

Comparing Age Assignments

Derek H. Ogle, Northland College

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Preliminaries

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

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)
```

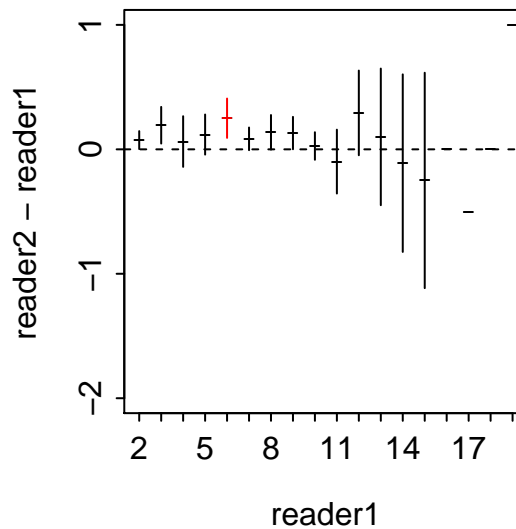
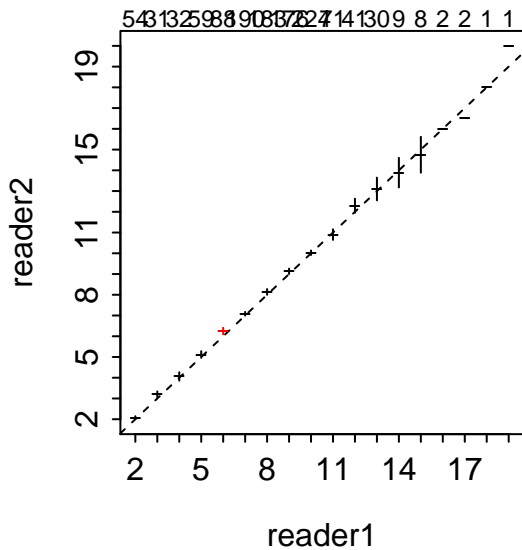
```
> summary(ab,what="table",flip.table=TRUE)
```

| | 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 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |

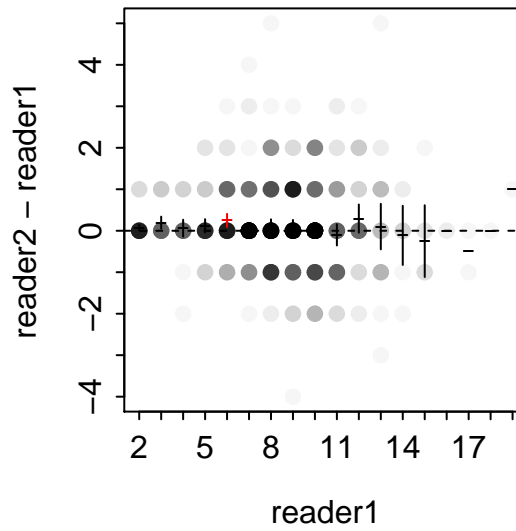
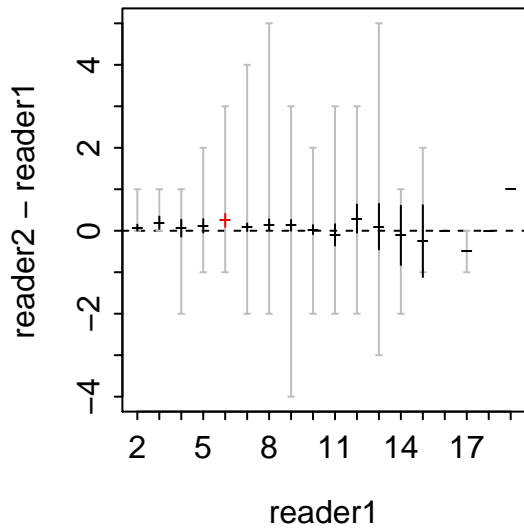
```
> summary(ab,what="symmetry")
      symTest df      chi.sq      p
1  McNemars  1  9.204793 0.0024138229
2 EvansHoenig  5 19.824421 0.0013481675
3   Bowkers 37 72.685469 0.0004126986
```

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

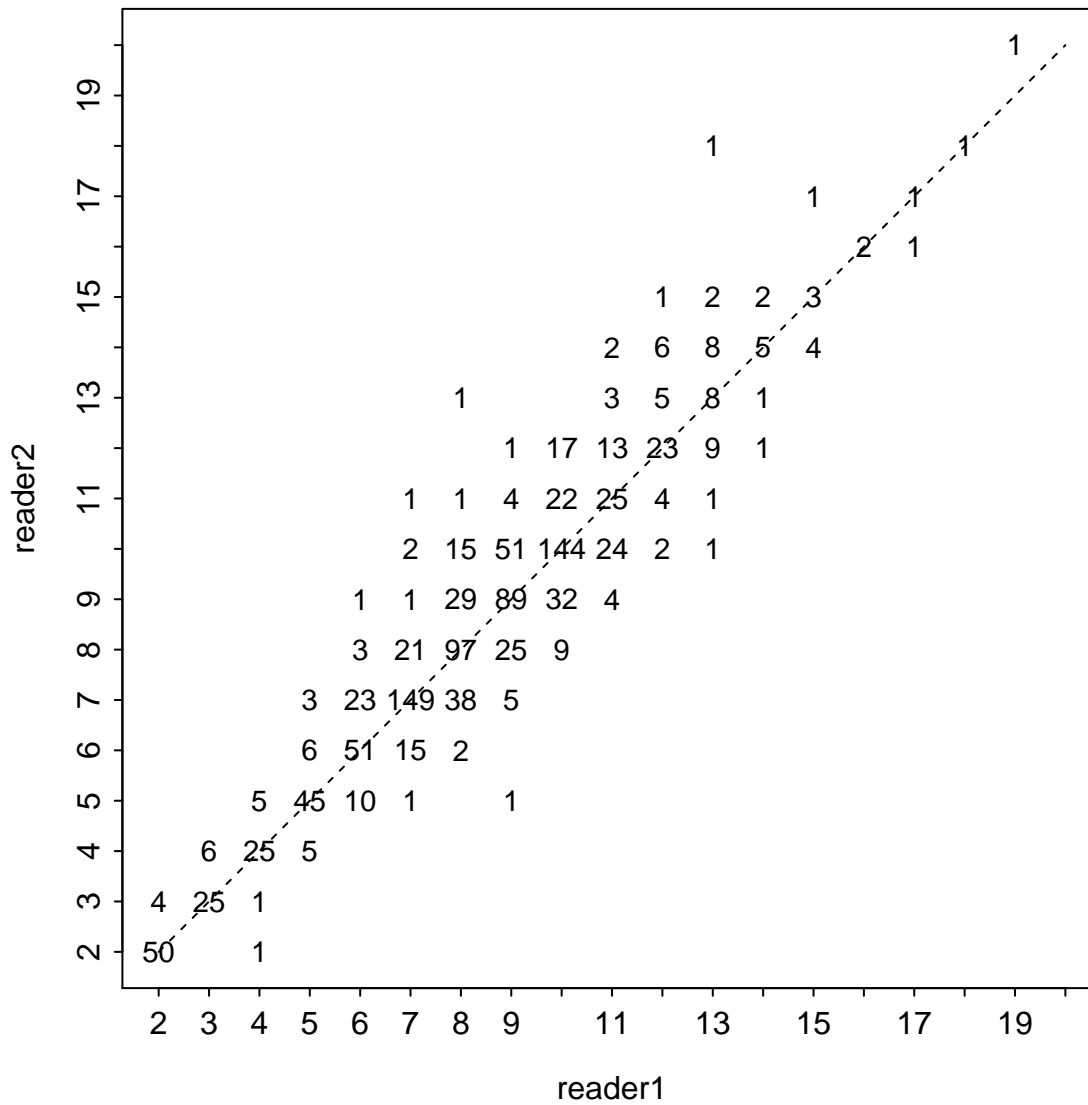
```
> plot(ab) # Left
> plot(ab,diff=TRUE,show.n=FALSE) # Right
```



```
> 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 R  ACV   APE PercAgree
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 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 2 | 2 | 2.0 | 0.000000 | 0.000000 | 0.000000 |
| 3 | 2 | 2 | 2.0 | 0.000000 | 0.000000 | 0.000000 |
| 4 | 2 | 2 | 2.0 | 0.000000 | 0.000000 | 0.000000 |
| 5 | 2 | 2 | 2.0 | 0.000000 | 0.000000 | 0.000000 |
| 1198 | 17 | 15 | 16.0 | 1.4142136 | 6.250000 | 8.838835 |
| 1199 | 17 | 17 | 17.0 | 0.000000 | 0.000000 | 0.000000 |
| 1200 | 18 | 13 | 15.5 | 3.5355339 | 16.129032 | 22.809896 |
| 1201 | 18 | 18 | 18.0 | 0.000000 | 0.000000 | 0.000000 |
| 1202 | 20 | 19 | 19.5 | 0.7071068 | 2.564103 | 3.626189 |