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Answers to questions

1. The performance of the model can be measured in the values from the metrics, although these measure different things, particularly, accuracy, precision, recall, f1 score, ROC, AUC, reference the confusion matrix and log loss
2. Metrics explanations and example based on the fertility code
    a. Accuracy: How good the model is in getting the outcome correct, regardless of positive or negative, just if the guess is correct. In the fertility model I was getting an accuracy of 0.76, however that number would vary wildly based on the random_state variable as I tested different states, which is not great, but it could also suggest that the features modeled do not strongly correlate to the values. Based on the features examined through the scatter plot that did seem to be the case where, for example hours sitting and smoking had a more positives than illness but still did not strongly correlate where one class would have a much noticeable match
    b. Precision: How accurate the model is at determining a true outcome. This was very low at 0.28, I attempted several variations of data partitioning yet did not have good luck, although this probably also circles back to needing to force the weight classes to be balanced (LogisticRegression(max_itter=1000, class_weight='balanced'))
    c. Recall: How often the model chooses a positive case correctly, mine was very high at 0.5, however, looking at precision it also shows a lot of false positives, this will be highlighted in f1 score
    d. F1 score: the balance between recall and precision, mine was low at only 0.36 due to a high rate of false positives
    e. AUC: The area under the curve shows the models ability to distinguish between positive and negative classes. This goes to 0.54, which shows that is somewhat able to handle class imbalances. However, circling back to precision I had to force the class weights to be balanced or else AUC becomes NAN
    f. Log Loss: The uncertainty that a model's estimates are correct, a 0.56 shows it was often incorrect
    g. Confusion matrix can also be referenced to derive some of these values in this project it was [[21 5]
       [2 2]]
3. Bayes output: this will be much briefer since I already defined the terms above. In general, the code preformed better than the fertility data set
    a. Accuracy: 0.93 This is a strong accuracy value that usually it is correct
    b. Precision: 0.92 The model accurately calculated a true outcome with few false positives
    c. Recall: 0.98 the model chose a positive case correctly 98% of the time
    d. F1 Score: 0.95 The model did a good job with recall and precision
    e. AUC: 0.97. The model strongly distinguishes between positive and negative values
    f. Log loss: 0.19 the model is fairly certain of its results
    g. Confusion matrix for this was [[52   9] [2 108]]