1. You are on the verge of investing some of your hard-earned money in the stock market and you cannot decide between two funds, let's call them A and B. Your investment adviser, I'll call him The Oracle, gives you some information on their performance (as measured by percentage return) over the last 200 trading days:

Fund A:

Variable	Obs	Mean	Std. Dev.	Min	Max
dailyret	200	5.000000	4.00000	-12.00	20.00

Fund B:

Variable	Obs	Mean	Std. Dev.	Min	Max
dailyret	200	11.000000	12.0000	-25.00	59.00

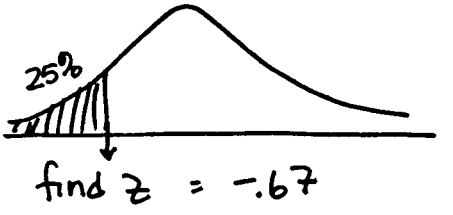
Assume they are both very close to normally distributed, so for our purposes they should be considered normal variables. Please answer the following questions:

A. Please give the five number summary for variable dailyret for Fund A and show your work for full credit (10 points). Please list the values from lowest to highest. If you do not have enough information for a complete answer, please write "not enough information", give as much of the five number summary as you can from the information given above, and tell us what you would need to give a complete answer.

MIN	Q1	MEDIAN	Q3	MAX
-12	2.32	5.0	7.68	20.00

1) MEDIAN ≅ MEAN for normal variables

2) FOR Q1

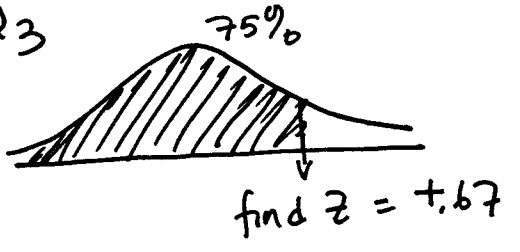


so $z = \frac{x-\mu}{\sigma}$ or $-.67 = \frac{x-5}{4}$

solve for x

$x = 2.32$

3) FOR Q_3



so $+.67 = \frac{x-5}{4}$

$x = 7.68$

(continued from above)

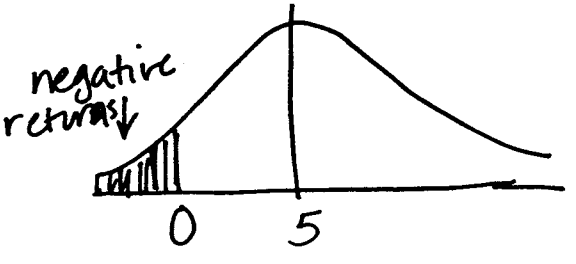
B. The Oracle advises you that while there are periods of time when you may get very low (near zero) returns on your investment, you should avoid negative returns at all times. Keeping his advice and the information above (i.e. mean, standard deviation, normally distributed) in mind, which Fund will have the larger proportion of non-negative percentage returns? (circle one, 2 points)

(FUND A) FUND B

Show the numerical calculations that helped you to arrive at your conclusion. (8 points)

need Z scores

FUND A

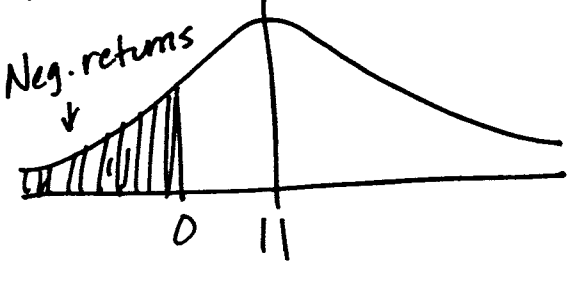


$z = \frac{0-5}{4} = -1.25$

the area to the right is ≈ 10.56%

so the non-negative is 89.44%

FUND B



$z = \frac{0-11}{12} = -.9166 \approx -.92$

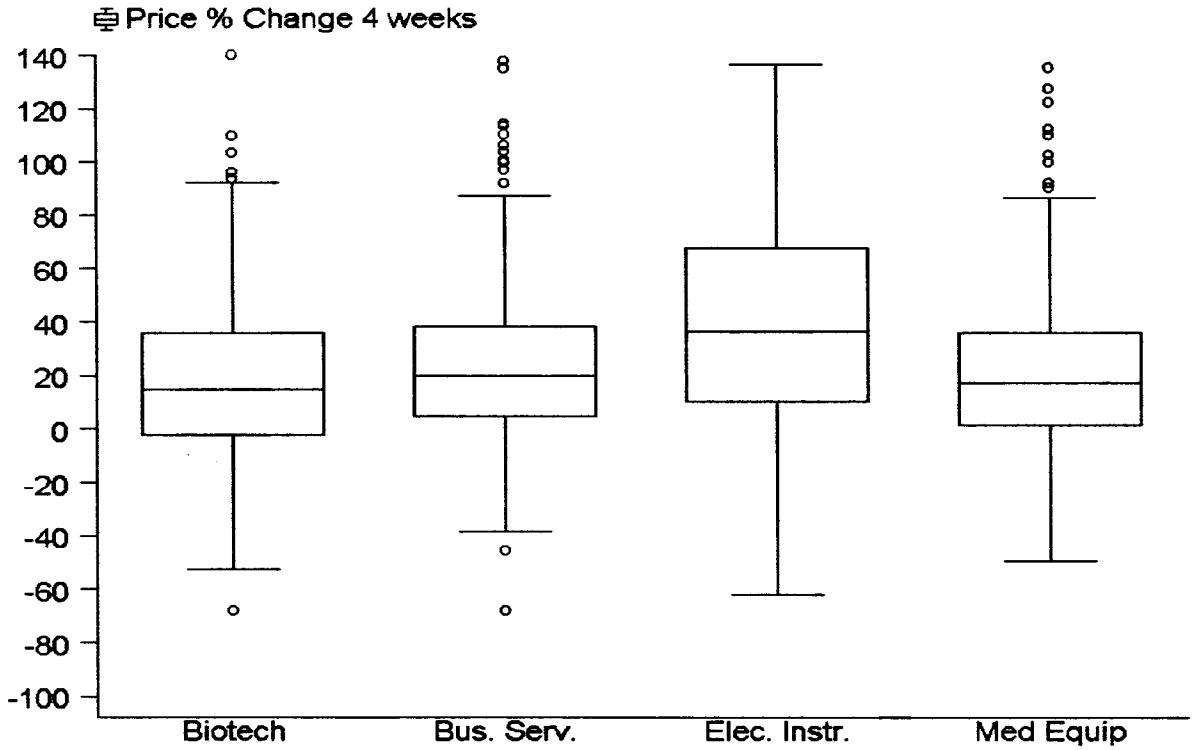
area to the right is .1788 or 17.88%

so non-negative is 82.12%

89.44 > 82.12

So choose A

2. The box plots below summarize the percentage change in stock price for 4 industries (each industry has many companies) for January 2001. Please answer the following questions on the basis of this graphic.



(a) For the Biotech industry, the 75th percentile for percentage change in stock price is (3 points):

A. A little over 90%
B. About 75%
C. About 60%
(D.) slightly less than 40%
E. not calculable from this graphic

(b) Is the distribution of percentage change in stock price nearly symmetrical for any these industries? (circle one, 2 points)

(YES) NO NEED MORE INFORMATION

(c) Please tell us how you arrived at your answer in part (b) above, use calculations where appropriate (5 points)

Elec Instr.

75th & 25th percentiles are nearly equidistant from the median

min & max are nearly equidistant from the 75th + 25th.

3. Congratulations! You graduated from UCLA and got a job as the marketing director for a large grocery store chain with an internet site that allows its customers to purchase products on-line. Your supervisor is wondering whether allowing customers to use special store coupons during their on-line purchases will increase the average dollar amount each customer spends on-line.

You decide to randomly sample 200 existing on-line customers. Then you gathered information about their purchasing behavior and demographics. Finally, using a random method, you give 100 of the on-line customers special store coupons for use during their next on-line purchase and you do not give the other 100 any special store coupons. You find that 75 of the 100 or 75% of the customers who were given the special store coupons made a purchase and they purchased an average of $53 worth of groceries. The 100 who did not receive the special store coupons purchased an average of $25 worth of groceries. Approximately 75 of the 100 without the special store coupons made an online purchase.

Data on 200,000 existing online customers reveals that the average dollar amount of groceries purchased is $28. Data on all 2,000,000 online and non-online customers reveals that the average dollar amount of groceries purchased is $41.

Please answer the following questions:

a. (2 points) The parameter is:
   i. $41*2,000,000 or $82,000,000
   ii. $53*200 or $10,600
   iii. 53 dollars
   iv. $28*200,000 or $5,600,000
   v. 28 dollars

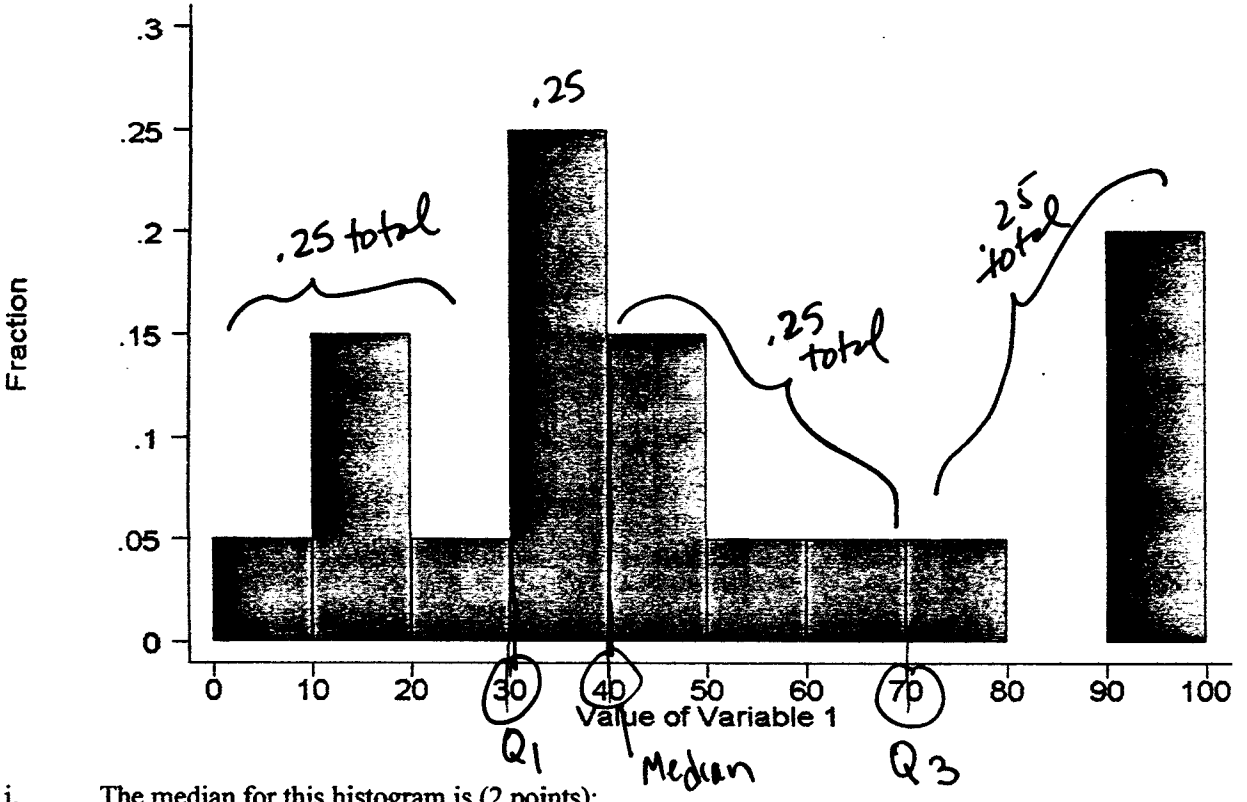
b. (2 points) The statistic of most interest to your supervisor is:
   i. $41*2,000,000 or $82,000,000
   ii. 53 dollars
   iii. $53*200 or $10,600
   iv. 28 dollars
   v. $28*200,000 or $5,600,000

c. (2 points) The population is:
   i. 2 million customers
   ii. $41*2,000,000 or $82,000,000
   iii. 200,000 online customers
   iv. $28*200,000 or $5,600,000
   v. 200 customers

d. (2 points) The sample is:
   i. 2 million customers
   ii. 200,000 online customers
   iii. 200 customers
   iv. 100 customers given special store coupons
   v. 100 customers not given special store coupons

e. (2 points) This study is:
   i. an Observational Study with controls
   ii. an Observational Study that uses a random probability method for sample selection.
   iii. a Randomized Experiment without Controls, but it is blind
   iv. a Randomized Experiment without Controls, but it is double-blind
   v. a Randomized Controlled Experiment

4. Using the graphic below, please answer the following questions:



i. The median for this histogram is (2 points):

a. A value between 30 and 40
b. Exactly 40
c. A value between 40 and 50
d. Exactly 50
e. not calculable because this is NOT a histogram

ii. The inter-quartile range for this histogram is (3 points):

a. 20
b. 30
c. 40
d. 50
e. not calculable because this is NOT a histogram