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WRITING ABOUT DISTRIBUTIONS AND ASSOCIATIONS

1. As of 2009, more than half (57%) of US students who began their postsecondary education during the 2003–4 academic year had borrowed money to pay for their education. Of those, just over 4 out of 10 (25% out of 57%) had accumulated a total educational debt of less than $10,000 during the five years after starting their postsecondary education, while the remaining borrowers were approximately equally split between those with debt between $10,000 and $20,000, and those with debt of $20,000 or more (28% and 26% of all borrowers, respectively).

3. "In 1996, age-specific death rates in the United States traced the familiar J-shape, with a substantial decline between infancy and early childhood, slowly increasing rates until middle age, and then an accelerating increase into old age. The lowest death rate was observed among children aged 5–9 years (19.4 deaths per 100,000 persons)—a 50-fold decrease from the death rate among infants (755 per 100,000). From age 50 onward, the death rate increased about 50% for each successive 5-year age group. Approximately one out of every six persons aged 85 or older died in 1996—the highest death rate of any age group."

5. Referring to figure 9A.
   a. Both the percentage of adults who are obese in 2002 and the percentage change in obesity rates between 1992 and 2002 are continuous variables. Percentage obese is a ratio variable; percentage change is an interval variable (no absolute zero point).
   b. A scatter chart is used in this case because many X values (obesity rates) have more than one Y value (change in obesity rate). Also, using a scatter chart conveys the almost complete lack of an association between obesity rate and percentage change in obesity rate.
   c. "In 2002, at least 17%, and as many as 28%, of adults in each of the 50 United States were obese. Obesity rates increased by 40% to 114% between 1992 and 2002. Somewhat surprisingly, there was virtually no correlation between the obesity rate in 2002 and the percentage change in obesity over the preceding decade. Large percentage increases were observed across the full range from low- to high-obesity-rate states."
   d. The Pearson correlation coefficient is the usual measure of association between two continuous variables.

7. Referring to figure 9B.
   a. Topic sentences for two paragraphs about patterns in figure 9B.
      i. "Over the 30-year period between academic years 1980–81 and 2010–11, Pell grants remained the single largest federal

source of educational aid, followed by Perkins loans. Federal Work-Study and Federal Supplemental Educational Opportunity Grants (SEOG) were consistently the third and fourth sources, respectively."

    ii. "Throughout the same period, aid per recipient from three of the four major US federal education aid sources remained flat or declined slightly when corrected for inflation."

b. Evidentiary sentences to follow the topic sentences in part a.

    i. "In the 1980–81 academic year, for instance, Pell grants and Perkins loans each averaged about $2,400 per aid recipient, while Federal Work-Study and SEOG averaged 76% and 58% of that amount, respectively."

    ii. "For example, Federal Perkins loans declined in real value (constant 2012 dollars) from an average aid amount of $2,362 in 1980–81, to $1,955 in 2010–11."

c. Exceptions to the generalizations in part a, and implications for the overall pattern. To follow the description in 7.b.ii:

"In contrast, Pell grants increased nearly 40% between the 2005–6 and 2010–11 academic years, from $2,880 to $4,028 per aid recipient in constant 2012 dollars. That increase, coupled with level or declining average aid from each of the three other federal sources, yielded a substantial widening in the gap between Pell and each of those sources. By 2010–11, average Perkins loan aid per recipient declined to 49%, Work-Study to 35%, and SEOG to only 12% of the average level of Pell aid in that year."