1. Use the data provided on the web page to estimate the causes of people entering college and finishing college.
   a) Which variables are significant at the 5% level?
   b) Does sex have a significant effect on entering college?
   c) Test \( H_0 \): Sex affects neither entry nor completion of college against the general alternative.
   d) Test if race has no effect on college completion first using a Likelihood Ratio test and then using a Wald test.
   e) Test \( H_0 \): having a dad who went to college has no effect on entering college against the alternative that having a dad who finished college increases the chances of entering college.

2. Consider the two models,
   \[
   \log w_i = \beta_0 + \beta_1 Black_i + \beta_2 Asian_i + X_i \gamma + u_i;
   \log w_i = \alpha_0 + \alpha_1 White_i + \alpha_2 Asian_i + X_i \delta + u_i.
   \]
   a) Write the relationship between the \( \beta \)'s, \( \gamma \)'s, \( \alpha \)'s, and \( \delta \)'s. I.e, if one knows the “true value” of \( (\beta, \gamma) \), how can one derive the “true values of \( (\alpha, \delta) \)?
   b) Write the relationship between the \( \hat{\beta} \)'s, \( \hat{\gamma} \)'s, \( \hat{\alpha} \)'s, and \( \hat{\delta} \)'s. I.e, if one knows the value of \( (\hat{\beta}, \hat{\gamma}) \), how can one derive the values of \( (\hat{\alpha}, \hat{\delta}) \)?
   c) Construct a model to measure how the return to getting a high school diploma and getting a college degree varies over sex and race.

3. Divorce rates vary across time and across states. List ten variables that you think might affect divorce rates. For each one, discuss how you think it would affect divorce rates and what would happen if you could not get data on that variable. Go to the Social Science data center and get data on divorce rates and at least five of the variables you included. Run an OLS regression using your data and report the results.