

Your name _____

Assignment #1 (30 points)
due Th 10/5 at the *beginning* of lab

Write your answers directly on the assignment, unless instructed otherwise.

Problems

- 1) (1 point) Do *SSDS* exercise 3 on page 27 in the 3rd edition, or page 25 in the 4th edition. Put your answers below, and check them against the back of the book.

3a

3b

3c

3d

3e

3f

3g

3h (4th edition only)

- 2) (2 points) Do *SSDS* exercise 1 on page 61 in the 3rd edition, or pages 55-56 in the 4th edition. Put your answers below, and check them against the back of the book.

1a

1b

1c

1d

- 3) (14 points) Whenever you buy or sell a stock, professional dealers collect a fee called the “spread.”¹ Although competition is supposed to keep spreads low, there is evidence that dealers conspire to keep spreads high.

The table below shows the spread for certain stock trades on the NASDAQ national market in 1991. At that time, spreads were required to be in eighths of a dollar: 1/8 (\$.125), 2/8 (\$.25), 3/8 (\$.375), etc.

Spread	Number of trades (f)	cf	%	c%
\$0.125	40,989			
\$0.25	146,324			
\$0.375	18,631			
\$0.50	122,766			
\$0.625	1,663			
\$0.75	35,237			
\$0.875	37			
\$1	5,352			
more than \$1	1,626			

Source: William D. Christie and Paul H. Schultz² (1994), “Why Do NASDAQ Market Makers Avoid Odd-Eighth Quotes?” *The Journal of Finance* 49(5):1813-1840.

- a) (3 points) Fill in the cumulative frequencies (cf), percentages (%), and cumulative percentages (c%). Put your answers in the table above. You can use this information to answer the next couple of questions, with a minimum of further calculation.
- b) (2 points) In a couple of ordinary English sentences, summarize all the information in the gray row. Include the information that you filled in.

- c) (1 point) How many trades in total are summarized by the table? How do you know?

- d) (2 points) What percentage of trades had a spread of \$.50 or less? What percentage had a spread of more than \$.50?

¹ The spread is the difference between the buyer’s price and the seller’s price. For example, the buyer pays \$30.25, the seller gets \$30, and the dealer collects the difference of \$.25. The spread is separate from other fees such as the broker’s commission.

² Paul Schultz teaches in the business school at Ohio State!

e) (2 points) Plot a histogram of the data, by hand or using Excel. Label the axes.

f) (2 points) “Even” spreads are $2/8, 4/8, 6/8, 8/8$ (\$.25, \$.50, \$.75, \$1.00); “odd” spreads are $1/8, 3/8, 5/8, 7/8$ (\$.125, \$.625, \$.875) This histogram sparked a billion dollar lawsuit, because it suggested that dealers had conspired to trade at even instead of odd spreads. What feature of the histogram supports this allegation? What is the general name for this type of shape?

g) (2 points) There is a minimum possible spread (\$0) but no maximum possible spread. How does this fact affect the shape of the histogram? What is the general name for this type of shape?

- 4) (6 points) This problem asks you to search newspapers, magazines, websites, etc. for examples of graphical distortion. *Please confine your search to graphics published after September 1, 2005.*
- a) (3 points) Find a time series or other graphic that exaggerates a trend as it moves from left to right. Remember, there are several ways to exaggerate trends: (i) by using a vertical axis that is long compared to the horizontal axis, (ii) by using a vertical axis that doesn't begin with zero, or (iii) by using a vertical axis that begins at zero but breaks before it reaches larger values. Paste the distorting graphic below, then re-draw it with the distorting feature removed. Describe how the re-drawn version changes your impression of the data.
- Note.* As discussed in class, the most common examples are stock-price graphs. Find something else.

- b) (3 points) Find a pie chart or other graphic that exaggerates something by using three dimensions when two would suffice. Paste the graphic below, then redraw it using just two dimensions. Describe how the redrawn version changes your impression of the data. What do you think was exaggerated by the use of a third dimension?

