

**Title:** GIS Software Tutorial: Data Management and Analysis with Tabular Data (Joins, Relate, Animation)

**Critical Resources:** an internet connected computer, ArcGIS Pro.

**YouTube Playlist:**

<https://youtube.com/playlist?list=PLtrmEEvdGsNqzF3nhzlatStjIILNzmKp->

**Purpose:**

The purpose of this lab will be for you gain experience and knowledge of data management with tabular data in ArcGIS Pro. Specifically, using a case study about COVID cases in New York State, USA, you will: (a) form a spatial hypothesis about COVID cases, (b) acquiring official COVID tabular datasets to test your hypothesis, (c) curate tabular datasets into file geodatabase to prepare for a spatial analysis, (d) use table joins, relates, and time-aware layer animation to conduct a basic spatial analysis using ArcGIS Pro.

**Learning Objectives – After completing the lab, you will know:**

- how to form a hypothesis about a spatial problem
- how to import US Census indicator tabular datasets
- how to import a COVID time series dataset based on CSV
- how to manage tabular datasets in a file geodatabase
- how to execute spatial SQL queries
- how to execute a basic table join
- how to execute a basic table relate
- how to create a basic thematic map
- how to use a time-enabled layer in ArcGIS Pro

**Deliverables:**

A screenshot of the maps created via the instruction and a short essay posted of your analysis.

**Steps:**

1. Develop a spatial hypothesis about COVID cases in New York State, USA that could be investigated using US census tract data at the county level. Include a news story to show where you got your idea from.

A representative example:

High school graduation rates by county have a relationship with COVID testing rates.

Example news story: [https://www.oleantimesherald.com/news/cattaraugus\\_county/area-schools-prepare-for-weekly-covid-testing-of-staff/article\\_943a0d1f-ea33-50c2-8934-32a7eba5a0d0.html](https://www.oleantimesherald.com/news/cattaraugus_county/area-schools-prepare-for-weekly-covid-testing-of-staff/article_943a0d1f-ea33-50c2-8934-32a7eba5a0d0.html)

Note: You can follow this example but I encourage you to come up with your own hypothesis/case study.

For ideas, see: <https://www.census.gov/about/index.html> for topics covered by the US Census.

2. Download the county boundaries from New York:

<https://www.census.gov/geographies/mapping-files/time-series/geo/carto-boundary-file.html>

3. Obtain indicator datasets for your hypothesis case study from:

<https://data.census.gov/cedsci/>

4. Curate the indicator dataset you download in step 3 so it can be joined onto the NY county boundaries you downloaded in step 2.

5. Run a query to select only counties from NY.

6. Export the selected NY counties to a new feature class.

7. Join the indicator dataset you modified in step 4 onto the NY counties.

8. Create a thematic map of your indicator dataset joined onto NY counties. Tip: Normalize your data using pop field from step 4.

9. Download NYS COVID-19 CSV data from:

<https://health.data.ny.gov/Health/New-York-State-Statewide-COVID-19-Testing/xdss-u53e/data>

10. Add NYS COVID-19 CSV data to map and export to standalone table in File Geodatabase.

11. Relate selected NY counties to standalone table NYS COVID-19 tables, observe results using identify tool.

12. Join counties with COVID testing data.

13. Modify county COVID testing data layer symbology to use graduated symbols.

14. Enable time in the county COVID testing data layer.

15. Review the COVID-19 time-enabled feature class using the animation tools of ArcGIS Pro, observe any interesting patterns you find when comparing what you see over time with the thematic map you created in step 8.

**Deliverables:**

1. Map layouts that show time snapshots of what you found.