IOWA STATE UNIVERSITY
Extension and Outreach

GIS
Training and Services

**Geospatial Technology
Training Program**
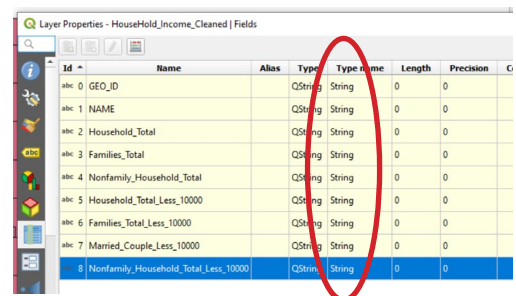
QGIS - Improving Table Joins with CSVT Files

QGIS 3.22

Welcome to the Essential GIS Task Sheet Series. This series supplements the Iowa State University Extension and Outreach Geospatial Technology Training Program's workshops and short courses by providing quick and easy instructions for performing a variety of mapping, data science, analysis and data visualization tasks.

This task sheet will teach you how to manage your CSV files and improve joins by creating a CSVT file. When adding CSV files to QGIS you may notice all fields are treated as Strings (text data); creating a CSVT file will help QGIS recognize the field types. A CSVT file is a simple line of text listing the field types used in your CSV file separated by commas. Common field types you will come across are: String used for text data, Integer used for whole numbers, Real used for numbers with decimals, and Boolean used for yes/not or true/false data with only two options. Pay close attention to the file types CSV and CSVT while working on this tasksheet.
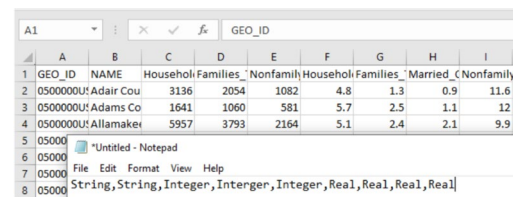
1. Getting Started

a. Data for this task sheet can be downloaded here: https://isueogtp.github.io/GISTaskSheets/TaskSheetData/PM2082-20m.zip. Extract the files when the download is complete.

b. Open a new QGIS project, and add the **Counties.shp** file to QGIS.

c. Open the **HouseHold_Income_Cleaned.csv** file in **Excel**, or your spreadsheet software of choice. Observe the data fields and notice the data is in text, whole numbers, and decimal numbers.

d. Add **HouseHold_Income_Cleaned** to **QGIS**, and open the **layer Properties**. Go to the **Fields** tab, notice the **Type name** column says each field is a String. If this is not corrected you will not be able to properly symbolize your data.

e. **Remove** the **HouseHold_Income_Cleaned** layer from QGIS.
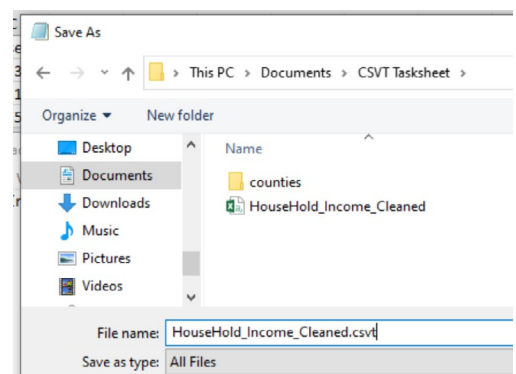

2. Creating a CSVT File

a. With the CSV file still open in your spreadsheet software, open your text editor software, (Notepad for Windows, or TextEdit for Mac) so that you can see both windows.

b. For each column, type the data type in your text editor and separate each type with a comma, to match the example picture. *Notice: GEO_ID has both numbers and letters making that column string data.*

c. When done use the **Save As...** option. Locate and save the file in the same location as your HouseHold_Income_Cleaned.csv file. For the file name type: **HouseHold_Income_Cleaned.csvt**. Then click **Save**.

d. Add your **HouseHold_Income_Cleaned.csv** to **QGIS** again. QGIS will automatically utilize your CSVT file. Open the **Manage Fields** tab in the layer properties. Now your **Type name** column will have the right data type.
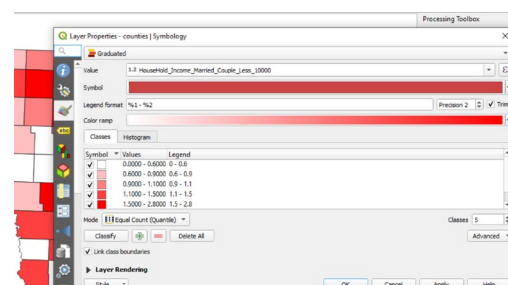

3. Join the Data

a. Open the Layer Properties for **Counties** and go to the **Join tab**. Click the **Green Plus** icon to open the **Add Join** window. Set **Join Layer** to **HouseHold_Income_Cleaned**. **Join Field** will be **GEO_ID** and **Target field** will be **GEO_ID**.

b. Make a few more adjustments by **checking** the box for **Joined Fields**, this will control what new fields will appear after the join. **Check all** the boxes except **GEO_ID** and **NAME**. Also **check** the **Custom Field Name Prefix** box, and set the name to **HouseHold_ Income_**. Click **Okay** to close the Add Vector Join Window.

c. Click **Apply** to make the join, then close the Layer Properties window.

d. Open the **Counties Attribute table** and observe the join. *Notice your GEO_ID and NAME column are not present.*
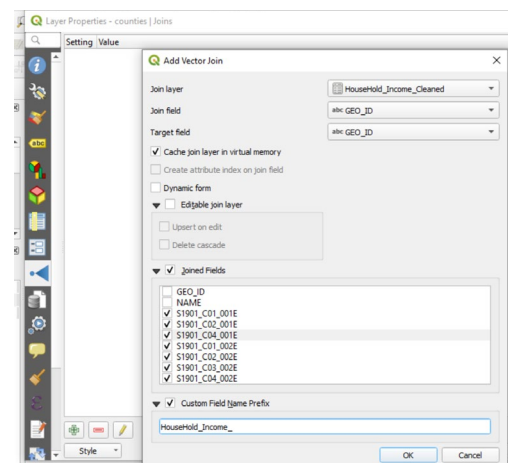
4. Symbology

a. Open the **Symbology** tab for the **Counties** layer. Set the first option to **Graduated**, then **Value** to **HouseHold_Income_Married_ Couple_Less_10000**. Select a **Color Ramp** such as Reds. Set the **Mode** to **Equal Count (Quantile)** and click the **Classify** button, then click **Apply** and close the Layer Properties.

b. Use the **Identify Features** tool from the Attributes Toolbar to click on Counties and see their values.

c. Click on a County, it will highlight in red and the Identify Results panel will open to display all the information.

Contact: Jay Maxwell, Data Analyst, and Professor Christopher J. Seeger, PLA, GISP can be reached at geospatial@iastate.edu. Additional task sheets and information about the Geospatial Technology and Spatial Data Science Programs are available at www.extension.iastate.edu/communities/gis.

This institution is an equal opportunity provider. For the full non-discrimination statement or accommodation inquiries, go to www.extension.iastate.edu/diversity/ext.