**Lab Report 0**

Title: Comparing spatial operation workflows in three different environments: ArcGIS Pro, ArcGIS Online and ArcPy.

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**Project Repository:**<https://github.com/msongfrancis/GIS5572.git>

**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 state trails in Minnesota must be buffered in each different environment (ArcPro, ArcOnline, Arcpy). Each environment may require a different process to perform the buffer operation.

*Table 1. Summary of data required for lab analysis.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Requirement** | **Defined As** | **Spatial Data** | **Attribute Data** | **Dataset** | **Preparation** |
| 1 | State Trail | State trails from the MNDNR | Line geometry |  | [Mn GeoSpatial Commons](https://gisdata.mn.gov/dataset/trans-state-trails-minnesota) |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |

**Input Data**

The Minnesota State Trails are maintained and collected by the MNDNR Division of Park and trails. It was collected from GPS, aerial imagery, and paper maps using data from 11/13/2009 to the present. The purpose of this data when it was collected was for maintenance, recreation planning and public access information. The coordinate system of this data is NAD83 UTM 15N. The attributes include trail name, usage, surface type, length in miles and meters, and more.

*Table 2. Information about input data for analysis*

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Title** | **Purpose in Analysis** | **Link to Source** |
| 1 | Minnesota State Trails | Network dataset to be buffered | [Mn GeoSpatial Commons](https://gisdata.mn.gov/dataset/trans-state-trails-minnesota) |
| 2 |  |  |  |
| 3 |  |  |  |
|  |  |  |  |

**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.*

**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

Setting up GitHub went well. I had prior experience using Git in GIS Programming where I learned how to clone, commit code and files to a repository, and fetch and pull from a repo.

*What did you learn? How does it relate to the main problem?*

**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 |  |