**Hope Supply Co. Partner Geocoding Project – Portfolio Write-Up**  
**By Crystal Hollis, GISC 2335 – Programming for GIS**

**GitHub:** <https://github.com/crystaljhollis/DallasCollege_Portfolio/tree/main/GISC2335_ProgrammingForGIS/WeeklyContent/week16>

**Package Link:** <https://arcg.is/0aq4OT2>

**Problem Statement**

Hope Supply Co. provided me with a list of 2024 partner agencies—Pantry Partners, Diaper Bank Partners, and Outreach Partners—but no street addresses or coordinates. Manually looking up each location in ArcGIS Pro would be tedious and error-prone. My goal was to fully automate the geocoding process so that every partner agency appears as a point on a map, complete with address fields and X/Y coordinates.

**What the Scripts Do**

1. **Environment & License Validation**
   * Each Python script first confirms it’s running under the ArcGIS Pro “arcgispro-py3” interpreter and that an ArcInfo (Advanced) license is available, exiting cleanly with a pop-up error if requirements aren’t met.
2. **Workspace & Excel Workbook Selection**
   * The user is prompted (via Tkinter dialogs) to choose an output folder and the Excel workbook containing partner data. If the workbook has multiple sheets, the user types or selects the correct one.
3. **Data Ingestion**
   * I use **pandas** to read that sheet into a DataFrame; then convert it into a structured NumPy array sized exactly to each column’s longest string—this avoids ArcPy’s Excel‐to‐table quirks. The array loads into an in\_memory table.
4. **Geocoding**
   * **Single-location script:** calls ArcPy’s GeocodeAddresses tool once on the entire table.
   * **Multi-location script:** “unpivots” any number of address columns into one “SingleLine” field, then either calls GeocodeAddresses or hits the ArcGIS World Geocoder REST API per row and uses an InsertCursor to append each result.
5. **Post-Processing**
   * Adds X/Y, ensures all address fields (PartnerAddress, City, State, County, ZIP) exist, and exports any matches scoring below 80% for manual review.
6. **Final Output**
   * The multi-location version appends new location points into a single “final” feature class (HopePartners\_Final), preserving the original single-location results.

**About the Batch Launcher**

I supplied a simple .bat file—**EditAndRunIfPrompted\_GeocodeLauncher.bat**—that novices can edit in Notepad to point PYTHON\_EXE at their ArcGIS Pro Python interpreter. Double-clicking the batch file then ensures the script always runs in the correct environment, catches exit codes, and prints friendly success or error messages to the console.

**Key Lessons Learned**

* **Iteration Is Essential:** Each time I tweaked the code—fixing sheet‐path syntax, adjusting field mappings, handling empty strings—I got closer to a bullet-proof solution.
* **Raw Strings Aren’t Foolproof:** Simply prepending r"…" sometimes didn’t normalize slashes on Windows, so I used os.path.normpath() to guarantee valid backslashes for ArcPy.
* **Pandas + NumPy Ingestion:** Bypassing ArcPy’s Excel tools with pandas.read\_excel and NumPyArrayToTable saved hours of “Table Load Error” headaches.
* **REST API for Fine Control:** When GeocodeAddresses misfired, calling the World Geocoder REST endpoint let me inspect JSON, handle timeouts, and log failures per row.
* **Living Atlas & Beyond:** I discovered powerful Living Atlas layers (e.g., under-6 poverty, demographic rasters) that I can quickly drop into my maps for richer context.

**Next Steps**

1. **Finalize Geocoding**: Review the four low-score failures, correct or manually place them, then lock in the final feature class.
2. **Thematic Mapping**: Pull in a Living Atlas layer—“Children Under 6 Living in Poverty” for Dallas–Fort Worth—and symbolize partner points against it to identify service gaps.
3. **Deliver a Report**: Design a concise map series and dashboard, package it in ArcGIS Online, and volunteer to present findings to Hope Supply Co., demonstrating where new diaper or hygiene kit distributions are most needed.

I’m still sharpening my skills, but this automated pipeline lays a solid foundation for data-driven decision-making in my client’s nonprofit outreach.

**APPENDIX**

**Laura Montalvo**  
Program Director  
Hope Supply Co.

laura@hopesupplyco.org

**Subject:** Crystal Hollis - GIS Project for Hope Supply Co. (School Portfolio) Questions

Hi Laura,

Thank you again for being open to me working on a school project that supports Hope Supply Co.!

Since my deadline is coming up quickly (the project is due May 11), I’m planning to create a geospatial analysis and report. The project will demonstrate applied GIS analysis techniques, such as mapping patterns of need, finding efficient delivery routes, and identifying areas that may need additional support, using newly sourced public or approved datasets. The final product could potentially assist with planning, grant writing, or outreach efforts.

If available, would you be able to help me answer a few quick questions so I can best align the project with your team’s needs?

**What do you think should be the focus?**

* Mapping areas of greatest need (such as child poverty rates or service gaps)
* Optimizing basic delivery routes for supplies
* Another area you think would be most useful to your team

**Additional Context (if applicable):**

* Who would be the intended audience for this project? (e.g., internal leadership, donors, partners)
* What decisions or actions might the project inform? (e.g., fundraising strategy, delivery logistics, partnership outreach)

**If internal information is available:**  
To assist the project, if any basic internal data is available and appropriate for public use, formats such as a CSV spreadsheet, Excel file (XLSX), or shapefile (SHP) would be ideal — for example, a list of partner locations, service sites, or delivery points.

Otherwise, I will proceed using public datasets, including:

* U.S. Census Bureau data (child poverty rates, household income, households with children)
* City of Dallas Open Data Portal (schools, clinics, food pantries, shelters)
* USDA Food Access Research Atlas (identifying food deserts and low-access areas)

**Important Note:**  
Because this project is for a graded assignment and will also be shared publicly as part of my professional online portfolio, any internal information shared would need to be appropriate and approved for public distribution. Otherwise, I will strictly rely on public datasets.

Thank you again for your time and support! I appreciate it, and I hope the final project can be of real value to Hope Supply Co.

Best regards,  
Crystal Hollis

Student

Dallas College

[e1960743@student.dcccd.edu](mailto:e1960743@student.dcccd.edu) | [crystaljhollis@gmail.com](mailto:crystaljhollis@gmail.com)

A screenshot of a computer

AI-generated content may be incorrect.