Naive Bayes

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        11706               90.3241 %
Incorrectly Classified Instances      1254                 9.6759 %
Kappa statistic                          0.8567
Mean absolute error                      0.0765
Root mean squared error                  0.1767
Relative absolute error                 28.0234 %
Root relative squared error             47.8152 %
Total Number of Instances             12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.906     0.001     recommend
                 0.058    0.000    0.905      0.058   0.109      0.226  0.995     0.827     very_recom
                 0.903    0.096    0.821      0.903   0.860      0.789  0.966     0.937     priority
                 0.869    0.047    0.894      0.869   0.882      0.829  0.978     0.943     spec_prior
Weighted Avg.    0.903    0.046    ?          0.903   ?          ?      0.982     0.957

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0   19  309    0 |    c = very_recom
    0    0    0 3851  415 |    d = priority
    0    0    0  528 3516 |    e = spec_prior
```
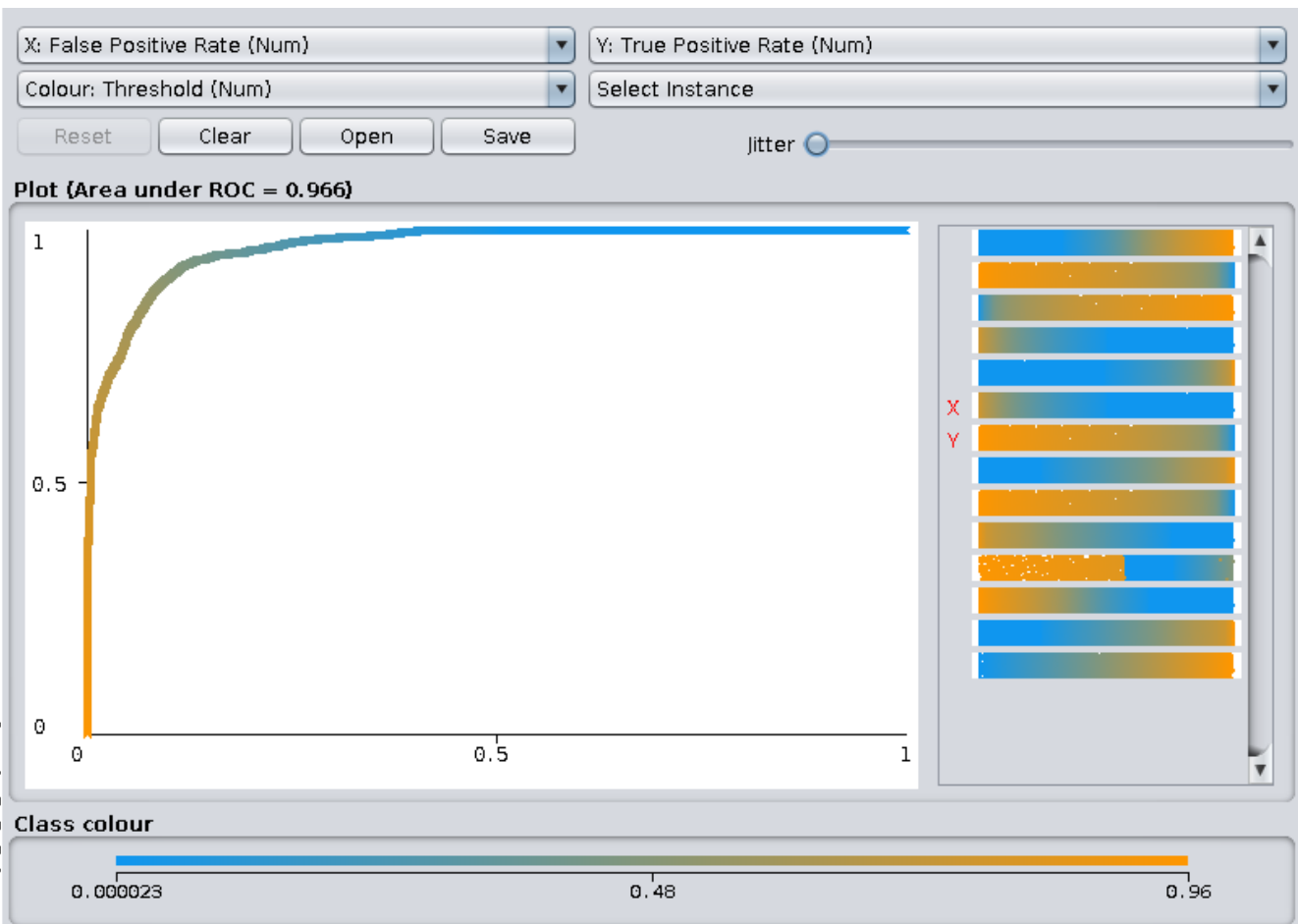
| X: False Positive Rate (Num) | ▼ | Y: True Positive Rate (Num) | ▼ |
| Colour: Threshold (Num) | ▼ | Select Instance | ▼ |

| Reset | Clear | Open | Save | | Jitter ◯ |

Plot (Area under ROC = 0.966)

Class colour

0.000023   0.48   0.96

J48 confidence level 0.25 min 2

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        12578                 97.0525 %
Incorrectly Classified Instances        382                  2.9475 %
Kappa statistic                           0.9568
Mean absolute error                       0.0153
Root mean squared error                   0.0951
Relative absolute error                   5.6151 %
Root relative squared error              25.7324 %
Total Number of Instances             12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC     ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000   1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?       0.499     0.000     recommend
                 0.726    0.005    0.804      0.726   0.763      0.758   0.986     0.830     very_recom
                 0.949    0.019    0.961      0.949   0.955      0.933   0.992     0.986     priority
                 0.982    0.018    0.961      0.982   0.971      0.958   0.995     0.985     spec_prior
Weighted Avg.    0.971    0.012    ?          0.971   ?          ?       0.995     0.986

=== Confusion Matrix ===

    a    b    c    d    e   <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0  238   90    0 |    c = very_recom
    0    0   56 4049  161 |    d = priority
    0    0    0   73 3971 |    e = spec_prior

Number of Leaves  :      359

Size of the tree :      511
```

J48 unprunned

```
Number of Leaves  :      680

Size of the tree :       944


Time taken to build model: 0.03 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        12803               98.7886 %
Incorrectly Classified Instances        157                1.2114 %
Kappa statistic                          0.9823
Mean absolute error                      0.0051
Root mean squared error                  0.0596
Relative absolute error                  1.8847 %
Root relative squared error             16.1206 %
Total Number of Instances             12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.499     0.000     recommend
                 0.893    0.004    0.864      0.893   0.879      0.875  0.985     0.904     very_recom
                 0.982    0.009    0.982      0.982   0.982      0.973  0.995     0.990     priority
                 0.990    0.004    0.992      0.990   0.991      0.986  0.997     0.994     spec_prior
Weighted Avg.    0.988    0.004    ?          0.988   ?          ?      0.997     0.992

=== Confusion Matrix ===

    a    b    c    d    e   <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0  293   35    0 |    c = very_recom
    0    0   44 4188   34 |    d = priority
    0    0    0   42 4002 |    e = spec_prior
```

ZeroR

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        4320              33.3333 %
Incorrectly Classified Instances      8640              66.6667 %
Kappa statistic                          0
Mean absolute error                      0.273
Root mean squared error                  0.3695
Relative absolute error                100       %
Root relative squared error            100       %
Total Number of Instances            12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    1.000    0.333      1.000   0.500      ?      0.500     0.333     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.100     0.000     recommend
                 0.000    0.000    ?          0.000   ?          ?      0.497     0.025     very_recom
                 0.000    0.000    ?          0.000   ?          ?      0.500     0.329     priority
                 0.000    0.000    ?          0.000   ?          ?      0.500     0.312     spec_prior
Weighted Avg.    0.333    0.333    ?          0.333   ?          ?      0.500     0.317

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    2    0    0    0    0 |    b = recommend
  328    0    0    0    0 |    c = very_recom
 4266    0    0    0    0 |    d = priority
 4044    0    0    0    0 |    e = spec_prior
```

OneR

```
Time taken to build model: 0.01 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        9198               70.9722 %
Incorrectly Classified Instances      3762               29.0278 %
Kappa statistic                          0.5701
Mean absolute error                      0.1161
Root mean squared error                  0.3408
Relative absolute error                 42.5265 %
Root relative squared error             92.2276 %
Total Number of Instances            12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.500     0.000     recommend
                 0.000    0.000    ?          0.000   ?          ?      0.500     0.025     very_recom
                 0.565    0.219    0.558      0.565   0.562      0.345  0.673     0.459     priority
                 0.610    0.208    0.571      0.610   0.590      0.395  0.701     0.470     spec_prior
Weighted Avg.    0.710    0.137    ?          0.710   ?          ?      0.786     0.632

=== Confusion Matrix ===

    a    b    c    d    e   <-- classified as
 4320    0    0    0    0 |   a = not_recom
    0    0    0    2    0 |   b = recommend
    0    0    0  328    0 |   c = very_recom
    0    0    0 2412 1854 |   d = priority
    0    0    0 1578 2466 |   e = spec_prior
```

```
=== Classifier model (full training set) ===

health:
        recommended      -> priority
        priority         -> spec_prior
        not_recom        -> not_recom
(9198/12960 instances correct)
```

K-nearest neighbors K=1

```
=== Classifier model (full training set) ===

IB1 instance-based classifier
using 1 nearest neighbour(s) for classification


Time taken to build model: 0.01 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances       12750               98.3796 %
Incorrectly Classified Instances       210                1.6204 %
Kappa statistic                          0.9761
Mean absolute error                      0.0859
Root mean squared error                  0.1466
Relative absolute error                 31.474  %
Root relative squared error             39.6775 %
Total Number of Instances            12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.999     0.064     recommend
                 0.515    0.000    0.988      0.515   0.677      0.709  1.000     0.978     very_recom
                 0.993    0.021    0.959      0.993   0.976      0.964  0.998     0.996     priority
                 0.995    0.003    0.993      0.995   0.994      0.991  1.000     1.000     spec_prior
Weighted Avg.    0.984    0.008    ?          0.984   ?          ?      0.999     0.998

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0  169  159    0 |    c = very_recom
    0    0    0 4237   29 |    d = priority
    0    0    0   20 4024 |    e = spec_prior
```

K-nearest neighbors K=3

```
Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        12750               98.3796 %
Incorrectly Classified Instances        210                1.6204 %
Kappa statistic                           0.9761
Mean absolute error                       0.0859
Root mean squared error                   0.1466
Relative absolute error                  31.474  %
Root relative squared error              39.6775 %
Total Number of Instances             12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.999     0.064     recommend
                 0.515    0.000    0.988      0.515   0.677      0.709  1.000     0.978     very_recom
                 0.993    0.021    0.959      0.993   0.976      0.964  0.998     0.996     priority
                 0.995    0.003    0.993      0.995   0.994      0.991  1.000     1.000     spec_prior
Weighted Avg.    0.984    0.008    ?          0.984   ?          ?      0.999     0.998

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0  169  159    0 |    c = very_recom
    0    0    0 4237   29 |    d = priority
    0    0    0   20 4024 |    e = spec_prior
```
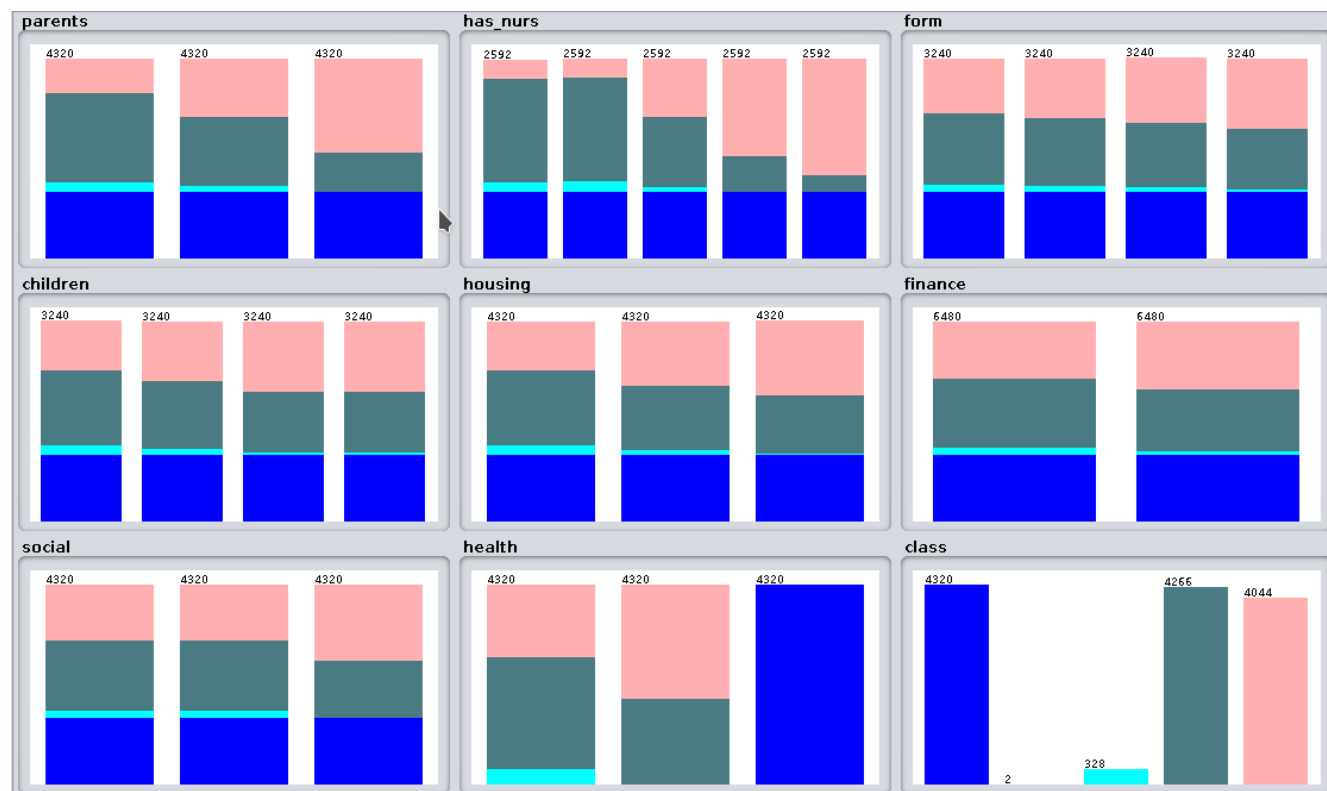
Logistic regression

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances       11989                92.5077 %
Incorrectly Classified Instances       971                 7.4923 %
Kappa statistic                          0.8901
Mean absolute error                      0.0425
Root mean squared error                  0.1456
Relative absolute error                 15.5611 %
Root relative squared error             39.4113 %
Total Number of Instances            12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC     ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000   1.000     1.000     not_recom
                 0.000    0.000    0.000      0.000   0.000      -0.000  1.000     0.243     recommend
                 0.744    0.005    0.803      0.744   0.772      0.767   0.996     0.862     very_recom
                 0.892    0.058    0.883      0.892   0.887      0.832   0.979     0.964     priority
                 0.895    0.045    0.900      0.895   0.898      0.851   0.984     0.961     spec_prior
Weighted Avg.    0.925    0.033    0.925      0.925   0.925      0.892   0.988     0.972

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    2  244   82    0 |    c = very_recom
    0    1   58 3805  402 |    d = priority
    0    0    0  424 3620 |    e = spec_prior
```

Random forest

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        12839               99.0664 %
Incorrectly Classified Instances       121                 0.9336 %
Kappa statistic                          0.9863
Mean absolute error                      0.0295
Root mean squared error                  0.0865
Relative absolute error                 10.8181 %
Root relative squared error             23.4089 %
Total Number of Instances             12960

=== Detailed Accuracy By Class ===

                 TP Rate  FP Rate  Precision  Recall  F-Measure  MCC    ROC Area  PRC Area  Class
                 1.000    0.000    1.000      1.000   1.000      1.000  1.000     1.000     not_recom
                 0.000    0.000    ?          0.000   ?          ?      0.999     0.074     recommend
                 0.899    0.001    0.942      0.899   0.920      0.919  0.999     0.960     very_recom
                 0.987    0.007    0.985      0.987   0.986      0.979  0.999     0.999     priority
                 0.992    0.004    0.991      0.992   0.991      0.987  1.000     0.999     spec_prior
Weighted Avg.    0.991    0.004    ?          0.991   ?          ?      1.000     0.998

=== Confusion Matrix ===

    a    b    c    d    e    <-- classified as
 4320    0    0    0    0 |    a = not_recom
    0    0    2    0    0 |    b = recommend
    0    0  295   33    0 |    c = very_recom
    0    0   16 4212   38 |    d = priority
    0    0    0   32 4012 |    e = spec_prior
```