Visualizing CSV/shapefile point data in Earth Pro

- Acquire data
  - ArcGIS Hub - Public Housing (USA)
  - Choosing a format
    - Recommended: CSV/shapefile - Earth Pro can apply style wizard to these formats
    - Not recommended: KML - you're on your own to style

- Preparing your CSV/shapefile data columns
  - Styling: Decide which will you use for styling your features
    - You can use existing, or create a new column for style "buckets"
  - Culling: Remove columns you don't need to improve KML loading performance
  - Score: If you want to regionate add a new column/field called "kml.FeatureScore" and add/calculate a numerical score for how important it is (higher = appears sooner)

- Conversion to styled KML
  - Lot of tools can convert to KML (and some can style on export)_
    - ArcGIS / QGIS: UI programs (paid/free)
    - GDAL / OGR
      - Standard GIS library used all over the place
      - But you have to compile the code yourself, or download "binaries" (check out gisinternals.com)
      - Command-line access… better for programmers and job automation
      - This is what Google Earth Pro uses under the hood!
    - Can also use Earth Pro!
      - GDAL/OGR is built-in for converting between GIS formats
      - LibKML (see maintained fork) is used to "regionate" KML/CSV files. Let me know if you want to know how to compile on Linux…

- Let's process public housing data with Earth Pro!
  - Grab my source data in this folder:
    - Public Housing.zip
    - lod_folders.kml

  - Step 1: [Demo only] Clean up the original CSV file
    - Remove most columns except for the "TOTAL_UNITS"
    - Add a "kml.FeatureScore" column, and use the same values as "TOTAL_UNITS"
    - Save as: step1_remove_columns_Public_Housing_Developments

  - Step 2:
    - Import the CSV in Google Earth Pro
    - Use "Y" for the Latitude column
    - Keep Field type defaults
    - Import All
    - Yes - Apply a style template

- Set the name to “PROJECT_NAME”
- Choose color tab > Set color from field
    - Choose TOTAL_UNITS
    - Check “create sub-folders for each bucket”
    - Create 3 buckets
        - Set first to max value of 50
        - Set second to max value 1000
    - You can color each bucket as you wish, but we’re gonna overwrite them later.
    - We’re going to skip setting specific icons in the wizard.
    - Click OK
    - Save the style template
- Don’t check on the resulting KML
- Save the resulting KML as: step3_folder_styled_Filtered_Public_Housing_Developments.kml

- Step 4:
    - Let’s turn on the KML to view it.
    - You’ll notice that it grinds Google Earth to a halt. There’s too many labels, which is very costly in terms of rendering performance.
    - Let’s restyle the contexts of of these folders and hide the labels
    - Right click each folder > Properties/Get Info
        - Choose the Style,Color tab > Choose Share Style
        - Choose an icon from the upper-right button
        - Choose an icon color for the bucket (e.g. yellow, red, green)
        - Set the label scale to 0
        - Notice the Balloon template box… this is HTML you can customize, and use data from each of the source data columns.
        - Repeat for the the other folders
    - Save this resulting KML as: step4_highlight_labels_Filtered_Public_Housing_Developments

- Step 5: Simple Region to somewhat improve performance
    - Let’s do something simple to improve the performance of this large layer.
    - Download and open the lod_folders.kml file from the “LOD Tool” folder on the drive
    - The contents of each of these folders will only appear once the zoom level is at/beyond the Level-of-Detail (LOD).
    - Play around with it until you find a zoom level you want to try (e.g. LOD 8)
    - Move the KML you created above into that folder.
    - Notice how the contents of the folder aren’t visible until you’ve flown in far enough
    - Save the file as: step5_simple_region_Filtered_Public_Housing_Developments

- Step 6: Regionation to dramatically improve performance
    - Tools > Regionate
    - Choose the file we just created: step5_simple_region_Filtered_Public_Housing_Developments

        - Create and select an output folder, called “step6 regionate”
        - Check the box to open at the end
        - Go!

    - Step 7: Fixing the balloon for the regoinated KML
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- Performance
    - Why?
    - Cheap & easy - Regions
        - Use Regions to control detail
        - Earth still has to load all the data, but display will be better
    - More work - Regionation
        - Use “regionation” or tiling tools to break up into smaller KML files
        - Others Tools: MapTiler, GeoServer, LibKML/Regionator
        - Ranking: should have a column named “kml.FeatureScore”
        - Processing in Earth
        - Viewing:
            - Settings > Enable access to local files