

R version 3.3.3 (2017-03-06) -- "Another Canoe"  
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Platform: x86\_64-apple-darwin13.4.0 (64-bit)

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[R.app GUI 1.69 (7328) x86\_64-apple-darwin13.4.0]

[History restored from /Users/jaaldios/.Rapp.history]

```
> # you must install packages klaR, openxlsx, caret, ggplot2 and tcltk
> library(klaR)
Loading required package: MASS
> library(openxlsx)
> library(tcltk)
>
> #read data (add more na strings like "N/N" if you use them)
> training <- read.xlsx(tk_choose.files(caption='Choose training set file'), sheet=1, na.strings=c("NN", ""))
> test <- read.xlsx(tk_choose.files(caption='Choose test set file'), sheet=1, na.strings=c("NN", ""))
> #if you prefer to include your own files, do not include tcltk and rewrite the last two lines as
> #training <- read.xlsx("training_set.xlsx", sheet=1, na.strings=c("NN", ""))
> #test <- read.xlsx("test_set.xlsx", sheet=1, na.strings=c("NN", ""))
>
> training[] <- lapply( training, factor) #convert training into factor
> test[] <- lapply( test, factor) #convert test into factor
> nb_mod <- NaiveBayes(Population ~., data=training)
> pred <- suppressWarnings(predict(nb_mod, test))
> nb_mod
$apriori
grouping
  PopA      PopB      PopC      PopD      PopE      PopF      PopG
0.39799331 0.06688963 0.26755853 0.06688963 0.06688963 0.06688963 0.06688963

$ables
$ables$CSF1P0
var
grouping 10/10 10/11 10/12 10/13 10/14 11/11 11/12 11/13 11/14 11/15 12/12 12/13
  PopA 0.08403361 0.1596639 0.1932773 0.03361345 0.008403361 0.07563025 0.1428571 0.06722689 0.008403361 0.00 0.1008403 0.04201681
  PopB 0.10000000 0.0000000 0.1500000 0.05000000 0.000000000 0.00000000 0.1000000 0.00000000 0.000000000 0.00 0.1500000 0.05000000
  PopC 0.08750000 0.2375000 0.1875000 0.05000000 0.000000000 0.08750000 0.1375000 0.02500000 0.000000000 0.00 0.0625000 0.02500000
  PopD 0.00000000 0.0000000 0.2500000 0.00000000 0.000000000 0.10000000 0.1500000 0.05000000 0.000000000 0.00 0.0500000 0.00000000
  PopE 0.00000000 0.2000000 0.2000000 0.00000000 0.000000000 0.20000000 0.0000000 0.05000000 0.000000000 0.00 0.1500000 0.15000000
  PopF 0.05000000 0.1500000 0.1000000 0.00000000 0.000000000 0.10000000 0.2000000 0.10000000 0.000000000 0.05 0.2000000 0.00000000
  PopG 0.05000000 0.0000000 0.1000000 0.00000000 0.000000000 0.25000000 0.1500000 0.00000000 0.000000000 0.00 0.3500000 0.05000000

var
grouping 12/14 12/15 13/13 7/10 7/11 7/12 8/11 8/12 8/9 9/10 9/11 9/12
  PopA 0.0000 0.0000 0.008403361 0.00 0.008403361 0.00 0.00 0.0 0.0 0.02521008 0.01680672 0.02521008
  PopB 0.0000 0.0000 0.000000000 0.00 0.000000000 0.00 0.05 0.0 0.1 0.05000000 0.15000000 0.05000000
  PopC 0.0125 0.0125 0.000000000 0.00 0.000000000 0.00 0.00 0.0 0.0 0.05000000 0.01250000 0.01250000
  PopD 0.0500 0.0000 0.000000000 0.05 0.050000000 0.05 0.00 0.1 0.0 0.00000000 0.10000000 0.00000000
  PopE 0.0000 0.0000 0.000000000 0.00 0.000000000 0.00 0.00 0.0 0.0 0.00000000 0.05000000 0.00000000
  PopF 0.0000 0.0000 0.000000000 0.00 0.000000000 0.00 0.00 0.0 0.0 0.00000000 0.00000000 0.05000000
  PopG 0.0000 0.0000 0.000000000 0.00 0.000000000 0.00 0.00 0.0 0.0 0.00000000 0.05000000 0.00000000

$ables$D135317
var
grouping 10/10 10/11 10/12 10/13 10/14 11/11 11/12 11/13 11/14 12/12 12/13 12/14
  PopA 0.03361345 0.06722689 0.04201681 0.02521008 0.008403361 0.04201681 0.05882353 0.05042017 0.02521008 0.02521008 0.02521008 0.00
  PopB 0.00000000 0.00000000 0.10000000 0.00000000 0.000000000 0.05000000 0.10000000 0.05000000 0.00000000 0.15000000 0.05000000 0.00
  PopC 0.00000000 0.06250000 0.05000000 0.00000000 0.012500000 0.10000000 0.13750000 0.07500000 0.06250000 0.01250000 0.10000000 0.00
  PopD 0.00000000 0.00000000 0.00000000 0.00000000 0.000000000 0.05000000 0.30000000 0.15000000 0.00000000 0.20000000 0.15000000 0.05
  PopE 0.00000000 0.05000000 0.00000000 0.00000000 0.000000000 0.25000000 0.20000000 0.05000000 0.10000000 0.00000000 0.05000000 0.00
  PopF 0.05000000 0.15000000 0.00000000 0.05000000 0.000000000 0.05000000 0.10000000 0.00000000 0.00000000 0.00000000 0.05000000 0.00
  PopG 0.05000000 0.00000000 0.05000000 0.00000000 0.000000000 0.05000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00

var
grouping 13/13 13/14 13/15 8/10 8/11 8/12 8/13 8/14 8/15 8/8 8/9 9/10
  PopA 0.01680672 0.00 0.0000 0.08403361 0.1092437 0.05042017 0.02521008 0.008403361 0.008403361 0.04201681 0.07563025 0.05042017
  PopB 0.00000000 0.05 0.0000 0.00000000 0.05000000 0.30000000 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.00000000
  PopC 0.01250000 0.00 0.0125 0.01250000 0.1000000 0.03750000 0.02500000 0.01250000 0.00000000 0.03750000 0.02500000 0.00000000
  PopD 0.05000000 0.00 0.0000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
  PopE 0.05000000 0.05 0.0000 0.00000000 0.00000000 0.05000000 0.10000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000
  PopF 0.00000000 0.05 0.0000 0.05000000 0.0500000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.05000000
  PopG 0.00000000 0.00 0.0000 0.15000000 0.1500000 0.15000000 0.00000000 0.00000000 0.00000000 0.10000000 0.00000000 0.10000000

var
grouping 9/11 9/12 9/13 9/15 9/9
  PopA 0.05882353 0.03361345 0.008403361 0.0000 0.02521008
  PopB 0.00000000 0.05000000 0.000000000 0.0000 0.00000000
  PopC 0.06250000 0.02500000 0.01250000 0.0125 0.00000000
  PopD 0.00000000 0.05000000 0.000000000 0.0000 0.00000000
  PopE 0.00000000 0.00000000 0.000000000 0.0000 0.00000000
```

PopF 0.05000000 0.15000000 0.10000000 0.0000 0.00000000  
PopG 0.05000000 0.05000000 0.00000000 0.0000 0.05000000

\$tables\$D16S539

```
var
grouping 10/10 10/11 10/12 10/13 11/11 11/12 11/13 11/14 12/12 12/13 12/14
PopA 0.008403361 0.05882353 0.1008403 0.04201681 0.05882353 0.1176471 0.04201681 0.008403361 0.05042017 0.07563025 0.008403361
PopB 0.000000000 0.15000000 0.0500000 0.00000000 0.20000000 0.1000000 0.00000000 0.00000000 0.00000000 0.10000000 0.000000000
PopC 0.000000000 0.05000000 0.0625000 0.03750000 0.07500000 0.1625000 0.07500000 0.01250000 0.15000000 0.16250000 0.012500000
PopD 0.000000000 0.05000000 0.0000000 0.05000000 0.15000000 0.2500000 0.05000000 0.00000000 0.05000000 0.00000000 0.000000000
PopE 0.000000000 0.05000000 0.1000000 0.00000000 0.15000000 0.0500000 0.15000000 0.05000000 0.05000000 0.10000000 0.000000000
PopF 0.050000000 0.1000000 0.3000000 0.00000000 0.05000000 0.2500000 0.05000000 0.00000000 0.10000000 0.00000000 0.000000000
PopG 0.000000000 0.05000000 0.0500000 0.15000000 0.10000000 0.0500000 0.05000000 0.00000000 0.05000000 0.00000000 0.000000000
var
grouping 13/13 13/14 14/14 8/11 8/12 8/14 9/10 9/11 9/12 9/13 9/14 9/9
PopA 0.01680672 0.008403361 0.01680672 0.000 0.0000 0.008403361 0.07563025 0.1092437 0.07563025 0.02521008 0.01680672 0.07563025
PopB 0.05000000 0.000000000 0.00000000 0.000 0.0000 0.050000000 0.05000000 0.2000000 0.05000000 0.00000000 0.00000000 0.000000000
PopC 0.07500000 0.000000000 0.00000000 0.025 0.0125 0.000000000 0.01250000 0.0250000 0.02500000 0.02500000 0.00000000 0.000000000
PopD 0.00000000 0.012500000 0.06250000 0.00000000 0.10000000 0.02500000 0.000000000 0.05000000 0.1000000 0.10000000 0.05000000 0.100000000
PopE 0.05000000 0.000000000 0.00000000 0.050 0.1000 0.050000000 0.00000000 0.0500000 0.00000000 0.00000000 0.00000000 0.000000000
PopF 0.0000000 0.000000000 0.00000000 0.000 0.0000 0.000000000 0.05000000 0.0500000 0.00000000 0.00000000 0.00000000 0.100000000
PopG 0.05000000 0.000000000 0.00000000 0.000 0.0000 0.000000000 0.00000000 0.2500000 0.05000000 0.05000000 0.00000000 0.100000000
```

\$tables\$D3S1358

```
var
grouping 12/16 14/14 14/15 14/16 14/17 14/18 15/15 15/16 15/17 15/18 15/19 16/16 16/17
PopA 0.0000 0.008403361 0.03361345 0.008403361 0.01680672 0.00 0.2016807 0.2521008 0.1680672 0.02521008 0.00 0.1008403 0.07563025
PopB 0.0000 0.000000000 0.00000000 0.05000000 0.00000000 0.05 0.0000000 0.1500000 0.1500000 0.05000000 0.00 0.0000000 0.300000000
PopC 0.0125 0.012500000 0.06250000 0.10000000 0.02500000 0.00 0.0875000 0.0875000 0.1625000 0.05000000 0.00 0.0625000 0.137500000
PopD 0.0000 0.000000000 0.05000000 0.00000000 0.00000000 0.00 0.1500000 0.3000000 0.1500000 0.05000000 0.00 0.0500000 0.150000000
PopE 0.0000 0.000000000 0.05000000 0.15000000 0.10000000 0.00 0.0500000 0.0500000 0.0000000 0.15000000 0.05 0.0000000 0.100000000
PopF 0.0000 0.000000000 0.05000000 0.00000000 0.10000000 0.00 0.1500000 0.1500000 0.2500000 0.05000000 0.00 0.0500000 0.050000000
PopG 0.0000 0.000000000 0.00000000 0.00000000 0.00000000 0.00 0.2000000 0.1000000 0.1500000 0.10000000 0.00 0.1500000 0.200000000
var
grouping 16/18 16/19 17/17 17/18 18/18
PopA 0.008403361 0.0000 0.07563025 0.02521008 0.0000
PopB 0.15000000 0.0000 0.10000000 0.00000000 0.0000
PopC 0.03750000 0.0125 0.07500000 0.03750000 0.0375
PopD 0.05000000 0.0000 0.05000000 0.00000000 0.0000
PopE 0.25000000 0.0000 0.00000000 0.00000000 0.0500
PopF 0.10000000 0.0000 0.00000000 0.05000000 0.0000
PopG 0.00000000 0.0000 0.10000000 0.00000000 0.0000
```

\$tables\$D8S1179

```
var
grouping 10/10 10/11 10/12 10/13 10/14 10/15 11/11 11/12 11/13 11/14 11/15 11/16
PopA 0.008403361 0.03361345 0.02521008 0.03361345 0.05882353 0.01680672 0.0 0.0 0.04201681 0.05882353 0.008403361 0.02521008
PopB 0.000000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.0 0.0 0.00000000 0.00000000 0.00000000 0.000000000
PopC 0.00000000 0.00000000 0.00000000 0.03750000 0.02500000 0.01250000 0.0 0.0 0.03750000 0.06250000 0.01250000 0.000000000
PopD 0.00000000 0.00000000 0.00000000 0.00000000 0.10000000 0.00000000 0.0 0.1 0.00000000 0.00000000 0.00000000 0.000000000
PopE 0.05000000 0.00000000 0.00000000 0.00000000 0.05000000 0.00000000 0.1 0.0 0.10000000 0.00000000 0.00000000 0.000000000
PopF 0.00000000 0.00000000 0.05000000 0.05000000 0.05000000 0.00000000 0.0 0.0 0.10000000 0.00000000 0.00000000 0.000000000
PopG 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.0 0.0 0.00000000 0.10000000 0.00000000 0.050000000
var
grouping 11/17 12/12 12/13 12/14 12/15 12/16 13/13 13/14 13/15 13/16 13/17 14/14
PopA 0.008403361 0.008403361 0.07563025 0.02521008 0.05042017 0.00 0.1092437 0.1344538 0.05042017 0.01680672 0.008403361 0.05042017
PopB 0.00000000 0.00000000 0.20000000 0.15000000 0.10000000 0.00 0.0000000 0.2000000 0.00000000 0.05000000 0.00000000 0.050000000
PopC 0.00000000 0.05000000 0.17500000 0.03750000 0.06250000 0.00 0.0625000 0.2000000 0.11250000 0.01250000 0.00000000 0.037500000
PopD 0.00000000 0.05000000 0.10000000 0.15000000 0.05000000 0.00 0.0000000 0.0500000 0.00000000 0.00000000 0.00000000 0.050000000
PopE 0.00000000 0.10000000 0.05000000 0.05000000 0.05000000 0.00 0.1500000 0.1500000 0.15000000 0.00000000 0.00000000 0.000000000
PopF 0.00000000 0.05000000 0.00000000 0.00000000 0.05000000 0.00 0.0000000 0.3500000 0.00000000 0.00000000 0.00000000 0.100000000
PopG 0.05000000 0.05000000 0.00000000 0.05000000 0.05000000 0.05 0.0500000 0.1500000 0.05000000 0.05000000 0.05000000 0.050000000
var
grouping 14/15 14/16 14/17 14/18 15/15 15/16 16/16 8/10 8/13 9/11 9/12 9/14
PopA 0.07563025 0.00 0.0000 0.008403361 0.05042017 0.0000 0.01680672 0.00 0.00 0.0000 0.0000 0.00
PopB 0.10000000 0.00 0.0500 0.00000000 0.00000000 0.0500 0.00000000 0.05 0.00 0.0000 0.0000 0.00
PopC 0.01250000 0.00 0.0125 0.00000000 0.00000000 0.0125 0.00000000 0.00 0.00 0.0125 0.0125 0.00
PopD 0.15000000 0.05 0.0000 0.00000000 0.10000000 0.0000 0.00000000 0.00 0.00 0.0000 0.0000 0.00
PopE 0.00000000 0.00 0.0000 0.00000000 0.00000000 0.0000 0.00000000 0.00 0.00 0.0000 0.0000 0.00
PopF 0.05000000 0.00 0.0000 0.00000000 0.05000000 0.0000 0.00000000 0.00 0.05 0.0000 0.0000 0.05
PopG 0.05000000 0.05 0.0000 0.00000000 0.05000000 0.0500 0.00000000 0.00 0.00 0.0000 0.0000 0.00
```

\$tables\$FGA

```
var
grouping 18.2/21 18/19 18/20 18/22 18/24 18/26 19/20 19/21 19/22 19/23 19/24 19/25 20.2/22
PopA 0.00 0.0000 0.0000 0.00 0.008403361 0.008403361 0.0000 0.008403361 0.02521008 0.01680672 0.02521008 0.008403361 0.008403361
PopB 0.00 0.0000 0.0000 0.05 0.00000000 0.00000000 0.0000 0.050000000 0.00000000 0.00000000 0.00000000 0.000000000 0.000000000
PopC 0.00 0.0125 0.0125 0.00 0.01250000 0.00000000 0.0125 0.025000000 0.01250000 0.02500000 0.03750000 0.00000000 0.000000000
PopD 0.05 0.0000 0.0000 0.00 0.00000000 0.00000000 0.0000 0.00000000 0.00000000 0.00000000 0.05000000 0.05000000 0.000000000
PopE 0.00 0.0000 0.0000 0.00 0.00000000 0.00000000 0.0000 0.10000000 0.00000000 0.05000000 0.00000000 0.00000000 0.000000000
PopF 0.00 0.0000 0.0000 0.05 0.00000000 0.00000000 0.0000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.000000000
PopG 0.00 0.0000 0.0000 0.00 0.00000000 0.00000000 0.0000 0.05000000 0.00000000 0.00000000 0.05000000 0.05000000 0.000000000
var
grouping 20/20 20/21 20/22 20/23 20/24 20/25 20/26 21/21 21/21.2 21/22 21/23
PopA 0.008403361 0.008403361 0.01680672 0.03361345 0.02521008 0.03361345 0.008403361 0.01680672 0.00 0.02521008 0.01680672
PopB 0.000000000 0.000000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.00 0.05000000 0.05000000
PopC 0.00000000 0.07500000 0.06250000 0.02500000 0.02500000 0.07500000 0.01250000 0.02500000 0.00 0.07500000 0.01250000
PopD 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.10000000 0.05000000 0.00 0.10000000 0.05000000
PopE 0.00000000 0.05000000 0.10000000 0.00000000 0.05000000 0.00000000 0.05000000 0.10000000 0.00 0.05000000 0.00000000
PopF 0.00000000 0.05000000 0.05000000 0.05000000 0.05000000 0.05000000 0.00000000 0.00000000 0.00 0.05000000 0.05000000
PopG 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.05000000 0.00000000 0.05000000 0.05 0.15000000 0.10000000
```

```

var
grouping 21/24 21/25 21/26 21/27 21/29 22.3/25 22/22 22/22.2 22/23 22/24 22/25 22/26 22/27
PopA 0.02521008 0.03361345 0.008403361 0.00 0.00 0.00 0.01680672 0.0000 0.02521008 0.08403361 0.07563025 0.01680672 0.0000
PopB 0.00000000 0.05000000 0.00000000 0.00 0.05 0.00 0.05000000 0.0000 0.00000000 0.05000000 0.15000000 0.00000000 0.0000
PopC 0.05000000 0.02500000 0.01250000 0.00 0.00 0.00 0.05000000 0.0125 0.07500000 0.08750000 0.03750000 0.00000000 0.0125
PopD 0.00000000 0.00000000 0.05000000 0.00 0.00 0.00 0.05 0.00000000 0.0000 0.20000000 0.00000000 0.00000000 0.0000
PopE 0.10000000 0.00000000 0.00000000 0.00 0.00 0.00 0.00000000 0.0000 0.15000000 0.05000000 0.00000000 0.00000000 0.0000
PopF 0.05000000 0.00000000 0.00000000 0.05 0.00 0.00 0.00000000 0.0000 0.00000000 0.05000000 0.15000000 0.00000000 0.0000
PopG 0.05000000 0.00000000 0.00000000 0.00 0.00 0.00 0.00000000 0.0500 0.00000000 0.05000000 0.00000000 0.00000000 0.0000

var
grouping 23.2/24 23.3/28 23/23 23/24 23/24.2 23/25 23/26 23/27 23/28 24.2/25 24.2/26 24/24 24/24.3
PopA 0.008403361 0.00 0.02521008 0.1008403 0.008403361 0.04201681 0.01680672 0.00 0.00 0.008403361 0.00 0.06722689 0.00
PopB 0.00000000 0.05 0.05000000 0.0500000 0.00000000 0.00000000 0.00000000 0.00 0.05 0.00000000 0.00 0.00000000 0.05
PopC 0.00000000 0.00 0.01250000 0.0000000 0.00000000 0.02500000 0.00000000 0.00 0.00 0.00000000 0.00 0.03750000 0.00
PopD 0.00000000 0.00 0.00000000 0.0500000 0.00000000 0.00000000 0.05000000 0.05 0.00 0.00000000 0.00 0.00000000 0.00
PopE 0.00000000 0.00 0.00000000 0.0500000 0.00000000 0.00000000 0.05000000 0.00 0.00 0.00000000 0.00 0.05000000 0.00
PopF 0.00000000 0.00 0.00000000 0.0500000 0.00000000 0.05000000 0.00000000 0.00 0.00 0.00000000 0.00 0.00000000 0.00
PopG 0.00000000 0.00 0.20000000 0.0000000 0.00000000 0.00000000 0.00000000 0.00 0.00 0.00000000 0.05 0.05000000 0.00

var
grouping 24/25 24/26 24/26.2 24/27 25/25 25/26 26/26
PopA 0.05042017 0.008403361 0.008403361 0.008403361 0.01680672 0.03361345 0.008403361
PopB 0.00000000 0.05000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000
PopC 0.00000000 0.01250000 0.00000000 0.00000000 0.01250000 0.00000000 0.00000000
PopD 0.05000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
PopE 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
PopF 0.05000000 0.00000000 0.00000000 0.05000000 0.05000000 0.10000000 0.00000000
PopG 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000

$stables$TH01
var
grouping 6/6 6/7 6/8 6/9 6/9.3 7/10 7/7 7/8 7/9 7/9.3 8/10 8/8 8/9 8/9.3
PopA 0.0000 0.05882353 0.02521008 0.1176471 0.05042017 0.0 0.1512605 0.02521008 0.1680672 0.08403361 0.00 0.00 0.04201681 0.03361345
PopB 0.0500 0.30000000 0.05000000 0.0500000 0.10000000 0.0 0.1000000 0.10000000 0.1000000 0.00000000 0.05 0.00 0.00000000 0.05000000
PopC 0.0375 0.05000000 0.03750000 0.1000000 0.20000000 0.0 0.0125000 0.01250000 0.0750000 0.11250000 0.00 0.00 0.07500000 0.02500000
PopD 0.0500 0.15000000 0.05000000 0.0500000 0.00000000 0.0 0.0500000 0.20000000 0.2000000 0.10000000 0.00 0.05 0.05000000 0.05000000
PopE 0.0000 0.15000000 0.05000000 0.0500000 0.15000000 0.0 0.0000000 0.05000000 0.0000000 0.20000000 0.00 0.00 0.00000000 0.10000000
PopF 0.1000 0.20000000 0.05000000 0.0500000 0.05000000 0.0 0.1500000 0.00000000 0.0500000 0.20000000 0.00 0.00 0.00000000 0.00000000
PopG 0.0000 0.15000000 0.00000000 0.0500000 0.05000000 0.1 0.2000000 0.05000000 0.1000000 0.10000000 0.00 0.00 0.00000000 0.00000000

var
grouping 9.3/9.3 9/10 9/9 9/9.3
PopA 0.04201681 0.02521008 0.06722689 0.1092437
PopB 0.00000000 0.05000000 0.00000000 0.00000000
PopC 0.08750000 0.00000000 0.03750000 0.1375000
PopD 0.00000000 0.00000000 0.00000000 0.00000000
PopE 0.20000000 0.00000000 0.05000000 0.00000000
PopF 0.00000000 0.00000000 0.05000000 0.1000000
PopG 0.00000000 0.05000000 0.10000000 0.0500000

$stables$TPOX
var
grouping 10/11 10/12 11/11 11/12 11/13 12/12 6/6 6/8 7/12 7/8 8/10 8/11 8/12 8/8
PopA 0.008403361 0.0000 0.06722689 0.00 0.008403361 0.008403361 0.00 0.00 0.00 0.00 0.02521008 0.3109244 0.05042017 0.3613445
PopB 0.00000000 0.0000 0.20000000 0.00 0.00000000 0.00000000 0.00 0.00 0.00 0.00 0.10000000 0.1000000 0.00000000 0.1000000
PopC 0.03750000 0.0125 0.03750000 0.00 0.00000000 0.00000000 0.00 0.00 0.00 0.03750000 0.3125000 0.06250000 0.3250000
PopD 0.00000000 0.0000 0.05000000 0.00 0.00000000 0.00000000 0.05 0.05 0.00 0.05 0.10000000 0.1500000 0.00000000 0.2000000
PopE 0.00000000 0.0000 0.05000000 0.00 0.00000000 0.00000000 0.00 0.00 0.00 0.00 0.00000000 0.4000000 0.00000000 0.4500000
PopF 0.00000000 0.0000 0.05000000 0.05 0.00000000 0.00000000 0.00 0.00 0.05 0.00 0.00000000 0.3000000 0.10000000 0.2500000
PopG 0.00000000 0.0000 0.00000000 0.00 0.00000000 0.00000000 0.00 0.00 0.00 0.00 0.05000000 0.4000000 0.00000000 0.3500000

var
grouping 8/9 9/10 9/11 9/12 9/9
PopA 0.1008403 0.008403361 0.02521008 0.01680672 0.008403361
PopB 0.2500000 0.05000000 0.10000000 0.00000000 0.10000000
PopC 0.1125000 0.02500000 0.03750000 0.00000000 0.00000000
PopD 0.1500000 0.00000000 0.20000000 0.00000000 0.00000000
PopE 0.0500000 0.00000000 0.05000000 0.00000000 0.00000000
PopF 0.1000000 0.00000000 0.10000000 0.00000000 0.00000000
PopG 0.1000000 0.00000000 0.10000000 0.00000000 0.00000000

$stables$vWA
var
grouping 13/18 14/14 14/15 14/16 14/17 14/18 14/19 14/20 14/21 15/15 15/16 15/17 15/18
PopA 0.0000 0.0000 0.0000 0.05042017 0.07563025 0.03361345 0.01680672 0.008403361 0.00 0.0000 0.03361345 0.03361345 0.008403361
PopB 0.0000 0.0000 0.0000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.0000 0.15000000 0.20000000 0.05000000
PopC 0.0125 0.0125 0.0125 0.02500000 0.06250000 0.03750000 0.02500000 0.01250000 0.00 0.0125 0.05000000 0.10000000 0.02500000
PopD 0.0000 0.0000 0.1000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.00 0.0000 0.20000000 0.15000000 0.00000000
PopE 0.0000 0.0000 0.0000 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.05 0.0500 0.05000000 0.10000000 0.05000000
PopF 0.0000 0.0000 0.0500 0.05000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00 0.0000 0.05000000 0.05000000 0.00000000
PopG 0.0000 0.0000 0.0000 0.00000000 0.15000000 0.05000000 0.05000000 0.00000000 0.00 0.0000 0.05000000 0.00000000 0.05000000

var
grouping 15/19 16/16 16/17 16/18 16/19 16/20 17/17 17/18 17/19 17/20 18/18 18/19
PopA 0.01680672 0.06722689 0.1680672 0.09243697 0.02521008 0.00 0.08403361 0.1176471 0.06722689 0.0000 0.04201681 0.01680672
PopB 0.00000000 0.00000000 0.00000000 0.05000000 0.05000000 0.05 0.05000000 0.1500000 0.10000000 0.0500 0.00000000 0.00000000
PopC 0.00000000 0.07500000 0.0875000 0.03750000 0.06250000 0.00 0.07500000 0.1375000 0.03750000 0.0125 0.03750000 0.03750000
PopD 0.05000000 0.10000000 0.0500000 0.00000000 0.00000000 0.00 0.10000000 0.0500000 0.10000000 0.0000 0.00000000 0.05000000
PopE 0.05000000 0.00000000 0.0500000 0.05000000 0.10000000 0.00 0.10000000 0.2500000 0.00000000 0.0000 0.00000000 0.05000000
PopF 0.00000000 0.15000000 0.2500000 0.1500000 0.00000000 0.00 0.15000000 0.0000000 0.00000000 0.0500 0.00000000 0.00000000
PopG 0.00000000 0.00000000 0.0500000 0.00000000 0.00000000 0.00 0.05000000 0.3000000 0.10000000 0.0500 0.10000000 0.00000000

var
grouping 18/20 19/19 19/20
PopA 0.01680672 0.01680672 0.008403361
PopB 0.00000000 0.00000000 0.05000000

```

PopC 0.00000000 0.01250000 0.00000000  
PopD 0.00000000 0.00000000 0.00000000  
PopE 0.00000000 0.00000000 0.00000000  
PopF 0.00000000 0.00000000 0.00000000  
PopG 0.00000000 0.00000000 0.00000000

\$tables\$D18S51

var  
grouping 10/21 11/12 11/14 11/16 12.2/16 12/12 12/13 12/14 12/15 12/16 12/17 12/18 12/19 12/20 12/21 13/13  
PopA 0.00 0.00 0.00 0.000 0.00 0.0000 0.03361345 0.01680672 0.01680672 0.00 0.0000 0.0000 0.00 0.008403361 0.0000 0.01680672  
PopB 0.00 0.05 0.00 0.000 0.05 0.0000 0.00000000 0.00000000 0.00000000 0.00 0.0000 0.0000 0.05 0.00000000 0.0500 0.00000000  
PopC 0.00 0.00 0.00 0.025 0.00 0.0125 0.03750000 0.02500000 0.02500000 0.05 0.0125 0.0375 0.00 0.00000000 0.0125 0.01250000  
PopD 0.05 0.00 0.00 0.000 0.00 0.0000 0.00000000 0.00000000 0.00000000 0.00 0.0500 0.0500 0.00 0.00000000 0.0000 0.00000000  
PopE 0.00 0.00 0.00 0.000 0.00 0.0000 0.00000000 0.05000000 0.05000000 0.00 0.0000 0.0000 0.00 0.00000000 0.0000 0.05000000  
PopF 0.00 0.00 0.00 0.000 0.00 0.0000 0.00000000 0.00000000 0.00000000 0.05 0.0500 0.0000 0.00 0.00000000 0.0000 0.05000000  
PopG 0.00 0.00 0.00 0.000 0.00 0.0000 0.05000000 0.05000000 0.00000000 0.05 0.0000 0.0000 0.00 0.00000000 0.0000 0.00000000

var  
grouping 13/14 13/15 13/16 13/17 13/18 13/19 13/20 13/21 13/22 13/23 14.2/19 14/14  
PopA 0.07563025 0.03361345 0.01680672 0.008403361 0.01680672 0.00 0.02521008 0.008403361 0.008403361 0.008403361 0.00 0.08403361  
PopB 0.00000000 0.00000000 0.00000000 0.10000000 0.00000000 0.00 0.00000000 0.05000000 0.00000000 0.00000000 0.05 0.00000000  
PopC 0.06250000 0.02500000 0.02500000 0.00000000 0.02500000 0.00 0.01250000 0.00000000 0.00000000 0.00000000 0.00 0.03750000  
PopD 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000  
PopE 0.00000000 0.20000000 0.00000000 0.05000000 0.00000000 0.00 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000  
PopF 0.10000000 0.00000000 0.05000000 0.00000000 0.00000000 0.05 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000  
PopG 0.00000000 0.20000000 0.00000000 0.05000000 0.00000000 0.00 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000

var  
grouping 14/15 14/16 14/17 14/18 14/19 14/20 14/21 14/25 15/15 15/16 15/17  
PopA 0.07563025 0.06722689 0.07563025 0.02521008 0.008403361 0.03361345 0.008403361 0.008403361 0.02521008 0.02521008 0.01680672  
PopB 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.10000000 0.10000000  
PopC 0.02500000 0.08750000 0.02500000 0.02500000 0.02500000 0.00000000 0.00000000 0.00000000 0.00000000 0.07500000 0.06250000  
PopD 0.00000000 0.00000000 0.05000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.05000000 0.10000000 0.05000000  
PopE 0.05000000 0.00000000 0.10000000 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.10000000 0.15000000  
PopF 0.00000000 0.15000000 0.05000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.05000000 0.05000000 0.00000000  
PopG 0.25000000 0.05000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.05000000 0.00000000 0.10000000 0.00000000

var  
grouping 15/18 15/19 15/20 15/22 16/16 16/17 16/18 16/19 16/20 16/22 16/24 17/17  
PopA 0.03361345 0.008403361 0.03361345 0.008403361 0.008403361 0.03361345 0.000 0.008403361 0.008403361 0.01680672 0.008403361 0.00  
PopB 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.050 0.00000000 0.00000000 0.00000000 0.00000000 0.00  
PopC 0.01250000 0.00000000 0.01250000 0.00000000 0.02500000 0.06250000 0.025 0.00000000 0.01250000 0.00000000 0.00000000 0.00  
PopD 0.00000000 0.00000000 0.00000000 0.00000000 0.10000000 0.00000000 0.000 0.00000000 0.00000000 0.00000000 0.00000000 0.00  
PopE 0.05000000 0.10000000 0.00000000 0.00000000 0.00000000 0.00000000 0.050 0.00000000 0.00000000 0.00000000 0.00000000 0.00  
PopF 0.00000000 0.05000000 0.10000000 0.00000000 0.00000000 0.05000000 0.050 0.00000000 0.00000000 0.00000000 0.00000000 0.05  
PopG 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.050 0.00000000 0.00000000 0.00000000 0.00000000 0.00

var  
grouping 17/18 17/19 17/20 17/21 17/22 18/18 18/19 18/20 18/21 19/19 19/20 19/22 20/20 20/21  
PopA 0.008403361 0.008403361 0.02521008 0.0000 0.0000 0.00 0.000 0.00 0.008403361 0.00 0.01680672 0.00 0.008403361 0.00  
PopB 0.10000000 0.00000000 0.00000000 0.0500 0.0000 0.00 0.000 0.00 0.00000000 0.00 0.05000000 0.00 0.00000000 0.05  
PopC 0.02500000 0.00000000 0.01250000 0.0125 0.0125 0.00 0.025 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00  
PopD 0.05000000 0.10000000 0.00000000 0.0000 0.0000 0.10 0.000 0.05 0.00000000 0.05 0.00000000 0.05 0.00000000 0.00  
PopE 0.00000000 0.00000000 0.00000000 0.0000 0.0000 0.05 0.000 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00  
PopF 0.00000000 0.00000000 0.00000000 0.0000 0.0000 0.00 0.000 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00  
PopG 0.00000000 0.00000000 0.00000000 0.0000 0.0000 0.00 0.000 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00

var  
grouping 20/22 9/17  
PopA 0.008403361 0.00  
PopB 0.00000000 0.00  
PopC 0.00000000 0.00  
PopD 0.00000000 0.05  
PopE 0.00000000 0.00  
PopF 0.00000000 0.00  
PopG 0.00000000 0.00

\$tables\$D19S433

var  
grouping 11/13 11/14 11/14.2 11/15 12.2/14.2 12.2/16.2 12/12 12/13 12/14 12/14.2 12/15 12/15.2  
PopA 0.01680672 0.00 0.008403361 0.00 0.008403361 0.00 0.008403361 0.03361345 0.008403361 0.008403361 0.00 0.01680672  
PopB 0.00000000 0.05 0.00000000 0.00 0.00000000 0.00 0.00000000 0.10000000 0.05000000 0.05000000 0.00 0.00000000  
PopC 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00 0.01250000 0.01250000 0.01250000 0.00000000 0.00 0.00000000  
PopD 0.00000000 0.05 0.00000000 0.05 0.00000000 0.00 0.00000000 0.05000000 0.00000000 0.00000000 0.00 0.00000000  
PopE 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.05000000 0.20000000 0.00000000 0.10 0.00000000  
PopF 0.00000000 0.00 0.00000000 0.00 0.00000000 0.05 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.00000000  
PopG 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00 0.00000000 0.00000000 0.00000000 0.00000000 0.05 0.00000000

var  
grouping 12/16 13.2/14 13.2/14.2 13.2/15 13.2/15.2 13/13 13/13.2 13/14 13/14.2 13/15 13/15.2 13/16  
PopA 0.008403361 0.00 0.008403361 0.0000 0.01680672 0.04201681 0.008403361 0.1680672 0.06722689 0.04201681 0.07563025 0.02521008  
PopB 0.05000000 0.05 0.00000000 0.0000 0.00000000 0.00000000 0.00000000 0.1500000 0.00000000 0.00000000 0.05000000 0.00000000  
PopC 0.01250000 0.00 0.00000000 0.0125 0.00000000 0.05000000 0.00000000 0.1000000 0.01250000 0.08750000 0.00000000 0.00000000  
PopD 0.00000000 0.00 0.00000000 0.0000 0.00000000 0.05000000 0.10000000 0.2000000 0.00000000 0.10000000 0.00000000 0.00000000  
PopE 0.00000000 0.00 0.00000000 0.0000 0.00000000 0.10000000 0.00000000 0.1500000 0.00000000 0.10000000 0.05000000 0.00000000  
PopF 0.00000000 0.10 0.00000000 0.0500 0.05000000 0.10000000 0.00000000 0.1500000 0.05000000 0.10000000 0.05000000 0.00000000  
PopG 0.00000000 0.00 0.00000000 0.0000 0.05000000 0.05000000 0.00000000 0.1500000 0.05000000 0.00000000 0.00000000 0.00000000

var  
grouping 13/16.2 14.2/14.2 14.2/15 14.2/15.2 14.2/16.2 14/14 14/14.2 14/15 14/15.2 14/16 14/16.2  
PopA 0.01680672 0.00 0.02521008 0.008403361 0.008403361 0.07563025 0.05882353 0.05882353 0.03361345 0.03361345 0.008403361  
PopB 0.10000000 0.05 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.05000000 0.00000000 0.00000000 0.05000000  
PopC 0.02500000 0.00 0.03750000 0.00000000 0.01250000 0.20000000 0.05000000 0.12500000 0.01250000 0.08750000 0.01250000  
PopD 0.00000000 0.00 0.05000000 0.05000000 0.05000000 0.05000000 0.05000000 0.05000000 0.05000000 0.00000000 0.05000000  
PopE 0.05000000 0.00 0.00000000 0.00000000 0.00000000 0.05000000 0.00000000 0.10000000 0.00000000 0.00000000 0.00000000  
PopF 0.00000000 0.00 0.05000000 0.00000000 0.00000000 0.15000000 0.00000000 0.05000000 0.05000000 0.00000000 0.00000000  
PopG 0.00000000 0.00 0.00000000 0.00000000 0.00000000 0.20000000 0.10000000 0.05000000 0.10000000 0.00000000 0.00000000

var

grouping	15.2/15.2	15.2/16	15.2/16.2	15/15	15/15.2	15/16	15/16.2	16.2/17	16/16
PopA	0.04201681	0.008403361	0.0000	0.008403361	0.01680672	0.01680672	0.0000	0.00	0.008403361
PopB	0.00000000	0.00000000	0.0500	0.00000000	0.00000000	0.00000000	0.0500	0.05	0.00000000
PopC	0.01250000	0.00000000	0.0125	0.06250000	0.00000000	0.02500000	0.0125	0.00	0.00000000
PopD	0.00000000	0.00000000	0.0000	0.00000000	0.00000000	0.00000000	0.0000	0.00	0.00000000
PopE	0.00000000	0.0500	0.0000	0.00000000	0.00000000	0.00000000	0.0500	0.00	0.00000000
PopF	0.00000000	0.00000000	0.0000	0.00000000	0.00000000	0.00000000	0.0000	0.00	0.00000000
PopG	0.10000000	0.00000000	0.0000	0.00000000	0.10000000	0.00000000	0.0000	0.00	0.00000000

\$tables\$D21511

grouping	24.3/29	26/28	27/28	27/29	27/30	27/31	27/35	28.2/29	28/28	28/28.2	28/29	28/30	28/30.2	28/31	28/31.2
PopA	0.00	0.0000	0.0000	0.0	0.0000	0.00	0.00	0.008403361	0.000	0.0000	0.0000	0.01680672	0.008403361	0.008403361	0.01680672
PopB	0.05	0.0000	0.0000	0.0	0.0500	0.00	0.05	0.000000000	0.000	0.0000	0.0000	0.05000000	0.00000000	0.00000000	0.00000000
PopC	0.00	0.0125	0.0125	0.0	0.0125	0.00	0.00	0.000000000	0.025	0.0125	0.0375	0.10000000	0.02500000	0.01250000	0.00000000
PopD	0.00	0.0000	0.0500	0.1	0.0000	0.00	0.00	0.000000000	0.150	0.0000	0.1500	0.05000000	0.00000000	0.05000000	0.00000000
PopE	0.00	0.0000	0.0000	0.0	0.0000	0.00	0.00	0.000000000	0.050	0.0000	0.1000	0.20000000	0.00000000	0.00000000	0.00000000
PopF	0.00	0.0000	0.0000	0.0	0.0500	0.05	0.00	0.000000000	0.000	0.0000	0.1000	0.10000000	0.00000000	0.00000000	0.00000000
PopG	0.00	0.0000	0.0000	0.0	0.0000	0.00	0.00	0.000000000	0.000	0.0000	0.0500	0.10000000	0.00000000	0.00000000	0.00000000

grouping	28/32	28/32.2	28/33.2	28/35	29/29	29/30	29/30.2	29/31	29/31.2	29/32	29/32.2	29/33.2
PopA	0.008403361	0.008403361	0.01680672	0.0	0.05042017	0.1260504	0.00	0.02521008	0.08403361	0.01680672	0.03361345	0.01680672
PopB	0.00000000	0.00000000	0.05000000	0.0	0.00000000	0.0500000	0.00	0.00000000	0.0500000	0.0000000	0.1000000	0.0500000
PopC	0.00000000	0.03750000	0.01250000	0.0	0.05000000	0.0375000	0.05	0.06250000	0.0250000	0.0125000	0.0500000	0.0375000
PopD	0.00000000	0.00000000	0.00000000	0.1	0.10000000	0.0500000	0.00	0.10000000	0.0000000	0.0000000	0.0500000	0.0000000
PopE	0.00000000	0.05000000	0.00000000	0.0	0.00000000	0.1000000	0.00	0.00000000	0.1000000	0.0000000	0.0000000	0.0000000
PopF	0.00000000	0.00000000	0.00000000	0.0	0.00000000	0.1500000	0.00	0.10000000	0.0000000	0.0000000	0.1000000	0.0000000
PopG	0.00000000	0.00000000	0.00000000	0.0	0.05000000	0.2500000	0.00	0.00000000	0.0500000	0.0500000	0.0500000	0.0500000

grouping	30.2/31	30.2/31.2	30.2/32.2	30.2/33.2	30/30	30/30.2	30/31	30/31.2	30/32	30/32.2	30/33.2	
PopA	0.008403361	0.008403361	0.0000	0.0000	0.0000	0.1428571	0.008403361	0.06722689	0.05042017	0.01680672	0.07563025	0.03361345
PopB	0.00000000	0.00000000	0.0000	0.0000	0.0500000	0.00000000	0.1000000	0.0000000	0.0500000	0.0500000	0.0000000	0.0000000
PopC	0.00000000	0.00000000	0.0125	0.0125	0.0250000	0.06250000	0.0375000	0.0375000	0.0000000	0.0750000	0.0000000	0.0000000
PopD	0.00000000	0.00000000	0.0000	0.0000	0.0000000	0.00000000	0.0000000	0.0000000	0.0000000	0.0500000	0.0000000	0.0000000
PopE	0.00000000	0.00000000	0.0000	0.0000	0.1000000	0.00000000	0.0500000	0.0500000	0.0000000	0.0500000	0.0000000	0.0000000
PopF	0.00000000	0.00000000	0.0500	0.0000	0.0000000	0.00000000	0.0500000	0.0000000	0.0000000	0.0000000	0.0500000	0.0500000
PopG	0.05000000	0.00000000	0.0000	0.0000	0.0500000	0.05000000	0.0000000	0.0500000	0.0000000	0.0500000	0.0500000	0.0500000

grouping	30/34.2	30/37	31.2/31.2	31.2/32	31.2/32.2	31.2/33.2	31.2/36	31/31	31/31.2	31/32.2	31/33.2	32.2/32.2
PopA	0.008403361	0.00	0.01680672	0.00	0.008403361	0.008403361	0.00	0.03361345	0.02521008	0.0000	0.0000	0.02521008
PopB	0.00000000	0.05	0.05000000	0.05	0.00000000	0.00000000	0.05	0.00000000	0.0500000	0.0000	0.0000	0.00000000
PopC	0.00000000	0.00	0.00000000	0.00	0.03750000	0.01250000	0.00	0.00000000	0.0250000	0.0125	0.0125	0.01250000
PopD	0.00000000	0.00	0.00000000	0.00	0.00000000	0.00000000	0.00	0.00000000	0.0000000	0.0000	0.0000	0.00000000
PopE	0.00000000	0.00	0.00000000	0.00	0.10000000	0.00000000	0.00	0.00000000	0.0000000	0.0000	0.0000	0.05000000
PopF	0.00000000	0.00	0.00000000	0.00	0.05000000	0.00000000	0.00	0.00000000	0.1000000	0.0000	0.0000	0.00000000
PopG	0.00000000	0.00	0.00000000	0.00	0.00000000	0.00000000	0.00	0.00000000	0.0500000	0.0000	0.0000	0.00000000

grouping	32/32.2	32/33.2
PopA	0.008403361	0.008403361
PopB	0.00000000	0.00000000
PopC	0.00000000	0.00000000
PopD	0.00000000	0.00000000
PopE	0.00000000	0.00000000
PopF	0.00000000	0.00000000
PopG	0.00000000	0.00000000

\$tables\$D251338

grouping	16/17	16/18	16/19	16/20	16/25	17/17	17/18	17/19	17/20	17/21	17/22	17/23	17/24
PopA	0.00	0.0000	0.008403361	0.0000	0.00	0.00	0.0000	0.02521008	0.01680672	0.008403361	0.008403361	0.05882353	0.02521008
PopB	0.00	0.0000	0.15000000	0.0000	0.00	0.00	0.0500	0.15000000	0.10000000	0.00000000	0.00000000	0.00000000	0.00000000
PopC	0.00	0.0125	0.01250000	0.0125	0.00	0.05	0.0875	0.06250000	0.08750000	0.02500000	0.01250000	0.03750000	0.05000000
PopD	0.05	0.0000	0.00000000	0.0000	0.00	0.00	0.0000	0.00000000	0.10000000	0.10000000	0.00000000	0.00000000	0.00000000
PopE	0.00	0.0000	0.00000000	0.0000	0.05	0.00	0.1000	0.00000000	0.10000000	0.00000000	0.05000000	0.00000000	0.05000000
PopF	0.00	0.0000	0.00000000	0.0000	0.00	0.10	0.0000	0.10000000	0.10000000	0.00000000	0.00000000	0.00000000	0.00000000
PopG	0.00	0.0000	0.00000000	0.0000	0.00	0.00	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.20000000	0.00000000

grouping	17/25	17/26	18/18	18/19	18/20	18/21	18/22	18/23	18/24	18/25	18/26
PopA	0.008403361	0.01680672	0.008403361	0.02521008	0.01680672	0.0000	0.02521008	0.04201681	0.05042017	0.04201681	0.01680672
PopB	0.00000000	0.00000000	0.00000000	0.05000000	0.05000000	0.0000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000
PopC	0.05000000	0.01250000	0.01250000	0.01250000	0.00000000	0.0125	0.01250000	0.02500000	0.02500000	0.03750000	0.00000000
PopD	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000	0.0000	0.00000000	0.00000000	0.00000000	0.05000000	0.00000000
PopE	0.00000000	0.00000000	0.00000000	0.00000000	0.10000000	0.0000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000
PopF	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.0000	0.00000000	0.00000000	0.00000000	0.00000000	0.05000000
PopG	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.0500	0.00000000	0.05000000	0.05000000	0.00000000	0.00000000

grouping	19/19	19/20	19/21	19/22	19/23	19/24	19/25	19/26	19/28	20/20	20/21
PopA	0.01680672	0.03361345	0.008403361	0.02521008	0.02521008	0.04201681	0.01680672	0.008403361	0.008403361	0.01680672	0.008403361
PopB	0.00000000	0.15000000	0.00000000	0.05000000	0.00000000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
PopC	0.00000000	0.03750000	0.00000000	0.00000000	0.00000000	0.00000000	0.02500000	0.01250000	0.00000000	0.05000000	0.00000000
PopD	0.00000000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.05000000	0.00000000	0.00000000	0.00000000
PopE	0.00000000	0.00000000	0.10000000	0.00000000	0.00000000	0.05000000	0.10000000	0.00000000	0.00000000	0.00000000	0.00000000
PopF	0.10000000	0.10000000	0.00000000	0.05000000	0.10000000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
PopG	0.05000000	0.00000000	0.05000000	0.00000000	0.15000000	0.05000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000

grouping	20/22	20/23	20/24	20/25	20/26	21/21	21/22	21/23	21/24	21/25	22/22	22/23	22/24
PopA	0.008403361	0.03361345	0.05882353	0.02521008	0.0000	0.00	0.008403361	0.008403361	0.0000	0.0000	0.00	0.01680672	0.0000
PopB	0.00000000	0.00000000	0.00000000	0.05000000	0.0000	0.00	0.05000000	0.00000000	0.0000	0.0000	0.00	0.00000000	0.0000
PopC	0.01250000	0.05000000	0.03750000	0.01250000	0.0125	0.00	0.00000000	0.00000000	0.0125	0.0125	0.00	0.00000000	0.0125
PopD	0.10000000	0.00000000	0.05000000	0.00000000	0.0000	0.05	0.05000000	0.00000000	0.0500	0.1000	0.00	0.00000000	0.0000
PopE	0.00000000	0.00000000	0.00000000	0.00000000	0.0000	0.00	0.00000000	0.00000000	0.0000	0.0000	0.00	0.00000000	0.000

```

PopF 0.00000000 0.05000000 0.05000000 0.00000000 0.0000 0.00 0.000000000 0.000000000 0.0000 0.0000 0.00 0.00000000 0.0500
PopG 0.00000000 0.00000000 0.05000000 0.05000000 0.0000 0.00 0.000000000 0.050000000 0.0000 0.0000 0.05 0.05000000 0.0000
var
grouping 22/25 23/23 23/24 23/25 23/26 23/28 24/24 24/25 24/26 25/25
PopA 0.01680672 0.02521008 0.06722689 0.04201681 0.00 0.008403361 0.01680672 0.02521008 0.01680672 0.008403361
PopB 0.00000000 0.00000000 0.00000000 0.00000000 0.00 0.000000000 0.00000000 0.00000000 0.00000000 0.00000000
PopC 0.00000000 0.00000000 0.00000000 0.03750000 0.00 0.000000000 0.02500000 0.00000000 0.00000000 0.00000000
PopD 0.05000000 0.00000000 0.05000000 0.00000000 0.00 0.000000000 0.05000000 0.00000000 0.00000000 0.00000000
PopE 0.00000000 0.05000000 0.00000000 0.05000000 0.05 0.000000000 0.00000000 0.10000000 0.00000000 0.00000000
PopF 0.00000000 0.05000000 0.05000000 0.00000000 0.00 0.000000000 0.00000000 0.00000000 0.00000000 0.00000000
PopG 0.00000000 0.05000000 0.05000000 0.00000000 0.00 0.000000000 0.00000000 0.00000000 0.00000000 0.00000000
```

```

$stables$D5S818
var
grouping 10/10 10/11 10/12 10/13 11/11 11/12 11/13 11/14 12/12 12/13 12/14 13/13
PopA 0.008403361 0.05042017 0.08403361 0.008403361 0.2016807 0.2268908 0.1428571 0.0000 0.05882353 0.07563025 0.0000 0.02521008
PopB 0.000000000 0.05000000 0.05000000 0.05000000 0.1500000 0.1500000 0.0500000 0.0000 0.10000000 0.05000000 0.0000 0.05000000
PopC 0.000000000 0.06250000 0.06250000 0.01250000 0.0625000 0.2250000 0.0750000 0.0125 0.15000000 0.10000000 0.0125 0.02500000
PopD 0.000000000 0.00000000 0.10000000 0.05000000 0.1000000 0.2500000 0.1000000 0.0000 0.30000000 0.10000000 0.0000 0.00000000
PopE 0.000000000 0.05000000 0.00000000 0.00000000 0.0500000 0.3000000 0.2000000 0.0000 0.05000000 0.15000000 0.0000 0.05000000
PopF 0.000000000 0.00000000 0.00000000 0.05000000 0.1000000 0.3000000 0.0500000 0.0000 0.05000000 0.05000000 0.0000 0.00000000
PopG 0.050000000 0.15000000 0.10000000 0.10000000 0.1000000 0.1000000 0.1500000 0.0000 0.15000000 0.05000000 0.0000 0.05000000
var
grouping 13/14 7/10 7/11 7/12 7/13 8/12 8/13 9/10 9/11 9/12 9/13
PopA 0.008403361 0.008403361 0.008403361 0.02521008 0.00 0.00 0.00 0.01680672 0.02521008 0.01680672 0.008403361
PopB 0.000000000 0.000000000 0.000000000 0.00000000 0.00 0.05 0.15 0.00000000 0.00000000 0.05000000 0.05000000
PopC 0.000000000 0.000000000 0.000000000 0.00000000 0.00 0.00 0.00 0.01250000 0.02500000 0.08750000 0.07500000
PopD 0.000000000 0.000000000 0.000000000 0.00000000 0.00 0.00 0.00 0.00000000 0.00000000 0.00000000 0.00000000
PopE 0.000000000 0.000000000 0.000000000 0.00000000 0.00 0.00 0.00 0.00000000 0.05000000 0.10000000 0.00000000
PopF 0.000000000 0.000000000 0.000000000 0.05000000 0.05 0.00 0.00 0.00000000 0.05000000 0.15000000 0.10000000
PopG 0.000000000 0.000000000 0.000000000 0.00000000 0.00 0.00 0.00 0.00000000 0.00000000 0.00000000 0.00000000
```

```

$stables$D7S820
var
grouping 10.1/12 10/10 10/11 10/12 10/13 10/14 11/11 11/12 11/13 11/14 12/12 7/10
PopA 0.00 0.05042017 0.1260504 0.05882353 0.03361345 0.008403361 0.1008403 0.02521008 0.01680672 0.008403361 0.008403361 0.00
PopB 0.05 0.15000000 0.00000000 0.15000000 0.05000000 0.000000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00
PopC 0.00 0.06250000 0.1250000 0.11250000 0.01250000 0.000000000 0.0375000 0.12500000 0.00000000 0.00000000 0.01250000 0.00
PopD 0.00 0.10000000 0.3000000 0.05000000 0.05000000 0.000000000 0.00000000 0.05000000 0.00000000 0.00000000 0.00000000 0.05
PopE 0.00 0.05000000 0.1500000 0.10000000 0.10000000 0.000000000 0.00000000 0.05000000 0.05000000 0.00000000 0.05000000 0.00
PopF 0.00 0.05000000 0.2500000 0.10000000 0.05000000 0.000000000 0.00000000 0.15000000 0.05000000 0.00000000 0.00000000 0.05
PopG 0.00 0.00000000 0.1000000 0.05000000 0.00000000 0.000000000 0.2000000 0.05000000 0.00000000 0.00000000 0.00000000 0.00
var
grouping 7/12 8/10 8/11 8/12 8/13 8/8 8/9 9/10 9/11 9/12 9/9
PopA 0.0000 0.1344538 0.1260504 0.07563025 0.01680672 0.05042017 0.04201681 0.04201681 0.05042017 0.02521008 0.0000
PopB 0.0000 0.2500000 0.1000000 0.00000000 0.00000000 0.00000000 0.05000000 0.10000000 0.00000000 0.05000000 0.0000
PopC 0.0125 0.1000000 0.0625000 0.02500000 0.00000000 0.07500000 0.06250000 0.06250000 0.06250000 0.03750000 0.0125
PopD 0.0000 0.1000000 0.0000000 0.00000000 0.00000000 0.10000000 0.10000000 0.05000000 0.05000000 0.00000000 0.0000
PopE 0.0000 0.1000000 0.0000000 0.05000000 0.00000000 0.00000000 0.10000000 0.10000000 0.00000000 0.05000000 0.0500
PopF 0.0000 0.0500000 0.0000000 0.05000000 0.00000000 0.00000000 0.00000000 0.05000000 0.05000000 0.10000000 0.0000
PopG 0.0000 0.2500000 0.2000000 0.00000000 0.00000000 0.10000000 0.00000000 0.05000000 0.00000000 0.00000000 0.0000
```

```

$levels
[1] "PopA" "PopB" "PopC" "PopD" "PopE" "PopF" "PopG"
```

```

$call
NaiveBayes.default(x = X, grouping = Y)
```

```

$X
CSF1P0 D13S317 D16S539 D3S1358 D8S1179 FGA TH01 TPOX vWA D18S51 D19S433 D21S11 D2S1338 D5S818 D7S820
1 12/12 8/9 12/13 17/17 11/17 23/26 7/9 8/9 17/18 13/14 13/16.2 29/30 20/24 11/13 11/11
2 11/11 8/11 9/11 17/17 15/15 21/25 7/8 8/12 17/18 15/16 12/15.2 29/33.2 23/24 11/12 8/11
3 11/13 11/11 11/12 15/16 11/16 21/22 6/7 8/9 17/18 14/17 15.2/15.2 29/32.2 23/23 12/13 8/13
4 7/11 8/9 9/14 15/17 10/11 22/23 6/9 8/8 17/18 15/17 13/14 30/32.2 23/24 7/12 9/12
5 10/10 8/12 11/12 15/18 11/14 19/22 7/9 8/10 17/17 14/17 13/14.2 32.2/32.2 19/23 12/13 9/10
6 11/13 8/9 9/10 17/18 14/15 22/25 9/9.3 8/9 16/17 13/14 14/15.2 28/30.2 18/20 11/12 10/11
7 10/11 8/11 9/11 16/17 13/13 22/25 6/9 8/8 16/18 15/16 13/14.2 30/30 19/19 10/12 11/11
8 10/12 10/11 9/11 16/16 12/15 25/26 8/9.3 11/11 16/17 12/15 12.2/14.2 28/30 23/24 10/12 8/11
9 10/11 9/10 10/12 17/17 16/16 23/26 7/7 8/11 17/19 16/17 15/16 29/32.2 22/23 10/10 10/12
10 10/12 10/12 9/10 16/16 10/11 22/24 7/9 11/11 14/18 13/14 14.2/15 31/31 17/23 10/11 8/11
11 10/10 12/12 9/9 15/16 14/15 23/24 9/9 8/11 16/17 13/14 14/14.2 29/31.2 18/23 11/12 8/10
12 11/13 8/9 12/13 15/17 11/13 22/24 7/9 8/8 17/19 12/13 14.2/15.2 32/33.2 20/20 7/12 10/11
13 10/12 9/10 12/12 15/17 15/15 19/22 7/9 8/11 17/19 15/15 14/14 30/33.2 17/20 11/13 9/11
14 10/12 10/13 9/9 17/18 10/14 22/24 9/9 8/11 14/17 13/20 12/14 31/31 19/24 10/11 11/11
15 10/10 12/13 10/12 15/15 11/16 22/23 6/8 8/8 19/19 14/20 14/15 28/33.2 20/23 11/13 10/12
16 12/12 8/12 10/11 14/16 11/14 20/23 9/10 8/8 17/18 14/15 13/14 30/31 18/23 12/13 8/11
17 9/11 9/12 9/10 16/17 12/14 18/26 7/7 8/11 14/17 16/16 15.2/15.2 29/32 17/20 10/12 10/12
18 10/11 8/12 9/10 15/17 10/11 24.2/25 6/9 8/8 14/17 13/18 13/14 30/32 18/18 10/12 11/11
19 9/11 10/13 9/12 15/16 12/15 20/22 7/9 8/9 19/19 14/14 13/15 30/30 24/25 9/13 8/12
20 11/12 9/9 9/12 15/16 10/12 23/24 9/9 8/11 15/16 13/15 15.2/15.2 29/33.2 18/24 13/13 10/12
21 10/10 9/9 12/12 16/17 14/15 24/24 8/9.3 8/9 16/16 14/15 13/15.2 29/29 20/25 11/11 9/10
22 10/12 8/9 11/13 15/16 13/13 25/25 7/7 8/11 19/20 15/17 13/14.2 30/30 17/26 7/10 8/8
23 10/11 11/12 9/13 15/17 11/13 23/24.2 7/7 8/11 16/17 13/16 13/15.2 30/30 17/22 11/12 11/12
24 11/14 8/15 12/12 15/16 15/15 19/24 6/7 8/8 18/19 14/15 13.2/15.2 30/34.2 18/25 11/12 10/12
25 10/13 10/10 11/12 15/16 12/13 22/24 7/9 8/8 15/16 13/15 13/14.2 32.2/32.2 18/25 11/13 8/10
26 10/10 11/13 12/12 15/16 14/15 23/25 7/9 8/8 18/18 15/18 15/15.2 29/30 17/26 10/12 9/10
27 10/12 8/11 9/9 15/15 14/15 25/26 8/9 11/11 16/16 14/14 15.2/15.2 32.2/32.2 19/20 11/12 10/11
28 11/13 10/12 10/10 15/17 12/13 21/24 6/9 8/12 17/19 14/18 13/16.2 29/32.2 20/24 7/11 8/11
29 10/11 8/10 9/11 16/16 10/12 21/23 9.3/9.3 8/11 14/18 14/19 14/15.2 29/31.2 23/25 11/12 8/12
30 11/11 11/12 9/9 15/16 15/15 24/27 6/7 8/8 14/20 15/20 14/14.2 30/31 23/24 11/11 8/8
```

31	10/11	10/12	9/9	15/18	10/15	19/24	7/9	11/11	15/17	15/18	13/13	29/30	17/23	10/11	12/12
32	11/11	9/11	9/11	16/17	13/13	23/24	7/9.3	8/9	17/19	13/14	13/15	29/30	22/25	11/12	9/11
33	10/11	11/12	9/9	15/16	13/14	24/26.2	7/9.3	8/10	14/18	16/22	13.2/15.2	29/30	17/24	11/11	8/11
34	10/14	10/11	9/13	14/15	14/14	19/23	9/9.3	8/8	16/19	16/19	14/14	29/30	19/28	12/13	11/11
35	10/11	9/12	10/12	15/17	12/13	24/25	6/8	8/8	14/16	14/20	13/14.2	30/30	20/24	13/13	11/14
36	11/13	9/9	9/11	15/15	11/14	23/24	8/9	8/11	16/17	14/16	12/13	28/30	17/24	11/11	8/8
37	9/10	11/14	11/13	15/15	10/12	24/24	8/9	8/11	17/18	13/15	13/14	30/30	17/23	10/12	10/10
38	10/12	9/10	12/13	16/16	14/15	23/23	9/9.3	8/8	16/16	13/14	13/14	30/31	18/24	10/12	11/13
39	11/12	9/11	9/12	15/15	13/13	24/26	7/7	8/8	14/19	15/20	13/15.2	29/29	19/19	12/13	9/10
40	10/10	9/11	10/12	15/16	13/14	22/24	9/9	8/8	14/16	17/20	13/14	30.2/31	20/23	10/12	9/11
41	10/12	8/10	11/12	15/17	13/13	23.2/24	6/9	8/11	14/16	12/14	13/14	29/31.2	23/23	11/12	10/12
42	10/11	9/10	9/11	15/17	13/13	23/24	7/9.3	8/11	16/19	12/13	14/14.2	29/31.2	19/24	10/12	8/9
43	12/12	11/12	10/11	15/15	13/13	21/24	9/9.3	8/8	17/17	13/21	13/14.2	29/30	17/19	11/12	9/12
44	11/12	10/11	9/13	15/15	13/14	24/24	6/7	11/11	15/19	12/14	13/14	28/33.2	20/24	11/13	8/11
45	11/12	8/10	12/13	15/15	10/14	22/25	9/9	11/11	16/18	20/22	13/13	28/32	20/23	11/11	8/12
46	11/12	12/12	10/12	17/17	11/14	18/24	8/9.3	9/11	14/17	16/17	13/16	29/30	19/25	10/11	8/10
47	10/12	10/11	12/13	17/18	13/13	23/23	7/9	8/8	18/18	15/15	12/12	30/30	18/22	11/12	8/10
48	11/11	8/11	9/11	15/16	15/15	22/24	7/7	8/11	16/18	14/14	15.2/16	29/30	17/24	11/11	8/10
49	12/12	8/11	10/13	15/15	11/15	20/24	6/9	8/11	16/17	14/14	13/16	29/30	23/24	11/11	8/10
50	12/13	11/11	9/12	16/17	10/10	23/24	9/9.3	8/11	17/19	13/16	14.2/16.2	29/32.2	23/25	13/14	10/11
51	10/12	11/11	11/12	15/17	14/14	21/22	7/9	11/11	16/16	14/17	14/16	30/33.2	19/22	9/11	10/12
52	10/13	8/8	11/12	14/15	13/14	25/26	9/9.3	8/8	16/17	17/20	13/14	31.2/33.2	23/28	11/12	8/12
53	11/11	8/9	9/12	15/16	10/13	21/22	7/8	8/11	14/17	13/15	11/14.2	30/30	18/24	11/12	11/12
54	10/12	10/11	9/11	15/15	12/13	22/25	8/9	8/11	17/17	14/18	13/14	31/31.2	18/19	11/12	10/10
55	11/13	10/10	9/12	17/17	13/14	24/24	9/9.3	8/8	17/17	14/14	14.2/15	30/32.2	19/22	13/13	8/11
56	11/13	9/11	11/11	15/17	10/13	23/24	7/9	8/8	15/17	13/20	12/13	28/32.2	20/23	11/11	8/10
57	10/11	8/11	10/12	15/15	14/18	22/26	9/10	8/8	14/17	14/17	12/16	31/31	23/25	12/12	8/11
58	11/12	8/9	9/9	15/16	10/14	22/25	6/9	8/8	15/16	17/19	14/14	30/32.2	18/24	11/12	11/11
59	11/12	11/12	9/11	15/15	13/17	20/25	9/9	9/11	14/17	15/22	15/15.2	30/32.2	23/25	11/13	8/10
60	12/12	8/11	11/14	14/17	10/14	22/25	9/9.3	8/8	16/18	14/16	13/15	28/31	16/19	12/12	10/10
61	10/11	9/10	10/12	16/17	13/15	24/24	9/9.3	8/10	17/18	16/20	14/15.2	30/32.2	19/24	12/13	10/11
62	9/12	8/10	12/13	15/16	13/13	22/24	6/9.3	8/8	18/18	14/14	14/15	30/31.2	18/25	11/11	11/13
63	13/13	8/13	10/12	15/17	12/13	20/25	7/9.3	8/11	17/17	14/17	13/14	30/31	20/24	11/11	10/11
64	12/12	8/10	12/13	15/17	13/14	24/25	9.3/9.3	8/11	17/19	17/20	13/14.2	32/32.2	20/21	11/11	10/11
65	10/12	10/12	8/14	15/16	13/14	20.2/22	9/9.3	8/9	16/18	14/17	14/16	30/32.2	22/23	11/11	8/10
66	11/12	8/11	11/12	16/16	12/14	24/25	7/9.3	8/8	16/17	14/14	14/14	31/31.2	17/19	12/13	8/12
67	10/11	9/13	14/14	15/17	13/13	23/24	6/7	8/11	17/17	19/20	13/14	30/32	25/25	12/12	8/8
68	11/12	8/13	10/12	15/17	13/14	23/24	7/7	8/8	16/17	14/16	13/13.2	30/30	19/20	11/12	8/10
69	11/12	8/8	11/12	16/16	12/14	24/25	7/9.3	8/8	16/17	14/14	14/14	31/31.2	17/19	11/12	8/12
70	10/12	8/9	9/14	17/17	13/15	24/25	9/9	8/11	17/17	14/15	13/15	30/32.2	20/20	11/12	10/10
71	10/13	8/14	14/14	17/17	13/15	21/25	8/9	8/8	15/17	15/18	14/14.2	30/31	20/25	11/11	8/8
72	10/12	9/11	11/13	14/14	13/15	19/21	6/9	8/11	14/19	12/15	13/14	29/31	20/24	10/13	10/11
73	11/12	13/13	12/13	14/15	13/14	21/21	6/9	8/11	15/17	13/23	11/13	29/29	19/20	11/13	8/10
74	9/12	10/10	12/12	17/17	13/14	20/25	9.3/9.3	8/11	18/19	14/17	14.2/15	29/32	19/21	11/13	10/11
75	12/13	8/13	10/11	15/15	13/14	23/25	8/9.3	8/8	17/17	14/14	14/15.2	30/31	19/20	11/13	8/11
76	11/13	8/8	11/12	15/17	13/15	22/25	6/9.3	8/8	17/17	14/21	13/14	30/31	19/25	11/11	10/11
77	12/13	9/11	12/12	15/17	14/14	20/25	6/7	8/8	16/17	19/20	14/14.2	30/30	19/24	11/11	10/11
78	11/12	11/13	12/13	17/17	10/13	24/24	9/9.3	8/8	17/18	20/20	13/14	30/32.2	20/24	11/11	8/11
79	9/12	10/12	11/13	16/17	13/14	22/24	7/9.3	8/8	18/20	14/17	14/14	28/31.2	18/22	11/12	8/13
80	10/11	11/13	11/12	15/15	10/15	21/24	7/7	8/11	14/17	14/20	14/15	30/33.2	24/24	11/13	10/11
81	11/12	8/9	11/12	16/16	11/14	25/26	6/9.3	8/12	17/17	14/15	14/14.2	30/31.2	18/20	11/11	11/11
82	9/10	11/11	9/12	15/16	12/15	26/26	7/9	9/10	18/18	14/16	14/16	31.2/31.2	22/25	12/12	8/9
83	11/11	11/11	9/9	15/16	10/14	19/24	6/8	8/11	18/18	13/17	13.2/14.2	30/30	17/23	11/12	9/10
84	10/10	10/10	10/13	15/16	10/14	21/25	7/9	8/12	14/17	16/24	14/16.2	28/31.2	18/23	11/11	10/13
85	10/12	8/12	11/12	16/16	12/15	22/26	7/9	8/9	16/17	14/16	12/13	30/30	18/24	10/12	8/11
86	10/11	8/8	13/13	15/17	14/14	21/26	7/7	8/8	17/18	15/15	12/15.2	31/31	17/23	11/13	10/13
87	10/12	8/10	9/11	15/18	13/16	22/24	6/9.3	8/9	16/18	13/18	13/15.2	29/31.2	17/21	11/13	9/11
88	10/12	8/10	10/12	16/18	14/15	20/23	9/9.3	8/8	16/16	12/20	14/14	30/31.2	18/26	11/13	8/8
89	10/12	8/11	10/12	15/15	13/15	23/25	7/9	8/11	16/16	14/20	14/14	30/30.2	19/23	9/11	11/11
90	10/12	8/10	11/11	15/15	12/13	22/25	7/9	9/11	16/18	14/25	13/15.2	29/29	18/23	11/11	8/11
91	10/11	12/13	11/13	16/17	10/11	21/23	7/9	8/11	16/17	16/17	11/13	30/30	17/25	11/13	8/11
92	11/12	11/13	10/11	15/16	12/15	20/24	7/7	8/11	15/16	18/21	13/13	30/31.2	24/26	11/13	8/12
93	10/10	10/14	9/10	15/15	13/14	19/25	7/8	8/11	14/16	12/13	13/14	30/30	19/24	11/11	8/10
94	11/11	11/14	9/12	15/16	12/13	20/22	9/9.3	8/11	16/18	12/13	14/14.2	29/29	18/25	9/10	8/9
95	10/12	11/13	11/11	15/17	14/15	22/23	6/9	8/11	14/16	13/14	13/13	30/33.2	18/22	7/12	11/11
96	10/11	8/10	11/12	15/16	13/13	22/22	7/7	8/11	16/19	13/14	13/14	29/30	18/23	11/12	11/11
97	12/12	8/8	9/12	15/15	11/13	20/20	9.3/9.3	8/9	17/18	13/22	13/15.2	29/31	24/26	11/13	9/11
98	9/10	9/12	10/11	15/15	12/13	19/23	9/9	8/11	16/17	13/14	13/15.2	29/29	19/23	11/12	9/11
99	10/11	11/12	10/12	15/16	15/15	25/25	6/7	8/8	16/16	17/18	15.2/15.2	30/32.2	19/22	11/12	10/11
100	10/13	9/12	11/11	15/16	13/14	20/23	9/10	8/9	15/18	15/19	13/14	29/31.2	18/26	11/11	10/11
101	12/13	8/11	13/13	14/17	16/16	20/26	7/9	10/11	17/18	14/15	14/15	28.2/29	23/24	11/12	10/13
102	10/10	8/12	10/13	15/16	11/14	19/22	7/7	8/12	16/17	14/14	14/15	30/30	17/23	11/11	10/14
103	11/12	10/11	9/10	16/16	14/14	22/25	9.3/9.3	8/12	17/18	14/15	13/16	29/30	23/23	9/12	8/10
104	12/12	8/11	9/11	15/15	11/13	23/24	6/9.3	8/11	16/17	14/16	13/14.2	30/31.2	21/22	9/10	10/13
105	10/11	10/11	9/9	15/16	14/14	24/25	7/9.3	9/12	16/18	14/15	14/16	30/31.2	23/24	9/12	8/9
106	12/12	9/11	10/11	15/15	10/13	23/24	6/9.3	8/11	16/16	14/15	16/16	30/31	18/19	12/12	10/10
107	12/12	8/10	13/14	15/16	12/12	23/25	7/9.3	11/13	16/17	13/13	13/15.2	30.2/31.2	24/24	11/11	9/12
108	10/12	11/13	9/10	15/17	12/1										

122	9/12	10/12	11/11	16/18	13/14	22/22	8/9.3	8/9	15/16	12.2/16	16.2/17	29/32.2	16/19	8/13	8/11
123	8/11	12/12	10/11	15/16	14/15	23.3/28	7/8	8/9	15/17	15/15	13/14	30/31	19/22	10/12	10.1/12
124	9/11	12/13	11/11	16/17	14/17	22/25	6/8	8/8	15/17	20/21	14/15	29/30	19/24	11/12	10/12
125	11/12	11/12	13/13	15/16	12/13	25/25	7/7	8/10	15/17	13/17	13/15.2	24.3/29	16/19	8/13	8/10
126	12/13	8/12	9/11	17/17	12/15	23/23	6/9.3	8/8	16/20	16/18	13/14	29/31.2	19/20	9/13	8/11
127	8/9	8/12	9/11	16/18	12/14	24/26	7/9	11/11	15/18	12/21	14/16.2	31.2/36	17/19	11/13	8/9
128	9/10	13/14	9/10	16/17	15/16	24/24.3	6/7	8/11	17/20	15/17	15.2/16.2	28/30	17/19	12/13	9/10
129	10/10	8/12	11/12	15/17	13/14	21/25	6/9	9/9	16/19	15/16	12/14	28/33.2	17/18	11/11	9/10
130	10/13	8/12	10/12	15/17	14/14	22/25	6/7	8/11	17/18	15/17	12/13	29/32.2	18/22	11/11	9/12
131	8/9	11/13	12/13	15/17	12/13	21/21	7/8	11/11	16/18	13/21	15/16.2	27/30	17/20	12/12	10/10
132	12/12	8/11	10/11	16/17	14/15	22/25	6/6	9/9	15/17	19/20	14.2/15.2	27/35	21/22	12/12	10/12
133	9/11	8/12	10/11	16/18	13/16	23/24	6/7	9/11	19/20	13/17	12/13	29/33.2	18/19	9/12	10/13
134	10/10	12/12	11/12	17/17	12/15	22/24	7/9	8/9	14/16	17/18	13/16.2	30/30	19/20	11/12	8/10
135	12/12	10/12	9/11	15/16	12/13	21/23	7/7	9/11	17/18	17/21	11/14	30/37	17/20	10/11	8/10
136	12/12	8/12	11/11	14/16	13/14	21/29	6/7	9/10	17/19	11/12	14.2/14.2	30/31	19/20	8/12	10/10
137	10/12	9/12	9/11	16/17	8/10	20/22	6/7	11/11	15/16	14.2/19	13/16.2	31/31.2	18/20	10/13	10/12
138	9/11	11/12	8/14	16/17	12/14	18/22	8/10	8/9	15/16	14/16	12/16	30/32.2	16/19	11/12	10/10
139	11/12	8/9	11/11	14/18	12/14	19/21	6/9.3	8/10	17/17	12/19	13/14	31.2/31.2	20/25	11/11	11/11
140	10/11	11/12	11/13	14/15	10/13	20/21	9/9.3	8/8	16/18	15/18	13/14.2	31.2/32.2	17/24	9/13	8/10
141	11/12	11/12	12/12	15/17	12/14	22/27	8/9.3	8/11	17/18	13/18	15/16	31/31.2	20/24	12/12	10/12
142	11/12	8/12	12/13	17/17	12/13	24/24	9.3/9.3	8/8	15/17	12/16	14/15	30.2/32.2	18/24	11/12	11/12
143	10/11	8/11	12/13	15/17	13/15	21/22	9.3/9.3	8/11	16/17	14/16	13/15	28/28	21/24	9/12	10/11
144	11/12	10/11	12/14	17/17	13/15	22/22.2	9.3/9.3	9/11	18/18	14/16	14/14	29/32.2	17/25	9/12	11/12
145	10/11	9/11	9/13	16/18	11/13	19/24	9.3/9.3	8/9	14/17	12/14	14/15	30/31	17/20	11/13	10/10
146	12/15	8/12	12/12	15/17	12/13	21/22	6/9.3	8/10	14/16	16/18	15/15	29/30	17/17	11/11	8/9
147	12/13	11/14	10/11	15/17	13/14	21/26	6/9.3	8/9	18/19	14/17	13/14	30/32.2	20/20	11/12	8/8
148	11/11	9/11	12/12	15/18	9/11	22/22	6/9	8/11	17/18	17/18	13/14	29/29	19/25	11/13	10/12
149	9/10	8/11	12/13	16/17	13/16	18/19	9/9.3	8/11	16/16	15/16	15/15	28/30	18/24	10/13	10/12
150	10/13	11/12	12/13	15/17	12/13	21/25	9/9.3	8/8	14/15	14/14	14.2/15	32.2/32.2	20/25	12/12	11/12
151	12/12	12/13	10/13	15/17	13/14	21/22	7/9.3	8/12	17/20	14/16	14/14.2	29/33.2	17/22	12/13	8/11
152	12/12	11/11	12/12	17/17	13/14	24/24	6/9.3	8/11	17/17	14/18	14/14	29/30.2	18/22	11/12	8/8
153	11/13	11/13	12/12	16/17	11/13	20/23	7/9	8/8	14/18	11/16	14/15	27/30	19/20	12/12	7/12
154	12/13	11/11	11/13	17/18	13/15	21/21	8/9.3	8/11	17/19	16/17	13/13	28/30	24/24	11/13	8/11
155	10/12	9/11	11/13	14/16	11/14	22/22	8/9	8/12	17/18	16/17	14/16	30/30.2	17/24	11/12	11/11
156	10/11	8/8	9/11	15/18	11/14	22/24	6/9	8/9	16/19	13/20	14/15	29/32.2	16/18	11/12	8/11
157	10/11	8/11	11/11	17/17	13/13	18/24	7/9	8/11	14/19	13/16	14/14	30/32.2	19/25	11/12	8/10
158	10/12	11/14	13/13	16/17	10/13	21/24	9.3/9.3	8/8	17/18	12/16	14/16	29/30.2	17/20	9/10	8/12
159	11/11	11/12	13/13	14/15	10/15	19/24	6/8	10/11	16/18	13/15	13/14	30/30.2	18/23	9/12	8/10
160	10/12	12/13	12/12	17/17	12/12	20/22	6/7	8/11	14/14	15/20	14/15	30/31.2	17/21	12/14	10/11
161	10/12	9/11	11/11	15/17	14/14	25/25	6/9.3	8/8	14/18	15/17	12/16	29/33.2	18/23	11/12	10/11
162	10/11	12/13	10/12	18/18	12/12	20/25	6/9	8/11	17/17	13/13	14/14.2	30/30.2	17/20	11/12	11/12
163	10/12	8/11	10/13	15/18	13/13	20/21	6/9.3	8/12	16/16	14/19	15.2/15.2	28/28	16/20	11/14	10/10
164	10/12	10/11	8/11	14/17	13/13	22/23	8/9	8/11	15/17	16/17	14/16	31.2/32.2	17/18	9/13	10/11
165	10/11	12/13	12/13	16/16	14/14	22/24	6/9.3	8/9	14/17	12/15	14.2/16.2	31/33.2	17/20	12/12	8/9
166	9/11	8/11	11/12	14/16	11/14	19/21	6/9.3	8/11	14/18	15/17	14/14.2	28/30.2	17/20	11/12	11/12
167	10/10	11/13	10/11	14/16	13/14	21/24	7/9	8/8	16/17	15/16	14.2/15	30/32.2	17/19	10/11	11/11
168	12/12	8/11	11/12	14/16	13/14	19/23	7/9.3	8/11	17/19	12/15	13/15	31/31.2	17/24	11/12	8/10
169	10/11	12/13	10/12	18/18	12/12	20/25	6/9	8/11	17/17	13/16	14/14.2	30/30.2	17/20	11/12	11/12
170	10/12	10/11	8/11	14/17	13/13	22/23	8/9	8/11	15/17	16/17	14/16	31.2/32.2	17/18	9/13	10/11
171	11/12	10/12	12/13	17/17	14/14	24/26	6/6	11/11	16/18	12/17	14/14	30/31.2	17/25	10/11	8/9
172	10/12	11/14	9/12	17/18	12/15	22/25	9/9	9/11	16/19	14/16	14/14	28/32.2	17/20	9/13	8/8
173	10/12	10/12	12/13	16/17	14/17	23/25	7/9.3	10/12	18/18	15/17	14/14	29/30	17/17	9/12	10/10
174	12/12	11/11	11/13	16/17	13/13	21/24	6/9.3	8/8	13/18	13/15	15/15	30/31	20/23	11/12	10/11
175	9/12	11/12	8/12	14/15	12/12	20/22	6/9.3	8/12	17/18	14/16	14/15	29/31.2	17/19	12/13	10/10
176	10/10	11/13	11/11	14/14	13/14	22/23	7/9	8/8	17/17	14/16	15/16.2	30/32.2	24/24	10/11	11/12
177	10/13	11/11	12/13	16/17	13/14	20/22	7/9.3	10/11	15/16	17/18	14/15	28/30	23/25	13/13	8/11
178	10/11	10/11	13/13	14/16	10/14	19/20	9/9.3	8/8	16/17	13/14	13/13	31.2/33.2	18/25	12/13	9/9
179	11/11	10/11	11/13	16/16	12/13	22/22	6/9.3	8/11	16/17	12/13	14/14	29/31	20/20	11/11	8/8
180	11/12	12/13	10/12	16/17	11/14	22/23	6/9.3	8/8	14/20	12/18	14/16.2	29/30.2	20/23	11/12	8/8
181	10/11	11/12	11/12	14/15	12/14	22/23	7/9.3	8/8	19/19	15/16	14/15	28/33.2	20/20	11/12	9/11
182	10/12	9/11	10/11	16/16	13/15	20/25	7/9	9/11	15/16	14/14	13/14	30/31.2	20/23	9/11	8/10
183	11/13	8/11	12/12	16/17	13/14	18/20	6/7	8/11	17/18	12/21	13.2/15	30/32.2	17/19	10/11	10/10
184	10/12	8/9	9/13	15/15	12/13	20/26	9/9.3	8/8	17/18	12/13	14/14	28/32.2	20/24	9/12	10/11
185	10/12	11/11	11/12	15/15	13/14	21/25	6/8	8/9	15/16	14/18	13/14	28/30	17/21	11/11	11/12
186	10/11	11/14	12/13	14/16	11/15	22/24	9/9	8/8	15/17	12/18	14/14	28/32.2	17/18	9/12	10/12
187	10/13	8/13	10/12	16/18	12/13	22/22	7/8	8/11	15/18	18/19	15/16	28/29	19/20	12/12	10/12
188	11/13	11/12	11/12	15/15	11/13	20/25	6/7	8/8	16/17	16/20	15/15	29/30	20/20	12/12	9/12
189	10/13	12/12	11/11	12/16	9/12	22/23	9.3/9.3	8/8	17/17	17/20	14/16	30/30	17/25	11/13	10/11
190	9/10	9/12	11/12	14/16	10/13	19/24	9/9.3	8/11	14/17	15/17	12/14	28/30	18/25	10/12	9/11
191	11/12	11/13	12/12	15/17	12/13	23/25	6/9	8/8	18/18	11/16	13/15	29/32	17/25	11/12	10/12
192	10/10	8/9	11/12	15/15	13/14	20/25	6/9.3	8/10	14/17	16/16	14/14	29/32.2	18/19	12/13	10/11
193	10/10	11/12	12/13	15/17	15/16	20/24	8/9	8/9	17/19	15/17	14/16	28/30	23/25	12/12	8/9
194	10/12	8/11	11/12	16/17	13/14	20/24	6/9	8/8	17/18	14/16	13/13	30/30	18/21	9/13	8/8
195	11/12	9/12	10/12	15/18	13/15	20/25	6/8	8/9	16/19	12/12	13/15	28/28.2	20/22	11/13	8/9
196	10/10	11/11	13/13	16/16	13/14	20/21	9/9.3	8/9	14/16	13/14	14/15	29/32.2	22/24	11/12	10/11
197	10/11	10/12	13/13	15/16	13/15	22/24	6/9.3	9/10	16/16	13/14	14/14	29/31	17/18	12/12	9/10
198	10/11	10/12	13/13	15/16	13/15	22/24	6/9.3	9/10	16/1						



213	10/11	11/11	11/13	15/16	10/14	20/21	6/9	8/8	15/17	14/14	14/15	30/32.2	17/19	10/12	10/12
214	11/11	11/14	11/11	14/16	12/13	20/21	9/9.3	8/11	15/15	16/18	12/13	29/31.2	17/24	11/12	11/12
215	10/11	8/12	12/13	16/16	13/14	20/22	9/9.3	8/8	16/17	17/21	13/14	30/30.2	19/26	10/12	9/10
216	11/11	8/8	12/12	15/15	12/15	22/24	8/9	8/8	15/17	16/17	13/16.2	29/31	20/26	12/12	9/10
217	12/14	8/8	12/12	14/15	13/14	24/24	8/9	8/8	18/19	14/15	14/16	27/28	17/26	11/13	8/10
218	10/11	11/13	10/13	18/18	12/15	22/25	7/9.3	8/9	18/19	12/18	13/15	29/29	17/19	13/13	10/13
219	10/11	8/10	11/12	16/19	12/14	22/25	6/9	8/11	16/16	14/15	12/12	31/32.2	17/23	12/13	9/11
220	11/12	11/12	11/11	16/16	14/15	23/24	6/7	8/9	17/17	17/18	14/14	28/30	16/17	11/12	10/11
221	9/11	11/13	11/12	15/15	12/14	21/22	7/9	8/8	16/16	16/16	11/15	28/28	19/26	12/12	9/11
222	10/12	12/12	11/12	16/17	15/15	22.3/25	7/9.3	8/8	16/17	12/17	13/13.2	28/28	17/21	12/12	9/10
223	11/12	12/13	9/12	15/15	13/15	22/23	7/7	8/8	17/18	15/17	14/16.2	29/31	17/20	12/12	8/10
224	8/12	11/12	9/11	15/17	14/14	24/25	7/8	8/9	15/16	17/19	14/14.2	29/31	20/22	11/12	8/8
225	12/12	11/13	11/12	15/15	13/14	23/27	6/9	7/8	15/16	15/16	14/15	29/30	21/24	11/13	10/11
226	11/12	13/13	9/9	15/17	11/12	22/23	7/8	8/11	14/18	9/17	11/14	29/29	24/24	12/12	8/9
227	10/12	12/13	9/14	15/17	12/14	19/25	7/9	8/11	15/17	18/20	13/13.2	28/35	21/21	12/12	10/13
228	7/11	12/12	9/11	16/17	14/16	23/26	7/8	8/8	14/15	14/18	14.2/15	29/32.2	19/20	12/13	10/10
229	12/14	11/11	11/11	15/16	14/15	22/23	8/9.3	6/6	15/19	12/18	13/14	28/28	22/25	11/12	10/11
230	7/10	11/12	11/13	15/18	12/13	21/21	7/9	9/11	18/19	16/16	13/15	28/29	20/22	11/11	8/10
231	10/12	11/12	11/11	15/16	10/14	20/26	6/6	8/10	15/16	10/21	13/14	28/29	20/24	10/12	10/11
232	8/12	12/13	11/12	15/16	15/15	24/26	8/8	8/11	15/16	18/18	14.2/15.2	28/31	21/25	10/12	8/8
233	11/13	12/12	10/13	16/18	12/12	21/23	6/7	9/11	15/17	14/17	14.2/16.2	27/28	21/25	11/12	8/9
234	10/12	12/12	12/12	17/17	10/14	21/22	7/9.3	11/11	14/15	19/19	13/13	27/29	17/21	12/12	7/10
235	9/11	12/14	9/10	16/17	12/15	21/26	7/8	9/11	17/19	19/22	13/15	27/29	21/22	11/11	11/12
236	10/12	11/13	9/9	14/15	12/14	18.2/21	8/9	8/8	15/17	18/18	12/13	29/29	18/25	11/12	10/10
237	11/11	11/12	11/12	15/16	14/15	20/26	7/9	9/11	16/16	15/16	14/15.2	28/29	17/20	12/13	10/12
238	7/12	9/12	10/11	15/16	11/12	19/24	6/8	8/9	17/19	15/15	13/14	30/32.2	17/25	10/13	10/11
239	11/11	11/12	9/12	15/16	12/13	22/23	6/7	8/10	17/17	17/19	13/14	28/35	23/24	11/13	10/11
240	11/13	13/13	8/12	14/17	13/14	24/24	6/9.3	8/8	17/17	13/15	13/13	28/30	17/20	10/11	10/12
241	10/12	11/11	12/13	15/18	12/12	21/21	6/7	8/8	17/18	15/17	14/15	30/31	17/20	11/12	11/12
242	10/12	11/11	11/12	15/16	13/13	19/21	7/9.3	9/11	16/18	14/19	13/14	31.2/32.2	19/25	9/12	8/12
243	11/11	11/12	11/13	16/17	10/10	21/21	6/9.3	8/8	16/17	13/15	12/14	31.2/32.2	18/20	11/13	10/10
244	11/11	11/12	11/13	14/16	12/13	20/24	8/9.3	8/8	16/19	14/17	12/14	28/28	24/25	12/13	10/11
245	11/11	11/11	9/11	15/18	12/15	20/26	6/8	8/11	15/17	16/18	13/16.2	28/30	18/22	11/13	9/9
246	10/12	11/13	8/11	15/18	11/13	19/23	9.3/9.3	8/11	16/19	13/17	13/15	30/32.2	17/18	9/11	9/12
247	10/11	11/11	8/12	14/16	11/11	23/24	7/9.3	8/11	17/18	14/15	12/15	28/30	17/24	11/12	8/10
248	10/11	11/12	11/13	18/18	11/13	19/21	6/7	8/11	18/19	14/17	13/13	28/29	23/23	11/12	8/9
249	10/11	11/14	10/12	15/15	13/14	23/26	8/9.3	8/11	15/19	15/17	13/15	29/30	17/22	12/12	10/11
250	10/12	11/14	11/14	14/16	13/13	22/23	7/9.3	8/8	14/17	15/16	14/14	29/31.2	19/25	11/13	12/12
251	12/13	8/8	10/11	16/18	13/13	21/24	9/9	8/9	17/18	13/15	12/14	30/30	16/25	9/12	10/12
252	12/13	11/12	8/14	16/18	11/11	22/24	7/9.3	8/8	15/16	18/18	13/14	29/30	23/26	11/12	9/10
253	12/12	8/13	13/13	15/19	13/15	20/22	9.3/9.3	8/11	17/17	12/15	14/15	28/30	19/21	11/12	8/9
254	12/13	13/14	12/13	16/18	12/14	20/21	9.3/9.3	8/8	17/18	13/15	12/13	30/31.2	18/20	11/13	10/13
255	10/11	10/11	12/12	16/18	12/12	22/23	6/7	8/8	15/15	15/16	13/14	28/29	19/24	12/13	11/13
256	12/12	12/13	10/12	16/18	13/15	21/22	9.3/9.3	11/11	14/21	15/17	12/14	28/32.2	17/18	11/11	10/11
257	12/12	11/11	11/11	16/17	10/14	22/23	6/9.3	8/8	15/17	12/14	15/16.2	30/30	19/21	12/13	10/13
258	9/11	8/12	11/11	14/15	13/15	20/22	6/9	8/11	15/18	13/13	13/15.2	32.2/32.2	23/25	11/12	8/10
259	11/11	8/13	11/11	14/17	13/14	21/24	7/8	8/11	17/18	11/14	12/15	29/31.2	24/25	13/13	9/10
260	10/12	10/11	10/10	16/18	10/13	25/26	7/9	8/12	14/19	16/18	14.2/15	30/33.2	19/23	11/12	10/13
261	11/15	11/12	12/12	14/17	13/14	23/25	7/9.3	8/11	16/17	17/17	13/13	30.2/32.2	17/17	11/12	7/10
262	11/12	9/12	11/11	15/16	13/14	21/23	7/9.3	11/11	14/15	14/16	13/15.2	31/31.2	17/17	9/13	10/11
263	12/12	8/9	11/13	16/18	13/14	25/25	7/7	8/9	15/16	14/17	14/15	29/30	19/19	7/13	10/10
264	11/12	10/11	10/12	15/17	13/14	24/25	6/7	11/12	16/18	12/17	14/14	30/31	19/20	12/13	10/12
265	12/12	9/11	11/12	14/17	10/12	22/24	9/9.3	8/9	16/18	13/14	13.2/14	28/29	22/24	11/12	10/11
266	12/12	9/12	10/11	14/15	11/13	21/27	7/9.3	7/12	16/16	16/17	13.2/14	30/32.2	23/24	11/11	11/12
267	11/13	8/11	10/12	15/17	11/13	21/22	9/9.3	8/11	17/20	15/19	14/14	29/30	18/25	9/12	10/11
268	10/11	11/11	10/11	15/17	15/15	24/27	6/9.3	8/11	16/17	15/20	13/15	28/29	17/19	9/13	11/12
269	10/11	13/14	11/12	15/18	10/14	18/22	6/9	8/8	14/16	13/13	13/14.2	27/31	20/24	12/12	10/11
270	10/10	8/10	11/12	16/17	9/14	22/25	6/7	8/8	16/18	14/16	13/14	29/30	19/23	9/12	10/12
271	12/12	10/13	10/12	16/16	14/15	22/25	6/8	8/11	16/16	13/14	14/15.2	27/30	19/19	7/12	9/10
272	11/13	9/10	9/10	15/15	12/12	20/22	7/9.3	8/12	17/17	15/20	13/14	29/31	19/20	11/13	11/13
273	10/11	9/12	13/13	15/17	13/14	21/24	7/7	9/11	16/17	12/16	13/14	29/31	17/20	9/11	8/10
274	9/12	9/13	12/12	15/15	14/14	20/24	6/6	8/11	16/17	15/16	13/15	29/32.2	19/24	11/12	9/11
275	11/11	10/10	11/12	15/16	8/13	22/25	9/9	8/8	17/17	15/15	12.2/16.2	29/32.2	17/19	9/12	9/10
276	11/11	11/12	10/12	15/17	12/15	20/21	6/6	8/8	16/17	14/16	13.2/15	31/31.2	17/20	10/13	11/12
277	11/12	10/11	10/12	15/16	13/14	25/26	6/7	8/8	16/16	13/19	13.2/15.2	31.2/32.2	19/22	11/12	8/12
278	11/12	12/13	11/12	15/15	13/14	20/25	6/7	8/11	17/17	13/16	13/13	28/30	20/23	11/12	10/11
279	10/12	9/13	10/12	17/18	14/14	23/24	7/7	9/11	15/17	14/20	14/14	28/30	23/23	11/11	9/12
280	12/12	10/12	11/13	15/15	12/12	21/23	6/9	8/8	14/19	13/17	14/14	30/30.2	21/23	11/11	10/11
281	11/11	8/10	11/12	16/17	13/13	23/23	7/9.3	8/9	17/17	14/25	14/14	30/32.2	19/24	13/13	8/11
282	11/11	9/11	9/9	16/17	13/16	20/24	7/7	8/11	17/20	12/14	13.2/15.2	29/32.2	19/19	11/12	8/8
283	12/12	8/12	9/13	15/15	11/14	21/24	7/7	8/11	16/17	12/16	14/14.2	29/30	17/23	11/13	8/10
284	12/12	8/12	9/12	15/15	14/16	21/22	7/10	8/9	15/16	14/15	15.2/15.2	31/31.2	22/22	11/11	8/11
285	12/13	8/12	10/11	16/16	13/14	23/23	6/7	8/8	14/17	14/16	15/15.2	30/30	19/23	10/13	11/11
286	12/12	9/12	9/11	15/18	14/14	22/24	7/9	8/11	17/18	14/19	14/14	28/30	17/23	11/12	10/11
287	11/11	8/10	10/12	15/17	15/16	19/21	6/7	8/10	17/19	15/16	13/14	29/30	18/24	10/11	8/8
288	11/11	8/8	13/13	16/17	14/15	19/24	7/7	8/8	17/18	14/15	14/14.2	30/33.2	19/23	10/11	11/11
289	10/10	11/11	9/11	15/16	11/14	21/21.2	9/9	8/8	15/18	13/15	14/15.2	29/30	19/21	10/12	

```
$varnames
[1] "CSF1P0" "D13S317" "D16S539" "D3S1358" "D8S1179" "FGA" "TH01" "TPOX" "vWA" "D18S51" "D19S433" "D21S11" "D2S1338"
[14] "D5S818" "D7S820"
```

```
attr("class")
[1] "NaiveBayes"
> pred
$class
 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
PopA PopA PopA PopA PopC PopC PopC PopC PopA PopC PopC PopC PopC PopA PopD PopA PopC PopC PopC PopC PopC PopC PopC PopA PopA PopA PopC
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
PopA PopA PopA PopC PopC PopF PopA PopA PopA PopA PopA PopA PopC PopA PopC PopA PopC PopC PopC PopC PopA PopA PopC PopA
Levels: PopA PopB PopC PopD PopE PopF PopG
```

```
$posterior
      PopA      PopB      PopC      PopD      PopE      PopF      PopG
1  9.978310e-01 6.417387e-09 2.303115e-05 9.626081e-11 1.604347e-07 6.684778e-06 2.139129e-03
2  9.999222e-01 1.815454e-09 7.271678e-05 1.361591e-09 3.630908e-11 5.105965e-06 2.723181e-10
3  7.278226e-01 1.686491e-04 6.862348e-02 1.798923e-01 2.248654e-02 9.994019e-04 6.995813e-06
4  9.874641e-01 1.523562e-10 1.253051e-02 7.617809e-09 4.062831e-06 1.269635e-06 1.269635e-09
5  8.499311e-02 6.520833e-08 8.876531e-01 1.013085e-09 3.647106e-07 2.735329e-02 2.701560e-08
6  3.323034e-01 1.044000e-08 6.644210e-01 3.915000e-08 1.305000e-05 3.262500e-03 1.761750e-08
7  1.552109e-02 4.171529e-09 9.667221e-01 6.952549e-05 1.668612e-02 9.270065e-04 7.416052e-05
8  2.339442e-05 3.195853e-13 9.999759e-01 6.657465e-07 4.260778e-08 1.065194e-10 2.662986e-10
9  7.990053e-01 1.106365e-02 1.899202e-01 1.843942e-06 1.180123e-07 8.850923e-06 1.966872e-08
10 6.104617e-03 6.852033e-05 9.880904e-01 4.075520e-03 1.630208e-03 1.449074e-06 3.260416e-05
11 4.924640e-02 1.098263e-03 7.942670e-01 2.288048e-03 5.491314e-04 1.525365e-01 1.464350e-05
12 3.866211e-02 6.188598e-11 9.613377e-01 7.735748e-10 7.426318e-08 6.188598e-08 1.031433e-07
13 4.118874e-01 1.809852e-08 5.638873e-01 5.655788e-05 3.619704e-05 1.206568e-06 2.413136e-02
14 8.725714e-01 1.447254e-09 1.272736e-01 2.894507e-05 1.206045e-04 5.427202e-06 1.447254e-09
15 2.780208e-01 4.852529e-07 9.393017e-01 5.391728e-01 2.94015e-04 9.705110e-05 2.156691e-05
16 7.474281e-01 1.855629e-05 2.516243e-01 9.278143e-04 5.154524e-07 7.731785e-07 3.711257e-11
17 7.640189e-03 1.493877e-07 9.773248e-01 1.991835e-07 1.593468e-02 7.967341e-11 1.493877e-08
18 1.159799e-01 1.282365e-10 8.828232e-01 1.282365e-04 4.274550e-09 1.068638e-03 2.564730e-10
19 2.091202e-01 3.860856e-03 2.078415e-01 1.158257e-06 9.266055e-06 5.791284e-01 3.860856e-05
20 6.069806e-02 7.701520e-07 9.393017e-01 8.004504e-09 2.001126e-08 2.001126e-07 4.002252e-11
21 3.796111e-01 9.266825e-09 6.186273e-01 9.266825e-07 1.737530e-03 2.316706e-05 2.780047e-10
22 9.449957e-01 2.625067e-12 2.875066e-02 2.625067e-02 2.625067e-06 4.375111e-08 3.500089e-07
23 1.976368e-02 5.473267e-06 9.796751e-01 2.052475e-07 5.473267e-12 1.368317e-05 8.209901e-10
24 5.621433e-01 2.186178e-10 4.378294e-01 2.186178e-06 1.311707e-05 1.093089e-06 1.093089e-05
25 9.996264e-01 2.876249e-07 2.194404e-04 4.793748e-07 1.534000e-04 7.669998e-09 3.834999e-09
26 7.567845e-01 4.173569e-05 3.449529e-02 2.086785e-01 6.183065e-12 1.545766e-09 9.274598e-10
27 4.600796e-01 2.421544e-11 5.399042e-01 1.614363e-05 2.152484e-09 2.421544e-11 2.152484e-11
28 9.999647e-01 3.844655e-11 5.646485e-06 2.306793e-10 6.407758e-12 2.883491e-05 7.689310e-07
29 9.989293e-01 1.665598e-05 1.053995e-03 5.551994e-09 2.775997e-08 1.040999e-08 1.665598e-09
30 9.990519e-01 4.029910e-12 1.798628e-04 4.533649e-04 1.511216e-08 3.148367e-04 2.014955e-08
31 1.926202e-02 3.427848e-09 9.807151e-01 2.285232e-05 2.742278e-08 1.828185e-16 1.371139e-12
32 1.404031e-02 3.427431e-11 9.859585e-01 1.927930e-08 1.156758e-06 1.713716e-10 1.285287e-09
33 1.221897e-02 4.699817e-06 3.944244e-01 5.874772e-03 2.506569e-09 5.874772e-01 2.506569e-09
34 8.968136e-01 6.157251e-03 7.234319e-03 1.539313e-06 4.617938e-09 8.979324e-02 2.052417e-09
35 7.476738e-01 1.466071e-08 2.523232e-01 8.796426e-08 1.954761e-14 2.932142e-06 4.691427e-11
36 9.234318e-01 4.585181e-05 6.632033e-02 1.018929e-02 3.396430e-08 1.273661e-05 2.717144e-09
37 9.998388e-01 1.544533e-10 5.939060e-06 3.861332e-07 1.544533e-04 4.633598e-07 1.544533e-10
38 8.776121e-01 3.761533e-04 1.220201e-01 4.595191e-09 2.450768e-12 7.352305e-08 1.470461e-07
39 8.520673e-01 1.077676e-04 1.348924e-01 1.197417e-02 4.789669e-07 3.592252e-04 5.987086e-04
40 7.327975e-05 1.946334e-09 5.846932e-01 1.297556e-05 4.152179e-01 2.595112e-06 1.946334e-09
41 9.999973e-01 7.713173e-11 1.446220e-06 6.941856e-10 1.301598e-06 2.892440e-10 7.713173e-11
42 2.923930e-02 4.876473e-12 9.707605e-01 4.876473e-12 1.462942e-09 1.645810e-07 4.876473e-12
43 6.065828e-01 5.154067e-05 3.932241e-01 2.290697e-05 1.145348e-04 4.123254e-06 4.581393e-11
44 2.193614e-01 6.074899e-09 7.786430e-01 1.518725e-03 6.074899e-06 4.556174e-04 1.518725e-05
45 1.350788e-01 3.750816e-08 8.499087e-01 1.350294e-07 1.500326e-02 9.001958e-06 1.125245e-07
46 1.267071e-03 2.748254e-03 9.959569e-01 1.099302e-06 1.978743e-05 6.870635e-06 1.099302e-08
47 9.607960e-01 9.864509e-03 2.759542e-02 9.864509e-05 1.644085e-03 1.315268e-06 5.918705e-08
48 9.681239e-01 1.435719e-11 3.114948e-02 7.178593e-04 2.392864e-06 5.982161e-06 3.589297e-07
49 1.495082e-03 5.510568e-08 9.985045e-01 1.836856e-14 2.479755e-07 9.643494e-08 5.510568e-10
50 8.074361e-01 2.795098e-05 1.504686e-02 1.118039e-08 2.795098e-03 1.746937e-01 2.795098e-07
```

```
> tab <- table(pred$class, test$Population)
> caret::confusionMatrix(tab)
Confusion Matrix and Statistics
```

	PopA	PopB	PopC	PopD	PopE	PopF	PopG
PopA	4	0	1	0	0	1	19
PopB	0	0	0	0	0	0	0
PopC	2	1	3	1	1	0	14
PopD	0	0	0	0	0	0	1
PopE	0	0	0	0	0	0	0
PopF	0	0	0	0	0	0	2
PopG	0	0	0	0	0	0	0

Overall Statistics

```
Accuracy : 0.14
95% CI : (0.0582, 0.2674)
No Information Rate : 0.72
P-Value [Acc > NIR] : 1
```

```
Kappa : 0.0483
```

```
Mcnemar's Test P-Value : NA
```

Statistics by Class:

	Class: PopA	Class: PopB	Class: PopC	Class: PopD	Class: PopE	Class: PopF	Class: PopG
Sensitivity	0.6667	0.00	0.7500	0.0000	0.00	0.0000	0.00
Specificity	0.5227	1.00	0.5870	0.9796	1.00	0.9592	1.00
Pos Pred Value	0.1600	NaN	0.1364	0.0000	NaN	0.0000	NaN
Neg Pred Value	0.9200	0.98	0.9643	0.9796	0.98	0.9792	0.28
Prevalence	0.1200	0.02	0.0800	0.0200	0.02	0.0200	0.72
Detection Rate	0.0800	0.00	0.0600	0.0000	0.00	0.0000	0.00
Detection Prevalence	0.5000	0.00	0.4400	0.0200	0.00	0.0400	0.00
Balanced Accuracy	0.5947	0.50	0.6685	0.4898	0.50	0.4796	0.50

```
> library(ggplot2)
```

```
> test$pred <- pred$class
```

```
> ggplot(test, aes(Population, pred, color = Population)) + geom_jitter(width = 0.2, height = 0.1, size=2)+  
+ labs(title="Confusion Matrix", subtitle="Predicted vs. Observed from test set", y="Predicted", x="Truth")
```

```
>
```

```
>
```