Fixing Problems with *Numeric & Text* Fields using the *Field Calculator*

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Overview

Oftentimes, you will need to view aggregated information for numeric data in an attribute table and discover that this is not possible because the data was formatted as a text (string, character) type of field. The Boston parcels assessor data is a good example of this problem – most of the information that should be numeric (e.g., valuations and size fields) is in text format. Before you can use these you need to make them into numeric fields. (You can do this by reformatting in Microsoft Excel but this tutorial will show you how to do it in ArcGIS).

You may also need to change field types between **text** and **numeric** when you are trying to join tables based on an attribute field – to do a join, the join fields in the respective tables have to be of the same type (e.g., both text or both numeric). Sometimes they are not (e.g., a census blockgroup ID may be text in one table but numeric in another, even though they have the exact same values).

The fix for this kind of problem is fairly easy. You need to open up the attribute table in which the problem exists, **add a new field of the type you desire** (e.g., you want gross tax value to be a numeric field, so you add a field called *GROSSTAX_N* and make it a double precision type of field), then use the **Field Calculator** function to copy the data from the original field to the new field.

VERY IMPORTANT: You CANNOT perform the following operation on the data if you are using it directly from the M: drive because the files are **READ-ONLY** there. You need your own copy. However, this FY09_Parcel_Join data set is very large (over 1 gigabyte), and thus won't fit into your H: Drive. Thus, **you need to either copy it to the Desktop or work with a smaller section within Boston (e.g., select parcels in Brighton and then choose *Data → Export* to create a smaller shape file that will fit on your H: drive)**

## Converting a **Text** field to a **Numeric** Field Type – GROSS_TAX example

We'll use an example from the Boston parcel data (on the M: drive this is under M:\City\Boston\Assessor\FY09_Parcel_Join.shp)

This data set has useful assessor data for all Boston parcels from Fiscal Year 2009. Attributes include the tax valuation for land (AV_LAN), for buildings (AV_BLD), the total valuation (AV_TOT), GROSS_AREA, LIVING_ARE (square footage of the living space), number of floors, etc. Some of these fields are correctly in a numeric type already, but some (e.g., gross tax) are in the database as text, not numbers. Thus, if you were looking for all entries with a gross tax over $10,000, you would not be able to perform the query. **The gross_tax field has to be of a numeric type of attribute field to perform that query.**

The following instructions show you how to change gross_tax to a numeric type field.
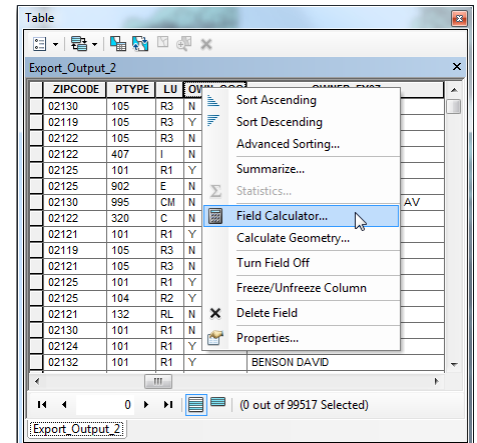
First, note that you can view the various types for your attribute table fields by *right clicking the layer* in the *Table of Contents*, choosing *Properties*, and then clicking on the *Fields* tab. 1) You see the fields listed on the left and 2) the corresponding information about each field on the right, e.g. **Data Type Text**. If you look at the fields Gross_Area, Gross_Tax, Living_Are, Land_SF and Num_Floors, you see that some of the fields that should be numeric are numeric (Long integer) and some are text.
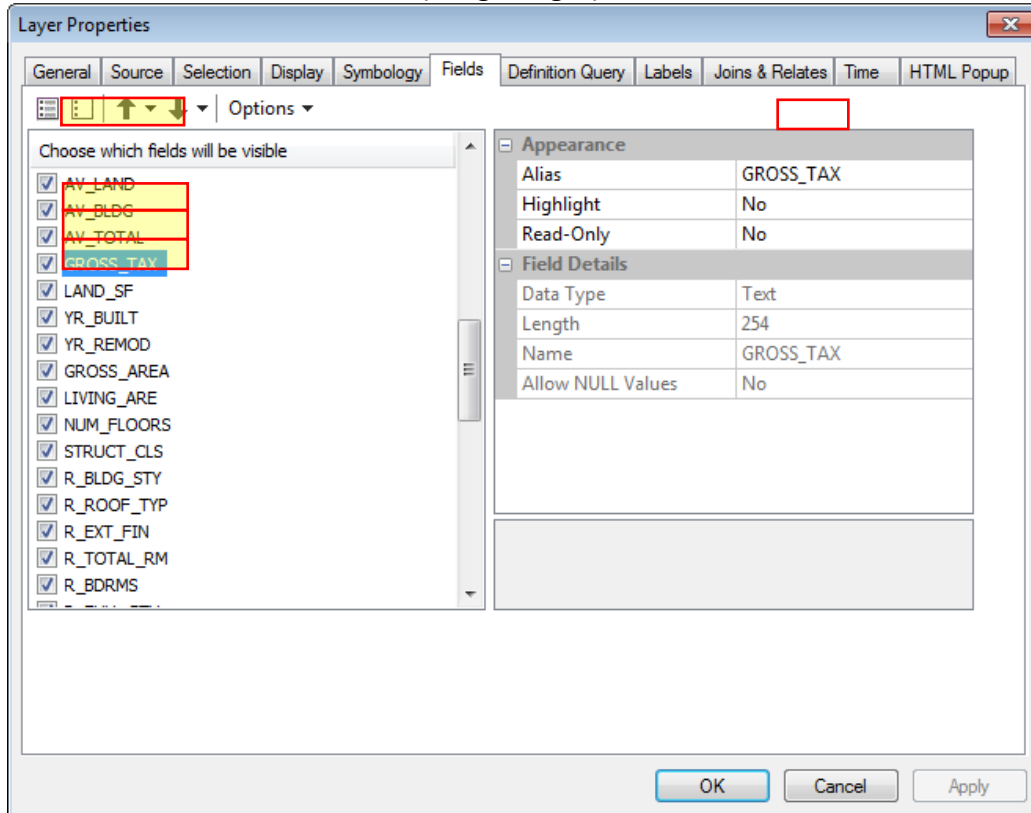

Also note that *Numeric* fields come in several types – *Double* and *Float* (both of which can have decimal values), and *Short* and *Long* Integer. (For details about these types, see the ArcGIS 10 Online Help topic Geodatabase Field Types).

In the Boston parcels example above, we want to make the *GROSS_TAX* field (**text**) into a **numeric field**. In ArcGIS you cannot simply change the field type. Instead, you have to **create a new field that is numeric**, and put the data from the *GROSS_TAX* field into the new field. Here are the steps using this example.

NOTE: Make sure you are using a copy of the *FY09_Parcel_Join* data set to which you have write access (not the data file on the M: drive)

1. Open the attribute table for *FY09_Parcel_Join*

2. Click on the *Field Options* button in the top left menu bar of the table ( )

3. Choose **Add Field…**

4. Name the new field *GROSSTAX_N* (field names in shape files are restricted to a maximum of 10 characters, no spaces, can't start with a number)

5. Make it a **double** precision type and leave precision and scale set to 0. Precision is the number of characters the field can have and scale is the number of decimal points – leaving both to 0 makes the software calculate this for you.
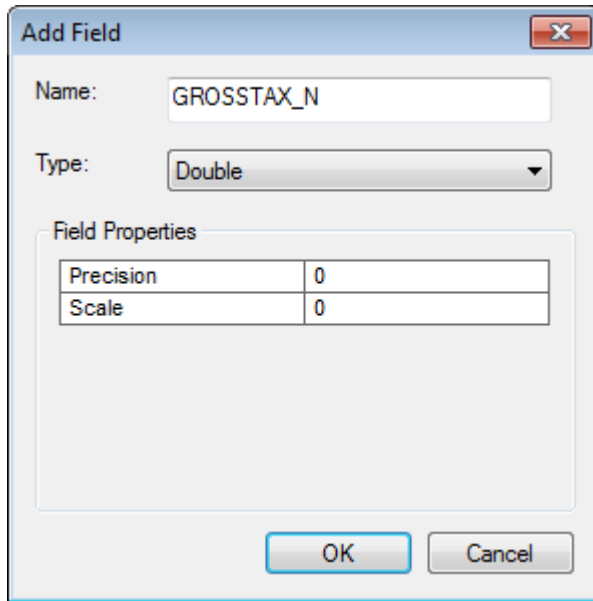
6. Click **OK**

7. The field is added to the very end (right side) of the table – scroll across the table to see the new field

8. Right-click on the new field name (*GROSSTAX_N*) and choose **Field Calculator.**
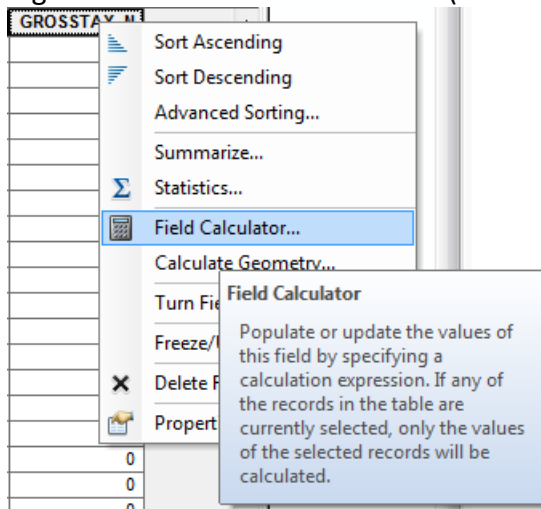
9. Ignore the warning (click **Yes**)

10. A field calculator window appears – note that the Query box already says **GROSSTAX_N =** and then you fill in what you want that new field to equal. In this case you scroll in the attribute list to find the original GROSS_TAX field, and *double-click* on it to add it to the query box.
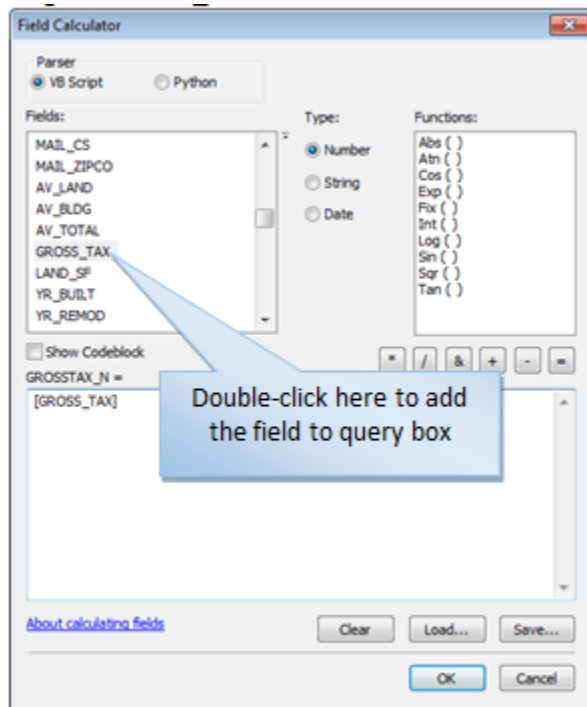
11. Click OK – the process will take a while on a large table.

The same process can be used change a numeric field (e.g., an ID field) into a text field type if need be. In that case your new field should be a text type field.

You can also use this process to hold the results of a calculation in shapefiles. For example, you can sum up counts of people in age cohorts in census data. To do that, use the arithmetic signs on the Field Calculator dialog box (e.g. *NewVariable = X +Y)*

VERY IMPORTANT NOTE!

The *Field Calculator* calculates for all records IF no records are selected.

If you have selected records (on purpose or by accident), the Field Calculator fills in the values for only the selected records. This is a very handy tool to have, but sometimes if you have forgotten you have selected records, you will be flummoxed by why the function didn't work on all the records. If this happens, clear the selected records and run the process again.

For more tips and tutorials, please feel free to visit our <u>website</u>.