Results

Table 1: Coefficients for Different Models

	OLS	Ridge	Lasso	PCR	PLSR
Income	-0.5982	-0.56871	-0.55143	-0.5985	-0.59894
Limit	0.9584	0.71866	0.78157	0.9565	0.67806
Rating	0.3825	0.59306	0.51106	0.38449	0.6641
Cards	0.05286	0.04425	0.03884	0.0532	0.04059
Age	-0.02303	-0.02538	-0.01677	-0.02362	-0.02382
Education	-0.00747	-0.00588	0	-0.00747	-0.0065
GenderFemale	-0.01159	-0.01068	-2e-05	-0.01039	-0.0112
StudentYes	0.2782	0.27318	0.26608	0.27843	0.27603
MarriedYes	-0.00905	-0.01103	0	-0.00932	-0.0114
EthnicityAsian	0.01595	0.01638	0	0.016	0.01651
EthnicityCaucasian	0.01101	0.01101	0	0.01012	0.01021

As we can see in Table 1, which has the official coefficients from the Credit dataset for each of the models (Ordinary Least Squares, Ridge, Lasso, Principal Components Regression, and Partial Least Squares Regression), most of the coefficient estimates are similar across the different models but the lasso model does not have coefficient estimates for four of the predictors.

Comparison of Coefficient Values for Different Models
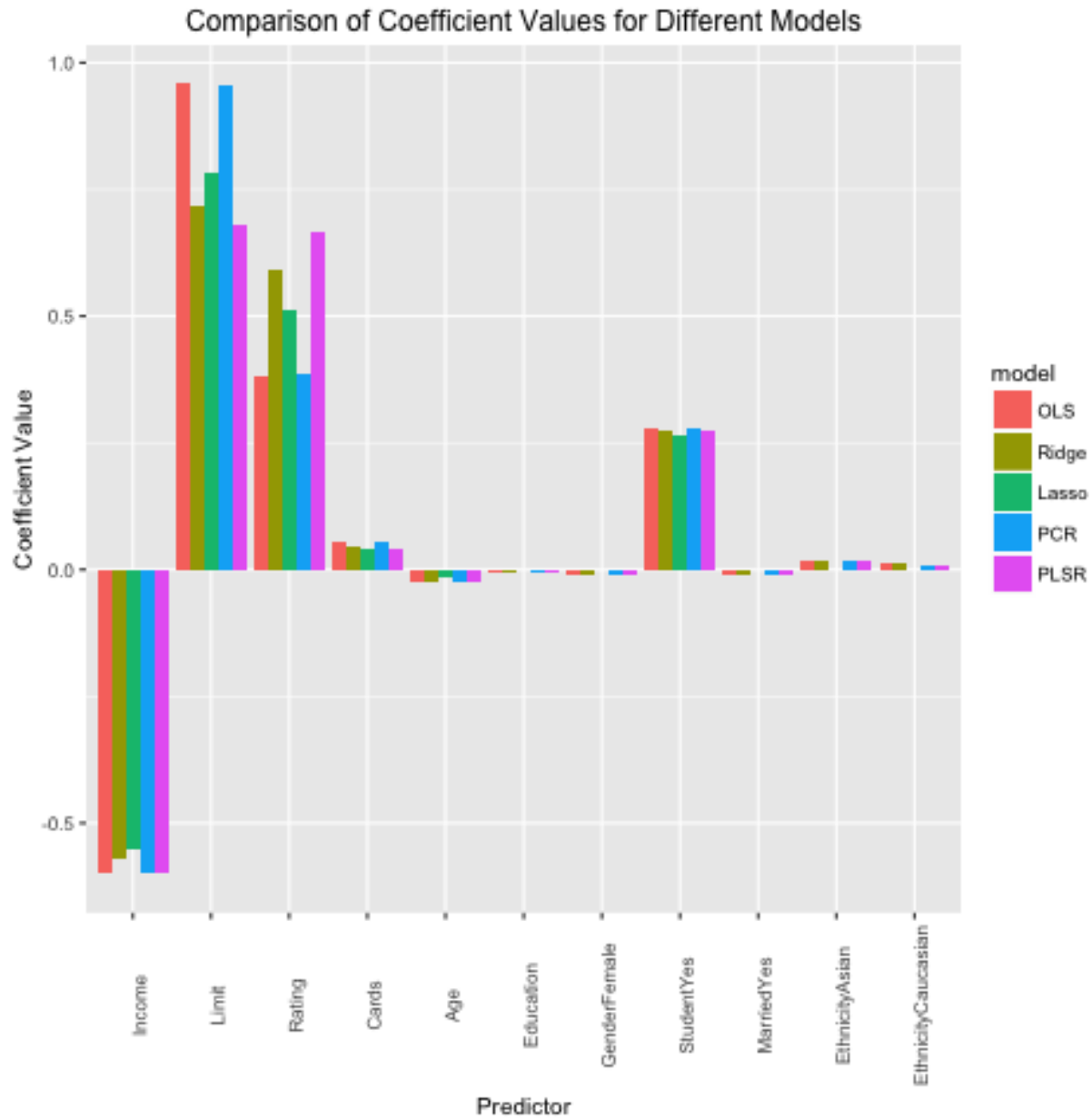
Looking at a plot of these coefficients separated by model, we can more easily see for which predictors the estimated coefficients differ. The estimates for most of the predictors are very similar across the models, but for limit and rating, the estimated coefficients differ quite significantly.

Comparison of Coefficient Values for Different Models
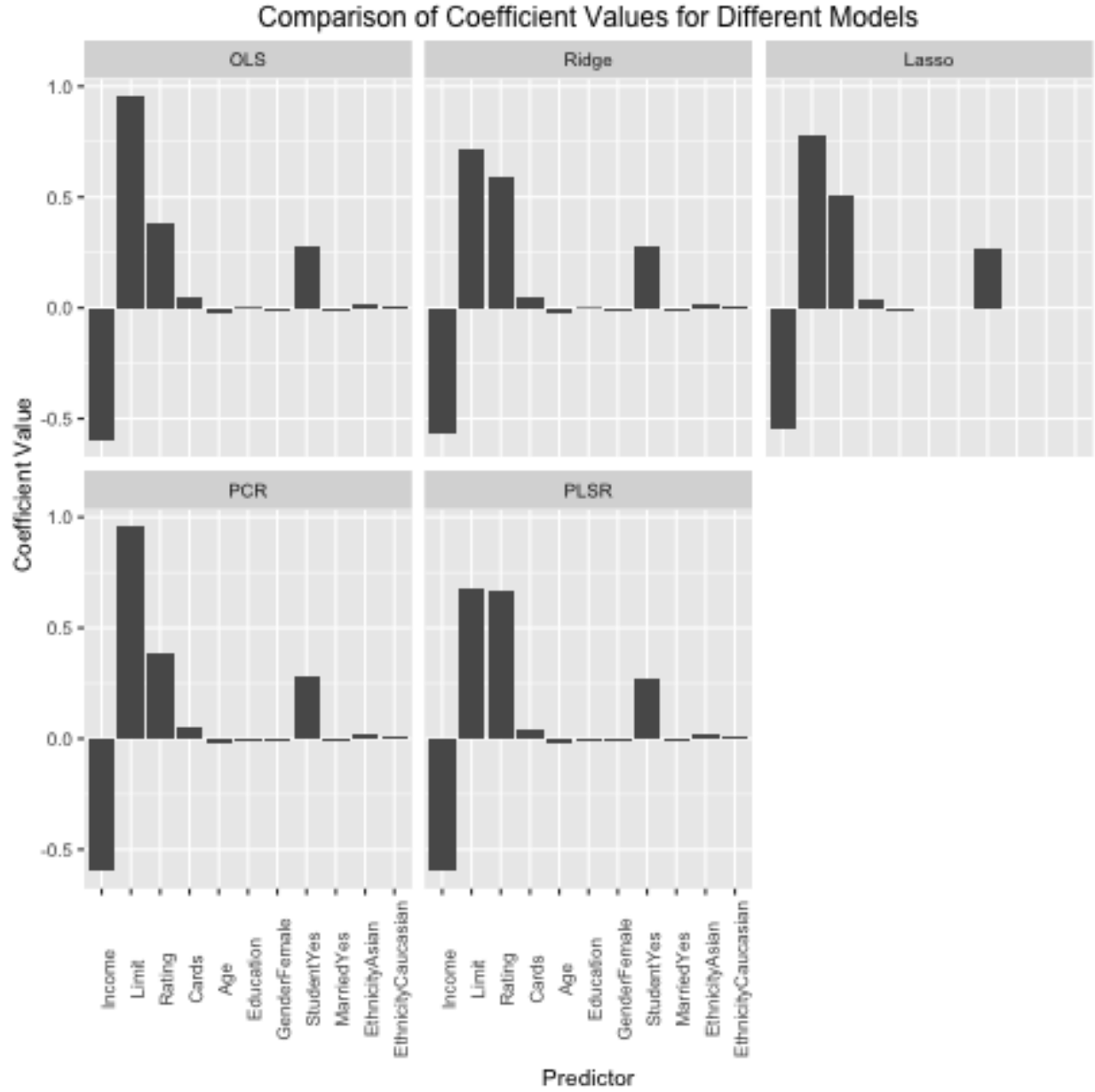
Another plot of these coefficients is given in Figure 2, which has separate plots for each of the models.

Table 2: MSE for Different Models

	OLS	Ridge	Lasso	PCR	PLSR
MSE	0.04479	0.05103	0.04899	0.04926	0.04863

Now looking at Table 4, we can see the mean squared errors for our models, and that the lowest mean squared error for the regression alternatives (not the ordinary least squares model) is for the partial least squares regression model, with a value of 0.0486271.