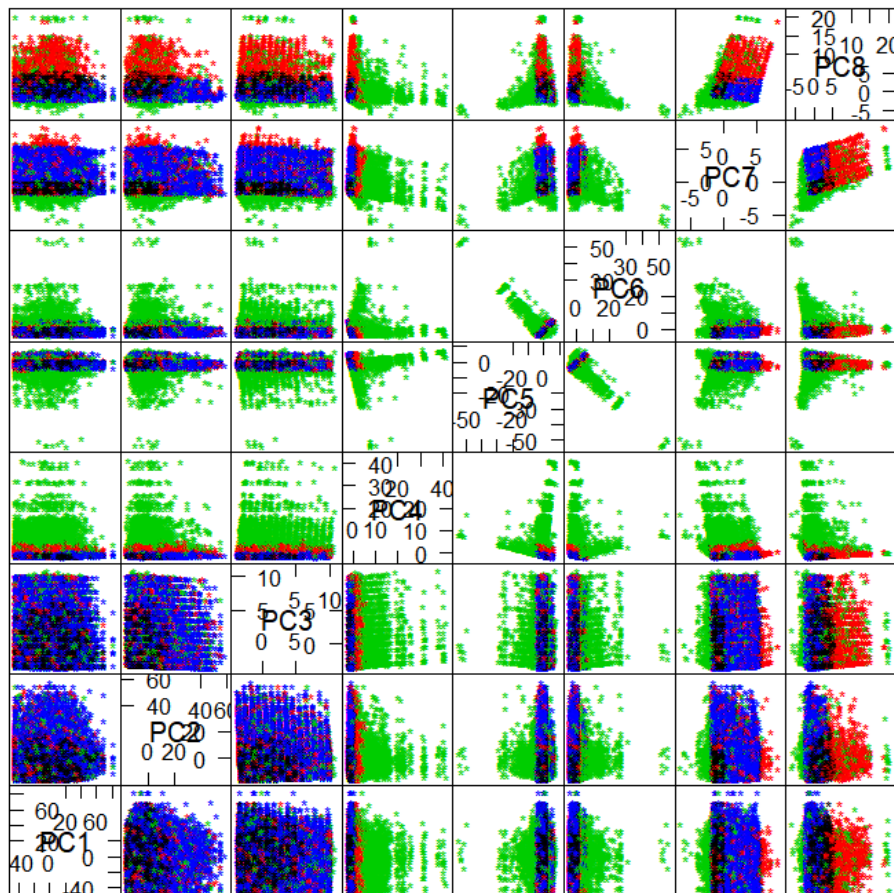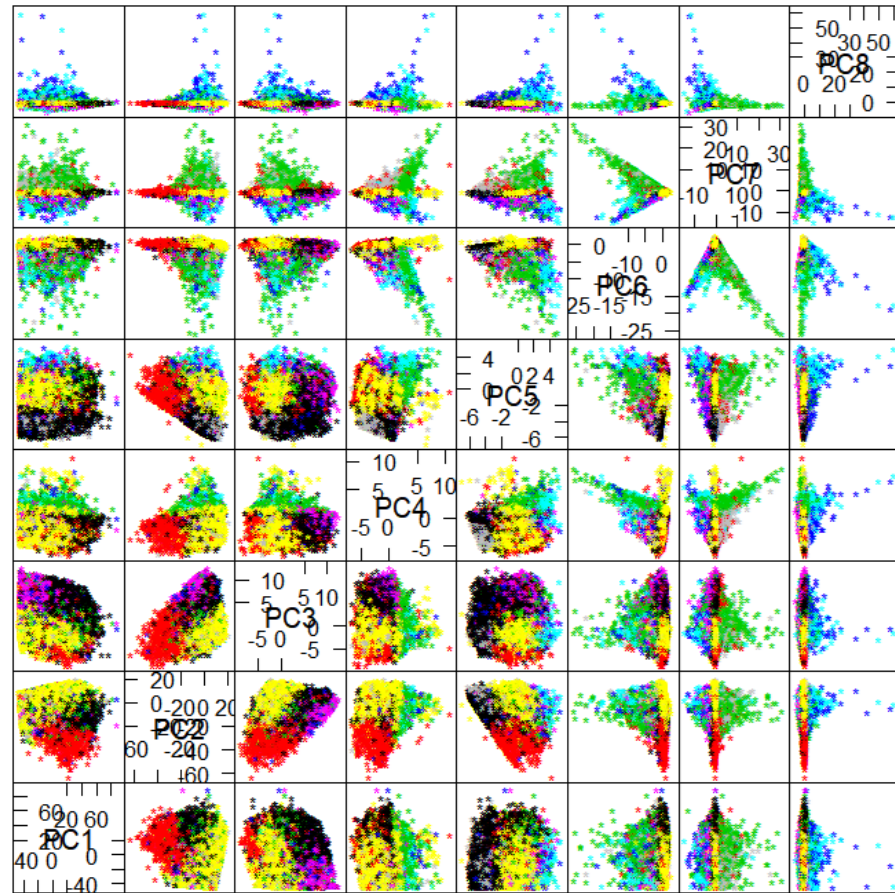# YellowBugs

Diabetes-Machine-Learning Track

Group Members

- Aurangzeeb Zakariya Ur Rehman (Zak)
- Crimson Scythe (Haseeb Kamal)
- Taoyu Mei

Scatterplot Matrix of 8 Principle Components
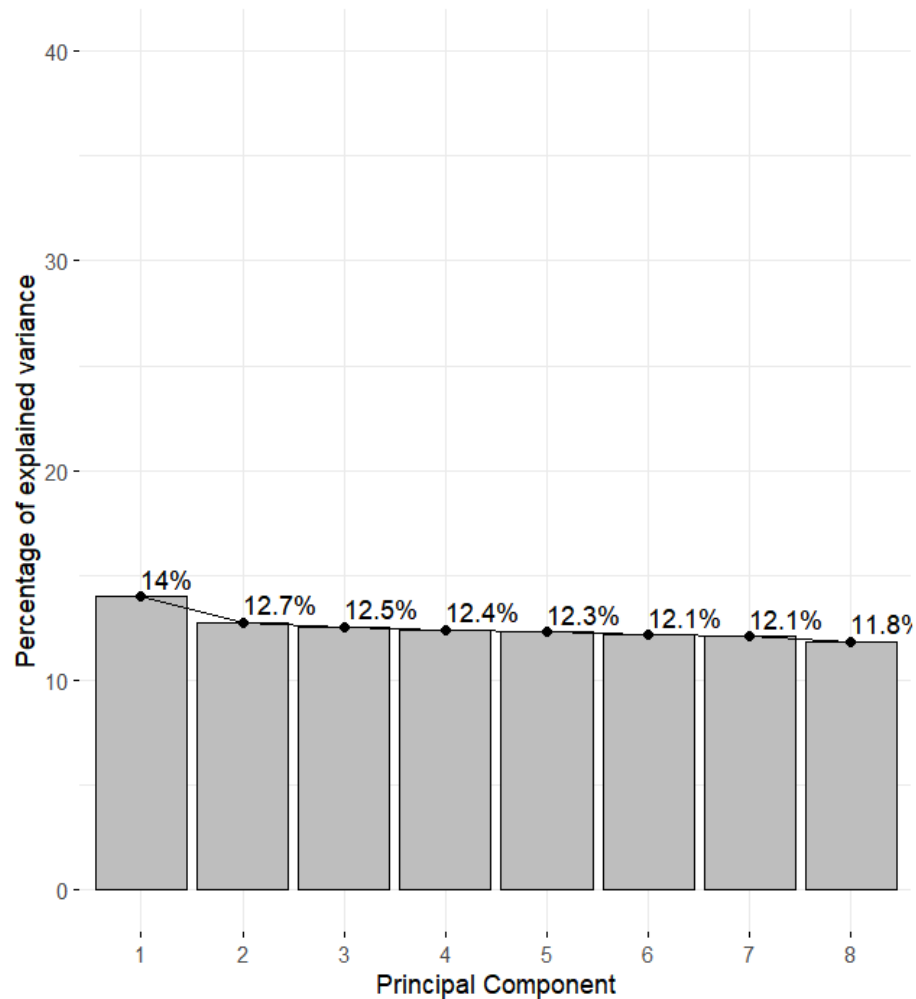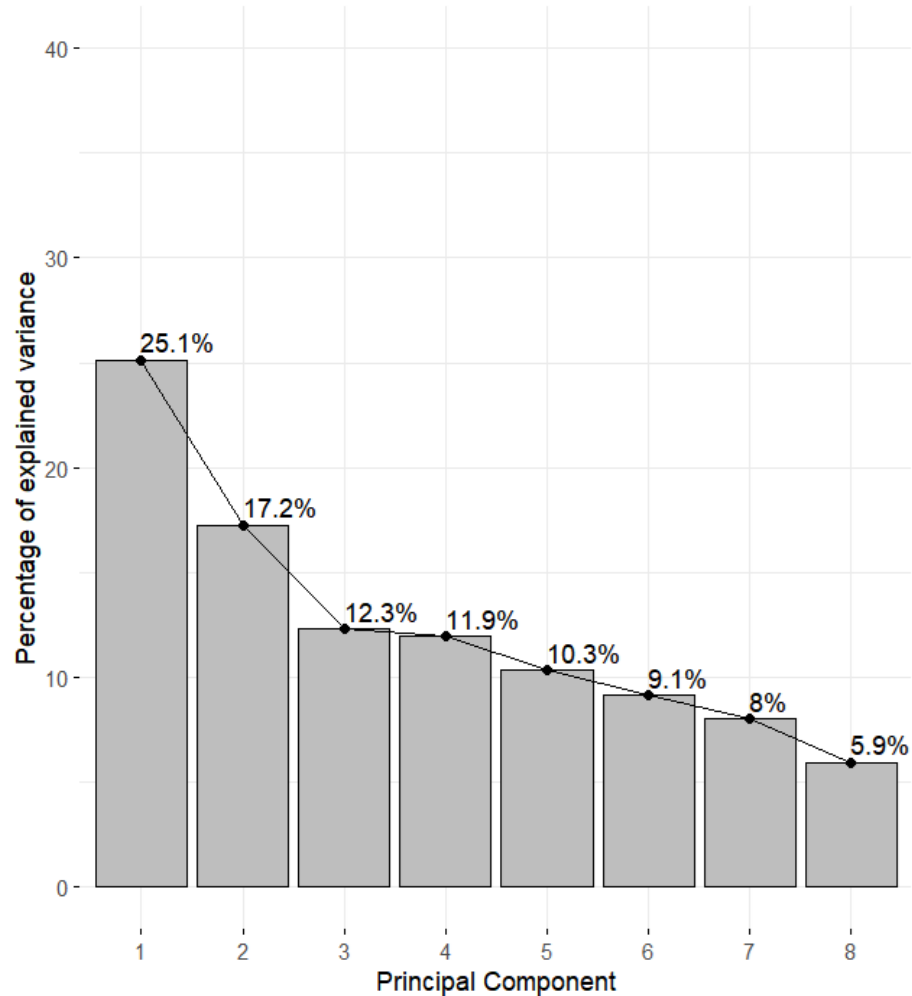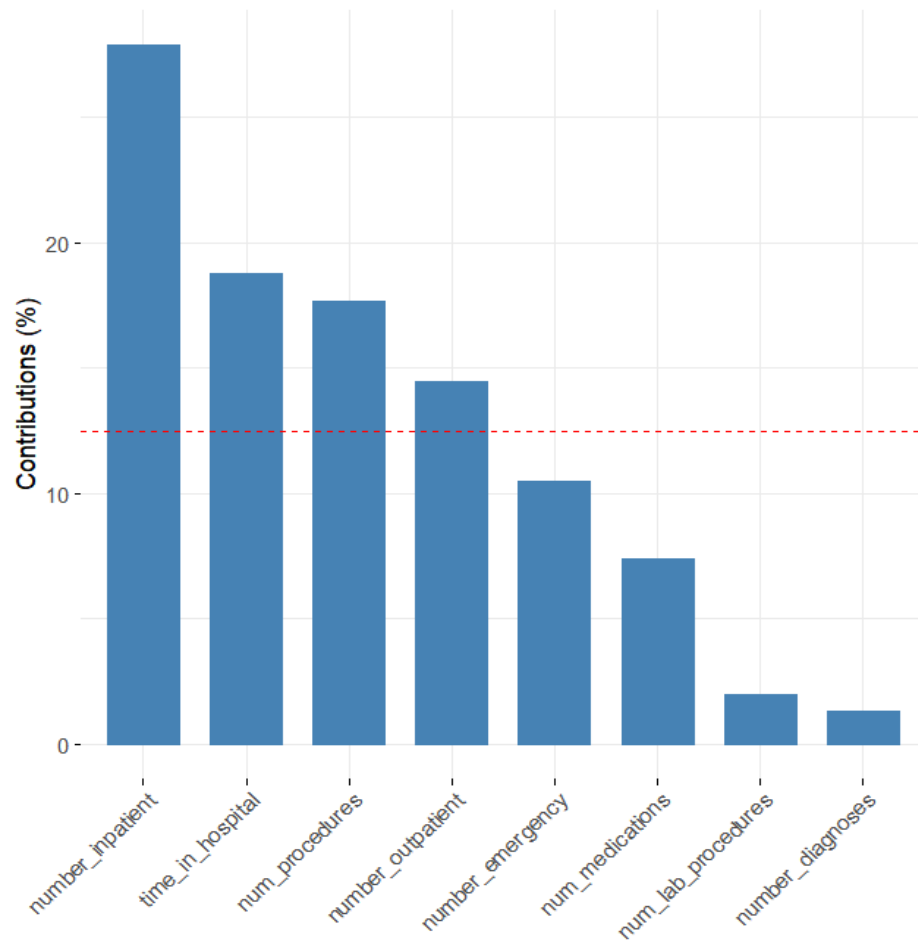

Synthetic Data

Real Data

Principal Component (PC) for mixed variables synthetic data — Principal Component (PC) for mixed variables real data

Contribution of variables to Dim-1 — Synthetic Data (left) and Real Data (right)
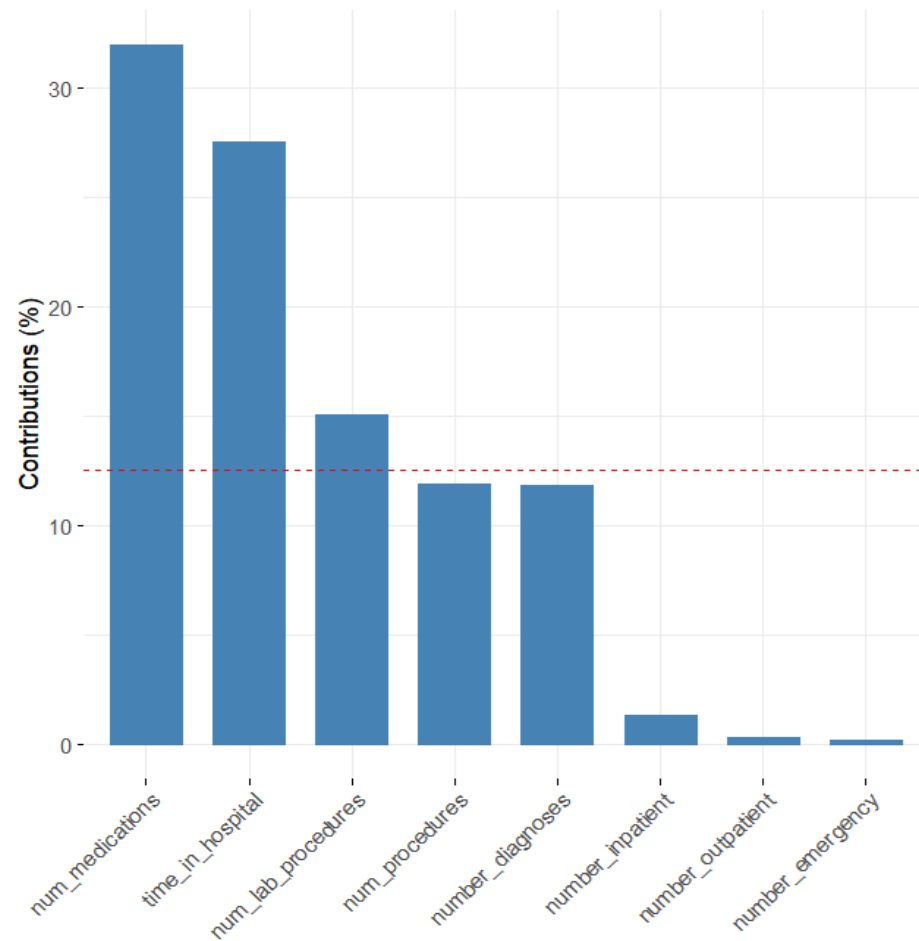
Readmitted: Random Forest & K-Nearest Neighbour

	Random Forest	K-Nearest Neighbour
Train on synthetic data, test on real data	0.5211	0.5196
Train & test on the 1st and 2nd half of the real data respectively	0.5677	0.5243

- One-hot transform, 165 common columns
- Random forest n_estimators=1000
- K-NN n_neighbors=15
- Accuracy score

Feed forward neural network

Tested on real data   Tested on

```
[10,    100] val loss: 0.664 acc: 0.500          [10,    100] val loss: 0.646 acc: 0.750
[10,    200] val loss: 1.300 acc: 0.750          [10,    200] val loss: 1.302 acc: 0.583
[10,    300] val loss: 1.951 acc: 0.250          [10,    300] val loss: 1.960 acc: 0.583
[10,    400] val loss: 2.604 acc: 0.583          [10,    400] val loss: 2.630 acc: 0.750
[10,    500] val loss: 3.256 acc: 0.500          [10,    500] val loss: 3.302 acc: 0.750
[10,    600] val loss: 3.935 acc: 0.583          [10,    600] val loss: 3.959 acc: 0.583
[10,    700] val loss: 4.588 acc: 0.250          [10,    700] val loss: 4.600 acc: 0.500
[10,    800] val loss: 5.258 acc: 0.500          [10,    800] val loss: 5.265 acc: 0.583
[10,    900] val loss: 5.918 acc: 0.333          [10,    900] val loss: 5.940 acc: 0.667
[10,   1000] val loss: 6.571 acc: 0.583          [10,   1000] val loss: 6.604 acc: 0.750
[10,   1100] val loss: 7.249 acc: 0.417          [10,   1100] val loss: 7.273 acc: 0.583
[10,   1200] val loss: 7.913 acc: 0.500          [10,   1200] val loss: 7.928 acc: 0.667
[10,   1300] val loss: 8.563 acc: 0.750          [10,   1300] val loss: 8.605 acc: 0.500
[10,   1400] val loss: 9.226 acc: 0.250          [10,   1400] val loss: 9.247 acc: 0.583
[10,   1500] val loss: 9.905 acc: 0.417          [10,   1500] val loss: 9.918 acc: 0.750
[10,   1600] val loss: 10.573 acc: 0.667         [10,   1600] val loss: 10.588 acc: 0.583
[10,   1700] val loss: 11.242 acc: 0.667         [10,   1700] val loss: 11.248 acc: 0.500
[10,   1800] val loss: 11.899 acc: 0.667         [10,   1800] val loss: 11.906 acc: 0.750
[10,   1900] val loss: 12.563 acc: 0.500         [10,   1900] val loss: 12.552 acc: 0.750
```