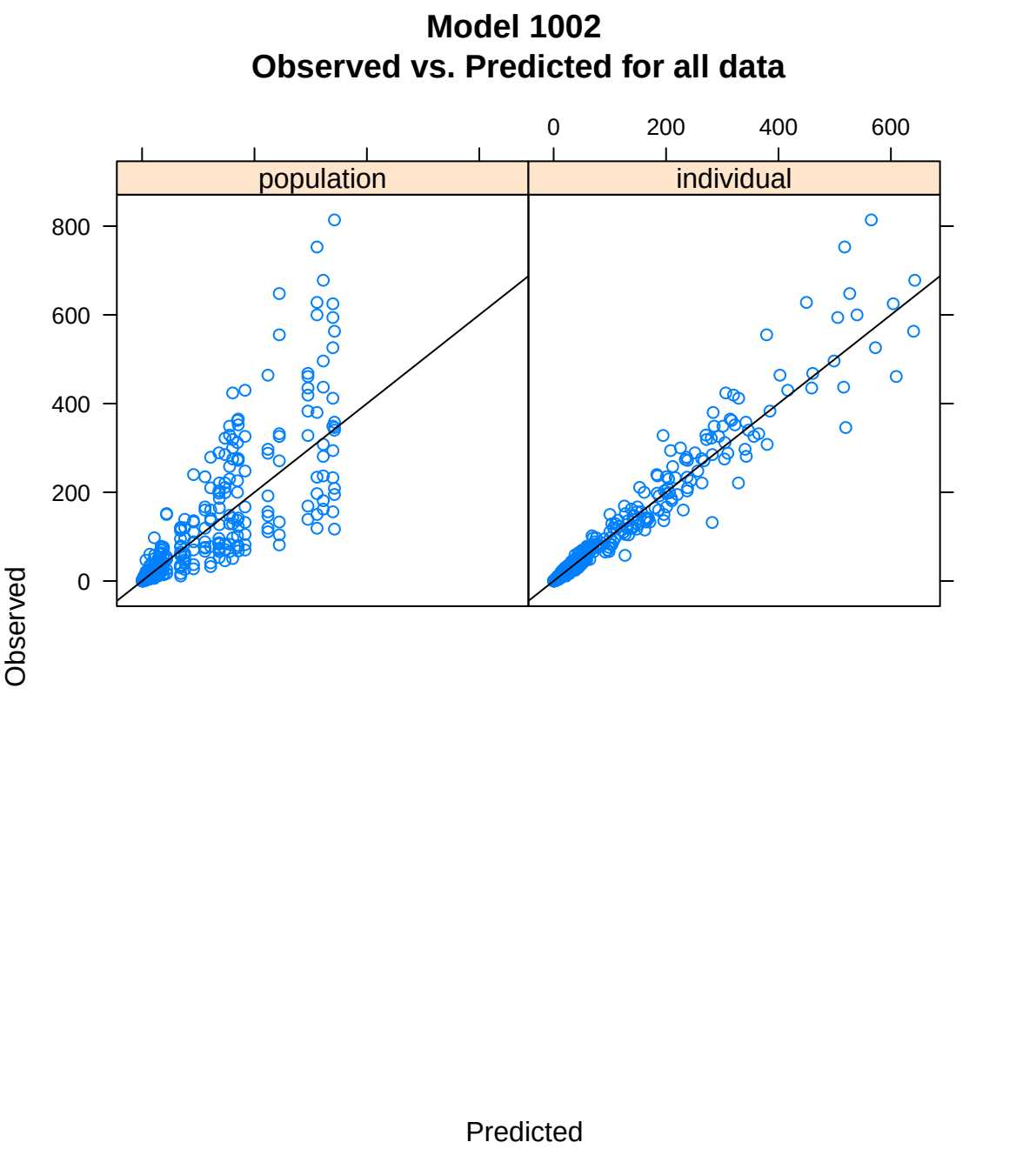
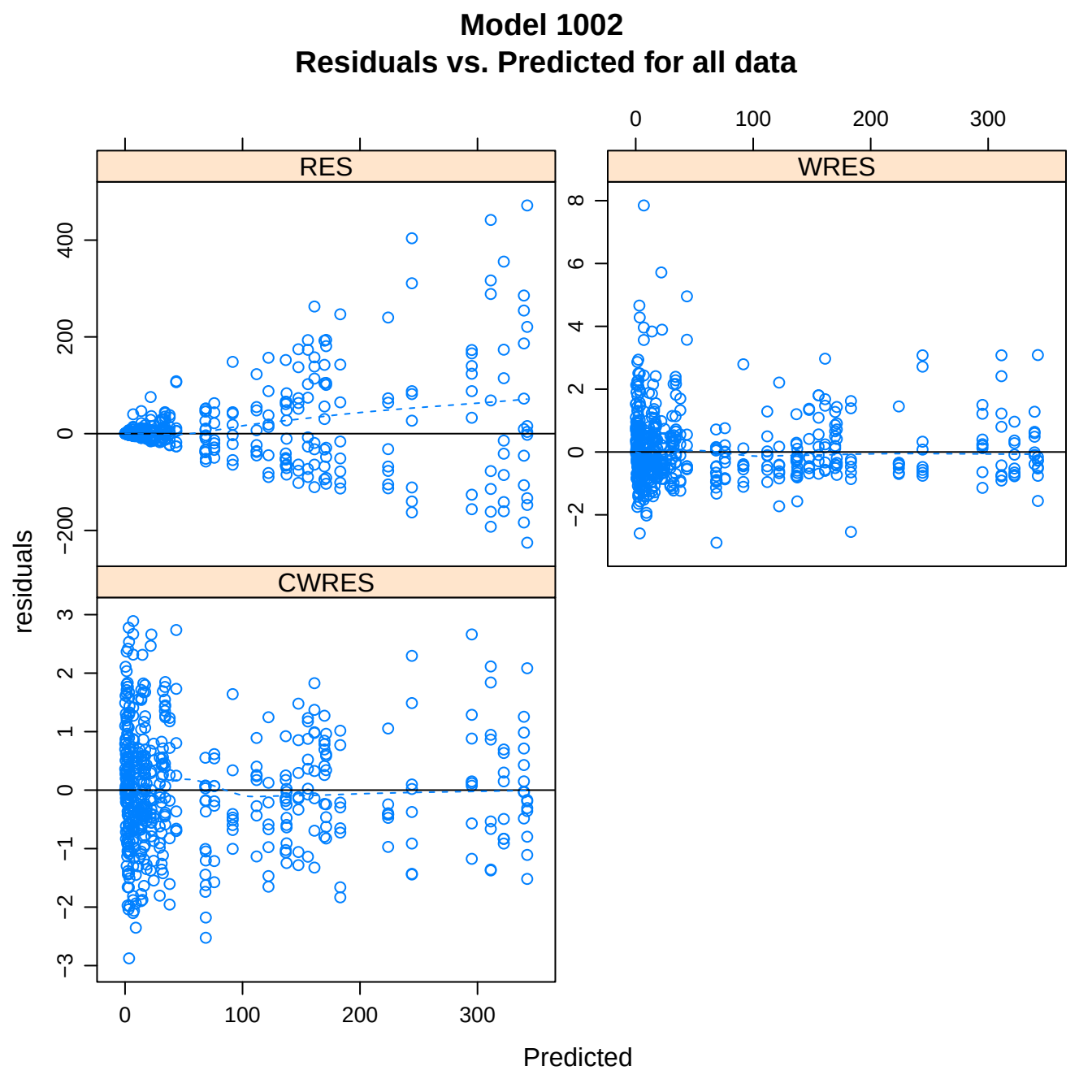
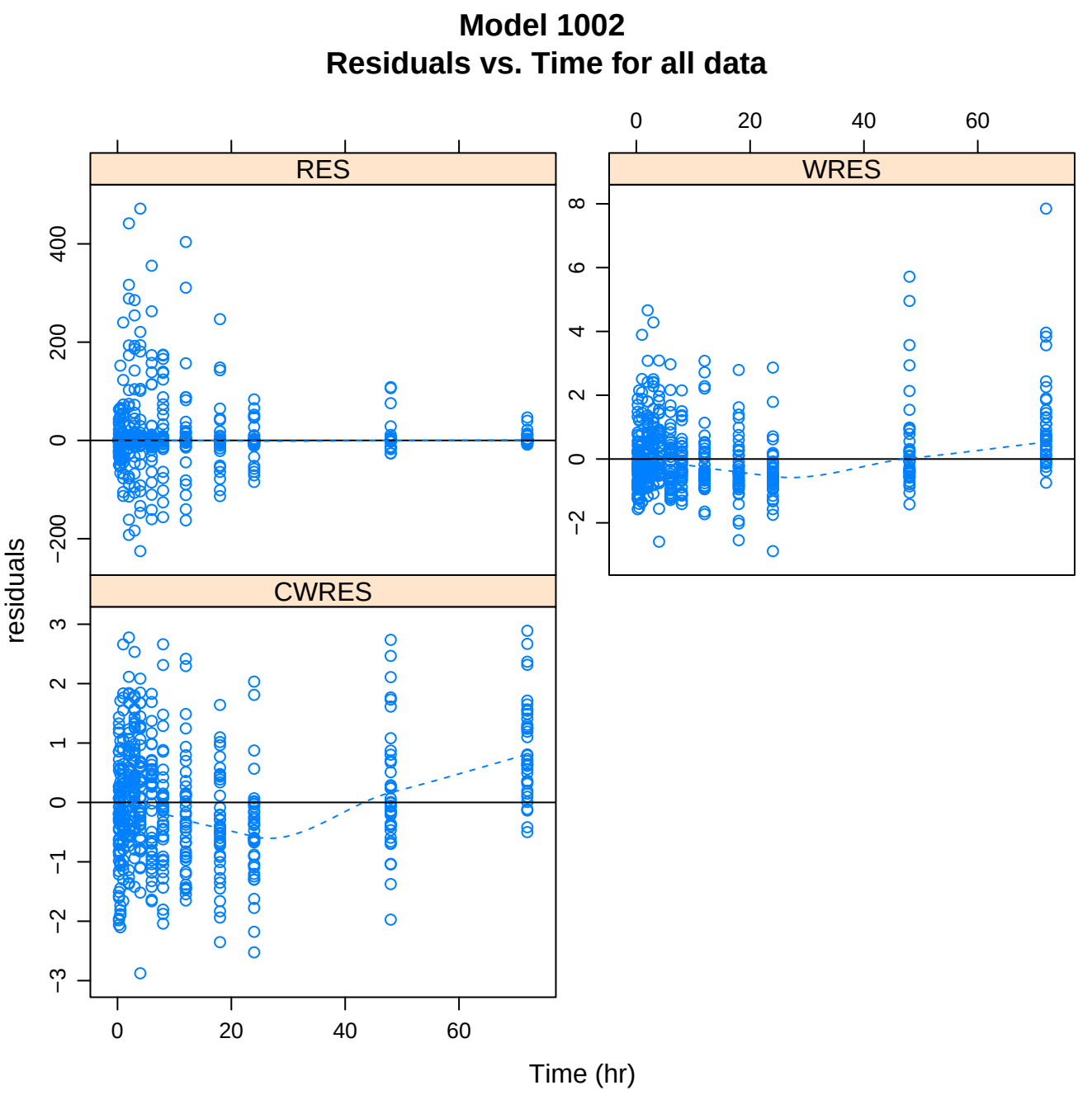
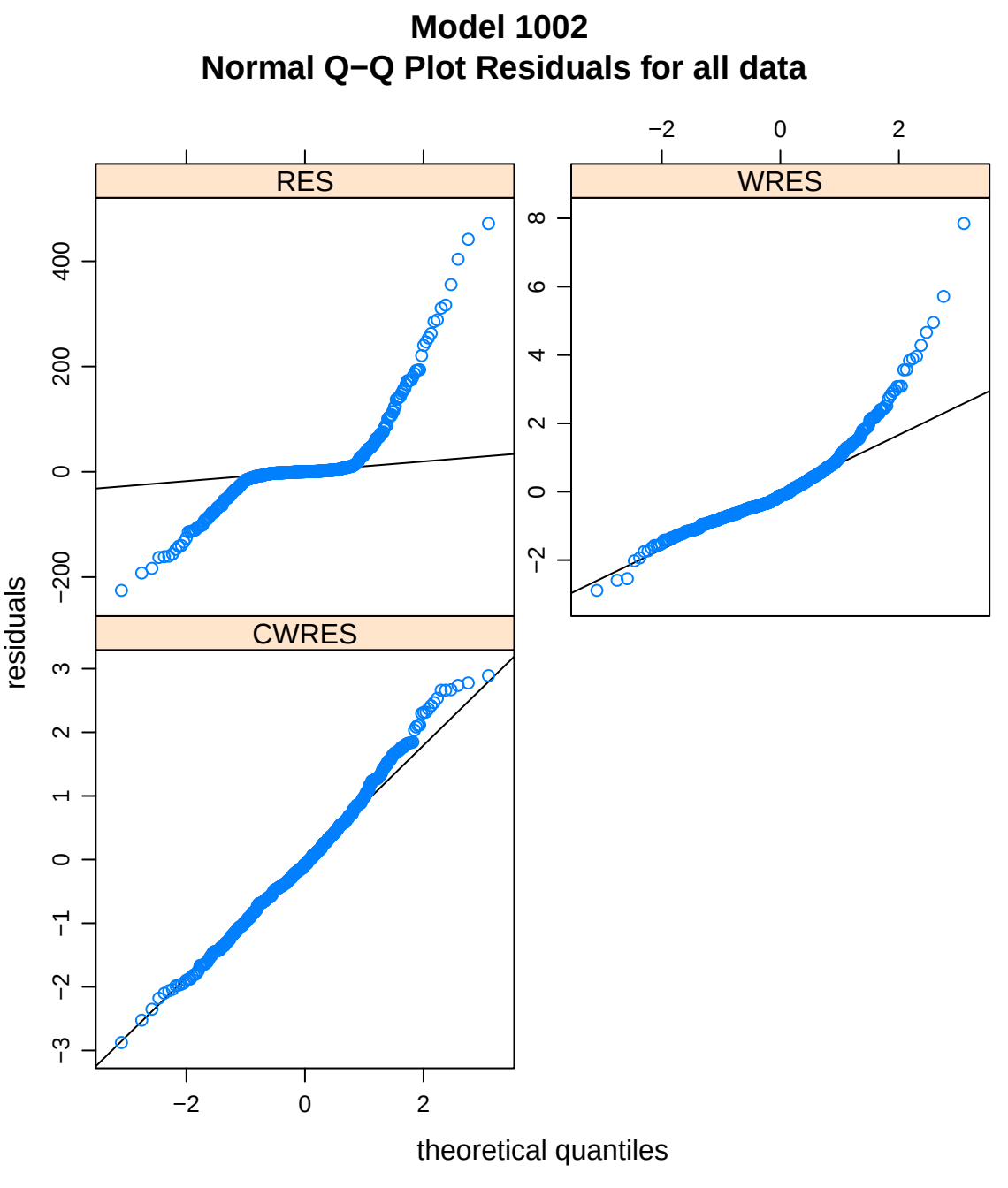
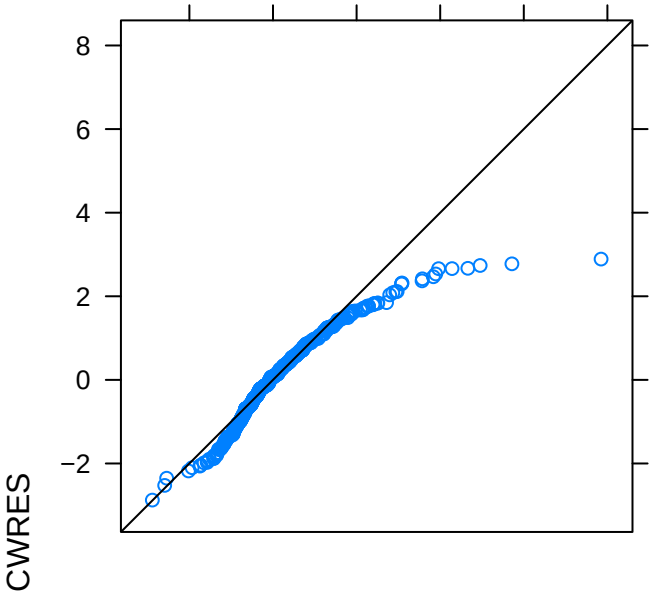

Model 1002
Observed vs. Predicted for all data
population
individual
0
200
400
600
800
Observed
Predicted


Model 1002
Residuals vs. Predicted for all data
RES
WRES
CWRES
residuals
Predicted
0
100
200
300
400
−200
−2
−3
2
4
6
8
1

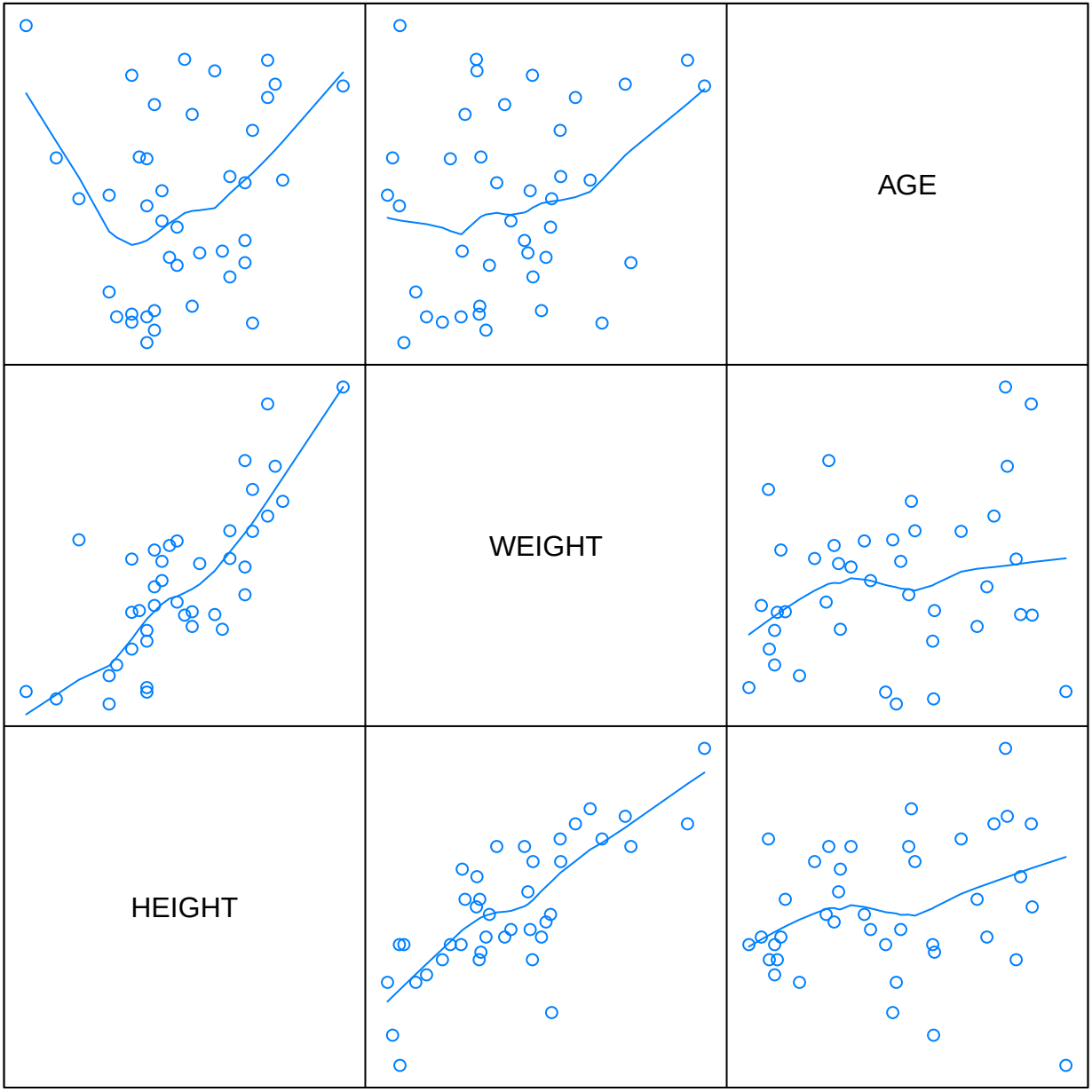

Model 1002
Residuals vs. Time for all data
RES
WRES
CWRES
residuals
Time (hr)
0
20
40
60
400
200
0
−200
8
6
4
2
0
−2
3
2
1
0
−1
−2
−3

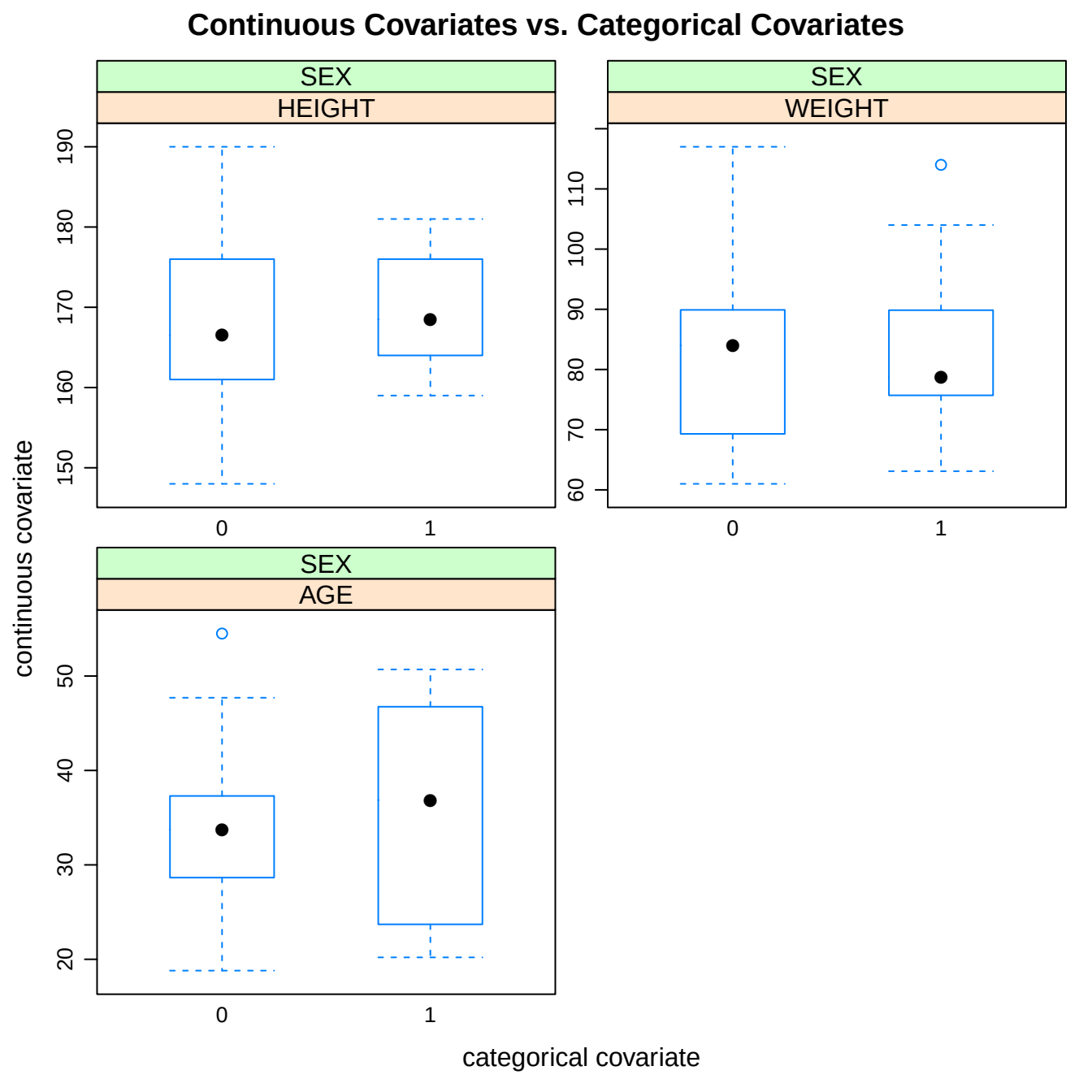

Model 1002
Normal Q−Q Plot Residuals for all data
RES
WRES
CWRES
residuals
theoretical quantiles
−2
0
2
400
200
0
−200
8
6
4
2
0
−2
3
2
1
0
−1
−2
−3

Model 1002
Q−Q Plot of CWRES vs. WRES for all data

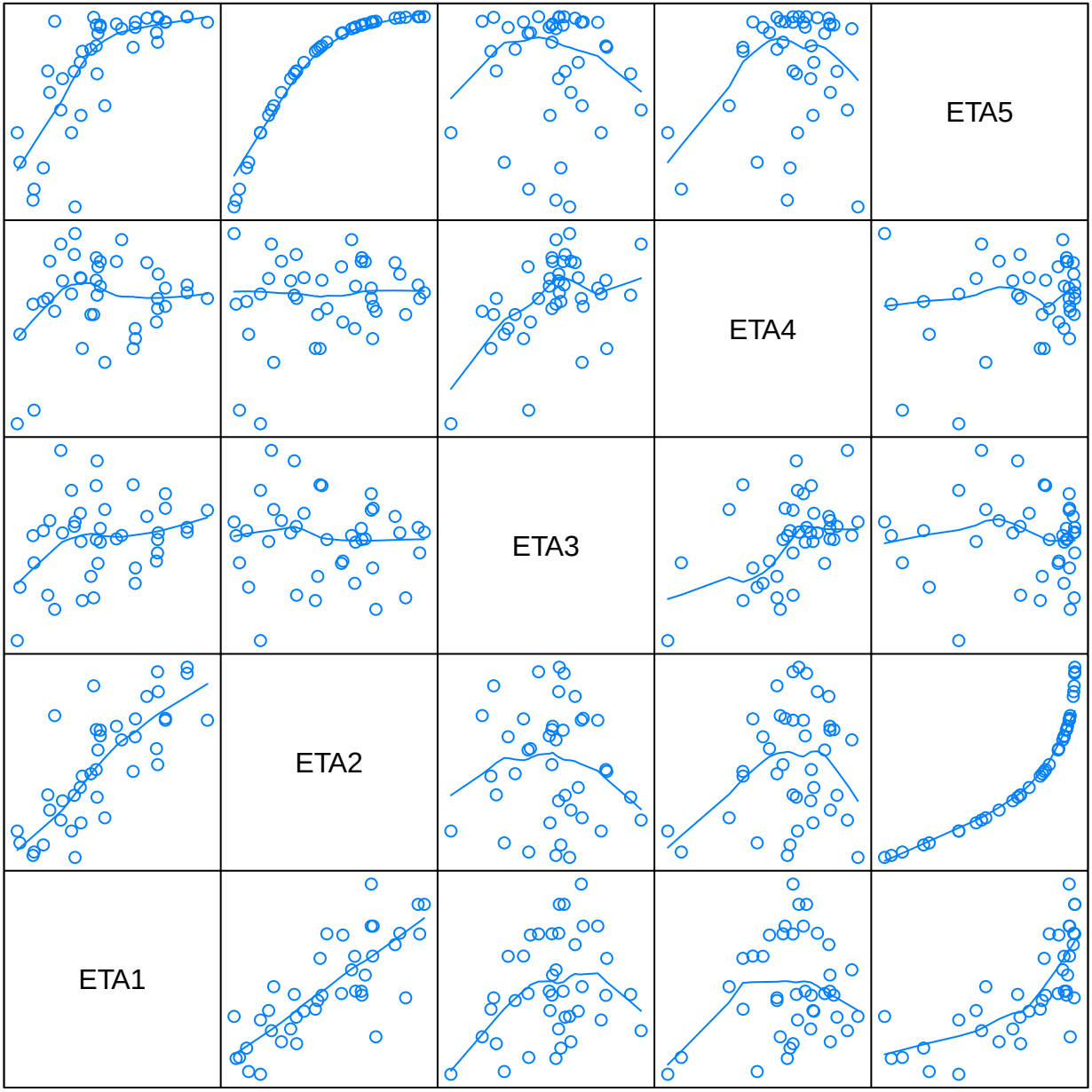


WRES

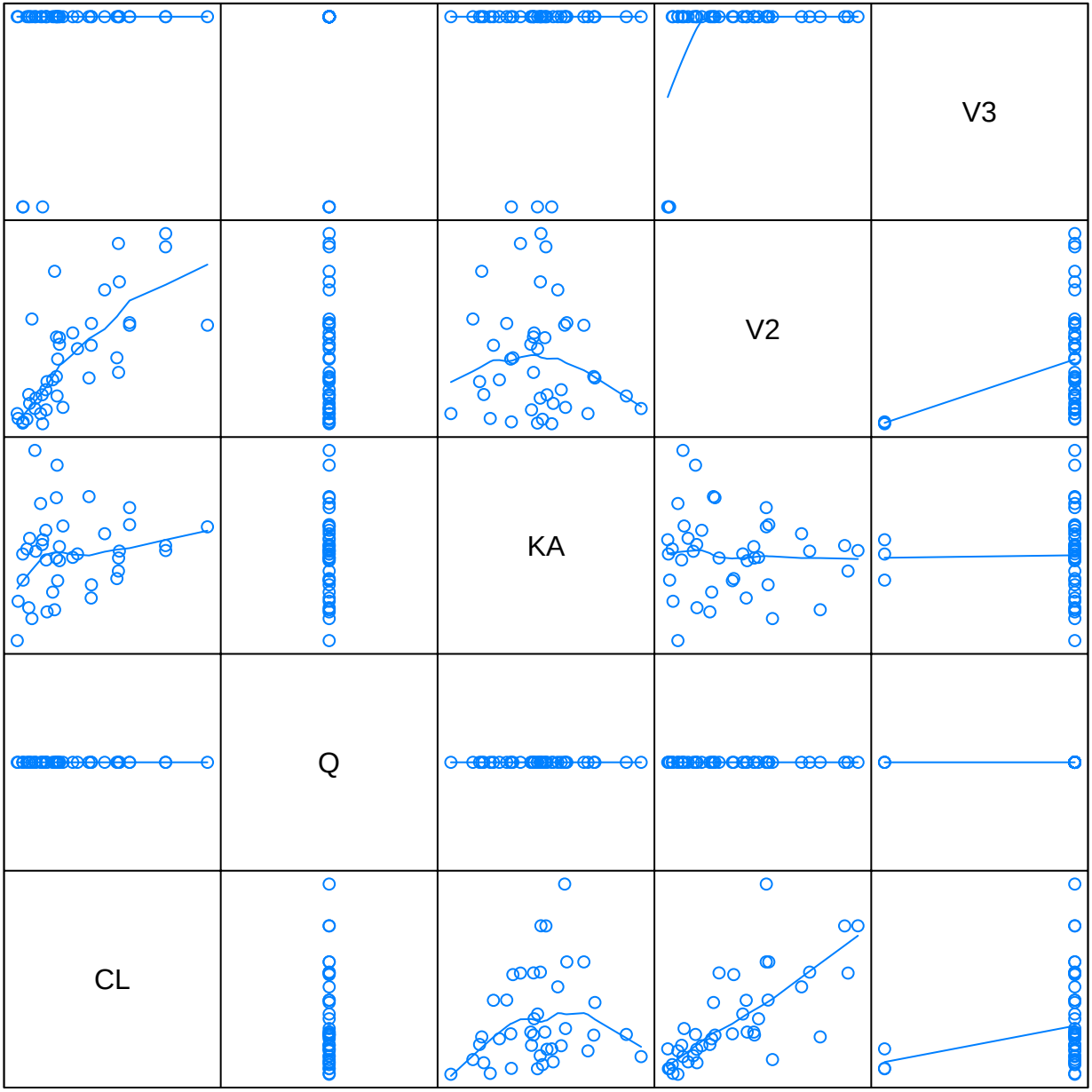

Covariate Scatterplots
AGE
WEIGHT
HEIGHT

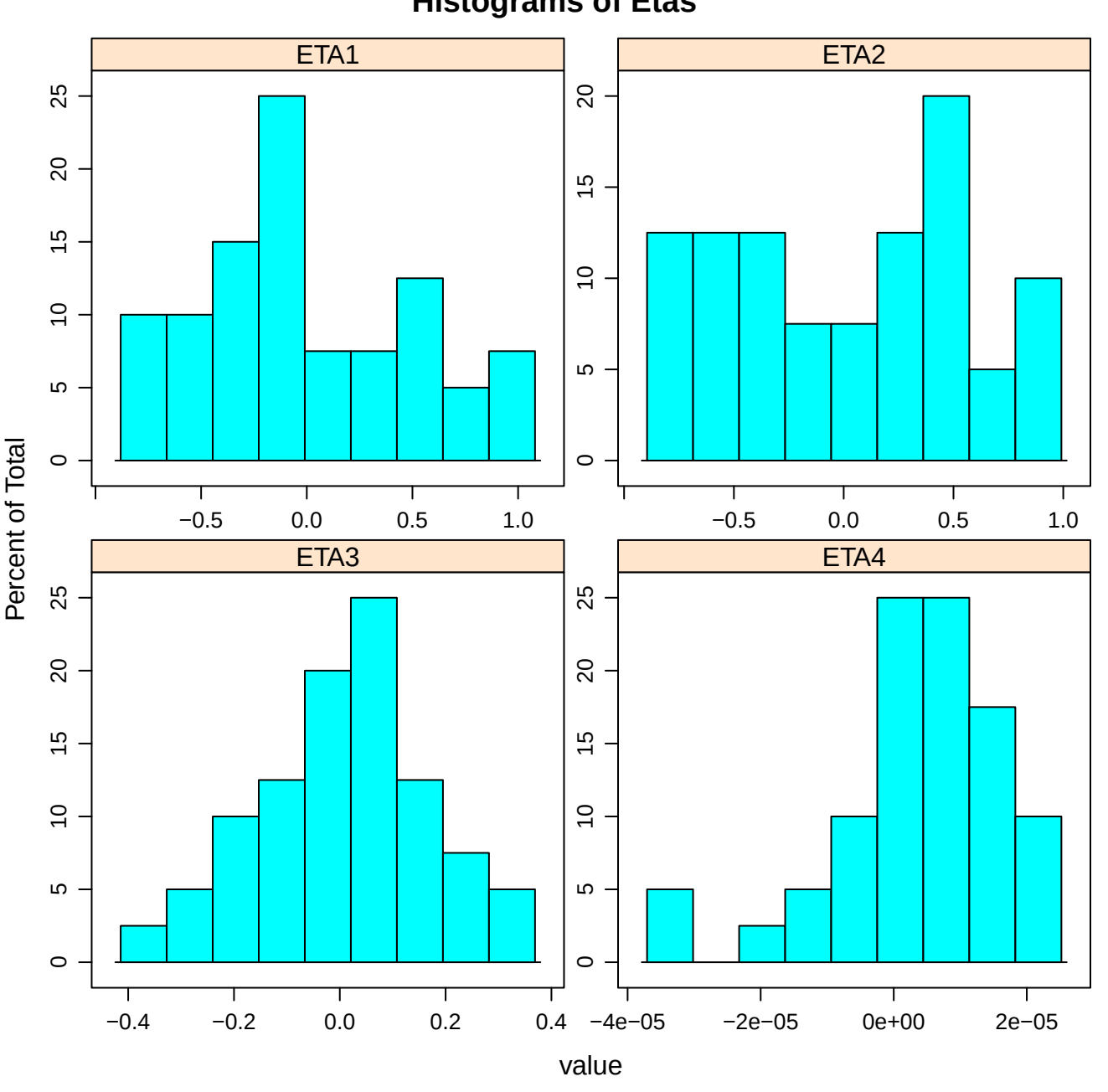

Continuous Covariates vs. Categorical Covariates
SEX
HEIGHT
150
160
170
180
190
0
1
SEX
WEIGHT
60
70
80
90
100
110
0
1
SEX
AGE
20
30
40
50
0
1
continuous covariate
categorical covariate

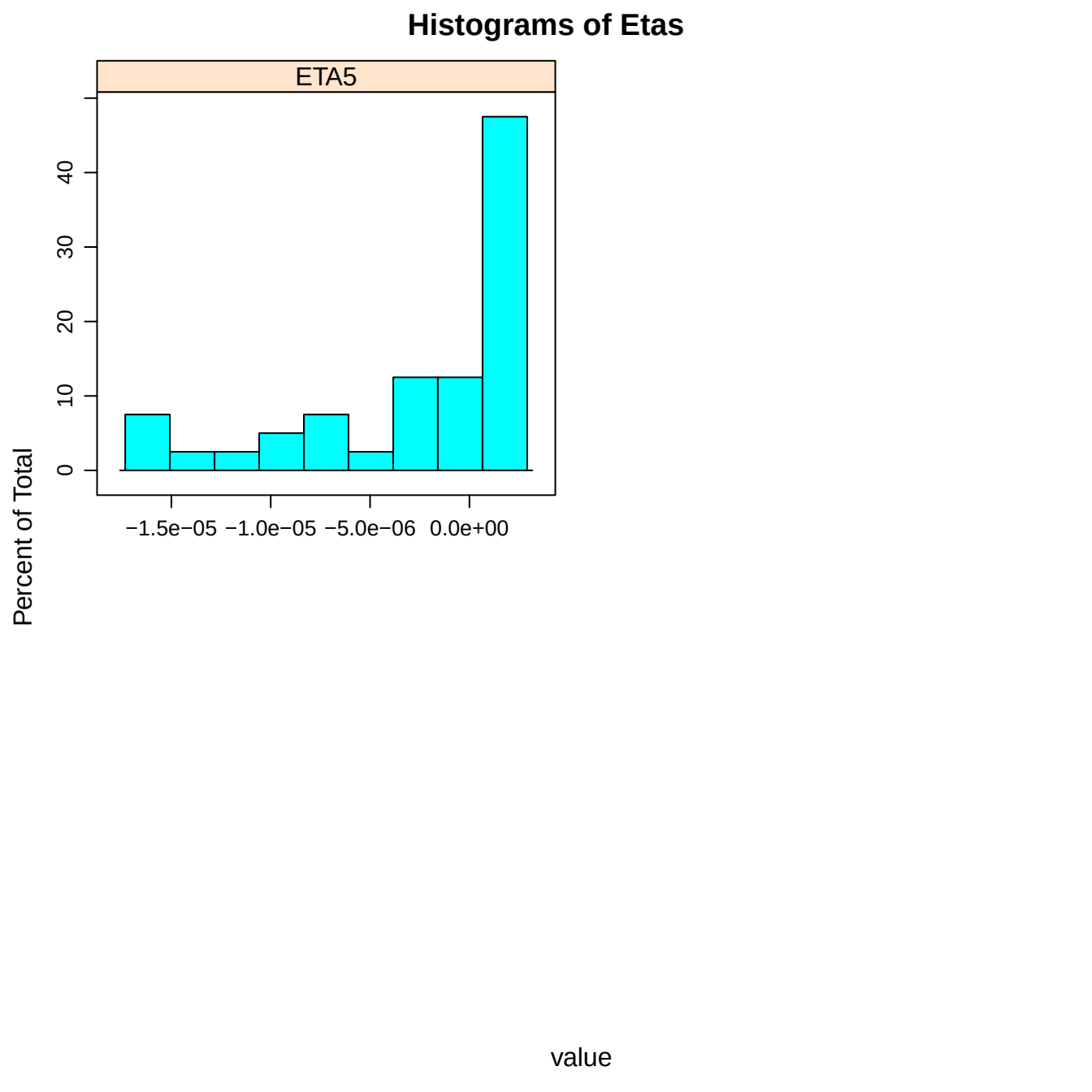
ETA Scatterplots

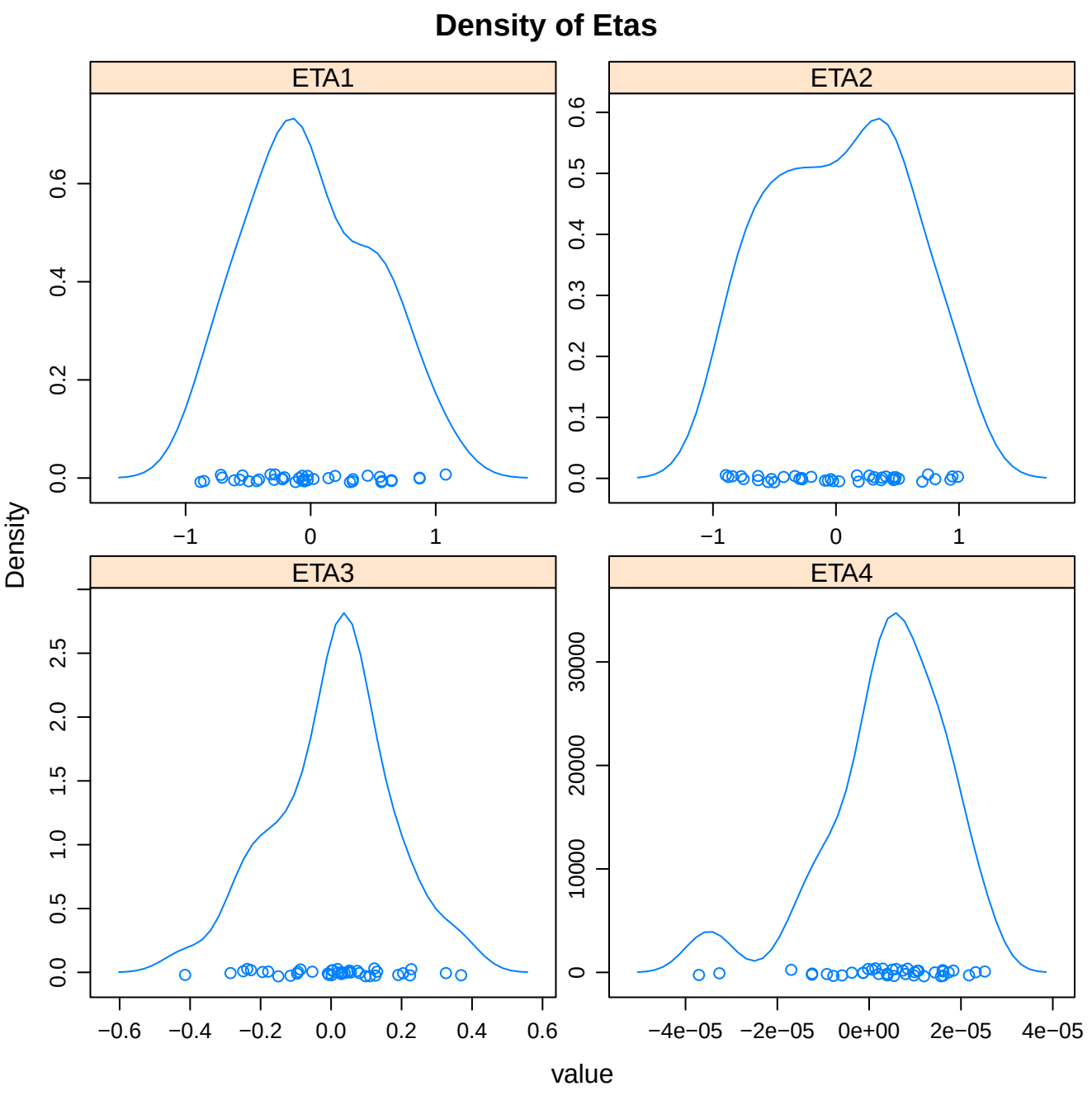


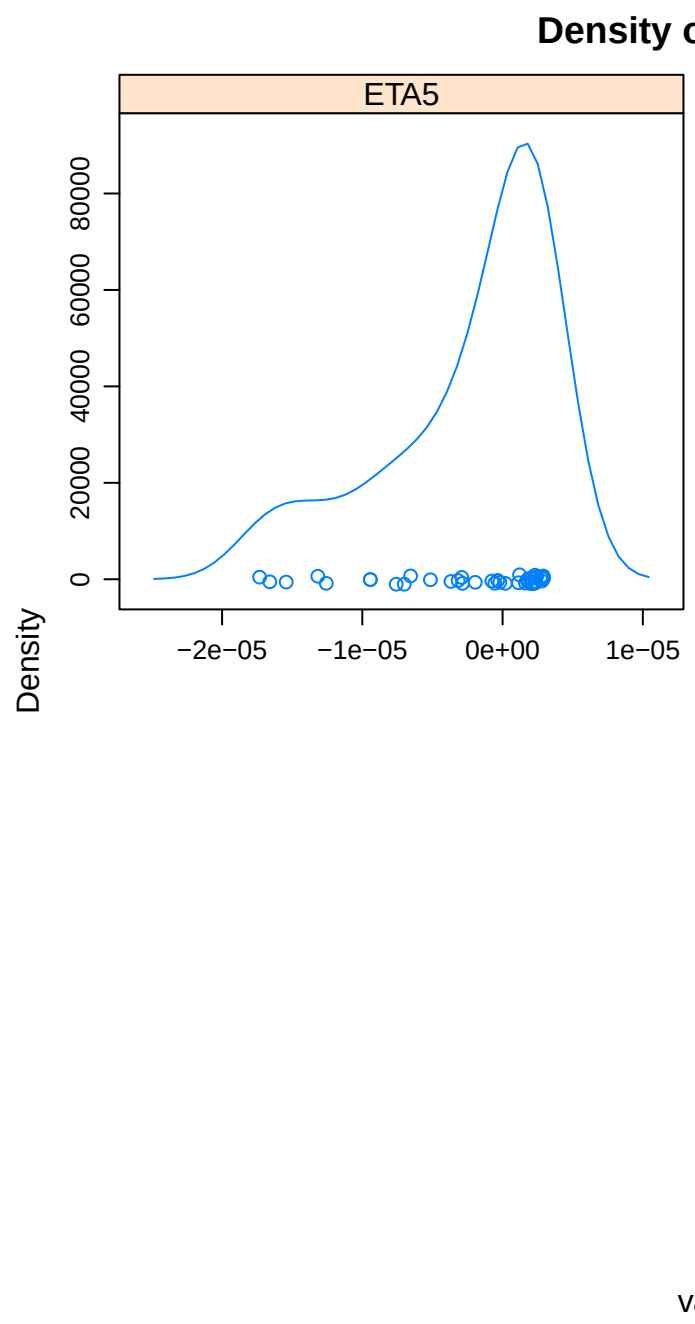
Parameter Scatterplots

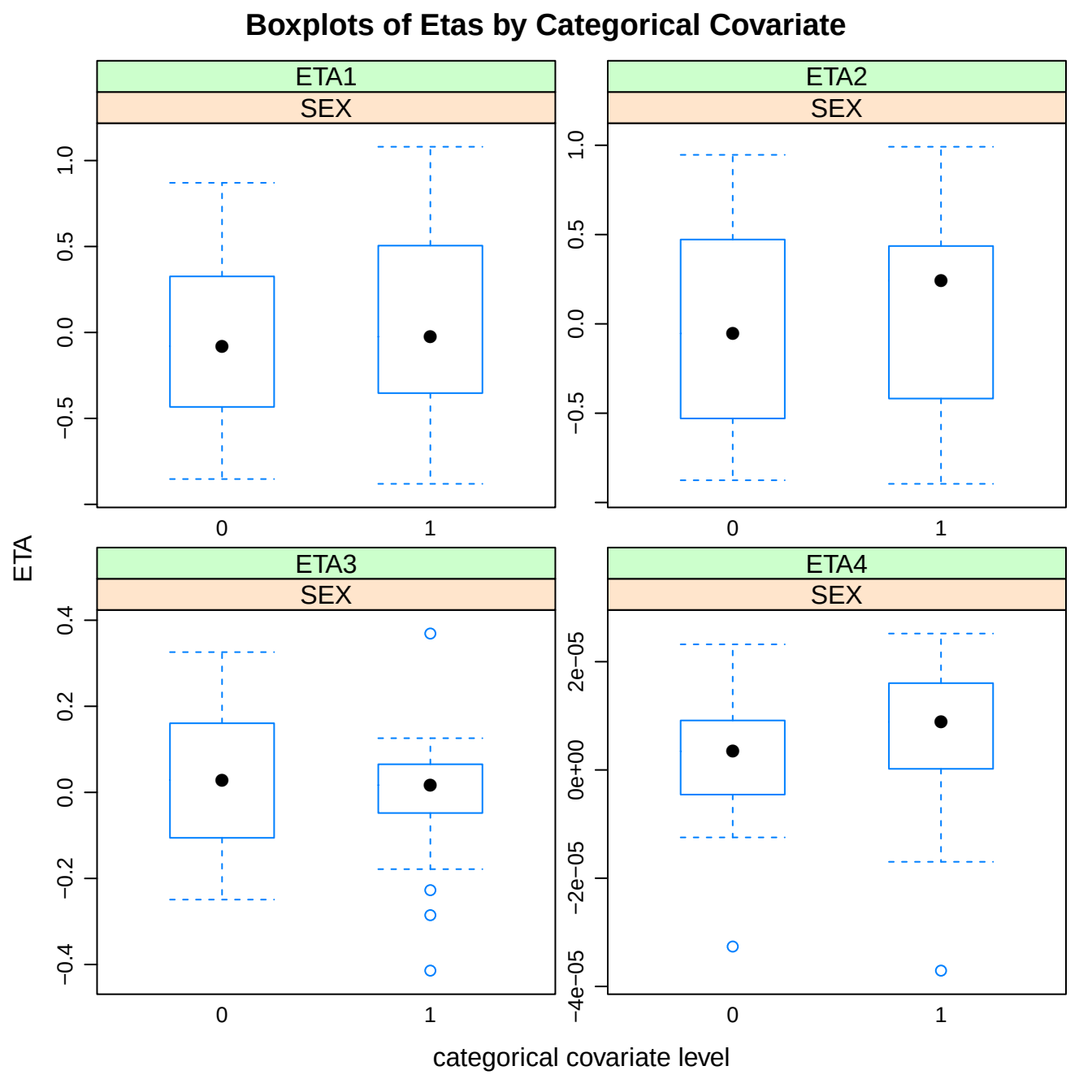


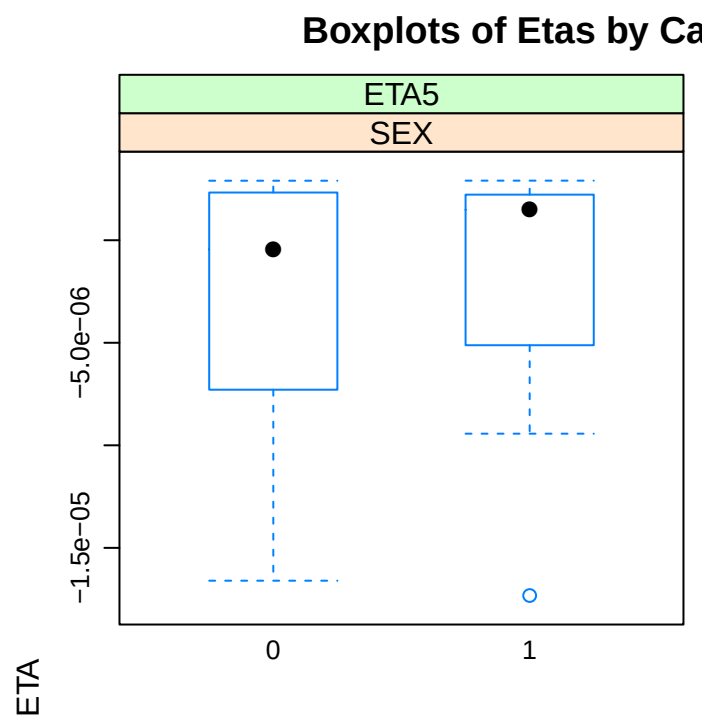

Histograms of Etas
ETA1
ETA2
ETA3
ETA4
Percent of Total
value
0
5
10
15
20
25
−0.5
0.0
0.5
1.0
−0.4
−0.2
0.0
0.2
0.4
−4e−05
−2e−05
0e+00
2e−05

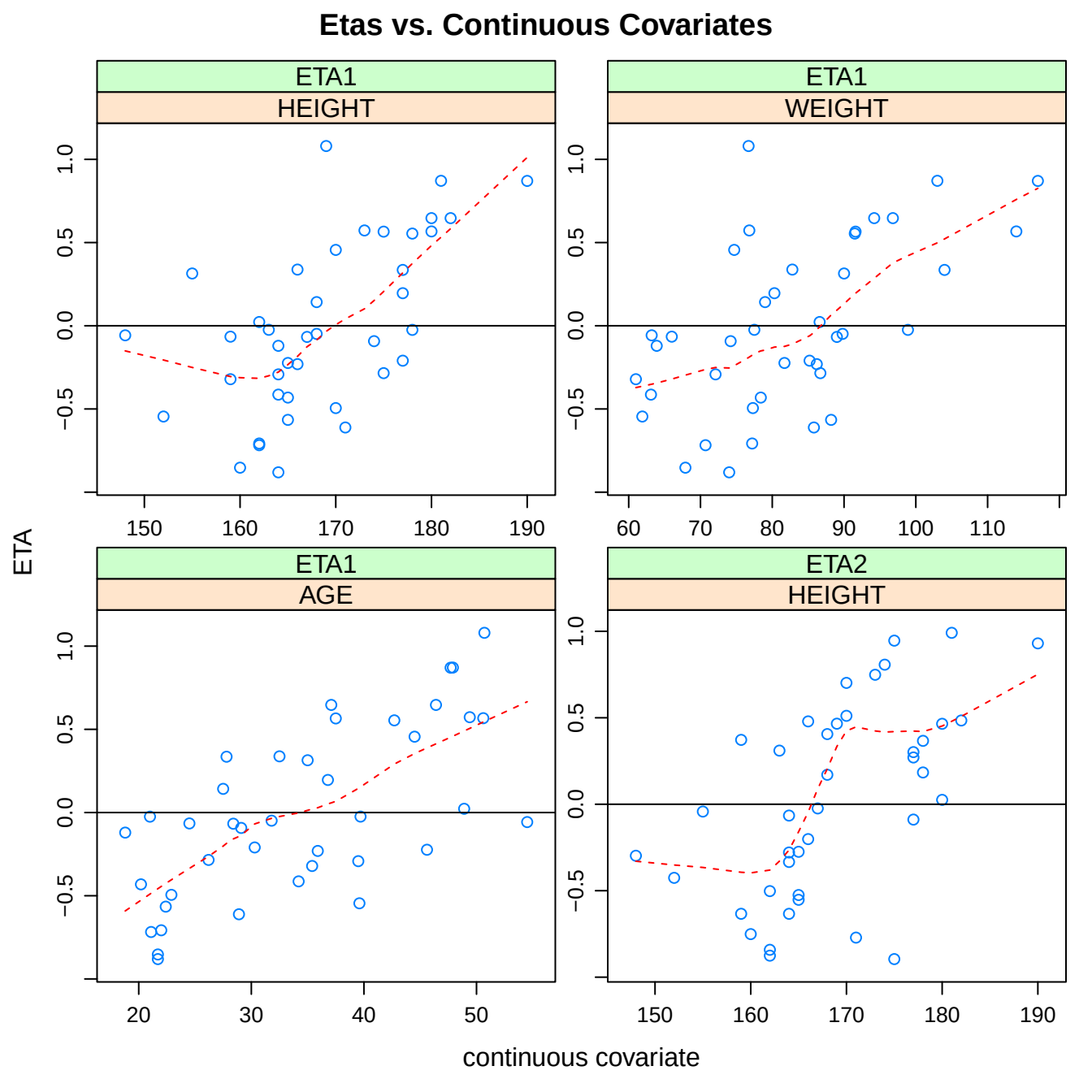

Histograms of Etas
ETA5
Percent of Total
0
10
20
30
40
−1.5e−05
−1.0e−05
−5.0e−06
0.0e+00
value

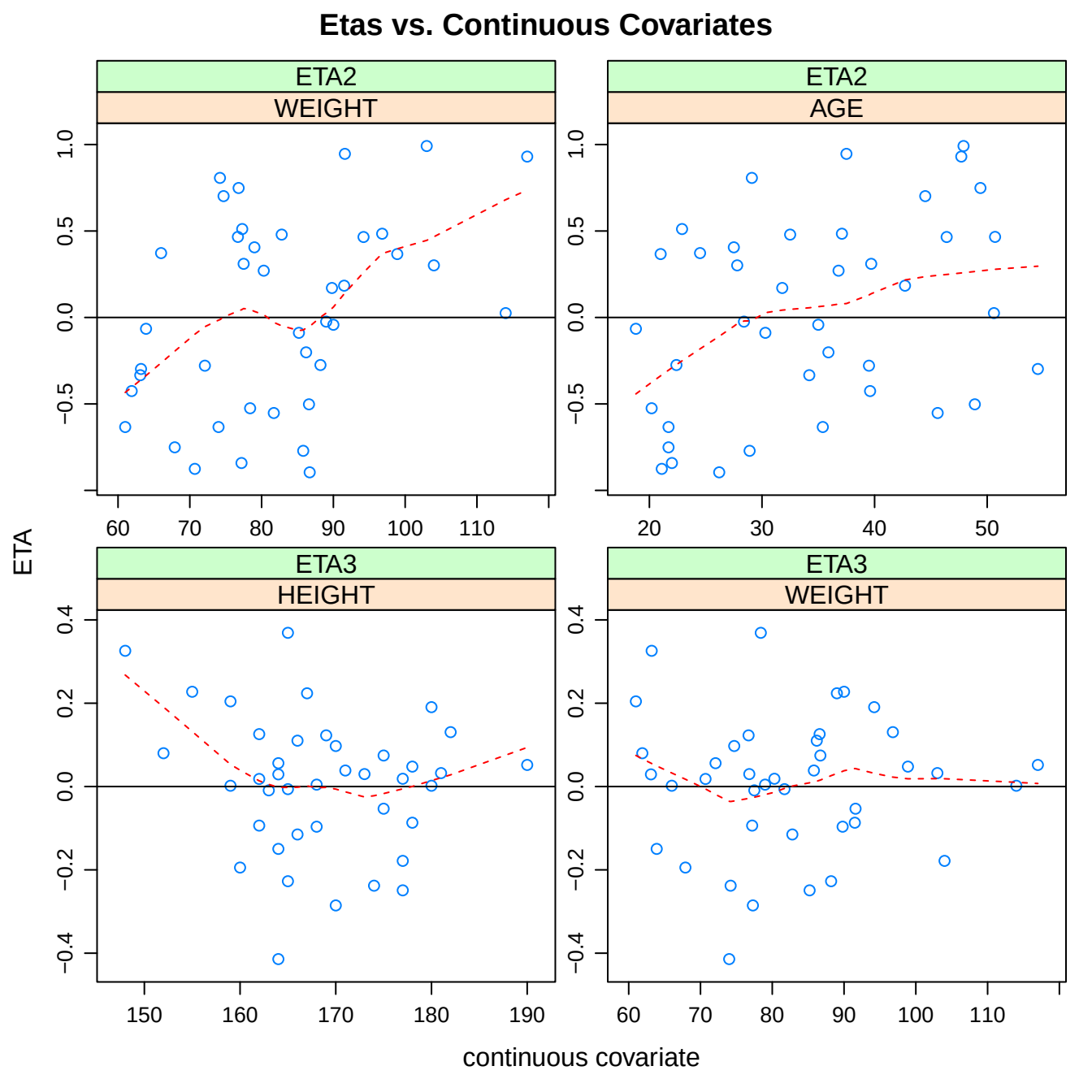

Density of Etas
ETA1
ETA2
ETA3
ETA4
Density
value
0.0
0.2
0.4
0.6
0.1
0.3
0.5
0.0
0.5
1.0
1.5
2.0
2.5
0
10000
20000
30000
−1
0
1
−0.6
−0.4
−0.2
0.0
0.2
0.4
0.6
−4e−05
−2e−05
0e+00
2e−05
4e−05

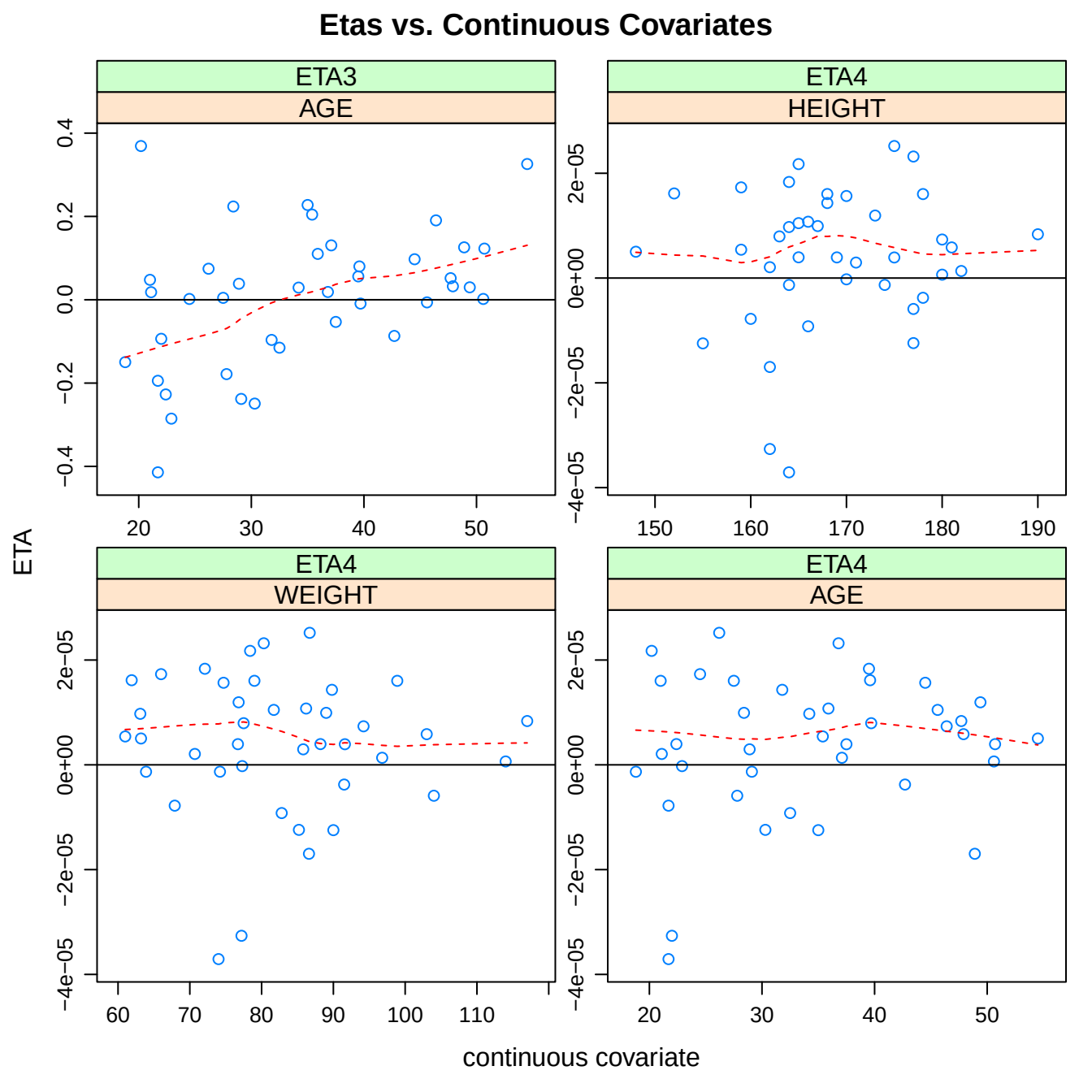

Density of Etas
ETA5
Density
0
20000
40000
60000
80000
−2e−05
−1e−05
0e+00
1e−05
value

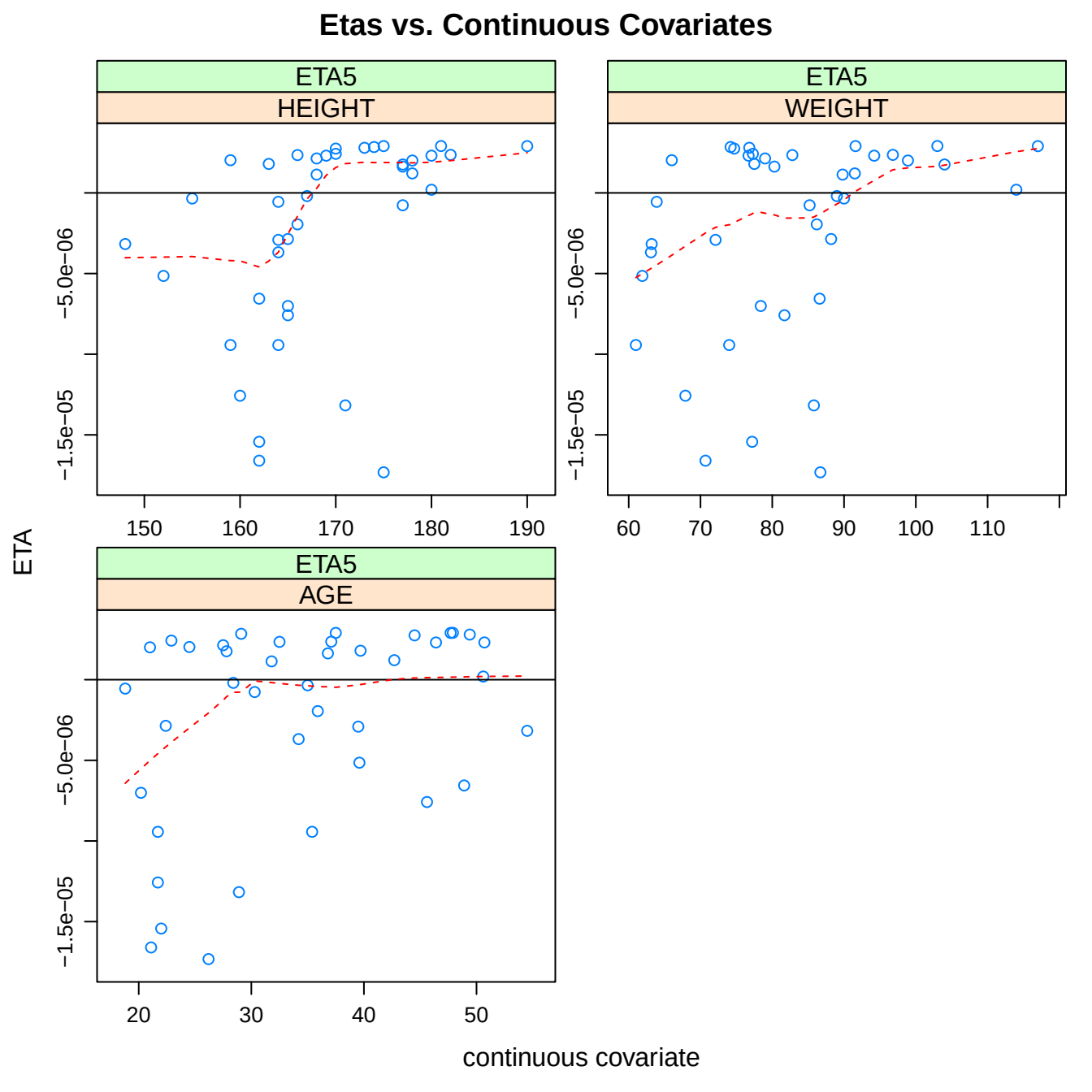

Boxplots of Etas by Categorical Covariate
ETA1
SEX
ETA2
SEX
ETA3
SEX
ETA4
SEX
ETA
categorical covariate level
1.0
0.5
0.0
−0.5
0.4
0.2
0.0
−0.2
−0.4
2e−05
0e+00
−2e−05
−4e−05
0
1


Boxplots of Etas by Categorical Covariate
ETA5
SEX
−5.0e−06
−1.5e−05
0
1
ETA
categorical covariate level

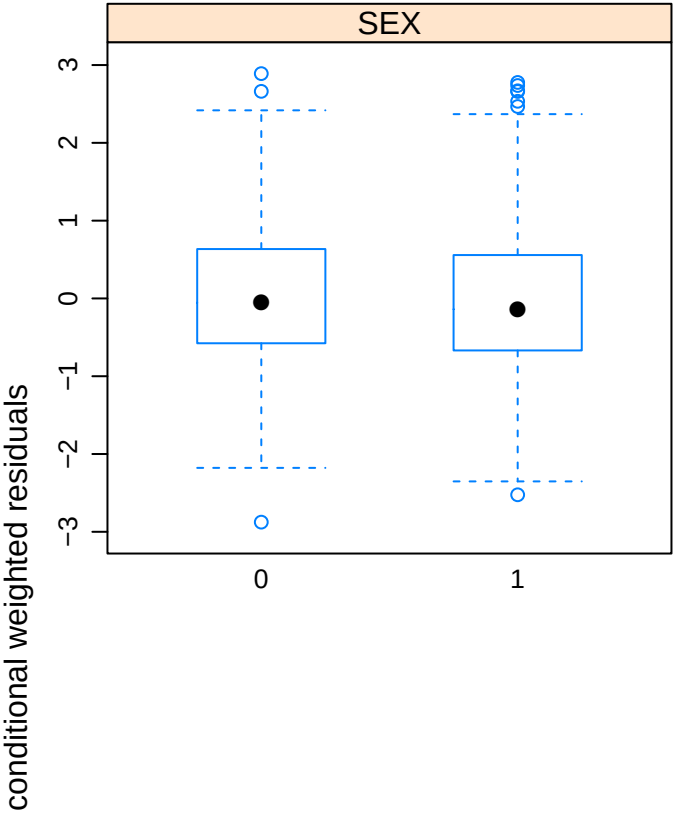

Etas vs. Continuous Covariates
ETA1
HEIGHT
ETA1
WEIGHT
ETA1
AGE
ETA2
HEIGHT
ETA
continuous covariate
1.0
0.5
0.0
−0.5
150
160
170
180
190
60
70
80
90
100
110
20
30
40
50

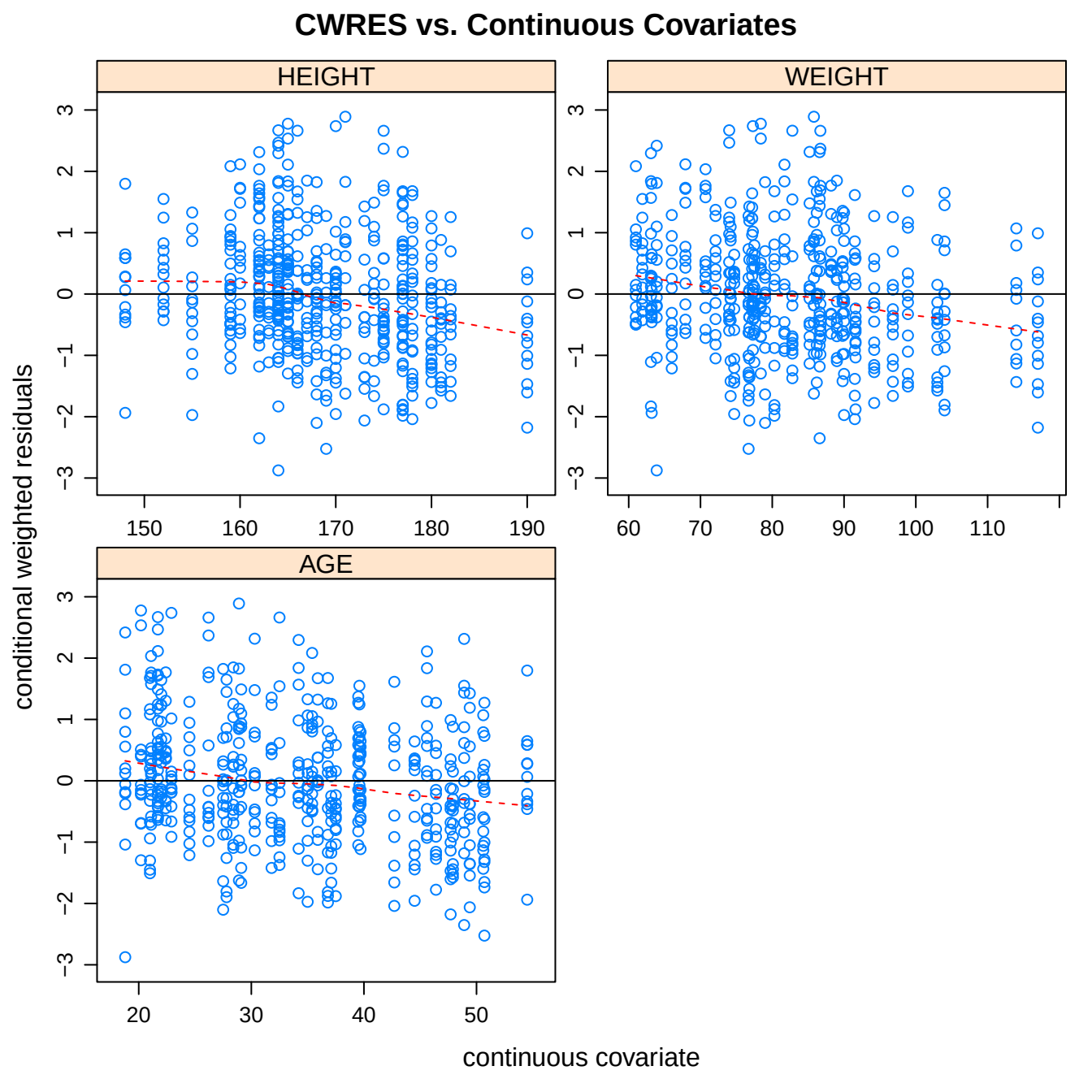

Etas vs. Continuous Covariates
ETA2
WEIGHT
ETA2
AGE
ETA3
HEIGHT
ETA3
WEIGHT
ETA
continuous covariate
1.0
0.5
0.0
−0.5
0.4
0.2
0.0
−0.2
−0.4
60
70
80
90
100
110
20
30
40
50
150
160
170
180
190

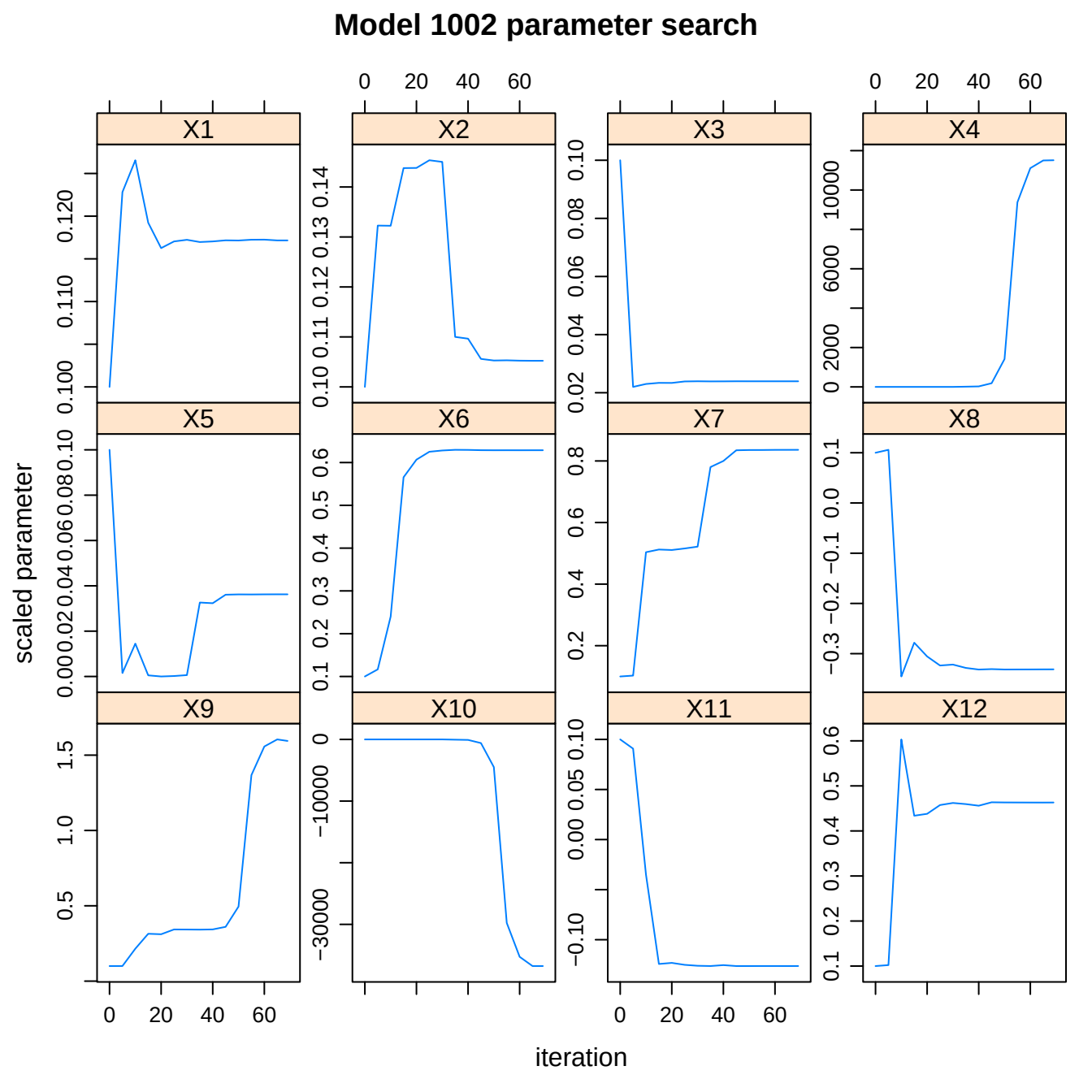

Etas vs. Continuous Covariates
ETA3
AGE
ETA4
HEIGHT
ETA4
WEIGHT
ETA4
AGE
ETA
continuous covariate
0.4
0.2
0.0
−0.2
−0.4
2e−05
0e+00
−2e−05
−4e−05
20
30
40
50
150
160
170
180
190
60
70
80
90
100
110

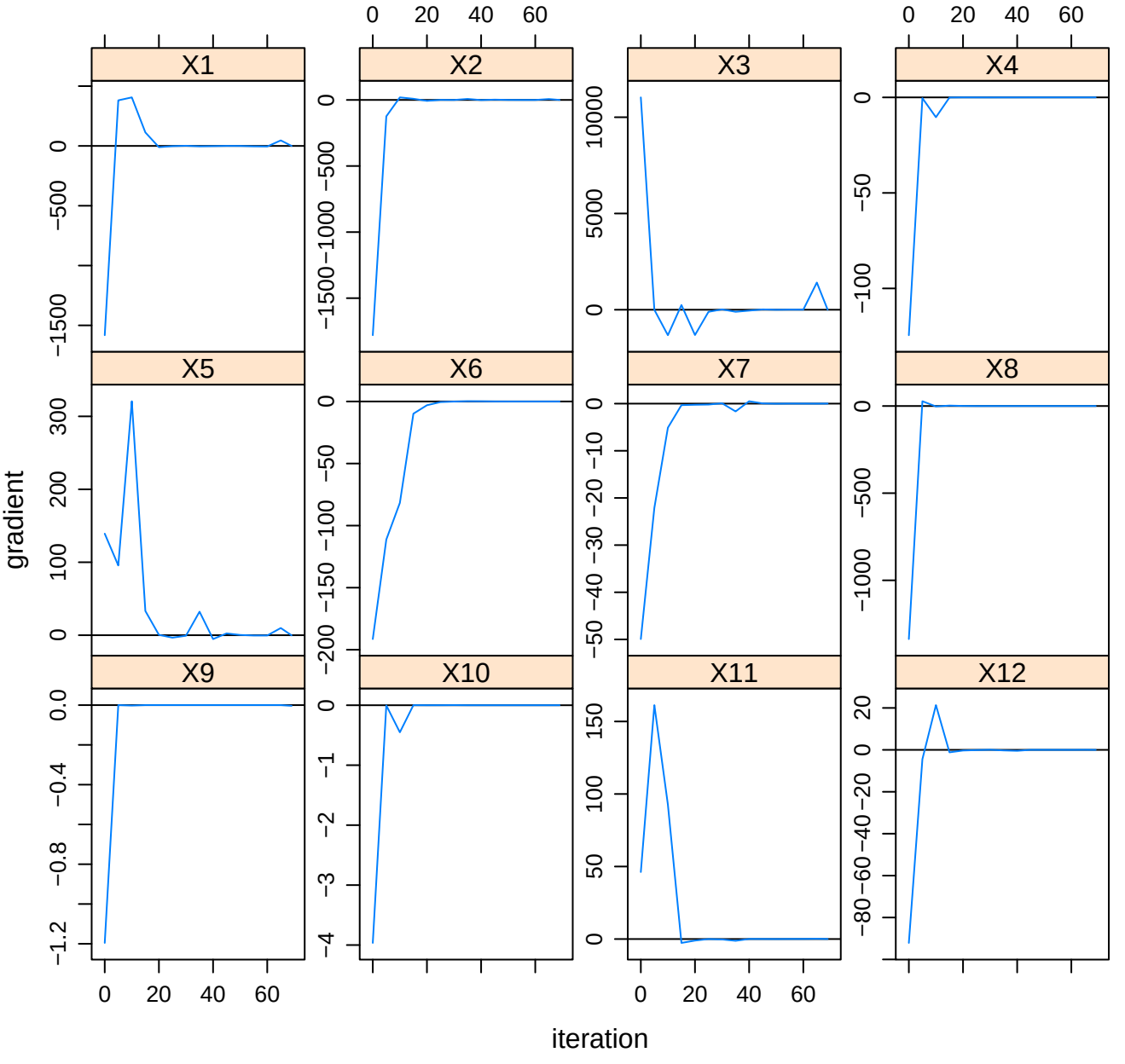

Etas vs. Continuous Covariates
ETA5
HEIGHT
ETA5
WEIGHT
ETA5
AGE
ETA
continuous covariate
−5.0e−06
−1.5e−05
150
160
170
180
190
60
70
80
90
100
110
20
30
40
50

CWRES vs. Categorical Covariates




CWRES vs. Continuous Covariates
HEIGHT
WEIGHT
AGE
conditional weighted residuals
continuous covariate
−3
−2
−1
0
1
2
3
150
160
170
180
190
60
70
80
90
100
110
20
30
40
50


Model 1002 parameter search
X1
X2
X3
X4
X5
X6
X7
X8
X9
X10
X11
X12
scaled parameter
iteration


Model 1002 gradient search
X1
X2
X3
X4
X5
X6
X7
X8
X9
X10
X11
X12
gradient
iteration