Making maps with Google Fusion Tables
(modified April 27, 2012)

Step one: Create a Google account that you will use solely for work-related purposes. Be sure to write down your login and password.

Step two: Prep your data in Excel. We are going to use a file called "stpaulforeclosuresQ1—2011" which contains one record for each St. Paul property that went through a sheriff's sale in the first three months of 2011. The data includes the date, sale amount and address. I've also created a field that contains just the month (1, 2 or 3) and another that has the month written out in text (January, February, March)— you'll see why later.
Google can "geocode" an address, but you need to make sure the address is all in one column (preferably a full address with house number, streetname, city, state and zipcode). Also there is a limit to how many addresses Google will geocode at one time (2,500 per user, per day), so it's a good idea to do this only with datasets that have less than 2,000 records. There are other ways to get bigger datasets into Fusion Tables, but that is more advanced.
Alternatively, you could have the "location" that is mapped be the name of a city (it will put one "pin" at the center of each city), so this would only work if your data consisted of one record per city.

Step three: Import your spreadsheet into Fusion Tables. Go to your Google account and click on Documents. It will show the documents in your account (or none, if you haven't used it yet) and there's a red tab on the left that says "CREATE". Click on that tab and you'll get a menu. Choose "Table (beta)" —- see picture to the right
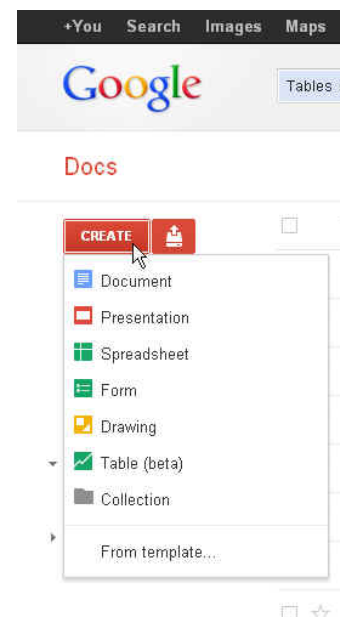
Step four: Import new table. Click the "Choose File" button (make sure the "From this computer" option is highlighted on the left.
(Alternatively, you could create your data in Google spreadsheets and link to it from this window)
It will accept Excel, delimited text files or KML files.
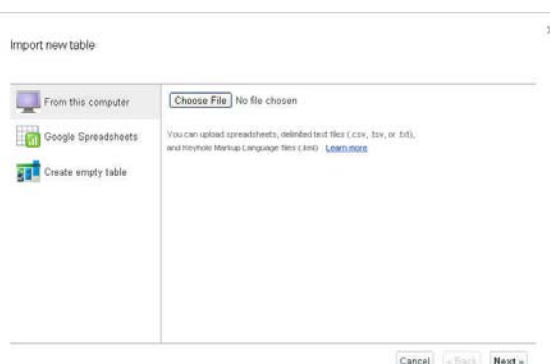
Step five: Will give you a preview of your data and allow you to choose which columns you want to import. The default is that all columns are imported. (Note the checkbox above each column). Also see that it has guessed that our column or field names are in row 1.

It will truncate any column names that are longer than 10 digits.

Step six: Allows you to name your table and to provide some "metadata," such as a description of what the data includes or where you got it from, etc. It would be a good idea to put something in the description box that will help you understand what the data is a year or more from now. You can name it whatever you like. I tend to leave the name the same as the file I imported it from in order to better track where it came from.

Step seven: You will now see your data in a Fusion Table. The address field will be highlighted in yellow (that's the way Fusion indicates it has identified that column as the "location" field).

Go to the "Edit" menu at the top, and choose "Modify columns." We're going to start by making sure our columns will display properly.

Step eight: This is the "configure columns" dialog box. On the left are a list of your table's columns and it has identified whether the column is a number or date/time, text or location.

Make sure that your address field is set as "location."

Click on Sale_date and change the Format to whatever date you'd like (I changed mine to the one that looks like "Dec 24, 2008")

Click on sale_amoun and change the Format to currency ($1,234.56)
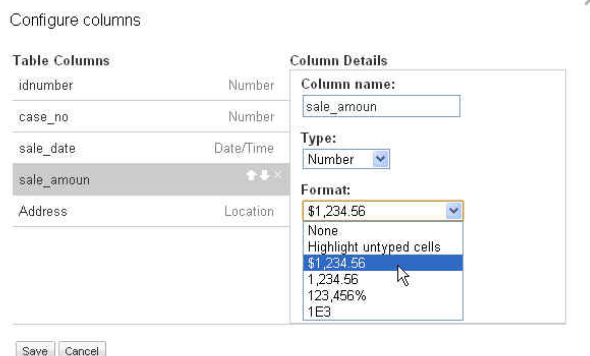
Step nine: It's time to map your data. Click on the Visualize tab and choose "Map". It will take a couple minutes for Google to geocode the records and plot them on a map. Then you will need to zoom into St. Paul to see the dots.
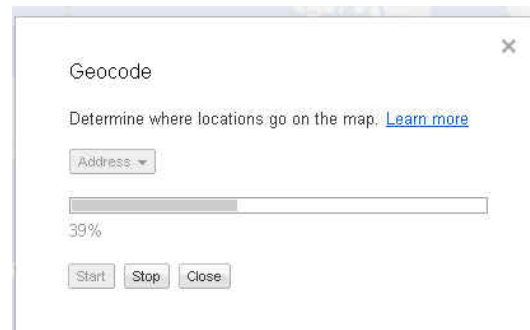
Step 10: Check out the pins. Note that we've got some pins outside of St. Paul. Click on a pin to see the underlying information. They all say "St Paul" but if you look closely at the zip codes, some of them are definitely suburban zip codes. Apparently the data we got from the Ramsey County Sheriff's office had St Paul listed as the city, but some of them are not really in St. Paul. If you don't want to include them in your map, you can go back to your Excel file and clean it up — then repeat all the steps up until this point OR you can click on Visualize and choose "Table" to go back to the Table view. There you can click the garbage can icon on the far right to delete a particular row (go through and find each of the records that don't belong and delete them one by one).

For this exercise, we're just going to leave them.

A general rule, though, is to look at all your pins and make sure there aren't any that are plotted in far-flung places that they shouldn't be (i.e. a pin for Springfield, Minn., is plotted in Springfield, Illinois)

Step 11: The next thing we'll do is modify what appears when you click on one of the pins. We can use any of the information that is stored in the table (sale date, amount, address) and add some other text.

Right now it's displaying everything and it looks a little ugly.
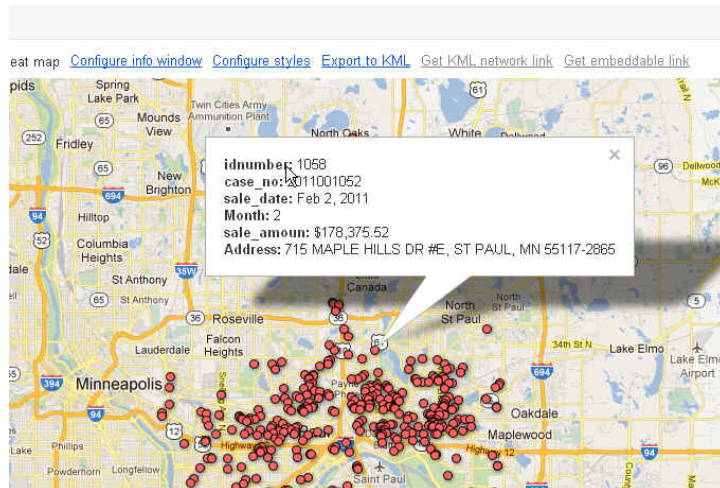
Click on "Configure Info window" link just above the map. It will bring up a dialog box that has two tabs — Automatic and custom.

On the Automatic one, you can see that each of the fields/columns from our table are listed and checked off. We can uncheck the ones we don't want.

Let's uncheck "idnumber", "case—no", and "month" and "monthTxt"

Then click on the Custom tab. Here you can edit the HTML. If you know HTML you can get really fancy (make tables, add borders, colors, etc). If you don't know HTML you can make a couple easy fixes.

The first easy fix is to change the order that the info will appear. Copy (Ctrl-C) the line that has "address" and paste (Ctrl-V) it just above the "sale—date" line.

Then you'll need to add a ‹br› tag to the end of that line (just like the other lines)

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tags) to "Sale Date:"
And change "sale—amoun:" (between tags) to "Sale Amount:"
Delete the ‹br› tag at the end of the Sale amount line (your last line)

Here's what it should look like:

```
<div class='googft-info-window' style='font-family: sans-serif'>
<b>Address:</b> {Address}<br>
<b>Sale Date:</b> {sale_date}<br>
<b>Sale Amount:</b> {sale_amoun}

</div>
```

Push the SAVE button in the lower left corner to close the dialog box and you'll be back on your map.
Click on any pin (it might take a few seconds before it will let you click) to see the new info window.

Step 12: Let's change the colors of our icons depending on the sale price. Click on "Configure styles" link above the map. This will bring up the Configure Map Styles dialog box.
Notice on the left it says Points, Polygons and Lines. Our data consists of "points". To change the icons for points, we have three options: fixed, column and buckets.
Fixed just has one option — one color for all of them. You can go in here and change the color, but it will apply to all the pins.
Column — we're going to use this one in a bit.
Buckets — is where you can dictate the color based on values in your data. It needs to be "continuous" data. In other words, something like money or a numeric value (city population, number of enrolled students, etc.)

We're going to use Buckets. Click the radio button next to "Divide" and change it to 5 buckets. Set the column to "sale_amoun"
Before doing this I usually open up the original Excel file and sort according to the "sale_amoun" field so I can see the range of values. Our data show that the sale amounts range from $13,000 (what a bargain!) to more than $3.6 million. So we need to set up buckets to accommodate those ranges.
Another good thing to do would be to look through your data to find natural breaking points or breaks that would make sense to the people looking at this map.

For this, we might want to have breaking points like this:
Less than $100,000
$100,000 to $149,000
$150,000 to $199,000
$200,000 to $299,000
$300,000 and up

See the picture to the left. You need to have 0 in the first box, then the starting value in each of the other boxes.
The bottom box needs to have a max value. In this case I set it to $4 million just to ensure it captures all of our data.
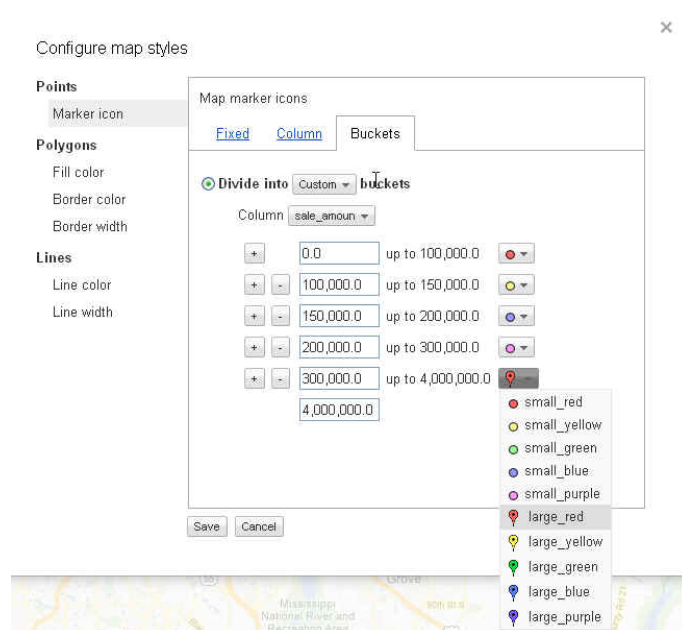
Next, click on the icons next to each bucket. Note we can have a small or a large icon and there are five color options.
Yes, the options here are pretty pathetic. This is a known and much-complained-about drawback of Fusion Tables. It is possible to get fancier icons, but you would need to do some serious programming (see link at end of handout for directions)

Let's use the small icons (since we have so many points) but let's make the largest value in red and the smallest value in yellow.
So the order should be:
Small yellow
Small green
Small purple
Small blue
Small red

Click the SAVE button in the lower left corner of the dialog box and you'll be back on your map. It will take a minute to update the new styles.

The thing that is missing from our map right now is a legend. The bad news is that Google has not created any way to make one easily based on what you've selected. Programmers have developed various bits of code that you can add to

your webpage to create a legend – we're going to save that for later. Google knows this is a problem and hopefully they will have that fixed sometime soon.
  If you don't want to have a legend, think about doing maps that have just one color. Or put a note above the map that helps readers understand. Something like:
  Yellow = under $100,000
  Green = $100,000 to $149,000
  Purple = $150,000 to $199,000
  Blue = $200,000 to $299,000
  Red = $300,000 and up

  Step 13: The final step is to embed this in a webpage or a blog. To do that, first we have to make the Fusion table "public"
  Go in the upper right corner to the tab that says "Share". Change the Visibility Options to either Public or Unlisted. (Public means that anybody can find it through Google's public tables page — and they could use it for their own work. I'd recommend choosing Unlisted)
  Close the dialog box.
  Now you will notice that the link above your map that says "Get embeddable link" is no longer greyed out.

  Click on the "**Get embeddable link**"
  Copy the text in the box that appears. You can then either send this to the online team to put into a page or you can post to your blog. Note that it says "width=500px" and "height=300px". This is dictating the size of the map that will appear on your webpage. You can adjust this, if necessary.

  If you want to see how your map looks now, you can create a Google Sites web page and put your map there.
  To do that, go to sites.google.com
  Click on Create
  Follow the directions for creating a new site.
  Once that's completed, go to your site and click on the Pencil-like icon in the upper right to "edit page."
  --On the toolbar, click the ‹HTML› tool.
  --Locate the spot in the page content where the visualization should appear.
  --Paste the embeddable code and click "Update."
  --A Gadget placeholder will show, previewing the location of the visualization in the page.
  --Press "Save" to see the visualization in the Sites page.

ADD CITY NEIGHBORHOODS AS BACKGROUND LAYER:
  It's possible to add a polygon map as a sort of opaque layer behind our pins. This requires having a KML version of the polygon map. Sometimes you can find KML files of the maps you want online. Other times you might have to request them from someone. (see notes at end of handout for more guidance on finding KML files)

  KML stands for keyhole markup language and it is the format that is used by Google Earth.

  We're going to use a KML file of St Paul neighborhoods. It's called "StPaulNeighborhoods.kml"

  Import that to Fusion Tables (just like we did the foreclosure file)

  After it imports, you'll see that we have two fields — the name of the neighborhood and a "geometry" field. The geometry field is the KML specifics that tell Google maps where to place this.
  Click on VISUALIZE to see that it gets plotted in the right spot.

  Click on Configure Styles. And under "Polygons" choose "Fill Color." Right now it's red. Click on the color and it will give you a pallet. You can choose a more generic color (like tan) and then set the opacity to 25% (the smaller the percentage here, the more "see through" it will be).
  Alternatively, you can put an HTML color code in the box at the top of the color pallet. You can find good colors and their respective codes at sites such as www.colorbrewer.org

  You might also want to Configure Info Window (like we did above)

Now we need to get the ID numbers for our two maps.
In the Neighborhoods map, go to the FILE menu and choose "About"

A dialog box like this one
will come up:

About StPaulNeighborhoods.kml

Name:	StPaulNeighborhoods.kml
Numeric ID:	3157385
Encrypted ID:	160EkMkUB2a9leNvLphvR_bKU2nS17FJMDo02hTl
Description:	Imported at Wed Mar 07 07:19:21 PST 2012 from zpdistUTM.kml.
Exportable:	yes
Visibility:	Private
Protected Map Layer:	Not set up set up now

  Where it says "Numeric
ID" copy and paste that

Edit table information

number (your number will be different than the one displayed here) into a Notepad file or write it down on a piece of paper. We're going to use it in a minute.
Close the dialog box.

Then click on the SHARE button in the upper right corner of the Neighborhoods map and set the visibility to either PUBLIC or UNLISTED. Close that dialog box.

Then go to your Foreclosure Map and repeat those two steps.
1) Get the numeric code from the About menu item. Paste into Notepad or write on a piece of paper.
2) make sure Share is set to public or unlisted.

Next we're going to go to the FusionTablesLayer Wizard. You can Google that term to find it (be sure to find Version 2.0), or go to this link:
http://fusion-tables-api-samples.googlecode.com/svn/trunk/FusionTablesLayerWizard/src/index.html
This is how we can mash our two maps together.

Where it says "Add layers" on the left side of the page, like this:

Add layers
The table needs to be *public or unlisted and exportable*. To find the table id, click *File > About* in the Fusion Tables menu.

Your table id:	
Location Column:	--Select--
Filter (optional):	
	Put layer on Map
Add a search feature:	--Select--

Paste or type the table ID number for the neighborhoods map into the "Your table id" box.

Give it a second, and then it will give you a pull-down menu next to Location Column.
From the menu, select "geometry" (if it doesn't let you pick a column, that's a sign that you forgot to change the visibility options in the Share menu on your map. You can go back and do that)

Edit Map
Dimensions: W: 500 px, H: 400 px
Map Center: 0, 0
Zoom: 1

Update Map

Then push the PUT LAYER ON MAP button.
You'll now see a red dot in North America.
Zoom in until you like the positioning of the map. It's possible it won't be the

Style base map
Base map styling options qualify for stricter Maps API *usage limits*.

Show: ☑ All features
More options

Saturation: Gray [ ] Bright

color you chose in the Configure Styles on your map, but don't worry — it will show up correctly on your web page.

Note that it automatically fills in the width and height, map center and zoom boxes for you. This is setting how the map is going to look when a viewer first opens it up on your web page. So make sure it's exactly as you want it in the Preview window.
You can edit the dimensions for your website — the default is 500 pixels by 400 pixels. Many websites these days can go as wide as 600 or maybe a little more.

Then a new button will appear saying ADD LAYER. Click that and you'll get another space to put in another layer.
Put the table ID number for the foreclosure map in the "second table id" box and select "address" from the location column pull-down menu.

Now you should have both layers in your map.

ADDING A SELECT OPTION:
Using Fusion Tables Layer Builder Wizard, we can add some options for users to decide what they want to see in the map. The options that you have will be dictated mostly, though, by the contents of your data file. So for example, right now we have a field called MonthTxt that has January, February and March. So we could use that to create a pulldown menu to let users display only the foreclosures that occurred in a given month.
So when you're building your dataset way back at the beginning, think about ways to categorize your data for this kind of display.

So go back to the Layer Builder Wizard. Version 2.0 allows us to have both map layers (the neighborhoods and the foreclosure points) and also add a search feature. The older version of Layer Builder did not allow more than 2 things.

If you've still got Layer Builder open with the 2-layer map we made above, you can simply add to that. Otherwise repeat the steps in the section titled "Add city neighborhoods as background layer"

Under the area where you put the table ID number for your foreclosure pins map, pulldown the "Add a search feature" menu and select "Select-based search."

In the select label box type what you want displayed, such as: "View foreclosures by month:"
From column to query, select "MonthTxt"

Click the ADD SEARCH button.

It will allow you to test it out on the preview window. Note that it's putting February first.
You can change that in the code.
Here's the snippet where it sets that pulldown menu:

```
<select id="search-string" onchange="changeMap(this.value);">
 <option value="">--Select--</option>
 <option value="February">February</option>
 <option value="January">January</option>
 <option value="March">March</option>
</select>
```

Just rearrange the items to put them in the order you want.
Also notice that it's putting that feature below the map.
That can go above the map — it just needs to be moved around in the ‹body› section of the HTML page.

At the bottom of the screen is a big text box labeled "Your HTML."
Copy all the contents of that window.
You can paste it into a Notepad file, then save it with a one-word name and a ".html" extension.
So I'm going to name mine "spforeclose.html"

This file is now ready to go on a web server for display. Or your online people might be able to add this to an existing page using iframe tags.

Here are directions for putting it into Google Sites (there's also a link to this on the LayerBuilder Wizard page)
http://gmaps-samples.googlecode.com/svn/trunk/fusiontables/embed_google_site.html

Note: Even after you've used LayerBuilder and created your web page, you can still go back to your two Fusion Tables maps and adjust the Info Window or the color styles. Those changes will be reflected in your final map.

A few other tricks....

FILTER

Go back to the Foreclosures map. At the top you'll see it says "Showing all rows options"

Click on Options and a filter box will come up like this:

Select the field "MONTH" from the pulldown menu and type the number 1 in the box on the far right.

We're telling it to filter so that we only see the records where the Month field in our foreclosures table says "1" (in other words, January)

Push the Apply button.

You'll see the map now has fewer pins.

If you want to make a new map out of this, click on Create View and give it a name in the "Save As" box that appears just above the map. Click "Save View"

AGGREGATE

Go back to the original foreclosure map (with all three months) and choose "options" then choose "aggregate"

It brings up this box:

We're going to create a chart that averages the sale price by month.

In the "show aggregate" section, select "average" next to "sale_amoun"
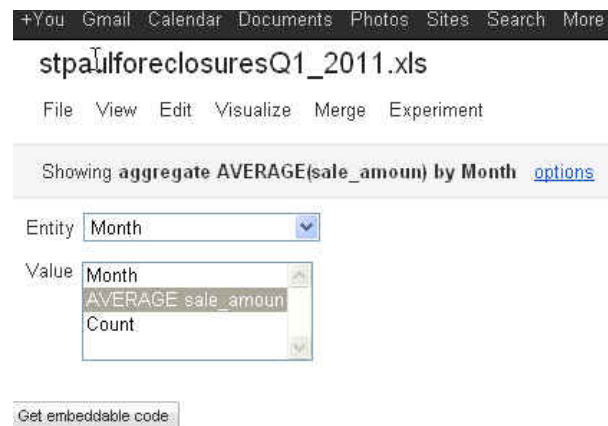Then in the "aggregated by" section select "month"

Push APPLY button.

It will bring up a table that has three records — one for each month.

Now select the VISUALIZE menu again, and this time choose BAR and then it will let you choose what to display.
Put "month" in the Entity box
And "Average sale_amoun" in the Value box.

Now we've got a chart. But February is a way off from January and March. What's up with that?
If we go back and look at our original Excel file, we'll see that all those big $3 million sales were in February. Since they are definitely outliers, how about if we filter them out?

Click on the Options link just above the chart. Choose Filter tab and then choose "sale_amoun" from the first pulldown menu, a less than symbol (<) from the second pulldown and type in 1000000 ($1 million) in the empty box. Click APPLY.
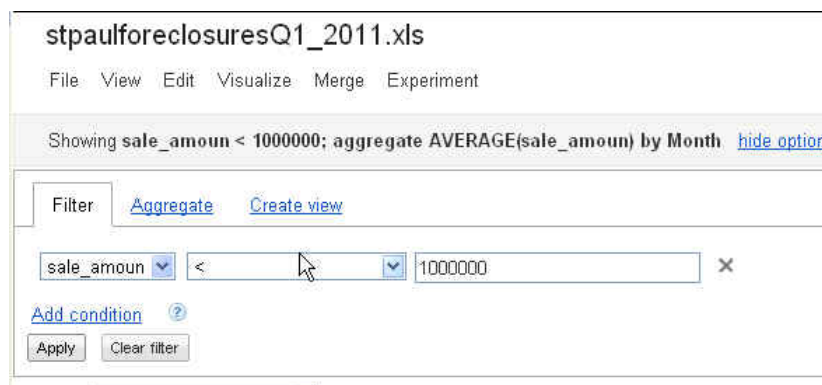
That looks much better! We see a trend — the average sale prices going up from month to month. It would be OK to publish this, as long as you note that it does not include sales over $1 million. You could be even more transparent and note that there were 4 such sales during this time period.

We can add this to our Google Sites page by clicking on GET EMBEDDABLE CODE link just above the chart.

PIN COLORS BASED ON LOOKUP TABLE:

First, let's change the pin colors. Remember that we have a field in the table with the month it was sold (1, 2 or 3). There's a way to tell Fusion Tables to map different colored pins depending on a value in your table, but first we have to create a "lookup" table that assigns the pin colors to those values.

Open Excel and create a new spreadsheet.
Create two fields. The first will be called "month" and the second will be called "Icon Name."

Type in the following information:

Month	Icon Name
1	small_red
2	small_blue
3	small_yellow

Save the spreadsheet (give it a name like "MonthIcons") somewhere you can find it.
Go back to Google Documents and import it as a Fusion Table (just like we did with the Foreclosures file)

In the Foreclosures Map, click on the Merge menu.
In the dialog box that comes up, click on the empty box under "merge with" and find your "MonthIcons" table.
Then click on "month" from each of the two lists of fields (these are the fields from your Foreclosures table — on
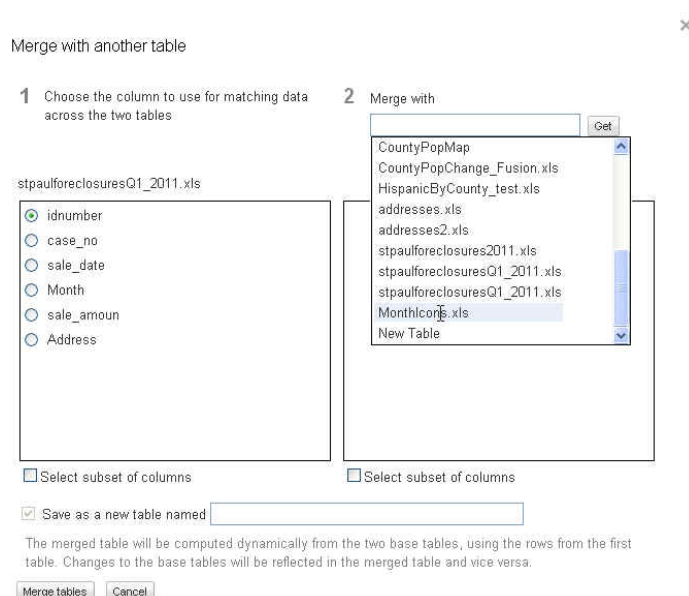
the left — and your MonthIcons table — on the right). This is how you're telling it to "join" the tables together.

At the bottom, **NAME THE TABLE** where it says "Save as a new table named" I'm going to name mine, "ForecloseByMonth"

Then click on the **MERGE TABLES** button at the bottom of the dialog box.

It will open up the new table, but you'll be back on the table view. Make sure that the "Icon Name" field is filled in with the values we had assigned (large_red, large_blue, large_yellow)

Click on Visualize to go back to the map view. You'll see that our icons are all one color again (like in the beginning).

Go to "Configure Styles" and click on the "Column" tab where it says "Use icon specified in a column". Choose "Icon Name" from the pulldown menu. Then click the SAVE button.
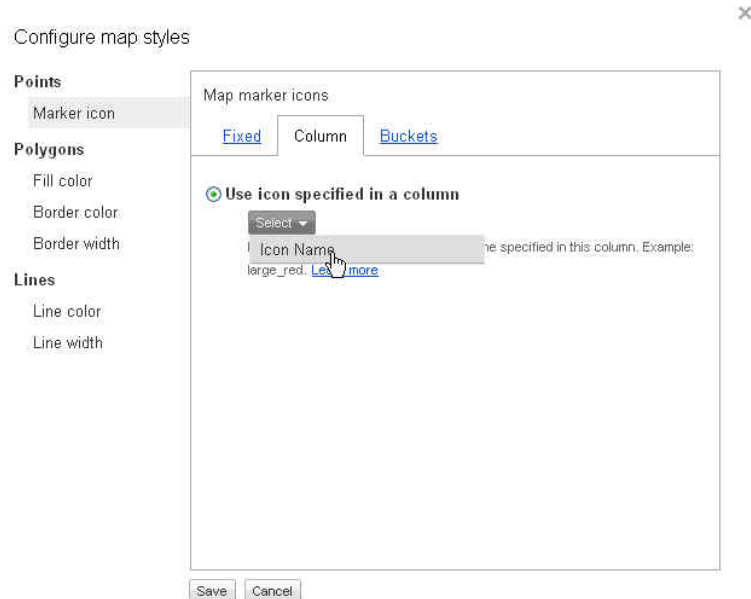
Here are directions from Google for doing what we just did:
http://support.google.co m/fusiontables/bin/answ er.py?hl=en&answer=2476954

Note: these directions say to build your lookup table in Google Spreadsheets, but apparently there is some glitch and Google Spreadsheets won't import into Fusion Tables. Hopefully Google will correct this soon, but in the meantime your best bet is to build the lookup table in Excel or even as a comma-separated values text file.

ADDING A LEGEND:

As noted above, Google has not yet made it "simple" to add a legend. But there are a variety of ways to add one. The two main routes are to build something in HTML and put it next to your map, or using JavaScript to build it into your map.

I'm going to demonstrate the JavaScript route, cause it's not really all that hard once you've used the Fusion Tables Layer Builder Wizard.

See the file that came with the training materials called **"fusion template.txt".** It has directions on the top for merging your results from Fusion Tables Layer Builder Wizard version 2.0 with some legend code. It also helps you add a headline, chatter and source.

The finished product would be an HTML page that you can provide to the online staff to embed into your story page (they will use i-frame tags to embed it)

MAKING A THEMATIC MAP:

Next we're going to make a map that displays a data value by color-shading polygons. This is called a thematic map (Google refers to it as an "intensity" map).

For this, we're going to use some different data.

We will need an Excel file called "HispanicByCounty.xls" — this contains 2010 Census data for all Minnesota counties, showing how many people (and what percentage of the population) are Hispanic. I did a couple things to get this file ready for Fusion Tables. The first is that I made sure to have a field displaying the county names in a way that would match my map file (KML file). My KML file has the county listed as one word (i.e. "Ramsey"). I also displayed the percentage column in two formats — one as a decimal and the other formatted as a percentage. I found that Fusion Tables likes the decimal version for displaying colors based on the Buckets. But you'll want the cleaned up percentage version for displaying in the Info Window.

We also will need a KML file called "MNCounties.kml"

Step 1: Import the HispanicByCounty spreadsheet into Fusion Tables. Go to Edit>Modify Columns and make sure the "Total", "Hispanic", "not_hispanic" and "Pct_hisp" fields each have a Number format (choose the "1,23.56" option)

Step 2: Import the KML file into a Fusion table.

Step 3: From within the MNCounties Fusion Table, select Merge.

In the "merge with" box start typing "HispanicByCounty" and a list of the possible Google Docs files will appear. Specify the columns from each table that are used for the join — countyname from the HispanicByCounty file and "name" from the mncounties.kml file.

At the bottom of the page is a box for "name new merged table" — type "HispanicMap"

Click MERGE TABLES.

Now you'll be in the new merged table — "HispanicMap".

The first thing you should do is look through your data table and make sure that all of the records matched each other. You should see data in all of the columns.

Ugh, oh. I don't see any records for Lac qui Parle county. What happened?

If you look back at the original two tables you'll see that one showed it as "Lac Qui Parle" and the other as "Lac qui Parle."

It turns out Fusion Tables didn't match it because of a capitalization issue.

You can easily fix this by going into the table for HispanicByCounty (the original data file we imported) and editing Lac qui Parle so that it matches the one in the KML file. Then save and refresh your web page.

Now the merged map HispanicMap should have corrected the problem.

Click Visualize and choose "Map". It should show the polygon boundaries (as all one color) in the correct place on the map.

Click on "Configure Styles" to change the colors that are being displayed, depending on the Percent Hispanic.

On the left, click on "Fill color" under the Polygons heading.

Then choose "Buckets" to have it display different colored icons depending on the value in the "percent Hispanic" field.
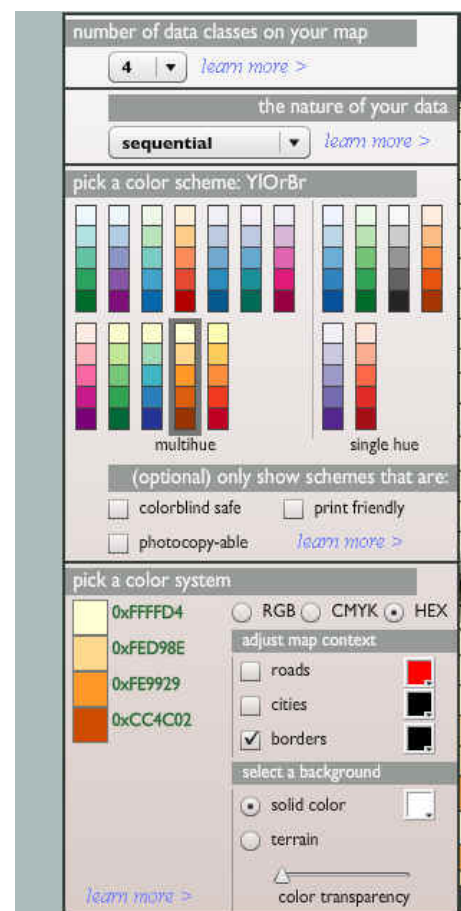
Buckets:
0.0
0.03
0.08
0.2

Change the colors to get a range of the same color — light to dark.

This is also a good time to consult colorbrewer2.org and insert the HTML color codes.
Click on the "HEX" value under "Pick a color system" and then "pick a color scheme" and how many data classes you want (that's up at the very top of the screen)

Note the color codes next to the colors I've selected under "pick a color system"
On colorbrewer each code starts with "0x". Copy just the stuff AFTER the x.

Then when you paste it into Configure Map Styles in Fusion Tables, you add a pound sign (#) to the front.

Note the little box above all the colors where it displays the color code.
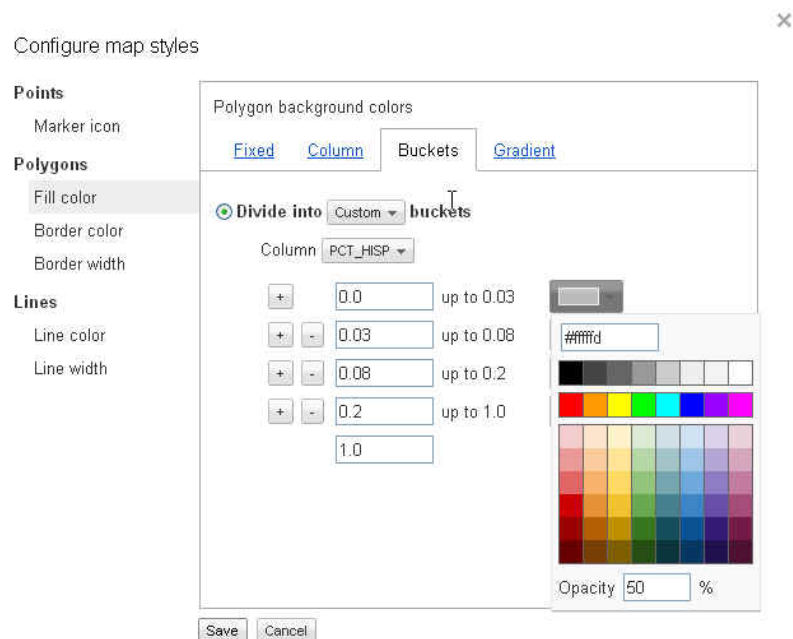
Here's link to Google's directions for making a custom intensity map:
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=1032332

Questions?
Can I put an image in the tooltip? Yes.

You need to store the images on a web server somewhere else (it won't actually be stored in your Fusion Tables). You just need to have a URL to link to the photo. You could accomplish this by putting photos in Google Photos, for example.

Then you put the URL in a field in your Fusion Table. The below directions explain how to set the formatting on the column to make it work properly.
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=171189

Then this one talks a bit about displaying the photo in the tooltip (or info window)
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=171216

Can I only display one state in my map (so that it doesn't show the neighboring states)? No. This link offers a workaround, though.
https://groups.google.com/a/googleproductforums.com/forum/#!category-topic/earth/pc/br4OnoZH87s

How do I get KML files?
KML files for US States and County boundaries (by state) that are free to use and already in Fusion Tables:
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=1182141

It's quite easy to find GIS shapefiles of the polygons you might want. But it might be hit or miss as to whether you can find the same thing in KML format. But there are lots of ways to convert shapefiles. Here's one that doesn't require any software on your computer and is easy to use:
Converting shapefiles to KML files: http://www.shpescape.com/

The U.S. Census Bureau is starting to roll out KML files here:
http://www.census.gov/geo/www/tiger/kml/kml.html

And you can get all of their shapefiles here: http://www.census.gov/cgi-bin/geo/shapefiles2010/main

In Minnesota, lots of options (including KML) available from the Legislative GIS office, http://www.gis.leg.mn/html/download.html#, the DNR's GIS office, http://www.dnr.state.mn.us/mis/gis/index.html and MetroGIS, http://www.datafinder.org/ (If you're in another state, I'd recommend poking

around for GIS offices associated with various state agencies and I'll bet you'll find web pages where they are posting either shapefiles and/or KML files of various boundaries)

Another option -- outside of Fusion Tables -- for creating heat maps:
  For a quick and dirty thematic or "heat" map for city, county or state polygons, try this other site, http://www.openheatmap.com. You upload a spreadsheet with a field that has the name of the city, county or state (i.e. "Ramsey County, MN" or "St. Paul, MN") and whatever field you want it to map (i.e. Percent Hispanic or Percent population change, etc) and it creates a basic heat map -- even with a simple legend. You have a handful of color options, but it's not terribly flexible. Then it gives you an embed code you can use to put it into your own site. I could see that this would be useful if you're on deadline and need to get something up really, really fast.

Geocoding notes:
  --Apparently the problems we had in class where the geocoding would stall out is one that is being experienced by everybody. Lots of complaints on the Google forum here: http://productforums.google.com/forum/#!category-topic/google-fusion-tables/broken/XkFOwkD5D84. Apparently Google is working on this, but as of now, it's still a problem.

  --How to fix pins that are geocoded into the wrong location: http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=171212

  -- You can geocode city names (so that you end up with a pin at the location of each city. Make sure you have a field with city and state (i.e. "St. Paul, MN) and that it's set as "location" for the type. While in the fusion table you're using, go to the Edit menu and select "Modify columns" to set the type, if necessary. (I'm trying to find out if you can geocode county names, but my attempts to do so are not working either because it's not possible or because I'm doing something wrong. I'll send an update when I learn more)

  --The limit for geocoding is 2,500 addresses (or requests) per day. So if you have more than this number, best advice is to geocode a bunch on one day, then a bunch more the next, etc. Alternatively, get the latitude and longitude coordinates for your addresses through some other means and include those fields in the table you import to Fusion Tables. A good site for doing that (which I demoed in class) is here: http://www.gpsvisualizer.com/geocoder/

MORE ADVANCED STUFF -- requires some programming:
How to create custom map markers:
https://developers.google.com/fusiontables/docs/samples/custom_markers

How to allow users to enter an address or city name and have it zoom to anything that "matches" on the map:
https://developers.google.com/fusiontables/docs/samples/open_infowindow

Some good tipsheets:
How should I prepare data for Fusion Tables?
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=171183&topic=27017&ctx=topic

How to combine location information together in one column (in Excel):
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=175922&topic=27017&ctx=topic

What is geocoding?
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=1012281&topic=27017&ctx=topic

How do I add more rows to an existing Fusion Table?
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=180803&topic=27017&ctx=topic

Include a chart in the map info window:
http://support.google.com/fusiontables/bin/answer.py?hl=en&answer=1011815

MaryJo Webster
St. Paul Pioneer Press
Computer-Assisted Reporting Editor
mwebster@pioneerpress.com
@mndatamine
651-228-5507