

Statistical Literacy: Course Topics Survey

A PRE-STATS BRIDGING COURSE:

Consider a new pre-statistics bridging course – a course taken before the first course on statistical inference. This bridging course excludes hypothesis tests, confidence intervals, sampling distributions and the binomial distribution.

This bridging course covers descriptive statistics and statistical modeling. The focus is on statistical association, probabilistic causation and their relationship.

The purpose of this survey is to identify the content for this course – not the pedagogy or the technical tools involved.

THE EVALUATION:

Given *the goals of this course*, evaluate the importance of various topics on a letter scale

- (a) Most important Conceptually critical.
- (b) Quite important: Fundamental, useful, and important. Good building block.
- (c) Moderately important: Elective topic.
- (d) Not very important. Could easily be omitted; not very relevant, useful or understandable.
- (e) Do not include. Not relevant, useful, valuable or intelligible at this level.
- (f) Topic is unfamiliar, ambiguous, or unintelligible to the reviewer.

THE RESULTS: Please return a copy of your survey to Milo Schield

- 1. in person,
- 2. by mail [Mail to Dept. of Business Administration, Augsburg College, Mpls, MN 55454],
- 3. by fax [Fax to 612: 330-1607], or
- 4. by email. [Key in your answers and send to schild@augsborg.edu]

Add any topics that you think should have been included:

0. ___ Philosophy of Science	47. ___ Read/interpret quantitative data
1. ___ inference: generalize, predict, etc.	48. ___ frequency distribution
2. ___ association vs. causation	49. ___ bar charts, histograms
3. ___ causes: determinate / probabilistic	50. ___ shape: symmetric/asymmetric/skew
4. ___ common cause (lurking variable)	51. ___ percentiles: calculate/compare
5. ___ fishbone (causal) diagrams	52. ___ mean and median
6. ___ Foundations of statistics	53. ___ mode and mid-range
7. ___ experiment vs. observational study	54. ___ mid-interquartile range
8. ___ natural experiments	55. ___ geometric mean
9. ___ study: cross-sectional/longitudinal	56. ___ minimum, maximum and range
10. ___ study: prospective vs. retrospective	57. ___ mean absolute deviation
	58. ___ variance

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<p>11. ___ control group (controlled study)</p> <p>12. ___ control for (take account of)</p> <p>13. ___ matching, test-retest</p> <p>14. ___ placebo and placebo effect</p> <p>15. ___ Hawthorne & halo effects</p> <p>16. ___ single and double blind studies</p> <p>17. ___ random assignment</p> <p>18. ___ population vs. sample</p> <p>19. ___ parameter vs. statistic</p> <p>20. ___ random error (sampling error)</p> <p>21. ___ bias: measurement error, etc.</p> <p>22. ___ confounding: spurious association</p> <p>23. ___ representative sampling/sample</p> <p>24. ___ random sampling/sample</p> <p>25. ___ data types: quality vs. quantity</p> <p>26. ___ constructs (psych., sociology, etc.)</p> <p>27. ___ reliability versus validity</p> <p>28. ___ Reading count-based data</p> <p>29. ___ exclusive and exhaustive</p> <p>30. ___ intersection and union</p> <p>31. ___ forming comparisons</p> <p>32. ___ reading and comparing counts</p> <p>33. ___ describing part-whole percentages</p> <p>34. ___ creating percentages from counts</p> <p>35. ___ comparing percentages</p> <p>36. ___ risk and relative risk</p> <p>37. ___ odds and odds ratio</p> <p>38. ___ reading and comparing rates</p> <p>39. ___ Interpret rates, percents, counts</p> <p>40. ___ risk as a measure of association</p> <p>41. ___ percentage attributable to</p> <p>42. ___ Simpson paradox; ecological fallacy</p> <p>43. ___ Bayes' Rule and medical tests</p> <p>44. ___ prosecutors fallacy</p> <p>45. ___ over-involvement ratios</p>	<p>59. ___ standard deviation</p> <p>60. ___ coefficient of variation: stdev/mean</p> <p>61. ___ inter-quartile range (IQR)</p> <p>62. ___ skewness: $3 * (\text{mean} - \text{median}) / \text{stdev}$.</p> <p>63. ___ standard deviation of binary data</p> <p>64. ___ outlier and trimmed mean</p> <p>65. ___ normalizing (z scores)</p> <p>66. ___ standardizing to new mean & StdDev</p> <p>67. ___ bell-shaped distribution: 1/2/3 rule</p> <p>68. ___ prediction interval</p> <p>69. ___ median overlap</p> <p>70. ___ algebraic models of table data</p> <p>71. ___ Normal distribution</p> <p>72. ___ Log-normal & exponential</p> <p>73. ___ Plots: quantile and quantile-normal</p> <p>74. ___ Simple least-squares regression</p> <p>75. ___ correlation</p> <p>76. ___ slope of regression</p> <p>77. ___ $b = r * (s_{\text{sub-y}}) / (s_{\text{sub-x}})$</p> <p>78. ___ $s_{\hat{y}} = s_y * \sqrt{1 - r^2}$</p> <p>79. ___ Prediction and prediction interval</p> <p>80. ___ R^2 (explanatory power of a model)</p> <p>81. ___ regression to the mean (test/retest)</p> <p>82. ___ Multivariate Analysis (& Misc)</p> <p>83. ___ partial correlation & partial slope</p> <p>84. ___ stepwise least-squares regression</p> <p>85. ___ logistic regression</p> <p>86. ___ Plot chance vs Z, 2 factor (Bell Curve)</p> <p>87. ___ cluster analysis</p> <p>88. ___ discriminant analysis</p> <p>89. ___ quality/reliability analysis</p> <p>90. ___ read/interpret longitudinal graphs</p> <p>91. ___ read/interpret cross-sectional graphs</p> <p>92. ___ read/interpret news stories with stats.</p>
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