Titanic Data:

Model performance assessment

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3 project

SOMMAIRE

1 Performance indicators for the Titanic data

2 Sampling impact on model performance

3 Attributes sampling impact on the model performance

4 Most Important features

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1

Indicators for the Titanic predictor

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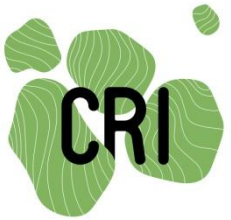

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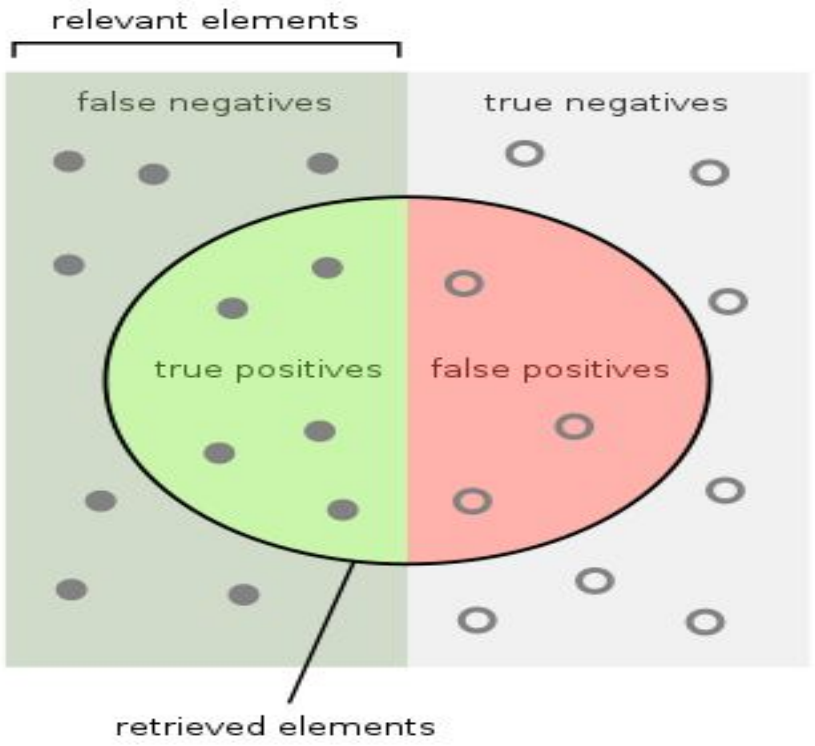
Indicators for the Titanic predictor

- Accuracy
- Recall score
- Precision
- F1 score



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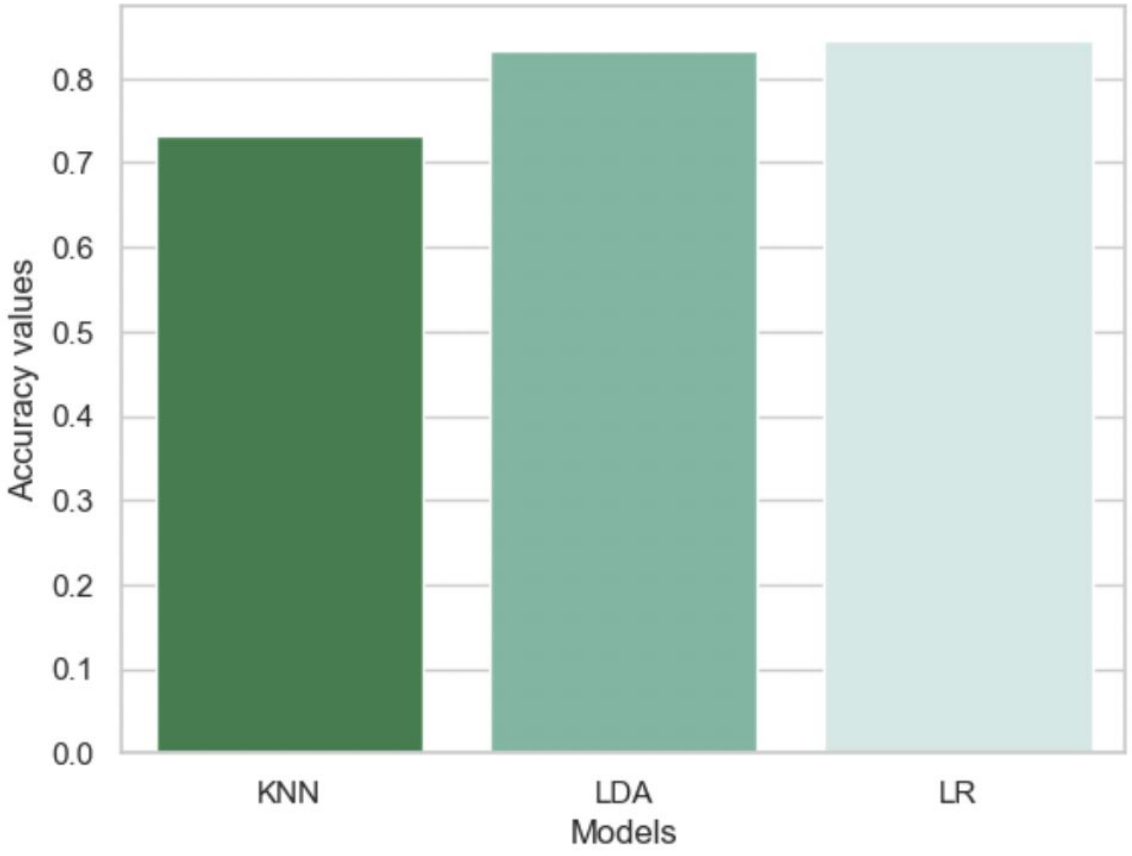
CRI

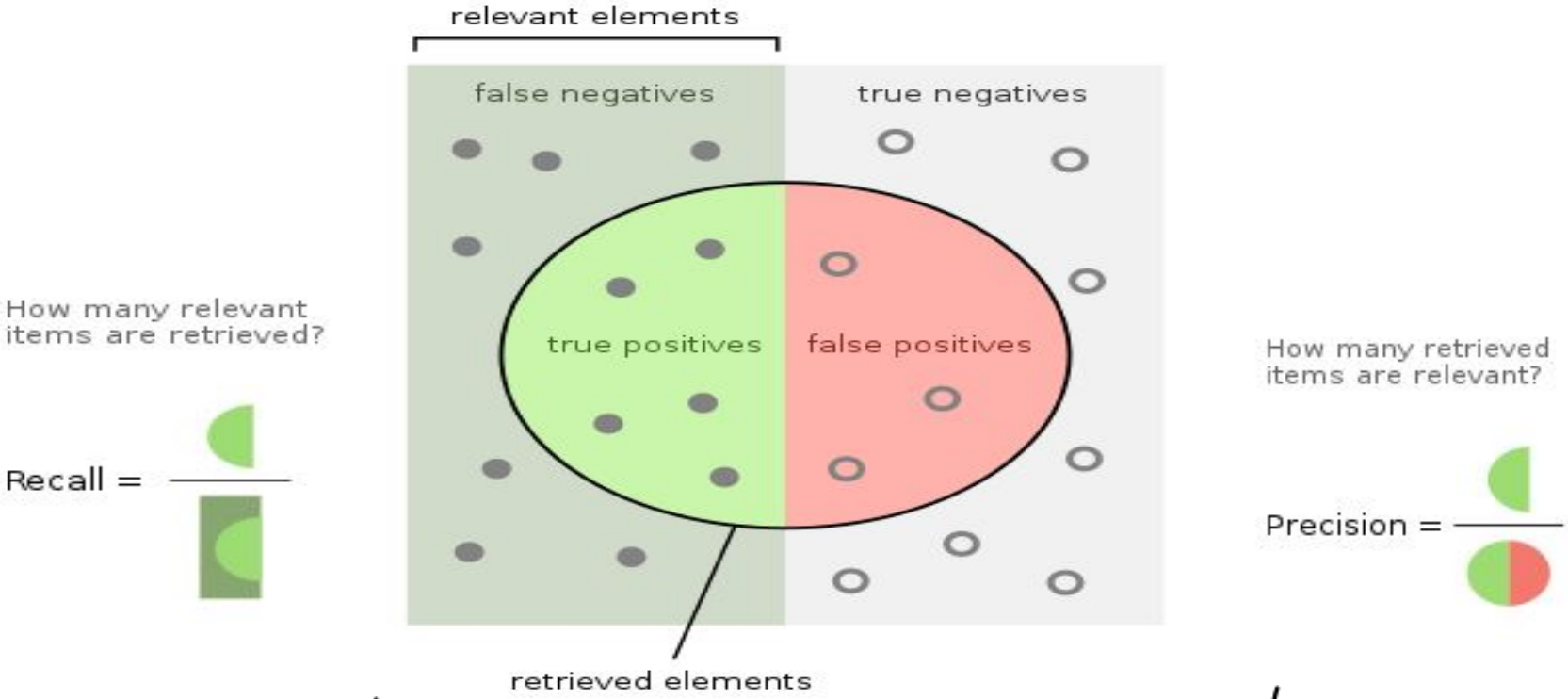
Accuracy

$$ACC = \frac{tp + tn}{tp + fp + tn + fn}$$



Models	Accuracy values
KNN	0.733
LDA	0.833
LR	0.844

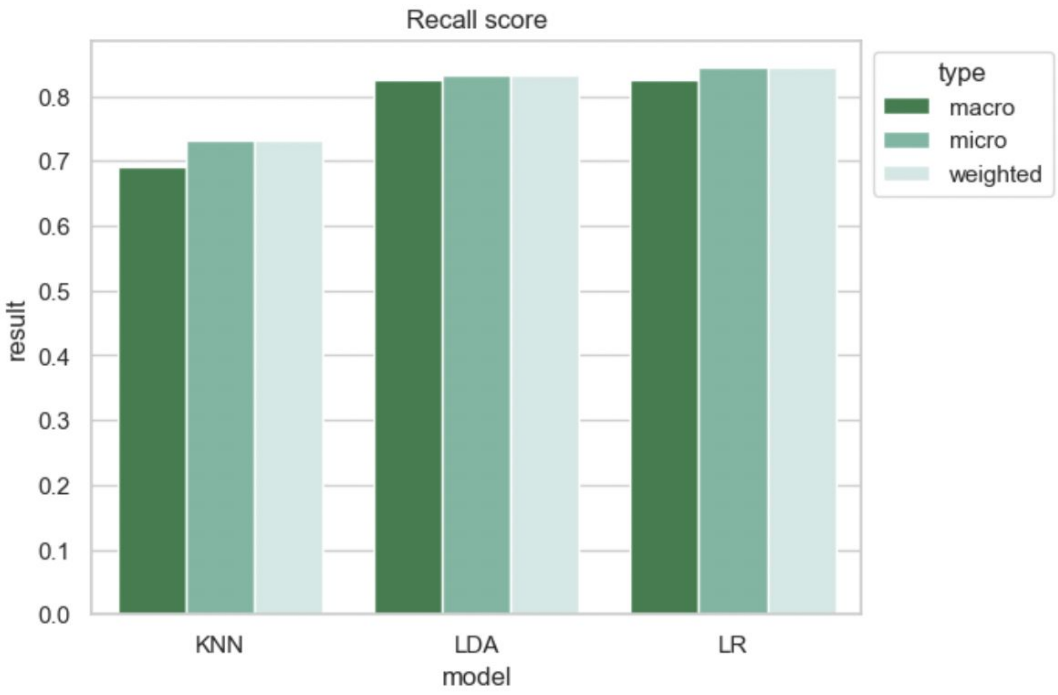
Recall & Precision



$$TPR = \frac{tp}{tp + fn}$$

$$PPV = \frac{tp}{tp + fp}$$

True Positive Rate | Recall

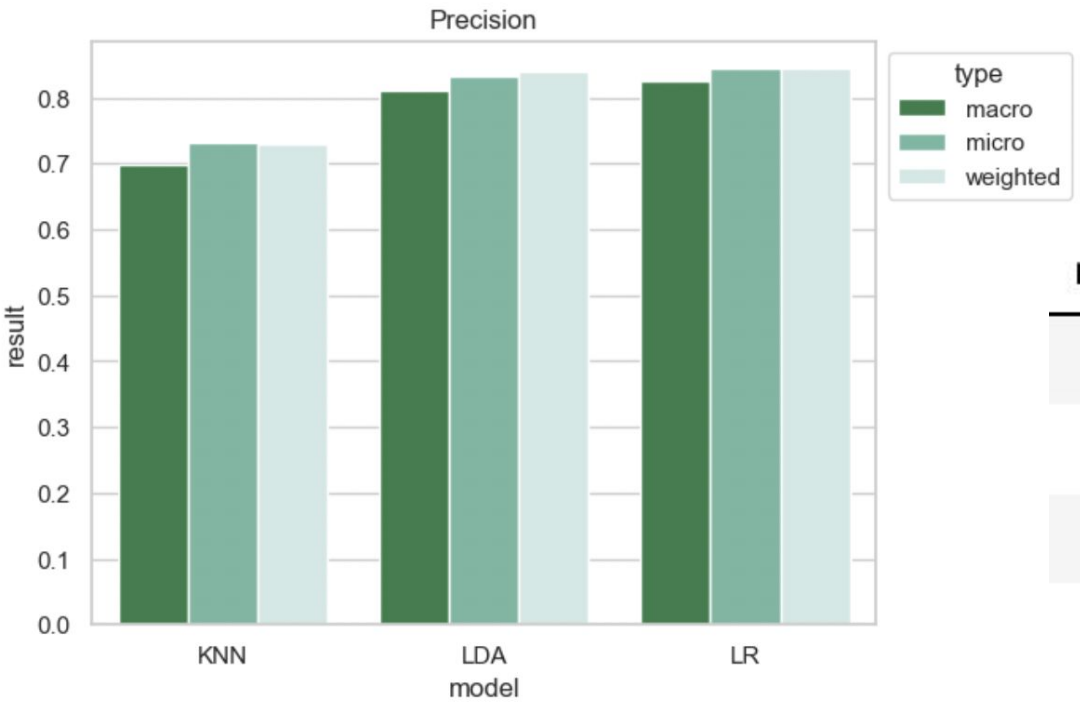


$$TPR = \frac{tp}{tp + fn}$$

model	macro	micro	weighted
KNN	0.692	0.733	0.733
LDA	0.825	0.833	0.833
LR	0.825	0.844	0.844

Positive Predictive Value | Precision

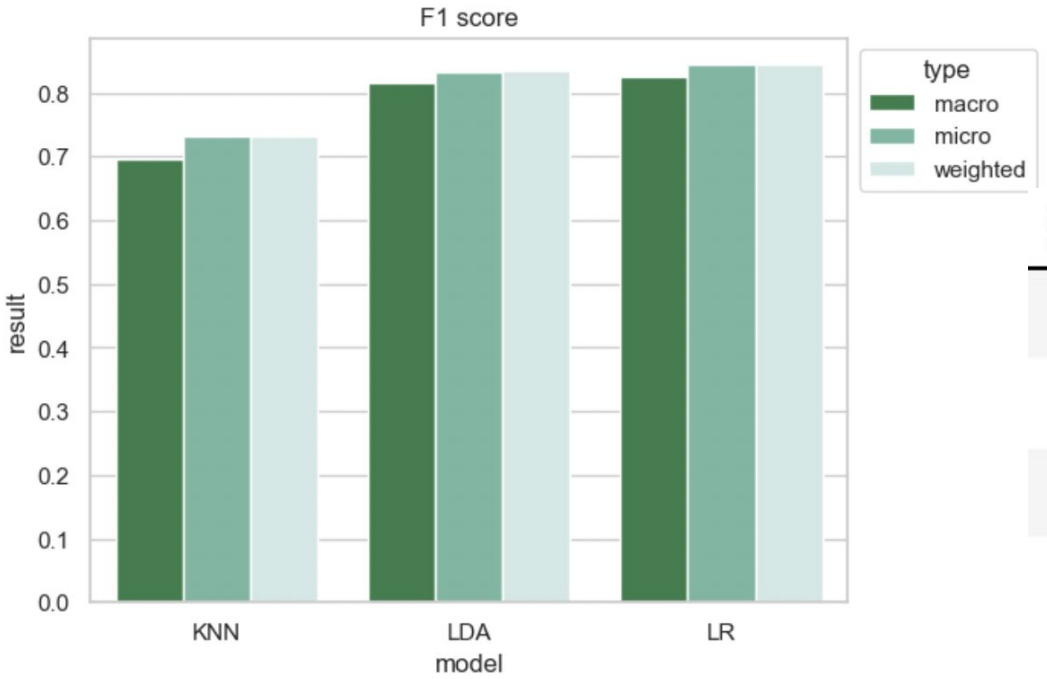
$$PPV = \frac{tp}{tp + fp}$$



model	macro	micro	weighted
KNN	0.699	0.733	0.729
LDA	0.811	0.833	0.839
LR	0.825	0.844	0.844

F1 score

$$F1 = \frac{2 * (precision * recall)}{(precision + recall)}$$

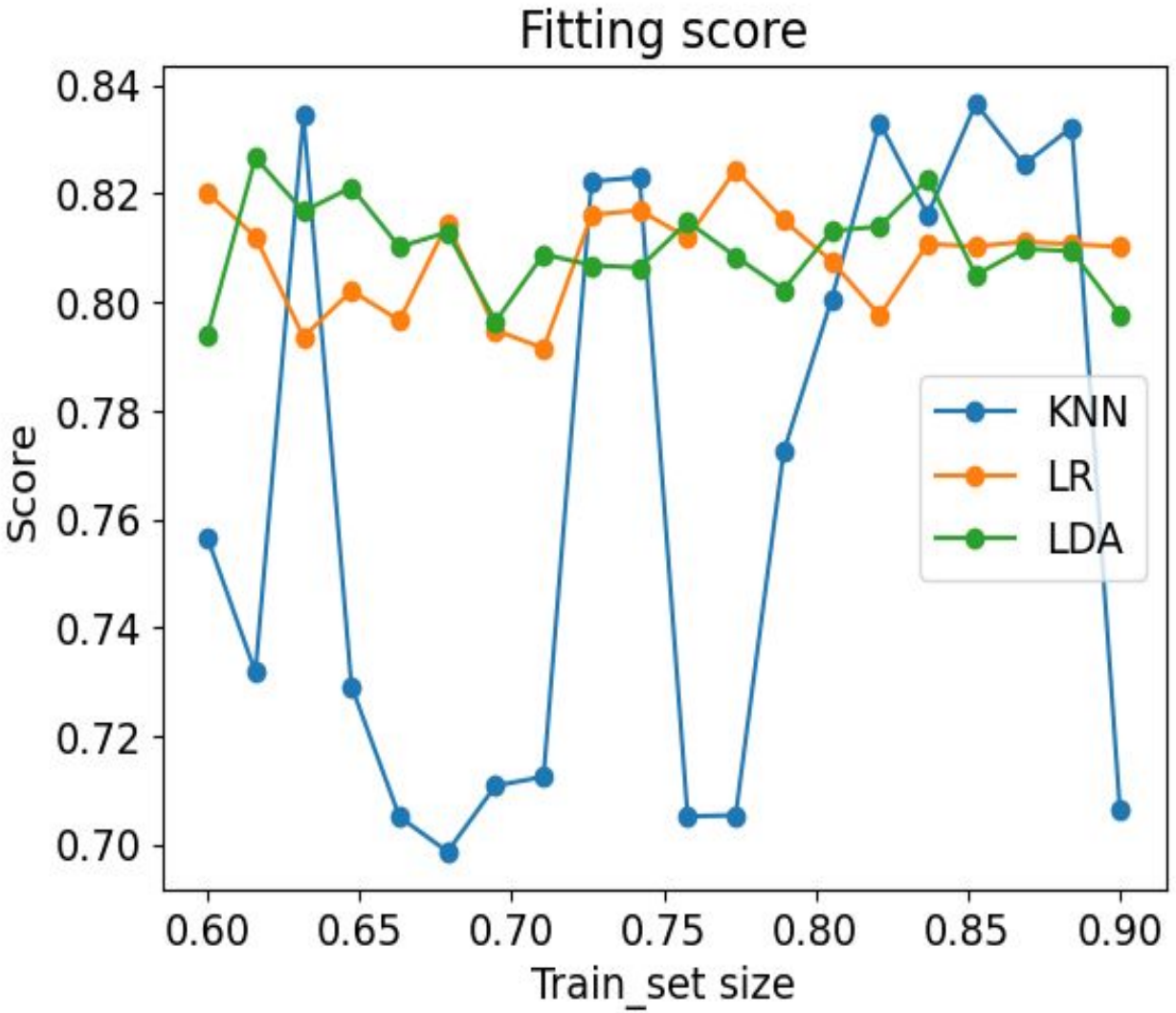


model	macro	micro	weighted
KNN	0.695	0.733	0.731
LDA	0.817	0.833	0.835
LR	0.825	0.844	0.844

2

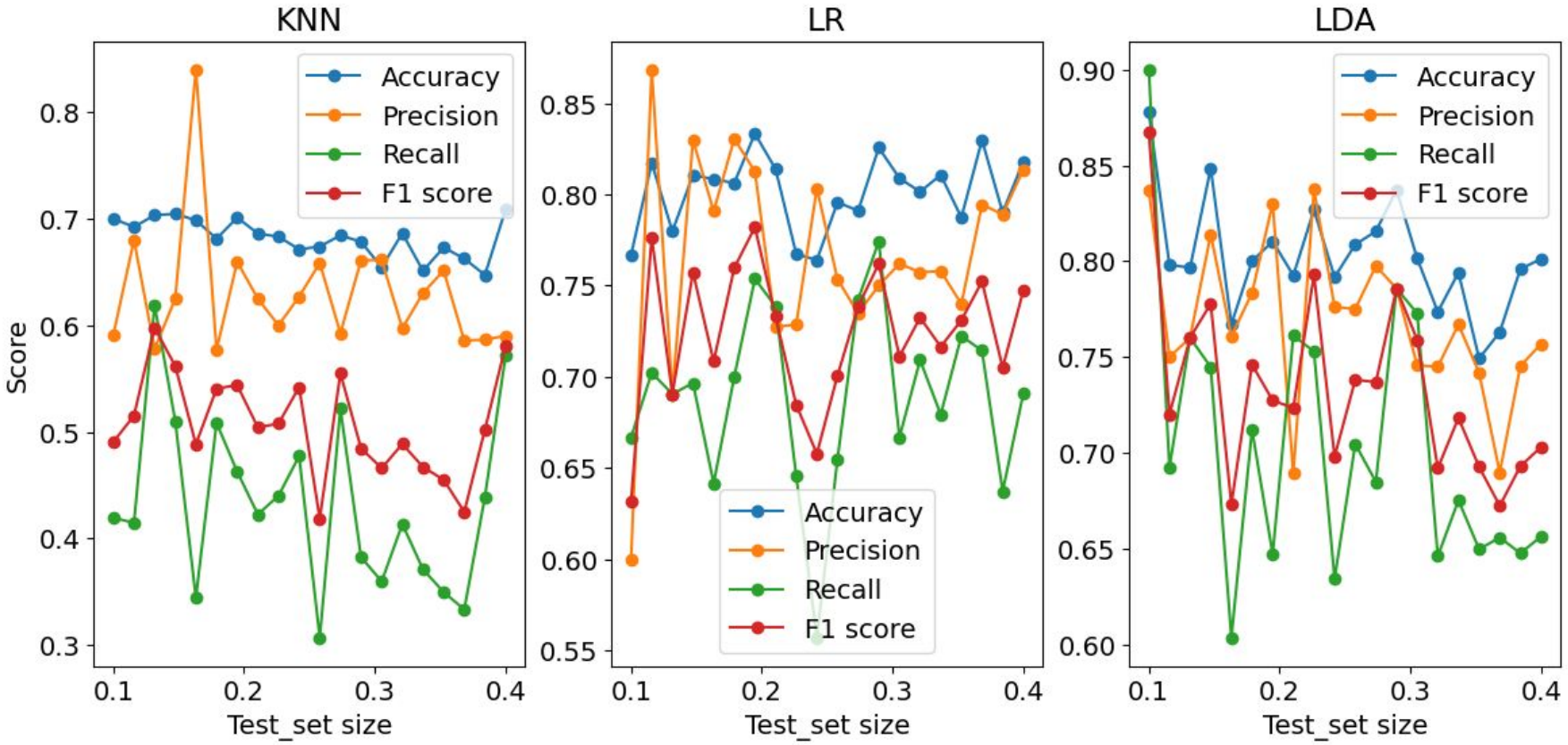
Data sampling impact on model performance

Data sampling impact



- Similar evolution of fitting score for LR and LDA
- High variability for KNN model fitting on different subset
- Finally, of course we have just 891 views, and the impact limited at this scale

Data sampling impact



Accuracy, Precision are most steady metrics

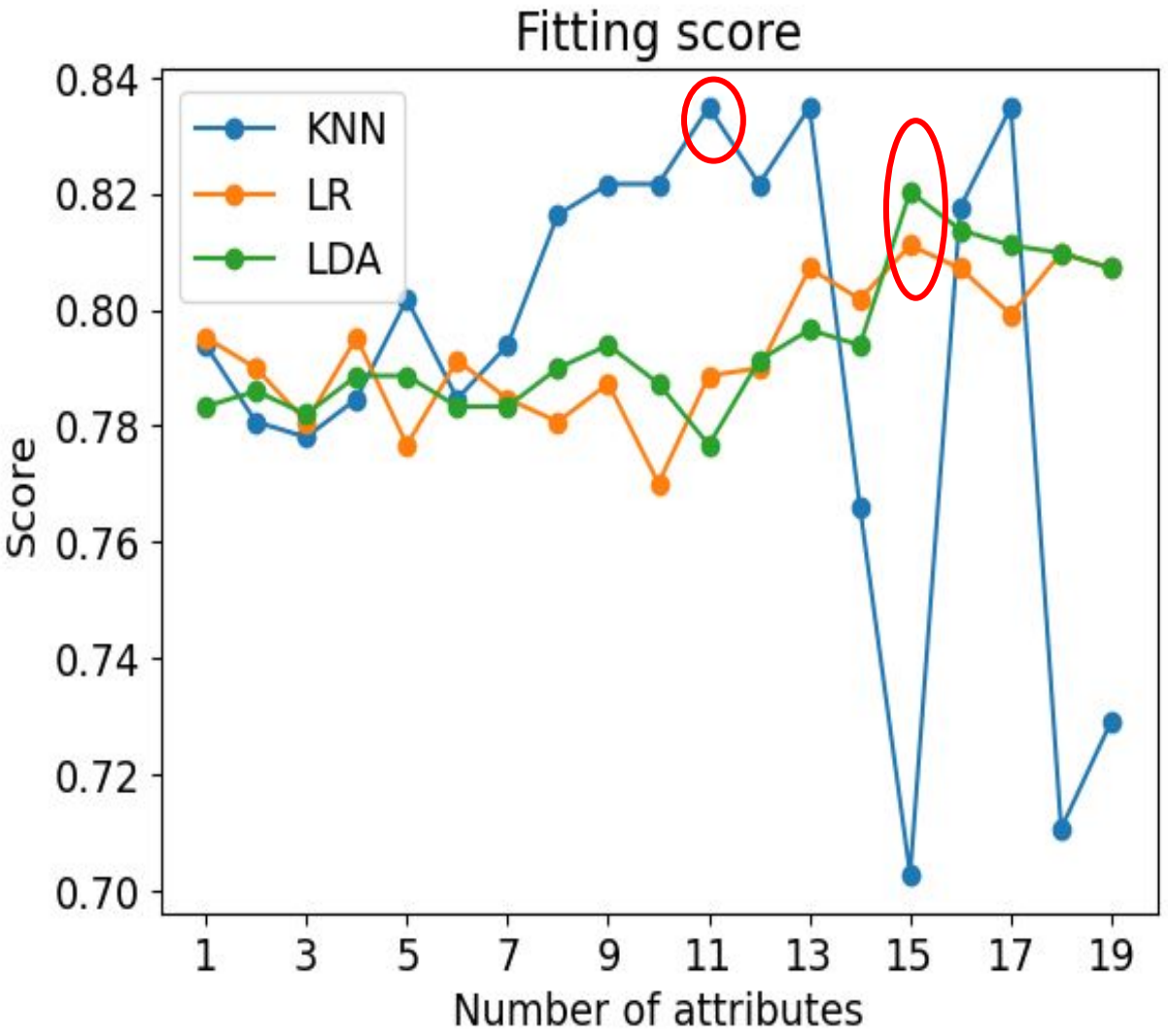
Recall

F1-score as the balance between precision and recall is really unstable.

3

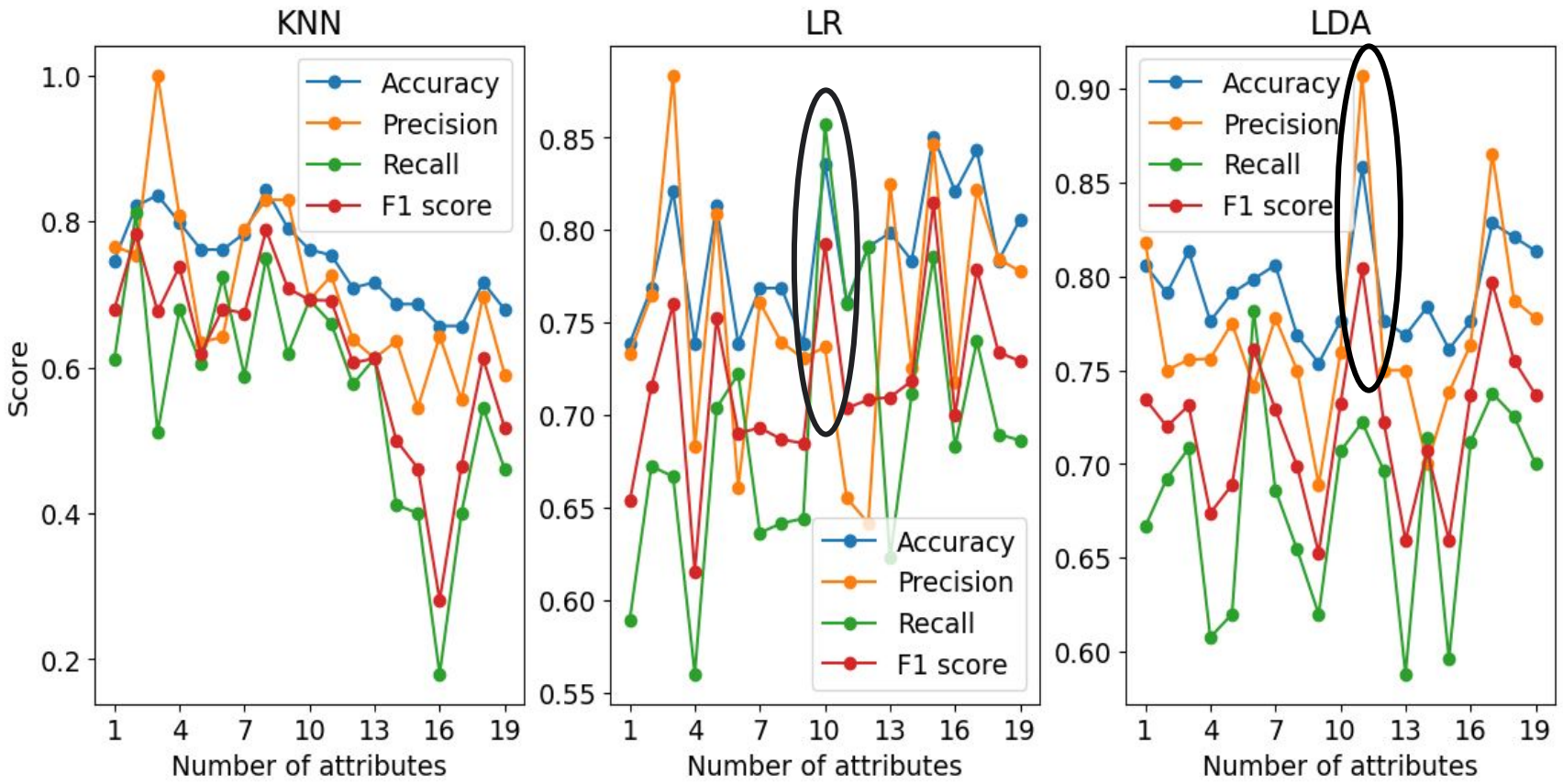
Attributes sampling impact on the model performance

Data sampling impact



- Similar evolution of fitting score for LR and LDA and keep growing until 16 attributes most significant
- KNN model learning well from training set until we reach 11 attributes in the training set.

Data sampling impact



- In general, as for fitting score when number of attributes growing more poor model KNN is after adding around 10 attributes.
- In average, score growing by number of attributes for LR get to the pic with just 10 more significant attributes
- For LDA, the optimum number of attributes to includes is 11.

4

Most Important features

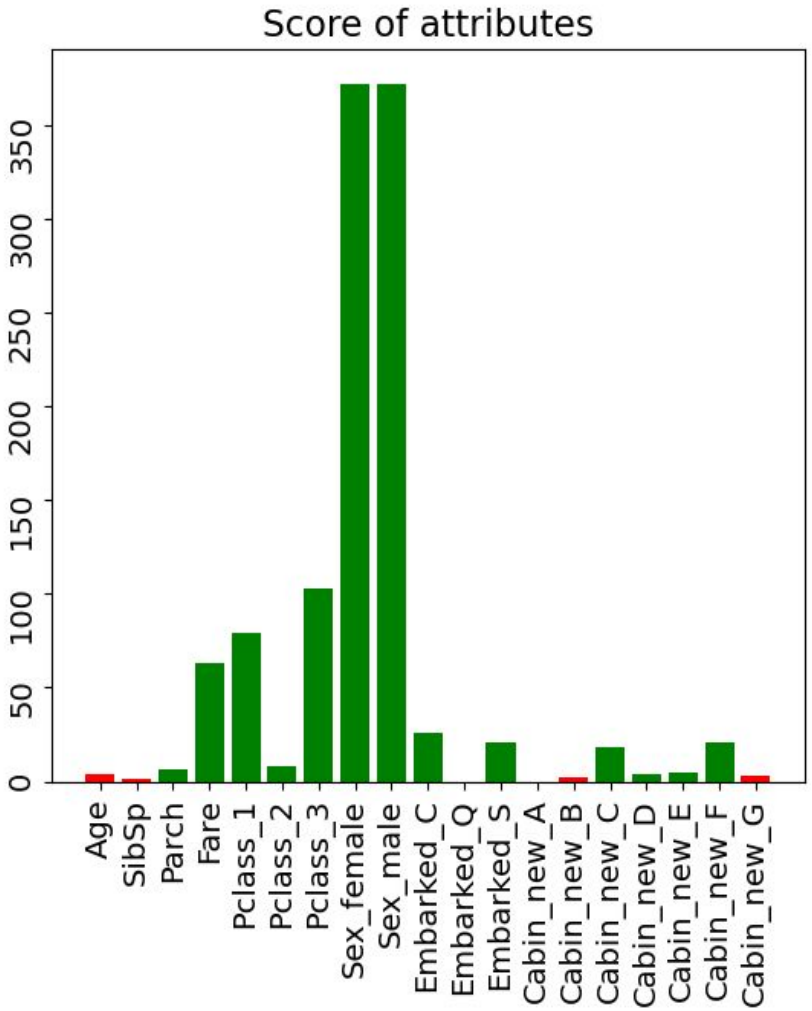
Most Important features

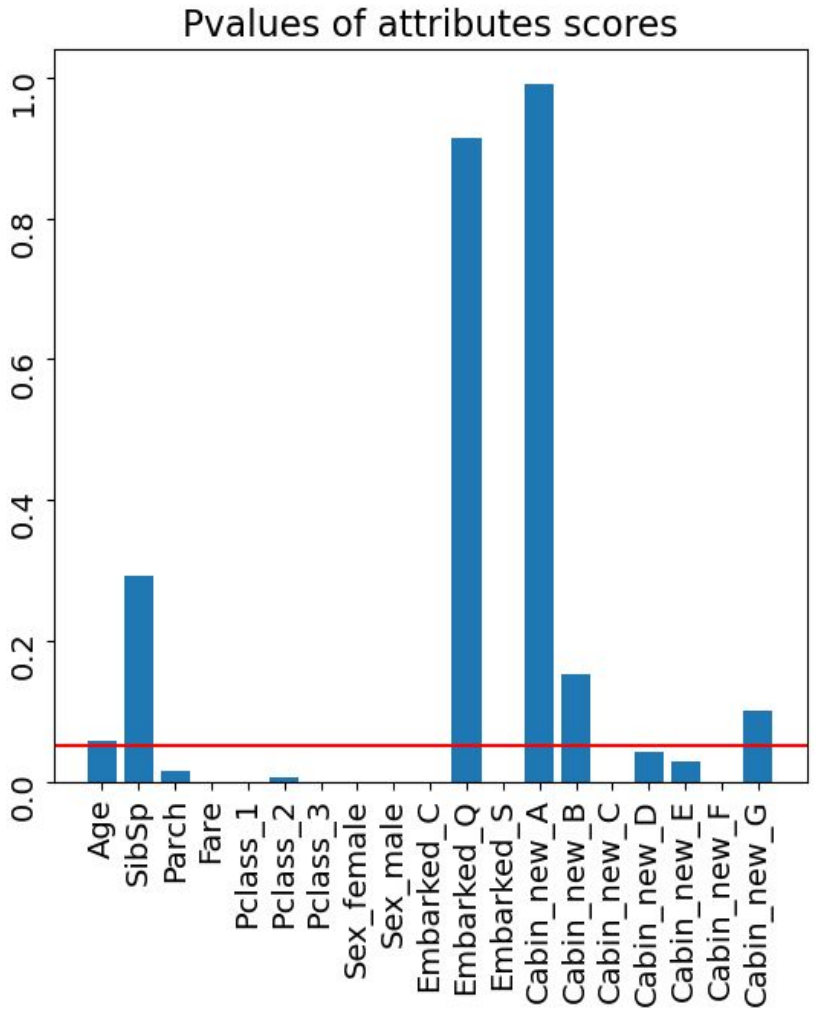
It processed scores between inputs and target based functions choices for a task with the pvalues

SelectKBest

- f_classif: classification
- chi2 : both
- f_regression : regression

Important attributes





Thank you for your attention