

School of Planning
Faculty of Environmental Studies
University of Waterloo

PLAN 418 / GEOG 428 / PLAN 674

Spatial Demography

Fall 2017

Instructor:

Dr. Jane Law

EV3-3251

j9law@uwaterloo.ca

COURSE OUTLINE

Calendar Description

This course develops the capacity of students to apply methods of spatial demography. Spatial demography refers to the statistical study of human population using spatial methods for analyzing demographic data. It can provide insights into the understanding of geographic variations of population's characteristics, which in turn can help to make better plans in building the environment. Through this course, students will learn the basic concepts, data sources, data issues, methodologies, and applications of spatial demography.

Prerequisite: ENVS 278 and GEOG/PLAN 281 for PLAN 418/GEOG 428

Recommended: An interest in computing, GIS, mapping, and understanding demography is highly desirable.

Introduction

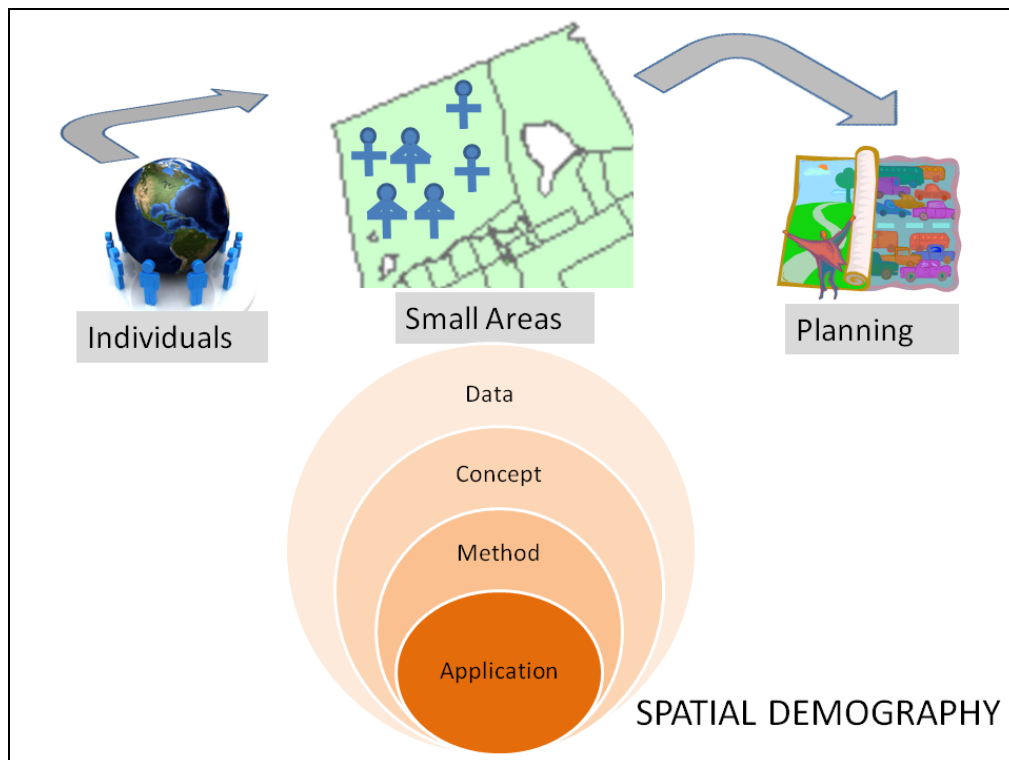
Mapping population and demographic outcomes plays an important role in demographic studies, which requires the understanding and use of spatial data. Some provinces, regions, or areas have population with better health, less criminal offenders, higher employment rate, more immigrants etc. Where? Why? Spatial analysis of demographic data can provide insights into the understanding of geographic variation of population's characteristics, which in turn can help planners to make better plans in building the environment.

This course covers the application of spatial data and methods in demographic studies. Topics to be covered range from gathering, organizing, and integrating spatial data on demographic events using Geographic Information Systems (GIS) through to issues associated with the analysis of spatial data including the identification of geographic patterns of demography and environmental factors that are associated with the underlying causes of the demographic outcomes. Students

will gain good hands-on experience in manipulating and analyzing demographic data using spatial methodologies.

Overview of the Course

From demography to spatial demography, this course looks at how characteristics of individuals can be used to study characteristics of communities or neighbourhoods through the use of demographic data and spatial analysis. Further, students will learn how spatial methods for confirming determinants and predicting outcomes (e.g., public health and safety) can be applied in planning.



Course Objectives

By the end of the course, students should be able to:

- understand basic concepts in spatial demography.
- identify sources and learn the use of demographic data.
- appreciate some common methodologies used in spatial demography.
- apply the concepts and methodologies of spatial demography.

Learning Modes

This course uses a combination of lectures, readings (in the form of journal articles, reports or web page references as assigned in class), and lab/tutorial sessions to build students' understanding of the key issues and concepts that underpin spatial demography. It put emphasis on the importance of "hands-on" practicals to help students to gain experience applying these concepts to practical demographic studies. The practicals will require use of GIS or/and spatial analysis software, as

without reinforcement of the use of these essential planning tools students will be not be well prepared for dealing with both the production and consumption of research.

SCHEDULES

Class Meetings

Class meets on Tuesday, 2:30 to 4:20 pm in EV3-4412 and on Tuesday, 4:30 to 05:20 pm in EV1-240 unless stated otherwise. Classes can include a variety of learning modes: lectures, class assignments, lab tutorials, group discussions, and student presentations.

Scheduled Office Hours or Consulting (T.A.s and professor)

My office hours are 12:30-2:30 pm on Tuesday and my office is in Room EV3-3251. Matthew Quick (mquick@uwaterloo.ca) is the TA for this course. He will hold his office hours on Monday from 1:30 to 2:30pm in Room EV3-3307.

SEQUENCE OF COURSE TOPICS AND ASSIGNMENTS

(Note: Topic progression may vary)

Course Week	Class Meeting Date	Lecture Topic	Assignment/Lab Tutorial (Topic to be announced)
1	Sept 12	Introduction to spatial demography	Group project
2	Sept 19	Spatial data I	Lab Assignment 1
3	Sept 26	Spatial data II	Lab Assignment 2
4	Oct 3	Spatial demographic data processing I	Lab Assignment 3
5	Oct 12	Spatial demographic data processing II	Lab Assignment 4
6	Oct 17	Exploratory and confirmatory spatial data analysis	Lab Assignment 5
7	Oct 24	Cluster detection	Lab Assignment 6
8	Oct 31	Identifying association I	Lab Assignment 7
9	Nov 7	Identifying association II	Lab Assignment 8
10	Nov 14	Discussions and conclusions	Group project
11	Nov 21	Group project presentations	Individual project
12	Nov 28	Individual project presentations	Individual project

Notes:

1. There may be the need to expand or contract some topics as the term progresses.
2. There may be minor adjustments from time to time in sequence and date.
3. Required and optional readings as appropriate in the form of journal articles, book chapters, reports, or web page references will be assigned in class or on the course LEARN site.

STUDENT EVALUATION

The course is designed with the intention of encouraging a high level of student involvement in course activities each week. The apportionment that makes up the final grade is:

Course Component	Percentage
<i>Class assignments</i>	10%
<i>Lab assignments (individual)</i>	40%
<i>Individual project:</i>	
a) <i>Presentation (Nov 28)</i>	10%
b) <i>Report (due Dec 4)</i>	20%
<i>Group project</i>	
a) <i>Presentation (Nov 21)</i>	5%
b) <i>Poster (due Nov 21)</i>	15%
Total	100%

Class assignments

There will be a class assignment for completion and submission during the lecture each week except the first week and the last two weeks on project presentations. Your best seven (out of nine) will be used to calculate your class assignment mark out of 10%. Students who score more than 50% out of 100% in eight or more class assignments will get one bonus mark. That means the maximum mark a student could score from class assignments is 11%.

Lab assignments

There will be eight lab assignments each worth 5%. Each lab assignment has equal weight. These lab assignments are to be completed individually (i.e. no group work). Lab assignment will be handed out during class or lab. The time allowed to finish an (individual) assignment is one week. For every assignment, a digital copy (in Microsoft .doc or .docx format) MUST be submitted to the course LEARN site before the due date. Every assignment submitted must contain a front cover of the "Assignment Checklist – Individual Submissions" (attached at the end of this course outline) completed and signed by the student. Failure to submit the checklist may result in a penalty of up to 10 marks.

Individual project

The individual project assignment that consists of a class individual presentation and report will be handed out during the fourth or fifth lecture. The date of presentation and due date for the report are shown in the table above. Students are expected to be present at the time the presentations are scheduled. No "make-up" presentations are provided. Students who do not present can receive a "zero" grade for the assignment.

All the raw and derived data used in the project, including a shapefile that can be opened using ArcGIS and contains all the variables used, must be zipped and submitted together with a digital copy of the report in Microsoft .doc or docx format to the course LEARN site. An **Assignment Checklist – Individual Submissions** must also be submitted. The checklist can be found at the end of this course outline. Penalties of up to 25% may be applied for any missing or incomplete submission.

Group project

The group project assignment that consists of a poster and a group presentation of the poster will be handed out during the fourth or fifth lecture. The date of presentation and due date for the poster are shown in the table above. Through the group project, students can learn to identify strengths of their peers. Also, students with strengths can mentor and improve their colleagues' capacities. The instructor/TA will discuss with the students to form groups that ideally will consist of both graduate and undergraduate students in each group.

Grading for the group project presentation will be based on the group presentation in class and the slides in the Microsoft Powerpoint file, which must contain presentation notes for each slide. Students are expected to be present at the time the presentations are scheduled. No "make-up" presentations are provided. Students who do not present or lack participation in the group project presentation can receive a "zero" grade for the assignment. Grading for the group poster will be based on the poster in the Microsoft Powerpoint file.

To minimize conflicts amongst group members, students in the same group will be given the same group presentation mark and group project mark under normal circumstances and when all members actively participate in the project. And, to ensure that evaluation will appropriately assess individual members' contributions to the group assignment, the instructor/TA will give a peer evaluation mark. The peer evaluation mark will be given based on the scores and information given by students in the same group in their peer evaluation forms.

The group project assignment is due on the date of group project presentation when every group will present their project and submit to the course LEARN site before the class a file in Microsoft Powerpoint format that contains all the slides with presentation notes for each slide together with the form of "Assignment Checklist – Group Submissions" (attached at the end of this course outline) completed and signed by all the students in the group. Also, all students need to complete and submit the peer evaluation form (attached at the end of this course outline) to the instructor (c.c. the TA) by email on that same date. Penalties of up to 25% may be applied for any missing or incomplete submission.

The professor determines the content and establishes the grading rules for the assignments and projects. The teaching assistant assists the instructor with grading work.

Requirements, Grade Penalties and Special Considerations:

1. **Every (individual) assignment is to be completed individually.** Students may consult with one another on technical aspects of the practicals and the use of software packages; however, their report and the contents (both the text and the illustrations) of their report must be their own work and must not be done in collaboration. Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. If you are unsure whether an action constitutes an offence, or need help in learning how to avoid offences (e.g., plagiarism, cheating) or about rules for group work / collaboration, you should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean.
2. Any evidence or instance of plagiarism will be dealt with according to the terms stated in University of Waterloo Policy #71. Plagiarism is defined in the Policy as 'the act of presenting the ideas, words or other intellectual property of another as one's own. The use of other people's work must be properly acknowledged and referenced in all written material such as take-home data, computer programs and research results. The properly acknowledged use of

sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under this policy.'

3. If your assignment is late, notify the instructor/TA with an email message as soon as possible and before the due date. In your email, specify how many days the assignment will be late. The late assignment should then be submitted to LEARN on or before the specified date and time of submission in your email. The date and time of submission to LEARN will be used to assess penalty for late submission. Assignments may not be accepted or penalties assessed if the digital copy is not submitted to LEARN before the due date and time of submission.
4. All assignments are due on the date set by the instructor. Assignments submitted later than the due dates will be subject to a late penalty of 15% per day, including weekends. Assignments submitted more than 4 days late will not be accepted and will be graded as zero unless they are accompanied by a note from a physician or there are extenuating circumstances beyond the control of the student.
5. Students are responsible for ensuring that assignments submitted via online dropboxes are properly uploaded to and are saved with the extension that is specified by the instructor. Unless otherwise indicated, assignments that are not submitted properly by the due date listed in the course outline will receive a mark of zero. Students may attempt to properly submit assignments after the due date but the instructor reserves the right to consider this as a regular late assignment and reweight the grade as indicated in the course outline. Students will be required to provide the emailed verification of submission in the event of a discrepancy with respect to submission.
6. Your written work will be evaluated according to content with consideration also given to logic, clarity, and grammatical structure. Remember to proofread your work carefully.
7. Students are expected to present well organized, and properly written work. Penalties of up to 25% may be applied in cases where readability and/or clarity are inadequate.
8. Completing the assignments in this course should be a knowledge building experience. This will be made easier if you exercise good judgement and good management in your work. You are responsible for all backups of your own work. Make sure that you back work up regularly.
9. Unclaimed assignments will be retained until one month after term grades become official in quest. After that, they will be destroyed in compliance with UW's confidential shredding procedures.

Texts

There is no textbook required for this course. However, recommended readings in the form of journal articles, book chapters, reports, or web page references will be assigned in class or on the course LEARN site.

Recommended Reference Texts

The textbook, Longley et al, *Geographic Information Systems and Science*, may prove useful in the assignments. The textbook, DeVeaux et al, *Statistics, Data and Models*, will also be a useful reference source for you regarding basic data analysis.

SPECIAL REQUIREMENTS IN THIS COURSE

Computer Use

Computer work is part of the assignments. Students are expected to have already appropriate skill in working with spreadsheets and GIS. Instruction and consulting regarding the use of these computer skills are not provided in this course

It is important for students to note that the data provided for the practicals/assignments are restricted to students in this course and should only be used for the practicals/assignments. Students must ensure that all data sets provided in this course are erased completely from their computer(s), laptop(s) and all storage media or devices upon completion of this course.

- **Academic Integrity**: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Students are strongly encouraged to review the material provided by the university's Academic Integrity office (see: <http://uwaterloo.ca/academicintegrity/Students/index.html>).

Consequences of Academic Offences:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here:

<http://uwaterloo.ca/academicintegrity/>

ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students:

<http://uwaterloo.ca/academicintegrity/Students/index.html>

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Student who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also visit this webpage:

<https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline,

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>

Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>

- Students who are unsure what constitutes an academic offence are requested to visit the on-line tutorial at <http://www.lib.uwaterloo.ca/ait/>.
- **Research Ethics:** Please also note that the 'University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance <https://uwaterloo.ca/research/office-research-ethics/research-human-participants>.

- **Note for students with disabilities:** AccessAbility Services, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.
- **Mental Health:** The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available.** Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <http://www.uwaterloo.ca/counselling-services> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.
- **Religious Observances:** **Please inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.**
- **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>. When in doubt please contact your Undergraduate Advisor for details.
- **Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>. For typical penalties, check Guidelines for Assessment of Penalties, <http://www.secretariat.uwaterloo.ca/guidelines/penaltyguidelines.htm>.
- **Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-72>.
- **LEARN:** Users can login to LEARN via:<http://learn.uwaterloo.ca/> use your WatIAM/Quest username and password. LEARN is an essential component of this course, so please be sure to login for course updates and information. The lecture-slides files are provided to simplify the note taking process and to ensure that diagrams are copied correctly. Further information and notes, including diagrams, images, and concepts, will be added or discussed during class. You are responsible for knowing all such further information presented in class as well.

- **Intellectual Property:** Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:
 - ◆ Lecture content, spoken and written (and any audio/video recording thereof);
 - ◆ Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
 - ◆ Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
 - ◆ Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

- **Use of digital devices:** The School strives to create a fair and equitable learning environment for all our students. In response to student feedback and in recognition of the substantial body of research indicating that the inappropriate use of digital devices (laptops, tablets, smartphones) interferes with the learning experience of both individuals operating those devices and the students sitting in their vicinity, it is an expectation that the use of digital devices (laptops, tablets, and smartphones) during a lecture is strictly limited to course-related purposes. In this course, you will be using technology in class. Therefore, no digital-use zones will be designated.

Additional Requirements for Graduate Students

PLAN 418/GEOG 428 is to be held with PLAN 674. PLAN 674 students are expected to do additional readings and are required to do additional tasks in the assignments.

Prepared in September 2017

Assignment Checklist – Individual Submissions

PLAN 418/GEOG 428/PLAN 674

Instructor: Dr. Jane Law

Assignment Title:

Assignment Checklist

Please read the checklist below following the completion of your assignment. Once you have verified these points, hand in this signed checklist with your assignment.

1. I have referenced and footnoted all ideas, words or other intellectual property from other sources used in the completion of this assignment.
2. I have included a proper bibliography, which includes acknowledgement of all sources used to complete this assignment.
3. This assignment was completed by my own efforts and I did not collaborate with any other person for ideas or answers.
4. This is the first time I have submitted this assignment or essay (either partially or entirely) for academic evaluation.

Signed: _____
Date: _____

Print Name: _____ UW-ID#

Assignment Checklist – Group Submissions

***Group Assignment
Disclosure***

Please read the disclosure below following the completion of your group assignment. Once you have verified these points, hand in this signed disclosure with your group assignment.

1. All team members have referenced and footnoted all ideas, words or other intellectual property from other sources used in the completion of this assignment.
2. A proper bibliography has been included, which includes acknowledgement of all sources used to complete this assignment.
3. This is the first time that any member of the group has submitted this assignment or essay (either partially or entirely) for academic evaluation.
4. Each member of the group has read the full content of the submission and is assured that the content is free of violations of academic integrity. Group discussions regarding the importance of academic integrity have taken place.
5. Each student has identified his or her individual contribution to the work submitted such that if violations of academic integrity are suspected, then the student primarily responsible for the violations may be identified. Note that in this case the remainder of the team may also be subject to disciplinary action.

Course: _____

Assignment: _____

Date: _____

Name (print)	Signature	Section Contributed	Section Edited

PLAN 418/ GEOG 428/ PLAN 674 PEER EVALUATION FORM

Name of Student: _____

Name of Project: _____

Date: _____

Instructions:

This peer evaluation provides an opportunity for you to evaluate the work of your team. It will assist in determining each student's contribution to the group project.

Please use a rating scale of 0-5 (0=poor contribution, 5=excellent contribution). Some of the factors to consider when assigning a rating for each group member may include participation, quality of work, and willingness to take on a fair share of the group. Students who do not submit a completed peer evaluation form can receive a "0" grade for the group project.

The information provided in this form will be kept confidential.

*Please rate below each team member, and return by email attachment to the instructor on the **date of the last class.***

	Name of team member	Peer Evaluation (0, 1, 2, 3, 4 or 5): (0=poor contribution, 5=excellent contribution)
Team mate 1		
Team mate 2		
Team mate 3		
Team mate 4		

Additional comments, if any, may be added below: