Fall 2013

Psychology 200
Statistics: An Activity-Based Approach
Section 001

Tu/Th 9 – 10:20 am
SCIE 74

Faculty Instructor: Andrea Patalano
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OH Tues 2-3; Wed 2-3

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We all have mailboxes in the Psychology Department mailroom (Judd Hall 104), which is open weekdays from 9 am to 5 pm. Professor Patalano’s mailbox has her name on it; TAs share a box labeled Patalano Psyc 200 TAs. To reduce confusion, please put the intended TA’s name on anything you put in their box.

Course Description

In this course, you will learn how to organize, describe, and make inferences from data. Specific goals of this course are for you: (1) to develop an understanding of the basic principles of statistical reasoning, (2) to learn how to apply and interpret statistical inference tests commonly used in psychology, and (3) to learn how to use SPSS statistical software towards achieving these goals. The course is geared towards psychology students who will eventually be conducting their own studies and/or analyzing data (such as in a Research Methods course or while engaging with faculty research) and who need to understand and critically evaluate published psychological data. However, the course is also relevant to anyone who wishes to better understand and evaluate the data encountered in everyday life (such as the results of studies reported in the media). The course is intensive and requires the devotion of considerable time to doing problem sets and working to grasp complex concepts.

The course will be organized around weekly lectures that clarify, illustrate, and provide context for key concepts and statistical techniques. You are expected to come to class having done the homework and having a general understanding of the week’s concepts and how to do basic computations. Class activities will be devoted to further exploration of these concepts by way of hands-on computer use of statistical software, analysis of real data, question-answer sessions, demonstrations, and discussions.
Teaching Assistants

You will be assigned one TA who will grade your assignments and who will be responsible for checking up on you and making sure you are doing ok but you are very welcome to go to the office hours / ask questions of both TAs as well as the professor. In addition, the University’s Quantitative Analysis Center (QAC) has undergraduate statistical consultants who are available nearly every afternoon and evening on a drop-in basis and are happy to help you with statistical questions when class TAs are not available. The website with QAC fall tutor hours is: http://qac.wesleyan.edu/

Class Website

I have set up a Moodle website for this class. We will not likely have many uses for it, as most of our communication will be done in class. However, I will use it to post lectures and grades, at the least, and you will use it to turn in reports.

Textbooks and Software

Books are available at the Broad Street Bookstore. The first is the required main textbook, and the second is an optional study guide (for your personal use in studying, if desired). One copy of each is also on reserve at Olin Library, as well as an older version of the text (in case you want more practice problems). Also essential is a personal, hand held calculator that can compute square roots (a cell phone with a calculator application is fine). You may also want a flash drive for saving assignments you start in class, so that you can finish them outside of class.


SPSS statistical software is needed to complete many assignments. A full version of SPSS is available on all PCs on campus. Please leave time in your schedule to work in a computer lab. Also, bring the main textbook, your calculator, and central handouts to each class unless told otherwise by the instructor.

The textbook also has a free site with flashcards and some multiple choice quizzes for each chapter. We will sometimes do these together in class:

http://www.cengagebrain.com/cgi-wadsworth/course_products_wp.pl?fid=M20b&product_isbn_issn=9781133956570&token=13427D15BE0FD7D542D763B73DD7DCF896E98D19278876126D6699D6F950B4E0F031A9BDF314B0403853CF53D33B03C4

Grading

The final class grade will be the percentage of points received out of 138 points. These points will come from the best 10 out of 11 problem set grades (2 pts x 10 = 20), 2 out of 3 quiz grades (25 pts x 2 = 50), 6 out of 7 report grades (3 pts x 6 = 18), a final report (10 pts), and a final exam (40 pts). If you miss an assignment’s deadline or cannot be present for a quiz, you will earn a 0 but will be able to drop one grade for each type of assignment; please do not ask about turning assignments in late or taking a quiz at a different time. While this point system is fixed, I reserve the right to adjust individual final grades to reflect...
great improvement or serious decline over time. TAs will score problem sets; I will grade reports, quizzes
and finals.

To convert final percentage to a final letter grade, use the following: 93.35-100 = A; 90.00-93.34 = A-;
86.65-89.99 B+; 83.35-86.64 B; 80.00-83.34 B-, etc…

Assignments

Readings. The textbook covers introductory statistics. It deals with all topics we will consider in the
course (and more), and will serve as a good reference for you. You should read the assigned chapters once
before class and again after class. Lectures will frame the reading, will elaborate on key points, and will
promote a deeper understanding of the materials, but will not introduce any fundamentally new concepts.

Problem sets. Assigned problem sets are drawn from the ends of the text chapters. The selected problems
are intended to ensure you understand the basics so that you are prepared for the initial class on the topic,
and for thinking more in-depth about the topic in class. The many problems that are not assigned are very
important too and can be used to study for quizzes and the final.

Problem sets are due on the day the topic is to be discussed in class, to be turned in at the beginning of class,
and should be given to your TA in class or put in your TA’s mailbox (if you cannot be in class). You will
receive up to 2 points per problem set (2 = solid understanding; 1 = needs work, 0 = insufficient / not turned
in). The lowest problem set grade (including a 0 for not turning it in) will be dropped. You must show all
of your work in order to earn credit.

Quizzes. Quizzes will consist of multiple choice, short answer, and computational questions, including
questions that ask you to interpret SPSS computer output (you will not be asked to run analyses though) and
will be worth 25 points each. You will need your calculator. The lowest quiz grade (including a 0 for not
being present) will be dropped. Quizzes will be closed book.

Reports. Reports will require you to analyze data sets using SPSS software, to report on different
components of the output and what the numbers mean, and to appropriately articulate your interpretation of
the results. Letting the computer do the computations will allow you to spend more time thinking about
what the output actually means.

You will work on these assignments in class on the day listed on the schedule. The reports are ideally due
at the end of class, but can be turned in by the start of the next class if you need more time. The reports
should be turned in electronically through the course Moodle site. You will receive up to 3 points per lab (3
= exceptional; 2 = solid understanding; 1 = needs work, 0 = insufficient / not turned in). The lowest report
grade (including a 0 for not turning it in) will be dropped.

Final report. The final report will be very similar to any other report but will be cumulative in that it will
require you to use techniques learned throughout the semester to analyze new data and will be a little
longer. The report will be take-home and will be due on the second to last class, as shown on the schedule.
It will be worth 10 points. It should be turned in electronically through Moodle by the start of class.
**Final exam.** The final exam will be similar to the quizzes but will be cumulative and will be about 1.5 times the length (about 2 hours). It will be closed book. You must be present for the final, during the scheduled final exam period, to earn credit for it. It will be worth 40 points.

**Class participation.** Class attendance is expected. The design of the course presumes attendance (for lectures, learning SPSS, taking quizzes, getting handouts, etc.), and so I will expect (and look forward) to see you regularly.

**Class collaboration.** You are welcome to work collaboratively with others in discussing homework assignments and reports. However, you are expected to then generate and turn in your own written work. For the final report, you are expected to work alone through the whole process.

**Honor code.** Any violations of the honor code will be brought to the Honor Board. If you have any questions as to what constitutes cheating versus collaboration, please ask.

**Disabilities.** It is the policy of Wesleyan University to provide reasonable accommodations to students with documented disabilities. Students, however, are responsible for registering with Disabilities Services, in addition to making requests known to me in a timely manner. If you require accommodations in this class, please speak with me before the end of the second week of classes so that appropriate arrangements can be made. The procedures for registering with Disabilities Services can be found at http://www.wesleyan.edu/studentaffairs/disabilities/index.html.

**Getting behind.** The concepts in this class build on one another over the entire semester. If you get behind in the beginning, it will only get worse! If you find yourself getting behind or struggling with anything, please put in the effort to catch up as soon as possible. The TAs are there to be of assistance to you, so please do not be afraid to ask them for help whenever you need it. If your need for one-on-one assistance grows beyond what they can provide, I recommend the University’s peer tutoring program: www.wesleyan.edu/studentaffairs/resources/peertutoring/.

**Other**

**Syllabus changes.** I reserve the right to change any information in the syllabus, when necessary, with notice given to you during class. It is your responsibility to keep up with any changes by being in class or getting word from classmates of anything you missed.

**Weather.** If I am unable to make it to campus or must leave early because of snow, I will send you an email (as it is often not possible for me to get to the classroom to leave a note on the door). My apologies in advance for any inconvenience this might cause.

**Communications.** If you need to speak with me or get some help, please come by my office hours or those of one of the TAs. If you send me an email, please put PSYC200 in the header. I will rarely be able to answer class emails after 7 pm or on weekends so please take this into account when corresponding. Thanks!
### Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Ch^</th>
<th>Problem Sets/Labs Due*</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>9/3</td>
<td>Introduction to Statistics</td>
<td>1, 2</td>
<td>Ch 1: 2, 4, 10, 20; Ch 2: 4, 9, 20</td>
</tr>
<tr>
<td>01</td>
<td>9/5</td>
<td>Variables, Methods, and Distributions</td>
<td>3, 4, 5</td>
<td>Ch 3: 4; Ch 4: 20, 21; Ch 5: 2, 22a</td>
</tr>
<tr>
<td>02</td>
<td>9/10</td>
<td>Central Tendency, Variability, and z-Scores</td>
<td>6, 7</td>
<td>Ch 6: 3, 9, 18; Ch 7: 4, 21</td>
</tr>
<tr>
<td>03</td>
<td>9/12</td>
<td>Activities in Descriptive Statistics</td>
<td>Descriptive Statistics Report</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>9/19</td>
<td>Hypothesis Testing and z-Tests</td>
<td>8</td>
<td>Ch 8: 1, 4, 12</td>
</tr>
<tr>
<td>04</td>
<td>9/24</td>
<td>One-Sample t-Tests</td>
<td>9</td>
<td>Ch 9: 12, 17</td>
</tr>
<tr>
<td>04</td>
<td>9/26</td>
<td>Activities in One-Sample t-Tests</td>
<td>One-Sample t-Test Report</td>
<td></td>
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<tr>
<td>05</td>
<td>10/1</td>
<td>Review of Foundational Principles</td>
<td></td>
<td></td>
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<tr>
<td>05</td>
<td>10/3</td>
<td>QUIZ thru 10/1</td>
<td></td>
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<tr>
<td>06</td>
<td>10/8</td>
<td>Independent-Samples t-Tests</td>
<td>10</td>
<td>Ch 10: 2, 15, 18 (but 2-tailed &amp; α = .05)</td>
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<tr>
<td>06</td>
<td>10/10</td>
<td>Activities in Independent-Samples t-Tests</td>
<td>Independent Samples t-Test Report</td>
<td></td>
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<tr>
<td>07</td>
<td>10/15</td>
<td>Paired-Samples t-Tests</td>
<td>11</td>
<td>Ch 11: 2, 10, 14 (+write report sentence)</td>
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<tr>
<td>07</td>
<td>10/17</td>
<td>Activities in Paired-Samples t-Tests</td>
<td>Paired-Samples t-Test Report</td>
<td></td>
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<tr>
<td>08</td>
<td>10/22</td>
<td>FALL BREAK</td>
<td></td>
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<tr>
<td>08</td>
<td>10/24</td>
<td>One-Factor Analysis of Variance</td>
<td>12</td>
<td>Ch 12: 2, 6, 16</td>
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<tr>
<td>09</td>
<td>10/29</td>
<td>Activities in One-Factor ANOVA</td>
<td>One-Factor ANOVA Report</td>
<td></td>
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<tr>
<td>09</td>
<td>10/31</td>
<td>Intro to Two-Factor Analysis of Variance</td>
<td>13</td>
<td>Ch 13: 18, 19</td>
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<tr>
<td>10</td>
<td>11/5</td>
<td>Review of Parametric Tests</td>
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<tr>
<td>10</td>
<td>11/7</td>
<td>Quiz thru 11/5</td>
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<tr>
<td>11</td>
<td>11/12</td>
<td>Correlation</td>
<td>14</td>
<td>Ch 14: 9 (+write report sentence), 17, 18, 21</td>
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<tr>
<td>11</td>
<td>11/14</td>
<td>Simple Regression</td>
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<tr>
<td>12</td>
<td>11/19</td>
<td>Activities in Correlation and Regression</td>
<td>15</td>
<td>Correlation and Regression Report</td>
</tr>
<tr>
<td>13</td>
<td>11/21</td>
<td>Chi-Square Statistics</td>
<td>Ch 15: 1, 8, 10 (+write report sentence)</td>
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<tr>
<td>13</td>
<td>11/26</td>
<td>Activities in Chi-Square Statistics</td>
<td>Chi-Square Report</td>
<td></td>
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<tr>
<td>14</td>
<td>11/28</td>
<td>THANKSGIVING BREAK</td>
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<tr>
<td>14</td>
<td>12/3</td>
<td>Review of Associations and Non-Parametric Tests</td>
<td>Final Report</td>
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<tr>
<td>14</td>
<td>12/5</td>
<td>QUIZ thru 12/3</td>
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The final report activity will be given out on 11/14 and due on 12/3.
The tentative University-set time for the final is Friday 12/13 9-12 noon.

^You should skim these concepts just to know what they are, but essentially omit them: Ch 1 p. 22 real limits; Ch 2 p. 43-44 real limits; Ch 3 pp. 71-72 precise median for continuous variable; Ch 5 pp. 136-138 other standardized distributions; Ch 6 p. 164 percentile ranks; Ch 8 pp. 224-227 one tailed tests; pp. 232-236 statistical power; Ch 9 pp 262-264 $r^2$; 268-270 one tailed tests; Ch 10 p. 292 $r^2$; pp. 296-297 one tailed tests; pp. 300-302 fmax test; p. 302 alternative to pooled variance; Ch 11 p. 322 $r^2$; pp. 326-327 one tailed tests; Ch 12 pp. 375-379 post-hoc tests; Ch 13 pp. 394-409 repeated measures ANOVA; pp. 418-426 computations for two-factor ANOVAs; Ch 14 p. 466 hypothesis test; pp. 468-480 other types of correlations and phi-coefficient; pp. 493-495 significance of regression equation; Ch 15 pp. 532-533 phi and Cramer’s $V$.

*Use the definitional formulas in the text to do homework and quizzes, NOT the computational ones. Problem sets should all be done by hand; reports should all be done with SPSS unless otherwise noted. For homework, you must show all work in order to earn credit.