

# Collaborative Statistics

**By:**

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**Online:**

< <http://cnx.org/content/col10522/1.40/> >

**C O N N E X I O N S**

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# Preface<sup>1</sup>

Welcome to *Collaborative Statistics*, presented by Connexions. The initial section below introduces you to Connexions. If you are familiar with Connexions, please skip to About "Collaborative Statistics." (Section : About Connexions)

## About Connexions

### Connexions Modular Content

Connexions (cnx.org<sup>2</sup>) is an online, **open access** educational resource dedicated to providing high quality learning materials free online, free in printable PDF format, and at low cost in bound volumes through print-on-demand publishing. The *Collaborative Statistics* textbook is one of many **collections** available to Connexions users. Each **collection** is composed of a number of re-usable learning **modules** written in the Connexions XML markup language. Each module may also be re-used (or 're-purposed') as part of other collections and may be used outside of Connexions. Including *Collaborative Statistics*, Connexions currently offers over 6500 modules and more than 350 collections.

The modules of *Collaborative Statistics* are derived from the original paper version of the textbook under the same title, *Collaborative Statistics*. Each module represents a self-contained concept from the original work. Together, the modules comprise the original textbook.

### Re-use and Customization

The Creative Commons (CC) Attribution license<sup>3</sup> applies to all Connexions modules. Under this license, any module in Connexions may be used or modified for any purpose as long as proper attribution to the original author(s) is maintained. Connexions' authoring tools make re-use (or re-purposing) easy. Therefore, instructors anywhere are permitted to create customized versions of the *Collaborative Statistics* textbook by editing modules, deleting unneeded modules, and adding their own supplementary modules. Connexions' authoring tools keep track of these changes and maintain the CC license's required attribution to the original authors. This process creates a new collection that can be viewed online, downloaded as a single PDF file, or ordered in any quantity by instructors and students as a low-cost printed textbook. To start building custom collections, please visit the help page, "Create a Collection with Existing Modules"<sup>4</sup>. For a guide to authoring modules, please look at the help page, "Create a Module in Minutes"<sup>5</sup>.

### Read the book online, print the PDF, or buy a copy of the book.

To browse the *Collaborative Statistics* textbook online, visit the collection home page at [cnx.org/content/col10522/latest](http://cnx.org/content/col10522/latest)<sup>6</sup>. You will then have three options.

<sup>1</sup>This content is available online at <<http://cnx.org/content/m16026/1.16/>>.

<sup>2</sup><http://cnx.org/>

<sup>3</sup><http://creativecommons.org/licenses/by/2.0/>

<sup>4</sup><http://cnx.org/help/CreateCollection>

<sup>5</sup><http://cnx.org/help/ModuleInMinutes>

<sup>6</sup>*Collaborative Statistics* <<http://cnx.org/content/col10522/latest/>>

1. You may obtain a PDF of the entire textbook to print or view offline by clicking on the “Download PDF” link in the “Content Actions” box.
2. You may order a bound copy of the collection by clicking on the “Order Printed Copy” button.
3. You may view the collection modules online by clicking on the “Start >>” link, which takes you to the first module in the collection. You can then navigate through the subsequent modules by using their “Next >>” and “Previous >>” links to move forward and backward in the collection. You can jump to any module in the collection by clicking on that module’s title in the “Collection Contents” box on the left side of the window. If these contents are hidden, make them visible by clicking on “[show table of contents]”.

### Accessibility and Section 508 Compliance

- For information on general Connexions accessibility features, please visit <http://cnx.org/content/m17212/latest/><sup>7</sup>.
- For information on accessibility features specific to the Collaborative Statistics textbook, please visit <http://cnx.org/content/m17211/latest/><sup>8</sup>.

### Version Change History and Errata

- For a list of modifications, updates, and corrections, please visit <http://cnx.org/content/m17360/latest/><sup>9</sup>.

### Adoption and Usage

- The Collaborative Statistics collection has been adopted and customized by a number of professors and educators for use in their classes. For a list of known versions and adopters, please visit <http://cnx.org/content/m18261/latest/><sup>10</sup>.

## About “Collaborative Statistics”

*Collaborative Statistics* was written by Barbara Illowsky and Susan Dean, faculty members at De Anza College in Cupertino, California. The textbook was developed over several years and has been used in regular and honors-level classroom settings and in distance learning classes. Courses using this textbook have been articulated by the University of California for transfer of credit. The textbook contains full materials for course offerings, including expository text, examples, labs, homework, and projects. A Teacher’s Guide is currently available in print form and on the Connexions site at <http://cnx.org/content/col10547/latest/><sup>11</sup>, and supplemental course materials including additional problem sets and video lectures are available at <http://cnx.org/content/col10586/latest/><sup>12</sup>. The on-line text for each of these collections will meet the Section 508 standards for accessibility.

An on-line course based on the textbook was also developed by Illowsky and Dean. It has won an award as the best on-line California community college course. The on-line course will be available at a later date as a collection in Connexions, and each lesson in the on-line course will be linked to the on-line textbook chapter. The on-line course will include, in addition to expository text and examples, videos of course lectures in captioned and non-captioned format.

The original preface to the book as written by professors Illowsky and Dean, now follows:

<sup>7</sup>“Accessibility Features of Connexions” <<http://cnx.org/content/m17212/latest/>>

<sup>8</sup>“Collaborative Statistics: Accessibility” <<http://cnx.org/content/m17211/latest/>>

<sup>9</sup>“Collaborative Statistics: Change History” <<http://cnx.org/content/m17360/latest/>>

<sup>10</sup>“Collaborative Statistics: Adoption and Usage” <<http://cnx.org/content/m18261/latest/>>

<sup>11</sup>*Collaborative Statistics Teacher’s Guide* <<http://cnx.org/content/col10547/latest/>>

<sup>12</sup>*Collaborative Statistics: Supplemental Course Materials* <<http://cnx.org/content/col10586/latest/>>

This book is intended for introductory statistics courses being taken by students at two- and four-year colleges who are majoring in fields other than math or engineering. Intermediate algebra is the only pre-requisite. The book focuses on applications of statistical knowledge rather than the theory behind it. The text is named *Collaborative Statistics* because students learn best by **doing**. In fact, they learn best by working in small groups. The old saying “two heads are better than one” truly applies here.

**Our emphasis in this text is on four main concepts:**

- thinking statistically
- incorporating technology
- working collaboratively
- writing thoughtfully

These concepts are integral to our course. Students learn the best by actively participating, not by just watching and listening. Teaching should be highly interactive. Students need to be thoroughly engaged in the learning process in order to make sense of statistical concepts. *Collaborative Statistics* provides techniques for students to write across the curriculum, to collaborate with their peers, to think statistically, and to incorporate technology.

This book takes students step by step. The text is interactive. Therefore, students can immediately apply what they read. Once students have completed the process of problem solving, they can tackle interesting and challenging problems relevant to today’s world. The problems require the students to apply their newly found skills. In addition, technology (TI-83 graphing calculators are highlighted) is incorporated throughout the text and the problems, as well as in the special group activities and projects. The book also contains labs that use real data and practices that lead students step by step through the problem solving process.

At De Anza, along with hundreds of other colleges across the country, the college audience involves a large number of ESL students as well as students from many disciplines. The ESL students, as well as the non-ESL students, have been especially appreciative of this text. They find it extremely readable and understandable. *Collaborative Statistics* has been used in classes that range from 20 to 120 students, and in regular, honor, and distance learning classes.

Susan Dean

Barbara Illowsky



# Additional Resources<sup>13</sup>

## Additional Resources Currently Available

- Glossary (Glossary, p. 5)
- View or Download This Textbook Online (View or Download This Textbook Online, p. 5)
- Collaborative Statistics Teacher's Guide (Collaborative Statistics Teacher's Guide, p. 6)
- Supplemental Materials (Supplemental Materials, p. 6)
- Video Lectures (Video Lectures, p. 6)
- Version History (Version History, p. 6)
- Textbook Adoption and Usage (Textbook Adoption and Usage, p. 6)
- Additional Technologies and Notes (Additional Technologies, p. 7)
- Accessibility and Section 508 Compliance (Accessibility and Section 508 Compliance, p. 7)

The following section describes some additional resources for learners and educators. These modules and collections are all available on the Connexions website (<http://cnx.org/><sup>14</sup>) and can be viewed online, downloaded, printed, or ordered as appropriate.

## Glossary

This module contains the entire glossary for the Collaborative Statistics textbook collection (col10522) since its initial release on 15 July 2008. The glossary is located at <http://cnx.org/content/m16129/latest/><sup>15</sup>.

Below are links to additional resources:

Link to the Statistics Glossary by Dr. Philip Stark, UC Berkeley

[http:// statistics.berkeley.edu/~stark/SticiGui/Text/gloss.htm](http://statistics.berkeley.edu/~stark/SticiGui/Text/gloss.htm)<sup>16</sup>

Link to Wikipedia

[http:// www.wikipedia.org/](http://www.wikipedia.org/)<sup>17</sup>

(Search on "Glossary of probability and statistics.")

## View or Download This Textbook Online

The complete contents of this book are available at no cost on the Connexions website at <http://cnx.org/content/col10522/latest/><sup>18</sup>. Anybody can view this content free of charge either as an online e-book or a downloadable PDF file. A low-cost printed version of this textbook is also available [here](http://my.qoop.com/store/7064943342106149/7781159220340)<sup>19</sup>.

<sup>13</sup>This content is available online at <<http://cnx.org/content/m18746/1.7/>>.

<sup>14</sup><http://cnx.org/>

<sup>15</sup>"Collaborative Statistics: Glossary" <<http://cnx.org/content/m16129/latest/>>

<sup>16</sup><http://statistics.berkeley.edu/~stark/SticiGui/Text/gloss.htm>

<sup>17</sup><http://www.wikipedia.org/>

<sup>18</sup>Collaborative Statistics <<http://cnx.org/content/col10522/latest/>>

<sup>19</sup><http://my.qoop.com/store/7064943342106149/7781159220340>

### Collaborative Statistics Teacher's Guide

A complementary Teacher's Guide for Collaborative statistics is available through Connexions at <http://cnx.org/content/col10547/latest/><sup>20</sup>. The Teacher's Guide includes suggestions for presenting concepts found throughout the book as well as recommended homework assignments. A low-cost printed version of this textbook is also available here<sup>21</sup>.

### Supplemental Materials

This companion to Collaborative Statistics provides a number of additional resources for use by students and instructors based on the award winning Elementary Statistics Sofia online course<sup>22</sup>, also by textbook authors Barbara Illowsky and Susan Dean. This content is designed to complement the textbook by providing video tutorials, course management materials, and sample problem sets. The Supplemental Materials collection can be found at <http://cnx.org/content/col10586/latest/><sup>23</sup>.

### Video Lectures

- Video Lecture 1: Sampling and Data<sup>24</sup>
- Video Lecture 2: Descriptive Statistics<sup>25</sup>
- Video Lecture 3: Probability Topics<sup>26</sup>
- Video Lecture 4: Discrete Distributions<sup>27</sup>
- Video Lecture 5: Continuous Random Variables<sup>28</sup>
- Video Lecture 6: The Normal Distribution<sup>29</sup>
- Video Lecture 7: The Central Limit Theorem<sup>30</sup>
- Video Lecture 8: Confidence Intervals<sup>31</sup>
- Video Lecture 9: Hypothesis Testing with a Single Mean<sup>32</sup>
- Video Lecture 10: Hypothesis Testing with Two Means<sup>33</sup>
- Video Lecture 11: The Chi-Square Distribution<sup>34</sup>
- Video Lecture 12: Linear Regression and Correlation<sup>35</sup>

### Version History

This module contains a listing of changes, updates, and corrections made to the Collaborative Statistics textbook collection (col10522) since its initial release on 15 July 2008. The Version History is located at <http://cnx.org/content/m17360/latest/><sup>36</sup>.

### Textbook Adoption and Usage

This module is designed to track the various derivations of the Collaborative Statistics textbook and its various companion resources, as well as keep track of educators who have adopted various versions for their courses. New adopters are encouraged to provide their contact information and describe how they will use this book for their courses. The goal is to provide a list that will allow educators using this book

<sup>20</sup> *Collaborative Statistics Teacher's Guide* <<http://cnx.org/content/col10547/latest/>>

<sup>21</sup> <http://my.qoop.com/store/7064943342106149/8791310589747>

<sup>22</sup> <http://sofia.fhda.edu/gallery/statistics/index.html>

<sup>23</sup> *Collaborative Statistics: Supplemental Course Materials* <<http://cnx.org/content/col10586/latest/>>

<sup>24</sup> "Elementary Statistics: Video Lecture - Sampling and Data" <<http://cnx.org/content/m17561/latest/>>

<sup>25</sup> "Elementary Statistics: Video Lecture - Descriptive Statistics" <<http://cnx.org/content/m17562/latest/>>

<sup>26</sup> "Elementary Statistics: Video Lecture - Probability Topics" <<http://cnx.org/content/m17563/latest/>>

<sup>27</sup> "Elementary Statistics: Video Lecture - Discrete Distributions" <<http://cnx.org/content/m17565/latest/>>

<sup>28</sup> "Elementary Statistics: Video Lecture - Continuous Random Variables" <<http://cnx.org/content/m17566/latest/>>

<sup>29</sup> "Elementary Statistics: Video Lecture - The Normal Distribution" <<http://cnx.org/content/m17567/latest/>>

<sup>30</sup> "Elementary Statistics: Video Lecture - The Central Limit Theorem" <<http://cnx.org/content/m17568/latest/>>

<sup>31</sup> "Elementary Statistics: Video Lecture - Confidence Intervals" <<http://cnx.org/content/m17569/latest/>>

<sup>32</sup> "Elementary Statistics: Video Lecture - Hypothesis Testing with a Single Mean" <<http://cnx.org/content/m17570/latest/>>

<sup>33</sup> "Elementary Statistics: Video Lecture - Hypothesis Testing with Two Means" <<http://cnx.org/content/m17577/latest/>>

<sup>34</sup> "Elementary Statistics: Video Lecture - The Chi-Square Distribution" <<http://cnx.org/content/m17571/latest/>>

<sup>35</sup> "Elementary Statistics: Video Lecture - Linear Regression and Correlation" <<http://cnx.org/content/m17572/latest/>>

<sup>36</sup> "Collaborative Statistics: Change History" <<http://cnx.org/content/m17360/latest/>>



to collaborate, share ideas, and make suggestions for future development of this text. The Adoption and Usage module is located at <http://cnx.org/content/m18261/latest/><sup>37</sup>.

### **Additional Technologies**

In order to provide the most flexible learning resources possible, we invite collaboration from all instructors wishing to create customized versions of this content for use with other technologies. For instance, you may be interested in creating a set of instructions similar to this collection's calculator notes. If you would like to contribute to this collection, please use the contact the authors with any ideas or materials you have created.

### **Accessibility and Section 508 Compliance**

- For information on general Connexions accessibility features, please visit <http://cnx.org/content/m17212/latest/><sup>38</sup>.
- For information on accessibility features specific to the Collaborative Statistics textbook, please visit <http://cnx.org/content/m17211/latest/><sup>39</sup>.

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<sup>37</sup>"Collaborative Statistics: Adoption and Usage" <<http://cnx.org/content/m18261/latest/>>

<sup>38</sup>"Accessibility Features of Connexions" <<http://cnx.org/content/m17212/latest/>>

<sup>39</sup>"Collaborative Statistics: Accessibility" <<http://cnx.org/content/m17211/latest/>>

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