



Infoshare/Community Studies of New York, Inc.  
155 W. 72<sup>nd</sup> St., Suite 402 New York, NY 10023  
Tel.: (212) 580-3890 Fax: (212) 580-1247  
E-mail: email@infoshare.org

## Mapping Community Data Using Public Domain



### Software



Download and install Quantum GIS (QGIS) from [www.qgis.org](http://www.qgis.org). This is a free, public domain geographic information system (GIS) or mapping system. It is comparable to commercial products such as ArcGIS and Mapinfo, though with some limitations; over time, these will diminish as developers around the world expand its capabilities.

### Part I - Creating a Table in Infoshare for Use in Mapping

Log on to [www.Infoshare.org](http://www.Infoshare.org).

Using the “Area Comparison” tab, you can create a table showing data for a set of geographic areas within an “Overall Area.” This allows you to compare areas using data drawn from any of the data files in Infoshare. Tables created in this module are suitable for mapping as well as graphing and other applications.

In this module, you will **create a table and map it**. As an example, the following shows how to create a table of percentage Hispanic population by zip code for New York City:

Step 1. Set **Region** to “New York City.”

Step 2. Set **Overall Area Type** to “City.”

Step 3. Set **Areas to Compare** to “Zip Code.”

Step 4. For the **Data File**, select “Demographics” and then choose “2010 Census.”

Step 5. For **Table**, select “Persons” and then “Hispanic Population.”

Step 6. For **Data**, select “Hispanic or Latino Persons,” then click “Go.”

Step 7. To obtain a percentage, you will need the total population. Then add another data column: For **Table**, select “Persons” and then “Population.”

Step 8. For **Data**, select “Total Population,” then click “Go.”

Step 9. Now generate a column containing the % Hispanic: Click the “**Add Ratio**” button.

Step 10. Name your new column “% Hispanic,” make the numerator “Hispanic Population,” make the denominator “Total Population,” and make the Multiplier “100 (Percent)”

Step 11. Click “**Save.**”

The screen will appear as follows:

**Select areas to compare** Jump to:  [Help](#)

Region: New York City  
 Overall Area Type: City  
 Areas to Compare: Zip Code

**Your table will contain the following columns**

	Show	Map
Hispanic or Latino persons [Hispanic Population] in 2010 Census	<input checked="" type="checkbox"/>	
Total population [Population] in 2010 Census	<input checked="" type="checkbox"/>	
Hispanic %	<input checked="" type="checkbox"/>	

[Add Ratio](#) [Save All Columns](#) [View Your Table](#)

**Select additional data to view for Zip Codes in New York City** [Search](#) | [Help](#)

Data File:  DEMOGRAPHICS  SOCIO-ECONOMICS  HEALTH  
 Table:  Persons  Households  Families  Housing

Click item to select:

- Population
- Race (One race only)
- Race (Two or more races)
- Race (Alone or in combination with other races)
- Hispanic Population
- Hispanic Origin by Race
- Asian Population by National Origin

Step 12. Click “**View Your Table.**”

**Click on headers to sort** [Print](#) | [File](#) | [Return to selections](#)

Area Name	Hispanic or Latino persons	Total population	Hispanic %
Bronx	741413	1385108	53.53
Brooklyn	496285	2504700	19.81
Manhattan	403577	1585873	25.45
Queens	613750	2230722	27.51
Staten Island	81051	468730	17.29
New York City	2336076	8175133	28.58
10001 - Fur-Flower District	2941	20759	14.17
10002 - Chinatown/Lower East Side	20174	80683	25.00
10003 - Cooper Square/Union Square	5039	62843	8.02
10004 - Battery/Governors Island	314	4253	7.38
10005 - Wall Street	512	7071	7.24
10006 - Trinity	220	2911	7.56
10007 - City Hall	419	7300	5.74
10009 - East Village/Stuyvesant Town	16420	61848	26.55
10010 - Madison Square/Cooper Village	2451	22066	11.11

Step 13. Click “File,” then Click “Export data as: Excel file (.xls).” Give the file a name, for instance, “Hispanic Percent.xls.”

Export data as: **Excel file (.xls)**  
**Comma separated values (.csv)**

	Hispanic or Latino persons	Total population	Hispanic %
	741413	1385108	53.53
	496285	2504700	19.81
Manhattan	403577	1585873	25.45
Queens	613750	2230722	27.51
Staten Island	81051	468730	17.29
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10001 - Fur-Flower District	2941	20759	14.17
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10004 - Battery/Governors Island	314	4253	7.38
10005 - Wall Street	512	7071	7.24
10006 - Trinity	220	2911	7.56

Step 14. Open the file in Excel.

	A	B	C	D	E
	MapID	Area Name	Hispanic or Latino persons	Total population	Hispanic %
2		Bronx	741413	1385108	53.53
3		Brooklyn	496285	2504700	19.81
4		Manhattan	403577	1585873	25.45
5		Queens	613750	2230722	27.51
6		Staten Island	81051	468730	17.29
7		New York City	2336076	8175133	28.58
8	10001	10001 - Fur-Flower District	2941	20759	14.17
9	10002	10002 - Chinatown/Lower East Side	20174	80683	25
10	10003	10003 - Cooper Square/Union Square	5039	62843	8.02
11	10004	10004 - Battery/Governors Island	314	4253	7.38
12	10005	10005 - Wall Street	512	7071	7.24
13	10006	10006 - Trinity	220	2911	7.56
14	10007	10007 - City Hall	419	7300	5.74
15	10009	10009 - East Village/Stuyvesant Town	16420	61848	26.55
16	10010	10010 - Madison Square/Cooper Village	2451	22066	11.11
17	10011	10011 - Chelsea	6528	51342	12.71
18	10012	10012 - Village/Noho/Soho	1818	23881	7.61
19	10013	10013 - Tribeca/Chinatown	1844	27922	6.6
20	10014	10014 - Greenwich Village	2223	32252	6.89
21	10016	10016 - Murray Hill	4219	53573	7.88
22	10017	10017 - Grand Central/United Nations	1213	18422	6.58
23	10018	10018 - Garment District	821	5478	14.99
24	10019	10019 - Midtown/Clinton	6465	41235	15.68
25	10020	10020 - Rockefeller Center	14	205	6.83

Step 15. Delete rows 2 through 7 and the information rows at the bottom, so that the file contains only zip codes.

The screenshot shows a Microsoft Excel spreadsheet titled "Hispanic Percent.xls". The spreadsheet has five columns: A (MapID), B (Area Name), C (Hispanic or Latino persons), D (Total population), and E (Hispanic %). The data is as follows:

MapID	Area Name	Hispanic or Latino persons	Total population	Hispanic %
10001	10001 - Fur-Flower District	2941	20759	14.17
10002	10002 - Chinatown/Lower East Side	20174	80683	25
10003	10003 - Cooper Square/Union Square	5039	62843	8.02
10004	10004 - Battery/Governors Island	314	4253	7.38
10005	10005 - Wall Street	512	7071	7.24
10006	10006 - Trinity	220	2911	7.56
10007	10007 - City Hall	419	7300	5.74
10009	10009 - East Village/Stuyvesant Town	16420	61848	26.55
10010	10010 - Madison Square/Cooper Village	2451	22066	11.11
10011	10011 - Chelsea	6528	51342	12.71
10012	10012 - Village/Noho/Soho	1818	23881	7.61
10013	10013 - Tribeca/Chinatown	1844	27922	6.6
10014	10014 - Greenwich Village	2223	32252	6.89
10016	10016 - Murray Hill	4219	53573	7.88
10017	10017 - Grand Central/United Nations	1213	18422	6.58
10018	10018 - Garment District	821	5478	14.99
10019	10019 - Midtown/Clinton	6465	41235	15.68
10020	10020 - Rockefeller Center	14	205	6.83
10021	10021 - Lenox Hill	5706	101624	5.61
10022	10022 - Sutton Place/Beekman Place	1817	33760	5.38
10023	10023 - Lincoln Center/Ansonia	5608	67260	8.34
10024	10024 - Upper West Side	6245	58680	10.64

Step 16. Save your Excel file. (Note: Continue to save your file as an .xls file; don't save it as an .xlsx file, the format used in Microsoft Office 2007 and later. Quantum GIS v.1.8 won't accept that newer format!)

Now that you have prepared your data, you are ready to place it on a map. . .

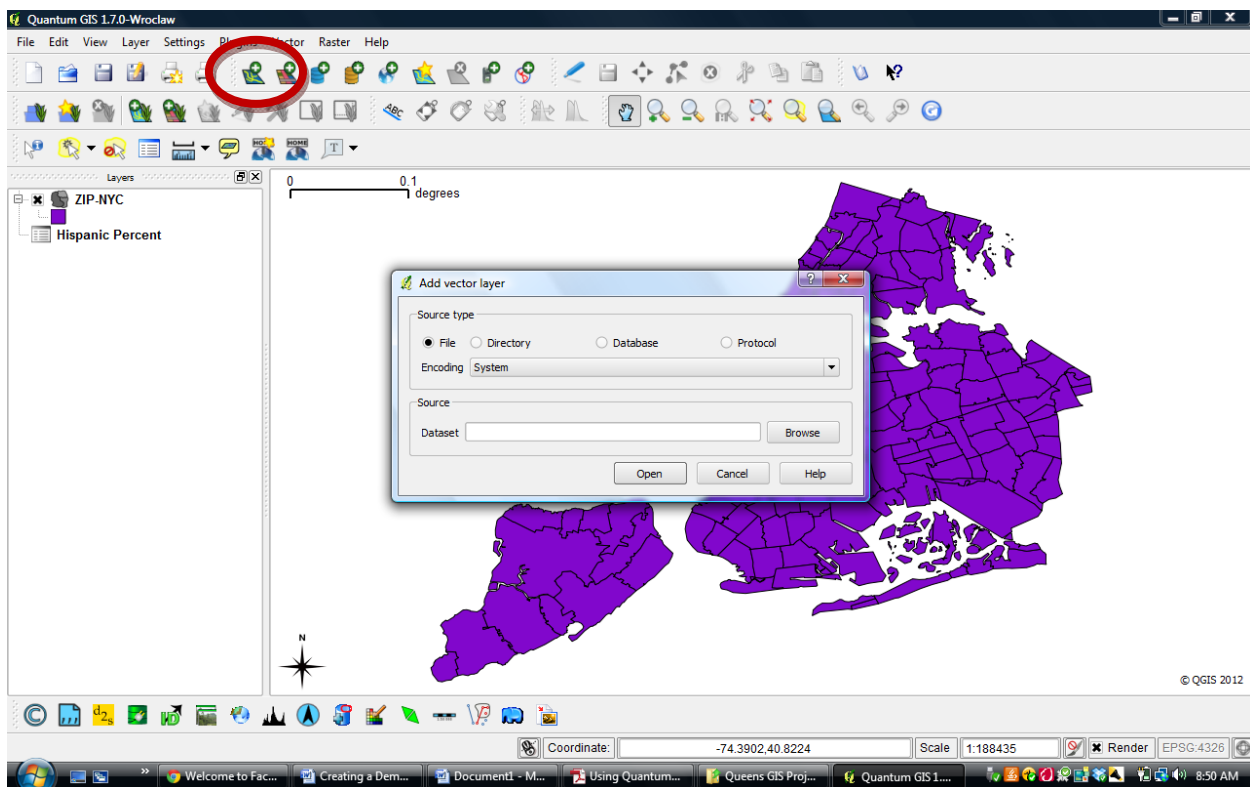


## Part II - Producing a Thematic or Shaded Map using Infoshare Data

In order to map tabular data such as that you have generated from Infoshare, you must "join" the Infoshare table to a map showing the areas that interest you. This guide will show you how to do it. You will need the ZIP-NYC.SHP "shapefile" which provides the zip code map of New York City. This and other shapefiles are available from Community Studies of New York, Inc

Step 1. Open the QGIS program and click on the “Add Vector Layer” button. Then click on the Browse button and add your "ZIP-NYC.SHP" shapefile . You will see a map of the City showing the zip code boundaries. You will also see ZIP-NYC in the Layers table on the left. You have just added your first "layer" to the map.

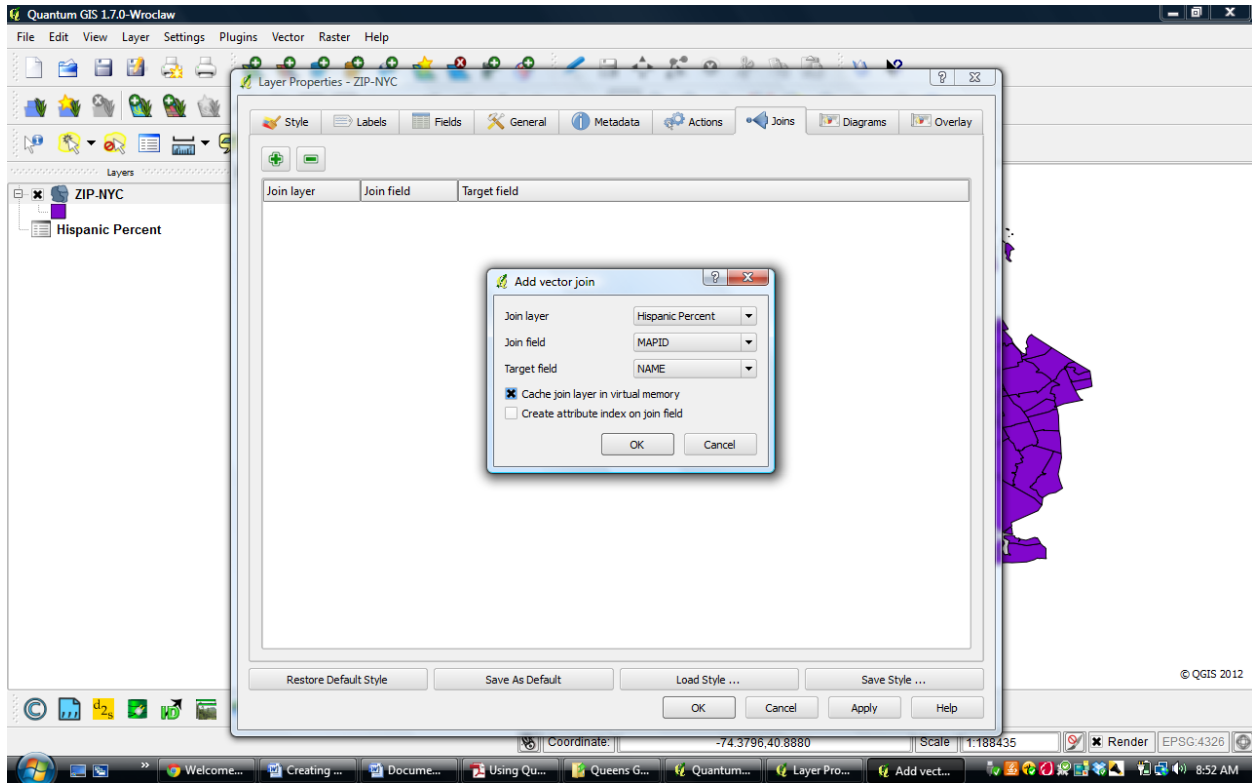
Step 2. Repeat Step 1, but this time Browse to your Infoshare "Hispanic Percent.xls" file. You will not find ".xls " files in the list of the types of files that QGIS can load, so set the type-of-file scroll to "All Files"; this will allow QGIS to find your .xls file. Open it up. It will now appear as a 2nd layer in the Layers table.



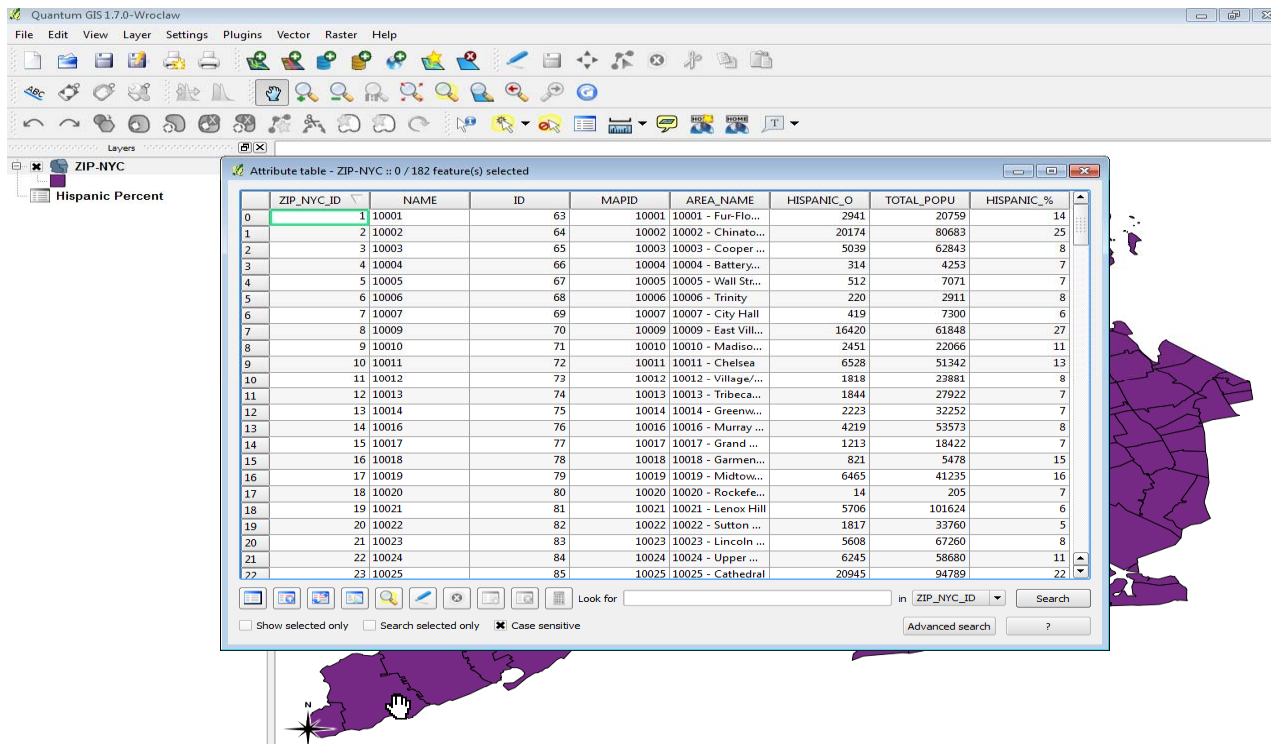
Step 3. Now right-click on ZIP-NYC and click on "Open attribute table." First the column containing the zip codes, and note its title: “NAME.” Then right-click on your Infoshare “Hispanic Percent” file and click on "Open attribute table." Note that the column titled “MapID” contains the zip codes in this table. Now you will be ready to "join" the map table ZIP-NYC to your data table "Hispanic Percent."

Step 4. Double click on ZIP-NYC in the Layers table and click on the “Joins” tab.

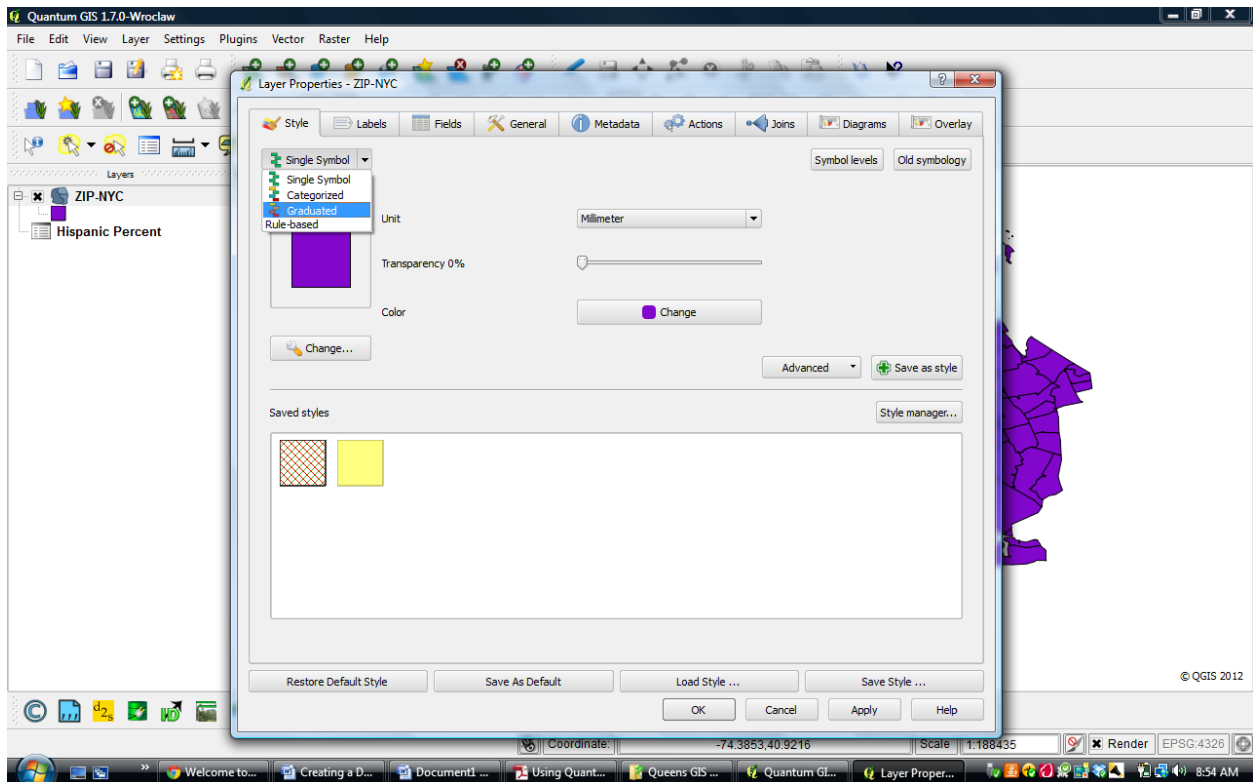
Step 5. Now join the data table to the map: Click on the “+” button on the upper left, set “**Join Layer**” to your Hispanic Percent” file, set “**Join Field**” to MapID, and set “**Target Field**” to NAME. Click OK, then click OK again.



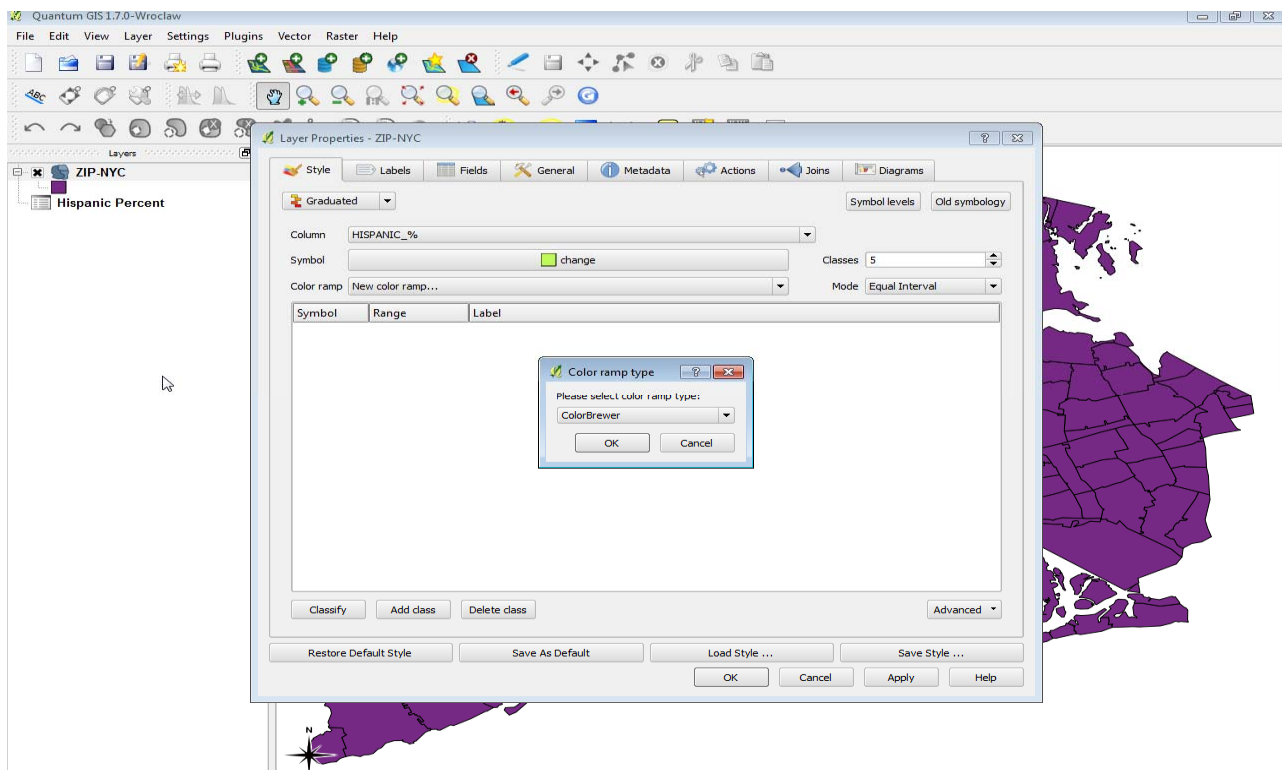
To see what you have accomplished, right-click on ZIP-NYC, select “Open attribute table,” and examine your newly-joined attribute table. The Infoshare data is now joined to the zip code data. [But see the note at the end of this guide, on p. 14.]



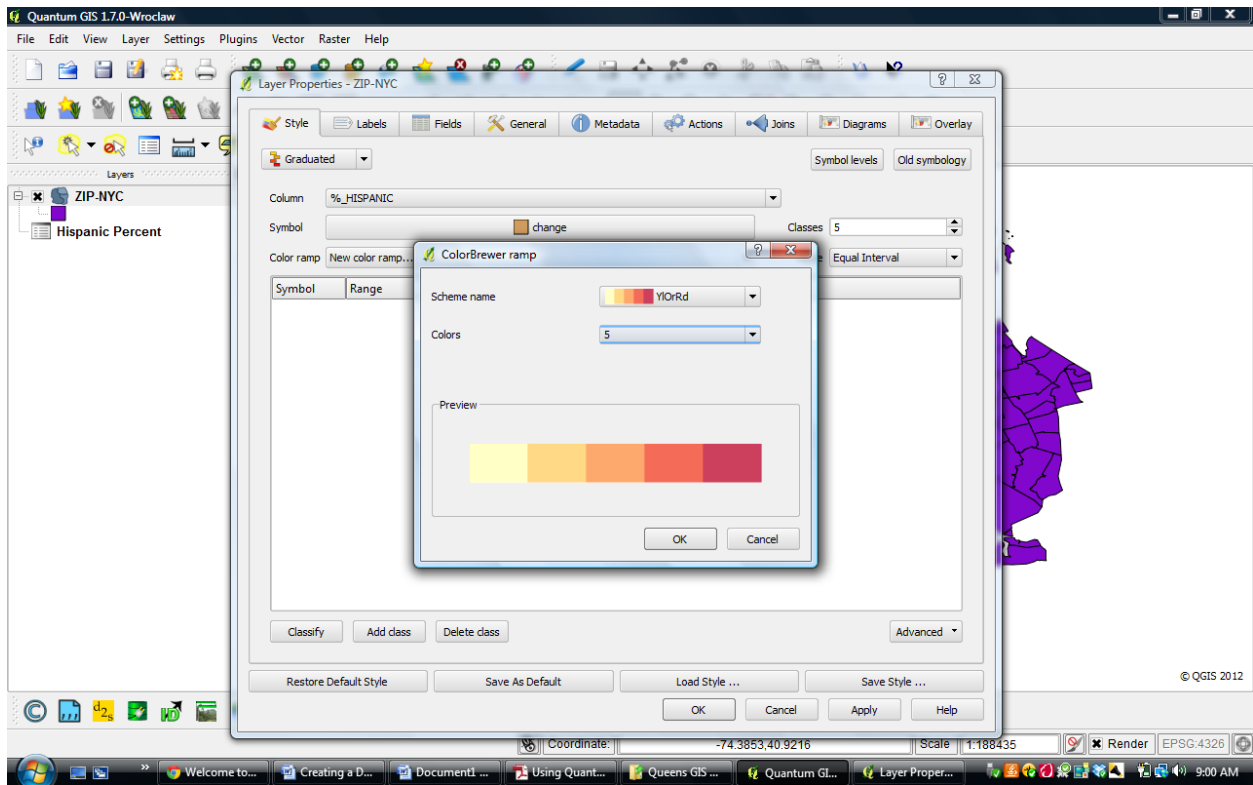
Step 6. Now you can prepare your map. Double-click on ZIP-NYC and click on the “Styles” tab., Then click on the Symbol drop-down menu and select “Graduated.”



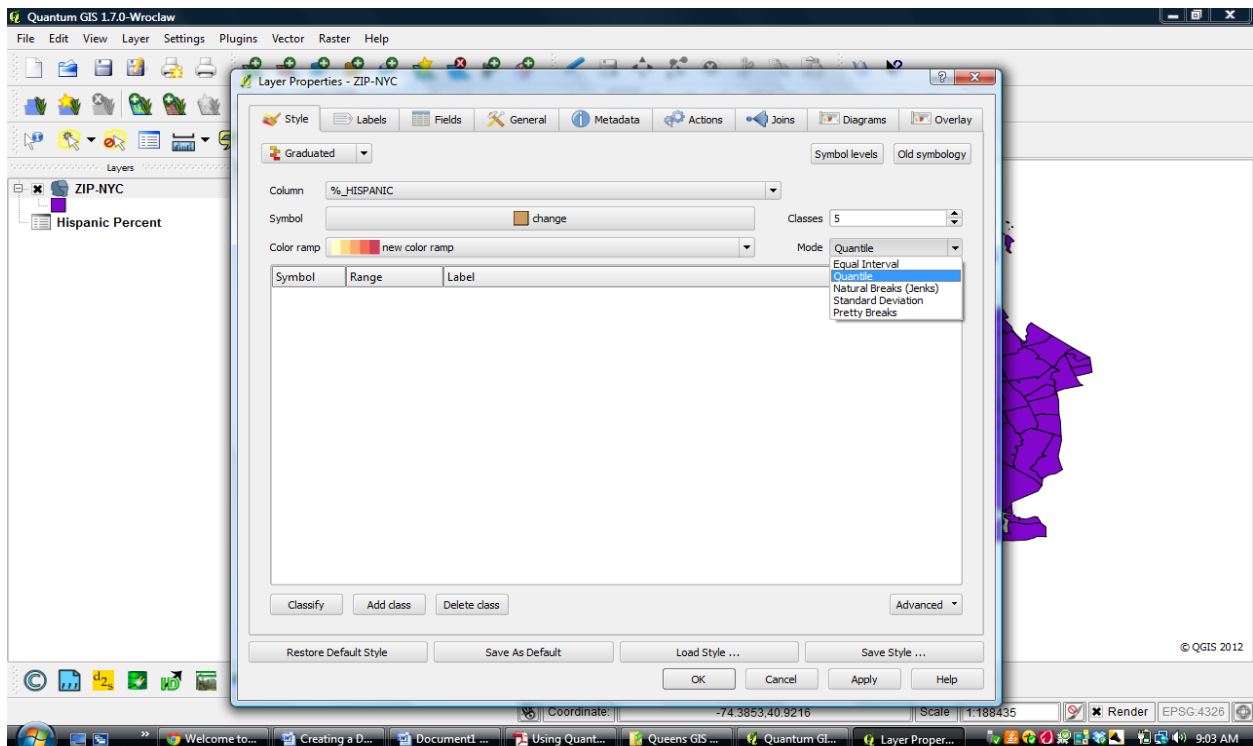
Step 7. Click on the “Column” drop-down menu select “Hispanic\_%.“ In the “Color Ramp” drop-down menu select “New Color Ramp.” In the “Color Ramp Type” drop-down menu select “ColorBrewer.” Click OK.



Step 8. Choose a color scheme, for instance “YlOrRd,” in the “Scheme Name” drop-down menu, and in “Colors” select “5.” Click OK, enter "YlOrRd" for the new color ramp, and click OK again.

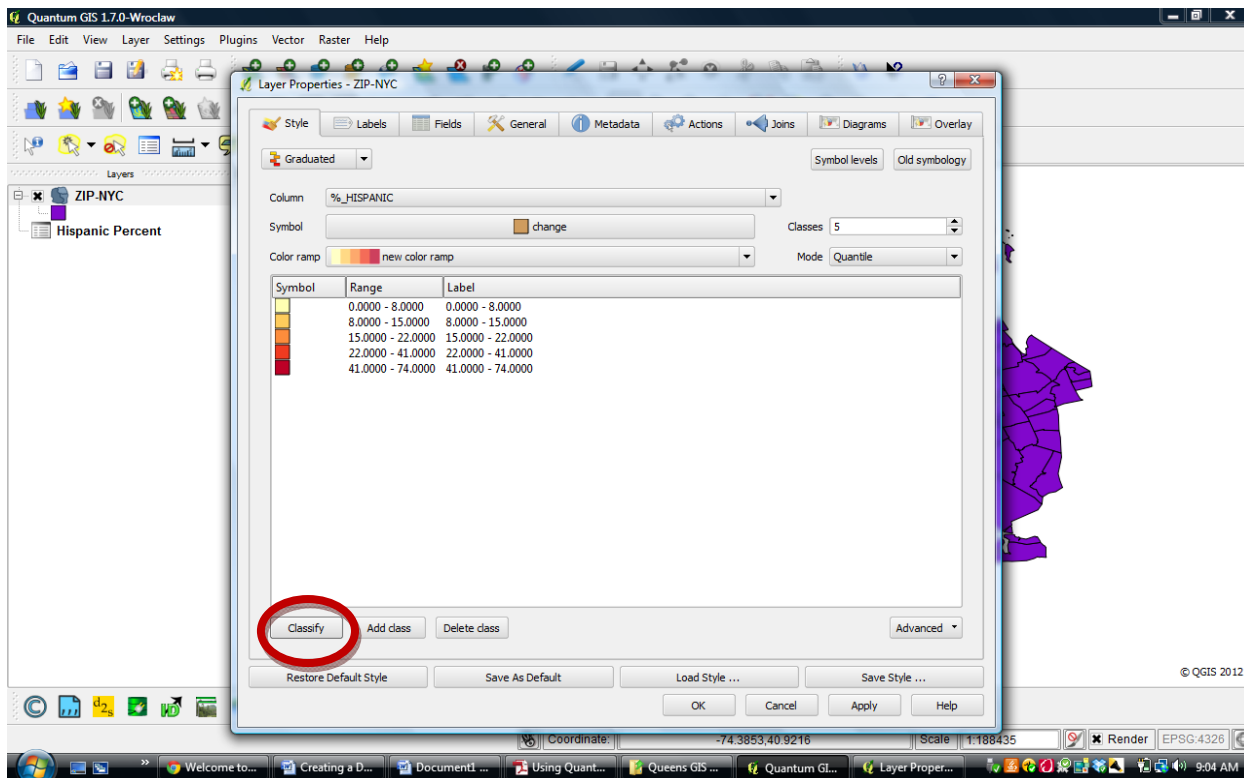


Step 9. In the “Mode” drop-down menu select “Quantile.” This will put an equal number of zip codes in each color. You can try a different choice after you've finished creating your first map. \* [However, see the note at the end of this guide, on p. 14.]

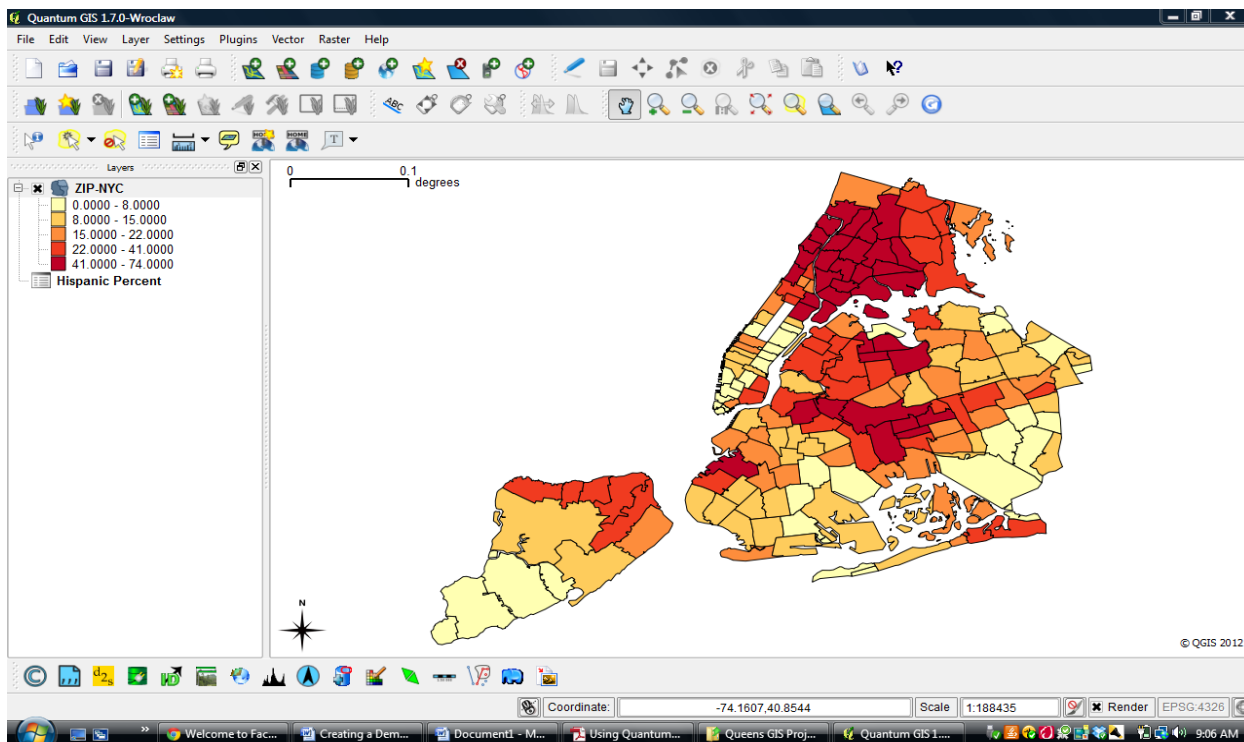




Step 10. Click “Classify” on the lower left corner.

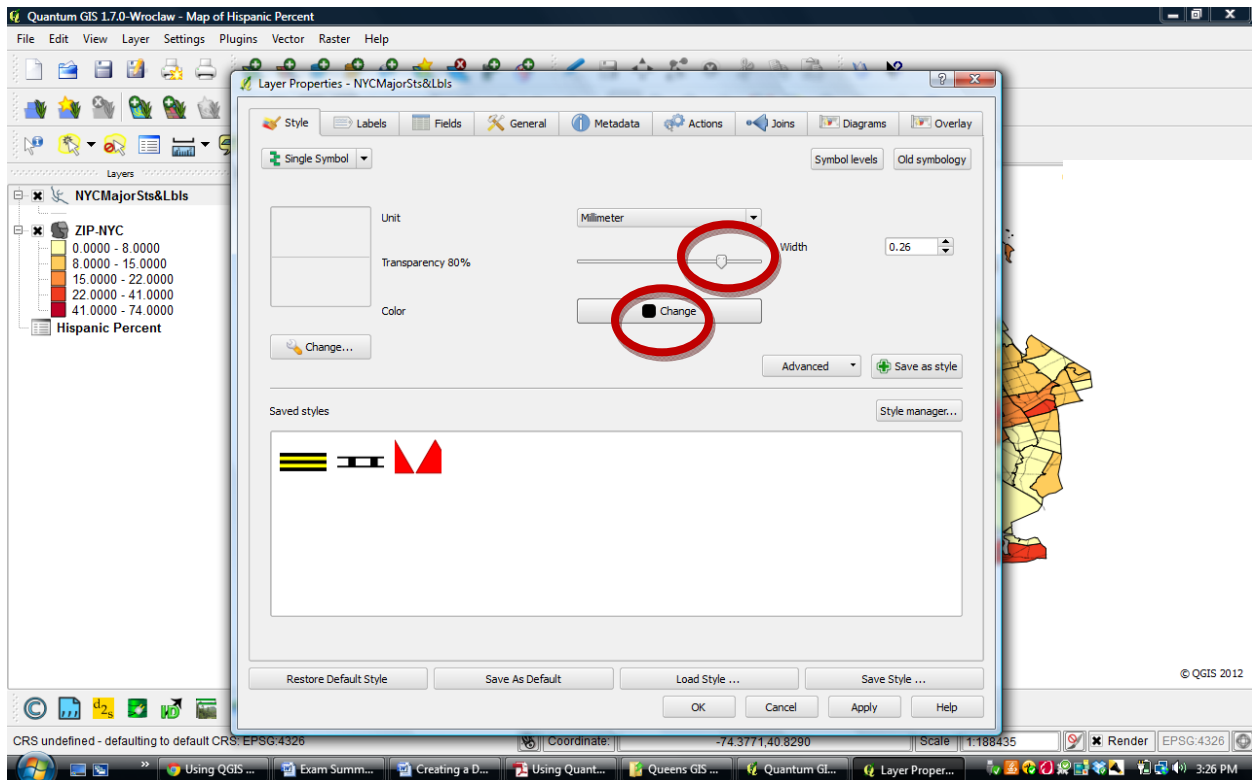


Step 11. Click OK and you will see your thematic or shaded map.

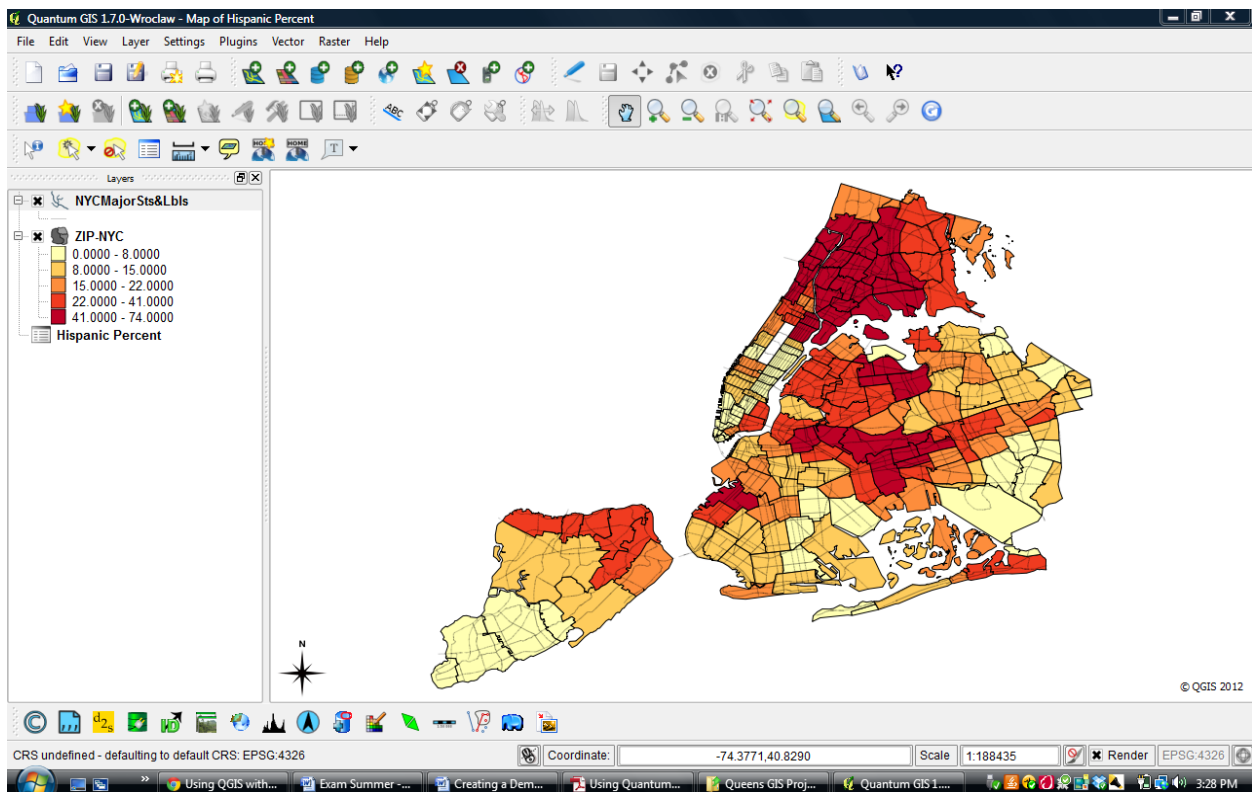


Step 12. You could now add additional features to your map. For instance, you might want to show the major streets, so the viewer could better identify locations. Click on the “Add Vector Layer” button and add the shapefile named “NYCMajorSts&LbIs.”

Step 13. Double click on “NYCMajorSts&LbIs” in the Layers table. In the “Style” tab on the upper left corner, slide the “Transparency” bar to 80%, and change the color to black.



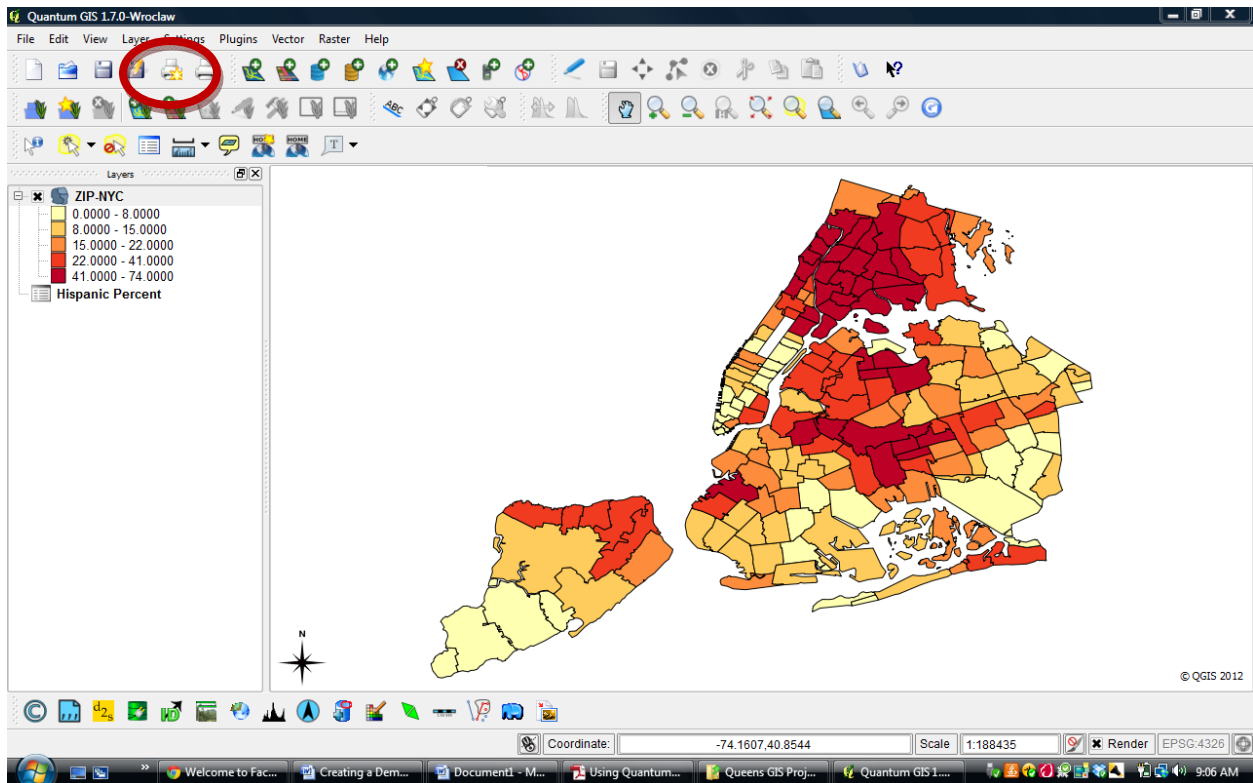
Step 14. Click OK.



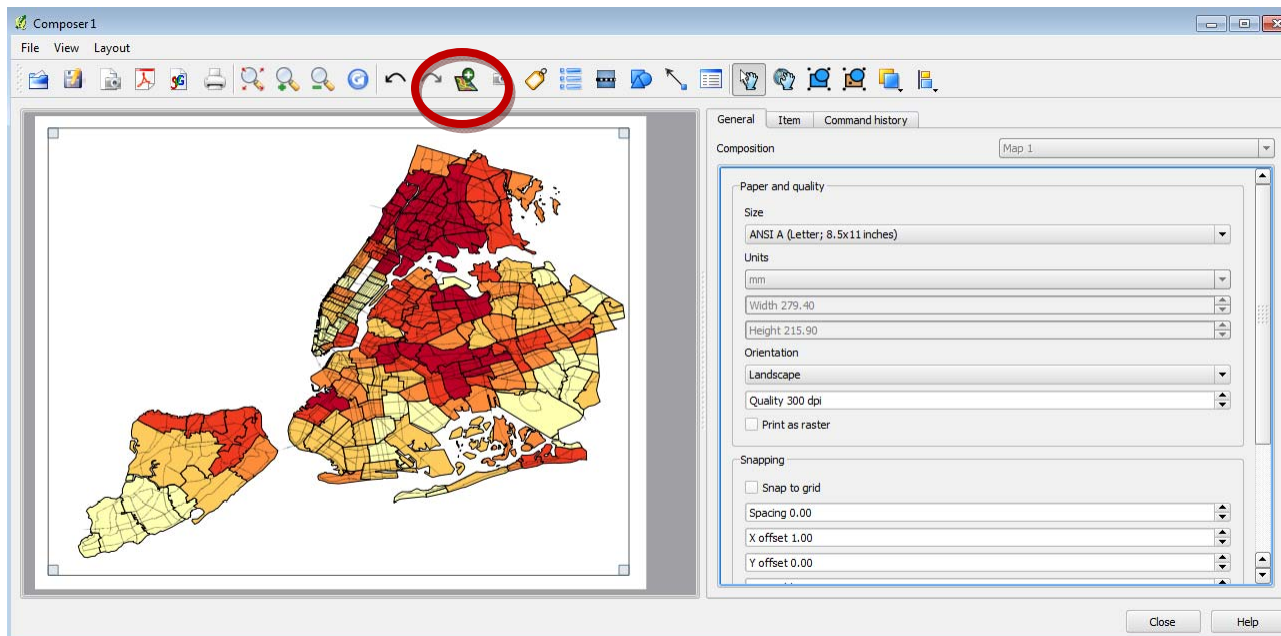
Step 15. Under "File," save your project as a .qgs file. This preserves your map settings.

## Part III - Composing and Printing Your Map

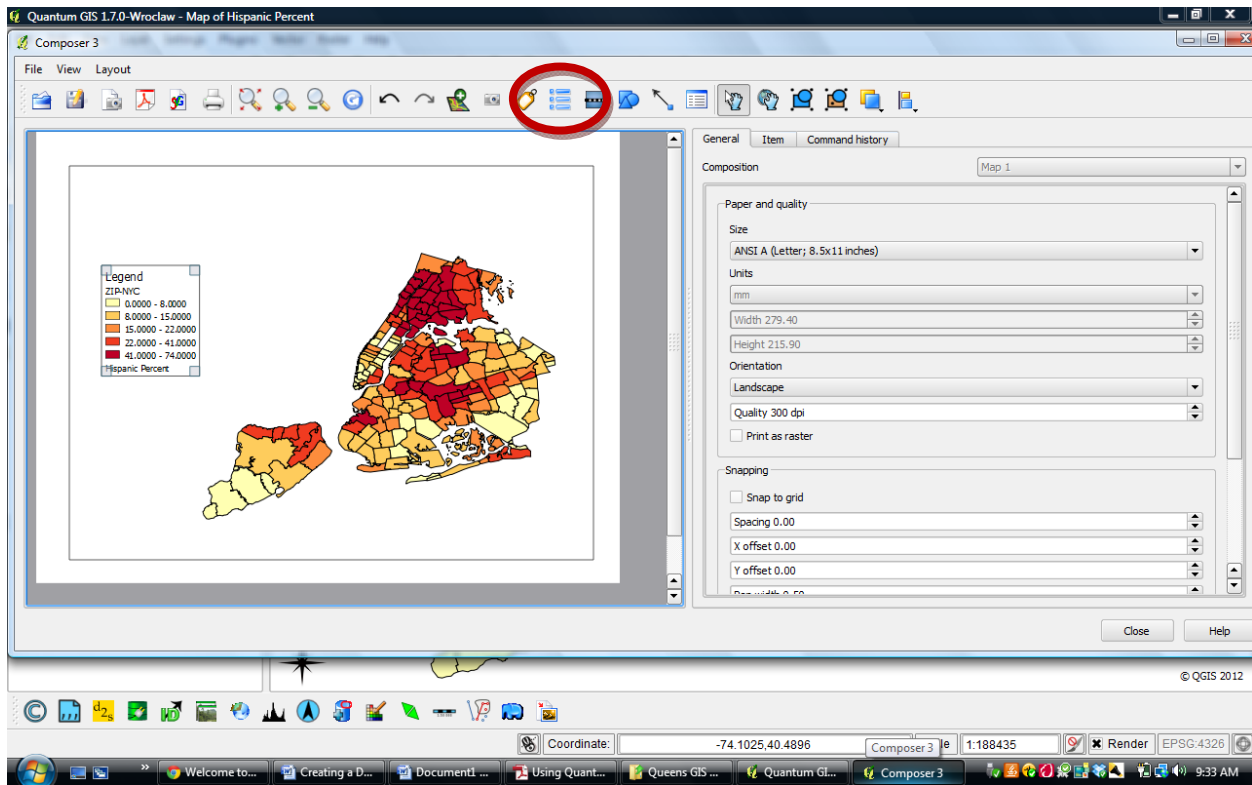
Step 1. Click the "New Print Composer" button to open the print Composer. On the General tab under "Paper and quality" on the right, change the paper size from ANSI A (Letter 8 1/2 by 11).



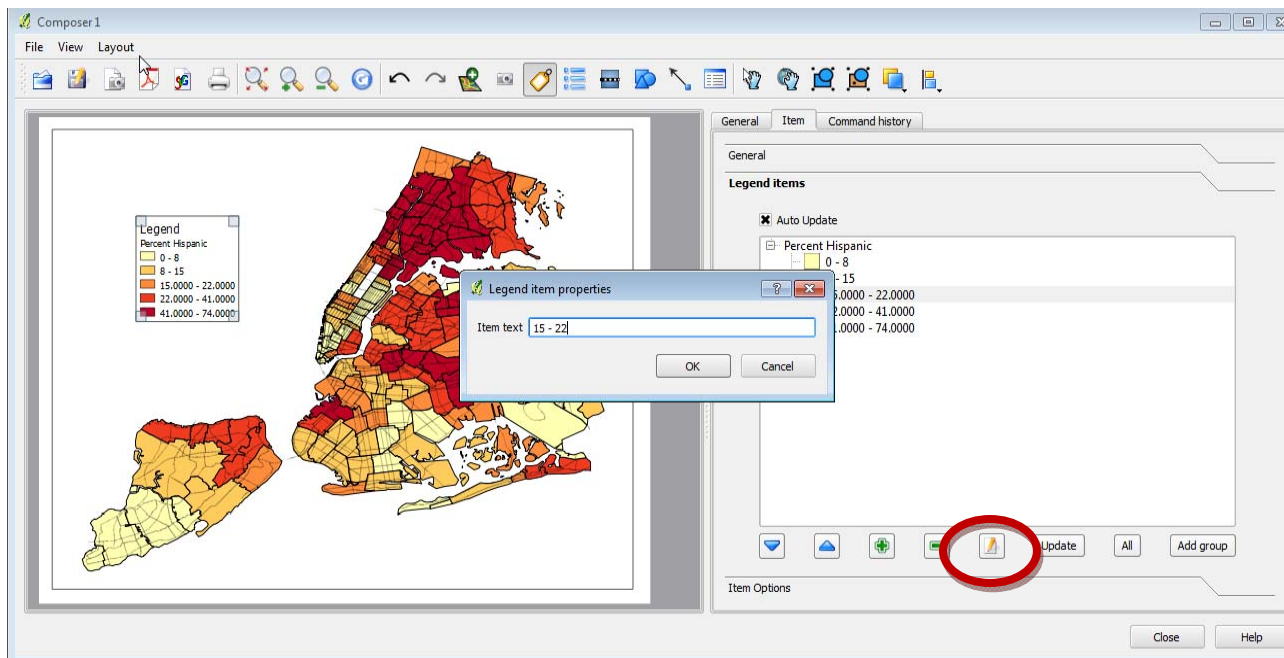
Step 2. Click the "Add new map" button in the toolbar. Then draw a box on the map canvas, leaving an even amount of space on each side. Your map will appear. If you don't get it right on the first try, you can always hover over an edge of the map and drag the edge with the mouse.



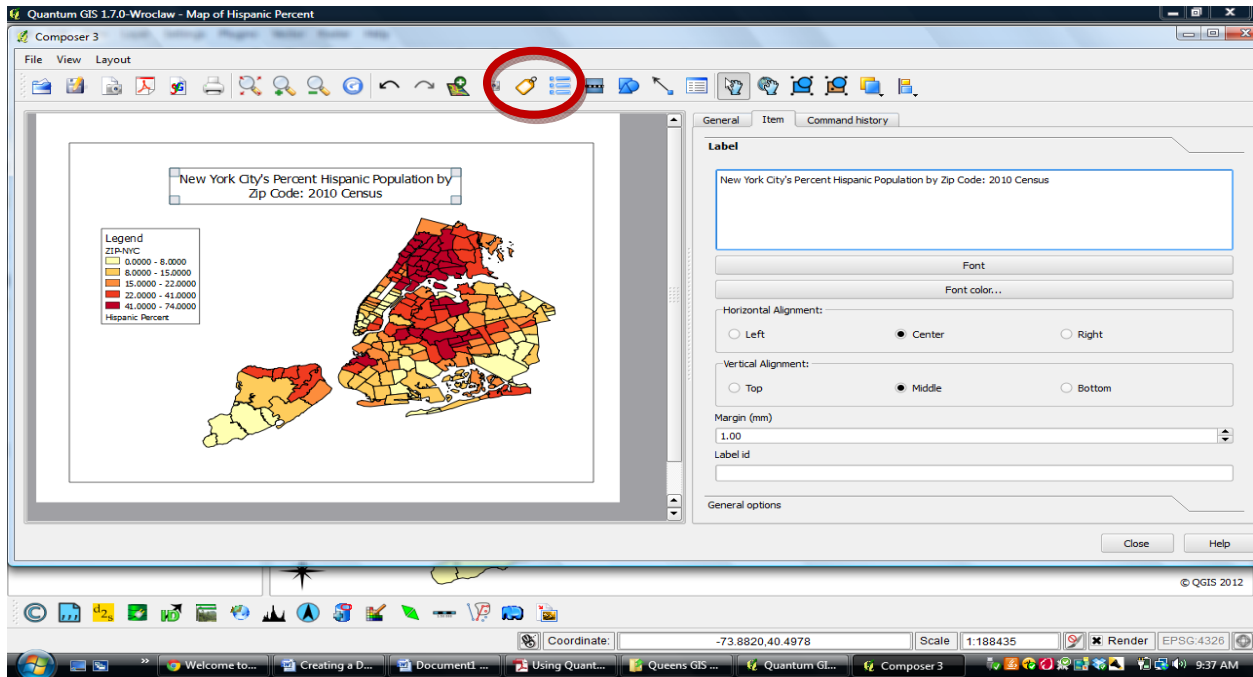
Step 3. Click the “Add new vect legend” button and locate your legend in an open space on the map.



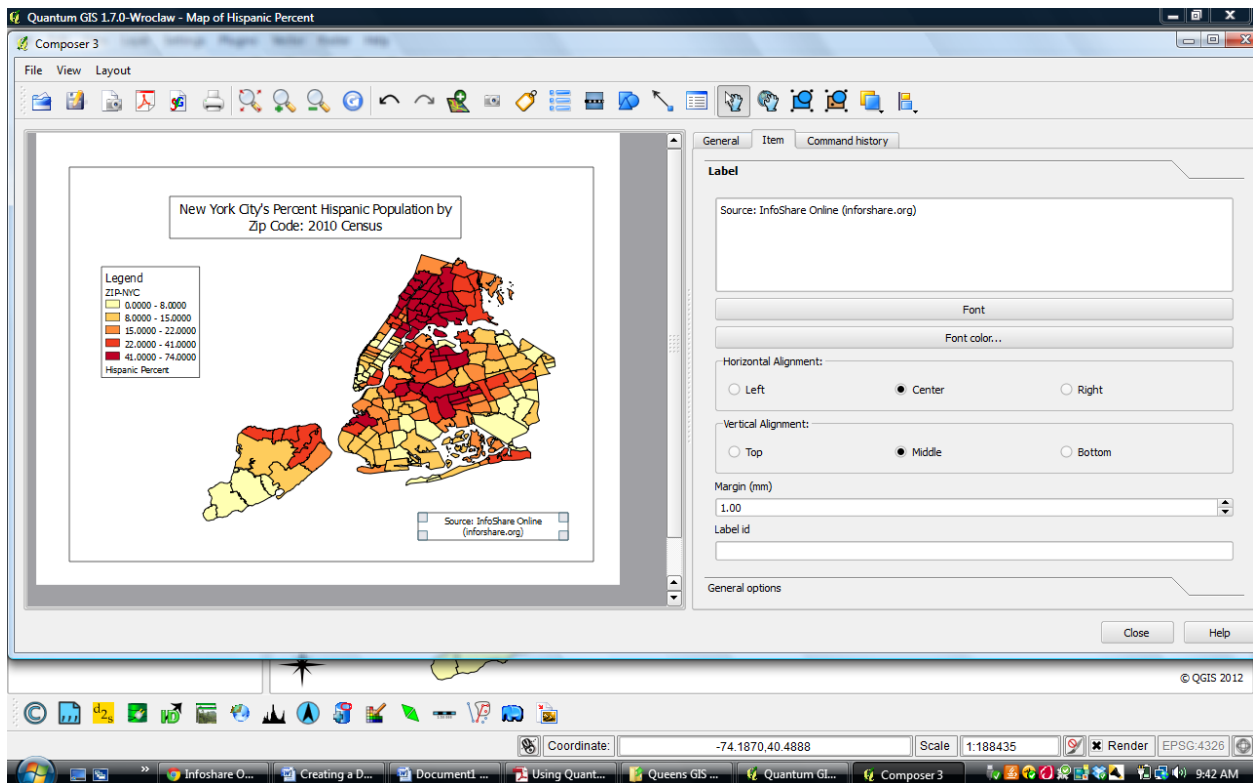
Step 4. Click the Item tab on the right and, under "Legend items", and using the "pencil" below, edit the title and numeric captions of the legend.



Step 5. Click the “Add new label” button to add a title to your map. Click in the open map area to locate where the title will be places. Then, in the Item tab on the right, write the title of your map “New York City’s Percent Hispanic Population by Zip Code: 2010 Census.” Center the horizontal and vertical alignments. Choose the font, the font size, and the font color.



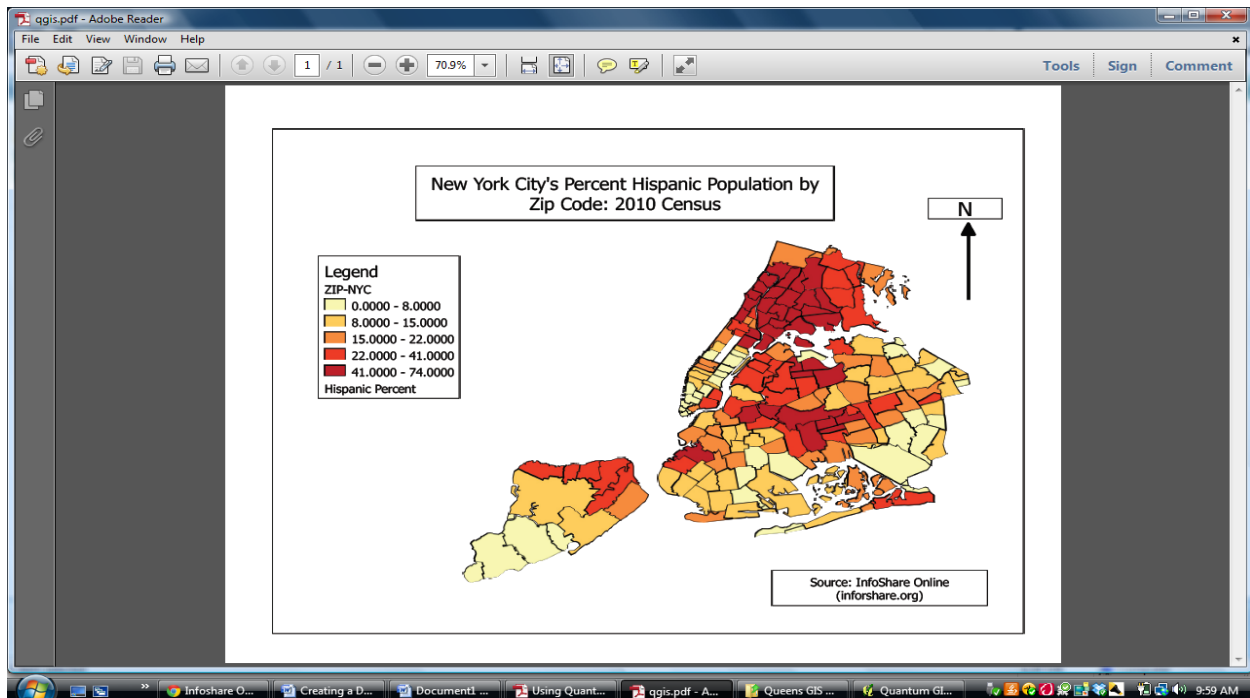
Step 6. Click on the “Add new label” button to add a text box containing source information to the lower right corner of your map. In the Item tab, put in the label “Source: Infoshare Online (www.infoshare.org)”





Step 7. Add another text box with your author information, add a North Arrow, and balance all your map elements to your liking.

Step 8. Close the Composer window and save your project again. Use the Print Composer to print your map or to create an Acrobat PDF file using the Acrobat icon in the Composer (you can access the composer at any time within QGIS from File/Print Composers).



**Congratulations on producing your first QGIS map!**

\* Temporary fix for QGIS defect: There is a bug in versions 1.7 and 1.8 of QGIS. While, using the method described here, you can map data by Quantile (that is, equal numbers of areas in each color category), if you try to classify data by Equal Intervals, all the values will be zero, and Natural Breaks will not work properly either. Here is a temporary work-around suggested by Francis Donnelly, the Geospatial Data Librarian at Baruch College: After joining the data file (.xls) to the shapefile (.shp), right-click on the shapefile and, using Save As, save it under a different name as a new shapefile. Then, using the Add Vector Data button, add this new shapefile to your project and (by right-clicking) remove the old shapefile. (You don't want to save the original shapefile, since that will permanently embed your data file into it.) The new shapefile will have the boundaries and data permanently joined together, and all of the classification schemes will work properly.