GES 666: Just Maps: Critical & Ethical Mapping – Fall 2024

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Office Hours: By appointment.
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Classroom: Sondheim Hall, 007 – GIS Lab
University of Maryland, Baltimore County
1099 Hilltop Rd,
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Meeting Days: Thursday 6:00 pm – 8:30 p.m.
Session Dates: August 29 – December 12, 2024

Course Description:

This course employs a variety of mapping tools to develop a student's ability to critically approach cartographic production. A methodological approach will be taken that ranges from the selection and preparation of data to the choice of map representation in the final visualization product. Students are introduced to the latest version of ArcGIS/ArcGIS Pro and R/R-Studio, but the course is primary about creating and evaluating maps and less about developing skills in R and ArcGIS.

Following the principles of scientific method, students will systematically analyze, interrogate, and reflect on how each stage of the cartographic process impacts the final product from the decisions they make during the process. Tangentially, this activity will also foster a student's ability to assess other maps students encounter from a variety of sources. By the end of the course, students will gain the ability to assess a cartographic product for its level of accuracy and quality in communicating what it intends to convey.

This course will illustrate the principles of "graphical excellence" so that students develop the skills to produce superior visual products. Following these principles, critical thought is extended beyond what is taught in regard to the content of the map, but also on quality of the map a professional product of publication-quality. As part of the cartographic production process, these skills are essential to creation of successful cartographic products.

This class is **not** about the simple assembly of a map and supporting elements. Nor is this class simply about how to use ArcPro to make a map. This class is about thoroughly critiquing and refining the maps to be of exceptional quality. Exceptional is defined as going beyond what typical map makers or other graphic designers will do.

No large map products or posters are made in this class. Rather, maps are produced that meet the criteria of graphical excellence and situated in the context of an analytical report. These reports are the focus of this course because those are the primary products students will create when they enter their careers. Students will produce publication-quality maps and linked with supporting analytical narrative that will mimic more closely what they will produce in their careers.

Course Coverage:

This course is divided into three parts. Part one is an overview of the fundamentals of critical cartography, issues of working with geographic data, and the principals of thematic mapping. The basics of R/R-Studio and QGIS/ArcPro for making maps will be introduced. Basic statistics are presented to begin working with R/R-Studio to process data and then visualizing the results in QGIS/ArcPro to produce cartographic products.

Part two cover the use of several geographic indices to demonstrate how to incorporate spatial relationships into an analysis to improve the quantitative representation of data beyond basic statistics. That is, the indices incorporate geography into the results and provides more context to the analysis. Also, working with these indices help students learn how to convert formulas into code so that the formulas are understood to a greater depth for critique. The indices covered are the (i) Location Quotient and the (ii) Diversity Index. Learning how to calculate and use these geographic indices helps to learn how geography affects mapping, as well as having more options to map social science data.

Part three covers advantages and pitfalls of using open-source data. The concepts, issues, quality, and limitations of working with these types of data are presented. Further, since some open-source data are available only at certain geographies, how to change the data's geographic scale is demonstrated. 311 Calls for Service and other publicly available data are used to create maps that help assess social, demographic, and economic conditions and their spatial relationships with each other.

Across each of these three parts, the principles of scientific thinking and philosophy are introduced to meet the GIS Program's objective of providing a social science foundation that underpins the technical aspects of using GIS to solve social or environmental problems.

The R programming language, through the R Studio IDE, is used throughout the course to process data and calculate several statistics. However, QGIS and ArcPro are used for data visualization and making the cartographic products. The combination of these two tools demonstrates the interplay between using a programming language and mapping software to capitalize on the strengths of each to efficiently create a completed cartographic product.

ChatGPT will be used in various classes throughout the course to demonstrate how it can be used to help make maps in R. Students will need to obtain accounts to use ChatGPT for assignments.

Recommended Texts:

Brewer, C. A. (2016). Designing Better Maps, 2nd edition - A Guide for GIS Users. ESRI Press, Redlands, CA.

Crampton, J. W. (2010). Mapping: A Critical Introduction to Cartography and GIS, 1st Edition. Wiley-Blackwell, Malden, MA.

Curry, M. R. (1998). Digital Places: Living with Geographic Information Technologies. Routledge, New York, NY.

Loukissas, Y. A. (2019). All Data Are Local: Thinking Critically in a Data-Driven Society. The MIT Press. Boston, M.A.

Required Articles:

While there are no required textbooks for this course, journal articles, book chapters, and report sections are required for reading. These readings are listed below under the dates they are relevant to the current or next lecture. These articles will be made available for student use on the course website in Blackboard. Several reference articles, book chapters, report sections, or appendices that are relevant to the course materials will be provided for supplemental reading, but are not required.

The readings are pertinent to meeting assignment objectives and for students to adequately demonstrate they understand the material. These readings are meant to supplement the lectures and any lab work, to which it is recommended that students keep pace with the readings to maximize their comprehension of the material.

Exams & Assignments:

Exams & Other Assessments

There are no exams for this course. Being an applied course, the emphasis is on the assignments from each class. However, there will be assessments on the readings throughout the semester for some of the videos and the readings assigned.

Assignments

Students will be given data sets thought the class and are expected to replicate the analyses from the lectures to demonstrate an understanding of how to conduct the analyses, but also how the analyses relate to the concepts of geographical data analysis and map making. As an applied course the emphasis will be on understanding the interpretation of analysis results as well as how the statistics operate. Assignment responses should be informed by a combination of materials covered in class through readings and lectures.

Assignment Ethos

UMBC guidelines state that for every credit, you should spend 2+ hours outside of class. The general expectation for graduate school, when you're taking fewer credits as a full-time load, jumps to 3+ hours per credit hour.

During outside class times, students are expected to do their own research about the topics and materials presented in classroom. The instructor is always available for guidance, but graduate school is about students learning how to use their own devices in solving assignment problems that can aid in completing the assignments.

Student Evaluation:

To receive a letter grade of an 'A' the student must adequately demonstrate a full understanding of both aspects. The letter grade of a 'B' will be earned if the student is only able to demonstrate a solid understanding of one aspect but is lacking in the other. A letter grade of 'C' or lower will be given if the student is unable to demonstrate sufficient knowledge of either aspect.

The grading rubric is each assignment will carry the same percentage weight, to which that percentage will be based on the total number of assignments completed across the semester. The percentage for each assignment will be the quotient from the total number of assignments divided by 100.

For Graduate Students, grades are determined on a weighted percentage basis using the minus to plus scale: 90-100% = A to A-; 80-89% = B+ to B-; 70-79% = C+ to C-; and less than 70% = F.

For Undergraduate Students, grades are determined on a weighted percentage basis using the whole letter scale: 90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; and less than 60% = F.

A note about grading the map products students create in the class…Grading the quality of maps in terms of their content and design is a subjective effort. Competing perspectives about what makes a quality visual product are numerous, even though there is a general consensus about the many of the elements that go into achieving graphical excellence. As such, the grading of the map products in this class are based on the material presented in class in terms of making a quality map or visual product. To that end, the grading is tied to the material presented in class and not to outside sources as to what might make a quality map or achieve graphical excellence.

For any reason an assignment cannot be turned in on time **a student MUST do** two things. First, the student must notify the instructor with a full description of the reason before the date it is due. Second, the student must give a due date to turn in the assignment afterwards. That due date cannot be later than the start of the next class. If the assignment is not turned in by that date, then a letter grade will be deducted based off the grade the student received from initial review. If the assignment is not submitted two weeks after the due date, the student will receive no credit for the assignment.

Regardless, the student will still be responsible for ensuring that all assignments are completed and for any material that we cover in class. It is the student's responsibility to identify other students, the Teaching Assistant (TA), the instructor, or any outside source that will aid in completing the assignments.

Writing Quality Expectations for Assignments and Exams

This course is part of a curriculum that awards a Masters in Professional Studies (M.P.S.) degree. Because the course requires students to describe –in writing– their interpretations of statistical results it is expected that students will generate products that meet the professional standards of such a program. One of the main facets of an M.P.S. is to gain an ability to clearly communicate analytical results to audiences of all types. All assignment and project products for this course **will be evaluated** on the student's ability to write a high-quality report of findings. Exercises and projects are designed to train students on how to professionally report analytical results in documents or write software code that

others will read or use. This is an important facet in demonstrating the value of geography and spatial analysis over other forms of analysis. All products, written or coded, must be thoroughly defined and polished. **Poorly written assignments may be downgraded one letter from achieved grade.**

UMBC offers two options for helping students improve their writing. The first is through the USG Center for Academic Success, who directly help students improve their writing. The second option is through the UMBC Writing Center, which offers online tutoring for ANY written assignment in ANY course during both summer sessions. Students may choose to chat synchronously online with a tutor, or submit a paper and receive asynchronous feedback. All appointments must be made at least one day in advance of meeting for a session. The following is a rubric for writing expectations:

Grade	*Style*	*Substance*
A	Clear and novel organization Accessible and concrete language Few mechanical errors Noteworthy graphics	Well-supported arguments Use of pertinent examples and facts Awareness of complexities Appropriate use of sources
B	Clear and competent organization Few sentence errors Well-prepared graphics	A few incorrect statements Adequately supported statements Appropriate secondary sources
C	Clear organization Adequate content Adequate graphics	Several incorrect statements Major arguments supported Inconsistent use of sources
D	Unclear organization Many mechanical errors Incomplete visual graphics	Many incorrect or unclear statements Unsupported arguments Irrelevant or misapplied examples

Plagiarism:

Copying or using another's work in written or oral form –partial or complete– without giving credit to the other person is a serious academic offense and is taken **VERY** seriously in this class, by the Department and by the University of Maryland, Baltimore County. UMBC specifically defines plagiarism as anyone who:

> "knowingly, or by carelessness or negligence, representing as one's own in any academic exercise the words, ideas, works of art or computer-generated information and images of someone else."

Any student who plagiarizes will be referred to the Program Directors and will be subject to the policies of the university. In general, the consequences of plagiarism include failing an assignment, receiving a lower course grade, and even failing a course.

Examples of plagiarism are:

- Submit someone else's work as your own.
- Buy a paper from a paper-mill, website or other source.
- Copy sentences, phrases, paragraphs, or ideas from someone else's work, published or unpublished, without giving the original author credit.
- Replace select words from a passage without giving the original author credit. ·
- Copy any type of graphics, tables, graphs, maps, or charts from someone else's work without giving the original author credit.
- Piece together phrases, ideas, and sentences from a variety of sources to write an essay.
- Build on someone else's idea or phrase without giving the original author credit.
- Using another person's maps as your own or using another's map as a foundation for making your own.
- Use Artificial Intelligence (AI) without reviewing and refining the output as is it output and does not use another author's work that you are claiming to have produced.

Details about avoiding plagiarism, examples, and disciplinary policies should be reviewed to gain a clear understand prior to working on an assignment or exam. Resources are also available on campus to help students needing academic support on this subject at the Center for Academic Success.

In Final, A Note About Mac Use:

There are no versions of ArcGIS and ArcPro for Mac computers. As such, students using Macs as their personal machine need to make arrangements to complete the assignments. There are three options for using ArcPro on a Mac, which can be found here: **Install ArcGIS On A Mac.** There is also the option of using a virtual machine to run ArcGIS/ArcPro on a server from the Mac. Please contact Charlie Kaylor ckaylor@umbc.edu at for help in getting set up with the Mac.

QGIS can be used as an alternate GIS in this class for mapping and other geo-processing tasks. However, the assignments must be completed according to the requirements for the final map products that are an output of the GIS. This means, if an assignment comes up short in meeting the requirements or objectives because of a limitation in QGIS, then the complete points for that assignment cannot be awarded because the decision to use an alternate software than what is used in the class rests on the student's choice. The loss of points can be minor or significant depending on the assignment.

Course Structure & Outline:

Semi-Hybrid Course: *This class is primarily in-person, with up to four classes being held virtually. When classes are held virtually, we will use Collaborate in the Blackboard Course Room. Any class meeting date that is scheduled to be virtual, students will be notified in advance so they can plan accordingly to be available on Collaborate. Otherwise, the class is in-person.*

Class contents, topics, and coverage are subject to change during the semester based on the pace of learning in the class or as opportunities to enhance learning present themselves

Readings listed in each class may or may not be assigned for that class when the date arrives. It may be decided that the readings that on that class date are no longer needed or relevant based on the material covered. As well, additional readings may be added or changed based on the material covered in the class. Students should check Blackboard for the "official" readings assigned for that class.

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Part I: Critical Cartography & Analytical Mapping

Class 1 **Thursday, August 29**

Lecture: Video - Critical Cartography and its relation to GIS – Ryan, James

Topics:
- Outline of the Semester
- Critical Cartography as it Relates to Professional Graphics
- How to Use GenAI in the Class

Software: n/a

Reading:

Crampton, J. W. & Krygier, J. (2006). An Introduction to Critical Cartography. *ACME: An International E-Journal for Critical Cartography*, 4(1): 11 – 33.

Sulzberger, A. G. (2023). Journalisms Essential Value. *Colombia Law Review*. Pp 1 – 19. May.

Yong, E. (2021). What Even Counts as Science Writing Anymore? *The Atlantic*, pp. 1 – 9. October.

u/Rlanguage - Reddit. (2020). Why are so many people insisting on the "base R - VS - tidyverse" false dichotomy? On-line Discussion, 1 – 6.

Video: Crash Course (2021) Geography –

#2 What is a Map?	10:29: mm/ss, and
#3 What is Space and How do We Study it?	10:25: mm/ss.

James, R. (2020). Critical Cartography (Mapping the City, Episode I). *Documentary*. 53:46: mm/ss.

Khan Academy (2015). Pixar in a Box: Unit 2, The Art of Storytelling –
We Are Storytellers. 2:48: mm/ss, and
Introduction to Visual Language. 5:01: mm/ss.

Class 2 **Thursday, September 05**

Lecture: Basics of File and Data Management for GIS and R Data

Topics:
- QGIS/ArcPro and Windows File and Project Structuring
- Getting Started with R, File Structure and Environment
- Learning to Use GenAI in Programming

Software: R-Studio, QGIS

Reading:

Crampton, J. W. (2010). Chapter 4, What is Critical Cartography and GIS, pp. 39 – 48.

Mahmoudi, D. & Shelton, T. (2022). Doing Critical GIS. *ACME: An International Journal for Critical Geographies*, 21(4): 327 – 336.

Martin, D. (1995). Chapter 4: Theories of GIS. In Martin, D., *Geographic Information Systems and their Socio-economic Applications*, pp. 44 – 64. Routledge, New York.

Veregin, H. (2011). GIS and Geo-enabled Cartography. *Cartography and Geographic Information Science*, 38(3), 286 – 288.

Class 3 **Thursday, September 12**

Lecture: Basic Quantitative Data for Mapping – All About Distributions

Topics:
- Ratios, Rates, Percents, Proportions, & Densities
- z-Scores, p-Values, and Outliers
- Using R to Calculate Statistics

Software: R-Studio, QGIS

Reading:

Brewer, C.A. (2006). Basic Mapping Principles for Visualizing Cancer Data Using Geographic Information Systems (GIS). *American Journal of Preventive Medicine*; pp. 25 – 36.

Davies, W. (2017). *How Statistics Lost their Power – and Why We Should Fear What Comes Next*. The Guardian, January, pp. 1 – 18.

Hallisey, E. J. (2005). Cartographic Visualization: An Assessment and Epistemological Review. *The Professional Geographer*, 57(3): 350 – 364.

Wilson, R. E, (2011). Visualizing Racial Segregation Differently - Exploring Changing Patterns from the Effect of Underlying Geographic Distributions. *Cityscape: A Journal of Policy Development and Research*, 13(2): 163 – 174.

Video: James, R. (2021). Writing Instructionals –
Your Essay is Biased. 2:00: mm/ss, and
Research Ethics: 2:00: mm/ss.

Wilson, R. (2021). Section 2: Why Use Statistics – *Lecture*. 20:53: mm/ss.

Class 4 - **Thursday, September 19**

Lecture: Anatomy of a Map Product – Meeting Graphical Excellence

Lab: -Principles of Graphic Excellence
-Narratives and Graphics to Support Maps
-Busting Cartographic Traditions

Software: QGIS

Reading: Carr, D. B. & Pickle, L. W. (2010). Chapter 3: Data Visualization and Design Principles. In Visualizing Data Patterns with Micromaps, section 3.4: 45 – 50.

Monmonier, M. (1996). Chapter 3. Map Generalization: Little White Lies and Lots of Them. *How to Lie with Maps, 2nd Ed*; pp. 25 – 42.

Zhilin, L. (2012). Theories of Map Design in the Digital Era. *Cartography and Geographic Information Science*, 39(2), 71 – 75.

Wilson, R. (2023). The Data-to-Ink Ratio in Mapping – An Editor's Perspective. *Working Paper*, 1 – 12.

Video: Khan Academy (2015). Pixar in a Box: Unit 2.4, The Art of Storytelling –
Space. 4:54: mm/ss,
Shape. 5:31: mm/ss, and
Lines. 5:56: mm/ss.

Class 5 **Thursday, September 26**

Lecture: Thematic Mapping of Cross-sectional Quantitative Data

Topics: -Interpreting Thematic Mapping Classification Schemes

-Basics of Map Design
-Content to Include and Exclude on the Map

Software: R-Studio, QGIS

Reading: Bo, G., Iianghzi, L., & Junxiaobo, Z. (2014). The Theory of Cartographic Communication Based on the Modern Computer. *Working Paper*, pp. 1 – 9.

Ingraham, C. (2016). The Dirty Little Secret that Data Journalists Aren't Telling You. *The Washington Post, WonkBlog*. April.

Su, Y-S. (2008). It's Easy to Produce Chartjunk using Microsoft Excel 2007, But Hard to Make Good Graphs. *Computational Statistics and Data Analysis*, 52, 4594 – 4601.

Lin, Z. (2012). Theories of Map Design in the Digital Era. *Cartography and Geographic Information Science*, 39(2), 71 – 75.

Wilson, R. (2023). Color Ramp Selection Basics for Mapping Quantitative Data. *Working Paper*, 1 – 6.

Video: Khan Academy (2015). Pixar in a Box: Unit 2.4, The Art of Storytelling –
Tone. 5:01: mm/ss, and
Color: 5:08: mm/ss.

Wilson, R. (2024). Thematic Mapping Classification Schemes and Selection – *Lecture*. 1:41:35: hh/mm/ss.

Part II: Geographic Indices & Spatial Principals

Class 6 **Thursday, October 03**

Lecture: Incorporating Geography into Basic Statistics – The Location Quotient (LQ)

Topics: -The Location Quotient as and Intro to Geography as a Context
-Translating the LQ Formula in R
-Critiquing between Maps, Basic Quantitative Stats vs Geographic Stats

Software: R-Studio, QGIS

Reading: Crampton, J. W. (2010). Chapter 11, The Cartographic Construction of Race & Identity, pp. 144 – 159.

Desai, A., Greenbaum, R. T., & Yushim, K. (2009). Incorporating Policy Criteria into Spatial Analysis. *The American Review of Public Administration*, 39(1): 23 – 42.

Pominova, M., Gabe, T. & Crawley, A. (2021) The Pitfalls of Using Location Quotients to Identify Clusters and Represent Industry Specialization in Small Regions. International Financial Discussion Papers; Number 1329, pp. 1 – 25.

Various Authors (2005). The Location Quotient. *Science Direct: Science Topics – Terms, Concepts & Definitions*, pp. 1 – 14. Elsevier, New York, NY.

Video:

Khan Academy (2015). Pixar in a Box: Unit 2.4, Introduction to Color –

Color Science:	2:49: mm/ss,
Spectrum of Light:	3:46: mm/ss,
RGB Color Model:	2:50: mm/ss,
HSL Color Model:	2:15: mm/ss,
Color Contrast:	3:49: mm/ss, and
Color Correction:	3:04: mm/*ss.*

James, R. (2022). Can't Just Assume it's a Community. *Key Ideas in Urban Studies*. 2:36: mm/ss.

James, R. (2022). "The Community" and Mapping (Mapping the City episode 4). *Key Ideas in Urban Studies*. 19:06: mm/ss.

Class 7 **Thursday, October 10**

Lecture: The Modifiable Areal Unit Problem (MAUP) and the Effects on Mapping

Topics:
-Identifying MAUP and Its Consequences
-How MAUP Manifests itself in the GIS
-Housing Market Conditions with Race & Ethnicity

Software: QGIS

Reading:

Parenteau, M. P. & Swada, M. C. (2011). The Modifiable Areal Unit Problem (MAUP) in the Relationship between Exposure to NO2 and Respiratory Health. *International Journal of Health Geographics*, 10(58): 1 – 15.

Ward, Z. B. (2021). On Value-laden Science. *Studies in the History and Philosophy of Science*, 85: 54 – 62.

Wong, D.W.S. (2004). The Modifiable Areal Unit Problem. In B. Warf, D. Janelle, and K. Hansen (eds.) World Minds: *Geographical Perspectives on 100 Problems*, 571 – 578.

Video: Wilson, R. (2024). The Modifiable Areal Unit Problem (MAUP) – *Lecture*. 2:12:20: hh/mm/ss.

Class 8 **Thursday, October 17**

Lecture: Evaluating the Data Quality & Characteristics through Maps

Topics: -Mapping Statistical Point Estimates to Assess Data Quality
-Color
-Calculating Summary Statistics in R

Software: R-Studio, QGIS

Reading: Abdi z-Scores.

Burt, J. E., Barber, G. M., & Rigby, D. L. (2009). Elementary Statistics for Geographers, 3rd Edition. New Guilford Press. New York, NY.
Chapter 1; Statistics and Geography, pp. 3 – 6.
Chapter 3; Describing Data with Statistics, pp: 119 – 155.

Video: Khan Academy (2015). Pixar in a Box: Unit 2.4, The Art of Storytelling –
Tone. 5:01: mm/ss, and
Color: 5:08: mm/ss.

Wilson, R. (2021). Introduction to Distributions and Hypotheses Testing – *Lecture*. 20:10: mm/ss.

Class 9 **Thursday, October 24**

Lecture: The Diversity (Entropy) Index

Topics: - Alternative to Single Race & Ethnicity Statistics
- Introduction to the Diversity Index
- Income Inequality with Race & Ethnicity

Software: R-Studio, ArcPro

Reading: Forest, B. (2005). Measures of Segregation and Isolation. *Working Paper*, 1 – 4.

McELroy E. (2022). Digital Cartographies of Displacement: Data as Property and Property as Data. *ACME: An International Journal for Critical Geographies*, 21(4): 357 – 371.

Wilson, R. E, (2011). Visualizing Racial Segregation Differently - Exploring Changing Patterns from the Effect of Underlying Geographic Distributions. *Cityscape: A Journal of Policy Development and Research*, 13(2): 163 – 174.

Wong, D. W. S. (2003) Spatial Decomposition of Segregation Indexes - A Framework Toward Measuring Segregation at Multiple Levels. *Geographical Analysis*, 30(3): 179 – 194.

Class 10 **Thursday, October 31**

Lecture: Bivariate Mapping I – Classifying Quantitative Data

Topics:
- Grouping Data based on Descriptive Statistics
- Deciphering Bivariate Grid Legends
- Color Selection & Variable Orientation

Software: R-Studio, ArcPro

Reading: Leonowicz, A. (2006). Two-variable Choropleth Maps as a Useful Tool for Visualization of Geographical Relationship. *Kartographija Cartography*, 33 – 38.

Strode, G, Morgan, J. D., Thorton, B., Mesev, V., Rau, E. Shortes, S. & Johnson N. (2019). Operationalizing Trumbo's Principles of Bivariate Choropleth Map Design. *Cartographic Perspectives*, 94: 1 – 20.

Class 11 **Thursday, November 07**

Lecture: Bivariate Mapping II – Interpreting Classified Quantitative Data

Topics:
- Identifying Significant Geographies with Z- Scores
- Connecting Legend & Map Patterns

Software: ArcPro

Reading: Baurd, E & Ruas, A. (2010). Processes for Improving the Colours of Topographic Maps in the Context of Map-on-Demand. *Working Paper*, 1 – 11.

Biesecker, C. Zahnd, W. E. Brandt, H. M., Adams, S. A. & Eberth, J. M. (2020). A Bivariate Mapping Tutorial for Cancer Control Resource Allocation Decisions and Interventions. *Tools for Public Health Practice*, 17(E1): 1 – 9.

Curry, M. R. (1998). Chapter 1, Reason and Language in Geographically Information Systems. In *Digital Places: Living with Geographic Information Technologies*; pp. 11 – 23.

Part III: Working with On-line & Open-Source Data

Class 12 **Thursday, November 14**

Lecture: Open & Public Data Sources: Evaluating the Contents

Lab: -Strengths & Weaknesses
-Citizens as Sensors
-Obtaining and Preparing Open-source Data

Software: R-Studio, ArcPro

Reading: De Jonge, E. & Van der Loo, M. (2013). From Raw Data to Technically Correct Data. In: *An Introduction to Data Cleaning with R, Discussion Paper*, Statistics Netherlands: pp. 12 – 28.

Goodchild, M. F. (2007). Citizens as Sensors: The World of Volunteered Geography. *GeoJournal*, 69(4): 211 – 221.

McELroy E. (2022). Digital Cartographies of Displacement: Data as Property and Property as Data. *ACME: An International Journal for Critical Geographies*, 21(4): 357 – 371.

Wang, L., Qian, C., Kats, P., Kontokosta, C. & Sobolevsky, S. (2017). Structure of 311 Service Requests as a Signature of Urban Location. *PLOS One*, pp: 1 – 21.

Class 13 **Thursday, November 21**

Seminar: Mapping Publicly Available Data for Policy Considerations

Topics: - Preparing Data for Mapping
- Overlaying Two or More Variables
- GenAI Analysis Assistance

Software: R-Studio, ArcPro

Reading: TbD – Based on date used for the demonstration and assignment.

Thursday, November 28

Thanksgiving Break – No Class

Class 14 **Thursday, December 05**

Lecture: Thematic Mapping of Related Variables to the Primary Variable

Topics: - Overlaying of Two Variables
- Assessing Expectations against Analysis
- Environmental and Administrative Data

Software: R-Studio, ArcPro

Reading: Bo, G., Iianghzi, L., & Junxiaobo, Z. (2014). The Theory of Cartographic Communication Based on the Modern Computer. *Working Paper*, pp. 1 – 9.

Hallisey, E. J. (2005). Cartographic Visualization: An Assessment and Epistemological Review. *The Professional Geographer*, 57(3): 350 – 364.

Class 15 **Thursday, December 12**

Lecture: None – Group Presentations of Publicly Available Data Project

Topics: - Demonstration of Analysis, Method, and Outcome
- Assessing Impact on Populations in Focus Areas
- Technical and Substantive Considerations in Analysis
- Use of GenAI in Supporting Research

Software: n/a

Reading: None.

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Appendix – University Addendums:

Students with Disabilities:

Accommodations for students with disabilities are provided for all students with a qualified disability under the Americans with Disabilities Act (ADA & ADAAA) and Section 504 of the Rehabilitation Act who request and are eligible for accommodations. The Office of Student Disability Services (SDS) is the UMBC department designated to coordinate accommodations that creates equal access for students when barriers to participation exist in University courses, programs, or activities.

If you have a documented disability and need to request academic accommodations in your courses, please refer to the SDS website at sds.umbc.edu for registration information and office procedures.

SDS email: disAbility@umbc.edu
SDS phone: 410-455-2459

If you will be using SDS approved accommodations in this class, please contact the instructor to discuss implementation of the accommodations. During remote instruction requirements due to COVID, communication and flexibility will be essential for success.

Sexual Assault, Sexual Harassment, and Gender Based Violence & Discrimination

UMBC Policy in addition to federal and state law (to include Title IX) prohibits discrimination and harassment on the basis of sex, sexual orientation, and gender identity in University programs and activities. Any student who is impacted by sexual harassment, sexual assault, domestic violence, dating violence, stalking, sexual exploitation, gender discrimination, pregnancy discrimination, gender-based harassment, or related retaliation should contact the University's Title IX Coordinator to make a report and/or access support and resources. The Title IX Coordinator can be reached at titleixcoordinator@umbc.edu or 410-455-1717.

You can access support and resources even if you do not want to take any further action. You will not be forced to file a formal complaint or police report. Please be aware that the University may take action on its own if essential to protect the safety of the community.

If you are interested in making a report, please use the Online Reporting/Referral Form. Please note that, if you report anonymously, the University's ability to respond will be limited.