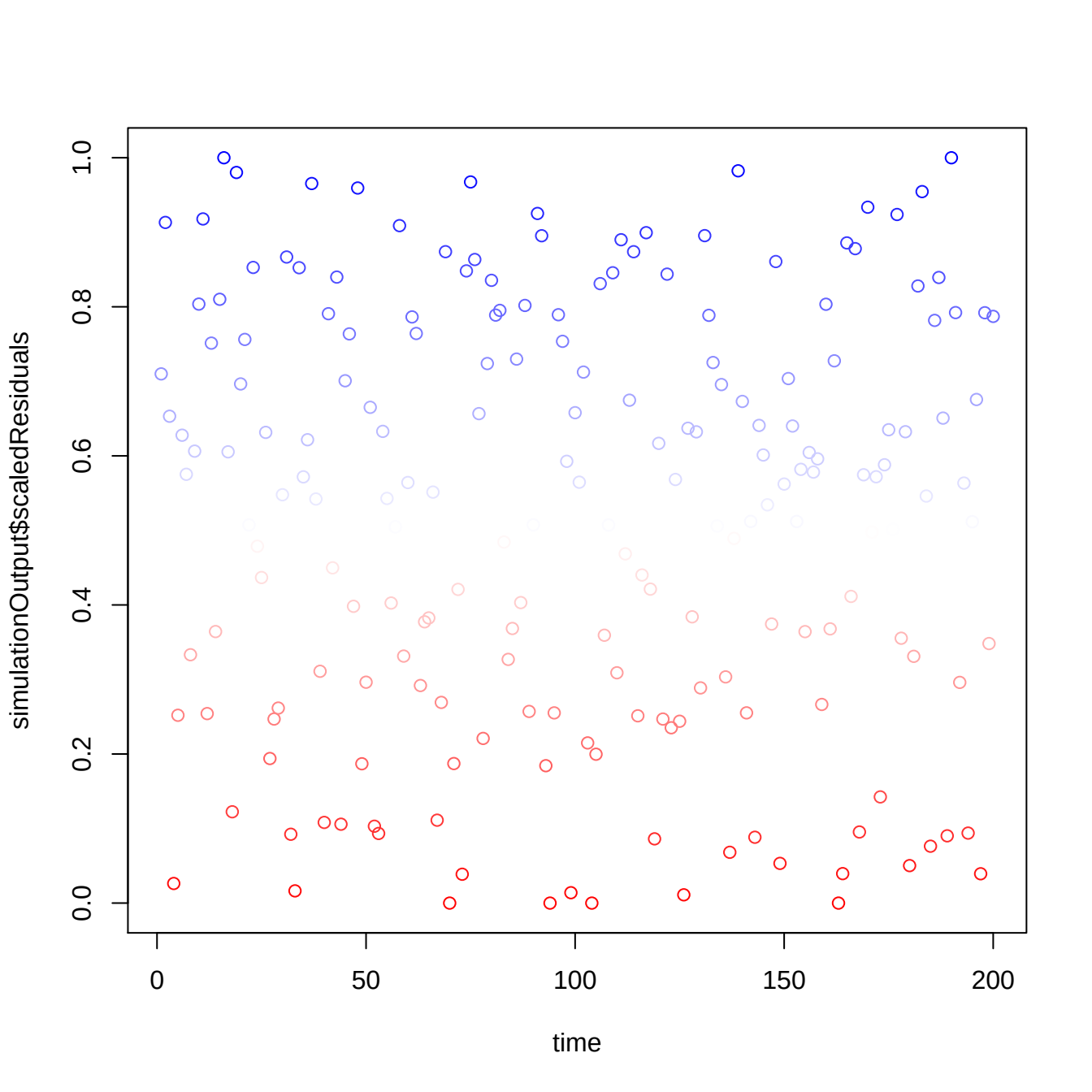

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0

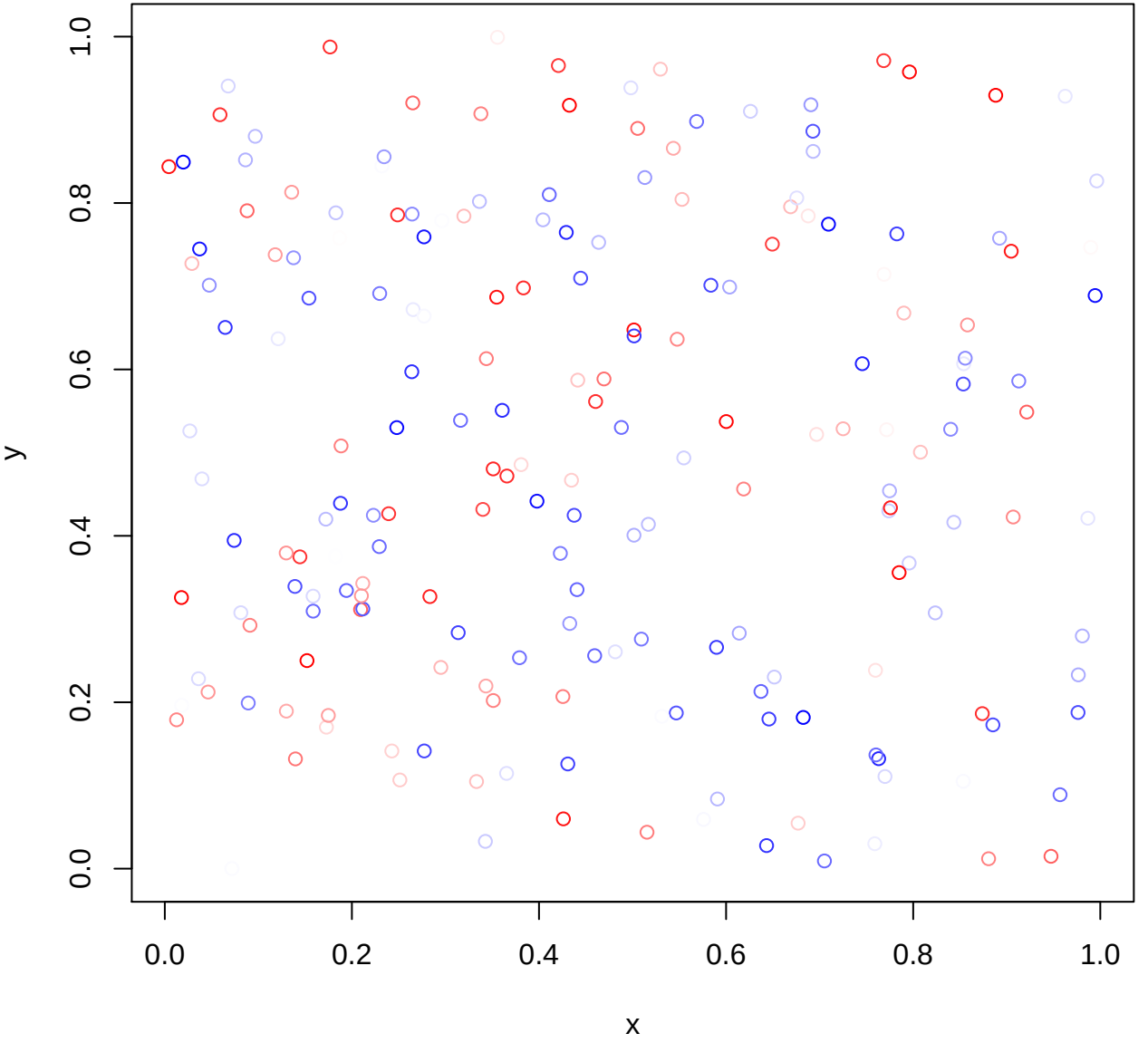

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

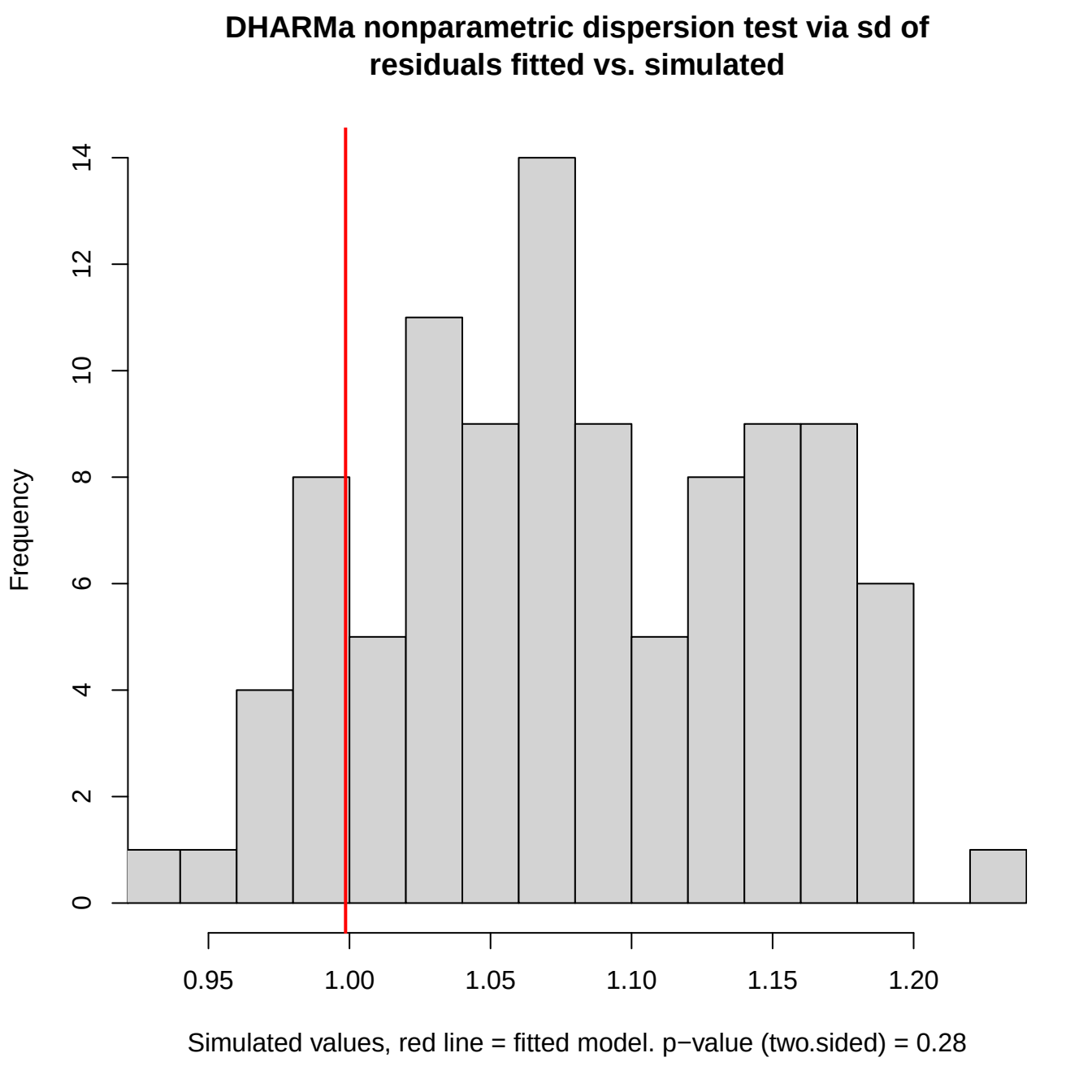

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

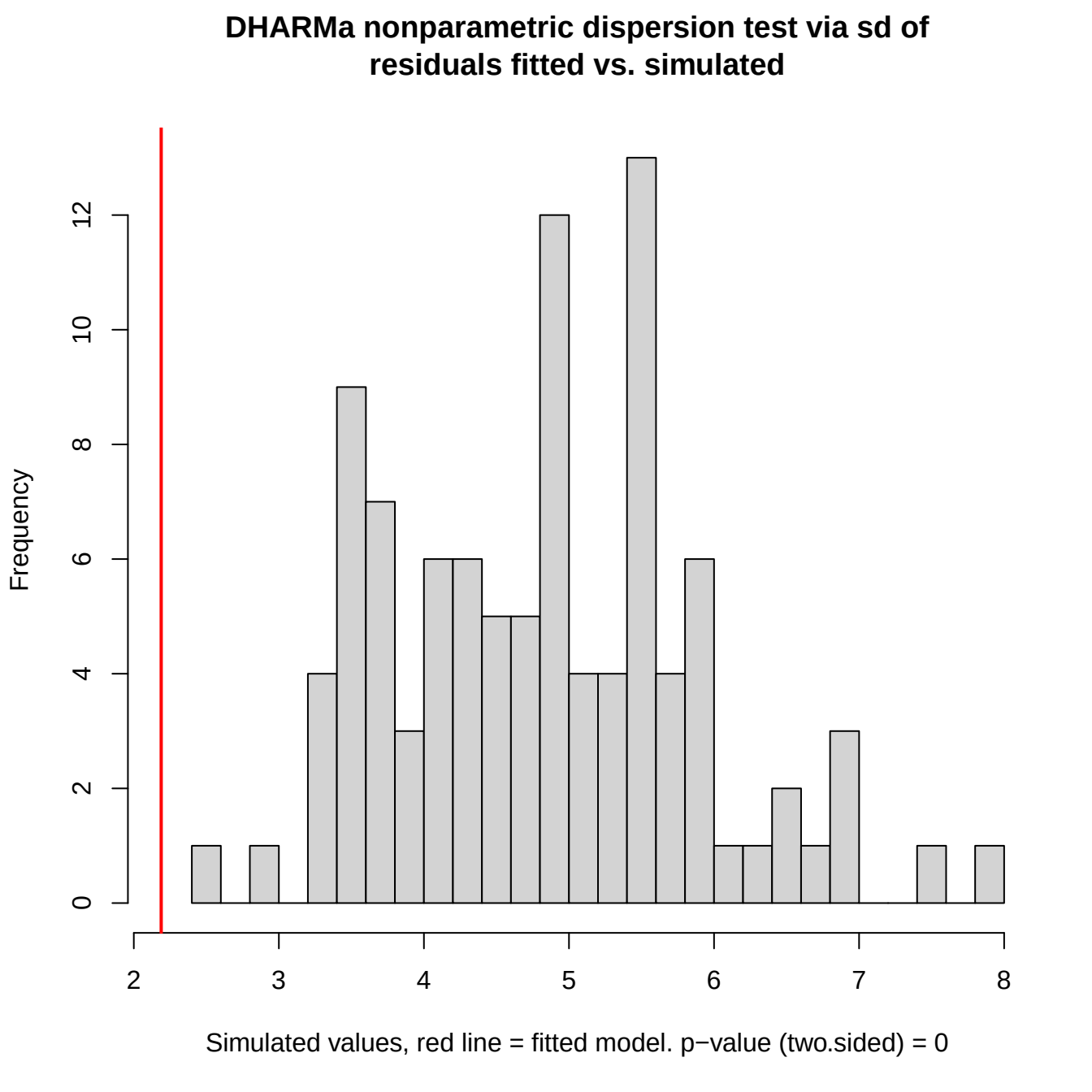

QQ plot residuals
KS test: p= 0.12958
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

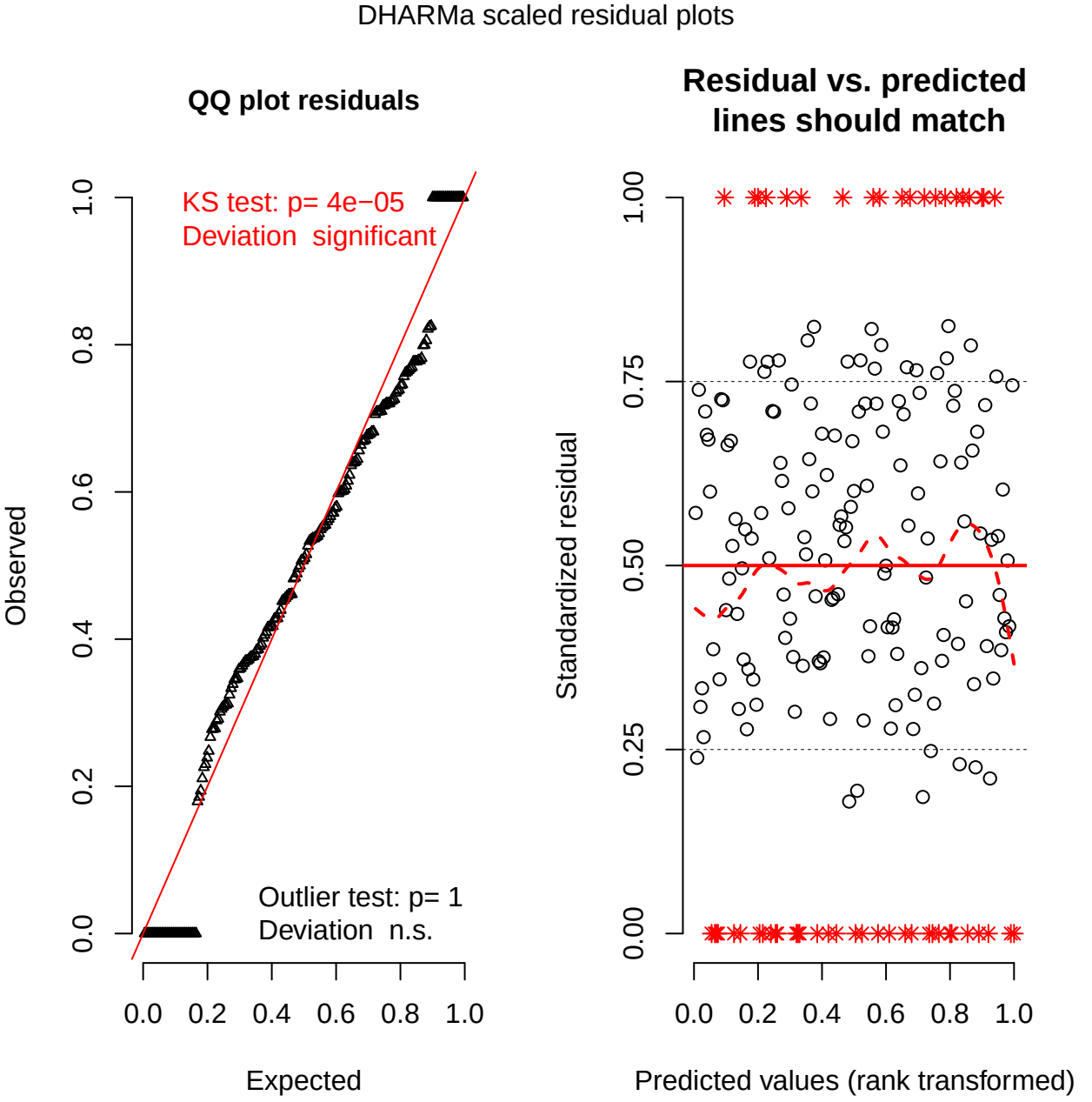

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
60
65
70
75
80
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

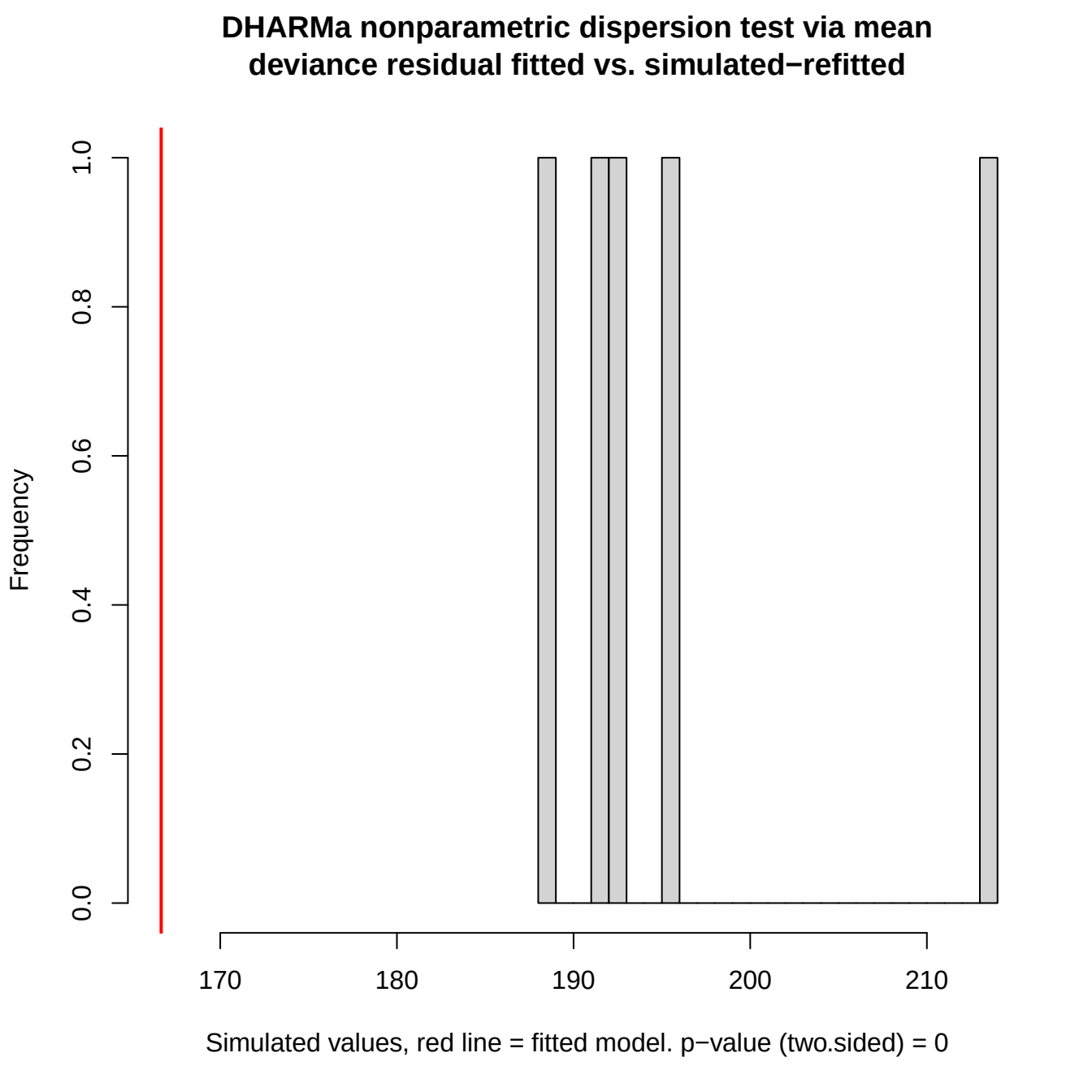

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

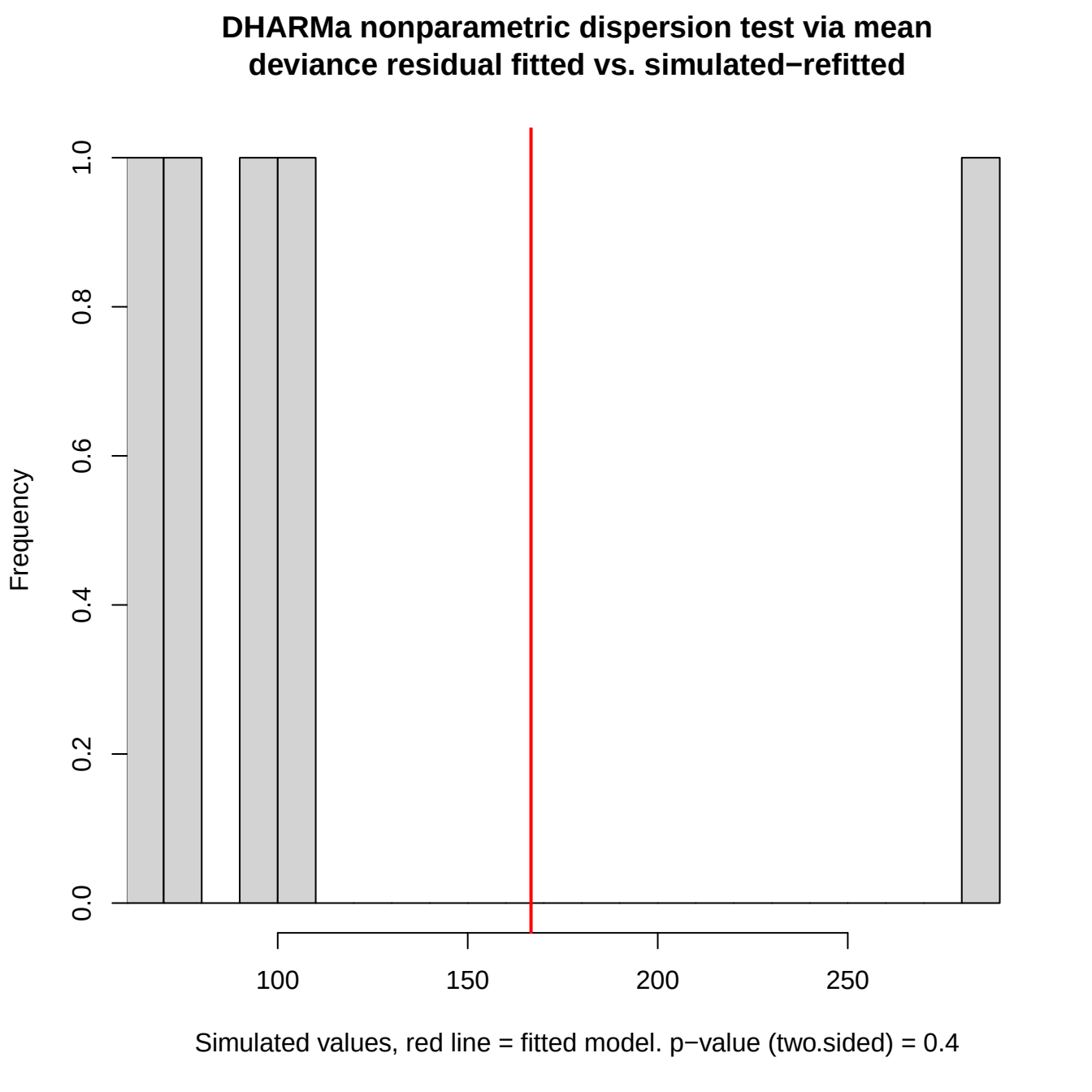

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

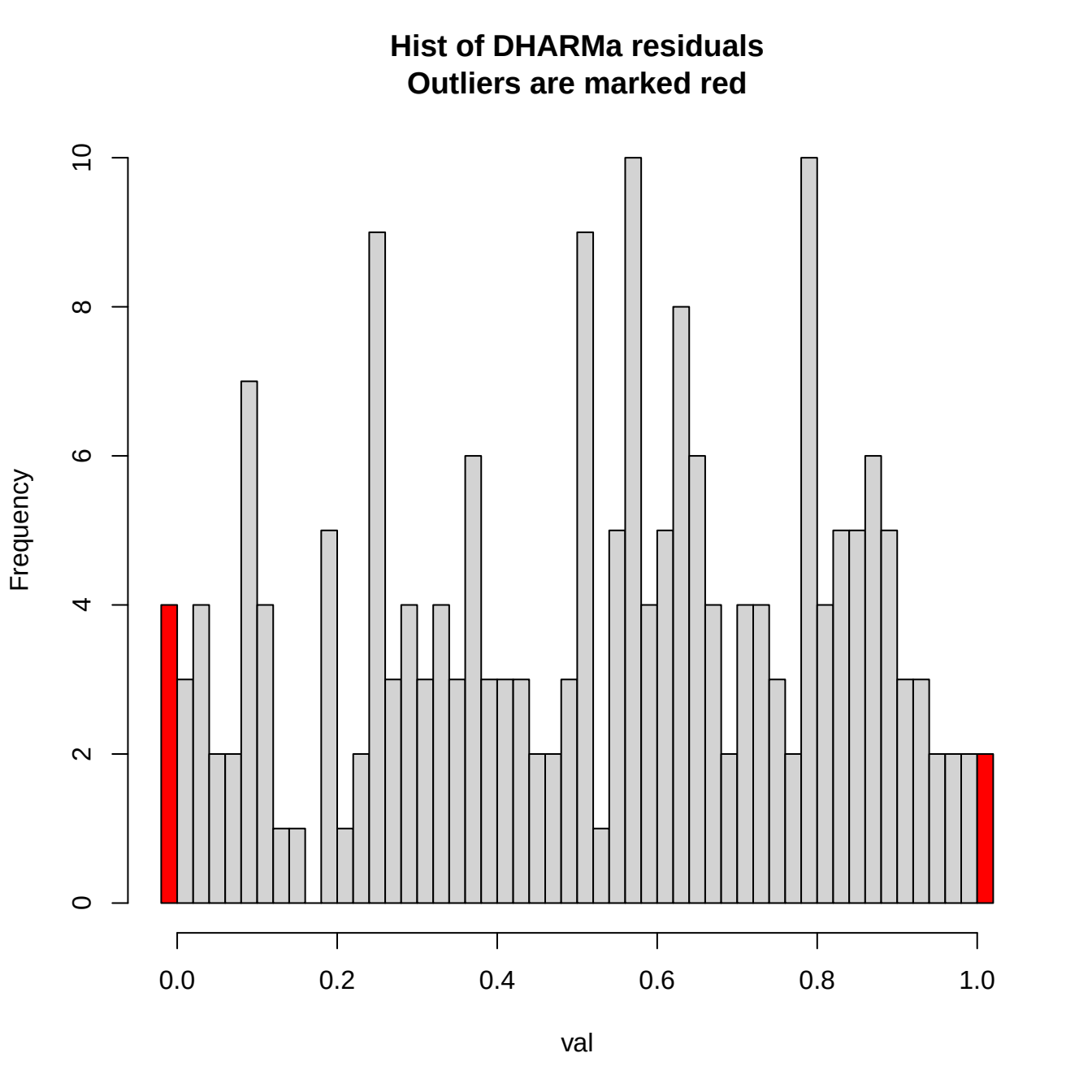

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

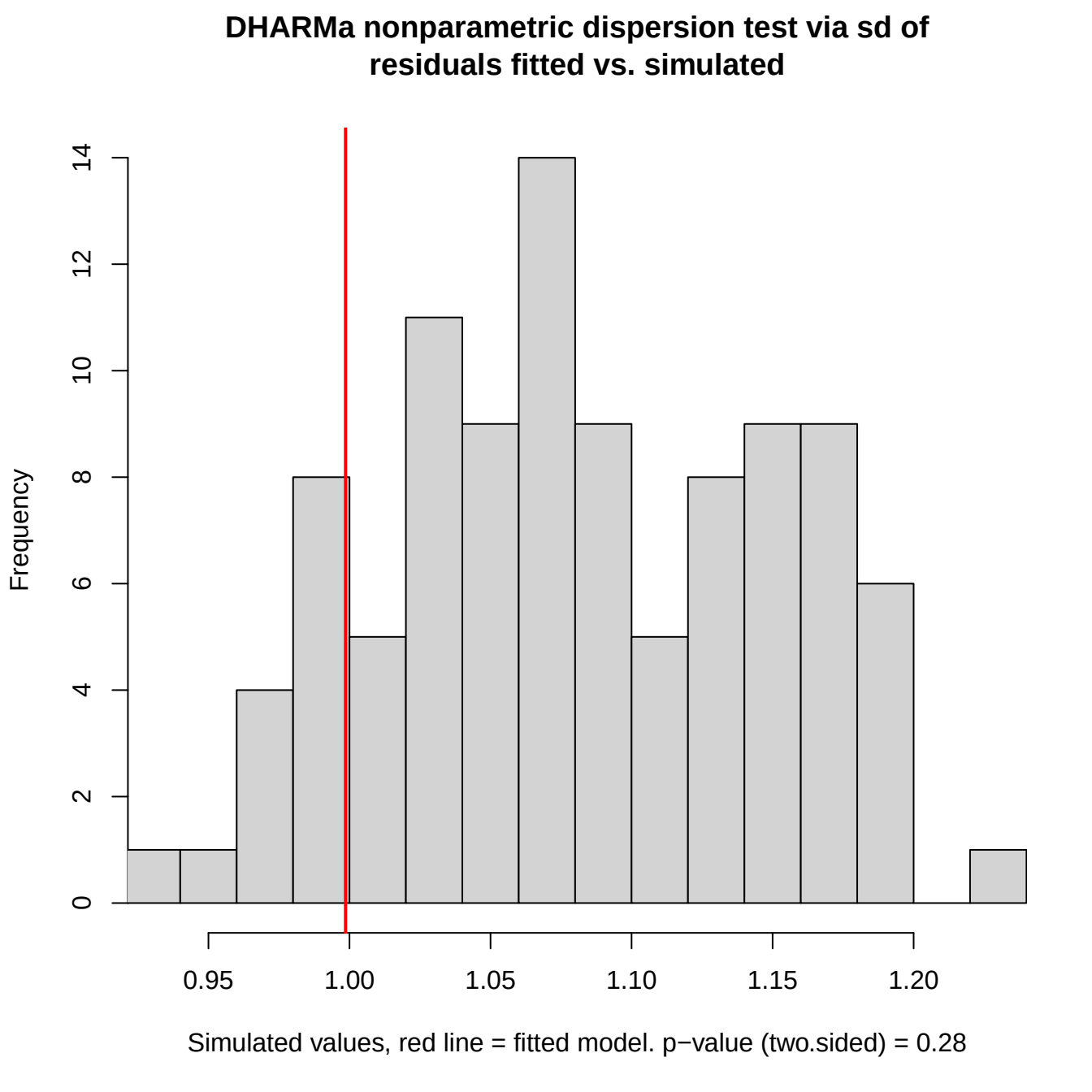

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0

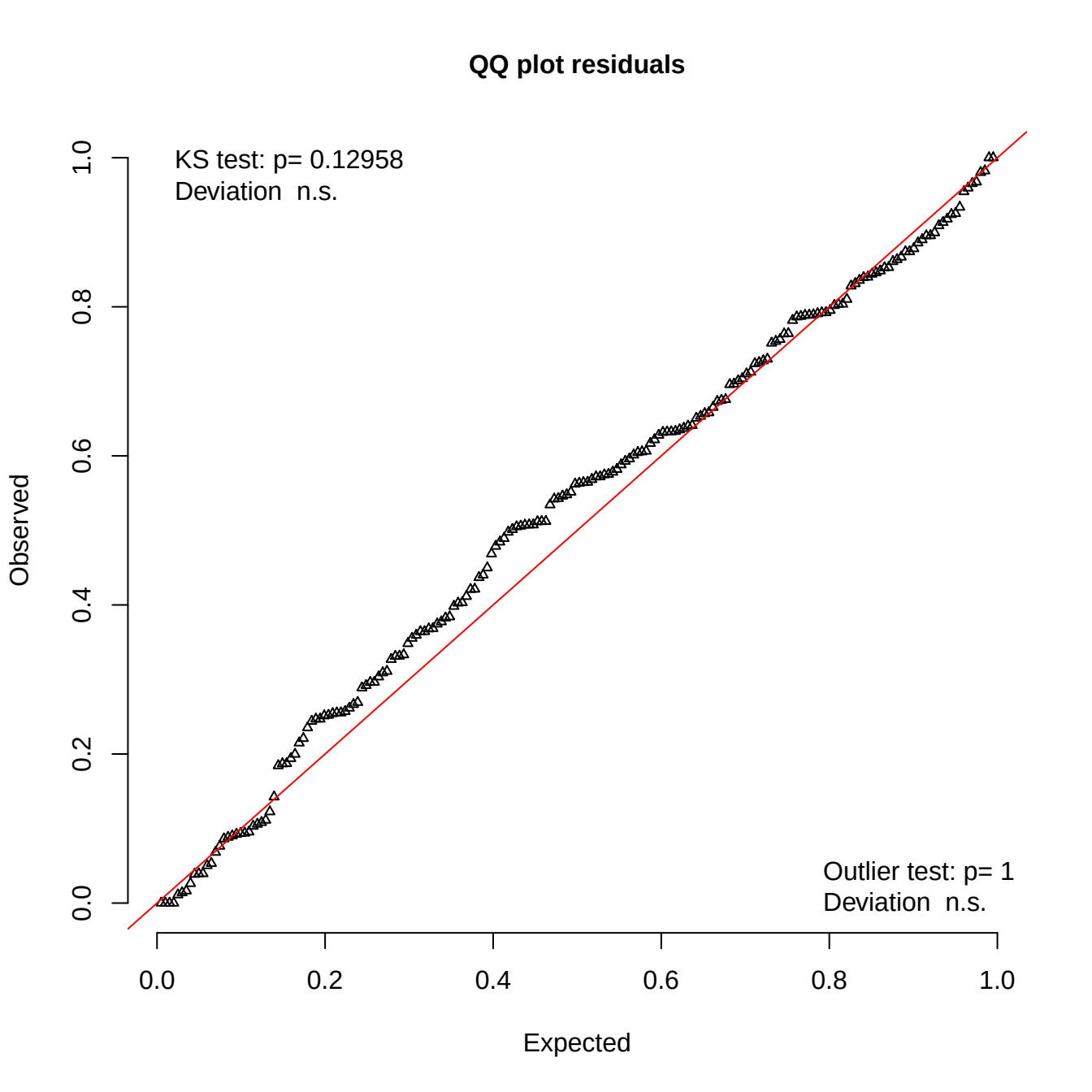

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

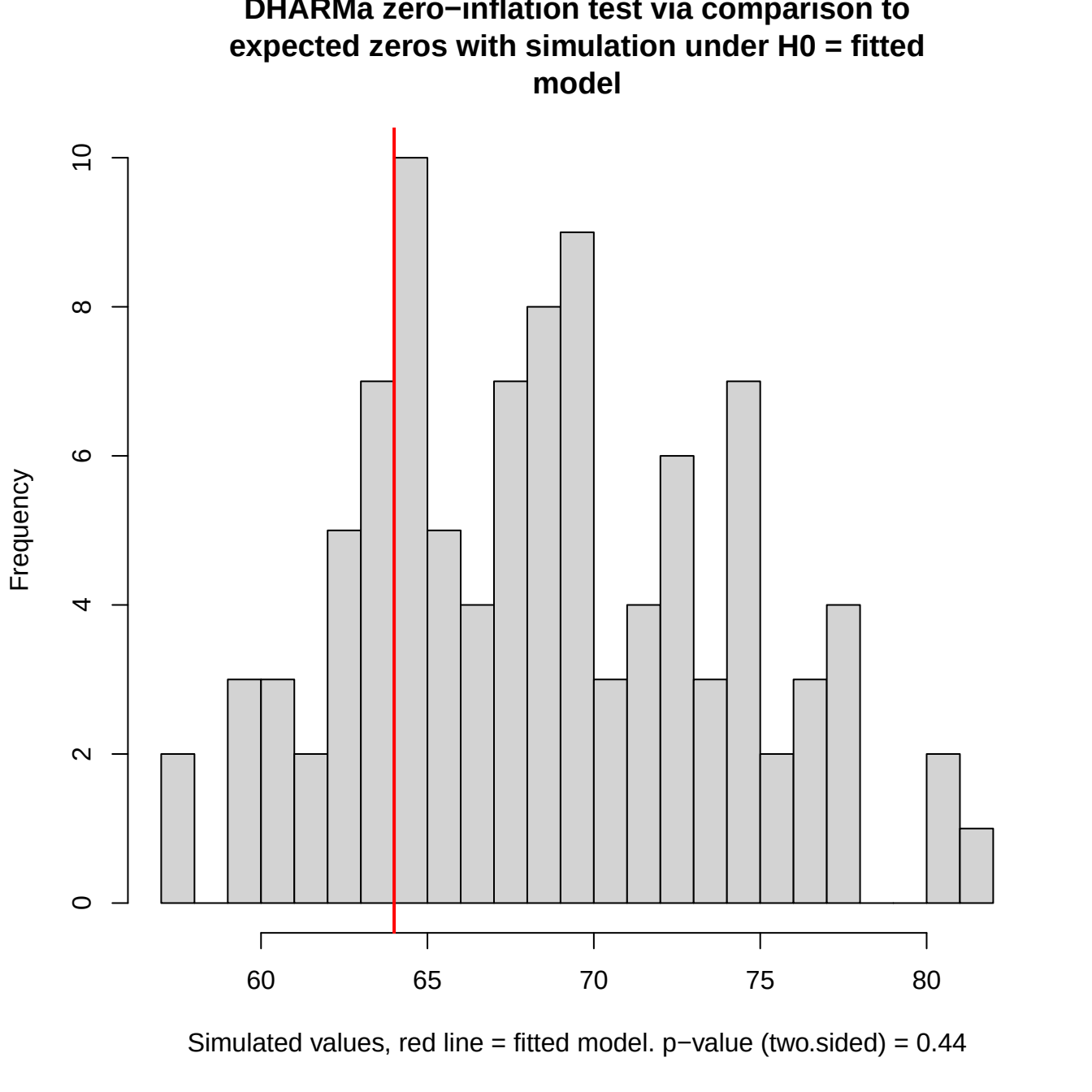

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

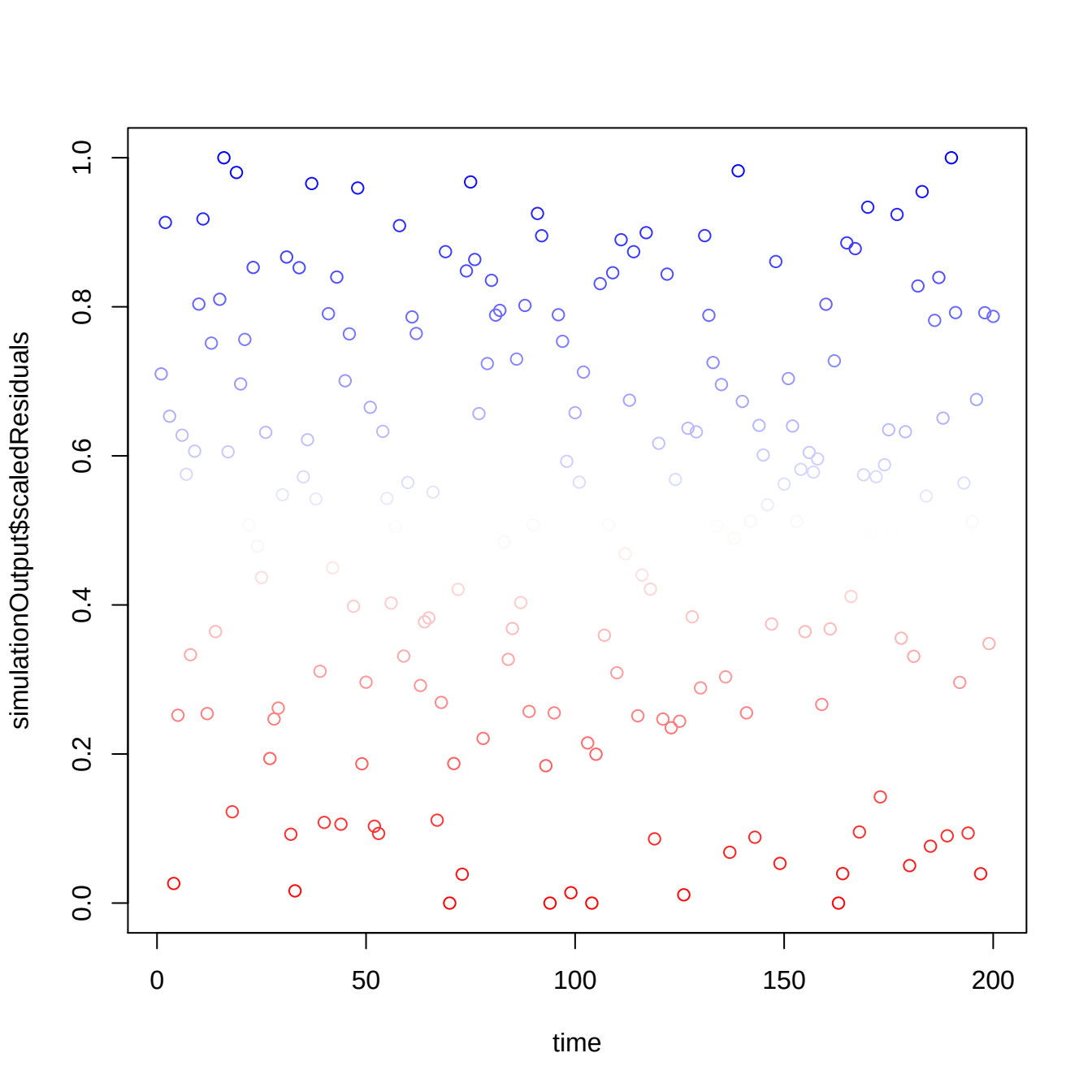

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
150
200
250
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

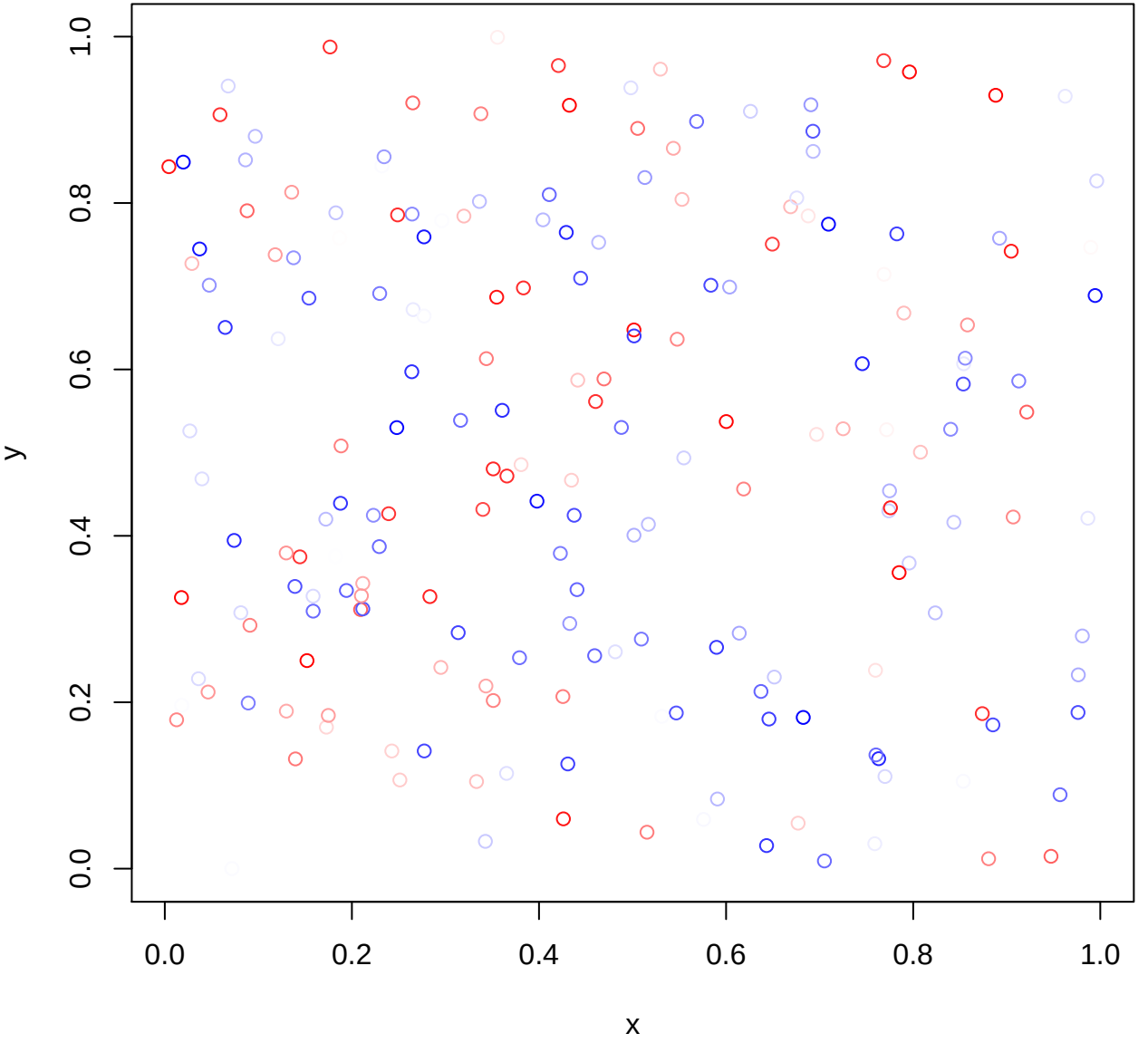

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

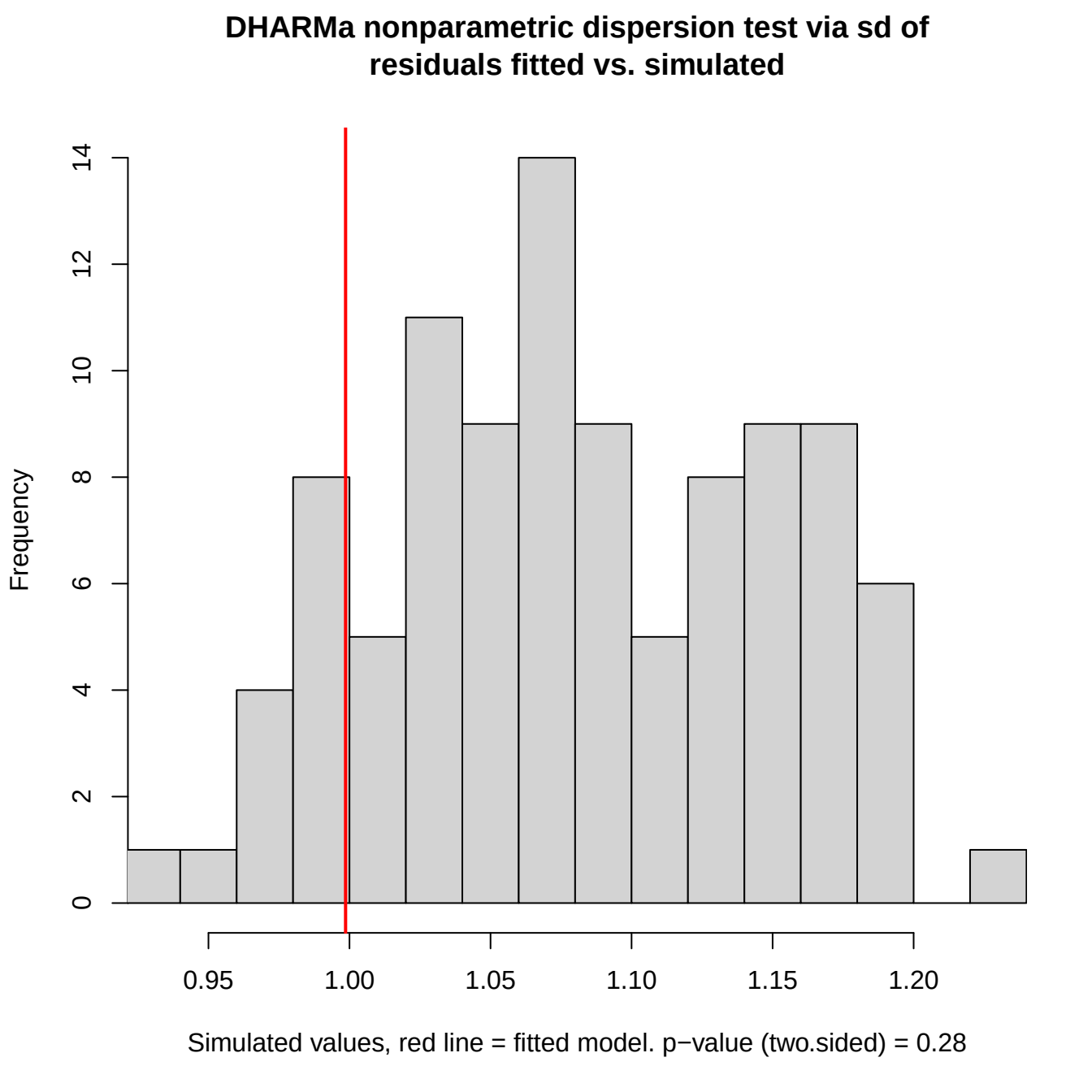

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

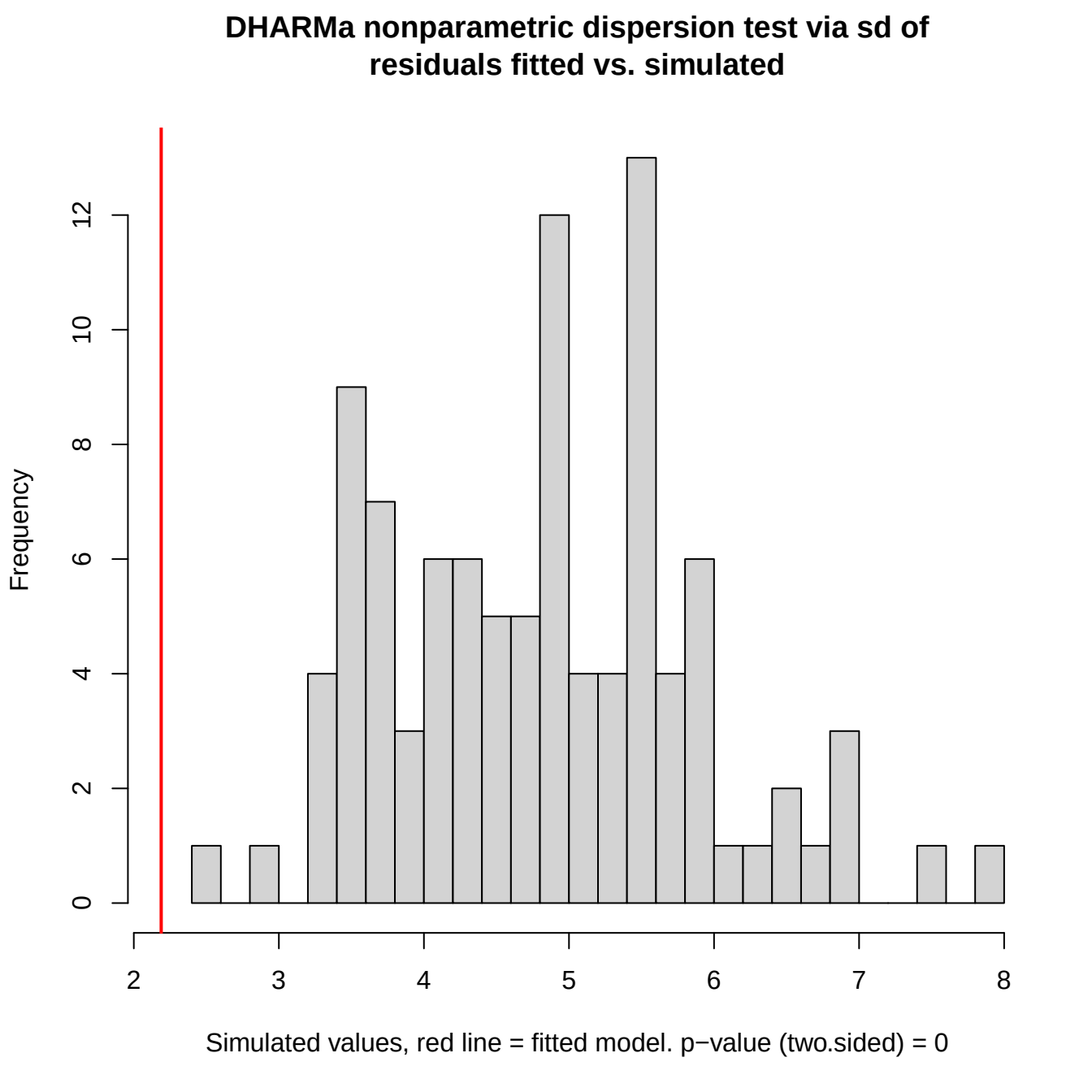

QQ plot residuals
KS test: p= 0.12958
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

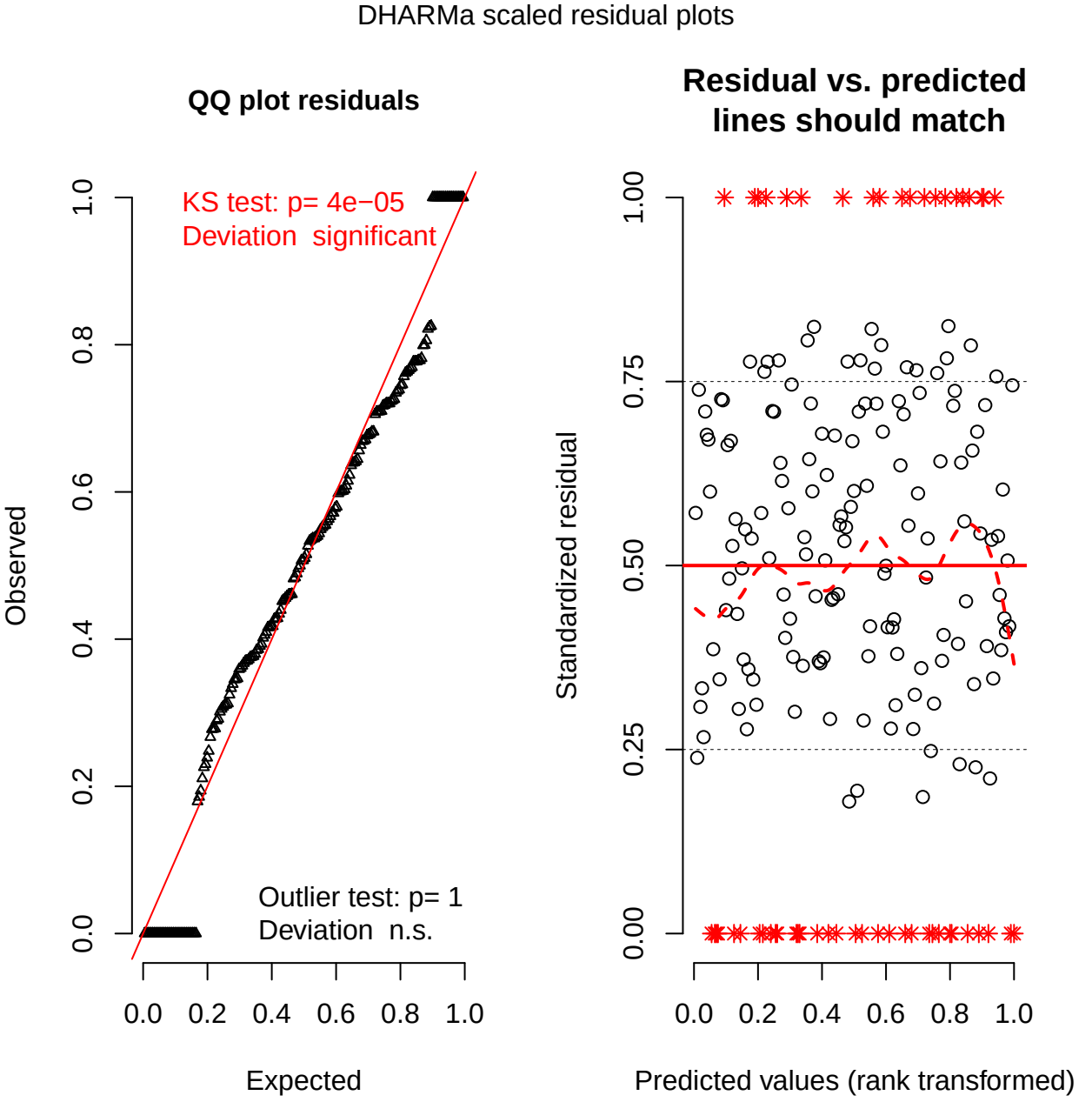

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
60
65
70
75
80
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

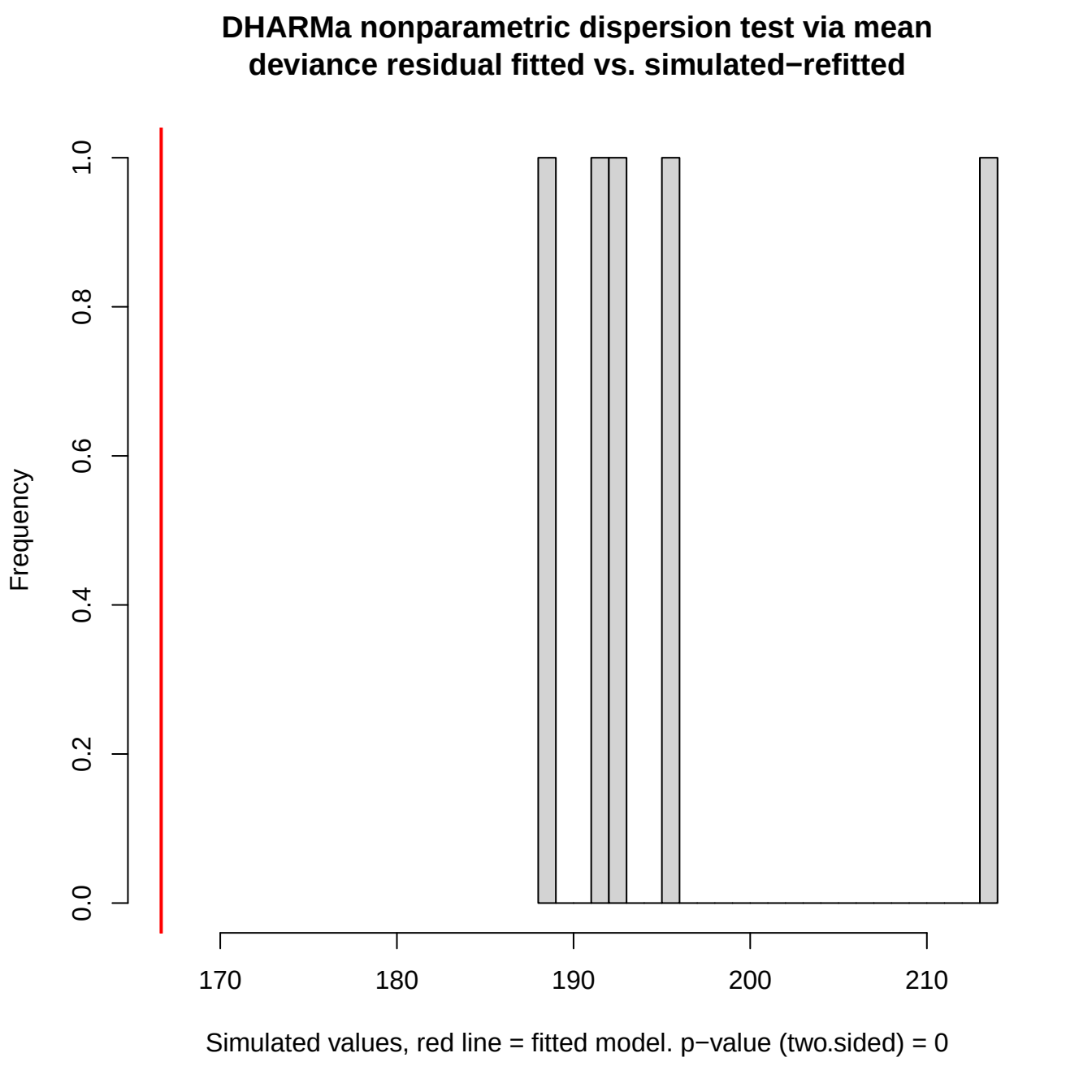

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

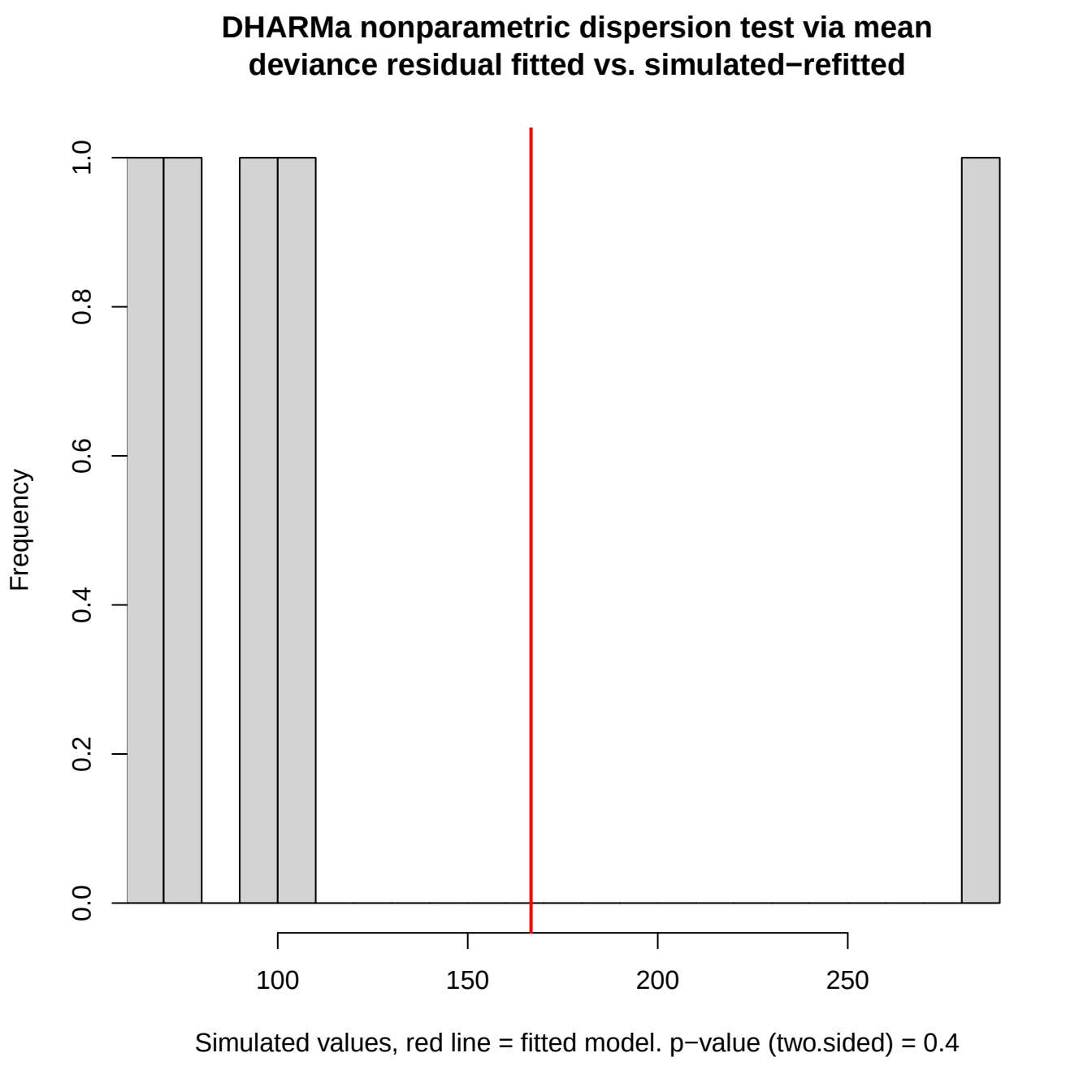

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

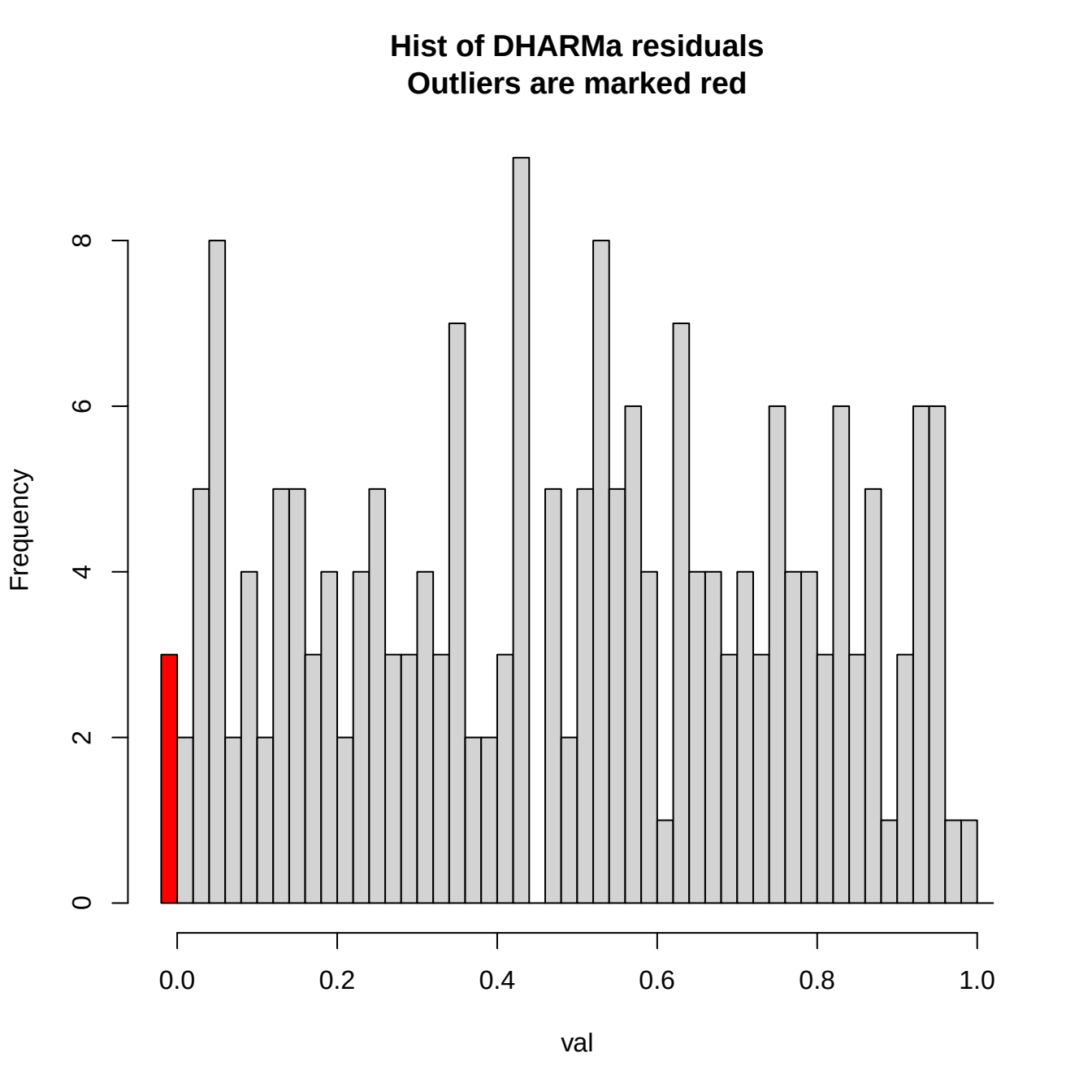

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

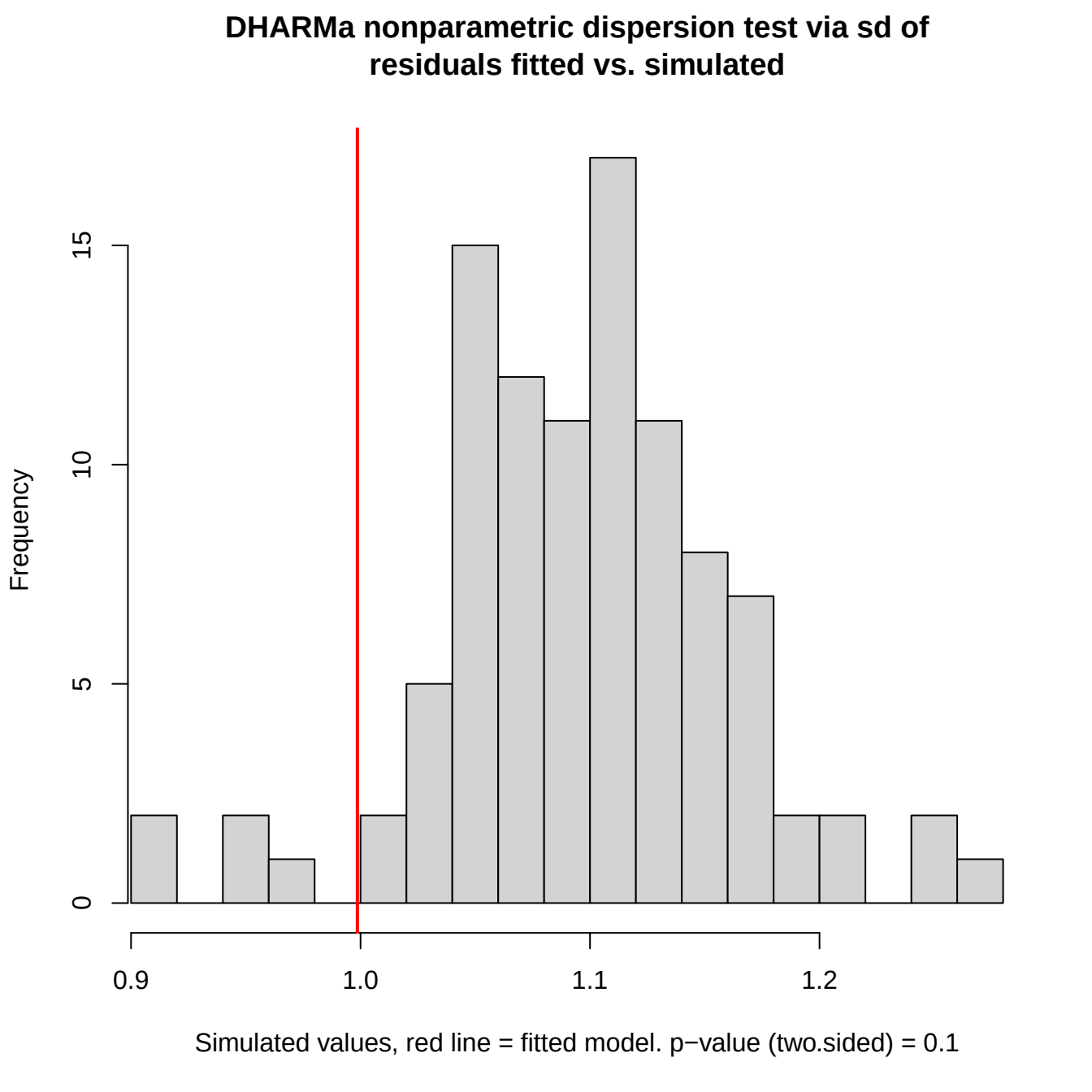

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0

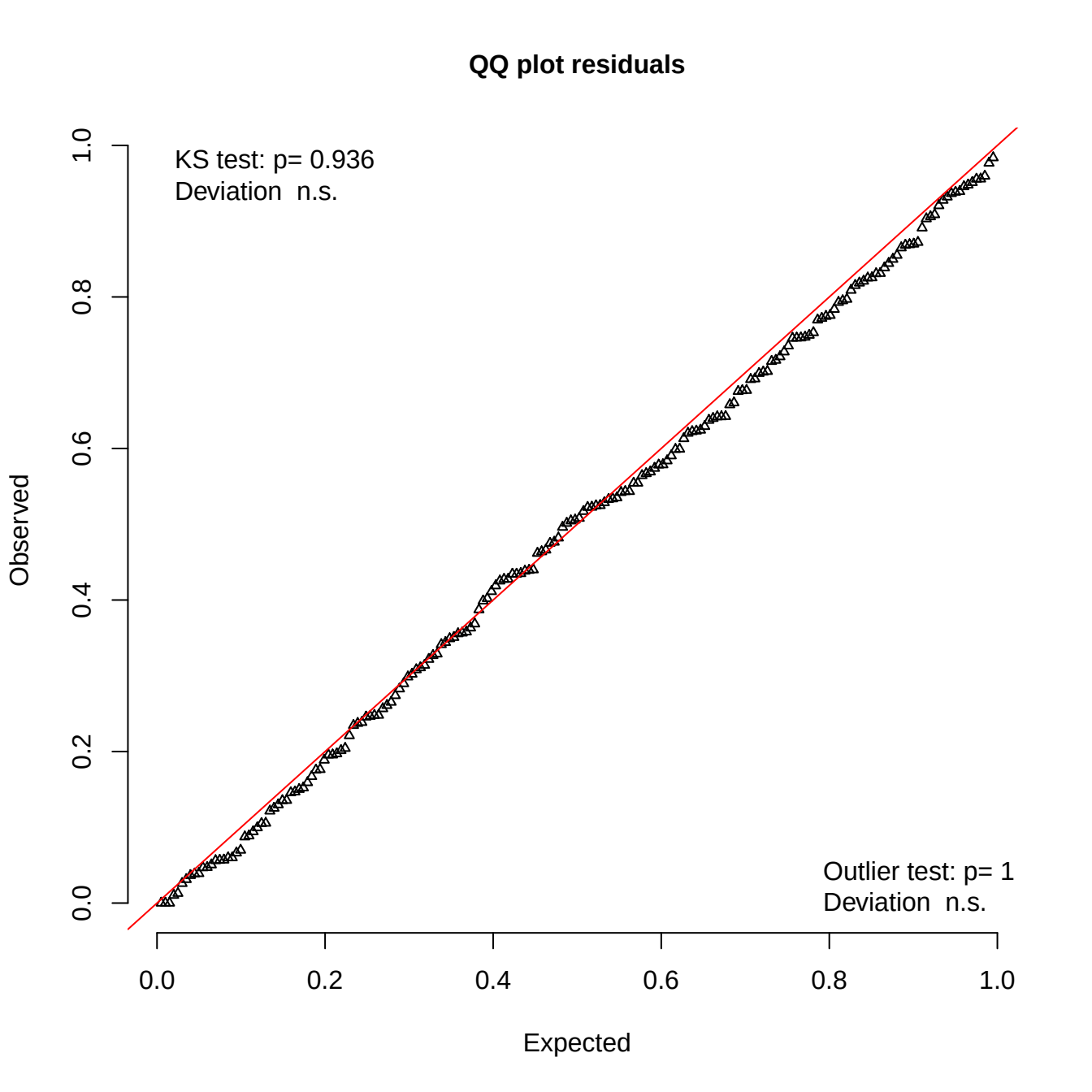

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

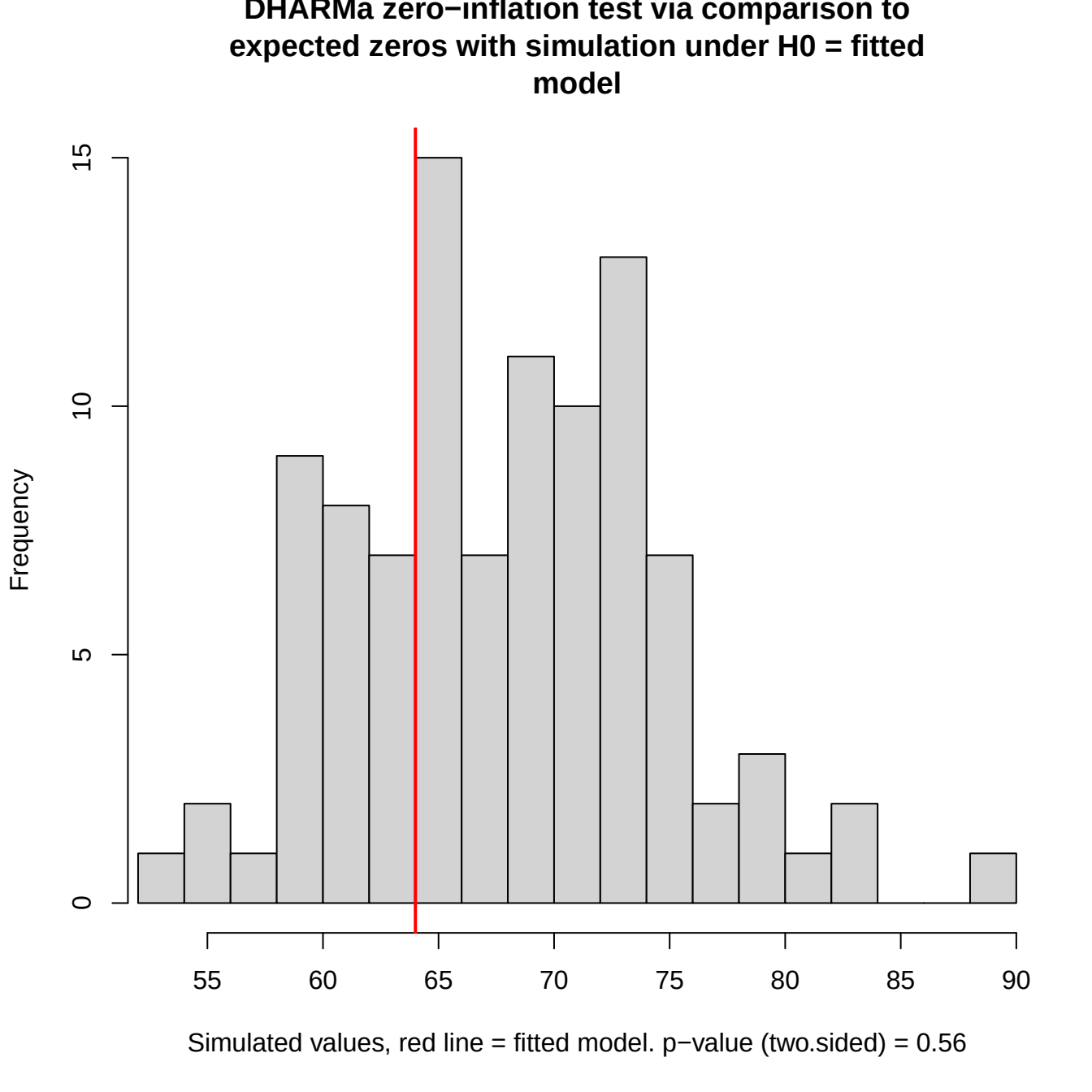

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

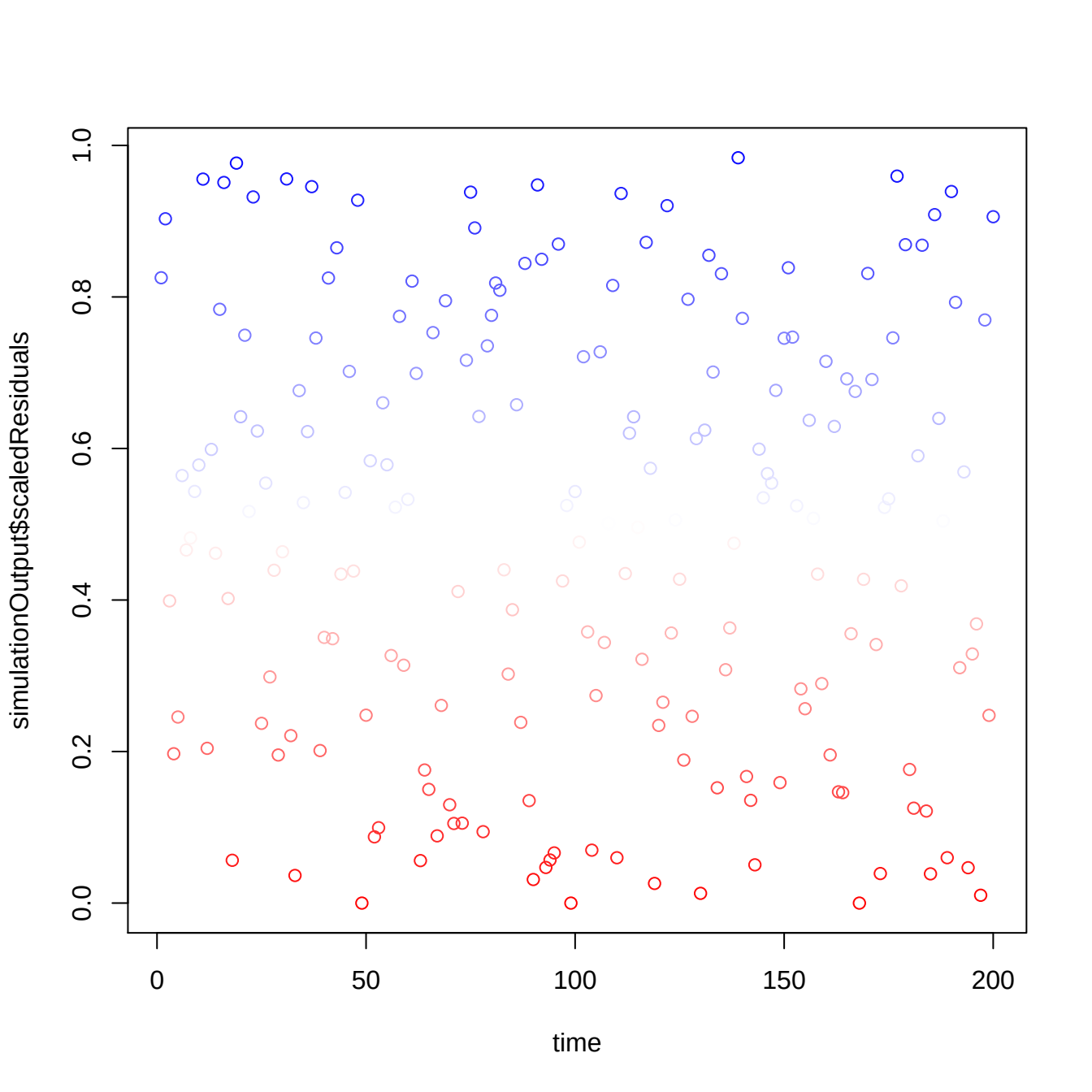

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
150
200
250
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

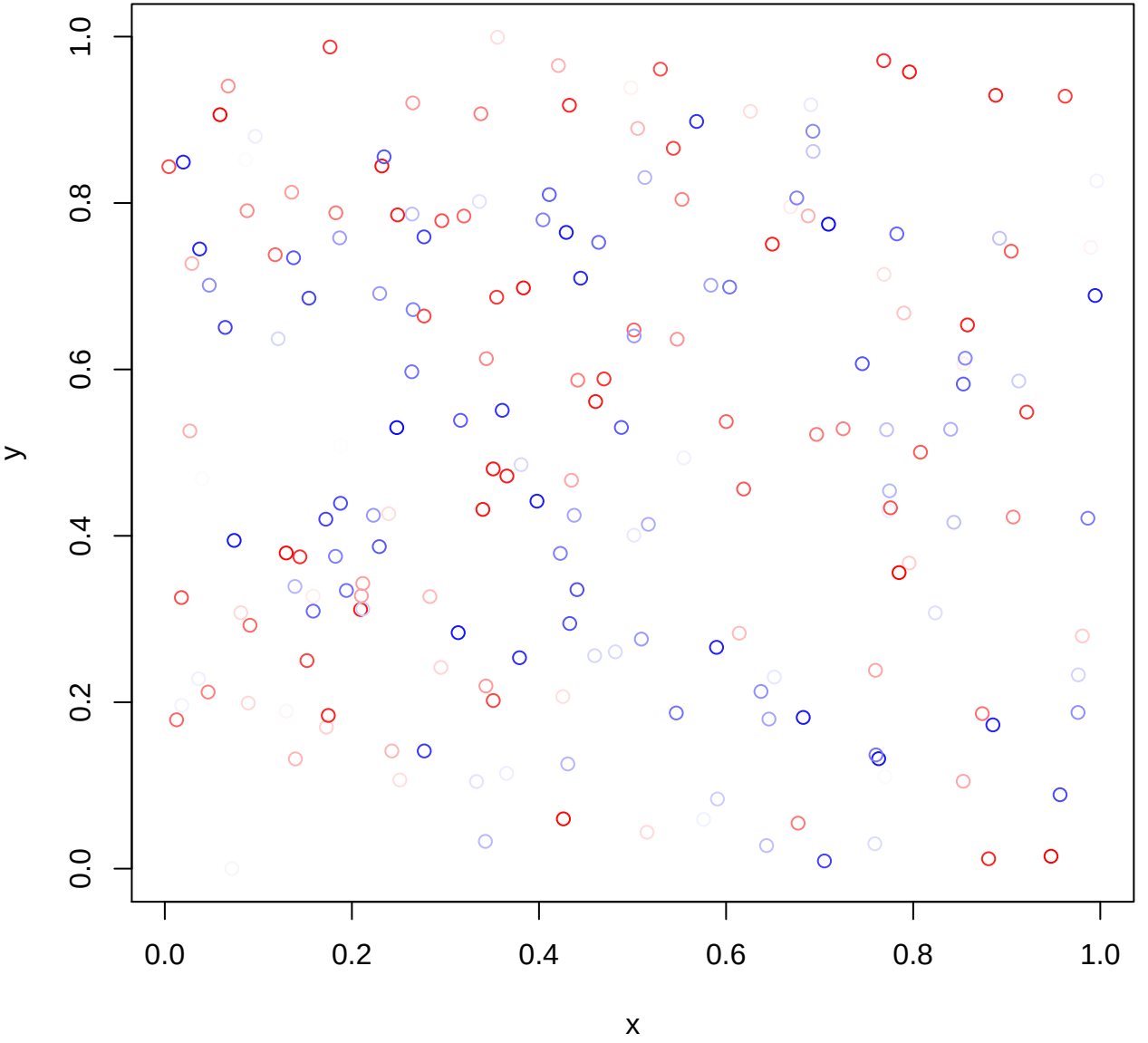

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

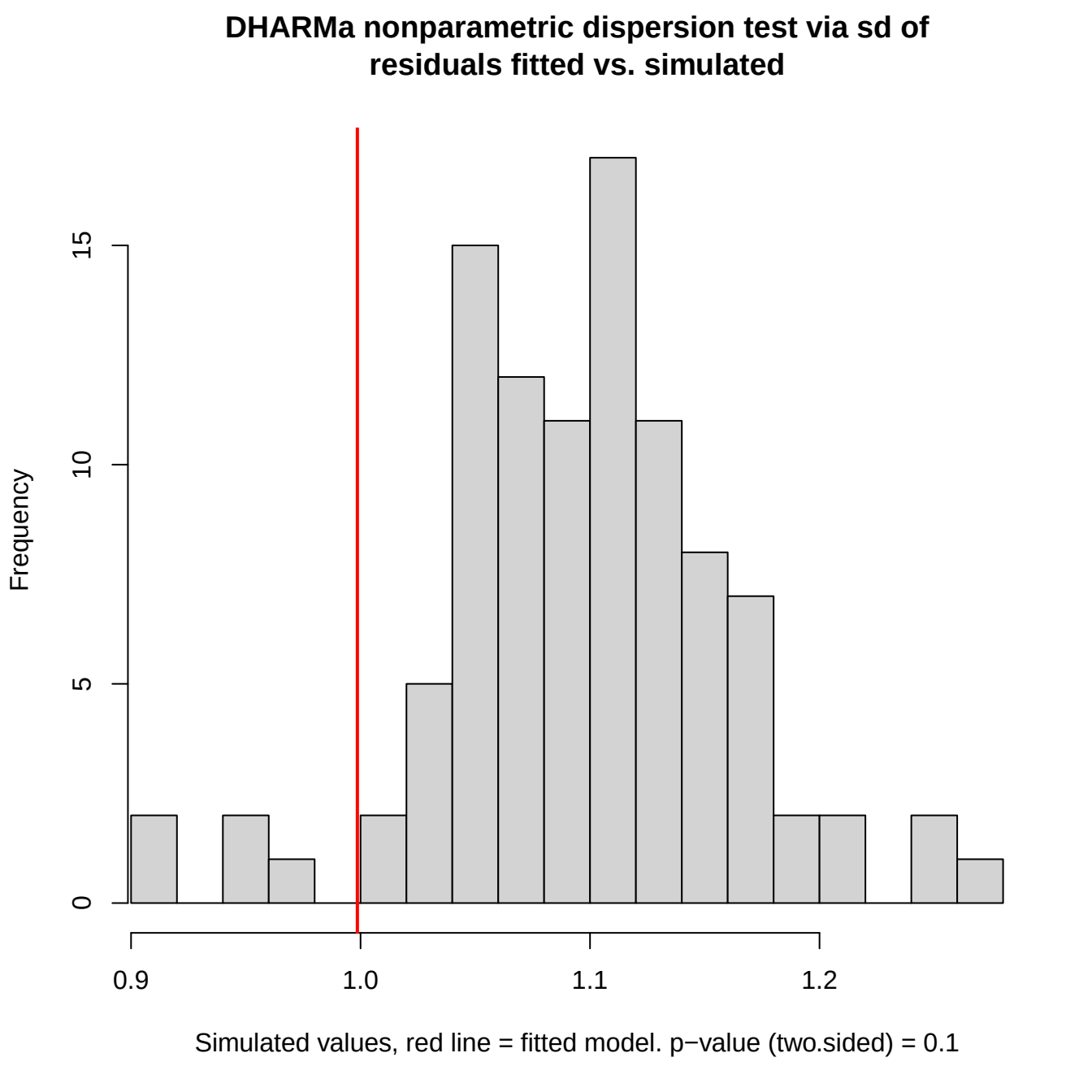

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.1

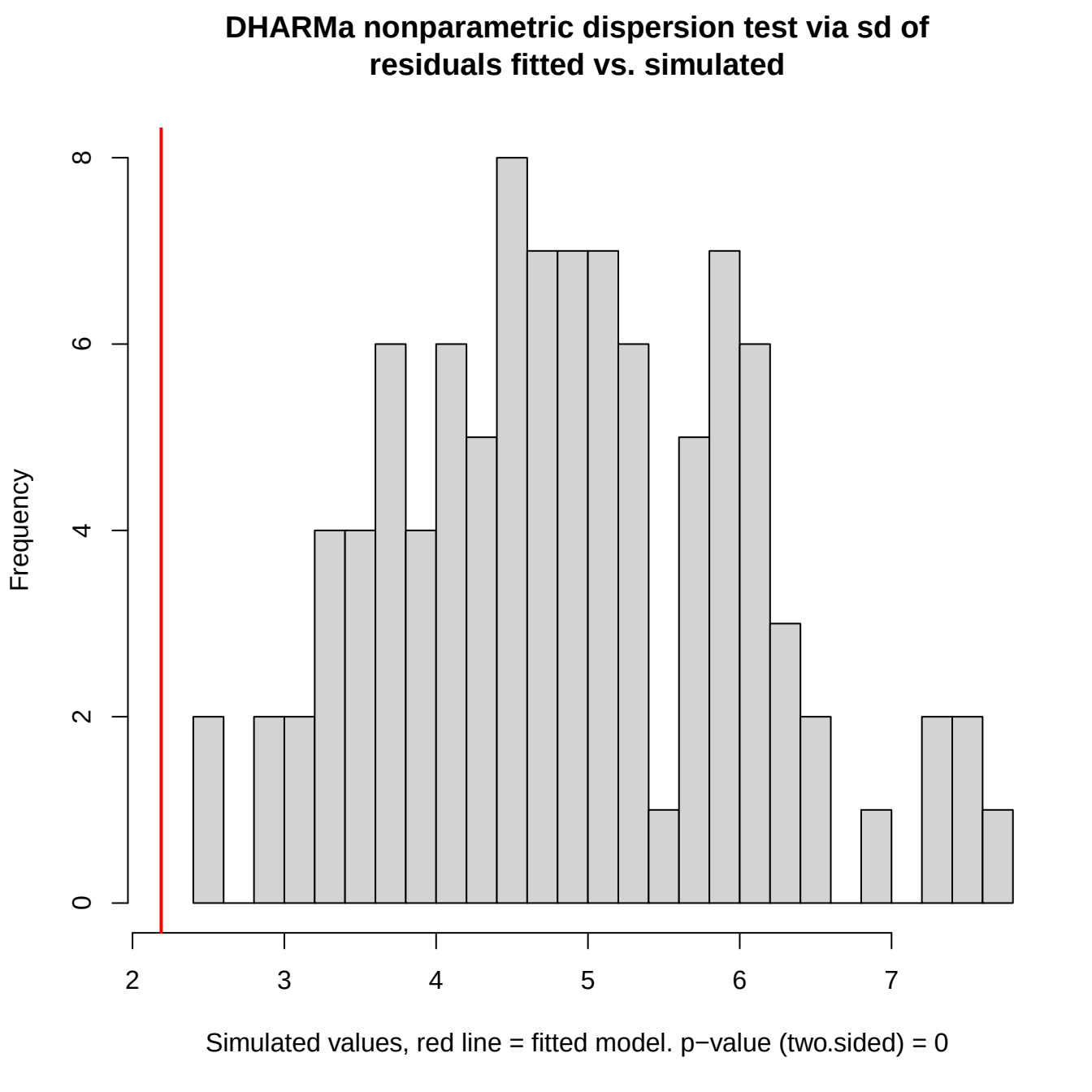

QQ plot residuals
KS test: p= 0.936
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

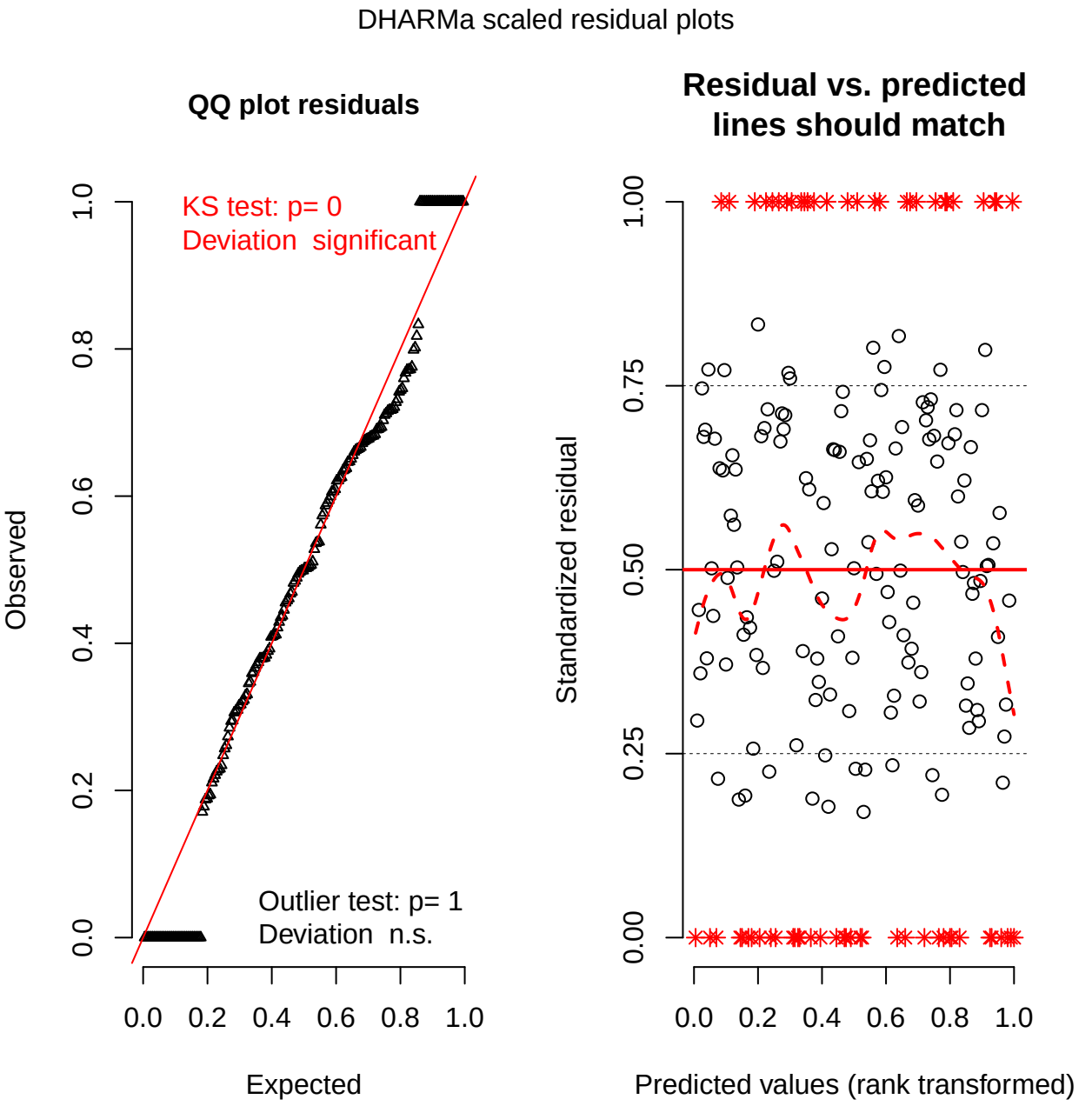

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
55
60
65
70
75
80
85
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.56

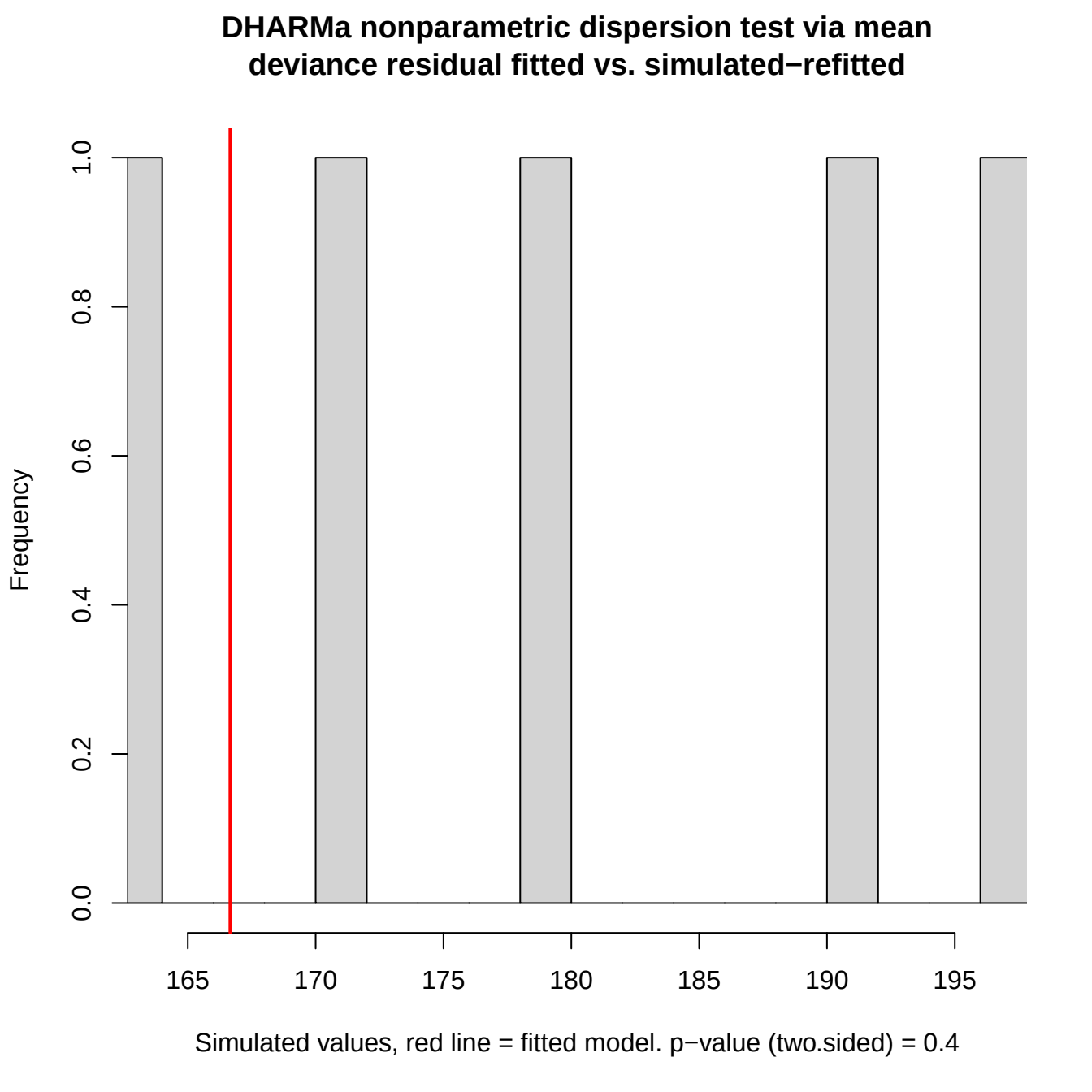

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

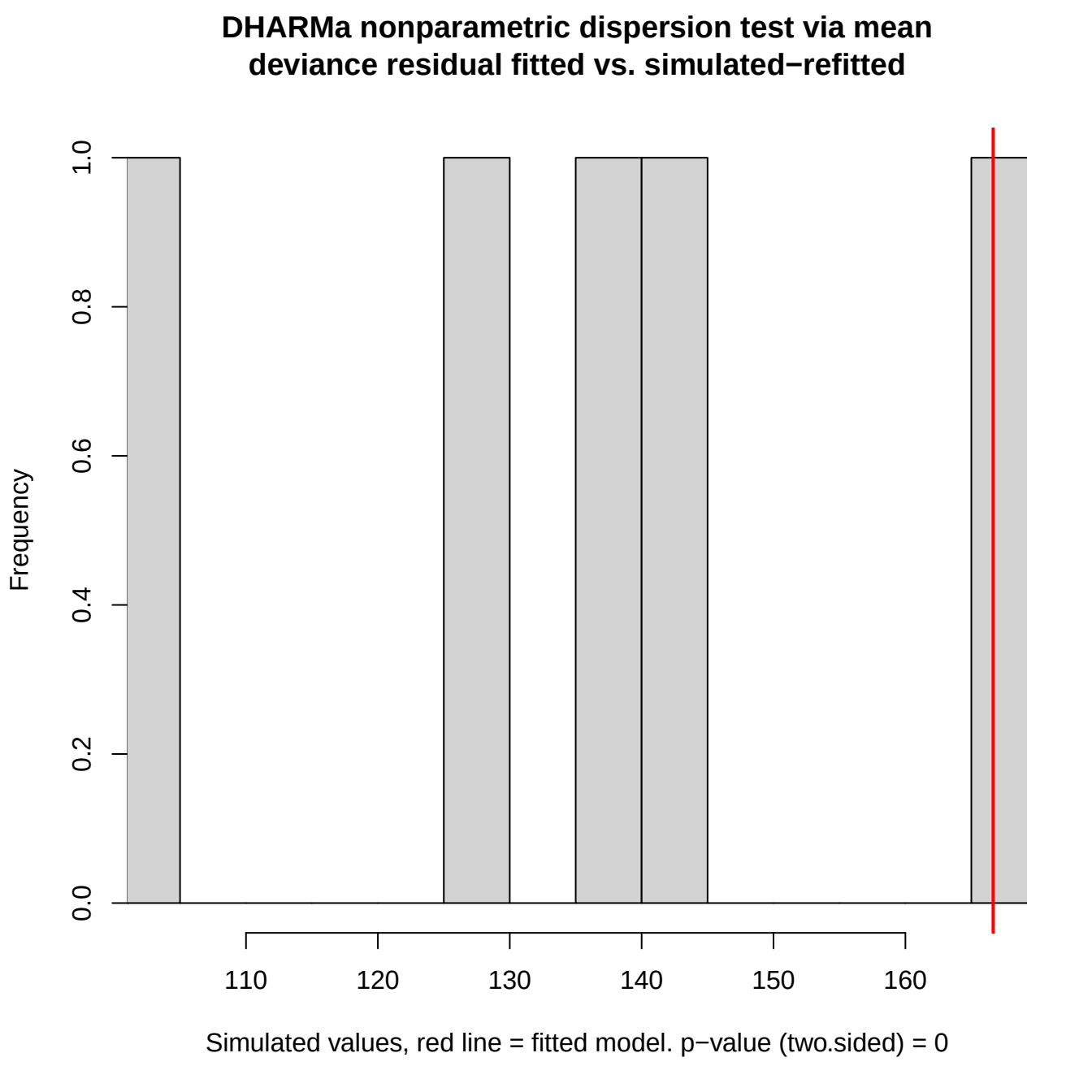

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

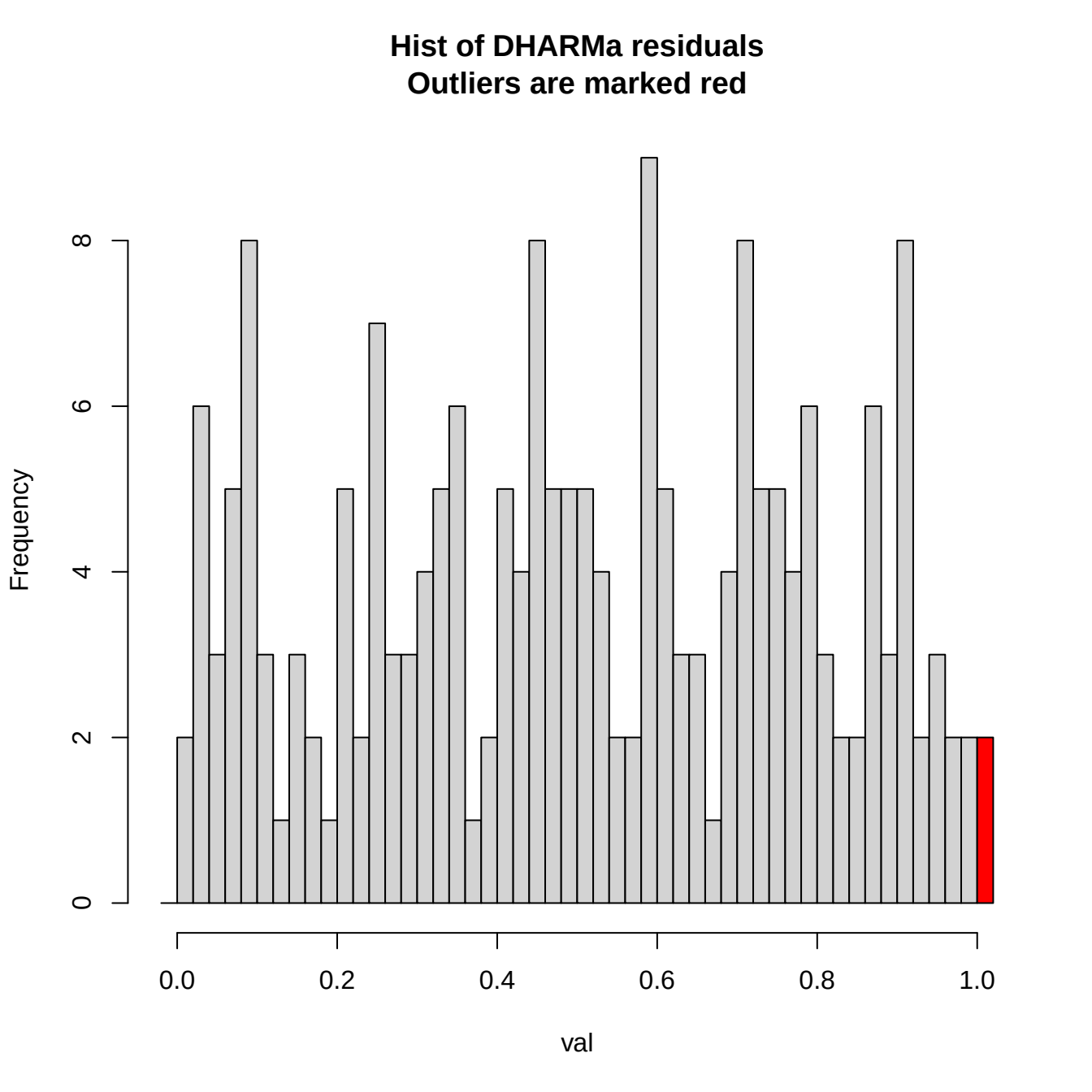

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.9
1.0
1.1
1.2
Simulated values, red line = fitted model. p−value (two.sided) = 0.1

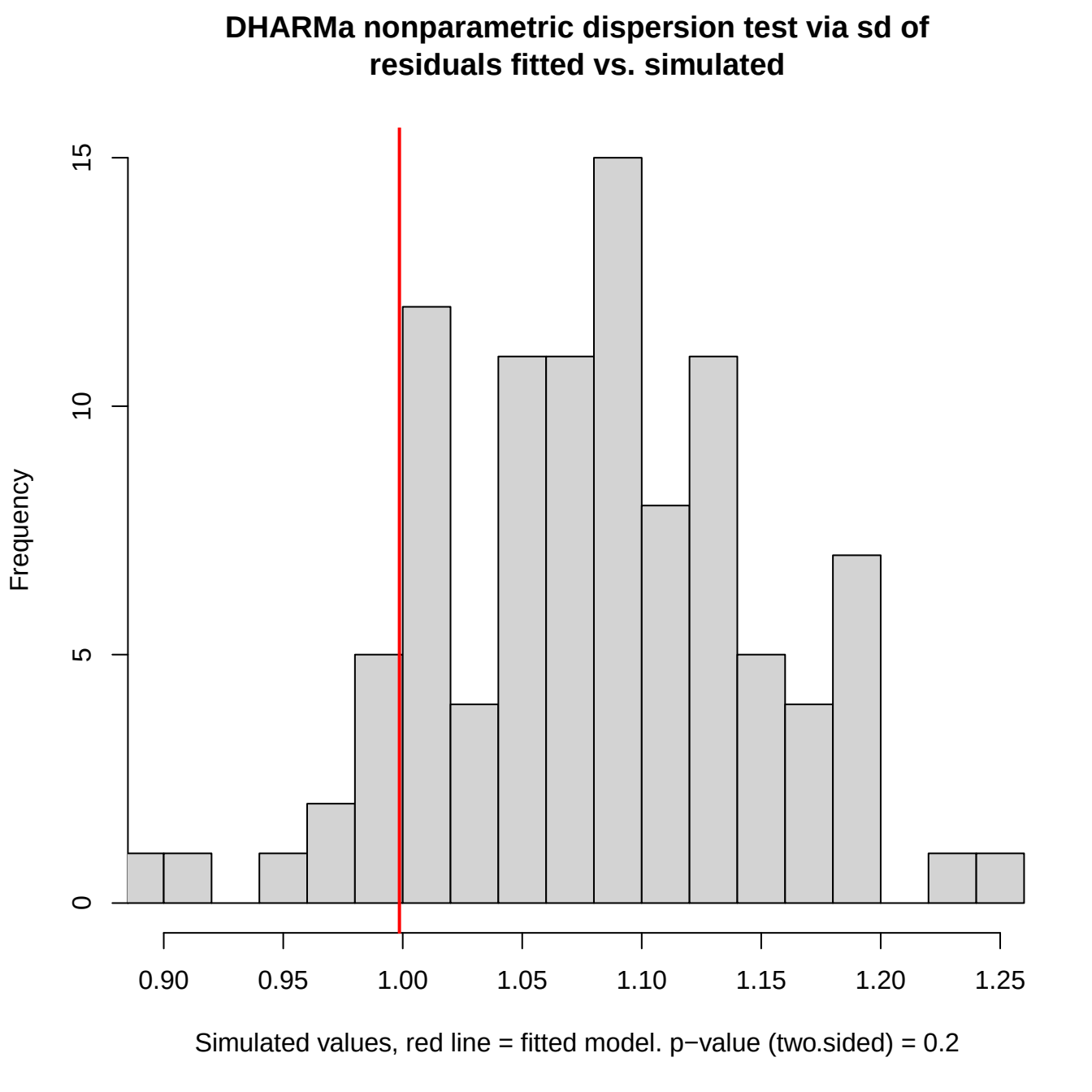

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
2
3
4
5
6
7
Simulated values, red line = fitted model. p−value (two.sided) = 0

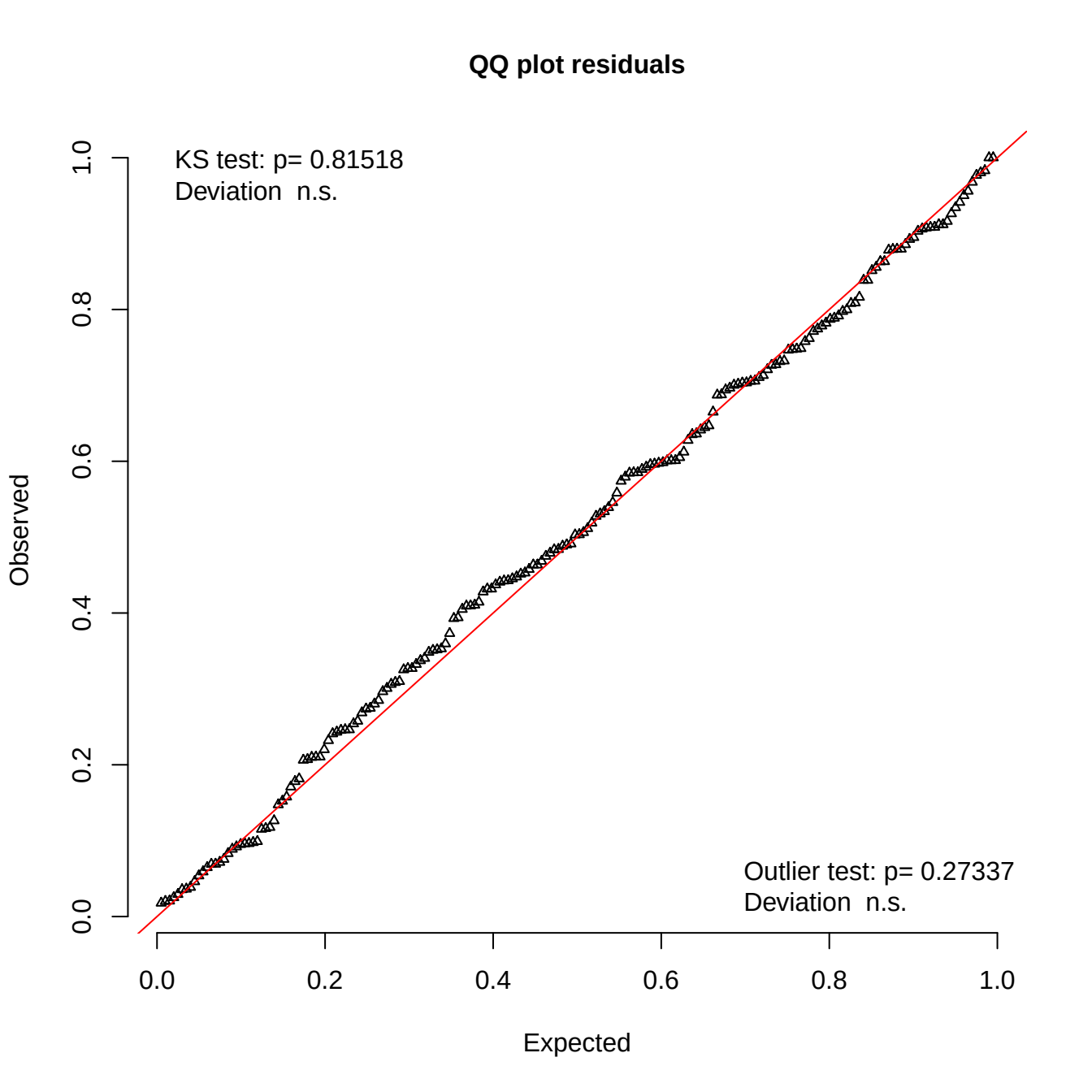

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

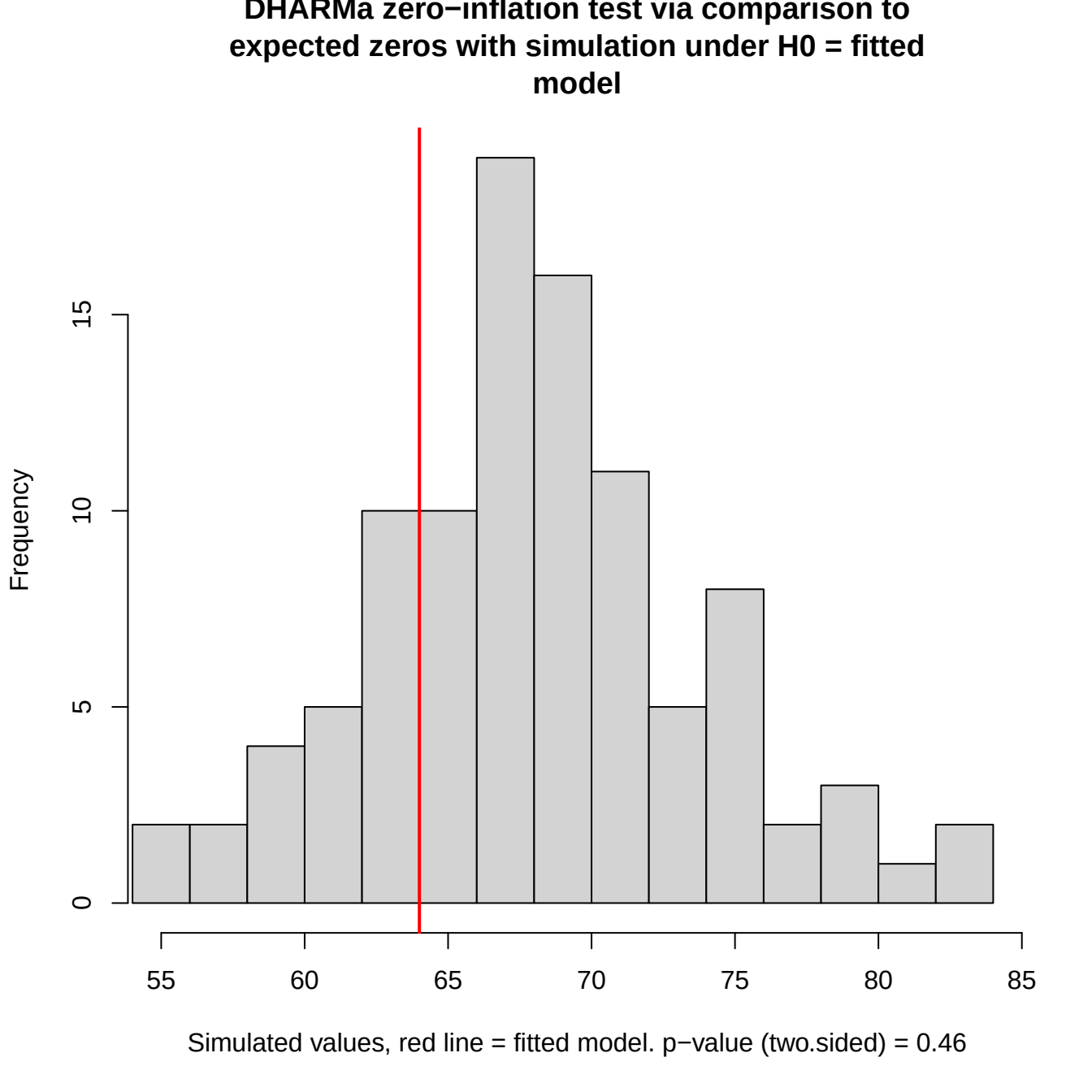

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
165
170
175
180
185
190
195
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

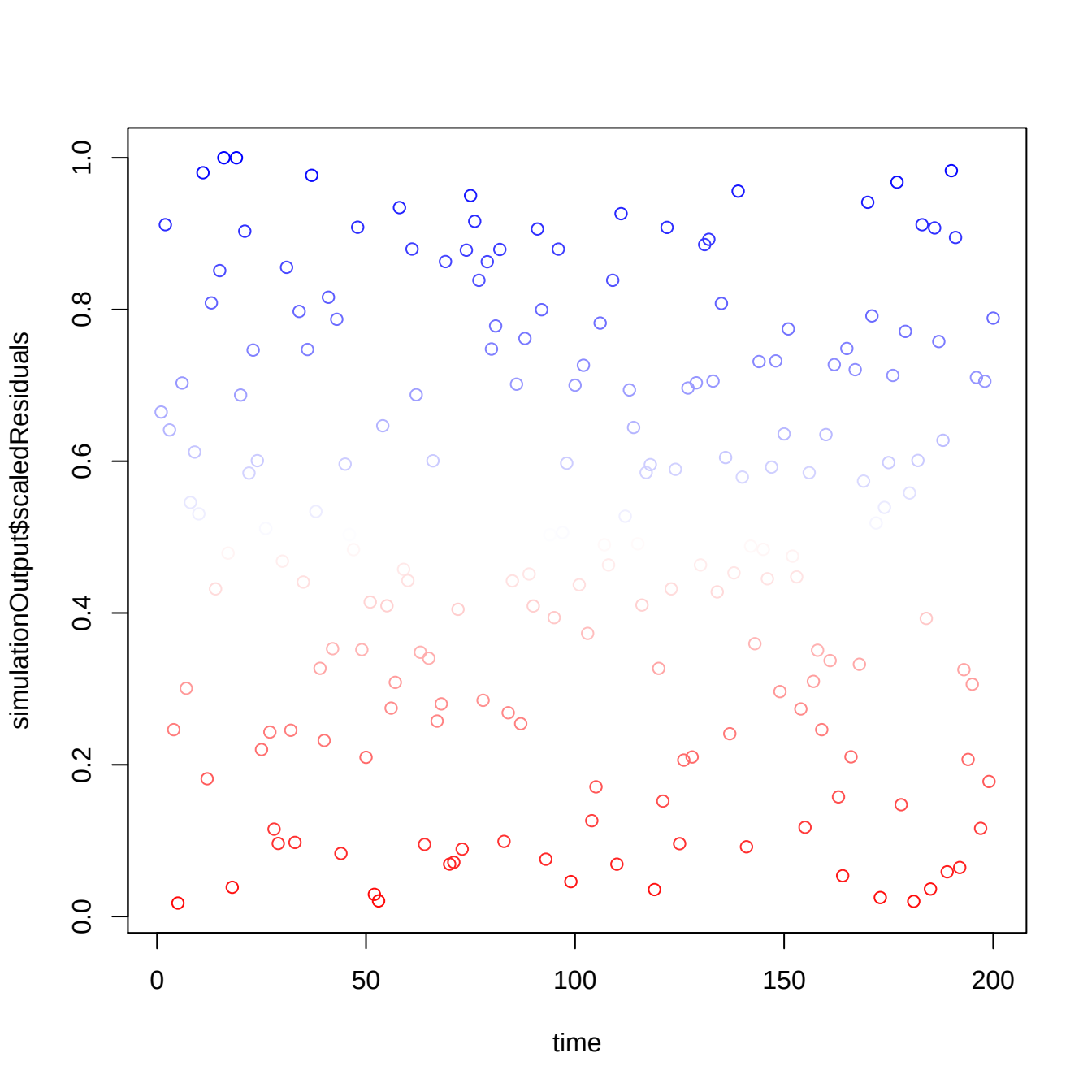

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
110
120
130
140
150
160
Simulated values, red line = fitted model. p−value (two.sided) = 0

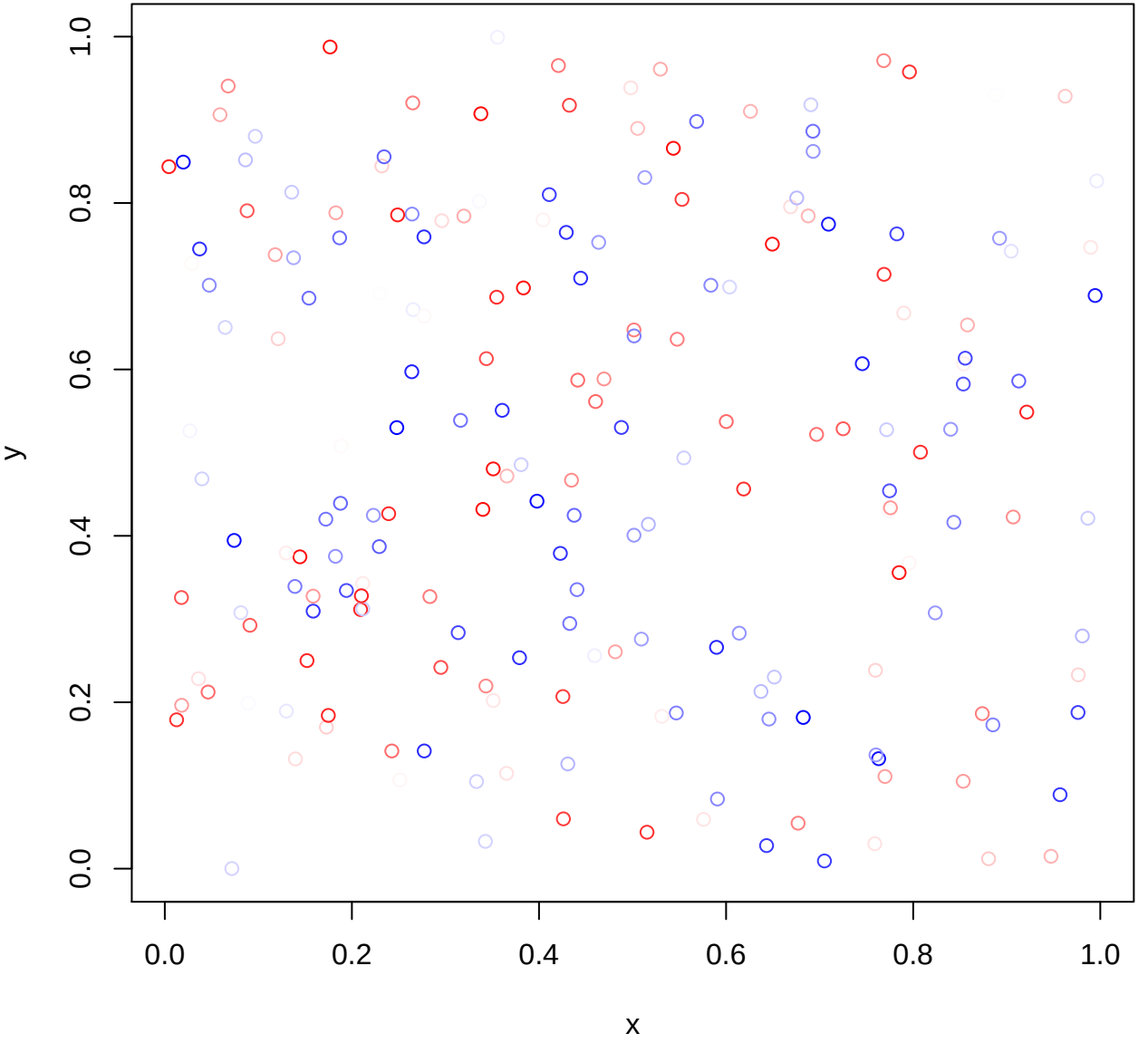

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

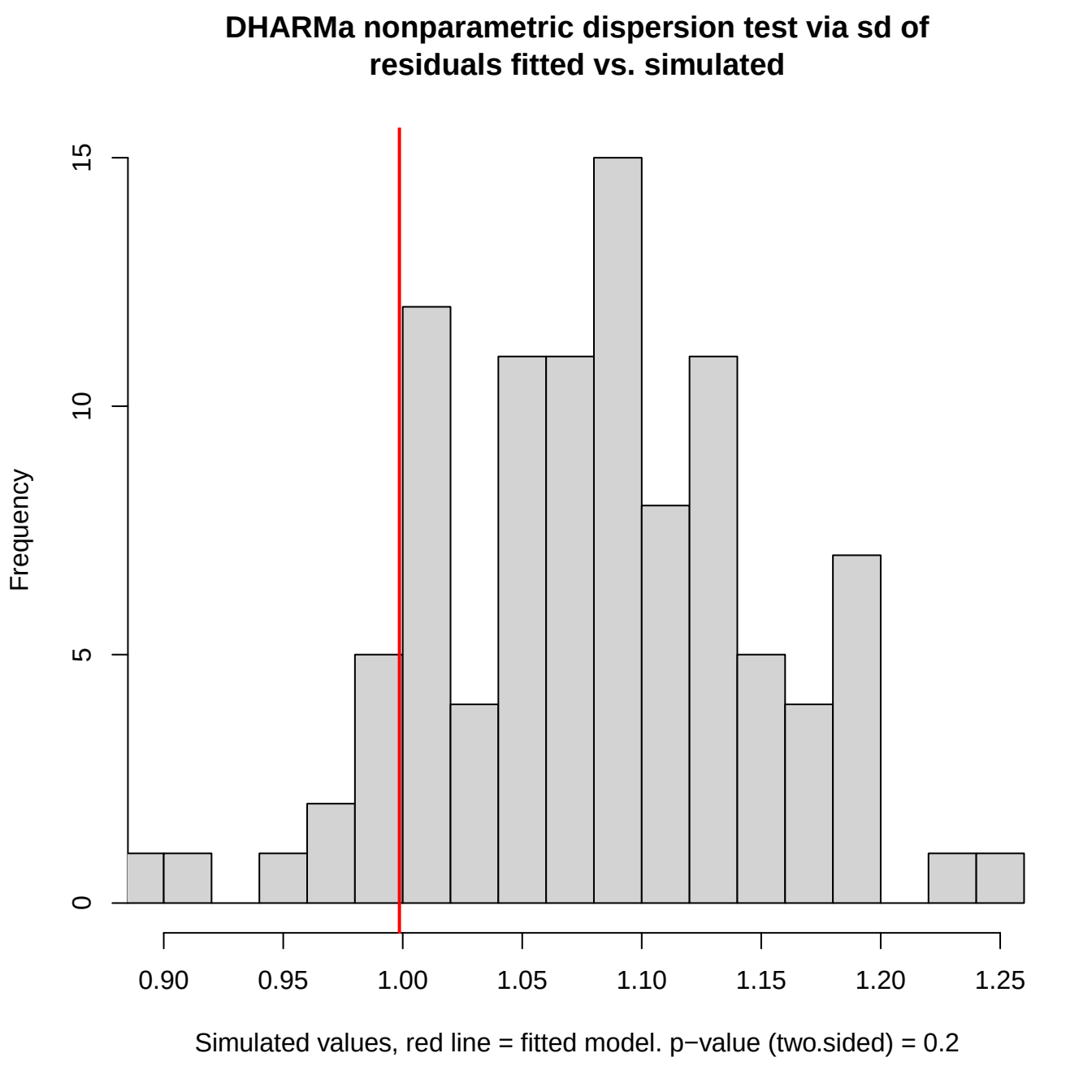

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.90
0.95
1.00
1.05
1.10
1.15
1.20
1.25
Simulated values, red line = fitted model. p−value (two.sided) = 0.2

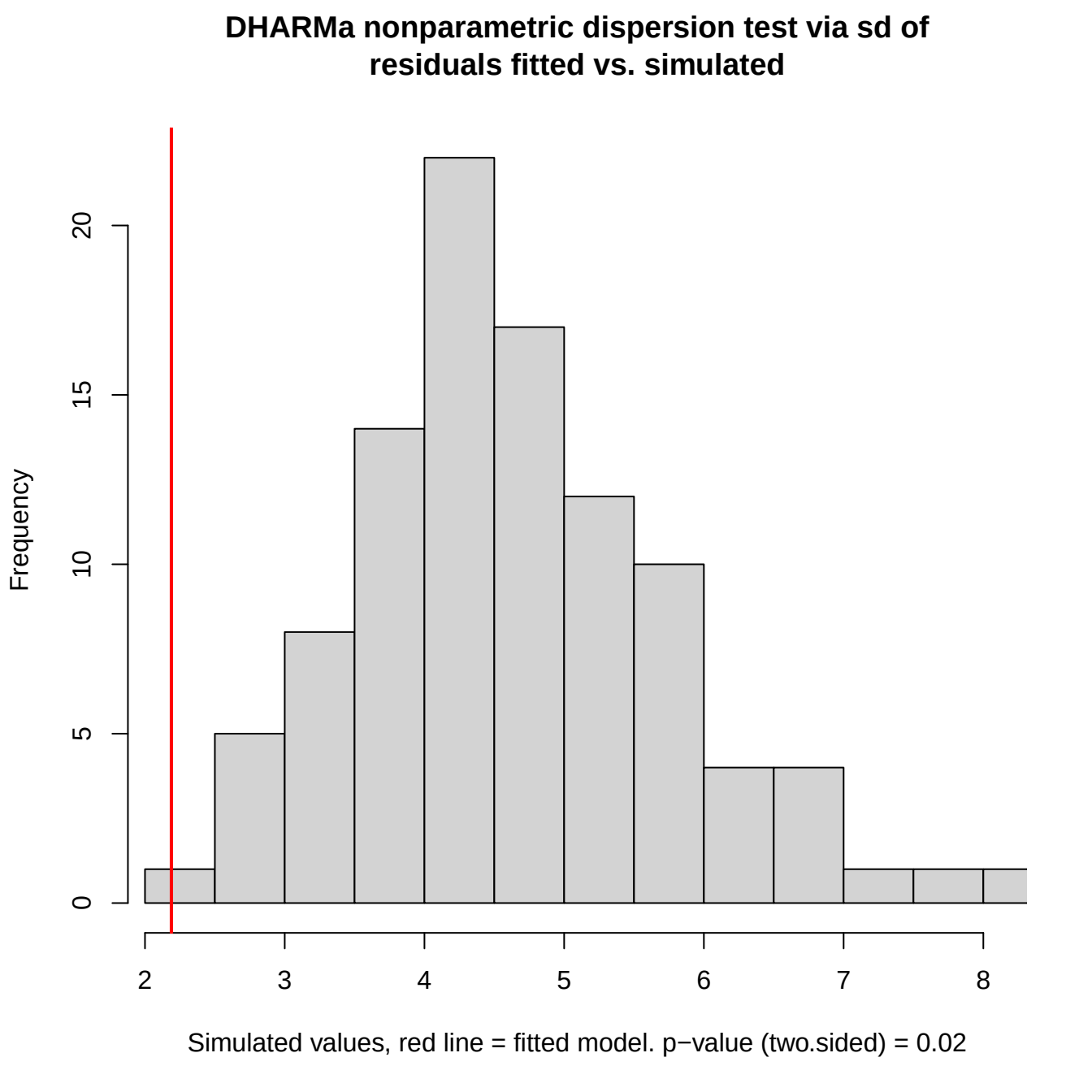

QQ plot residuals
KS test: p= 0.81518
Deviation n.s.
Outlier test: p= 0.27337
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

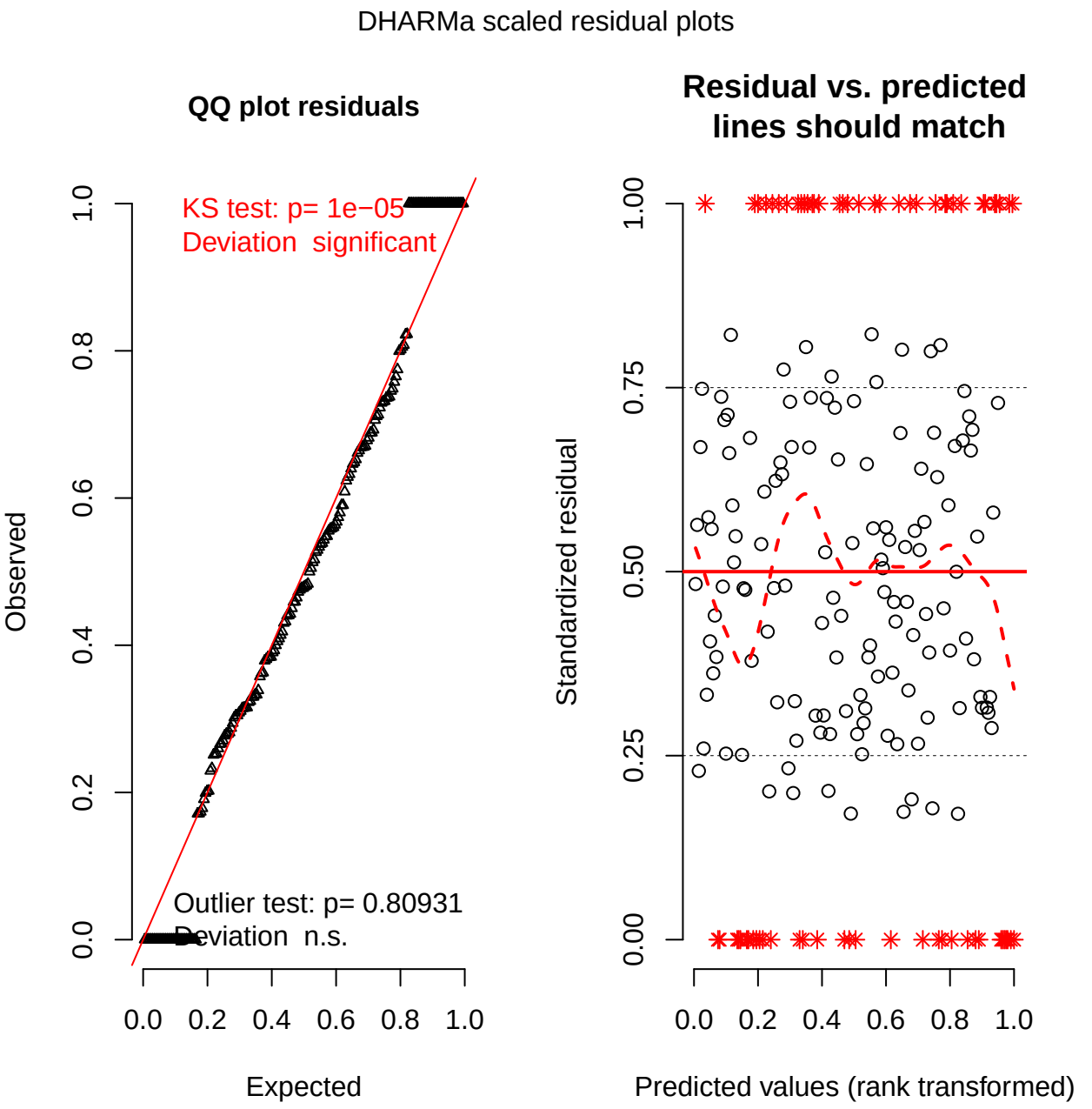

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
55
60
65
70
75
80
85
Simulated values, red line = fitted model. p−value (two.sided) = 0.46

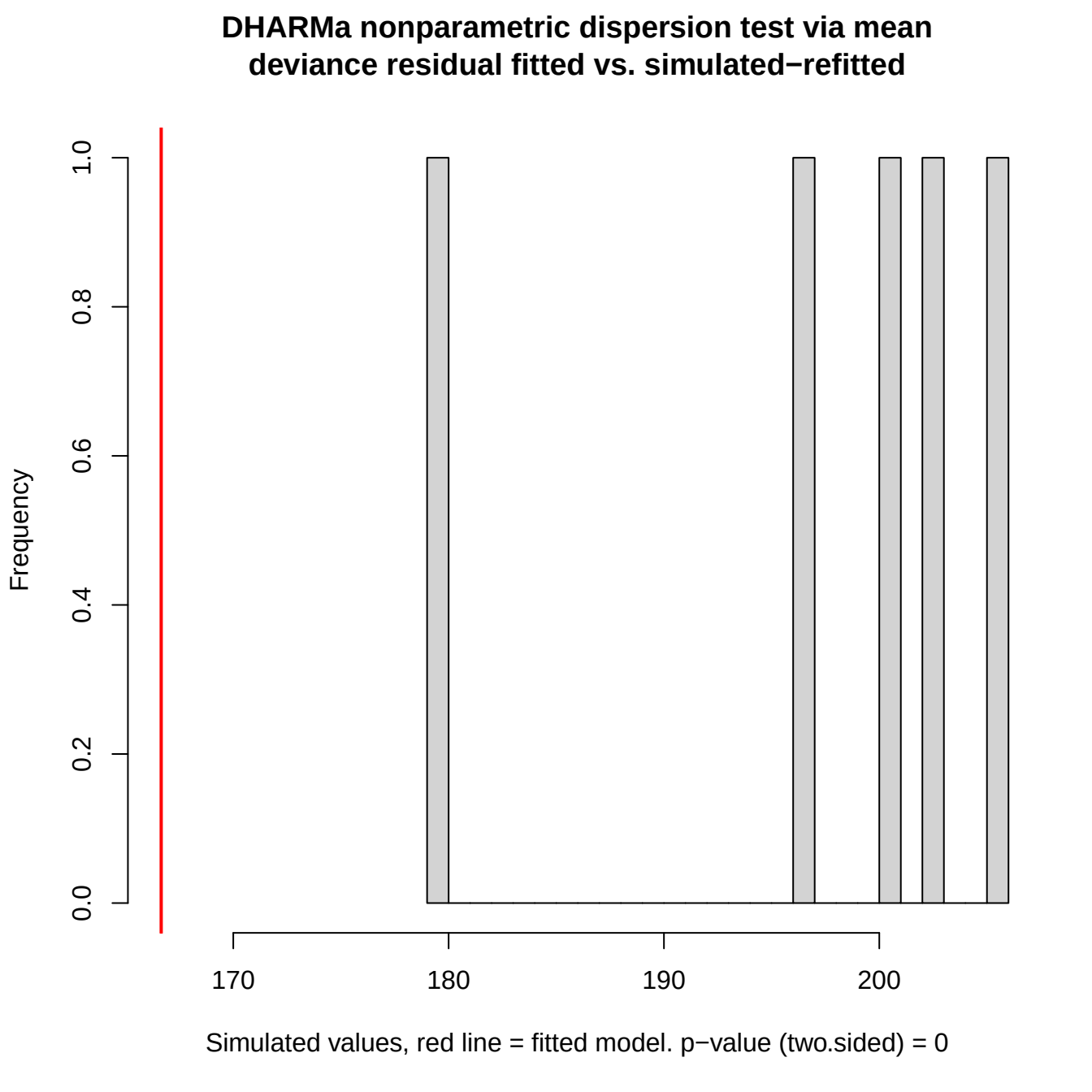

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

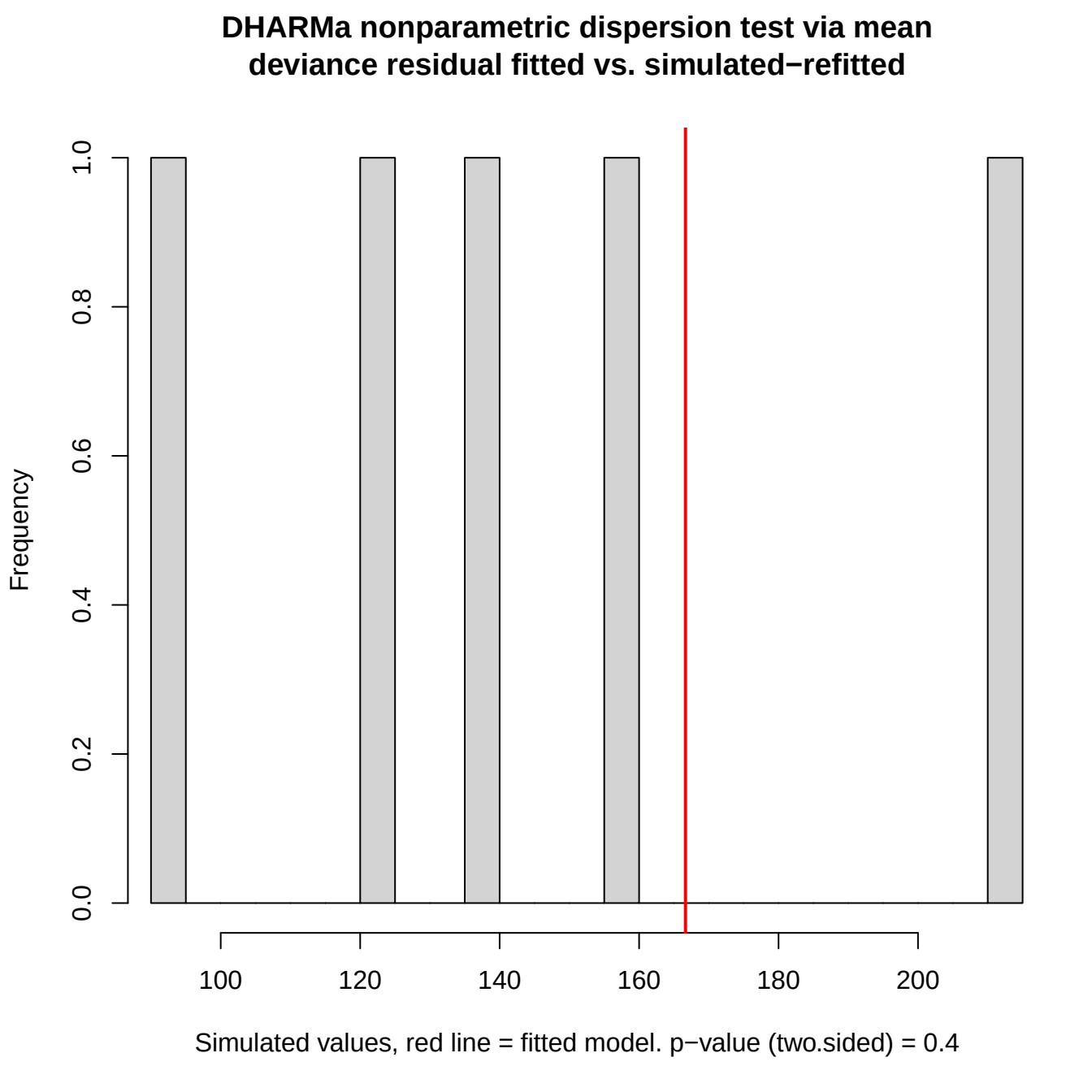

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

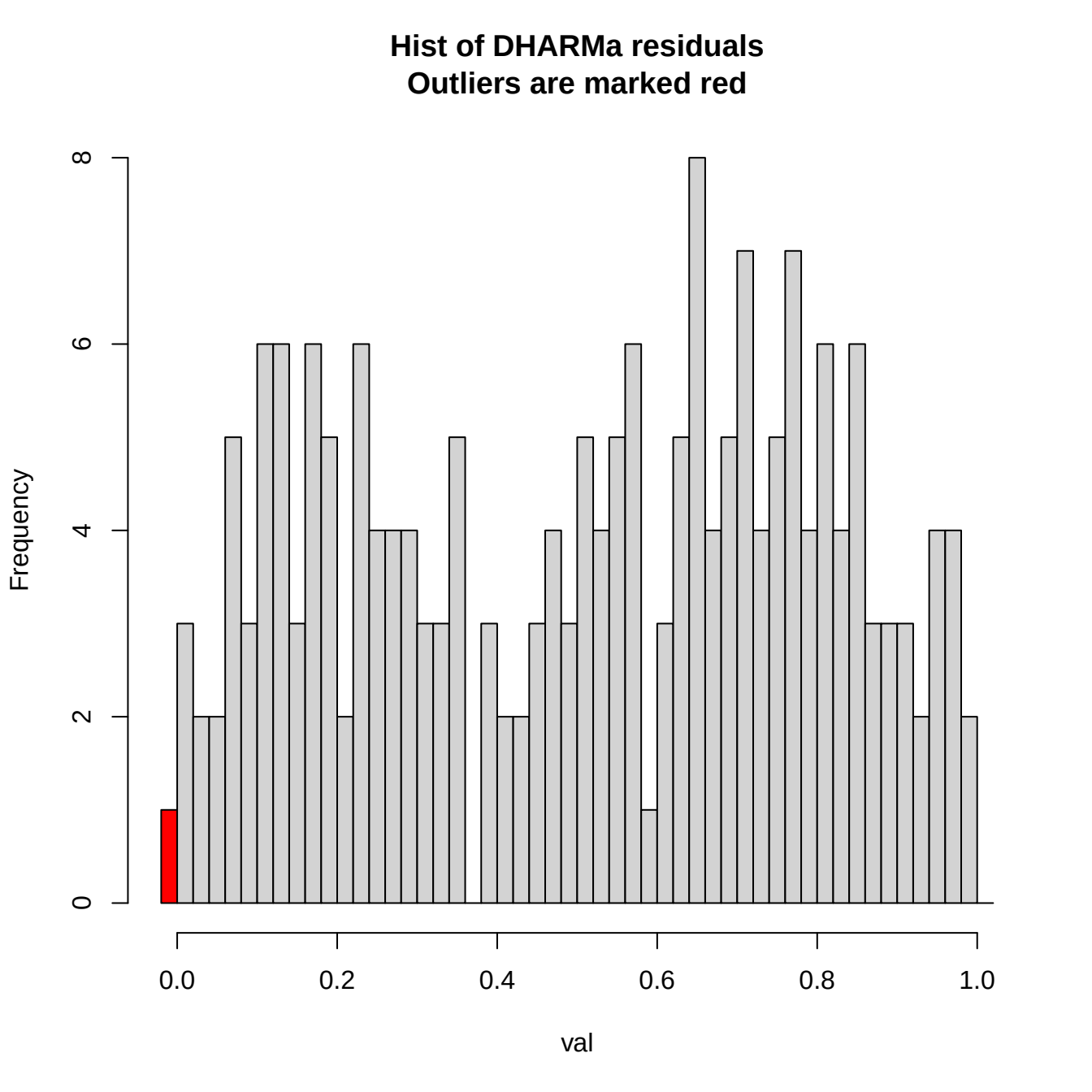

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
0.90
0.95
1.00
1.05
1.10
1.15
1.20
1.25
Simulated values, red line = fitted model. p−value (two.sided) = 0.2

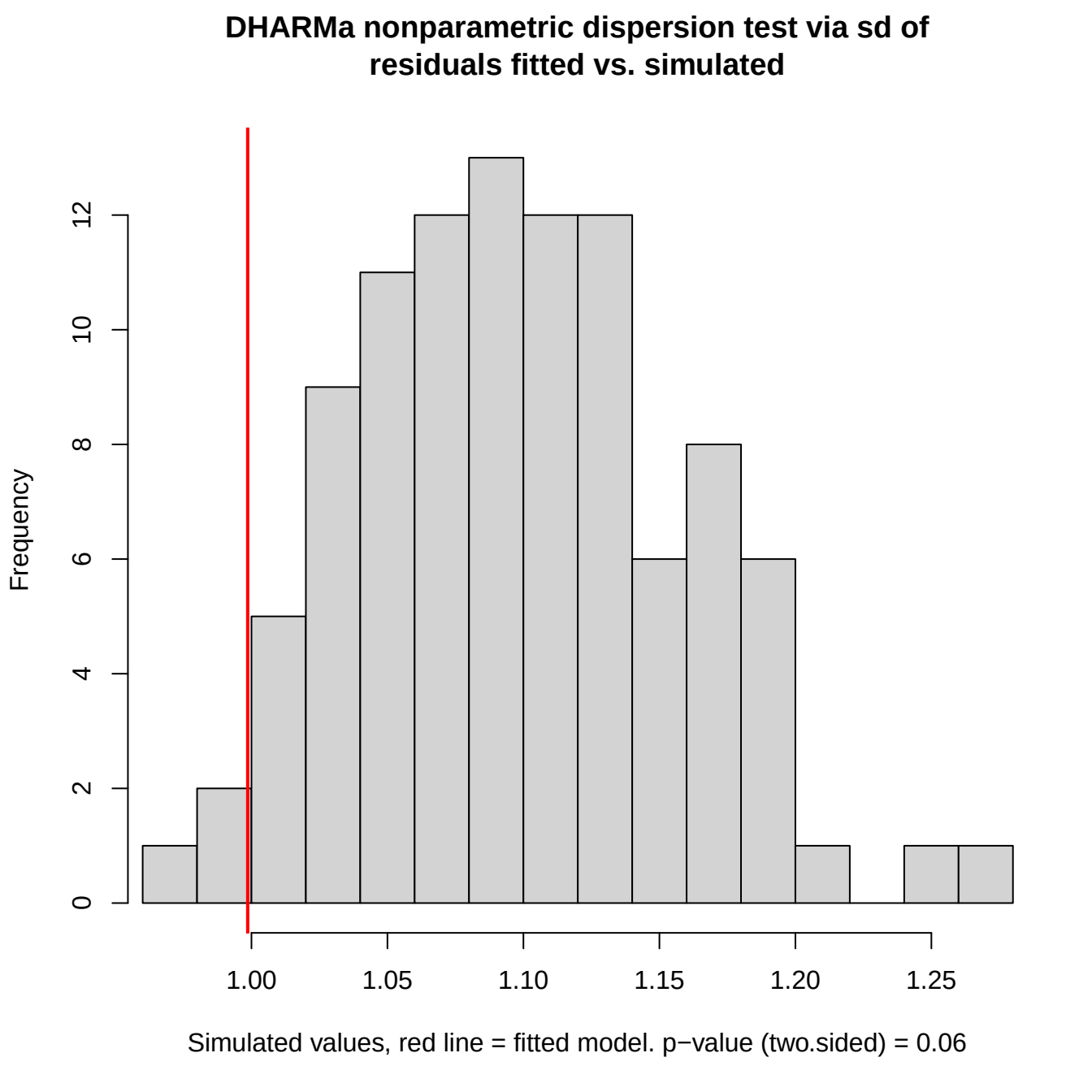

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.02

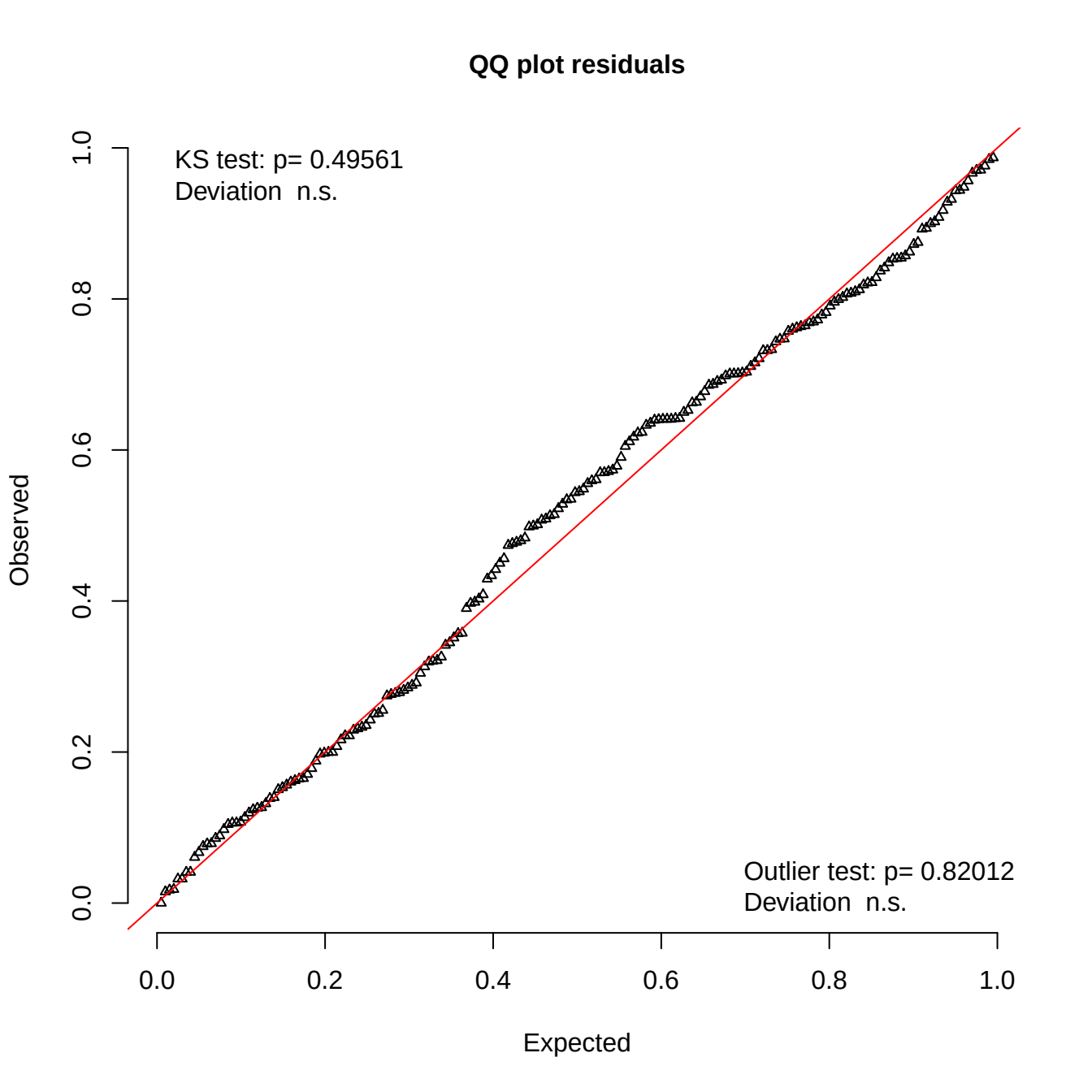

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 1e−05
Deviation significant
Outlier test: p= 0.80931
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

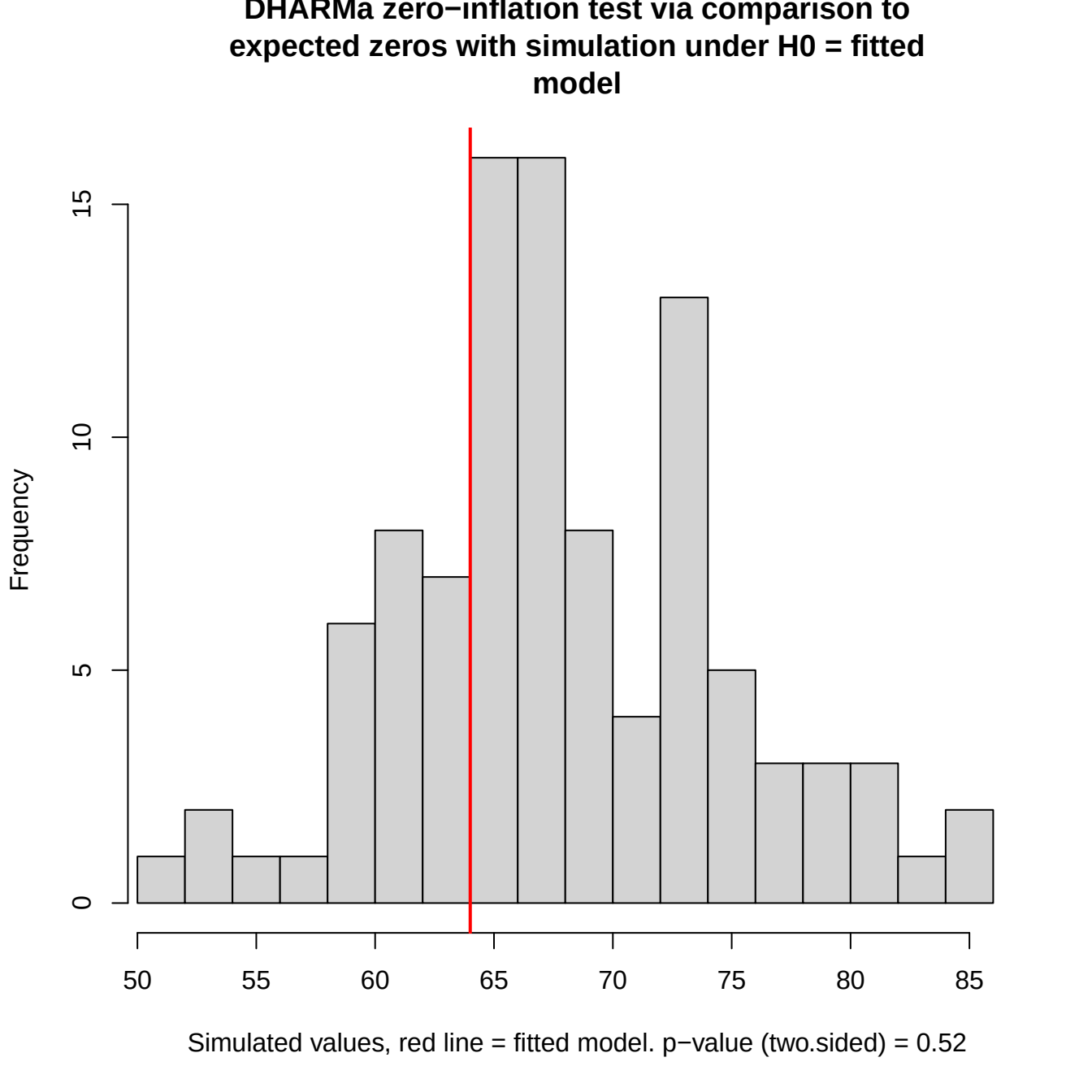

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
Simulated values, red line = fitted model. p−value (two.sided) = 0

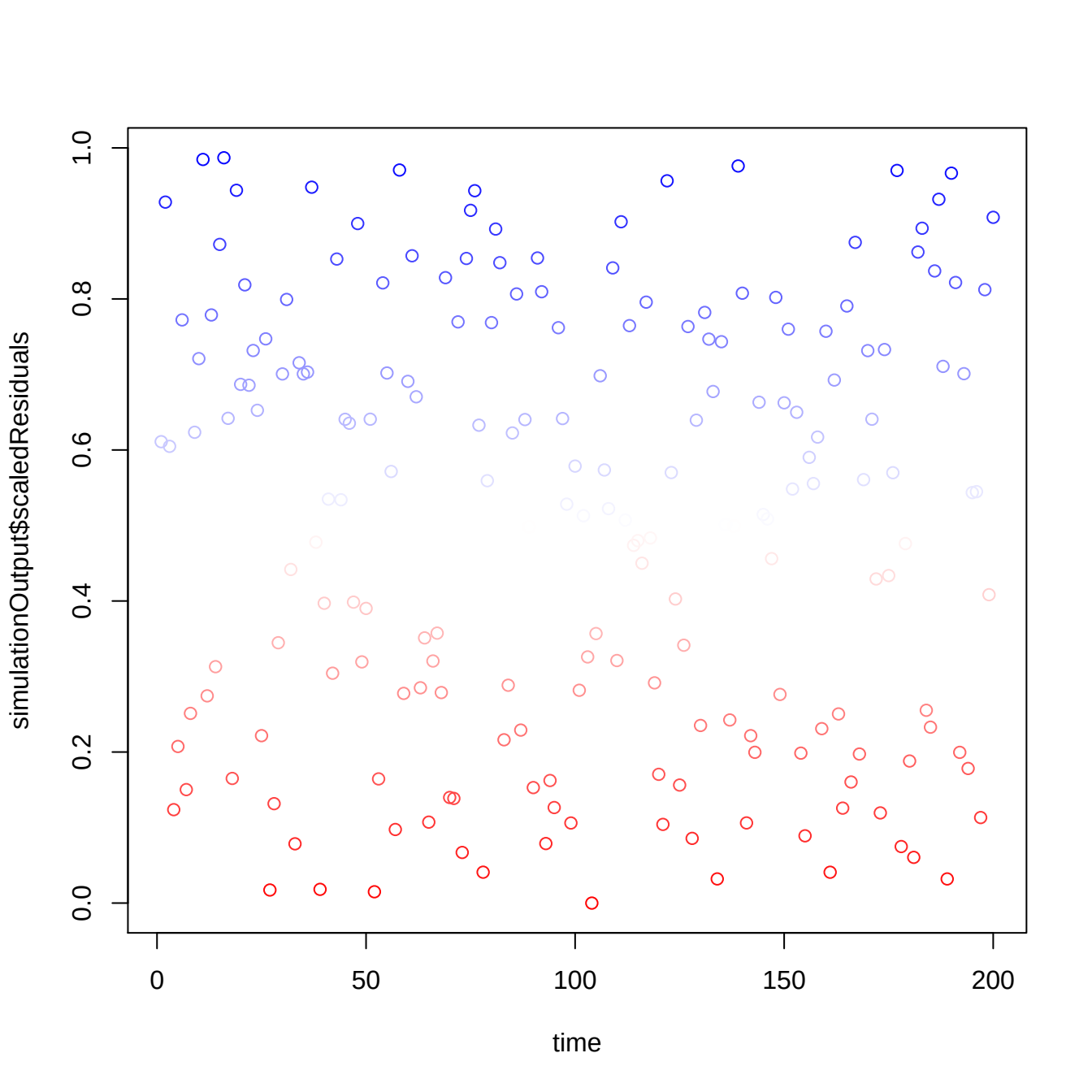

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
120
140
160
180
200
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

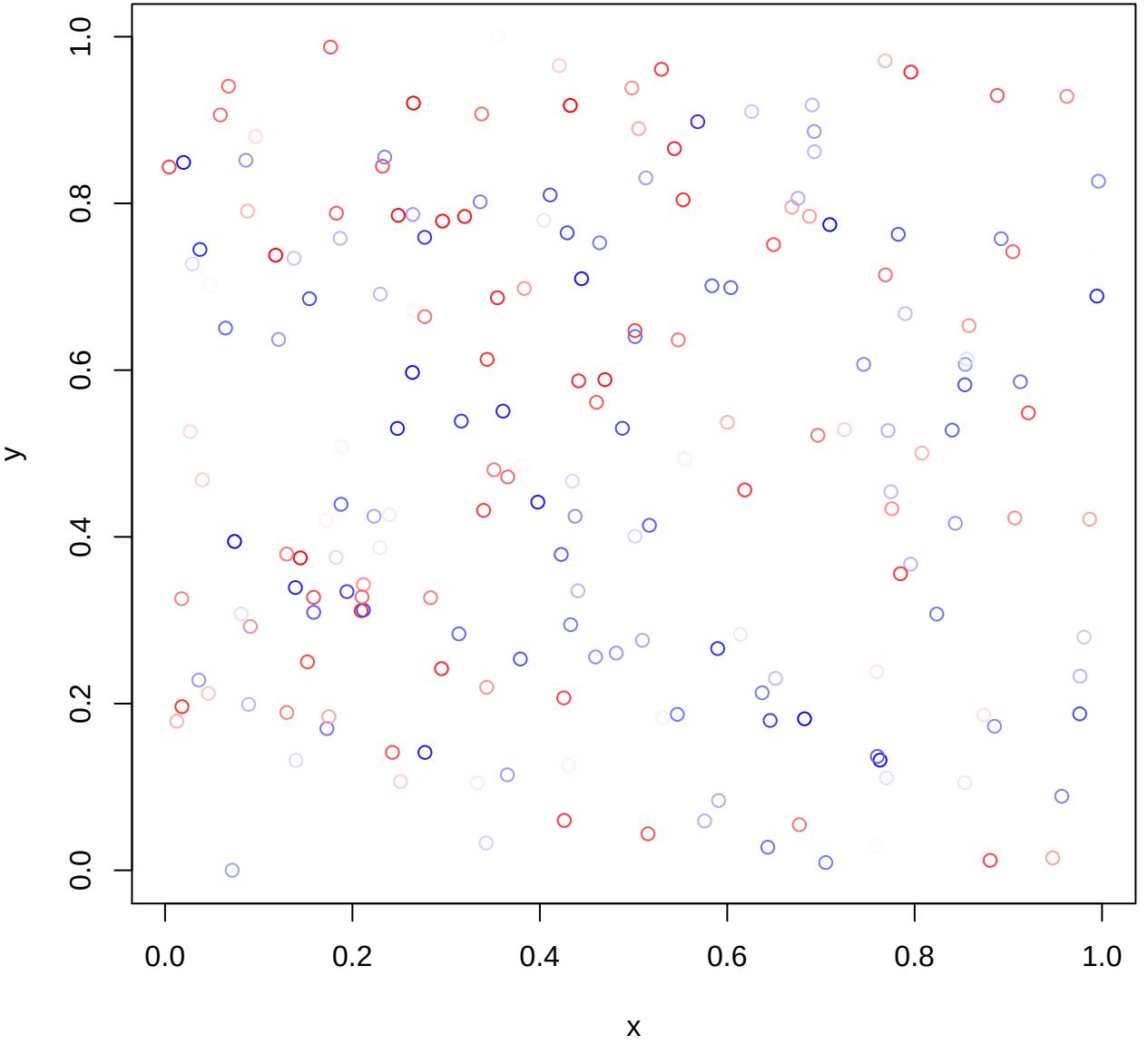

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

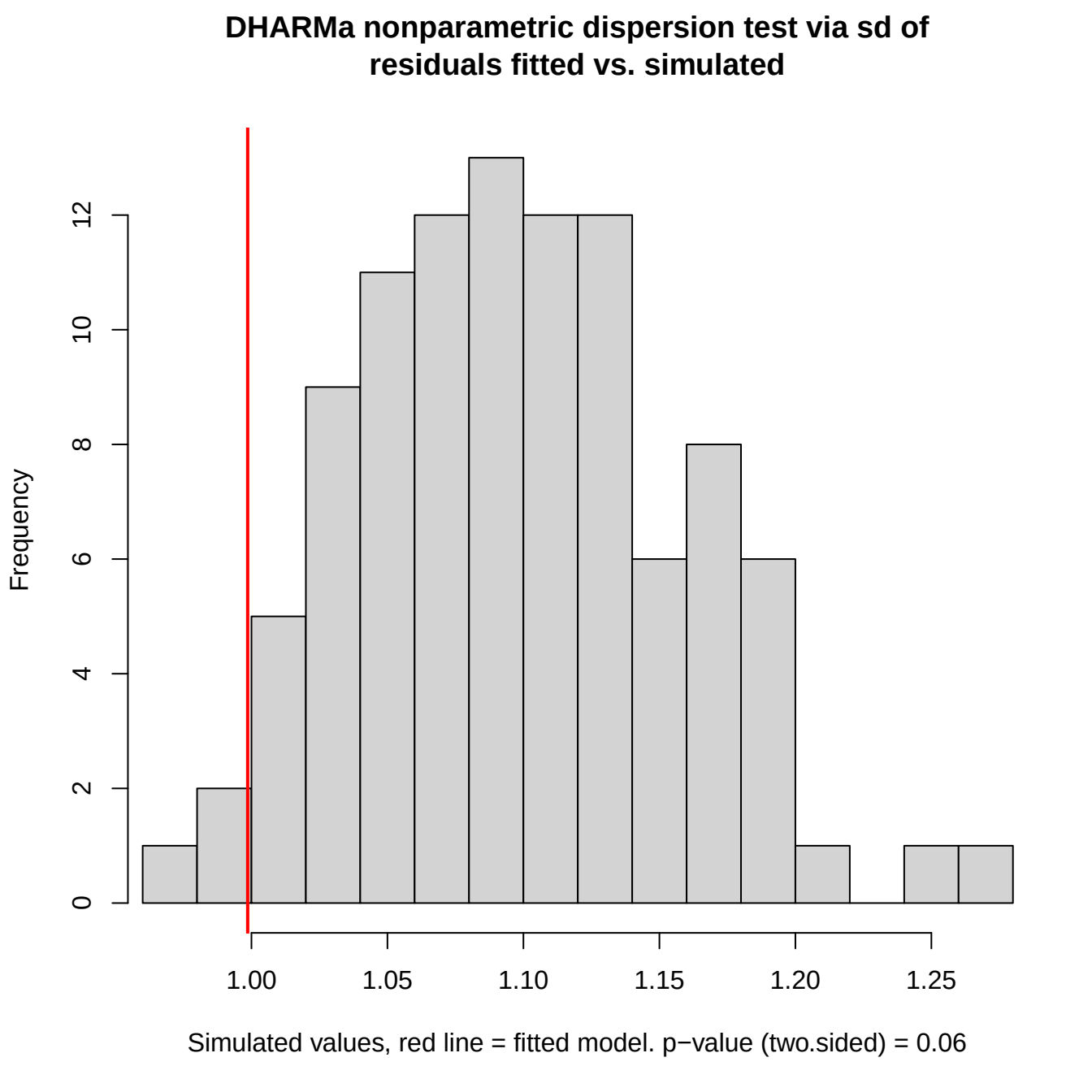

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
1.00
1.05
1.10
1.15
1.20
1.25
Simulated values, red line = fitted model. p−value (two.sided) = 0.06

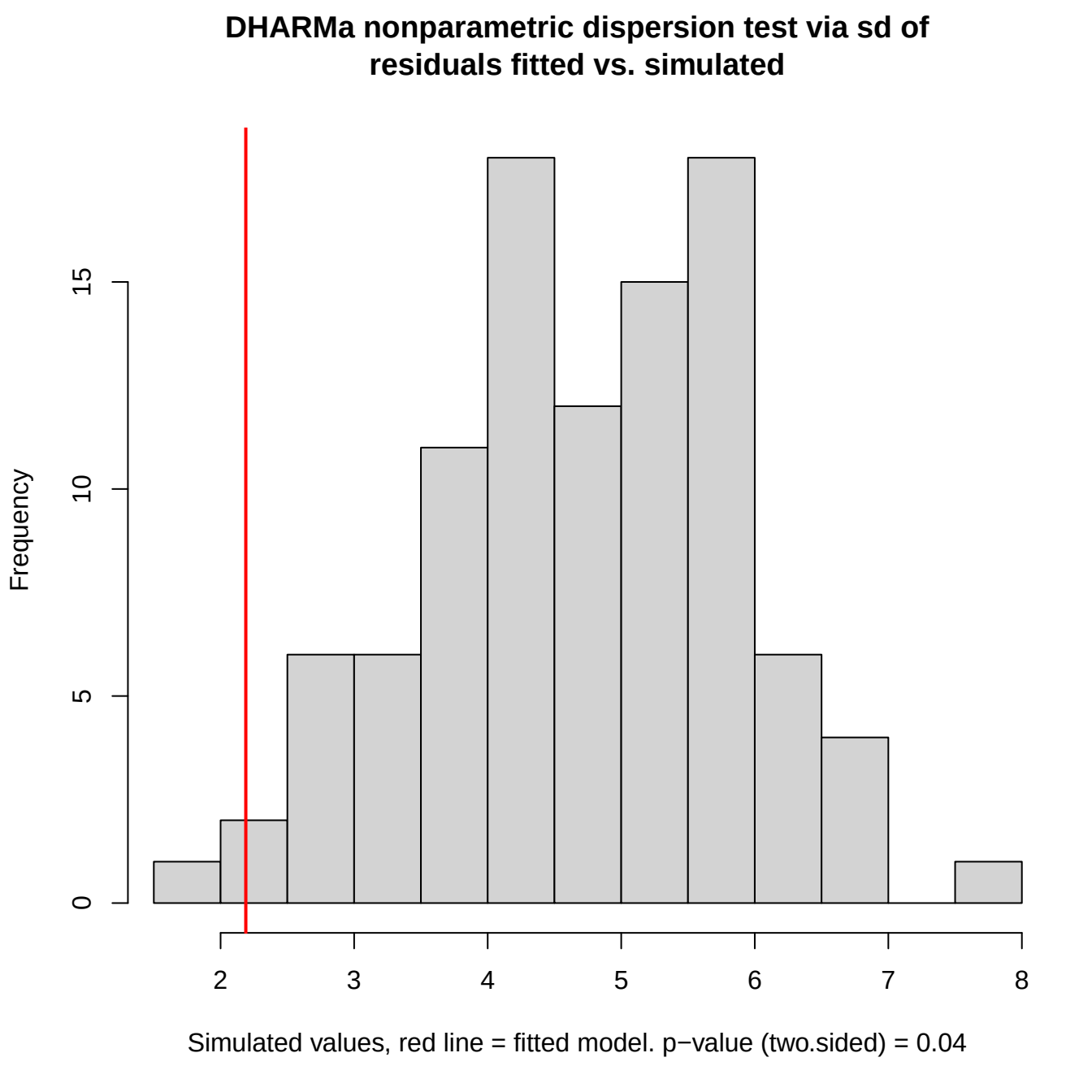

QQ plot residuals
KS test: p= 0.49561
Deviation n.s.
Outlier test: p= 0.82012
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

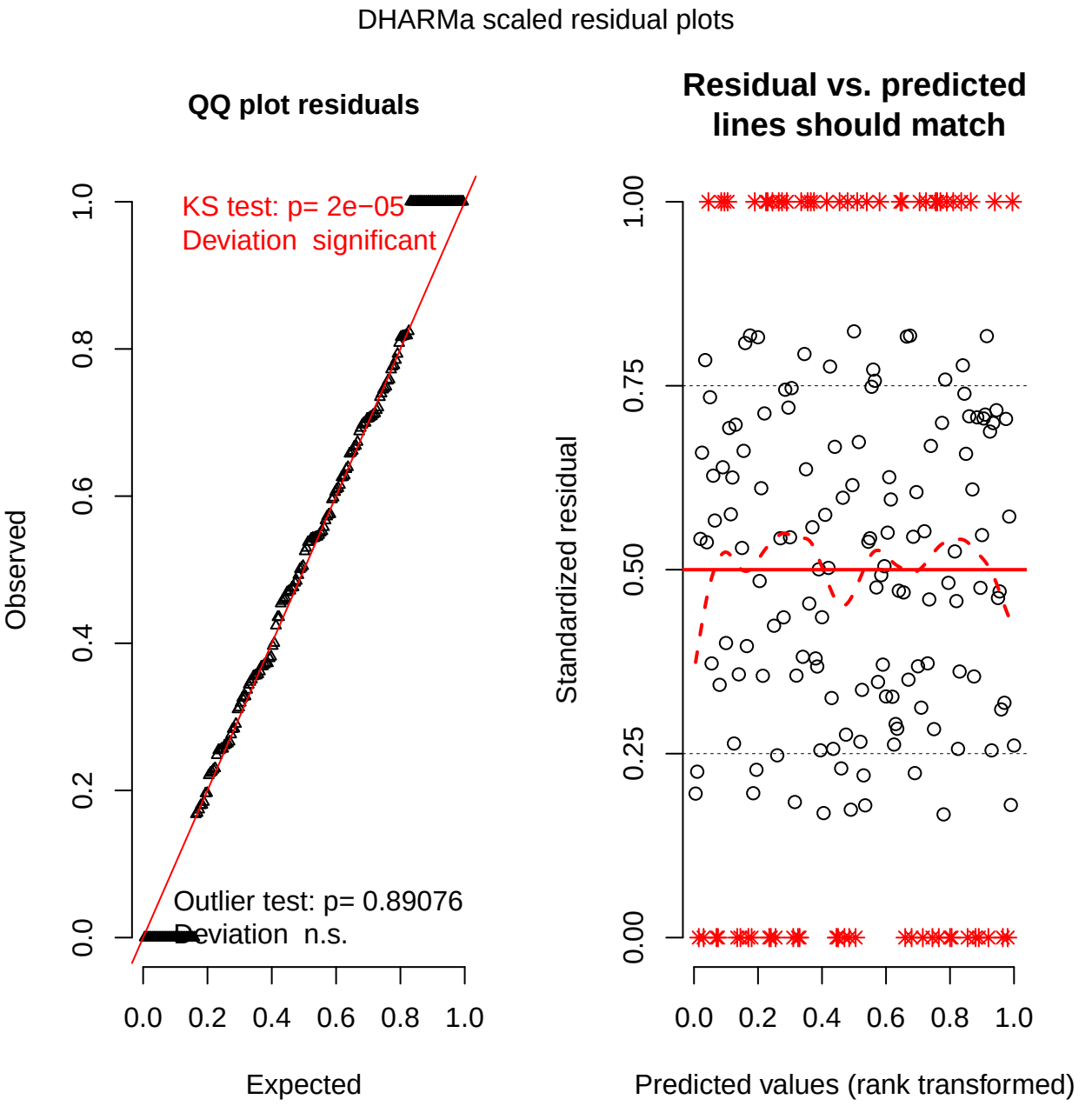

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
50
55
60
65
70
75
80
85
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

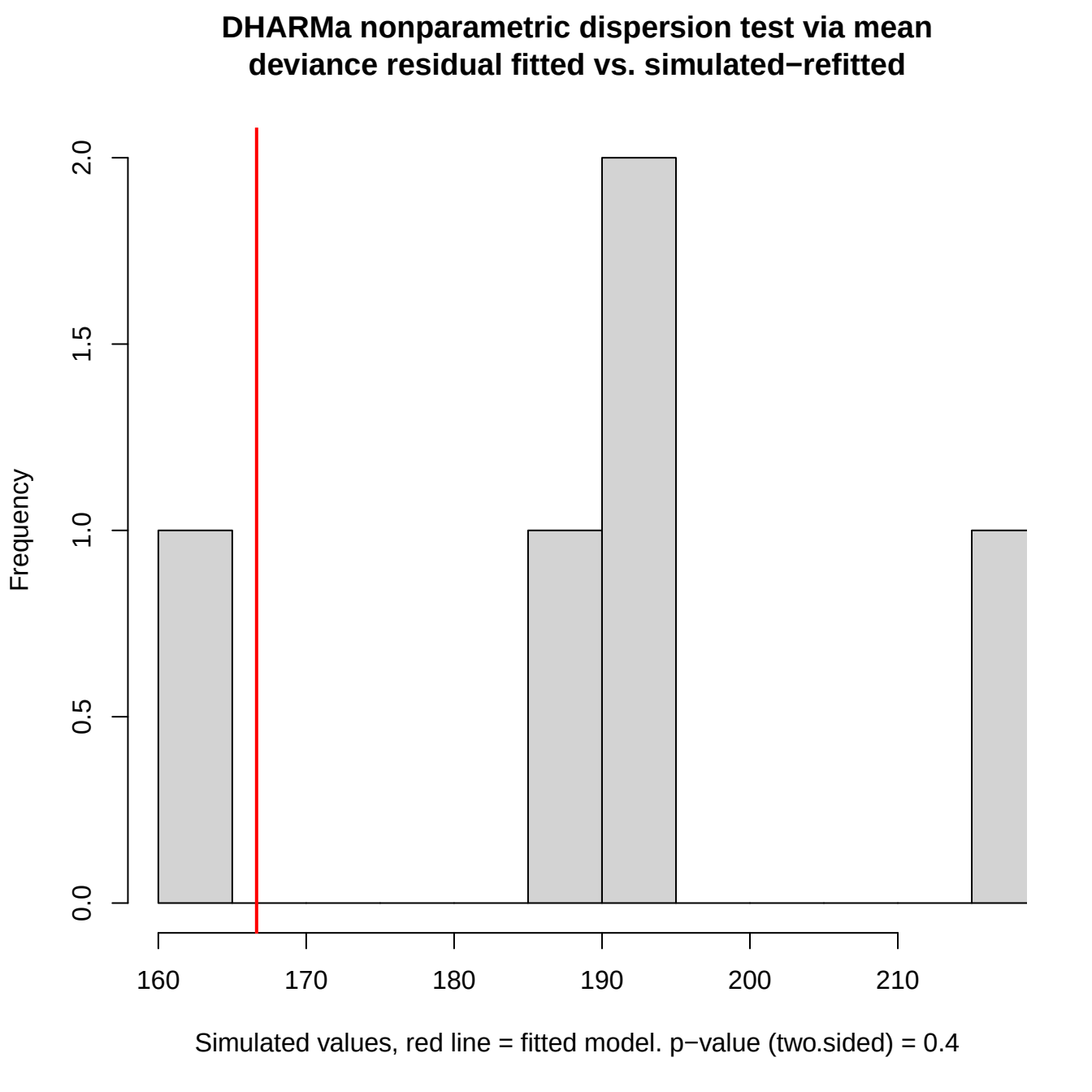

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

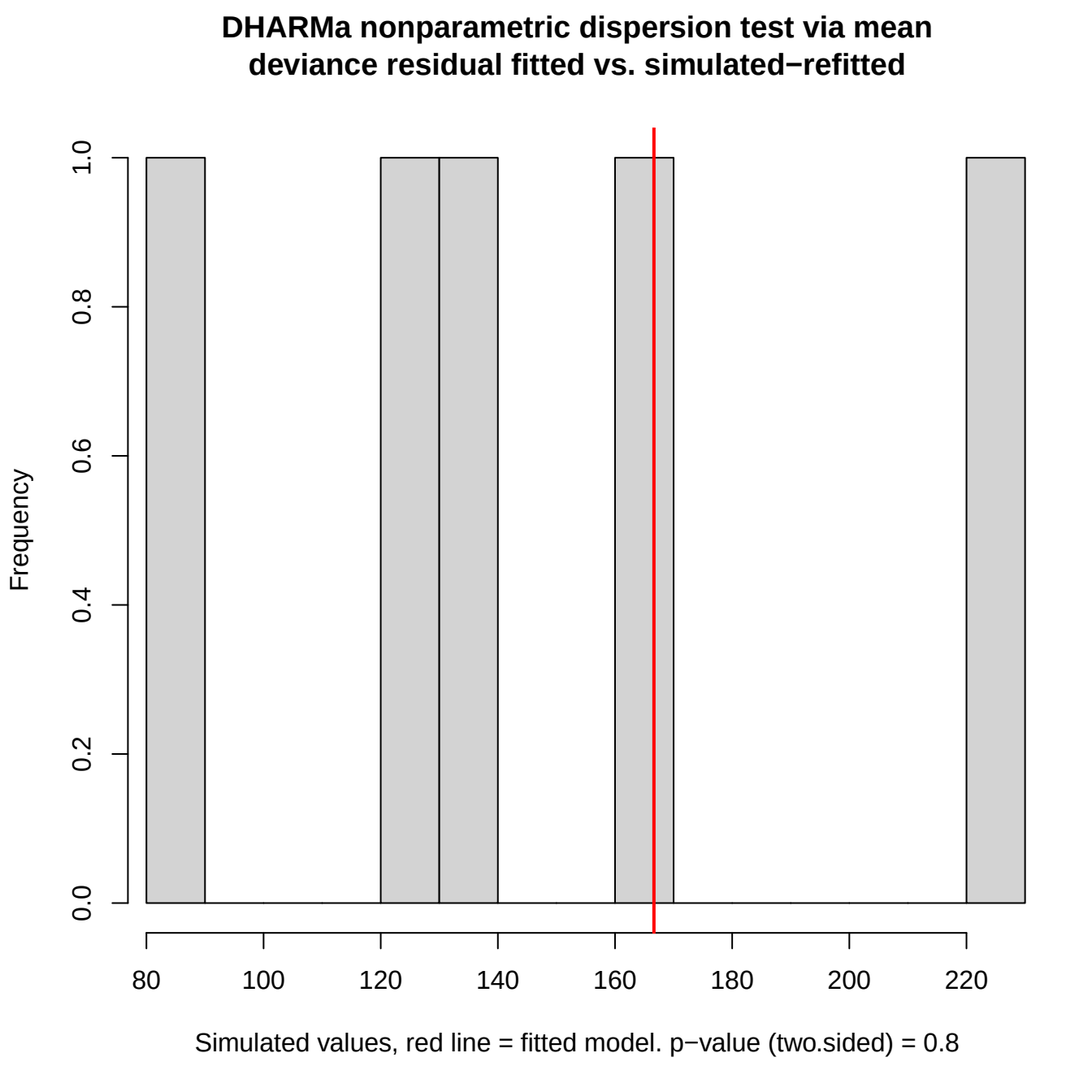

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

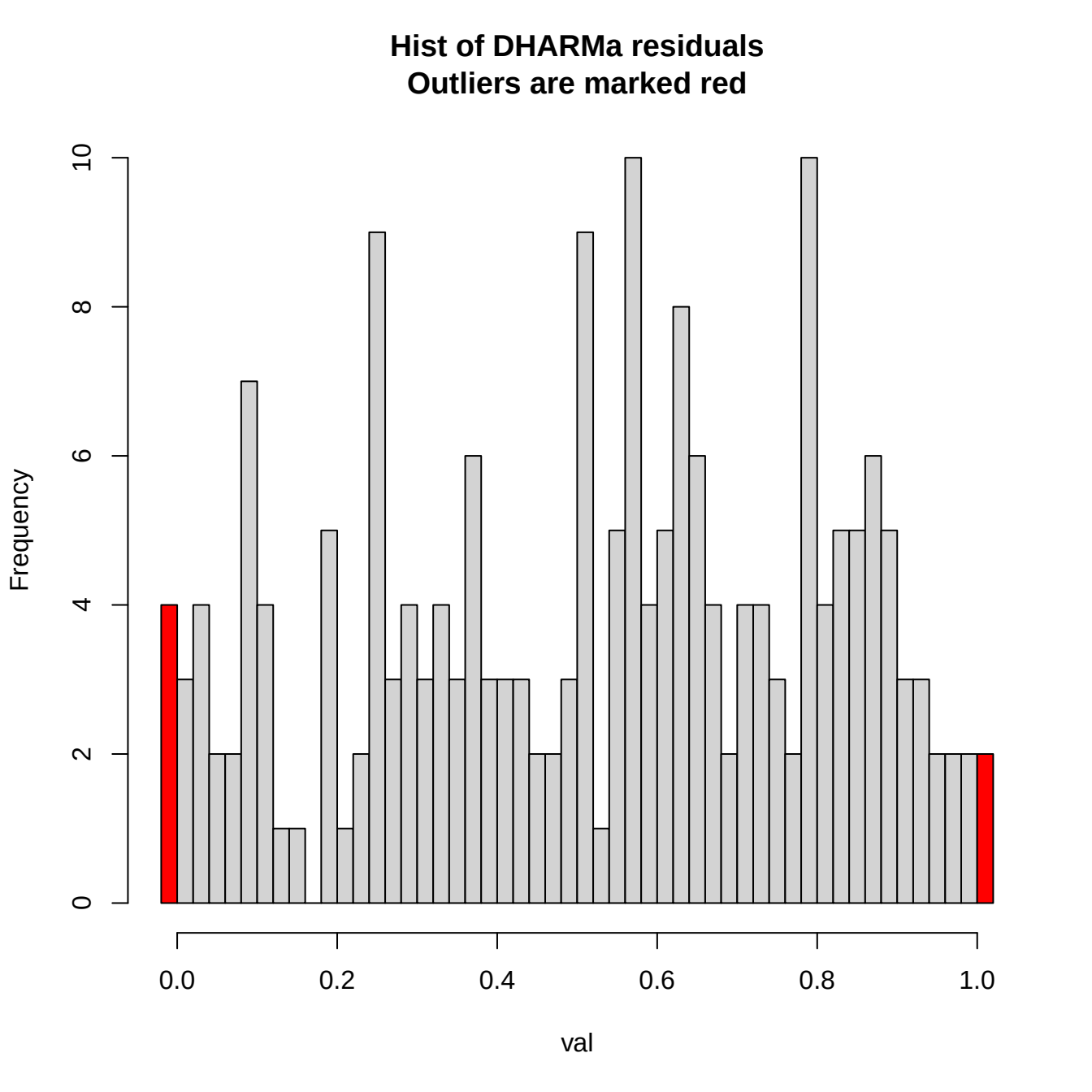

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
1.00
1.05
1.10
1.15
1.20
1.25
Simulated values, red line = fitted model. p−value (two.sided) = 0.06

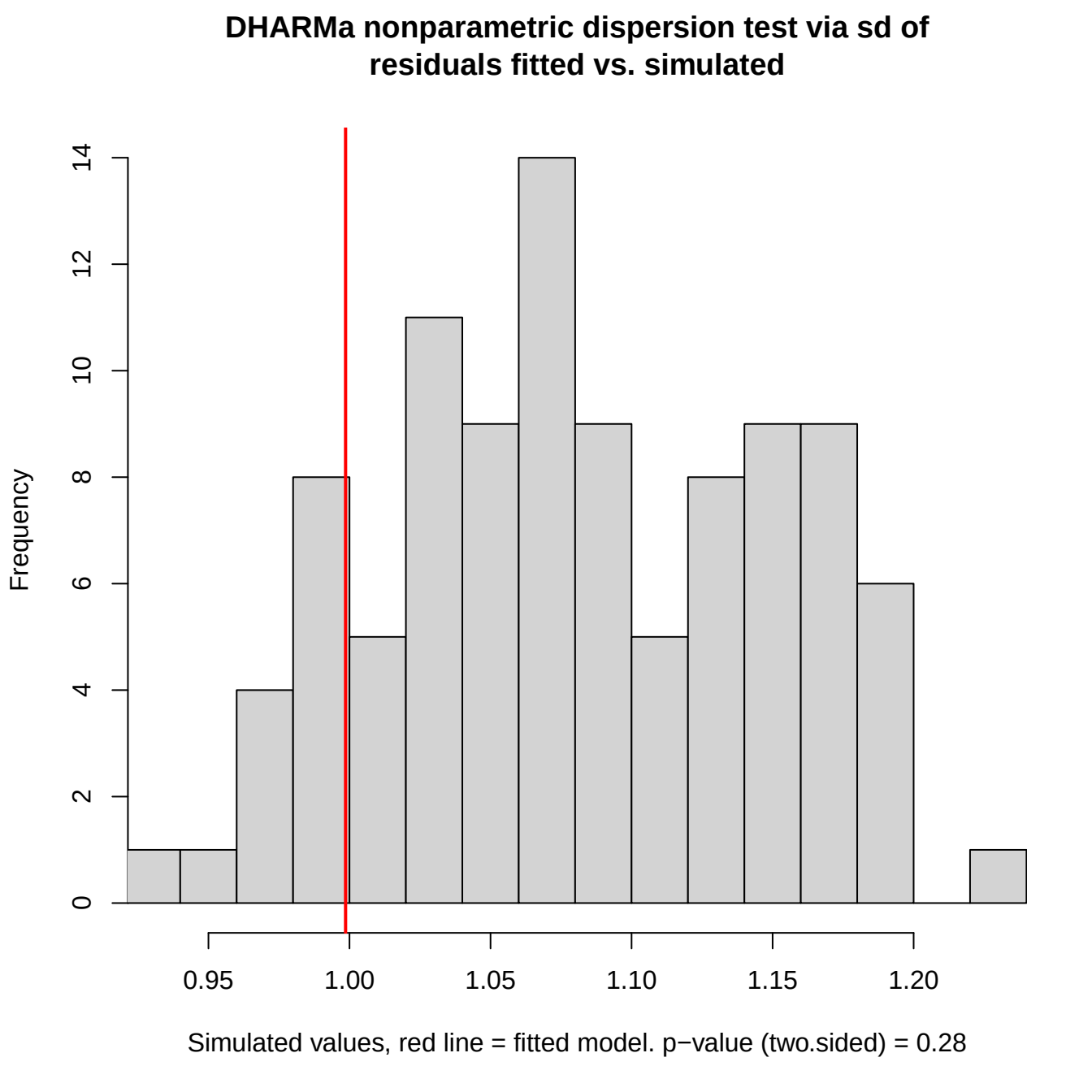

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.04

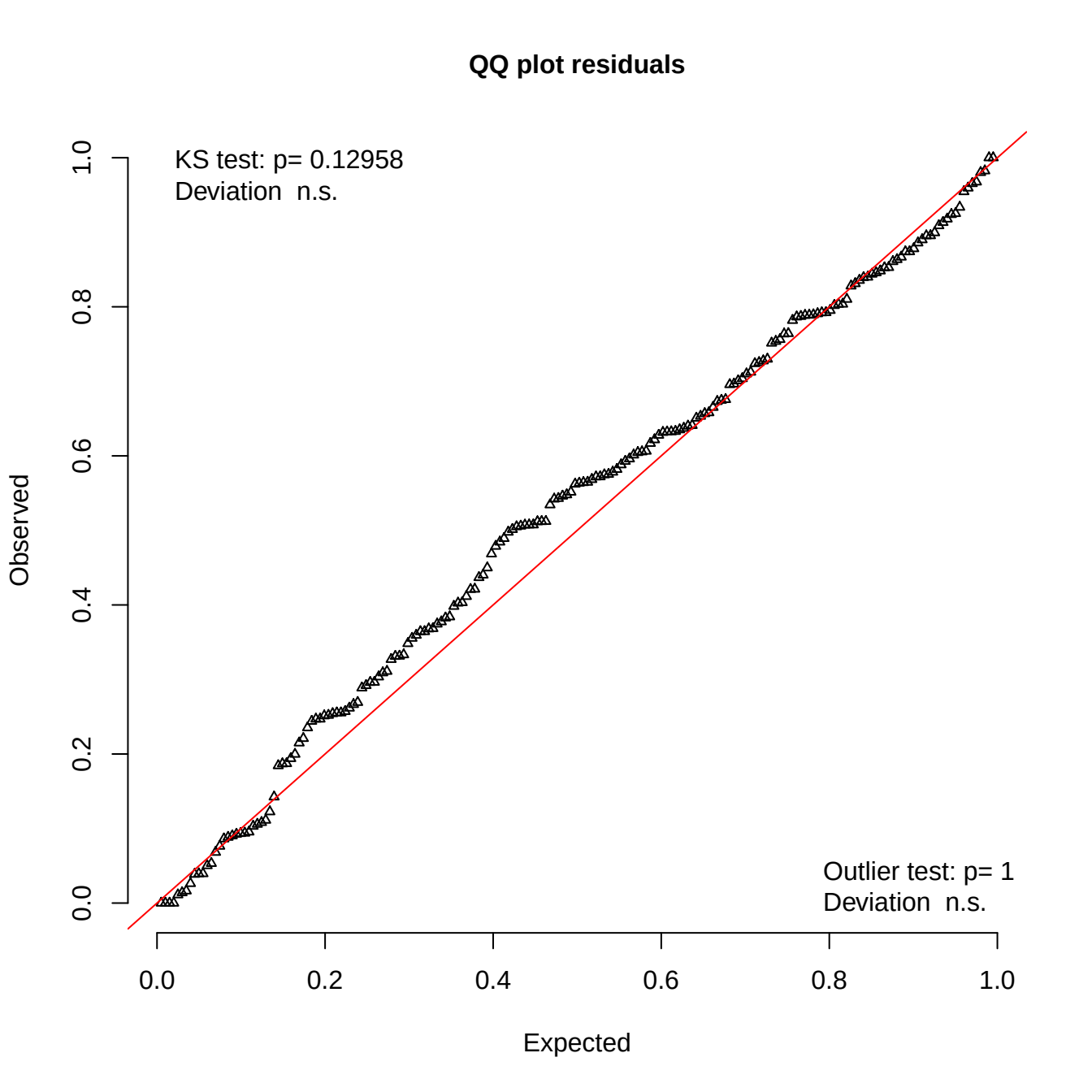

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 2e−05
Deviation significant
Outlier test: p= 0.89076
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

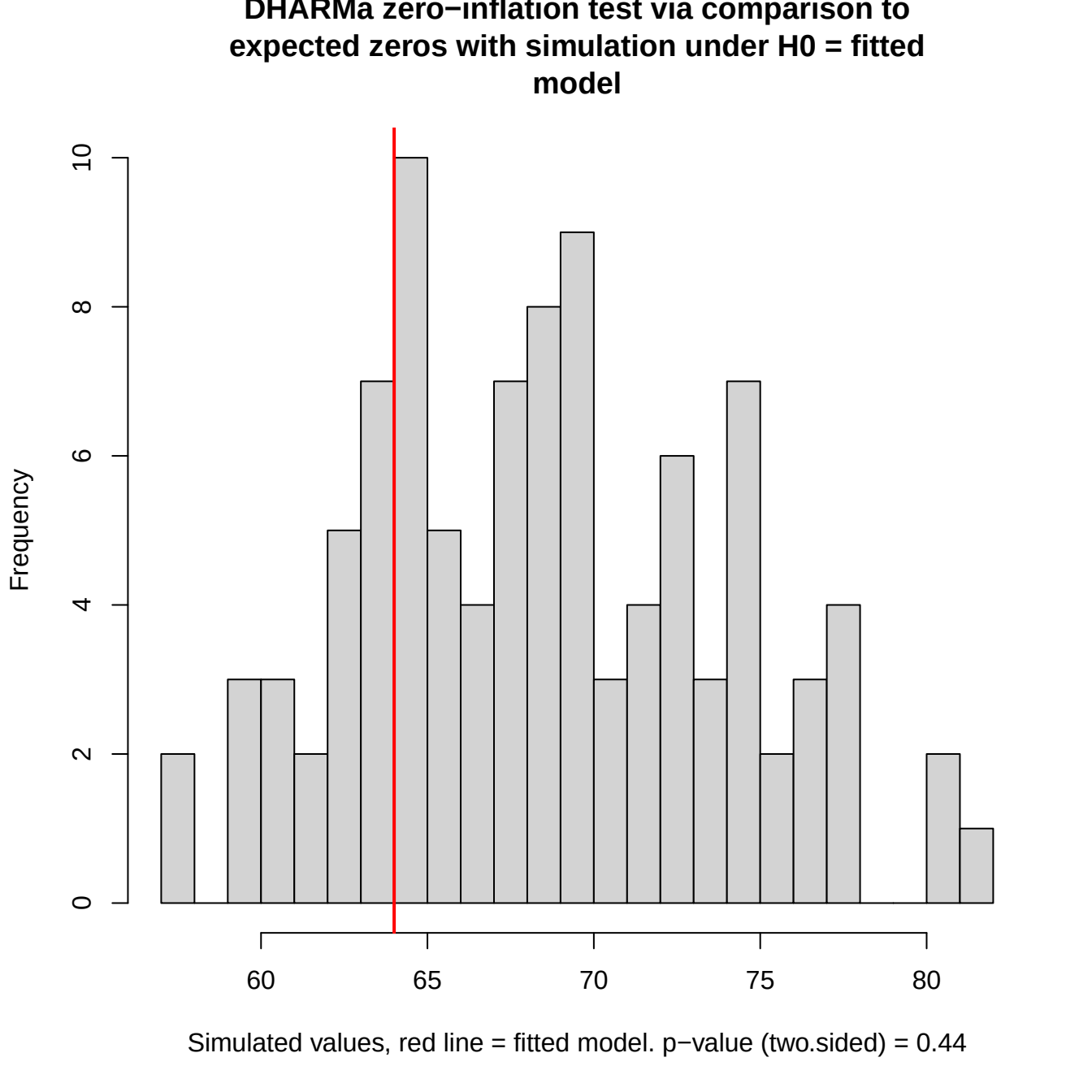

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
160
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

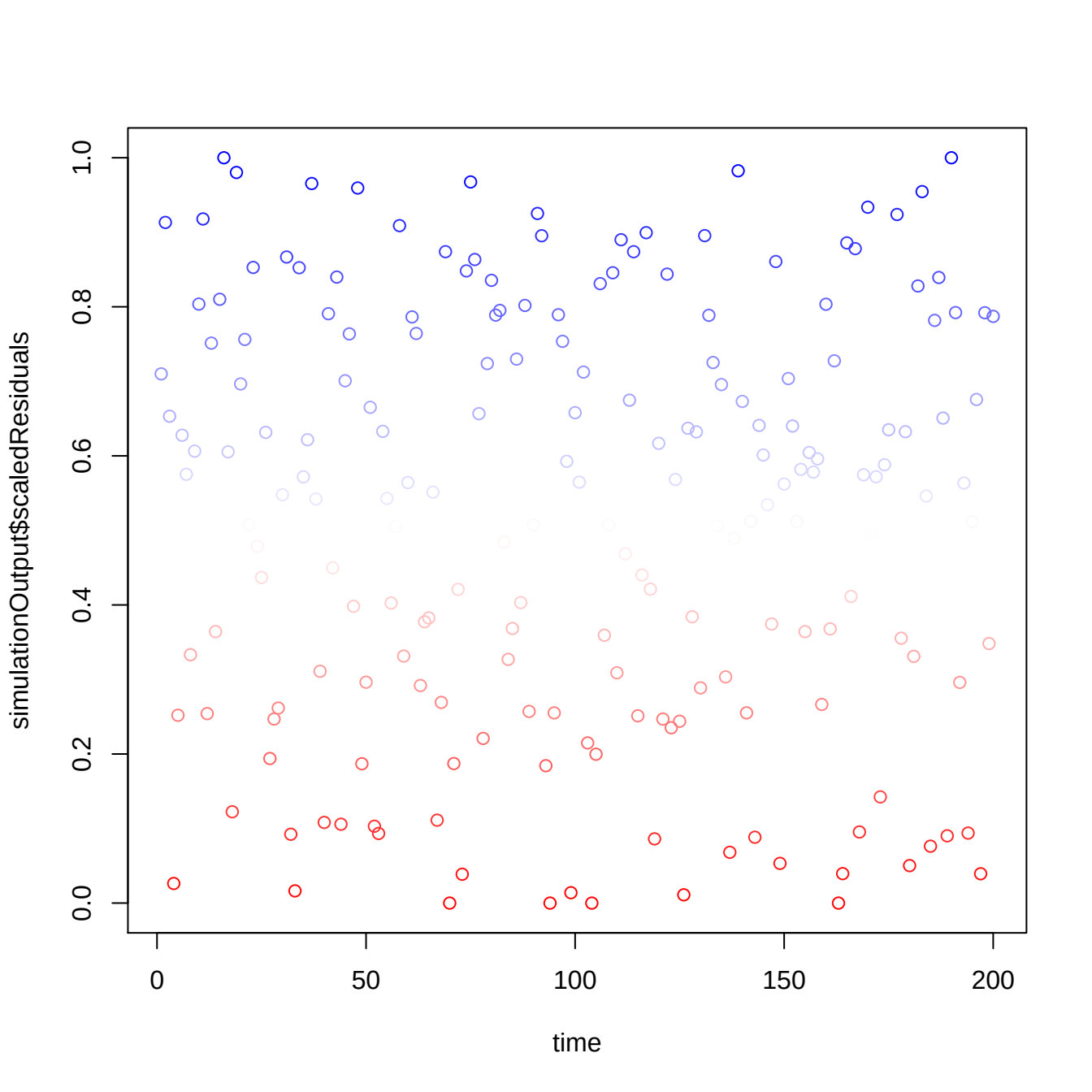

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
180
200
220
Simulated values, red line = fitted model. p−value (two.sided) = 0.8

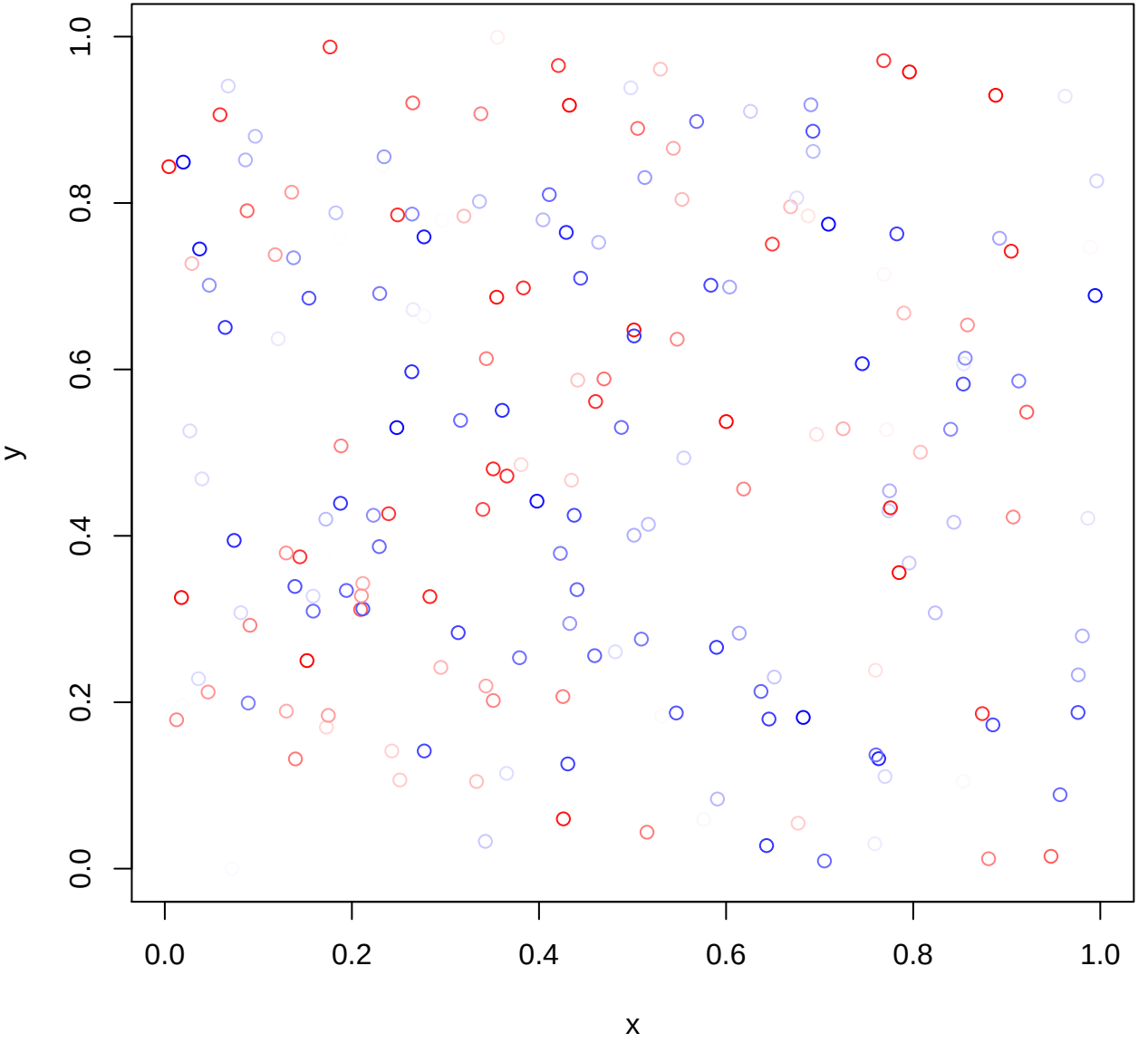

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

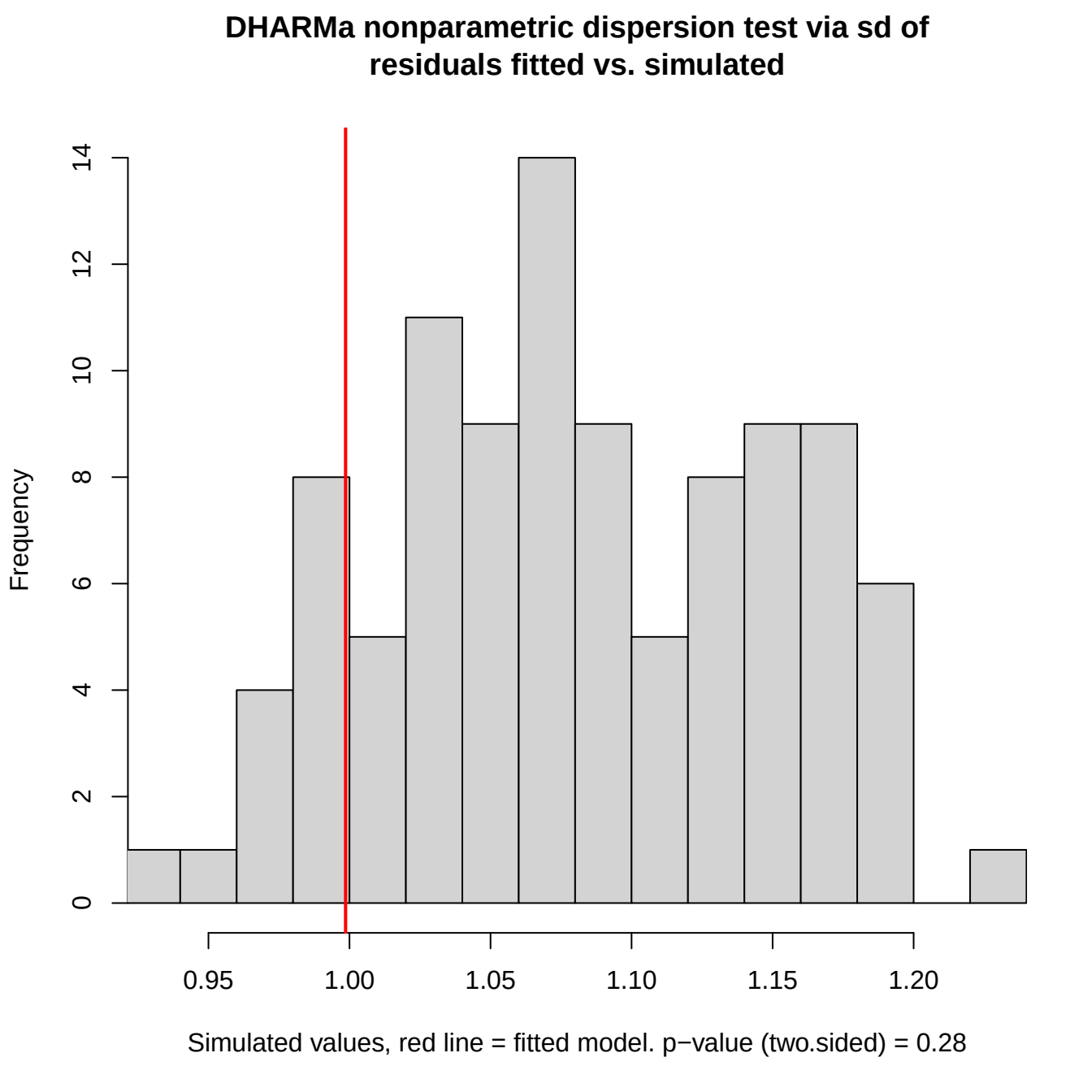

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

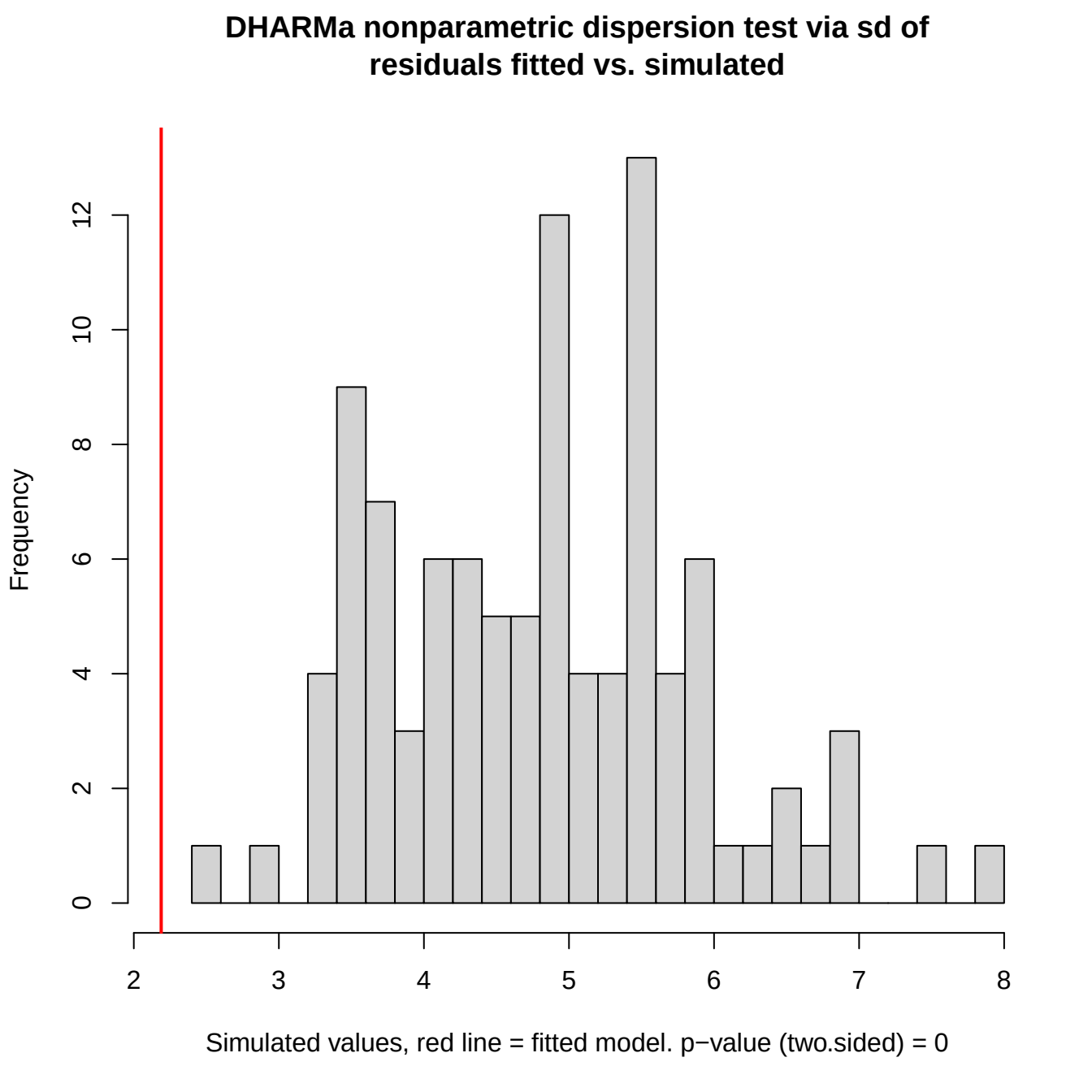

QQ plot residuals
KS test: p= 0.12958
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

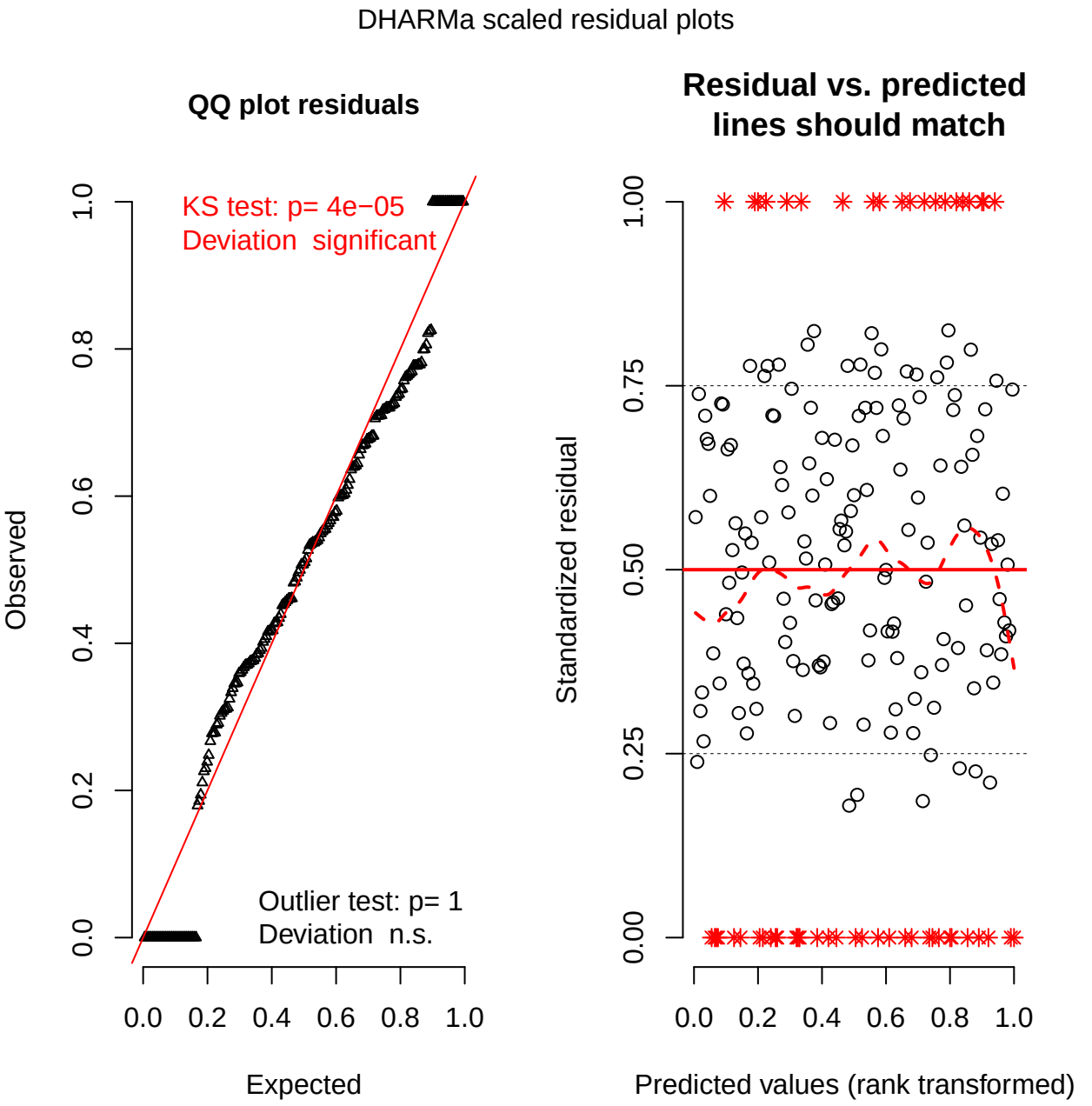

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
10
60
65
70
75
80
Simulated values, red line = fitted model. p−value (two.sided) = 0.44

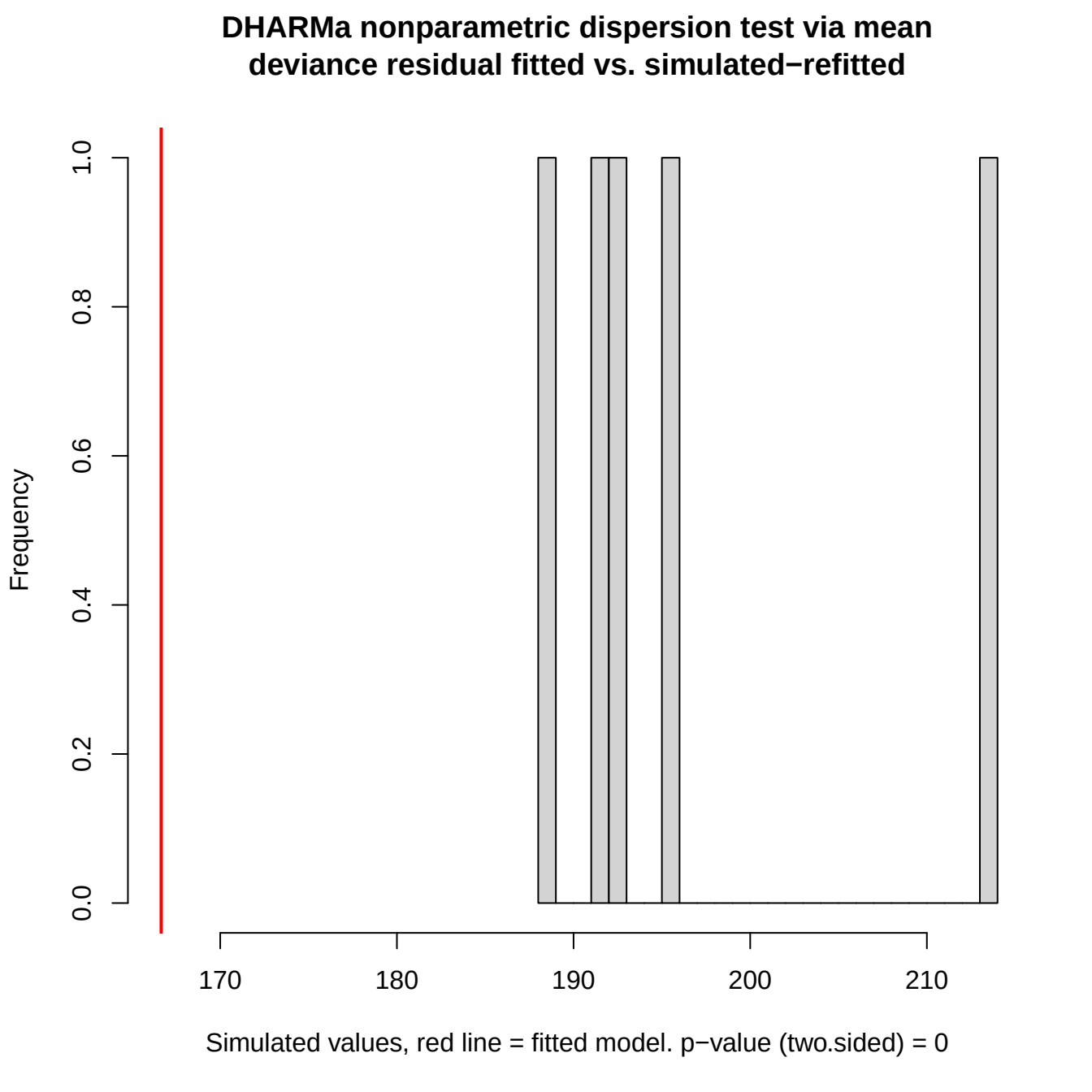

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

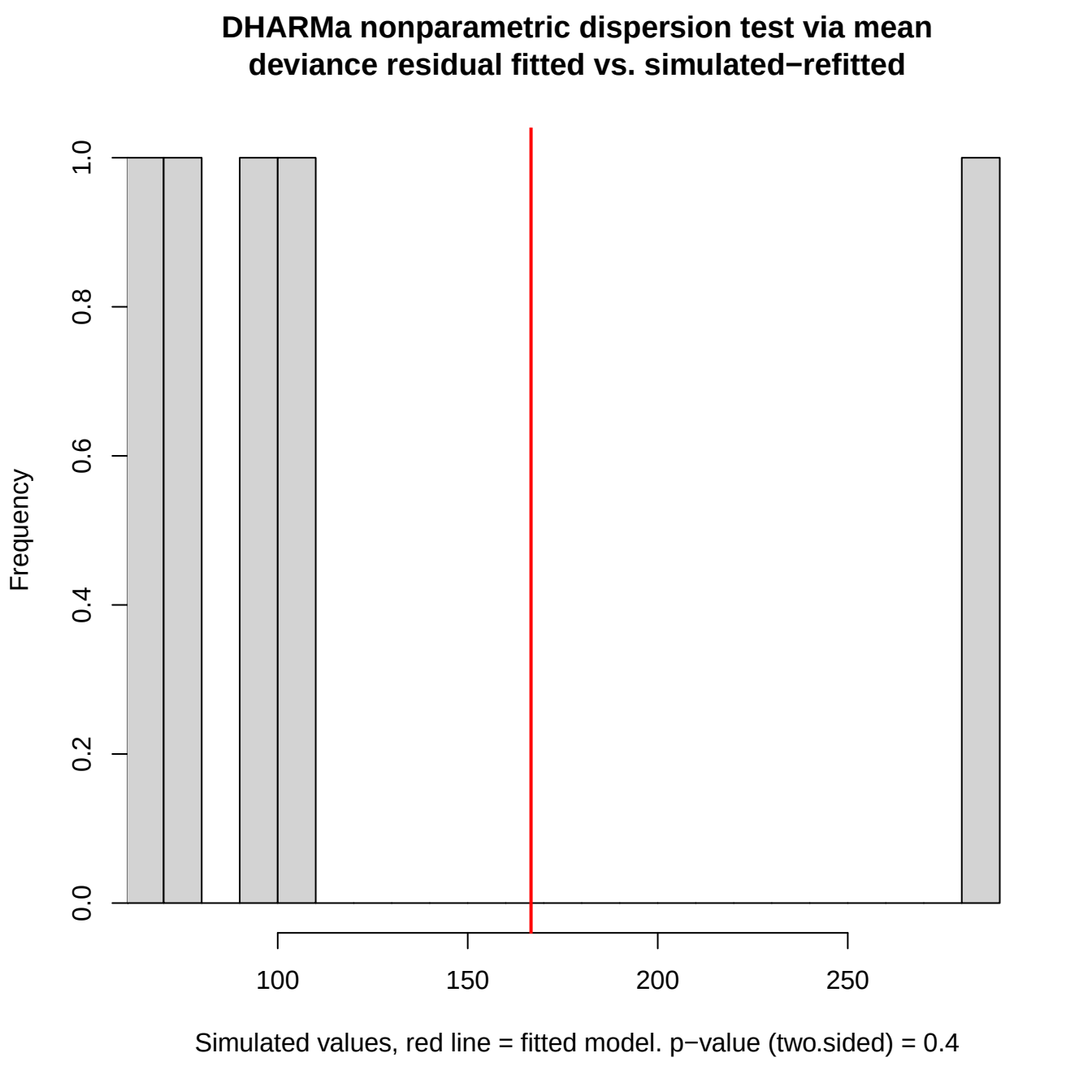

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

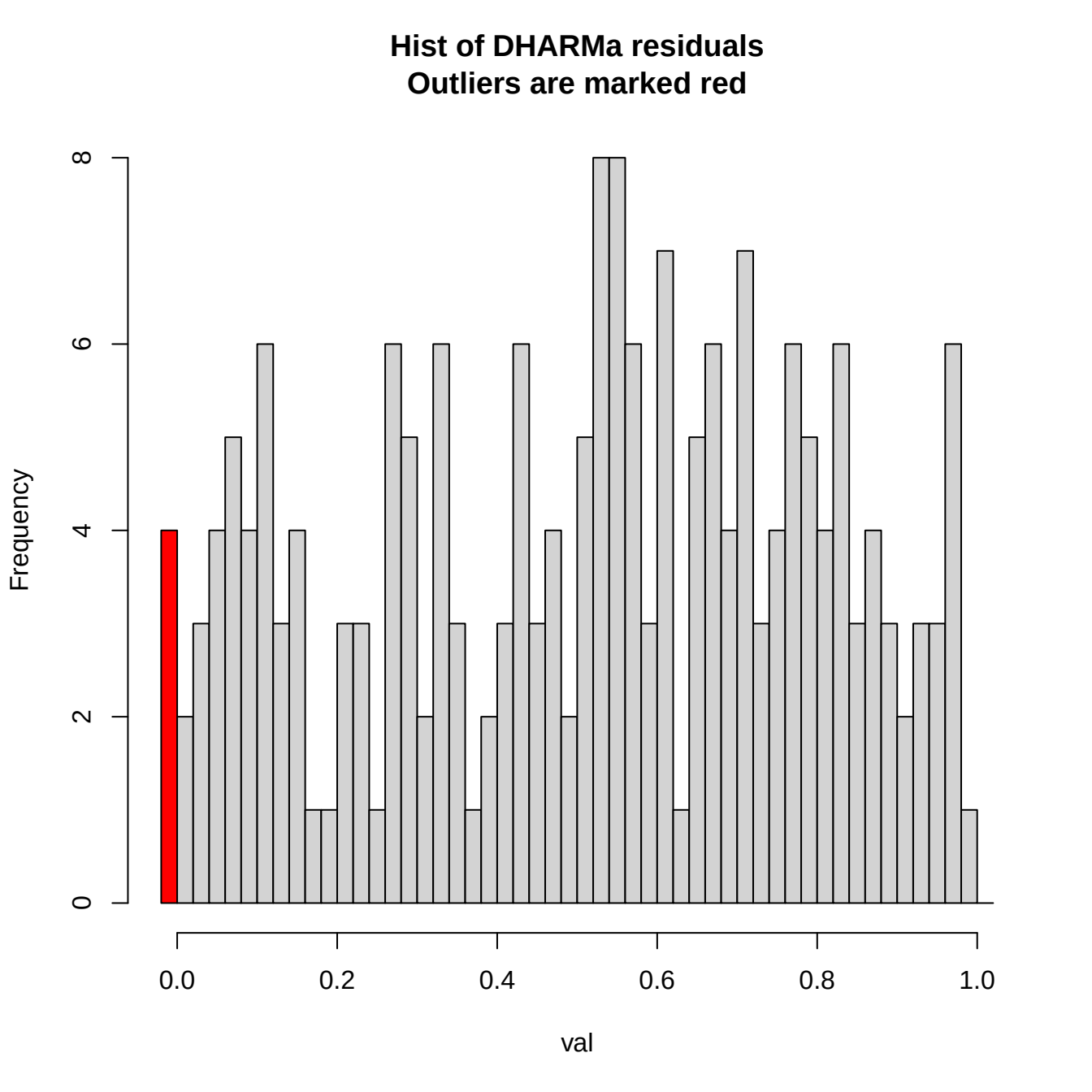

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

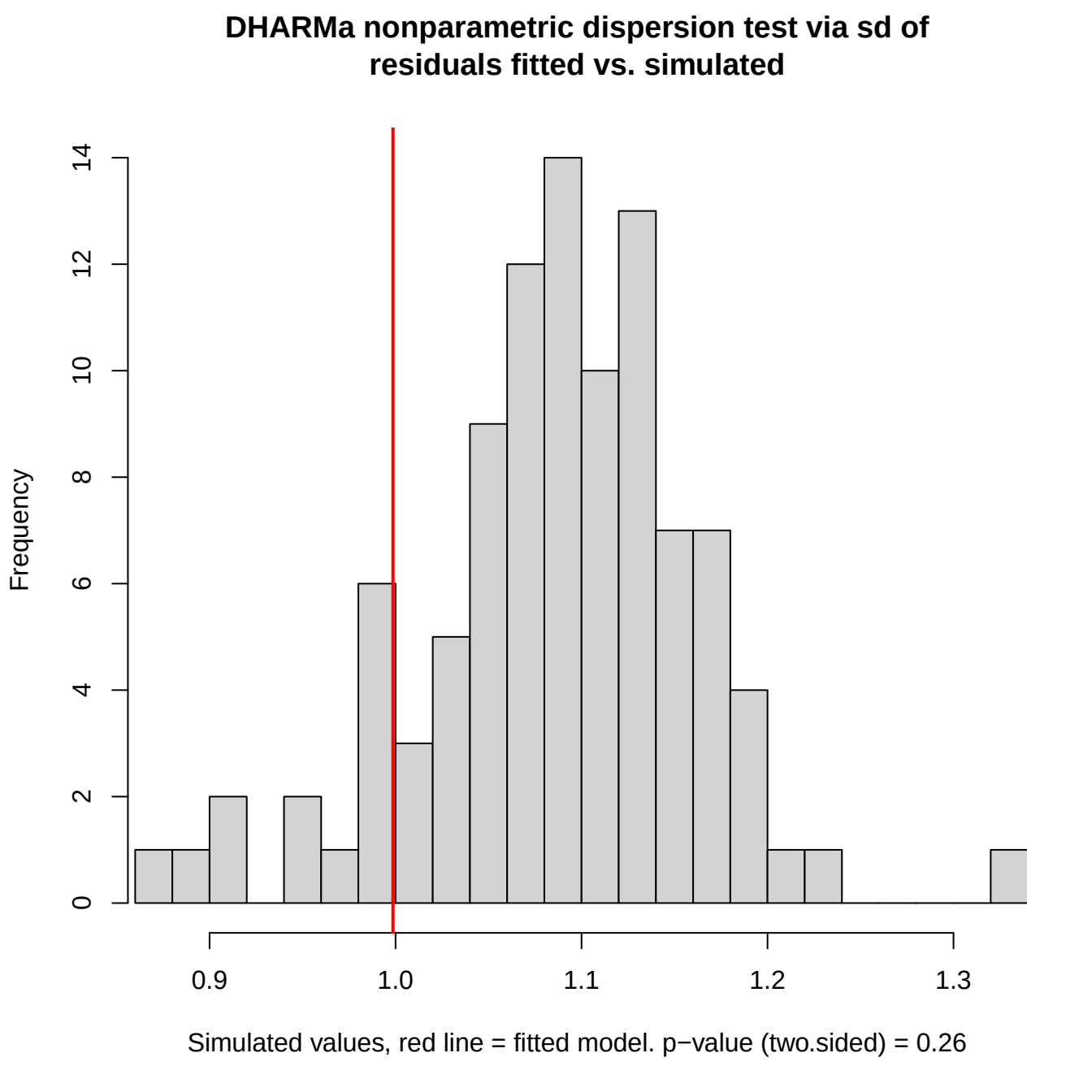

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0

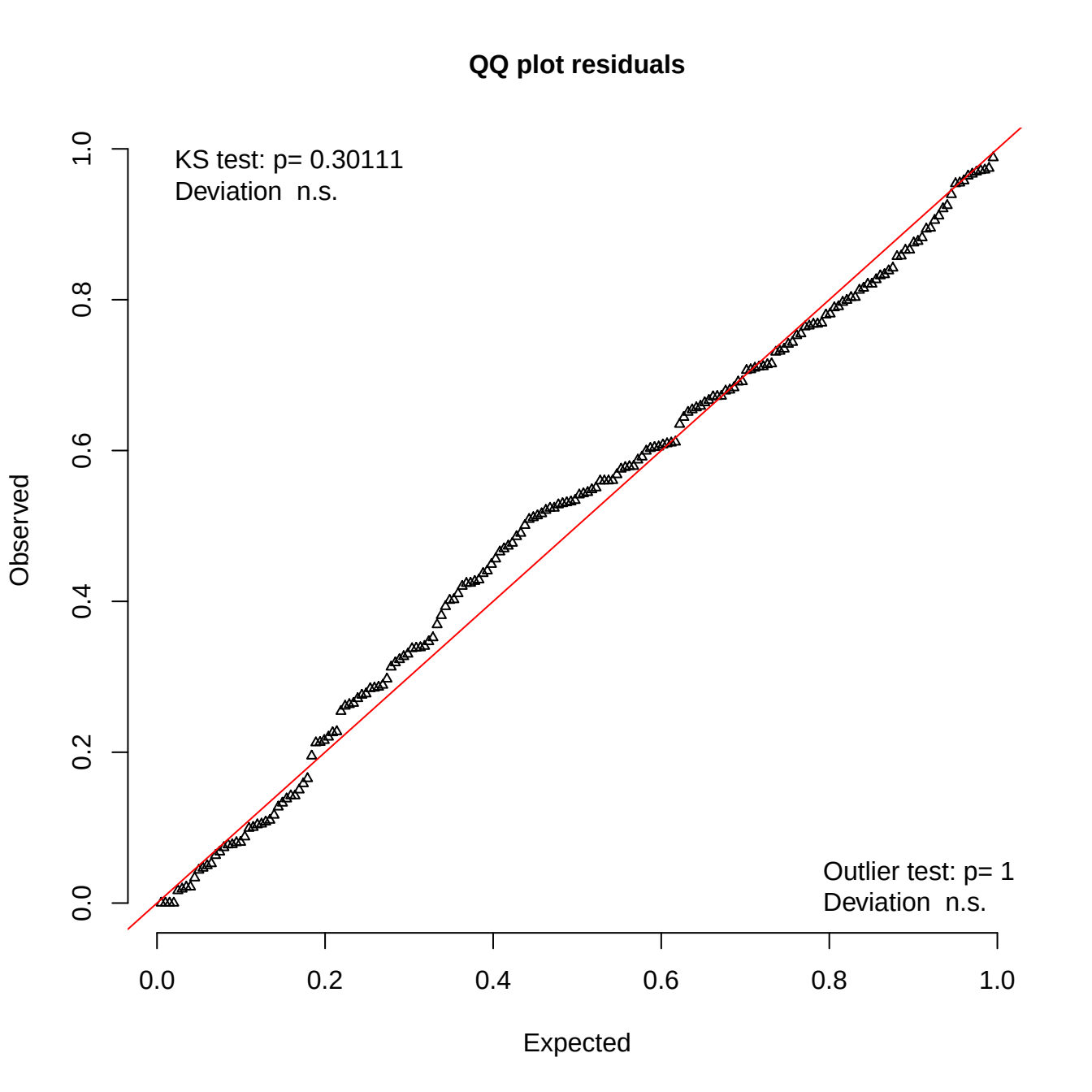

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

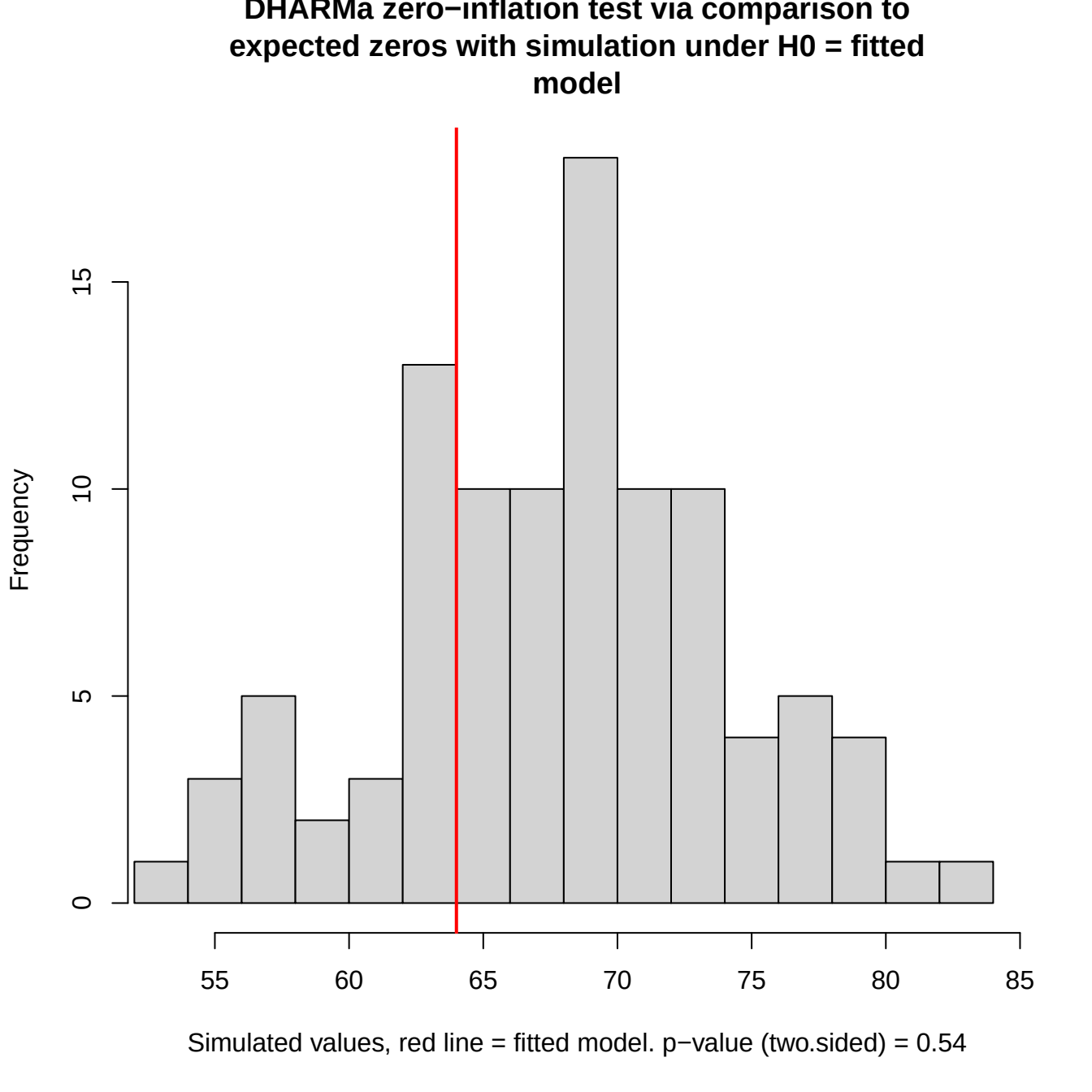

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
170
180
190
200
210
Simulated values, red line = fitted model. p−value (two.sided) = 0

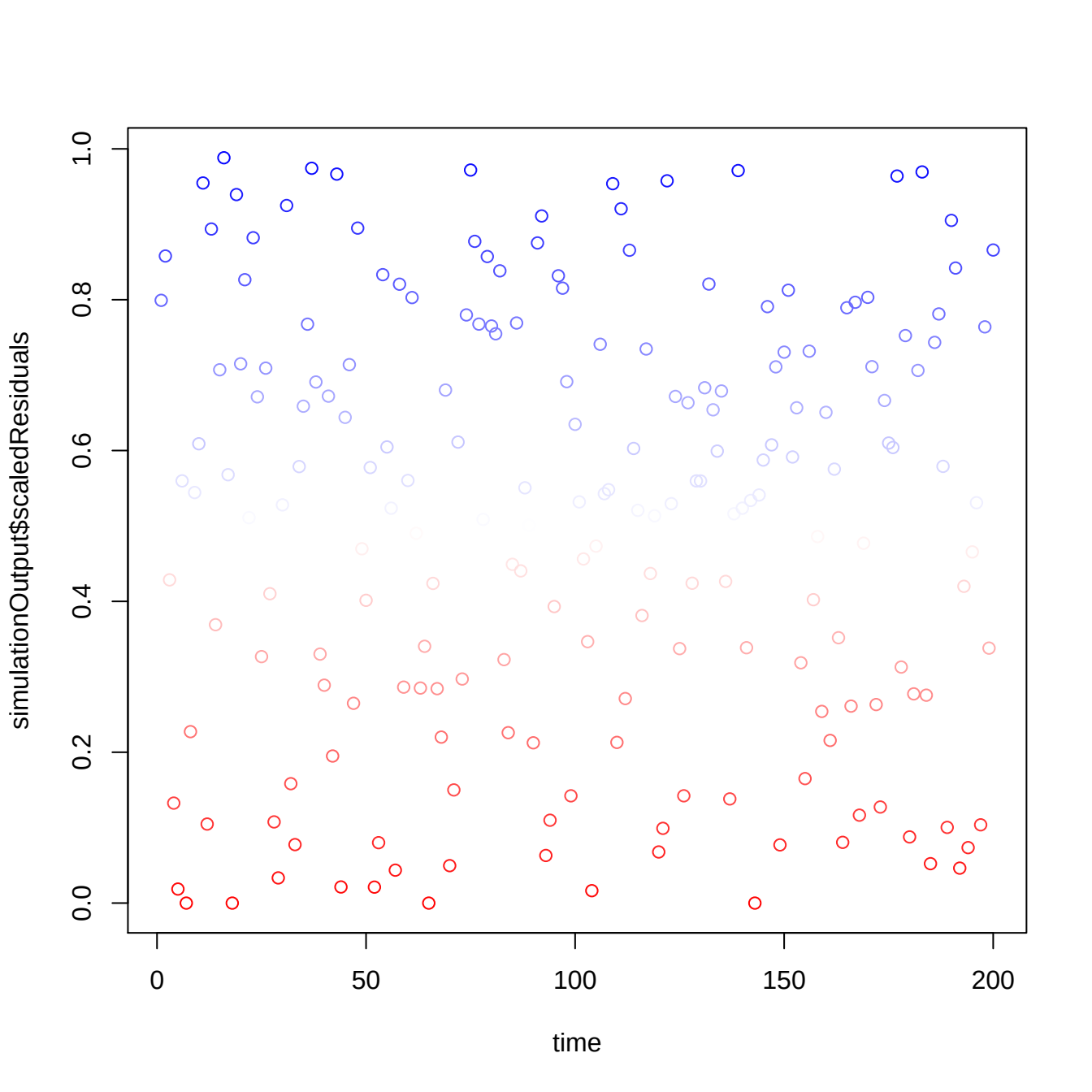

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
100
150
200
250
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

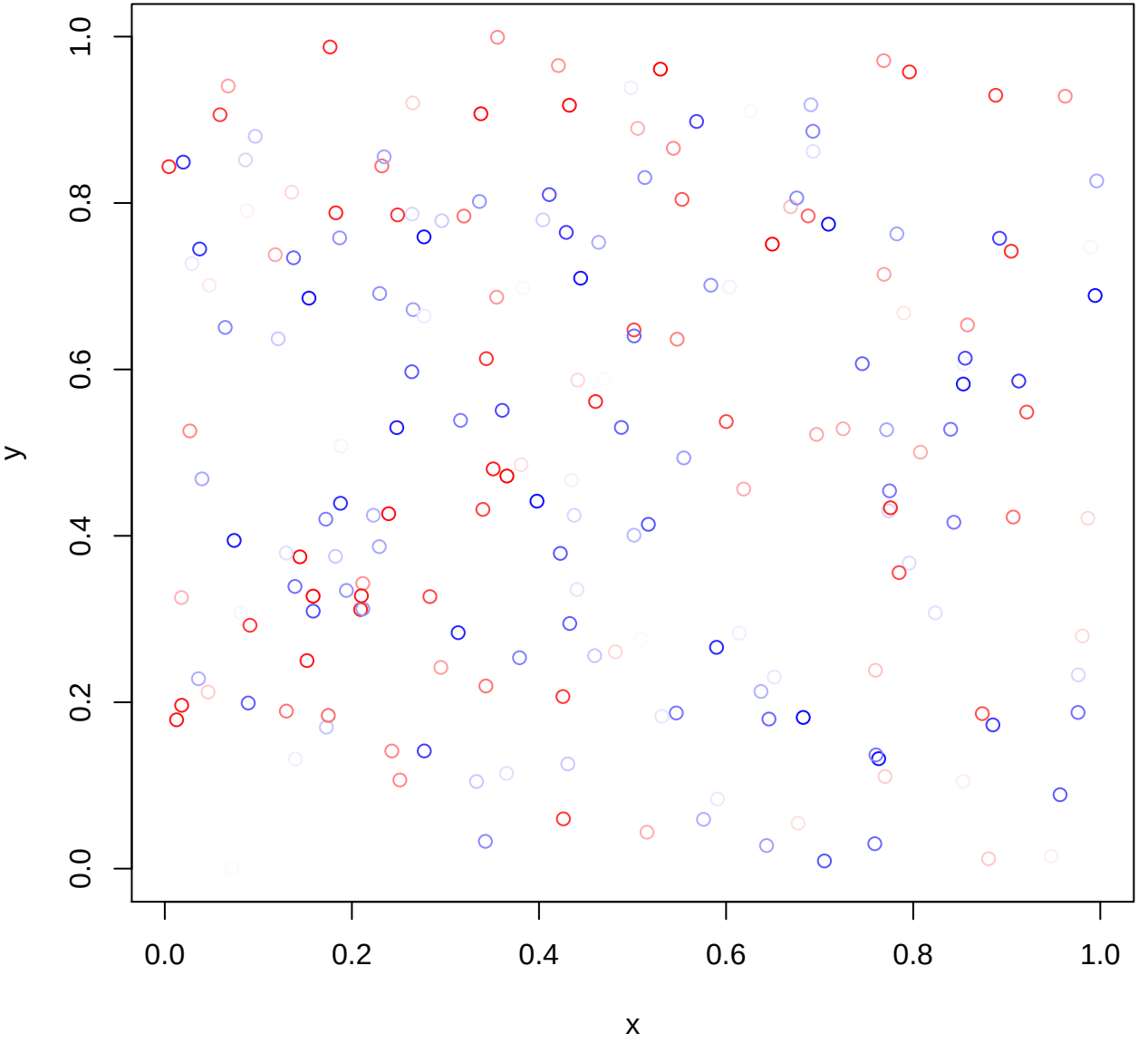

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
0.0
0.2
0.4
0.6
0.8
1.0
val

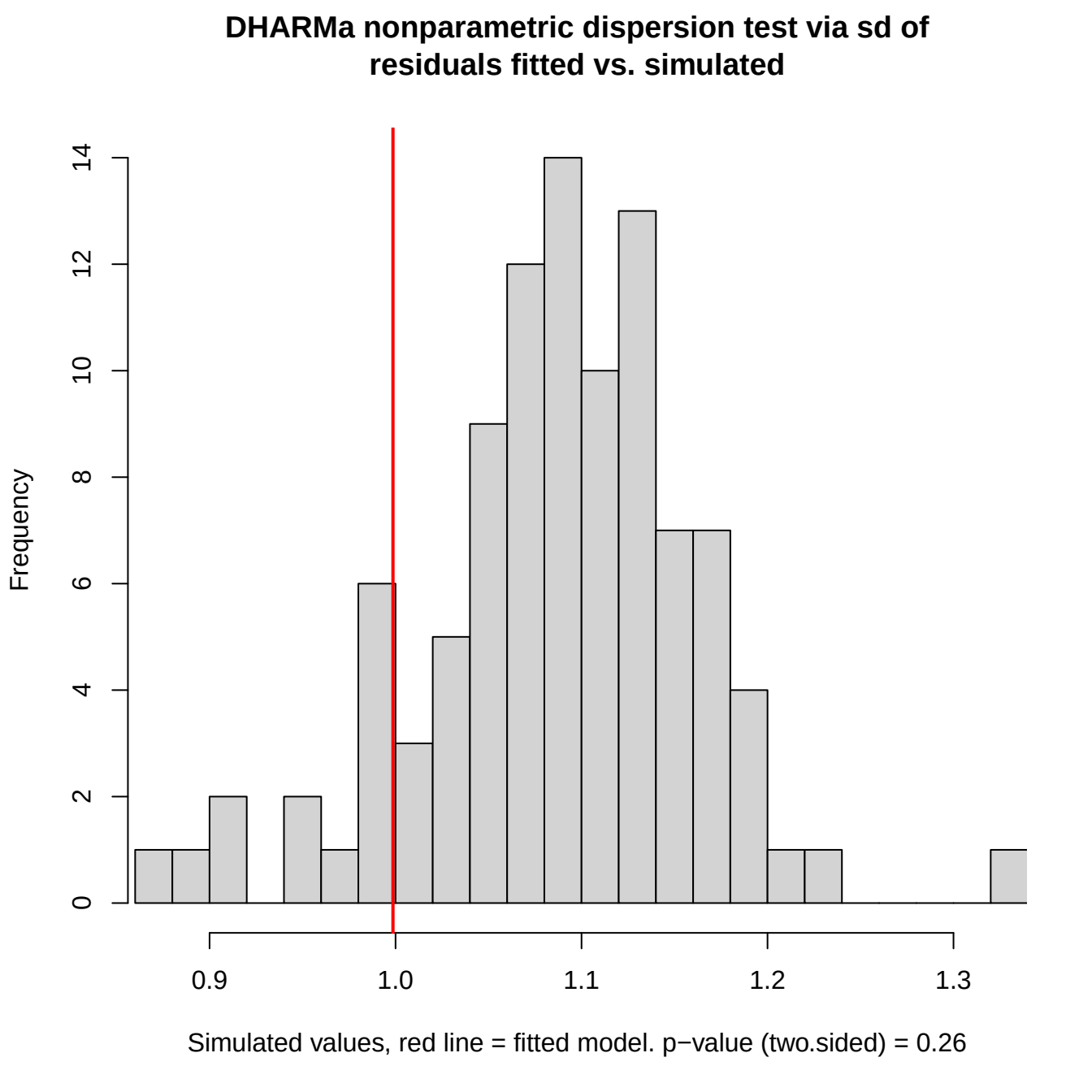

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.26

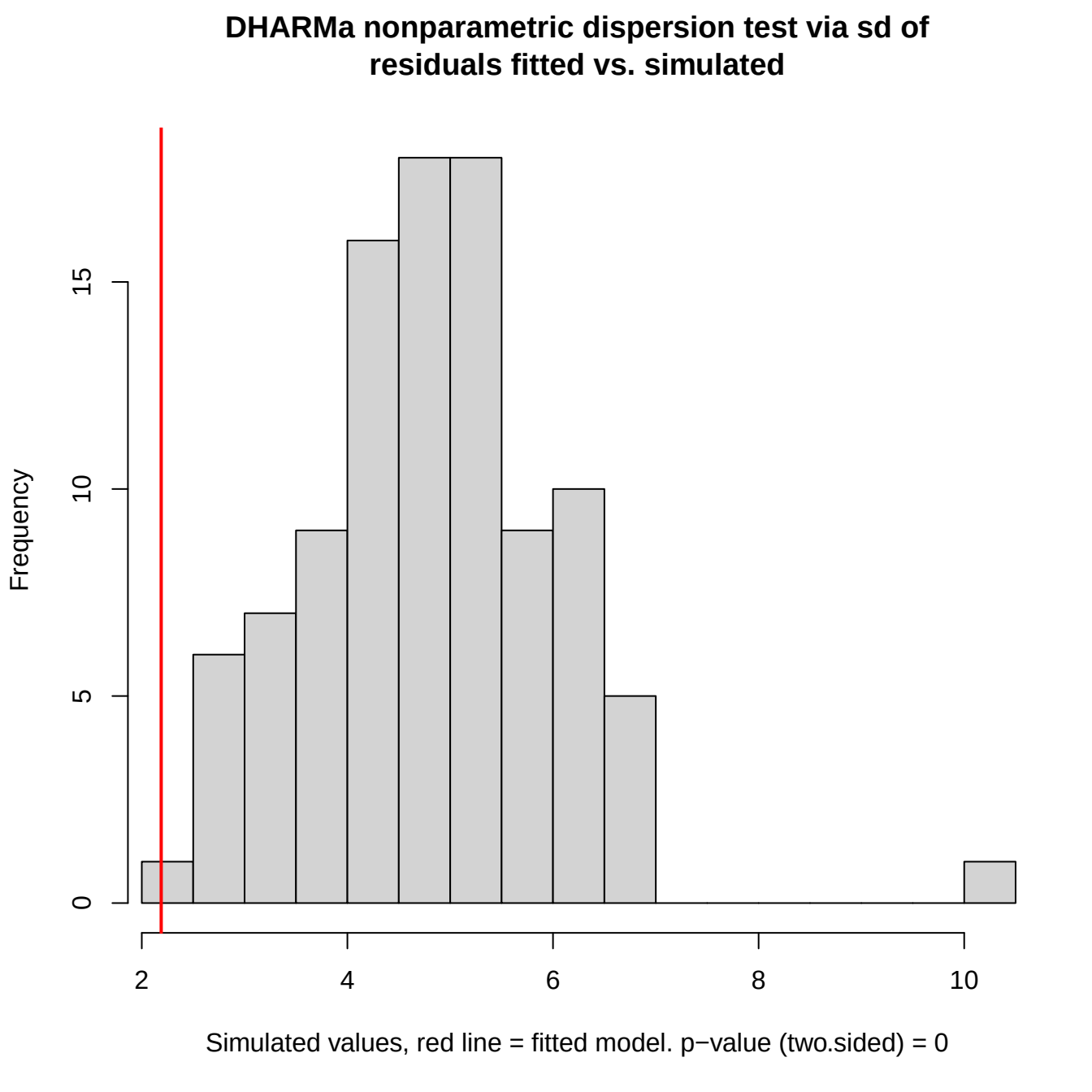

QQ plot residuals
KS test: p= 0.30111
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

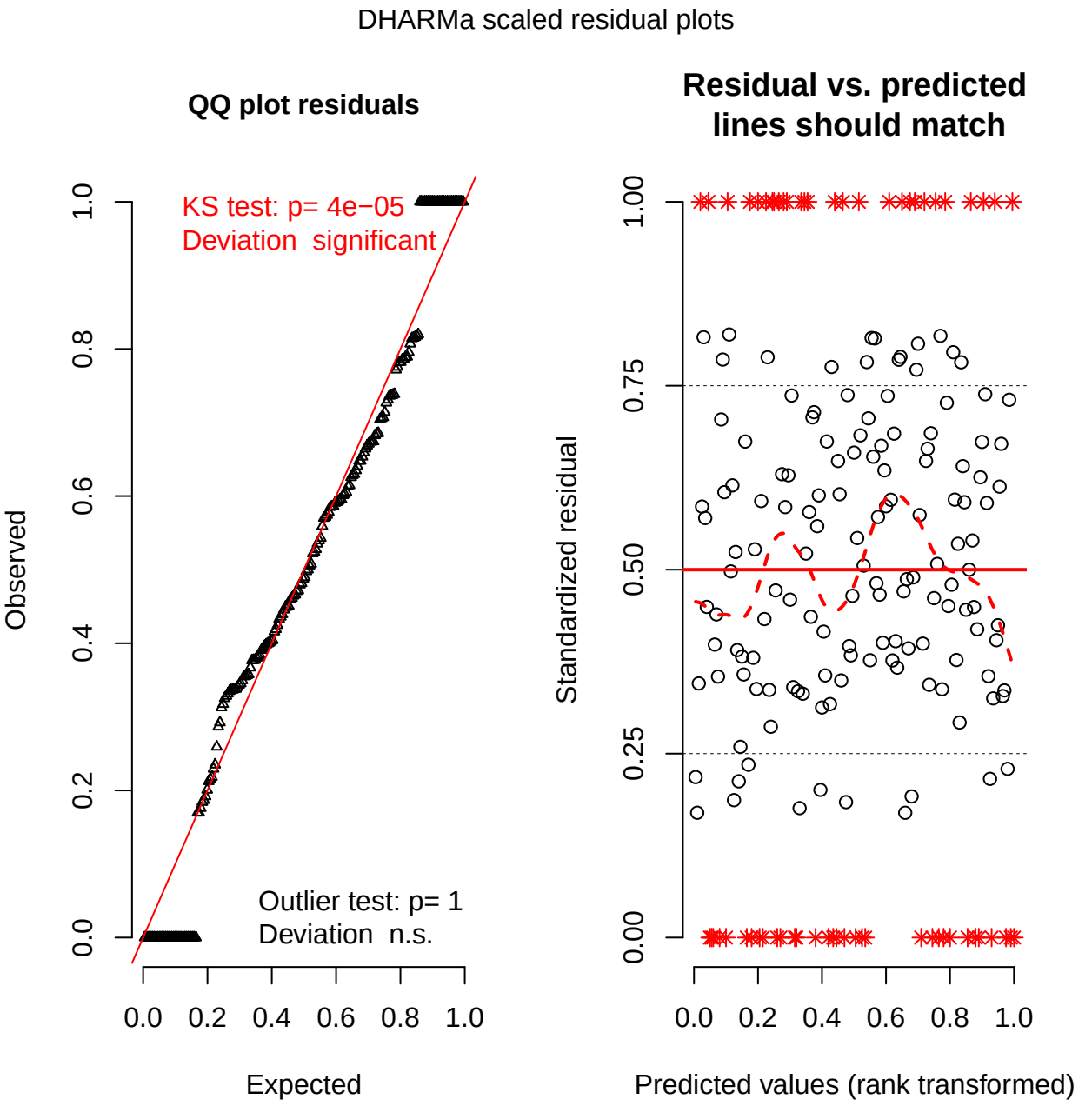

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
55
60
65
70
75
80
85
Simulated values, red line = fitted model. p−value (two.sided) = 0.54

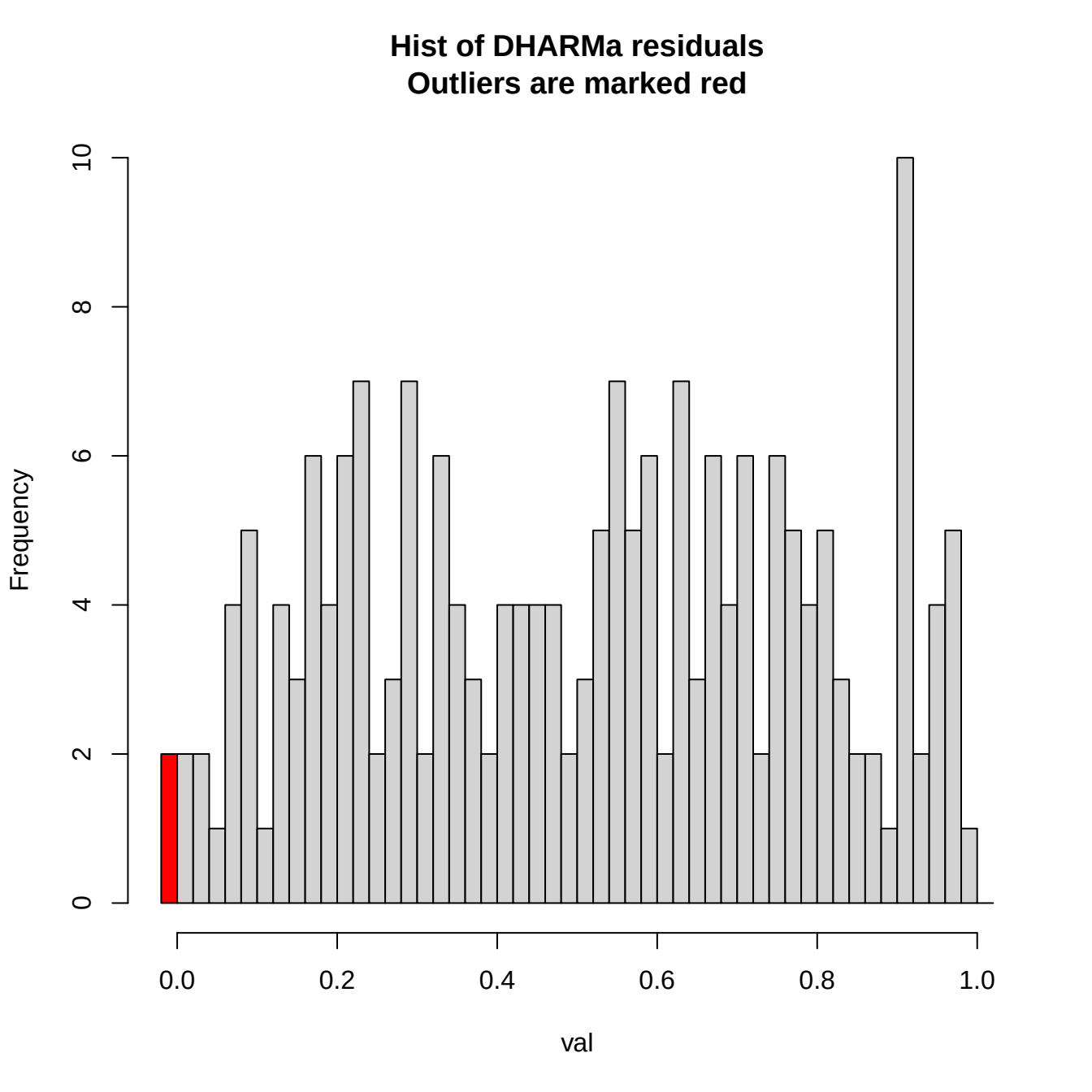

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

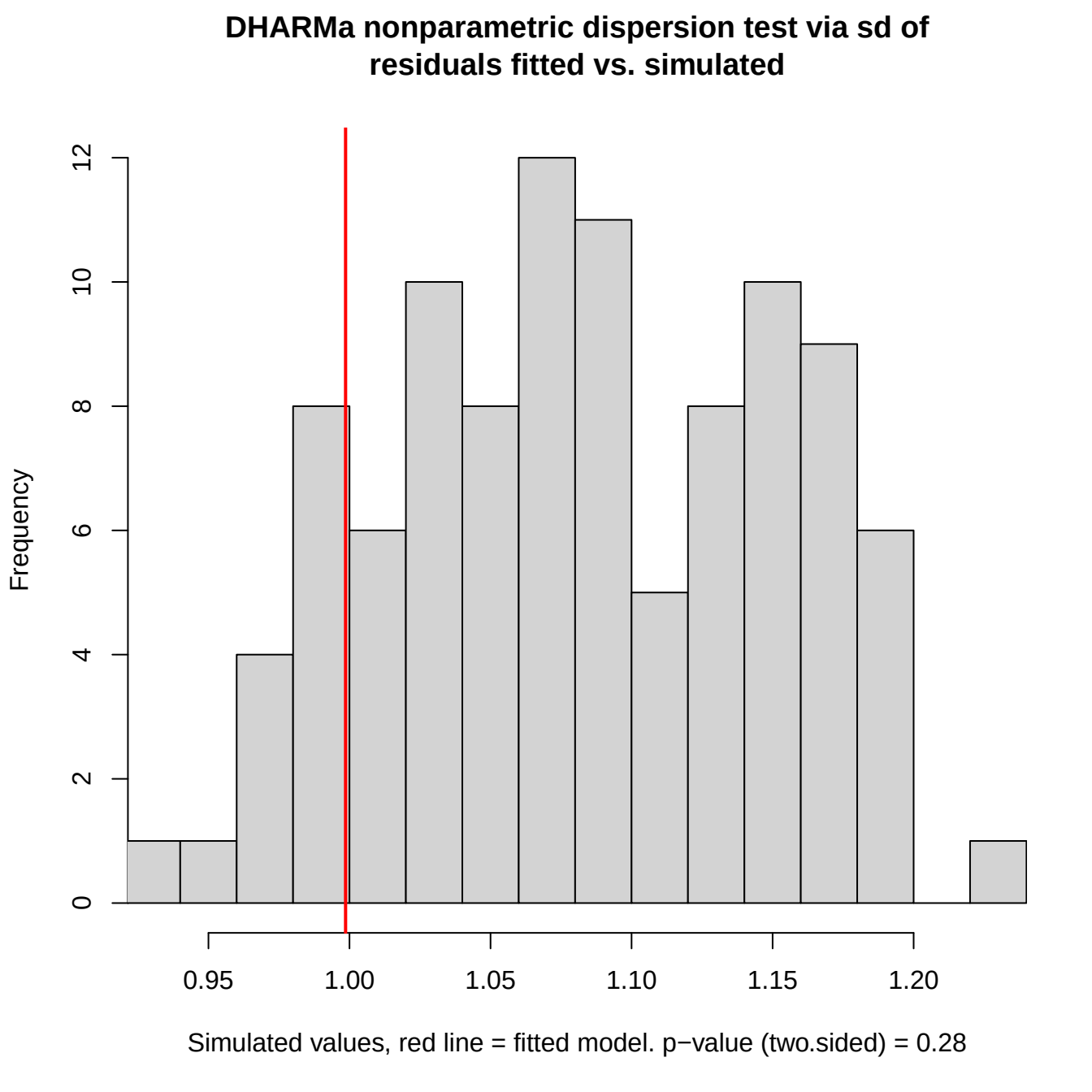

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

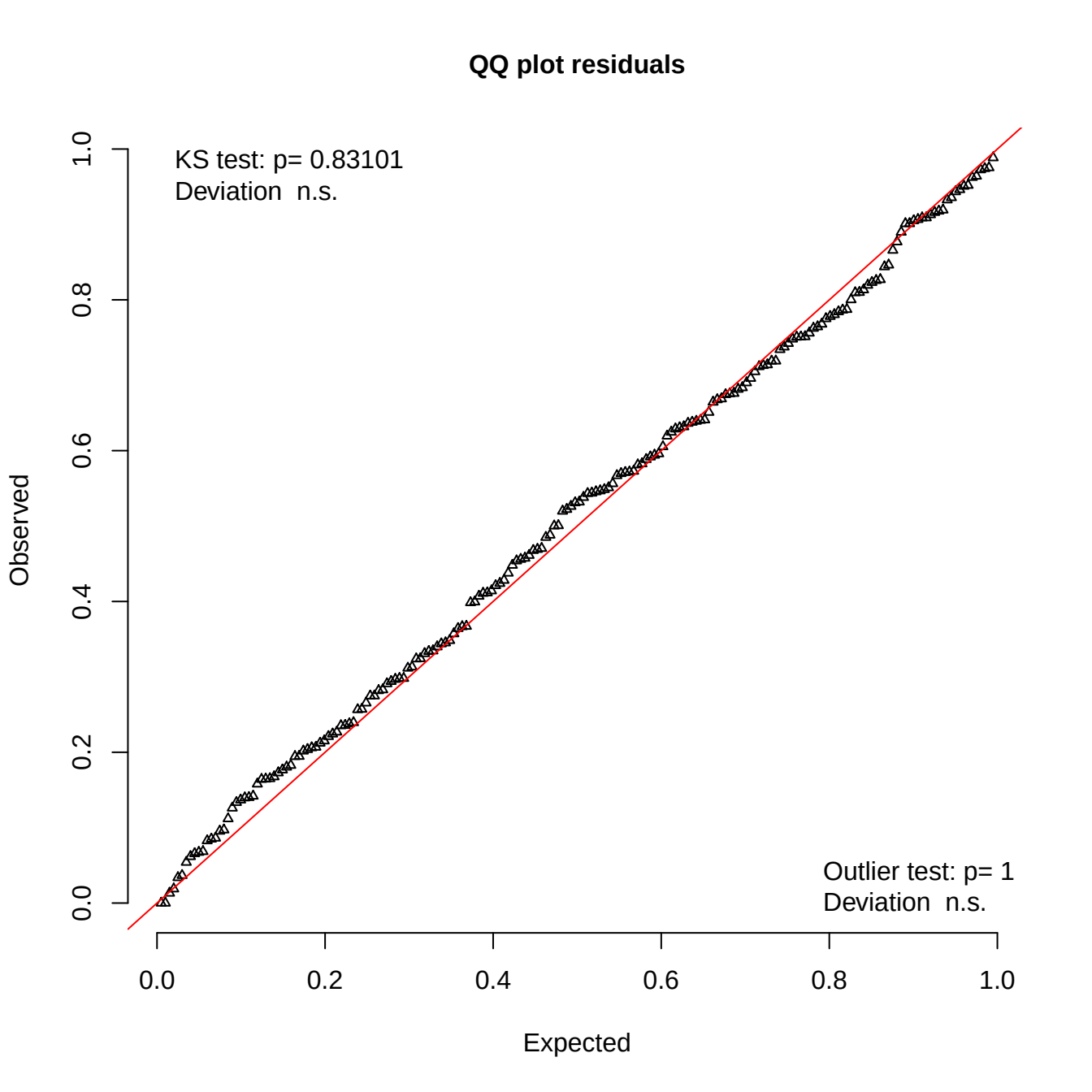

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
14
0.9
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.26

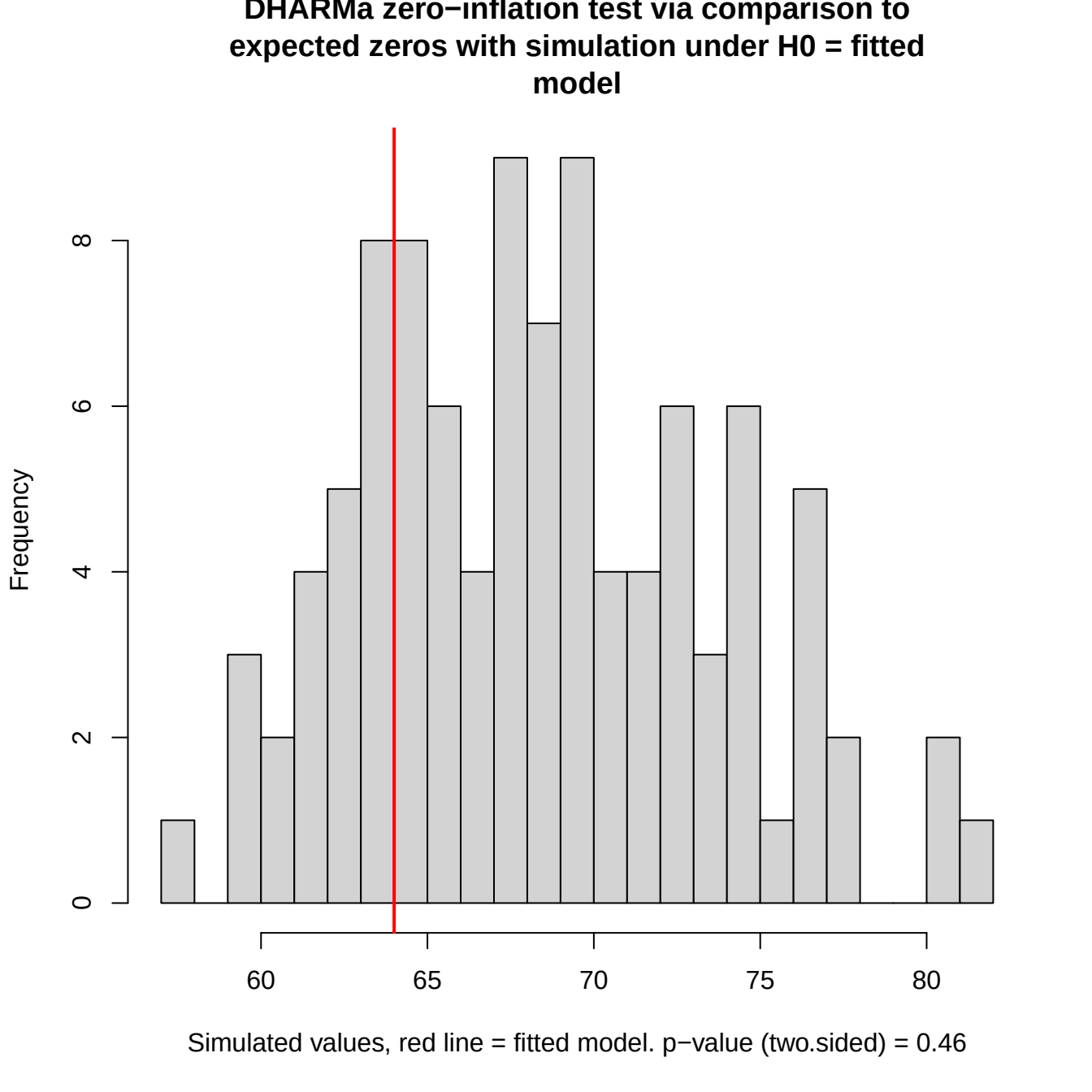

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
2
4
6
8
10
Simulated values, red line = fitted model. p−value (two.sided) = 0

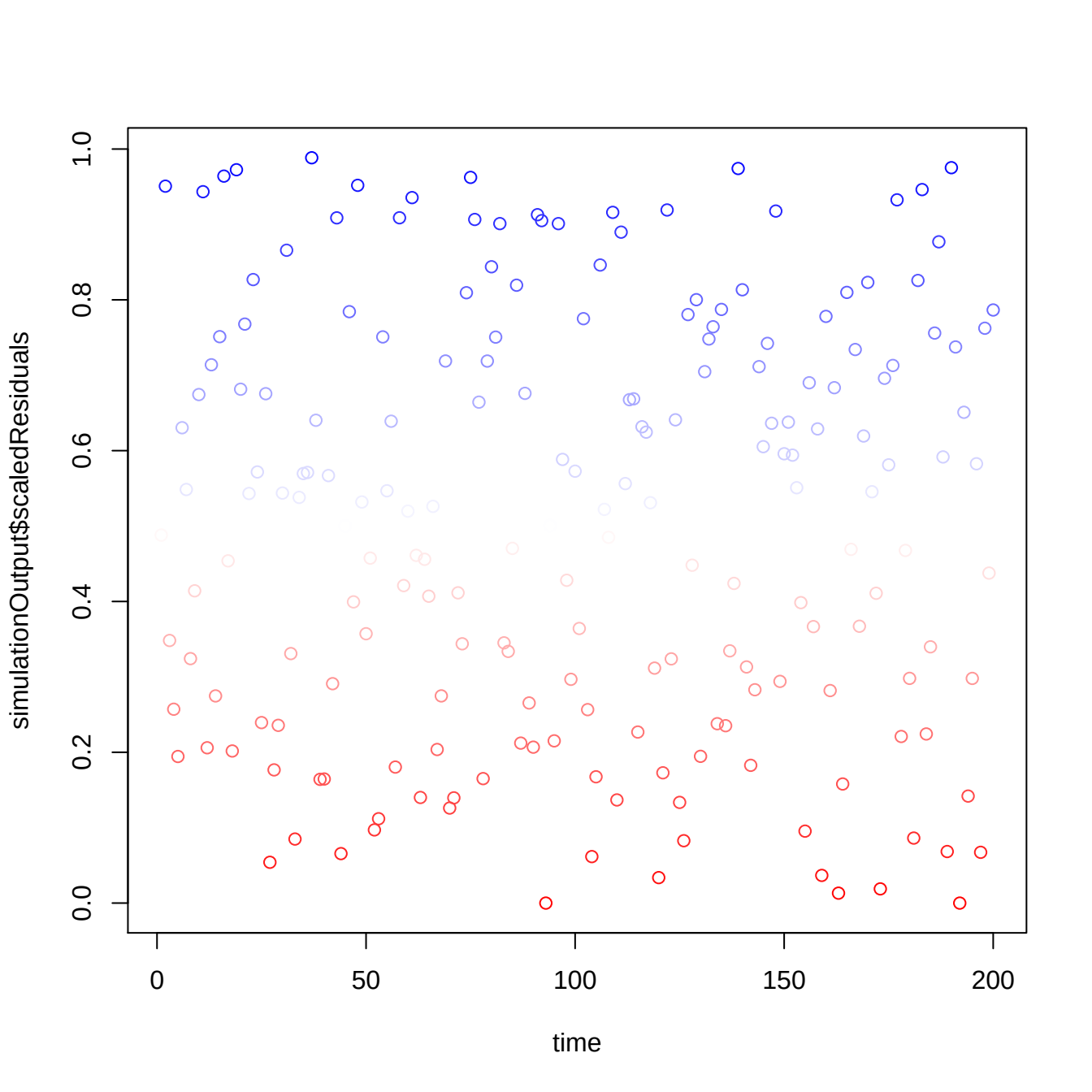

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 4e−05
Deviation significant
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

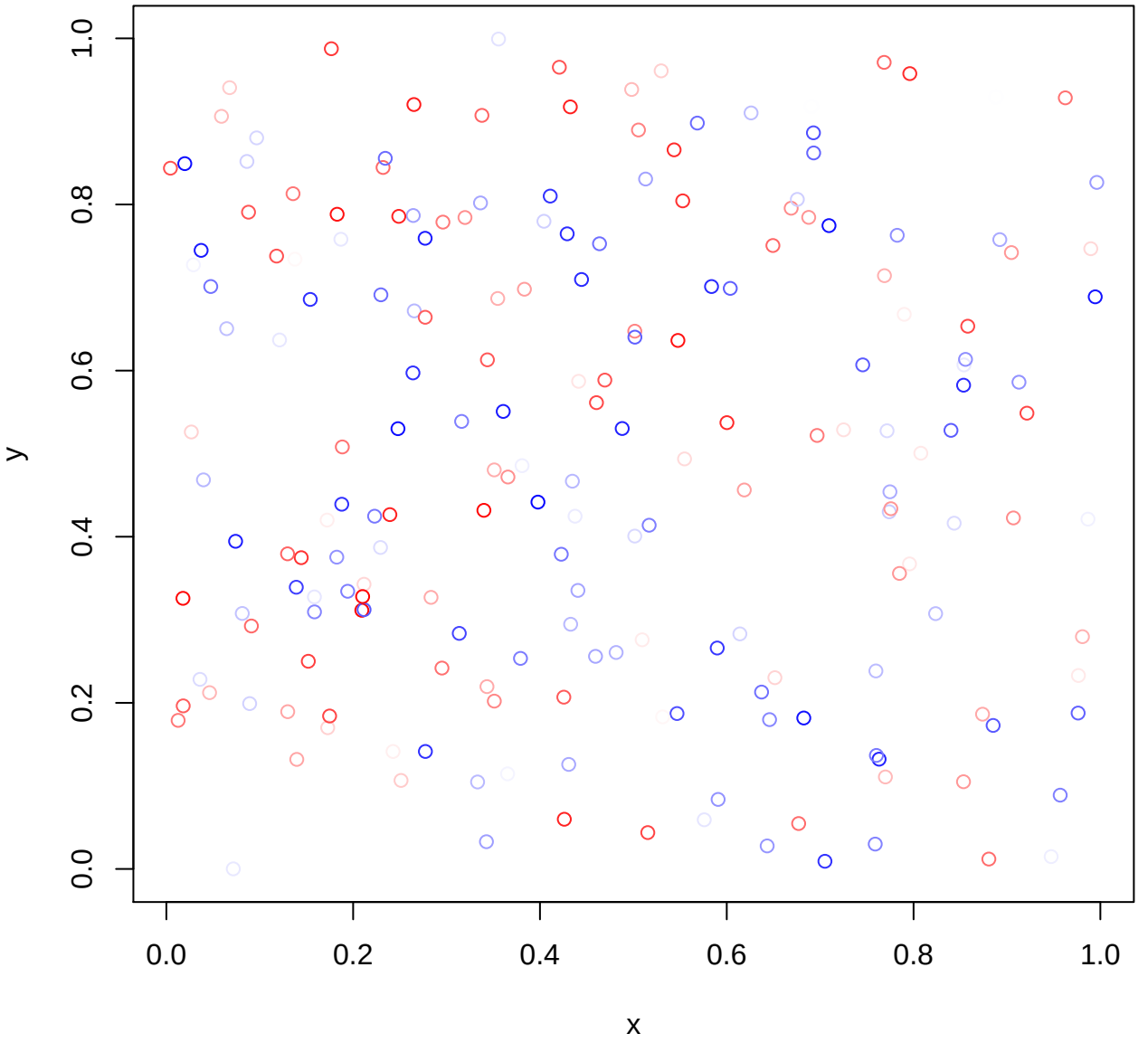

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
2
4
6
8
10
0.0
0.2
0.4
0.6
0.8
1.0
val

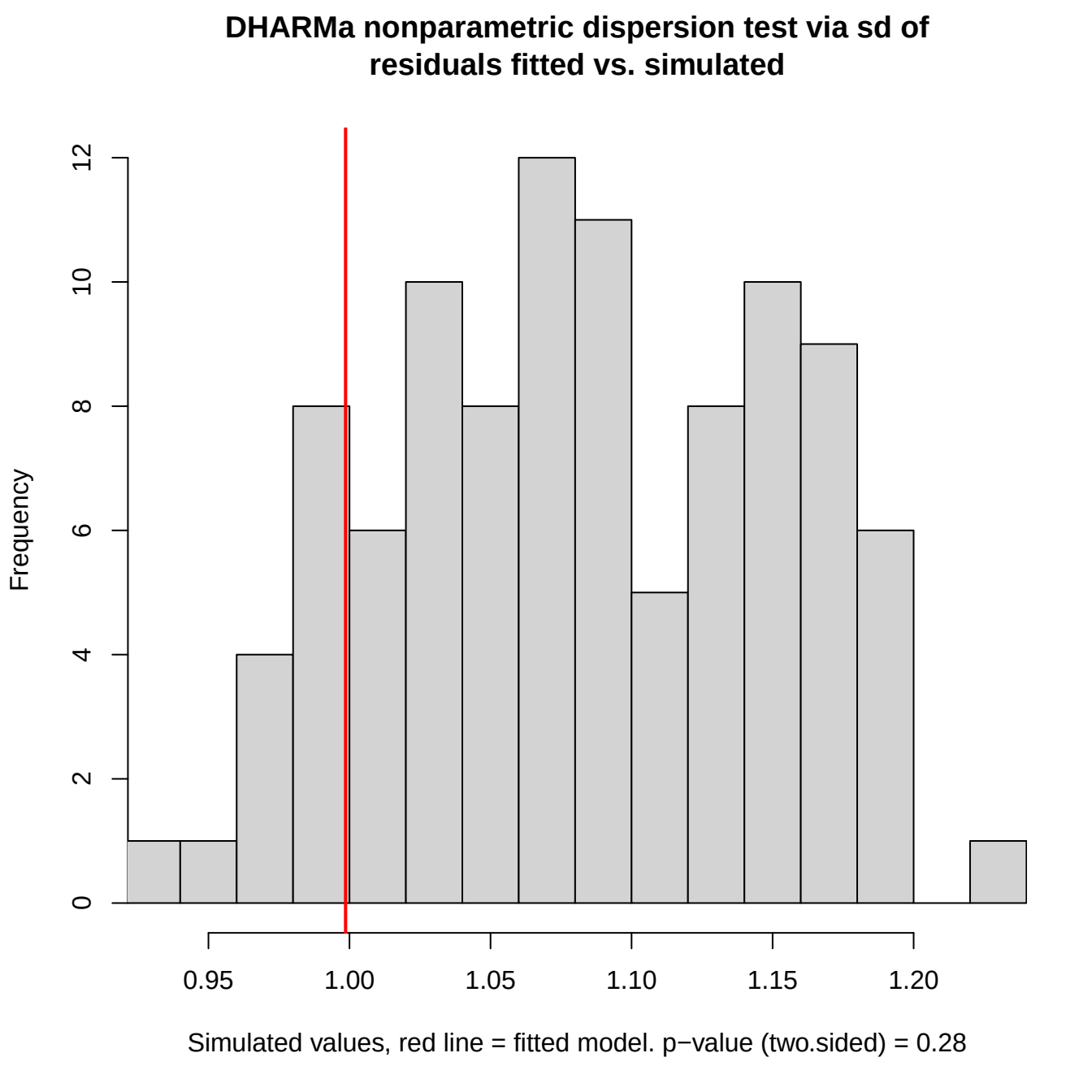

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

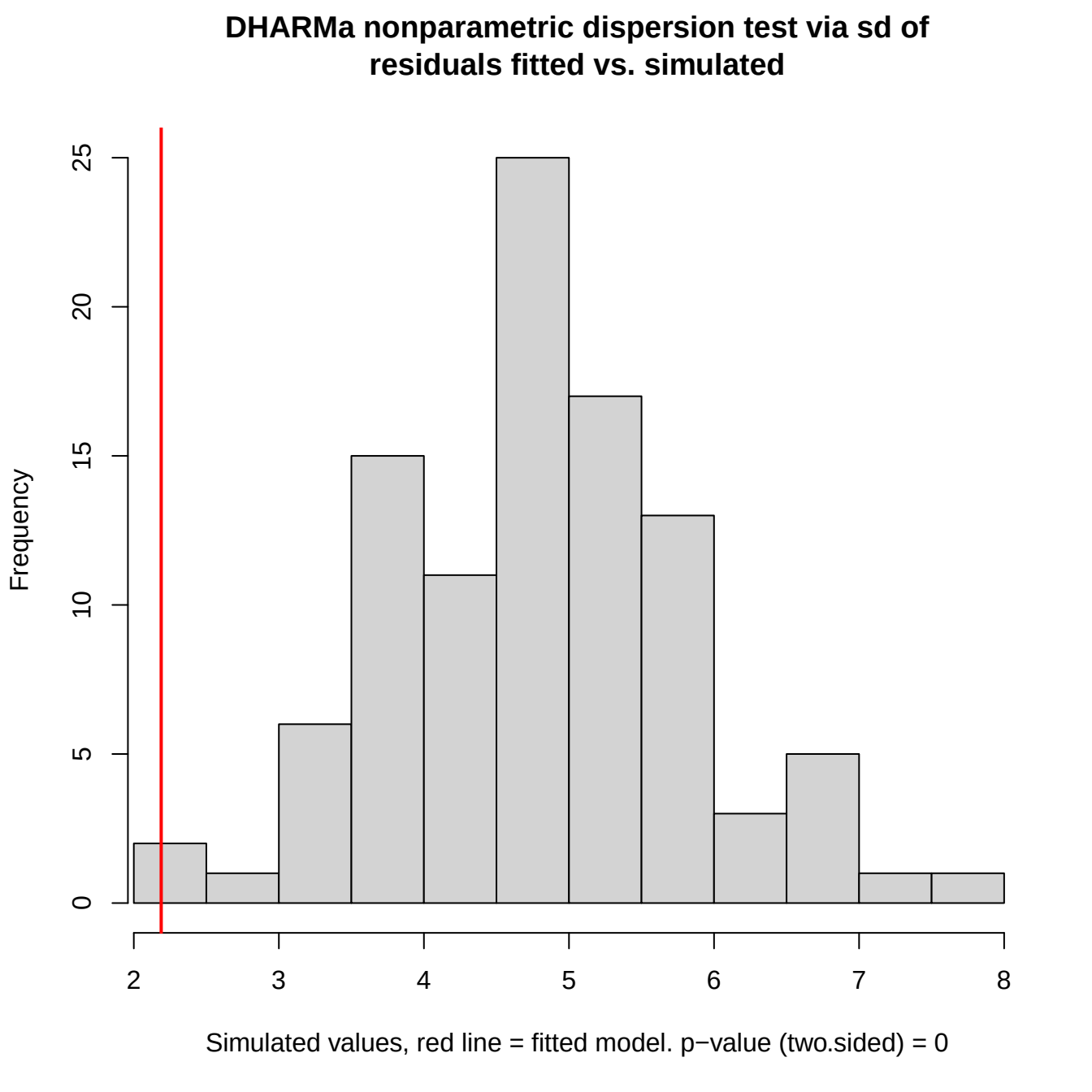

QQ plot residuals
KS test: p= 0.83101
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

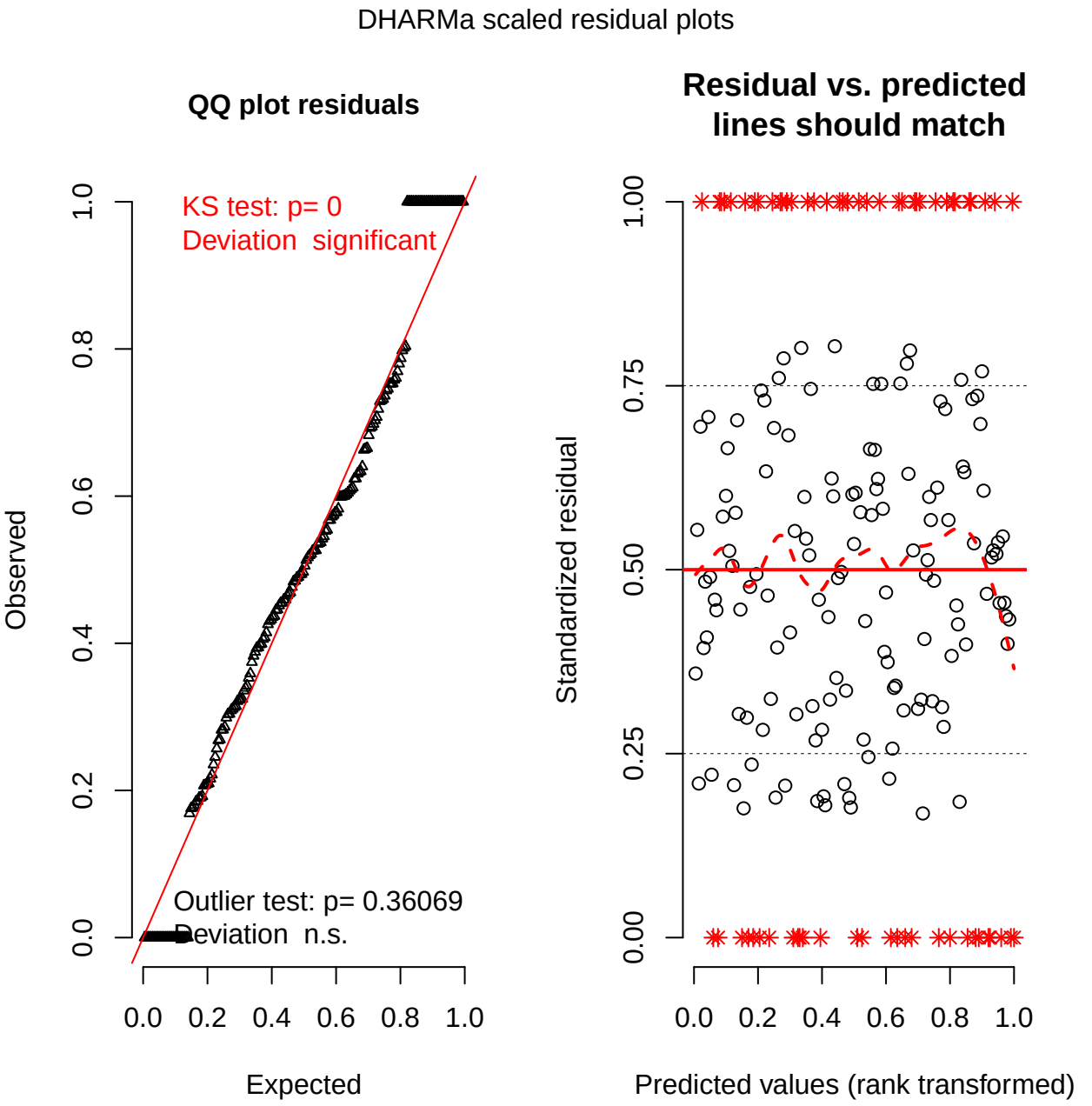

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
2
4
6
8
60
65
70
75
80
Simulated values, red line = fitted model. p−value (two.sided) = 0.46

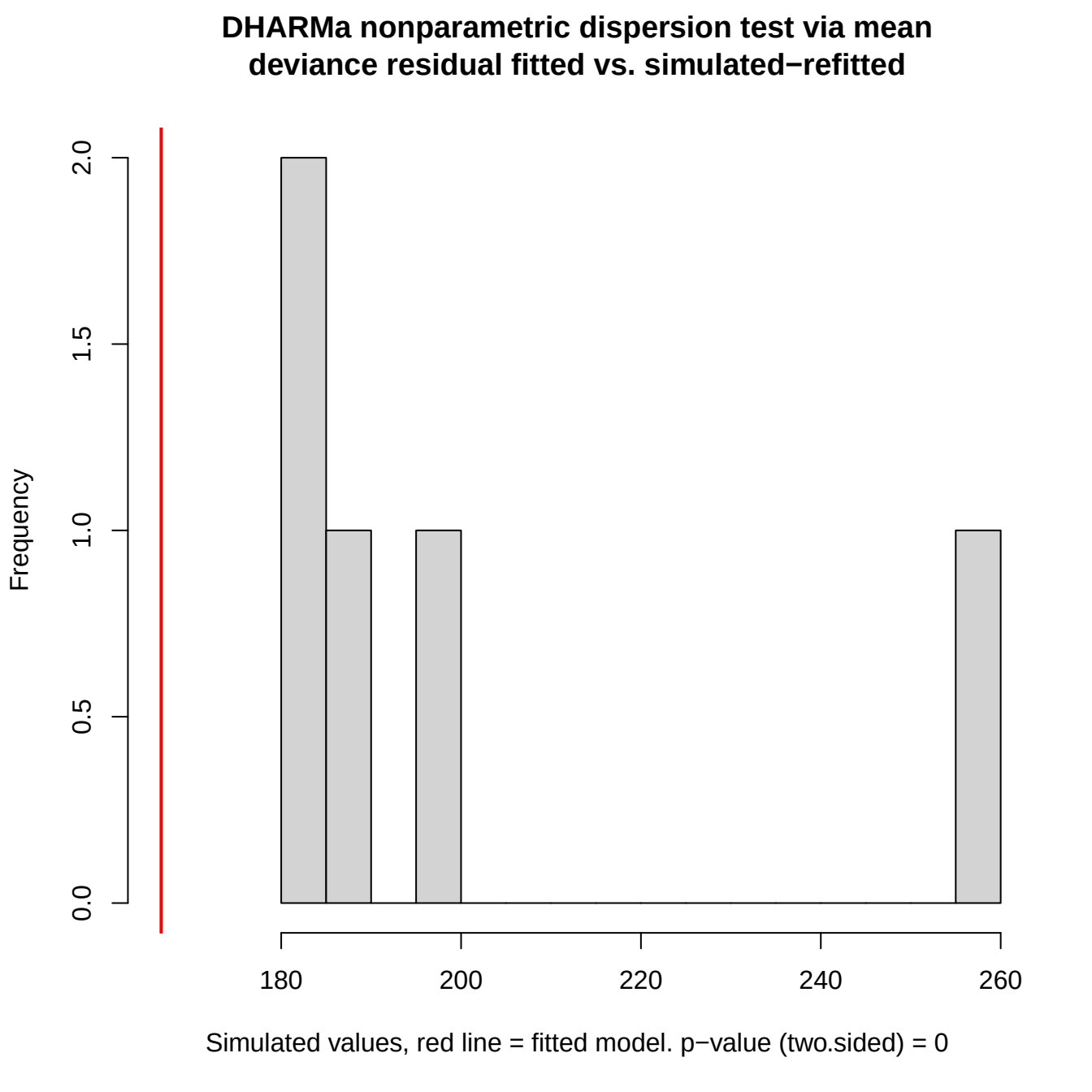

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

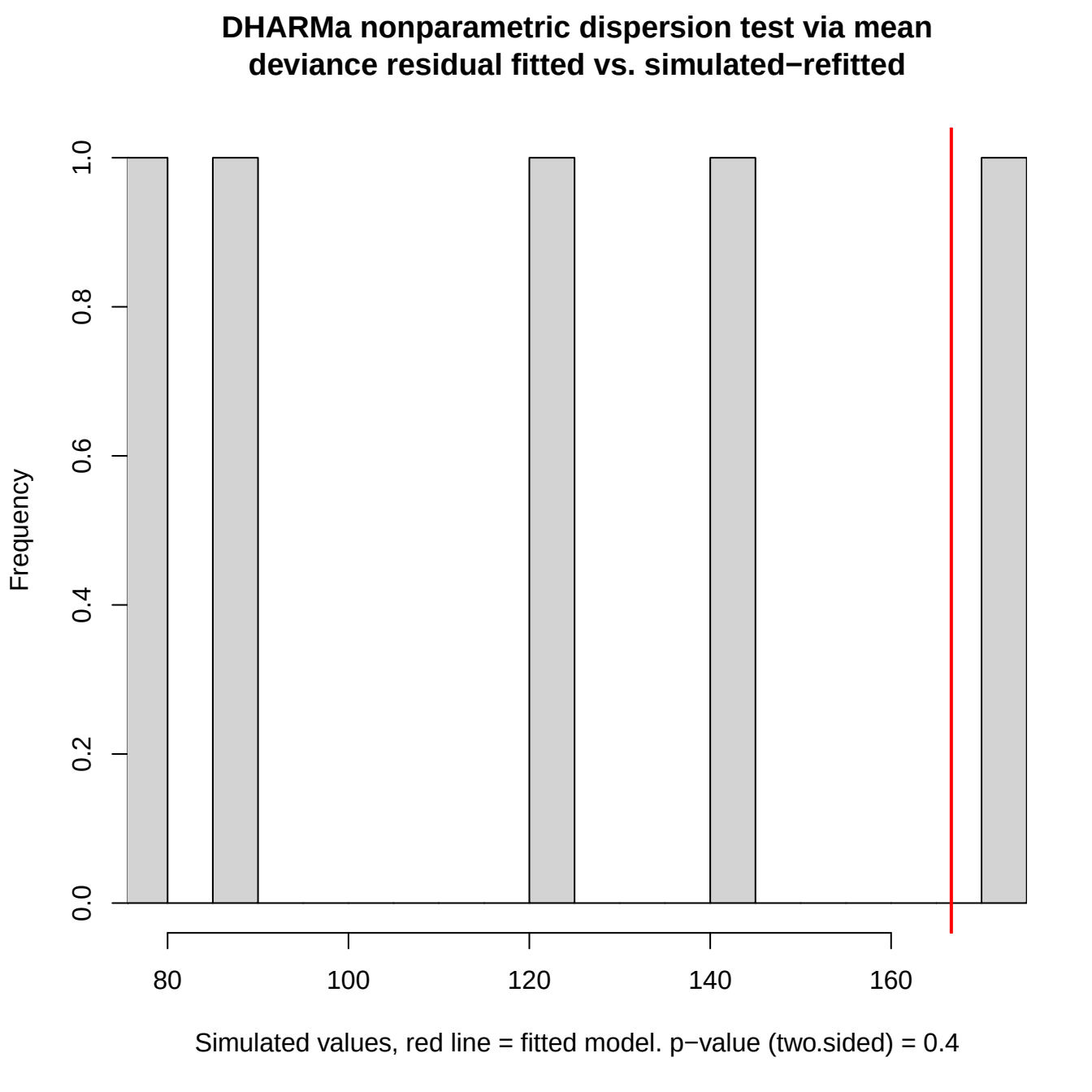

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

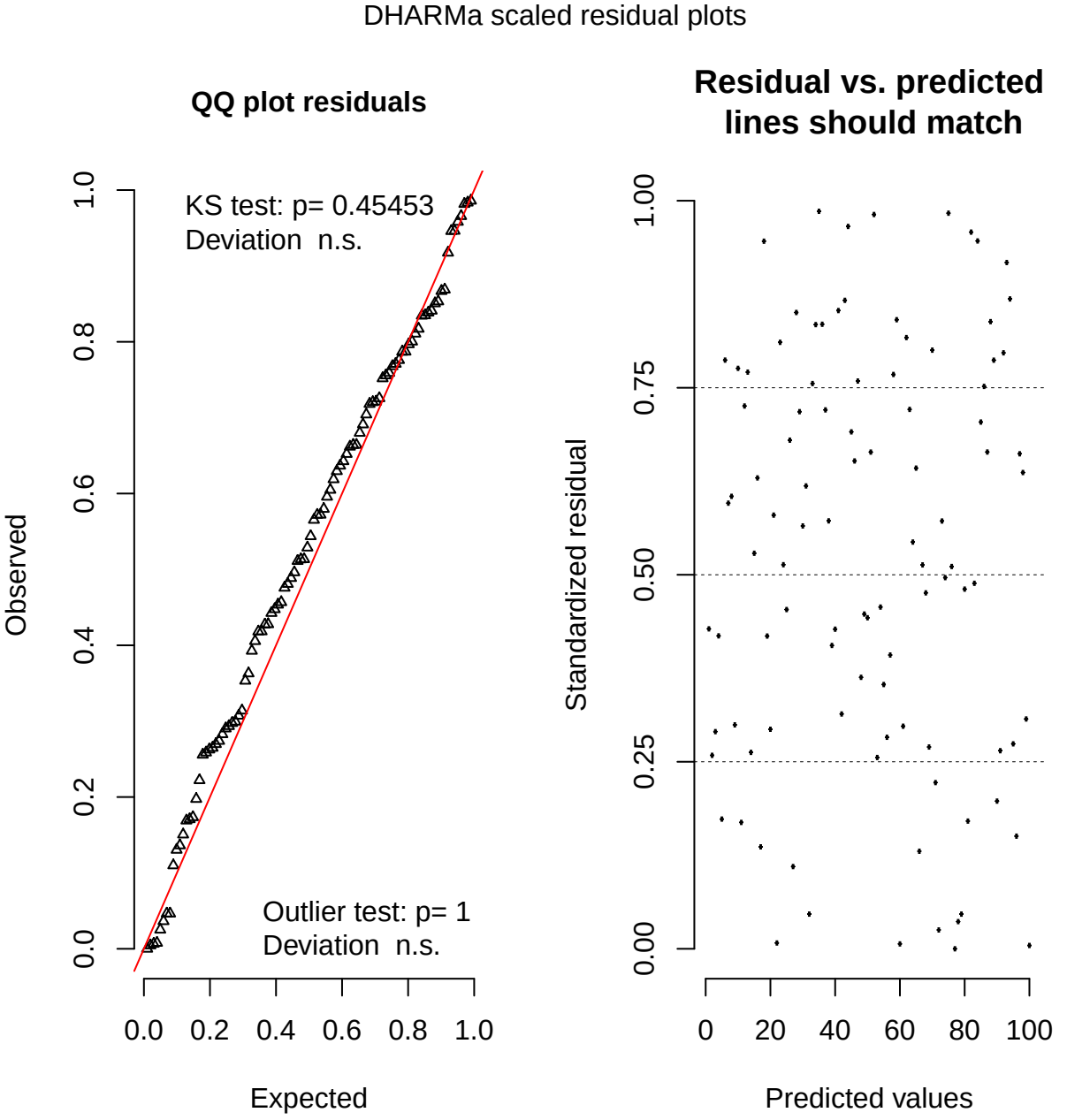

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
2
4
6
8
10
12
0.95
1.00
1.05
1.10
1.15
1.20
Simulated values, red line = fitted model. p−value (two.sided) = 0.28

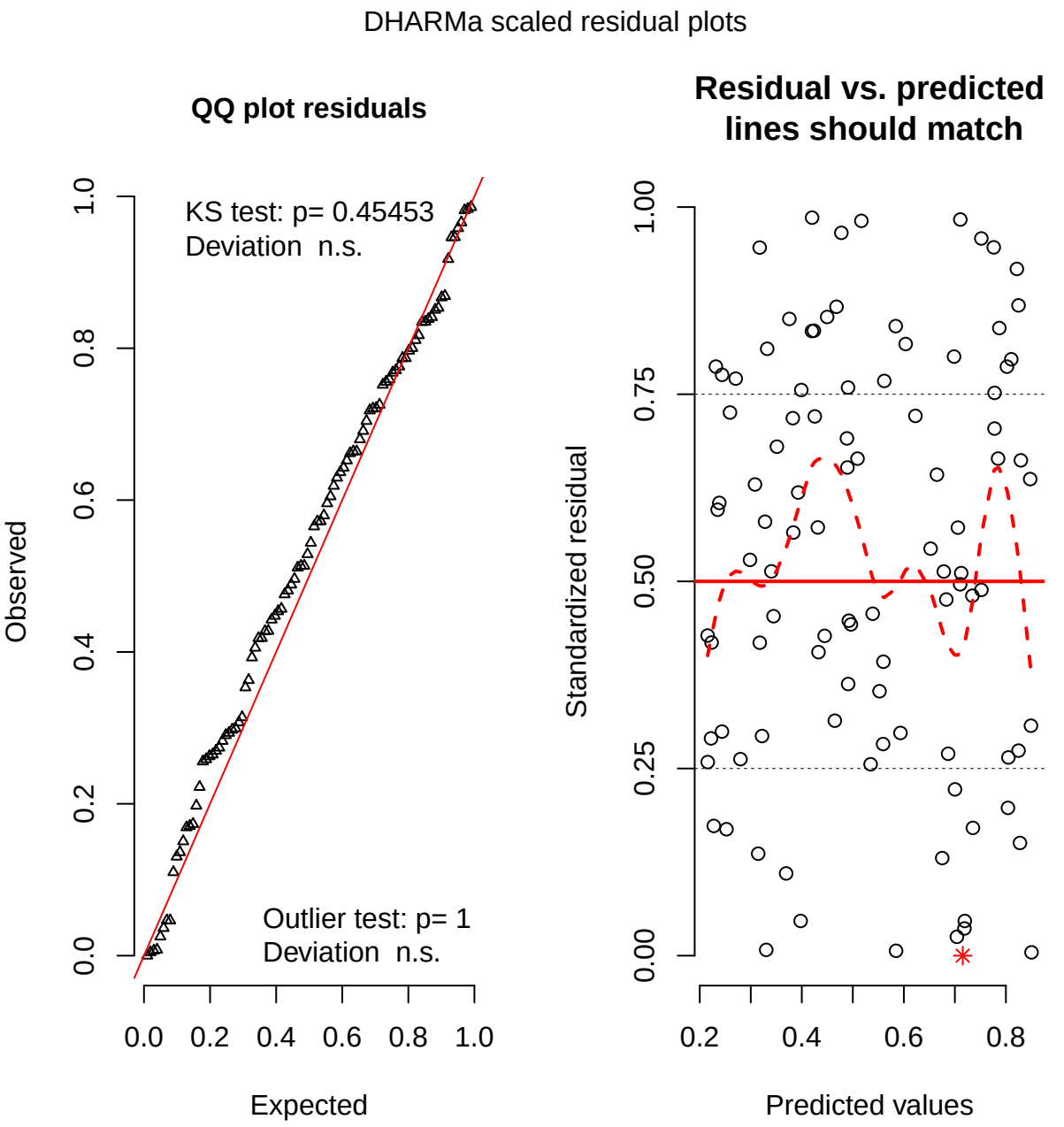

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
2
3
4
5
6
7
8
Simulated values, red line = fitted model. p−value (two.sided) = 0

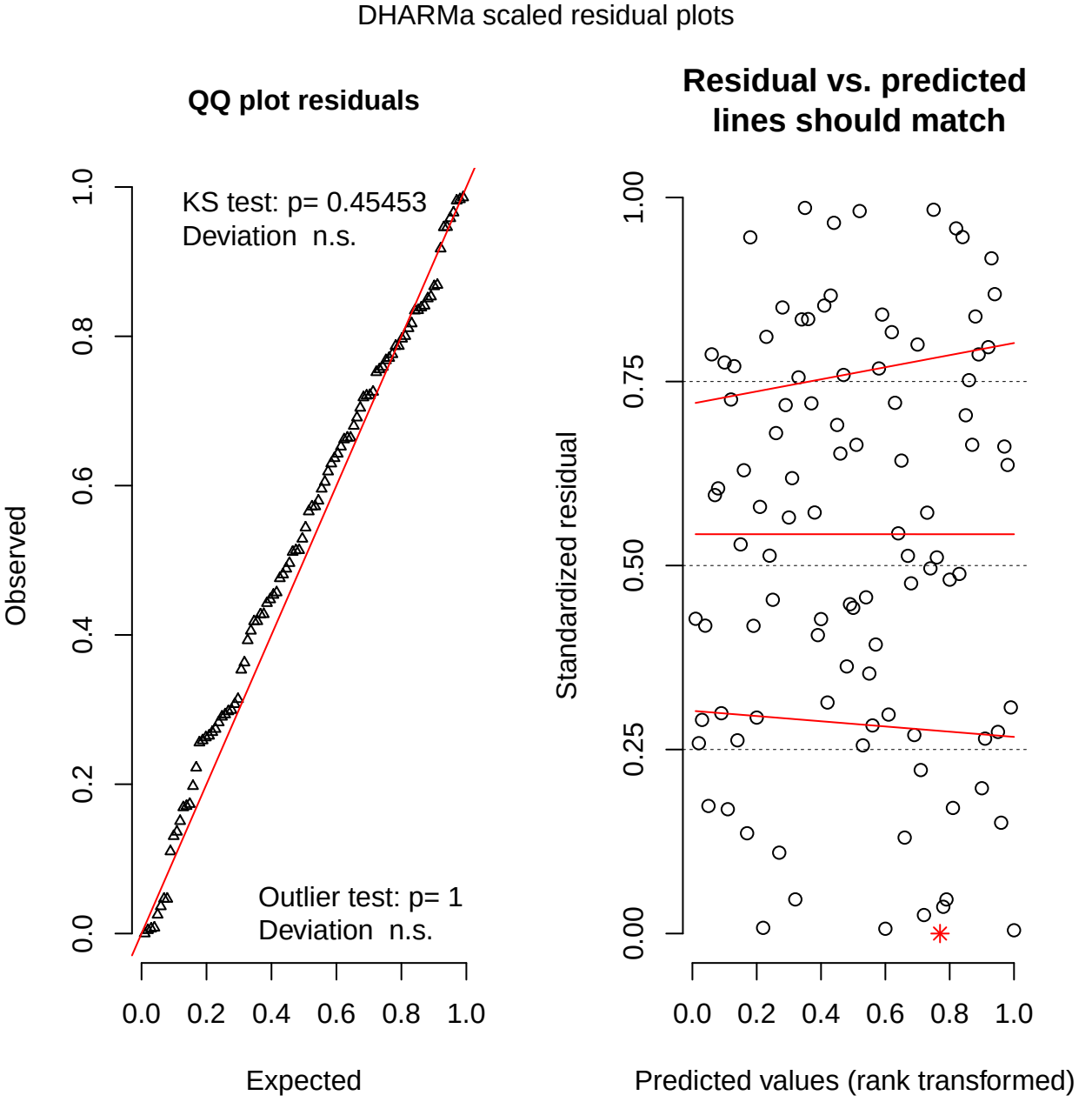

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.36069
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

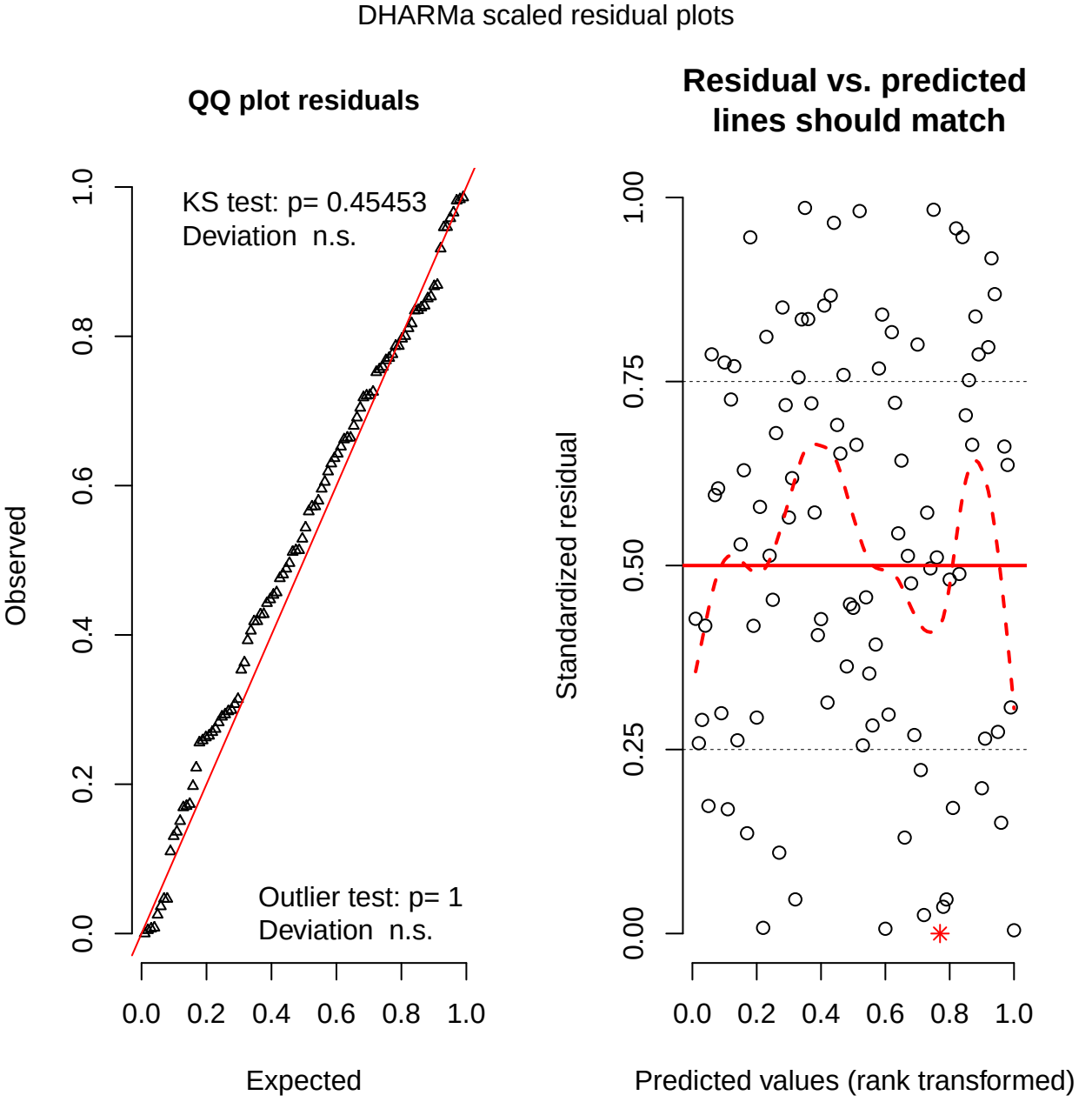

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.5
1.0
1.5
2.0
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0

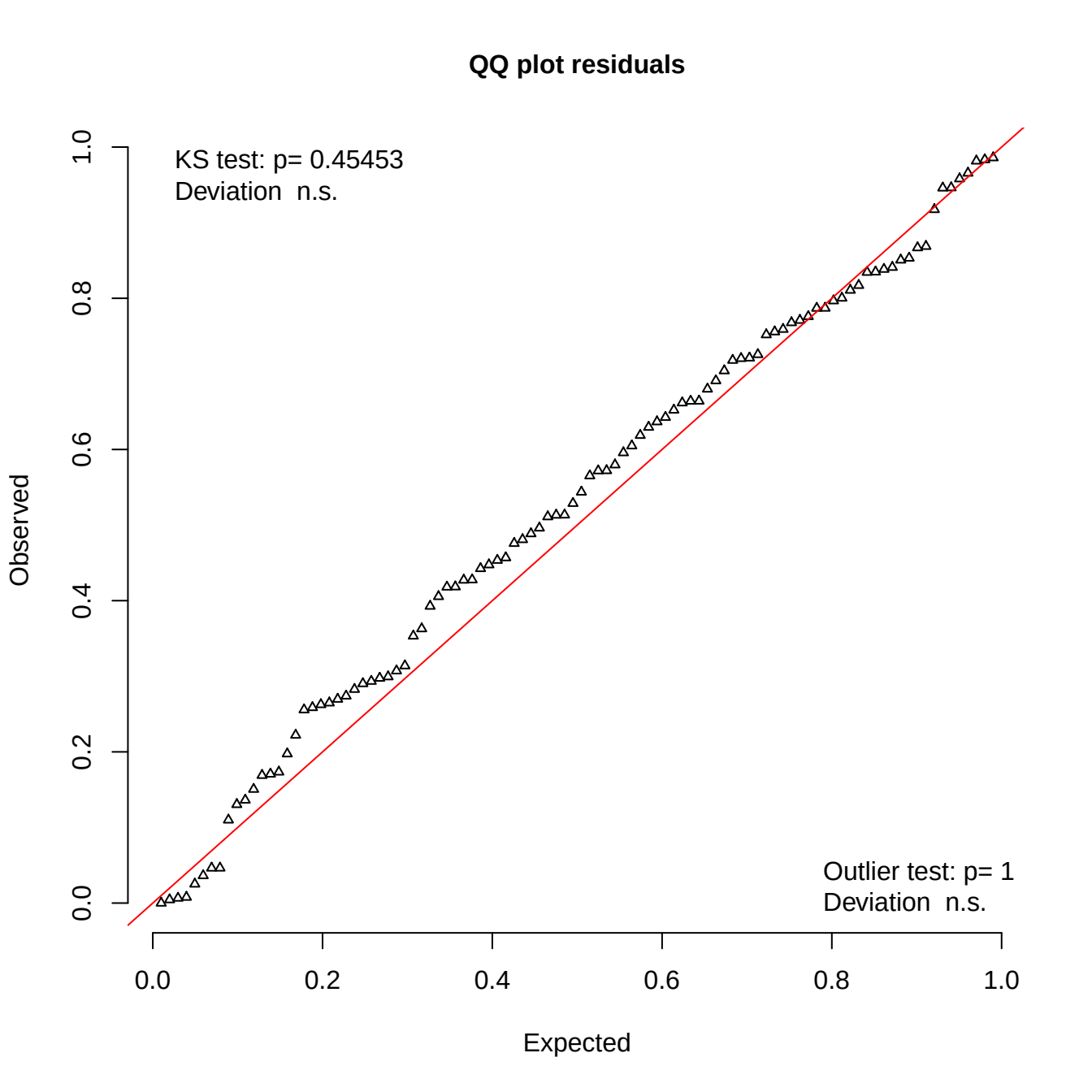

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0.0
0.2
0.4
0.6
0.8
1.0
80
100
120
140
160
Simulated values, red line = fitted model. p−value (two.sided) = 0.4

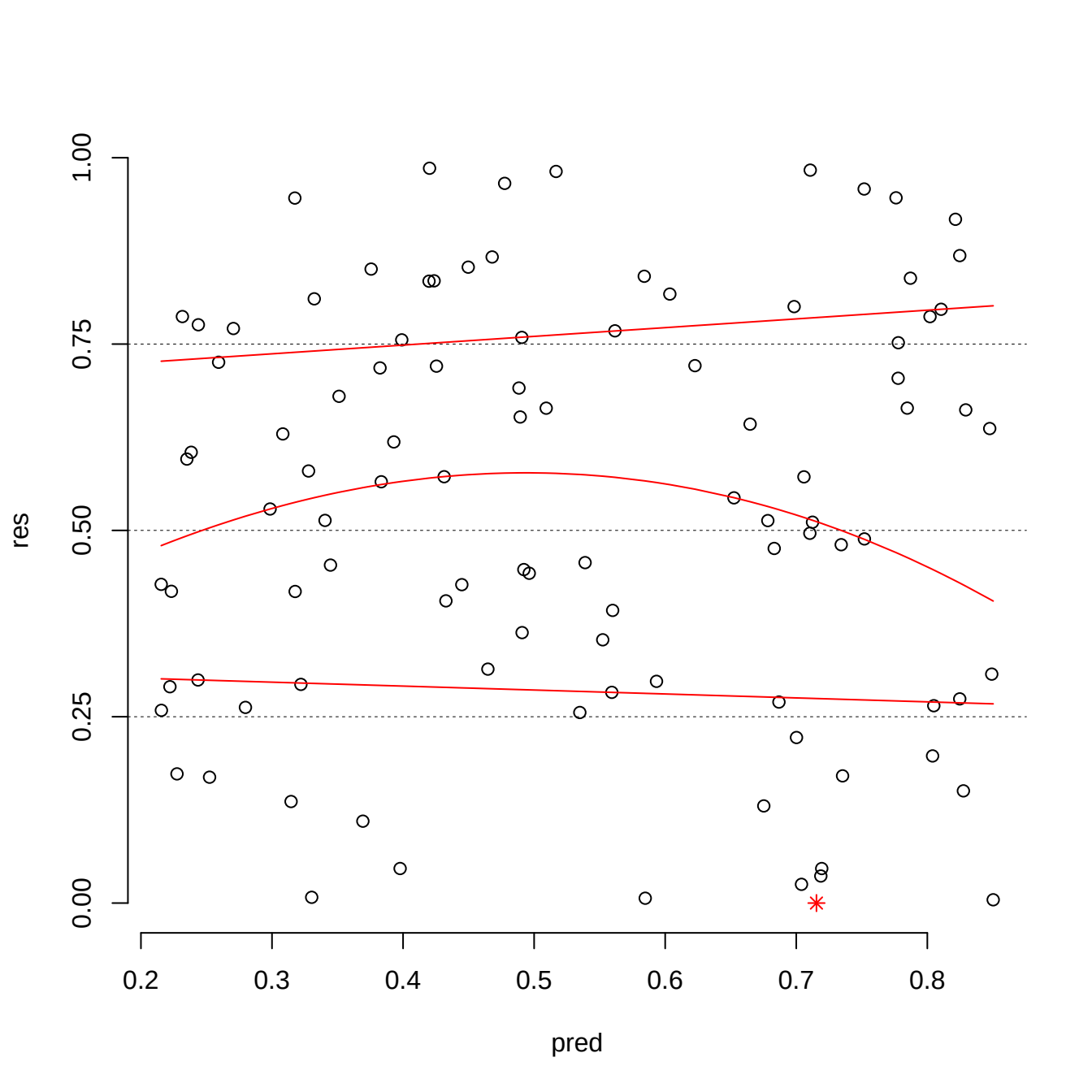

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.45453
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
0
20
40
60
80
100

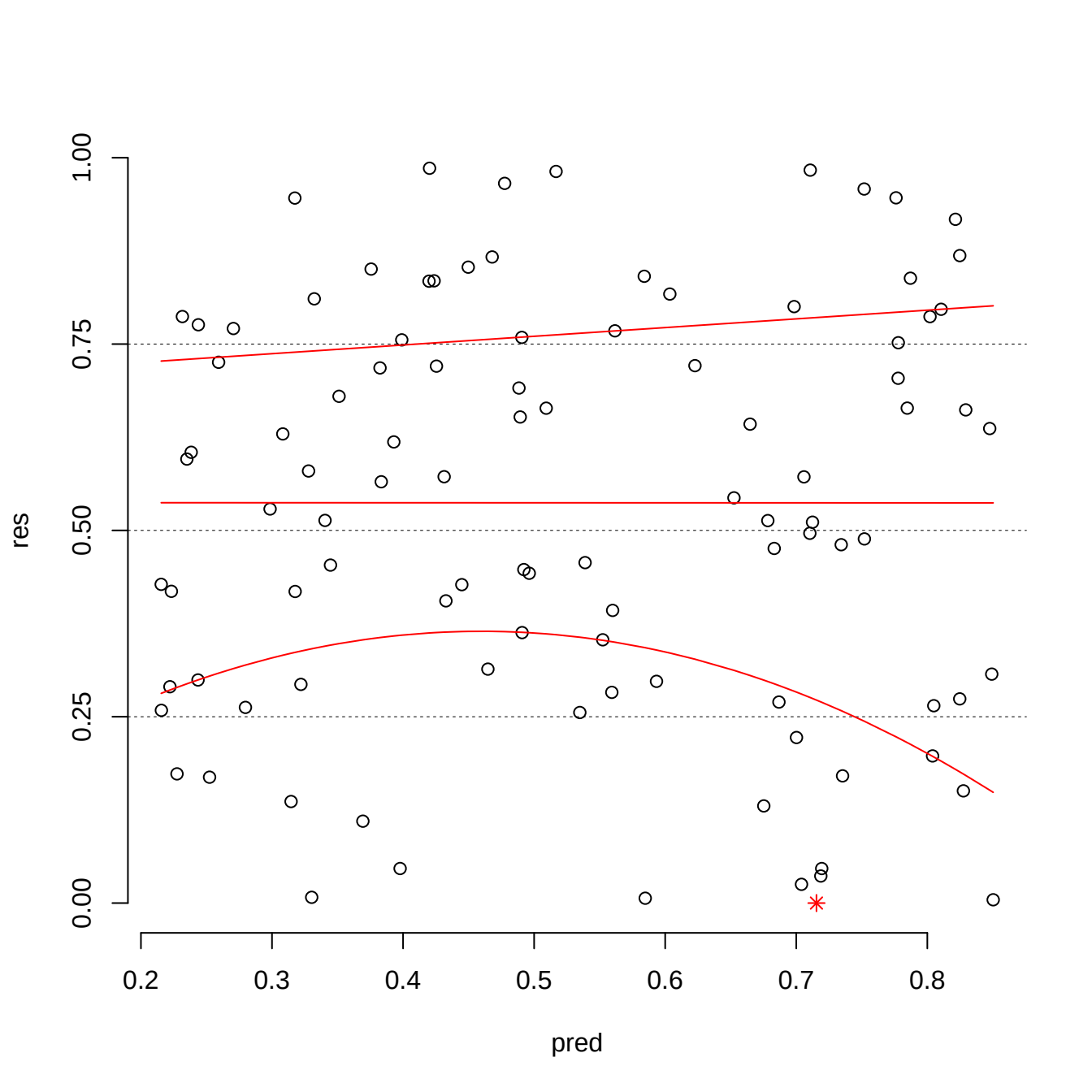

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.45453
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
0.2
0.4
0.6
0.8

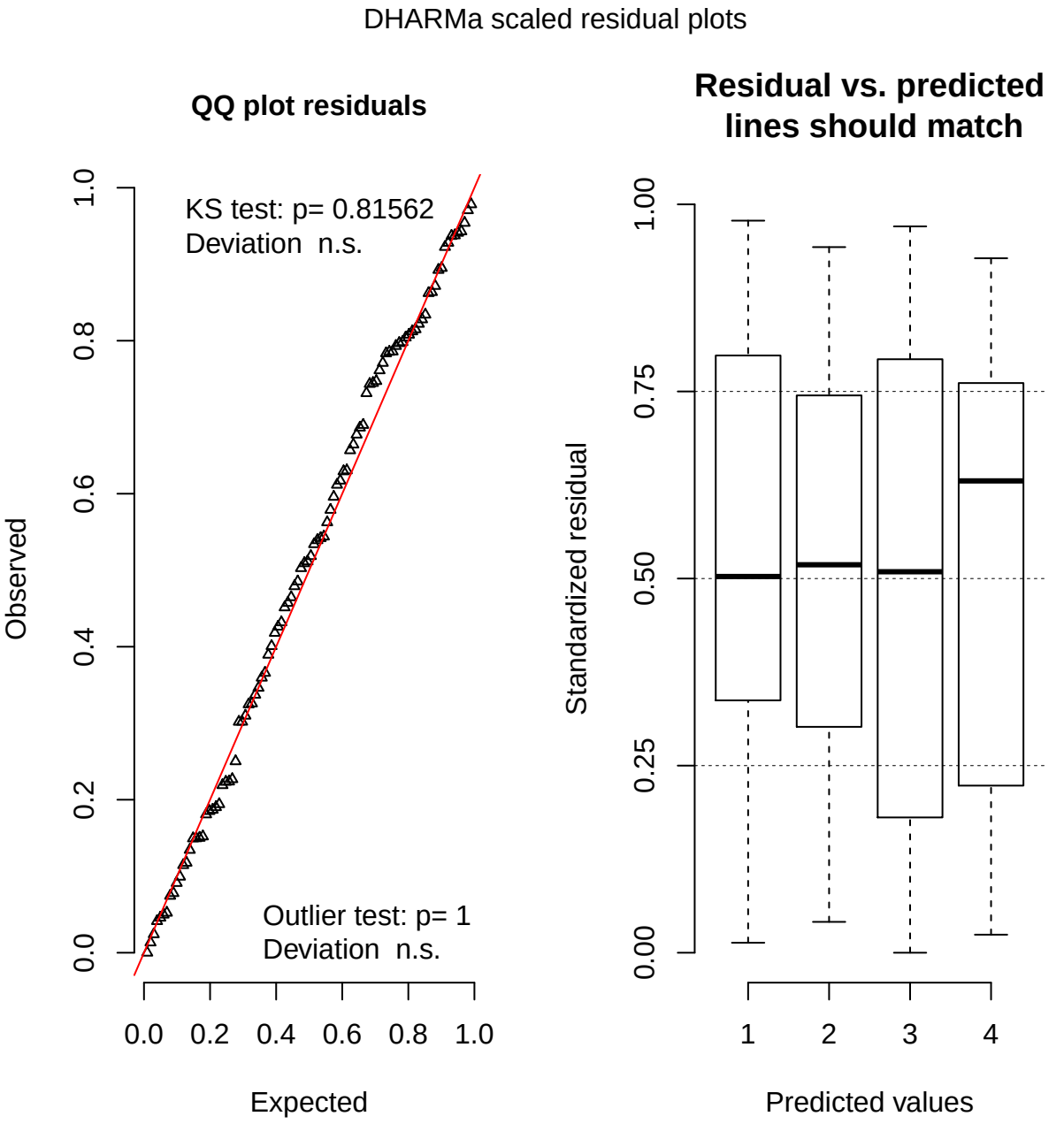

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.45453
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

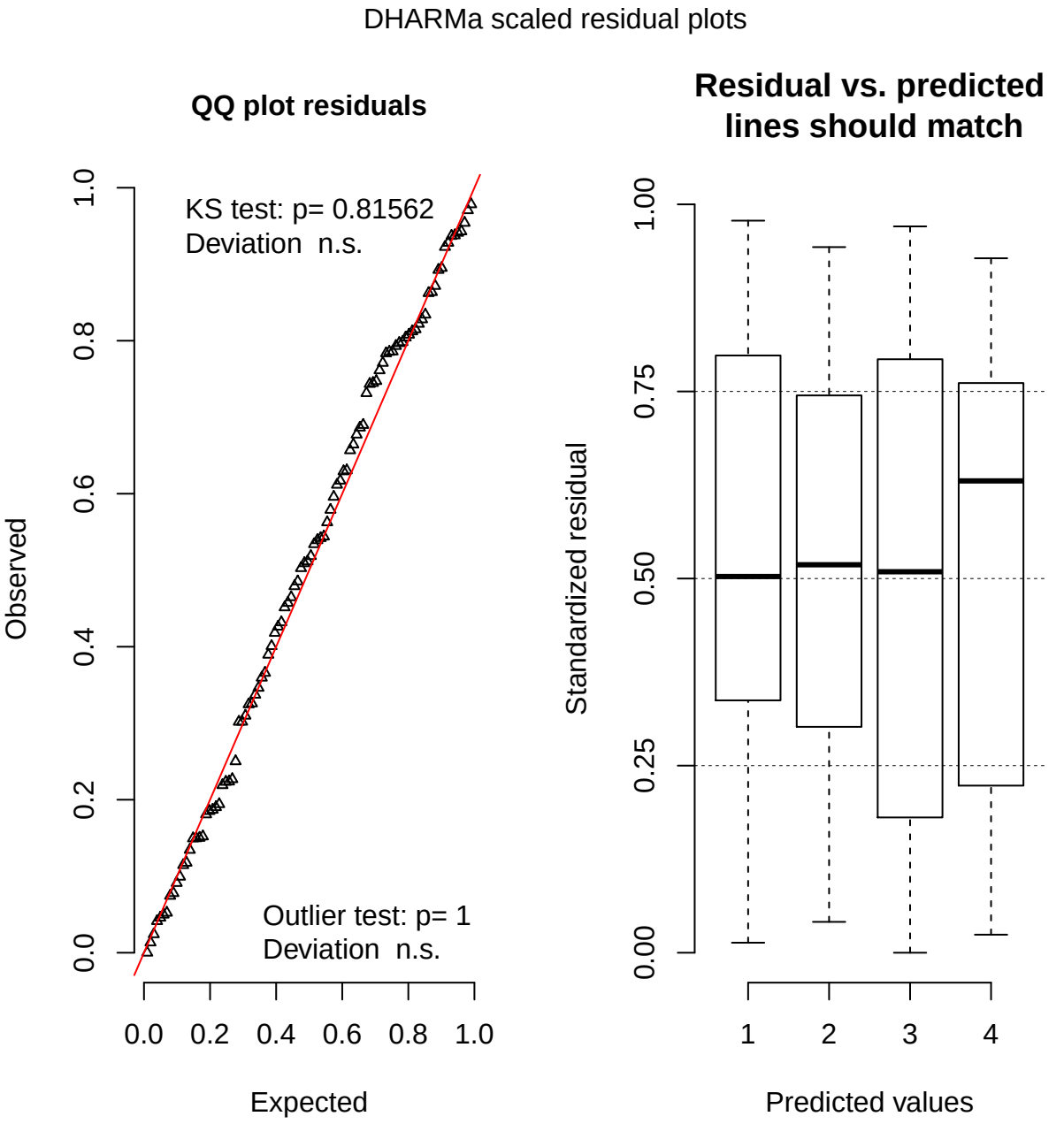

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.45453
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

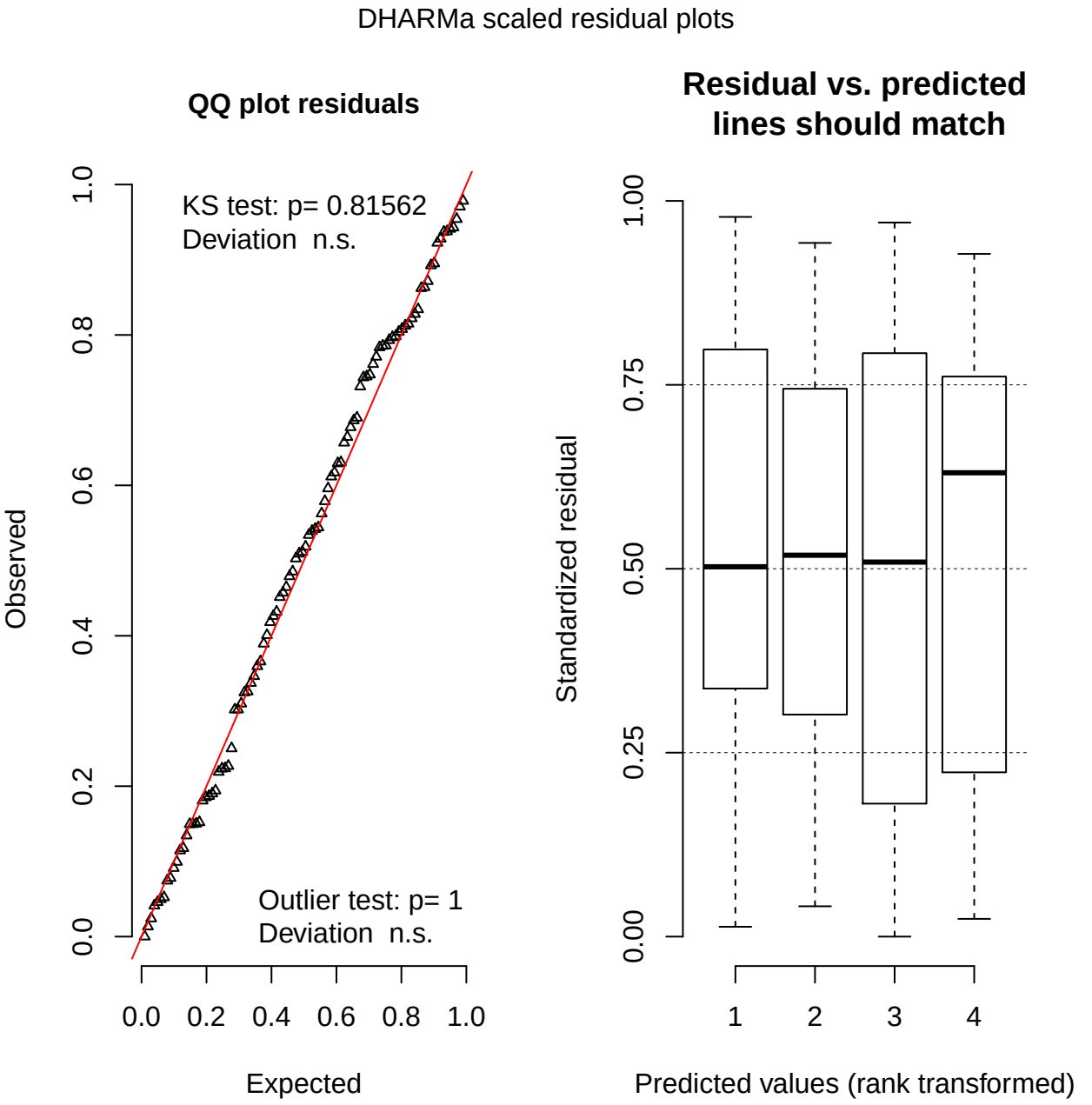

QQ plot residuals
KS test: p= 0.45453
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

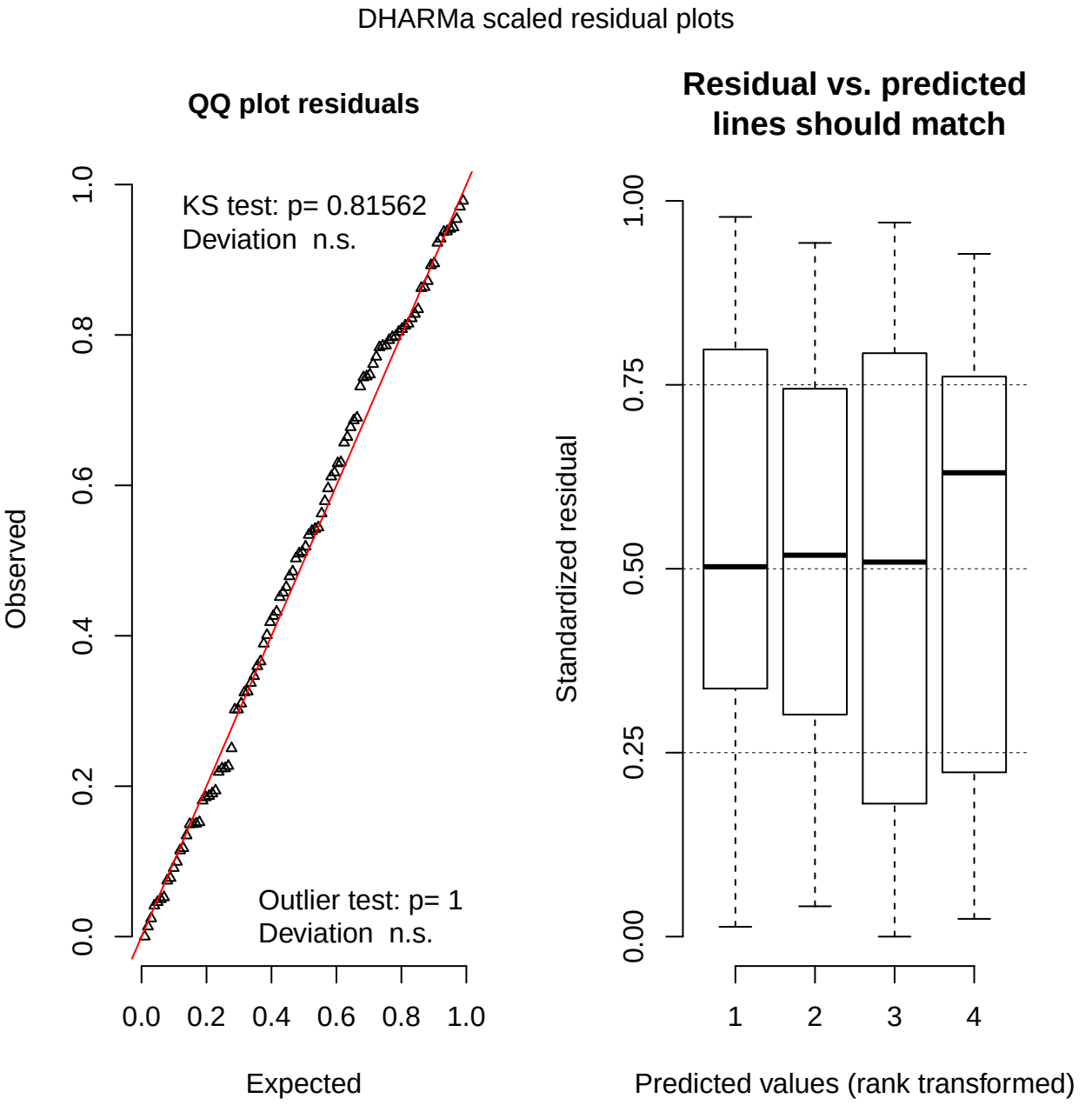

1.00
0.75
0.50
0.25
0.00
res
0.2
0.3
0.4
0.5
0.6
0.7
0.8
pred

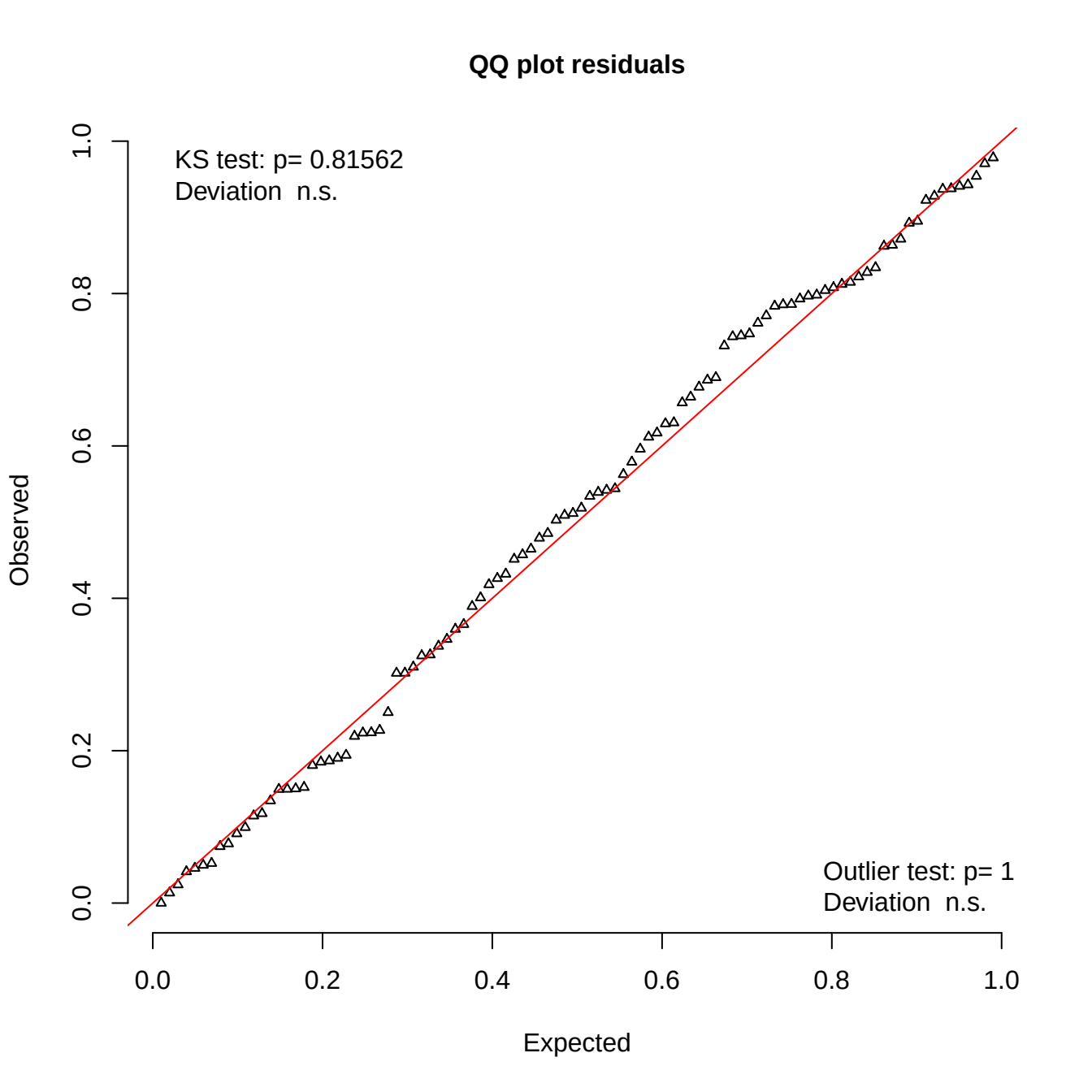

1.00
0.75
0.50
0.25
0.00
res
0.2
0.3
0.4
0.5
0.6
0.7
0.8
pred

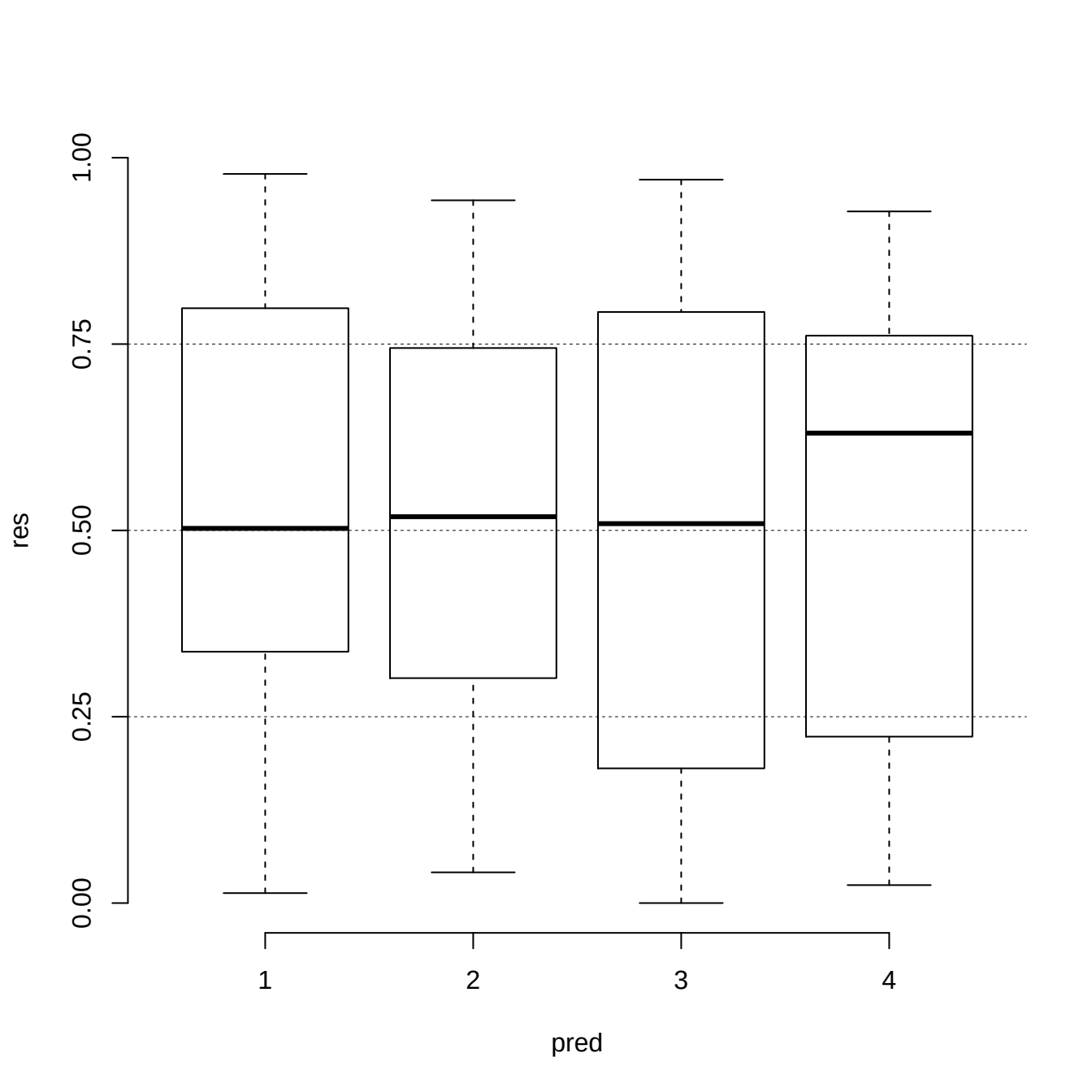

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.81562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
1
2
3
4

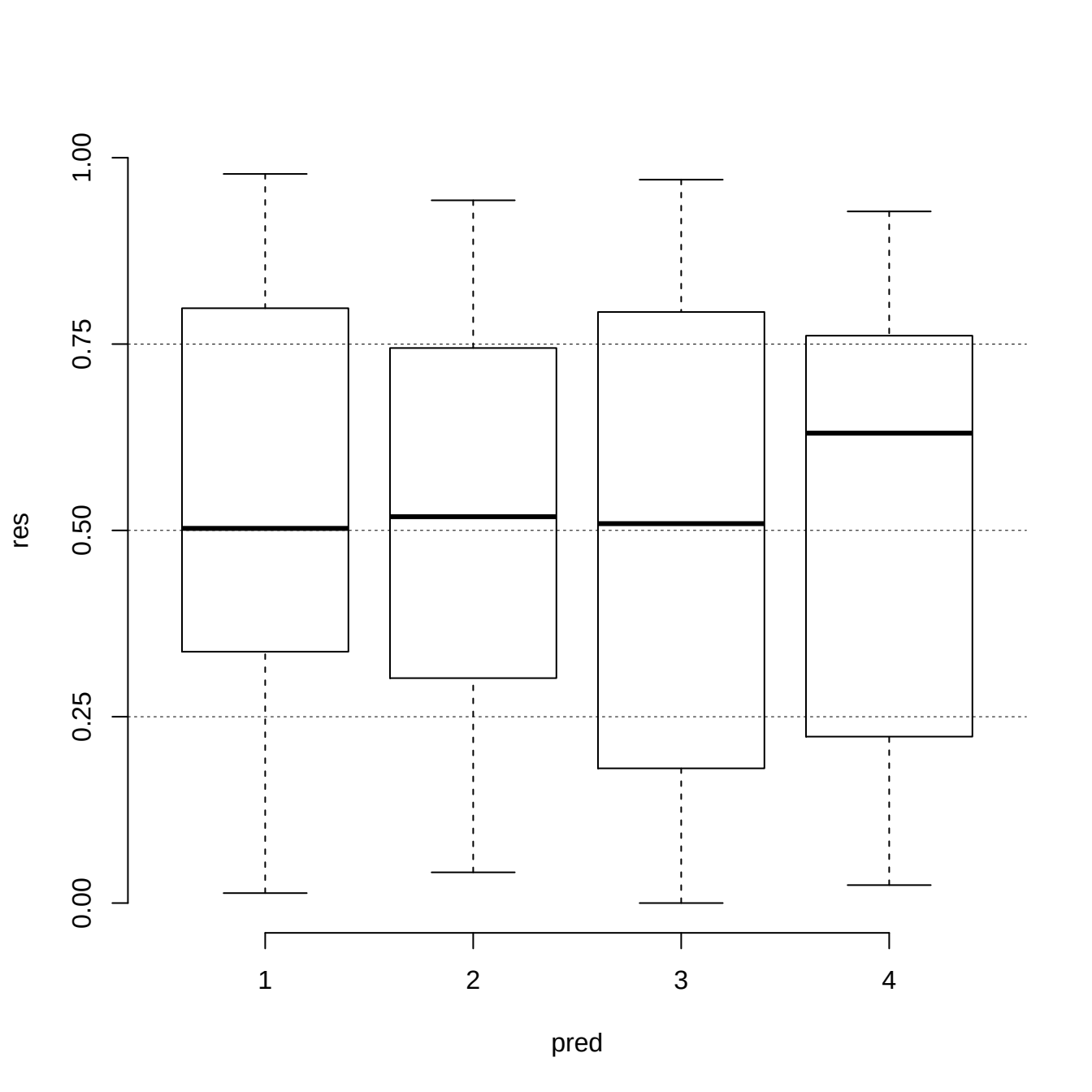

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.81562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values
0.00
0.25
0.50
0.75
1.00
1
2
3
4

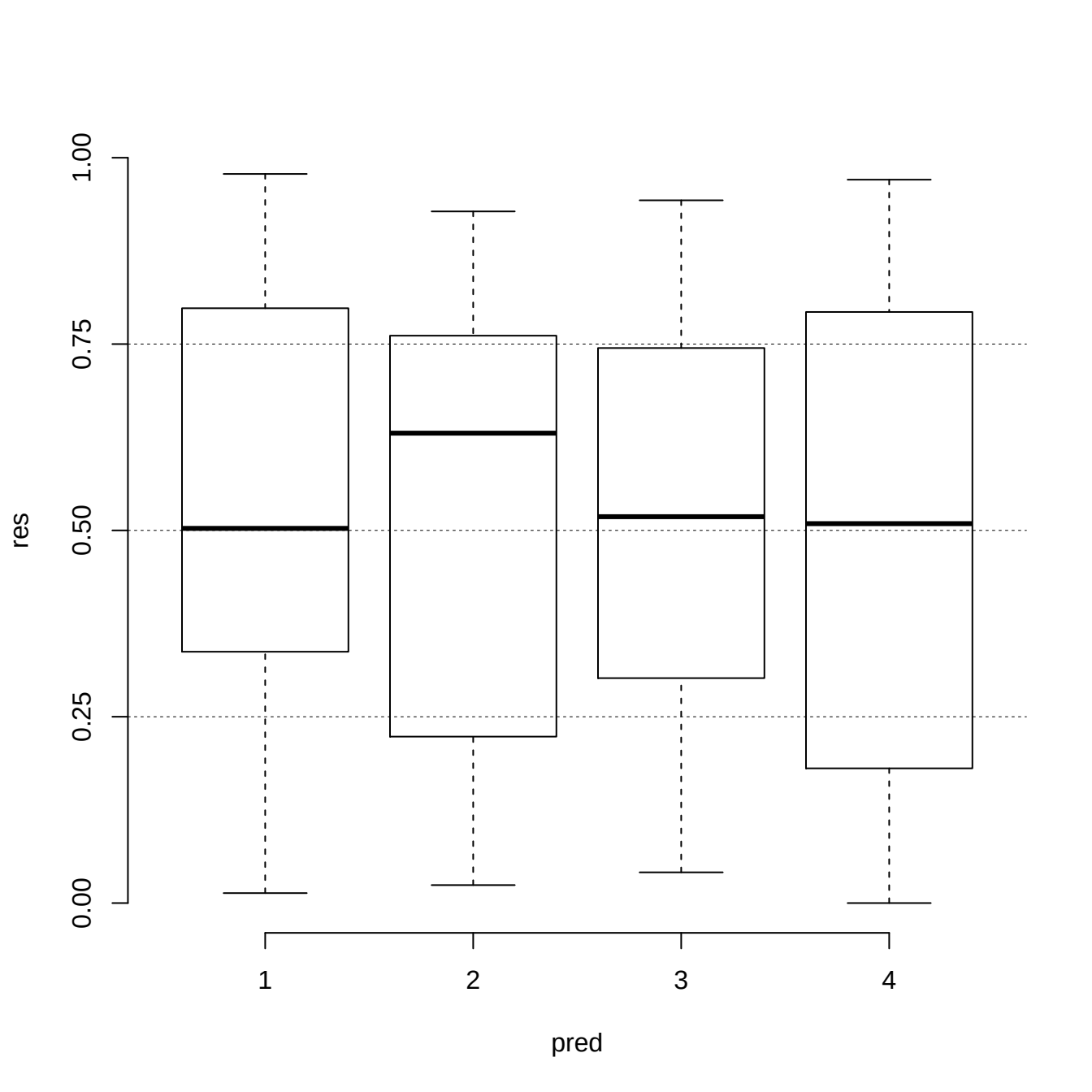

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.81562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00
1
2
3
4

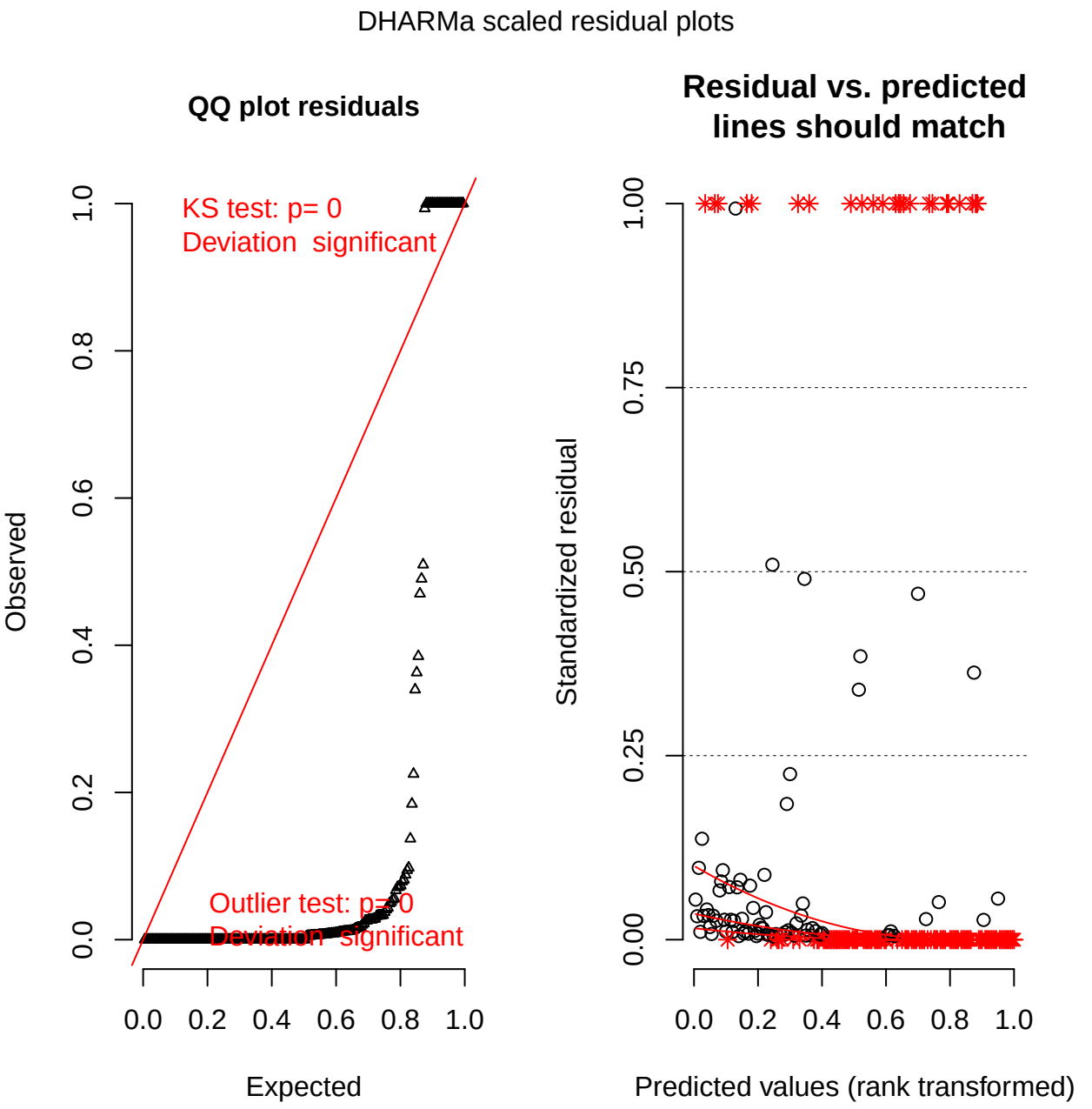

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0.81562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00
1
2
3
4

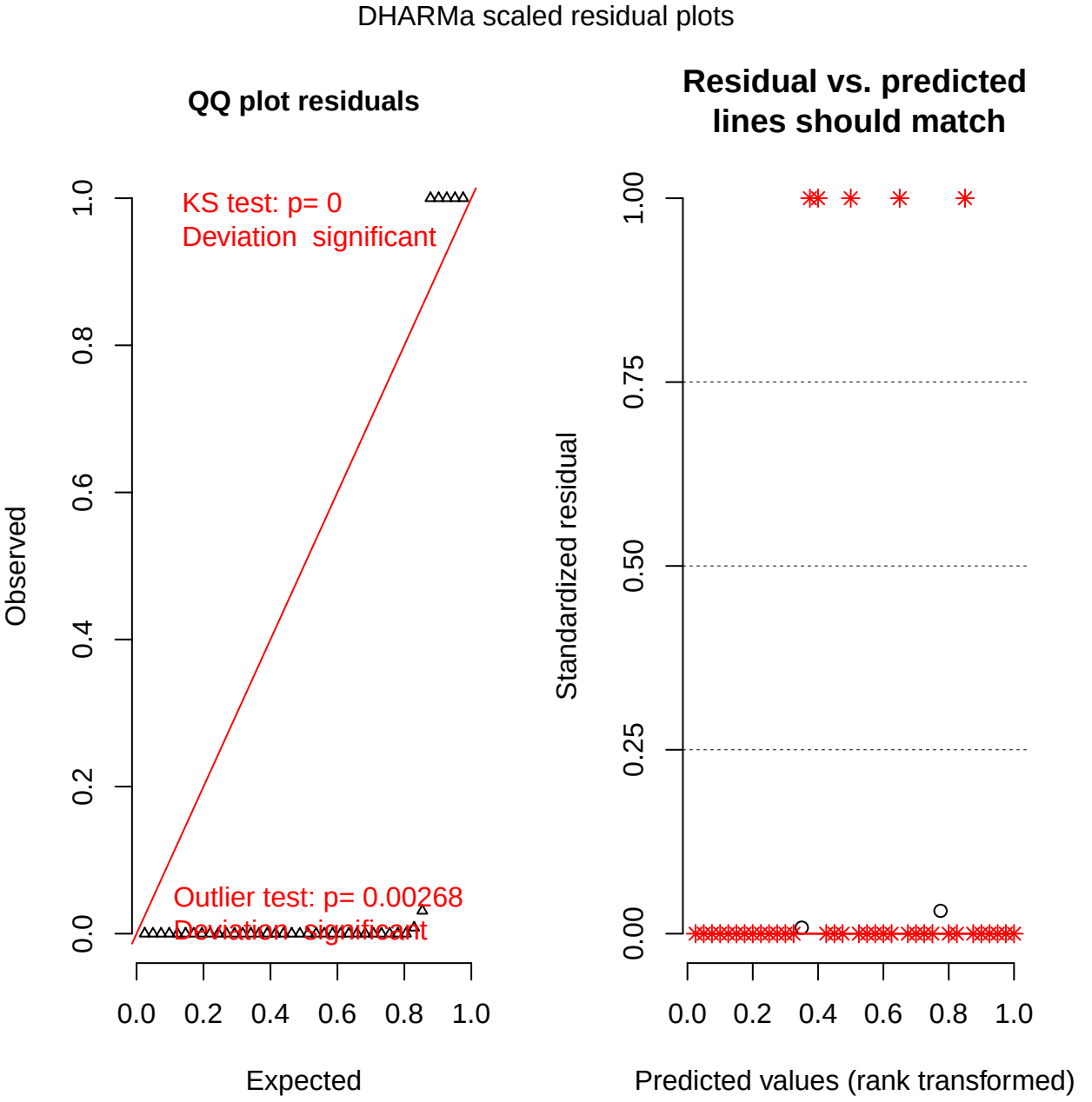

QQ plot residuals
KS test: p= 0.81562
Deviation n.s.
Outlier test: p= 1
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

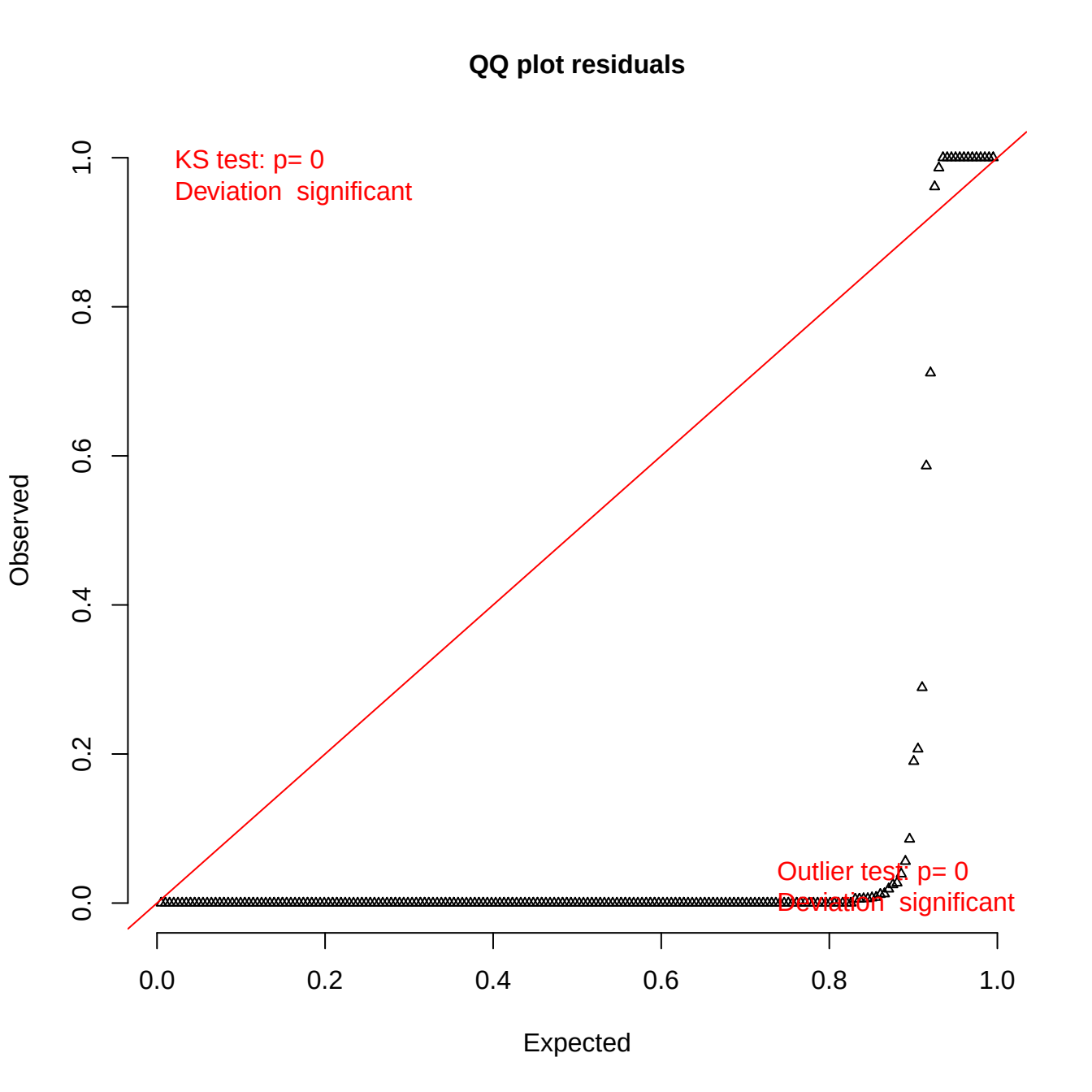

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

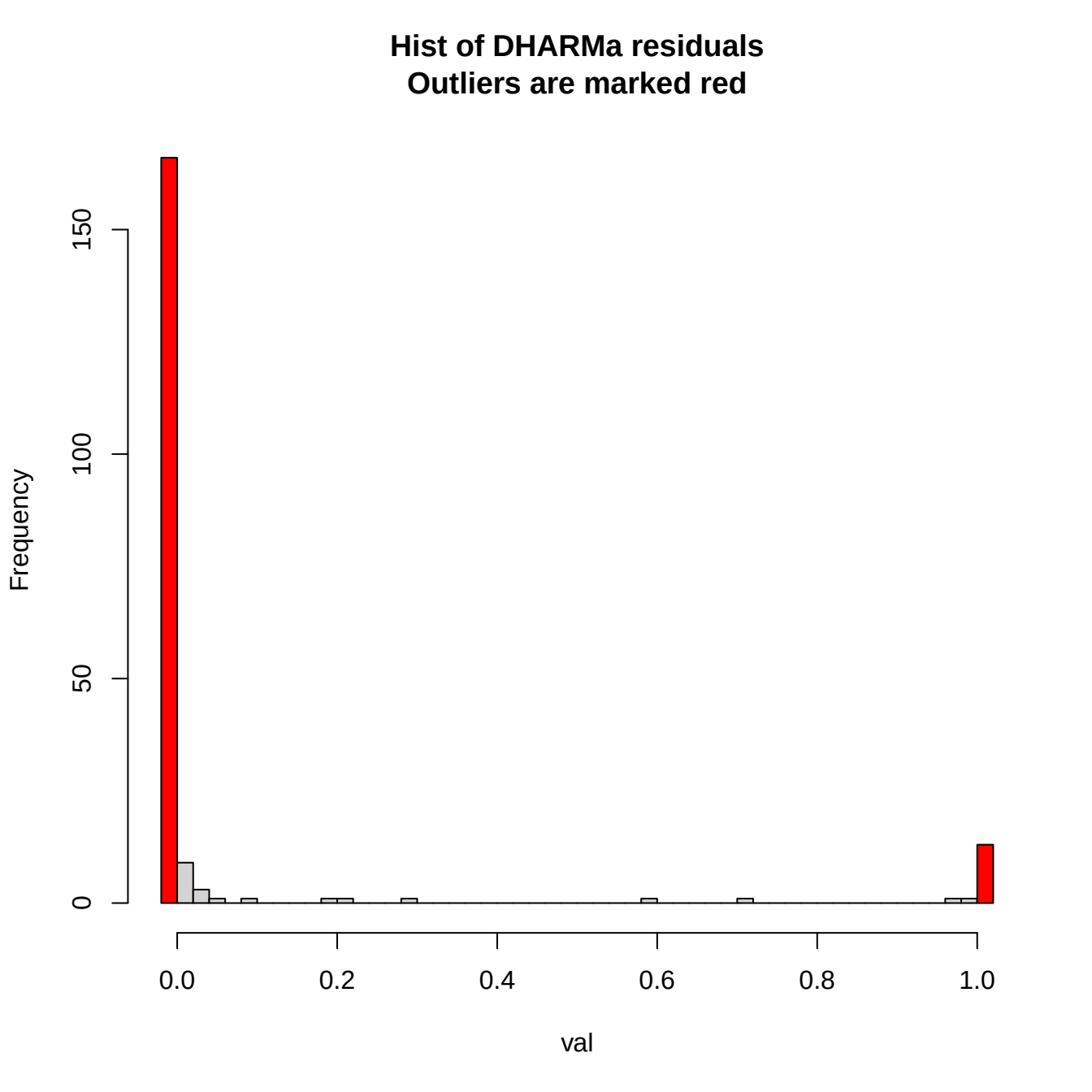

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

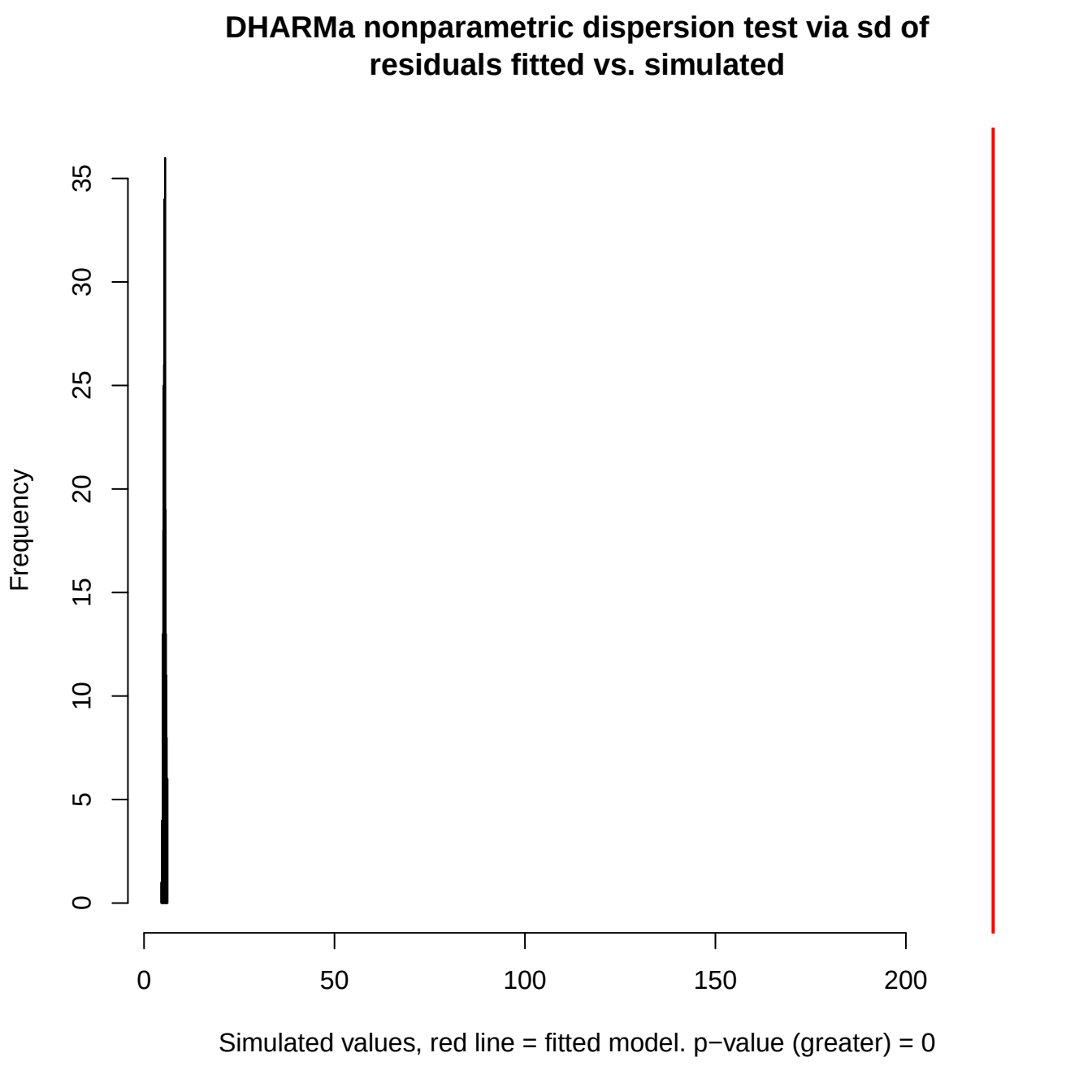

1.00
0.75
0.50
0.25
0.00
res
1
2
3
4
pred

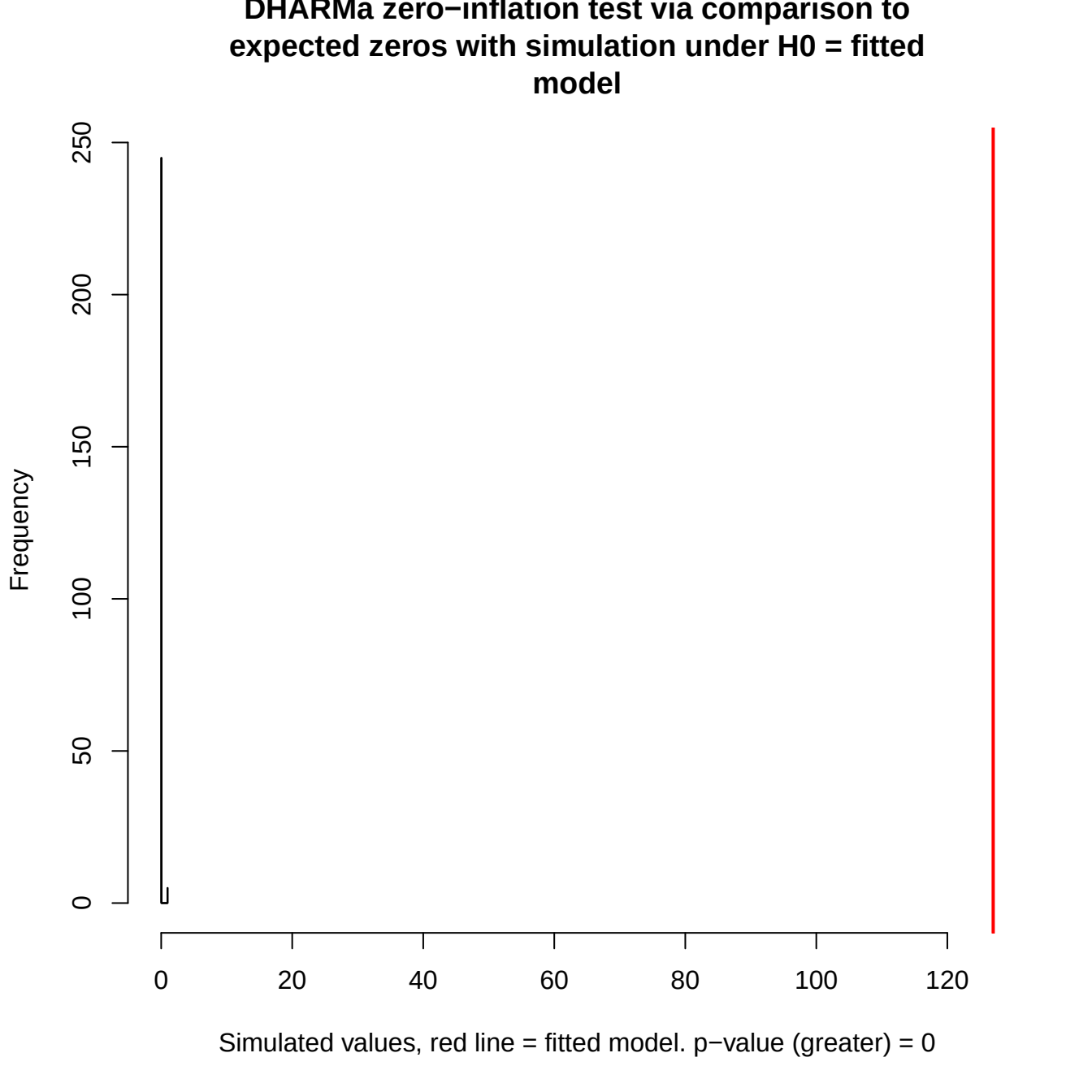

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

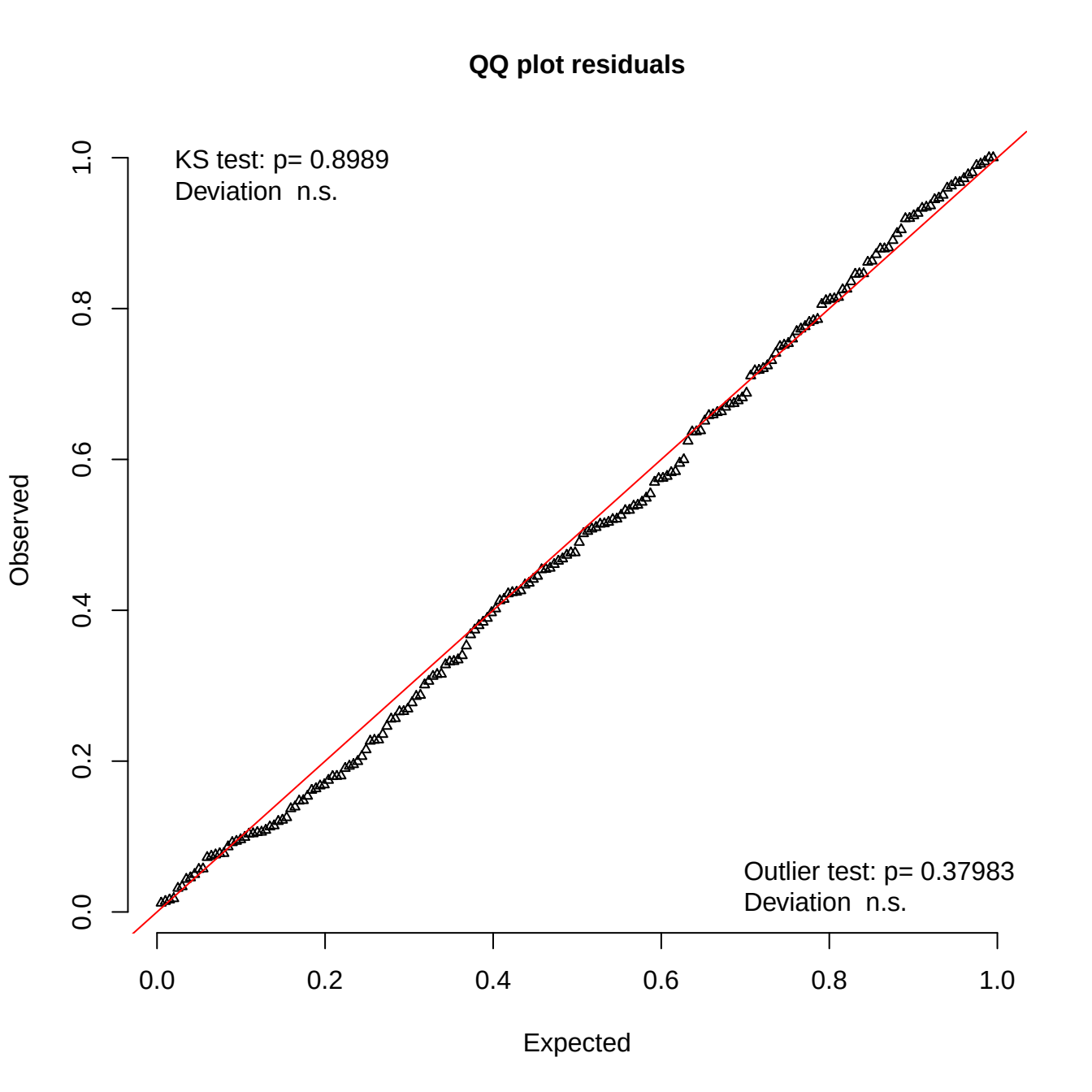

DHARMa scaled residual plots
QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0.00268
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
Residual vs. predicted
lines should match
Standardized residual
Predicted values (rank transformed)
0.00
0.25
0.50
0.75
1.00

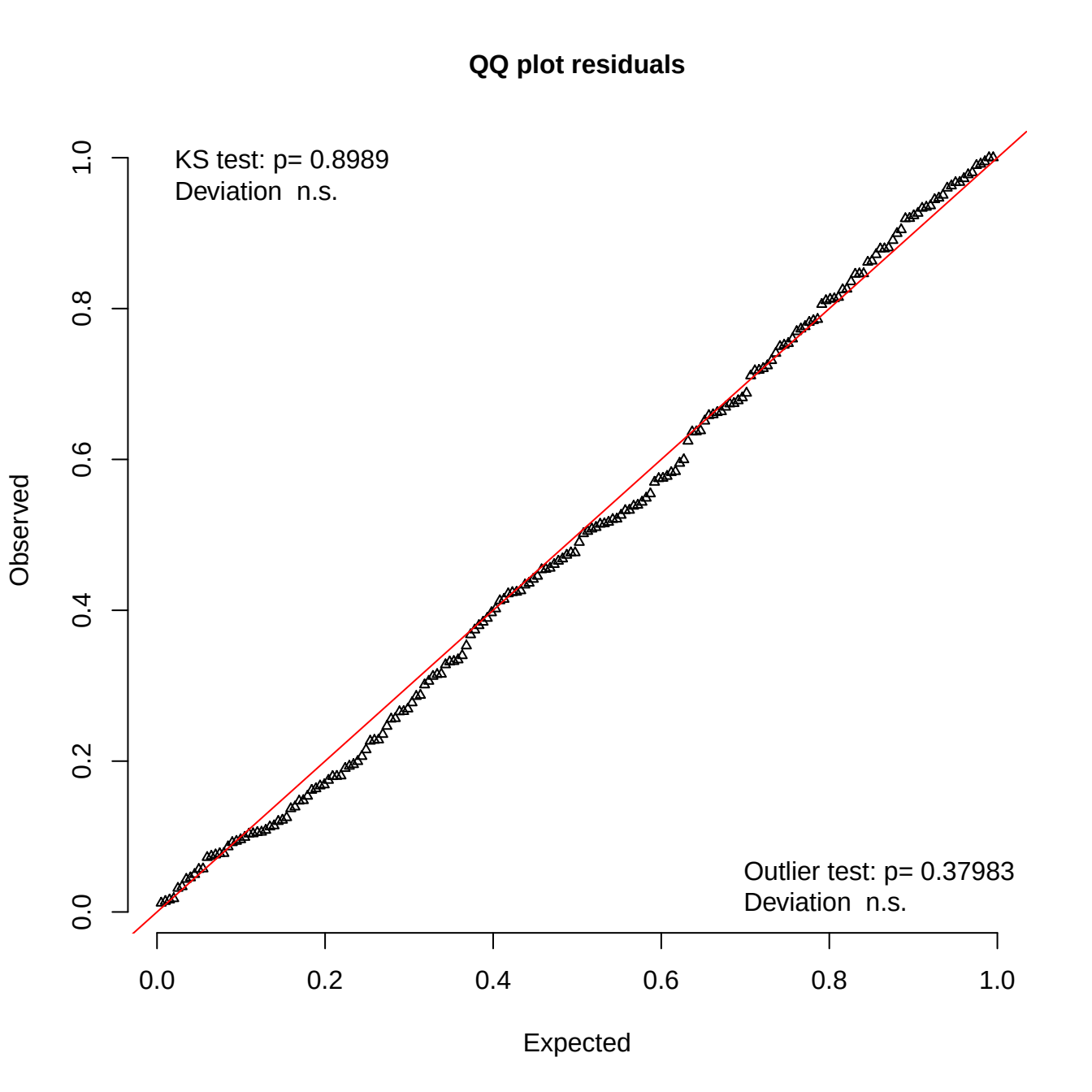

QQ plot residuals
KS test: p= 0
Deviation significant
Outlier test: p= 0
Deviation significant
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

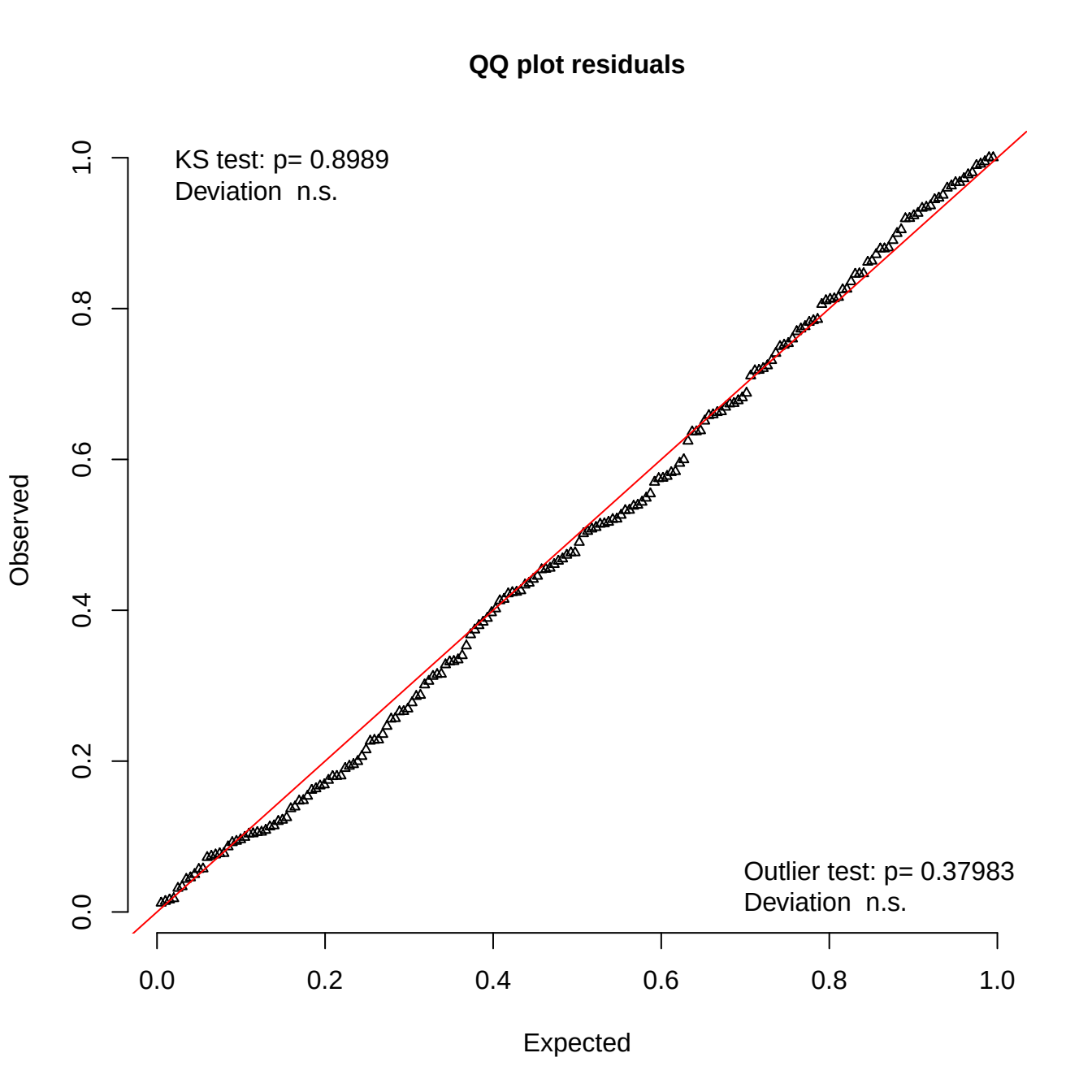

Hist of DHARMa residuals
Outliers are marked red
Frequency
0
50
100
150
0.0
0.2
0.4
0.6
0.8
1.0
val

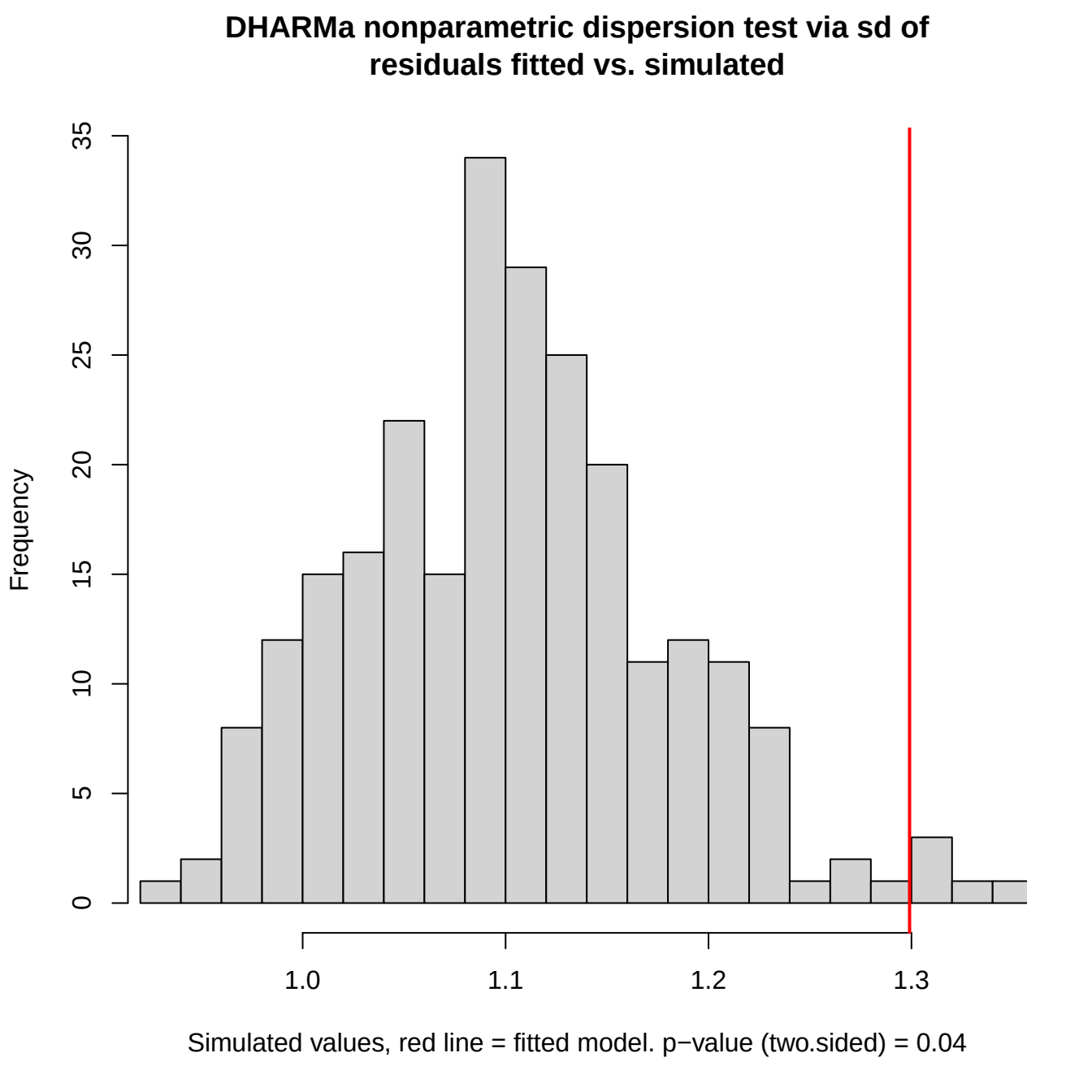

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
0
50
100
150
200
Simulated values, red line = fitted model. p−value (greater) = 0

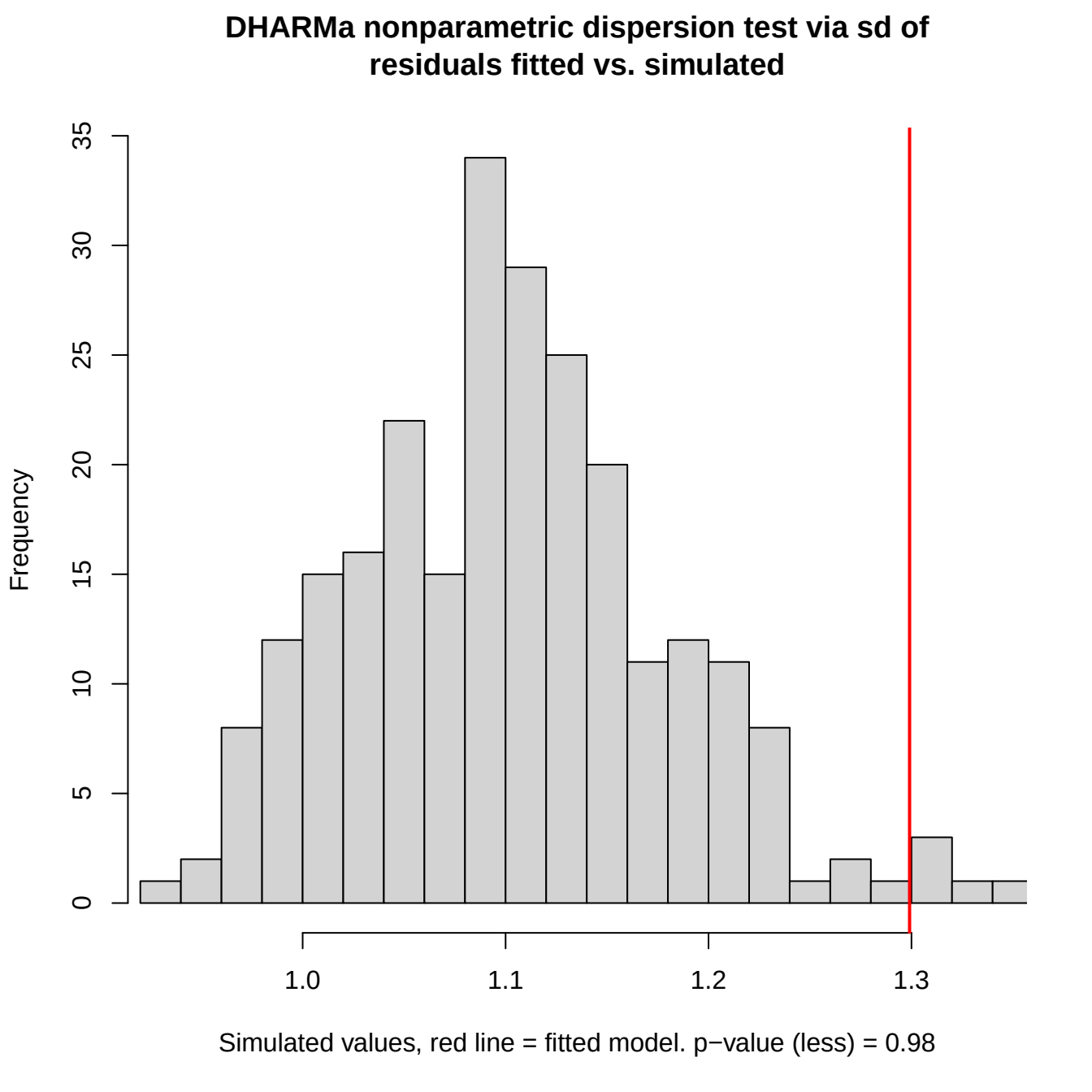

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
0
20
40
60
80
100
120
Simulated values, red line = fitted model. p−value (greater) = 0

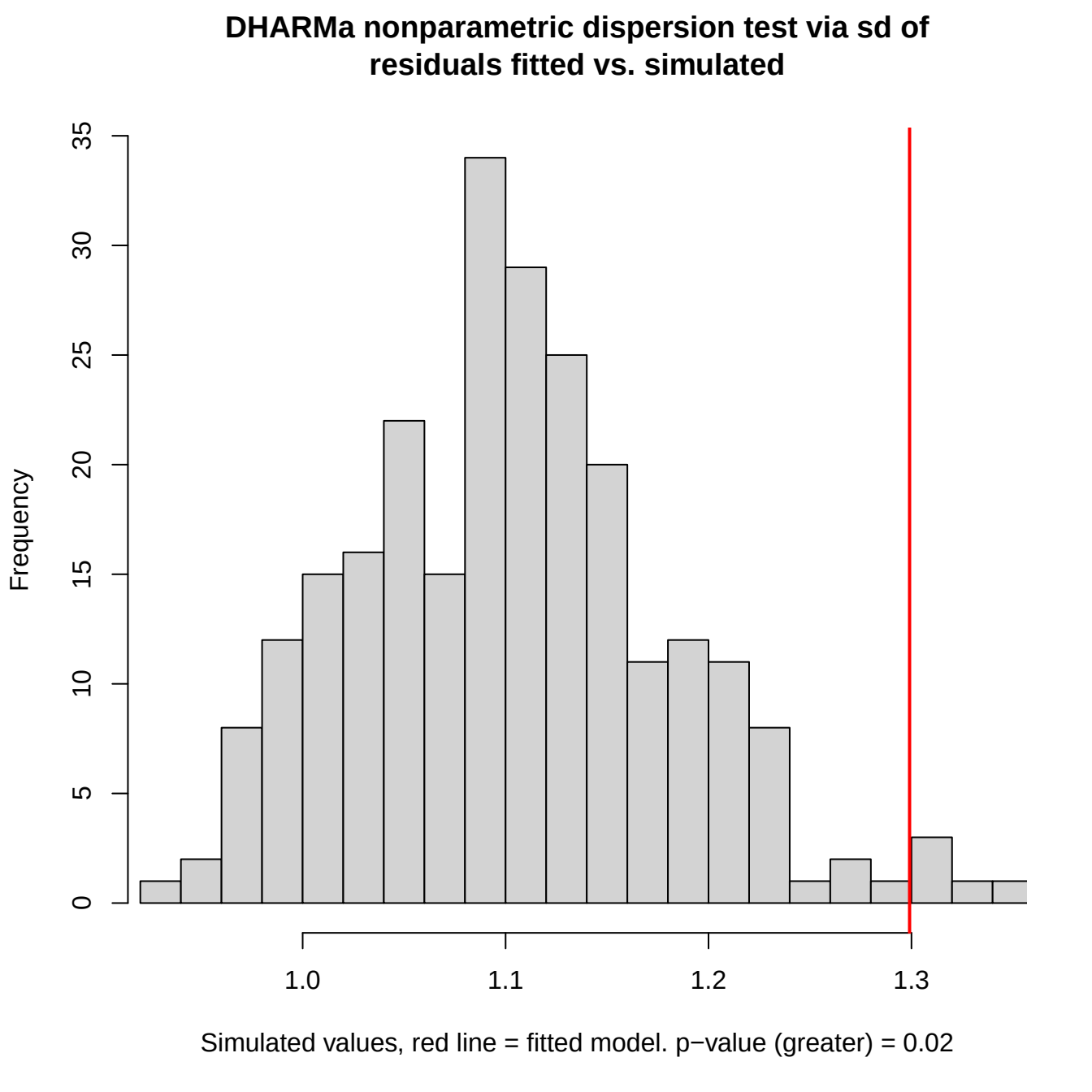

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

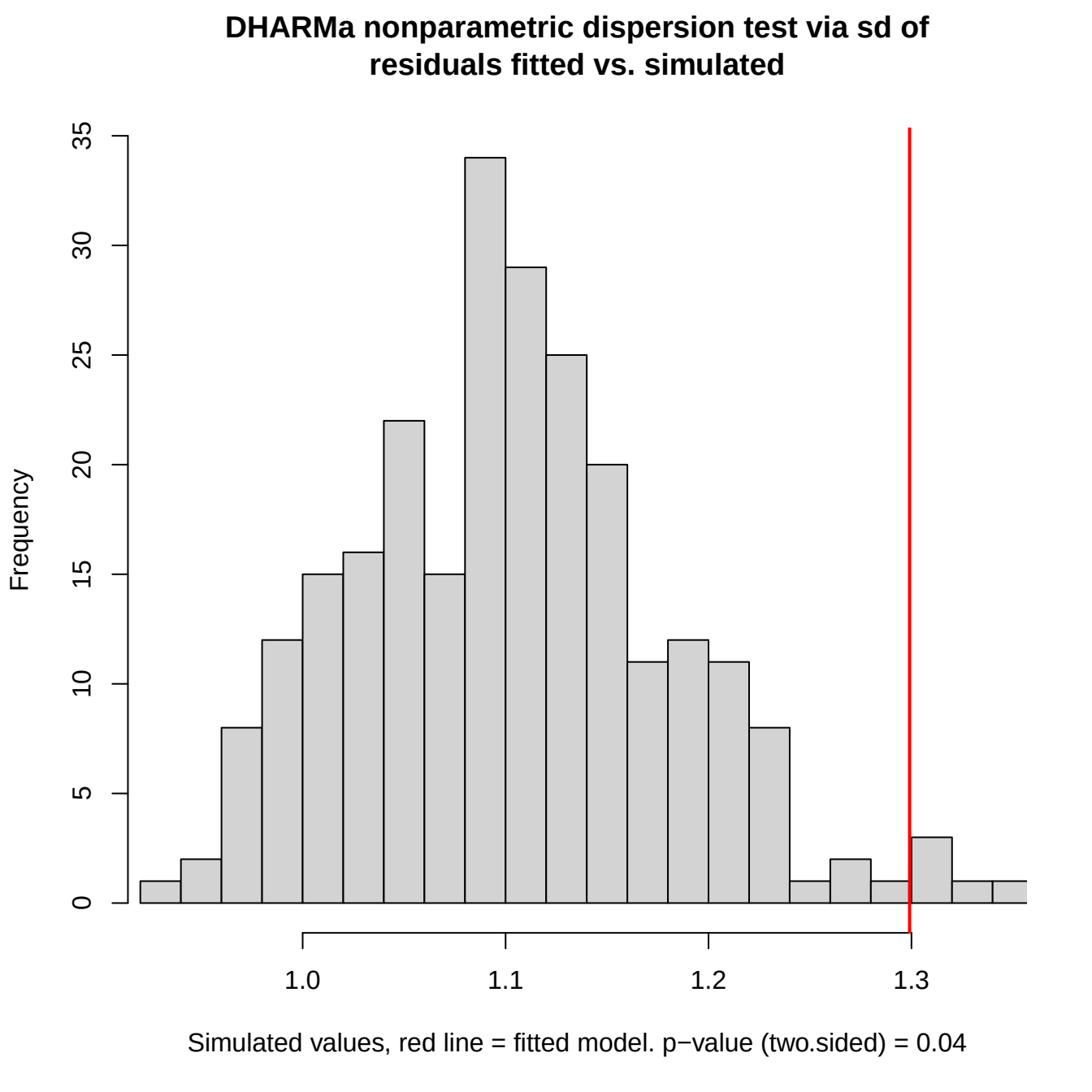

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

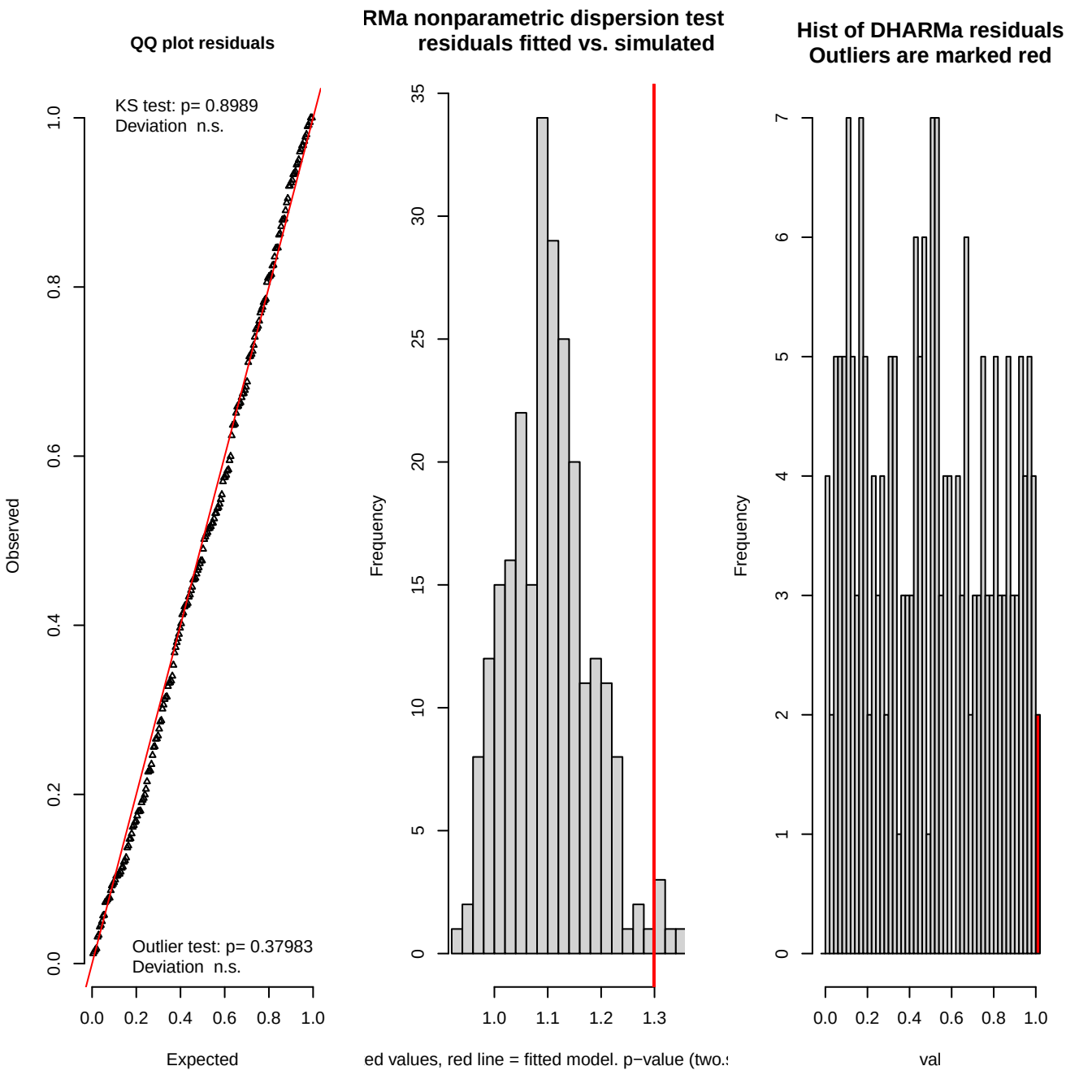

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0

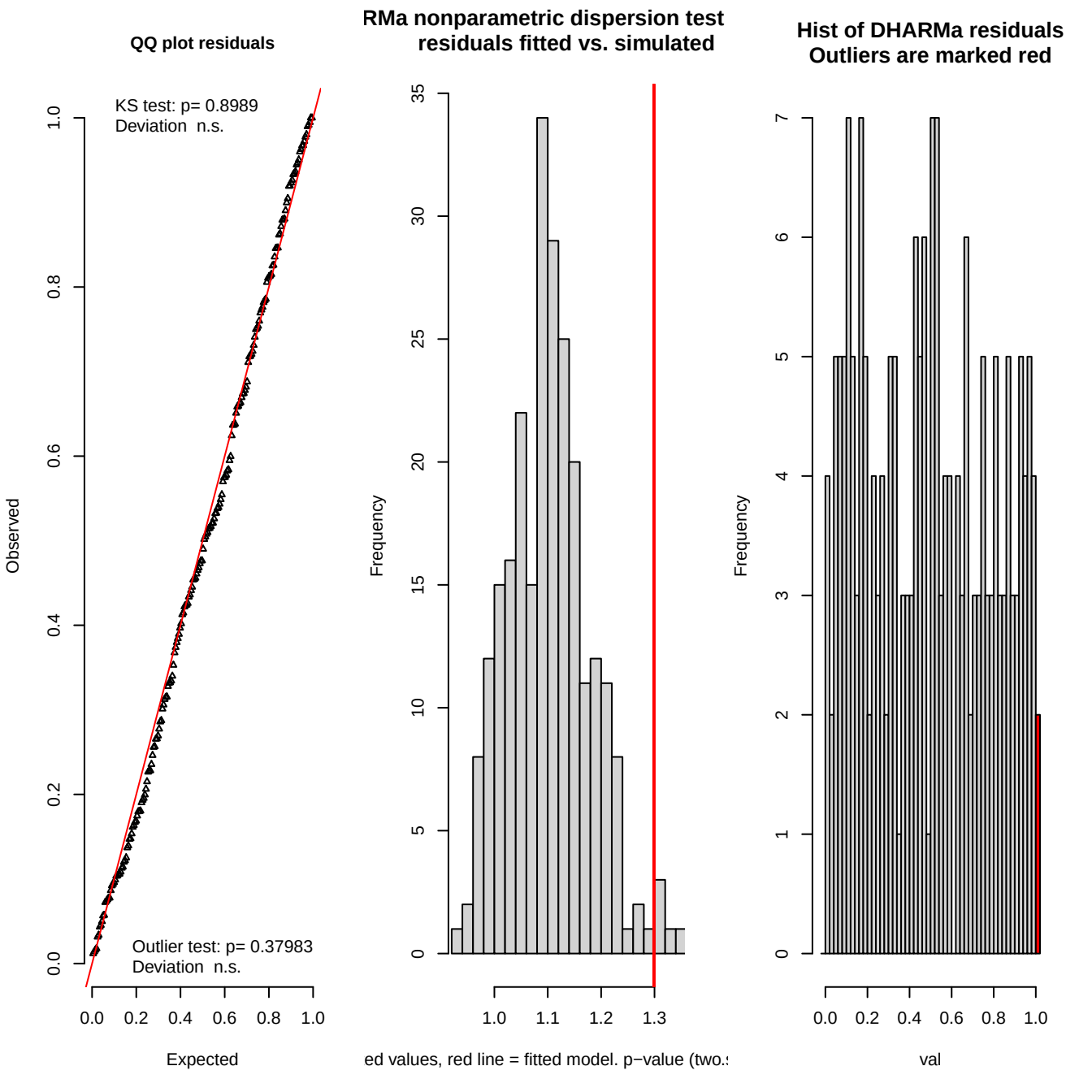

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.04

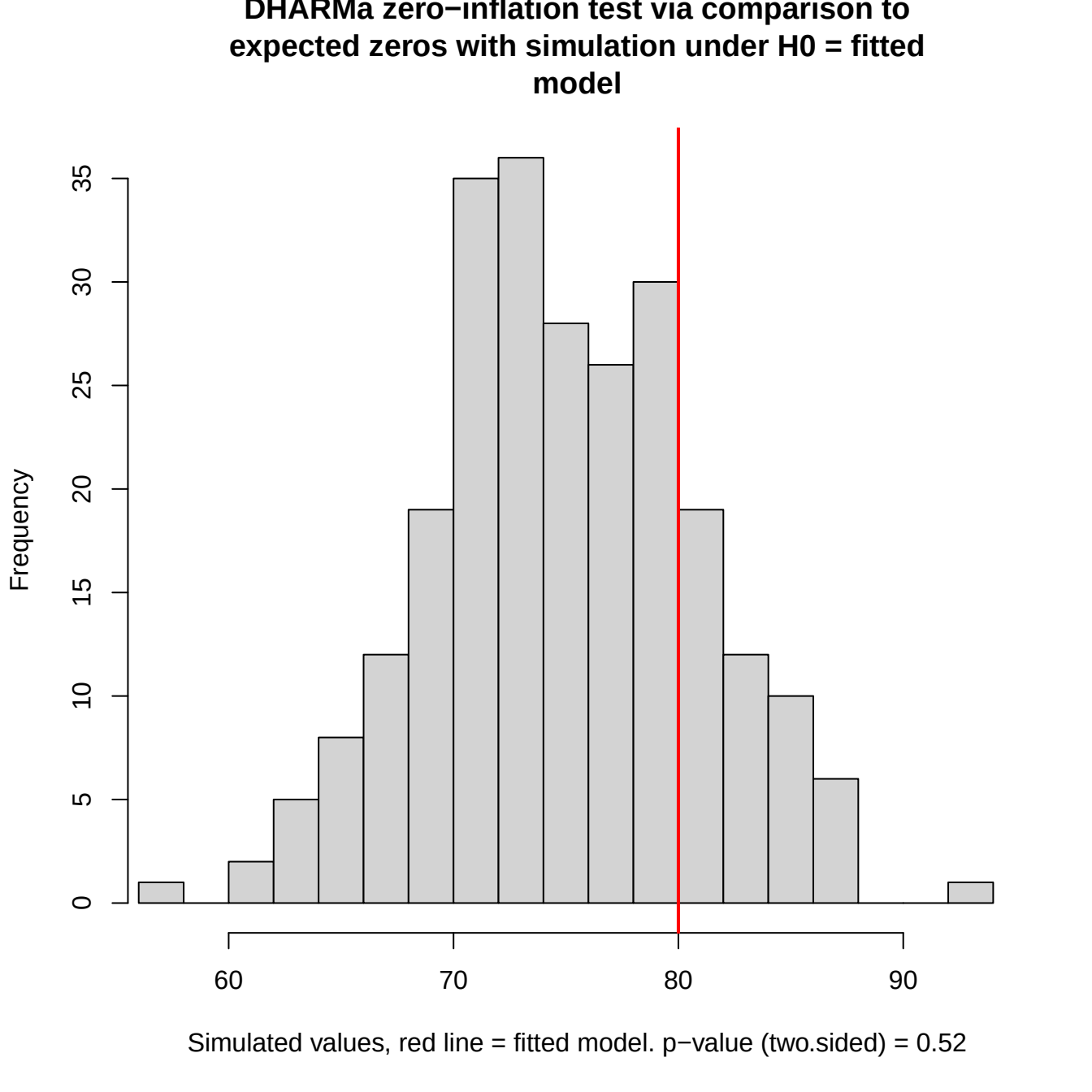

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (less) = 0.98

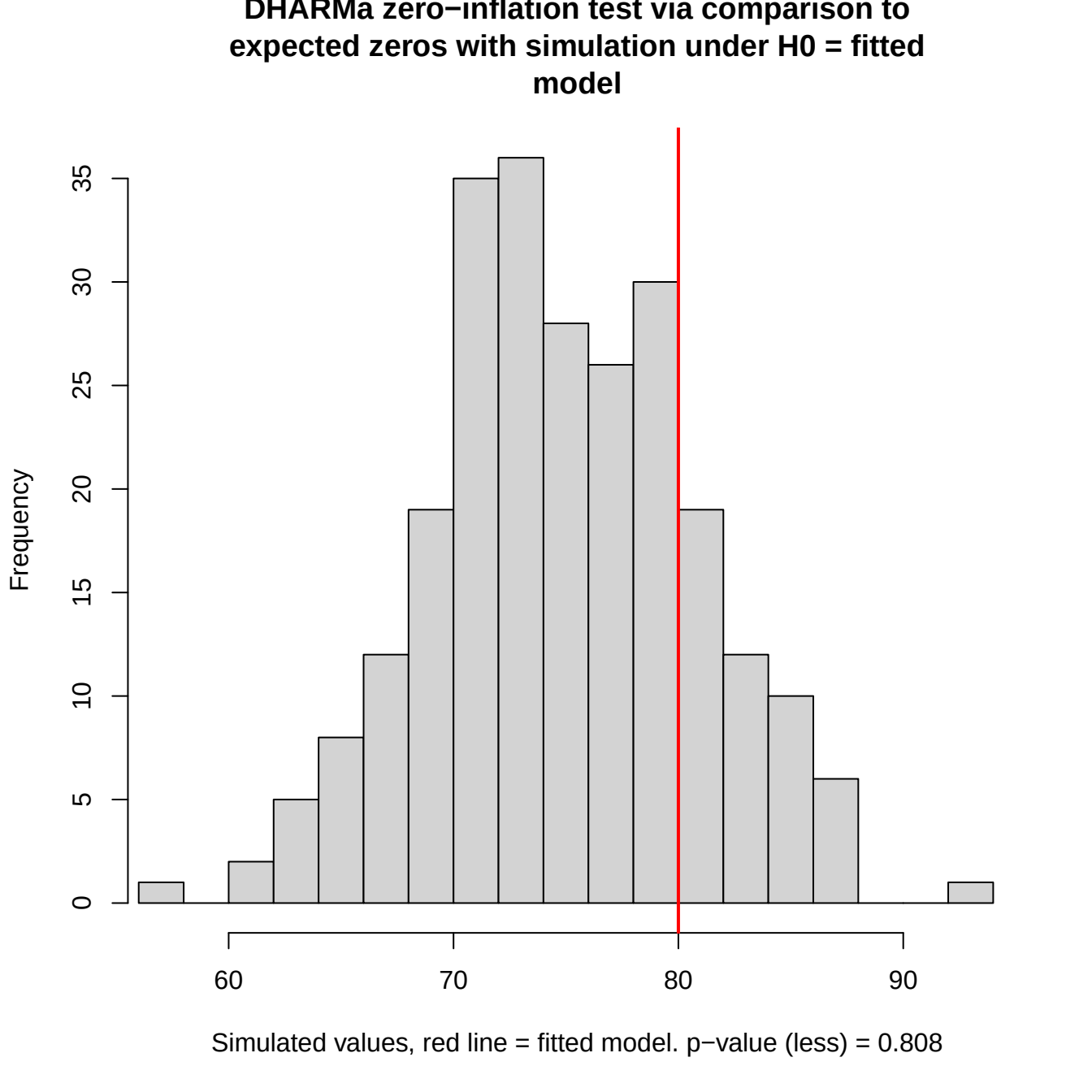

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (greater) = 0.02

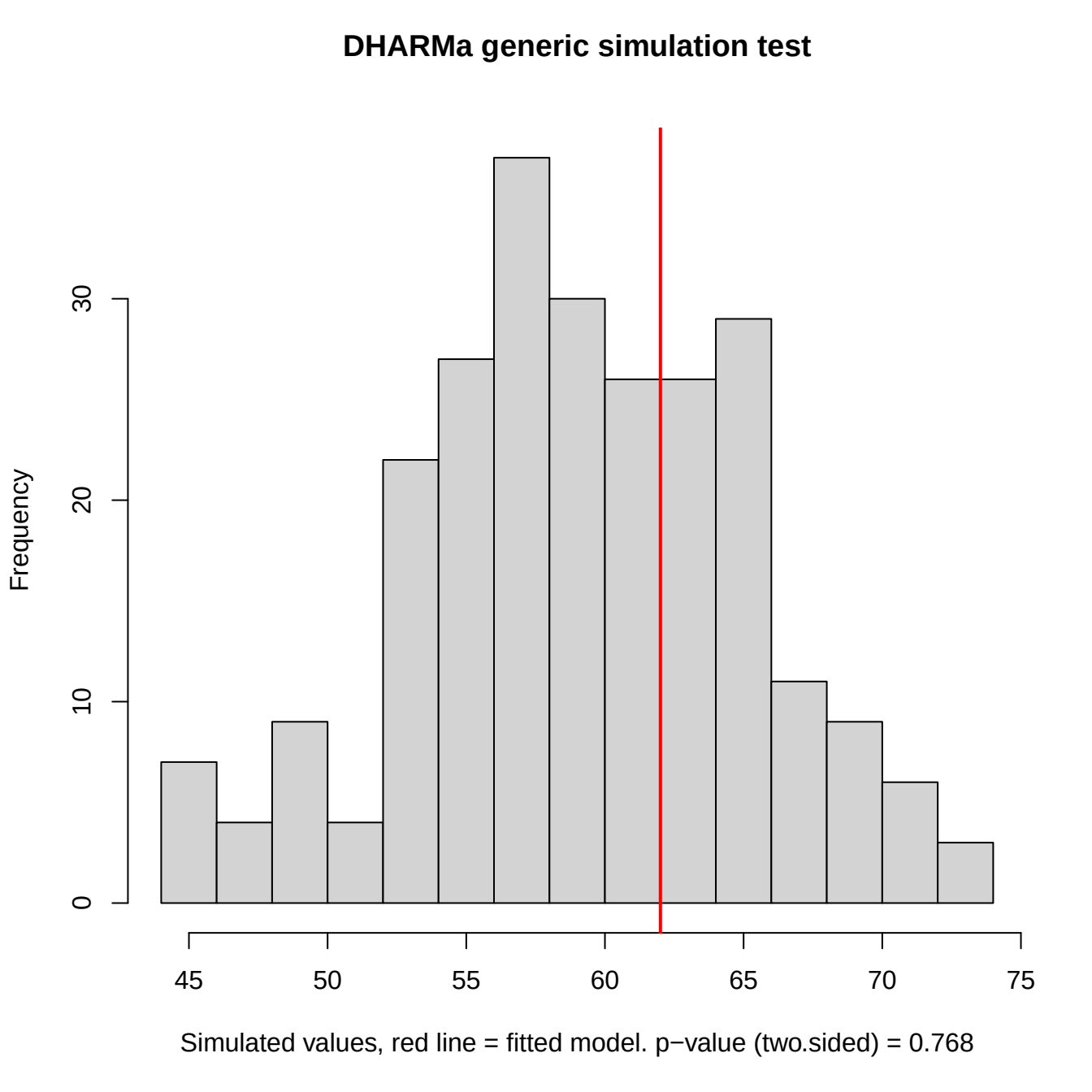

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
5
10
15
20
25
30
35
1.0
1.1
1.2
1.3
Simulated values, red line = fitted model. p−value (two.sided) = 0.04

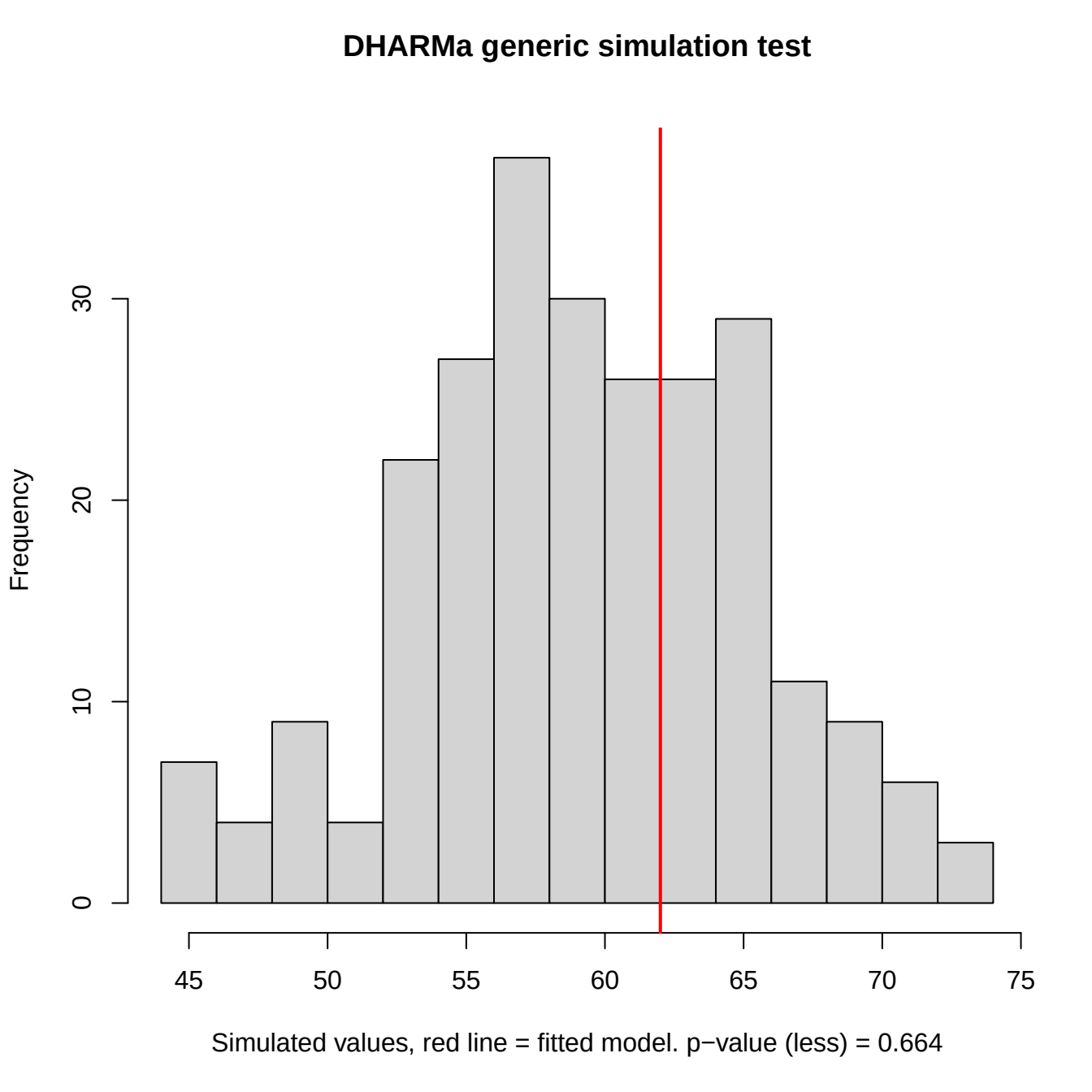

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

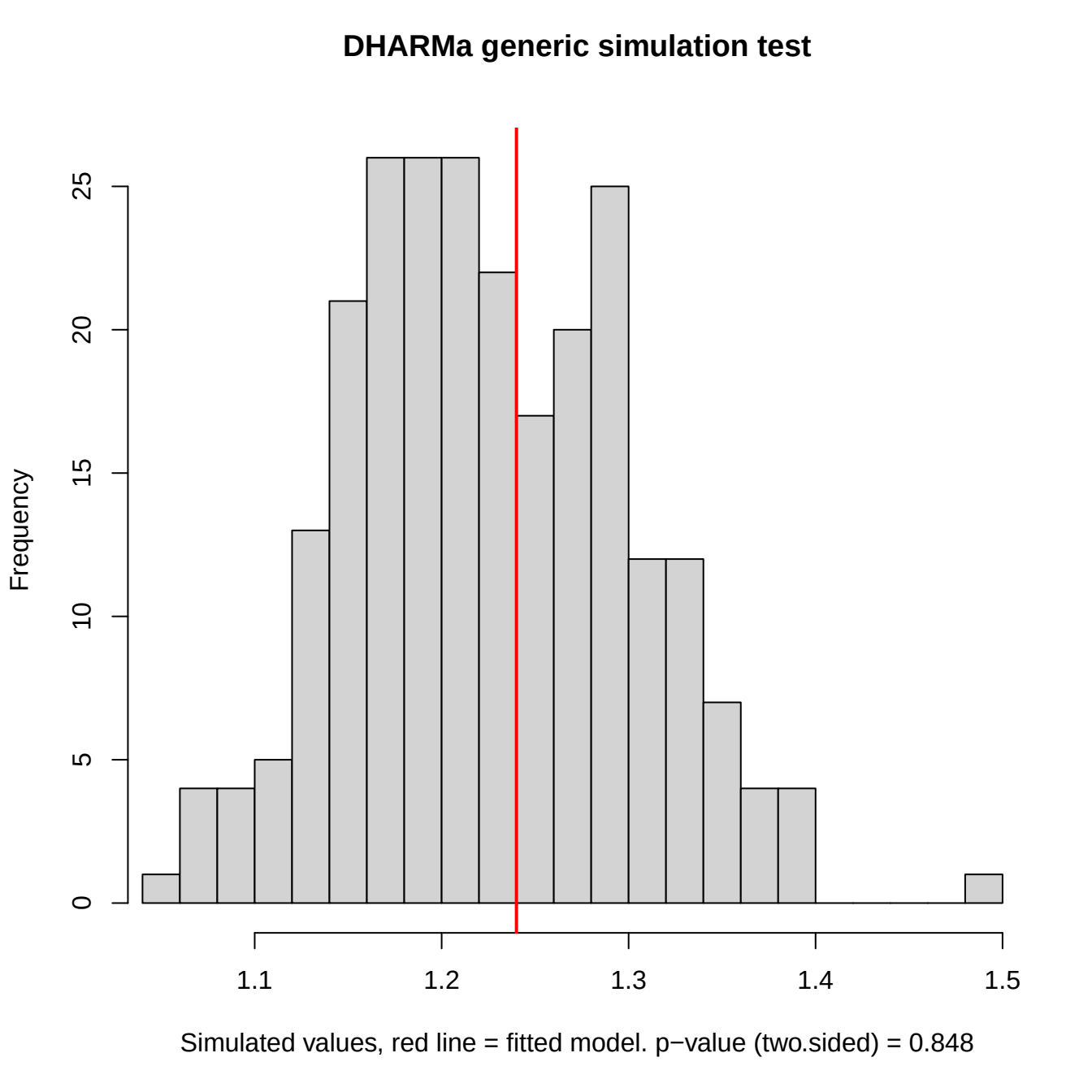

QQ plot residuals
KS test: p= 0.8989
Deviation n.s.
Outlier test: p= 0.37983
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

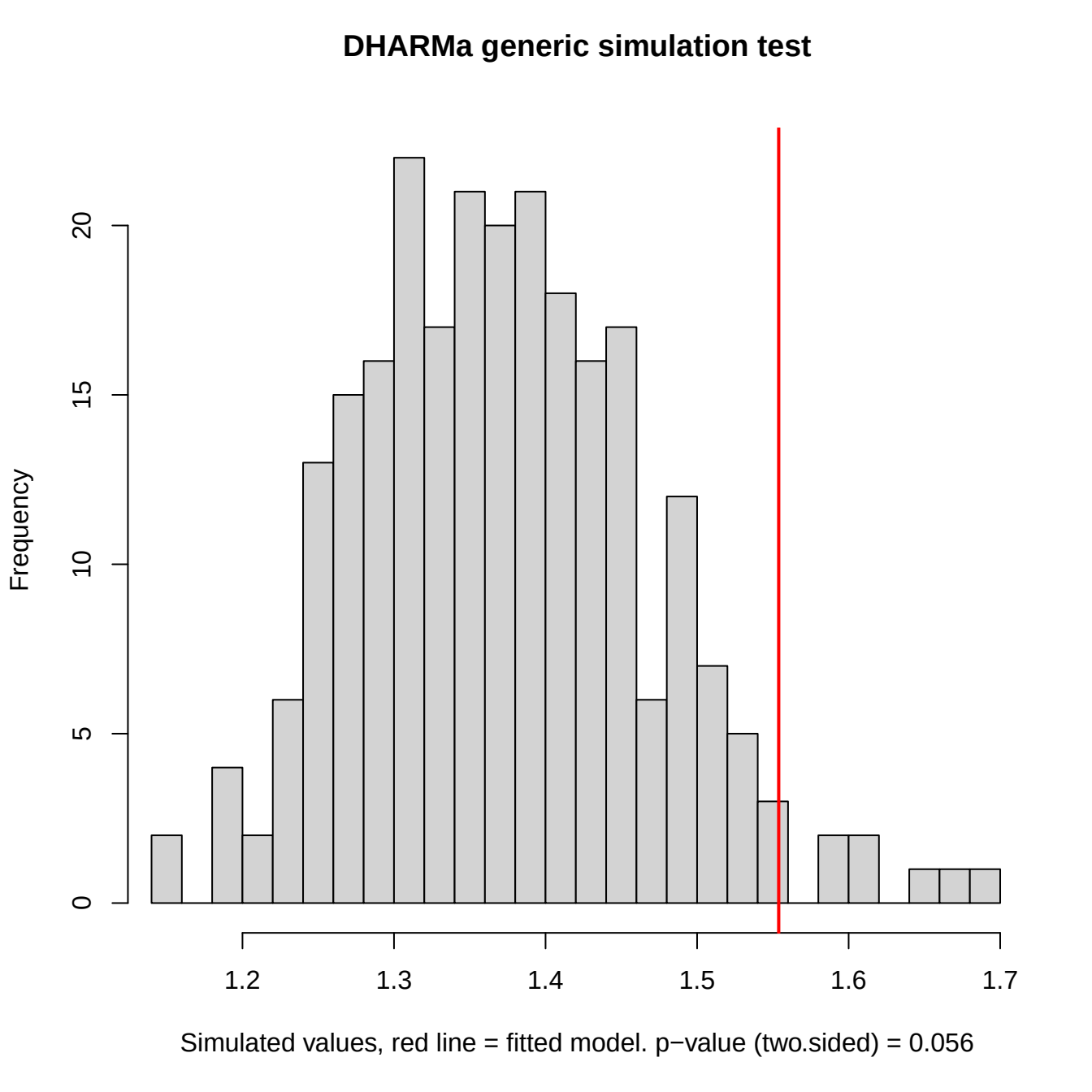

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
20
25
30
35
60
70
80
90
Simulated values, red line = fitted model. p−value (two.sided) = 0.52

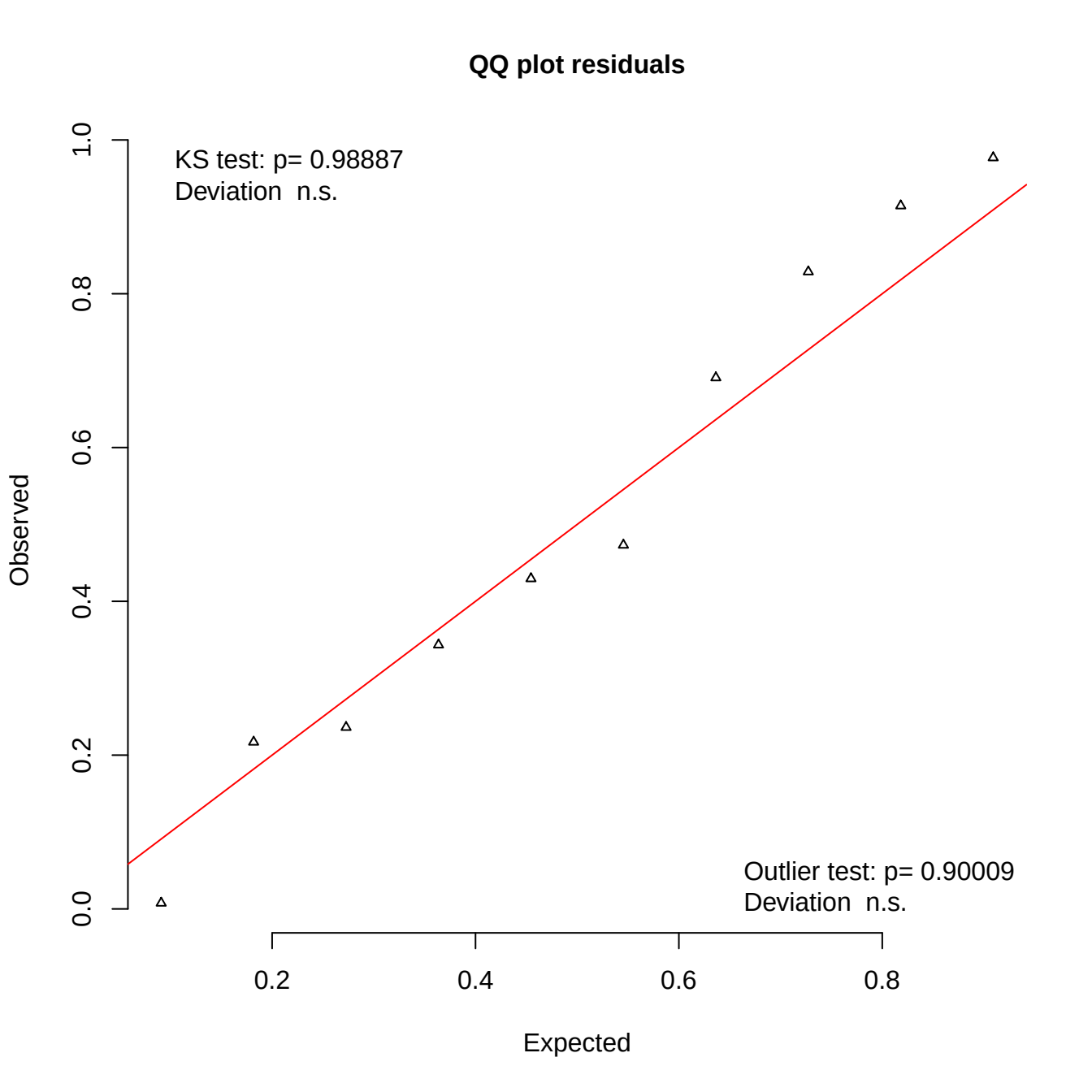

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
5
10
15
20
25
30
35
60
70
80
90
Simulated values, red line = fitted model. p−value (less) = 0.808

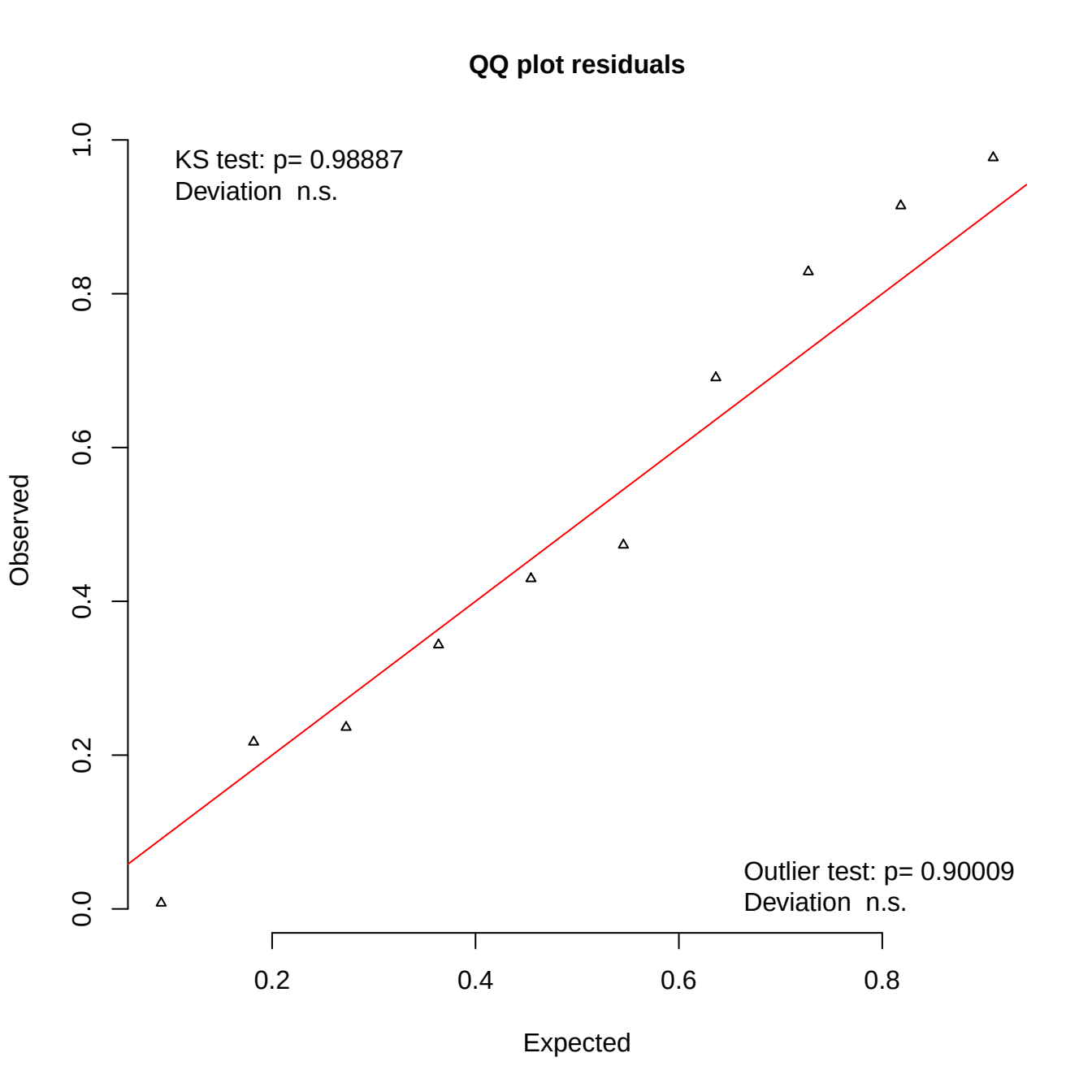

DHARMa generic simulation test
Frequency
0
10
20
30
45
50
55
60
65
70
75
Simulated values, red line = fitted model. p−value (two.sided) = 0.768

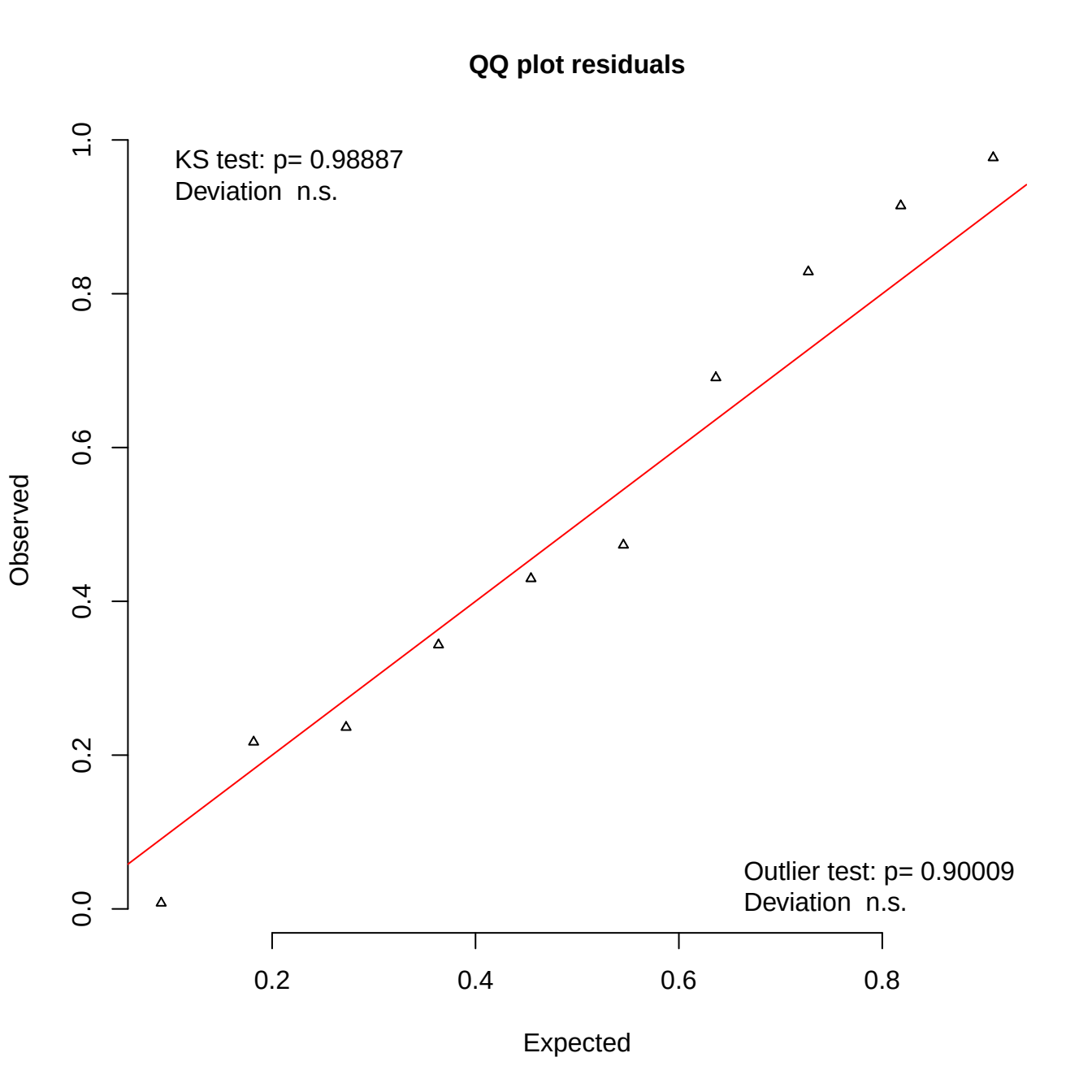

DHARMa generic simulation test
Frequency
0
10
20
30
45
50
55
60
65
70
75
Simulated values, red line = fitted model. p−value (less) = 0.664

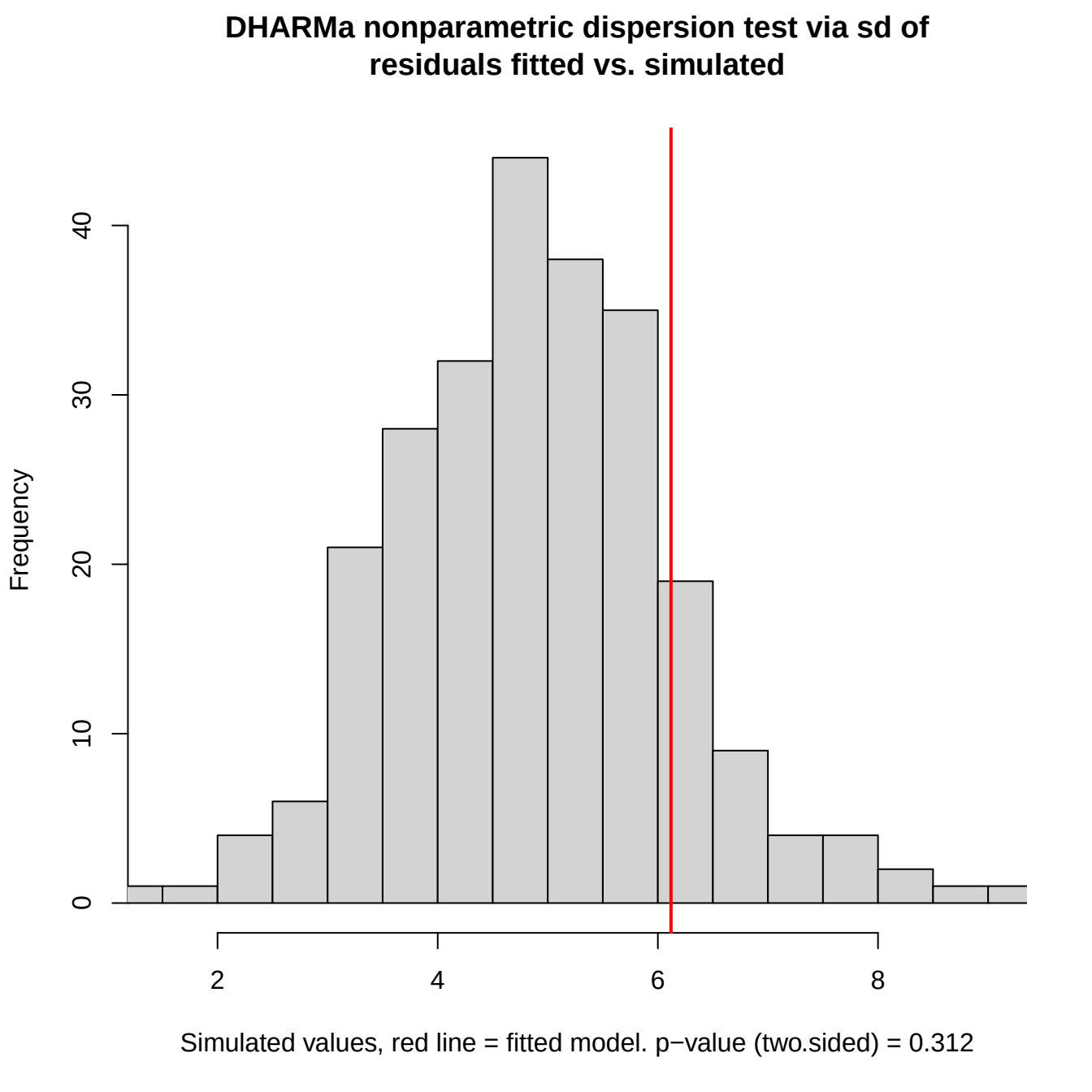

DHARMa generic simulation test
Frequency
0
5
10
15
20
25
1.1
1.2
1.3
1.4
1.5
Simulated values, red line = fitted model. p−value (two.sided) = 0.848

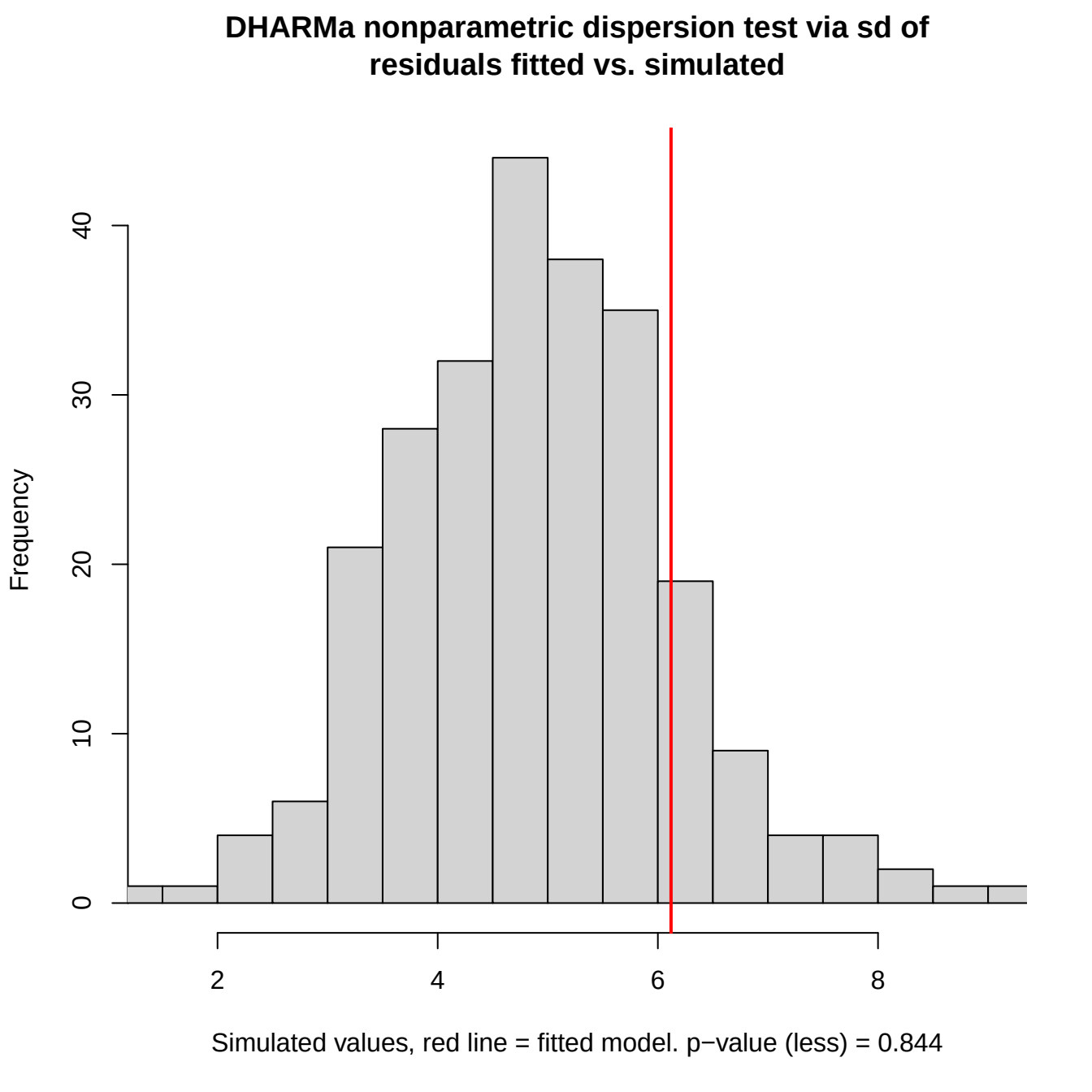

DHARMa generic simulation test
Frequency
0
5
10
15
20
1.2
1.3
1.4
1.5
1.6
1.7
Simulated values, red line = fitted model. p−value (two.sided) = 0.056

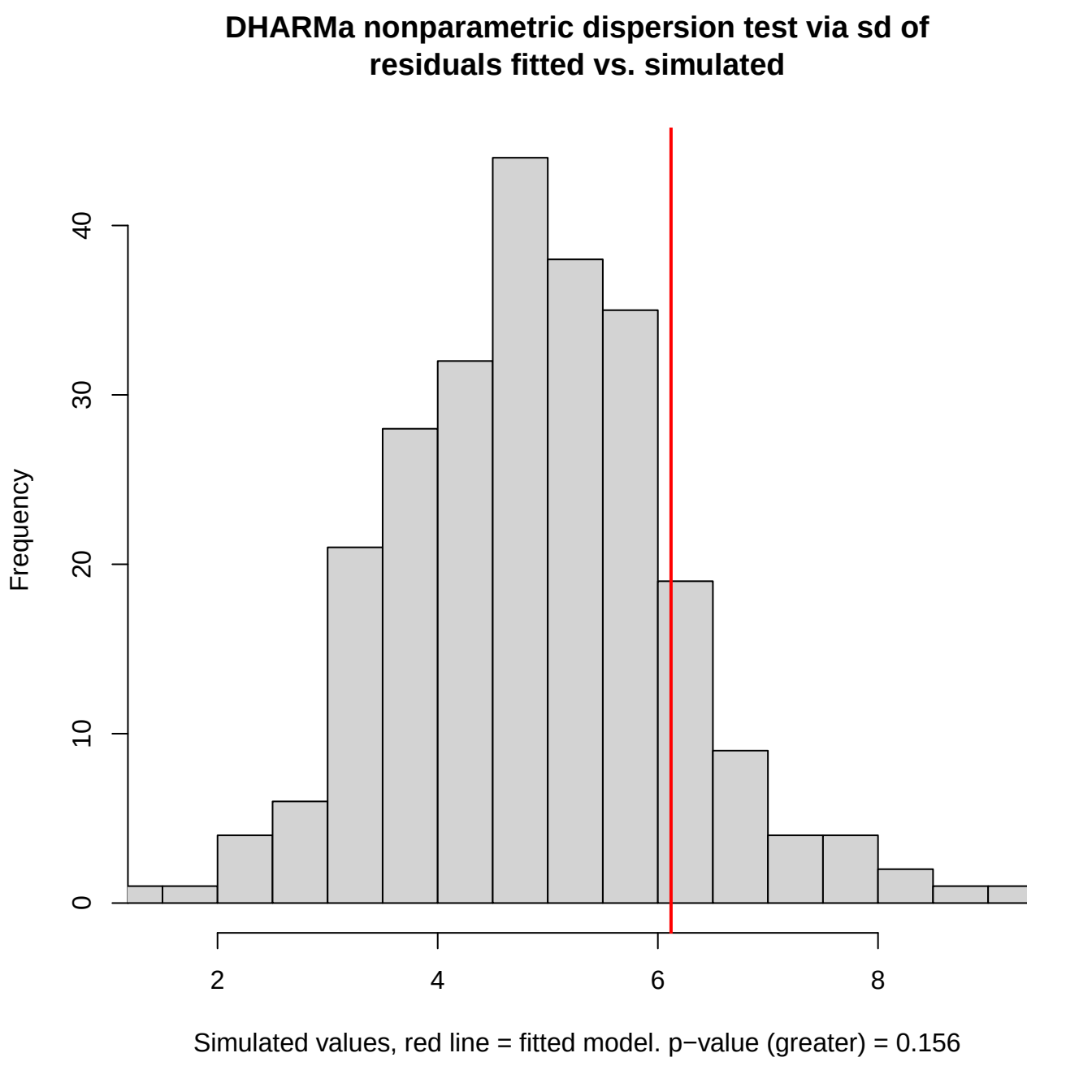

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

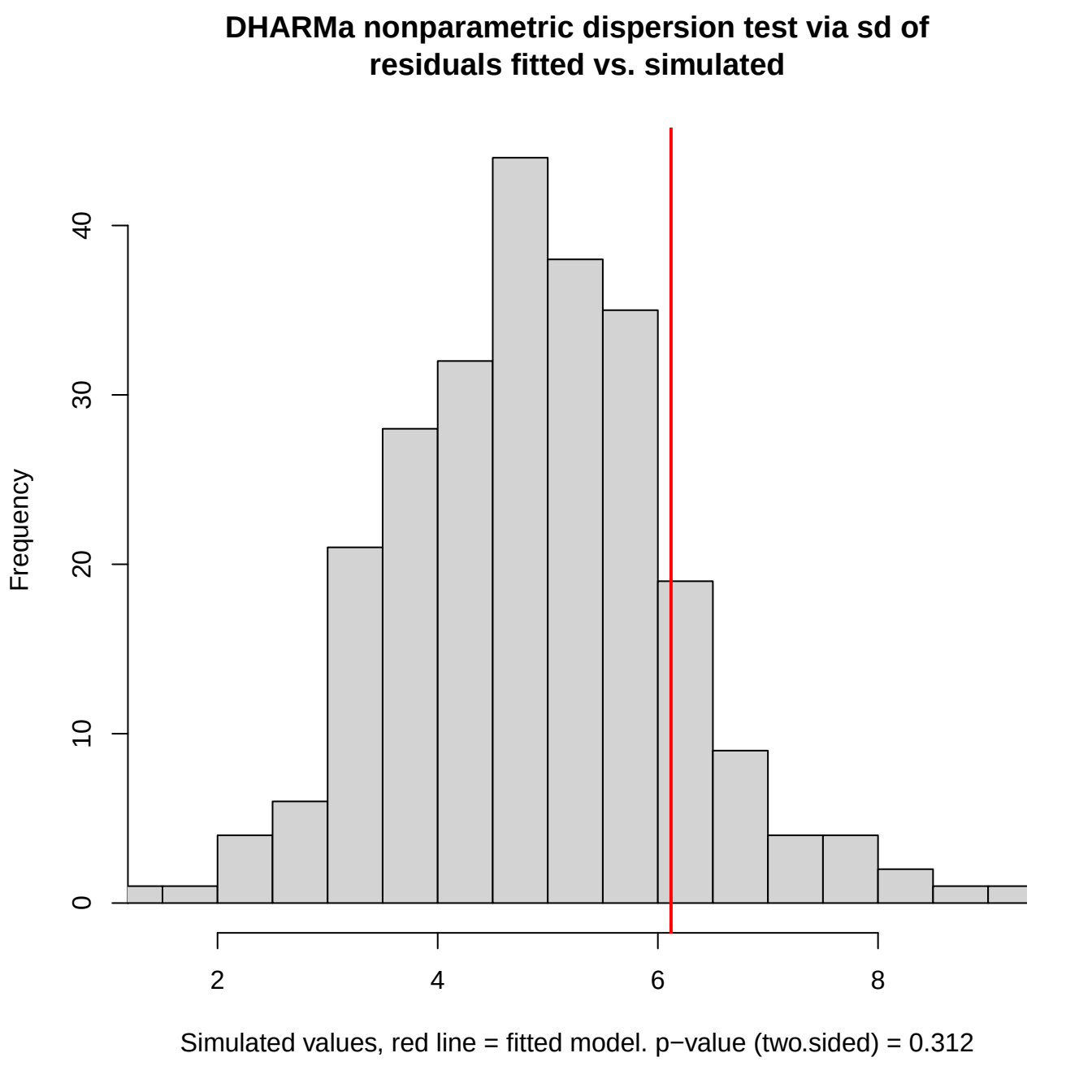

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

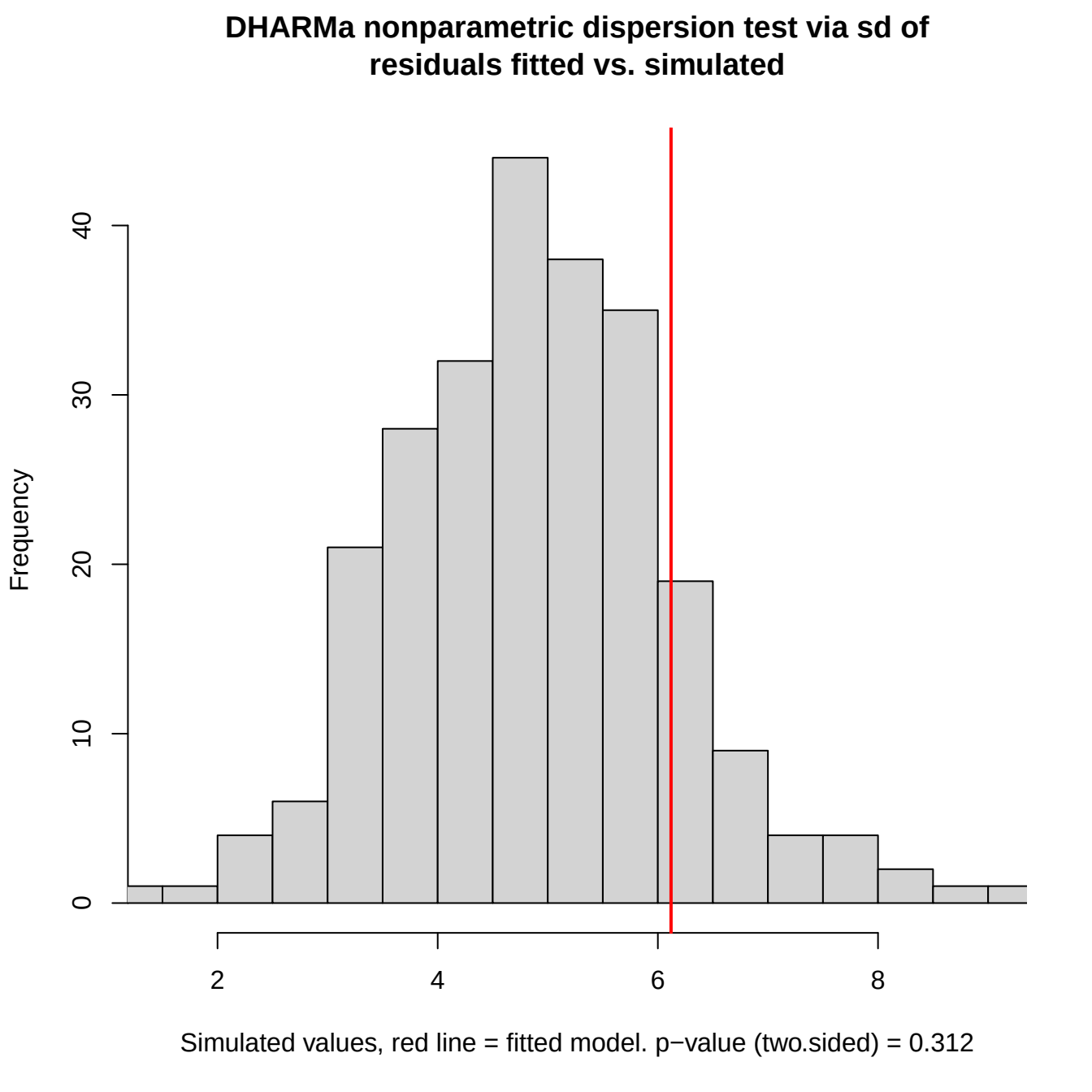

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
0.0
0.2
0.4
0.6
0.8
1.0
0.2
0.4
0.6
0.8

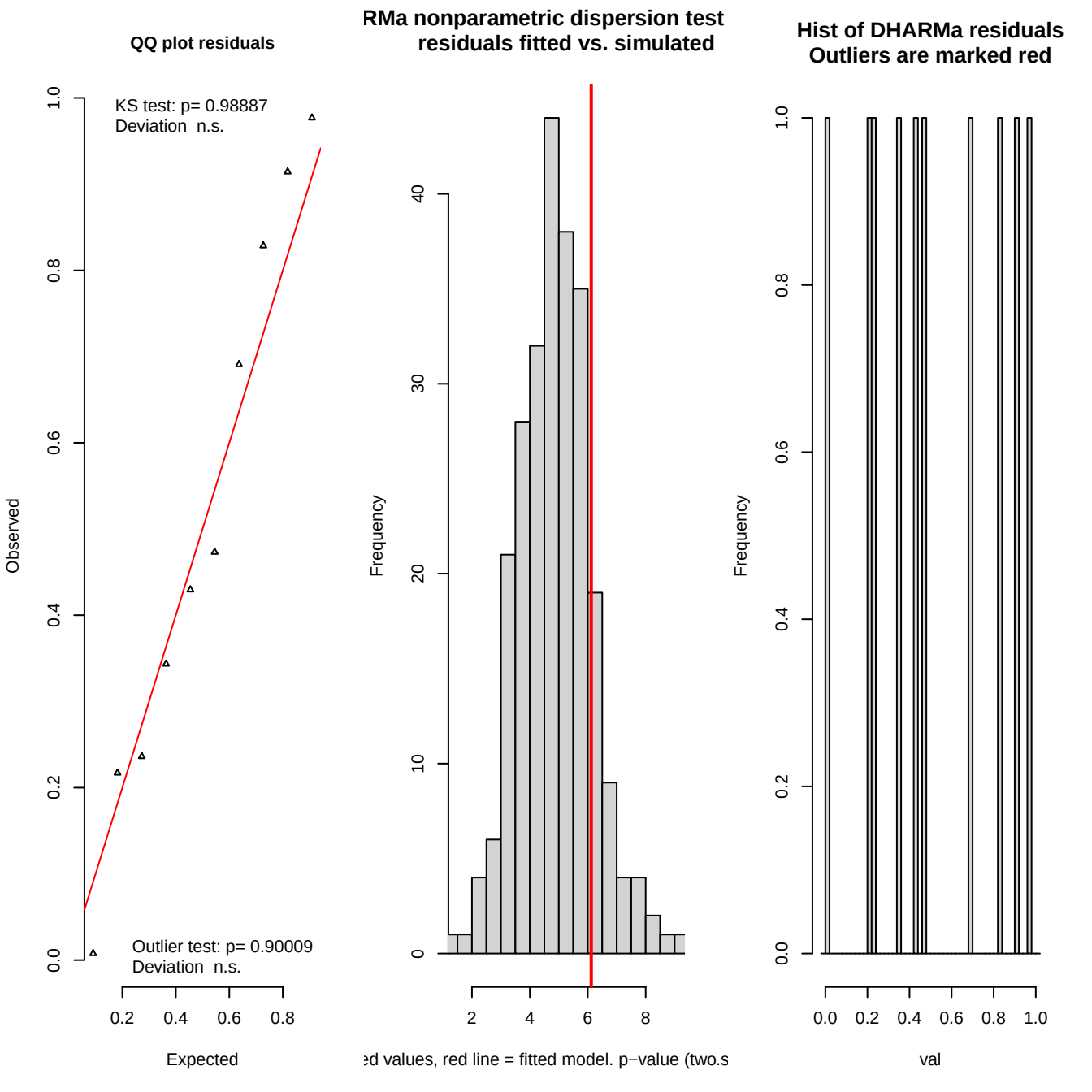

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

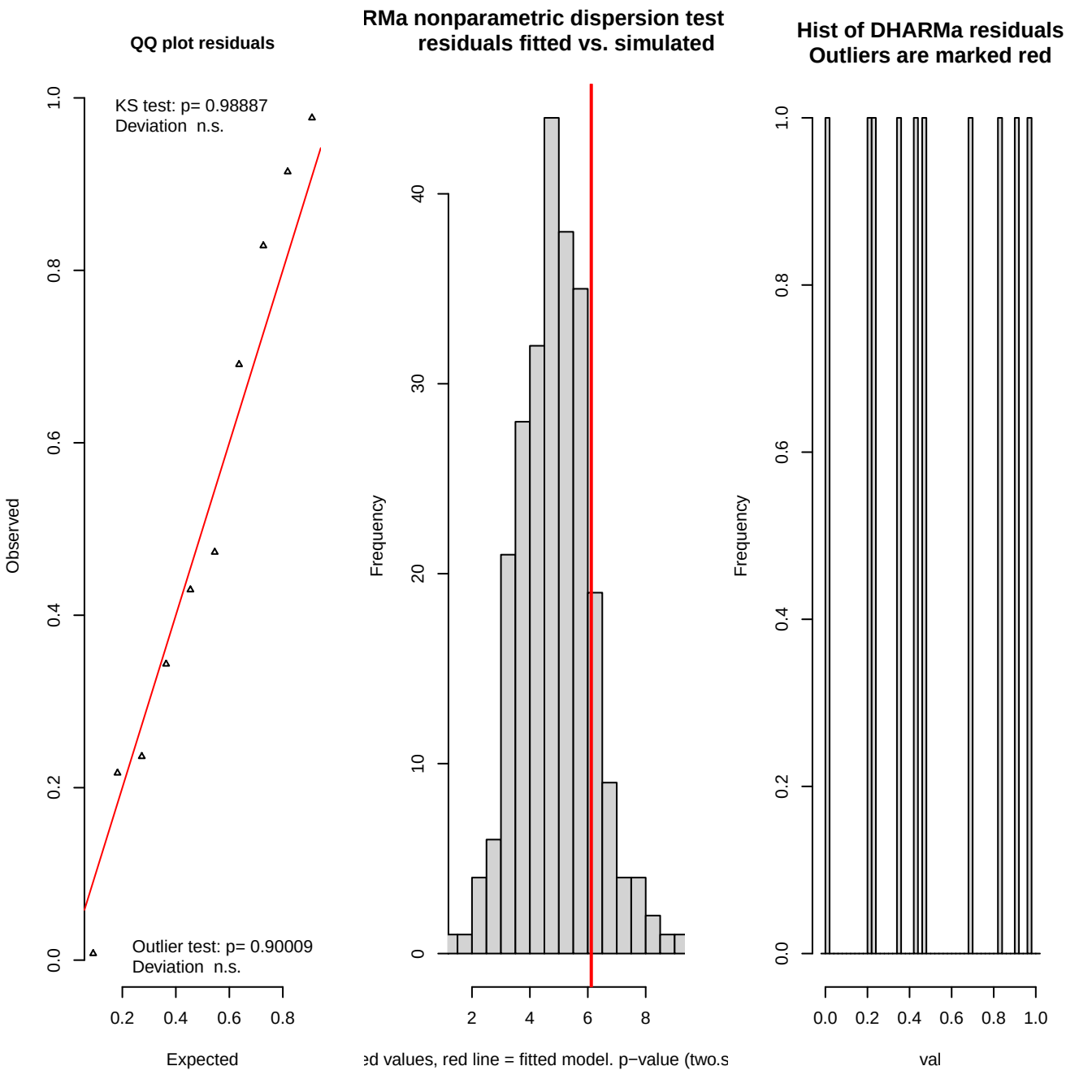

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (less) = 0.844

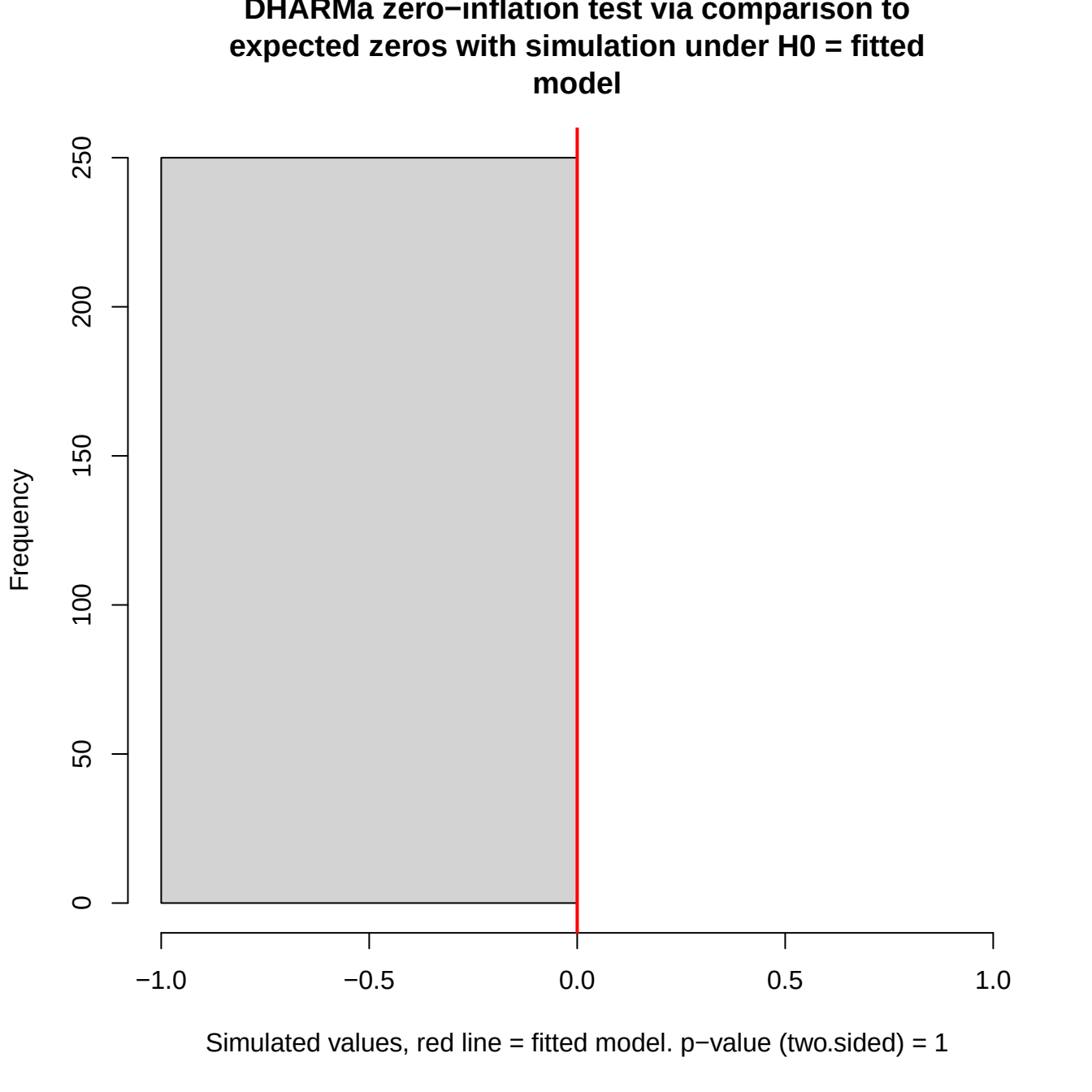

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (greater) = 0.156

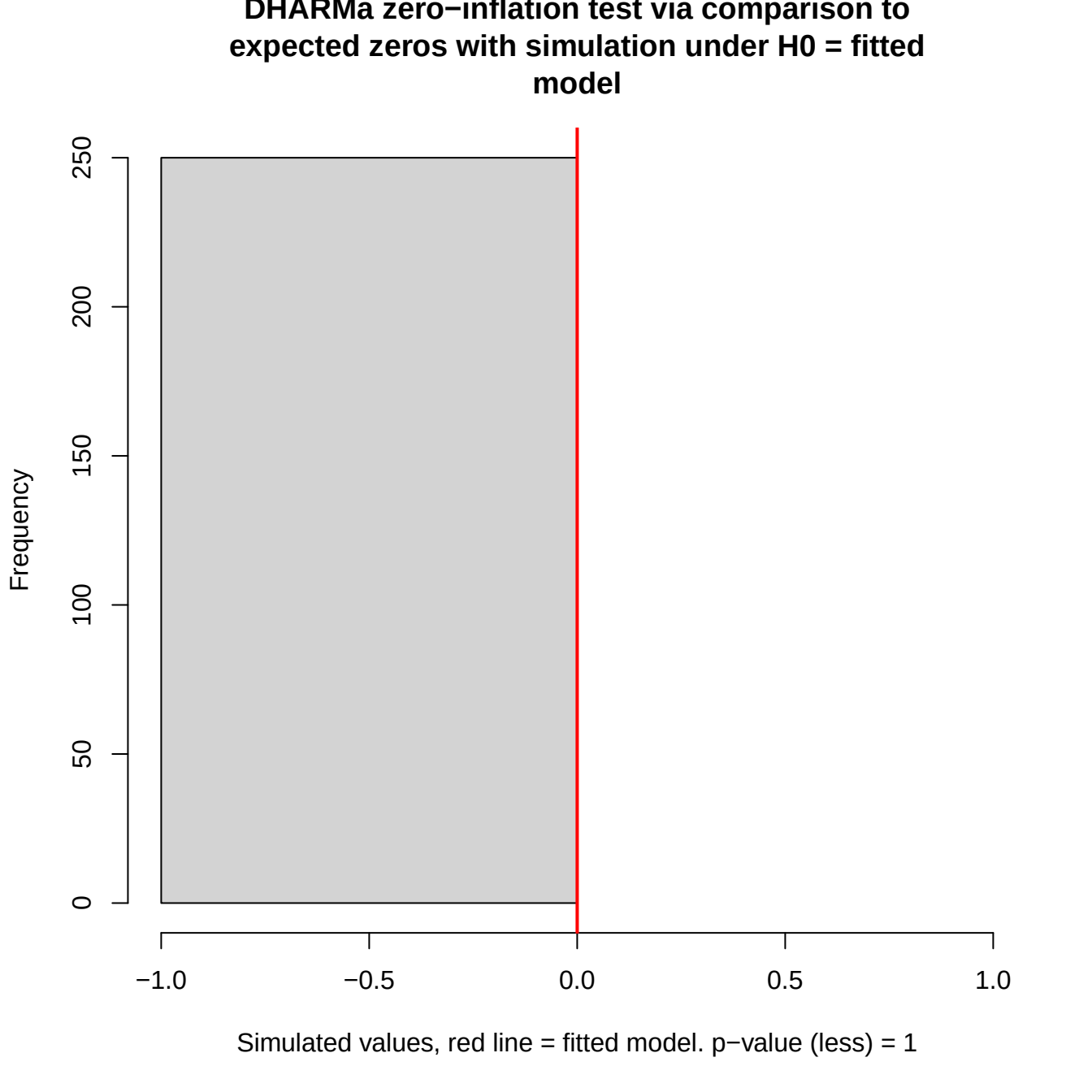

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

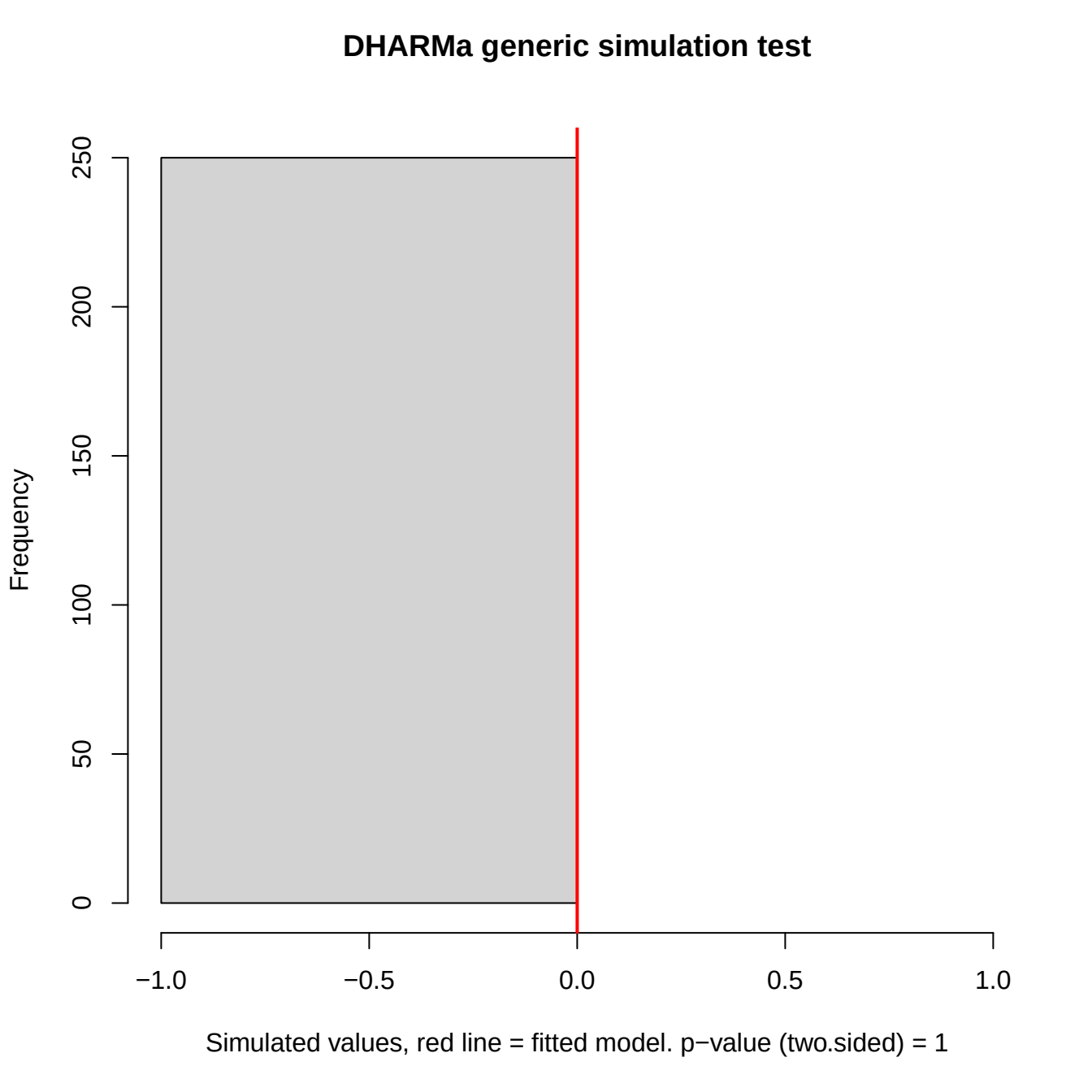

DHARMa nonparametric dispersion test via sd of residuals fitted vs. simulated
Frequency
0
10
20
30
40
2
4
6
8
Simulated values, red line = fitted model. p−value (two.sided) = 0.312

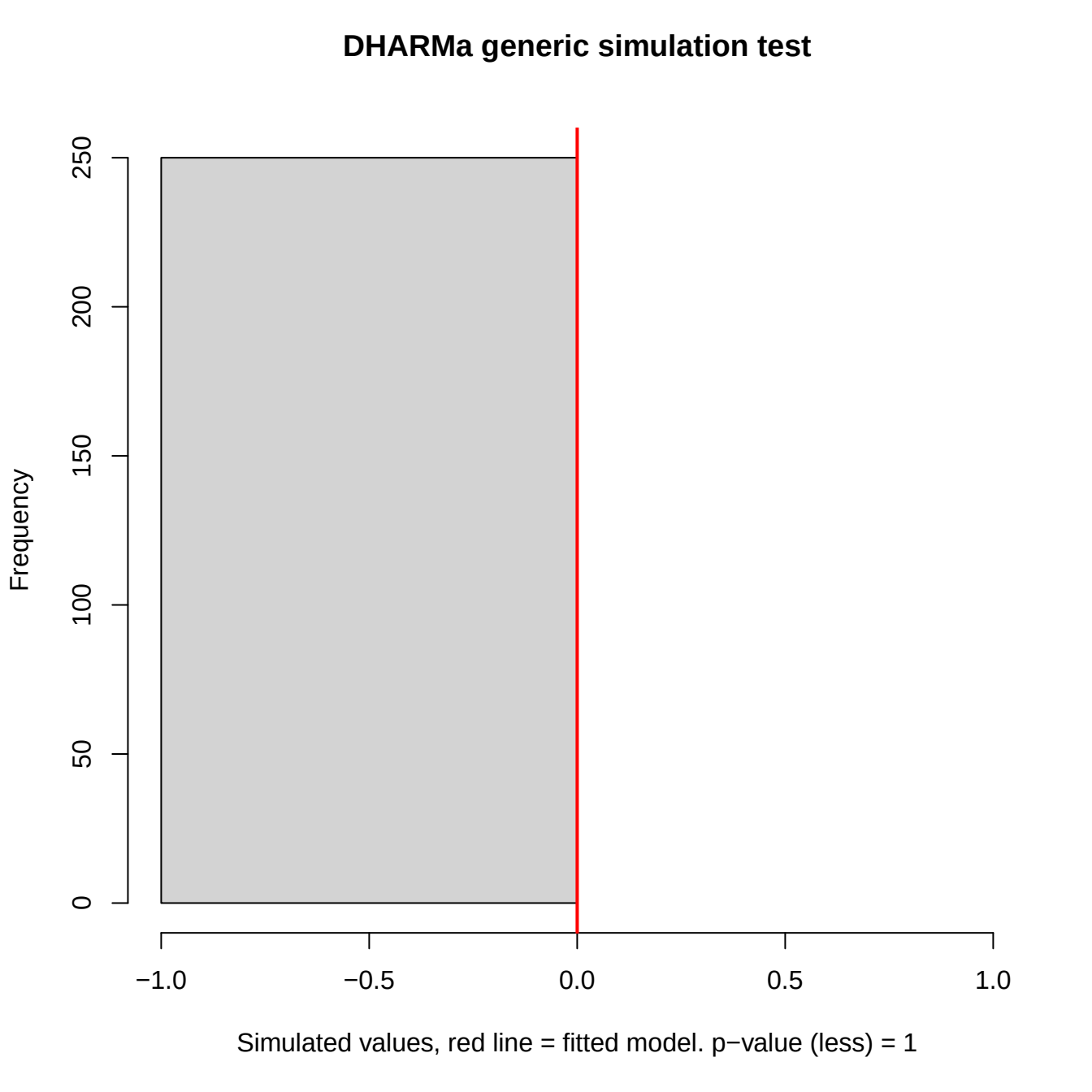

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.s
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

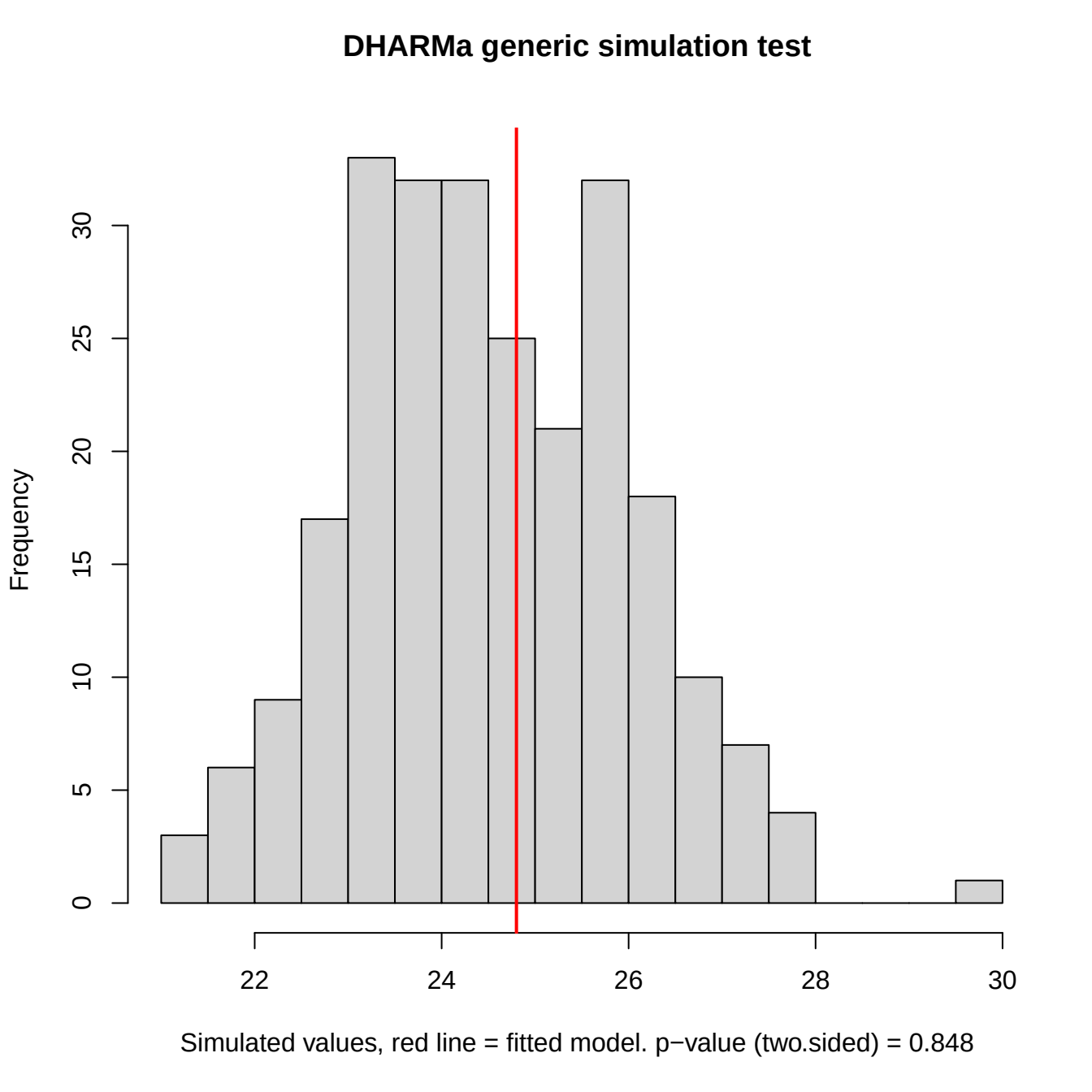

QQ plot residuals
KS test: p= 0.98887
Deviation n.s.
Outlier test: p= 0.90009
Deviation n.s.
Observed
Expected
RMa nonparametric dispersion test
residuals fitted vs. simulated
Frequency
ed values, red line = fitted model. p−value (two.s
Hist of DHARMa residuals
Outliers are marked red
Frequency
val

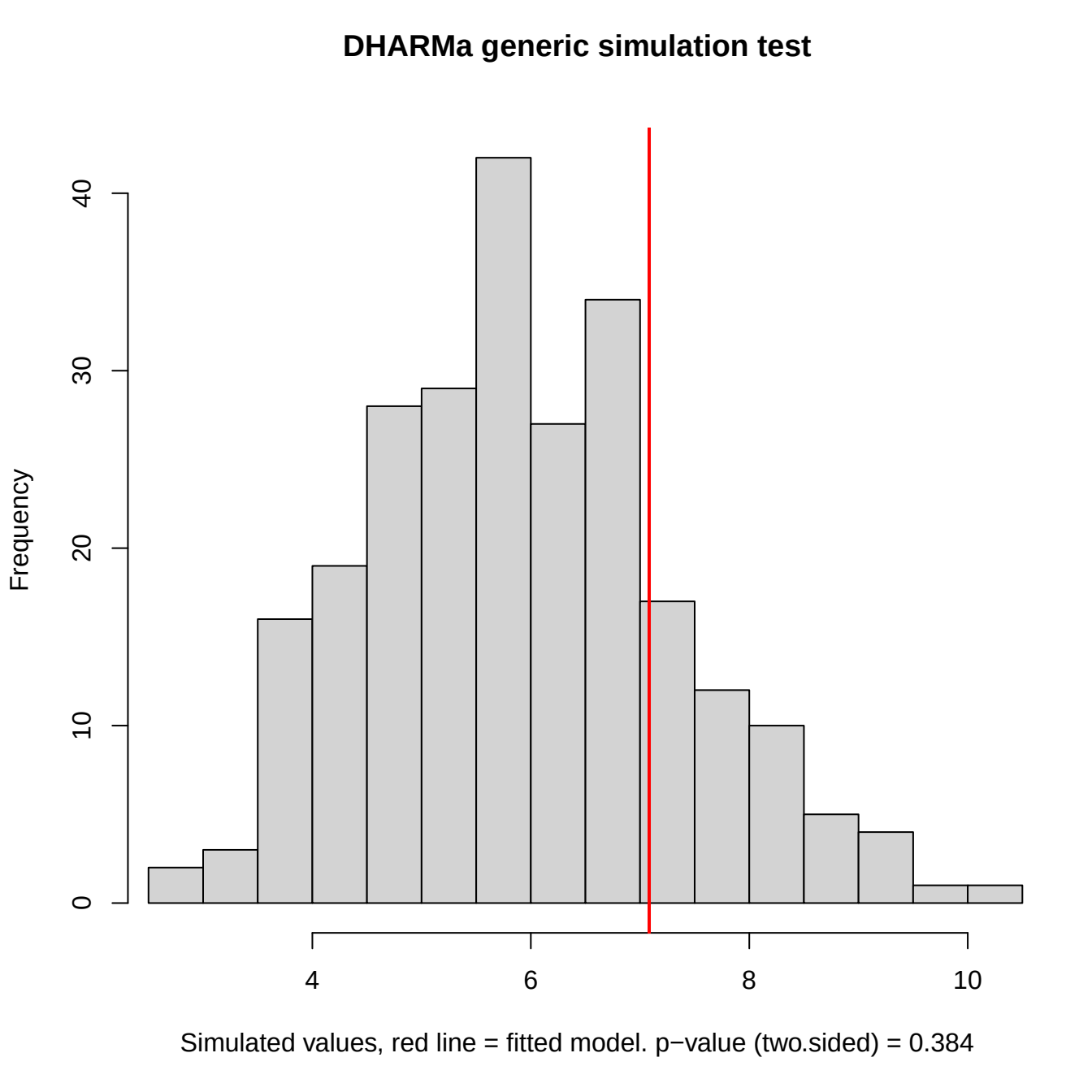

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

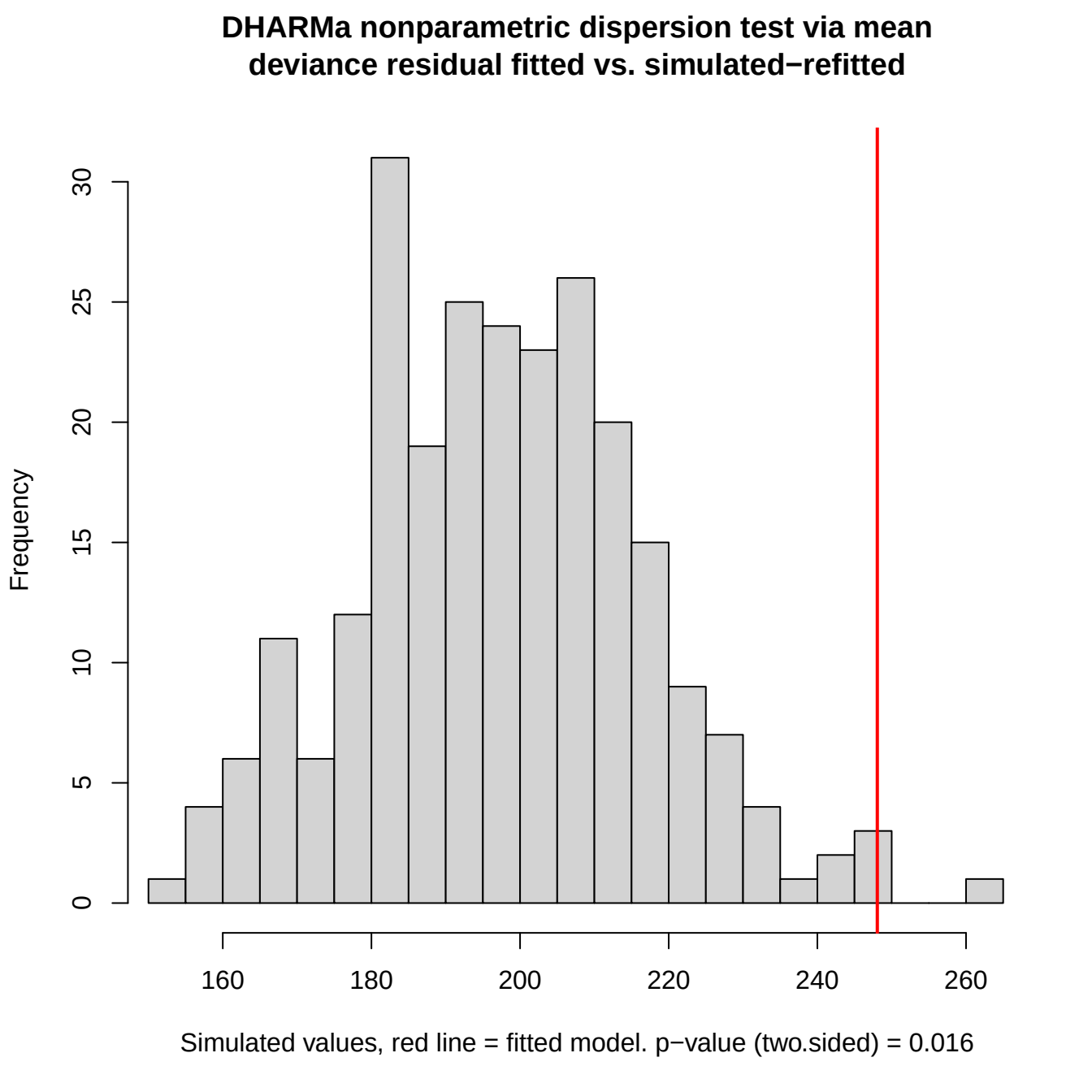

DHARMa zero−inflation test via comparison to expected zeros with simulation under H0 = fitted model
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (less) = 1

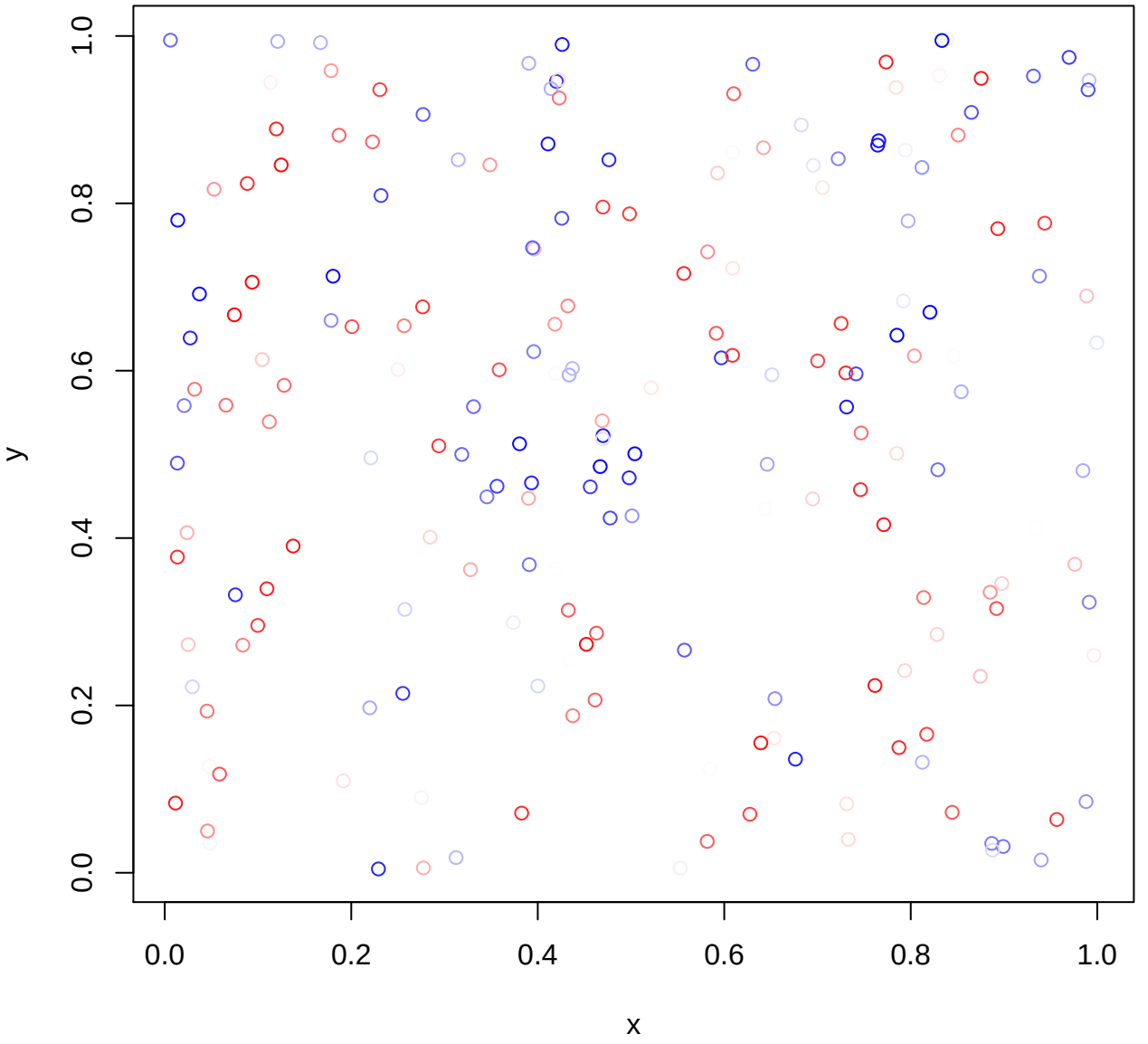

DHARMa generic simulation test
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (two.sided) = 1

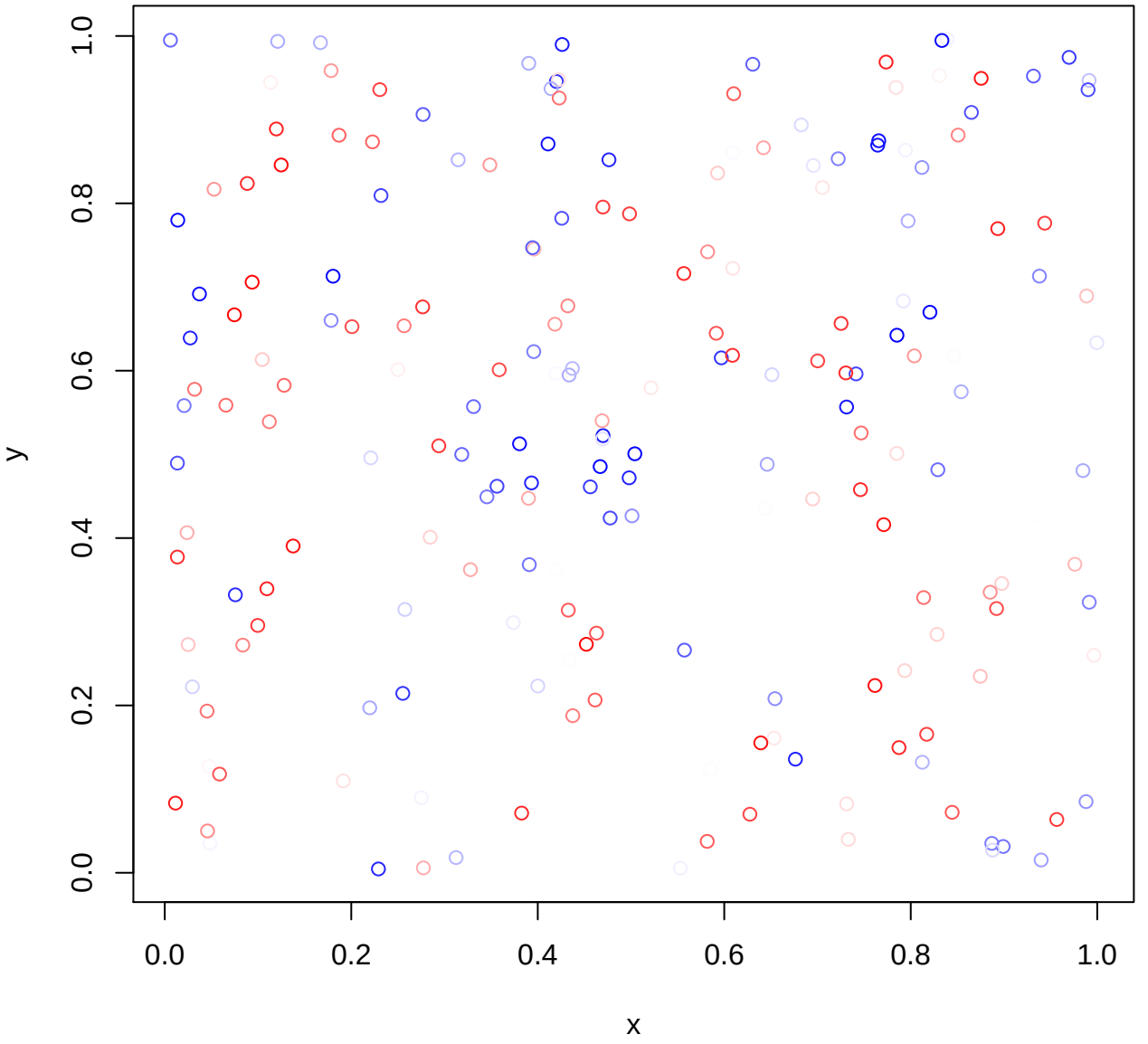

DHARMa generic simulation test
Frequency
0
50
100
150
200
250
−1.0
−0.5
0.0
0.5
1.0
Simulated values, red line = fitted model. p−value (less) = 1

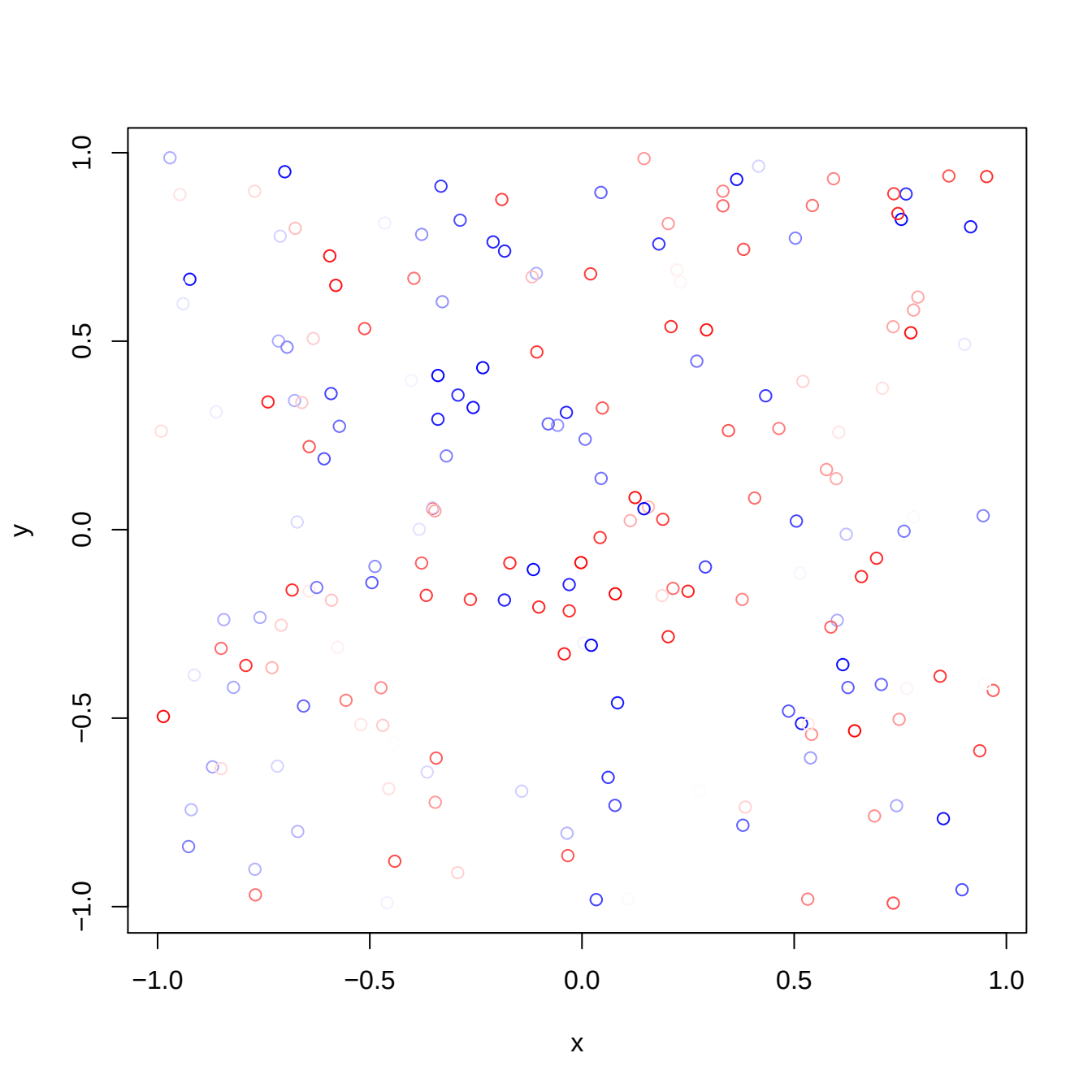

DHARMa generic simulation test
Frequency
0
5
10
15
20
25
30
22
24
26
28
30
Simulated values, red line = fitted model. p−value (two.sided) = 0.848

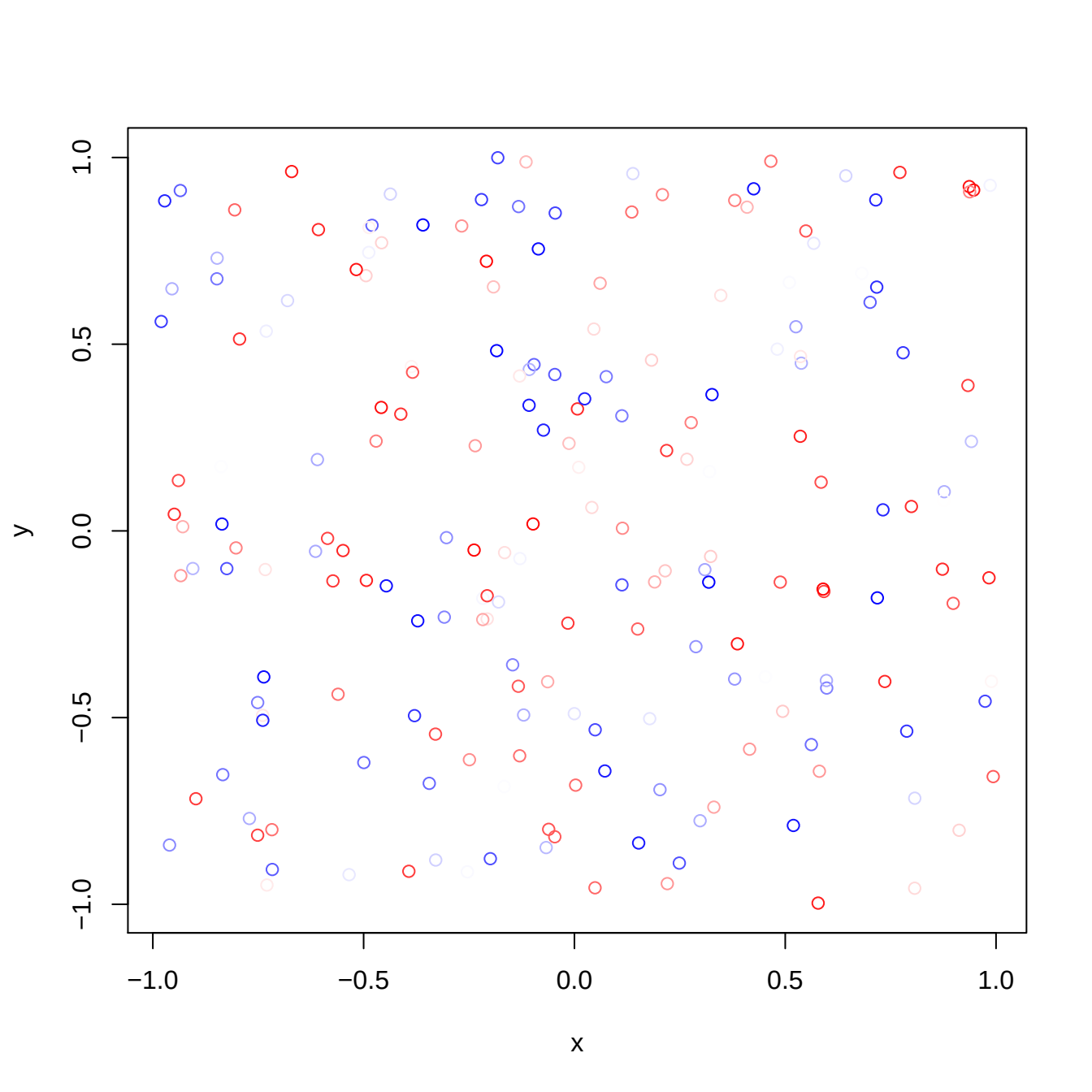

DHARMa generic simulation test
Frequency
0
10
20
30
40
4
6
8
10
Simulated values, red line = fitted model. p−value (two.sided) = 0.384

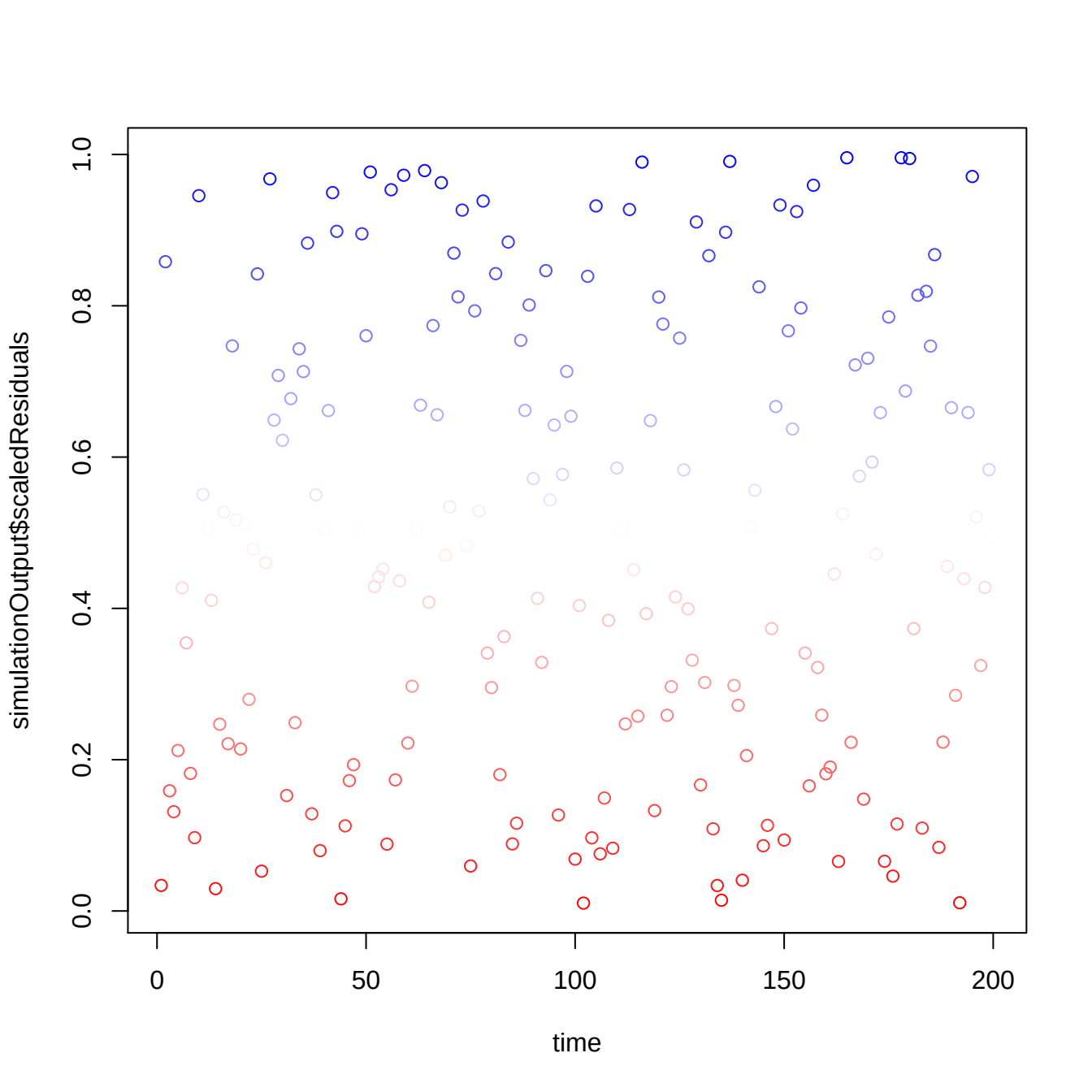

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0
5
10
15
20
25
30
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.016

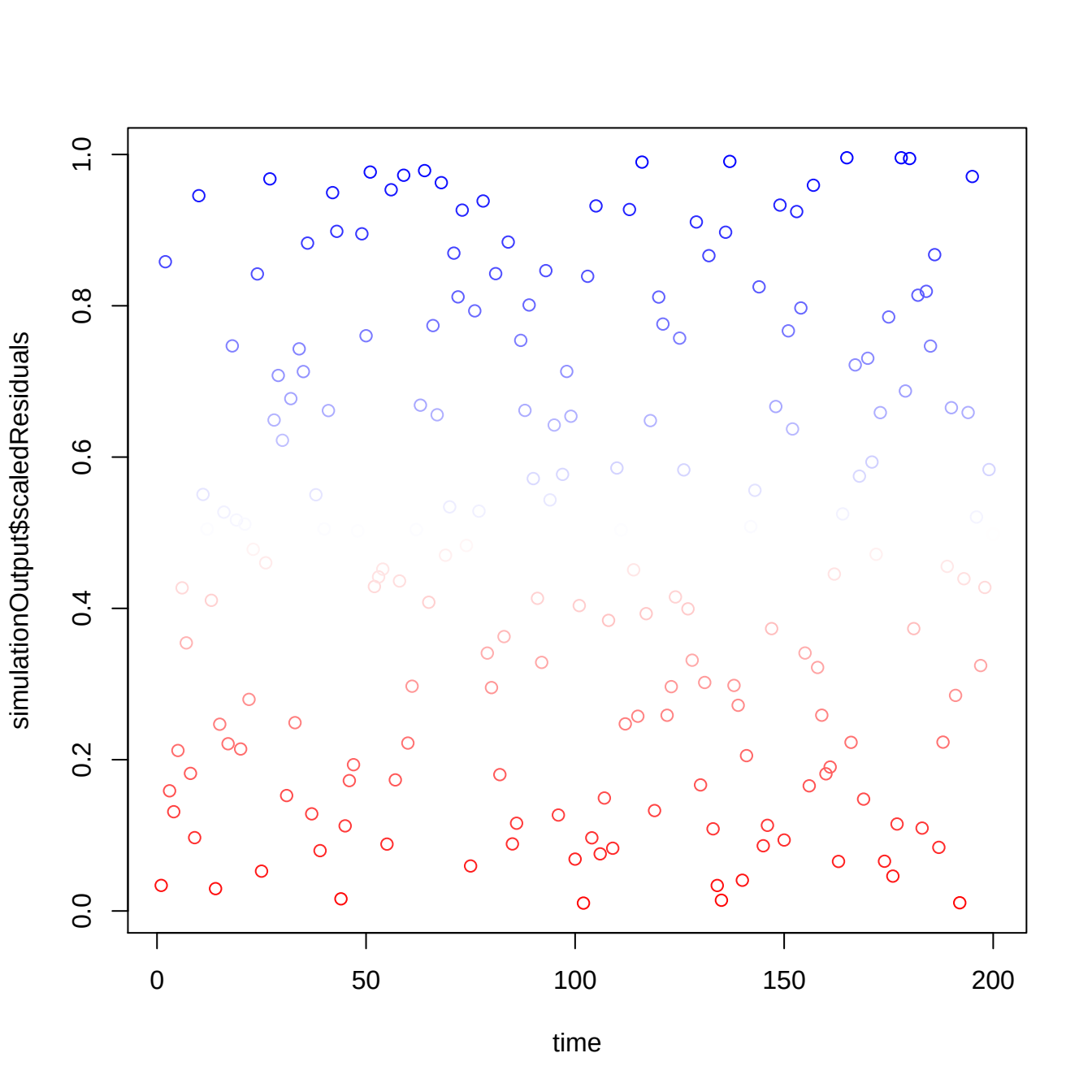

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

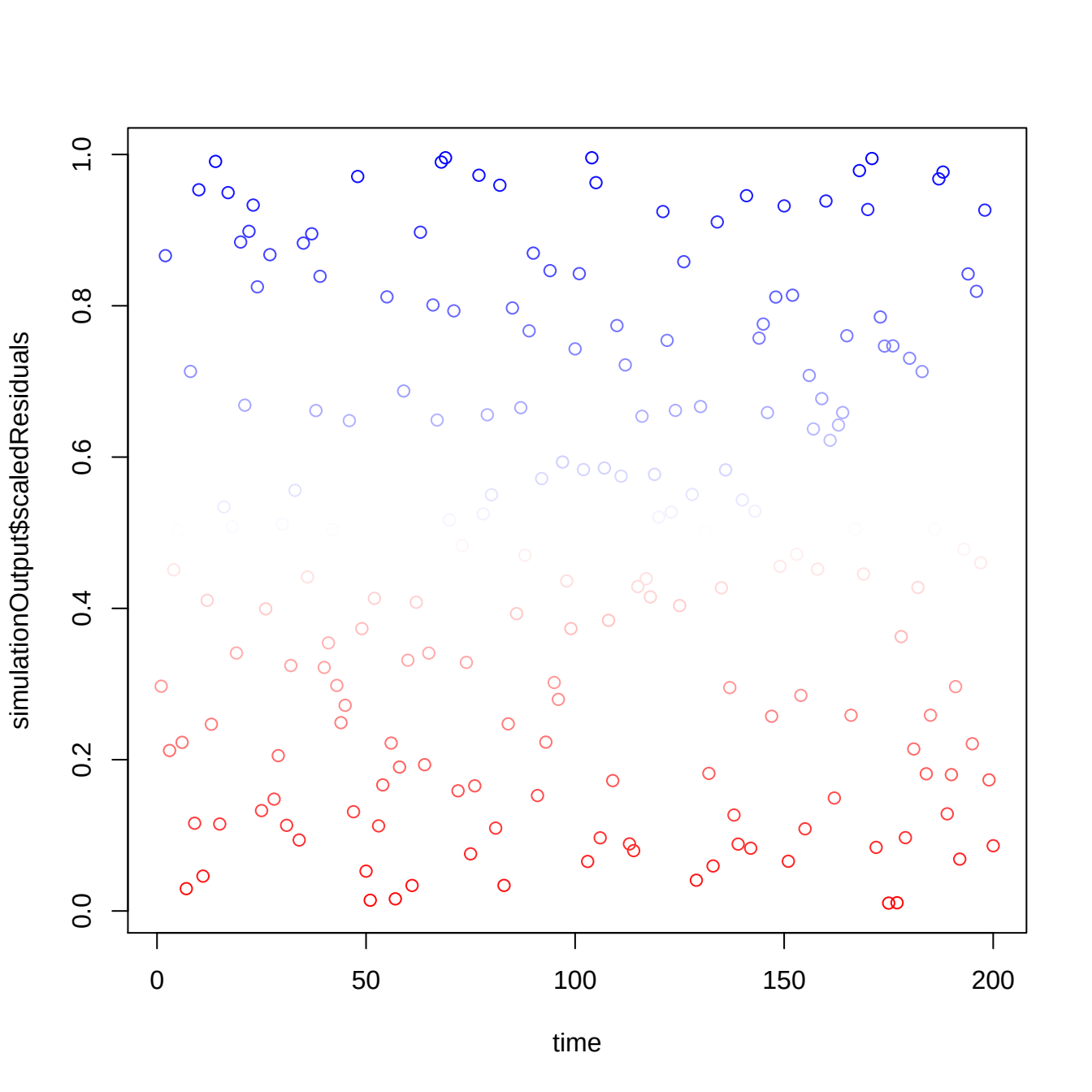

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

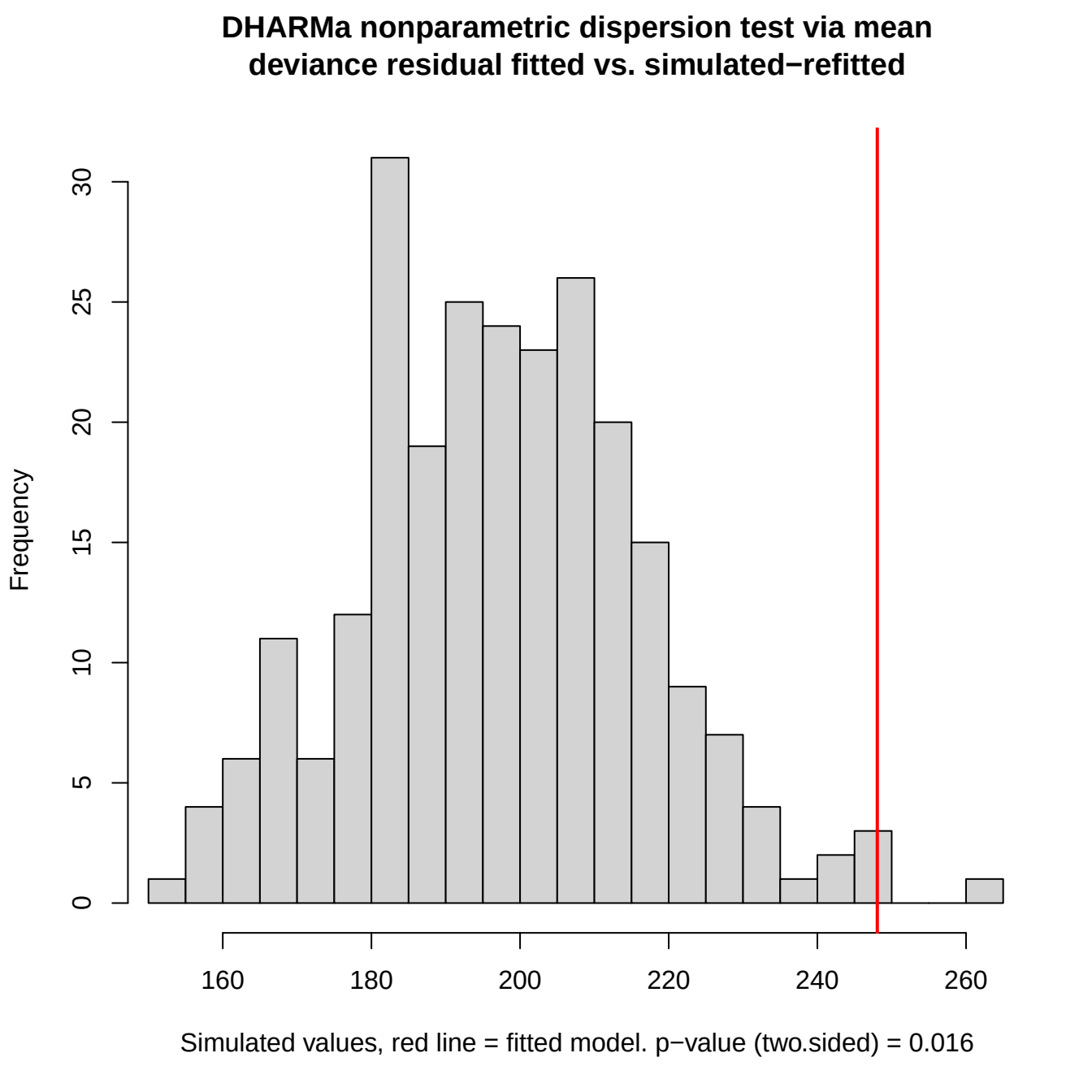

1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x

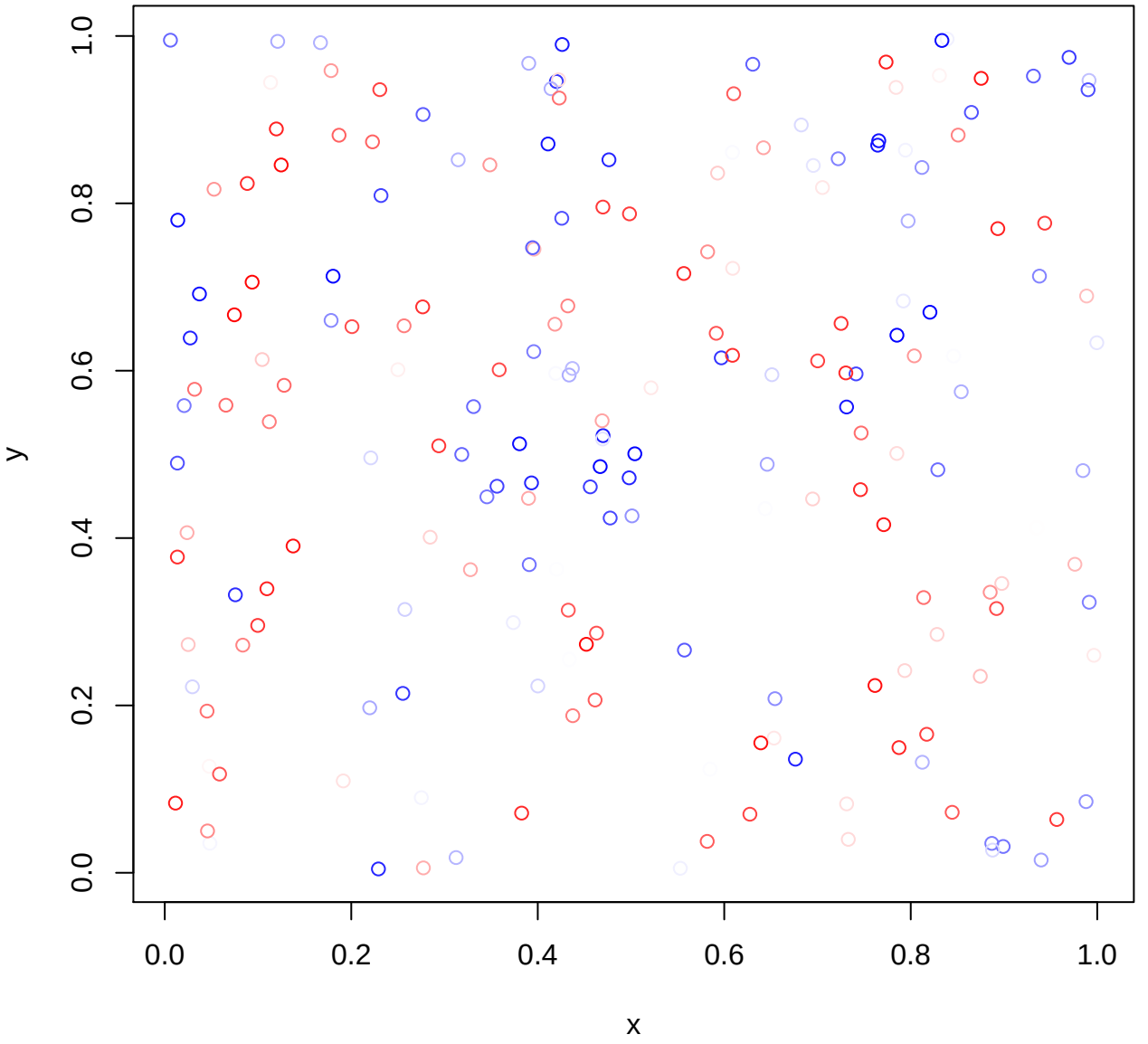

1.0
0.5
0.0
−0.5
−1.0
y
−1.0
−0.5
0.0
0.5
1.0
x

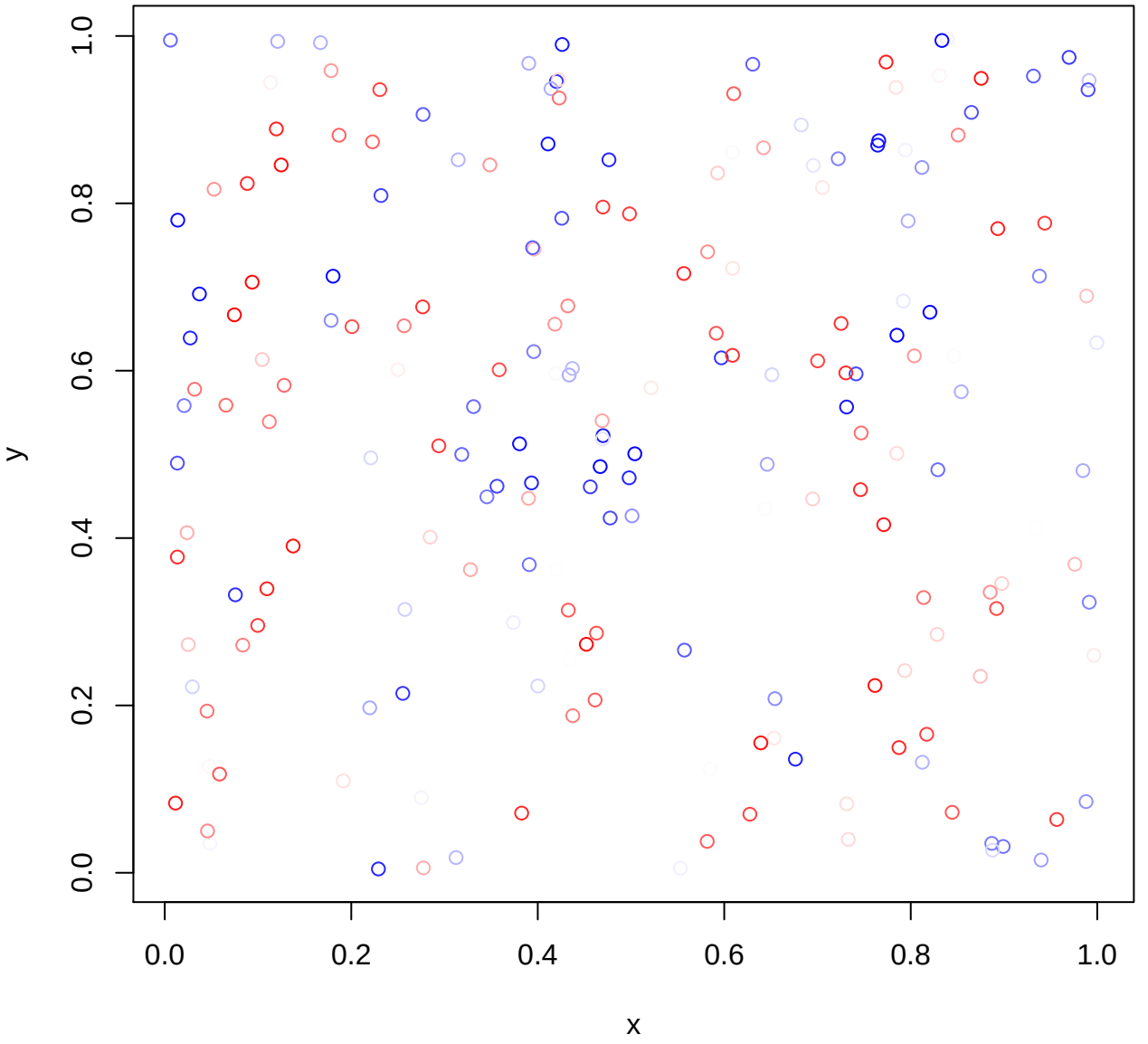

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

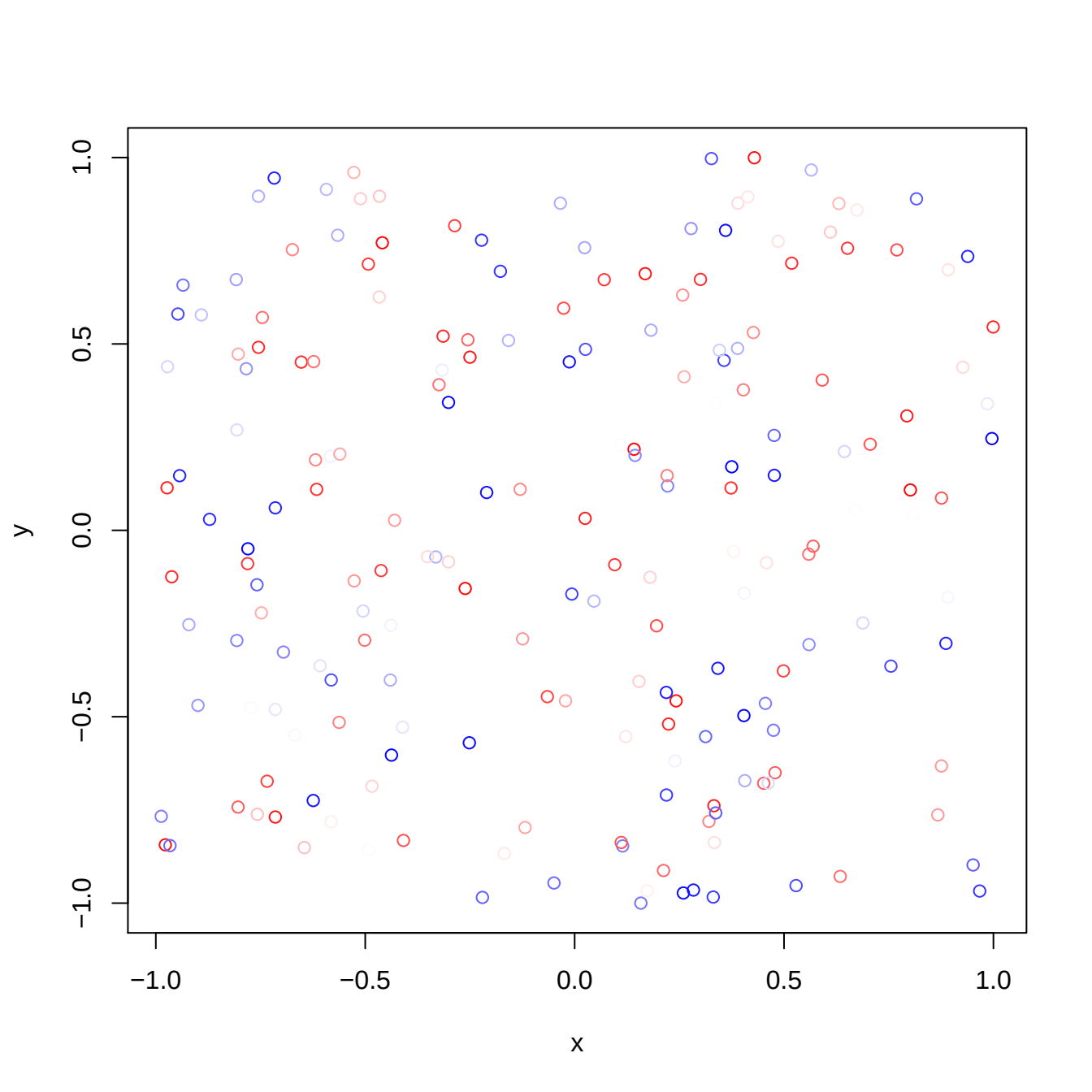

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

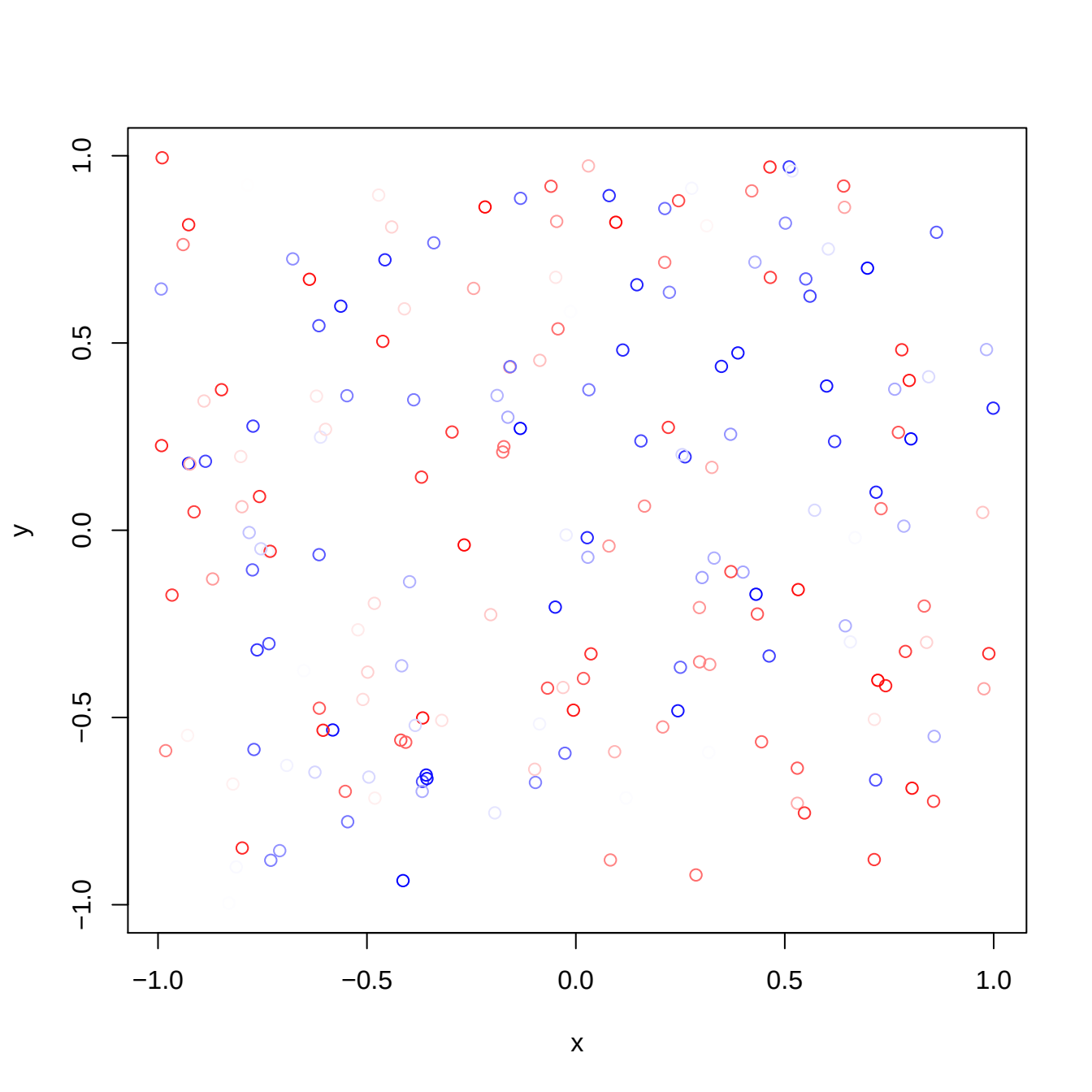

simulationOutput$scaledResiduals
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
time

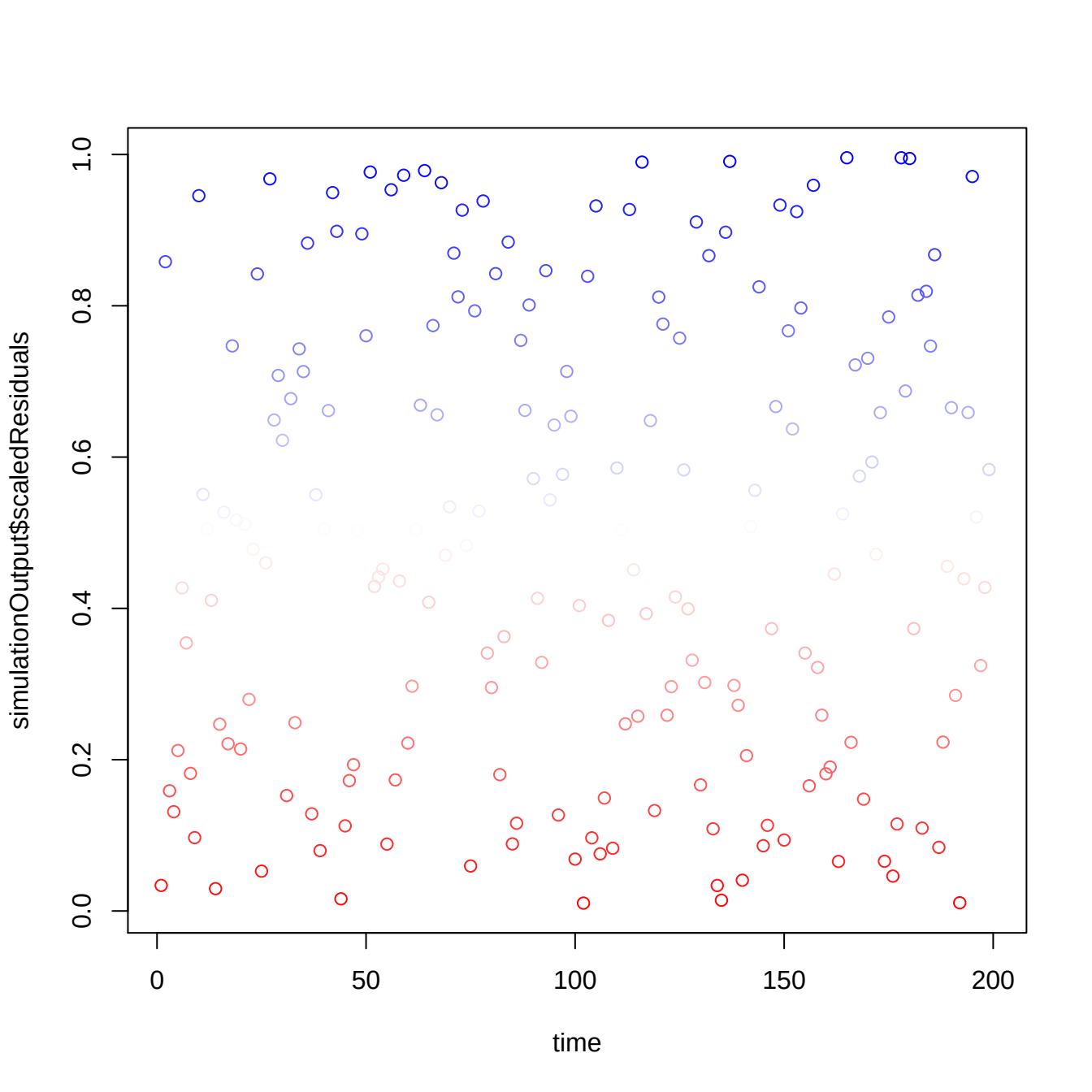

DHARMa nonparametric dispersion test via mean deviance residual fitted vs. simulated−refitted
Frequency
0
5
10
15
20
25
30
160
180
200
220
240
260
Simulated values, red line = fitted model. p−value (two.sided) = 0.016

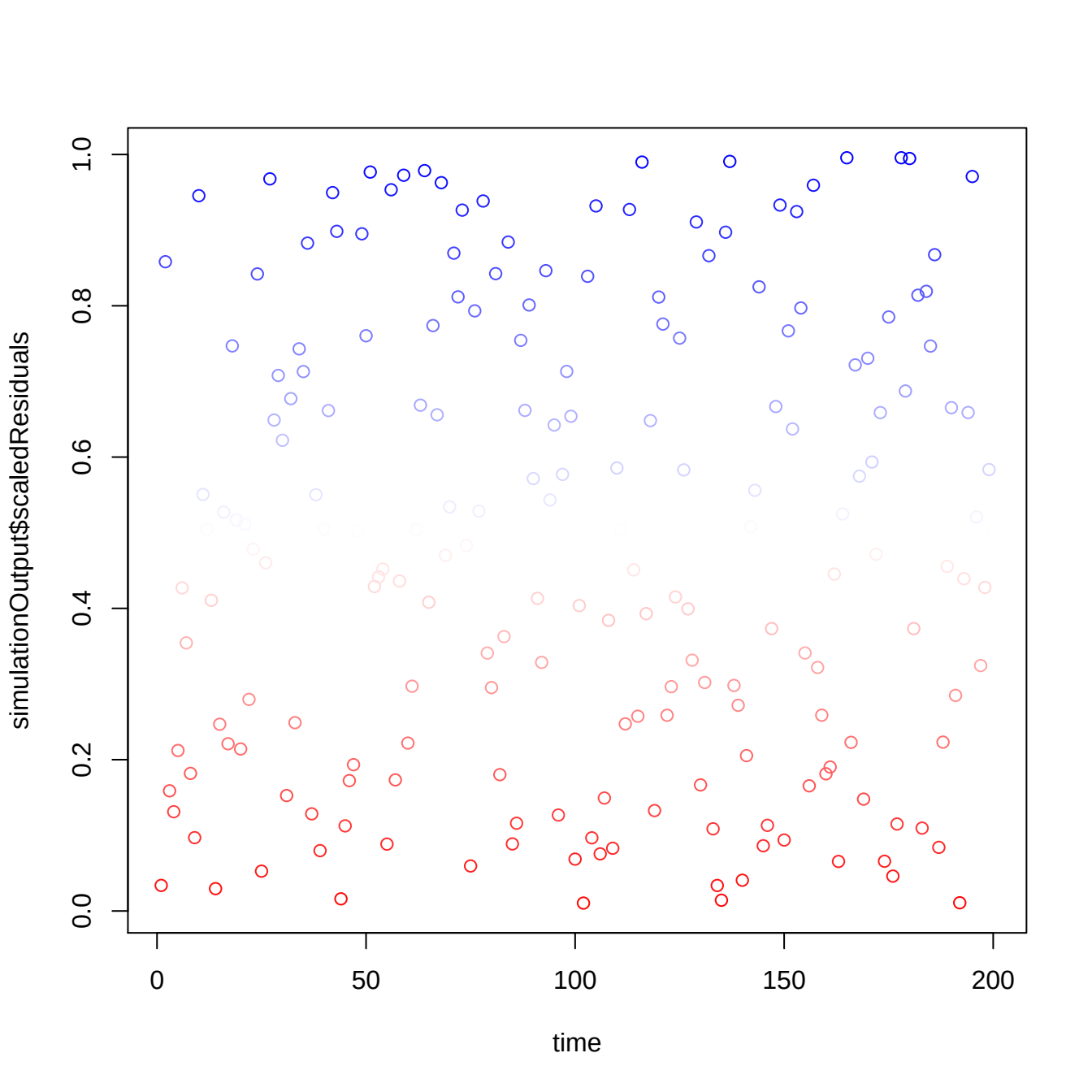

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0

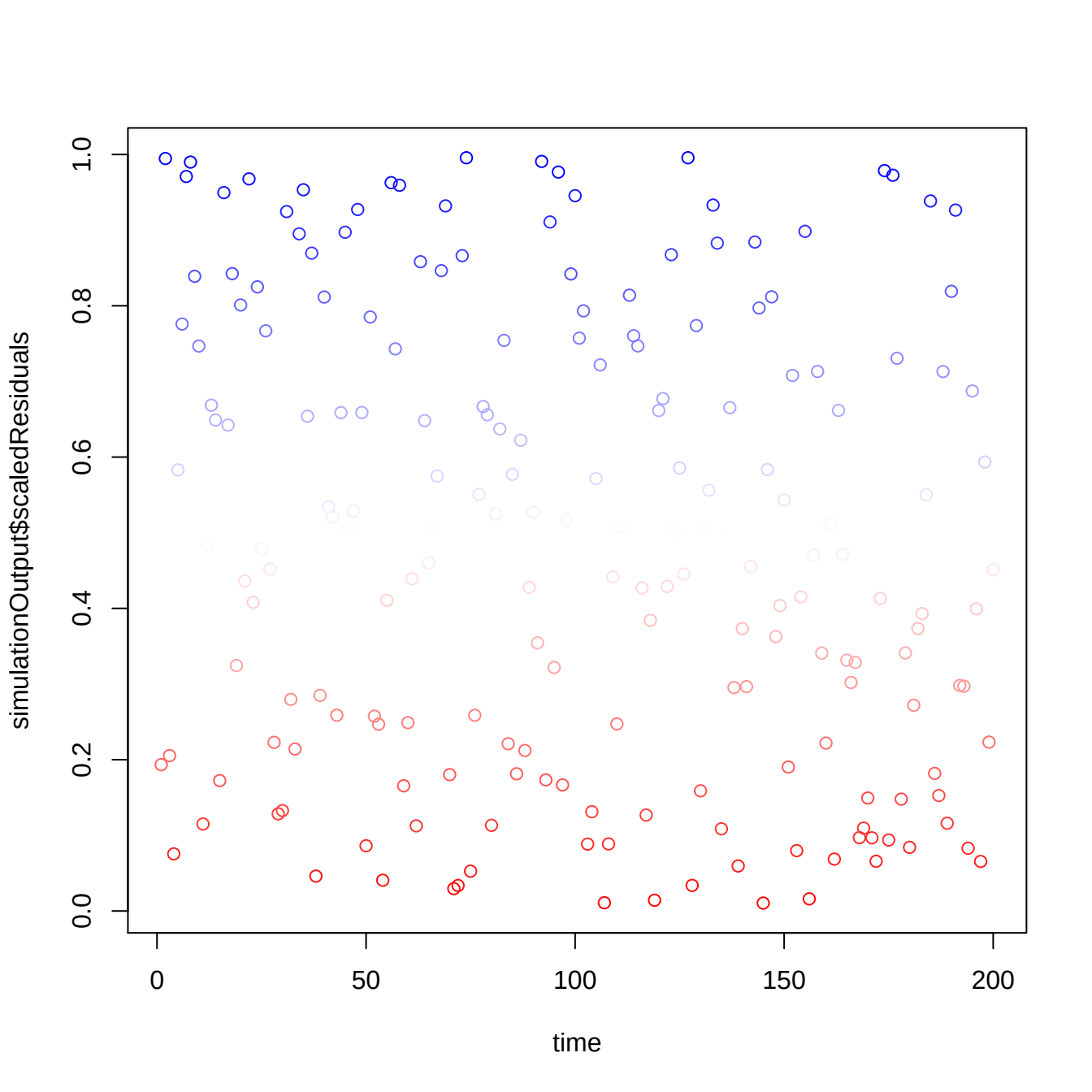

y
x
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.2
0.4
0.6
0.8
1.0


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