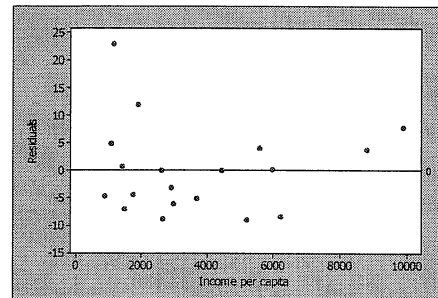
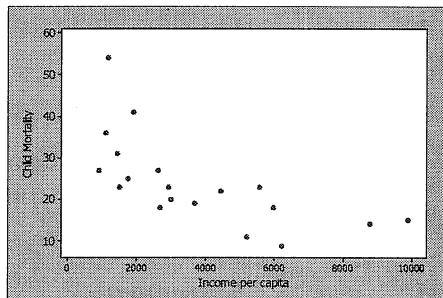


What is the relationship between per capita income in a country and child mortality? On this page is computer output for three different regression models examining this relationship for countries in Central and South America. Child mortality is measured in deaths before age 5 per 1000 children born, and income is measured in U.S. dollars per person. Questions about these data are on the next page. All logarithms are base 10.

I. Child mortality *versus* Income

Predictor	Coef	SE Coef	T	P
Constant	34.149	3.397	10.05	0.000
Income per capita	-0.0027295	0.0007530	-3.62	0.002

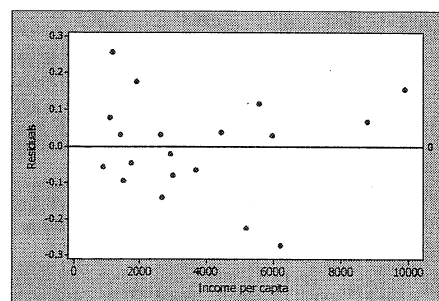
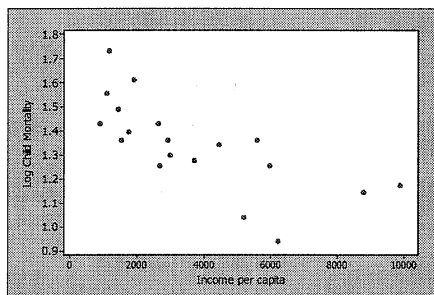
S = 8.35744 R-Sq = 43.6% R-Sq(adj) = 40.3%



II. Log child mortality *versus* Income

Predictor	Coef	SE Coef	T	P
Constant	1.53434	0.05580	27.50	0.000
Income per capita	-0.00005198	0.00001237	-4.20	0.001

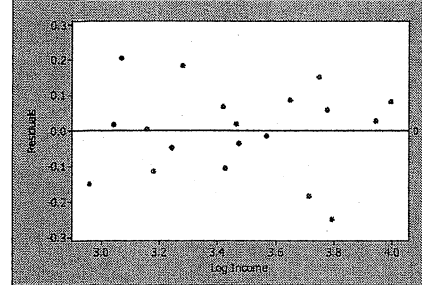
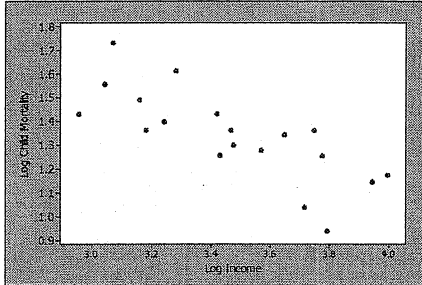
S = 0.137280 R-Sq = 51.0% R-Sq(adj) = 48.1%



III. Log child mortality
versus Log income

Predictor	Coef	SE Coef	T	P
Constant	2.9649	0.3299	8.99	0.000
Log Income	-0.46824	0.09476	-4.94	0.000

S = 0.125578 R-Sq = 59.0% R-Sq(adj) = 56.5%



1. Explain why the information provided suggests that a power model would better describe the relationship between Child mortality and Income in these countries than a linear model or exponential model would.

2. Write the equation of the power model in the form $\hat{y} = ax^b$

3. Use the model to predict the mortality rate in a country with an income of \$1,300 per person.

Foresters are interested in predicting the amount of usable lumber they can harvest from various tree species. The following data have been collected on the diameter of Ponderosa trees and the yield in board feet (a piece of lumber 12 inches by 12 inches by 1 inch).

D	36	28	28	41	19	32	22	38	25	17	31	20	25	19	39	33	17	37	23	39
BF	192	113	88	294	28	123	51	252	56	16	141	32	86	21	231	187	22	205	57	265

4. Justify why a power model would describe the relationship between diameter and board feet better than either a linear or exponential would.

5. Write the equation of the power model in $\hat{y} = ax^b$