TP 3

TP 3

```
df <- read.table(file="../../data/INFARCTUS.txt", header=TRUE, sep="", stringsAsFactors=FALSE)
head(df)
```

```
##   Obs C  PRONO FRCAR INCAR INSYS PRDIA PAPUL PVENT REPUL
## 1   1 2 SURVIE    90  1.71  19.0    16  19.5  16.0   912
## 2   2 1  DECES    90  1.68  18.7    24  31.0  14.0  1476
## 3   3 1  DECES   120  1.40  11.7    23  29.0   8.0  1657
## 4   4 2 SURVIE    82  1.79  21.8    14  17.5  10.0   782
## 5   5 1  DECES    80  1.58  19.7    21  28.0  18.5  1418
## 6   6 1  DECES    80  1.13  14.1    18  23.5   9.0  1664
```

1. ACP (selectionner les variables)

(a) Selection des variables

```
Xquanti <- df[, sapply(df, is.numeric)]
Xquanti
```

```
##     Obs C FRCAR INCAR INSYS PRDIA PAPUL PVENT REPUL
## 1     1 2    90  1.71  19.0  16.0  19.5  16.0   912
## 2     2 1    90  1.68  18.7  24.0  31.0  14.0  1476
## 3     3 1   120  1.40  11.7  23.0  29.0   8.0  1657
## 4     4 2    82  1.79  21.8  14.0  17.5  10.0   782
## 5     5 1    80  1.58  19.7  21.0  28.0  18.5  1418
## 6     6 1    80  1.13  14.1  18.0  23.5   9.0  1664
## 7     7 2    94  2.04  21.7  23.0  27.0  10.0  1059
## 8     8 2    80  1.19  14.9  16.0  21.0  16.5  1412
## 9     9 2    78  2.16  27.7  15.0  20.5  11.5   759
## 10   10 2   100  2.28  22.8  16.0  23.0   4.0   807
## 11   11 2    90  2.79  31.0  16.0  25.0   8.0   717
## 12   12 2    86  2.70  31.4  15.0  23.0   9.5   681
## 13   13 2    80  2.61  32.6   8.0  15.0   1.0   460
## 14   14 2    61  2.84  47.3  11.0  17.0  12.0   479
## 15   15 2    99  3.12  31.8  15.0  20.0  11.0   513
## 16   16 2    92  2.47  26.8  12.0  19.0  11.0   615
## 17   17 2    96  1.88  19.6  12.0  19.0   3.0   809
## 18   18 2    86  1.70  19.8  10.0  14.0  10.5   659
## 19   19 2   125  3.37  26.9  18.0  28.0   6.0   665
## 20   20 2    80  2.01  25.0  15.0  20.0   6.0   796
## 21   21 2    82  3.15  38.4  13.0  20.0   6.0   508
```

```
## 22   22 1  110  1.66  15.1  23.0  31.0   6.5  1494
## 23   23 1   80  1.50  18.7  13.0  17.0  12.0   907
## 24   24 1  118  1.03   8.7  19.0  27.0  10.0  2097
## 25   25 1   95  1.89  19.9  25.0  27.0  20.0  1143
## 26   26 1   80  1.45  18.1  19.0  23.0  15.0  1269
## 27   27 1   85  1.30  15.1  13.0  18.0  10.0  1108
## 28   28 1  105  1.84  17.5  18.0  22.0  10.0   957
## 29   29 2  122  2.79  22.9  25.0  36.0  10.0  1032
## 30   30 2   81  1.77  21.9  18.0  27.0  11.0  1220
## 31   31 2  118  2.31  19.6  22.0  27.0  10.0   935
## 32   32 1   87  1.20  13.8  34.0  41.0  20.0  2733
## 33   33 1   65  1.19  18.3  15.0  18.0  13.0  1210
## 34   34 2   84  2.15  25.6  27.0  37.0  10.0  1377
## 35   35 1  103  0.91   8.8  30.0  33.5  10.0  2945
## 36   36 2   75  2.54  33.9  24.0  31.0  16.0   976
## 37   37 2   90  2.08  23.1  20.0  28.0   6.0  1077
## 38   38 2   90  1.93  21.4  11.0  18.0  10.0   746
## 39   39 1   90  0.95  10.6  20.0  24.0   6.0  2021
## 40   40 2   65  2.38  36.6  16.0  22.0  12.0   739
## 41   41 1   95  0.99  10.4  20.0  27.5   8.0  2222
## 42   42 1   95  0.85   8.9  19.0  22.0  15.5  2071
## 43   43 2   86  2.05  23.8  21.0  28.0  10.0  1093
## 44   44 2   82  2.02  24.6  16.0  22.0  14.0   871
## 45   45 1   70  1.44  20.6  19.0  26.5  11.0  1472
## 46   46 2   92  3.06  33.3  10.0  15.0   6.0   392
## 47   47 1   94  1.31  13.9  26.0  40.0  15.0  2443
## 48   48 1   79  1.29  16.3  24.0  31.0  10.0  1922
## 49   49 2   67  1.47  21.9  15.0  18.0  16.0   980
## 50   50 1   75  1.21  16.1  19.0  24.0   4.0  1587
## 51   51 2   80  2.41  30.9  19.0  24.0   7.0   797
## 52   52 2   61  3.28  54.0  12.0  16.0   7.0   390
## 53   53 1  110  1.24  11.3  22.0  27.5  11.0  1774
## 54   54 1  116  1.85  15.9  33.0  42.0  13.0  1816
## 55   55 2   75  2.00  26.7  16.0  22.0   5.0   880
## 56   56 1   92  1.97  21.4  18.0  27.0   3.0  1096
## 57   57 2  110  0.96   8.8  15.0  19.0  16.0  1583
## 58   58 2   95  2.56  26.9   8.0  13.0   3.0   406
## 59   59 2   75  2.32  30.9   8.0  10.0   6.0   345
## 60   60 2   80  2.65  33.1  13.0  19.0   9.0   574
## 61   61 1  102  1.60  15.7  24.0  31.0  16.0  1550
## 62   62 2   86  1.67  19.4  18.0  23.0   8.5  1102
## 63   63 1   60  0.82  13.7  22.0  32.0  13.0  3122
## 64   64 2  100  1.76  17.6  23.0  33.0   2.0  1500
## 65   65 2   80  3.28  41.0  12.0  17.0   2.0   415
## 66   66 2  108  2.96  27.4  24.0  35.0   6.5   946
## 67   67 1   92  1.37  14.8  25.0  46.0  11.0  2686
## 68   68 1  100  1.38  13.8  20.0  31.0  11.0  1797
## 69   69 2   80  2.85  35.6  25.0  32.0   7.0   898
## 70   70 1   87  2.51  28.8  16.0  24.0  20.0   765
## 71   71 2  100  2.31  23.1   8.0  12.0   1.0   416
## 72   72 1  120  1.18   9.9  25.0  36.0   8.0  2441
## 73   73 1  115  1.83  15.9  25.0  30.0   8.0  1311
## 74   74 2  101  2.55  25.2  23.2  30.5   9.0   957
## 75   75 2   92  2.17  23.5  19.0  24.0   3.0   885
```

```
## 76   76 1    87  1.42  16.1  20.0  26.0  10.0  1465
## 77   77 2    80  1.59  19.9  13.0  20.5   4.0  1031
## 78   78 1    88  1.47  16.7  23.0  32.5  10.0  1769
## 79   79 1   104  1.23  11.8  27.0  33.0  11.0  2146
## 80   80 2    90  1.45  16.1  17.0  24.0   8.5  1324
## 81   81 1    67  0.85  12.7  26.0  33.0  11.0  3106
## 82   82 2    87  2.37  27.2  15.0  22.0  10.0   743
## 83   83 2   108  2.40  22.2  26.0  31.0   4.0  1033
## 84   84 1   120  1.91  15.9  18.0  27.0  15.0  1131
## 85   85 1   108  1.50  13.9  28.0  43.0  16.0  1813
## 86   86 2    86  2.36  27.4  24.0  34.0   8.0  1153
## 87   87 1   112  1.56  13.9  24.0  29.0   4.0  1487
## 88   88 1    80  1.34  17.0  16.0  25.0  16.0  1493
## 89   89 1    95  1.65  17.4  20.0  33.0   7.0  1600
## 90   90 1    90  2.04  22.7  28.0  41.0  10.0  1608
## 91   91 2    90  3.03  33.6  17.0  23.5   7.0   620
## 92   92 1    94  1.21  12.9  17.0  22.0   3.0  1455
## 93   93 1    51  1.34  26.3  11.0  17.0   6.0  1015
## 94   94 1   110  1.17  10.6  29.0  35.0  10.5  2393
## 95   95 1    96  1.74  18.1  24.0  29.0   6.0  1333
## 96   96 1   132  1.31   9.9  23.0  28.0  12.0  1710
## 97   97 1   135  0.95   7.0  15.0  20.0   7.0  1684
## 98   98 1   105  1.92  18.3  18.0  24.0   3.0  1000
## 99   99 1    99  0.83   8.4  23.0  27.0   8.0  2602
## 100 100 1   116  0.60   5.2  33.0  38.0  10.0  5067
## 101 101 1   112  1.54  13.8  25.0  31.0   8.0  1610
```

```
Xquanti <- Xquanti[,-c(1,2)]
Xquanti
```

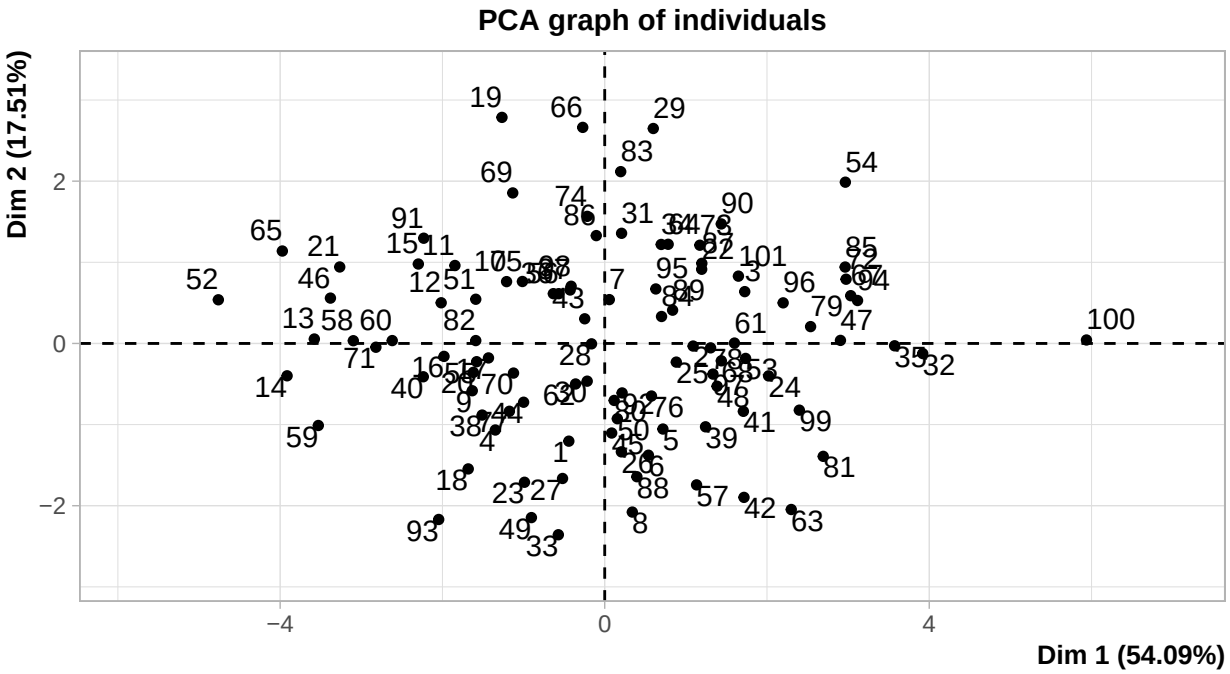
```
##     FRCAR INCAR INSYS PRDIA PAPUL PVENT REPUL
## 1      90  1.71  19.0  16.0  19.5  16.0   912
## 2      90  1.68  18.7  24.0  31.0  14.0  1476
## 3     120  1.40  11.7  23.0  29.0   8.0  1657
## 4      82  1.79  21.8  14.0  17.5  10.0   782
## 5      80  1.58  19.7  21.0  28.0  18.5  1418
## 6      80  1.13  14.1  18.0  23.5   9.0  1664
## 7      94  2.04  21.7  23.0  27.0  10.0  1059
## 8      80  1.19  14.9  16.0  21.0  16.5  1412
## 9      78  2.16  27.7  15.0  20.5  11.5   759
## 10    100  2.28  22.8  16.0  23.0   4.0   807
## 11     90  2.79  31.0  16.0  25.0   8.0   717
## 12     86  2.70  31.4  15.0  23.0   9.5   681
## 13     80  2.61  32.6   8.0  15.0   1.0   460
## 14     61  2.84  47.3  11.0  17.0  12.0   479
## 15     99  3.12  31.8  15.0  20.0  11.0   513
## 16     92  2.47  26.8  12.0  19.0  11.0   615
## 17     96  1.88  19.6  12.0  19.0   3.0   809
## 18     86  1.70  19.8  10.0  14.0  10.5   659
## 19    125  3.37  26.9  18.0  28.0   6.0   665
## 20     80  2.01  25.0  15.0  20.0   6.0   796
## 21     82  3.15  38.4  13.0  20.0   6.0   508
## 22    110  1.66  15.1  23.0  31.0   6.5  1494
## 23     80  1.50  18.7  13.0  17.0  12.0   907
```

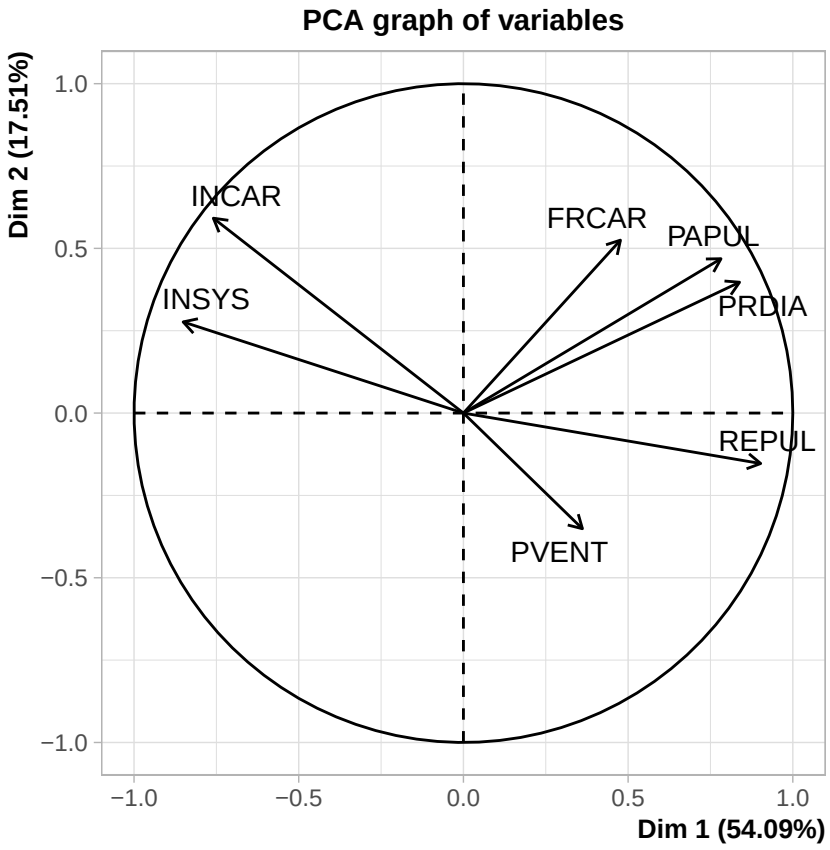
```
## 24    118  1.03   8.7  19.0  27.0  10.0  2097
## 25     95  1.89  19.9  25.0  27.0  20.0  1143
## 26     80  1.45  18.1  19.0  23.0  15.0  1269
## 27     85  1.30  15.1  13.0  18.0  10.0  1108
## 28    105  1.84  17.5  18.0  22.0  10.0   957
## 29    122  2.79  22.9  25.0  36.0  10.0  1032
## 30     81  1.77  21.9  18.0  27.0  11.0  1220
## 31    118  2.31  19.6  22.0  27.0  10.0   935
## 32     87  1.20  13.8  34.0  41.0  20.0  2733
## 33     65  1.19  18.3  15.0  18.0  13.0  1210
## 34     84  2.15  25.6  27.0  37.0  10.0  1377
## 35    103  0.91   8.8  30.0  33.5  10.0  2945
## 36     75  2.54  33.9  24.0  31.0  16.0   976
## 37     90  2.08  23.1  20.0  28.0   6.0  1077
## 38     90  1.93  21.4  11.0  18.0  10.0   746
## 39     90  0.95  10.6  20.0  24.0   6.0  2021
## 40     65  2.38  36.6  16.0  22.0  12.0   739
## 41     95  0.99  10.4  20.0  27.5   8.0  2222
## 42     95  0.85   8.9  19.0  22.0  15.5  2071
## 43     86  2.05  23.8  21.0  28.0  10.0  1093
## 44     82  2.02  24.6  16.0  22.0  14.0   871
## 45     70  1.44  20.6  19.0  26.5  11.0  1472
## 46     92  3.06  33.3  10.0  15.0   6.0   392
## 47     94  1.31  13.9  26.0  40.0  15.0  2443
## 48     79  1.29  16.3  24.0  31.0  10.0  1922
## 49     67  1.47  21.9  15.0  18.0  16.0   980
## 50     75  1.21  16.1  19.0  24.0   4.0  1587
## 51     80  2.41  30.9  19.0  24.0   7.0   797
## 52     61  3.28  54.0  12.0  16.0   7.0   390
## 53    110  1.24  11.3  22.0  27.5  11.0  1774
## 54    116  1.85  15.9  33.0  42.0  13.0  1816
## 55     75  2.00  26.7  16.0  22.0   5.0   880
## 56     92  1.97  21.4  18.0  27.0   3.0  1096
## 57    110  0.96   8.8  15.0  19.0  16.0  1583
## 58     95  2.56  26.9   8.0  13.0   3.0   406
## 59     75  2.32  30.9   8.0  10.0   6.0   345
## 60     80  2.65  33.1  13.0  19.0   9.0   574
## 61    102  1.60  15.7  24.0  31.0  16.0  1550
## 62     86  1.67  19.4  18.0  23.0   8.5  1102
## 63     60  0.82  13.7  22.0  32.0  13.0  3122
## 64    100  1.76  17.6  23.0  33.0   2.0  1500
## 65     80  3.28  41.0  12.0  17.0   2.0   415
## 66    108  2.96  27.4  24.0  35.0   6.5   946
## 67     92  1.37  14.8  25.0  46.0  11.0  2686
## 68    100  1.38  13.8  20.0  31.0  11.0  1797
## 69     80  2.85  35.6  25.0  32.0   7.0   898
## 70     87  2.51  28.8  16.0  24.0  20.0   765
## 71    100  2.31  23.1   8.0  12.0   1.0   416
## 72    120  1.18   9.9  25.0  36.0   8.0  2441
## 73    115  1.83  15.9  25.0  30.0   8.0  1311
## 74    101  2.55  25.2  23.2  30.5   9.0   957
## 75     92  2.17  23.5  19.0  24.0   3.0   885
## 76     87  1.42  16.1  20.0  26.0  10.0  1465
## 77     80  1.59  19.9  13.0  20.5   4.0  1031
```

```
## 78     88  1.47  16.7  23.0  32.5  10.0  1769
## 79    104  1.23  11.8  27.0  33.0  11.0  2146
## 80     90  1.45  16.1  17.0  24.0   8.5  1324
## 81     67  0.85  12.7  26.0  33.0  11.0  3106
## 82     87  2.37  27.2  15.0  22.0  10.0   743
## 83    108  2.40  22.2  26.0  31.0   4.0  1033
## 84    120  1.91  15.9  18.0  27.0  15.0  1131
## 85    108  1.50  13.9  28.0  43.0  16.0  1813
## 86     86  2.36  27.4  24.0  34.0   8.0  1153
## 87    112  1.56  13.9  24.0  29.0   4.0  1487
## 88     80  1.34  17.0  16.0  25.0  16.0  1493
## 89     95  1.65  17.4  20.0  33.0   7.0  1600
## 90     90  2.04  22.7  28.0  41.0  10.0  1608
## 91     90  3.03  33.6  17.0  23.5   7.0   620
## 92     94  1.21  12.9  17.0  22.0   3.0  1455
## 93     51  1.34  26.3  11.0  17.0   6.0  1015
## 94    110  1.17  10.6  29.0  35.0  10.5  2393
## 95     96  1.74  18.1  24.0  29.0   6.0  1333
## 96    132  1.31   9.9  23.0  28.0  12.0  1710
## 97    135  0.95   7.0  15.0  20.0   7.0  1684
## 98    105  1.92  18.3  18.0  24.0   3.0  1000
## 99     99  0.83   8.4  23.0  27.0   8.0  2602
## 100   116  0.60   5.2  33.0  38.0  10.0  5067
## 101   112  1.54  13.8  25.0  31.0   8.0  1610
```

```
library(FactoMineR)
```

```
res <- PCA(Xquanti)
```


PCA graph of individuals
Dim 2 (17.51%)
Dim 1 (54.09%)
2
0
−2
−4
0
4



2. Utiliser les qualitatives

```
X <- df[,-1]
X
```

```
##      C  PRONO FRCAR INCAR INSYS PRDIA PAPUL PVENT REPUL
## 1    2 SURVIE    90  1.71  19.0  16.0  19.5  16.0   912
## 2    1  DECES    90  1.68  18.7  24.0  31.0  14.0  1476
## 3    1  DECES   120  1.40  11.7  23.0  29.0   8.0  1657
## 4    2 SURVIE    82  1.79  21.8  14.0  17.5  10.0   782
## 5    1  DECES    80  1.58  19.7  21.0  28.0  18.5  1418
## 6    1  DECES    80  1.13  14.1  18.0  23.5   9.0  1664
## 7    2 SURVIE    94  2.04  21.7  23.0  27.0  10.0  1059
## 8    2 SURVIE    80  1.19  14.9  16.0  21.0  16.5  1412
## 9    2 SURVIE    78  2.16  27.7  15.0  20.5  11.5   759
## 10   2 SURVIE   100  2.28  22.8  16.0  23.0   4.0   807
## 11   2 SURVIE    90  2.79  31.0  16.0  25.0   8.0   717
## 12   2 SURVIE    86  2.70  31.4  15.0  23.0   9.5   681
## 13   2 SURVIE    80  2.61  32.6   8.0  15.0   1.0   460
## 14   2 SURVIE    61  2.84  47.3  11.0  17.0  12.0   479
## 15   2 SURVIE    99  3.12  31.8  15.0  20.0  11.0   513
## 16   2 SURVIE    92  2.47  26.8  12.0  19.0  11.0   615
## 17   2 SURVIE    96  1.88  19.6  12.0  19.0   3.0   809
## 18   2 SURVIE    86  1.70  19.8  10.0  14.0  10.5   659
```

```
## 19  2 SURVIE   125  3.37  26.9  18.0  28.0   6.0   665
## 20  2 SURVIE    80  2.01  25.0  15.0  20.0   6.0   796
## 21  2 SURVIE    82  3.15  38.4  13.0  20.0   6.0   508
## 22  1  DECES   110  1.66  15.1  23.0  31.0   6.5  1494
## 23  1  DECES    80  1.50  18.7  13.0  17.0  12.0   907
## 24  1  DECES   118  1.03   8.7  19.0  27.0  10.0  2097
## 25  1  DECES    95  1.89  19.9  25.0  27.0  20.0  1143
## 26  1  DECES    80  1.45  18.1  19.0  23.0  15.0  1269
## 27  1  DECES    85  1.30  15.1  13.0  18.0  10.0  1108
## 28  1  DECES   105  1.84  17.5  18.0  22.0  10.0   957
## 29  2 SURVIE   122  2.79  22.9  25.0  36.0  10.0  1032
## 30  2 SURVIE    81  1.77  21.9  18.0  27.0  11.0  1220
## 31  2 SURVIE   118  2.31  19.6  22.0  27.0  10.0   935
## 32  1  DECES    87  1.20  13.8  34.0  41.0  20.0  2733
## 33  1  DECES    65  1.19  18.3  15.0  18.0  13.0  1210
## 34  2 SURVIE    84  2.15  25.6  27.0  37.0  10.0  1377
## 35  1  DECES   103  0.91   8.8  30.0  33.5  10.0  2945
## 36  2 SURVIE    75  2.54  33.9  24.0  31.0  16.0   976
## 37  2 SURVIE    90  2.08  23.1  20.0  28.0   6.0  1077
## 38  2 SURVIE    90  1.93  21.4  11.0  18.0  10.0   746
## 39  1  DECES    90  0.95  10.6  20.0  24.0   6.0  2021
## 40  2 SURVIE    65  2.38  36.6  16.0  22.0  12.0   739
## 41  1  DECES    95  0.99  10.4  20.0  27.5   8.0  2222
## 42  1  DECES    95  0.85   8.9  19.0  22.0  15.5  2071
## 43  2 SURVIE    86  2.05  23.8  21.0  28.0  10.0  1093
## 44  2 SURVIE    82  2.02  24.6  16.0  22.0  14.0   871
## 45  1  DECES    70  1.44  20.6  19.0  26.5  11.0  1472
## 46  2 SURVIE    92  3.06  33.3  10.0  15.0   6.0   392
## 47  1  DECES    94  1.31  13.9  26.0  40.0  15.0  2443
## 48  1  DECES    79  1.29  16.3  24.0  31.0  10.0  1922
## 49  2 SURVIE    67  1.47  21.9  15.0  18.0  16.0   980
## 50  1  DECES    75  1.21  16.1  19.0  24.0   4.0  1587
## 51  2 SURVIE    80  2.41  30.9  19.0  24.0   7.0   797
## 52  2 SURVIE    61  3.28  54.0  12.0  16.0   7.0   390
## 53  1  DECES   110  1.24  11.3  22.0  27.5  11.0  1774
## 54  1  DECES   116  1.85  15.9  33.0  42.0  13.0  1816
## 55  2 SURVIE    75  2.00  26.7  16.0  22.0   5.0   880
## 56  1  DECES    92  1.97  21.4  18.0  27.0   3.0  1096
## 57  2 SURVIE   110  0.96   8.8  15.0  19.0  16.0  1583
## 58  2 SURVIE    95  2.56  26.9   8.0  13.0   3.0   406
## 59  2 SURVIE    75  2.32  30.9   8.0  10.0   6.0   345
## 60  2 SURVIE    80  2.65  33.1  13.0  19.0   9.0   574
## 61  1  DECES   102  1.60  15.7  24.0  31.0  16.0  1550
## 62  2 SURVIE    86  1.67  19.4  18.0  23.0   8.5  1102
## 63  1  DECES    60  0.82  13.7  22.0  32.0  13.0  3122
## 64  2 SURVIE   100  1.76  17.6  23.0  33.0   2.0  1500
## 65  2 SURVIE    80  3.28  41.0  12.0  17.0   2.0   415
## 66  2 SURVIE   108  2.96  27.4  24.0  35.0   6.5   946
## 67  1  DECES    92  1.37  14.8  25.0  46.0  11.0  2686
## 68  1  DECES   100  1.38  13.8  20.0  31.0  11.0  1797
## 69  2 SURVIE    80  2.85  35.6  25.0  32.0   7.0   898
## 70  1  DECES    87  2.51  28.8  16.0  24.0  20.0   765
## 71  2 SURVIE   100  2.31  23.1   8.0  12.0   1.0   416
## 72  1  DECES   120  1.18   9.9  25.0  36.0   8.0  2441
```

```
## 73  1  DECES   115  1.83  15.9  25.0  30.0   8.0  1311
## 74  2 SURVIE   101  2.55  25.2  23.2  30.5   9.0   957
## 75  2 SURVIE    92  2.17  23.5  19.0  24.0   3.0   885
## 76  1  DECES    87  1.42  16.1  20.0  26.0  10.0  1465
## 77  2 SURVIE    80  1.59  19.9  13.0  20.5   4.0  1031
## 78  1  DECES    88  1.47  16.7  23.0  32.5  10.0  1769
## 79  1  DECES   104  1.23  11.8  27.0  33.0  11.0  2146
## 80  2 SURVIE    90  1.45  16.1  17.0  24.0   8.5  1324
## 81  1  DECES    67  0.85  12.7  26.0  33.0  11.0  3106
## 82  2 SURVIE    87  2.37  27.2  15.0  22.0  10.0   743
## 83  2 SURVIE   108  2.40  22.2  26.0  31.0   4.0  1033
## 84  1  DECES   120  1.91  15.9  18.0  27.0  15.0  1131
## 85  1  DECES   108  1.50  13.9  28.0  43.0  16.0  1813
## 86  2 SURVIE    86  2.36  27.4  24.0  34.0   8.0  1153
## 87  1  DECES   112  1.56  13.9  24.0  29.0   4.0  1487
## 88  1  DECES    80  1.34  17.0  16.0  25.0  16.0  1493
## 89  1  DECES    95  1.65  17.4  20.0  33.0   7.0  1600
## 90  1  DECES    90  2.04  22.7  28.0  41.0  10.0  1608
## 91  2 SURVIE    90  3.03  33.6  17.0  23.5   7.0   620
## 92  1  DECES    94  1.21  12.9  17.0  22.0   3.0  1455
## 93  1  DECES    51  1.34  26.3  11.0  17.0   6.0  1015
## 94  1  DECES   110  1.17  10.6  29.0  35.0  10.5  2393
## 95  1  DECES    96  1.74  18.1  24.0  29.0   6.0  1333
## 96  1  DECES   132  1.31   9.9  23.0  28.0  12.0  1710
## 97  1  DECES   135  0.95   7.0  15.0  20.0   7.0  1684
## 98  1  DECES   105  1.92  18.3  18.0  24.0   3.0  1000
## 99  1  DECES    99  0.83   8.4  23.0  27.0   8.0  2602
## 100 1  DECES   116  0.60   5.2  33.0  38.0  10.0  5067
## 101 1  DECES   112  1.54  13.8  25.0  31.0   8.0  1610
```

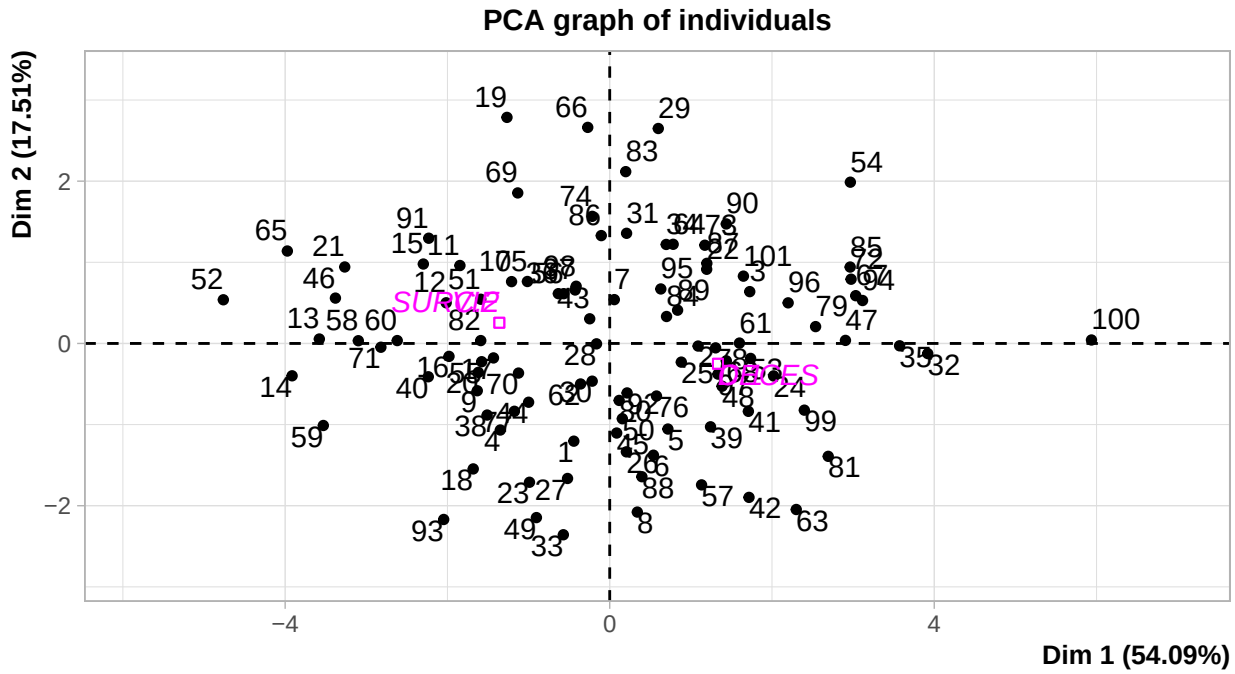
```
quali_indice <- c(1,2)
X[,quali_indice]
```

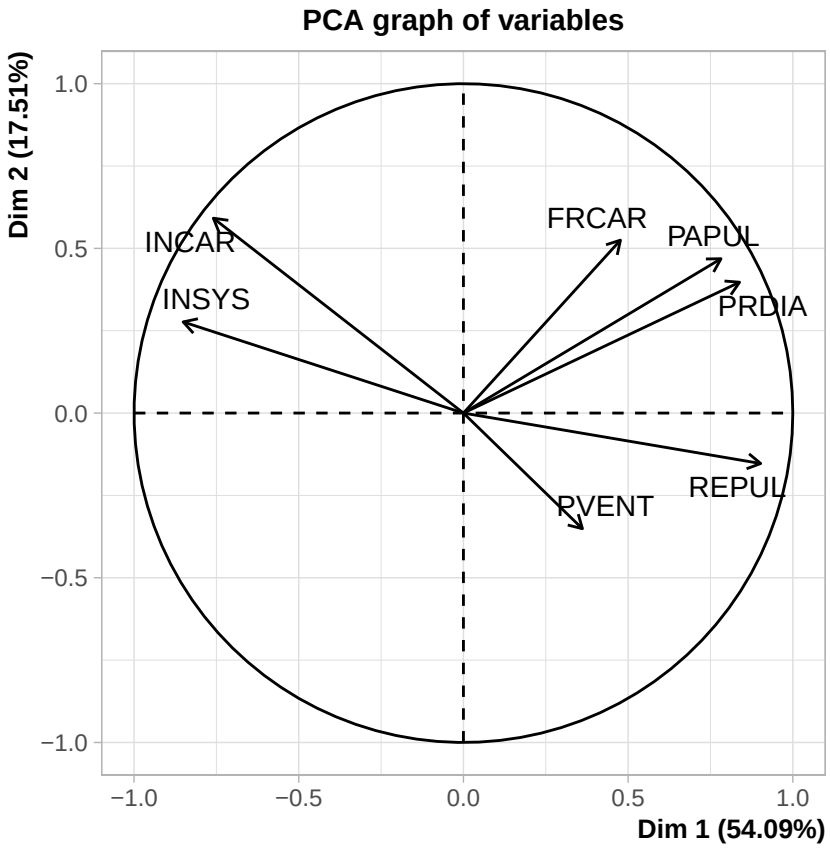
```
##     C  PRONO
## 1   2 SURVIE
## 2   1  DECES
## 3   1  DECES
## 4   2 SURVIE
## 5   1  DECES
## 6   1  DECES
## 7   2 SURVIE
## 8   2 SURVIE
## 9   2 SURVIE
## 10  2 SURVIE
## 11  2 SURVIE
## 12  2 SURVIE
## 13  2 SURVIE
## 14  2 SURVIE
## 15  2 SURVIE
## 16  2 SURVIE
## 17  2 SURVIE
## 18  2 SURVIE
## 19  2 SURVIE
## 20  2 SURVIE
```

```
## 21  2 SURVIE
## 22  1  DECES
## 23  1  DECES
## 24  1  DECES
## 25  1  DECES
## 26  1  DECES
## 27  1  DECES
## 28  1  DECES
## 29  2 SURVIE
## 30  2 SURVIE
## 31  2 SURVIE
## 32  1  DECES
## 33  1  DECES
## 34  2 SURVIE
## 35  1  DECES
## 36  2 SURVIE
## 37  2 SURVIE
## 38  2 SURVIE
## 39  1  DECES
## 40  2 SURVIE
## 41  1  DECES
## 42  1  DECES
## 43  2 SURVIE
## 44  2 SURVIE
## 45  1  DECES
## 46  2 SURVIE
## 47  1  DECES
## 48  1  DECES
## 49  2 SURVIE
## 50  1  DECES
## 51  2 SURVIE
## 52  2 SURVIE
## 53  1  DECES
## 54  1  DECES
## 55  2 SURVIE
## 56  1  DECES
## 57  2 SURVIE
## 58  2 SURVIE
## 59  2 SURVIE
## 60  2 SURVIE
## 61  1  DECES
## 62  2 SURVIE
## 63  1  DECES
## 64  2 SURVIE
## 65  2 SURVIE
## 66  2 SURVIE
## 67  1  DECES
## 68  1  DECES
## 69  2 SURVIE
## 70  1  DECES
## 71  2 SURVIE
## 72  1  DECES
## 73  1  DECES
## 74  2 SURVIE
```

```
## 75  2 SURVIE
## 76  1  DECES
## 77  2 SURVIE
## 78  1  DECES
## 79  1  DECES
## 80  2 SURVIE
## 81  1  DECES
## 82  2 SURVIE
## 83  2 SURVIE
## 84  1  DECES
## 85  1  DECES
## 86  2 SURVIE
## 87  1  DECES
## 88  1  DECES
## 89  1  DECES
## 90  1  DECES
## 91  2 SURVIE
## 92  1  DECES
## 93  1  DECES
## 94  1  DECES
## 95  1  DECES
## 96  1  DECES
## 97  1  DECES
## 98  1  DECES
## 99  1  DECES
## 100 1  DECES
## 101 1  DECES
```

```
res_all <- PCA(
  X,
  quali.sup = quali_indice
)
```


PCA graph of individuals
Dim 2 (17.51%)
Dim 1 (54.09%)
2
0
−2
−4
0
4
SURVIVE
DECEASES



3. Interprétation (10 lignes minimum). Quelles sont les variables liées au pronostic ?

Les variables qui joue un role important sur le dignostiques sont les varibale les mieux progetés sur le plan.

Voici la liste des variables liées au pronostic :

- INCAR
- INSYS
- PAPUL
- PRDIA
- RPUL

Le nuage de point semble assez dispersé sur l'axe vertical. Et etalé sur l'axe horizontal avec une perte de densité sur les extrémité.

Les observations comprenant un décés ont tendance a etre positif dans la premieres dimension tandis que ce qui comprenent une survie sont négatif sur la première dimension. La deuxieme dimension parrait uniform donc sans conclusion.

En conclusion, les décés semble etre lié à un score positif sur les variable qui contribuent positivement à la premiere dimension (e.i. PAPUL, PRDIA, RPUL). Les varibles contribuant le plus negativement à la premiere dimension sont plutot lié à la survie (i.e. INCAR, INSYS);