

Math 1070 - Spring '11 - Take Home Exam 1

Exercises 1.25, 1.35, 5.34 in textbook: (data files available on course website)

- 1.25 What color is your car?** The most popular colors for cars and light trucks change over time. Silver passed green in 2000 to become the most popular color worldwide, then gave way to shades of white in 2007. Here is the **distribution** of colors for vehicles sold in North America in 2007:¹⁴

Color	Popularity
White	19%
Silver	18%
Black	16%
Red	13%
Gray	12%
Blue	12%
Beige, brown	5%
Other colors	

Fill in the percent of vehicles that are in other colors. Make a graph to display the **distribution** of color popularity.

- 1.35 Where are the doctors?** Table 1.5 gives the number of active medical doctors per 100,000 people in each state.²³

TABLE 1.5 Medical doctors per 100,000 people, by state

STATE	DOCTORS	STATE	DOCTORS	STATE	DOCTORS
Alabama	213	Louisiana	264	Ohio	261
Alaska	222	Maine	267	Oklahoma	171
Arizona	208	Maryland	411	Oregon	263
Arkansas	203	Massachusetts	450	Pennsylvania	294
California	259	Michigan	240	Rhode Island	351
Colorado	258	Minnesota	281	South Carolina	230
Connecticut	363	Mississippi	181	South Dakota	219
Delaware	248	Missouri	239	Tennessee	261
Florida	245	Montana	221	Texas	212
Georgia	220	Nebraska	239	Utah	209
Hawaii	310	Nevada	186	Vermont	362
Idaho	169	New Hampshire	260	Virginia	270
Illinois	272	New Jersey	306	Washington	265
Indiana	213	New Mexico	240	West Virginia	229
Iowa	187	New York	389	Wisconsin	254
Kansas	220	North Carolina	253	Wyoming	188
Kentucky	230	North Dakota	242	Dist. of Columbia	798

[Open in Supplemental Window]

- (a) Why is the number of doctors per 100,000 people a better measure of the availability of health care than a simple count of the number of doctors in a state?
- (b) Make a histogram that displays the **distribution** of doctors per 100,000 people. Write a brief description of the **distribution**. Are there any outliers? If so, can you explain them?

5.34 Sisters and brothers. How strongly do physical characteristics of sisters and brothers correlate? Here are data on the heights (in inches) of 11 adult pairs:¹²

Brother	71	68	66	67	70	71	70	73	72	65	66
Sister	69	64	65	63	65	62	65	64	66	59	62

- (a) Use your calculator or software to find the **correlation** and the equation of the least-squares line for predicting sister's height from brother's height. Make a **scatterplot** of the data and add the **regression line** to your plot.
- (b) Damien is 70 inches tall. Predict the height of his sister Tonya. Based on the **scatterplot** and the **correlation** r , do you expect your prediction to be very accurate? Why?