**Lab Report**

Title: Comparing Three Methods for Buffering a Network Dataset

Notice: Dr. Bryan Runck

Author:

Date:

**Project Repository:**https://github.com/hleaf/GIS5571/tree/main/Lab0

**Google Drive Link:**

**Time Spent:** *<report to the nearest quarter hour>*

**Abstract**

*<Delete this text in light grey throughout>*

*250 words max. Clearly summarize the following major sections. Each gets one or two sentences.*

**Problem Statement**

The Esri ecosystem has many different ways that you can access the same underlying functionality. Your objective is to compare and contrast performing the same simple activity - buffer a network dataset - using three different tools: ArcPro, Jupyter Notebooks in ArcPro, Jupyter Notebooks in ArcOnline.

*Table 1. Data Required for responding to problem statement*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Requirement** | **Defined As** | **(Spatial) Data** | **Attribute Data** | **Dataset** | **Preparation** |
| 1 | Bikeways | Raw input network dataset of regional bikeways from MNDOT (2003) | Bikeway geometry |  | [Mn GeoSpatial Commons](https://gisdata.mn.gov/dataset/trans-roads-mndot-tis)  https://gisdata.mn.gov/dataset/us-mn-state-metc-trans-bikeways |  |

**Input Data**

The data used was created by MNDOT in 2003. The dataset has been maintained by the Land Management Information Center. The dataset includes a shapefile and attribute data (not relevant to this lab) for regional bikeways in the Twin Cities metropolitan area. The area includes bicycle routes in nine counties: Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, Washington, and Wright. Bicycle routes include on- and off-road bikeways, proposed and existing routes, bike lanes, bike-friendly road shoulders, and off-road bike trails.

*Table 2. Input data used for creating network dataset buffers*

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Title** | **Purpose in Analysis** | **Link to Source** |
| 1 | Twin Cities Bikeways | Network dataset for buffering using each method | https://gisdata.mn.gov/dataset/us-mn-state-metc-trans-bikeways |

**Methods**

*Include a data flow diagram or screenshot from model builder. Do references in line (Rammankutty, 2033). Document any and all steps that you did to the input data in the data flow diagram. Provide natural language description of the most important steps, giving a narrative arc and provide well formatting screenshots with a boarder and centered throughout.*

*Resources on Data Flow Diagrams:*

* [*https://www.visual-paradigm.com/tutorials/data-flow-diagram-dfd.jsp*](https://www.visual-paradigm.com/tutorials/data-flow-diagram-dfd.jsp)
* [*https://www.lucidchart.com/pages/data-flow-diagram/how-to-make-a-dfd*](https://www.lucidchart.com/pages/data-flow-diagram/how-to-make-a-dfd)

*Figure 1. Data flow diagram.*

*If appropriate, add in pseudo-code describing model algorithms and/or objects. If using mathematical equations, create a clear mapping between the reference equation, pseudo-code, and actual implementation in a programming language.*

**Results**

*Show the results in figures and maps. Describe how they address the problem statement.*

*Follow best practice for map design, coloring, etc.*

**Results Verification**

*How do you know your results are correct? This can be a qualitative or quantitative verification.*

**Discussion and Conclusion**

***GitHub***

This lab was just a refresher and guide on how to organize files for this class. It went smoothly.

**References**

*Use a common format*

**Self-score**

*Fill out this rubric for yourself and include it in your lab report. The same rubric will be used to generate a grade in proportion to the points assigned in the syllabus to the assignment.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Category** | **Description** | **Points Possible** | **Score** |
| **Structural Elements** | All elements of a lab report are included **(2 points each)**:  Title, Notice: Dr. Bryan Runck, Author, Project Repository, Date, Abstract, Problem Statement, Input Data w/ tables, Methods w/ Data, Flow Diagrams, Results, Results Verification, Discussion and Conclusion, References in common format, Self-score | 28 |  |
| **Clarity of Content** | Each element above is executed at a professional level so that someone can understand the goal, data, methods, results, and their validity and implications in a 5 minute reading at a cursory-level, and in a 30 minute meeting at a deep level **(12 points)**. There is a clear connection from data to results to discussion and conclusion **(12 points)**. | 24 |  |
| **Reproducibility** | Results are completely reproducible by someone with basic GIS training. There is no ambiguity in data flow or rationale for data operations. Every step is documented and justified. | 28 |  |
| **Verification** | Results are correct in that they have been verified in comparison to some standard. The standard is clearly stated **(10 points)**, the method of comparison is clearly stated **(5 points)**, and the result of verification is clearly stated **(5 points)**. | 20 |  |
|  |  | 100 |  |