UP 316
Urban Informatics II

Department of Urban and Regional Planning
University of Illinois at Urbana-Champaign
Spring 2022

LECTURES:	Monday and Wednesday, 2:00 – 2:50pm, 225 TBH
LABS:	Friday, 2:00– 2:50pm, 101 Oregon Building Computer Lab (901 W Oregon St)
INSTRUCTOR:	Bumsoo Lee, M206 TBH, bumsoo@illinois.edu Office hours: 1:00pm-1:50pm on Monday and by appointment, Zoom
TEACHING ASSISTANT:	David Wright, dwrigh27@illinois.edu Office hours: 3:00pm-3:50pm on Friday and by appointment, Zoom

COURSE OVERVIEW

Any successful planning process requires *information and data* on the current and future conditions of the community and region. UP 316 is designed to teach formal planning methods that help planners collect, analyze, and interpret critical data for various urban planning projects. The first half of the semester will focus on a primary data collection method, survey research. Students will learn how to design and administer an effective sample survey and how to analyze and interpret survey results. Students will also have a hands-on experience of conducting their own sample survey research as a group project. The second half of the course will focus on other analytical techniques that are widely used by planners to understand demographic and socio-economic conditions of a city and its future.

Among the topics to be covered are:

- Survey research – questionnaire design, administering survey, data analysis & report writing
- Review of statistical tools and their application to survey data analysis
- Demographic analysis and population projection methods
- Economic analysis techniques: economic base model and shift-share analysis
- Cost-benefit analysis as a project evaluation method
- Using MS-Excel and R for urban data analytics

Monday and Wednesday classes are in lecture/discussion format. Students will learn and discuss foundational concepts, theories, and tools in urban informatics. In Lab sessions on Friday, students will have opportunities to apply these tools using real world data and computer programs. The best way to learn planning methods is *learning by doing*. Thus, various exercises and assignments will be given throughout the semester.

Students should read required readings, be prepared for class, and actively participate in class discussion. All the lecture notes will be posted to the Canvas course webpage (canvas.illinois.edu) so that students can reduce the need for note taking and actively participate in class discussion.

PREREQUISITE

UP 116 Urban Informatics I or an equivalent introductory statistics course.

COURSE AT A GLANCE

Week	Dates	Topic	Assignment
1	Jan 19	Introduction	
2	Jan 24, 26	Overview of survey process; Survey design	
3	Jan 31, Feb 2	Survey design & administration	Survey-5 Likert scale questions (2/3)
4	Feb 7, 9	Statistical tools—Descriptive statistics; Confidence intervals	Survey-survey draft (2/11)
5	Feb 14, 16	Statistical tools—Difference in means test	Survey-pre-test report (2/18)
6	Feb 21, 23	Statistical tools—Correlation and regression	
7	Feb 28, Mar 2	Survey sampling	Survey-completed survey data (3/4)
8	Mar 7, 9	EXAM; Census geography	
9	Mar 21, 23	Demographic analysis & Population projection	Survey-**final report (3/25)**
10	Mar 28, 30	Population projection	
11	Apr 4, 6	Population projection	
12	Apr 11, 13	Regional economic analysis	Assignment 1 (4/15)
13	Apr 18, 20	Regional economic analysis	
14	Apr 25, 27	Regional economic analysis; Cost-benefit analysis	Assignment 2 (4/29)
15	May 2, 4	Cost-benefit analysis	Assignment 3 (5/9)

LAB & LAB ASSIGNMENT AT A GLANCE

Week	Dates	Lab Topic	Lab Assignment
1	Jan 21	Excel 101	Lab assignment 1
2	Jan 28	Introduction to R & R-Studio	Lab assignment 2
3	Feb 4	Survey project team building and discussion	
4	Feb 11	Data analysis with R—Descriptive statistics	Lab assignment 3
5	Feb 18	Data analysis with R—Cross-tab, t-test, ANOVA	Lab assignment 4
6	Feb 25	Data analysis with R—Correlation & Regression	Lab assignment 5
7	Mar 4	Group work—Survey data analysis	
8	Mar 11	Data visualization with Excel and R	Lab assignment 6
9	Mar 25	Downloading census data & population pyramid	Lab assignment 7
10	Apr 1	Trend extrapolation method exercise	Lab assignment 8
11	Apr 8	Cohort component method exercise	Lab assignment 9
12	Apr 15	Economic base analysis exercise	Lab assignment 10
13	Apr 22	Shift-share analysis exercise	Lab assignment 11
14	Apr 29	Cost-benefit analysis (CBA) exercise	
15		No lab	

TEXTBOOKS

Rea, Louis M. and Richard A. Parker.2014.*Designing and Conducting Survey Research: A Comprehensive Guide*, 4th edition. San Francisco, CA: Josey-Bass Inc. E-book available at UIUC Library https://learning.oreilly.com/library/view/designing-and-conducting/9781118767023/?ar=

Klosterman, Richard E., et al. 2018. *Planning Support Methods: Urban and Regional Analysis and Projection*. Lanham, MD: Rowman & Littlefield. Reserved at the Funk ACES Library.

Additional reading assignments (or the links to them) will be posted on the Canvas.

REQUIREMENTS

Students will be required to complete one group survey project, one exam and a series of homework/lab assignments. Class participation grade will be based on both random attendance checks and class participation. Each unexcused absence will reduce your final grade by 1%.

GRADES will be assigned as follows:

Group Project: Student Attitude Survey	20 %
Mid-term EXAM	20 %
Lab Assignments	20 %
Homework Assignments	30 %
Participation/Attendance	12 %

ASSIGNMENTS and PROJECTS: In general, homework assignments are due at 2pm (class time) on the due date unless noted otherwise. Lab assignments are generally due by 11:59pm on the same day (Friday) unless noted otherwise. Late lab/homework assignments will be graded down by 10% per day up to 30%.

RUBRIC: The general grading rubric for assignments and projects is as follows:

A: Demonstrates original thought and synthesis of ideas and cogent analysis, and is clearly written and presented. Outstanding work.
B: Presents above average analysis with appropriate evidence to support ideas, and is clearly written or presented. Good work.
C: Shows a basic level of understanding, with analysis limited to obvious arguments. Writing is competent. Adequate work.
D: Misunderstands or misrepresents the material, or is so poorly written or presented as to obscure the analysis. Inadequate work.

Transformation of numerical grade to letter grade will be according to the schedule below:

A+	97-100		
A	93-96.9	C+	77-79.9
A-	90-92.9	C	73-76.9
B+	87-89.9	C-	70-72.9
B	83-86.9	D+	67-69.9
B-	80-82.9	D	60-66.9

POLICIES

SPECIAL ACCOMMODATIONS This course will accommodate students with documented disabilities. Please refer to http://www.disability.uiuc.edu/resourceguide for more information and provide the appropriate documentation at the beginning of the semester.

ACADEMIC INTEGRITY This course follows the guidelines set forth by the University student code. See http://www.admin.uiuc.edu/policy/code/article_1/a1_1-401.html for specific guidelines, examples, and punishment associated with academic dishonesty.

PLAGIARISM No student shall represent the words, work, or ideas of another as their own in any academic endeavor. Plagiarism includes but is not limited to copying, direct quotation, paraphrase, and borrowed facts or information. See the guidelines on

	the student code to avoid plagiarism https://studentcode.illinois.edu/article1/part4/1-402/.
CLASS CLIMATE	The Department of Urban and Regional Planning (DURP) is committed to creating an environment of inclusion and opportunity that is rooted in the very goals and responsibilities of practicing planners. Conduct that interferes with the rights of another or creates an atmosphere of intimidation or disrespect is inconsistent with the environment of learning and cooperation that the program requires. By enrolling in a course in the Department of Urban and Regional Planning, students agree to be responsible for maintaining a respectful environment in all DURP activities, including lectures, discussions, labs, projects, and extracurricular programs. We will be governed by the University Student Code. See Student Code Article 1—Student Rights and Responsibilities, Part 1. Student Rights: §1-102 In the Classroom.
EMERGENCY RESPONSE RECOMMENDATIONS	The Department of Homeland Security and the University of Illinois at Urbana-Champaign Office of Campus Emergency Planning recommend the following three responses to any emergency on campus: **RUN > HIDE > FIGHT** For more information, http://police.illinois.edu/emergencyplanning/general/ More detailed recommendations for emergency response and TBH floor plans are posted on the Compass website of the course.
COUNSELING CENER	The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. The Counseling Center provides individual, couples, and group counseling. All of these services are paid for through the health services fee. The Counseling Center offers primarily short term counseling, but they do also provide referrals to the community when students could benefit from longer term services. https://counselingcenter.illinois.edu/

READING ASSIGNMENTS	Rea and Parker = Rea, Louis M. and Richard A. Parker.2014.*Designing and Conducting Survey Research: A Comprehensive Guide*, 4th edition. Klosterman et al. = Klosterman, Richard, et al. 2018. *Planning Support Methods: Urban and Regional Analysis and Projection*. Lanham, MD: Rowman & Littlefield.

INTRODUCTION

Week 1	1/19	Introduction to UP316; Rea and Parker, Chapter 1: *An Overview of the Sample Survey Process*
Lab:	1/21	Excel 101

DEVELOPING AND ADMINISTERING SURVEY

Week 2	1/24	Rea and Parker, Chapter 1: *An Overview of the Sample Survey Process*
(Project 1 handout)	1/26	Rea and Parker, Chapter 2: *Designing Effective Questionnaires: Basic Guidelines*
Lab:	1/28	Introduction to R and R-Studio: Overview, data import & export

Week 3	1/31	Rea and Parker, Chapter 3: *Developing Survey Questions*
	2/2	Administering efficient surveys (Rea and Parker, Chapters 1 - 3)
Lab:	2/4	**Must attend**! Survey team building and team discussion on the survey topic and design
Assignment:	2/3	Five Likert scale questions (submit a pdf file to the Canvas by **midnight** of 2/3 AND bring a hard copy to the Friday lab session on 2/4)

ANALYSING SURVEY RESULTS

Week 4	2/7	Rea and Parker, Chapter 5: *Descriptive Statistics: Measures of Central tendency and Dispersion* and Chapter 6: *The Theoretical Basis of Sampling*
	2/9	Rea and Parker, Chapter 7: *Confidence Intervals and Basic Hypothesis Testing*
Lab:	2/11	Data analysis with R: Descriptive statistics, confidence intervals
Assignment:	2/11	Group survey *draft* due
Week 5	2/14	Rea and Parker, Chapter 10: *Analyzing Cross-Tabulated Data*
	2/16	Rea and Parker, Chapter 11: *Testing the Difference Between Means*
Lab:	2/18	Data Analysis with R: Cross-Tab, t-test, and ANOVA
Assignment:	2/18	Finalized survey & pre-test report due
Week 6	2/21	Rea and Parker, Chapter 12: *Regression and Correlation*
	2/23	Rea and Parker, Chapter 12: *Regression and Correlation, Continued*
Lab:	2/25	Data Entry (Coding) and Data Analysis with R: Correlation & Regression

SURVEY SAMPLING

Week 7	2/28	Rea and Parker, Chapter 8: *Determining Sample Size*
	3/2	Rea and Parker, Chapter 9: *Selecting a Representative Sample*
Lab:	3/4	Group work—Survey data analysis
Assignment:	3/4	Bring completed survey for data coding and analysis

MID-TERM EXAM

Week 8	3/7	**EXAM**

CENSUS GEOGRAPHY AND CENSUS DATA

	3/9	OMB (2021) 2020 Standards for delineating Core Based Statistical Areas: Notice. *Federal Register* 86 (134) https://www.federalregister.gov/documents/2021/07/16/2021-15159/2020-standards-for-delineating-core-based-statistical-areas
Lab	3/11	Data Visualization: Graphs and Charts with Excel and R

DEMOGRAPHIC ANALYSIS AND POPULATION PROJECTION

Week 9	3/21	Klosterman et al. Chapter 1 Foundations (pp. 1-10); Chapter 2 Welcome to Decatur (pp. 13-33)
	3/23	Klosterman et al. Chapter 3 Trend Projection Methods (pp. 35-48)
Lab	3/25	Downloading Census Data & Population Pyramid
Assignment:	3/25	Project 1: Group Survey Research Final Report Due
Week 10	3/28	Klosterman et al. Chapter 3 Trend Projection Methods (pp. 35-48)
	3/30	Klosterman et al. Chapter 5 Cohort-Component Methods (pp. 79-117)

Lab:	4/1	Trend Extrapolation Exercise
Week 11	4/4	Klosterman et al. Chapter 5 Cohort-Component Methods (pp. 79-117)
	4/6	Klosterman et al. Chapter 5 Cohort-Component Methods (pp. 79-117)
Lab:	4/8	Cohort Component Method Exercise

REGIONAL ECONOMIC ANALYSIS

Week 12	4/11	Klosterman et al. Chapter 6 Economic Analysis Methods (pp. 125-159)
	4/13	Klosterman et al. Chapter 6 Economic Analysis Methods (pp. 125-159)
Lab:	4/15	Economic Base Analysis Exercise
Assignment:	4/15	Assignment 1 due: Population Analysis and Projection
Week 13	4/18	Klosterman et al. Chapter 6 Economic Analysis Methods (pp. 125-159)
	4/20	Klosterman et al. Chapter 6 Economic Analysis Methods (pp. 125-159)
Lab:	4/22	Shift-Share Analysis Exercise
Week 14	4/25	Klosterman et al. Chapter 6 Economic Analysis Methods (pp. 125-159)

PROJECT EVALUATION: COST BENEFIT ANALYSIS

	4/27	Gupta, Dipak K. 2001. Chapter 14: Choosing the Best Alternative: Cost-Benefit Analysis from *Analyzing Public Policy: Concepts, Tools and Techniques.*
Lab:	4/29	Cost Benefit Analysis Exercise
Assignment:	4/29	Assignment 2: Regional Economic Analysis
Week 15	5/2	*Cost-Benefit analysis*, Continued.
	5/4	*Cost-Benefit analysis*, Continued.
Assignment:	5/9	Assignment 3: Cost Benefit Analysis of an LRT project due by **Noon**.