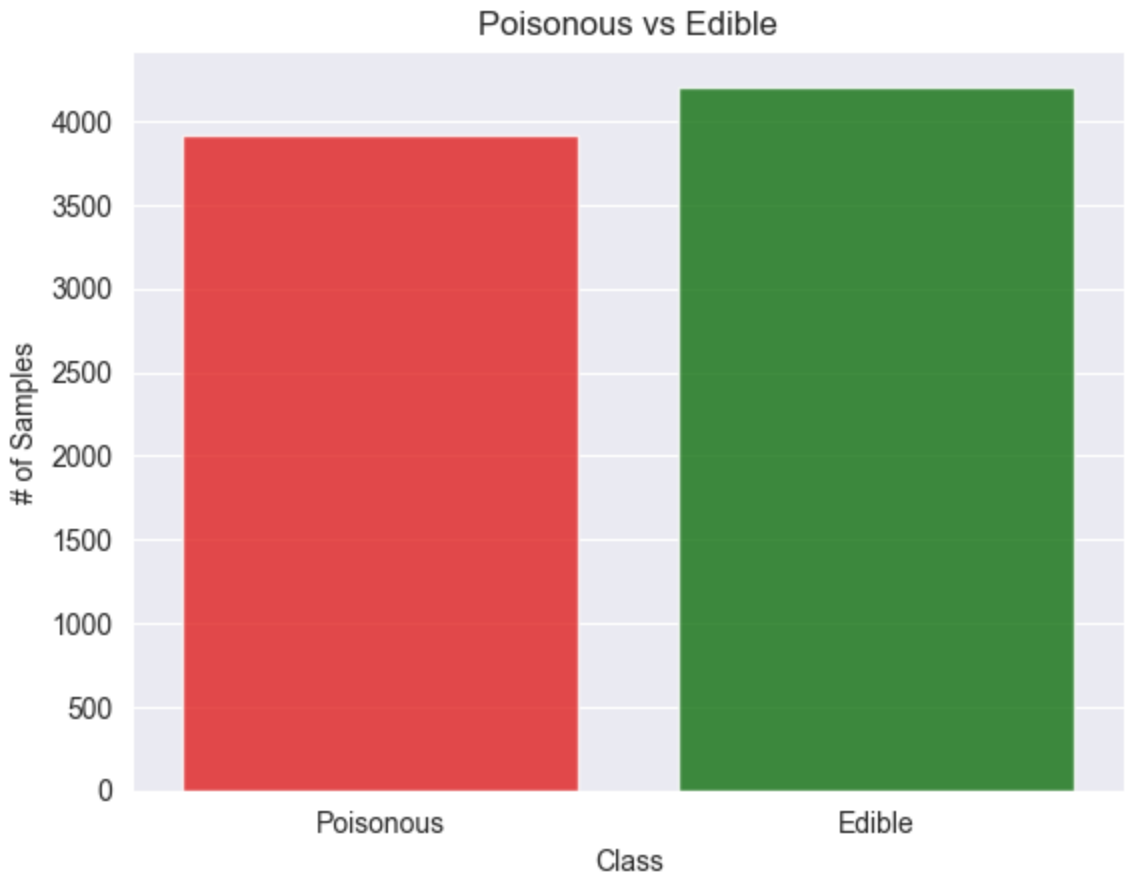
IDENTIFYING WILD MUSHROOMS :
WHAT TO PICK, WHAT TO AVOID ?

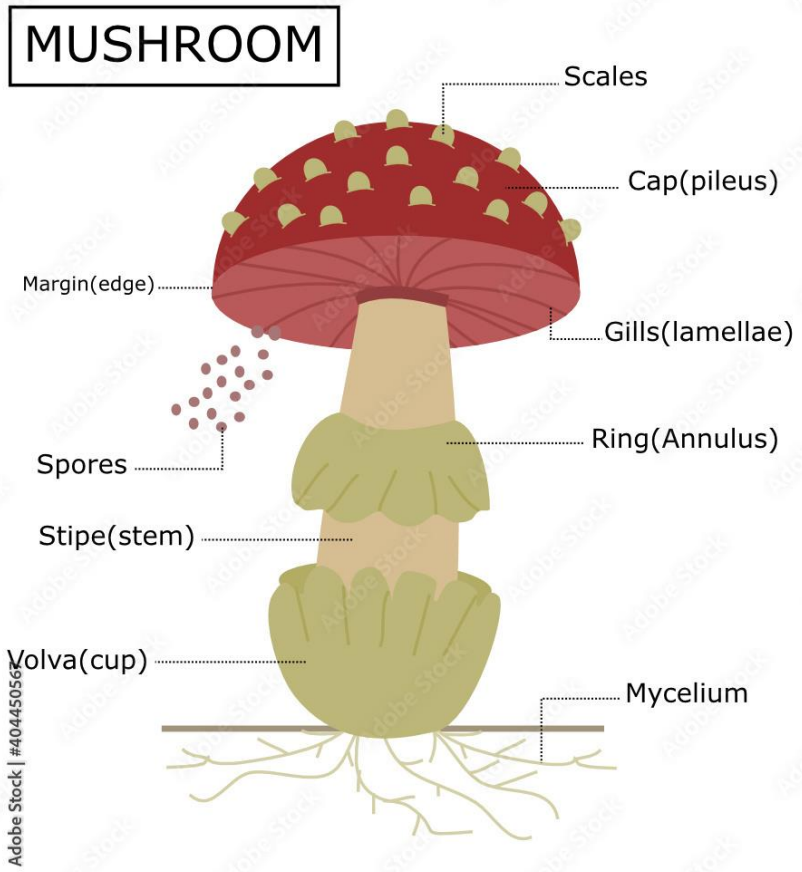
Classification Project by Laurent GUIDDIR

TARGET VARIABLE



Independent Variables

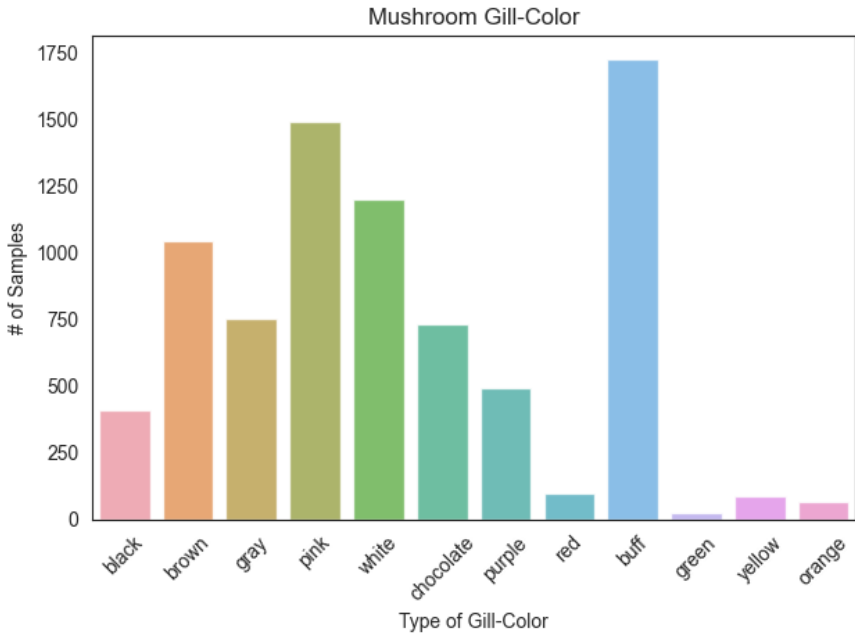
- Cap Shape
- Cap Surface
- Cap Color
- Bruises
- Odor
- Gill Attachment
- Gill Spacing
- Gill Size
- Gill Color
- Stalk Shape
- Stalk Root
- Stalk Surface above ring
- Stalk surface below ring
- Veil Color

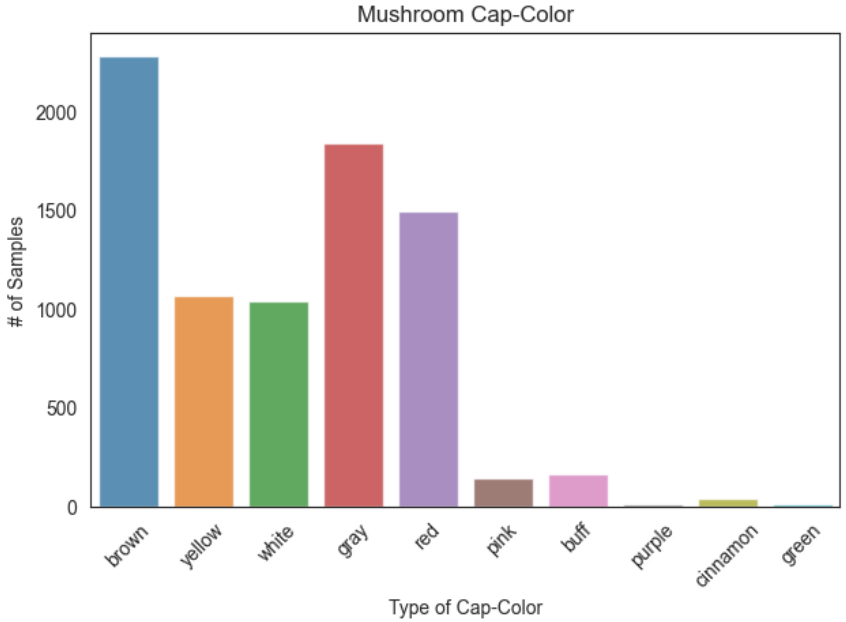


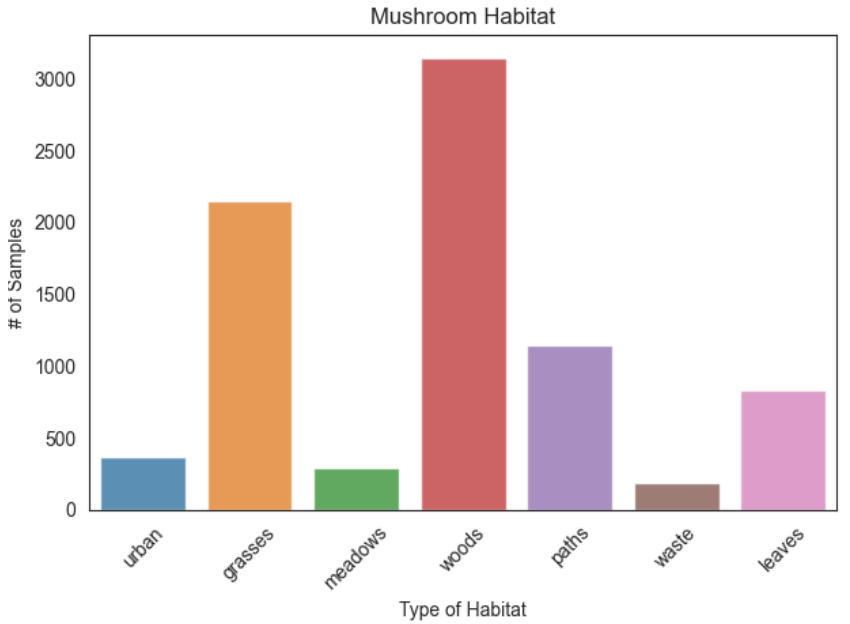
- Ring Number
- Ring Type
- Spore Print Color
- Population
- Habitat

Explorative data analysis

a lot of categories by features
here are some of them

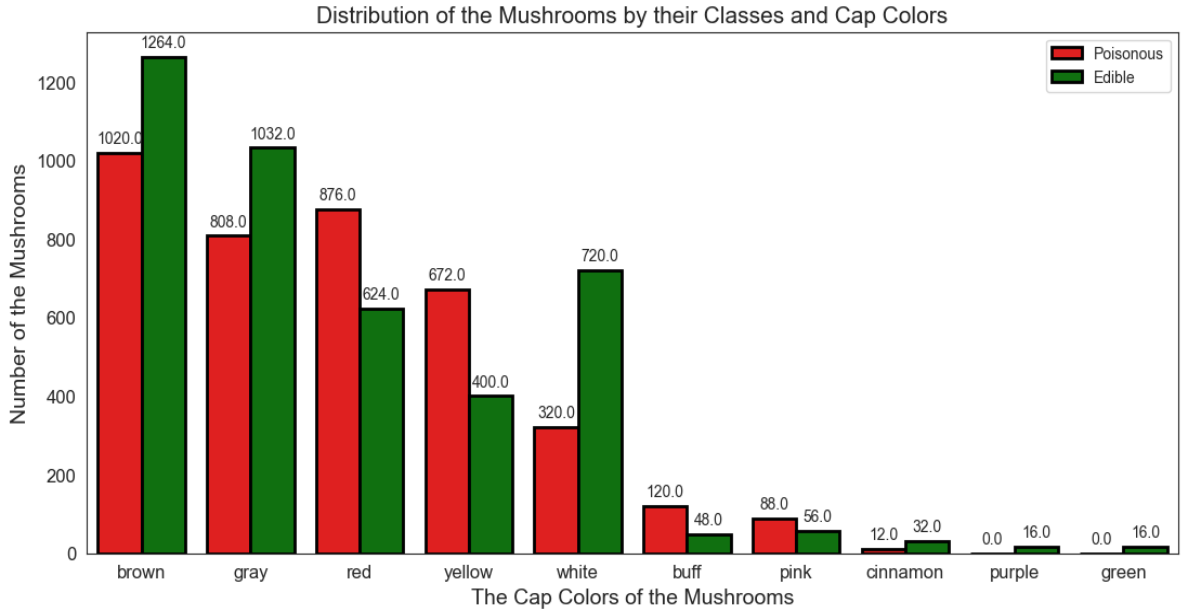


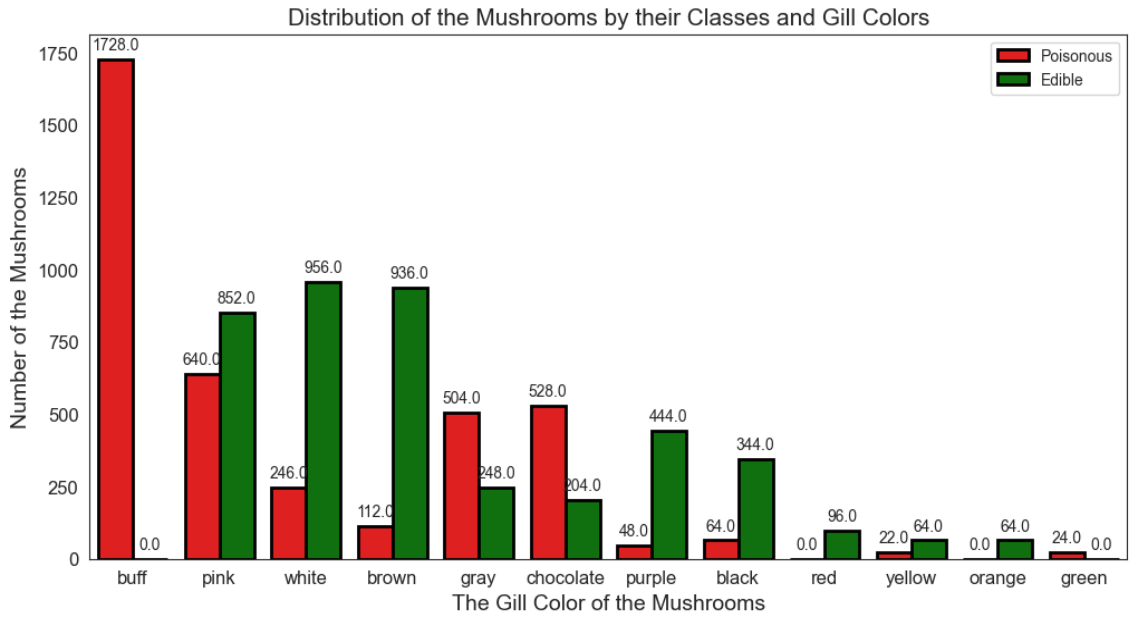


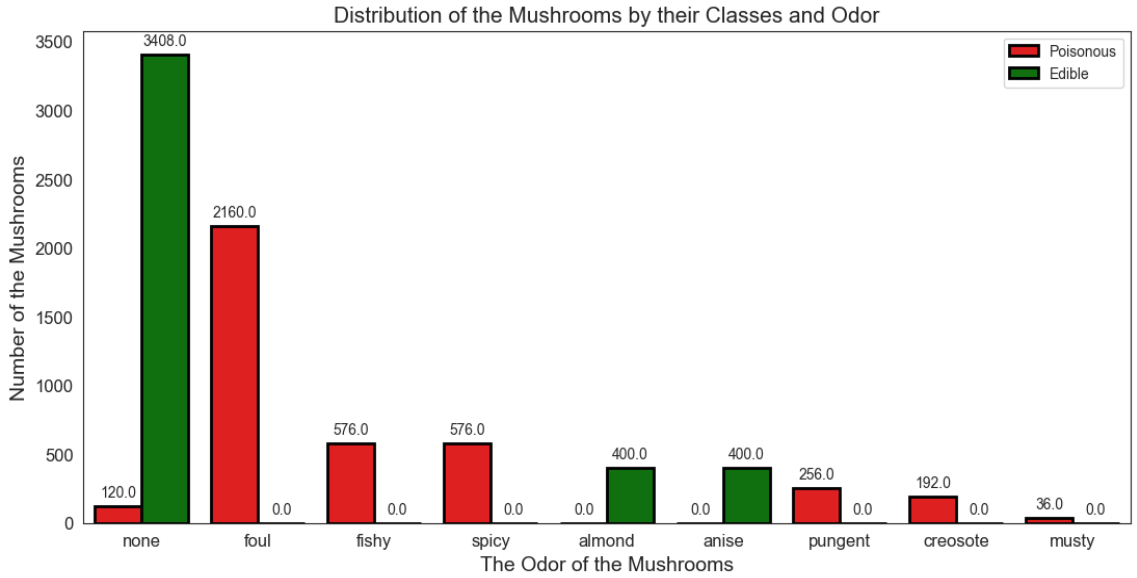


Explorative data analysis

more insight on the distribution across the target variables

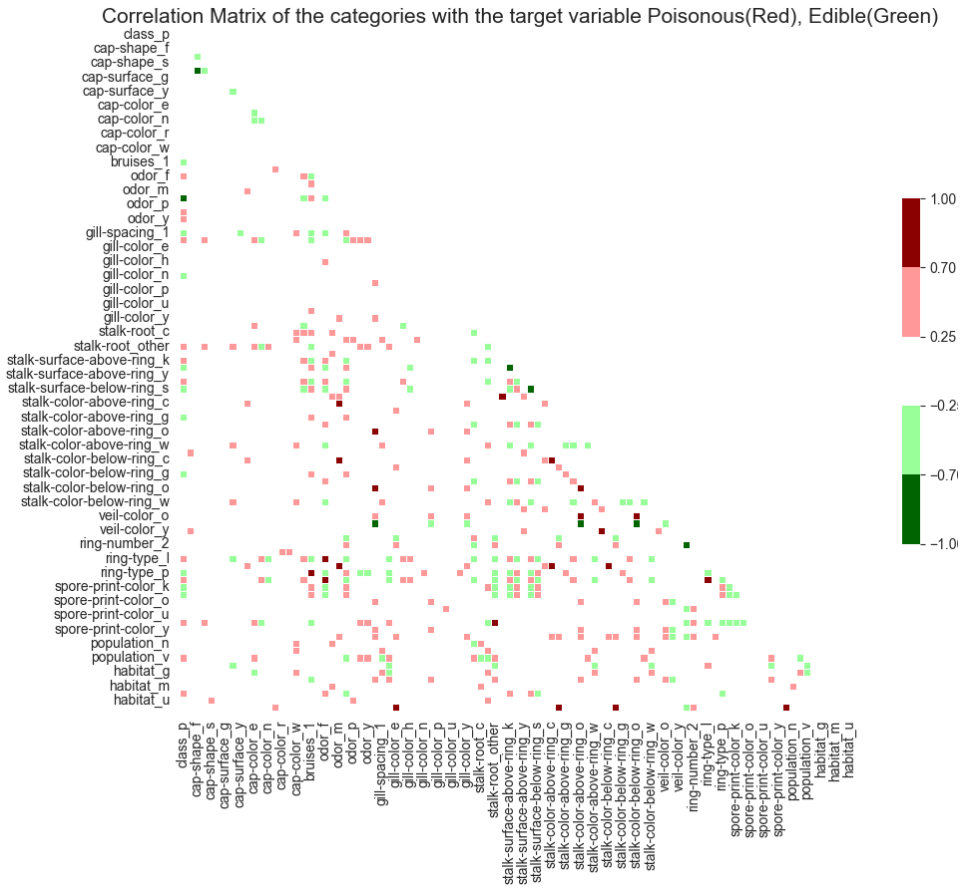


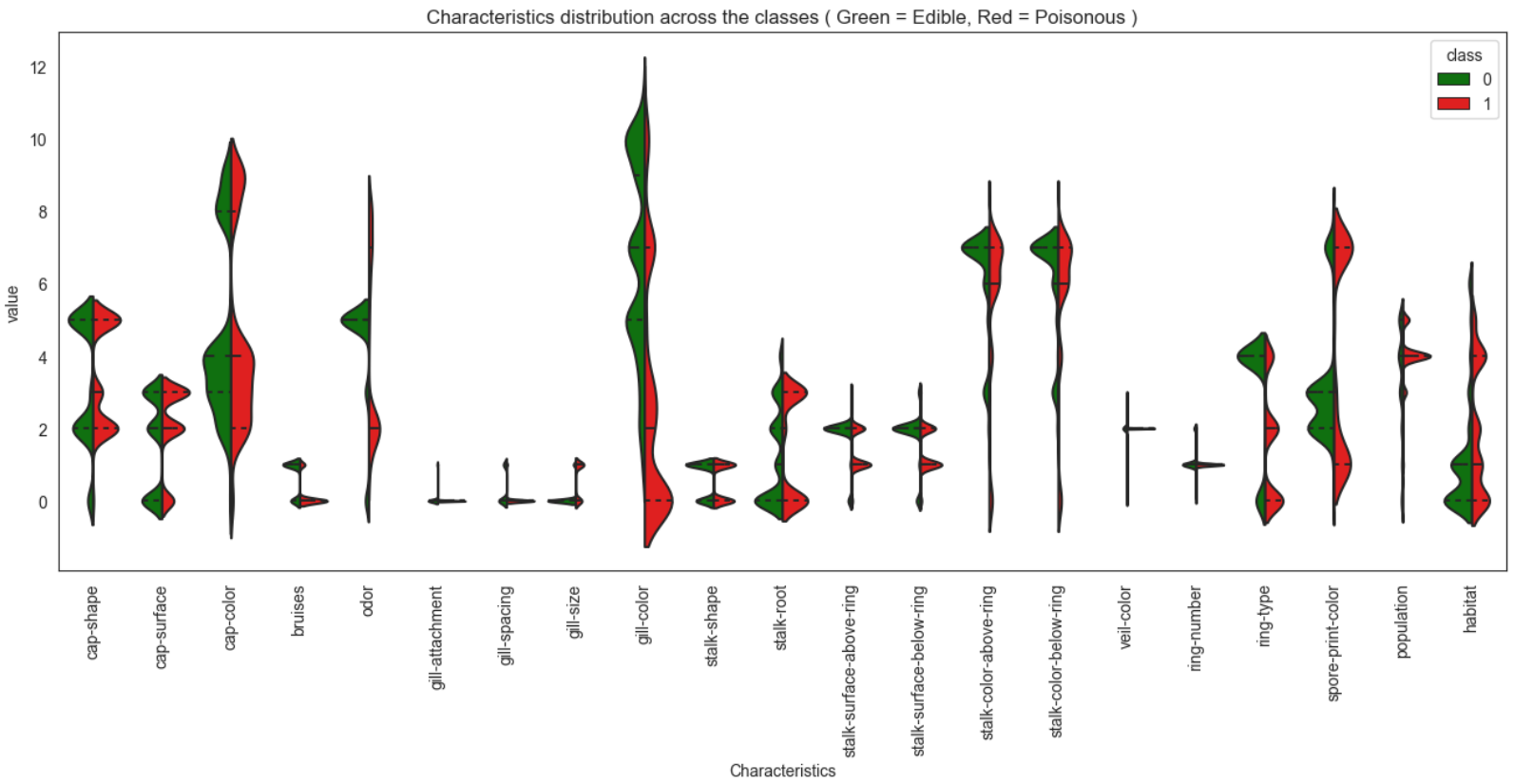




Explorative data analysis

Sum up of the entire distribution across the target variables

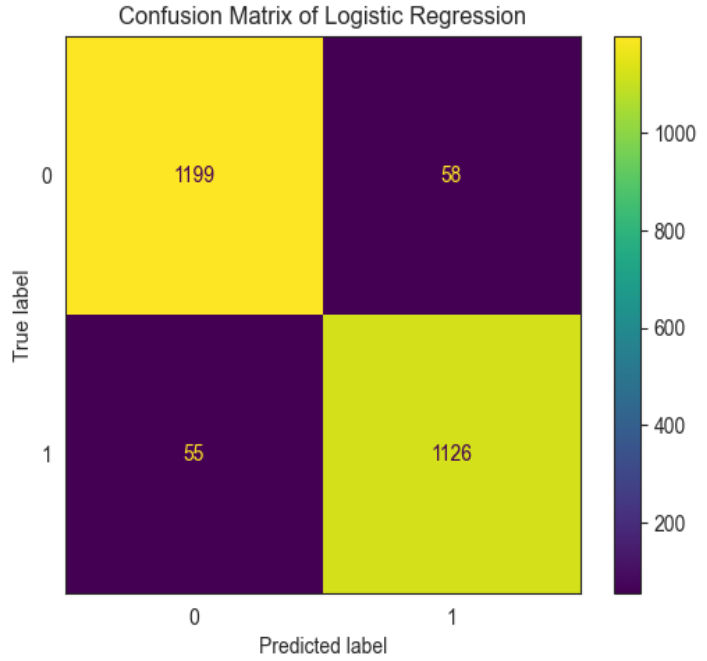


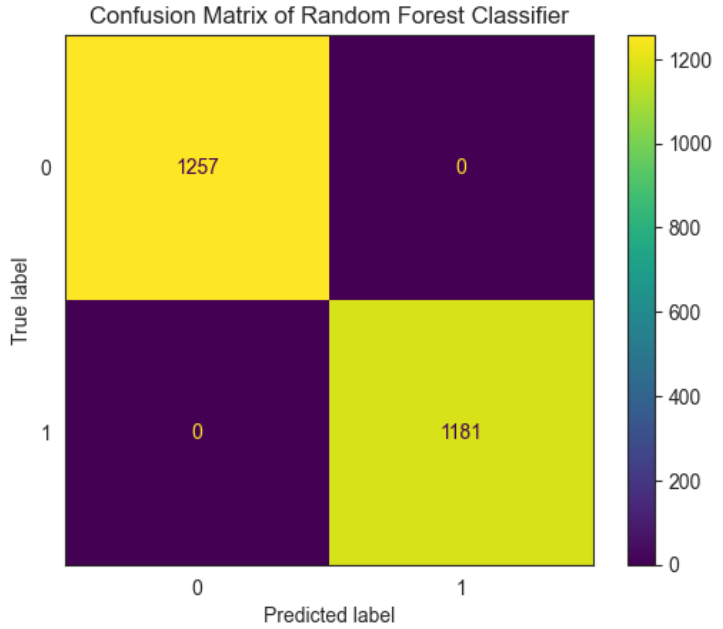


Models

Results

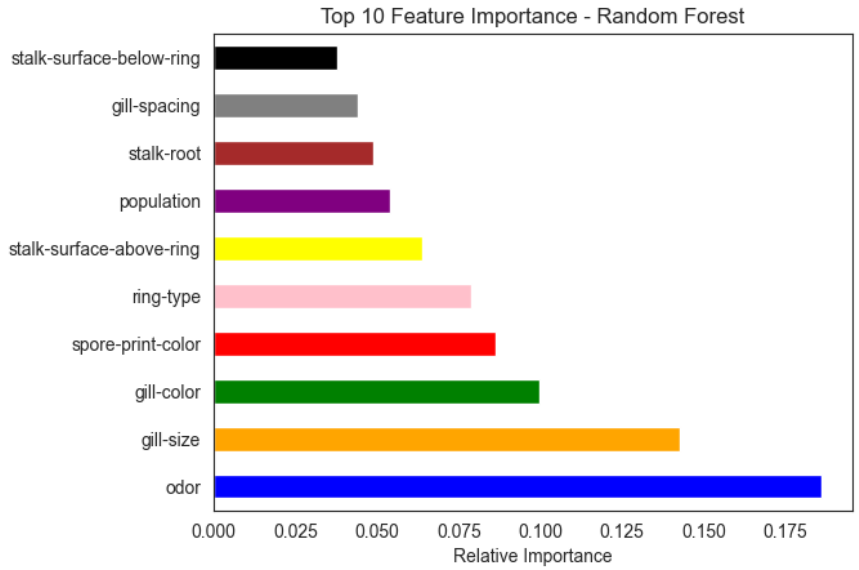
	Accuracy	F1-score	Mean Accuracy (cv=5)
Random Forest	**1.0**	**1.0**	**0.928**
Decision Tree	**1.0**	**1.0**	**0.951**
Logisitic Regression	**0.95**	**0.95**	**0.856**
KNN	**1.0**	**1.0**	**0.881**

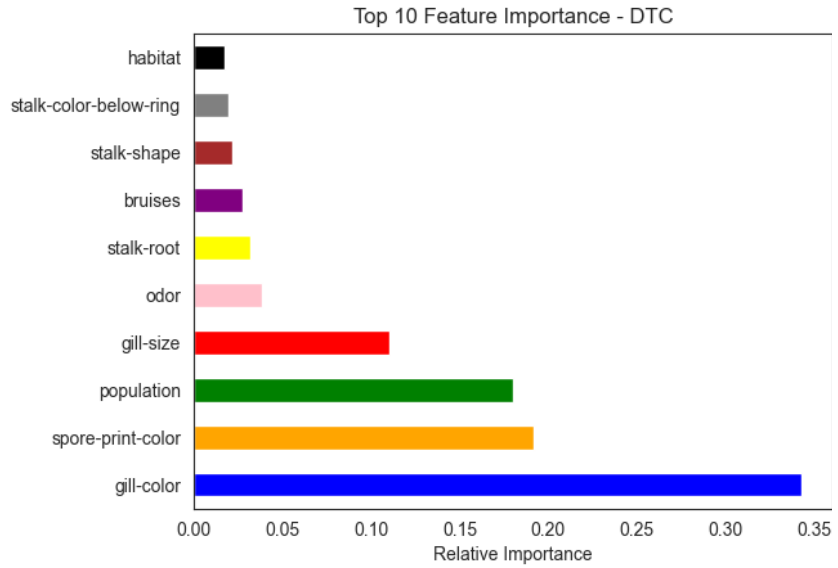


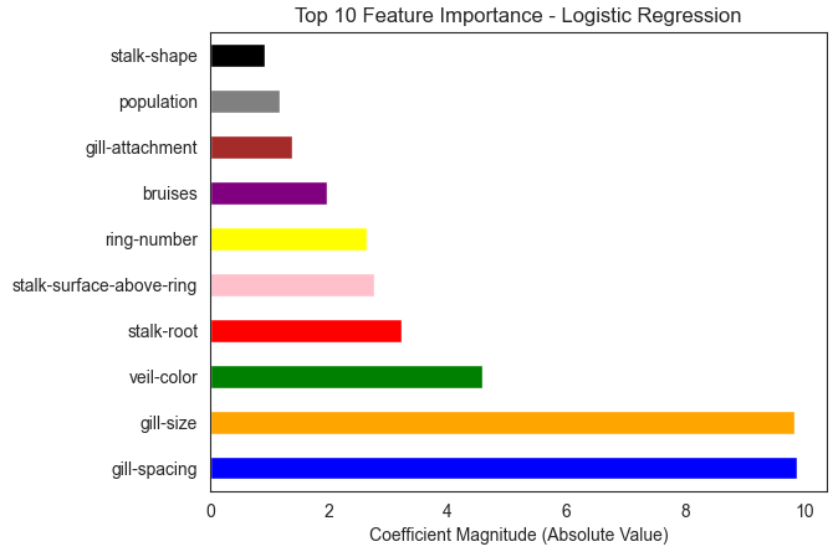


Models

Most relevant features

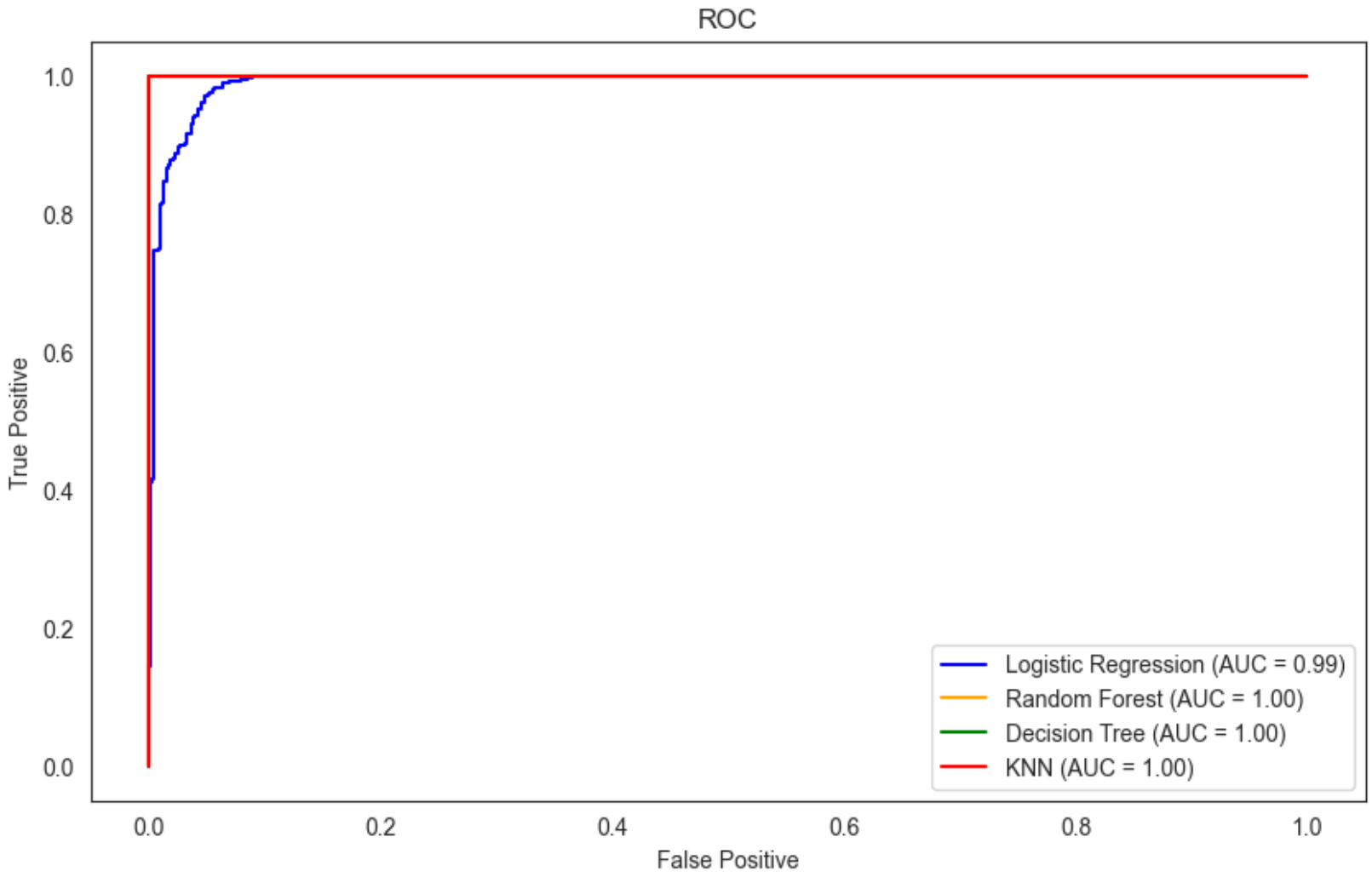






Models

Results



Conclusion

Fortunately for our apprentice mushroom hunters, it is possible to reliably distinguish between poisonous and edible mushrooms by assessing their characteristics such as their odor , gill size , spore print and bruises.
Unpleasant **odors, narrow gills, bruises free** and **white/red/chocolate** colors for the **spore print color** are all indicative of a poisonous mushroom.

To go further, it could be interesting to build and compare two other kind of models :
One image classification model relaying only on images classification to detect whether of not a mushroom is poisonous.
And a second one that combine an image classification and our finding to make prediction