

*** Discriminant Analysis ***

Call:

```
discrim(IRISTYPE ~ SEPALLEN + SEPALWID + PETALLEN + PETALWID, data = irisdat,  
        family = Classical(cov.structure = "homoscedastic"), na.action =  
        na.omit, prior = "proportional")
```

Constants:

```
      SETOSA  VERSICOL  VIRGINIC  
-86.30847 -72.85261 -104.3683
```

Linear Coefficients:

```
      SETOSA  VERSICOL  VIRGINIC  
SEPALLEN  23.54417 15.69821 12.44585  
SEPALWID  23.58787  7.07251  3.68528  
PETALLEN -16.43064  5.21145 12.76654  
PETALWID -17.39841  6.43423 21.07911
```

Tests for Homogeneity of Covariances:

```
      Statistic df Pr  
Box.M  146.6632 20  0  
adj.M  140.9430 20  0
```

Tests for the Equality of Means:

```
      Statistics      F df1 df2 Pr  
Wilks Lambda      0.023 199.1  8 288  0  
Pillai Trace      1.192  53.5  8 290  0  
Hotelling-Lawley Trace 32.477 580.5  8 286  0  
Roy Greatest Root  32.192 1167.0  4 145  0
```

* Tests assume covariance homoscedasticity.

F Statistic for Wilks' Lambda is exact.

F Statistic for Roy's Greatest Root is an upper bound.

Hotelling's T Squared for Differences in Means Between Each Group:

```
      F df1 df2 Pr  
SETOSA-VERSICOL  550.189  4 144  0  
SETOSA-VIRGINIC 1098.274  4 144  0  
VERSICOL-VIRGINIC 105.313  4 144  0
```

Mahalanobis Distance:

```
      SETOSA  VERSICOL  VIRGINIC  
SETOSA    0.00000 89.86419 179.3847  
VERSICOL      0.00000  17.2011  
VIRGINIC      0.00000   0.0000
```

Kolmogorov-Smirnov Test for Normality:

```
      Statistic Probability  
SEPALLEN 0.0351960  0.9923955  
SEPALWID 0.0797311  0.2960447  
PETALLEN 0.0485438  0.8714318  
PETALWID 0.0478590  0.8820729
```

Plug-in classification table:

```
      SETOSA  VERSICOL  VIRGINIC  Error  Posterior.Error  
SETOSA      50         0         0  0.00      0.00000000  
VERSICOL     0        48         2  0.04      0.0383211  
VIRGINIC     0         1        49  0.02      0.0102247  
Overall              0.02      0.0161820  
(from=rows,to=columns)
```

Cross-validation table:

```
      SETOSA  VERSICOL  VIRGINIC  Error  Posterior.Error  
SETOSA      50         0         0  0.00      0.00000000  
VERSICOL     0        48         2  0.04      0.0393301  
VIRGINIC     0         1        49  0.02      0.0145146  
Overall              0.02      0.0179482  
(from=rows,to=columns)
```

*** Discriminant Analysis ***

Call:

```
discrim(IRISTYPE ~ SEPALLEN + SEPALWID + PETALLEN + PETALWID, data = irisdat,
  family = Classical(cov.structure = "heteroscedastic"), na.action =
  na.omit, prior = "proportional")
```

Constants:

```
  SETOSA  VERSICOL  VIRGINIC
-113.7146 -68.43729 -67.70908
```

Linear Coefficients:

```
      SETOSA  VERSICOL  VIRGINIC
SEPALLEN  44.55288   18.01286   7.37247
SEPALWID  -7.61596   15.96070  13.24526
PETALLEN  33.55954    3.26878   6.23407
PETALWID -31.25587  -14.71256   9.66198
```

Quadratic coefficients:

group: SETOSA

```
      SEPALLEN  SEPALWID  PETALLEN  PETALWID
SEPALLEN -9.471719   6.202413   2.25010   2.38806
SEPALWID      -7.785270  -0.55554   1.05205
PETALLEN      -19.38810   8.96752
PETALWID      -53.02295
```

group: VERSICOL

```
      SEPALLEN  SEPALWID  PETALLEN  PETALWID
SEPALLEN -4.751382   1.838108   4.31586  -3.22725
SEPALWID      -9.855483  -1.05801   9.74016
PETALLEN      -9.90188  13.46861
PETALWID      -43.62240
```

group: VIRGINIC

```
      SEPALLEN  SEPALWID  PETALLEN  PETALWID
SEPALLEN -5.266933   1.739863   4.980073 -0.894076
SEPALWID      -7.937721 -0.551344   4.236425
PETALLEN      -6.702910   1.445459
PETALWID      -9.657025
```

Hotelling's T Squared for Differences in Means Between Each Group:

```
      F df1 df2 Pr
SETOSA-VERSICOL 623.173 4 84.83745 0
SETOSA-VIRGINIC 1175.751 4 79.87637 0
VERSICOL-VIRGINIC 86.130 4 94.35363 0
```

* df2 is Yao's approximation.

Kolmogorov-Smirnov Test for Normality:

```
      Statistic Probability
SEPALLEN 0.0447841 0.9243243
SEPALWID 0.0592492 0.6682178
PETALLEN 0.0345377 0.9939979
PETALWID 0.0735822 0.3910849
```

Plug-in classification table:

```
      SETOSA  VERSICOL  VIRGINIC  Error  Posterior.Error
SETOSA      50         0         0  0.00      0.0000000
VERSICOL      0        48         2  0.04      0.0443544
VIRGINIC      0         1        49  0.02      0.0021883
Overall                                0.02      0.0155142
(from=rows,to=columns)
```

Cross-validation table:

```
      SETOSA  VERSICOL  VIRGINIC  Error  Posterior.Error
SETOSA      50         0         0  0.0000000  0.0000000
VERSICOL      0        47         3  0.0600000  0.0640457
VIRGINIC      0         1        49  0.0200000 -0.0138618
Overall                                0.0266667  0.0167280
(from=rows,to=columns)
```

Posterior Probabilities (Irisdat.sta in irisdat.stw) Incorrect classifications are marked with *				
	Observed - Classif.	SETOSA - p=.33333	VERSICOL - p=.33333	VIRGINIC - p=.33333
1	SETOSA	1.000000	0.000000	0.000000
2	VIRGINIC	0.000000	0.000003	0.999997
3	VERSICOL	0.000000	0.995590	0.004410
4	VIRGINIC	0.000000	0.000001	0.999999
* 5	VIRGINIC	0.000000	0.729388	0.270612
6	SETOSA	1.000000	0.000000	0.000000
7	VIRGINIC	0.000000	0.000428	0.999572
8	VERSICOL	0.000000	0.959573	0.040427
* 9	VERSICOL	0.000000	0.253228	0.746772
10	SETOSA	1.000000	0.000000	0.000000
11	VERSICOL	0.000000	0.998093	0.001907
* 12	VERSICOL	0.000000	0.143392	0.856608
13	VIRGINIC	0.000000	0.003146	0.996854
14	VERSICOL	0.000000	0.999997	0.000003
15	VIRGINIC	0.000000	0.006084	0.993916
16	VIRGINIC	0.000000	0.001078	0.998922
17	VIRGINIC	0.000000	0.000001	0.999999
18	SETOSA	1.000000	0.000000	0.000000

Classification Matrix (Irisdat.sta in irisdat.stw) Rows: Observed classifications Columns: Predicted classifications				
	Percent - Correct	SETOSA - p=.33333	VERSICOL - p=.33333	VIRGINIC - p=.33333
SETOSA	100.0000	50	0	0
VERSICOL	96.0000	0	48	2
VIRGINIC	98.0000	0	1	49
Total	98.0000	50	49	51

Posterior Probabilities (Irisdat.sta in irisdat.stw) Incorrect classifications are marked with *				
	Observed - Classif.	SETOSA - p=.01000	VERSICOL - p=.01000	VIRGINIC - p=.98000
1	SETOSA	1.000000	0.000000	0.000000
2	VIRGINIC	0.000000	0.000000	1.000000
3	VERSICOL	0.000000	0.697321	0.302679
4	VIRGINIC	0.000000	0.000000	1.000000
5	VIRGINIC	0.000000	0.026767	0.973233
6	SETOSA	1.000000	0.000000	0.000000
7	VIRGINIC	0.000000	0.000004	0.999996
* 8	VERSICOL	0.000000	0.194981	0.805019
* 9	VERSICOL	0.000000	0.003448	0.996552
10	SETOSA	1.000000	0.000000	0.000000
11	VERSICOL	0.000000	0.842316	0.157684
* 12	VERSICOL	0.000000	0.001705	0.998295
13	VIRGINIC	0.000000	0.000032	0.999968
14	VERSICOL	0.000000	0.999677	0.000323
15	VIRGINIC	0.000000	0.000062	0.999938
16	VIRGINIC	0.000000	0.000011	0.999989
17	VIRGINIC	0.000000	0.000000	1.000000
18	SETOSA	1.000000	0.000000	0.000000

Classification Matrix (Irisdat.sta in irisdat.stw) Rows: Observed classifications Columns: Predicted classifications				
	Percent - Correct	SETOSA - p=.01000	VERSICOL - p=.01000	VIRGINIC - p=.98000
SETOSA	100.0000	50	0	0
VERSICOL	84.0000	0	42	8
VIRGINIC	100.0000	0	0	50
Total	94.6667	50	42	58