

Cases with residuals greater than $|4|$ were removed first, and then cases with Cook's D greater than $5 SD$ from the mean were removed. This left 16,463 cases from an original 16,608 (removing 145, or 0.87% of the original cases).

As you can see in Table 10.4b, following data cleaning, all blocks of variables significantly and impressively improved the model except the last block containing the cubic interaction terms. Thus, all cubic terms were removed from the final model, which you can see at the bottom of Table 10.4c. This regression equation was used to compute predicted values for students with low (-2), average (0), and high (2) achievement across a range of family SES values. These predicted logits were then converted to predicted probabilities and are presented graphically in Figure 10.1e.

Examining this curvilinear interaction, we can see that although family SES generally is considered to have a moderately strong influence on student outcomes, our findings indicate that the dynamics might be more complex. For the most part, family SES does not appear to have a strong impact on graduation rates for students with average or high achievement test scores, where graduation rates are relatively consistent and high. The only influence we see from family SES is in the lower range of student achievement. For average students, graduation rates seem to increase from about 90% to almost 100% as family SES increases from 2 SD below the mean to average. For students with high achievement test scores, graduation rates are virtually 100% across the entire range of family SES. It is, however, the students with low achievement test scores that show the strongest effect of SES on graduation rates.

For these students, as SES increases from very low to average, graduation rates more than double, increasing from about 32% to about 77%. As SES increases above the mean, graduation rates increase at a slower rate. Thus, we can conclude that although achievement scores are predictive of graduation rates, and family affluence is also predictive of graduation rates, it is in the combination of the two variables, and particularly when students are below average in both variables, that we see the lowest graduation rates. Having either average or higher achievement or SES seems to be associated with relatively high probabilities of graduation.