What is the 90% confidence interval for validation set accuracy for this model.
90% accuracy bound: 0.8605 - 0.9055

At the 80% confidence level (using a two sided bound) is the logistic regression model better than the most common class model? In 2-3 sentences explain how you came to the answer.
80% accuracy bound: 0.8209 - 0.8610
Yes, by looking at the 80% accuracy bound of the logistic regression model which is 80% accuracy bound: 0.8654 - 0.9006. This means at the 80% confidence, the logistic regression model is strictly better as their bands do not overlap.

At the 75% confidence level (using a one sided bound) is the logistic regression model better than the most common class model? In 2-3 sentences explain how you came to the answer.
 0.50% accuracy bound: 0.8305 - 0.8514
You can compare the single-sided bound for 75% by looking at the 50% double-sided bound, which is 0.50% accuracy bound: 0.8738 - 0.8922 for logistic regression. Again this is strictly better with 75% confidence level (one-sided) as the lower range of the logistic model is better than the higher range of most common class model.

Among the following possibilities for one-sided bounds: 75%, 90%, 95%, 97.5%, 99.5%. Which is the highest level of confidence where we can say the logistic regression model is better than simply predicting the most common class? In 3-5 sentences explain how you came to that conclusion.

1) I calculated the prediction accuracy of MostCommon and Logic Regression with MI with 5-fold cross-validation on the training set
2) I calculated the mean of the difference and the t-statistic variance with 4 degrees of freedom
3) For the observed mean of the difference in accuracy of the model, the cdf is the one-sided confidence level that accuracy(Logistic Regression) > accuracy(MostCommon), because if it wasn't, this would only occur with probability of 1 - confidence

Hence the confidence level I got for a mean difference of 3.87% with t-std of 0.003086 and 4 degrees of freedom is 99.99%.