

**UEP 305: Urban Data Analysis**  
**Occidental College**  
**Fall 2016**  
**Tues & Thurs 1:30-2:55 p.m.**  
**Johnson 315**

**Instructor:** Virginia Parks, Ph.D.  
**Office Hours:** Tuesday, 8:45 a.m. to 11 a.m.  
**Office location:** UEP 202  
**Phone:** 323-341-4090  
**E-mail Address:** vparks@oxy.edu

**Lab Sections:** 3:05-4:30 p.m. Tues & Thurs in O-Mac Lab (Library 2)

*Please note: Details may change. Please check Moodle for most updated version of the syllabus.*

**Course Description and Goals**

In this course, students will learn how to document and analyze urban processes, problems, and policies using quantitative data. Quantitative data provide a compelling means by which we can understand the magnitude of urban problems and who is impacted by these problems across demographic groups, neighborhoods, cities, and countries. Quantitative data can also help identify solutions, including public policies, and then evaluate the effectiveness of those solutions. Ultimately, our task is to develop quantitative reasoning skills in order to mobilize facts in the pursuit of a more just and equitable urban society. In the words of urban geographer Elvin Wyly: Get mad. Get data. Get to work.

An important aspect of the course is how to make relevant and meaningful comparisons. How can we understand the size and significance of an urban problem such as low-wage work, or housing discrimination, racial profiling by the police, or air pollution? We understand these issues best in relation to other outcomes: good jobs, nondiscriminatory housing and police practices, clean air. We need to measure these outcomes in ways that we can compare them. Toward that goal, students will learn basic mathematical calculations and concepts such as percentages, rates, normalization, baselines, distributions, and statistical inference. Students will learn to read and interpret quantitative information presented in various formats, such as tables, graphs, geometric figures, or in text. Students will also learn to assess numeric arguments and “answers” for reasonableness, as well as to recognize the limits of quantitative methods. In particular, students will learn to evaluate how quantitative data is used, and sometimes misused, in the news media and public debates about social, economic, and environmental problems. Lastly, students will explore basic research methods using quantitative data, such as specifying a research question, research design, sampling, measurement, and validity.

The course includes a weekly lab where students will directly manipulate, analyze, and visualize real-world data related to urban problems and policy concerns, such as poverty, wages and low-wage work, housing affordability, transportation equity, air quality, water safety, green space, food access, and public safety. We will focus on identifying and communicating patterns of urban inequality. Students will become familiar with Excel and be introduced to a statistical software package. Students will learn to manage data, produce basic charts and graphs, generate descriptive statistics, and test simple hypotheses.

### **Required Texts and Software**

Moore, Notz, and Fligner. 2015. *The Basic Practice of Statistics*, 7<sup>th</sup> ed.

Available for rent on Amazon (you can rent for free for one week, then begin your subscription through Dec. 13 to save a few dollars):

[https://www.amazon.com/Basic-Practice-Statistics-David-Moore/dp/146414253X/ref=mt\\_hardcover?\\_encoding=UTF8&me=](https://www.amazon.com/Basic-Practice-Statistics-David-Moore/dp/146414253X/ref=mt_hardcover?_encoding=UTF8&me=)

Online Statistics Education: A Multimedia Course of Study (<http://onlinestatbook.com/>). Project Leader: David M. Lane, Rice University.

Dona M. Wong. 2010. *The Wall Street Journal Guide to Information Graphics*. New York: W.W. Norton & Company.

Gareth Cook, ed. 2015. *The Best American Infographics 2015*. Boston and New York: Houghton Mifflin Harcourt.

Software available in computer labs:

Excel, Stata, Tableau, Social Explorer (with Oxy subscription)

### **Course Requirements**

Lab Assignments: 10% each (4 total)

Community Profile, Residential Segregation, Earnings, Statistical Literacy

Data Project: 25%

Mid-term: 15%

Final: 20%

### **Grading Rubric:**

I want you to become informed, confident, and engaged citizens of the world. Your effective and strategic action stems from a strong foundation of quantitative reasoning and critical thinking skills. I want you to understand the amount of time, the commitment to analysis, and the depth of thinking it takes to consider any topic or issue thoroughly. In the end, I wish for you to become skilled, deep, and confident thinkers. Every aspect of this course is designed to build these skills and habits because, in the long run, the person you become at the end of this class—or at the end of your career at Oxy—matters more than any grade you receive. In sum, I hope you become less focused on letter grades and instead that you become completely obsessed with developing these skills and habits and cultivating your intellectual identity.

That said, I also see value in grades. They are a measurement of aptitude that should direct your interests and your future pursuits, so I take them very seriously. When assessing grades, I use the following standards:

- A** Multi-faceted and thoughtful engagement with course material; integration of course concepts into independent thinking; excellent depth of quantitative reasoning and critical analysis; sophisticated and accurate analysis of primary data; assessment of secondary data analysis that exhibits statistical literacy; engagement with scholarship; well-constructed and compelling arguments utilizing numeric information; synthesis of course concepts and skills across the semester; cogent, clear, and persuasive data presentation, speaking, and writing
- *student goes well beyond the requirements of the course. Overall, I'm thoroughly impressed!*
- B** Good to Very Good analysis and understanding of quantitative concepts and data; accurate assessment of numeric information; well-constructed numeric arguments; solid data presentation, speaking, and writing skills; demonstrates an ability to connect concepts and skills across the semester
- *student meets requirements of the course competently, offering a smattering of insightful quantitative interpretations*
- C** Satisfactory; student can summarize course concepts and has made fair attempts at independent data analysis; analysis and critique may require further development or coherence, numeric interpretation may still be a bit inaccurate, and/or ideas may be difficult to understand due to issues of data presentation and writing
- *student meets requirements of the course to my satisfaction*
- D** Unsatisfactory; student reads course material but does not understand it at a satisfactory level; student completes course assignments but they do not evidence adequate understanding, analysis, or preparation
- *student made some effort to meet minimum requirements*
- F** Student fails to meet the minimum requirements of the course

\*\* If you have any questions about course policies or expectations, please see me right away—before you run into any problems! \*\*

### **Email Policy**

I answer student emails Monday-Friday, 9 a.m.-5 p.m. I respond to emails within one business day of receiving them. I do not answer emails over the weekend. Please make sure to send me your email before 3 p.m. on Friday if you need a reply before the end of the day (5 p.m.). Please do not expect me to answer your emails an hour or two before an assignment is due!

### **Writing Support Services**

We can all use help sharpening our writing skills. I strongly encourage you to utilize the writing support services provided by the Center for Academic Excellence, particularly for your response-to-readings papers requiring a single essay response and your final paper (if you are writing one). Drop-in hours are posted here:

<http://www.oxy.edu/center-academic-excellence/drop-hours-only>

### **Academic Ethics**

Read full policy statement here:

<http://www.oxy.edu/student-handbook/academic-ethics/academic-ethics>

#### *Plagiarism Defined*

Plagiarism occurs when the ideas, organization, or language of another are incorporated into one's work without properly crediting the original source with a citation or other disclosure. It includes re-writing or re-formatting material without acknowledging the original source of the ideas. Even if the language and organization are in the student's own words, any ideas or information that are not common knowledge must be acknowledged in a reference. Students are responsible for knowing and using the correct procedures for acknowledging and identifying sources of borrowed material. Failure to properly credit sources in all or part of work presented in draft or final form to anyone is plagiarism, regardless of whether it occurs as a result of dishonest intent or carelessness and regardless of the course credit attached to it. As a student scholar, if you:

- Quote directly from a source: you must enclose the quoted material, even if it is no more than a phrase or a single distinctive word (such as a neologism), within quotation marks, and provide a reference.
- Paraphrase, i.e., restate the material in your own words: (a) the paraphrasing must represent a substantial change from the original, not just the changing of occasional words and phrases, and (b) you must provide a reference.
- Present material that is common knowledge, but borrow someone else's organizational pattern: you must acknowledge that borrowing in a reference.

Penalties for academic misconduct are severe (see "Academic Misconduct"), and ignorance of the principles and policies concerning cheating and plagiarism is not a defense. Students with any doubts at all about whether an action or piece of academic work involves academic misconduct should consult their instructors before committing the action or submitting the work.

### **Disability Services**

Students with documented disabilities who are registered with Disability Services are required to present their accommodation letter to the instructor at the beginning of each semester or as soon as possible thereafter. Students who experience significant physical or mental impairments can contact Disability Services at (323) 259-2969 to learn about available services and support.

### **Occidental Sexual Misconduct Policy and Resources**

Policy: <http://www.oxy.edu/sexual-assault-resources-support/policies-procedures>

24/7 Confidential Hotline: (323) 341-4141

Campus Safety Emergency Line: (323) 259-2511

Dean of Students Office: (323) 259-2661

## Course Schedule

- T, Aug. 30      Introduction:  
What is urban data? What are urban problems that data can measure?  
*The Basic Practice of Statistics*, pp. 1-10.
- R, Sept. 1      Variables, Variation, Distributions: types of variables; measurement; histograms  
*The Basic Practice of Statistics*, pp. 11-37.  
Lane, 1.1-1.4  
*Black Metropolis*
- LAB:**    Introduction to Excel: managing data, making charts & graphs
- T, Sept. 6      Describing Distributions: mean, median, mode; percentiles  
*The Basic Practice of Statistics*, pp. 47-67.  
Lane, chpt. 3 "Summarizing Distributions"
- R, Sept. 8      What counts? Compared to what? Concept of disparate impact  
*Black Metropolis*  
Crime rates: chpt. 3 *The New Jim Crow*
- LAB:**    Data Analysis in Excel
- T, Sept. 13     Introduction to American Community Survey
- <https://www.census.gov/programs-surveys/acs/>
- "American Community Survey Information Guide"  
[https://www.census.gov/content/dam/Census/programs-surveys/acs/about/ACS\\_Information\\_Guide.pdf](https://www.census.gov/content/dam/Census/programs-surveys/acs/about/ACS_Information_Guide.pdf)
- Minkel, J.R. 2007. "Confirmed: The U.S. Census Bureau Gave Up names of Japanese-Americans in WWII." *Scientific America*, 30 March 2007.  
<http://www.scientificamerican.com/article/confirmed-the-us-census-b/>
- R, Sept. 15     How Advocates Use Data  
Guest Speaker: USC Program for Environmental and Regional Equity (PERE)
- LAB:**    Social Explorer
- T, Sept. 20     Residential Segregation  
*American Apartheid*  
*Coates' Atlantic article*
- Community Profile assignment due
- R, Sept. 22     Urban Data Analysis Case Study: Dept. of Justice Ferguson Report
- LAB:**    Measuring residential segregation

T, Sept. 27 Normal Distributions  
*The Basic Practice of Statistics*, pp. 75-95.

*Residential Segregation assignment due*

R, Sept. 29 More with Distributions: Measuring Inequality

**LAB:** Effect of Race and Gender on Earnings  
*Lane, chpt. 2 "Graphing Distributions"*

T, Oct. 4 Sampling  
Respondent Driven Sampling: <http://www.respondentdrivensampling.org>

*Earnings Inequality assignment due*

R, Oct. 6 Experiments  
Housing discrimination audit studies  
Research Design: Randomized controls [Case study: MTO]  
*Continue discussion of residential segregation; compare Gatreaux to MTO*  
Research Design: Natural Experiment [Case study: Card's minimum wage study]

**LAB** Qualtrics

T, Oct 11 Fall Break: No class!

R, Oct. 13 Mid-term

**NO LAB! (Fall Break)**

T, Oct. 18 Scatterplots and Bivariate Distributions  
*The Basic Practice of Statistics*, pp. 101-111.

R, Oct. 20 Correlation  
*The Basic Practice of Statistics*, pp. 111-120.

**LAB:** Introduction to Stata

T, Oct. 25 Statistical Literacy

R, Oct. 27 Urban Data Analysis Case Study

**LAB:** Zotero & Literature Review Workshop

T, Nov. 1 Least-squares Regression  
*The Basic Practice of Statistics*, pp. 127-153.

R, Nov. 3 Two-way Tables  
*The Basic Practice of Statistics*, pp. 163-174.

*Statistical Literacy assignment due*

**LAB:** Data Analysis with Stata

T, Nov. 8            Statistical Inference  
*The Basic Practice of Statistics*, pp. 373-387.

R, Nov. 10          Testing for statistical differences: t-tests and Chi-Square  
*The Basic Practice of Statistics*, pp. 391-402; 455-466 (means); 517-526  
(proportions); pp. 577-593 (Chi-Square).

**LAB:** Statistical Tests with Stata

T, Nov. 15          Data visualization  
Edward Tufte  
*The Best American Infographics 2015*

*Data Project description due*

R, Nov. 17          NO CLASS

**LAB:** Data Visualization using Tableau (CDLA)

T, Nov. 22          Strategic Positivism and other epistemological frames

Elvin Wyly (2009). "Strategic Positivism." *Professional Geographer* 61(3), 1-13.  
Mark Ellis (2009). "Vital Statistics." *Professional Geographer* 61(3), 301-309.

**NO LAB! (Thanksgiving)**

T, Nov. 29          Intro to GIS: Community Health Effects of Urban Oil Drilling

R, Dec. 1            Presentations

**LAB:** Project Analysis

T, Dec. 6            Conclusion & Review

*Data Project due*

**NO LAB!**

**Tues., Dec. 13, 8:30 – 11:30 a.m.          FINAL EXAM**