

ba

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```
d <- read_excel("covid_study_v2.xlsx")
d$AGE[d$AGE < 18] <- NA
d$female = d$GENDER == "F"
d$male = d$GENDER == "M"
d <- select(d, -c("GENDER"))
d$Lymphocytes = as.numeric(d$Lymphocytes)
```

Warning: NAs durch Umwandlung erzeugt

```
summary(d)
```

```
##      AGE      WBC      Platelets      Neutrophils
##  Min.   :18.00  Min.    : 1.100  Min.    : 20.0  Min.    : 0.5
## 1st Qu.:49.00  1st Qu.: 5.100  1st Qu.:163.0  1st Qu.: 3.5
## Median :64.00  Median : 7.100  Median :205.0  Median : 5.1
## Mean   :61.78  Mean    : 8.553  Mean    :226.5  Mean    : 6.2
## 3rd Qu.:76.00  3rd Qu.:10.700  3rd Qu.:271.0  3rd Qu.: 7.5
## Max.   :98.00  Max.    :29.200  Max.    :620.0  Max.    :26.4
## NA's   :2      NA's    :2      NA's    :2      NA's    :70
##  Lymphocytes  Monocytes  Eosinophils  Basophils
##  Min.   :0.200  Min.    :0.0000  Min.    :0.00000  Min.    :0.00000
## 1st Qu.:0.700  1st Qu.:0.4000  1st Qu.:0.00000  1st Qu.:0.00000
## Median :1.000  Median :0.5000  Median :0.00000  Median :0.00000
## Mean   :1.187  Mean    :0.6057  Mean    :0.05502  Mean    :0.01442
## 3rd Qu.:1.400  3rd Qu.:0.7000  3rd Qu.:0.10000  3rd Qu.:0.00000
## Max.   :7.200  Max.    :3.2000  Max.    :1.30000  Max.    :0.30000
## NA's   :71     NA's    :70     NA's    :70     NA's    :71
##      CRP      AST      ALT      ALP
##  Min.   : 0.10  Min.    : 11.0  Min.    : 9.00  Min.    : 34.00
## 1st Qu.: 21.40  1st Qu.: 27.0  1st Qu.: 21.00  1st Qu.: 57.50
## Median : 54.20  Median : 36.0  Median : 31.00  Median : 71.00
## Mean   : 90.89  Mean    : 54.2  Mean    : 44.92  Mean    : 89.89
## 3rd Qu.:129.10  3rd Qu.: 60.0  3rd Qu.: 46.00  3rd Qu.: 90.00
## Max.   :478.00  Max.    :550.0  Max.    :335.00  Max.    :838.00
## NA's   :6      NA's    :2      NA's    :13     NA's    :148
##      GGT      LDH      SWAB      female
##  Min.   : 10.00  Min.    : 98.0  Min.    :0.0000  Mode :logical
## 1st Qu.: 23.75  1st Qu.:243.2  1st Qu.:0.0000  FALSE:188
## Median : 41.00  Median :328.0  Median :1.0000  TRUE :91
## Mean   : 82.48  Mean    :380.4  Mean    :0.6344
## 3rd Qu.: 83.00  3rd Qu.:454.5  3rd Qu.:1.0000
## Max.   :839.00  Max.    :1195.0  Max.    :1.0000
## NA's   :143     NA's    :85
```

```
dm <- mice(d, m=5, maxit=20, seed=500)
```

2

[illegible]

```
## 20 2 AGE WBC Platelets Neutrophils Lymphocytes Monocytes Eosinophils Basophils CRP AST
## 20 3 AGE WBC Platelets Neutrophils Lymphocytes Monocytes Eosinophils Basophils CRP AST
## 20 4 AGE WBC Platelets Neutrophils Lymphocytes Monocytes Eosinophils Basophils CRP AST
## 20 5 AGE WBC Platelets Neutrophils Lymphocytes Monocytes Eosinophils Basophils CRP AST
```

```
## Warning: Number of logged events: 1
```

```
summary(dm)
```

```
## Class: mids
```

```
## Number of multiple imputations: 5
```

```
## Imputation methods:
```

```
##      AGE      WBC      Platelets Neutrophils Lymphocytes      Monocytes
##      "pmm"      "pmm"      "pmm"      "pmm"      "pmm"      "pmm"
## Eosinophils Basophils      CRP      AST      ALT      ALP
##      "pmm"      "pmm"      "pmm"      "pmm"      "pmm"      "pmm"
##      GGT      LDH      SWAB      female      male
##      "pmm"      "pmm"      ""      ""      ""
```

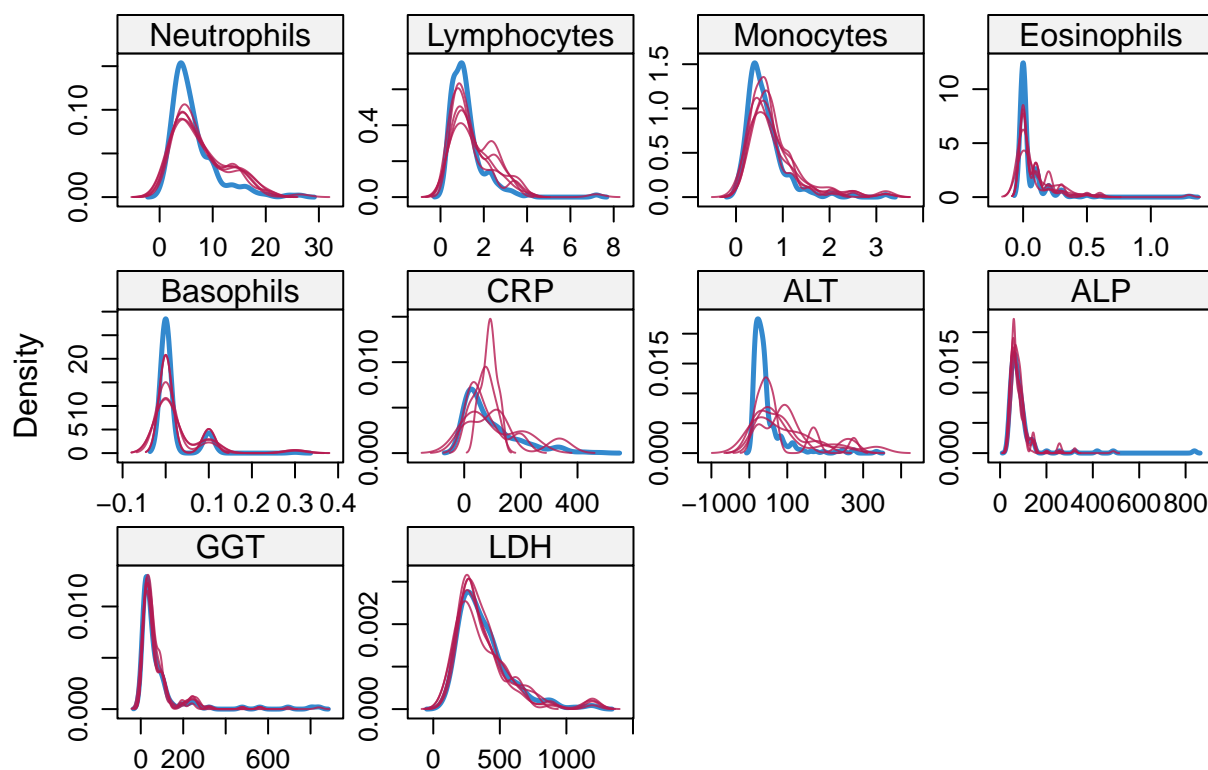
```
## PredictorMatrix:
```

```
##      AGE WBC Platelets Neutrophils Lymphocytes Monocytes Eosinophils
## AGE      0  1      1      1      1      1      1
## WBC      1  0      1      1      1      1      1
## Platelets 1  1      0      1      1      1      1
## Neutrophils 1  1      1      0      1      1      1
## Lymphocytes 1  1      1      1      0      1      1
## Monocytes 1  1      1      1      1      0      1
##      Basophils CRP AST ALT ALP GGT LDH SWAB female male
## AGE      1  1  1  1  1  1  1  1  1  0
## WBC      1  1  1  1  1  1  1  1  1  0
## Platelets 1  1  1  1  1  1  1  1  1  0
## Neutrophils 1  1  1  1  1  1  1  1  1  0
## Lymphocytes 1  1  1  1  1  1  1  1  1  0
## Monocytes 1  1  1  1  1  1  1  1  1  0
```

```
## Number of logged events: 1
```

```
## it im dep      meth out
## 1 0 0      collinear male
```

```
densityplot(dm)
```



```
dc <- complete(dm, 1)
summary(dc)
```

```
##      AGE      WBC      Platelets      Neutrophils
##  Min.   :18.00   Min.    : 1.10   Min.    : 20.0   Min.    : 0.500
## 1st Qu.:49.00   1st Qu.: 5.10   1st Qu.:162.5   1st Qu.: 3.550
## Median :64.00   Median : 7.10   Median :204.0   Median : 5.300
## Mean   :61.86   Mean    : 8.53   Mean    :225.9   Mean    : 6.571
## 3rd Qu.:76.00   3rd Qu.:10.70   3rd Qu.:271.0   3rd Qu.: 8.200
## Max.   :98.00   Max.    :29.20   Max.    :620.0   Max.    :26.400
##  Lymphocytes  Monocytes  Eosinophils  Basophils
##  Min.   :0.200   Min.    :0.0000   Min.    :0.00000   Min.    :0.00000
## 1st Qu.:0.700   1st Qu.:0.4000   1st Qu.:0.00000   1st Qu.:0.00000
## Median :1.000   Median :0.6000   Median :0.00000   Median :0.00000
## Mean   :1.234   Mean    :0.6595   Mean    :0.05663   Mean    :0.01864
## 3rd Qu.:1.500   3rd Qu.:0.8000   3rd Qu.:0.10000   3rd Qu.:0.00000
## Max.   :7.200   Max.    :3.2000   Max.    :1.30000   Max.    :0.30000
##      CRP      AST      ALT      ALP
##  Min.   : 0.10   Min.    : 11.00   Min.    : 9.0   Min.    : 34.00
## 1st Qu.: 21.55   1st Qu.: 27.00   1st Qu.: 22.0   1st Qu.: 59.00
## Median : 53.80   Median : 36.00   Median : 33.0   Median : 72.00
## Mean   : 90.93   Mean    : 54.01   Mean    : 47.6   Mean    : 85.48
## 3rd Qu.:129.35   3rd Qu.: 60.00   3rd Qu.: 47.0   3rd Qu.: 89.00
## Max.   :478.00   Max.    :550.00   Max.    :335.0   Max.    :838.00
##      GGT      LDH      SWAB      female
##  Min.   : 10.00   Min.    : 98.0   Min.    :0.0000   Mode :logical
```

```

## 1st Qu.: 25.00    1st Qu.: 235.0    1st Qu.:0.0000    FALSE:188
## Median : 45.00    Median : 321.0    Median :1.0000    TRUE :91
## Mean   : 73.05    Mean   : 382.8    Mean   :0.6344
## 3rd Qu.: 82.00    3rd Qu.: 459.0    3rd Qu.:1.0000
## Max.    :839.00    Max.    :1195.0    Max.    :1.0000
##      male
## Mode :logical
## FALSE:91
## TRUE :188
##
##
##

```