

DSC 330 - Business Statistics

Preparation for Mid-term Exam

The 90-minute exam will consist of 30 questions: 26 multiple choice and 4 true/false. Each question will be worth the same number of points. This will be a closed-book exam: you cannot use the text book or your class-notes. You may only use any notes you make on the space provided on this “Preparation for Mid-term Exam” available on the course website (four pages numbered 1-4 – both sides of two sheets of paper – total). You may find a (regular) calculator useful; a statistical calculator may be used (although it will provide no advantage over a regular calculator).

The exam is based on chapters 1 and 2 only. Most of the questions will be based on the following four situations. You may want to read these over ahead of time so that you are familiar with them.

(Situation 1) Forty-five CEO's from the Electronics industry were randomly sampled and a 95% confidence interval for the average salary of all Electronics CEO's was constructed. The interval was (\$944,677, \$1,797,100).

(Situation 2) Private colleges and universities rely on money contributed by individuals and corporations for their operating expenses. Much of this money is put into a fund called an endowment, and the college spends only the interest earned by the fund. A recent survey of eight private colleges in the United States revealed the following endowments (in millions of dollars): 60.2, 47.0, 235.1, 490.0, 122.6, 177.5, 95.4 and 220.0. The mean of these eight numbers is 180.975, while the standard deviation is 143.042.

(Situation 3) A bottling company needs to produce bottles that will hold 12 ounces of liquid for a local brewery. Periodically, the company gets complaints that their bottles contain less liquid than claimed. To test this complaint, the bottling company randomly samples 15 bottles and finds the average amount of liquid held by the 15 bottles is 11.80 ounces with a standard deviation of 0.2 ounces.

(Situation 4) Each year U.S. News & World Report conducts its "Survey of America's Best Graduate and Professional Schools." The top 25 business schools in 1991, as determined by reputation, student selectivity, placement success, and graduation rate, are listed in the table. For each school, three variables were measured: (1) GMAT score for the typical incoming student; (2) student acceptance rate (percentage accepted of all students who applied); and (3) starting salary of the typical graduating student.

	School	GMAT	Acc. Rate	Salary
1.	Harvard	644	15.0%	\$63,000
2.	Stanford	665	10.2	60,000
3.	Penn	644	19.4	55,000
4.	Northwestern	640	22.6	54,000
5.	MIT	650	21.3	57,000
6.	Chicago	632	30.0	55,269
7.	Duke	630	18.2	53,300
8.	Dartmouth	649	13.4	52,000
9.	Virginia	630	23.0	55,269
10.	Michigan	620	32.4	53,300
11.	Columbia	635	37.1	52,000
12.	Cornell	648	14.9	50,700
13.	CMU	630	31.2	52,050
14.	UNC	625	15.4	50,800
15.	Cal-Berkeley	634	24.7	50,000
16.	UCLA	640	20.7	51,494
17.	Texas	612	28.1	43,985
18.	Indiana	600	29.0	44,119
19.	NYU	610	35.0	53,161
20.	Purdue	595	26.8	43,500
21.	USC	610	31.9	49,080
22.	Pittsburgh	605	33.0	43,500
23.	Georgetown	617	31.7	45,156
24.	Maryland	593	28.1	42,925
25.	Rochester	605	35.9	44,499

The academic advisor wants to predict the typical starting salary of a graduate at a top business school using GMAT score of the school as a predictor variable. Some results from a simple linear regression of SALARY versus GMAT using the 25 data points in the table are shown below.

$$\hat{b}_0 = -92040 \quad \hat{b}_1 = 228 \quad s = 3213 \quad R^2 = 0.66 \quad r = 0.81 \quad n = 25$$

t-statistic for testing whether slope is zero = 6.67

Space for notes

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