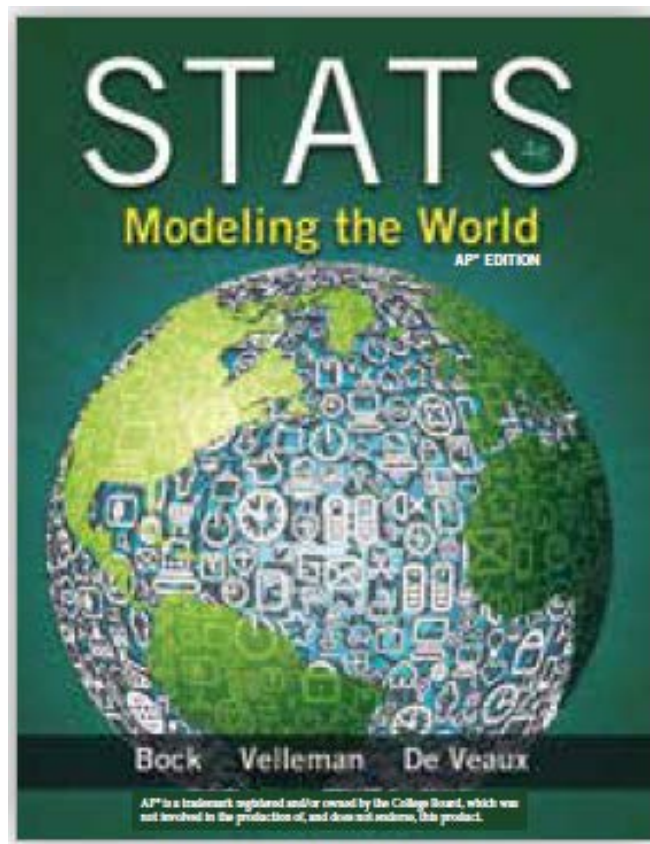


A Correlation of

Stats
Modeling the World
AP® Edition
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to the

Advanced Placement
Statistics Standards

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|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| I. Exploring Data: Describing patterns and departures from patterns | |
| A. Constructing and interpreting graphical displays of distributions of univariate data (dotplot, stemplot, histogram, cumulative frequency plot) | |
| 1. Center and spread | SE/TE: 1.3: 48, 51-53, 58 |
| 2. Clusters and gaps | SE/TE: 1.3: 44, 51, 3.11: 287 |
| 3. Outliers and other unusual features | SE/TE: 1.4: 88-89 |
| 4. Shape | SE/TE: 1.3: 48, 50, 58 |
| B. Summarizing distributions of univariate data | |
| 1. Measuring center: median, mean | SE/TE: 1.3: 51-53, 58-60 |
| 2. Measuring spread: range, interquartile range, standard deviation | SE/TE: 1.3: 53-54, 56, 60-61, 1.5: 111 |
| 3. Measuring position: quartiles, percentiles, standardized scores (z-scores) | SE/TE: 1.3: 53-54 |
| 4. Using boxplots | SE/TE: 1.3: 55-56, 58 |
| 5. The effect of changing units on summary measures | SE/TE: 1.5: 111-112 |
| C. Comparing distributions of univariate data (dotplots, back-to back stemplots, parallel boxplots) | |
| 1. Comparing center and spread: within group, between group variation | SE/TE: 1.4: 84-88, 2.9: 234-235, 6.23: 606, 622 |
| 2. Comparing clusters and gaps | SE/TE: 1.4: 44 |
| 3. Comparing outliers and other unusual features | SE/TE: 1.3: 50, 56, 1.4: 89 |
| 4. Comparing shapes | SE/TE: 1.3: 48-51 |
| D. Exploring bivariate data | |
| 1. Analyzing patterns in scatterplots | SE/TE: 2.6: 151, 155, 2.9: 236 |
| 2. Correlation and linearity | SE/TE: 2.6: 154-156, 2.7: 178-179 |
| 3. Least-squares regression line | SE/TE: 2.9: 255, 7.26: 708 |
| 4. Residual plots, outliers, and influential points | SE/TE: 1.4: 88-89 |
| 5. Transformations to achieve linearity: logarithmic and power transformations | SE/TE: 2.9: 241-242 |

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| E. Exploring categorical data | |
| 1. Frequency tables and bar charts | SE/TE: 1.2: 16-17, 22-26, 31-42 |
| 2. Marginal and joint frequencies for two-way tables | SE/TE: 1.2: 18-20, 25, 31 |
| 3. Conditional relative frequencies and association | SE/TE: 1.2: 16-17, 20-23, 26, 31 |
| 4. Comparing distributions using bar charts | SE/TE: 1.2: 17, 22-24, 31 |
| II. Sampling and Experimentation: Planning and conducting a study | |
| A. Overview of methods of data collection | |
| 1. Census | SE/TE: 1.1: 5, 283-284, 582, 585 |
| 2. Sample survey | SE/TE: 3.11: 280-297, 331 |
| 3. Experiment | SE/TE: 3.12: 305-325, 331 |
| 4. Observational study | SE/TE: 1.2: 27, 3.12: 305-306, 331 |
| B. Planning and conducting surveys | |
| 1. Characteristics of a well-designed and well-conducted survey | SE/TE: 3.11: 291-293, 296-297 |
| 2. Populations, samples, and random selection | SE/TE: 3.11: 282, 313-314 |
| 3. Sources of bias in surveys | SE/TE: 3.11: 281-282, 5.18: 487 |
| 4. Sampling methods, including simple random sampling, stratified random sampling, and cluster sampling | SE/TE: 3.11: 285-288, 296-297, 3.12: 311 |
| C. Planning and conducting experiments | |
| 1. Characteristics of a well-designed and well-conducted experiment | SE/TE: 3.12: 308-312 |
| 2. Treatments, control groups, experimental units, random assignments, and replication | SE/TE: 1.1: 4, 3.12: 307, 308-310, 312-313, 314 |
| 3. Sources of bias and confounding, including placebo effect and blinding | SE/TE: 3.12: 314-315, 316 |
| 4. Completely randomized design | SE/TE: 3.12: 311, 318, 320 |
| 5. Randomized block design, including matched pairs design | SE/TE: 3.12: 317-318 |

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| D. Generalizability of results and types of conclusions that can be drawn from observational studies, experiments, and surveys | SE/TE: 3.11: 296-297, 3.12: 306 |
| III. Anticipating Patterns: Exploring random phenomena using probability and simulation | |
| A. Probability | |
| 1. Interpreting probability, including long-run relative frequency interpretation | SE/TE: 1.2: 16-17, 1.3: 44 |
| 2. "Law of large numbers" concept | SE/TE: 4.13: 345, 354-355 |
| 3. Addition rule, multiplication rule, conditional probability, and independence | SE/TE: 4.13: 345, 350-351, 4.14: 368-371, 4.15: 396, 5.20: 518 |
| 4. Discrete random variables and their probability distributions, including binomial and geometric | SE/TE: 4.15: 389-390, 393-394, 405, 4.16: 415-422, 428 |
| 5. Simulation of random behavior and probability distributions | SE/TE: 3.10: 269-275, 4.15: 389-390, 405 |
| 6. Mean (expected value) and standard deviation of a random variable, and linear transformation of a random variable | SE/TE: 4.15: 394-400 |
| B. Combining independent random variables | |
| 1. Notion of independence versus dependence | SE/TE: 4.15: 399, 401-402, 405 |
| 2. Mean and standard deviation for sums and differences of independent random variables | SE/TE: 4.15: 394-400 |
| C. The normal distribution | |
| 1. Properties of the normal distribution | SE/TE: 5.17: 448 |
| 2. Using tables of the normal distribution | SE/TE: 1.5: 119 |
| 3. The normal distribution as a model for measurements | SE/TE: 1.5: 114, 116, 4.16: 423-425, 428 |
| D. Sampling distributions | |
| 1. Sampling distribution of a sample proportion | SE/TE: 5.17: 445-448, 449-452 |
| 2. Sampling distribution of a sample mean | SE/TE: 5.17: 456, 457-458 |
| 3. Central Limit Theorem | SE/TE: 5.17: 454-455, 459-460 |

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| 4. Sampling distribution of a difference between two independent sample proportions | SE/TE: 5.17: 445-448, 449-452 |
| 5. Sampling distribution of a difference between two independent sample means | SE/TE: 5.17: 456, 457-458 |
| 6. Simulation of sampling distributions | SE/TE: 5.17: 453-454 |
| 7. <i>t</i> -distribution | SE/TE: 6.22: 578, 596, 7.26: 716, 720 |
| 8. Chi-square distribution | SE/TE: 7.25: 675, 695 |
| IV. Statistical Inference: Estimating population parameters and testing hypotheses | |
| A. Estimation (point estimators and confidence intervals) | |
| 1. Estimating population parameters and margins of error | SE/TE: 3.11: 284-285, 5.18: 477-478 |
| 2. Properties of point estimators, including unbiasedness and variability | SE/TE: 5.17: 465, 5.21: 561, 7.26: 726 |
| 3. Logic of confidence intervals, meaning of confidence level and confidence intervals, and properties of confidence intervals | SE/TE: 5.18: 473-488 |
| 4. Large sample confidence interval for a proportion | SE/TE: 5.21: 544-545 |
| 5. Large sample confidence interval for a difference between two proportions | SE/TE: 5.21: 544-545 |
| 6. Confidence interval for a mean | SE/TE: 6.22: 578-579 |
| 7. Confidence interval for a difference between two means (unpaired and paired) | SE/TE: 6.22: 578-579, 6.24: 641-642 |
| 8. Confidence interval for the slope of a least-squares regression line | SE/TE: 7.26: 706-707, 724, 728 |
| B. Tests of significance | |
| 1. Logic of significance testing, null and alternative hypotheses; <i>p</i> -values; one- and two-sided tests; concepts of Type I and Type II errors; concept of power | SE/TE: 5.19: 494-496, 498-499, 500-501, 503-504, 5.20: 518-524, 527-535 |

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| 2. Large sample test for a proportion | SE/TE: 5.21: 555 |
| 3. Large sample test for a difference between two proportions | SE/TE: 5.21: 555-556 |
| 4. Test for a mean | SE/TE: 6.22: 590 |
| 5. Test for a difference between two means (unpaired and paired) | SE/TE: 6.23: 617 |
| 6. Chi-square test for goodness of fit, homogeneity of proportions, and independence (one- and two-way tables) | SE/TE: 7.25: 676-678, 682, 687-693, 697 |
| 7. Test for the slope of a least-squares regression line | SE/TE: 7.26: 718-721 |

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