A Handbook of Statistical Analyses Using **R** — 2nd Edition

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Recursive Partitioning: Predicting Body Fat and Glaucoma Diagnosis

9.1 Introduction

9.2 Recursive Partitioning

9.3 Analysis Using **R**

9.3.1 Predicting Body Fat Content

The `rpart` function from **rpart** can be used to grow a regression tree. The response variable and the covariates are defined by a model formula in the same way as for `lm`, say. By default, a large initial tree is grown, we restrict the number of observations required to establish a potential binary split to at least ten:

```
R> library("rpart")
R> data("bodyfat", package = "mboost")
R> bodyfat_rpart <- rpart(DEXfat ~ age + waistcirc + hipcirc +
+      elbowbreadth + kneebreadth, data = bodyfat,
+      control = rpart.control(minsplit = 10))
```
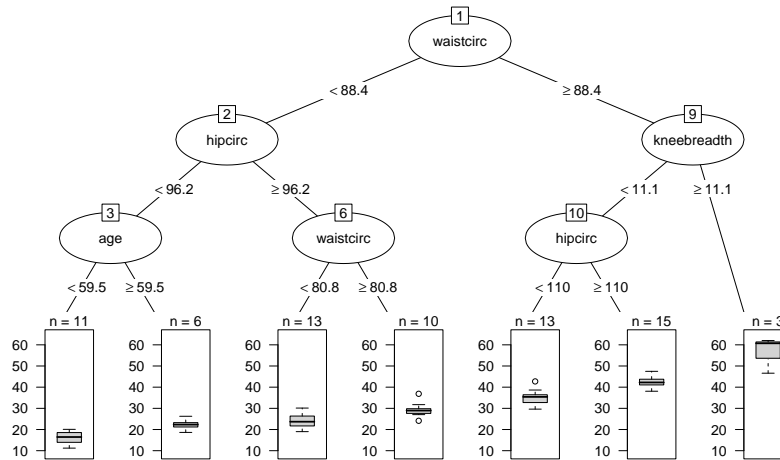
A `print` method for *rpart* objects is available; however, a graphical representation (here utilising functionality offered from package **partykit**, Hothorn and Zeileis, 2012) shown in Figure~9.1 is more convenient. Observations that satisfy the condition shown for each node go to the left and observations that don't are element of the right branch in each node. As expected, higher values for waist- and hip circumferences and wider knees correspond to higher values of body fat content. The rightmost terminal node consists of only three rather extreme observations.

To determine if the tree is appropriate or if some of the branches need to be subjected to pruning we can use the `cptable` element of the *rpart* object:

```
R> print(bodyfat_rpart$cptable)
```

```
      CP nsplit rel error xerror   xstd
1 0.6629      0    1.0000  1.027 0.1684
2 0.0938      1    0.3371  0.427 0.0943
3 0.0770      2    0.2433  0.445 0.0869
4 0.0451      3    0.1663  0.354 0.0696
5 0.0184      4    0.1212  0.264 0.0597
6 0.0182      5    0.1028  0.286 0.0622
7 0.0100      6    0.0846  0.279 0.0624
```

```
R> library("partykit")
R> plot(as.party(bodyfat_rpart), tp_args = list(id = FALSE))
```


Figure 9.1   Initial tree for the body fat data with the distribution of body fat in
terminal nodes visualised via boxplots.

```
R> opt <- which.min(bodyfat_rpart$cptable[,"xerror"])
```

The `xerror` column contains of estimates of cross-validated prediction error
for different numbers of splits (`nsplit`). The best tree has four splits. Now we
can prune back the large initial tree using

```
R> cp <- bodyfat_rpart$cptable[opt, "CP"]
R> bodyfat_prune <- prune(bodyfat_rpart, cp = cp)
```
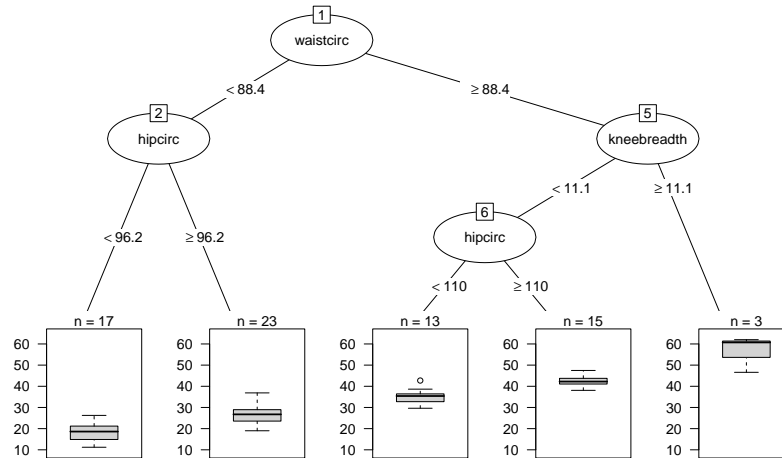
The result is shown in Figure˜9.2. Note that the inner nodes three and six
have been removed from the tree. Still, the rightmost terminal node might
give very unreliable extreme predictions.

   Given this model, one can predict the (unknown, in real circumstances)
body fat content based on the covariate measurements. Here, using the known
values of the response variable, we compare the model predictions with the
actually measured body fat as shown in Figure˜9.3. The three observations
with large body fat measurements in the rightmost terminal node can be
identified easily.

9.3.2 Glaucoma Diagnosis

```
R> data("GlaucomaM", package = "TH.data")
R> glaucoma_rpart <- rpart(Class ~ ., data = GlaucomaM,
+      control = rpart.control(xval = 100))
R> glaucoma_rpart$cptable
```

```
R> plot(as.party(bodyfat_prune), tp_args = list(id = FALSE))
```


Figure 9.2   Pruned regression tree for body fat data.

```
        CP nsplit rel error xerror    xstd
1 0.6531      0      1.000  1.531 0.0605
2 0.0714      1      0.347  0.388 0.0565
3 0.0136      2      0.276  0.378 0.0559
4 0.0100      5      0.235  0.449 0.0596
```

```
R> opt <- which.min(glaucoma_rpart$cptable[,"xerror"])
R> cp <- glaucoma_rpart$cptable[opt, "CP"]
R> glaucoma_prune <- prune(glaucoma_rpart, cp = cp)
```

As we discussed earlier, the choice of the appropriatly sized tree is not a
trivial problem. For the glaucoma data, the above choice of three leaves is
very unstable across multiple runs of cross-validation. As an illustration of
this problem we repeat the very same analysis as shown above and record the
optimal number of splits as suggested by the cross-validation runs.

```
R> nsplitopt <- vector(mode = "integer", length = 25)
R> for (i in 1:length(nsplitopt)) {
+       cp <- rpart(Class ~ ., data = GlaucomaM)$cptable
+       nsplitopt[i] <- cp[which.min(cp[,"xerror"]), "nsplit"]
+ }
R> table(nsplitopt)

nsplitopt
 1  2  5
14  7  4
```
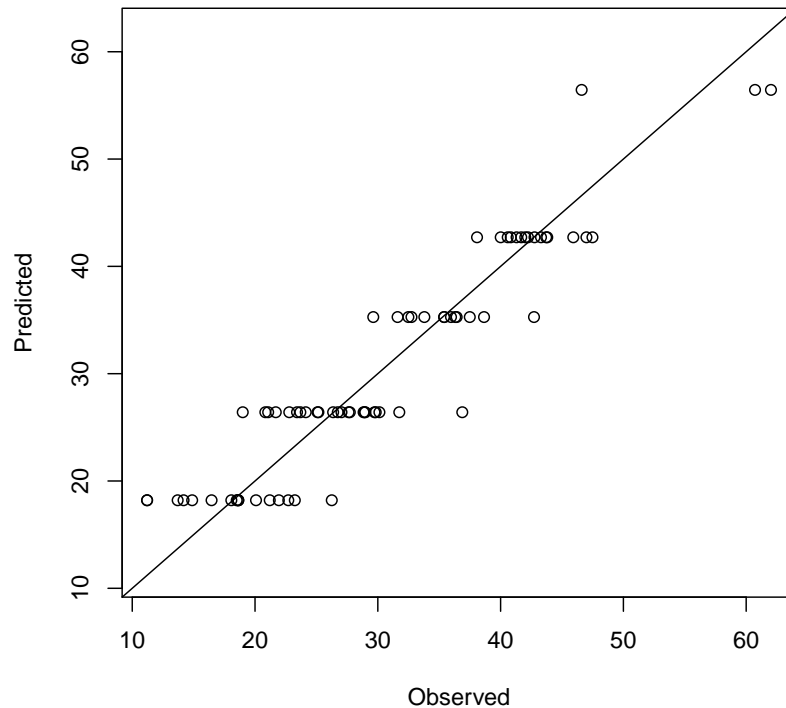
```
R> DEXfat_pred <- predict(bodyfat_prune, newdata = bodyfat)
R> xlim <- range(bodyfat$DEXfat)
R> plot(DEXfat_pred ~ DEXfat, data = bodyfat, xlab = "Observed",
+       ylab = "Predicted", ylim = xlim, xlim = xlim)
R> abline(a = 0, b = 1)
```
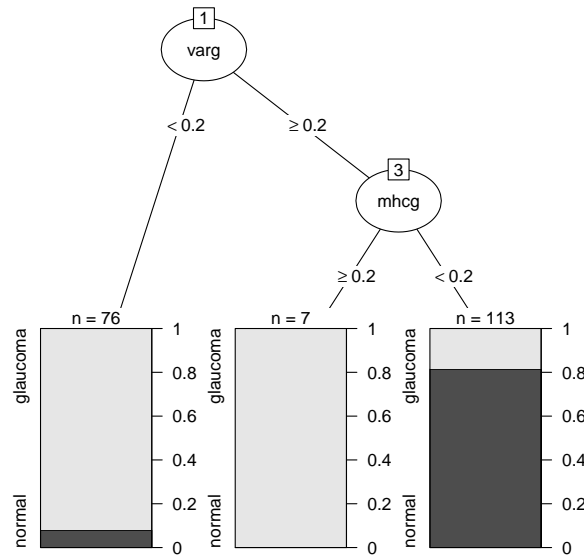

Figure 9.3   Observed and predicted DXA measurements.

Although for 14 runs of cross-validation a simple tree with one split only is suggested, larger trees would have been favoured in 11 of the cases. This short analysis shows that we should not trust the tree in Figure~9.4 too much.

One way out of this dilemma is the aggregation of multiple trees via bagging. In R, the bagging idea can be implemented by three or four lines of code. Case count or weight vectors representing the bootstrap samples can be drawn from the multinominal distribution with parameters n and $p_1 = 1/n, \ldots, p_n = 1/n$ via the `rmultinom` function. For each weight vector, one large tree is

```
R> plot(as.party(glaucoma_prune), tp_args = list(id = FALSE))
```


Figure 9.4   Pruned classification tree of the glaucoma data with class distribution in the leaves.

constructed without pruning and the *rpart* objects are stored in a list, here called `trees`:

```
R> trees <- vector(mode = "list", length = 25)
R> n <- nrow(GlaucomaM)
R> bootsamples <- rmultinom(length(trees), n, rep(1, n)/n)
R> mod <- rpart(Class ~ ., data = GlaucomaM,
+               control = rpart.control(xval = 0))
R> for (i in 1:length(trees))
+       trees[[i]] <- update(mod, weights = bootsamples[,i])
```

The `update` function re-evaluates the call of `mod`, however, with the weights being altered, i.e., fits a tree to a bootstrap sample specified by the weights. It is interesting to have a look at the structures of the multiple trees. For example, the variable selected for splitting in the root of the tree is not unique as can be seen by

```
R> table(sapply(trees, function(x) as.character(x$frame$var[1])))
```

```
phcg varg vari vars
   1   14    9    1
```

Although `varg` is selected most of the time, other variables such as `vari` occur as well – a further indication that the tree in Figure~9.4 is questionable and that hard decisions are not appropriate for the glaucoma data.

In order to make use of the ensemble of trees in the list `trees` we estimate the conditional probability of suffering from glaucoma given the covariates for each observation in the original data set by

```
R> classprob <- matrix(0, nrow = n, ncol = length(trees))
R> for (i in 1:length(trees)) {
+       classprob[,i] <- predict(trees[[i]],
+                                 newdata = GlaucomaM)[,1]
+       classprob[bootsamples[,i] > 0,i] <- NA
+  }
```

Thus, for each observation we get 25 estimates. However, each observation has been used for growing one of the trees with probability 0.632 and thus was not used with probability 0.368. Consequently, the estimate from a tree where an observation was not used for growing is better for judging the quality of the predictions and we label the other estimates with `NA`.

Now, we can average the estimates and we vote for glaucoma when the average of the estimates of the conditional glaucoma probability exceeds 0.5. The comparison between the observed and the predicted classes does not suffer from overfitting since the predictions are computed from those trees for which each single observation was *not* used for growing.

```
R> avg <- rowMeans(classprob, na.rm = TRUE)
R> predictions <- factor(ifelse(avg > 0.5, "glaucoma",
+                                          "normal"))
R> predtab <- table(predictions, GlaucomaM$Class)
R> predtab

predictions glaucoma normal
   glaucoma       77     12
   normal         21     86
```

Thus, an honest estimate of the probability of a glaucoma prediction when the patient is actually suffering from glaucoma is

```
R> round(predtab[1,1] / colSums(predtab)[1] * 100)

glaucoma
      79
```

per cent. For

```
R> round(predtab[2,2] / colSums(predtab)[2] * 100)

normal
     88
```

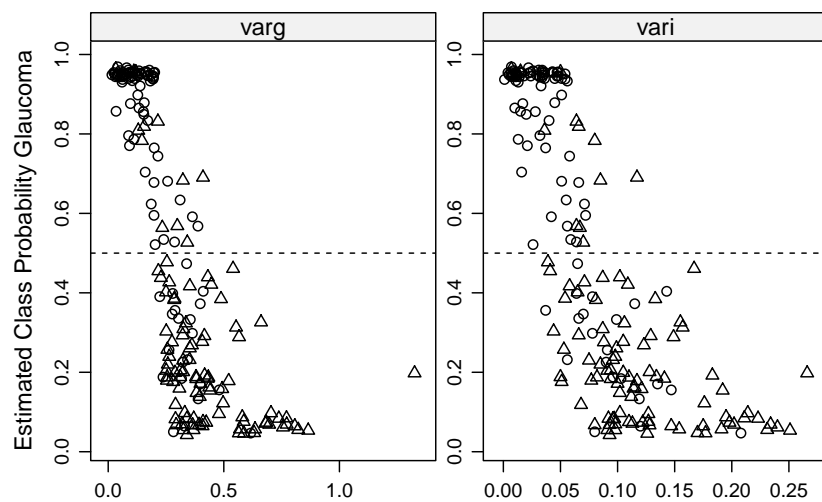per cent of normal eyes, the ensemble does not predict a glaucomateous damage.

The bagging procedure is a special case of a more general approach called *random forest* (Breiman, 2001). The package **randomForest** (Breiman et~al., 2012) can be used to compute such ensembles via

```
R> library("lattice")
R> gdata <- data.frame(avg = rep(avg, 2),
+       class = rep(as.numeric(GlaucomaM$Class), 2),
+       obs = c(GlaucomaM[["varg"]], GlaucomaM[["vari"]]),
+       var = factor(c(rep("varg", nrow(GlaucomaM)),
+                      rep("vari", nrow(GlaucomaM)))))
R> panelf <- function(x, y) {
+             panel.xyplot(x, y, pch = gdata$class)
+             panel.abline(h = 0.5, lty = 2)
+          }
R> print(xyplot(avg ~ obs | var, data = gdata,
+          panel = panelf,
+          scales = "free", xlab = "",
+          ylab = "Estimated Class Probability Glaucoma"))
```


Figure 9.5   Estimated class probabilities depending on two important variables. The 0.5 cut-off for the estimated glaucoma probability is depicted as a horizontal line. Glaucomateous eyes are plotted as circles and normal eyes are triangles.

```
R> library("randomForest")
R> rf <- randomForest(Class ~ ., data = GlaucomaM)
```

and we obtain out-of-bag estimates for the prediction error via

```
R> table(predict(rf), GlaucomaM$Class)
```

```
           glaucoma normal
  glaucoma       80     11
  normal         18     87
```

9.3.3 Trees Revisited

For the body fat data, such a *conditional inference tree* can be computed using
the ctree function

```
R> library("party")
R> bodyfat_ctree <- ctree(DEXfat ~ age + waistcirc + hipcirc +
+        elbowbreadth + kneebreadth, data = bodyfat)
```

```
sweights 71.000000
swx 3611.000000, f1 1.014286, f2 0.014286
Exp 111156.751831 Cov 1527037.700820
1: LS 113959.160000 Exp 111156.751831 Cov 1527037.700820
LS 113959.160000 Exp 111156.751831 Cov 1527037.700820
teststat 5.142959
var 1 teststat 5.142959
sweights 71.000000
swx 3611.000000, f1 1.014286, f2 0.014286
Exp 111156.751831 Cov 1527037.700820
1: LS 113959.160000 Exp 111156.751831 Cov 1527037.700820
sweights 71.000000
swx 6204.200000, f1 1.014286, f2 0.014286
Exp 190982.752620 Cov 1679845.001909
1: LS 200727.619000 Exp 190982.752620 Cov 1679845.001909
LS 200727.619000 Exp 190982.752620 Cov 1679845.001909
teststat 56.530466
var 2 teststat 56.530466
sweights 71.000000
swx 6204.200000, f1 1.014286, f2 0.014286
Exp 190982.752620 Cov 1679845.001909
1: LS 200727.619000 Exp 190982.752620 Cov 1679845.001909
sweights 71.000000
swx 7474.900000, f1 1.014286, f2 0.014286
Exp 230098.478056 Cov 1040472.092067
1: LS 237797.957000 Exp 230098.478056 Cov 1040472.092067
LS 237797.957000 Exp 230098.478056 Cov 1040472.092067
teststat 56.976037
var 3 teststat 56.976037
sweights 71.000000
swx 7474.900000, f1 1.014286, f2 0.014286
Exp 230098.478056 Cov 1040472.092067
```

1: LS 237797.957000 Exp 230098.478056 Cov 1040472.092067
sweights 71.000000
swx 462.100000, f1 1.014286, f2 0.014286
Exp 14224.739690 Cov 1777.305190
1: LS 14349.452000 Exp 14224.739690 Cov 1777.305190
LS 14349.452000 Exp 14224.739690 Cov 1777.305190
teststat 8.750979
var 4 teststat 8.750979
sweights 71.000000
swx 462.100000, f1 1.014286, f2 0.014286
Exp 14224.739690 Cov 1777.305190
1: LS 14349.452000 Exp 14224.739690 Cov 1777.305190
sweights 71.000000
swx 660.400000, f1 1.014286, f2 0.014286
Exp 20328.972282 Cov 7125.090476
1: LS 20871.391000 Exp 20328.972282 Cov 7125.090476
LS 20871.391000 Exp 20328.972282 Cov 7125.090476
teststat 41.293239
var 5 teststat 41.293239
sweights 71.000000
swx 660.400000, f1 1.014286, f2 0.014286
Exp 20328.972282 Cov 7125.090476
1: LS 20871.391000 Exp 20328.972282 Cov 7125.090476
sweights 45.000000
swx 2234.000000, f1 1.022727, f2 0.022727
Exp 54043.935111 Cov 395645.149141
1: LS 55758.900000 Exp 54043.935111 Cov 395645.149141
LS 55758.900000 Exp 54043.935111 Cov 395645.149141
teststat 7.433693
var 1 teststat 7.433693
sweights 45.000000
swx 2234.000000, f1 1.022727, f2 0.022727
Exp 54043.935111 Cov 395645.149141
1: LS 55758.900000 Exp 54043.935111 Cov 395645.149141
sweights 45.000000
swx 3553.400000, f1 1.022727, f2 0.022727
Exp 85962.273511 Cov 138557.548198
1: LS 87898.533000 Exp 85962.273511 Cov 138557.548198
LS 87898.533000 Exp 85962.273511 Cov 138557.548198
teststat 27.058077
var 2 teststat 27.058077
sweights 45.000000
swx 3553.400000, f1 1.022727, f2 0.022727
Exp 85962.273511 Cov 138557.548198
1: LS 87898.533000 Exp 85962.273511 Cov 138557.548198
sweights 45.000000
swx 4425.800000, f1 1.022727, f2 0.022727
Exp 107066.986578 Cov 55997.341745
1: LS 108279.559000 Exp 107066.986578 Cov 55997.341745

```
LS 108279.559000 Exp 107066.986578 Cov 55997.341745
teststat 26.257173
var 3 teststat 26.257173
sweights 45.000000
swx 4425.800000, f1 1.022727, f2 0.022727
Exp 107066.986578 Cov 55997.341745
1: LS 108279.559000 Exp 107066.986578 Cov 55997.341745
sweights 45.000000
swx 287.300000, f1 1.022727, f2 0.022727
Exp 6950.233911 Cov 422.308609
1: LS 6965.346000 Exp 6950.233911 Cov 422.308609
LS 6965.346000 Exp 6950.233911 Cov 422.308609
teststat 0.540778
var 4 teststat 0.540778
sweights 45.000000
swx 287.300000, f1 1.022727, f2 0.022727
Exp 6950.233911 Cov 422.308609
1: LS 6965.346000 Exp 6950.233911 Cov 422.308609
sweights 45.000000
swx 397.800000, f1 1.022727, f2 0.022727
Exp 9623.400800 Cov 765.692750
1: LS 9698.767000 Exp 9623.400800 Cov 765.692750
LS 9698.767000 Exp 9623.400800 Cov 765.692750
teststat 7.418203
var 5 teststat 7.418203
sweights 45.000000
swx 397.800000, f1 1.022727, f2 0.022727
Exp 9623.400800 Cov 765.692750
1: LS 9698.767000 Exp 9623.400800 Cov 765.692750
sweights 28.000000
swx 1511.000000, f1 1.037037, f2 0.037037
Exp 41688.490000 Cov 114363.126736
1: LS 41895.560000 Exp 41688.490000 Cov 114363.126736
LS 41895.560000 Exp 41688.490000 Cov 114363.126736
teststat 0.374928
var 1 teststat 0.374928
sweights 28.000000
swx 1511.000000, f1 1.037037, f2 0.037037
Exp 41688.490000 Cov 114363.126736
1: LS 41895.560000 Exp 41688.490000 Cov 114363.126736
sweights 28.000000
swx 2353.700000, f1 1.037037, f2 0.037037
Exp 64938.583000 Cov 28736.132020
1: LS 65473.298000 Exp 64938.583000 Cov 28736.132020
LS 65473.298000 Exp 64938.583000 Cov 28736.132020
teststat 9.949847
var 2 teststat 9.949847
sweights 28.000000
swx 2353.700000, f1 1.037037, f2 0.037037
```

Exp 64938.583000 Cov 28736.132020
1: LS 65473.298000 Exp 64938.583000 Cov 28736.132020
sweights 28.000000
swx 2814.400000, f1 1.037037, f2 0.037037
Exp 77649.296000 Cov 17237.545153
1: LS 78151.664000 Exp 77649.296000 Cov 17237.545153
LS 78151.664000 Exp 77649.296000 Cov 17237.545153
teststat 14.640925
var 3 teststat 14.640925
sweights 28.000000
swx 2814.400000, f1 1.037037, f2 0.037037
Exp 77649.296000 Cov 17237.545153
1: LS 78151.664000 Exp 77649.296000 Cov 17237.545153
sweights 28.000000
swx 180.900000, f1 1.037037, f2 0.037037
Exp 4991.031000 Cov 123.262189
1: LS 4987.254000 Exp 4991.031000 Cov 123.262189
LS 4987.254000 Exp 4991.031000 Cov 123.262189
teststat 0.115735
var 4 teststat 0.115735
sweights 28.000000
swx 180.900000, f1 1.037037, f2 0.037037
Exp 4991.031000 Cov 123.262189
1: LS 4987.254000 Exp 4991.031000 Cov 123.262189
sweights 28.000000
swx 252.600000, f1 1.037037, f2 0.037037
Exp 6969.234000 Cov 315.533379
1: LS 6989.863000 Exp 6969.234000 Cov 315.533379
LS 6989.863000 Exp 6969.234000 Cov 315.533379
teststat 1.348687
var 5 teststat 1.348687
sweights 28.000000
swx 252.600000, f1 1.037037, f2 0.037037
Exp 6969.234000 Cov 315.533379
1: LS 6989.863000 Exp 6969.234000 Cov 315.533379
sweights 26.000000
swx 1377.000000, f1 1.040000, f2 0.040000
Exp 58096.689231 Cov 169357.274435
1: LS 58200.260000 Exp 58096.689231 Cov 169357.274435
LS 58200.260000 Exp 58096.689231 Cov 169357.274435
teststat 0.063339
var 1 teststat 0.063339
sweights 26.000000
swx 1377.000000, f1 1.040000, f2 0.040000
Exp 58096.689231 Cov 169357.274435
1: LS 58200.260000 Exp 58096.689231 Cov 169357.274435
sweights 26.000000
swx 2650.800000, f1 1.040000, f2 0.040000
Exp 111839.291077 Cov 96753.785154

```
1: LS 112829.086000 Exp 111839.291077 Cov 96753.785154
LS 112829.086000 Exp 111839.291077 Cov 96753.785154
teststat 10.125640
var 2 teststat 10.125640
sweights 26.000000
swx 2650.800000, f1 1.040000, f2 0.040000
Exp 111839.291077 Cov 96753.785154
1: LS 112829.086000 Exp 111839.291077 Cov 96753.785154
sweights 26.000000
swx 3049.100000, f1 1.040000, f2 0.040000
Exp 128643.874462 Cov 68517.854582
1: LS 129518.398000 Exp 128643.874462 Cov 68517.854582
LS 129518.398000 Exp 128643.874462 Cov 68517.854582
teststat 11.161929
var 3 teststat 11.161929
sweights 26.000000
swx 3049.100000, f1 1.040000, f2 0.040000
Exp 128643.874462 Cov 68517.854582
1: LS 129518.398000 Exp 128643.874462 Cov 68517.854582
sweights 26.000000
swx 174.800000, f1 1.040000, f2 0.040000
Exp 7374.946462 Cov 156.238717
1: LS 7384.106000 Exp 7374.946462 Cov 156.238717
LS 7384.106000 Exp 7374.946462 Cov 156.238717
teststat 0.536981
var 4 teststat 0.536981
sweights 26.000000
swx 174.800000, f1 1.040000, f2 0.040000
Exp 7374.946462 Cov 156.238717
1: LS 7384.106000 Exp 7374.946462 Cov 156.238717
sweights 26.000000
swx 262.600000, f1 1.040000, f2 0.040000
Exp 11079.296000 Cov 749.466057
1: LS 11172.624000 Exp 11079.296000 Cov 749.466057
LS 11172.624000 Exp 11079.296000 Cov 749.466057
teststat 11.621761
var 5 teststat 11.621761
sweights 26.000000
swx 262.600000, f1 1.040000, f2 0.040000
Exp 11079.296000 Cov 749.466057
1: LS 11172.624000 Exp 11079.296000 Cov 749.466057
```

This tree doesn't require a pruning procedure because an internal stop crite-
rion based on formal statistical tests prevents the procedure from overfitting
the data. The tree structure is shown in Figure~9.6. Although the structure
of this tree and the tree depicted in Figure~9.2 are rather different, the corre-
sponding predictions don't vary too much.

Very much the same code is needed to grow a tree on the glaucoma data:

```
R> glaucoma_ctree <- ctree(Class ~ ., data = GlaucomaM)
```

```
R> plot(bodyfat_ctree)
```


Figure 9.6 Conditional inference tree with the distribution of body fat content shown for each terminal leaf.

```
sweights 196.000000
swx 510.880000, f1 1.005128, f2 0.005128
Exp 255.440000 Cov 21.330732
1: LS 255.312000 Exp 255.440000 Cov 21.330732
LS 255.312000 Exp 255.440000 Cov 21.330732
teststat 0.000768
var 1 teststat 0.000768
sweights 196.000000
swx 510.880000, f1 1.005128, f2 0.005128
Exp 255.440000 Cov 21.330732
1: LS 255.312000 Exp 255.440000 Cov 21.330732
sweights 196.000000
swx 89.960000, f1 1.005128, f2 0.005128
Exp 44.980000 Cov 0.790481
1: LS 45.468000 Exp 44.980000 Cov 0.790481
LS 45.468000 Exp 44.980000 Cov 0.790481
teststat 0.301265
var 2 teststat 0.301265
sweights 196.000000
swx 89.960000, f1 1.005128, f2 0.005128
Exp 44.980000 Cov 0.790481
1: LS 45.468000 Exp 44.980000 Cov 0.790481
sweights 196.000000
swx 127.749000, f1 1.005128, f2 0.005128
Exp 63.874500 Cov 1.230392
```

1: LS 63.120000 Exp 63.874500 Cov 1.230392
LS 63.120000 Exp 63.874500 Cov 1.230392
teststat 0.462674
var 3 teststat 0.462674
sweights 196.000000
swx 127.749000, f1 1.005128, f2 0.005128
Exp 63.874500 Cov 1.230392
1: LS 63.120000 Exp 63.874500 Cov 1.230392
sweights 196.000000
swx 163.842000, f1 1.005128, f2 0.005128
Exp 81.921000 Cov 2.418519
1: LS 82.420000 Exp 81.921000 Cov 2.418519
LS 82.420000 Exp 81.921000 Cov 2.418519
teststat 0.102956
var 4 teststat 0.102956
sweights 196.000000
swx 163.842000, f1 1.005128, f2 0.005128
Exp 81.921000 Cov 2.418519
1: LS 82.420000 Exp 81.921000 Cov 2.418519
sweights 196.000000
swx 129.359000, f1 1.005128, f2 0.005128
Exp 64.679500 Cov 1.271154
1: LS 64.313000 Exp 64.679500 Cov 1.271154
LS 64.313000 Exp 64.679500 Cov 1.271154
teststat 0.105670
var 5 teststat 0.105670
sweights 196.000000
swx 129.359000, f1 1.005128, f2 0.005128
Exp 64.679500 Cov 1.271154
1: LS 64.313000 Exp 64.679500 Cov 1.271154
sweights 196.000000
swx 367.331000, f1 1.005128, f2 0.005128
Exp 183.665500 Cov 25.487603
1: LS 202.415000 Exp 183.665500 Cov 25.487603
LS 202.415000 Exp 183.665500 Cov 25.487603
teststat 13.792735
var 6 teststat 13.792735
sweights 196.000000
swx 367.331000, f1 1.005128, f2 0.005128
Exp 183.665500 Cov 25.487603
1: LS 202.415000 Exp 183.665500 Cov 25.487603
sweights 196.000000
swx 79.649000, f1 1.005128, f2 0.005128
Exp 39.824500 Cov 0.777198
1: LS 41.529000 Exp 39.824500 Cov 0.777198
LS 41.529000 Exp 39.824500 Cov 0.777198
teststat 3.738200
var 7 teststat 3.738200
sweights 196.000000

swx 79.649000, f1 1.005128, f2 0.005128
Exp 39.824500 Cov 0.777198
1: LS 41.529000 Exp 39.824500 Cov 0.777198
sweights 196.000000
swx 95.335000, f1 1.005128, f2 0.005128
Exp 47.667500 Cov 1.667712
1: LS 51.118000 Exp 47.667500 Cov 1.667712
LS 51.118000 Exp 47.667500 Cov 1.667712
teststat 7.139092
var 8 teststat 7.139092
sweights 196.000000
swx 95.335000, f1 1.005128, f2 0.005128
Exp 47.667500 Cov 1.667712
1: LS 51.118000 Exp 47.667500 Cov 1.667712
sweights 196.000000
swx 98.238000, f1 1.005128, f2 0.005128
Exp 49.119000 Cov 4.013071
1: LS 57.737000 Exp 49.119000 Cov 4.013071
LS 57.737000 Exp 49.119000 Cov 4.013071
teststat 18.507007
var 9 teststat 18.507007
sweights 196.000000
swx 98.238000, f1 1.005128, f2 0.005128
Exp 49.119000 Cov 4.013071
1: LS 57.737000 Exp 49.119000 Cov 4.013071
sweights 196.000000
swx 94.099000, f1 1.005128, f2 0.005128
Exp 47.049500 Cov 1.483137
1: LS 52.019000 Exp 47.049500 Cov 1.483137
LS 52.019000 Exp 47.049500 Cov 1.483137
teststat 16.651148
var 10 teststat 16.651148
sweights 196.000000
swx 94.099000, f1 1.005128, f2 0.005128
Exp 47.049500 Cov 1.483137
1: LS 52.019000 Exp 47.049500 Cov 1.483137
sweights 196.000000
swx 253.215000, f1 1.005128, f2 0.005128
Exp 126.607500 Cov 30.158994
1: LS 157.566000 Exp 126.607500 Cov 30.158994
LS 157.566000 Exp 126.607500 Cov 30.158994
teststat 31.779201
var 11 teststat 31.779201
sweights 196.000000
swx 253.215000, f1 1.005128, f2 0.005128
Exp 126.607500 Cov 30.158994
1: LS 157.566000 Exp 126.607500 Cov 30.158994
sweights 196.000000
swx 63.666000, f1 1.005128, f2 0.005128

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Exp 31.833000 Cov 0.995564
1: LS 36.018000 Exp 31.833000 Cov 0.995564
LS 36.018000 Exp 31.833000 Cov 0.995564
teststat 17.592257
var 12 teststat 17.592257
sweights 196.000000
swx 63.666000, f1 1.005128, f2 0.005128
Exp 31.833000 Cov 0.995564
1: LS 36.018000 Exp 31.833000 Cov 0.995564
sweights 196.000000
swx 64.576000, f1 1.005128, f2 0.005128
Exp 32.288000 Cov 1.982226
1: LS 40.059000 Exp 32.288000 Cov 1.982226
LS 40.059000 Exp 32.288000 Cov 1.982226
teststat 30.464961
var 13 teststat 30.464961
sweights 196.000000
swx 64.576000, f1 1.005128, f2 0.005128
Exp 32.288000 Cov 1.982226
1: LS 40.059000 Exp 32.288000 Cov 1.982226
sweights 196.000000
swx 61.257000, f1 1.005128, f2 0.005128
Exp 30.628500 Cov 3.973832
1: LS 40.624000 Exp 30.628500 Cov 3.973832
LS 40.624000 Exp 30.628500 Cov 3.973832
teststat 25.141982
var 14 teststat 25.141982
sweights 196.000000
swx 61.257000, f1 1.005128, f2 0.005128
Exp 30.628500 Cov 3.973832
1: LS 40.624000 Exp 30.628500 Cov 3.973832
sweights 196.000000
swx 63.716000, f1 1.005128, f2 0.005128
Exp 31.858000 Cov 1.964089
1: LS 40.868000 Exp 31.858000 Cov 1.964089
LS 40.868000 Exp 31.858000 Cov 1.964089
teststat 41.332200
var 15 teststat 41.332200
sweights 196.000000
swx 63.716000, f1 1.005128, f2 0.005128
Exp 31.858000 Cov 1.964089
1: LS 40.868000 Exp 31.858000 Cov 1.964089
sweights 196.000000
swx 59.782000, f1 1.005128, f2 0.005128
Exp 29.891000 Cov 1.518485
1: LS 39.066000 Exp 29.891000 Cov 1.518485
LS 39.066000 Exp 29.891000 Cov 1.518485
teststat 55.437232
var 16 teststat 55.437232
```

sweights 196.000000
swx 59.782000, f1 1.005128, f2 0.005128
Exp 29.891000 Cov 1.518485
1: LS 39.066000 Exp 29.891000 Cov 1.518485
sweights 196.000000
swx 18.453000, f1 1.005128, f2 0.005128
Exp 9.226500 Cov 0.230705
1: LS 11.953000 Exp 9.226500 Cov 0.230705
LS 11.953000 Exp 9.226500 Cov 0.230705
teststat 32.222077
var 17 teststat 32.222077
sweights 196.000000
swx 18.453000, f1 1.005128, f2 0.005128
Exp 9.226500 Cov 0.230705
1: LS 11.953000 Exp 9.226500 Cov 0.230705
sweights 196.000000
swx 41.984000, f1 1.005128, f2 0.005128
Exp 20.992000 Cov 0.444471
1: LS 20.233000 Exp 20.992000 Cov 0.444471
LS 20.233000 Exp 20.992000 Cov 0.444471
teststat 1.296106
var 18 teststat 1.296106
sweights 196.000000
swx 41.984000, f1 1.005128, f2 0.005128
Exp 20.992000 Cov 0.444471
1: LS 20.233000 Exp 20.992000 Cov 0.444471
sweights 196.000000
swx 12.002000, f1 1.005128, f2 0.005128
Exp 6.001000 Cov 0.325573
1: LS 9.167000 Exp 6.001000 Cov 0.325573
LS 9.167000 Exp 6.001000 Cov 0.325573
teststat 30.787441
var 19 teststat 30.787441
sweights 196.000000
swx 12.002000, f1 1.005128, f2 0.005128
Exp 6.001000 Cov 0.325573
1: LS 9.167000 Exp 6.001000 Cov 0.325573
sweights 196.000000
swx 14.465000, f1 1.005128, f2 0.005128
Exp 7.232500 Cov 0.413453
1: LS 10.428000 Exp 7.232500 Cov 0.413453
LS 10.428000 Exp 7.232500 Cov 0.413453
teststat 24.697429
var 20 teststat 24.697429
sweights 196.000000
swx 14.465000, f1 1.005128, f2 0.005128
Exp 7.232500 Cov 0.413453
1: LS 10.428000 Exp 7.232500 Cov 0.413453
sweights 196.000000

swx 12.681000, f1 1.005128, f2 0.005128
Exp 6.340500 Cov 0.406392
1: LS 10.549000 Exp 6.340500 Cov 0.406392
LS 10.549000 Exp 6.340500 Cov 0.406392
teststat 43.582211
var 21 teststat 43.582211
sweights 196.000000
swx 12.681000, f1 1.005128, f2 0.005128
Exp 6.340500 Cov 0.406392
1: LS 10.549000 Exp 6.340500 Cov 0.406392
sweights 196.000000
swx −15.391000, f1 1.005128, f2 0.005128
Exp −7.695500 Cov 0.314281
1: LS −3.475000 Exp −7.695500 Cov 0.314281
LS −3.475000 Exp −7.695500 Cov 0.314281
teststat 56.677334
var 22 teststat 56.677334
sweights 196.000000
swx −15.391000, f1 1.005128, f2 0.005128
Exp −7.695500 Cov 0.314281
1: LS −3.475000 Exp −7.695500 Cov 0.314281
sweights 196.000000
swx 28.950000, f1 1.005128, f2 0.005128
Exp 14.475000 Cov 0.423088
1: LS 15.057000 Exp 14.475000 Cov 0.423088
LS 15.057000 Exp 14.475000 Cov 0.423088
teststat 0.800600
var 23 teststat 0.800600
sweights 196.000000
swx 28.950000, f1 1.005128, f2 0.005128
Exp 14.475000 Cov 0.423088
1: LS 15.057000 Exp 14.475000 Cov 0.423088
sweights 196.000000
swx −6.085000, f1 1.005128, f2 0.005128
Exp −3.042500 Cov 0.322948
1: LS 0.168000 Exp −3.042500 Cov 0.322948
LS 0.168000 Exp −3.042500 Cov 0.322948
teststat 31.916331
var 24 teststat 31.916331
sweights 196.000000
swx −6.085000, f1 1.005128, f2 0.005128
Exp −3.042500 Cov 0.322948
1: LS 0.168000 Exp −3.042500 Cov 0.322948
sweights 196.000000
swx −6.347000, f1 1.005128, f2 0.005128
Exp −3.173500 Cov 0.397594
1: LS 0.678000 Exp −3.173500 Cov 0.397594
LS 0.678000 Exp −3.173500 Cov 0.397594
teststat 37.309584

```
var 25 teststat 37.309584
sweights 196.000000
swx -6.347000, f1 1.005128, f2 0.005128
Exp -3.173500 Cov 0.397594
1: LS 0.678000 Exp -3.173500 Cov 0.397594
sweights 196.000000
swx -8.306000, f1 1.005128, f2 0.005128
Exp -4.153000 Cov 0.467402
1: LS 0.880000 Exp -4.153000 Cov 0.467402
LS 0.880000 Exp -4.153000 Cov 0.467402
teststat 54.195541
var 26 teststat 54.195541
sweights 196.000000
swx -8.306000, f1 1.005128, f2 0.005128
Exp -4.153000 Cov 0.467402
1: LS 0.880000 Exp -4.153000 Cov 0.467402
sweights 196.000000
swx 70.645000, f1 1.005128, f2 0.005128
Exp 35.322500 Cov 0.715845
1: LS 30.690000 Exp 35.322500 Cov 0.715845
LS 30.690000 Exp 35.322500 Cov 0.715845
teststat 29.978623
var 27 teststat 29.978623
sweights 196.000000
swx 70.645000, f1 1.005128, f2 0.005128
Exp 35.322500 Cov 0.715845
1: LS 30.690000 Exp 35.322500 Cov 0.715845
sweights 196.000000
swx 124.145000, f1 1.005128, f2 0.005128
Exp 62.072500 Cov 8.200288
1: LS 75.472000 Exp 62.072500 Cov 8.200288
LS 75.472000 Exp 62.072500 Cov 8.200288
teststat 21.895158
var 28 teststat 21.895158
sweights 196.000000
swx 124.145000, f1 1.005128, f2 0.005128
Exp 62.072500 Cov 8.200288
1: LS 75.472000 Exp 62.072500 Cov 8.200288
sweights 196.000000
swx 26.262000, f1 1.005128, f2 0.005128
Exp 13.131000 Cov 0.313221
1: LS 15.271000 Exp 13.131000 Cov 0.313221
LS 15.271000 Exp 13.131000 Cov 0.313221
teststat 14.620984
var 29 teststat 14.620984
sweights 196.000000
swx 26.262000, f1 1.005128, f2 0.005128
Exp 13.131000 Cov 0.313221
1: LS 15.271000 Exp 13.131000 Cov 0.313221
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sweights 196.000000
swx 36.419000, f1 1.005128, f2 0.005128
Exp 18.209500 Cov 0.761748
1: LS 21.821000 Exp 18.209500 Cov 0.761748
LS 21.821000 Exp 18.209500 Cov 0.761748
teststat 17.122372
var 30 teststat 17.122372
sweights 196.000000
swx 36.419000, f1 1.005128, f2 0.005128
Exp 18.209500 Cov 0.761748
1: LS 21.821000 Exp 18.209500 Cov 0.761748
sweights 196.000000
swx 29.283000, f1 1.005128, f2 0.005128
Exp 14.641500 Cov 0.795684
1: LS 18.279000 Exp 14.641500 Cov 0.795684
LS 18.279000 Exp 14.641500 Cov 0.795684
teststat 16.628973
var 31 teststat 16.628973
sweights 196.000000
swx 29.283000, f1 1.005128, f2 0.005128
Exp 14.641500 Cov 0.795684
1: LS 18.279000 Exp 14.641500 Cov 0.795684
sweights 196.000000
swx 32.184000, f1 1.005128, f2 0.005128
Exp 16.092000 Cov 0.512737
1: LS 20.107000 Exp 16.092000 Cov 0.512737
LS 20.107000 Exp 16.092000 Cov 0.512737
teststat 31.439530
var 32 teststat 31.439530
sweights 196.000000
swx 32.184000, f1 1.005128, f2 0.005128
Exp 16.092000 Cov 0.512737
1: LS 20.107000 Exp 16.092000 Cov 0.512737
sweights 196.000000
swx 9.735000, f1 1.005128, f2 0.005128
Exp 4.867500 Cov 0.181056
1: LS 3.308000 Exp 4.867500 Cov 0.181056
LS 3.308000 Exp 4.867500 Cov 0.181056
teststat 13.432522
var 33 teststat 13.432522
sweights 196.000000
swx 9.735000, f1 1.005128, f2 0.005128
Exp 4.867500 Cov 0.181056
1: LS 3.308000 Exp 4.867500 Cov 0.181056
sweights 196.000000
swx 0.407000, f1 1.005128, f2 0.005128
Exp 0.203500 Cov 0.000455
1: LS 0.141000 Exp 0.203500 Cov 0.000455
LS 0.141000 Exp 0.203500 Cov 0.000455

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teststat 8.579774
var 34 teststat 8.579774
sweights 196.000000
swx 0.407000, f1 1.005128, f2 0.005128
Exp 0.203500 Cov 0.000455
1: LS 0.141000 Exp 0.203500 Cov 0.000455
sweights 196.000000
swx 1.979000, f1 1.005128, f2 0.005128
Exp 0.989500 Cov 0.016132
1: LS 0.629000 Exp 0.989500 Cov 0.016132
LS 0.629000 Exp 0.989500 Cov 0.016132
teststat 8.056256
var 35 teststat 8.056256
sweights 196.000000
swx 1.979000, f1 1.005128, f2 0.005128
Exp 0.989500 Cov 0.016132
1: LS 0.629000 Exp 0.989500 Cov 0.016132
sweights 196.000000
swx 5.020000, f1 1.005128, f2 0.005128
Exp 2.510000 Cov 0.054275
1: LS 1.767000 Exp 2.510000 Cov 0.054275
LS 1.767000 Exp 2.510000 Cov 0.054275
teststat 10.171323
var 36 teststat 10.171323
sweights 196.000000
swx 5.020000, f1 1.005128, f2 0.005128
Exp 2.510000 Cov 0.054275
1: LS 1.767000 Exp 2.510000 Cov 0.054275
sweights 196.000000
swx 2.324000, f1 1.005128, f2 0.005128
Exp 1.162000 Cov 0.008371
1: LS 0.769000 Exp 1.162000 Cov 0.008371
LS 0.769000 Exp 1.162000 Cov 0.008371
teststat 18.451128
var 37 teststat 18.451128
sweights 196.000000
swx 2.324000, f1 1.005128, f2 0.005128
Exp 1.162000 Cov 0.008371
1: LS 0.769000 Exp 1.162000 Cov 0.008371
sweights 196.000000
swx 83.418000, f1 1.005128, f2 0.005128
Exp 41.709000 Cov 8.567673
1: LS 54.754000 Exp 41.709000 Cov 8.567673
LS 54.754000 Exp 41.709000 Cov 8.567673
teststat 19.862105
var 38 teststat 19.862105
sweights 196.000000
swx 83.418000, f1 1.005128, f2 0.005128
Exp 41.709000 Cov 8.567673
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1: LS 54.754000 Exp 41.709000 Cov 8.567673
sweights 196.000000
swx 19.050000, f1 1.005128, f2 0.005128
Exp 9.525000 Cov 0.297461
1: LS 12.030000 Exp 9.525000 Cov 0.297461
LS 12.030000 Exp 9.525000 Cov 0.297461
teststat 21.095264
var 39 teststat 21.095264
sweights 196.000000
swx 19.050000, f1 1.005128, f2 0.005128
Exp 9.525000 Cov 0.297461
1: LS 12.030000 Exp 9.525000 Cov 0.297461
sweights 196.000000
swx 24.253000, f1 1.005128, f2 0.005128
Exp 12.126500 Cov 0.736269
1: LS 15.819000 Exp 12.126500 Cov 0.736269
LS 15.819000 Exp 12.126500 Cov 0.736269
teststat 18.518434
var 40 teststat 18.518434
sweights 196.000000
swx 24.253000, f1 1.005128, f2 0.005128
Exp 12.126500 Cov 0.736269
1: LS 15.819000 Exp 12.126500 Cov 0.736269
sweights 196.000000
swx 19.416000, f1 1.005128, f2 0.005128
Exp 9.708000 Cov 1.090174
1: LS 12.536000 Exp 9.708000 Cov 1.090174
LS 12.536000 Exp 9.708000 Cov 1.090174
teststat 7.336059
var 41 teststat 7.336059
sweights 196.000000
swx 19.416000, f1 1.005128, f2 0.005128
Exp 9.708000 Cov 1.090174
1: LS 12.536000 Exp 9.708000 Cov 1.090174
sweights 196.000000
swx 20.681000, f1 1.005128, f2 0.005128
Exp 10.340500 Cov 0.434791
1: LS 14.367000 Exp 10.340500 Cov 0.434791
LS 14.367000 Exp 10.340500 Cov 0.434791
teststat 37.288533
var 42 teststat 37.288533
sweights 196.000000
swx 20.681000, f1 1.005128, f2 0.005128
Exp 10.340500 Cov 0.434791
1: LS 14.367000 Exp 10.340500 Cov 0.434791
sweights 196.000000
swx 58.053000, f1 1.005128, f2 0.005128
Exp 29.026500 Cov 1.958642
1: LS 17.494000 Exp 29.026500 Cov 1.958642
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LS 17.494000 Exp 29.026500 Cov 1.958642
teststat 67.903468
var 43 teststat 67.903468
sweights 196.000000
swx 58.053000, f1 1.005128, f2 0.005128
Exp 29.026500 Cov 1.958642
1: LS 17.494000 Exp 29.026500 Cov 1.958642
sweights 196.000000
swx 2.058000, f1 1.005128, f2 0.005128
Exp 1.029000 Cov 0.004835
1: LS 0.627000 Exp 1.029000 Cov 0.004835
LS 0.627000 Exp 1.029000 Cov 0.004835
teststat 33.424352
var 44 teststat 33.424352
sweights 196.000000
swx 2.058000, f1 1.005128, f2 0.005128
Exp 1.029000 Cov 0.004835
1: LS 0.627000 Exp 1.029000 Cov 0.004835
sweights 196.000000
swx 14.886000, f1 1.005128, f2 0.005128
Exp 7.443000 Cov 0.157559
1: LS 4.416000 Exp 7.443000 Cov 0.157559
LS 4.416000 Exp 7.443000 Cov 0.157559
teststat 58.154182
var 45 teststat 58.154182
sweights 196.000000
swx 14.886000, f1 1.005128, f2 0.005128
Exp 7.443000 Cov 0.157559
1: LS 4.416000 Exp 7.443000 Cov 0.157559
sweights 196.000000
swx 25.441000, f1 1.005128, f2 0.005128
Exp 12.720500 Cov 0.392590
1: LS 8.060000 Exp 12.720500 Cov 0.392590
LS 8.060000 Exp 12.720500 Cov 0.392590
teststat 55.325511
var 46 teststat 55.325511
sweights 196.000000
swx 25.441000, f1 1.005128, f2 0.005128
Exp 12.720500 Cov 0.392590
1: LS 8.060000 Exp 12.720500 Cov 0.392590
sweights 196.000000
swx 15.662000, f1 1.005128, f2 0.005128
Exp 7.831000 Cov 0.165660
1: LS 4.390000 Exp 7.831000 Cov 0.165660
LS 4.390000 Exp 7.831000 Cov 0.165660
teststat 71.474683
var 47 teststat 71.474683
sweights 196.000000
swx 15.662000, f1 1.005128, f2 0.005128

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Exp 7.831000 Cov 0.165660
1: LS 4.390000 Exp 7.831000 Cov 0.165660
sweights 196.000000
swx 134.312000, f1 1.005128, f2 0.005128
Exp 67.156000 Cov 2.031679
1: LS 72.015000 Exp 67.156000 Cov 2.031679
LS 72.015000 Exp 67.156000 Cov 2.031679
teststat 11.620870
var 48 teststat 11.620870
sweights 196.000000
swx 134.312000, f1 1.005128, f2 0.005128
Exp 67.156000 Cov 2.031679
1: LS 72.015000 Exp 67.156000 Cov 2.031679
sweights 196.000000
swx 119.460000, f1 1.005128, f2 0.005128
Exp 59.730000 Cov 1.798552
1: LS 63.185000 Exp 59.730000 Cov 1.798552
LS 63.185000 Exp 59.730000 Cov 1.798552
teststat 6.637021
var 49 teststat 6.637021
sweights 196.000000
swx 119.460000, f1 1.005128, f2 0.005128
Exp 59.730000 Cov 1.798552
1: LS 63.185000 Exp 59.730000 Cov 1.798552
sweights 196.000000
swx 136.247000, f1 1.005128, f2 0.005128
Exp 68.123500 Cov 2.573024
1: LS 73.535000 Exp 68.123500 Cov 2.573024
LS 73.535000 Exp 68.123500 Cov 2.573024
teststat 11.381290
var 50 teststat 11.381290
sweights 196.000000
swx 136.247000, f1 1.005128, f2 0.005128
Exp 68.123500 Cov 2.573024
1: LS 73.535000 Exp 68.123500 Cov 2.573024
sweights 196.000000
swx 119.846000, f1 1.005128, f2 0.005128
Exp 59.923000 Cov 3.112698
1: LS 67.940000 Exp 59.923000 Cov 3.112698
LS 67.940000 Exp 59.923000 Cov 3.112698
teststat 20.648419
var 51 teststat 20.648419
sweights 196.000000
swx 119.846000, f1 1.005128, f2 0.005128
Exp 59.923000 Cov 3.112698
1: LS 67.940000 Exp 59.923000 Cov 3.112698
sweights 196.000000
swx 124.763000, f1 1.005128, f2 0.005128
Exp 62.381500 Cov 1.984112
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1: LS 67.501000 Exp 62.381500 Cov 1.984112
LS 67.501000 Exp 62.381500 Cov 1.984112
teststat 13.209579
var 52 teststat 13.209579
sweights 196.000000
swx 124.763000, f1 1.005128, f2 0.005128
Exp 62.381500 Cov 1.984112
1: LS 67.501000 Exp 62.381500 Cov 1.984112
sweights 196.000000
swx -18.225000, f1 1.005128, f2 0.005128
Exp -9.112500 Cov 0.573935
1: LS -3.289000 Exp -9.112500 Cov 0.573935
LS -3.289000 Exp -9.112500 Cov 0.573935
teststat 59.088840
var 53 teststat 59.088840
sweights 196.000000
swx -18.225000, f1 1.005128, f2 0.005128
Exp -9.112500 Cov 0.573935
1: LS -3.289000 Exp -9.112500 Cov 0.573935
sweights 196.000000
swx -0.913000, f1 1.005128, f2 0.005128
Exp -0.456500 Cov 0.803594
1: LS 4.645000 Exp -0.456500 Cov 0.803594
LS 4.645000 Exp -0.456500 Cov 0.803594
teststat 32.386113
var 54 teststat 32.386113
sweights 196.000000
swx -0.913000, f1 1.005128, f2 0.005128
Exp -0.456500 Cov 0.803594
1: LS 4.645000 Exp -0.456500 Cov 0.803594
sweights 196.000000
swx -7.802000, f1 1.005128, f2 0.005128
Exp -3.901000 Cov 1.103634
1: LS 3.880000 Exp -3.901000 Cov 1.103634
LS 3.880000 Exp -3.901000 Cov 1.103634
teststat 54.858709
var 55 teststat 54.858709
sweights 196.000000
swx -7.802000, f1 1.005128, f2 0.005128
Exp -3.901000 Cov 1.103634
1: LS 3.880000 Exp -3.901000 Cov 1.103634
sweights 196.000000
swx -28.852000, f1 1.005128, f2 0.005128
Exp -14.426000 Cov 0.882543
1: LS -9.910000 Exp -14.426000 Cov 0.882543
LS -9.910000 Exp -14.426000 Cov 0.882543
teststat 23.108507
var 56 teststat 23.108507
sweights 196.000000
```

swx -28.852000, f1 1.005128, f2 0.005128
Exp -14.426000 Cov 0.882543
1: LS -9.910000 Exp -14.426000 Cov 0.882543
sweights 196.000000
swx -7.156000, f1 1.005128, f2 0.005128
Exp -3.578000 Cov 0.911950
1: LS 3.591000 Exp -3.578000 Cov 0.911950
LS 3.591000 Exp -3.578000 Cov 0.911950
teststat 56.356803
var 57 teststat 56.356803
sweights 196.000000
swx -7.156000, f1 1.005128, f2 0.005128
Exp -3.578000 Cov 0.911950
1: LS 3.591000 Exp -3.578000 Cov 0.911950
sweights 196.000000
swx 177.377000, f1 1.005128, f2 0.005128
Exp 88.688500 Cov 0.618567
1: LS 88.895000 Exp 88.688500 Cov 0.618567
LS 88.895000 Exp 88.688500 Cov 0.618567
teststat 0.068937
var 58 teststat 0.068937
sweights 196.000000
swx 177.377000, f1 1.005128, f2 0.005128
Exp 88.688500 Cov 0.618567
1: LS 88.895000 Exp 88.688500 Cov 0.618567
sweights 196.000000
swx 35.747000, f1 1.005128, f2 0.005128
Exp 17.873500 Cov 0.433703
1: LS 13.677000 Exp 17.873500 Cov 0.433703
LS 13.677000 Exp 17.873500 Cov 0.433703
teststat 40.605250
var 59 teststat 40.605250
sweights 196.000000
swx 35.747000, f1 1.005128, f2 0.005128
Exp 17.873500 Cov 0.433703
1: LS 13.677000 Exp 17.873500 Cov 0.433703
sweights 196.000000
swx 45.329000, f1 1.005128, f2 0.005128
Exp 22.664500 Cov 0.751985
1: LS 28.457000 Exp 22.664500 Cov 0.751985
LS 28.457000 Exp 22.664500 Cov 0.751985
teststat 44.619326
var 60 teststat 44.619326
sweights 196.000000
swx 45.329000, f1 1.005128, f2 0.005128
Exp 22.664500 Cov 0.751985
1: LS 28.457000 Exp 22.664500 Cov 0.751985
sweights 196.000000
swx 60.545000, f1 1.005128, f2 0.005128

Exp 30.272500 Cov 0.805904
1: LS 35.480000 Exp 30.272500 Cov 0.805904
LS 35.480000 Exp 30.272500 Cov 0.805904
teststat 33.649258
var 61 teststat 33.649258
sweights 196.000000
swx 60.545000, f1 1.005128, f2 0.005128
Exp 30.272500 Cov 0.805904
1: LS 35.480000 Exp 30.272500 Cov 0.805904
sweights 196.000000
swx 6.574000, f1 1.005128, f2 0.005128
Exp 3.287000 Cov 0.023393
1: LS 3.481000 Exp 3.287000 Cov 0.023393
LS 3.481000 Exp 3.287000 Cov 0.023393
teststat 1.608856
var 62 teststat 1.608856
sweights 196.000000
swx 6.574000, f1 1.005128, f2 0.005128
Exp 3.287000 Cov 0.023393
1: LS 3.481000 Exp 3.287000 Cov 0.023393
sweights 87.000000
swx 229.600000, f1 1.011628, f2 0.011628
Exp 197.931034 Cov 4.289685
1: LS 193.855000 Exp 197.931034 Cov 4.289685
LS 193.855000 Exp 197.931034 Cov 4.289685
teststat 3.873025
var 1 teststat 3.873025
sweights 87.000000
swx 229.600000, f1 1.011628, f2 0.011628
Exp 197.931034 Cov 4.289685
1: LS 193.855000 Exp 197.931034 Cov 4.289685
sweights 87.000000
swx 41.091000, f1 1.011628, f2 0.011628
Exp 35.423276 Cov 0.166604
1: LS 34.734000 Exp 35.423276 Cov 0.166604
LS 34.734000 Exp 35.423276 Cov 0.166604
teststat 2.851688
var 2 teststat 2.851688
sweights 87.000000
swx 41.091000, f1 1.011628, f2 0.011628
Exp 35.423276 Cov 0.166604
1: LS 34.734000 Exp 35.423276 Cov 0.166604
sweights 87.000000
swx 56.579000, f1 1.011628, f2 0.011628
Exp 48.775000 Cov 0.241424
1: LS 47.693000 Exp 48.775000 Cov 0.241424
LS 47.693000 Exp 48.775000 Cov 0.241424
teststat 4.849247
var 3 teststat 4.849247

sweights 87.000000
swx 56.579000, f1 1.011628, f2 0.011628
Exp 48.775000 Cov 0.241424
1: LS 47.693000 Exp 48.775000 Cov 0.241424
sweights 87.000000
swx 74.320000, f1 1.011628, f2 0.011628
Exp 64.068966 Cov 0.487467
1: LS 62.791000 Exp 64.068966 Cov 0.487467
LS 62.791000 Exp 64.068966 Cov 0.487467
teststat 3.350373
var 4 teststat 3.350373
sweights 87.000000
swx 74.320000, f1 1.011628, f2 0.011628
Exp 64.068966 Cov 0.487467
1: LS 62.791000 Exp 64.068966 Cov 0.487467
sweights 87.000000
swx 57.619000, f1 1.011628, f2 0.011628
Exp 49.671552 Cov 0.257143
1: LS 48.644000 Exp 49.671552 Cov 0.257143
LS 48.644000 Exp 49.671552 Cov 0.257143
teststat 4.106137
var 5 teststat 4.106137
sweights 87.000000
swx 57.619000, f1 1.011628, f2 0.011628
Exp 49.671552 Cov 0.257143
1: LS 48.644000 Exp 49.671552 Cov 0.257143
sweights 87.000000
swx 183.220000, f1 1.011628, f2 0.011628
Exp 157.948276 Cov 4.072564
1: LS 159.344000 Exp 157.948276 Cov 4.072564
LS 159.344000 Exp 157.948276 Cov 4.072564
teststat 0.478334
var 6 teststat 0.478334
sweights 87.000000
swx 183.220000, f1 1.011628, f2 0.011628
Exp 157.948276 Cov 4.072564
1: LS 159.344000 Exp 157.948276 Cov 4.072564
sweights 87.000000
swx 37.227000, f1 1.011628, f2 0.011628
Exp 32.092241 Cov 0.146623
1: LS 31.937000 Exp 32.092241 Cov 0.146623
LS 31.937000 Exp 32.092241 Cov 0.146623
teststat 0.164367
var 7 teststat 0.164367
sweights 87.000000
swx 37.227000, f1 1.011628, f2 0.011628
Exp 32.092241 Cov 0.146623
1: LS 31.937000 Exp 32.092241 Cov 0.146623
sweights 87.000000

swx 45.270000, f1 1.011628, f2 0.011628
Exp 39.025862 Cov 0.287967
1: LS 39.154000 Exp 39.025862 Cov 0.287967
LS 39.154000 Exp 39.025862 Cov 0.287967
teststat 0.057018
var 8 teststat 0.057018
sweights 87.000000
swx 45.270000, f1 1.011628, f2 0.011628
Exp 39.025862 Cov 0.287967
1: LS 39.154000 Exp 39.025862 Cov 0.287967
sweights 87.000000
swx 52.964000, f1 1.011628, f2 0.011628
Exp 45.658621 Cov 0.667491
1: LS 46.731000 Exp 45.658621 Cov 0.667491
LS 46.731000 Exp 45.658621 Cov 0.667491
teststat 1.722865
var 9 teststat 1.722865
sweights 87.000000
swx 52.964000, f1 1.011628, f2 0.011628
Exp 45.658621 Cov 0.667491
1: LS 46.731000 Exp 45.658621 Cov 0.667491
sweights 87.000000
swx 47.754000, f1 1.011628, f2 0.011628
Exp 41.167241 Cov 0.200829
1: LS 41.517000 Exp 41.167241 Cov 0.200829
LS 41.517000 Exp 41.167241 Cov 0.200829
teststat 0.609131
var 10 teststat 0.609131
sweights 87.000000
swx 47.754000, f1 1.011628, f2 0.011628
Exp 41.167241 Cov 0.200829
1: LS 41.517000 Exp 41.167241 Cov 0.200829
sweights 87.000000
swx 149.471000, f1 1.011628, f2 0.011628
Exp 128.854310 Cov 5.824878
1: LS 129.859000 Exp 128.854310 Cov 5.824878
LS 129.859000 Exp 128.854310 Cov 5.824878
teststat 0.173291
var 11 teststat 0.173291
sweights 87.000000
swx 149.471000, f1 1.011628, f2 0.011628
Exp 128.854310 Cov 5.824878
1: LS 129.859000 Exp 128.854310 Cov 5.824878
sweights 87.000000
swx 32.951000, f1 1.011628, f2 0.011628
Exp 28.406034 Cov 0.169417
1: LS 28.399000 Exp 28.406034 Cov 0.169417
LS 28.399000 Exp 28.406034 Cov 0.169417
teststat 0.000292

```
var 12 teststat 0.000292
sweights 87.000000
swx 32.951000, f1 1.011628, f2 0.011628
Exp 28.406034 Cov 0.169417
1: LS 28.399000 Exp 28.406034 Cov 0.169417
sweights 87.000000
swx 36.711000, f1 1.011628, f2 0.011628
Exp 31.647414 Cov 0.390838
1: LS 31.791000 Exp 31.647414 Cov 0.390838
LS 31.791000 Exp 31.647414 Cov 0.390838
teststat 0.052751
var 13 teststat 0.052751
sweights 87.000000
swx 36.711000, f1 1.011628, f2 0.011628
Exp 31.647414 Cov 0.390838
1: LS 31.791000 Exp 31.647414 Cov 0.390838
sweights 87.000000
swx 40.084000, f1 1.011628, f2 0.011628
Exp 34.555172 Cov 0.925098
1: LS 35.221000 Exp 34.555172 Cov 0.925098
LS 35.221000 Exp 34.555172 Cov 0.925098
teststat 0.479221
var 14 teststat 0.479221
sweights 87.000000
swx 40.084000, f1 1.011628, f2 0.011628
Exp 34.555172 Cov 0.925098
1: LS 35.221000 Exp 34.555172 Cov 0.925098
sweights 87.000000
swx 39.734000, f1 1.011628, f2 0.011628
Exp 34.253448 Cov 0.305485
1: LS 34.456000 Exp 34.253448 Cov 0.305485
LS 34.456000 Exp 34.253448 Cov 0.305485
teststat 0.134302
var 15 teststat 0.134302
sweights 87.000000
swx 39.734000, f1 1.011628, f2 0.011628
Exp 34.253448 Cov 0.305485
1: LS 34.456000 Exp 34.253448 Cov 0.305485
sweights 87.000000
swx 34.761000, f1 1.011628, f2 0.011628
Exp 29.966379 Cov 0.249106
1: LS 31.909000 Exp 29.966379 Cov 0.249106
LS 31.909000 Exp 29.966379 Cov 0.249106
teststat 15.149301
var 16 teststat 15.149301
sweights 87.000000
swx 34.761000, f1 1.011628, f2 0.011628
Exp 29.966379 Cov 0.249106
1: LS 31.909000 Exp 29.966379 Cov 0.249106
```

sweights 87.000000
swx 10.622000, f1 1.011628, f2 0.011628
Exp 9.156897 Cov 0.046022
1: LS 9.565000 Exp 9.156897 Cov 0.046022
LS 9.565000 Exp 9.156897 Cov 0.046022
teststat 3.618896
var 17 teststat 3.618896
sweights 87.000000
swx 10.622000, f1 1.011628, f2 0.011628
Exp 9.156897 Cov 0.046022
1: LS 9.565000 Exp 9.156897 Cov 0.046022
sweights 87.000000
swx 16.072000, f1 1.011628, f2 0.011628
Exp 13.855172 Cov 0.104661
1: LS 14.637000 Exp 13.855172 Cov 0.104661
LS 14.637000 Exp 13.855172 Cov 0.104661
teststat 5.840345
var 18 teststat 5.840345
sweights 87.000000
swx 16.072000, f1 1.011628, f2 0.011628
Exp 13.855172 Cov 0.104661
1: LS 14.637000 Exp 13.855172 Cov 0.104661
sweights 87.000000
swx 8.078000, f1 1.011628, f2 0.011628
Exp 6.963793 Cov 0.053933
1: LS 7.442000 Exp 6.963793 Cov 0.053933
LS 7.442000 Exp 6.963793 Cov 0.053933
teststat 4.240071
var 19 teststat 4.240071
sweights 87.000000
swx 8.078000, f1 1.011628, f2 0.011628
Exp 6.963793 Cov 0.053933
1: LS 7.442000 Exp 6.963793 Cov 0.053933
sweights 87.000000
swx 9.814000, f1 1.011628, f2 0.011628
Exp 8.460345 Cov 0.096731
1: LS 8.598000 Exp 8.460345 Cov 0.096731
LS 8.598000 Exp 8.460345 Cov 0.096731
teststat 0.195894
var 20 teststat 0.195894
sweights 87.000000
swx 9.814000, f1 1.011628, f2 0.011628
Exp 8.460345 Cov 0.096731
1: LS 8.598000 Exp 8.460345 Cov 0.096731
sweights 87.000000
swx 10.158000, f1 1.011628, f2 0.011628
Exp 8.756897 Cov 0.069503
1: LS 9.169000 Exp 8.756897 Cov 0.069503
LS 9.169000 Exp 8.756897 Cov 0.069503

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teststat 2.443496
var 21 teststat 2.443496
sweights 87.000000
swx 10.158000, f1 1.011628, f2 0.011628
Exp 8.756897 Cov 0.069503
1: LS 9.169000 Exp 8.756897 Cov 0.069503
sweights 87.000000
swx -2.821000, f1 1.011628, f2 0.011628
Exp -2.431897 Cov 0.054911
1: LS -1.720000 Exp -2.431897 Cov 0.054911
LS -1.720000 Exp -2.431897 Cov 0.054911
teststat 9.229424
var 22 teststat 9.229424
sweights 87.000000
swx -2.821000, f1 1.011628, f2 0.011628
Exp -2.431897 Cov 0.054911
1: LS -1.720000 Exp -2.431897 Cov 0.054911
sweights 87.000000
swx 11.277000, f1 1.011628, f2 0.011628
Exp 9.721552 Cov 0.110352
1: LS 10.972000 Exp 9.721552 Cov 0.110352
LS 10.972000 Exp 9.721552 Cov 0.110352
teststat 14.169339
var 23 teststat 14.169339
sweights 87.000000
swx 11.277000, f1 1.011628, f2 0.011628
Exp 9.721552 Cov 0.110352
1: LS 10.972000 Exp 9.721552 Cov 0.110352
sweights 87.000000
swx 0.651000, f1 1.011628, f2 0.011628
Exp 0.561207 Cov 0.053846
1: LS 0.989000 Exp 0.561207 Cov 0.053846
LS 0.989000 Exp 0.561207 Cov 0.053846
teststat 3.398680
var 24 teststat 3.398680
sweights 87.000000
swx 0.651000, f1 1.011628, f2 0.011628
Exp 0.561207 Cov 0.053846
1: LS 0.989000 Exp 0.561207 Cov 0.053846
sweights 87.000000
swx 1.207000, f1 1.011628, f2 0.011628
Exp 1.040517 Cov 0.086946
1: LS 1.367000 Exp 1.040517 Cov 0.086946
LS 1.367000 Exp 1.040517 Cov 0.086946
teststat 1.225940
var 25 teststat 1.225940
sweights 87.000000
swx 1.207000, f1 1.011628, f2 0.011628
Exp 1.040517 Cov 0.086946
```

1: LS 1.367000 Exp 1.040517 Cov 0.086946
sweights 87.000000
swx 1.603000, f1 1.011628, f2 0.011628
Exp 1.381897 Cov 0.084316
1: LS 2.093000 Exp 1.381897 Cov 0.084316
LS 2.093000 Exp 1.381897 Cov 0.084316
teststat 5.997278
var 26 teststat 5.997278
sweights 87.000000
swx 1.603000, f1 1.011628, f2 0.011628
Exp 1.381897 Cov 0.084316
1: LS 2.093000 Exp 1.381897 Cov 0.084316
sweights 87.000000
swx 26.978000, f1 1.011628, f2 0.011628
Exp 23.256897 Cov 0.178964
1: LS 22.268000 Exp 23.256897 Cov 0.178964
LS 22.268000 Exp 23.256897 Cov 0.178964
teststat 5.464312
var 27 teststat 5.464312
sweights 87.000000
swx 26.978000, f1 1.011628, f2 0.011628
Exp 23.256897 Cov 0.178964
1: LS 22.268000 Exp 23.256897 Cov 0.178964
sweights 87.000000
swx 67.964000, f1 1.011628, f2 0.011628
Exp 58.589655 Cov 1.647135
1: LS 60.905000 Exp 58.589655 Cov 1.647135
LS 60.905000 Exp 58.589655 Cov 1.647135
teststat 3.254633
var 28 teststat 3.254633
sweights 87.000000
swx 67.964000, f1 1.011628, f2 0.011628
Exp 58.589655 Cov 1.647135
1: LS 60.905000 Exp 58.589655 Cov 1.647135
sweights 87.000000
swx 13.580000, f1 1.011628, f2 0.011628
Exp 11.706897 Cov 0.063295
1: LS 12.114000 Exp 11.706897 Cov 0.063295
LS 12.114000 Exp 11.706897 Cov 0.063295
teststat 2.618441
var 29 teststat 2.618441
sweights 87.000000
swx 13.580000, f1 1.011628, f2 0.011628
Exp 11.706897 Cov 0.063295
1: LS 12.114000 Exp 11.706897 Cov 0.063295
sweights 87.000000
swx 19.295000, f1 1.011628, f2 0.011628
Exp 16.633621 Cov 0.161418
1: LS 17.087000 Exp 16.633621 Cov 0.161418

LS 17.087000 Exp 16.633621 Cov 0.161418
teststat 1.273420
var 30 teststat 1.273420
sweights 87.000000
swx 19.295000, f1 1.011628, f2 0.011628
Exp 16.633621 Cov 0.161418
1: LS 17.087000 Exp 16.633621 Cov 0.161418
sweights 87.000000
swx 16.973000, f1 1.011628, f2 0.011628
Exp 14.631897 Cov 0.180141
1: LS 15.265000 Exp 14.631897 Cov 0.180141
LS 15.265000 Exp 14.631897 Cov 0.180141
teststat 2.225039
var 31 teststat 2.225039
sweights 87.000000
swx 16.973000, f1 1.011628, f2 0.011628
Exp 14.631897 Cov 0.180141
1: LS 15.265000 Exp 14.631897 Cov 0.180141
sweights 87.000000
swx 18.118000, f1 1.011628, f2 0.011628
Exp 15.618966 Cov 0.090366
1: LS 16.441000 Exp 15.618966 Cov 0.090366
LS 16.441000 Exp 15.618966 Cov 0.090366
teststat 7.477823
var 32 teststat 7.477823
sweights 87.000000
swx 18.118000, f1 1.011628, f2 0.011628
Exp 15.618966 Cov 0.090366
1: LS 16.441000 Exp 15.618966 Cov 0.090366
sweights 87.000000
swx 2.828000, f1 1.011628, f2 0.011628
Exp 2.437931 Cov 0.006405
1: LS 2.005000 Exp 2.437931 Cov 0.006405
LS 2.005000 Exp 2.437931 Cov 0.006405
teststat 29.264696
var 33 teststat 29.264696
sweights 87.000000
swx 2.828000, f1 1.011628, f2 0.011628
Exp 2.437931 Cov 0.006405
1: LS 2.005000 Exp 2.437931 Cov 0.006405
sweights 87.000000
swx 0.159000, f1 1.011628, f2 0.011628
Exp 0.137069 Cov 0.000114
1: LS 0.104000 Exp 0.137069 Cov 0.000114
LS 0.104000 Exp 0.137069 Cov 0.000114
teststat 9.605840
var 34 teststat 9.605840
sweights 87.000000
swx 0.159000, f1 1.011628, f2 0.011628

Exp 0.137069 Cov 0.000114
1: LS 0.104000 Exp 0.137069 Cov 0.000114
sweights 87.000000
swx 0.622000, f1 1.011628, f2 0.011628
Exp 0.536207 Cov 0.000456
1: LS 0.447000 Exp 0.536207 Cov 0.000456
LS 0.447000 Exp 0.536207 Cov 0.000456
teststat 17.459864
var 35 teststat 17.459864
sweights 87.000000
swx 0.622000, f1 1.011628, f2 0.011628
Exp 0.536207 Cov 0.000456
1: LS 0.447000 Exp 0.536207 Cov 0.000456
sweights 87.000000
swx 1.428000, f1 1.011628, f2 0.011628
Exp 1.231034 Cov 0.001975
1: LS 1.034000 Exp 1.231034 Cov 0.001975
LS 1.034000 Exp 1.231034 Cov 0.001975
teststat 19.661473
var 36 teststat 19.661473
sweights 87.000000
swx 1.428000, f1 1.011628, f2 0.011628
Exp 1.231034 Cov 0.001975
1: LS 1.034000 Exp 1.231034 Cov 0.001975
sweights 87.000000
swx 0.620000, f1 1.011628, f2 0.011628
Exp 0.534483 Cov 0.000859
1: LS 0.420000 Exp 0.534483 Cov 0.000859
LS 0.420000 Exp 0.534483 Cov 0.000859
teststat 15.252382
var 37 teststat 15.252382
sweights 87.000000
swx 0.620000, f1 1.011628, f2 0.011628
Exp 0.534483 Cov 0.000859
1: LS 0.420000 Exp 0.534483 Cov 0.000859
sweights 87.000000
swx 53.226000, f1 1.011628, f2 0.011628
Exp 45.884483 Cov 2.439775
1: LS 46.142000 Exp 45.884483 Cov 2.439775
LS 46.142000 Exp 45.884483 Cov 2.439775
teststat 0.027181
var 38 teststat 0.027181
sweights 87.000000
swx 53.226000, f1 1.011628, f2 0.011628
Exp 45.884483 Cov 2.439775
1: LS 46.142000 Exp 45.884483 Cov 2.439775
sweights 87.000000
swx 11.074000, f1 1.011628, f2 0.011628
Exp 9.546552 Cov 0.065577

1: LS 9.829000 Exp 9.546552 Cov 0.065577
LS 9.829000 Exp 9.546552 Cov 0.065577
teststat 1.216535
var 39 teststat 1.216535
sweights 87.000000
swx 11.074000, f1 1.011628, f2 0.011628
Exp 9.546552 Cov 0.065577
1: LS 9.829000 Exp 9.546552 Cov 0.065577
sweights 87.000000
swx 15.049000, f1 1.011628, f2 0.011628
Exp 12.973276 Cov 0.208719
1: LS 12.965000 Exp 12.973276 Cov 0.208719
LS 12.965000 Exp 12.973276 Cov 0.208719
teststat 0.000328
var 40 teststat 0.000328
sweights 87.000000
swx 15.049000, f1 1.011628, f2 0.011628
Exp 12.973276 Cov 0.208719
1: LS 12.965000 Exp 12.973276 Cov 0.208719
sweights 87.000000
swx 13.378000, f1 1.011628, f2 0.011628
Exp 11.532759 Cov 0.396816
1: LS 11.066000 Exp 11.532759 Cov 0.396816
LS 11.066000 Exp 11.532759 Cov 0.396816
teststat 0.549029
var 41 teststat 0.549029
sweights 87.000000
swx 13.378000, f1 1.011628, f2 0.011628
Exp 11.532759 Cov 0.396816
1: LS 11.066000 Exp 11.532759 Cov 0.396816
sweights 87.000000
swx 13.721000, f1 1.011628, f2 0.011628
Exp 11.828448 Cov 0.097089
1: LS 12.281000 Exp 11.828448 Cov 0.097089
LS 12.281000 Exp 11.828448 Cov 0.097089
teststat 2.109445
var 42 teststat 2.109445
sweights 87.000000
swx 13.721000, f1 1.011628, f2 0.011628
Exp 11.828448 Cov 0.097089
1: LS 12.281000 Exp 11.828448 Cov 0.097089
sweights 87.000000
swx 12.713000, f1 1.011628, f2 0.011628
Exp 10.959483 Cov 0.081491
1: LS 10.041000 Exp 10.959483 Cov 0.081491
LS 10.041000 Exp 10.959483 Cov 0.081491
teststat 10.352197
var 43 teststat 10.352197
sweights 87.000000

swx 12.713000, f1 1.011628, f2 0.011628
Exp 10.959483 Cov 0.081491
1: LS 10.041000 Exp 10.959483 Cov 0.081491
sweights 87.000000
swx 0.578000, f1 1.011628, f2 0.011628
Exp 0.498276 Cov 0.000415
1: LS 0.417000 Exp 0.498276 Cov 0.000415
LS 0.417000 Exp 0.498276 Cov 0.000415
teststat 15.927107
var 44 teststat 15.927107
sweights 87.000000
swx 0.578000, f1 1.011628, f2 0.011628
Exp 0.498276 Cov 0.000415
1: LS 0.417000 Exp 0.498276 Cov 0.000415
sweights 87.000000
swx 3.587000, f1 1.011628, f2 0.011628
Exp 3.092241 Cov 0.011286
1: LS 2.832000 Exp 3.092241 Cov 0.011286
LS 2.832000 Exp 3.092241 Cov 0.011286
teststat 6.001032
var 45 teststat 6.001032
sweights 87.000000
swx 3.587000, f1 1.011628, f2 0.011628
Exp 3.092241 Cov 0.011286
1: LS 2.832000 Exp 3.092241 Cov 0.011286
sweights 87.000000
swx 5.895000, f1 1.011628, f2 0.011628
Exp 5.081897 Cov 0.023829
1: LS 4.639000 Exp 5.081897 Cov 0.023829
LS 4.639000 Exp 5.081897 Cov 0.023829
teststat 8.231896
var 46 teststat 8.231896
sweights 87.000000
swx 5.895000, f1 1.011628, f2 0.011628
Exp 5.081897 Cov 0.023829
1: LS 4.639000 Exp 5.081897 Cov 0.023829
sweights 87.000000
swx 2.648000, f1 1.011628, f2 0.011628
Exp 2.282759 Cov 0.002995
1: LS 2.150000 Exp 2.282759 Cov 0.002995
LS 2.150000 Exp 2.282759 Cov 0.002995
teststat 5.885002
var 47 teststat 5.885002
sweights 87.000000
swx 2.648000, f1 1.011628, f2 0.011628
Exp 2.282759 Cov 0.002995
1: LS 2.150000 Exp 2.282759 Cov 0.002995
sweights 87.000000
swx 62.180000, f1 1.011628, f2 0.011628

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Exp 53.603448 Cov 0.396702
1: LS 55.185000 Exp 53.603448 Cov 0.396702
LS 55.185000 Exp 53.603448 Cov 0.396702
teststat 6.305244
var 48 teststat 6.305244
sweights 87.000000
swx 62.180000, f1 1.011628, f2 0.011628
Exp 53.603448 Cov 0.396702
1: LS 55.185000 Exp 53.603448 Cov 0.396702
sweights 87.000000
swx 55.385000, f1 1.011628, f2 0.011628
Exp 47.745690 Cov 0.384130
1: LS 49.168000 Exp 47.745690 Cov 0.384130
LS 49.168000 Exp 47.745690 Cov 0.384130
teststat 5.266356
var 49 teststat 5.266356
sweights 87.000000
swx 55.385000, f1 1.011628, f2 0.011628
Exp 47.745690 Cov 0.384130
1: LS 49.168000 Exp 47.745690 Cov 0.384130
sweights 87.000000
swx 63.199000, f1 1.011628, f2 0.011628
Exp 54.481897 Cov 0.520388
1: LS 56.437000 Exp 54.481897 Cov 0.520388
LS 56.437000 Exp 54.481897 Cov 0.520388
teststat 7.345351
var 50 teststat 7.345351
sweights 87.000000
swx 63.199000, f1 1.011628, f2 0.011628
Exp 54.481897 Cov 0.520388
1: LS 56.437000 Exp 54.481897 Cov 0.520388
sweights 87.000000
swx 58.781000, f1 1.011628, f2 0.011628
Exp 50.673276 Cov 0.478464
1: LS 52.392000 Exp 50.673276 Cov 0.478464
LS 52.392000 Exp 50.673276 Cov 0.478464
teststat 6.173951
var 51 teststat 6.173951
sweights 87.000000
swx 58.781000, f1 1.011628, f2 0.011628
Exp 50.673276 Cov 0.478464
1: LS 52.392000 Exp 50.673276 Cov 0.478464
sweights 87.000000
swx 57.848000, f1 1.011628, f2 0.011628
Exp 49.868966 Cov 0.336545
1: LS 51.585000 Exp 49.868966 Cov 0.336545
LS 51.585000 Exp 49.868966 Cov 0.336545
teststat 8.750011
var 52 teststat 8.750011
```

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sweights 87.000000
swx 57.848000, f1 1.011628, f2 0.011628
Exp 49.868966 Cov 0.336545
1: LS 51.585000 Exp 49.868966 Cov 0.336545
sweights 87.000000
swx -2.251000, f1 1.011628, f2 0.011628
Exp -1.940517 Cov 0.076139
1: LS -0.990000 Exp -1.940517 Cov 0.076139
LS -0.990000 Exp -1.940517 Cov 0.076139
teststat 11.866218
var 53 teststat 11.866218
sweights 87.000000
swx -2.251000, f1 1.011628, f2 0.011628
Exp -1.940517 Cov 0.076139
1: LS -0.990000 Exp -1.940517 Cov 0.076139
sweights 87.000000
swx 4.740000, f1 1.011628, f2 0.011628
Exp 4.086207 Cov 0.165472
1: LS 5.009000 Exp 4.086207 Cov 0.165472
LS 5.009000 Exp 4.086207 Cov 0.165472
teststat 5.146179
var 54 teststat 5.146179
sweights 87.000000
swx 4.740000, f1 1.011628, f2 0.011628
Exp 4.086207 Cov 0.165472
1: LS 5.009000 Exp 4.086207 Cov 0.165472
sweights 87.000000
swx 3.358000, f1 1.011628, f2 0.011628
Exp 2.894828 Cov 0.175994
1: LS 4.309000 Exp 2.894828 Cov 0.175994
LS 4.309000 Exp 2.894828 Cov 0.175994
teststat 11.363330
var 55 teststat 11.363330
sweights 87.000000
swx 3.358000, f1 1.011628, f2 0.011628
Exp 2.894828 Cov 0.175994
1: LS 4.309000 Exp 2.894828 Cov 0.175994
sweights 87.000000
swx -7.970000, f1 1.011628, f2 0.011628
Exp -6.870690 Cov 0.154256
1: LS -5.985000 Exp -6.870690 Cov 0.154256
LS -5.985000 Exp -6.870690 Cov 0.154256
teststat 5.085356
var 56 teststat 5.085356
sweights 87.000000
swx -7.970000, f1 1.011628, f2 0.011628
Exp -6.870690 Cov 0.154256
1: LS -5.985000 Exp -6.870690 Cov 0.154256
sweights 87.000000
```

swx 4.684000, f1 1.011628, f2 0.011628
Exp 4.037931 Cov 0.123849
1: LS 5.279000 Exp 4.037931 Cov 0.123849
LS 5.279000 Exp 4.037931 Cov 0.123849
teststat 12.436488
var 57 teststat 12.436488
sweights 87.000000
swx 4.684000, f1 1.011628, f2 0.011628
Exp 4.037931 Cov 0.123849
1: LS 5.279000 Exp 4.037931 Cov 0.123849
sweights 87.000000
swx 79.298000, f1 1.011628, f2 0.011628
Exp 68.360345 Cov 0.117882
1: LS 67.739000 Exp 68.360345 Cov 0.117882
LS 67.739000 Exp 68.360345 Cov 0.117882
teststat 3.275052
var 58 teststat 3.275052
sweights 87.000000
swx 79.298000, f1 1.011628, f2 0.011628
Exp 68.360345 Cov 0.117882
1: LS 67.739000 Exp 68.360345 Cov 0.117882
sweights 87.000000
swx 10.159000, f1 1.011628, f2 0.011628
Exp 8.757759 Cov 0.061423
1: LS 9.121000 Exp 8.757759 Cov 0.061423
LS 9.121000 Exp 8.757759 Cov 0.061423
teststat 2.148136
var 59 teststat 2.148136
sweights 87.000000
swx 10.159000, f1 1.011628, f2 0.011628
Exp 8.757759 Cov 0.061423
1: LS 9.121000 Exp 8.757759 Cov 0.061423
sweights 87.000000
swx 25.256000, f1 1.011628, f2 0.011628
Exp 21.772414 Cov 0.144887
1: LS 23.167000 Exp 21.772414 Cov 0.144887
LS 23.167000 Exp 21.772414 Cov 0.144887
teststat 13.423381
var 60 teststat 13.423381
sweights 87.000000
swx 25.256000, f1 1.011628, f2 0.011628
Exp 21.772414 Cov 0.144887
1: LS 23.167000 Exp 21.772414 Cov 0.144887
sweights 87.000000
swx 31.172000, f1 1.011628, f2 0.011628
Exp 26.872414 Cov 0.157992
1: LS 28.123000 Exp 26.872414 Cov 0.157992
LS 28.123000 Exp 26.872414 Cov 0.157992
teststat 9.899019

var 61 teststat 9.899019
sweights 87.000000
swx 31.172000, f1 1.011628, f2 0.011628
Exp 26.872414 Cov 0.157992
1: LS 28.123000 Exp 26.872414 Cov 0.157992
sweights 87.000000
swx 2.995000, f1 1.011628, f2 0.011628
Exp 2.581897 Cov 0.004582
1: LS 2.588000 Exp 2.581897 Cov 0.004582
LS 2.588000 Exp 2.581897 Cov 0.004582
teststat 0.008130
var 62 teststat 0.008130
sweights 87.000000
swx 2.995000, f1 1.011628, f2 0.011628
Exp 2.581897 Cov 0.004582
1: LS 2.588000 Exp 2.581897 Cov 0.004582
sweights 79.000000
swx 204.042000, f1 1.012821, f2 0.012821
Exp 191.127949 Cov 1.481690
1: LS 191.044000 Exp 191.127949 Cov 1.481690
LS 191.044000 Exp 191.127949 Cov 1.481690
teststat 0.004756
var 1 teststat 0.004756
sweights 79.000000
swx 204.042000, f1 1.012821, f2 0.012821
Exp 191.127949 Cov 1.481690
1: LS 191.044000 Exp 191.127949 Cov 1.481690
sweights 79.000000
swx 36.453000, f1 1.012821, f2 0.012821
Exp 34.145848 Cov 0.059683
1: LS 34.165000 Exp 34.145848 Cov 0.059683
LS 34.165000 Exp 34.145848 Cov 0.059683
teststat 0.006146
var 2 teststat 0.006146
sweights 79.000000
swx 36.453000, f1 1.012821, f2 0.012821
Exp 34.145848 Cov 0.059683
1: LS 34.165000 Exp 34.145848 Cov 0.059683
sweights 79.000000
swx 50.332000, f1 1.012821, f2 0.012821
Exp 47.146430 Cov 0.082536
1: LS 47.063000 Exp 47.146430 Cov 0.082536
LS 47.063000 Exp 47.146430 Cov 0.082536
teststat 0.084334
var 3 teststat 0.084334
sweights 79.000000
swx 50.332000, f1 1.012821, f2 0.012821
Exp 47.146430 Cov 0.082536
1: LS 47.063000 Exp 47.146430 Cov 0.082536

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sweights 79.000000
swx 65.962000, f1 1.012821, f2 0.012821
Exp 61.787190 Cov 0.170220
1: LS 61.814000 Exp 61.787190 Cov 0.170220
LS 61.814000 Exp 61.787190 Cov 0.170220
teststat 0.004223
var 4 teststat 0.004223
sweights 79.000000
swx 65.962000, f1 1.012821, f2 0.012821
Exp 61.787190 Cov 0.170220
1: LS 61.814000 Exp 61.787190 Cov 0.170220
sweights 79.000000
swx 51.302000, f1 1.012821, f2 0.012821
Exp 48.055038 Cov 0.088755
1: LS 48.009000 Exp 48.055038 Cov 0.088755
LS 48.009000 Exp 48.055038 Cov 0.088755
teststat 0.023880
var 5 teststat 0.023880
sweights 79.000000
swx 51.302000, f1 1.012821, f2 0.012821
Exp 48.055038 Cov 0.088755
1: LS 48.009000 Exp 48.055038 Cov 0.088755
sweights 79.000000
swx 166.884000, f1 1.012821, f2 0.012821
Exp 156.321722 Cov 1.606061
1: LS 157.310000 Exp 156.321722 Cov 1.606061
LS 157.310000 Exp 156.321722 Cov 1.606061
teststat 0.608130
var 6 teststat 0.608130
sweights 79.000000
swx 166.884000, f1 1.012821, f2 0.012821
Exp 156.321722 Cov 1.606061
1: LS 157.310000 Exp 156.321722 Cov 1.606061
sweights 79.000000
swx 33.476000, f1 1.012821, f2 0.012821
Exp 31.357266 Cov 0.062346
1: LS 31.420000 Exp 31.357266 Cov 0.062346
LS 31.420000 Exp 31.357266 Cov 0.062346
teststat 0.063125
var 7 teststat 0.063125
sweights 79.000000
swx 33.476000, f1 1.012821, f2 0.012821
Exp 31.357266 Cov 0.062346
1: LS 31.420000 Exp 31.357266 Cov 0.062346
sweights 79.000000
swx 41.186000, f1 1.012821, f2 0.012821
Exp 38.579291 Cov 0.092929
1: LS 38.780000 Exp 38.579291 Cov 0.092929
LS 38.780000 Exp 38.579291 Cov 0.092929
```

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teststat 0.433491
var 8 teststat 0.433491
sweights 79.000000
swx 41.186000, f1 1.012821, f2 0.012821
Exp 38.579291 Cov 0.092929
1: LS 38.780000 Exp 38.579291 Cov 0.092929
sweights 79.000000
swx 48.290000, f1 1.012821, f2 0.012821
Exp 45.233671 Cov 0.238916
1: LS 45.989000 Exp 45.233671 Cov 0.238916
LS 45.989000 Exp 45.233671 Cov 0.238916
teststat 2.387964
var 9 teststat 2.387964
sweights 79.000000
swx 48.290000, f1 1.012821, f2 0.012821
Exp 45.233671 Cov 0.238916
1: LS 45.989000 Exp 45.233671 Cov 0.238916
sweights 79.000000
swx 43.926000, f1 1.012821, f2 0.012821
Exp 41.145873 Cov 0.091936
1: LS 41.116000 Exp 41.145873 Cov 0.091936
LS 41.116000 Exp 41.145873 Cov 0.091936
teststat 0.009707
var 10 teststat 0.009707
sweights 79.000000
swx 43.926000, f1 1.012821, f2 0.012821
Exp 41.145873 Cov 0.091936
1: LS 41.116000 Exp 41.145873 Cov 0.091936
sweights 79.000000
swx 134.994000, f1 1.012821, f2 0.012821
Exp 126.450076 Cov 2.034798
1: LS 128.385000 Exp 126.450076 Cov 2.034798
LS 128.385000 Exp 126.450076 Cov 2.034798
teststat 1.839952
var 11 teststat 1.839952
sweights 79.000000
swx 134.994000, f1 1.012821, f2 0.012821
Exp 126.450076 Cov 2.034798
1: LS 128.385000 Exp 126.450076 Cov 2.034798
sweights 79.000000
swx 29.597000, f1 1.012821, f2 0.012821
Exp 27.723772 Cov 0.069872
1: LS 27.964000 Exp 27.723772 Cov 0.069872
LS 27.964000 Exp 27.723772 Cov 0.069872
teststat 0.825931
var 12 teststat 0.825931
sweights 79.000000
swx 29.597000, f1 1.012821, f2 0.012821
Exp 27.723772 Cov 0.069872
```

1: LS 27.964000 Exp 27.723772 Cov 0.069872
sweights 79.000000
swx 33.037000, f1 1.012821, f2 0.012821
Exp 30.946051 Cov 0.121644
1: LS 31.519000 Exp 30.946051 Cov 0.121644
LS 31.519000 Exp 30.946051 Cov 0.121644
teststat 2.698615
var 13 teststat 2.698615
sweights 79.000000
swx 33.037000, f1 1.012821, f2 0.012821
Exp 30.946051 Cov 0.121644
1: LS 31.519000 Exp 30.946051 Cov 0.121644
sweights 79.000000
swx 36.361000, f1 1.012821, f2 0.012821
Exp 34.059671 Cov 0.330037
1: LS 34.800000 Exp 34.059671 Cov 0.330037
LS 34.800000 Exp 34.059671 Cov 0.330037
teststat 1.660685
var 14 teststat 1.660685
sweights 79.000000
swx 36.361000, f1 1.012821, f2 0.012821
Exp 34.059671 Cov 0.330037
1: LS 34.800000 Exp 34.059671 Cov 0.330037
sweights 79.000000
swx 36.009000, f1 1.012821, f2 0.012821
Exp 33.729949 Cov 0.107054
1: LS 34.111000 Exp 33.729949 Cov 0.107054
LS 34.111000 Exp 33.729949 Cov 0.107054
teststat 1.356320
var 15 teststat 1.356320
sweights 79.000000
swx 36.009000, f1 1.012821, f2 0.012821
Exp 33.729949 Cov 0.107054
1: LS 34.111000 Exp 33.729949 Cov 0.107054
sweights 79.000000
swx 32.807000, f1 1.012821, f2 0.012821
Exp 30.730608 Cov 0.092337
1: LS 31.457000 Exp 30.730608 Cov 0.092337
LS 31.457000 Exp 30.730608 Cov 0.092337
teststat 5.714333
var 16 teststat 5.714333
sweights 79.000000
swx 32.807000, f1 1.012821, f2 0.012821
Exp 30.730608 Cov 0.092337
1: LS 31.457000 Exp 30.730608 Cov 0.092337
sweights 79.000000
swx 9.877000, f1 1.012821, f2 0.012821
Exp 9.251873 Cov 0.017720
1: LS 9.356000 Exp 9.251873 Cov 0.017720

LS 9.356000 Exp 9.251873 Cov 0.017720
teststat 0.611874
var 17 teststat 0.611874
sweights 79.000000
swx 9.877000, f1 1.012821, f2 0.012821
Exp 9.251873 Cov 0.017720
1: LS 9.356000 Exp 9.251873 Cov 0.017720
sweights 79.000000
swx 15.405000, f1 1.012821, f2 0.012821
Exp 14.430000 Cov 0.043033
1: LS 14.382000 Exp 14.430000 Cov 0.043033
LS 14.382000 Exp 14.430000 Cov 0.043033
teststat 0.053540
var 18 teststat 0.053540
sweights 79.000000
swx 15.405000, f1 1.012821, f2 0.012821
Exp 14.430000 Cov 0.043033
1: LS 14.382000 Exp 14.430000 Cov 0.043033
sweights 79.000000
swx 7.731000, f1 1.012821, f2 0.012821
Exp 7.241696 Cov 0.021959
1: LS 7.437000 Exp 7.241696 Cov 0.021959
LS 7.437000 Exp 7.241696 Cov 0.021959
teststat 1.737021
var 19 teststat 1.737021
sweights 79.000000
swx 7.731000, f1 1.012821, f2 0.012821
Exp 7.241696 Cov 0.021959
1: LS 7.437000 Exp 7.241696 Cov 0.021959
sweights 79.000000
swx 8.970000, f1 1.012821, f2 0.012821
Exp 8.402278 Cov 0.024939
1: LS 8.449000 Exp 8.402278 Cov 0.024939
LS 8.449000 Exp 8.402278 Cov 0.024939
teststat 0.087531
var 20 teststat 0.087531
sweights 79.000000
swx 8.970000, f1 1.012821, f2 0.012821
Exp 8.402278 Cov 0.024939
1: LS 8.449000 Exp 8.402278 Cov 0.024939
sweights 79.000000
swx 9.089000, f1 1.012821, f2 0.012821
Exp 8.513747 Cov 0.025496
1: LS 8.715000 Exp 8.513747 Cov 0.025496
LS 8.715000 Exp 8.513747 Cov 0.025496
teststat 1.588573
var 21 teststat 1.588573
sweights 79.000000
swx 9.089000, f1 1.012821, f2 0.012821

Exp 8.513747 Cov 0.025496
1: LS 8.715000 Exp 8.513747 Cov 0.025496
sweights 79.000000
swx -1.935000, f1 1.012821, f2 0.012821
Exp -1.812532 Cov 0.022779
1: LS -1.655000 Exp -1.812532 Cov 0.022779
LS -1.655000 Exp -1.812532 Cov 0.022779
teststat 1.089448
var 22 teststat 1.089448
sweights 79.000000
swx -1.935000, f1 1.012821, f2 0.012821
Exp -1.812532 Cov 0.022779
1: LS -1.655000 Exp -1.812532 Cov 0.022779
sweights 79.000000
swx 11.507000, f1 1.012821, f2 0.012821
Exp 10.778709 Cov 0.038042
1: LS 11.015000 Exp 10.778709 Cov 0.038042
LS 11.015000 Exp 10.778709 Cov 0.038042
teststat 1.467680
var 23 teststat 1.467680
sweights 79.000000
swx 11.507000, f1 1.012821, f2 0.012821
Exp 10.778709 Cov 0.038042
1: LS 11.015000 Exp 10.778709 Cov 0.038042
sweights 79.000000
swx 1.006000, f1 1.012821, f2 0.012821
Exp 0.942329 Cov 0.023848
1: LS 1.054000 Exp 0.942329 Cov 0.023848
LS 1.054000 Exp 0.942329 Cov 0.023848
teststat 0.522909
var 24 teststat 0.522909
sweights 79.000000
swx 1.006000, f1 1.012821, f2 0.012821
Exp 0.942329 Cov 0.023848
1: LS 1.054000 Exp 0.942329 Cov 0.023848
sweights 79.000000
swx 1.394000, f1 1.012821, f2 0.012821
Exp 1.305772 Cov 0.028609
1: LS 1.382000 Exp 1.305772 Cov 0.028609
LS 1.382000 Exp 1.305772 Cov 0.028609
teststat 0.203104
var 25 teststat 0.203104
sweights 79.000000
swx 1.394000, f1 1.012821, f2 0.012821
Exp 1.305772 Cov 0.028609
1: LS 1.382000 Exp 1.305772 Cov 0.028609
sweights 79.000000
swx 1.592000, f1 1.012821, f2 0.012821
Exp 1.491241 Cov 0.027969

1: LS 1.722000 Exp 1.491241 Cov 0.027969
LS 1.722000 Exp 1.491241 Cov 0.027969
teststat 1.903896
var 26 teststat 1.903896
sweights 79.000000
swx 1.592000, f1 1.012821, f2 0.012821
Exp 1.491241 Cov 0.027969
1: LS 1.722000 Exp 1.491241 Cov 0.027969
sweights 79.000000
swx 23.413000, f1 1.012821, f2 0.012821
Exp 21.931165 Cov 0.050542
1: LS 21.636000 Exp 21.931165 Cov 0.050542
LS 21.636000 Exp 21.931165 Cov 0.050542
teststat 1.723746
var 27 teststat 1.723746
sweights 79.000000
swx 23.413000, f1 1.012821, f2 0.012821
Exp 21.931165 Cov 0.050542
1: LS 21.636000 Exp 21.931165 Cov 0.050542
sweights 79.000000
swx 62.591000, f1 1.012821, f2 0.012821
Exp 58.629544 Cov 0.651663
1: LS 60.113000 Exp 58.629544 Cov 0.651663
LS 60.113000 Exp 58.629544 Cov 0.651663
teststat 3.376961
var 28 teststat 3.376961
sweights 79.000000
swx 62.591000, f1 1.012821, f2 0.012821
Exp 58.629544 Cov 0.651663
1: LS 60.113000 Exp 58.629544 Cov 0.651663
sweights 79.000000
swx 12.404000, f1 1.012821, f2 0.012821
Exp 11.618937 Cov 0.028449
1: LS 11.914000 Exp 11.618937 Cov 0.028449
LS 11.914000 Exp 11.618937 Cov 0.028449
teststat 3.060323
var 29 teststat 3.060323
sweights 79.000000
swx 12.404000, f1 1.012821, f2 0.012821
Exp 11.618937 Cov 0.028449
1: LS 11.914000 Exp 11.618937 Cov 0.028449
sweights 79.000000
swx 17.567000, f1 1.012821, f2 0.012821
Exp 16.455165 Cov 0.053921
1: LS 16.899000 Exp 16.455165 Cov 0.053921
LS 16.899000 Exp 16.455165 Cov 0.053921
teststat 3.653318
var 30 teststat 3.653318
sweights 79.000000

swx 17.567000, f1 1.012821, f2 0.012821
Exp 16.455165 Cov 0.053921
1: LS 16.899000 Exp 16.455165 Cov 0.053921
sweights 79.000000
swx 15.544000, f1 1.012821, f2 0.012821
Exp 14.560203 Cov 0.070940
1: LS 14.995000 Exp 14.560203 Cov 0.070940
LS 14.995000 Exp 14.560203 Cov 0.070940
teststat 2.664899
var 31 teststat 2.664899
sweights 79.000000
swx 15.544000, f1 1.012821, f2 0.012821
Exp 14.560203 Cov 0.070940
1: LS 14.995000 Exp 14.560203 Cov 0.070940
sweights 79.000000
swx 17.076000, f1 1.012821, f2 0.012821
Exp 15.995241 Cov 0.037811
1: LS 16.306000 Exp 15.995241 Cov 0.037811
LS 16.306000 Exp 15.995241 Cov 0.037811
teststat 2.554034
var 32 teststat 2.554034
sweights 79.000000
swx 17.076000, f1 1.012821, f2 0.012821
Exp 15.995241 Cov 0.037811
1: LS 16.306000 Exp 15.995241 Cov 0.037811
sweights 79.000000
swx 2.077000, f1 1.012821, f2 0.012821
Exp 1.945544 Cov 0.000930
1: LS 1.901000 Exp 1.945544 Cov 0.000930
LS 1.901000 Exp 1.945544 Cov 0.000930
teststat 2.133263
var 33 teststat 2.133263
sweights 79.000000
swx 2.077000, f1 1.012821, f2 0.012821
Exp 1.945544 Cov 0.000930
1: LS 1.901000 Exp 1.945544 Cov 0.000930
sweights 79.000000
swx 0.111000, f1 1.012821, f2 0.012821
Exp 0.103975 Cov 0.000020
1: LS 0.101000 Exp 0.103975 Cov 0.000020
LS 0.101000 Exp 0.103975 Cov 0.000020
teststat 0.445168
var 34 teststat 0.445168
sweights 79.000000
swx 0.111000, f1 1.012821, f2 0.012821
Exp 0.103975 Cov 0.000020
1: LS 0.101000 Exp 0.103975 Cov 0.000020
sweights 79.000000
swx 0.454000, f1 1.012821, f2 0.012821

Exp 0.425266 Cov 0.000063
1: LS 0.415000 Exp 0.425266 Cov 0.000063
LS 0.415000 Exp 0.425266 Cov 0.000063
teststat 1.666883
var 35 teststat 1.666883
sweights 79.000000
swx 0.454000, f1 1.012821, f2 0.012821
Exp 0.425266 Cov 0.000063
1: LS 0.415000 Exp 0.425266 Cov 0.000063
sweights 79.000000
swx 1.118000, f1 1.012821, f2 0.012821
Exp 1.047241 Cov 0.000516
1: LS 1.012000 Exp 1.047241 Cov 0.000516
LS 1.012000 Exp 1.047241 Cov 0.000516
teststat 2.406018
var 36 teststat 2.406018
sweights 79.000000
swx 1.118000, f1 1.012821, f2 0.012821
Exp 1.047241 Cov 0.000516
1: LS 1.012000 Exp 1.047241 Cov 0.000516
sweights 79.000000
swx 0.395000, f1 1.012821, f2 0.012821
Exp 0.370000 Cov 0.000066
1: LS 0.374000 Exp 0.370000 Cov 0.000066
LS 0.374000 Exp 0.370000 Cov 0.000066
teststat 0.244015
var 37 teststat 0.244015
sweights 79.000000
swx 0.395000, f1 1.012821, f2 0.012821
Exp 0.370000 Cov 0.000066
1: LS 0.374000 Exp 0.370000 Cov 0.000066
sweights 79.000000
swx 47.229000, f1 1.012821, f2 0.012821
Exp 44.239823 Cov 0.599207
1: LS 45.757000 Exp 44.239823 Cov 0.599207
LS 45.757000 Exp 44.239823 Cov 0.599207
teststat 3.841453
var 38 teststat 3.841453
sweights 79.000000
swx 47.229000, f1 1.012821, f2 0.012821
Exp 44.239823 Cov 0.599207
1: LS 45.757000 Exp 44.239823 Cov 0.599207
sweights 79.000000
swx 10.069000, f1 1.012821, f2 0.012821
Exp 9.431722 Cov 0.027106
1: LS 9.723000 Exp 9.431722 Cov 0.027106
LS 9.723000 Exp 9.431722 Cov 0.027106
teststat 3.130045
var 39 teststat 3.130045

sweights 79.000000
swx 10.069000, f1 1.012821, f2 0.012821
Exp 9.431722 Cov 0.027106
1: LS 9.723000 Exp 9.431722 Cov 0.027106
sweights 79.000000
swx 13.254000, f1 1.012821, f2 0.012821
Exp 12.415139 Cov 0.048158
1: LS 12.881000 Exp 12.415139 Cov 0.048158
LS 12.881000 Exp 12.415139 Cov 0.048158
teststat 4.506591
var 40 teststat 4.506591
sweights 79.000000
swx 13.254000, f1 1.012821, f2 0.012821
Exp 12.415139 Cov 0.048158
1: LS 12.881000 Exp 12.415139 Cov 0.048158
sweights 79.000000
swx 11.289000, f1 1.012821, f2 0.012821
Exp 10.574506 Cov 0.064231
1: LS 10.963000 Exp 10.574506 Cov 0.064231
LS 10.963000 Exp 10.574506 Cov 0.064231
teststat 2.349748
var 41 teststat 2.349748
sweights 79.000000
swx 11.289000, f1 1.012821, f2 0.012821
Exp 10.574506 Cov 0.064231
1: LS 10.963000 Exp 10.574506 Cov 0.064231
sweights 79.000000
swx 12.614000, f1 1.012821, f2 0.012821
Exp 11.815646 Cov 0.033735
1: LS 12.188000 Exp 11.815646 Cov 0.033735
LS 12.188000 Exp 11.815646 Cov 0.033735
teststat 4.109947
var 42 teststat 4.109947
sweights 79.000000
swx 12.614000, f1 1.012821, f2 0.012821
Exp 11.815646 Cov 0.033735
1: LS 12.188000 Exp 11.815646 Cov 0.033735
sweights 79.000000
swx 10.743000, f1 1.012821, f2 0.012821
Exp 10.063063 Cov 0.029325
1: LS 9.653000 Exp 10.063063 Cov 0.029325
LS 9.653000 Exp 10.063063 Cov 0.029325
teststat 5.734000
var 43 teststat 5.734000
sweights 79.000000
swx 10.743000, f1 1.012821, f2 0.012821
Exp 10.063063 Cov 0.029325
1: LS 9.653000 Exp 10.063063 Cov 0.029325
sweights 79.000000

swx 0.442000, f1 1.012821, f2 0.012821
Exp 0.414025 Cov 0.000098
1: LS 0.387000 Exp 0.414025 Cov 0.000098
LS 0.387000 Exp 0.414025 Cov 0.000098
teststat 7.448439
var 44 teststat 7.448439
sweights 79.000000
swx 0.442000, f1 1.012821, f2 0.012821
Exp 0.414025 Cov 0.000098
1: LS 0.387000 Exp 0.414025 Cov 0.000098
sweights 79.000000
swx 2.995000, f1 1.012821, f2 0.012821
Exp 2.805443 Cov 0.003461
1: LS 2.663000 Exp 2.805443 Cov 0.003461
LS 2.663000 Exp 2.805443 Cov 0.003461
teststat 5.863216
var 45 teststat 5.863216
sweights 79.000000
swx 2.995000, f1 1.012821, f2 0.012821
Exp 2.805443 Cov 0.003461
1: LS 2.663000 Exp 2.805443 Cov 0.003461
sweights 79.000000
swx 4.989000, f1 1.012821, f2 0.012821
Exp 4.673241 Cov 0.009553
1: LS 4.506000 Exp 4.673241 Cov 0.009553
LS 4.506000 Exp 4.673241 Cov 0.009553
teststat 2.927959
var 46 teststat 2.927959
sweights 79.000000
swx 4.989000, f1 1.012821, f2 0.012821
Exp 4.673241 Cov 0.009553
1: LS 4.506000 Exp 4.673241 Cov 0.009553
sweights 79.000000
swx 2.314000, f1 1.012821, f2 0.012821
Exp 2.167544 Cov 0.001322
1: LS 2.094000 Exp 2.167544 Cov 0.001322
LS 2.094000 Exp 2.167544 Cov 0.001322
teststat 4.091788
var 47 teststat 4.091788
sweights 79.000000
swx 2.314000, f1 1.012821, f2 0.012821
Exp 2.167544 Cov 0.001322
1: LS 2.094000 Exp 2.167544 Cov 0.001322
sweights 79.000000
swx 57.040000, f1 1.012821, f2 0.012821
Exp 53.429873 Cov 0.172773
1: LS 54.342000 Exp 53.429873 Cov 0.172773
LS 54.342000 Exp 53.429873 Cov 0.172773
teststat 4.815430

```
var 48 teststat 4.815430
sweights 79.000000
swx 57.040000, f1 1.012821, f2 0.012821
Exp 53.429873 Cov 0.172773
1: LS 54.342000 Exp 53.429873 Cov 0.172773
sweights 79.000000
swx 50.892000, f1 1.012821, f2 0.012821
Exp 47.670987 Cov 0.167778
1: LS 48.414000 Exp 47.670987 Cov 0.167778
LS 48.414000 Exp 47.670987 Cov 0.167778
teststat 3.290472
var 49 teststat 3.290472
sweights 79.000000
swx 50.892000, f1 1.012821, f2 0.012821
Exp 47.670987 Cov 0.167778
1: LS 48.414000 Exp 47.670987 Cov 0.167778
sweights 79.000000
swx 58.088000, f1 1.012821, f2 0.012821
Exp 54.411544 Cov 0.215765
1: LS 55.501000 Exp 54.411544 Cov 0.215765
LS 55.501000 Exp 54.411544 Cov 0.215765
teststat 5.500952
var 50 teststat 5.500952
sweights 79.000000
swx 58.088000, f1 1.012821, f2 0.012821
Exp 54.411544 Cov 0.215765
1: LS 55.501000 Exp 54.411544 Cov 0.215765
sweights 79.000000
swx 53.883000, f1 1.012821, f2 0.012821
Exp 50.472684 Cov 0.204260
1: LS 51.503000 Exp 50.472684 Cov 0.204260
LS 51.503000 Exp 50.472684 Cov 0.204260
teststat 5.197063
var 51 teststat 5.197063
sweights 79.000000
swx 53.883000, f1 1.012821, f2 0.012821
Exp 50.472684 Cov 0.204260
1: LS 51.503000 Exp 50.472684 Cov 0.204260
sweights 79.000000
swx 53.645000, f1 1.012821, f2 0.012821
Exp 50.249747 Cov 0.138426
1: LS 50.925000 Exp 50.249747 Cov 0.138426
LS 50.925000 Exp 50.249747 Cov 0.138426
teststat 3.293951
var 52 teststat 3.293951
sweights 79.000000
swx 53.645000, f1 1.012821, f2 0.012821
Exp 50.249747 Cov 0.138426
1: LS 50.925000 Exp 50.249747 Cov 0.138426
```

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sweights 79.000000
swx -1.480000, f1 1.012821, f2 0.012821
Exp -1.386329 Cov 0.033534
1: LS -0.929000 Exp -1.386329 Cov 0.033534
LS -0.929000 Exp -1.386329 Cov 0.033534
teststat 6.236947
var 53 teststat 6.236947
sweights 79.000000
swx -1.480000, f1 1.012821, f2 0.012821
Exp -1.386329 Cov 0.033534
1: LS -0.929000 Exp -1.386329 Cov 0.033534
sweights 79.000000
swx 4.735000, f1 1.012821, f2 0.012821
Exp 4.435316 Cov 0.077530
1: LS 5.028000 Exp 4.435316 Cov 0.077530
LS 5.028000 Exp 4.435316 Cov 0.077530
teststat 4.530783
var 54 teststat 4.530783
sweights 79.000000
swx 4.735000, f1 1.012821, f2 0.012821
Exp 4.435316 Cov 0.077530
1: LS 5.028000 Exp 4.435316 Cov 0.077530
sweights 79.000000
swx 3.994000, f1 1.012821, f2 0.012821
Exp 3.741215 Cov 0.067563
1: LS 4.346000 Exp 3.741215 Cov 0.067563
LS 4.346000 Exp 3.741215 Cov 0.067563
teststat 5.413656
var 55 teststat 5.413656
sweights 79.000000
swx 3.994000, f1 1.012821, f2 0.012821
Exp 3.741215 Cov 0.067563
1: LS 4.346000 Exp 3.741215 Cov 0.067563
sweights 79.000000
swx -6.602000, f1 1.012821, f2 0.012821
Exp -6.184152 Cov 0.071839
1: LS -5.886000 Exp -6.184152 Cov 0.071839
LS -5.886000 Exp -6.184152 Cov 0.071839
teststat 1.237407
var 56 teststat 1.237407
sweights 79.000000
swx -6.602000, f1 1.012821, f2 0.012821
Exp -6.184152 Cov 0.071839
1: LS -5.886000 Exp -6.184152 Cov 0.071839
sweights 79.000000
swx 5.009000, f1 1.012821, f2 0.012821
Exp 4.691975 Cov 0.052671
1: LS 5.281000 Exp 4.691975 Cov 0.052671
LS 5.281000 Exp 4.691975 Cov 0.052671
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teststat 6.587182
var 57 teststat 6.587182
sweights 79.000000
swx 5.009000, f1 1.012821, f2 0.012821
Exp 4.691975 Cov 0.052671
1: LS 5.281000 Exp 4.691975 Cov 0.052671
sweights 79.000000
swx 71.317000, f1 1.012821, f2 0.012821
Exp 66.803266 Cov 0.043311
1: LS 66.791000 Exp 66.803266 Cov 0.043311
LS 66.791000 Exp 66.803266 Cov 0.043311
teststat 0.003474
var 58 teststat 0.003474
sweights 79.000000
swx 71.317000, f1 1.012821, f2 0.012821
Exp 66.803266 Cov 0.043311
1: LS 66.791000 Exp 66.803266 Cov 0.043311
sweights 79.000000
swx 9.622000, f1 1.012821, f2 0.012821
Exp 9.013013 Cov 0.017655
1: LS 8.877000 Exp 9.013013 Cov 0.017655
LS 8.877000 Exp 9.013013 Cov 0.017655
teststat 1.047847
var 59 teststat 1.047847
sweights 79.000000
swx 9.622000, f1 1.012821, f2 0.012821
Exp 9.013013 Cov 0.017655
1: LS 8.877000 Exp 9.013013 Cov 0.017655
sweights 79.000000
swx 23.785000, f1 1.012821, f2 0.012821
Exp 22.279620 Cov 0.061411
1: LS 22.885000 Exp 22.279620 Cov 0.061411
LS 22.885000 Exp 22.279620 Cov 0.061411
teststat 5.967774
var 60 teststat 5.967774
sweights 79.000000
swx 23.785000, f1 1.012821, f2 0.012821
Exp 22.279620 Cov 0.061411
1: LS 22.885000 Exp 22.279620 Cov 0.061411
sweights 79.000000
swx 28.924000, f1 1.012821, f2 0.012821
Exp 27.093367 Cov 0.068839
1: LS 27.733000 Exp 27.093367 Cov 0.068839
LS 27.733000 Exp 27.093367 Cov 0.068839
teststat 5.943321
var 61 teststat 5.943321
sweights 79.000000
swx 28.924000, f1 1.012821, f2 0.012821
Exp 27.093367 Cov 0.068839
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1: LS 27.733000 Exp 27.093367 Cov 0.068839
sweights 79.000000
swx 2.691000, f1 1.012821, f2 0.012821
Exp 2.520684 Cov 0.002107
1: LS 2.523000 Exp 2.520684 Cov 0.002107
LS 2.523000 Exp 2.520684 Cov 0.002107
teststat 0.002546
var 62 teststat 0.002546
sweights 79.000000
swx 2.691000, f1 1.012821, f2 0.012821
Exp 2.520684 Cov 0.002107
1: LS 2.523000 Exp 2.520684 Cov 0.002107
sweights 109.000000
swx 281.280000, f1 1.009259, f2 0.009259
Exp 59.352661 Cov 8.243394
1: LS 61.457000 Exp 59.352661 Cov 8.243394
LS 61.457000 Exp 59.352661 Cov 8.243394
teststat 0.537187
var 1 teststat 0.537187
sweights 109.000000
swx 281.280000, f1 1.009259, f2 0.009259
Exp 59.352661 Cov 8.243394
1: LS 61.457000 Exp 59.352661 Cov 8.243394
sweights 109.000000
swx 48.869000, f1 1.009259, f2 0.009259
Exp 10.311807 Cov 0.291182
1: LS 10.734000 Exp 10.311807 Cov 0.291182
LS 10.734000 Exp 10.311807 Cov 0.291182
teststat 0.612148
var 2 teststat 0.612148
sweights 109.000000
swx 48.869000, f1 1.009259, f2 0.009259
Exp 10.311807 Cov 0.291182
1: LS 10.734000 Exp 10.311807 Cov 0.291182
sweights 109.000000
swx 71.170000, f1 1.009259, f2 0.009259
Exp 15.017523 Cov 0.485442
1: LS 15.427000 Exp 15.017523 Cov 0.485442
LS 15.427000 Exp 15.017523 Cov 0.485442
teststat 0.345399
var 3 teststat 0.345399
sweights 109.000000
swx 71.170000, f1 1.009259, f2 0.009259
Exp 15.017523 Cov 0.485442
1: LS 15.427000 Exp 15.017523 Cov 0.485442
sweights 109.000000
swx 89.522000, f1 1.009259, f2 0.009259
Exp 18.889963 Cov 0.927455
1: LS 19.629000 Exp 18.889963 Cov 0.927455

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LS 19.629000 Exp 18.889963 Cov 0.927455
teststat 0.588897
var 4 teststat 0.588897
sweights 109.000000
swx 89.522000, f1 1.009259, f2 0.009259
Exp 18.889963 Cov 0.927455
1: LS 19.629000 Exp 18.889963 Cov 0.927455
sweights 109.000000
swx 71.740000, f1 1.009259, f2 0.009259
Exp 15.137798 Cov 0.490659
1: LS 15.669000 Exp 15.137798 Cov 0.490659
LS 15.669000 Exp 15.137798 Cov 0.490659
teststat 0.575095
var 5 teststat 0.575095
sweights 109.000000
swx 71.740000, f1 1.009259, f2 0.009259
Exp 15.137798 Cov 0.490659
1: LS 15.669000 Exp 15.137798 Cov 0.490659
sweights 109.000000
swx 184.111000, f1 1.009259, f2 0.009259
Exp 38.849110 Cov 9.941263
1: LS 43.071000 Exp 38.849110 Cov 9.941263
LS 43.071000 Exp 38.849110 Cov 9.941263
teststat 1.792967
var 6 teststat 1.792967
sweights 109.000000
swx 184.111000, f1 1.009259, f2 0.009259
Exp 38.849110 Cov 9.941263
1: LS 43.071000 Exp 38.849110 Cov 9.941263
sweights 109.000000
swx 42.422000, f1 1.009259, f2 0.009259
Exp 8.951431 Cov 0.302704
1: LS 9.592000 Exp 8.951431 Cov 0.302704
LS 9.592000 Exp 8.951431 Cov 0.302704
teststat 1.355545
var 7 teststat 1.355545
sweights 109.000000
swx 42.422000, f1 1.009259, f2 0.009259
Exp 8.951431 Cov 0.302704
1: LS 9.592000 Exp 8.951431 Cov 0.302704
sweights 109.000000
swx 50.065000, f1 1.009259, f2 0.009259
Exp 10.564174 Cov 0.682625
1: LS 11.964000 Exp 10.564174 Cov 0.682625
LS 11.964000 Exp 10.564174 Cov 0.682625
teststat 2.870554
var 8 teststat 2.870554
sweights 109.000000
swx 50.065000, f1 1.009259, f2 0.009259
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Exp 10.564174 Cov 0.682625
1: LS 11.964000 Exp 10.564174 Cov 0.682625
sweights 109.000000
swx 45.274000, f1 1.009259, f2 0.009259
Exp 9.553229 Cov 1.446900
1: LS 11.006000 Exp 9.553229 Cov 1.446900
LS 11.006000 Exp 9.553229 Cov 1.446900
teststat 1.458665
var 9 teststat 1.458665
sweights 109.000000
swx 45.274000, f1 1.009259, f2 0.009259
Exp 9.553229 Cov 1.446900
1: LS 11.006000 Exp 9.553229 Cov 1.446900
sweights 109.000000
swx 46.345000, f1 1.009259, f2 0.009259
Exp 9.779220 Cov 0.586785
1: LS 10.502000 Exp 9.779220 Cov 0.586785
LS 10.502000 Exp 9.779220 Cov 0.586785
teststat 0.890293
var 10 teststat 0.890293
sweights 109.000000
swx 46.345000, f1 1.009259, f2 0.009259
Exp 9.779220 Cov 0.586785
1: LS 10.502000 Exp 9.779220 Cov 0.586785
sweights 109.000000
swx 103.744000, f1 1.009259, f2 0.009259
Exp 21.890936 Cov 7.256520
1: LS 27.707000 Exp 21.890936 Cov 7.256520
LS 27.707000 Exp 21.890936 Cov 7.256520
teststat 4.661546
var 11 teststat 4.661546
sweights 109.000000
swx 103.744000, f1 1.009259, f2 0.009259
Exp 21.890936 Cov 7.256520
1: LS 27.707000 Exp 21.890936 Cov 7.256520
sweights 109.000000
swx 30.715000, f1 1.009259, f2 0.009259
Exp 6.481147 Cov 0.352632
1: LS 7.619000 Exp 6.481147 Cov 0.352632
LS 7.619000 Exp 6.481147 Cov 0.352632
teststat 3.671556
var 12 teststat 3.671556
sweights 109.000000
swx 30.715000, f1 1.009259, f2 0.009259
Exp 6.481147 Cov 0.352632
1: LS 7.619000 Exp 6.481147 Cov 0.352632
sweights 109.000000
swx 27.865000, f1 1.009259, f2 0.009259
Exp 5.879771 Cov 0.554629

1: LS 8.268000 Exp 5.879771 Cov 0.554629
LS 8.268000 Exp 5.879771 Cov 0.554629
teststat 10.283698
var 13 teststat 10.283698
sweights 109.000000
swx 27.865000, f1 1.009259, f2 0.009259
Exp 5.879771 Cov 0.554629
1: LS 8.268000 Exp 5.879771 Cov 0.554629
sweights 109.000000
swx 21.173000, f1 1.009259, f2 0.009259
Exp 4.467697 Cov 0.787647
1: LS 5.403000 Exp 4.467697 Cov 0.787647
LS 5.403000 Exp 4.467697 Cov 0.787647
teststat 1.110639
var 14 teststat 1.110639
sweights 109.000000
swx 21.173000, f1 1.009259, f2 0.009259
Exp 4.467697 Cov 0.787647
1: LS 5.403000 Exp 4.467697 Cov 0.787647
sweights 109.000000
swx 23.982000, f1 1.009259, f2 0.009259
Exp 5.060422 Cov 0.431166
1: LS 6.412000 Exp 5.060422 Cov 0.431166
LS 6.412000 Exp 5.060422 Cov 0.431166
teststat 4.236797
var 15 teststat 4.236797
sweights 109.000000
swx 23.982000, f1 1.009259, f2 0.009259
Exp 5.060422 Cov 0.431166
1: LS 6.412000 Exp 5.060422 Cov 0.431166
sweights 109.000000
swx 25.021000, f1 1.009259, f2 0.009259
Exp 5.279661 Cov 0.432461
1: LS 7.157000 Exp 5.279661 Cov 0.432461
LS 7.157000 Exp 5.279661 Cov 0.432461
teststat 8.149651
var 16 teststat 8.149651
sweights 109.000000
swx 25.021000, f1 1.009259, f2 0.009259
Exp 5.279661 Cov 0.432461
1: LS 7.157000 Exp 5.279661 Cov 0.432461
sweights 109.000000
swx 7.831000, f1 1.009259, f2 0.009259
Exp 1.652413 Cov 0.069455
1: LS 2.388000 Exp 1.652413 Cov 0.069455
LS 2.388000 Exp 1.652413 Cov 0.069455
teststat 7.790504
var 17 teststat 7.790504
sweights 109.000000

swx 7.831000, f1 1.009259, f2 0.009259
Exp 1.652413 Cov 0.069455
1: LS 2.388000 Exp 1.652413 Cov 0.069455
sweights 109.000000
swx 25.912000, f1 1.009259, f2 0.009259
Exp 5.467670 Cov 0.128184
1: LS 5.596000 Exp 5.467670 Cov 0.128184
LS 5.596000 Exp 5.467670 Cov 0.128184
teststat 0.128477
var 18 teststat 0.128477
sweights 109.000000
swx 25.912000, f1 1.009259, f2 0.009259
Exp 5.467670 Cov 0.128184
1: LS 5.596000 Exp 5.467670 Cov 0.128184
sweights 109.000000
swx 3.924000, f1 1.009259, f2 0.009259
Exp 0.828000 Cov 0.116090
1: LS 1.725000 Exp 0.828000 Cov 0.116090
LS 1.725000 Exp 0.828000 Cov 0.116090
teststat 6.930884
var 19 teststat 6.930884
sweights 109.000000
swx 3.924000, f1 1.009259, f2 0.009259
Exp 0.828000 Cov 0.116090
1: LS 1.725000 Exp 0.828000 Cov 0.116090
sweights 109.000000
swx 4.651000, f1 1.009259, f2 0.009259
Exp 0.981404 Cov 0.101358
1: LS 1.830000 Exp 0.981404 Cov 0.101358
LS 1.830000 Exp 0.981404 Cov 0.101358
teststat 7.104683
var 20 teststat 7.104683
sweights 109.000000
swx 4.651000, f1 1.009259, f2 0.009259
Exp 0.981404 Cov 0.101358
1: LS 1.830000 Exp 0.981404 Cov 0.101358
sweights 109.000000
swx 2.523000, f1 1.009259, f2 0.009259
Exp 0.532376 Cov 0.103418
1: LS 1.380000 Exp 0.532376 Cov 0.103418
LS 1.380000 Exp 0.532376 Cov 0.103418
teststat 6.947173
var 21 teststat 6.947173
sweights 109.000000
swx 2.523000, f1 1.009259, f2 0.009259
Exp 0.532376 Cov 0.103418
1: LS 1.380000 Exp 0.532376 Cov 0.103418
sweights 109.000000
swx −12.570000, f1 1.009259, f2 0.009259

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Exp -2.652385 Cov 0.077585
1: LS -1.755000 Exp -2.652385 Cov 0.077585
LS -1.755000 Exp -2.652385 Cov 0.077585
teststat 10.379561
var 22 teststat 10.379561
sweights 109.000000
swx -12.570000, f1 1.009259, f2 0.009259
Exp -2.652385 Cov 0.077585
1: LS -1.755000 Exp -2.652385 Cov 0.077585
sweights 109.000000
swx 17.673000, f1 1.009259, f2 0.009259
Exp 3.729165 Cov 0.120166
1: LS 4.085000 Exp 3.729165 Cov 0.120166
LS 4.085000 Exp 3.729165 Cov 0.120166
teststat 1.053698
var 23 teststat 1.053698
sweights 109.000000
swx 17.673000, f1 1.009259, f2 0.009259
Exp 3.729165 Cov 0.120166
1: LS 4.085000 Exp 3.729165 Cov 0.120166
sweights 109.000000
swx -6.736000, f1 1.009259, f2 0.009259
Exp -1.421358 Cov 0.101711
1: LS -0.821000 Exp -1.421358 Cov 0.101711
LS -0.821000 Exp -1.421358 Cov 0.101711
teststat 3.543675
var 24 teststat 3.543675
sweights 109.000000
swx -6.736000, f1 1.009259, f2 0.009259
Exp -1.421358 Cov 0.101711
1: LS -0.821000 Exp -1.421358 Cov 0.101711
sweights 109.000000
swx -7.554000, f1 1.009259, f2 0.009259
Exp -1.593963 Cov 0.088167
1: LS -0.689000 Exp -1.593963 Cov 0.088167
LS -0.689000 Exp -1.593963 Cov 0.088167
teststat 9.288754
var 25 teststat 9.288754
sweights 109.000000
swx -7.554000, f1 1.009259, f2 0.009259
Exp -1.593963 Cov 0.088167
1: LS -0.689000 Exp -1.593963 Cov 0.088167
sweights 109.000000
swx -9.909000, f1 1.009259, f2 0.009259
Exp -2.090890 Cov 0.097583
1: LS -1.213000 Exp -2.090890 Cov 0.097583
LS -1.213000 Exp -2.090890 Cov 0.097583
teststat 7.897808
var 26 teststat 7.897808
```

sweights 109.000000
swx -9.909000, f1 1.009259, f2 0.009259
Exp -2.090890 Cov 0.097583
1: LS -1.213000 Exp -2.090890 Cov 0.097583
sweights 109.000000
swx 43.667000, f1 1.009259, f2 0.009259
Exp 9.214138 Cov 0.162064
1: LS 8.422000 Exp 9.214138 Cov 0.162064
LS 8.422000 Exp 9.214138 Cov 0.162064
teststat 3.871818
var 27 teststat 3.871818
sweights 109.000000
swx 43.667000, f1 1.009259, f2 0.009259
Exp 9.214138 Cov 0.162064
1: LS 8.422000 Exp 9.214138 Cov 0.162064
sweights 109.000000
swx 56.181000, f1 1.009259, f2 0.009259
Exp 11.854706 Cov 2.608278
1: LS 14.567000 Exp 11.854706 Cov 2.608278
LS 14.567000 Exp 11.854706 Cov 2.608278
teststat 2.820457
var 28 teststat 2.820457
sweights 109.000000
swx 56.181000, f1 1.009259, f2 0.009259
Exp 11.854706 Cov 2.608278
1: LS 14.567000 Exp 11.854706 Cov 2.608278
sweights 109.000000
swx 12.682000, f1 1.009259, f2 0.009259
Exp 2.676018 Cov 0.108189
1: LS 3.157000 Exp 2.676018 Cov 0.108189
LS 3.157000 Exp 2.676018 Cov 0.108189
teststat 2.138334
var 29 teststat 2.138334
sweights 109.000000
swx 12.682000, f1 1.009259, f2 0.009259
Exp 2.676018 Cov 0.108189
1: LS 3.157000 Exp 2.676018 Cov 0.108189
sweights 109.000000
swx 17.124000, f1 1.009259, f2 0.009259
Exp 3.613321 Cov 0.249873
1: LS 4.734000 Exp 3.613321 Cov 0.249873
LS 4.734000 Exp 3.613321 Cov 0.249873
teststat 5.026234
var 30 teststat 5.026234
sweights 109.000000
swx 17.124000, f1 1.009259, f2 0.009259
Exp 3.613321 Cov 0.249873
1: LS 4.734000 Exp 3.613321 Cov 0.249873
sweights 109.000000

swx 12.310000, f1 1.009259, f2 0.009259
Exp 2.597523 Cov 0.225552
1: LS 3.014000 Exp 2.597523 Cov 0.225552
LS 3.014000 Exp 2.597523 Cov 0.225552
teststat 0.769018
var 31 teststat 0.769018
sweights 109.000000
swx 12.310000, f1 1.009259, f2 0.009259
Exp 2.597523 Cov 0.225552
1: LS 3.014000 Exp 2.597523 Cov 0.225552
sweights 109.000000
swx 14.066000, f1 1.009259, f2 0.009259
Exp 2.968055 Cov 0.165624
1: LS 3.666000 Exp 2.968055 Cov 0.165624
LS 3.666000 Exp 2.968055 Cov 0.165624
teststat 2.941171
var 32 teststat 2.941171
sweights 109.000000
swx 14.066000, f1 1.009259, f2 0.009259
Exp 2.968055 Cov 0.165624
1: LS 3.666000 Exp 2.968055 Cov 0.165624
sweights 109.000000
swx 6.907000, f1 1.009259, f2 0.009259
Exp 1.457440 Cov 0.104379
1: LS 1.303000 Exp 1.457440 Cov 0.104379
LS 1.303000 Exp 1.457440 Cov 0.104379
teststat 0.228513
var 33 teststat 0.228513
sweights 109.000000
swx 6.907000, f1 1.009259, f2 0.009259
Exp 1.457440 Cov 0.104379
1: LS 1.303000 Exp 1.457440 Cov 0.104379
sweights 109.000000
swx 0.248000, f1 1.009259, f2 0.009259
Exp 0.052330 Cov 0.000144
1: LS 0.037000 Exp 0.052330 Cov 0.000144
LS 0.037000 Exp 0.052330 Cov 0.000144
teststat 1.634483
var 34 teststat 1.634483
sweights 109.000000
swx 0.248000, f1 1.009259, f2 0.009259
Exp 0.052330 Cov 0.000144
1: LS 0.037000 Exp 0.052330 Cov 0.000144
sweights 109.000000
swx 1.357000, f1 1.009259, f2 0.009259
Exp 0.286339 Cov 0.009922
1: LS 0.182000 Exp 0.286339 Cov 0.009922
LS 0.182000 Exp 0.286339 Cov 0.009922
teststat 1.097258

var 35 teststat 1.097258
sweights 109.000000
swx 1.357000, f1 1.009259, f2 0.009259
Exp 0.286339 Cov 0.009922
1: LS 0.182000 Exp 0.286339 Cov 0.009922
sweights 109.000000
swx 3.592000, f1 1.009259, f2 0.009259
Exp 0.757945 Cov 0.031310
1: LS 0.733000 Exp 0.757945 Cov 0.031310
LS 0.733000 Exp 0.757945 Cov 0.031310
teststat 0.019874
var 36 teststat 0.019874
sweights 109.000000
swx 3.592000, f1 1.009259, f2 0.009259
Exp 0.757945 Cov 0.031310
1: LS 0.733000 Exp 0.757945 Cov 0.031310
sweights 109.000000
swx 1.704000, f1 1.009259, f2 0.009259
Exp 0.359560 Cov 0.003809
1: LS 0.349000 Exp 0.359560 Cov 0.003809
LS 0.349000 Exp 0.359560 Cov 0.003809
teststat 0.029277
var 37 teststat 0.029277
sweights 109.000000
swx 1.704000, f1 1.009259, f2 0.009259
Exp 0.359560 Cov 0.003809
1: LS 0.349000 Exp 0.359560 Cov 0.003809
sweights 109.000000
swx 30.192000, f1 1.009259, f2 0.009259
Exp 6.370789 Cov 1.409711
1: LS 8.612000 Exp 6.370789 Cov 1.409711
LS 8.612000 Exp 6.370789 Cov 1.409711
teststat 3.563161
var 38 teststat 3.563161
sweights 109.000000
swx 30.192000, f1 1.009259, f2 0.009259
Exp 6.370789 Cov 1.409711
1: LS 8.612000 Exp 6.370789 Cov 1.409711
sweights 109.000000
swx 7.976000, f1 1.009259, f2 0.009259
Exp 1.683009 Cov 0.083498
1: LS 2.201000 Exp 1.683009 Cov 0.083498
LS 2.201000 Exp 1.683009 Cov 0.083498
teststat 3.213436
var 39 teststat 3.213436
sweights 109.000000
swx 7.976000, f1 1.009259, f2 0.009259
Exp 1.683009 Cov 0.083498
1: LS 2.201000 Exp 1.683009 Cov 0.083498

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sweights 109.000000
swx 9.204000, f1 1.009259, f2 0.009259
Exp 1.942128 Cov 0.137049
1: LS 2.854000 Exp 1.942128 Cov 0.137049
LS 2.854000 Exp 1.942128 Cov 0.137049
teststat 6.067241
var 40 teststat 6.067241
sweights 109.000000
swx 9.204000, f1 1.009259, f2 0.009259
Exp 1.942128 Cov 0.137049
1: LS 2.854000 Exp 1.942128 Cov 0.137049
sweights 109.000000
swx 6.038000, f1 1.009259, f2 0.009259
Exp 1.274073 Cov 0.096001
1: LS 1.470000 Exp 1.274073 Cov 0.096001
LS 1.470000 Exp 1.274073 Cov 0.096001
teststat 0.399862
var 41 teststat 0.399862
sweights 109.000000
swx 6.038000, f1 1.009259, f2 0.009259
Exp 1.274073 Cov 0.096001
1: LS 1.470000 Exp 1.274073 Cov 0.096001
sweights 109.000000
swx 6.960000, f1 1.009259, f2 0.009259
Exp 1.468624 Cov 0.083497
1: LS 2.086000 Exp 1.468624 Cov 0.083497
LS 2.086000 Exp 1.468624 Cov 0.083497
teststat 4.564892
var 42 teststat 4.564892
sweights 109.000000
swx 6.960000, f1 1.009259, f2 0.009259
Exp 1.468624 Cov 0.083497
1: LS 2.086000 Exp 1.468624 Cov 0.083497
sweights 109.000000
swx 45.340000, f1 1.009259, f2 0.009259
Exp 9.567156 Cov 0.603935
1: LS 7.453000 Exp 9.567156 Cov 0.603935
LS 7.453000 Exp 9.567156 Cov 0.603935
teststat 7.400890
var 43 teststat 7.400890
sweights 109.000000
swx 45.340000, f1 1.009259, f2 0.009259
Exp 9.567156 Cov 0.603935
1: LS 7.453000 Exp 9.567156 Cov 0.603935
sweights 109.000000
swx 1.480000, f1 1.009259, f2 0.009259
Exp 0.312294 Cov 0.002263
1: LS 0.210000 Exp 0.312294 Cov 0.002263
LS 0.210000 Exp 0.312294 Cov 0.002263
```

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teststat 4.624483
var 44 teststat 4.624483
sweights 109.000000
swx 1.480000, f1 1.009259, f2 0.009259
Exp 0.312294 Cov 0.002263
1: LS 0.210000 Exp 0.312294 Cov 0.002263
sweights 109.000000
swx 11.299000, f1 1.009259, f2 0.009259
Exp 2.384193 Cov 0.057906
1: LS 1.584000 Exp 2.384193 Cov 0.057906
LS 1.584000 Exp 2.384193 Cov 0.057906
teststat 11.057756
var 45 teststat 11.057756
sweights 109.000000
swx 11.299000, f1 1.009259, f2 0.009259
Exp 2.384193 Cov 0.057906
1: LS 1.584000 Exp 2.384193 Cov 0.057906
sweights 109.000000
swx 19.546000, f1 1.009259, f2 0.009259
Exp 4.124385 Cov 0.128048
1: LS 3.421000 Exp 4.124385 Cov 0.128048
LS 3.421000 Exp 4.124385 Cov 0.128048
teststat 3.863801
var 46 teststat 3.863801
sweights 109.000000
swx 19.546000, f1 1.009259, f2 0.009259
Exp 4.124385 Cov 0.128048
1: LS 3.421000 Exp 4.124385 Cov 0.128048
sweights 109.000000
swx 13.014000, f1 1.009259, f2 0.009259
Exp 2.746073 Cov 0.042256
1: LS 2.240000 Exp 2.746073 Cov 0.042256
LS 2.240000 Exp 2.746073 Cov 0.042256
teststat 6.060900
var 47 teststat 6.060900
sweights 109.000000
swx 13.014000, f1 1.009259, f2 0.009259
Exp 2.746073 Cov 0.042256
1: LS 2.240000 Exp 2.746073 Cov 0.042256
sweights 109.000000
swx 72.132000, f1 1.009259, f2 0.009259
Exp 15.220514 Cov 0.781602
1: LS 16.830000 Exp 15.220514 Cov 0.781602
LS 16.830000 Exp 15.220514 Cov 0.781602
teststat 3.314278
var 48 teststat 3.314278
sweights 109.000000
swx 72.132000, f1 1.009259, f2 0.009259
Exp 15.220514 Cov 0.781602
```

1: LS 16.830000 Exp 15.220514 Cov 0.781602
sweights 109.000000
swx 64.075000, f1 1.009259, f2 0.009259
Exp 13.520413 Cov 0.646739
1: LS 14.017000 Exp 13.520413 Cov 0.646739
LS 14.017000 Exp 13.520413 Cov 0.646739
teststat 0.381296
var 49 teststat 0.381296
sweights 109.000000
swx 64.075000, f1 1.009259, f2 0.009259
Exp 13.520413 Cov 0.646739
1: LS 14.017000 Exp 13.520413 Cov 0.646739
sweights 109.000000
swx 73.048000, f1 1.009259, f2 0.009259
Exp 15.413798 Cov 0.967877
1: LS 17.098000 Exp 15.413798 Cov 0.967877
LS 17.098000 Exp 15.413798 Cov 0.967877
teststat 2.930677
var 50 teststat 2.930677
sweights 109.000000
swx 73.048000, f1 1.009259, f2 0.009259
Exp 15.413798 Cov 0.967877
1: LS 17.098000 Exp 15.413798 Cov 0.967877
sweights 109.000000
swx 61.065000, f1 1.009259, f2 0.009259
Exp 12.885275 Cov 1.304747
1: LS 15.548000 Exp 12.885275 Cov 1.304747
LS 15.548000 Exp 12.885275 Cov 1.304747
teststat 5.434083
var 51 teststat 5.434083
sweights 109.000000
swx 61.065000, f1 1.009259, f2 0.009259
Exp 12.885275 Cov 1.304747
1: LS 15.548000 Exp 12.885275 Cov 1.304747
sweights 109.000000
swx 66.915000, f1 1.009259, f2 0.009259
Exp 14.119679 Cov 0.835458
1: LS 15.916000 Exp 14.119679 Cov 0.835458
LS 15.916000 Exp 14.119679 Cov 0.835458
teststat 3.862278
var 52 teststat 3.862278
sweights 109.000000
swx 66.915000, f1 1.009259, f2 0.009259
Exp 14.119679 Cov 0.835458
1: LS 15.916000 Exp 14.119679 Cov 0.835458
sweights 109.000000
swx −15.974000, f1 1.009259, f2 0.009259
Exp −3.370661 Cov 0.159031
1: LS −2.299000 Exp −3.370661 Cov 0.159031

LS -2.299000 Exp -3.370661 Cov 0.159031
teststat 7.221608
var 53 teststat 7.221608
sweights 109.000000
swx -15.974000, f1 1.009259, f2 0.009259
Exp -3.370661 Cov 0.159031
1: LS -2.299000 Exp -3.370661 Cov 0.159031
sweights 109.000000
swx -5.653000, f1 1.009259, f2 0.009259
Exp -1.192835 Cov 0.214264
1: LS -0.364000 Exp -1.192835 Cov 0.214264
LS -0.364000 Exp -1.192835 Cov 0.214264
teststat 3.206177
var 54 teststat 3.206177
sweights 109.000000
swx -5.653000, f1 1.009259, f2 0.009259
Exp -1.192835 Cov 0.214264
1: LS -0.364000 Exp -1.192835 Cov 0.214264
sweights 109.000000
swx -11.160000, f1 1.009259, f2 0.009259
Exp -2.354862 Cov 0.330549
1: LS -0.429000 Exp -2.354862 Cov 0.330549
LS -0.429000 Exp -2.354862 Cov 0.330549
teststat 11.220571
var 55 teststat 11.220571
sweights 109.000000
swx -11.160000, f1 1.009259, f2 0.009259
Exp -2.354862 Cov 0.330549
1: LS -0.429000 Exp -2.354862 Cov 0.330549
sweights 109.000000
swx -20.882000, f1 1.009259, f2 0.009259
Exp -4.406294 Cov 0.293416
1: LS -3.925000 Exp -4.406294 Cov 0.293416
LS -3.925000 Exp -4.406294 Cov 0.293416
teststat 0.789471
var 56 teststat 0.789471
sweights 109.000000
swx -20.882000, f1 1.009259, f2 0.009259
Exp -4.406294 Cov 0.293416
1: LS -3.925000 Exp -4.406294 Cov 0.293416
sweights 109.000000
swx -11.840000, f1 1.009259, f2 0.009259
Exp -2.498349 Cov 0.222225
1: LS -1.688000 Exp -2.498349 Cov 0.222225
LS -1.688000 Exp -2.498349 Cov 0.222225
teststat 2.954957
var 57 teststat 2.954957
sweights 109.000000
swx -11.840000, f1 1.009259, f2 0.009259

Exp −2.498349 Cov 0.222225
1: LS −1.688000 Exp −2.498349 Cov 0.222225
sweights 109.000000
swx 98.079000, f1 1.009259, f2 0.009259
Exp 20.695569 Cov 0.247850
1: LS 21.156000 Exp 20.695569 Cov 0.247850
LS 21.156000 Exp 20.695569 Cov 0.247850
teststat 0.855345
var 58 teststat 0.855345
sweights 109.000000
swx 98.079000, f1 1.009259, f2 0.009259
Exp 20.695569 Cov 0.247850
1: LS 21.156000 Exp 20.695569 Cov 0.247850
sweights 109.000000
swx 25.588000, f1 1.009259, f2 0.009259
Exp 5.399303 Cov 0.091046
1: LS 4.556000 Exp 5.399303 Cov 0.091046
LS 4.556000 Exp 5.399303 Cov 0.091046
teststat 7.811004
var 59 teststat 7.811004
sweights 109.000000
swx 25.588000, f1 1.009259, f2 0.009259
Exp 5.399303 Cov 0.091046
1: LS 4.556000 Exp 5.399303 Cov 0.091046
sweights 109.000000
swx 20.073000, f1 1.009259, f2 0.009259
Exp 4.235587 Cov 0.208857
1: LS 5.290000 Exp 4.235587 Cov 0.208857
LS 5.290000 Exp 4.235587 Cov 0.208857
teststat 5.323190
var 60 teststat 5.323190
sweights 109.000000
swx 20.073000, f1 1.009259, f2 0.009259
Exp 4.235587 Cov 0.208857
1: LS 5.290000 Exp 4.235587 Cov 0.208857
sweights 109.000000
swx 29.373000, f1 1.009259, f2 0.009259
Exp 6.197972 Cov 0.254059
1: LS 7.357000 Exp 6.197972 Cov 0.254059
LS 7.357000 Exp 6.197972 Cov 0.254059
teststat 5.287539
var 61 teststat 5.287539
sweights 109.000000
swx 29.373000, f1 1.009259, f2 0.009259
Exp 6.197972 Cov 0.254059
1: LS 7.357000 Exp 6.197972 Cov 0.254059
sweights 109.000000
swx 3.579000, f1 1.009259, f2 0.009259
Exp 0.755202 Cov 0.009221

1: LS 0.893000 Exp 0.755202 Cov 0.009221
LS 0.893000 Exp 0.755202 Cov 0.009221
teststat 2.059153
var 62 teststat 2.059153
sweights 109.000000
swx 3.579000, f1 1.009259, f2 0.009259
Exp 0.755202 Cov 0.009221
1: LS 0.893000 Exp 0.755202 Cov 0.009221
sweights 65.000000
swx 150.482000, f1 1.015625, f2 0.015625
Exp 13.890646 Cov 2.118353
1: LS 13.857000 Exp 13.890646 Cov 2.118353
LS 13.857000 Exp 13.890646 Cov 2.118353
teststat 0.000534
var 1 teststat 0.000534
sweights 65.000000
swx 150.482000, f1 1.015625, f2 0.015625
Exp 13.890646 Cov 2.118353
1: LS 13.857000 Exp 13.890646 Cov 2.118353
sweights 65.000000
swx 25.826000, f1 1.015625, f2 0.015625
Exp 2.383938 Cov 0.072312
1: LS 2.348000 Exp 2.383938 Cov 0.072312
LS 2.348000 Exp 2.383938 Cov 0.072312
teststat 0.017861
var 2 teststat 0.017861
sweights 65.000000
swx 25.826000, f1 1.015625, f2 0.015625
Exp 2.383938 Cov 0.072312
1: LS 2.348000 Exp 2.383938 Cov 0.072312
sweights 65.000000
swx 38.401000, f1 1.015625, f2 0.015625
Exp 3.544708 Cov 0.127265
1: LS 3.553000 Exp 3.544708 Cov 0.127265
LS 3.553000 Exp 3.544708 Cov 0.127265
teststat 0.000540
var 3 teststat 0.000540
sweights 65.000000
swx 38.401000, f1 1.015625, f2 0.015625
Exp 3.544708 Cov 0.127265
1: LS 3.553000 Exp 3.544708 Cov 0.127265
sweights 65.000000
swx 47.478000, f1 1.015625, f2 0.015625
Exp 4.382585 Cov 0.231323
1: LS 4.331000 Exp 4.382585 Cov 0.231323
LS 4.331000 Exp 4.382585 Cov 0.231323
teststat 0.011503
var 4 teststat 0.011503
sweights 65.000000

swx 47.478000, f1 1.015625, f2 0.015625
Exp 4.382585 Cov 0.231323
1: LS 4.331000 Exp 4.382585 Cov 0.231323
sweights 65.000000
swx 38.793000, f1 1.015625, f2 0.015625
Exp 3.580892 Cov 0.131939
1: LS 3.627000 Exp 3.580892 Cov 0.131939
LS 3.627000 Exp 3.580892 Cov 0.131939
teststat 0.016113
var 5 teststat 0.016113
sweights 65.000000
swx 38.793000, f1 1.015625, f2 0.015625
Exp 3.580892 Cov 0.131939
1: LS 3.627000 Exp 3.580892 Cov 0.131939
sweights 65.000000
swx 85.275000, f1 1.015625, f2 0.015625
Exp 7.871538 Cov 1.910390
1: LS 8.409000 Exp 7.871538 Cov 1.910390
LS 8.409000 Exp 7.871538 Cov 1.910390
teststat 0.151207
var 6 teststat 0.151207
sweights 65.000000
swx 85.275000, f1 1.015625, f2 0.015625
Exp 7.871538 Cov 1.910390
1: LS 8.409000 Exp 7.871538 Cov 1.910390
sweights 65.000000
swx 21.318000, f1 1.015625, f2 0.015625
Exp 1.967815 Cov 0.069849
1: LS 1.968000 Exp 1.967815 Cov 0.069849
LS 1.968000 Exp 1.967815 Cov 0.069849
teststat 0.000000
var 7 teststat 0.000000
sweights 65.000000
swx 21.318000, f1 1.015625, f2 0.015625
Exp 1.967815 Cov 0.069849
1: LS 1.968000 Exp 1.967815 Cov 0.069849
sweights 65.000000
swx 23.921000, f1 1.015625, f2 0.015625
Exp 2.208092 Cov 0.147707
1: LS 2.601000 Exp 2.208092 Cov 0.147707
LS 2.601000 Exp 2.208092 Cov 0.147707
teststat 1.045154
var 8 teststat 1.045154
sweights 65.000000
swx 23.921000, f1 1.015625, f2 0.015625
Exp 2.208092 Cov 0.147707
1: LS 2.601000 Exp 2.208092 Cov 0.147707
sweights 65.000000
swx 17.746000, f1 1.015625, f2 0.015625

Exp 1.638092 Cov 0.239243
1: LS 1.774000 Exp 1.638092 Cov 0.239243
LS 1.774000 Exp 1.638092 Cov 0.239243
teststat 0.077206
var 9 teststat 0.077206
sweights 65.000000
swx 17.746000, f1 1.015625, f2 0.015625
Exp 1.638092 Cov 0.239243
1: LS 1.774000 Exp 1.638092 Cov 0.239243
sweights 65.000000
swx 22.290000, f1 1.015625, f2 0.015625
Exp 2.057538 Cov 0.137723
1: LS 2.063000 Exp 2.057538 Cov 0.137723
LS 2.063000 Exp 2.057538 Cov 0.137723
teststat 0.000217
var 10 teststat 0.000217
sweights 65.000000
swx 22.290000, f1 1.015625, f2 0.015625
Exp 2.057538 Cov 0.137723
1: LS 2.063000 Exp 2.057538 Cov 0.137723
sweights 65.000000
swx 39.012000, f1 1.015625, f2 0.015625
Exp 3.601108 Cov 1.161634
1: LS 4.751000 Exp 3.601108 Cov 1.161634
LS 4.751000 Exp 3.601108 Cov 1.161634
teststat 1.138269
var 11 teststat 1.138269
sweights 65.000000
swx 39.012000, f1 1.015625, f2 0.015625
Exp 3.601108 Cov 1.161634
1: LS 4.751000 Exp 3.601108 Cov 1.161634
sweights 65.000000
swx 13.625000, f1 1.015625, f2 0.015625
Exp 1.257692 Cov 0.080473
1: LS 1.373000 Exp 1.257692 Cov 0.080473
LS 1.373000 Exp 1.257692 Cov 0.080473
teststat 0.165222
var 12 teststat 0.165222
sweights 65.000000
swx 13.625000, f1 1.015625, f2 0.015625
Exp 1.257692 Cov 0.080473
1: LS 1.373000 Exp 1.257692 Cov 0.080473
sweights 65.000000
swx 9.814000, f1 1.015625, f2 0.015625
Exp 0.905908 Cov 0.077347
1: LS 1.318000 Exp 0.905908 Cov 0.077347
LS 1.318000 Exp 0.905908 Cov 0.077347
teststat 2.195574
var 13 teststat 2.195574

```
sweights 65.000000
swx 9.814000, f1 1.015625, f2 0.015625
Exp 0.905908 Cov 0.077347
1: LS 1.318000 Exp 0.905908 Cov 0.077347
sweights 65.000000
swx 6.079000, f1 1.015625, f2 0.015625
Exp 0.561138 Cov 0.088310
1: LS 0.876000 Exp 0.561138 Cov 0.088310
LS 0.876000 Exp 0.561138 Cov 0.088310
teststat 1.122617
var 14 teststat 1.122617
sweights 65.000000
swx 6.079000, f1 1.015625, f2 0.015625
Exp 0.561138 Cov 0.088310
1: LS 0.876000 Exp 0.561138 Cov 0.088310
sweights 65.000000
swx 9.489000, f1 1.015625, f2 0.015625
Exp 0.875908 Cov 0.093678
1: LS 1.184000 Exp 0.875908 Cov 0.093678
LS 1.184000 Exp 0.875908 Cov 0.093678
teststat 1.013264
var 15 teststat 1.013264
sweights 65.000000
swx 9.489000, f1 1.015625, f2 0.015625
Exp 0.875908 Cov 0.093678
1: LS 1.184000 Exp 0.875908 Cov 0.093678
sweights 65.000000
swx 10.248000, f1 1.015625, f2 0.015625
Exp 0.945969 Cov 0.110090
1: LS 1.547000 Exp 0.945969 Cov 0.110090
LS 1.547000 Exp 0.945969 Cov 0.110090
teststat 3.281298
var 16 teststat 3.281298
sweights 65.000000
swx 10.248000, f1 1.015625, f2 0.015625
Exp 0.945969 Cov 0.110090
1: LS 1.547000 Exp 0.945969 Cov 0.110090
sweights 65.000000
swx 3.767000, f1 1.015625, f2 0.015625
Exp 0.347723 Cov 0.024706
1: LS 0.697000 Exp 0.347723 Cov 0.024706
LS 0.697000 Exp 0.347723 Cov 0.024706
teststat 4.937836
var 17 teststat 4.937836
sweights 65.000000
swx 3.767000, f1 1.015625, f2 0.015625
Exp 0.347723 Cov 0.024706
1: LS 0.697000 Exp 0.347723 Cov 0.024706
sweights 65.000000
```

swx 15.660000, f1 1.015625, f2 0.015625
Exp 1.445538 Cov 0.045323
1: LS 1.627000 Exp 1.445538 Cov 0.045323
LS 1.627000 Exp 1.445538 Cov 0.045323
teststat 0.726520
var 18 teststat 0.726520
sweights 65.000000
swx 15.660000, f1 1.015625, f2 0.015625
Exp 1.445538 Cov 0.045323
1: LS 1.627000 Exp 1.445538 Cov 0.045323
sweights 65.000000
swx 1.409000, f1 1.015625, f2 0.015625
Exp 0.130062 Cov 0.038195
1: LS 0.585000 Exp 0.130062 Cov 0.038195
LS 0.585000 Exp 0.130062 Cov 0.038195
teststat 5.418758
var 19 teststat 5.418758
sweights 65.000000
swx 1.409000, f1 1.015625, f2 0.015625
Exp 0.130062 Cov 0.038195
1: LS 0.585000 Exp 0.130062 Cov 0.038195
sweights 65.000000
swx 1.400000, f1 1.015625, f2 0.015625
Exp 0.129231 Cov 0.033799
1: LS 0.621000 Exp 0.129231 Cov 0.033799
LS 0.621000 Exp 0.129231 Cov 0.033799
teststat 7.155185
var 20 teststat 7.155185
sweights 65.000000
swx 1.400000, f1 1.015625, f2 0.015625
Exp 0.129231 Cov 0.033799
1: LS 0.621000 Exp 0.129231 Cov 0.033799
sweights 65.000000
swx 0.455000, f1 1.015625, f2 0.015625
Exp 0.042000 Cov 0.033481
1: LS 0.226000 Exp 0.042000 Cov 0.033481
LS 0.226000 Exp 0.042000 Cov 0.033481
teststat 1.011208
var 21 teststat 1.011208
sweights 65.000000
swx 0.455000, f1 1.015625, f2 0.015625
Exp 0.042000 Cov 0.033481
1: LS 0.226000 Exp 0.042000 Cov 0.033481
sweights 65.000000
swx −8.314000, f1 1.015625, f2 0.015625
Exp −0.767446 Cov 0.024601
1: LS −0.474000 Exp −0.767446 Cov 0.024601
LS −0.474000 Exp −0.767446 Cov 0.024601
teststat 3.500231

```
var 22 teststat 3.500231
sweights 65.000000
swx −8.314000, f1 1.015625, f2 0.015625
Exp −0.767446 Cov 0.024601
1: LS −0.474000 Exp −0.767446 Cov 0.024601
sweights 65.000000
swx 10.235000, f1 1.015625, f2 0.015625
Exp 0.944769 Cov 0.038031
1: LS 1.116000 Exp 0.944769 Cov 0.038031
LS 1.116000 Exp 0.944769 Cov 0.038031
teststat 0.770949
var 23 teststat 0.770949
sweights 65.000000
swx 10.235000, f1 1.015625, f2 0.015625
Exp 0.944769 Cov 0.038031
1: LS 1.116000 Exp 0.944769 Cov 0.038031
sweights 65.000000
swx −4.825000, f1 1.015625, f2 0.015625
Exp −0.445385 Cov 0.029203
1: LS −0.113000 Exp −0.445385 Cov 0.029203
LS −0.113000 Exp −0.445385 Cov 0.029203
teststat 3.783212
var 24 teststat 3.783212
sweights 65.000000
swx −4.825000, f1 1.015625, f2 0.015625
Exp −0.445385 Cov 0.029203
1: LS −0.113000 Exp −0.445385 Cov 0.029203
sweights 65.000000
swx −5.695000, f1 1.015625, f2 0.015625
Exp −0.525692 Cov 0.030484
1: LS −0.112000 Exp −0.525692 Cov 0.030484
LS −0.112000 Exp −0.525692 Cov 0.030484
teststat 5.614053
var 25 teststat 5.614053
sweights 65.000000
swx −5.695000, f1 1.015625, f2 0.015625
Exp −0.525692 Cov 0.030484
1: LS −0.112000 Exp −0.525692 Cov 0.030484
sweights 65.000000
swx −6.588000, f1 1.015625, f2 0.015625
Exp −0.608123 Cov 0.034410
1: LS −0.318000 Exp −0.608123 Cov 0.034410
LS −0.318000 Exp −0.608123 Cov 0.034410
teststat 2.446127
var 26 teststat 2.446127
sweights 65.000000
swx −6.588000, f1 1.015625, f2 0.015625
Exp −0.608123 Cov 0.034410
1: LS −0.318000 Exp −0.608123 Cov 0.034410
```

sweights 65.000000
swx 27.022000, f1 1.015625, f2 0.015625
Exp 2.494338 Cov 0.060775
1: LS 2.432000 Exp 2.494338 Cov 0.060775
LS 2.432000 Exp 2.494338 Cov 0.060775
teststat 0.063942
var 27 teststat 0.063942
sweights 65.000000
swx 27.022000, f1 1.015625, f2 0.015625
Exp 2.494338 Cov 0.060775
1: LS 2.432000 Exp 2.494338 Cov 0.060775
sweights 65.000000
swx 21.681000, f1 1.015625, f2 0.015625
Exp 2.001323 Cov 0.478358
1: LS 2.425000 Exp 2.001323 Cov 0.478358
LS 2.425000 Exp 2.001323 Cov 0.478358
teststat 0.375246
var 28 teststat 0.375246
sweights 65.000000
swx 21.681000, f1 1.015625, f2 0.015625
Exp 2.001323 Cov 0.478358
1: LS 2.425000 Exp 2.001323 Cov 0.478358
sweights 65.000000
swx 5.556000, f1 1.015625, f2 0.015625
Exp 0.512862 Cov 0.021233
1: LS 0.547000 Exp 0.512862 Cov 0.021233
LS 0.547000 Exp 0.512862 Cov 0.021233
teststat 0.054889
var 29 teststat 0.054889
sweights 65.000000
swx 5.556000, f1 1.015625, f2 0.015625
Exp 0.512862 Cov 0.021233
1: LS 0.547000 Exp 0.512862 Cov 0.021233
sweights 65.000000
swx 6.311000, f1 1.015625, f2 0.015625
Exp 0.582554 Cov 0.040443
1: LS 0.746000 Exp 0.582554 Cov 0.040443
LS 0.746000 Exp 0.582554 Cov 0.040443
teststat 0.660546
var 30 teststat 0.660546
sweights 65.000000
swx 6.311000, f1 1.015625, f2 0.015625
Exp 0.582554 Cov 0.040443
1: LS 0.746000 Exp 0.582554 Cov 0.040443
sweights 65.000000
swx 3.922000, f1 1.015625, f2 0.015625
Exp 0.362031 Cov 0.032769
1: LS 0.407000 Exp 0.362031 Cov 0.032769
LS 0.407000 Exp 0.362031 Cov 0.032769

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teststat 0.061712
var 31 teststat 0.061712
sweights 65.000000
swx 3.922000, f1 1.015625, f2 0.015625
Exp 0.362031 Cov 0.032769
1: LS 0.407000 Exp 0.362031 Cov 0.032769
sweights 65.000000
swx 5.896000, f1 1.015625, f2 0.015625
Exp 0.544246 Cov 0.037758
1: LS 0.726000 Exp 0.544246 Cov 0.037758
LS 0.726000 Exp 0.544246 Cov 0.037758
teststat 0.874896
var 32 teststat 0.874896
sweights 65.000000
swx 5.896000, f1 1.015625, f2 0.015625
Exp 0.544246 Cov 0.037758
1: LS 0.726000 Exp 0.544246 Cov 0.037758
sweights 65.000000
swx 4.948000, f1 1.015625, f2 0.015625
Exp 0.456738 Cov 0.047685
1: LS 0.403000 Exp 0.456738 Cov 0.047685
LS 0.403000 Exp 0.456738 Cov 0.047685
teststat 0.060561
var 33 teststat 0.060561
sweights 65.000000
swx 4.948000, f1 1.015625, f2 0.015625
Exp 0.456738 Cov 0.047685
1: LS 0.403000 Exp 0.456738 Cov 0.047685
sweights 65.000000
swx 0.191000, f1 1.015625, f2 0.015625
Exp 0.017631 Cov 0.000055
1: LS 0.013000 Exp 0.017631 Cov 0.000055
LS 0.013000 Exp 0.017631 Cov 0.000055
teststat 0.391450
var 34 teststat 0.391450
sweights 65.000000
swx 0.191000, f1 1.015625, f2 0.015625
Exp 0.017631 Cov 0.000055
1: LS 0.013000 Exp 0.017631 Cov 0.000055
sweights 65.000000
swx 1.023000, f1 1.015625, f2 0.015625
Exp 0.094431 Cov 0.004804
1: LS 0.050000 Exp 0.094431 Cov 0.004804
LS 0.050000 Exp 0.094431 Cov 0.004804
teststat 0.410936
var 35 teststat 0.410936
sweights 65.000000
swx 1.023000, f1 1.015625, f2 0.015625
Exp 0.094431 Cov 0.004804
```

1: LS 0.050000 Exp 0.094431 Cov 0.004804
sweights 65.000000
swx 2.555000, f1 1.015625, f2 0.015625
Exp 0.235846 Cov 0.013731
1: LS 0.215000 Exp 0.235846 Cov 0.013731
LS 0.215000 Exp 0.235846 Cov 0.013731
teststat 0.031648
var 36 teststat 0.031648
sweights 65.000000
swx 2.555000, f1 1.015625, f2 0.015625
Exp 0.235846 Cov 0.013731
1: LS 0.215000 Exp 0.235846 Cov 0.013731
sweights 65.000000
swx 1.174000, f1 1.015625, f2 0.015625
Exp 0.108369 Cov 0.001498
1: LS 0.124000 Exp 0.108369 Cov 0.001498
LS 0.124000 Exp 0.108369 Cov 0.001498
teststat 0.163097
var 37 teststat 0.163097
sweights 65.000000
swx 1.174000, f1 1.015625, f2 0.015625
Exp 0.108369 Cov 0.001498
1: LS 0.124000 Exp 0.108369 Cov 0.001498
sweights 65.000000
swx 10.132000, f1 1.015625, f2 0.015625
Exp 0.935262 Cov 0.241649
1: LS 1.371000 Exp 0.935262 Cov 0.241649
LS 1.371000 Exp 0.935262 Cov 0.241649
teststat 0.785719
var 38 teststat 0.785719
sweights 65.000000
swx 10.132000, f1 1.015625, f2 0.015625
Exp 0.935262 Cov 0.241649
1: LS 1.371000 Exp 0.935262 Cov 0.241649
sweights 65.000000
swx 3.072000, f1 1.015625, f2 0.015625
Exp 0.283569 Cov 0.014867
1: LS 0.359000 Exp 0.283569 Cov 0.014867
LS 0.359000 Exp 0.283569 Cov 0.014867
teststat 0.382717
var 39 teststat 0.382717
sweights 65.000000
swx 3.072000, f1 1.015625, f2 0.015625
Exp 0.283569 Cov 0.014867
1: LS 0.359000 Exp 0.283569 Cov 0.014867
sweights 65.000000
swx 2.815000, f1 1.015625, f2 0.015625
Exp 0.259846 Cov 0.021173
1: LS 0.396000 Exp 0.259846 Cov 0.021173

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LS 0.396000 Exp 0.259846 Cov 0.021173
teststat 0.875553
var 40 teststat 0.875553
sweights 65.000000
swx 2.815000, f1 1.015625, f2 0.015625
Exp 0.259846 Cov 0.021173
1: LS 0.396000 Exp 0.259846 Cov 0.021173
sweights 65.000000
swx 1.679000, f1 1.015625, f2 0.015625
Exp 0.154985 Cov 0.012506
1: LS 0.209000 Exp 0.154985 Cov 0.012506
LS 0.209000 Exp 0.154985 Cov 0.012506
teststat 0.233304
var 41 teststat 0.233304
sweights 65.000000
swx 1.679000, f1 1.015625, f2 0.015625
Exp 0.154985 Cov 0.012506
1: LS 0.209000 Exp 0.154985 Cov 0.012506
sweights 65.000000
swx 2.556000, f1 1.015625, f2 0.015625
Exp 0.235938 Cov 0.017600
1: LS 0.408000 Exp 0.235938 Cov 0.017600
LS 0.408000 Exp 0.235938 Cov 0.017600
teststat 1.682117
var 42 teststat 1.682117
sweights 65.000000
swx 2.556000, f1 1.015625, f2 0.015625
Exp 0.235938 Cov 0.017600
1: LS 0.408000 Exp 0.235938 Cov 0.017600
sweights 65.000000
swx 31.186000, f1 1.015625, f2 0.015625
Exp 2.878708 Cov 0.218268
1: LS 2.195000 Exp 2.878708 Cov 0.218268
LS 2.195000 Exp 2.878708 Cov 0.218268
teststat 2.141664
var 43 teststat 2.141664
sweights 65.000000
swx 31.186000, f1 1.015625, f2 0.015625
Exp 2.878708 Cov 0.218268
1: LS 2.195000 Exp 2.878708 Cov 0.218268
sweights 65.000000
swx 1.084000, f1 1.015625, f2 0.015625
Exp 0.100062 Cov 0.000842
1: LS 0.067000 Exp 0.100062 Cov 0.000842
LS 0.067000 Exp 0.100062 Cov 0.000842
teststat 1.297977
var 44 teststat 1.297977
sweights 65.000000
swx 1.084000, f1 1.015625, f2 0.015625
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Exp 0.100062 Cov 0.000842
1: LS 0.067000 Exp 0.100062 Cov 0.000842
sweights 65.000000
swx 7.996000, f1 1.015625, f2 0.015625
Exp 0.738092 Cov 0.021900
1: LS 0.463000 Exp 0.738092 Cov 0.021900
LS 0.463000 Exp 0.738092 Cov 0.021900
teststat 3.455555
var 45 teststat 3.455555
sweights 65.000000
swx 7.996000, f1 1.015625, f2 0.015625
Exp 0.738092 Cov 0.021900
1: LS 0.463000 Exp 0.738092 Cov 0.021900
sweights 65.000000
swx 13.384000, f1 1.015625, f2 0.015625
Exp 1.235446 Cov 0.044694
1: LS 0.945000 Exp 1.235446 Cov 0.044694
LS 0.945000 Exp 1.235446 Cov 0.044694
teststat 1.887465
var 46 teststat 1.887465
sweights 65.000000
swx 13.384000, f1 1.015625, f2 0.015625
Exp 1.235446 Cov 0.044694
1: LS 0.945000 Exp 1.235446 Cov 0.044694
sweights 65.000000
swx 8.721000, f1 1.015625, f2 0.015625
Exp 0.805015 Cov 0.014767
1: LS 0.721000 Exp 0.805015 Cov 0.014767
LS 0.721000 Exp 0.805015 Cov 0.014767
teststat 0.478008
var 47 teststat 0.478008
sweights 65.000000
swx 8.721000, f1 1.015625, f2 0.015625
Exp 0.805015 Cov 0.014767
1: LS 0.721000 Exp 0.805015 Cov 0.014767
sweights 65.000000
swx 39.988000, f1 1.015625, f2 0.015625
Exp 3.691200 Cov 0.278518
1: LS 4.552000 Exp 3.691200 Cov 0.278518
LS 4.552000 Exp 3.691200 Cov 0.278518
teststat 2.660428
var 48 teststat 2.660428
sweights 65.000000
swx 39.988000, f1 1.015625, f2 0.015625
Exp 3.691200 Cov 0.278518
1: LS 4.552000 Exp 3.691200 Cov 0.278518
sweights 65.000000
swx 35.970000, f1 1.015625, f2 0.015625
Exp 3.320308 Cov 0.209143

1: LS 3.577000 Exp 3.320308 Cov 0.209143
LS 3.577000 Exp 3.320308 Cov 0.209143
teststat 0.315052
var 49 teststat 0.315052
sweights 65.000000
swx 35.970000, f1 1.015625, f2 0.015625
Exp 3.320308 Cov 0.209143
1: LS 3.577000 Exp 3.320308 Cov 0.209143
sweights 65.000000
swx 40.226000, f1 1.015625, f2 0.015625
Exp 3.713169 Cov 0.352628
1: LS 4.495000 Exp 3.713169 Cov 0.352628
LS 4.495000 Exp 3.713169 Cov 0.352628
teststat 1.733441
var 50 teststat 1.733441
sweights 65.000000
swx 40.226000, f1 1.015625, f2 0.015625
Exp 3.713169 Cov 0.352628
1: LS 4.495000 Exp 3.713169 Cov 0.352628
sweights 65.000000
swx 30.406000, f1 1.015625, f2 0.015625
Exp 2.806708 Cov 0.443585
1: LS 3.798000 Exp 2.806708 Cov 0.443585
LS 3.798000 Exp 2.806708 Cov 0.443585
teststat 2.215271
var 51 teststat 2.215271
sweights 65.000000
swx 30.406000, f1 1.015625, f2 0.015625
Exp 2.806708 Cov 0.443585
1: LS 3.798000 Exp 2.806708 Cov 0.443585
sweights 65.000000
swx 36.635000, f1 1.015625, f2 0.015625
Exp 3.381692 Cov 0.288042
1: LS 4.277000 Exp 3.381692 Cov 0.288042
LS 4.277000 Exp 3.381692 Cov 0.288042
teststat 2.782846
var 52 teststat 2.782846
sweights 65.000000
swx 36.635000, f1 1.015625, f2 0.015625
Exp 3.381692 Cov 0.288042
1: LS 4.277000 Exp 3.381692 Cov 0.288042
sweights 65.000000
swx −13.091000, f1 1.015625, f2 0.015625
Exp −1.208400 Cov 0.024900
1: LS −1.123000 Exp −1.208400 Cov 0.024900
LS −1.123000 Exp −1.208400 Cov 0.024900
teststat 0.292895
var 53 teststat 0.292895
sweights 65.000000

swx -13.091000, f1 1.015625, f2 0.015625
Exp -1.208400 Cov 0.024900
1: LS -1.123000 Exp -1.208400 Cov 0.024900
sweights 65.000000
swx -5.841000, f1 1.015625, f2 0.015625
Exp -0.539169 Cov 0.042928
1: LS -0.565000 Exp -0.539169 Cov 0.042928
LS -0.565000 Exp -0.539169 Cov 0.042928
teststat 0.015543
var 54 teststat 0.015543
sweights 65.000000
swx -5.841000, f1 1.015625, f2 0.015625
Exp -0.539169 Cov 0.042928
1: LS -0.565000 Exp -0.539169 Cov 0.042928
sweights 65.000000
swx -12.434000, f1 1.015625, f2 0.015625
Exp -1.147754 Cov 0.043724
1: LS -0.971000 Exp -1.147754 Cov 0.043724
LS -0.971000 Exp -1.147754 Cov 0.043724
teststat 0.714530
var 55 teststat 0.714530
sweights 65.000000
swx -12.434000, f1 1.015625, f2 0.015625
Exp -1.147754 Cov 0.043724
1: LS -0.971000 Exp -1.147754 Cov 0.043724
sweights 65.000000
swx -15.571000, f1 1.015625, f2 0.015625
Exp -1.437323 Cov 0.079934
1: LS -1.510000 Exp -1.437323 Cov 0.079934
LS -1.510000 Exp -1.437323 Cov 0.079934
teststat 0.066078
var 56 teststat 0.066078
sweights 65.000000
swx -15.571000, f1 1.015625, f2 0.015625
Exp -1.437323 Cov 0.079934
1: LS -1.510000 Exp -1.437323 Cov 0.079934
sweights 65.000000
swx -9.399000, f1 1.015625, f2 0.015625
Exp -0.867600 Cov 0.053610
1: LS -0.671000 Exp -0.867600 Cov 0.053610
LS -0.671000 Exp -0.867600 Cov 0.053610
teststat 0.720983
var 57 teststat 0.720983
sweights 65.000000
swx -9.399000, f1 1.015625, f2 0.015625
Exp -0.867600 Cov 0.053610
1: LS -0.671000 Exp -0.867600 Cov 0.053610
sweights 65.000000
swx 55.400000, f1 1.015625, f2 0.015625

```
Exp 5.113846 Cov 0.067173
1: LS 5.135000 Exp 5.113846 Cov 0.067173
LS 5.135000 Exp 5.113846 Cov 0.067173
teststat 0.006662
var 58 teststat 0.006662
sweights 65.000000
swx 55.400000, f1 1.015625, f2 0.015625
Exp 5.113846 Cov 0.067173
1: LS 5.135000 Exp 5.113846 Cov 0.067173
sweights 65.000000
swx 16.564000, f1 1.015625, f2 0.015625
Exp 1.528985 Cov 0.032768
1: LS 1.248000 Exp 1.528985 Cov 0.032768
LS 1.248000 Exp 1.528985 Cov 0.032768
teststat 2.409417
var 59 teststat 2.409417
sweights 65.000000
swx 16.564000, f1 1.015625, f2 0.015625
Exp 1.528985 Cov 0.032768
1: LS 1.248000 Exp 1.528985 Cov 0.032768
sweights 65.000000
swx 8.667000, f1 1.015625, f2 0.015625
Exp 0.800031 Cov 0.041158
1: LS 1.041000 Exp 0.800031 Cov 0.041158
LS 1.041000 Exp 0.800031 Cov 0.041158
teststat 1.410811
var 60 teststat 1.410811
sweights 65.000000
swx 8.667000, f1 1.015625, f2 0.015625
Exp 0.800031 Cov 0.041158
1: LS 1.041000 Exp 0.800031 Cov 0.041158
sweights 65.000000
swx 14.377000, f1 1.015625, f2 0.015625
Exp 1.327108 Cov 0.057864
1: LS 1.641000 Exp 1.327108 Cov 0.057864
LS 1.641000 Exp 1.327108 Cov 0.057864
teststat 1.702753
var 61 teststat 1.702753
sweights 65.000000
swx 14.377000, f1 1.015625, f2 0.015625
Exp 1.327108 Cov 0.057864
1: LS 1.641000 Exp 1.327108 Cov 0.057864
sweights 65.000000
swx 2.018000, f1 1.015625, f2 0.015625
Exp 0.186277 Cov 0.001395
1: LS 0.221000 Exp 0.186277 Cov 0.001395
LS 0.221000 Exp 0.186277 Cov 0.001395
teststat 0.863998
var 62 teststat 0.863998
```

sweights 65.000000
swx 2.018000, f1 1.015625, f2 0.015625
Exp 0.186277 Cov 0.001395
1: LS 0.221000 Exp 0.186277 Cov 0.001395
sweights 44.000000
swx 130.798000, f1 1.023256, f2 0.023256
Exp 50.535591 Cov 3.110381
1: LS 47.600000 Exp 50.535591 Cov 3.110381
LS 47.600000 Exp 50.535591 Cov 3.110381
teststat 2.770623
var 1 teststat 2.770623
sweights 44.000000
swx 130.798000, f1 1.023256, f2 0.023256
Exp 50.535591 Cov 3.110381
1: LS 47.600000 Exp 50.535591 Cov 3.110381
sweights 44.000000
swx 23.043000, f1 1.023256, f2 0.023256
Exp 8.902977 Cov 0.112591
1: LS 8.386000 Exp 8.902977 Cov 0.112591
LS 8.386000 Exp 8.902977 Cov 0.112591
teststat 2.373770
var 2 teststat 2.373770
sweights 44.000000
swx 23.043000, f1 1.023256, f2 0.023256
Exp 8.902977 Cov 0.112591
1: LS 8.386000 Exp 8.902977 Cov 0.112591
sweights 44.000000
swx 32.769000, f1 1.023256, f2 0.023256
Exp 12.660750 Cov 0.187180
1: LS 11.874000 Exp 12.660750 Cov 0.187180
LS 11.874000 Exp 12.660750 Cov 0.187180
teststat 3.306849
var 3 teststat 3.306849
sweights 44.000000
swx 32.769000, f1 1.023256, f2 0.023256
Exp 12.660750 Cov 0.187180
1: LS 11.874000 Exp 12.660750 Cov 0.187180
sweights 44.000000
swx 42.044000, f1 1.023256, f2 0.023256
Exp 16.244273 Cov 0.357025
1: LS 15.298000 Exp 16.244273 Cov 0.357025
LS 15.298000 Exp 16.244273 Cov 0.357025
teststat 2.508037
var 4 teststat 2.508037
sweights 44.000000
swx 42.044000, f1 1.023256, f2 0.023256
Exp 16.244273 Cov 0.357025
1: LS 15.298000 Exp 16.244273 Cov 0.357025
sweights 44.000000

swx 32.947000, f1 1.023256, f2 0.023256
Exp 12.729523 Cov 0.185254
1: LS 12.042000 Exp 12.729523 Cov 0.185254
LS 12.042000 Exp 12.729523 Cov 0.185254
teststat 2.551560
var 5 teststat 2.551560
sweights 44.000000
swx 32.947000, f1 1.023256, f2 0.023256
Exp 12.729523 Cov 0.185254
1: LS 12.042000 Exp 12.729523 Cov 0.185254
sweights 44.000000
swx 98.836000, f1 1.023256, f2 0.023256
Exp 38.186636 Cov 3.350026
1: LS 34.662000 Exp 38.186636 Cov 3.350026
LS 34.662000 Exp 38.186636 Cov 3.350026
teststat 3.708348
var 6 teststat 3.708348
sweights 44.000000
swx 98.836000, f1 1.023256, f2 0.023256
Exp 38.186636 Cov 3.350026
1: LS 34.662000 Exp 38.186636 Cov 3.350026
sweights 44.000000
swx 21.104000, f1 1.023256, f2 0.023256
Exp 8.153818 Cov 0.091495
1: LS 7.624000 Exp 8.153818 Cov 0.091495
LS 7.624000 Exp 8.153818 Cov 0.091495
teststat 3.068012
var 7 teststat 3.068012
sweights 44.000000
swx 21.104000, f1 1.023256, f2 0.023256
Exp 8.153818 Cov 0.091495
1: LS 7.624000 Exp 8.153818 Cov 0.091495
sweights 44.000000
swx 26.144000, f1 1.023256, f2 0.023256
Exp 10.101091 Cov 0.238894
1: LS 9.363000 Exp 10.101091 Cov 0.238894
LS 9.363000 Exp 10.101091 Cov 0.238894
teststat 2.280422
var 8 teststat 2.280422
sweights 44.000000
swx 26.144000, f1 1.023256, f2 0.023256
Exp 10.101091 Cov 0.238894
1: LS 9.363000 Exp 10.101091 Cov 0.238894
sweights 44.000000
swx 27.528000, f1 1.023256, f2 0.023256
Exp 10.635818 Cov 0.615524
1: LS 9.232000 Exp 10.635818 Cov 0.615524
LS 9.232000 Exp 10.635818 Cov 0.615524
teststat 3.201672

```
var 9 teststat 3.201672
sweights 44.000000
swx 27.528000, f1 1.023256, f2 0.023256
Exp 10.635818 Cov 0.615524
1: LS 9.232000 Exp 10.635818 Cov 0.615524
sweights 44.000000
swx 24.055000, f1 1.023256, f2 0.023256
Exp 9.293977 Cov 0.190244
1: LS 8.439000 Exp 9.293977 Cov 0.190244
LS 8.439000 Exp 9.293977 Cov 0.190244
teststat 3.842358
var 10 teststat 3.842358
sweights 44.000000
swx 24.055000, f1 1.023256, f2 0.023256
Exp 9.293977 Cov 0.190244
1: LS 8.439000 Exp 9.293977 Cov 0.190244
sweights 44.000000
swx 64.732000, f1 1.023256, f2 0.023256
Exp 25.010091 Cov 2.336386
1: LS 22.956000 Exp 25.010091 Cov 2.336386
LS 22.956000 Exp 25.010091 Cov 2.336386
teststat 1.805904
var 11 teststat 1.805904
sweights 44.000000
swx 64.732000, f1 1.023256, f2 0.023256
Exp 25.010091 Cov 2.336386
1: LS 22.956000 Exp 25.010091 Cov 2.336386
sweights 44.000000
swx 17.090000, f1 1.023256, f2 0.023256
Exp 6.602955 Cov 0.076235
1: LS 6.246000 Exp 6.602955 Cov 0.076235
LS 6.246000 Exp 6.602955 Cov 0.076235
teststat 1.671367
var 12 teststat 1.671367
sweights 44.000000
swx 17.090000, f1 1.023256, f2 0.023256
Exp 6.602955 Cov 0.076235
1: LS 6.246000 Exp 6.602955 Cov 0.076235
sweights 44.000000
swx 18.051000, f1 1.023256, f2 0.023256
Exp 6.974250 Cov 0.152404
1: LS 6.950000 Exp 6.974250 Cov 0.152404
LS 6.950000 Exp 6.974250 Cov 0.152404
teststat 0.003859
var 13 teststat 0.003859
sweights 44.000000
swx 18.051000, f1 1.023256, f2 0.023256
Exp 6.974250 Cov 0.152404
1: LS 6.950000 Exp 6.974250 Cov 0.152404
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sweights 44.000000
swx 15.094000, f1 1.023256, f2 0.023256
Exp 5.831773 Cov 0.489141
1: LS 4.527000 Exp 5.831773 Cov 0.489141
LS 4.527000 Exp 5.831773 Cov 0.489141
teststat 3.480451
var 14 teststat 3.480451
sweights 44.000000
swx 15.094000, f1 1.023256, f2 0.023256
Exp 5.831773 Cov 0.489141
1: LS 4.527000 Exp 5.831773 Cov 0.489141
sweights 44.000000
swx 14.493000, f1 1.023256, f2 0.023256
Exp 5.599568 Cov 0.141352
1: LS 5.228000 Exp 5.599568 Cov 0.141352
LS 5.228000 Exp 5.599568 Cov 0.141352
teststat 0.976733
var 15 teststat 0.976733
sweights 44.000000
swx 14.493000, f1 1.023256, f2 0.023256
Exp 5.599568 Cov 0.141352
1: LS 5.228000 Exp 5.599568 Cov 0.141352
sweights 44.000000
swx 14.773000, f1 1.023256, f2 0.023256
Exp 5.707750 Cov 0.108659
1: LS 5.610000 Exp 5.707750 Cov 0.108659
LS 5.610000 Exp 5.707750 Cov 0.108659
teststat 0.087936
var 16 teststat 0.087936
sweights 44.000000
swx 14.773000, f1 1.023256, f2 0.023256
Exp 5.707750 Cov 0.108659
1: LS 5.610000 Exp 5.707750 Cov 0.108659
sweights 44.000000
swx 4.064000, f1 1.023256, f2 0.023256
Exp 1.570182 Cov 0.022310
1: LS 1.691000 Exp 1.570182 Cov 0.022310
LS 1.691000 Exp 1.570182 Cov 0.022310
teststat 0.654294
var 17 teststat 0.654294
sweights 44.000000
swx 4.064000, f1 1.023256, f2 0.023256
Exp 1.570182 Cov 0.022310
1: LS 1.691000 Exp 1.570182 Cov 0.022310
sweights 44.000000
swx 10.252000, f1 1.023256, f2 0.023256
Exp 3.961000 Cov 0.055464
1: LS 3.969000 Exp 3.961000 Cov 0.055464
LS 3.969000 Exp 3.961000 Cov 0.055464
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teststat 0.001154
var 18 teststat 0.001154
sweights 44.000000
swx 10.252000, f1 1.023256, f2 0.023256
Exp 3.961000 Cov 0.055464
1: LS 3.969000 Exp 3.961000 Cov 0.055464
sweights 44.000000
swx 2.515000, f1 1.023256, f2 0.023256
Exp 0.971705 Cov 0.050711
1: LS 1.140000 Exp 0.971705 Cov 0.050711
LS 1.140000 Exp 0.971705 Cov 0.050711
teststat 0.558528
var 19 teststat 0.558528
sweights 44.000000
swx 2.515000, f1 1.023256, f2 0.023256
Exp 0.971705 Cov 0.050711
1: LS 1.140000 Exp 0.971705 Cov 0.050711
sweights 44.000000
swx 3.251000, f1 1.023256, f2 0.023256
Exp 1.256068 Cov 0.032543
1: LS 1.209000 Exp 1.256068 Cov 0.032543
LS 1.209000 Exp 1.256068 Cov 0.032543
teststat 0.068076
var 20 teststat 0.068076
sweights 44.000000
swx 3.251000, f1 1.023256, f2 0.023256
Exp 1.256068 Cov 0.032543
1: LS 1.209000 Exp 1.256068 Cov 0.032543
sweights 44.000000
swx 2.068000, f1 1.023256, f2 0.023256
Exp 0.799000 Cov 0.043684
1: LS 1.154000 Exp 0.799000 Cov 0.043684
LS 1.154000 Exp 0.799000 Cov 0.043684
teststat 2.884950
var 21 teststat 2.884950
sweights 44.000000
swx 2.068000, f1 1.023256, f2 0.023256
Exp 0.799000 Cov 0.043684
1: LS 1.154000 Exp 0.799000 Cov 0.043684
sweights 44.000000
swx -4.256000, f1 1.023256, f2 0.023256
Exp -1.644364 Cov 0.035695
1: LS -1.281000 Exp -1.644364 Cov 0.035695
LS -1.281000 Exp -1.644364 Cov 0.035695
teststat 3.698931
var 22 teststat 3.698931
sweights 44.000000
swx -4.256000, f1 1.023256, f2 0.023256
Exp -1.644364 Cov 0.035695
```

```
1: LS -1.281000 Exp -1.644364 Cov 0.035695
sweights 44.000000
swx 7.438000, f1 1.023256, f2 0.023256
Exp 2.873773 Cov 0.064222
1: LS 2.969000 Exp 2.873773 Cov 0.064222
LS 2.969000 Exp 2.873773 Cov 0.064222
teststat 0.141201
var 23 teststat 0.141201
sweights 44.000000
swx 7.438000, f1 1.023256, f2 0.023256
Exp 2.873773 Cov 0.064222
1: LS 2.969000 Exp 2.873773 Cov 0.064222
sweights 44.000000
swx -1.911000, f1 1.023256, f2 0.023256
Exp -0.738341 Cov 0.057561
1: LS -0.708000 Exp -0.738341 Cov 0.057561
LS -0.708000 Exp -0.738341 Cov 0.057561
teststat 0.015993
var 24 teststat 0.015993
sweights 44.000000
swx -1.911000, f1 1.023256, f2 0.023256
Exp -0.738341 Cov 0.057561
1: LS -0.708000 Exp -0.738341 Cov 0.057561
sweights 44.000000
swx -1.859000, f1 1.023256, f2 0.023256
Exp -0.718250 Cov 0.027289
1: LS -0.577000 Exp -0.718250 Cov 0.027289
LS -0.577000 Exp -0.718250 Cov 0.027289
teststat 0.731115
var 25 teststat 0.731115
sweights 44.000000
swx -1.859000, f1 1.023256, f2 0.023256
Exp -0.718250 Cov 0.027289
1: LS -0.577000 Exp -0.718250 Cov 0.027289
sweights 44.000000
swx -3.321000, f1 1.023256, f2 0.023256
Exp -1.283114 Cov 0.038531
1: LS -0.895000 Exp -1.283114 Cov 0.038531
LS -0.895000 Exp -1.283114 Cov 0.038531
teststat 3.909376
var 26 teststat 3.909376
sweights 44.000000
swx -3.321000, f1 1.023256, f2 0.023256
Exp -1.283114 Cov 0.038531
1: LS -0.895000 Exp -1.283114 Cov 0.038531
sweights 44.000000
swx 16.645000, f1 1.023256, f2 0.023256
Exp 6.431023 Cov 0.051811
1: LS 5.990000 Exp 6.431023 Cov 0.051811
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LS 5.990000 Exp 6.431023 Cov 0.051811
teststat 3.754049
var 27 teststat 3.754049
sweights 44.000000
swx 16.645000, f1 1.023256, f2 0.023256
Exp 6.431023 Cov 0.051811
1: LS 5.990000 Exp 6.431023 Cov 0.051811
sweights 44.000000
swx 34.500000, f1 1.023256, f2 0.023256
Exp 13.329545 Cov 1.110068
1: LS 12.142000 Exp 13.329545 Cov 1.110068
LS 12.142000 Exp 13.329545 Cov 1.110068
teststat 1.270430
var 28 teststat 1.270430
sweights 44.000000
swx 34.500000, f1 1.023256, f2 0.023256
Exp 13.329545 Cov 1.110068
1: LS 12.142000 Exp 13.329545 Cov 1.110068
sweights 44.000000
swx 7.126000, f1 1.023256, f2 0.023256
Exp 2.753227 Cov 0.058443
1: LS 2.610000 Exp 2.753227 Cov 0.058443
LS 2.610000 Exp 2.753227 Cov 0.058443
teststat 0.351007
var 29 teststat 0.351007
sweights 44.000000
swx 7.126000, f1 1.023256, f2 0.023256
Exp 2.753227 Cov 0.058443
1: LS 2.610000 Exp 2.753227 Cov 0.058443
sweights 44.000000
swx 10.813000, f1 1.023256, f2 0.023256
Exp 4.177750 Cov 0.104803
1: LS 3.988000 Exp 4.177750 Cov 0.104803
LS 3.988000 Exp 4.177750 Cov 0.104803
teststat 0.343550
var 30 teststat 0.343550
sweights 44.000000
swx 10.813000, f1 1.023256, f2 0.023256
Exp 4.177750 Cov 0.104803
1: LS 3.988000 Exp 4.177750 Cov 0.104803
sweights 44.000000
swx 8.388000, f1 1.023256, f2 0.023256
Exp 3.240818 Cov 0.124167
1: LS 2.607000 Exp 3.240818 Cov 0.124167
LS 2.607000 Exp 3.240818 Cov 0.124167
teststat 3.235369
var 31 teststat 3.235369
sweights 44.000000
swx 8.388000, f1 1.023256, f2 0.023256

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Exp 3.240818 Cov 0.124167
1: LS 2.607000 Exp 3.240818 Cov 0.124167
sweights 44.000000
swx 8.170000, f1 1.023256, f2 0.023256
Exp 3.156591 Cov 0.074070
1: LS 2.940000 Exp 3.156591 Cov 0.074070
LS 2.940000 Exp 3.156591 Cov 0.074070
teststat 0.633340
var 32 teststat 0.633340
sweights 44.000000
swx 8.170000, f1 1.023256, f2 0.023256
Exp 3.156591 Cov 0.074070
1: LS 2.940000 Exp 3.156591 Cov 0.074070
sweights 44.000000
swx 1.959000, f1 1.023256, f2 0.023256
Exp 0.756886 Cov 0.008404
1: LS 0.900000 Exp 0.756886 Cov 0.008404
LS 0.900000 Exp 0.756886 Cov 0.008404
teststat 2.437139
var 33 teststat 2.437139
sweights 44.000000
swx 1.959000, f1 1.023256, f2 0.023256
Exp 0.756886 Cov 0.008404
1: LS 0.900000 Exp 0.756886 Cov 0.008404
sweights 44.000000
swx 0.057000, f1 1.023256, f2 0.023256
Exp 0.022023 Cov 0.000034
1: LS 0.024000 Exp 0.022023 Cov 0.000034
LS 0.024000 Exp 0.022023 Cov 0.000034
teststat 0.114165
var 34 teststat 0.114165
sweights 44.000000
swx 0.057000, f1 1.023256, f2 0.023256
Exp 0.022023 Cov 0.000034
1: LS 0.024000 Exp 0.022023 Cov 0.000034
sweights 44.000000
swx 0.334000, f1 1.023256, f2 0.023256
Exp 0.129045 Cov 0.000207
1: LS 0.132000 Exp 0.129045 Cov 0.000207
LS 0.132000 Exp 0.129045 Cov 0.000207
teststat 0.042103
var 35 teststat 0.042103
sweights 44.000000
swx 0.334000, f1 1.023256, f2 0.023256
Exp 0.129045 Cov 0.000207
1: LS 0.132000 Exp 0.129045 Cov 0.000207
sweights 44.000000
swx 1.037000, f1 1.023256, f2 0.023256
Exp 0.400659 Cov 0.004483
```

1: LS 0.518000 Exp 0.400659 Cov 0.004483
LS 0.518000 Exp 0.400659 Cov 0.004483
teststat 3.071381
var 36 teststat 3.071381
sweights 44.000000
swx 1.037000, f1 1.023256, f2 0.023256
Exp 0.400659 Cov 0.004483
1: LS 0.518000 Exp 0.400659 Cov 0.004483
sweights 44.000000
swx 0.530000, f1 1.023256, f2 0.023256
Exp 0.204773 Cov 0.000998
1: LS 0.225000 Exp 0.204773 Cov 0.000998
LS 0.225000 Exp 0.204773 Cov 0.000998
teststat 0.409948
var 37 teststat 0.409948
sweights 44.000000
swx 0.530000, f1 1.023256, f2 0.023256
Exp 0.204773 Cov 0.000998
1: LS 0.225000 Exp 0.204773 Cov 0.000998
sweights 44.000000
swx 20.060000, f1 1.023256, f2 0.023256
Exp 7.750455 Cov 0.773448
1: LS 7.241000 Exp 7.750455 Cov 0.773448
LS 7.241000 Exp 7.750455 Cov 0.773448
teststat 0.335567
var 38 teststat 0.335567
sweights 44.000000
swx 20.060000, f1 1.023256, f2 0.023256
Exp 7.750455 Cov 0.773448
1: LS 7.241000 Exp 7.750455 Cov 0.773448
sweights 44.000000
swx 4.904000, f1 1.023256, f2 0.023256
Exp 1.894727 Cov 0.051942
1: LS 1.842000 Exp 1.894727 Cov 0.051942
LS 1.842000 Exp 1.894727 Cov 0.051942
teststat 0.053524
var 39 teststat 0.053524
sweights 44.000000
swx 4.904000, f1 1.023256, f2 0.023256
Exp 1.894727 Cov 0.051942
1: LS 1.842000 Exp 1.894727 Cov 0.051942
sweights 44.000000
swx 6.389000, f1 1.023256, f2 0.023256
Exp 2.468477 Cov 0.071421
1: LS 2.458000 Exp 2.468477 Cov 0.071421
LS 2.458000 Exp 2.468477 Cov 0.071421
teststat 0.001537
var 40 teststat 0.001537
sweights 44.000000

swx 6.389000, f1 1.023256, f2 0.023256
Exp 2.468477 Cov 0.071421
1: LS 2.458000 Exp 2.468477 Cov 0.071421
sweights 44.000000
swx 4.359000, f1 1.023256, f2 0.023256
Exp 1.684159 Cov 0.068814
1: LS 1.261000 Exp 1.684159 Cov 0.068814
LS 1.261000 Exp 1.684159 Cov 0.068814
teststat 2.602147
var 41 teststat 2.602147
sweights 44.000000
swx 4.359000, f1 1.023256, f2 0.023256
Exp 1.684159 Cov 0.068814
1: LS 1.261000 Exp 1.684159 Cov 0.068814
sweights 44.000000
swx 4.404000, f1 1.023256, f2 0.023256
Exp 1.701545 Cov 0.046873
1: LS 1.678000 Exp 1.701545 Cov 0.046873
LS 1.678000 Exp 1.701545 Cov 0.046873
teststat 0.011827
var 42 teststat 0.011827
sweights 44.000000
swx 4.404000, f1 1.023256, f2 0.023256
Exp 1.701545 Cov 0.046873
1: LS 1.678000 Exp 1.701545 Cov 0.046873
sweights 44.000000
swx 14.154000, f1 1.023256, f2 0.023256
Exp 5.468591 Cov 0.090604
1: LS 5.258000 Exp 5.468591 Cov 0.090604
LS 5.258000 Exp 5.468591 Cov 0.090604
teststat 0.489475
var 43 teststat 0.489475
sweights 44.000000
swx 14.154000, f1 1.023256, f2 0.023256
Exp 5.468591 Cov 0.090604
1: LS 5.258000 Exp 5.468591 Cov 0.090604
sweights 44.000000
swx 0.396000, f1 1.023256, f2 0.023256
Exp 0.153000 Cov 0.000491
1: LS 0.143000 Exp 0.153000 Cov 0.000491
LS 0.143000 Exp 0.153000 Cov 0.000491
teststat 0.203656
var 44 teststat 0.203656
sweights 44.000000
swx 0.396000, f1 1.023256, f2 0.023256
Exp 0.153000 Cov 0.000491
1: LS 0.143000 Exp 0.153000 Cov 0.000491
sweights 44.000000
swx 3.303000, f1 1.023256, f2 0.023256

Exp 1.276159 Cov 0.006538
1: LS 1.121000 Exp 1.276159 Cov 0.006538
LS 1.121000 Exp 1.276159 Cov 0.006538
teststat 3.682064
var 45 teststat 3.682064
sweights 44.000000
swx 3.303000, f1 1.023256, f2 0.023256
Exp 1.276159 Cov 0.006538
1: LS 1.121000 Exp 1.276159 Cov 0.006538
sweights 44.000000
swx 6.162000, f1 1.023256, f2 0.023256
Exp 2.380773 Cov 0.029848
1: LS 2.476000 Exp 2.380773 Cov 0.029848
LS 2.476000 Exp 2.380773 Cov 0.029848
teststat 0.303818
var 46 teststat 0.303818
sweights 44.000000
swx 6.162000, f1 1.023256, f2 0.023256
Exp 2.380773 Cov 0.029848
1: LS 2.476000 Exp 2.380773 Cov 0.029848
sweights 44.000000
swx 4.293000, f1 1.023256, f2 0.023256
Exp 1.658659 Cov 0.010385
1: LS 1.519000 Exp 1.658659 Cov 0.010385
LS 1.519000 Exp 1.658659 Cov 0.010385
teststat 1.878167
var 47 teststat 1.878167
sweights 44.000000
swx 4.293000, f1 1.023256, f2 0.023256
Exp 1.658659 Cov 0.010385
1: LS 1.519000 Exp 1.658659 Cov 0.010385
sweights 44.000000
swx 32.144000, f1 1.023256, f2 0.023256
Exp 12.419273 Cov 0.249783
1: LS 12.278000 Exp 12.419273 Cov 0.249783
LS 12.278000 Exp 12.419273 Cov 0.249783
teststat 0.079901
var 48 teststat 0.079901
sweights 44.000000
swx 32.144000, f1 1.023256, f2 0.023256
Exp 12.419273 Cov 0.249783
1: LS 12.278000 Exp 12.419273 Cov 0.249783
sweights 44.000000
swx 28.105000, f1 1.023256, f2 0.023256
Exp 10.858750 Cov 0.291146
1: LS 10.440000 Exp 10.858750 Cov 0.291146
LS 10.440000 Exp 10.858750 Cov 0.291146
teststat 0.602280
var 49 teststat 0.602280

```
sweights 44.000000
swx 28.105000, f1 1.023256, f2 0.023256
Exp 10.858750 Cov 0.291146
1: LS 10.440000 Exp 10.858750 Cov 0.291146
sweights 44.000000
swx 32.822000, f1 1.023256, f2 0.023256
Exp 12.681227 Cov 0.289324
1: LS 12.603000 Exp 12.681227 Cov 0.289324
LS 12.603000 Exp 12.681227 Cov 0.289324
teststat 0.021151
var 50 teststat 0.021151
sweights 44.000000
swx 32.822000, f1 1.023256, f2 0.023256
Exp 12.681227 Cov 0.289324
1: LS 12.603000 Exp 12.681227 Cov 0.289324
sweights 44.000000
swx 30.659000, f1 1.023256, f2 0.023256
Exp 11.845523 Cov 0.285372
1: LS 11.750000 Exp 11.845523 Cov 0.285372
LS 11.750000 Exp 11.845523 Cov 0.285372
teststat 0.031974
var 51 teststat 0.031974
sweights 44.000000
swx 30.659000, f1 1.023256, f2 0.023256
Exp 11.845523 Cov 0.285372
1: LS 11.750000 Exp 11.845523 Cov 0.285372
sweights 44.000000
swx 30.280000, f1 1.023256, f2 0.023256
Exp 11.699091 Cov 0.286308
1: LS 11.639000 Exp 11.699091 Cov 0.286308
LS 11.639000 Exp 11.699091 Cov 0.286308
teststat 0.012612
var 52 teststat 0.012612
sweights 44.000000
swx 30.280000, f1 1.023256, f2 0.023256
Exp 11.699091 Cov 0.286308
1: LS 11.639000 Exp 11.699091 Cov 0.286308
sweights 44.000000
swx -2.883000, f1 1.023256, f2 0.023256
Exp -1.113886 Cov 0.041101
1: LS -1.176000 Exp -1.113886 Cov 0.041101
LS -1.176000 Exp -1.113886 Cov 0.041101
teststat 0.093869
var 53 teststat 0.093869
sweights 44.000000
swx -2.883000, f1 1.023256, f2 0.023256
Exp -1.113886 Cov 0.041101
1: LS -1.176000 Exp -1.113886 Cov 0.041101
sweights 44.000000
```
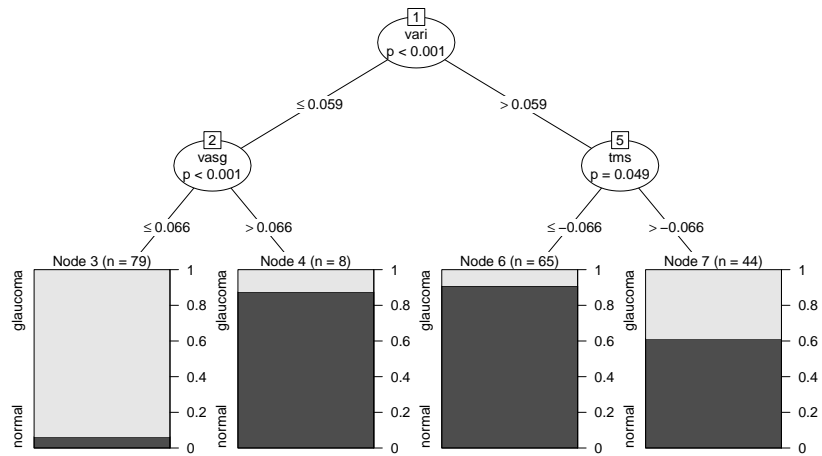
swx 0.188000, f1 1.023256, f2 0.023256
Exp 0.072636 Cov 0.130570
1: LS 0.201000 Exp 0.072636 Cov 0.130570
LS 0.201000 Exp 0.072636 Cov 0.130570
teststat 0.126195
var 54 teststat 0.126195
sweights 44.000000
swx 0.188000, f1 1.023256, f2 0.023256
Exp 0.072636 Cov 0.130570
1: LS 0.201000 Exp 0.072636 Cov 0.130570
sweights 44.000000
swx 1.274000, f1 1.023256, f2 0.023256
Exp 0.492227 Cov 0.043823
1: LS 0.542000 Exp 0.492227 Cov 0.043823
LS 0.542000 Exp 0.492227 Cov 0.043823
teststat 0.056530
var 55 teststat 0.056530
sweights 44.000000
swx 1.274000, f1 1.023256, f2 0.023256
Exp 0.492227 Cov 0.043823
1: LS 0.542000 Exp 0.492227 Cov 0.043823
sweights 44.000000
swx −5.311000, f1 1.023256, f2 0.023256
Exp −2.051977 Cov 0.105844
1: LS −2.415000 Exp −2.051977 Cov 0.105844
LS −2.415000 Exp −2.051977 Cov 0.105844
teststat 1.245087
var 56 teststat 1.245087
sweights 44.000000
swx −5.311000, f1 1.023256, f2 0.023256
Exp −2.051977 Cov 0.105844
1: LS −2.415000 Exp −2.051977 Cov 0.105844
sweights 44.000000
swx −2.441000, f1 1.023256, f2 0.023256
Exp −0.943114 Cov 0.117459
1: LS −1.017000 Exp −0.943114 Cov 0.117459
LS −1.017000 Exp −0.943114 Cov 0.117459
teststat 0.046477
var 57 teststat 0.046477
sweights 44.000000
swx −2.441000, f1 1.023256, f2 0.023256
Exp −0.943114 Cov 0.117459
1: LS −1.017000 Exp −0.943114 Cov 0.117459
sweights 44.000000
swx 42.679000, f1 1.023256, f2 0.023256
Exp 16.489614 Cov 0.078213
1: LS 16.021000 Exp 16.489614 Cov 0.078213
LS 16.021000 Exp 16.489614 Cov 0.078213
teststat 2.807696

```
var 58 teststat 2.807696
sweights 44.000000
swx 42.679000, f1 1.023256, f2 0.023256
Exp 16.489614 Cov 0.078213
1: LS 16.021000 Exp 16.489614 Cov 0.078213
sweights 44.000000
swx 9.024000, f1 1.023256, f2 0.023256
Exp 3.486545 Cov 0.022287
1: LS 3.308000 Exp 3.486545 Cov 0.022287
LS 3.308000 Exp 3.486545 Cov 0.022287
teststat 1.430354
var 59 teststat 1.430354
sweights 44.000000
swx 9.024000, f1 1.023256, f2 0.023256
Exp 3.486545 Cov 0.022287
1: LS 3.308000 Exp 3.486545 Cov 0.022287
sweights 44.000000
swx 11.406000, f1 1.023256, f2 0.023256
Exp 4.406864 Cov 0.083337
1: LS 4.249000 Exp 4.406864 Cov 0.083337
LS 4.249000 Exp 4.406864 Cov 0.083337
teststat 0.299039
var 60 teststat 0.299039
sweights 44.000000
swx 11.406000, f1 1.023256, f2 0.023256
Exp 4.406864 Cov 0.083337
1: LS 4.249000 Exp 4.406864 Cov 0.083337
sweights 44.000000
swx 14.996000, f1 1.023256, f2 0.023256
Exp 5.793909 Cov 0.110748
1: LS 5.716000 Exp 5.793909 Cov 0.110748
LS 5.716000 Exp 5.793909 Cov 0.110748
teststat 0.054807
var 61 teststat 0.054807
sweights 44.000000
swx 14.996000, f1 1.023256, f2 0.023256
Exp 5.793909 Cov 0.110748
1: LS 5.716000 Exp 5.793909 Cov 0.110748
sweights 44.000000
swx 1.561000, f1 1.023256, f2 0.023256
Exp 0.603114 Cov 0.009211
1: LS 0.672000 Exp 0.603114 Cov 0.009211
LS 0.672000 Exp 0.603114 Cov 0.009211
teststat 0.515192
var 62 teststat 0.515192
sweights 44.000000
swx 1.561000, f1 1.023256, f2 0.023256
Exp 0.603114 Cov 0.009211
1: LS 0.672000 Exp 0.603114 Cov 0.009211
```

R> plot(glaucoma_ctree)

Figure 9.7   Conditional inference tree with the distribution of glaucomateous eyes shown for each terminal leaf.

and a graphical representation is depicted in Figure~9.7 showing both the cutpoints and the p-values of the associated independence tests for each node. The first split is performed using a cutpoint defined with respect to the volume of the optic nerve above some reference plane, but in the inferior part of the eye only (vari).

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