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COLLABORATIVE STATISTICS SUMMARY OF MODIFICATIONS BY R. BLOOM*

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Abstract

This module summarizes the modifications made by Roberta Bloom to the modules included in her collection Collaborative Statistics by Roberta Bloom, based on the collection Collaborative Statistics, by Susan Dean and Dr. Barbara Illowsky, Connexions Web site. http://cnx.org/content/col10522/1.29/, Dec 5, 2008

This module summarizes the modifications made by Roberta Bloom to the modules included in the custom textbook collection Collaborative Statistics by R. Bloom http://cnx.org/content/col10617/ \(^1\) http://cnx.org/content/col10617 and Homework Book for Collaborative Statistics by R. Bloom http://cnx.org/content/col10619/ \(^2\) These custom collections are based on the textbook collection Collaborative Statistics, by Illowsky, B.and S.Dean, Connexions Web site, http://cnx.org/content/col10522/1.29/, Dec 5, 2008, but have been modified, as detailed in this module. If future modifications are made to the custom collection, this module will be updated to contain current information.

IMPORTANT NOTE TO STUDENTS OWNING A PRINT COPY OF THIS TEXTBOOK:

This custom version of the Collaborative Statistics textbook by Susan Dean and Barbara Illowsky has been modified by Roberta Bloom. The sections that are different in this book are listed below, by title, along with a description of the changes. Section numbers and page numbers may be different also, but the section titles should correspond to the sections in the original Dean/Illowsky textbook.

If you are using a print copy of this textbook and your class instructor is NOT Ms. Bloom:

- you need to be aware of the textbook changes listed below
- you may need to go to Collaborative Statistics collection by S. Dean and B. Illowsky (http://cnx.org/content/col10522/la) of the versions of the listed sections as included in the Dean/Illowsky collection for this textbook so that you have the same version as the rest of your class.

The custom collection for Ms. Bloom's class has divided the textbook into two collections:

Homework Collection Collaborative Statistics Homework Collection (modified R. Bloom) (http://cnx.org/content/col10)
which contains the formula summary page, the homework problems and the review problems

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¹ Collaborative Statistics: Custom Version modified by R. Bloom http://cnx.org/content/col10617/latest/

²Collaborative Statistics Homework Book: Custom Version modified by R. Bloom

http://cnx.org/content/col10619/latest/

 $^{{}^3}Collaborative\ Statistics < http://cnx.org/content/col10522/latest/>$

⁴Collaborative Statistics Homework Book: Custom Version modified by R. Bloom

http://cnx.org/content/col10619/latest/

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• Textbook Collection Collaborative Statistics (custom collection modified R. Bloom) (http://cnx.org/content/col10617/l) which contains the text and the chapter practices, but not the homework or review problems.

• YOU NEED TO USE BOTH THE HOMEWORK COLLECTION AND THE TEXTBOOK COLLECTION FOR MS. BLOOM'S CLASS.

List of Modifications:

Labs and Projects Removed

The labs and projects have been removed from this modified version of Collaborative Statistics. Ms. Bloom posts the labs (and projects, if any) for her class on her class website. If you are using this book with another instructor you may need to access and print out the labs or projects online from the original Dean/Illowsky Collaborative Statistics textbook collection: http://cnx.org/content/col10522/latest

Chapter 1 Data and Sampling

• Homework: two new homework problems have been added

Chapter 2 Descriptive Statistics

- Measuring the Spread of the Data: some revisions in wording and use of symbols; introduced terminology for z-score; formulas added; brief summary of Chebyshev's Rule and Empirical Rule have been added.
- Practice 3: Interpreting Percentiles: new section added that was not included in the original textbook
- Homework: Some new homework questions have been added

Chapter 3: Probability Topics

- Terminology: wording revisions; discussion of the Law of Large Numbers added
- Independent and Mutually Exclusive Events: wording revisions; add additional worked example has been added to illustrate determining that two events are not independent
- Contingency Tables: one example was removed from this section
- Practice 1: the data has been presented in tabular form
- Homework: new problems #33 through #41 have been added

Chapter 4: Discrete Distributions

• Homework: new problems #38 through #43 have been added

Chapter 5: Continuous Probability Distributions

- Introduction to Continuous Random Variables: some material has been removed
- Properties of Continuous Random Variables: the concepts of probability as area, including graphs illustrating this concept; probability density functions, and cumulative distribution functions are explained
- Uniform Distribution: Example 4 is new, illustrating the uniform distribution when the minimum value is not 0. This replaces the example for conditional probability that had been in the original module.
- Practice 1: Uniform Distribution: Problems pertaining to conditional probability have been removed from this section

Chapter 6: The Normal Distribution

• No changes have been made to this chapter

Chapter 7: Central Limit Theorem

⁵Collaborative Statistics: Custom Version modified by R. Bloom http://cnx.org/content/col10617/latest/

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- The section for CLT for Sums has been retitled as OPTIONAL
- Using the Central Limit Theorem: Examples illustrating use of the CLT for sums have been removed from this section.
- Practice: problems pertaining to the CLT for sums were removed from the practice
- Homework: Several homework exercises pertaining to the CLT for sums have been removed. Several homework exercises have been changed to reflect only the CLT for means: parts pertaining to the CLT for sums were replaced with new parts or removed. Specific changes made: Exercise #1 parts g,i and exercise #15 parts d,e,i and exercise #6 have been removed. Exercises #7, #11, #13, #22, #23 have been modified. Exercise #24 is new.
- Review: the context of the last problem has been changed

Chapter 8: Confidence Interval Estimates

- Confidence Interval for an Unknown Population Mean, Population Standard Deviation Known: Normal Distribution: worked examples have modified to show the step by step solution using the error bound formulas to find the confidence intervals; revised module may also contain some revisions in wording.
- Confidence Interval for an Unknown Population Mean, Population Standard Deviation Known: Normal Distribution: An additional example has been added to the module illustrating how to find the mean and the error bound when only the confidence interval is given.
- Confidence Interval for an Unknown Population Mean, Population Standard Deviation Unknown: Student t Distribution: worked examples have modified to show the step by step solution using the error bound formulas to find the confidence intervals; revised module may also contain some revisions in wording.
- Confidence Interval for an Unknown Population Proportion: worked examples have modified to show the step by step solution using the error bound formulas to find the confidence intervals; revised module may also contain some revisions in wording.
- In all 3 sections listed above, the emphasis has been changed to using the error bound formulas to calculate the confidence interval rather than reliance on the calculators' interval functions to find the confidence interval.

Chapter 9: Hypothesis Test for a Single Mean or Single Proportion

• Homework: Some homework exercises have been omitted in this revision; the numbering remains unchanged for the remaining exercises. The omitted exercises are indicated in the section.

Chapter 10: Hypothesis Testing: Two Means, Paired Data, Two Proportions

• At this time, no changes have been made in this chapter.

Chapter 11: THe Chi-Square Distribution

• No changes have been made in this chapter.

Chapter 12: Linear Regression and Correlation

- Sections 12.5 (The Regression Equation), 12.6 (Correlation Coefficient and Coefficient of Determination), 12.7 (Testing the Significance of the Correlation Coefficient), 12.8 (Prediction), 12.9 Outliers have been modified
- Section 12. 5 now contains calculator instructions for the LinRegTTest for the TI-83,83+,84+ calculators
- Section 12.6 includes the coefficient of determination that was not included in the original section and includes some material that was originally in section 12.7

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• Section 12.7 now includes both the p-value approach and critical value approach to testing the significance of the correlation coefficient. It also contains additional information about the assumptions underlying the test of significance. Some material originally contained in section 12.7 has been moved forward to section 12.6

- Section 12.9 includes a graphical method of identifying outliers, in addition to the numerical method included in the original version of this section
- In the Homework Section, 2 new problems have been added.

Chpater 13: F Distribution and ANOVA

• No changes have been made in this chapter.

Hypothesis Test Solution Sheets

- Hypothesis test solution sheets for chapters 9, 10, 11, 13 will be modified and will be made available, appropriately formatted, via links on Ms. Bloom's class website.
- The original solution sheets will be removed from the online collection.

Practice Final Exams

- Practice Final Exams have been removed from this collection
- Instead, Practice Final Exams will be made available via links on Ms. Bloom's class website