
Practical work on Machine Learning:
Classification on bank marketing data

Appendix

MARTÍ CARDOSO I SABÉ
MEYSAM ZAMANI FOROOSHANI

ML (MIRI - Data Science)

June, 2019

Table of contents

A	Box plot and histogram of the continuous variables	2
B	Bar plot of categorical variables	3
C	Density function of variables	4
D	Visualization with PCA and MCA results	5
E	Grid search results of SVM using RBF kernel	10

A Box plot and histogram of the continuous variables

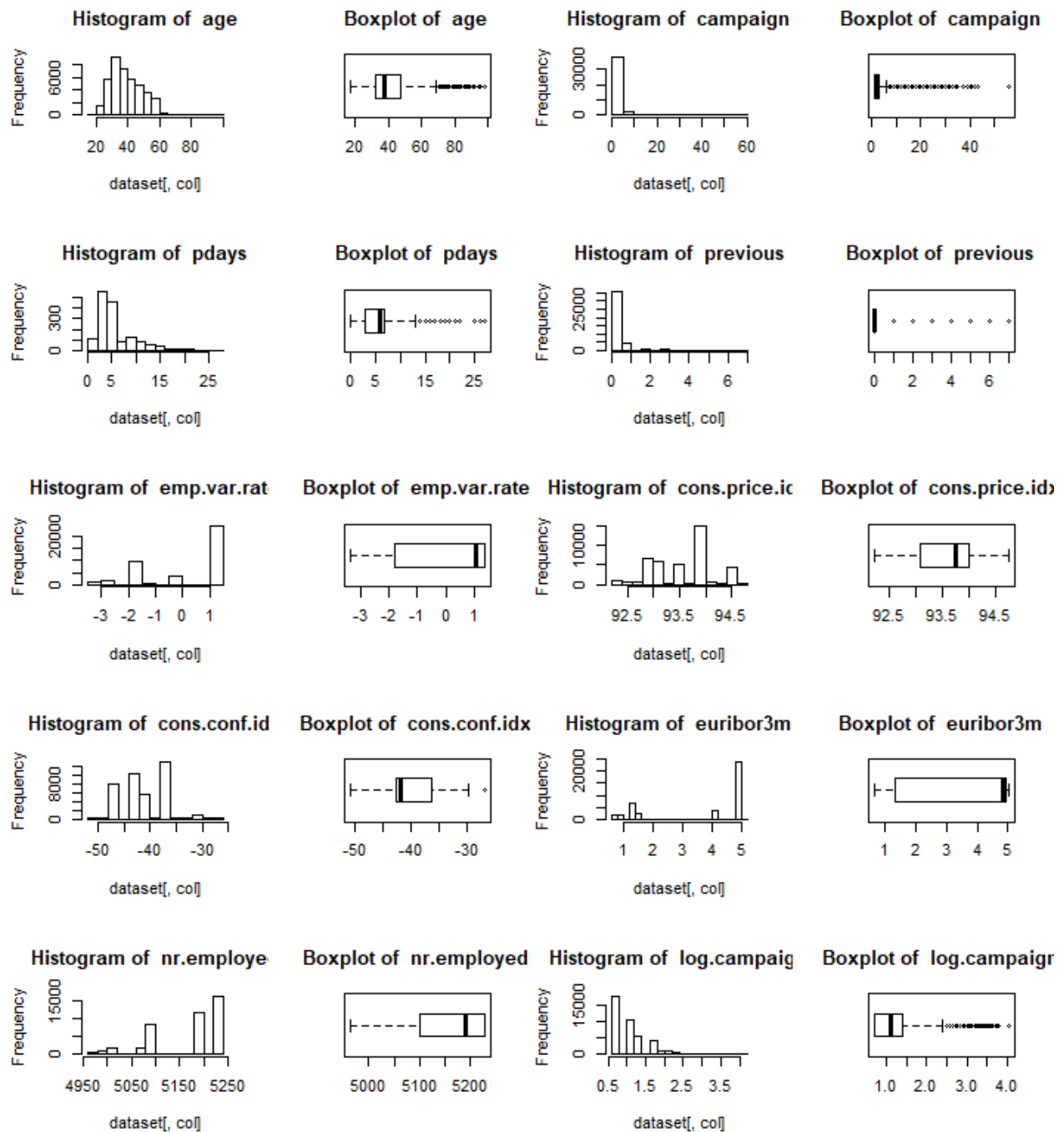


Figure 5: Box plot and histogram of the continuous variables

B Bar plot of categorical variables

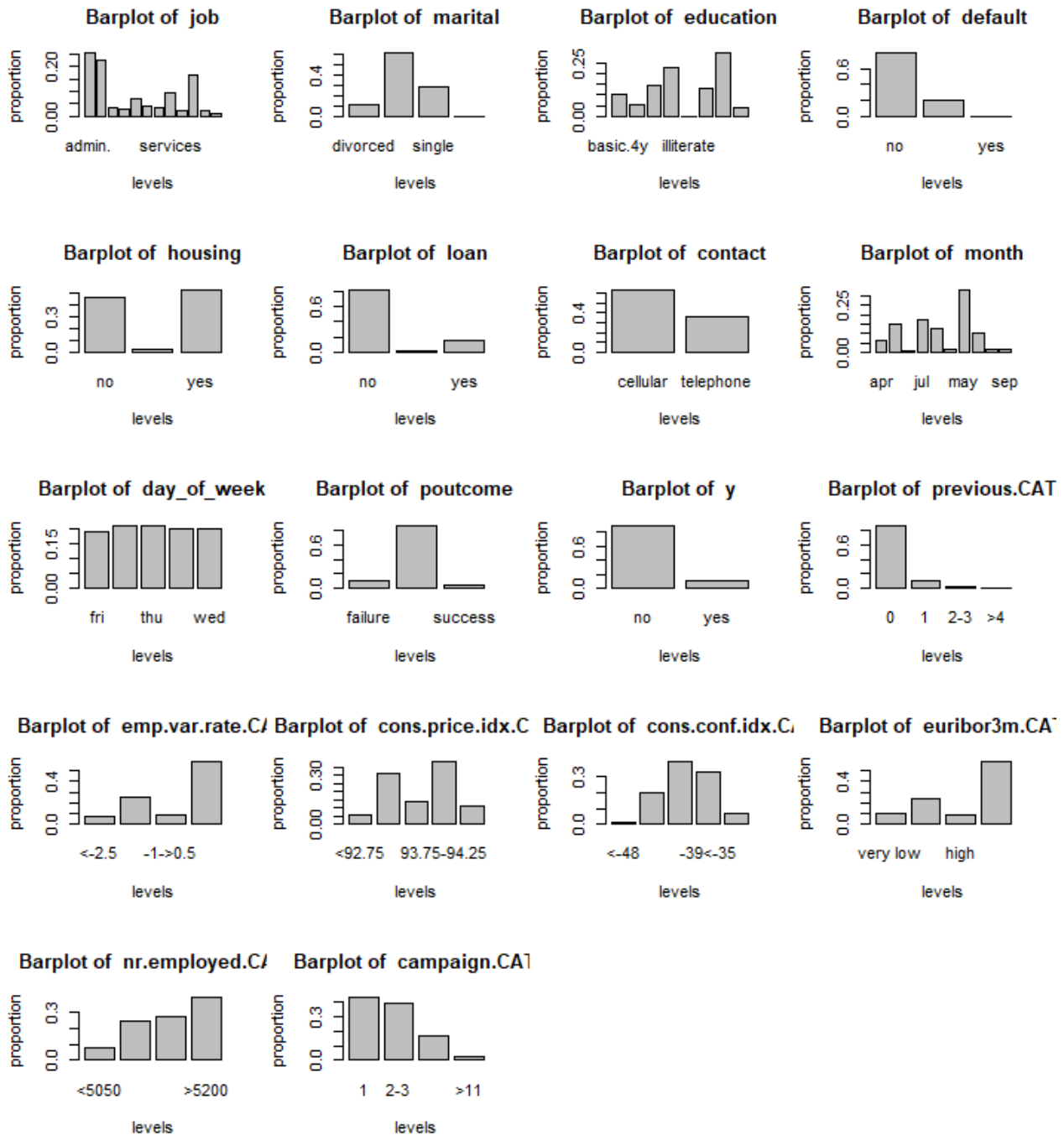


Figure 6: Bar plot of categorical variables (including the newly created ones)

C Density function of variables

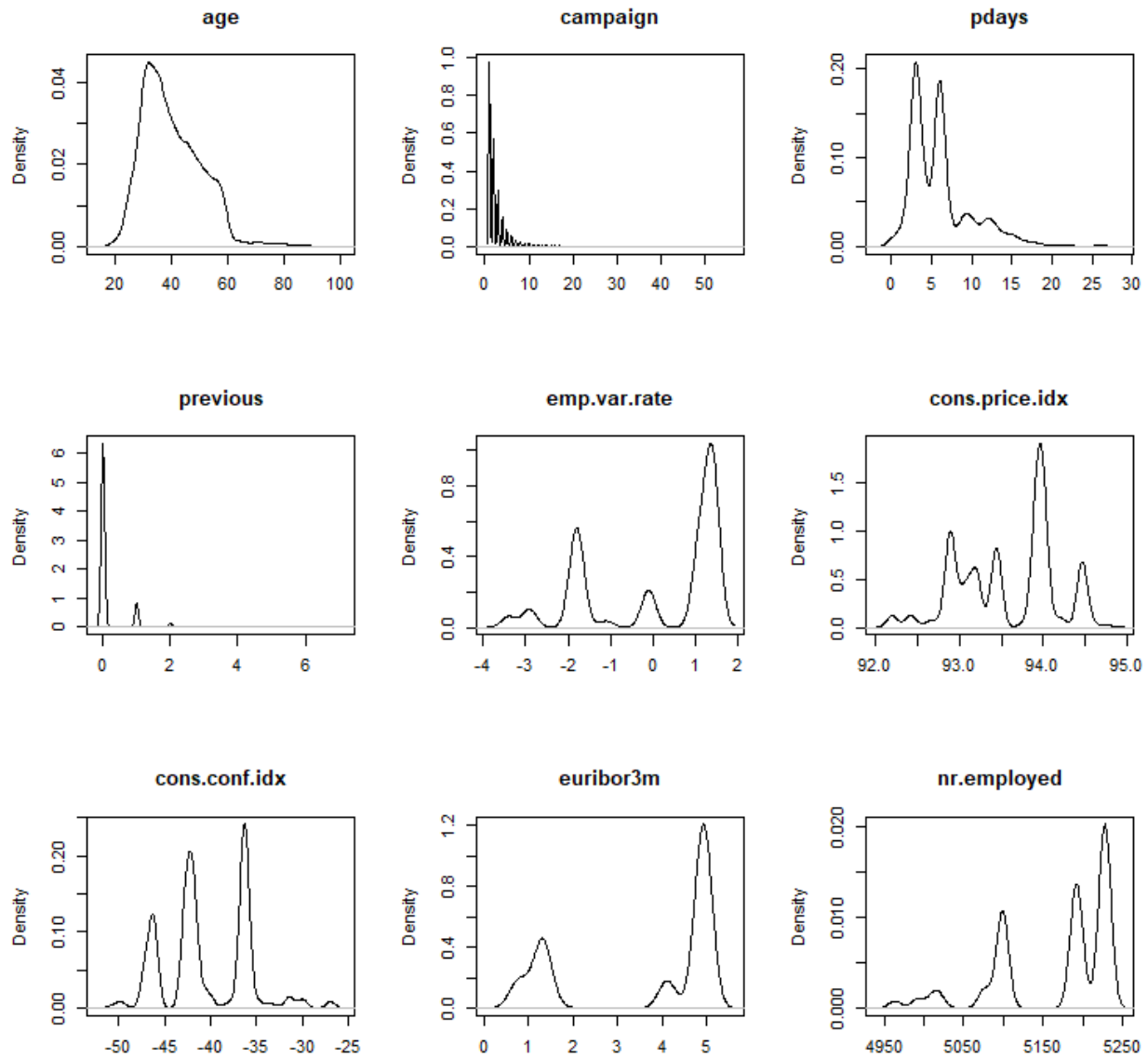


Figure 7: Density function of the continuous variables of our dataset

D Visualization with PCA and MCA results

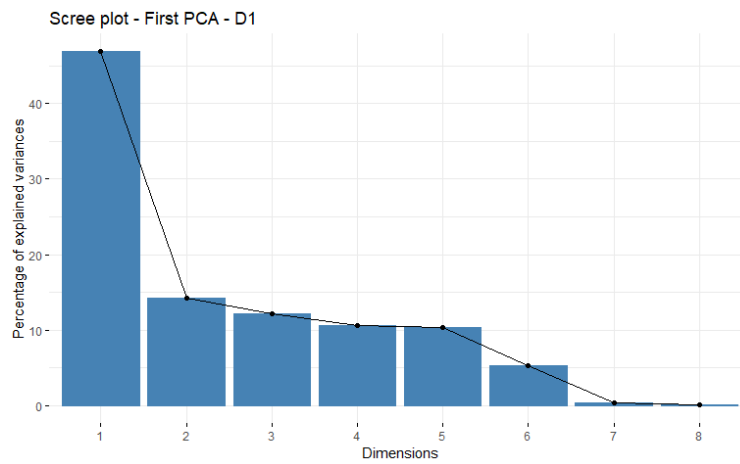


Figure 8: [Visualization, approach 1] Scree Plot of the first PCA applied to the continuous variables

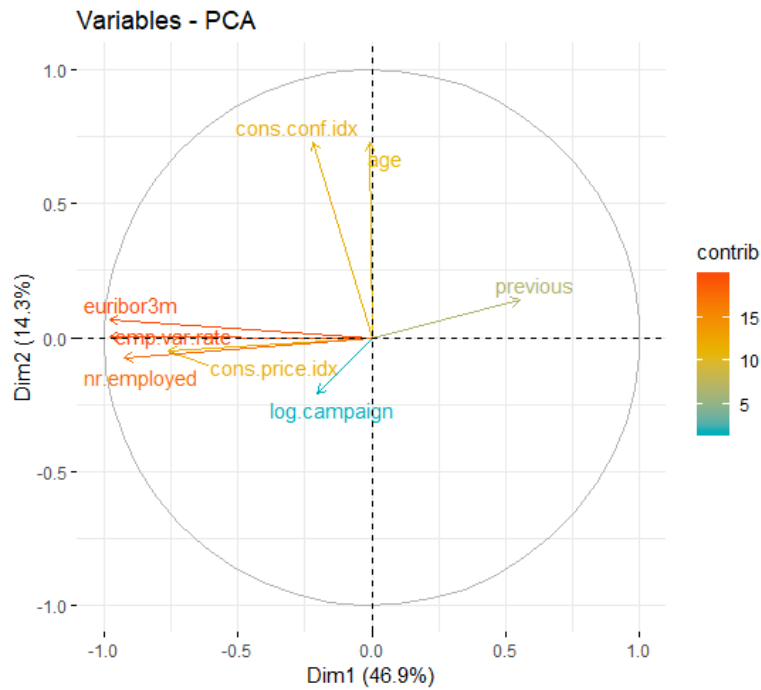


Figure 9: [Visualization, approach 1] Projection of variables in the first two dimensions of the first PCA applied to the continuous variables

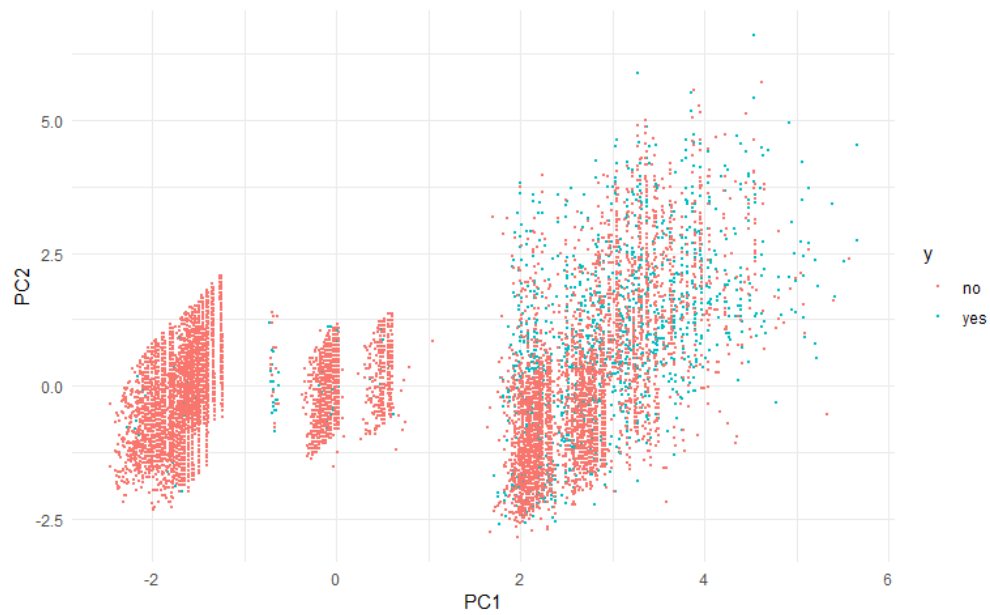


Figure 10: [Visualization, approach 1] Projection of observations in the first two dimensions of the first PCA applied to the continuous variables

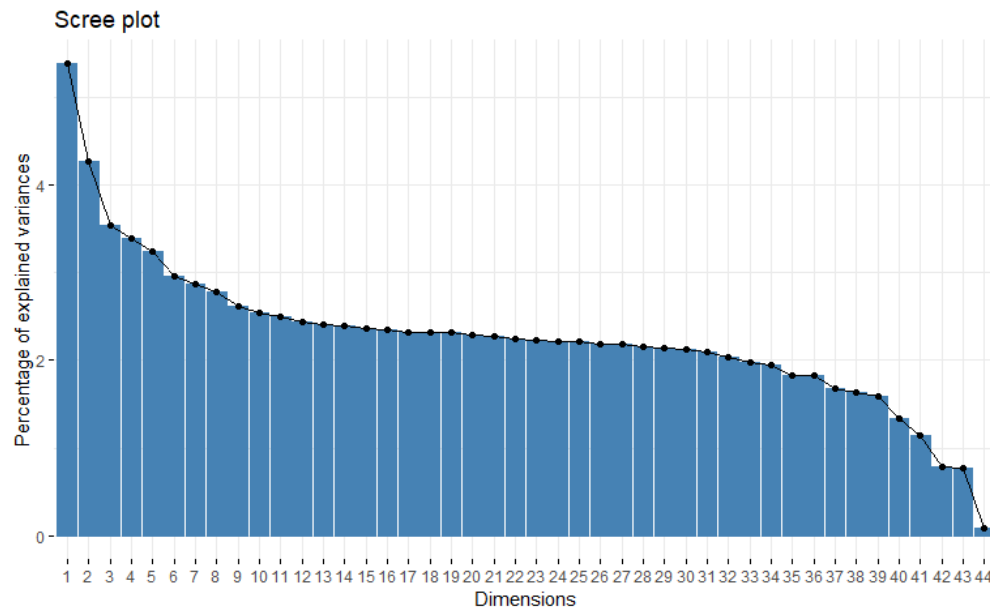


Figure 11: [Visualization, approach 1] Scree Plot of the MCA applied to only categorical variables

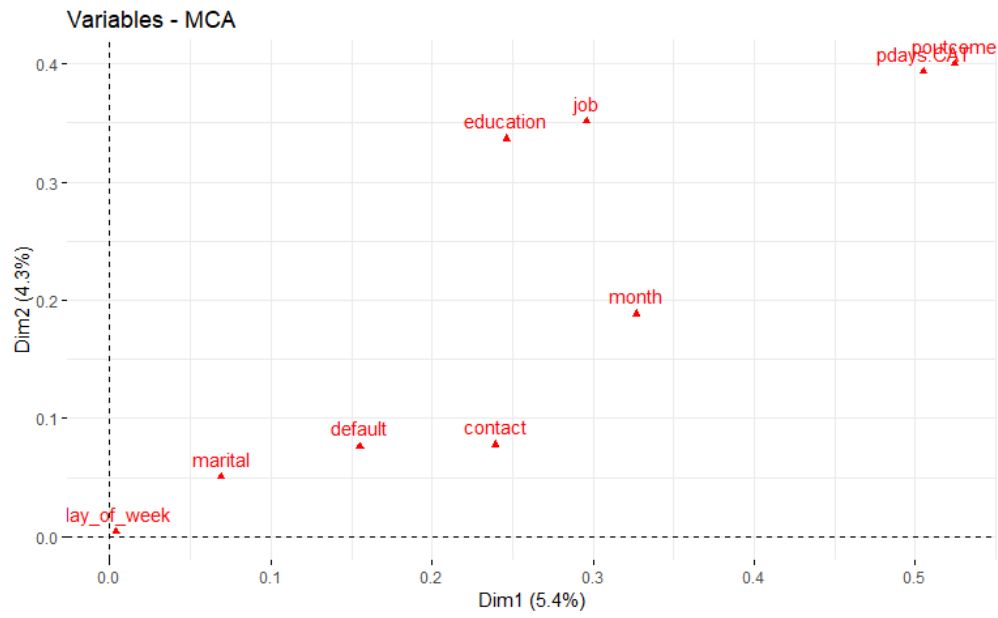


Figure 12: [Visualization, approach 1] Projection of variables in the first two dimensions of the MCA applied to only categorical variables

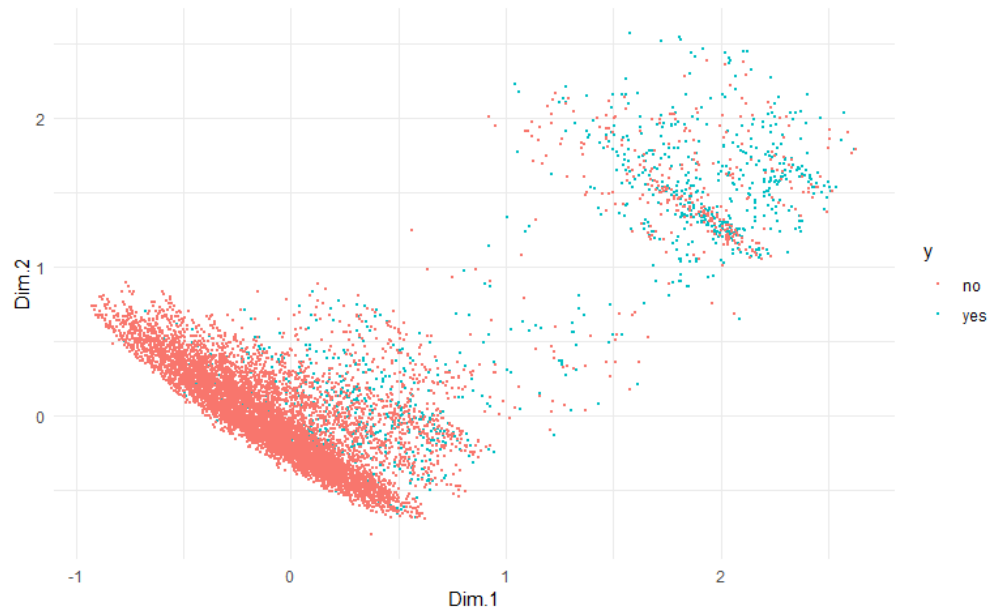


Figure 13: [Visualization, approach 1] Projection of observations in the first two dimensions of the MCA applied to only categorical variables

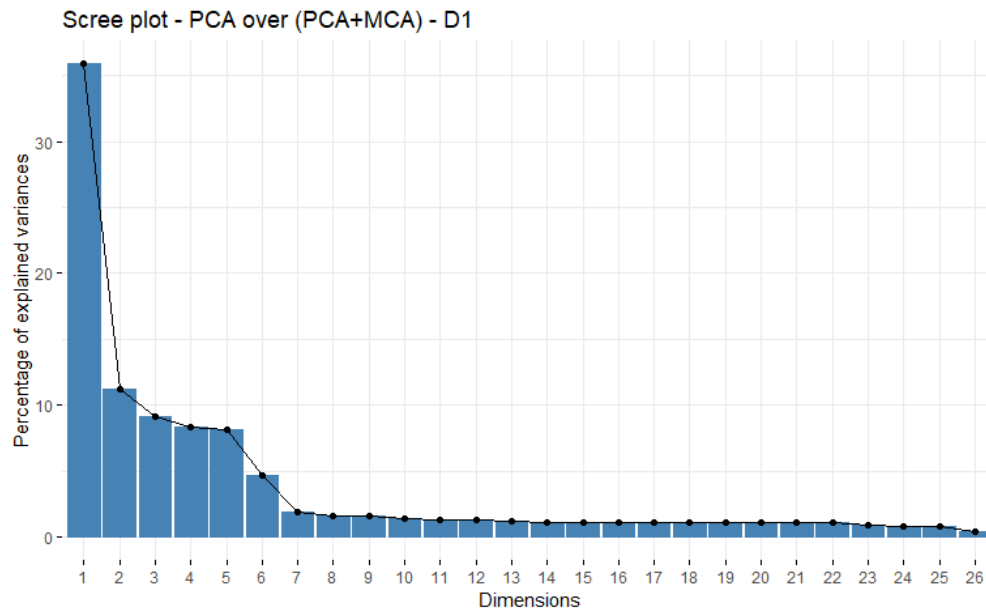


Figure 14: [Visualization, approach 1] Scree Plot of the PCA applied to the concatenation of PCA and MCA



Figure 15: [Visualization, approach 1] Projection of observations in the first two dimensions of the PCA applied to the concatenation of PCA and MCA

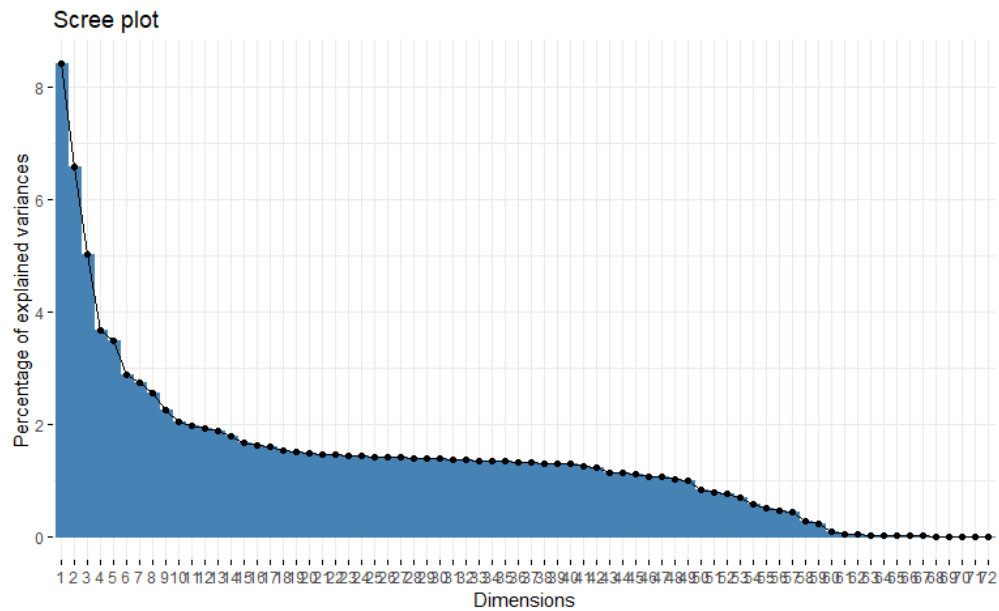


Figure 16: [Visualization, approach 2] Scree Plot of the MCA applied to the dataset with all variables discretized

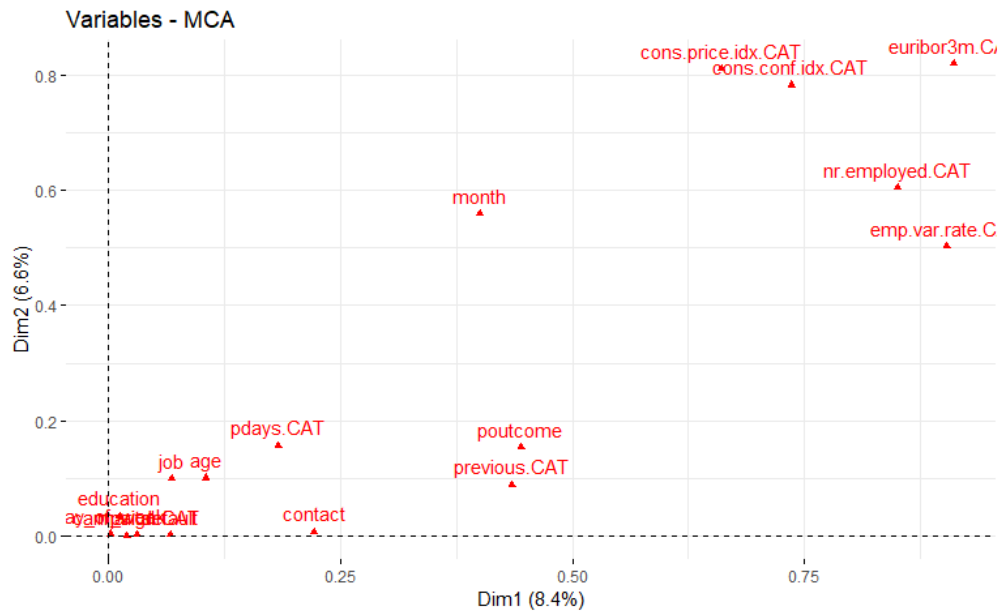


Figure 17: [Visualization, approach 2] Projection of variables in the first two dimensions of the MCA applied to the dataset with all variables discretized



Figure 18: [Visualization, approach 2] Projection of individuals in the first two dimensions of the MCA applied to the dataset with all variables discretized

E Grid search results of SVM using RBF kernel

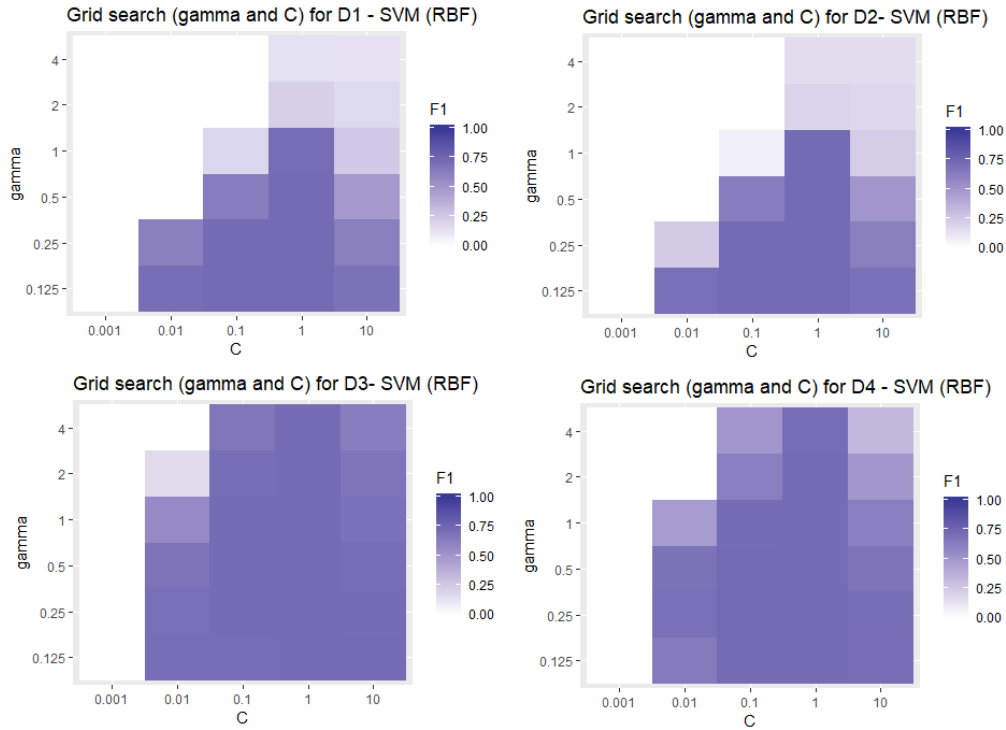


Figure 19: Grid search results of SVM using RBF. It is tested several γ and C for our datasets: D1 (top left), D2 (top right), D3 (bottom left) and D4 (bottom right).