Assessing Neighborhoods in Epidemiology

CLASS SESSIONS
Monday, June 22 and Tuesday 23, 2020
1:30 – 5:30pm
Location: 6/22 (Mon) (Room TBD)
6/23 (Tue): (Room TBD)
Hammer Building, 701 West 168th Street, NY, NY 10032
Directions can be found here: http://www.cuepissummer.org/contactpage

INSTRUCTORS
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COURSE DESCRIPTION
A large body of research in epidemiology and population health has investigated connections between neighborhood (e.g. residential, social and work) characteristics (e.g. crime rate, density of fast food restaurants, distance to parks) and a myriad of health outcomes (e.g. obesity, mental health, substance use). This research has characterized neighborhood factors in multiple ways. This one-day course will discuss standard and emerging methods to study neighborhood characteristics. In particular, the course will provide an overview of neighborhood characteristic assessment methods, including self-report, systematic social observation, geographic information system (GIS) methods, web-based geospatial methods, real-time geospatial methods, crowd-sourced geospatial methods and information retrieval methods. We will discuss the strengths and limitations of each neighborhood characteristic assessment methods (e.g. ease of administration, validity), and students will be provided with examples of each neighborhood assessment method applied in the epidemiology and population health literature. In addition, this course will discuss different methods to examine neighborhood boundaries, including self-report, administrative definitions, ego-centric buffers and global positioning system (GPS)-defined activity spaces. We will discuss the strengths and limitations of each method of examining neighborhood boundaries (e.g. spatial
misclassification, technical difficulty), and students will be provided with examples of each neighborhood boundary applied in the epidemiology and population health literature.

**PREREQUISITES**
None, but an introductory course in Social Epidemiology will be helpful.

**COURSE LEARNING OBJECTIVES**
By the end of the course, participants will be able to:

- Critically assess the broad literature on neighborhoods in epidemiology and population health, including strengths and weaknesses in the conceptualization, study design, measurement, and interpretation of study findings
- Identify and articulate various approaches to studying neighborhood characteristics
- Describe the strengths and limitations of the various approaches to studying neighborhoods
- Identify and articulate different methods of examining neighborhood boundaries
- Describe the strengths and limitations of the different methods of examining neighborhood boundaries
- Apply knowledge to plan a study on neighborhoods in epidemiology and population health
- Utilize basic geographic information system (GIS) methods and geospatial analysis techniques on epidemiological research

**COURSE READINGS**


Duncan DT, Kawachi I, Subramanian SV, Aldstadt J, Melly SJ, Williams DR. Examination of how neighborhood definition influences measurements of youths' access to tobacco retailers: a

OPTIONAL READINGS


Additional PDF optional readings will be supplied to the students by the instructor.

Lab Session
There is 4-hour lab session on the second day. All lab session materials and data uploaded on Google Drive (https://drive.google.com/open?id=1S0NiEvF2Z-Y6MH5gCKqxN6zwOtIRfMFP), and participants are required to download all materials before the lab session.

COURSE STRUCTURE
Class meets from 1:30 – 5:30pm over two days (8 hours total). The course will include conceptual lectures and discussion, in addition to applications of course material and include
adequate time for questions.
### COURSE SCHEDULE

#### Day 1

<table>
<thead>
<tr>
<th>Approx. Time</th>
<th>Session Description</th>
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<tbody>
<tr>
<td>15 Min</td>
<td>Course Overview &amp; Introductions</td>
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| 30 Min       | Connecting Neighborhoods and Health: An Overview  
- Overview of Spatial Epidemiology  
- Class Activity: Watch Videos Connecting Neighborhoods and Health:  
  - TED Talk: “Your health depends on where you live”  
  - Documentary: “Bad Neighborhoods Affect Your Health?”  
  - “Unnatural Causes: Is Inequality Making Us Sick? Part 5: Place Matters”  
- Neighborhood and Health Theory  
- Neighborhoods Effects on Health: Research Evidence  
- Spatial Epidemiology Landmark Studies: Profiles  
- Discussion |
| 1 Hour       | Methods for Studying Neighborhoods I: Neighborhood Characteristics  
- Lecture (Concepts, Considerations, and Examples)  
- Group Activity  
- Discussion |
| 1 Hour       | Methods for Studying Neighborhoods II: Neighborhood Boundaries  
- Lecture (Concepts, Considerations, and Examples)  
- Group Activity  
- Discussion |
| 30 Min       | Critical Review of Grant Applications in Spatial Epidemiology  
- Review  
- Discussion |
| 30 Min       | Application: Design Your Own Study on Neighborhoods in Epidemiology  
- Plan Study (i.e. write 2 to 3 Specific Aims)  
- Present to Class/ Discussion |
| 15 Min       | Questions & Evaluation |

#### Day 2

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<tr>
<th>Approx. Time</th>
<th>Session Description</th>
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<tbody>
<tr>
<td>15 Min</td>
<td>Day 1 Recap</td>
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<td>1 Hour</td>
<td>Lab 1: Introducing GIS Software</td>
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<tr>
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<td>• Introduction to ArcGIS</td>
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<td>• Introduction to QGIS</td>
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<td>• ArcGIS Interface: introducing ArcMap software and basic interface</td>
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<tr>
<th>1 Hour</th>
<th>Lab 2: Spatial Data Processing using ArcGIS</th>
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<td>• Coordinating Systems</td>
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<td>• Geocoding</td>
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<td>• Geoprocessing Tools: introducing basic processing tools</td>
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<tr>
<th>1 Hour</th>
<th>Lab 3: Spatial Analysis using ArcGIS</th>
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<tr>
<td></td>
<td>• Measuring Neighborhood Boundaries with ArcGIS</td>
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<td>• Spatial Join</td>
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<td>• Mapping</td>
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<tr>
<th>30 Min</th>
<th>Lab 4: Application – practice with HIV example</th>
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<tr>
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<td>• Hotspot analysis using ArcGIS</td>
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<td>• HIV prevalence and HIV testing site after adjusting neighborhood characteristics</td>
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<td>• Questions and evaluation</td>
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| 15 Min | Questions & Evaluation                      |