**MBA 646 72473 Mon Examination 1 Part II Due November 1, 2013**

Part II of the examination will be completed at home. There is a Word file with the questions, that is, the file you are now reading. There also is an Excel file with the data to be analyzed, as well as space for the analysis. The work you submit for Part II is to be done by you, without support from anyone. Papers with similar solutions will be analyzed by “Turn-It-In” for plagiarism.

Begin by entering your name in the space below. This question sheet will serve as an answer sheet as well. Read the question, perform the analysis in Excel, and then copy-and-paste the answers BELOW THE QUESTION. If a description of what you have found is required, then enter that below as well. Remember I will not have access to your Excel file, so you must be sure to provide all the information needed to answer the question. When you have completed and checked your work, submit this answer sheet to me by email (phoefer@pace.edu). I will accept answer sheets up until 5pm on Friday November 1. Any late submissions may not be graded.

Part II

Name Megan Burke

1. The HyTex Company is a direct marketer of technical products. The data on sales from this company are provided in the Excel file tab “Problem 1”.

a. Create a contingency table (or “cross-tabs”) of the two categorical variables “Gender” and “AmountSpentCategorical”. Copy and paste the table below this question. Suggestion: Use Excel’s PivotTable option to create the table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Count of AmountSpentCategorical**  | **Column Labels** |  |  |
| **Row Labels** | **F** | **M** | **Grand Total** |
| High | 57 | 86 | 143 |
| Low | 242 | 148 | 390 |
| Medium | 78 | 139 | 217 |
| **Grand Total** | **377** | **373** | **750** |

b. Create a bar graph or, loosely speaking, a histogram describing the table. Copy and paste the graph below this question. Note there are two possible ways of providing the graph; both are correct.

c. Are the two variables independent or not? Why? Your response must refer to the table and graph determined above. (10)

The two variables are not independent because the results for males and females are significantly different. If they were independent, the numbers would be similar and the bars on the graph would be similar sizes.

2. The Alpha Corporation has been doing business for many years. A data base of some of their employees is contained in the Excel file tab “Problem 2”.

a. Which of the variables are quantitative? Which are qualitative?

Employee: qualitative

Gender: qualitative

Age: quantitative

Prior experience: quantitative

Alpha experience: quantitative

Education: quantitative

Annual salary: quantitative

b. For the quantitative variables only, which variable is most highly related to Annual Salary? Be sure to copy-and-paste your supporting analysis from Excel; paste it just below this question.

Alpha Experience is most highly related to Annual Salary. I know this because alpha experience has the highest correlation with annual salary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **StatTools Report** |   |   |   |   |
| **Analysis:** | Correlation and Covariance |   |   |   |
| **Performed By:** | Windows User |   |   |   |   |
| **Date:** | Thursday, October 31, 2013 |   |   |   |
| **Updating:** | Live |   |   |   |   |
|  |  |  |  |  |  |
|  | **Age** | **Prior Experience** | **Alpha Experience** | **Education** | **Annual Salary** |
| ***Linear Correlation Table*** | **Data Set #4** | **Data Set #4** | **Data Set #4** | **Data Set #4** | **Data Set #4** |
| **Age** | 1.000 | 0.471 | 0.479 | 0.263 | 0.541 |
| **Prior Experience** | 0.471 | 1.000 | 0.349 | 0.234 | 0.682 |
| **Alpha Experience** | 0.479 | 0.349 | 1.000 | 0.133 | 0.734 |
| **Education** | 0.263 | 0.234 | 0.133 | 1.000 | 0.565 |
| **Annual Salary** | 0.541 | 0.682 | 0.734 | 0.565 | 1.000 |
|  |  |  |  |  |  |
|  | **Age** | **Prior Experience** | **Alpha Experience** | **Education** | **Annual Salary** |
| ***Covariance Table*** | **Data Set #4** | **Data Set #4** | **Data Set #4** | **Data Set #4** | **Data Set #4** |
| **Age** | 130.288 | 26.610 | 34.882 | 5.429 | 198329.377 |
| **Prior Experience** | 26.610 | 24.452 | 11.028 | 2.096 | 108252.015 |
| **Alpha Experience** | 34.882 | 11.028 | 40.772 | 1.535 | 150522.601 |
| **Education** | 5.429 | 2.096 | 1.535 | 3.277 | 32824.808 |
| **Annual Salary** | 198329.377 | 108252.015 | 150522.601 | 32824.808 | 1030203364.469 |

c. For the quantitative variables only, which variable is most lowly related to Annual Salary? Be sure to copy-and-paste your supporting analysis from Excel; paste it just below this question. (10)

Age is the most lowly related to Annual Salary. It is the farthest number from annual salary.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
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| **Date:** | Thursday, October 31, 2013 |   |   |   |
| **Updating:** | Live |   |   |   |   |
|  |  |  |  |  |  |
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| **Annual Salary** | 0.541 | 0.682 | 0.734 | 0.565 | 1.000 |
|  |  |  |  |  |  |
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| **Education** | 5.429 | 2.096 | 1.535 | 3.277 | 32824.808 |
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3. A random variable is defined in the tab “Problem 3.”

a. What is the mean and standard deviation of the random variable?

|  |  |
| --- | --- |
| E(X) | 1.8 |
| Var(X) | 1.26 |
| STD(X) | 1.122497 |
|

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CumP | X | P(X) | (X-E(X))^2) | X(P(x)) |
| 0.0 | 6 | 0.000729 | 18 | 0.004374 |
| 0.0 | 5 | 0.010206 | 10 | 0.05103 |
| 0.0 | 4 | 0.059535 | 5 | 0.23814 |
| 0.1 | 3 | 0.185220 | 1 | 0.55566 |
| 0.3 | 2 | 0.324135 | 0 | 0.64827 |
| 0.6 | 1 | 0.302526 | 1 | 0.302526 |
| 0.9 | 0 | 0.117649 | 3 | 0 |
| 1.8 |  |  |  | 1.8 |

Mean:  | 1.8 |
| Std | 1.12 |

b. Simulate 50 replications of the random variable. Copy and paste the replications below here, being careful to include the random numbers. How do the mean and standard deviation of the simulation compare with the descriptors determined in a.? (10)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Rep # | Normal | Sim X |  | Sim X |
| 1 | 1.86033084 | 0 |  | 2 |
| 2 | 2.83970532 | 0 |  | 2 |
| 3 | 2.4077337 | 0 |  | 2 |
| 4 | 1.53952047 | 0 |  | 2 |
| 5 | 0.58937775 | 1 |  | 0 |
| 6 | 1.87532087 | 0 |  | 3 |
| 7 | 0.1623343 | 3 |  | 0 |
| 8 | 1.99984884 | 0 |  | 3 |
| 9 | 1.82414549 | 0 |  | 3 |
| 10 | 2.66043773 | 0 |  | 1 |
| 11 | 1.39395563 | 0 |  | 1 |
| 12 | 0.49592315 | 2 |  | 2 |
| 13 | 0.87916009 | 1 |  | 1 |
| 14 | 0.94657635 | 0 |  | 0 |
| 15 | 0.43347637 | 2 |  | 4 |
| 16 | 3.32469221 | 0 |  | 2 |
| 17 | 2.03728103 | 0 |  | 1 |
| 18 | 3.5320223 | 0 |  | 4 |
| 19 | 0.7938912 | 1 |  | 1 |
| 20 | 0.0048704 | 5 |  | 1 |
| 21 | 0.93190658 | 0 |  | 1 |
| 22 | 4.2894928 | 0 |  | 1 |
| 23 | 2.5591523 | 0 |  | 1 |
| 24 | 3.15238458 | 0 |  | 3 |
| 25 | 0.61741114 | 1 |  | 2 |
| 26 | 2.29201991 | 0 |  | 3 |
| 27 | 0.93523132 | 0 |  | 1 |
| 28 | 2.72310401 | 0 |  | 1 |
| 29 | 3.24235902 | 0 |  | 3 |
| 30 | 0.4030631 | 2 |  | 0 |
| 31 | 2.38202238 | 0 |  | 2 |
| 32 | 2.21183194 | 0 |  | 2 |
| 33 | 2.18986946 | 0 |  | 2 |
| 34 | 1.9230012 | 0 |  | 3 |
| 35 | 2.89960743 | 0 |  | 0 |
| 36 | 1.49668654 | 0 |  | 2 |
| 37 | 0.9905059 | 0 |  | 3 |
| 38 | 0.44320051 | 2 |  | 1 |
| 39 | 2.10453606 | 0 |  | 4 |
| 40 | 3.1121911 | 0 |  | 1 |
| 41 | 4.05522387 | 0 |  | 3 |
| 42 | 1.68137808 | 0 |  | 3 |
| 43 | 3.26279634 | 0 |  | 0 |
| 44 | 1.28049325 | 0 |  | 0 |
| 45 | 2.55770845 | 0 |  | 2 |
| 46 | 1.06456801 | 0 |  | 1 |
| 47 | 2.75788477 | 0 |  | 4 |
| 48 | 2.04254395 | 0 |  | 1 |
| 49 | 2.03287729 | 0 |  | 1 |
| 50 | 2.24790424 | 0 |  | 1 |

|  |  |
| --- | --- |
| mean: | 1.909671 |
| std dev: | 1.045412 |

The mean and standard deviation are extremely similar to the mean and standard deviation found in part A.