

Census Tip Sheet

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This tip sheet assumes you have census geography and data to map – see the Census tutorial if you need to download and format census geography and data.

Trouble-shooting field (column) names in attribute tables (e.g., SF3 tables)

Problem 1 - field names are changed in the conversion from Excel to dBase to ArcMap

When you are converting data tables between Excel and dBase, you will run into problems regarding field (column) names in the tables. In dBase formats, field names must be 10 or less characters with no spaces or other unusual punctuation. If your field names in Excel are longer than this, they get chopped down in the process of saving to a dBase (.dbf) file.

When using SF3 data from the Census Bureau, the conversion from Excel to dBase results in the loss of the last numbers of the field name, which is really bad because they identify the different fields. E.g., GCTH9_CO1.C0 becomes GCTH9_CO1, and GCTH9_CO1.C1 *also* becomes GCTH9_CO1. When you bring this into ArcMap, it tries to help by *adding* sequential numbers to the field names in order to distinguish them - unfortunately, it adds a 1 to what had been a 0, 2 to what had been a 1, etc. All of which causes total confusion, and makes you understand why it is much easier to buy pre-processed data if possible.

Solution for Problem 1

Change the field names in Excel before you save as a dBase (.dbf) file. You can use whatever field name makes sense to you as long as you keep it 10 or less characters with no spaces or other funny stuff (e.g., *med_HH_inc* will work, as will *medHHinc*).

While you're at it, you can also delete any fields in Excel that you don't need for data display in ArcMap. Just make sure *not* to delete the *Geo_id* field - you need that to make the join to the tracts layer.

Problem 2 - field names are too long to see when trying to map a value

When you join the newly created .dbf file to a layer in ArcMap, another potential problem occurs. The field names that you see are even longer because ArcMap adds to each field name the name of the table the field came from (either the layer's attribute table or the newly joined table) as you see here:

NTER_OCC	census2000_tracts_sf1.Geo_id	finan_housing.OID	finan_housing.GEO_ID	finan_housing.SUMLEVEL	finan
670	14000US48453000101	0	14000US48453000101	140	00
88	14000US48453000102	1	14000US48453000102	140	00
2293	14000US48453000201	2	14000US48453000201	140	00
269	14000US48453000203	3	14000US48453000203	140	00
1108	14000US48453000204	4	14000US48453000204	140	00
2418	14000US48453000301	5	14000US48453000301	140	00
2273	14000US48453000302	6	14000US48453000302	140	00
737	14000US48453000303	7	14000US48453000303	140	00
1215	14000US48453000401	8	14000US48453000401	140	00
789	14000US48453000402	9	14000US48453000402	140	00
2233	14000US48453000500	10	14000US48453000500	140	00
203	14000US48453000001	11	14000US48453000001	140	00

This addition is only temporary while the join is in place, so your field names have not actually been renamed. Still it can be confusing to look at.

It becomes even more confusing when you try to create a map, because when you click to choose the value you want to map, the names are sometimes so long, you can't see them in full and so can't see which is the desired field.

Solution for Problem 2

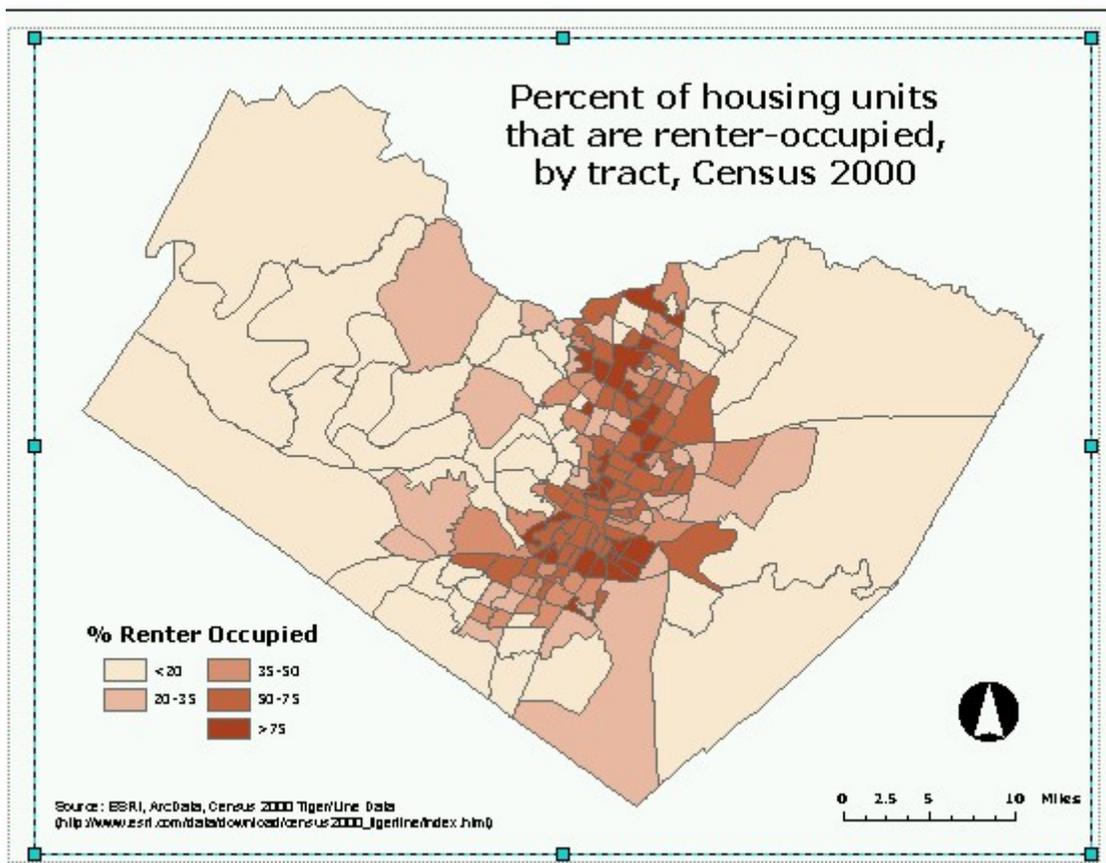
I have solved this particular problem by exporting the layer, with the table still joined, to a new shape file. To do this, right-click on the layer name (e.g., census2000_tracts_sf1) and choosing Data - Export Data. This creates a new shape file with the original attributes of the layer and the joined table together in one new permanent shape file (by contrast, a join is temporary). You should name this new shape file something reasonable, e.g., tracts_SF3_income_poverty. Once you do this, the field names go back to what you originally named them and are easier to see. This is not an ideal work-around, but it works.

Mapping Tips

A few tips about census maps:

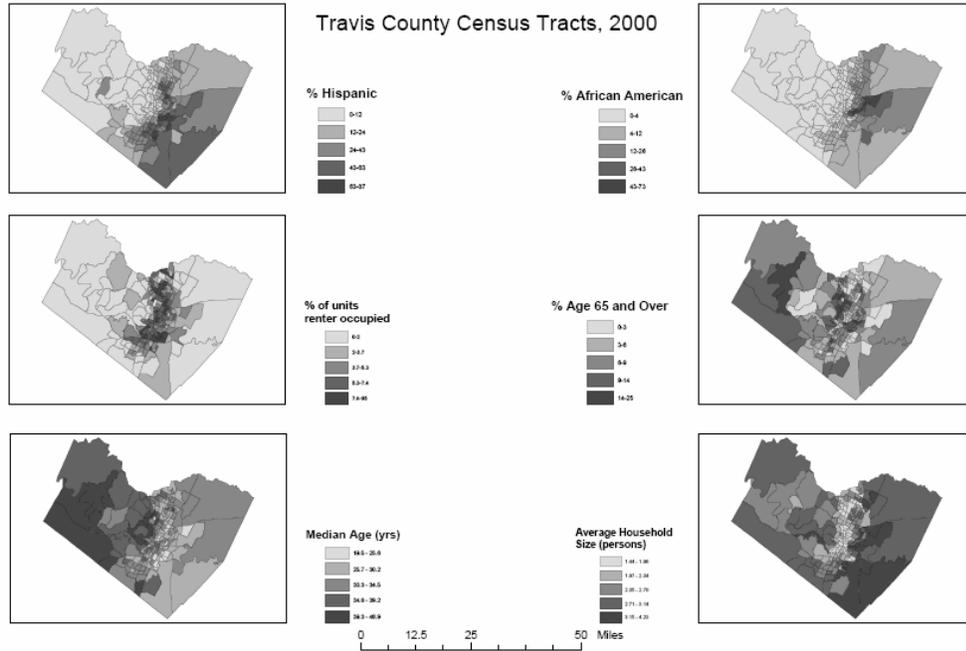
- Because tract boundaries are in part set to contain around 5000 people, and so are very close to each other in population, it doesn't make much sense to do a map of total population - there just aren't big differences. It would make more sense to map population density (total population divided by area in square miles), but you do not as yet have an area field to use for this. There is a way, and you will learn it later, but you have enough complications for one assignment!
- Mapping number or percentage of females or males is also not very helpful as the values are around 50% most of the time. It is interesting to find exceptions to this (e.g., where there is a large military base or prison), but these are very rare. So don't make maps of gender unless you have a specific need or purpose.
- Remember, don't try using fill patterns (hatching, dots, etc.) - they are very distracting and hard to distinguish.
- Use a single color scheme (e.g., pale blue to dark blue, white-gray-black, pale red to dark red) - as we said in class there are some other color schemes that work but the safest bet is a very simple color scheme.
- Use the Natural Breaks method of classification unless you really think another method more effectively tells the story you want to tell. But do adjust the breaks to make more sense to a map viewer (e.g., 13.9% might be better set at 15%).

- For now stick with the graduated colors option, again unless you see a pressing need for something else. Other options like graduated symbols or dot density can sometimes be appropriate, but you should wait to use them until you have a better understanding of what impact they convey. Take a look at using charts, like pie charts (e.g., you can show in a pie chart the distribution of vacant, owner-occupied, and renter-occupied units), but again, unless you feel very confident of your design skills, hold off for now. These make good maps in very rare circumstances. Just because the computer can do it, doesn't mean you should use it!
- Manage your white space! The shape of Travis County offers some opportunities for map element placement. You can allow the county to fill the whole page, for example, but still have room to the top just right of center and in the bottom two as in the example below, and note that the map frame has been expanded to fill the whole page, while the other elements are placed within the map frame. This particular example would apply if you were doing one map per page. If you are doing several maps in a page, your solution would be different.

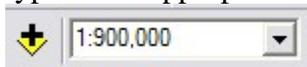


- If you are putting more than one map on a page, some notes to help:
 - Here is an example where I have placed all six maps on one tabloid size (11x17 inches) sheet. The map isn't perfect (I should have made the maps themselves

slightly larger probably) but you get the idea

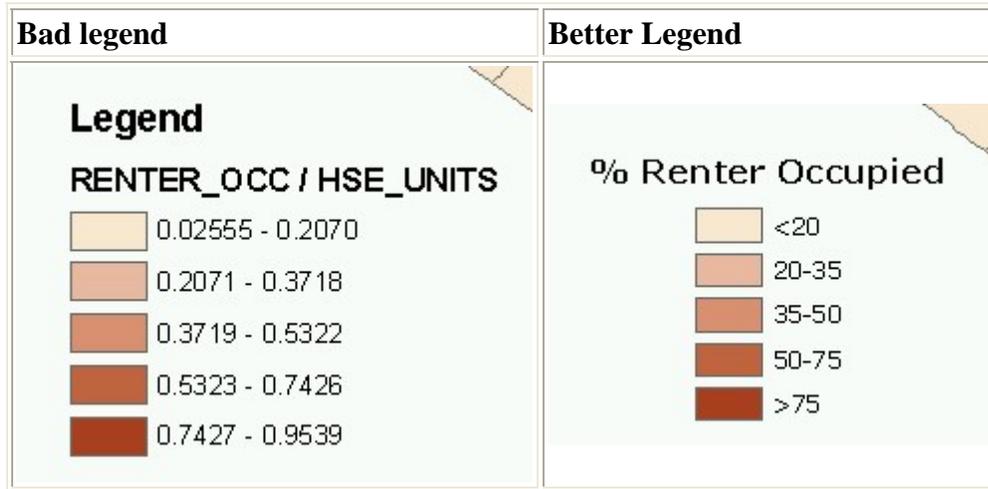


- To make all the data frame panes the same size, hold down the CTRL key and click on each pane in turn - this is the way to select multiple panes. Then with all the panes selected right-click to get a menu for adjustments. One of the available functions is *Distribute* and under this you can use the *Make Same Size* option. You will also see an Alignment function that will help you line up panes.
- Make sure all the data panes are showing the county at the same scale. You have to set the scale for each individual pane but you should do this towards the end of making all the adjustments to your layout, otherwise you might have to set scale all over again anyway. To set the scale for a data frame in Layout View, click on the data frame you are working on, then go to the scale area of the Standard Menu and type in the appropriate scale (I used 1:900,000 for my tabloid sheet with six maps:



Legend Tips

OK, now to the legend!



How to get from here to there...

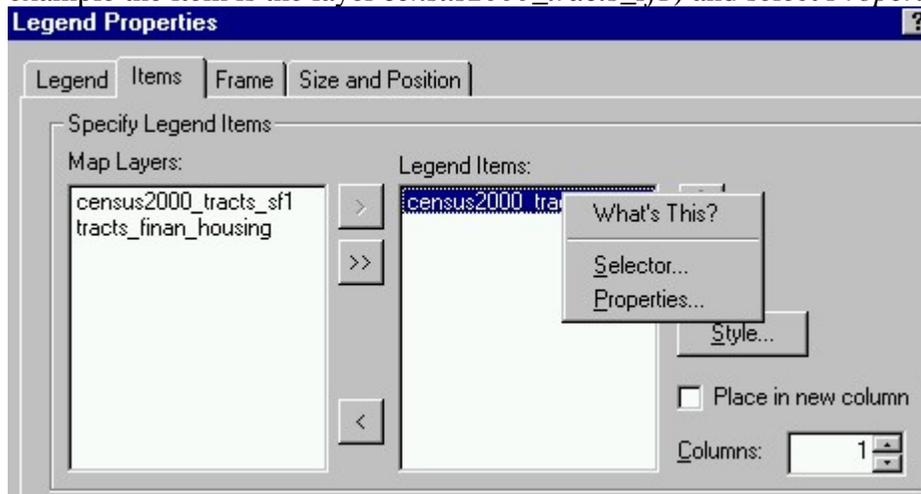
This is what I do with legends - you can also read up on them in ArcGIS Desktop Help.

- First, when creating the map in the first place, set intelligible breaks and labels for your data - you do both these things in the Layer Properties - Symbology tab, as in the example below (renter occupied normalized by total housing units to show percent renter-occupied) - here I have used the *Natural Breaks* method but I am in the midst of slightly adjusting the upper break points in each range and applying labels:

The screenshot shows the 'Layer Properties' dialog box with the 'Symbology' tab selected. The 'Draw quantities using color to show values' section is active. The 'Fields' section shows 'Value: RENTER_OCC' and 'Normalization: HSE_UNITS'. The 'Classification' section is set to 'Manual' with 'Classes: 5'. A color ramp is shown below. A table lists the symbol ranges and labels for each class. The second class, with a range of 0.400000001 - 0.532229965 and label '20-40', is highlighted. A small map preview is visible in the bottom left corner.

Symbol	Range	Label
[Light Yellow]	0.025551684 - 0.200000000	< 20
[Light Orange]	0.400000001 - 0.532229965	20-40
[Orange]	0.400000001 - 0.532229965	0.4001 - 0.5322
[Dark Orange]	0.532229966 - 0.742567788	0.5323 - 0.7426
[Dark Red]	0.742567789 - 0.953900709	0.7427 - 0.9539

- Next create a legend in the layout view (**Insert - Legend**). I typically accept all of the defaults. This gives you the *bad* legend but you now have something to play with...
- In the lay-out, right-click on the legend and choose *Properties*.
- In the *Legend* tab, I type the legend I want to see on my map, e.g., *% Renter-Occupied*. Make sure that *Show* is checked.
(Note: in your title or other text, you should be explaining what the map is in full, e.g., *Percent of total housing units that are renter-occupied*. With that done, your legend title can be very succinct)
- In the *Items* tab (still in Legend Properties), first make sure that any items (layers) you don't want in the legend are not showing by clicking on unwanted items under *Legend Items* and moving them back over to the left)
- Next right-click on the legend item of interest (or the one that is causing problems, in my example the item is the layer *census2000_tracts_sf1*) and select *Properties*



- In the *Legend Item Properties* box, click on the *General* tab, and **uncheck** *Show Heading*. This gets rid of the annoying *RENTER_OCC/HSE_UNITS* heading
- Another route to modifying the legend is to click on the *item* as above, then click the *Style...* button, then click on the various style examples and check the little preview pane. I use the third style down - *Horizontal Single Symbol Label Only* for the census maps.