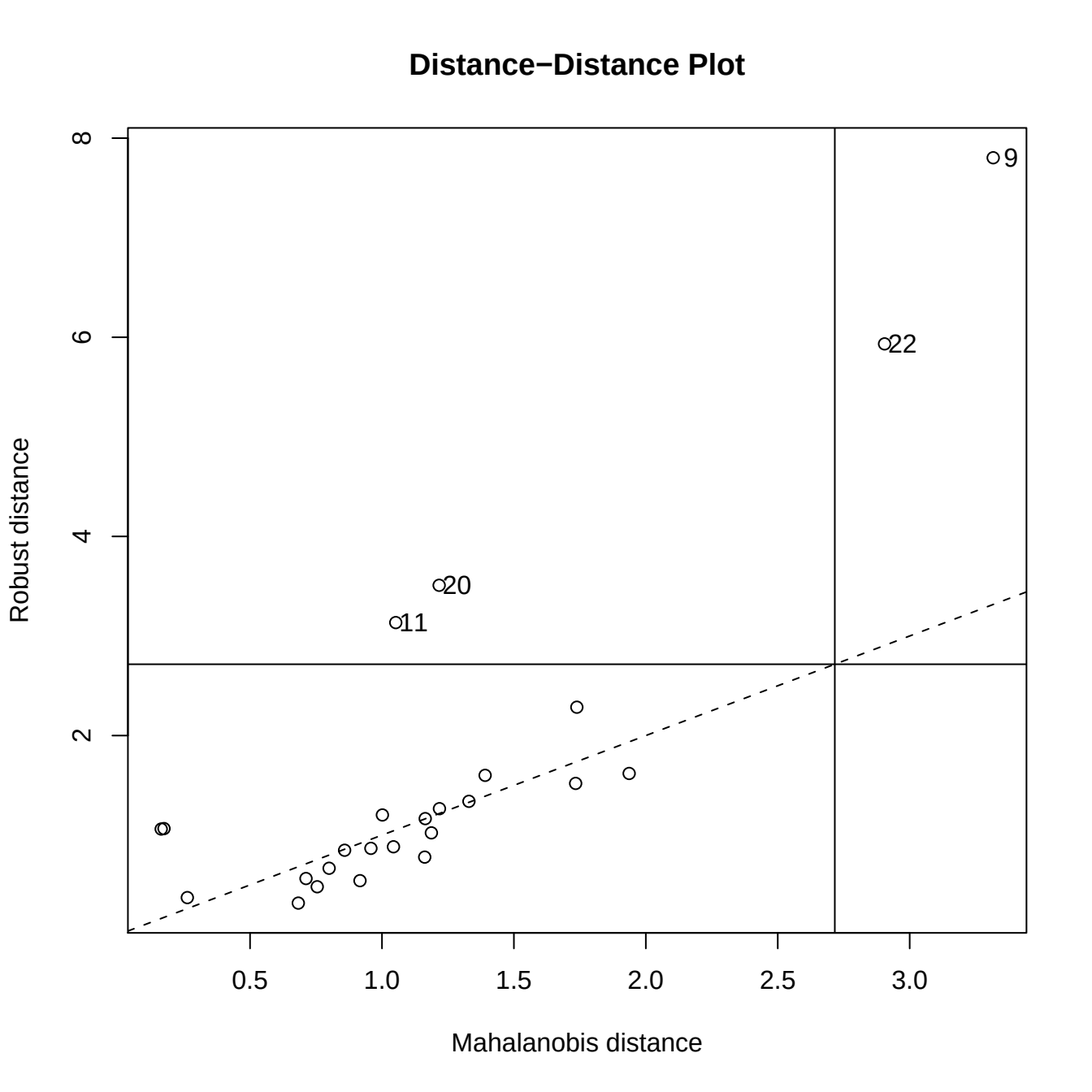
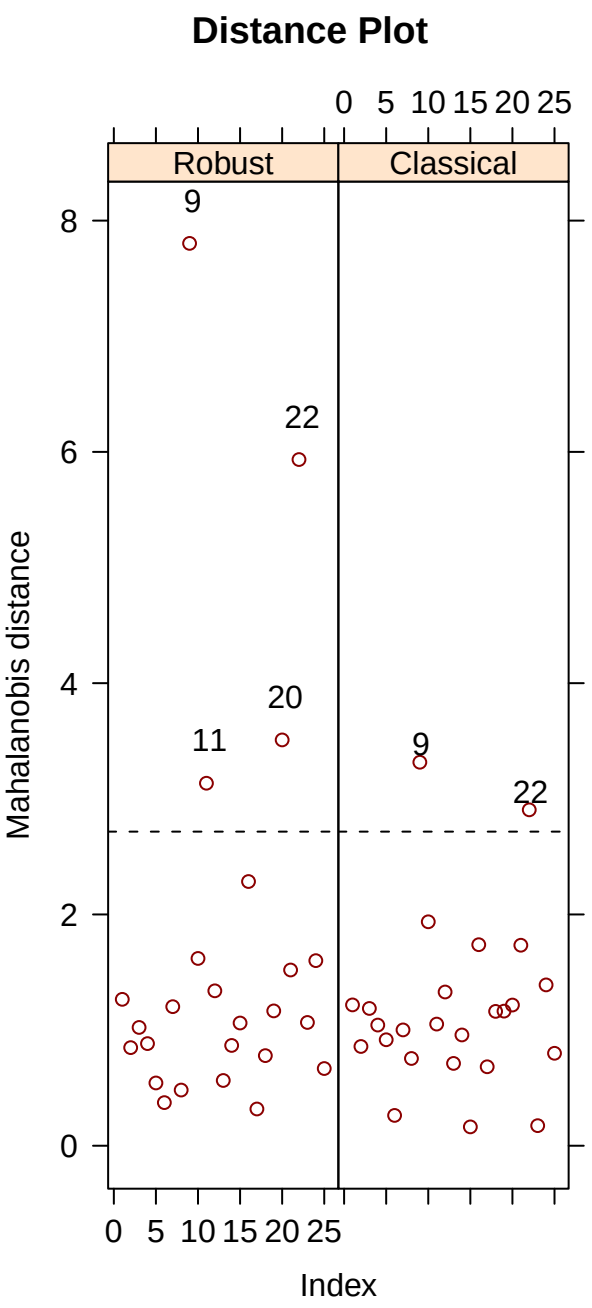
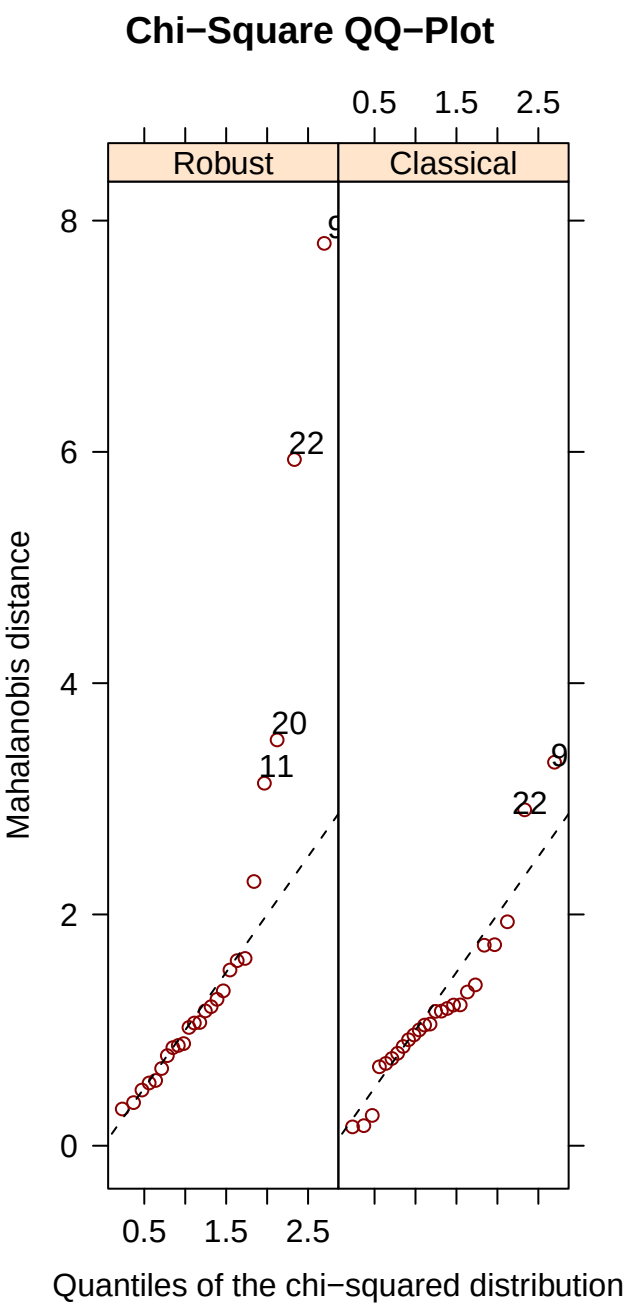
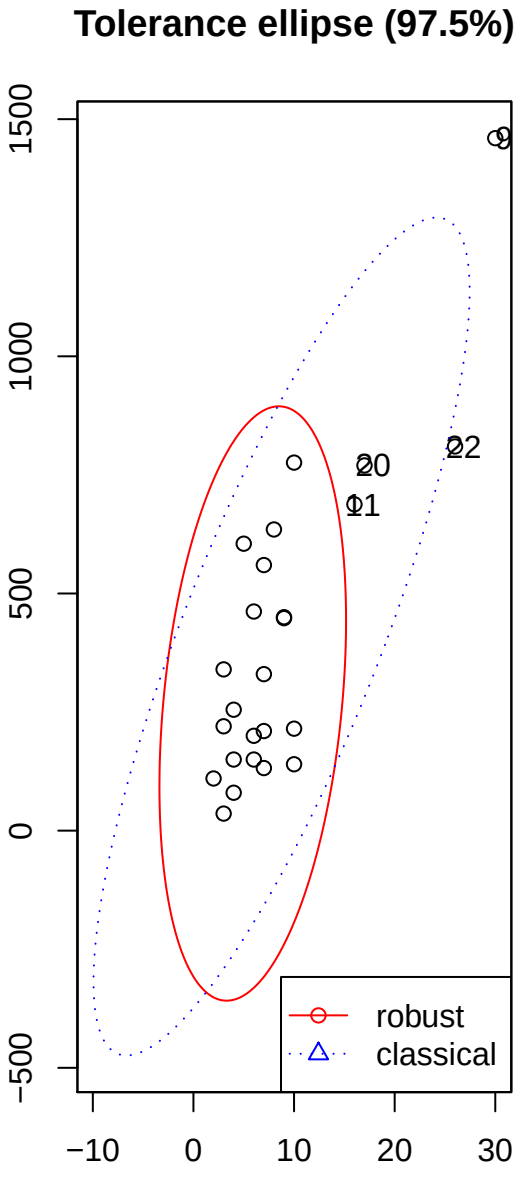
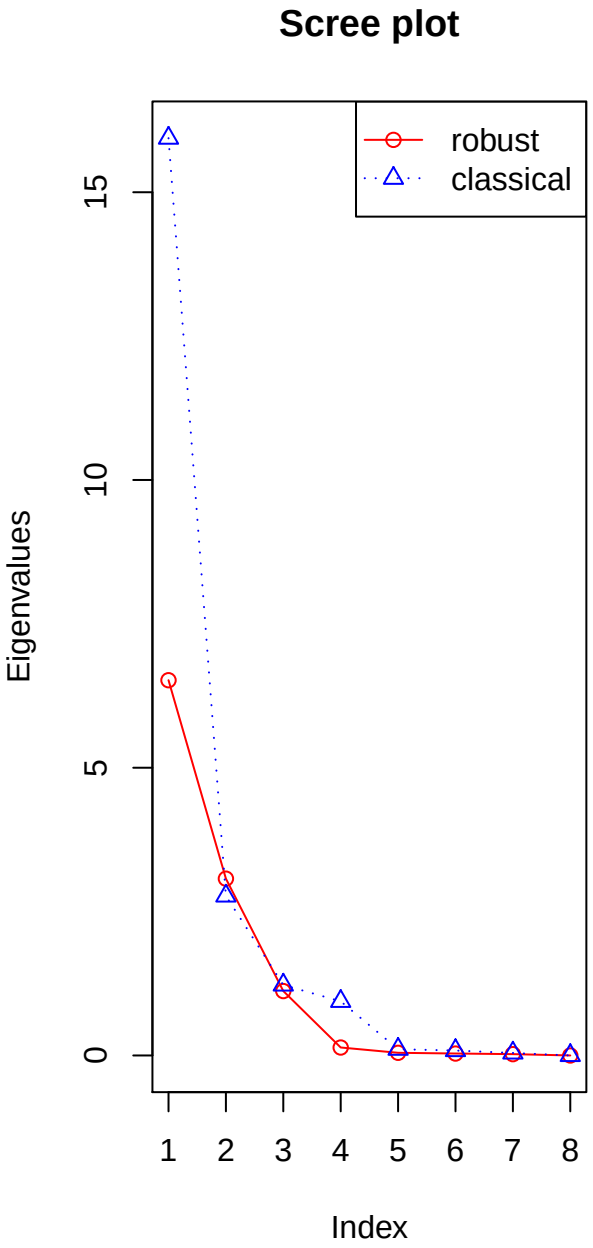
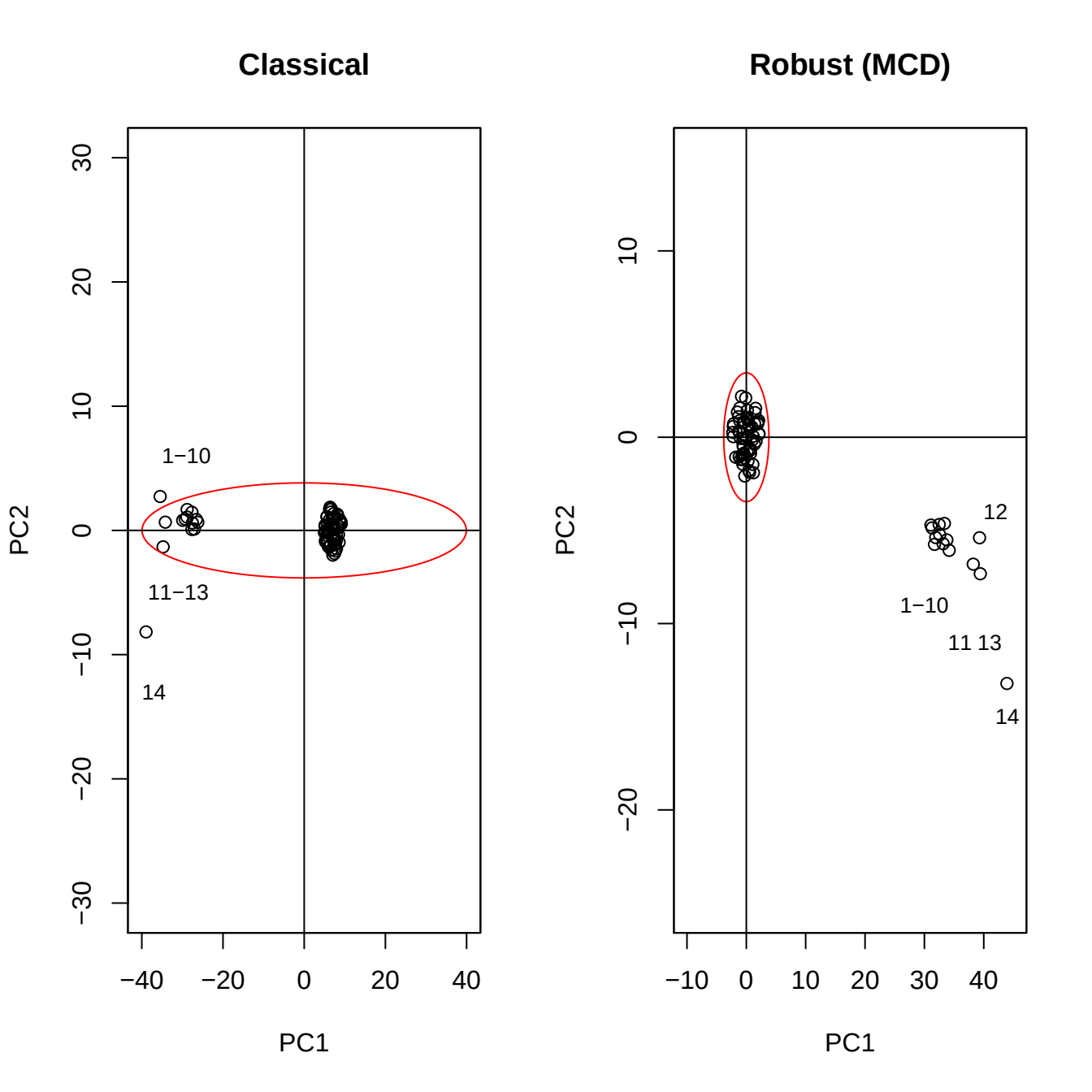

Distance−Distance Plot
Robust distance
Mahalanobis distance
2
4
6
8
0.5
1.0
1.5
2.0
2.5
3.0
9
22
20
11

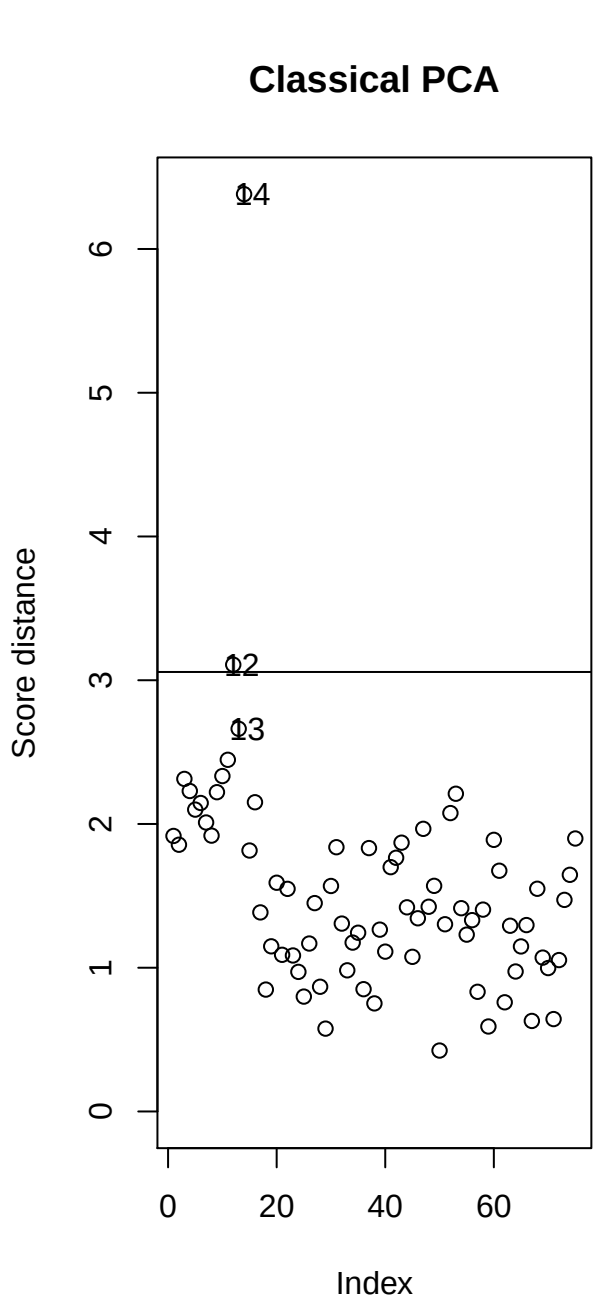

Distance Plot
Robust
Classical
Mahalanobis distance
Index
0 5 10 15 20 25
0 2 4 6 8
9
22
20
11
9
22

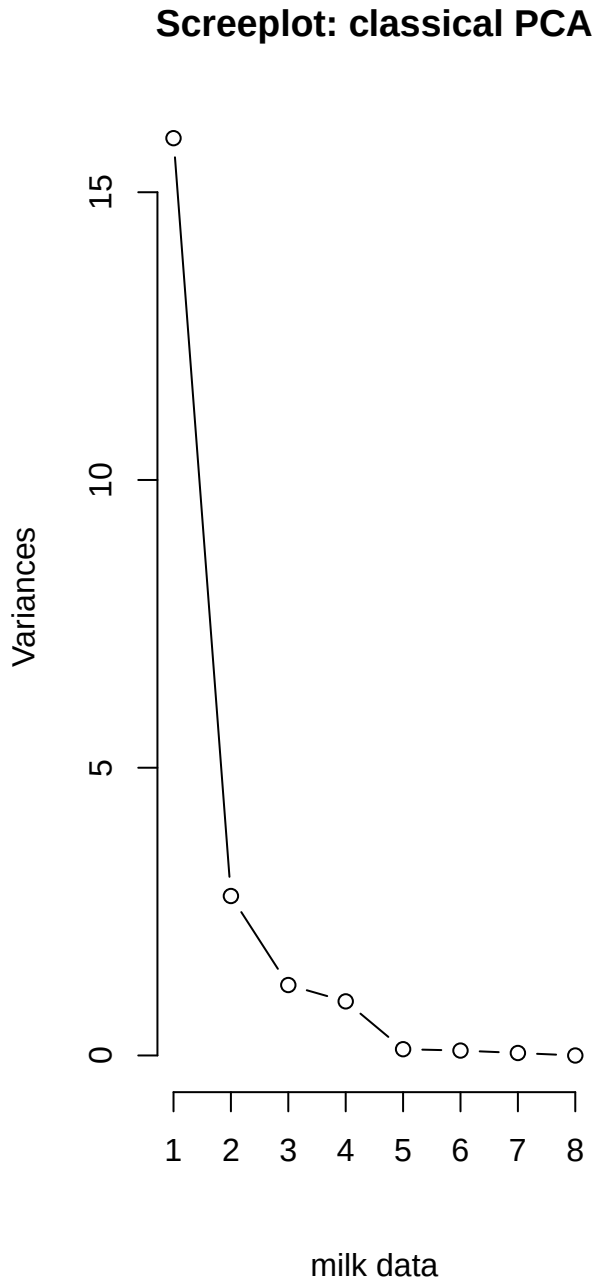

Chi−Square QQ−Plot
Robust
Classical
Mahalanobis distance
Quantiles of the chi−squared distribution
0.5 1.5 2.5
0 2 4 6 8
22
20
11
9
22
9

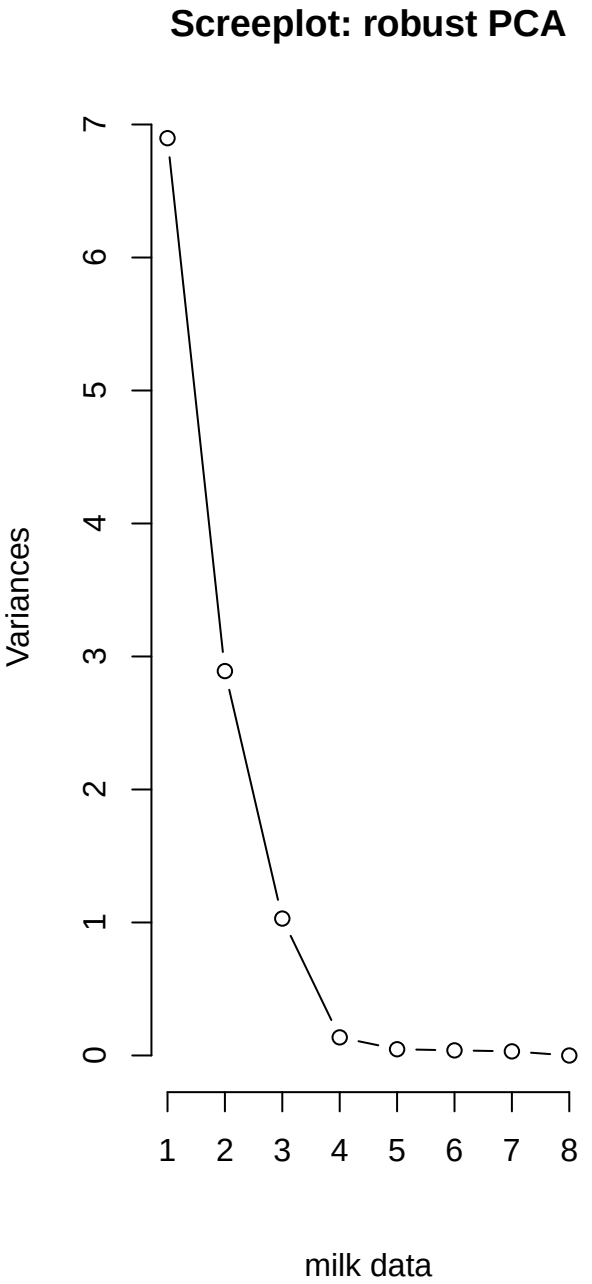

Tolerance ellipse (97.5%)
1500
1000
500
0
−500
−10
0
10
20
30
9
20
22
11
robust
classical

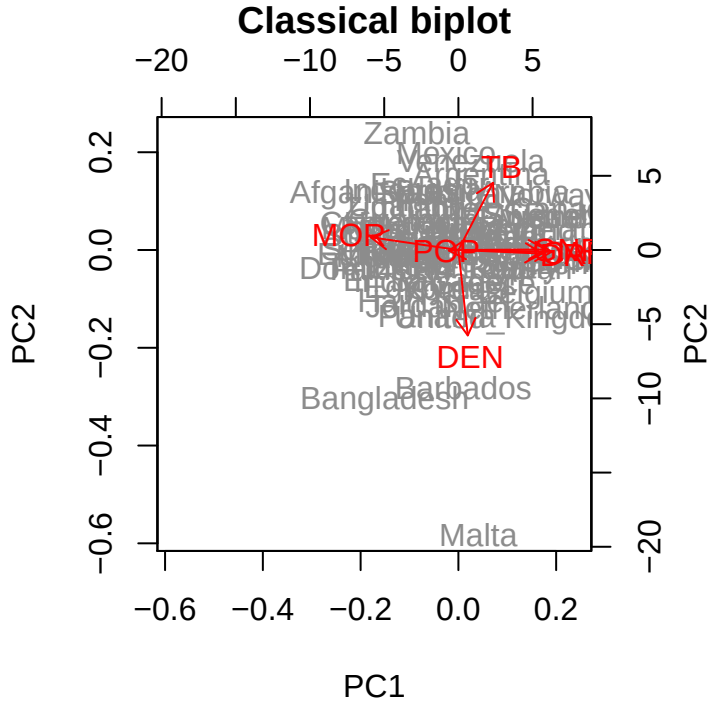

Scree plot
Eigenvalues
15
10
5
0
1
2
3
4
5
6
7
8
Index
robust
classical

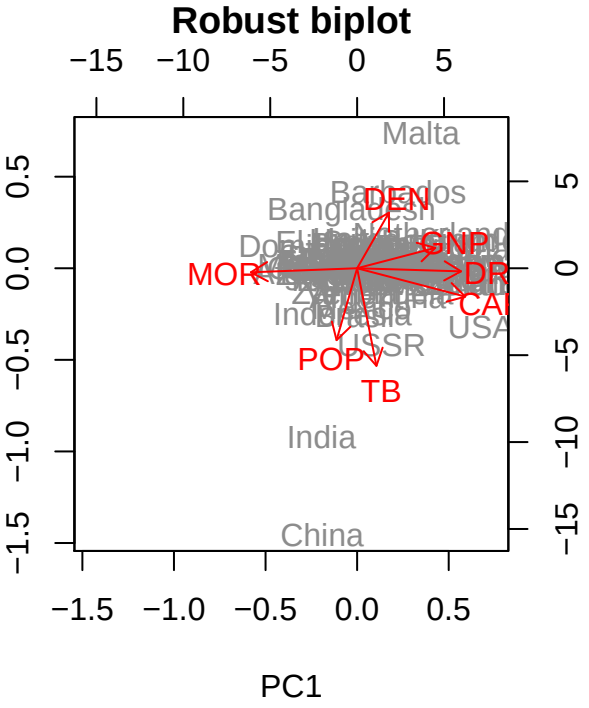

Classical
Robust (MCD)
PC1
PC2
1−10
11−13
14
12
11 13
30
20
10
0
−10
−20
−30
−40
40

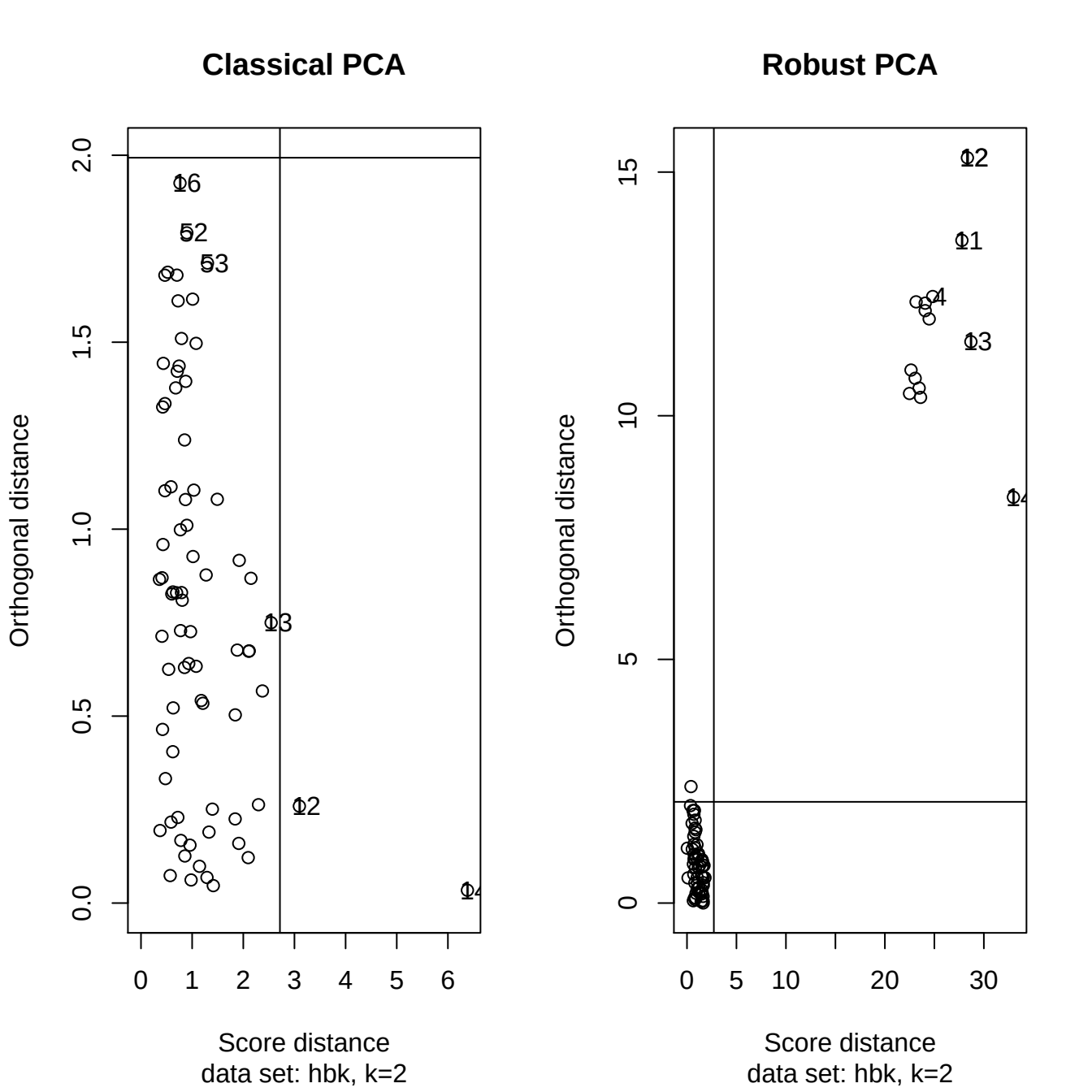

Classical PCA
Score distance
Index
0
1
2
3
4
5
6
0
20
40
60
14
12
13

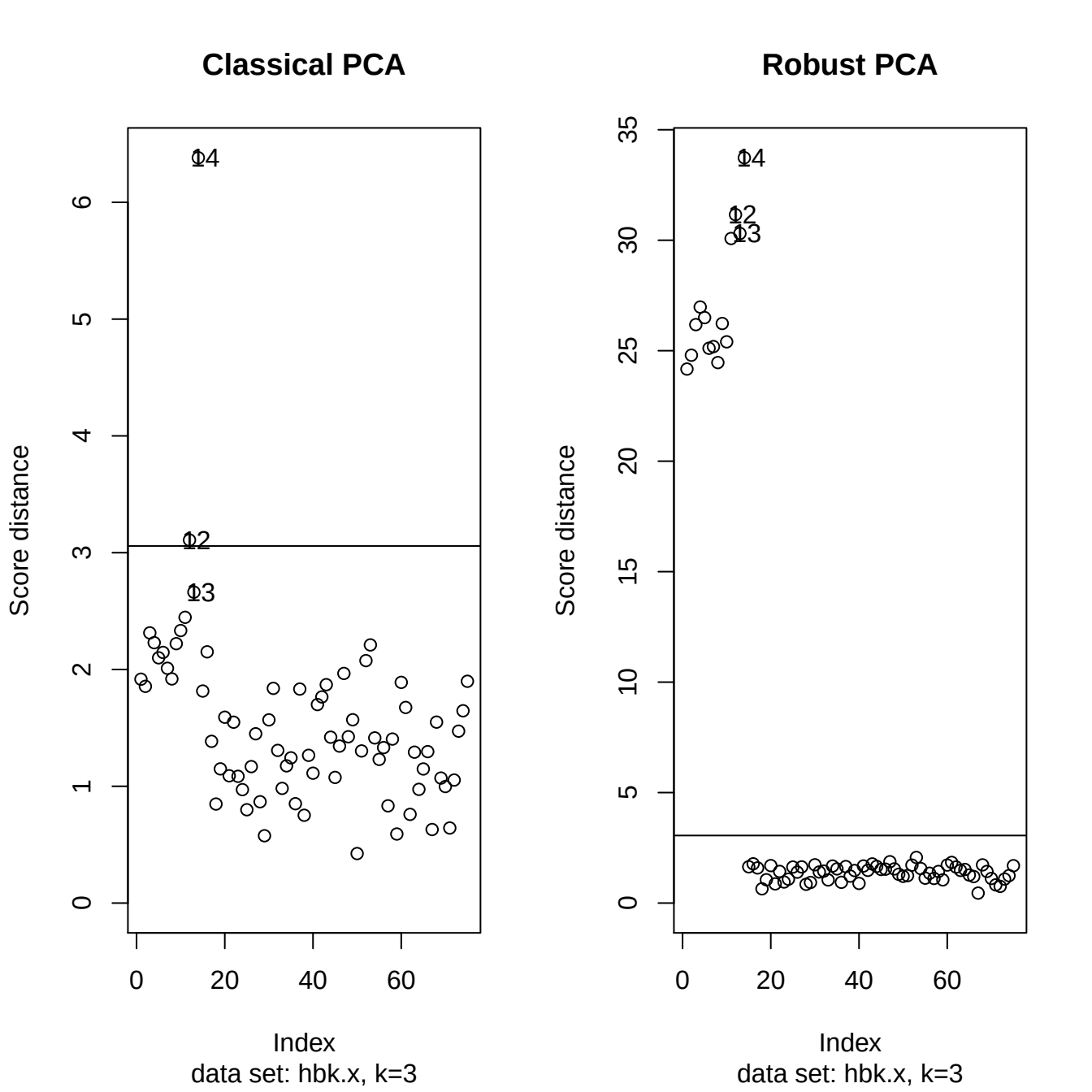

Screeplot: classical PCA
Variances
0
5
10
15
1
2
3
4
5
6
7
8
milk data

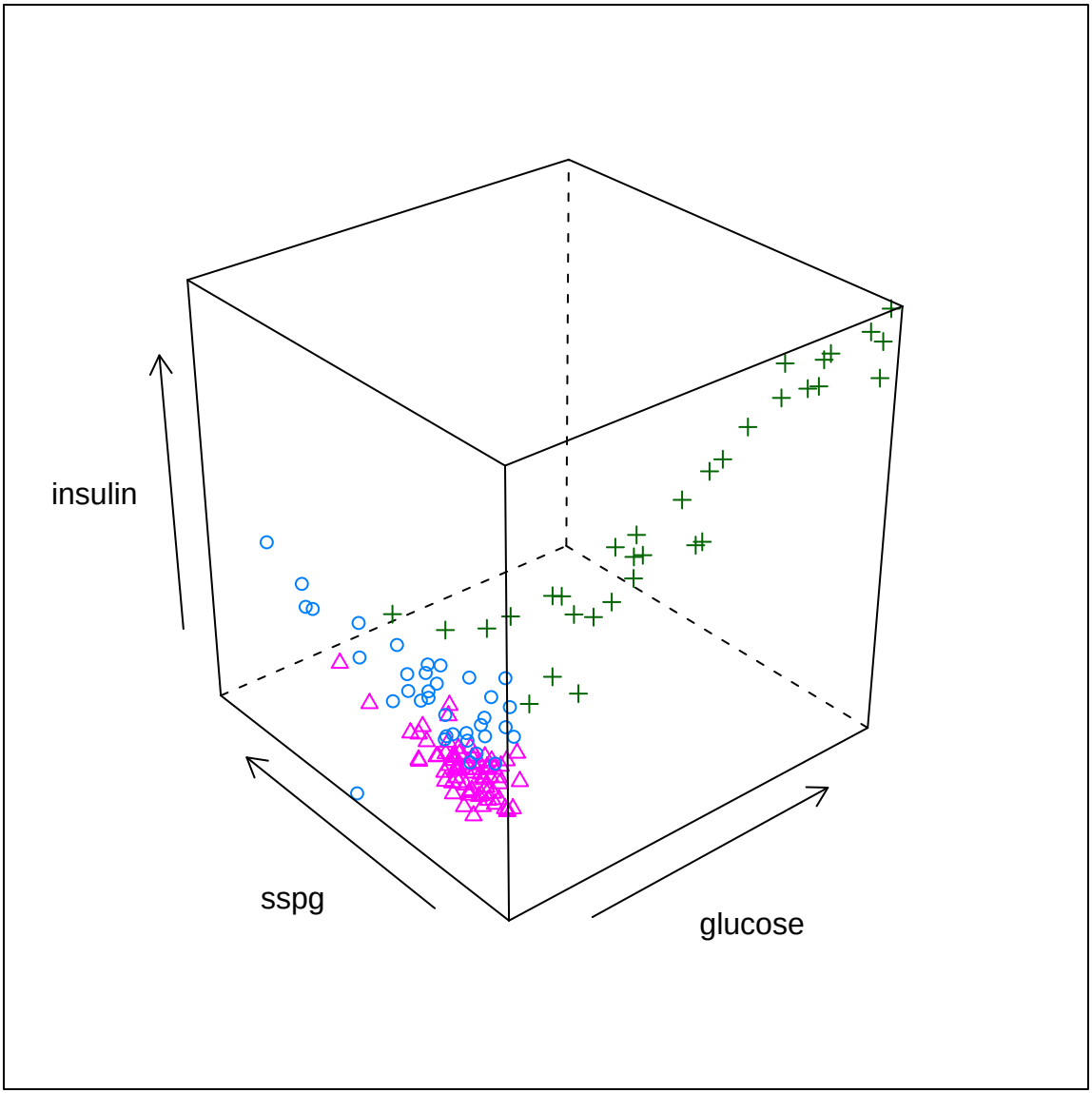

Screeplot: robust PCA
Variances
0
1
2
3
4
5
6
7
1
2
3
4
5
6
7
8
milk data


Classical biplot
PC1
PC2
TB
MOR
POP
DEN
Zambia
Barbados
Bangladesh
Malta


Robust biplot
PC1
PC2
DEN
GNP
MOR
DR
CAT
USA
USSR
POP
TB
India
China
Malta
Barbados
Bangladesh


Classical PCA
Orthogonal distance
Score distance
data set: hbk, k=2
Robust PCA
Orthogonal distance
Score distance
data set: hbk, k=2


Classical PCA
Score distance
0
1
2
3
4
5
6
14
12
13
0
20
40
60
Index
data set: hbk.x, k=3
Robust PCA
Score distance
0
5
10
15
20
25
30
35
14
12
13
0
20
40
60
Index
data set: hbk.x, k=3


chemical
normal
overt
insulin
sspg
glucose