Just as in the course material, in order to simplify and arrive at the best model we’ll use a new conjugate prior distribution called Zellner’s g prior and MCMC model sampling and repeat some of the plots steps performed for BIC.

The model based on the different priors (ZS-null and MCMC) advices different predictors. With the BIC prior, we get an ideal model with the features 'runtime', 'imdb\_rating' and 'critics\_score', while the ZS-null prior proposes a model with features 'imdb\_rating' and 'critics\_score'.

Finally, for this part, I pick a movie from 2016 (a new movie that is not in the sample) and do a prediction for this movie using the model I developed and the predict function in R.

The predicted audience score for the movie Hidden Figures is 83 and the credible interval is 61 for the lower limit and 105 for the higher limit. The actual value is 93 according to Rotten Tomatoes, which falls within the predicted credible interval.

While the BMA takes into account all variables, `imdb\_rating` has a particularly strong relationship with `audience\_score` and the BMA is weighted heavily by this variable, followed by ` critics\_score`.

I started with a dataset comprised of 651 randomly sampled movies produced and released before 2016. Some of these variables are only there for informational purposes and do not make any sense to include in a statistical analysis. During the modeling process, I created additional features that in the end were not used, because they are not significant predictors of audience score.

The proposed linear model shows a good prediction accuracy, however the model is based on a very small sample. It can prove advantageous more data and do more feature engineering.

More factors that underscore the movie plot, and marketing spend, ratings on trailers released, and possible social media ‘hype’ are also possible new features.

Last but not the least we should also gather information regarding sequels for movies that do qualify as this can inject bias in the data and model.