

# Comparing Age Assignments

## Preliminaries

```
> library(FSAdata) # for StripedBass4 data
> library(FSA)     # for headtail(), ageBias(), agePrecision()
```

## Loading Data

```
> data(StripedBass4)
> SB <- StripedBass4
> str(SB)
'data.frame': 1202 obs. of 2 variables:
 $ reader1: int  2 2 2 2 2 2 2 2 2 2 ...
 $ reader2: int  2 2 2 2 2 2 2 2 2 2 ...
```

```
> headtail(SB)
  reader1 reader2
1         2      2
2         2      2
3         2      2
1200      13     18
1201      18     18
1202      19     20
```

## Examine Age Bias

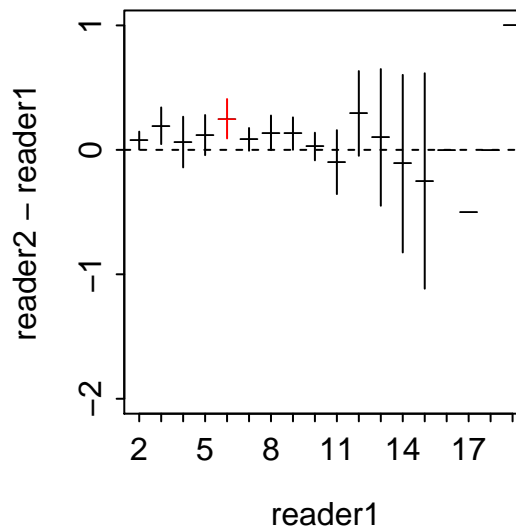
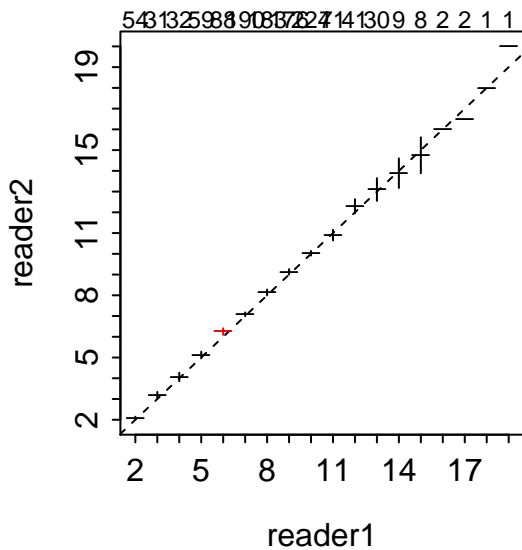
```
> ab <- ageBias(reader2~reader1,data=SB)
```

```
> summary(ab,what="table",flip.table=TRUE)
  reader1
reader2  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20
20      -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  1  -
19      -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
18      -  -  -  -  -  -  -  -  -  -  -  1  -  -  -  -  1  -  -
17      -  -  -  -  -  -  -  -  -  -  -  -  -  1  -  1  -  -  -
16      -  -  -  -  -  -  -  -  -  -  -  -  -  -  2  1  -  -  -
15      -  -  -  -  -  -  -  -  -  -  1  2  2  3  -  -  -  -  -
14      -  -  -  -  -  -  -  -  -  2  6  8  5  4  -  -  -  -  -
13      -  -  -  -  -  -  1  -  -  3  5  8  1  -  -  -  -  -  -
12      -  -  -  -  -  -  -  1 17 13 23 9  1  -  -  -  -  -  -
11      -  -  -  -  -  1  1  4 22 25 4  1  -  -  -  -  -  -  -
10      -  -  -  -  -  2 15 51 144 24 2  1  -  -  -  -  -  -  -
9       -  -  -  -  1  1 29 89 32  4  -  -  -  -  -  -  -  -  -
8       -  -  -  -  3 21 97 25  9  -  -  -  -  -  -  -  -  -  -
7       -  -  -  3 23 149 38  5  -  -  -  -  -  -  -  -  -  -  -
6       -  -  -  6 51 15  2  -  -  -  -  -  -  -  -  -  -  -  -
5       -  -  5 45 10  1  -  1  -  -  -  -  -  -  -  -  -  -  -
4       -  6 25  5  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
3       4 25  1  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
2      50  -  1  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
```

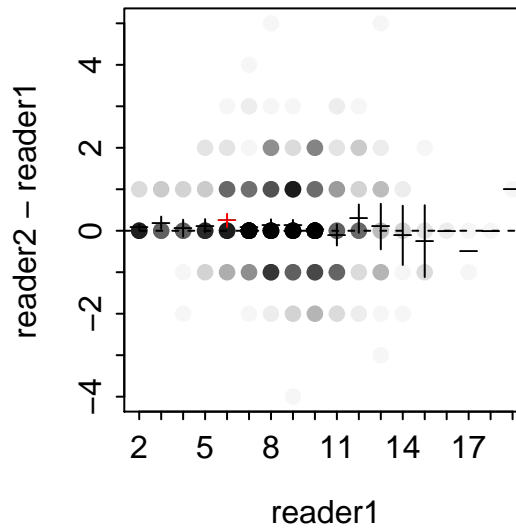
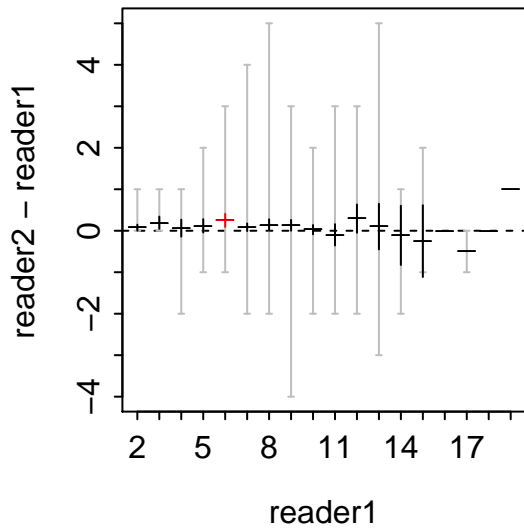
```
> summary(ab,what="symmetry")
      symTest df      chi.sq      p
1      McNemar  1  9.204793 0.0024138229
2 EvansHoenig  5 19.824421 0.0013481675
3      Bowker 37 72.685469 0.0004126986
```

```
> summary(ab,what="bias")
      reader1      n min max  mean      SE      t adj.p      sig      LCI      UCI
1          2    54   2   3  2.07 0.0360   2.059 0.5329 FALSE  2.00  2.15
2          3    31   3   4  3.19 0.0721   2.683 0.1527 FALSE  3.05  3.34
3          4    32   2   5  4.06 0.0998   0.626 1.0000 FALSE  3.86  4.27
4          5    59   4   7  5.12 0.0805   1.474 1.0000 FALSE  4.96  5.28
5          6    88   5   9  6.25 0.0796   3.141 0.0322  TRUE  6.09  6.41
6          7   190   5  11  7.08 0.0462   1.823 0.6294 FALSE  6.99  7.18
7          8   183   6  13  8.14 0.0705   1.937 0.5423 FALSE  8.00  8.28
8          9   176   5  12  9.13 0.0660   1.981 0.5404 FALSE  9.00  9.26
9         10   224   8  12 10.03 0.0562   0.477 1.0000 FALSE  9.92 10.14
10        11    71   9  14 10.90 0.1287  -0.766 1.0000 FALSE 10.64 11.16
11        12    41  10  15 12.29 0.1684   1.738 0.7187 FALSE 11.95 12.63
12        13    30  10  18 13.10 0.2685   0.372 1.0000 FALSE 12.55 13.65
13        14     9  12  15 13.89 0.3093  -0.359 1.0000 FALSE 13.18 14.60
14        15     8  14  17 14.75 0.3660  -0.683 1.0000 FALSE 13.88 15.62
15        16     2  16  16 16.00      NA      NA      NA FALSE  NA   NA
16        17     2  16  17 16.50      NA      NA      NA FALSE  NA   NA
17        18     1  18  18 18.00      NA      NA      NA FALSE  NA   NA
18        19     1  20  20 20.00      NA      NA      NA FALSE  NA   NA
```

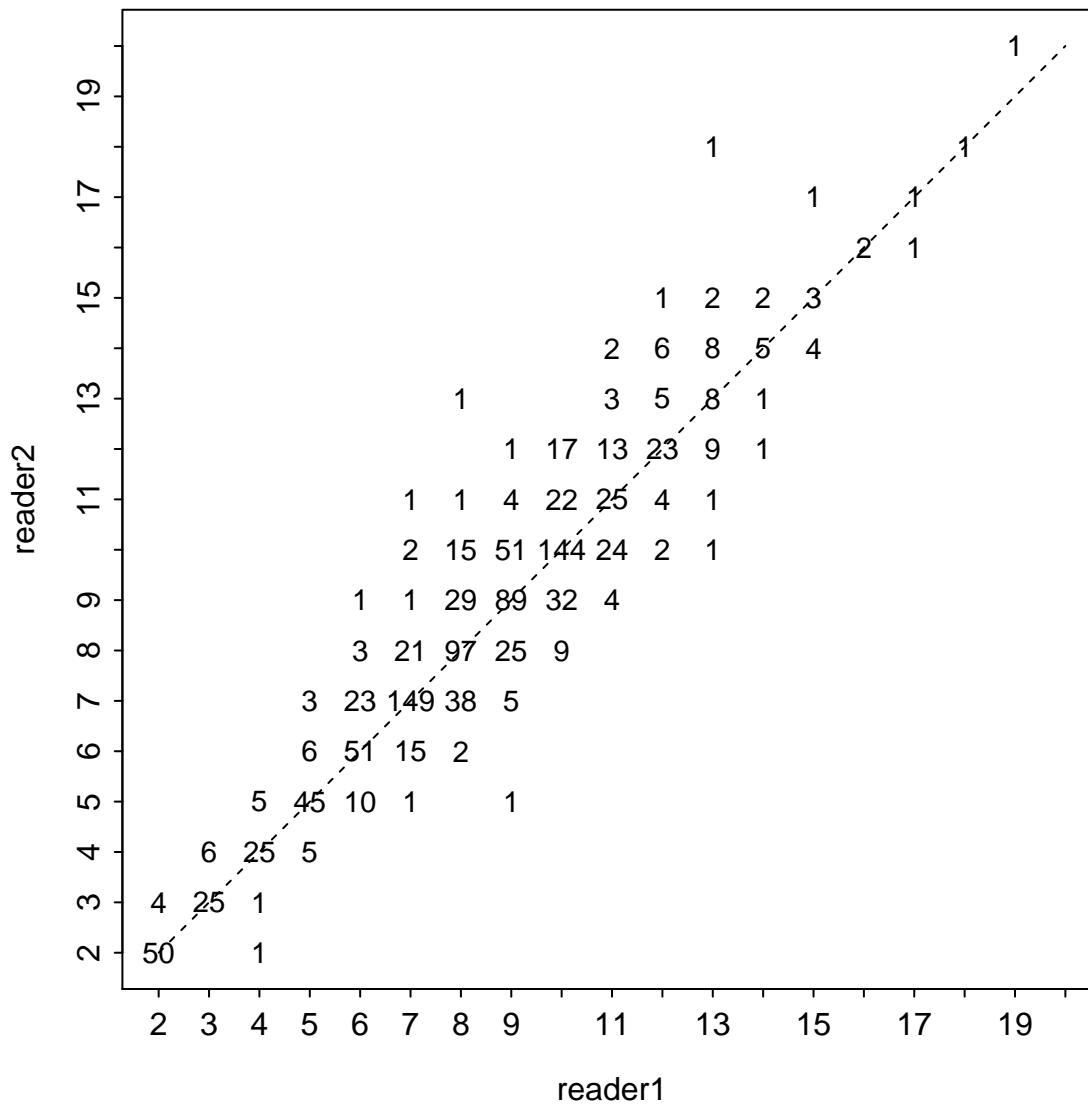
```
> plot(ab) # Left
> plot(ab,diff=TRUE,show.n=FALSE) # Right
```



```
> plot(ab,diff=TRUE,show.n=FALSE,show.range=TRUE) # Left
> plot(ab,diff=TRUE,show.n=FALSE,show.pts=TRUE,transparency=1/25) # Right
```



```
> plot(ab,what="numbers",xlim=c(2,20),ylim=c(2,20))
```



## Examine Age Precision

```
> ap <- agePrecision(reader2~reader1,data=SB)
> summary(ap,what="difference",digits=1)
  -4   -3   -2   -1    0    1    2    3    4    5
0.08 0.08 2.16 14.06 61.81 16.31 4.58 0.67 0.08 0.17
```

```
> summary(ap,what="absolute difference",digits=2)
  0    1    2    3    4    5
61.81 30.37 6.74 0.75 0.17 0.17
```

```
> summary(ap,what="precision")
  n validn R  ACV  APE PercAgree
1202 1202 2 3.98 2.815 61.81
```

```
> summary(ap,what="detail") # only some rows shown
```

	reader2	reader1	avg	sd	APE	ACV
1	2	2	2.0	0.0000000	0.000000	0.000000
2	2	2	2.0	0.0000000	0.000000	0.000000
3	2	2	2.0	0.0000000	0.000000	0.000000
4	2	2	2.0	0.0000000	0.000000	0.000000
5	2	2	2.0	0.0000000	0.000000	0.000000
1198	17	15	16.0	1.4142136	6.250000	8.838835
1199	17	17	17.0	0.0000000	0.000000	0.000000
1200	18	13	15.5	3.5355339	16.129032	22.809896
1201	18	18	18.0	0.0000000	0.000000	0.000000
1202	20	19	19.5	0.7071068	2.564103	3.626189