SAN JOSÉ STATE UNIVERSITY
URBAN AND REGIONAL PLANNING DEPARTMENT
URBP 204: QUANTITATIVE METHODS I: DATA COLLECTION AND ANALYSIS

SPRING 2014

Instructor: Dr. Shishir Mathur
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Email: shishir.mathur@sjsu.edu
Office hours: Monday 2:30 pm to 4 pm at WSQ 216 E & by appointment
Class days/time: Monday 4:30 pm to 7 pm
Classroom: WSQ 208
Class website: http://www.sjsu.edu/people/shishir.mathur/courses/204sp2014/
Prerequisites: None
Units: 4

Course Catalog Description
Urban research design, measurement, selected statistical research tools and introduction to computer processing. Extensive treatment of survey research.

Course Description and Course Learning Objectives
The course begins with an overview of social research, and of several research methods frequently used in social science research. Next, it focuses on learning statistical tools needed to answer specific research questions. Thereafter it provides an overview of survey research. It then reviews the elements of research design. In the end it requires the students to conduct statistical analysis of survey data, and to present the research findings to the class.

Upon successful completion of the course, students will be able to:

1. Identify the overall strengths and weaknesses of quantitative, qualitative, experimental, and survey research methods; and assess which research method/s, given the resource constraints, are most appropriate for answering the research question.

2. Develop research question worthy of informing public policy, and identify the statistical tool appropriate for answering the research question. The tools learned in this class are: Tests between Means of Different Groups, Tests Between Means of Related Groups, ANOVA,
Factorial ANOVA, Correlation, One- and Two- Factor Chi Square, Ordinary Least Squares Regression and Logistic Regression.

3. Develop survey research questions that conform to conventional best practices in survey design.

4. Critically evaluate the strengths and weaknesses of various non-probability and probability-based sampling techniques.

5. Present quantitative data and results in text and graphic formats.

6. Identify the policy implications of statistical test results.

**Planning Accreditation Board (PAB) Knowledge Components**

This course partially covers the following PAB Knowledge Components: 2b and 2c.

2b) Written, Oral and Graphic Communication: ability to prepare clear, accurate and compelling text, graphics and maps for use in documents and presentations.

2c) Quantitative and Qualitative Methods: data collection, analysis and modeling tools for forecasting, policy analysis, and design of projects and plans.

A complete list of the PAB Knowledge Components can be found at [http://www.sjsu.edu/urbanplanning/courses/pabknowledge.html](http://www.sjsu.edu/urbanplanning/courses/pabknowledge.html).

**Required Course Texts to Purchase**

There are two required text books for this course. They are:


You may also use the 10th edition of the book.


You may also use the 2nd edition of the book.

**Recommended Course Text to Purchase**

There is one recommend text book for this course. It is:


You may also use the 3rd edition of the book.

**Course Assignments and Grading Policy**

This class will be a combination of lectures, discussions, and lab work. MS Excel, LIMDEP and SPSS will be the primary statistical software used.
Grades will be based on five take home exercises (5% each for the first and the fifth take home exercise, 10% each for the remaining three take home exercises); term project (30%), the presentation of the term project (5%), and 25% for activities for the engagement unit (details to be provided later in the semester).

Through short answer questions, exercises one and five will test your comprehension of course material covered in week 1 and weeks 13-15, respectively. In exercise 2 you will conduct statistical tests learned in weeks 3 to 6. Exercises 3 and 4 will require you to conduct Ordinary Least Squares regression and Logistic regression, respectively. The details for the exercises and term project (including term project presentation guidelines) will be handed out later in the semester. See the section titled “Course Workload” for a brief description of assignments 6 and 7.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Percent of Course Grade</th>
<th>Course Learning Objectives Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1: Exercise Set 1: Social research</td>
<td>5%</td>
<td>1</td>
</tr>
<tr>
<td>Assignment 2: Exercise Set 2: Bivariate statistical tests</td>
<td>10%</td>
<td>2</td>
</tr>
<tr>
<td>Assignment 3: Exercise Set 3: Ordinary Least Squares Regression</td>
<td>10%</td>
<td>2</td>
</tr>
<tr>
<td>Assignment 4: Exercise Set 4: Logistic regression</td>
<td>10%</td>
<td>2</td>
</tr>
<tr>
<td>Assignment 5: Exercise Set 5: Survey research and research design</td>
<td>5%</td>
<td>3 &amp; 4</td>
</tr>
<tr>
<td>Assignment 6: Term project</td>
<td>30%</td>
<td>2, 5 &amp; 6</td>
</tr>
<tr>
<td>Assignment 7: Engagement Activity 1: Windshield survey &amp; neighborhood profile memo</td>
<td>15%</td>
<td>2</td>
</tr>
<tr>
<td>Assignment 8: Engagement Activity 2: Reflective memo</td>
<td>10%</td>
<td>2</td>
</tr>
<tr>
<td>Assignment 9: Presentation of term project</td>
<td>5%</td>
<td>2, 5 &amp; 6</td>
</tr>
</tbody>
</table>

**Calculation of Final Course Letter Grade**

The course grade consists of 9 assignments. The first, fifth and ninth assignments are worth 5 points each, the second, third, fourth and eighth assignments are worth 10 points each, the seventh assignment is worth 15 points, and the sixth assignment is worth 30 points, for a total of 100 points. If a student named “Joe” obtains 5 points on the first assignment, 8 on the second, 10 on the third, 8 on the fourth, 5 on the fifth, 23 on the sixth, 13 on the seventh and 9 on the eighth, and 5 on the ninth, his final letter grade can be calculated using the following steps:

a) Add the score for each assignment to arrive at the final score for the course.

\[
\text{Final score} = 5+8+10+8+5+23+13+9+5 = 86
\]

b) The following grading scheme converts the final score into a letter grade.
A+ (96 and above); A (93 to 95); A- (90 to 92); B+ (87 to 89); B (84 to 86); B- (81 to 83); C+ (78 to 80); C (75 to 77); C- (72 to 74); D+ (69 to 71); D (66 to 68); D- (63 to 65); F (below 63)

c) Using the grading scheme provided in step “b” to arrive at the letter grade, the score of 85 for “Joe” equals a letter grade of “B.”

Other Grading and Assignment Issues
Late work will not be accepted, except with the instructor’s prior permission.

Course Workload
Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Because this is a four-unit class, you can expect to spend a minimum of nine hours per week in addition to time spent in class and on scheduled tutorials or activities. Special projects or assignments may require additional work for the course. Careful time management will help you keep up with readings and assignments and enable you to be successful in all of your courses. For this class, you will have to undertake additional activities outside the class hours (assignments 6 and 7), such as conducting a windshield survey of a San Jose neighborhood and engaging with fellow students through email exchanges and reflective memos. Details on how to complete these activities will be provided on handouts distributed in class later in the semester.

Academic Integrity Statement, Plagiarism, and Citing Sources Properly
SJSU’s Policy on Academic Integrity states: “Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development” (Academic Senate Policy S07-2). The policy on academic integrity can be found at www.sjsu.edu/senate/docs/S07-2.pdf.

Plagiarism is the use of someone else's language, images, data, or ideas without proper attribution. It is a very serious offense both in the university and in your professional work. In essence, plagiarism is both theft and lying: you have stolen someone else's ideas, and then lied by implying that they are your own.

Plagiarism will lead to grade penalties and a record filed with the Office of Student Conduct and Ethical Development. In severe cases, students may also fail the course or even be expelled from the university.

If you are unsure what constitutes plagiarism, it is your responsibility to make sure you clarify the issues before you hand in draft or final work.
Learning when to cite a source and when not to is an art, not a science. However, here are some common examples of plagiarism that you should be careful to avoid:

- Using a sentence (or even a part of a sentence) that someone else wrote without identifying the language as a quote by putting the text in quote marks and referencing the source.
- Paraphrasing somebody else's theory or idea without referencing the source.
- Using a picture or table from a webpage or book without reference the source.
- Using data some other person or organization has collected without referencing the source.

The University of Indiana has developed a very helpful website with concrete examples about proper paraphrasing and quotation. See in particular the following pages:

- Overview of plagiarism at [www.indiana.edu/~istd/overview.html](http://www.indiana.edu/~istd/overview.html)
- Examples of plagiarism at [www.indiana.edu/~istd/examples.html](http://www.indiana.edu/~istd/examples.html)
- Plagiarism quiz at [www.indiana.edu/~istd/test.html](http://www.indiana.edu/~istd/test.html)

If you still have questions, feel free to talk to me personally. There is nothing wrong with asking for help, whereas even unintentional plagiarism is a serious offense.

**Citation style**

It is important to properly cite any references you use in your assignments. The Department of Urban and Regional Planning uses Kate Turabian’s *A Manual for Writers of Research Papers, Theses, and Dissertations*, 8th edition (University of Chicago Press, 2013, ISBN 780226816388). Copies are available in the SJSU King Library. Additionally, the book is relatively inexpensive, and you may wish to purchase a copy. Please note that Turabian’s book describes two systems for referencing materials: (1) “notes” (footnotes or endnotes), plus a corresponding bibliography, and (2) in-text parenthetical references, plus a corresponding reference list. The instructor prefers the latter.

**Accommodation for Disabilities**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the AEC (Accessible Education Center) to establish a record of their disability.

You can find information about the services SJSU offers to accommodate students with disabilities at the Accessible Education Center website at [www.sjsu.edu/aec](http://www.sjsu.edu/aec).

**Library Liaison**

The SJSU Library Liaison for the Urban and Regional Planning Department is Ms. Toby Matoush. If you have questions, you can contact her at toby.matoush@sjsu.edu or 408-808-2096.

**SJSU Writing Center**

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU San José State University

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colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The Writing Center website is located at [http://www.sjsu.edu/writingcenter](http://www.sjsu.edu/writingcenter).

**Classroom Protocol**

It is expected that students attend each class, be on time, complete the assigned readings prior to each class, and actively participate in discussions with an open mind. If you are unable to attend a class, please notify me in advance.

We live in a 24/7 connected world. However, I will request that you refrain from texting, tweeting, surfing, and anything else that you can do on an electronic device unless it is for taking notes or for looking up information relevant to the discussion at hand. If you must connect for other reasons, I ask that you either wait until break or do so with discretion. Phones must be off or on silent.
URBP 204: QUANTITATIVE METHODS I
SPRING 2014
COURSE SCHEDULE
(subject to change with fair notice)

Please note: In the Course Schedule below, the chapter numbers for the Earl Babbie book are as per the 13th Edition. The Chapters numbers for the 13th and the 10th editions are provided at the end of the syllabus. If you buy the earlier edition, look for the corresponding chapter titles.

Chapter numbers for the Salkind book are as per the 4th Edition. The Chapters numbers for the 4th and the 2nd editions are provided at the end of the syllabus. If you buy the earlier edition, look for the corresponding chapter titles.

Chapter numbers for the Agresti and Finlay book are as per the 4th Edition. The Chapters numbers for the 4th and the 3rd editions are provided at the end of the syllabus. If you buy the earlier edition, look for the corresponding chapter titles.

Week 1: January 27
Course Overview; Social Research
Required reading: Earl, Babbie. Ch. 2, 3 and 5

Week 2: February 3
Statistical Analysis – I
Descriptive Statistics; Census Overview; Normal Distribution; Hypothesis Testing; T-statistics
Required reading: Salkind, Neil. Ch. 2, 3, 4, 7, 8 and 9
Exercise 1 Introduced

Week 3: February 10
Statistical Analysis – II
Tests between Means of Different Groups; Tests Between Means of Related Groups; ANOVA
Required reading: Salkind, Neil. Ch. 11, 12, and 13

Week 4: February 17
Statistical Analysis – III
Factorial ANOVA; Chi-squared tests; Correlation
Required reading: Salkind, Neil. Ch. 14, 15, and 17
Exercise 1 Due
Exercise 2 Introduced

Week 5: February 24
Statistical Analysis – IV; Tutorial on how to create charts and graphs
Ordinary Least Squares Regression (OLS)
Recommended Reading: Agresti and Finlay Ch. 9, 10, 11 and 14
Exercise Set 1 Graded
Term Project Introduced (Review of Survey Questionnaire; Review of Survey Data File)
Week 6: March 3
Statistical Analysis – IV continued
Ordinary Least Squares Regression (OLS)
Revised Exercise 1 Due
Exercise 2 Due

Week 7: March 10
Statistical Analysis – IV continued; Lab Time for Exercise 3
Ordinary Least Squares Regression (OLS)
Revised Exercise 1 Graded
Exercise 2 Graded
Exercise 3 Introduced
Neighborhood Profile Memo “A” Due

Week 8: March 17
Statistical Analysis – V
Logistic Regression
Recommended Reading: Agresti and Finlay Ch. 15
Revised Exercise Set 2 Due
Neighborhood Profile Memo “A” Graded

Week 9: March 24 – no class (Spring Break)

Week 10: March 31 – no class (Cesar Chavez Day)

Week 11: April 7
Statistical Analysis – V continued; Discussion of Research Questions
Logistic Regression
Exercise 4 Introduced
Research Questions Assignment Due (graded and returned via email by April 10)
(email WORD file at shishir.mathur@sjsu.edu with subject line “204, first name, last name, Research Questions”)
Neighborhood Profile Memo “B” Due
Exercise 3 Due
Revised Exercise 2 Graded

Week 12: April 14
Survey Research – I; Lab Time for Exercise 4
Required reading: Earl, Babbie Ch. 9
Exercise 3 Graded
Revised Research Questions Assignment Due
Neighborhood Profile Memo “B” Graded

Week 13: April 21
Survey Research – II; Lab Time to Work on Term Project Analysis Report
Revised Exercise 3 Due
Exercise 4 Due
Revised Research Questions Assignment Graded
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Exercise 5 Introduced

**Week 14: April 28**

Experiments and Qualitative Field Research  
Required reading: Earl, Babbie Ch. 8 and 10  
Revised Exercise 3 Graded  
Term Project Analysis Report Due  
Exercise 4 Graded

**Week 15: May 5**

Research Design; Lab Time to Work on the Presentation and to Revise Term Project Analysis Report  
Required reading: Earl, Babbie Ch. 4 and 6  
Revised Exercise 4 Due  
Term Project Analysis Report Graded  
Exercise 5 Due

**Week 16: May 12**

In-Class Presentation of Term Project  
Revised Term Project Analysis Report Due  
Revised Exercise 4 Graded  
Exercise 5 Due

**Week 17: May 19 (Final’s Week)**

Please note that the class will meet from 5:15 pm to 7:30 pm  
In-Class Presentation of Term Project; Course Reflection  
Revised Term Project Analysis Report Graded  
Revised Exercise 5 Due
APPENDIX

Chapter Titles: Babbie 13th edition

Ch. 1: Human Inquiry and Science
Ch 2: Paradigms, Theory and Social Research
Ch 3: The Ethics and Politics of Social Research
Ch 4: Research Design
Ch 5: Conceptualization, Operationalization, and Measurement
Ch 6: Indexes, Scales, and Typologies
Ch 7: The Logic of Sampling
Ch 8: Experiments
Ch 9: Survey Research
Ch 10: Qualitative Field Research
Ch 11: Unobtrusive Research
Ch 12: Evaluation Research
Ch 13: Qualitative Data Analysis
Ch 14: Quantitative Data Analysis
Ch 15: The Logic of Multivariate Analysis
Ch 16: Statistical Analyses
Ch 17: Reading and Writing Social Research

Chapter Titles: Babbie 10th edition

Ch.1: Human Inquiry and Science
Ch 2: Paradigms, Theory and Social Research
Ch 3: The Ethics and Politics of Social Research
Ch 4: Research Design
Ch 5: Conceptualization, Operationalization, and Measurement
Ch 6: Indexes, Scales, and Typologies
Ch 7: The Logic of Sampling
Ch 8: Experiments
Ch 9: Survey Research
Ch 10: Qualitative Field Research
Ch 11: Unobtrusive Research
Ch 12: Evaluation Research

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Chapter Titles: Salkind 4th edition

1. Statistics or Sadistics? It's Up to You

Part II
2. Means to an End: Computing and Understanding Averages
3. Vive la Diff,rence: Understanding Variability
4. A Picture Really Is Worth a Thousand Words
5. Ice Cream and Crime: Computing Correlation Coefficients
6. Just the Truth: An Introduction Understanding Reliability and Validity

Part III
7. Hypotheticals and You: Testing Your Questions

Part IV
10. Only the Lonely: The One-Sample Z Test
11. t(ea) for Two: Tests Between the Means of Different Groups
12. t(ea) for Two (Again): Tests Between the Means of Related Groups
13. Two Groups Too Many? Try Analysis of Variance
14. Two Too Many Factors: Factorial Analysis of Variance
15. Cousins or Just Good Friends? Testing Relationships Using the Correlation Coefficient

16. Predicting Who'll Win the Super Bowl: Using Linear Regression
17. What to Do When You're Not Normal: Chi-Square and Some Other Nonparametric Tests
18. Some Other (Important) Statistical Procedures You Should Know About
19. A Statistical Software Sampler

Part V
20. The Ten (or More) Best Internet Sites for Statistics Stuff
21. The Ten Commandments of Data Collection
Chapter Titles: Salkind 2nd edition

1. Statistics or Sadistics? It's Up to You

Part II

2. Means to an End: Computing and Understanding Averages
3. Vive la Diff,erence: Understanding Variability
4. A Picture Really Is Worth a Thousand Words
5. Ice Cream and Crime: Computing Correlation Coefficients

Part III

6. Hypotheticals and You: Testing Your Questions
7. Are Your Curves Normal? Probability and Why It Counts

Part IV

9. t(ea) for Two: Tests Between the Means of Different Groups
10. t(ea) for Two (Again): Tests Between the Means of Related Groups
11. Two Groups Too Many? Try Analysis of Variance
12. Two Too Many Factors: Factorial Analysis of Variance
13. Cousins or Just Good Friends? Testing Relationships Using the Correlation Coefficient
14. Predicting Who'll Win the Super Bowl: Using Linear Regression
15. What to Do When You're Not Normal: Chi-Square and Some Other Nonparametric Tests
16. Just the Truth: An Introduction Understanding Reliability and Validity
17. Some Other (Important) Statistical Procedures You Should Know About
18. A Statistical Software Sampler

Part V

19. The Ten Best Internet Sites for Statistics Stuff
20. The Ten Commandments of Data Collection

Chapter Titles: Agresti and Finlay 4th edition

1. Introduction
2. Sampling and Measurement
3. Descriptive statistics
4. Probability Distributions
5. Statistical inference: estimation

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6. Statistical Inference: Significance Tests
7. Comparison of Two Groups
8. Analyzing Association between Categorical Variables
9. Linear Regression and Correlation
10. Introduction to multivariate Relationships
11. Multiple Regression and Correlation
12. Comparing groups: Analysis of Variance (ANOVA) methods
13. Combining regression and ANOVA: Quantitative and Categorical Predictors
14. Model Building with Multiple Regression
15. Logistic Regression: Modeling Categorical Responses
16. Introduction to Advanced Topics

Chapter Titles: Agresti and Finlay 3rd edition
1. Introduction
2. Sampling and Measurement
3. Descriptive statistics
4. Probability Distributions
5. Statistical inference: estimation
6. Statistical Inference: Significance Tests
7. Comparison of Two Groups
8. Analyzing Association between Categorical Variables
9. Linear Regression and Correlation
10. Introduction to multivariate Relationships
11. Multiple Regression and Correlation
12. Comparing groups: Analysis of Variance methods
13. Combining regression and ANOVA: Analysis of Covariance
14. Model Building with Multiple Regression
15. Logistic Regression: Modeling Categorical Responses
16. Introduction to Advanced Topics