CRP 386 2: Applied Methods

Spring 2018

Meeting time and location
T/Th 5-6:30pm
West Mall Building 1.110

Instructor
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Course overview
Quantitative, model-based projections of future conditions nominally undergird decision making across the spectrum of planning-related activities. Indeed, future projections and their underlying methods and data are absolutely vital to the planning enterprise. Yet we also know that planning is inherently a political activity. Later assessments of past projections often reveal large biases unrelated to the technical methods used. Rather, the assumptions and/or data from which the projections came often prove to have been unreliable.

Throughout the semester you will learn to employ state-of-the-art methods for projecting future conditions in cities and regions including population, demographics, economic activity, and infrastructure demand. You will also learn to think critically about models, projections, and data and their application to real-world problems. To facilitate these two sets of learning objectives, the course will combine instruction in the quantitative and computer methods in common use today with readings and in-class discussions that encourage you to question convention while imagining how such models and their results can be most useful to decision makers and members of the public. You will become proficient in collecting, manipulating, and analyzing the data needed to solve common planning problems. You will make your findings interpretable through clear and compelling writing. A key emphasis of the course will be on policies and practices that prescribe the use of particular methods and data. Do the methods actually help us achieve our planning goals (e.g. sustainability, livability, etc.) or does an overemphasis on quantitative methods shield us from tackling tough questions around

Note that this syllabus is subject to change. The most up-to-date version will always be posted on Canvas and revisions will be announced in class and/or by e-mail. This version is current as of 10/26/2017. Image from: Beimborn, E. and R. Kennedy (1996). Inside the Blackbox: Making Transportation Models Work for Livable Communities, Citizens for a Better Environment and The Environmental Defense Fund.
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governance, local control, and regulation that need to be addressed simultaneously? The course will cover six major topics including, in order:

1. Data management using databases and spreadsheets
2. Employing public data sources
3. Time series models and projections
4. Economic analysis tools
5. Population projections
6. Infrastructure demand, including transportation and housing

Learning objectives

Upon completion of this course, students will have acquired new skills through in-class discussion and debate, detailed analysis and thoughtful reflection in assignments, completion of two midterm exams, and a synthetic final paper. Specifically, successful students will be able to:

1. Obtain publicly available data on demographics, economic activity, infrastructure, and land use relevant to a wide variety of planning questions.
2. Input, import, and export those data using a database management system or a spreadsheet.
3. Perform common database queries (select, join, insert into, update, etc.).
4. Apply time-series analysis to forecast future values using lines, curves, regression, and comparative analysis.
5. Perform quantitative analyses to understand various planning-relevant phenomena including:
   a. Economic activity using economic base, location quotient, and shift-share approaches.
   c. Infrastructure demand using contemporary models for trip generation and travel demand to assess the need for parking, public transit systems, and highways.
   d. Housing demand using approaches based on a jurisdiction’s prior performance in housing provision.
6. Calculate basic poverty and inequality measures.
7. Describe basic principles of transportation and land use/urban development models, related scenario analysis approaches, and relevant legal and regulatory frameworks.
8. Discuss and debate the merits of various families of quantitative planning models including promising practices, appropriate uses, and potential risks and pitfalls.

Course expectations and policies

Attendance

While attendance during all class periods is highly encouraged, I trust that you can manage your own time. When attending, please arrive to class on time and stay the entire period unless you’ve discussed other arrangements with me. Students are responsible for any material missed due to their absence.

Readings

There is no assigned textbook for this course. All readings are available either on Canvas or are linked to from this syllabus. I expect that you will complete the readings prior to the class or lab on which they are assigned. For some of the readings, you will complete a short quiz before coming to class (further details in “Assessments” below).
Use of laptops, phones, and other devices
The use of electronic devices during class (laptops, cellphones, etc.) is generally permitted – you may find it valuable to bring a device to class to follow along with the demonstration of a particular piece of software or a particular data source. Please turn all cell phones to silent (not vibrate) during class time. To avoid distraction and for the benefit of your fellow students, please refrain from using your devices for non-class material during class time.

Disability accommodations
Any student requesting accommodations because of a disability will be referred to Services for Students with Disabilities. The staff will work with you to arrange for appropriate accommodations. The student will receive an accommodation letter that will be reviewed with me.

Plagiarism and cheating
We will be completing writing assignments for this course. Plagiarism involves using the words or ideas of another person as your own. It is perfectly acceptable to borrow ideas from other scholars. Indeed, this is how scholarship advances. But those words and ideas must be appropriately referenced with a citation and page number, as appropriate. Please use APA format for work prepared for this class. If you are planning to continue in academia, it will be in your interest to learn to use one of the many pieces of citation management software. Zotero is a great option that’s free for everyone.²

If you are caught plagiarizing or cheating, you will be dealt with according to the University of Texas Honor Code. For any questions involving these or any other Academic Honor Code issues, please consult me or http://catalog.utexas.edu/general-information/appendices/appendix-c/student-discipline-and-conduct/. If you are not sure what constitutes cheating or plagiarizing, please come see me.

Assessments
The student assessments for this course will involve a mix of in-class participation, labs, written assignments documenting research and data analysis, midterm exams, and a final paper and presentation. Some projects will be completed in groups, but unless specifically identified as group work, all evaluations are to be completed by you alone. The assessments will generally require the use of a database management system or spreadsheet software. In order for all students to learn the basic mechanics of databases and spreadsheets, everyone will have the option of completing a set of online tutorials for Microsoft Access and Microsoft Excel. There are direct links to the tutorials at the end of this document. I am assuming you are already reasonably comfortable with a spreadsheet. If you are not, you should consider getting a basic text and working through examples immediately. Come see me for recommendations.

Details regarding each assessment category are included below.

Participation
Despite the class size, I encourage constructive participation. While we will be covering quantitative methods in depth, there will also be an opportunity to engage with academic research and planning practice. Since you are all MCRP students, I expect that you have opinions about the use of quantitative methods in planning. Please share these during class while being respectful of other students’ opinions and time. Through these discussions, you should hone critical thinking skills that will ultimately be useful to you in your job as a professional planner. We will sometimes have structured in-class participation activities involving small group discussions. Students are expected to be active and

² https://www.zotero.org/
engaged during these times. They should provide students who are less comfortable speaking in a large group the opportunity to be heard.

Reading quizzes
In my prior teaching, I’ve found that one of the most effective ways to ensure that students complete the required readings ahead of time is to provide a concrete incentive. For this reason, there will be five “reading quizzes” throughout the semester that you will complete before class using Socrative.com.\(^3\) The quizzes will consist of two questions, one multiple choice and one short answer. The multiple choice question will be worth one point and the short answer will be graded on a three-point scale. The quizzes will be designed so that if you do the reading you should easily get 4/4, but I will also endeavor to make reading specifically for the quiz difficult. You will have to demonstrate a nontrivial understanding of the material to receive three points on the short answer question. I’ll review the quiz responses to frame our discussions in class and to understand how well students are able to read the assigned work. The quiz will open at 9am on the day before class on which the reading is assigned and will be due by midnight the same day.

Assignments
Students will complete four written assignments, with due dates and times outlined in the course schedule. The assignments will allow students the opportunity to demonstrate mastery of the quantitative principles discussed in class as well as the application of critical perspectives to the methods used and results generated. You may complete assignments in groups of two that you choose. Group composition can change for each submission. Assignments will be distributed on Canvas and announced in class.

Midterm exams
There will be two midterm exams scheduled during regular lecture periods, with dates as noted in the course schedule. They will emphasize both quantitative principles and general principles of computing and data management. They will include short answer questions, multiple choice, definitions, fill-in-the-blanks, model building and assessment, and longer answers requiring the interpretation of data and results.

Final paper and presentation
Students will complete a final paper and presentation that includes a cumulative demonstration of the knowledge gained over the semester. The final project can be completed in groups of up to five chosen by the students. The last two class periods (one lecture and one lab) are reserved for short presentations of the project results. Further details on expectations and requirements for the final project will be distributed later in the semester.

Policy on late work
All written work must be turned into Canvas at the date and time noted on the assignment prompt. Work submitted late will receive reduced credit of five points (on a traditional 100-point grading scale) per day or portion of day late, unless prior arrangements have been made with the instructor.

Grading
All grades may be adjusted upward or downward depending on the distribution resulting from a particular assessment. In cases where there is not a specific quantitative answer, and especially where the results are subject to interpretation, I generally grade assessments holistically—I’m interested in how

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\(^3\) Readings with associated quizzes are marked with a superscript Q in the class schedule.
well you’re able to demonstrate proficiency with the learning objectives that we go over in each lecture period. Keep an eye on your grade throughout the semester—if you find that you’re not on track to receive a final grade consistent with your expectations, talk with Dr. Karner to see how your performance on each assessment can be improved. Final grades will be based on the following components, weighted as shown:

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<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>In-class participation</td>
<td>5</td>
</tr>
<tr>
<td>Reading quizzes</td>
<td>5</td>
</tr>
<tr>
<td>Assignments (four total)</td>
<td>25</td>
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<tr>
<td>Midterm exams (two total)</td>
<td>40</td>
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<tr>
<td>Final paper and presentation</td>
<td>25</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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