

CHAPTER 4

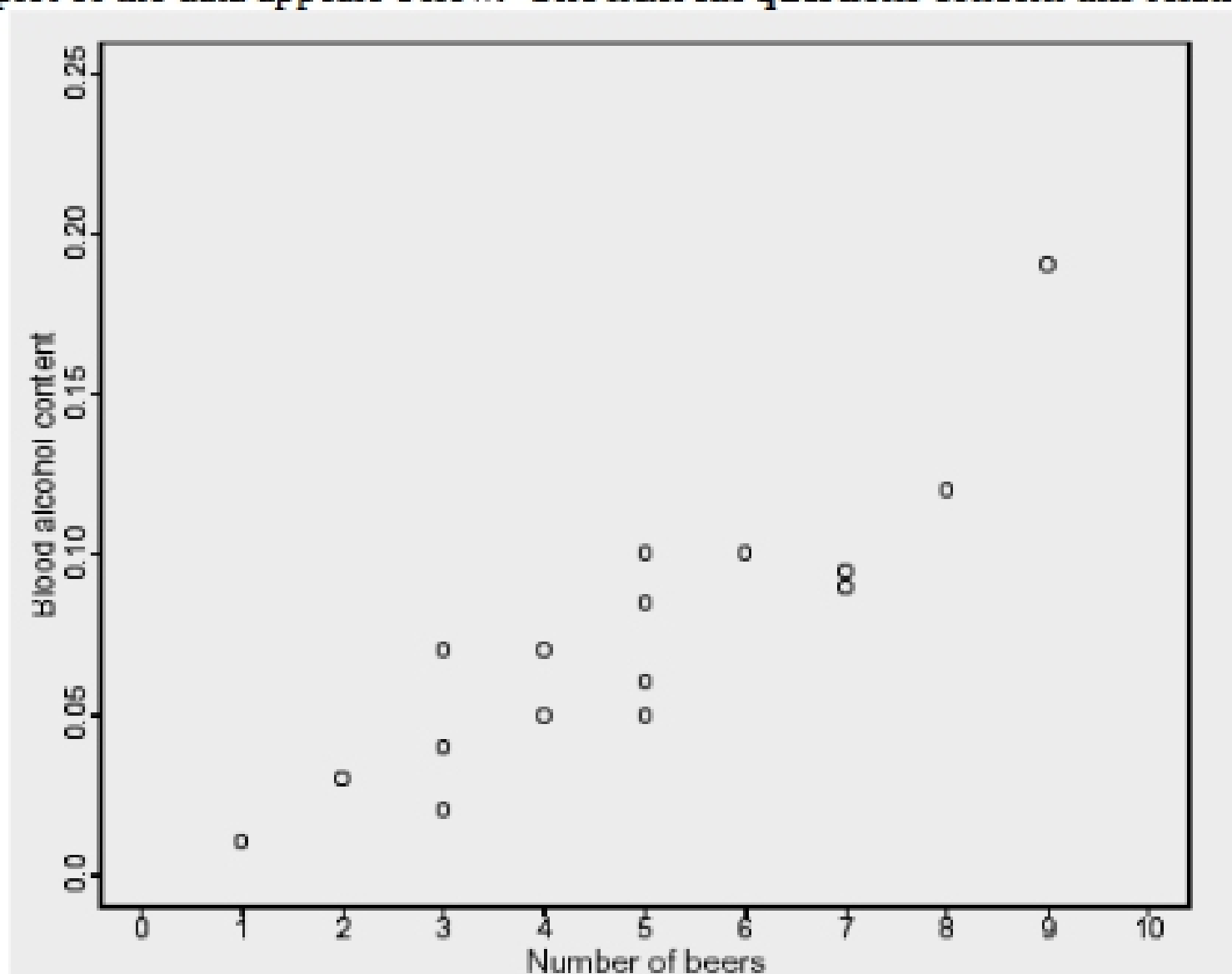
The stock market did well during the 1990s. Here are the percent total returns (change in price plus dividends paid) for the Standard & Poor's 500 stock index:

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Return	31.7	-3.1	30.5	7.6	10.1	1.3	37.6	23.0	33.4	28.6

The next three questions are related to this situation.

- The correlation of U.S. stock returns with overseas stock returns during these years was $r = 0.44$. This tells you that
 - when U.S. stocks rose, overseas stocks also tended to rise, but the connection was not very strong
 - when U.S. stocks rose, overseas stocks rose by almost exactly the same amount
 - when U.S. stocks rose, overseas stocks tended to fall, but the connection was not very strong
 - there is almost no relationship between changes in U.S. stocks and changes in overseas stocks
 - nothing, because this is not a possible value of r
- If x is the return on U.S. stocks and y is the return on overseas stocks in the same year, the least-squares regression line for predicting y from x is $y = -2.7 + 0.47x$. You think U.S. stocks will have a return of 10% in 1999. Using this regression line, you predict that the return on overseas stocks will be
 - 7.4%
 - 2.23%
 - 2%
 - 3.17%
 - 27%
- Stock returns are measured in percent. What are the units of the mean, the median, the quartiles, the standard deviation, and the correlation between U.S. and overseas returns?
 - all are measured in percent.
 - all are measured in percent except the standard deviation, which is measured in squared percent.
 - all are measured in percent except the correlation, which is a number that has no units.
 - all are measured in percent except the correlation, which is measured in squared percent.
 - the mean, median, and quartiles are in percents, the standard deviation is in squared percent, and the correlation has no units.
- Consider a large number of countries around the world. There is a positive correlation between the number of Nintendo games per person x and the average life expectancy y . Does this mean that we could increase the life expectancy in Rwanda by shipping Nintendo games to that country?
 - Yes: the correlation says that as Nintendos go up, so does life expectancy.
 - No: if the correlation were negative we could accept that conclusion, but this correlation is positive.
 - Yes: positive correlation means that if we increase x , then y will also increase.
 - No: the positive correlation just shows that richer countries have both more Nintendos and higher life expectancies.
 - It makes no sense to calculate correlation between these variables.

How well does the number of beers a person drinks predict his or her blood alcohol content? Sixteen student volunteers at Ohio State University drank a randomly assigned number of cans of beer. Thirty minutes later, a police officer measured their blood alcohol content (BAC). A scatterplot of the data appears below. **The next six questions** concern this relationship.



10. One person drank 9 beers. You see from the scatterplot that his BAC was about
 (a) 19 (b) 9 (c) 5 (d) 0.19 (e) 0.05

11. The scatterplot shows
 (a) a weak negative relationship
 (b) a moderately strong negative relationship
 (c) almost no relationship
 (d) a weak positive relationship
 (e) a moderately strong positive relationship

12. A plausible value of the correlation between number of beers and blood alcohol content, based on the scatterplot, is
 (a) $r = -0.9$ (b) $r = -0.3$ (c) r close to 0 (d) $r = 0.3$ (e) $r = 0.9$