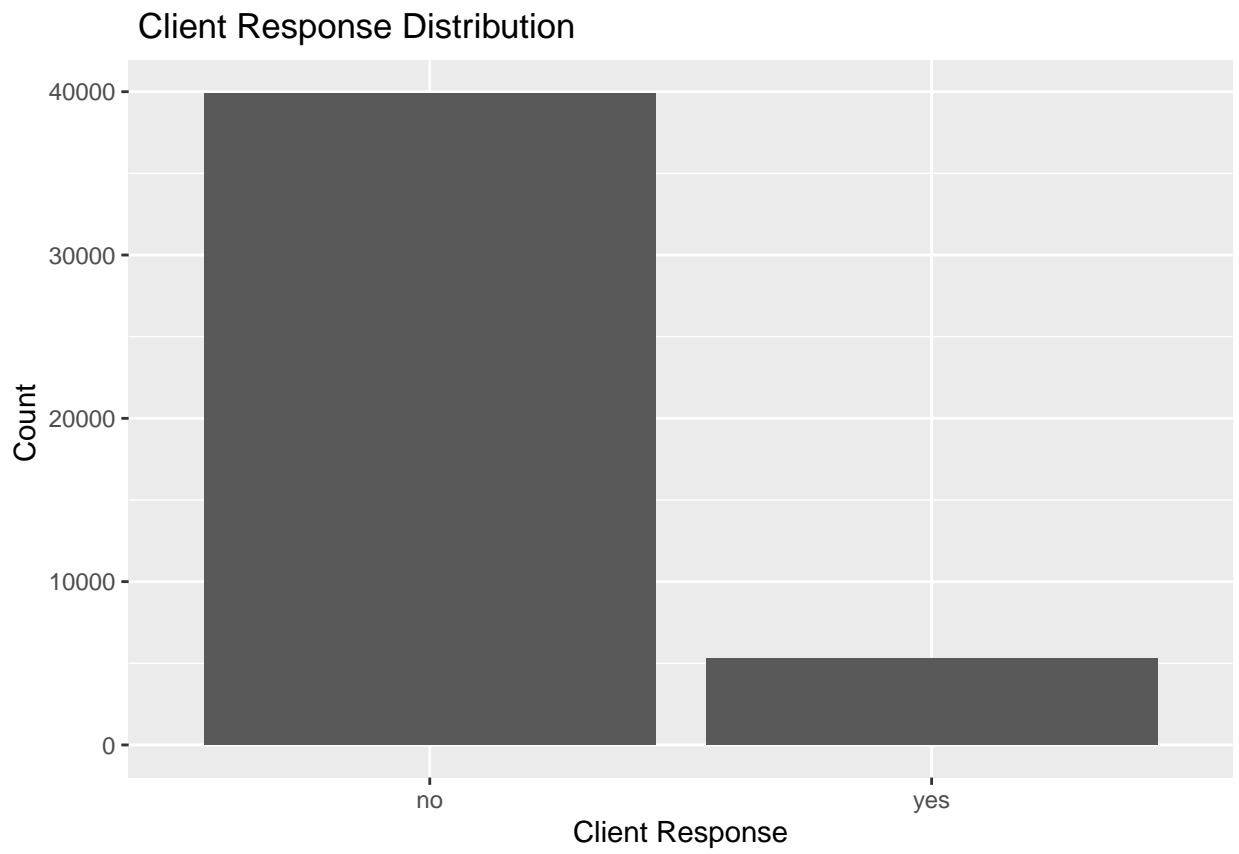
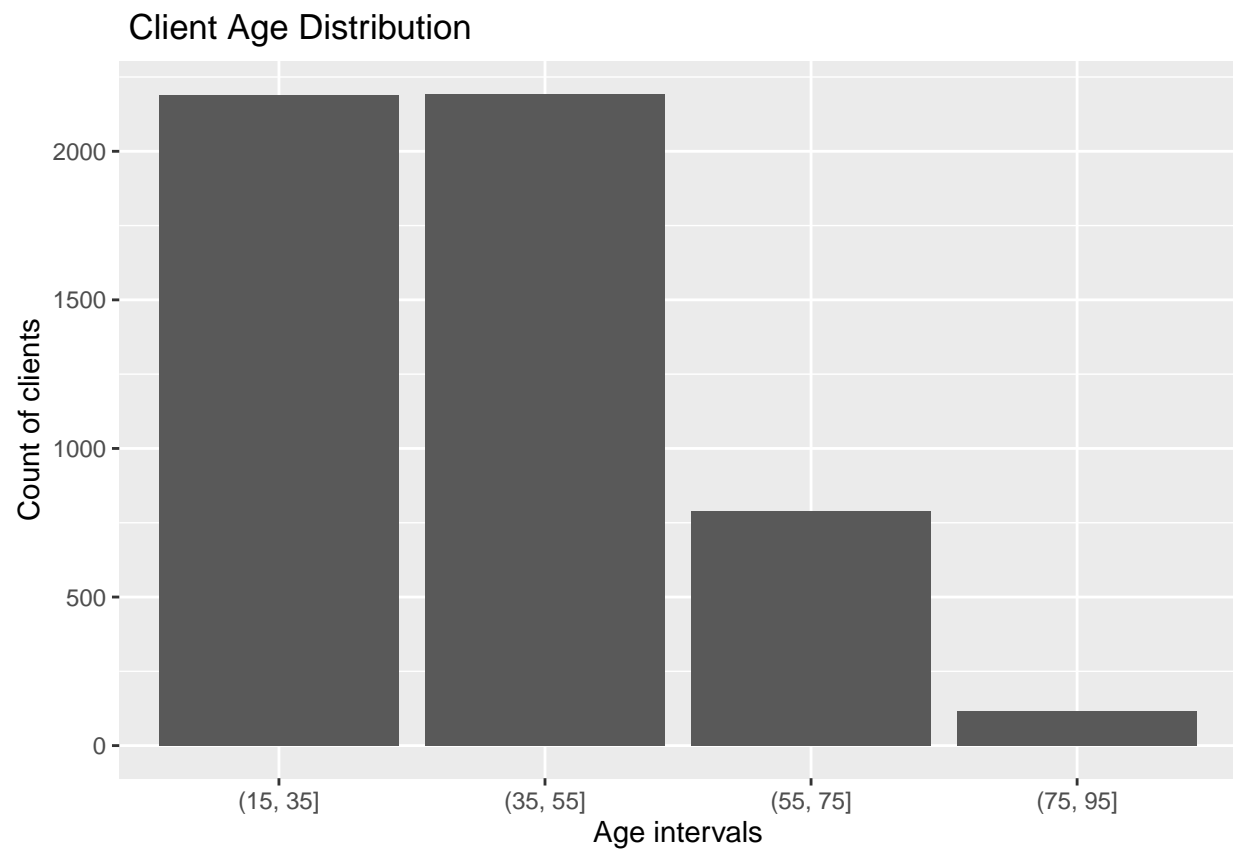
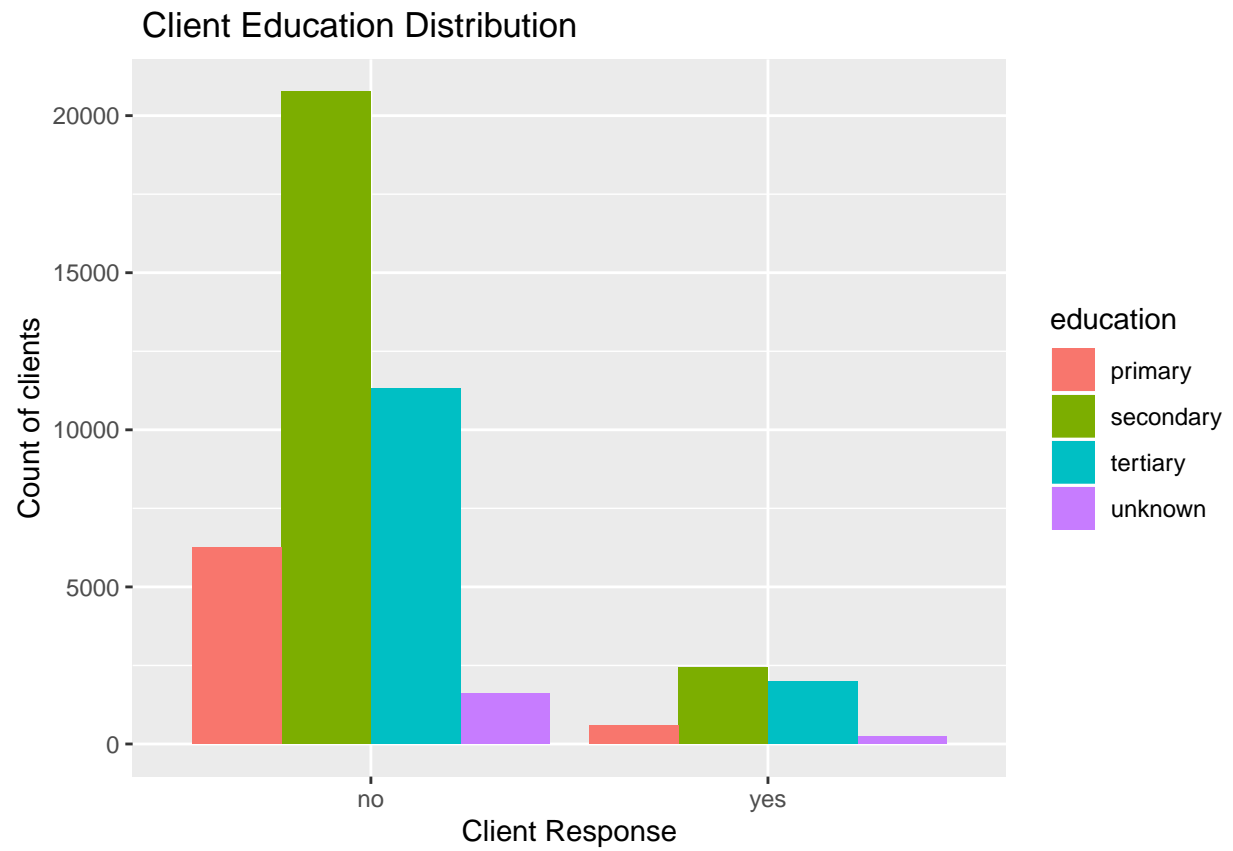


# Bankanalysis





```
## Invalid filter: "object 'X1' not found". Update or remove the expression
```

```
## Logistic regression (GLM)
```

```
## Data : my_data_1
```

```
## Filter : X1 < 36000
```

```
## Response variable : y
```

```
## Level : no in y
```

```
## Explanatory variables: age, job, marital, education, default, balance, housing, loan, contact, day, c
```

```
## Null hyp.: there is no effect of x on y
```

```
## Alt. hyp.: there is an effect of x on y
```

```
##
```

	OR	coefficient	std.error	z.value
## (Intercept)		11.640	0.207	56.196
## age	0.997	-0.003	0.002	-1.459
## job blue-collar	1.555	0.441	0.069	6.381
## job entrepreneur	1.789	0.582	0.120	4.837
## job housemaid	1.642	0.496	0.129	3.851
## job management	1.298	0.260	0.071	3.694
## job retired	0.757	-0.279	0.092	-3.032
## job self-employed	1.508	0.410	0.107	3.843
## job services	1.410	0.344	0.080	4.320
## job student	0.569	-0.564	0.106	-5.307
## job technician	1.340	0.292	0.066	4.448
## job unemployed	1.261	0.232	0.106	2.191
## job unknown	1.542	0.433	0.223	1.944
## marital married	1.159	0.147	0.056	2.632
## marital single	0.834	-0.181	0.064	-2.838
## education secondary	0.842	-0.172	0.061	-2.805
## education tertiary	0.623	-0.473	0.071	-6.617
## education unknown	0.741	-0.299	0.099	-3.035
## default yes	1.272	0.240	0.161	1.497
## balance	1.000	-0.000	0.000	-3.606
## housing yes	2.423	0.885	0.038	23.219
## loan yes	1.807	0.592	0.056	10.501
## contact telephone	1.076	0.073	0.071	1.020
## contact unknown	2.745	1.010	0.055	18.398
## day	1.005	0.005	0.002	2.164
## duration_log	0.168	-1.786	0.026	-67.760
## contact ed_1_to_4too many times	1.480	0.392	0.064	6.134
## previously_contacted yes	0.345	-1.065	0.040	-26.737

```
## p.value
```

```
## < .001 ***
```

```
## 0.145
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## 0.002 **
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## < .001 ***
```

```
## 0.028 *
```

```
## 0.052 .
```

```

##      0.008 **
##      0.005 **
##      0.005 **
##      < .001 ***
##      0.002 **
##      0.135
##      < .001 ***
##      < .001 ***
##      < .001 ***
##      0.308
##      < .001 ***
##      0.030 *
##      < .001 ***
##      < .001 ***
##      < .001 ***
##
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Pseudo R-squared: 0.305
## Log-likelihood: -11343.991, AIC: 22743.982, BIC: 22988.117
## Chi-squared: 9942.973 df(27), p.value < .001
## Nr obs: 45,211

## Logistic regression (GLM)
## Data      : my_data_1
## Filter    : X1 < 36000
## Response variable : y
## Level(s)  : no in y
## Explanatory variables: age, job, marital, education, default, balance, housing, loan, contact, day, c
## Interval  : confidence
## Prediction dataset : my_data_1
## Rows shown   : 10 of 45,211
##
##   age      job      marital education default balance housing loan contact
##   58      management married tertiary      no      2143      yes      no unknown
##   44      technician single secondary      no        29      yes      no unknown
##   33 entrepreneur married secondary      no         2      yes      yes unknown
##   47 blue-collar married unknown      no      1506      yes      no unknown
##   33      unknown single unknown      no         1      no      no unknown
##   35      management married tertiary      no      231      yes      no unknown
##   28      management single tertiary      no      447      yes      yes unknown
##   42 entrepreneur divorced tertiary      yes         2      yes      no unknown
##   58      retired married primary      no      121      yes      no unknown
##   43      technician single secondary      no      593      yes      no unknown
##   day duration_log contacted_1_to_4 previously_contacted Prediction 2.5%
##   5      5.568      1-4 times      no      0.966 0.960
##   5      5.024      1-4 times      no      0.988 0.986
##   5      4.344      1-4 times      no      0.999 0.999
##   5      4.533      1-4 times      no      0.996 0.995
##   5      5.293      1-4 times      no      0.956 0.933
##   5      4.942      1-4 times      no      0.990 0.988
##   5      5.384      1-4 times      no      0.983 0.980
##   5      5.943      1-4 times      no      0.959 0.941
##   5      3.932      1-4 times      no      0.998 0.998

```

```

##      5      4.025      1-4 times      no      0.998 0.997
## 97.5%
## 0.970
## 0.990
## 0.999
## 0.997
## 0.971
## 0.991
## 0.986
## 0.972
## 0.998
## 0.998

## Invalid filter: "object 'X1' not found". Update or remove the expression
## Invalid filter: "object 'X1' not found". Update or remove the expression

## Confusion matrix
## Data      : my_data_1
## Filter    : X1 < 36000
## Results for: Both
## Predictors : pred_logit
## Response   : y
## Level      : no in y
## Cost:Margin: 1 : 2
##
##      Type Predictor      TP      FP      TN      FN      total      TPR      TNR      precision
## Training pred_logit 38,965 3,891 1,398 957 45,211 0.976 0.264      0.909
## Test pred_logit 38,965 3,891 1,398 957 45,211 0.976 0.264      0.909
## Fscore
## 0.941
## 0.941
##
##      Type Predictor accuracy kappa profit index ROME contact      AUC
## Training pred_logit      0.893 0.317 35,074 1.000 0.818      0.948 0.881
## Test pred_logit      0.893 0.317 35,074 1.000 0.818      0.948 0.881

## age balance housing contact day duration campaign pdays previous y
## 1 58      2143      yes unknown      5      261      1      -1      0 no
## 2 44      29      yes unknown      5      151      1      -1      0 no
## 3 33      2      yes unknown      5      76      1      -1      0 no
## 4 47      1506      yes unknown      5      92      1      -1      0 no
## 5 33      1      no unknown      5      198      1      -1      0 no
## 6 35      231      yes unknown      5      139      1      -1      0 no
## job_management job_technician job_entrepreneur job_blue-collar
## 1      1      0      0
## 2      0      1      0
## 3      0      0      1
## 4      0      0      0
## 5      0      0      0
## 6      1      0      0
## job_unknown job_retired job_admin job_services job_self_employed
## 1      0      0      0      0      0
## 2      0      0      0      0      0
## 3      0      0      0      0      0
## 4      0      0      0      0      0

```

```

## 5      1      0      0      0      0
## 6      0      0      0      0      0
##  job_unemployed job_housemaid job_student marital_married marital_single
## 1      0      0      0      1      0
## 2      0      0      0      0      1
## 3      0      0      0      1      0
## 4      0      0      0      1      0
## 5      0      0      0      0      1
## 6      0      0      0      1      0
##  marital_divorced education_tertiary education_secondary
## 1      0      1      0
## 2      0      0      1
## 3      0      0      1
## 4      0      0      0
## 5      0      0      0
## 6      0      1      0
##  education_unknown education_primary housing_yes poutcome_success
## 1      0      0      1      0
## 2      0      0      1      0
## 3      0      0      1      0
## 4      1      0      1      0
## 5      1      0      0      0
## 6      0      0      1      0
##  poutcome_failure month_may month_jun month_jul month_aug month_oct
## 1      0      1      0      0      0      0
## 2      0      1      0      0      0      0
## 3      0      1      0      0      0      0
## 4      0      1      0      0      0      0
## 5      0      1      0      0      0      0
## 6      0      1      0      0      0      0
##  month_nov month_dec month_jan month_feb month_mar month_apr month_sep
## 1      0      0      0      0      0      0      0
## 2      0      0      0      0      0      0      0
## 3      0      0      0      0      0      0      0
## 4      0      0      0      0      0      0      0
## 5      0      0      0      0      0      0      0
## 6      0      0      0      0      0      0      0
##  predicted actual Freq lab
## 1      no      no 5836 TN
## 2      yes      no 152  FP
## 3      no      yes 514  FN
## 4      yes      yes 279  TP
## [1] "Accuracy:"
## [1] 583.9544
## [1] "Precision:"
## [1] 153
## [1] "Recall:"
## [1] 515

```

rf

