

# New Jersey State Data Center Census GIS Workshop 2015

Len Preston

Chief, Labor Market Information

New Jersey Department of Labor  
& Workforce Development





- Cooperative project of the State of New Jersey and the U.S. Bureau of the Census serving data users in the public, private, and academic sectors since 1980.
- Each state has an SDC acting as secondary distributors of Census data providing value added products and expertise for their respective state
- The NJSDC maintains a data dissemination network of over 110 state, county, regional, and local agencies.
  - Includes:
    - All 21 county planning boards
    - Metropolitan Planning Organizations – DVRPC, NJTPA, SJTPO
    - Representatives from 19 State Departments/Agencies
    - Federal Depository Libraries including the New Jersey State Library, Rutgers and Princeton University Libraries

[http://lwd.dol.state.nj.us/labor/lpa/LMI\\_index.html](http://lwd.dol.state.nj.us/labor/lpa/LMI_index.html)

Department of Labor and Workforce Development | Office of Research and Information - Microsoft Internet Explorer provided by Ne

http://lwd.dol.state.nj.us/labor/lpa/LMI\_index.html

File Edit View Favorites Tools Help

Department of Labor and Workforce Development | O...

STATE OF NEW JERSEY  
DEPARTMENT OF LABOR  
AND WORKFORCE DEVELOPMENT

Governor Chris Christie • Lt. Governor Kim Guadagno  
NJ Home | Services A to Z | Departments/Agencies | FAQs  
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FILE HERE Unemployment Benefits  
Sunday filing pays benefits faster

Unemployment Insurance HELP

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ORIOffice of Research & Information

Labor Market Information

What's New

What is NJ's Unemployment Rate?  
What do jobs pay in New Jersey?  
What are tomorrow's growth occupations?  
How do I subscribe to your Publications?  
ORI Labor Market Analysts

OnTheMap Inflow Outflow Maps  
US Census Bureau data series shows new perspective on commuting to and from work

What's New Quick Links Data Tools dataZoo Publications Press Releases Job Seekers A to Z

What's New

Open a free dataZoo account  
Access all d2-Dot supported data; follow live updating dataZoo tables, charts and data series. Combine displays and series into custom, shareable views and dashboards, export data to your favorite tools and more.  
OPEN YOUR FREE dataZoo ACCOUNT

Download a free dataZephyr  
Drag data series from dataZoo tables -

Latest Values	Latest Value	Difference from Year Ago
Civilian Labor Force (Thousands)	4,504.9 in May 2015	59.2 ↓
All Employees: Total Nonfarm	4,012.4 in May 2015	48.1 ↓
Unemployment % (New Jersey)	6.5 in May 2015	-0.1 ↓
Unemployment % (United States)	5.3 in Jun 2015	-0.8 ↓
Total Gross Domestic Product	549,099 in 2014	11,703 ↓
Real Total Gross Domestic Product	504,159 in 2014	1,938 ↓
Total Wages and Salaries	244,846,976 in 2015 Q1	7,709,784 ↓
Proprietors' Nonfarm Income	44,907,665 in 2015 Q1	1,767,439 ↓
Proprietors' Farm Income	53,756 in 2015 Q1	-16,108 ↓
Total Personal Income (JUSR Millions)	520,327,709	18,755,168 ↓

Done, but with errors on page.

Start

Trusted sites | Protected Mode: Off

75%

4:23 PM  
7/21/2015





Governor Chris Christie - Lt. Governor Kim Guadagno  
NJ Home | Services A to Z | Departments/Agencies | FAQs

Search All of NJ  Submit

**FILE HERE** Unemployment Benefits  
Sunday filing pays benefits faster

**Unemployment Insurance** **HELP**

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- ▶ LWD Home
- ▶ Employer Accounts
- ▶ Employer Handbook
- ▶ Family Leave Insurance
- ▶ Individuals with Disabilities
- Labor Market Information**
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  - ▶ Workers' Compensation
  - ▶ Workforce Development

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## NEW JERSEY STATE DATA CENTER



The New Jersey State Data Center (NJSDC) is a cooperative project of the State of New Jersey and the U.S. Bureau of the Census. Serving data users in the public, private, and academic sectors, the NJSDC has three main objectives:

- Expand access to and use of census and other statistics
- Provide technical assistance and analytical support in the use of these statistics
- Provide user training on timely, census-related topics.

The NJSDC consists of a [network](#) of over 110 state, county, regional, and local agencies. The lead agency is housed within the Division of Labor Market and Demographic Research, New Jersey Department of Labor and Workforce Development.

A variety of statistical reports from State and Federal agencies may be accessed through the NJSDC network. Data from the state and sub-state demographic and economic data prepared by the New Jersey Department of Labor and Workforce Development are also available through the NJSDC.

### 2010 Census Links

[NJSDC 2010 Census Home Page](#)



### What's New

- ▶ [2010 Census Affirmative Action 5-year ACS Data](#) Data contain residence based summary occupational information by Race/Ethnicity and Sex for Affirmative Action/EEO Plans Tabulation 2006-2010 (5-year ACS data).
- ▶ [My Congressional District](#) gives you quick and easy access to selected statistics by the U.S. Census Bureau through the American Community Survey. Find detail information on People, Jobs, Housing, Economic, or Education for each New Jersey Congressional District.
- ▶ [2010 5-Year Commuter-Adjusted Population Estimates](#) (all US States, counties and minor civil divisions with 2,500

# Data Available Through NJLWD and NJSDC

- Population and Demographic Trends
  - Census Data
  - Population and Household Estimates
  - Building Permits
  - Income and Poverty Data
  - Women and Minority Owned Businesses
- NJ Department of Labor Economic Data
  - Labor Force Estimates
  - Unemployment Rates
  - Employment Data
  - Industry and Occupational Employment Projections
  - Population and Labor Force Projections
  - Occupational Wage Rates

# QGIS



## Pros:

Powerful Desktop GIS Software

Open Source Software

ArcGIS type Layout Used

Free

## Cons:

Open Source Vulnerabilities

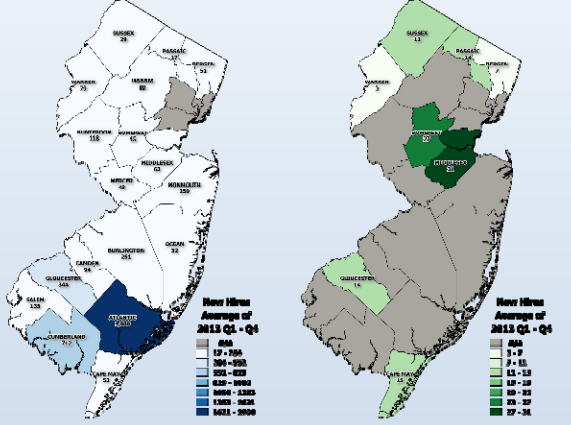
Not as Widely Used as ArcGIS

Not Compatible with ArcGIS

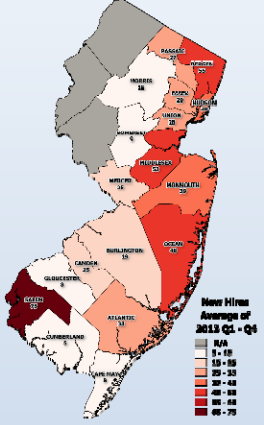
- .qgs extension

# Local Employment Dynamics – New Hires By Industry ( New Hires – Counts Average of Quarters 2013 Q1 – 2013 Q4)

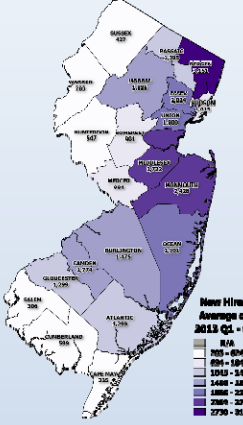
**Agriculture, Forestry, Fishing and Hunting Mining, Quarrying, and Oil and Gas Extraction**



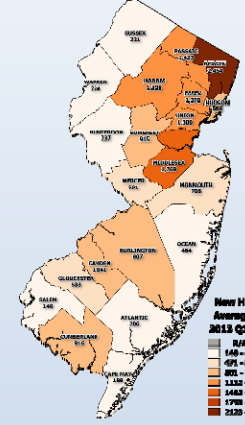
**Utilities**



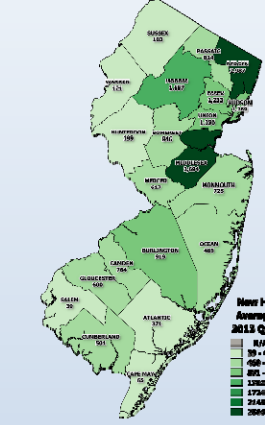
**Construction**



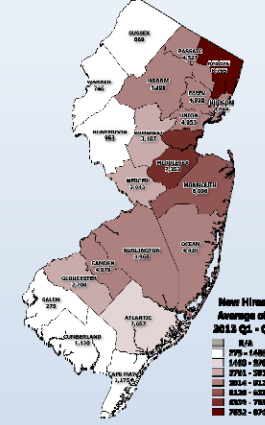
**Manufacturing**



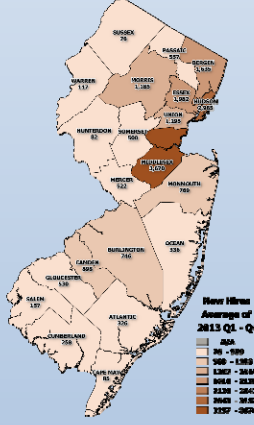
**Wholesale Trade**



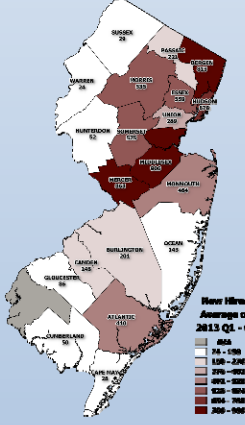
**Retail Trade**



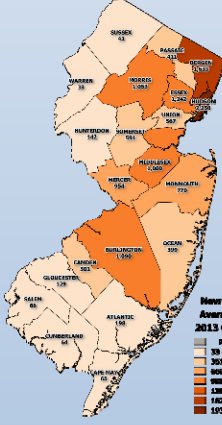
**Transportation and Warehousing**



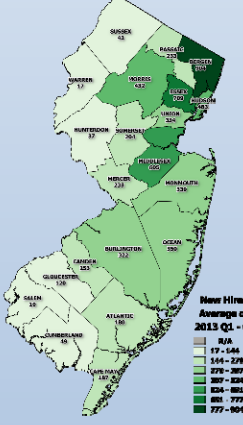
**Information**



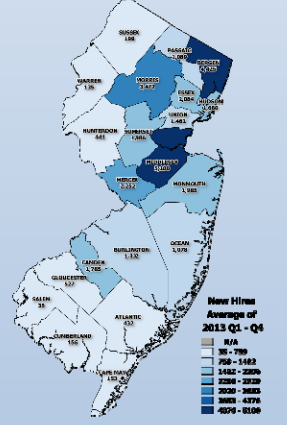
**Finance and Insurance**



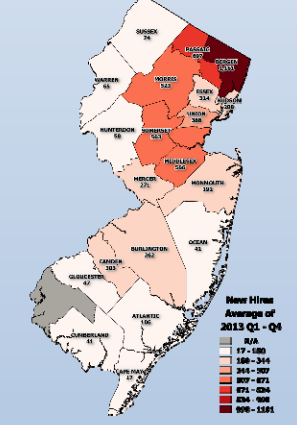
**Real Estate and Rental and Leasing**



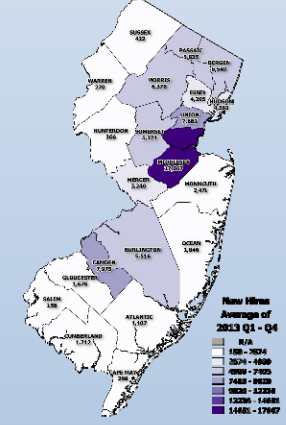
**Professional, Scientific, and Technical Services**



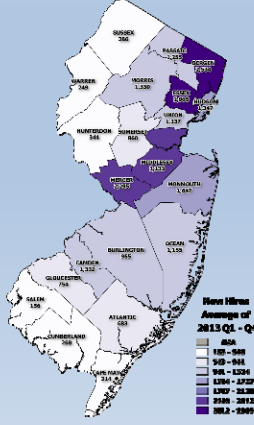
**Management of Companies and Enterprises**



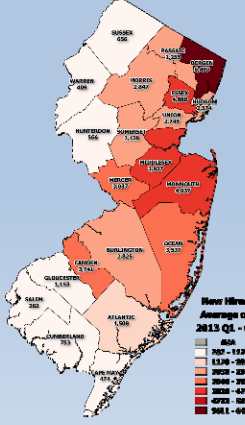
**Administrative and Support and Waste Management and Remediation Services**



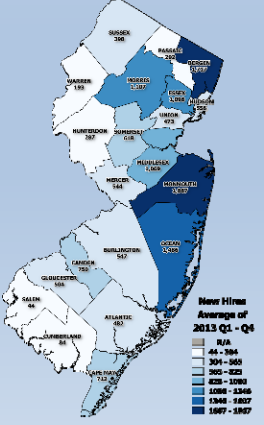
**Educational Services**



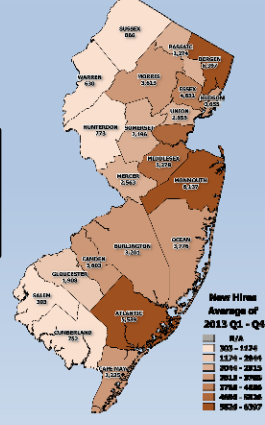
**Health Care and Social Assistance**



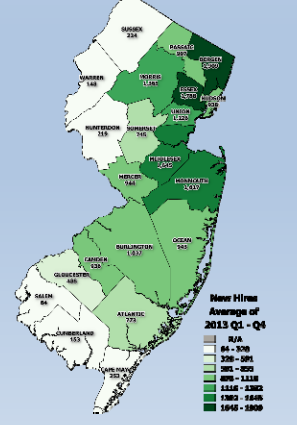
**Arts, Entertainment, and Recreation**



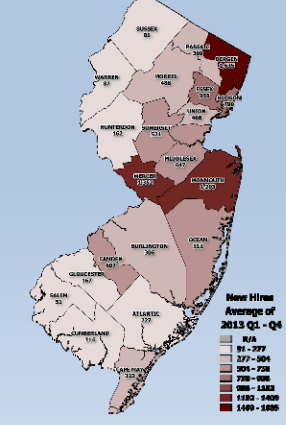
**Accommodation and Food Services**



**Other Services (except Public Administration)**



**Public Administration**



Source: U.S. Census Bureau Local Employment Dynamics  
 Quarterly Workforce Indicators (QWI) 2013 Quarters 1 through 4  
 Prepared by: New Jersey Department of Labor and Workforce Development  
 Office of Research and Information,  
 Division of Economic and Demographic Research  
 New Jersey State Data Center  
 June, 2015

# QWI Explorer <http://qwiexplorer.ces.census.gov/>

Link below will bring you into the tool with all of the example parameters pre-loaded

QWI Explorer

State: New Jersey

Indicator: HirN - Hires New: Counts

Filters/Aggregations

- Quarters: Group
- Sub-State Geography: X-Axis
- Industries: None
- Firm Ownership: All Ownership
- Firm Age/Size: None
- Worker Characteristics: None

X-Axis: Counties (21 Counties Selected)

Group: Year/Quarter (Four Year/Quarters Selected)

	2013 Q1	2013 Q2	2013 Q3	2013 Q4
Atlantic, NJ	10,854	25,703	21,101	15,032
Bergen, NJ	47,660	55,878	58,790	57,532
Burlington, NJ	22,498	27,670	27,823	26,013
Camden, NJ	24,528	33,187	31,072	33,438
Cape May, NJ	3,023	13,570	11,670	3,242
Cumberland, NJ	6,519	9,676	9,876	7,642
Essex, NJ	31,143	35,868	41,613	36,148
Gloucester, NJ	9,897	14,905	15,192	15,074
Hudson, NJ	25,646	28,789	34,516	31,142
Hunterdon, NJ	4,368	6,714	6,306	5,450
Mercer, NJ	18,619	25,535	27,815	24,919

Privacy Policy | 2010 Census | Data Tools | Information Quality | Product Catalog | Contact Us | Home  
Source: U.S. Census Bureau, Center for Economic Studies, LEHD | e-mail: CES.QWI.Feedback@census.gov

<http://qwiexplorer.ces.census.gov/exp-r/f4352.html?st=NJ&v=map&fc=true&t=ac0&extra=x%3D0%26g%3D0>



# Downloaded Comma Delimited File

This is what the downloaded .csv data file looks like in Excel.

The screenshot shows an Excel spreadsheet with the following data:

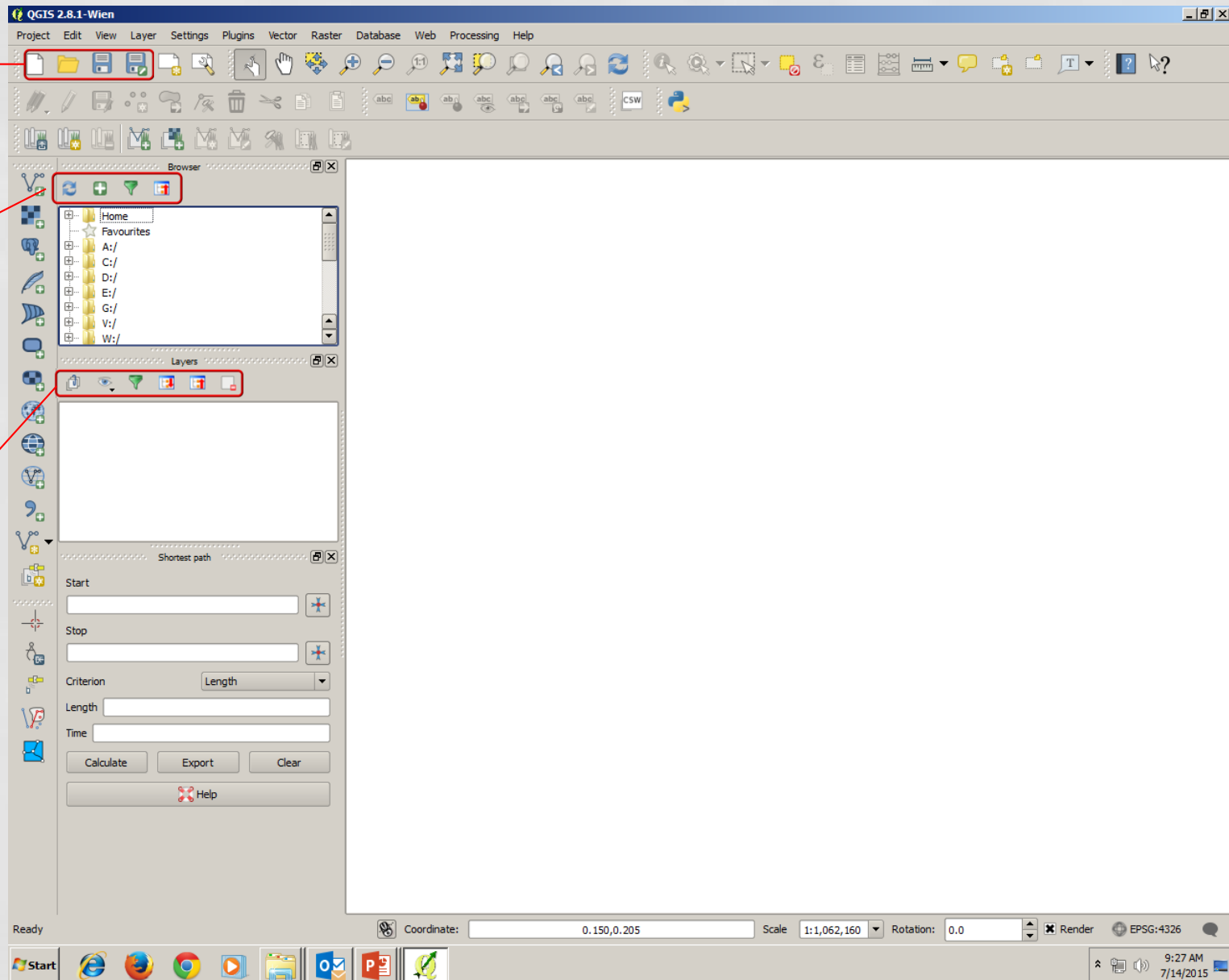
1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
	COUNTY	Agricultur	Mining, Q	Utilities	Construct	Manufact	Wholesale	Retail Tra	Transport	Informati	Finance ar	Real Estat	Professio	Managem	Adminstr	Education	Health Cai	Arts, Ente	Accommo	Ot
2	SUSSEX	29	12		427	221	103	869	76	29	42	42	199	74	422	366	656	398	866	
3	HUNTERD	118			547	237	199	953	82	52	142	37	441	58	366	344	566	287	773	
4	CAPE MAY	52	15	8	335	189	65	1175	85	28	65	187	153	17	299	214	474	712	3225	
5	WARREN	79	3		203	224	121	746	117	24	33	17	135	65	270	249	409	193	630	
6	SALEM	135		75	306	140	39	275	157		66	19	35		158	156	282	44	303	
7	CUMBERL	712		5	599	816	501	1120	258	50	64	49	156	41	1712	268	753	84	752	
8	ATLANTIC	1888		33	1299	206	371	2657	326	410	198	180	432	106	1107	683	1508	482	5539	
9	OCEAN	32		48	1991	464	485	4429	336	143	399	350	1078	41	1846	1155	3537	1486	3776	
10	SOMERSE	45	27	9	901	915	846	3187	500	575	591	204	1986	563	5374	860	2128	618	2196	
11	MERCER	48		25	984	591	617	3042	522	863	954	233	2252	271	3240	2295	3037	544	2563	
12	GLOUCEST	344	14	8	1299	583	600	2704	530	86	129	120	527	47	1676	754	1153	504	1908	
13	PASSAIC	17	14	27	1395	1423	814	4527	557	221	411	233	1089	697	5835	1255	2255	292	2274	
14	BURLINGT	251		19	1475	807	919	3968	746	201	1090	322	1332	262	5516	955	2825	547	3201	
15	MONMOUN	159		39	2428	708	725	6096	769	464	770	339	1985	192	2471	1647	4037	1867	6137	
16	CAMDEN	94		25	1774	1041	764	4079	898	248	501	253	1785	303	7975	1332	3741	750	3603	
17	MORRIS	89		15	1836	1328	1657	4308	1185	535	1053	432	3471	523	6378	1330	2847	1107	3613	
18	UNION			28	1900	1309	1196	4953	1295	289	567	334	1462	388	7682	1137	2745	473	2855	
19	BERGEN	51	7	55	3151	2454	2987	8765	1635	813	1633	904	4425	1161	6549	2534	6499	1717	6397	
20	ESSEX			29	2024	1370	1233	4918	1982	559	1242	709	2084	314	4205	2905	4680	1096	4631	
21	HUDSON			38	1015	888	1269	4044	2965	678	2256	483	1660	208	4592	1347	2574	556	3655	
22	MIDDLESE	63	31	53	2722	1768	2694	7353	3670	906	1000	605	5100	566	17067	2133	3937	1069	5278	
23																				
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34																				

# QGIS Opening Screen

New Map/Project  
Open Map/Project  
Save and Save as

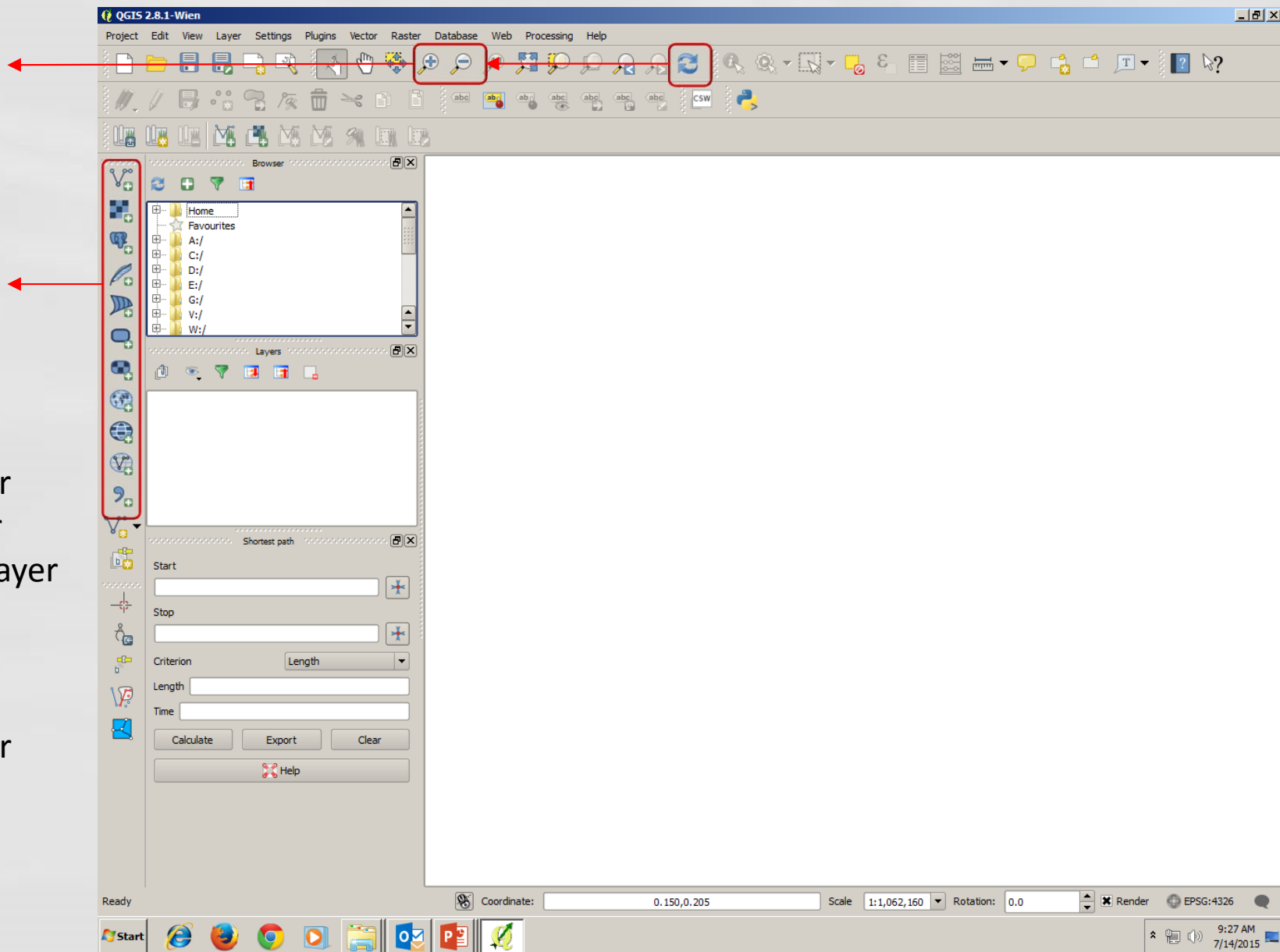
Browser Window:  
-Refresh  
-Add Selected Layer  
-Filter Files  
-Collapse All

Layer Window:  
-Add Group  
-Manage Layer  
  Visibility  
-Filter Legend by  
  Map Content  
-Expand All  
-Collapse All  
-Remove  
  Layer/Group



# QGIS Opening Screen

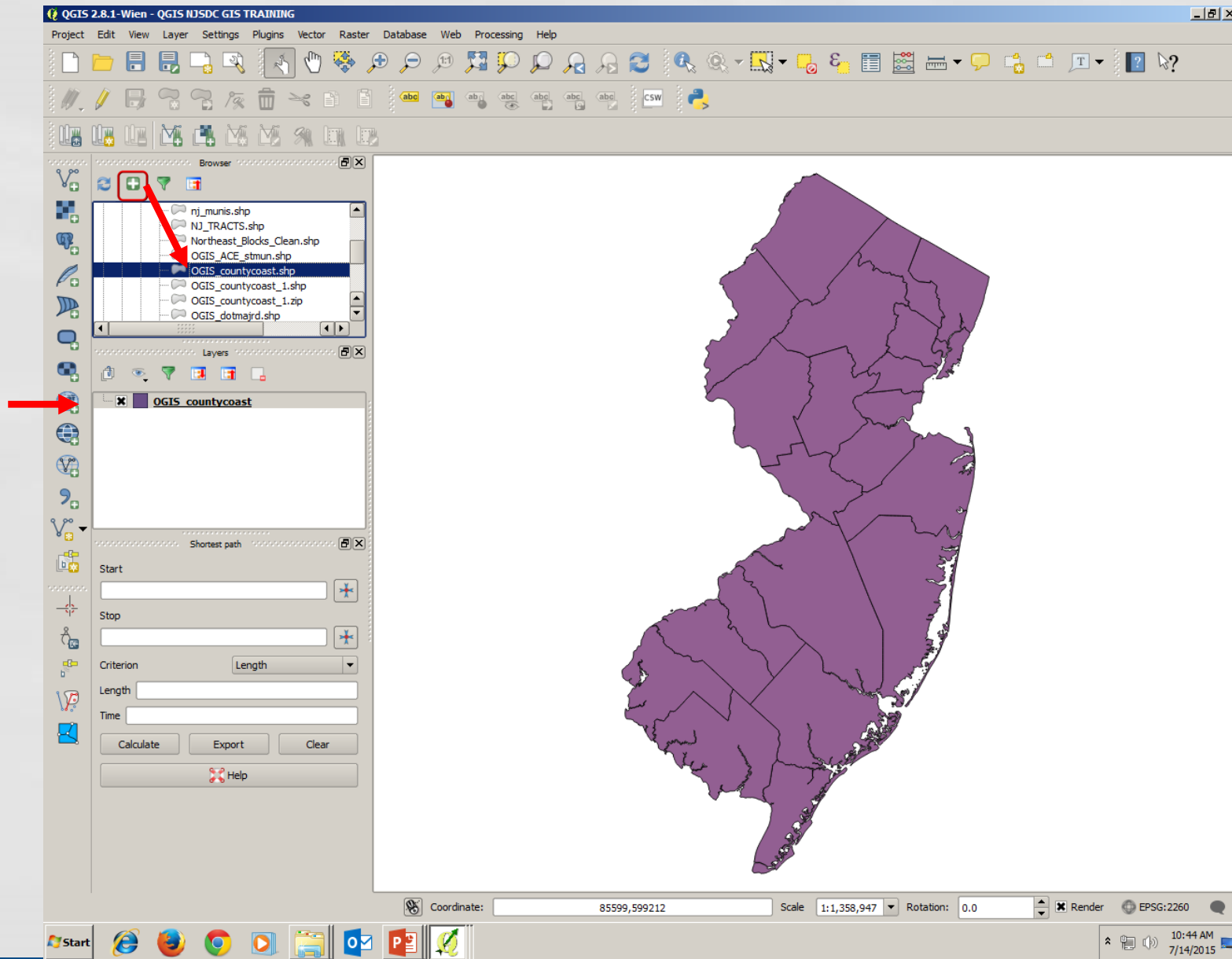
Zoom In/ Zoom Out  
Refresh



Add:  
Vector Layer  
Raster Layer  
PostGIS Layers  
SpatiaLite Layer  
MSSQL Spatial Layer  
Oracle Spatial Layer  
Oracle GeoRaster Layer  
WMS/WMTS Layer  
WCS Layer  
WFS Layer  
Delimited Text Layer

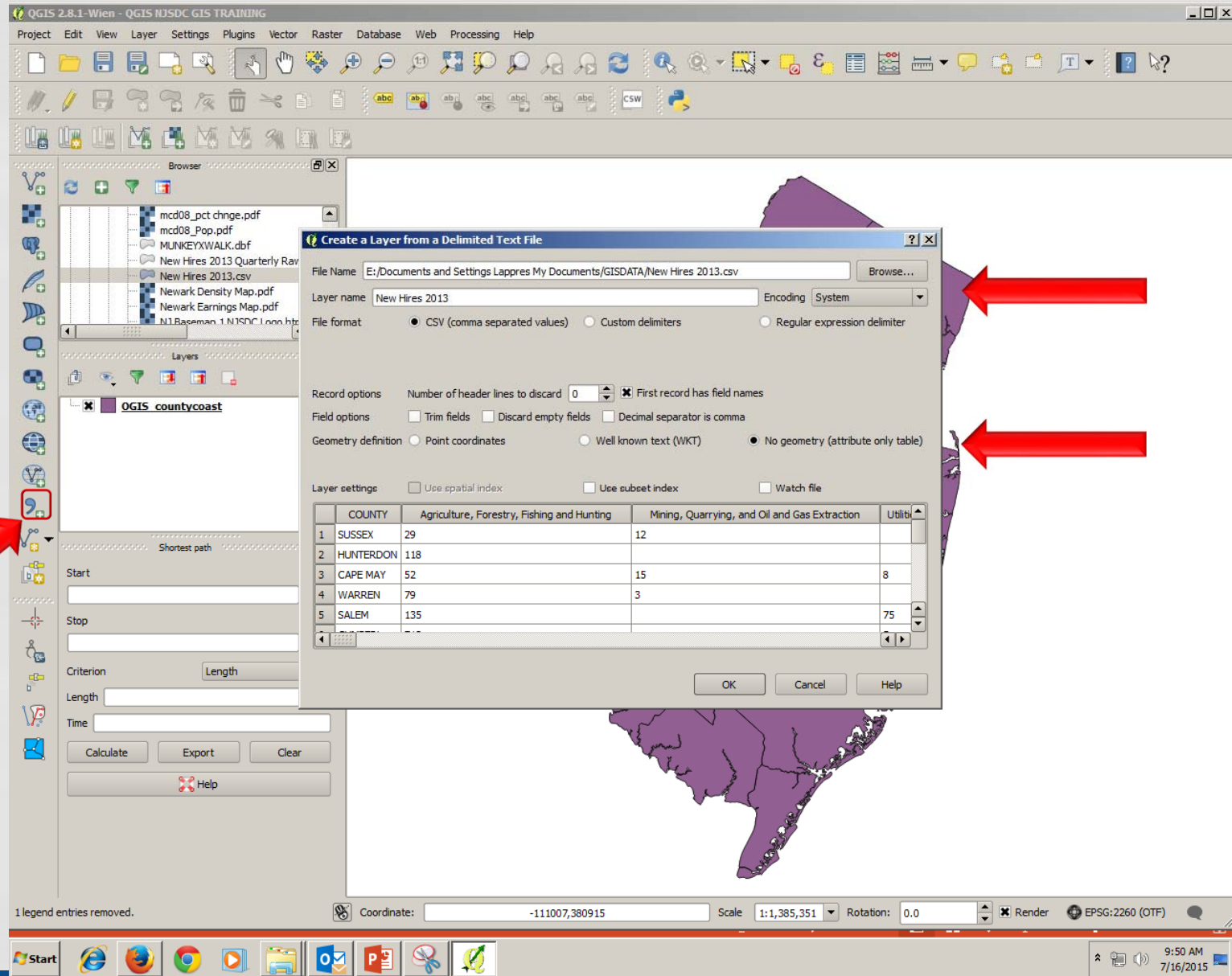
# Add County Shapefile

Add County Shapefile by either double clicking on shapefile in browser window or highlight file and click "Add Selected Layers" button



# Add Data File

Now add the Local Employment Dynamics data file (.csv) by double clicking on the “Add Delimited Text Layer” button. Browse for your .csv file and under Geometry Definition, click the “No Geometry” radio Button. Click on “OK”.



# Preparing to Join Files

Right click on each of the Shapefile and Data file to click on “Open Attribute Table” and find a common field to join the two tables

Remember the variable names in each file as they may not be the same.

Next, click on “Properties” to get to the Join “Tab”

The screenshot shows the QGIS 2.8.1 interface. The 'Open Attribute Table' context menu is open over the 'New Hires 2' layer. The attribute table for 'OGIS\_countycoast' is visible, showing a 'COUNTY' column with values like ATLANTIC, BERGEN, BURLINGTON, CAMDEN, CAPE MAY, CUMBERLAND, ESSEX, HUDSON, HUNTERDON, MERCER, MIDDLESEX, MONMOUTH, MORRIS, OCEAN, PASSAIC, SALEM, SOMERSET, SUSSEX, UNION, and WARREN. The attribute table for 'New Hires 2013' is also shown, with a 'COUNTY' column and various industry categories like Forestry, Fishing and Hunting, and Utilities.

INDEX	COUNTY	POP2000	POP1990	POP1980	SHAPE_AREA	SHAPE_LEN	Region	CTYFIPS
0	ATLANTIC	253552	275372	209415	157619584.15...	2109047.082010...	COASTAL	001
1	BERGEN	884118	829592	849843	66666759402.050...	503857.9770020...	NORTHEASTERN	003
2	BURLINGTON	423394	395066	362542	22591951774.09...	1082918.233800...	SOUTHERN	005
3	CAMDEN	508932	532498	471650	6253215041.010...	528896.1549589...	SOUTHERN	007
4	CAPE MAY	102326	95089	82266	7220030627.380...	1683373.688370...	COASTAL	009
5	CUMBERLAND	146438	138053	132866	13797656144.89...	1390176.752379...	SOUTHERN	011
6	ESSEX	793633	748281	850451	3560440812.679...	354639.8981379...	NORTHEASTERN	013
7	GLOUCESTER	254673	230082	199917	9134202137.860...	618544.8995270...	SOUTHERN	015
8	HUDSON	608975	553099	556972	1307846372.680...	440671.2871280...	NORTHEASTERN	017
9	HUNTERDON	121989	107776	87361	12149881220.39...	580841.1192710...	CENTRAL	019
10	MERCER	350761	325824	307863	6330845166.470...	489479.8771350...	CENTRAL	021
11	MIDDLESEX	750162	671780	595893	8734358821.409...	687637.2892040...	CENTRAL	023
12	MONMOUTH	615301	638345	582982	13235659375.29...	1107050.199530...	COASTAL	025
13	MORRIS	470212	421353	407630	13390245935.09...	747059.8399229...	NORTHEASTERN	027
14	OCEAN	510916	443424	356502	17865700553.09...	2395209.286600...	COASTAL	029
15	PASSAIC	489049	453060	447585	59484570227.659...	490292.6156789...	NORTHEASTERN	031
16	SALEM	64285	65294	64676	9516129545.760...	991947.0629689...	SOUTHERN	033
17	SOMERSET	297490	240279	203129	8498291885.829...	541111.1422879...	CENTRAL	035
18	SUSSEX	144166	138911	123621	14914780694.89...	576577.9350489...	NORTHEASTERN	037
19	UNION	522541	493819	504094	2892658589.449...	320195.8042370...	NORTHEASTERN	039
20	WARREN	102437	91607	84429	10044002854.39...	610858.8934459...	NORTHWESTERN	041

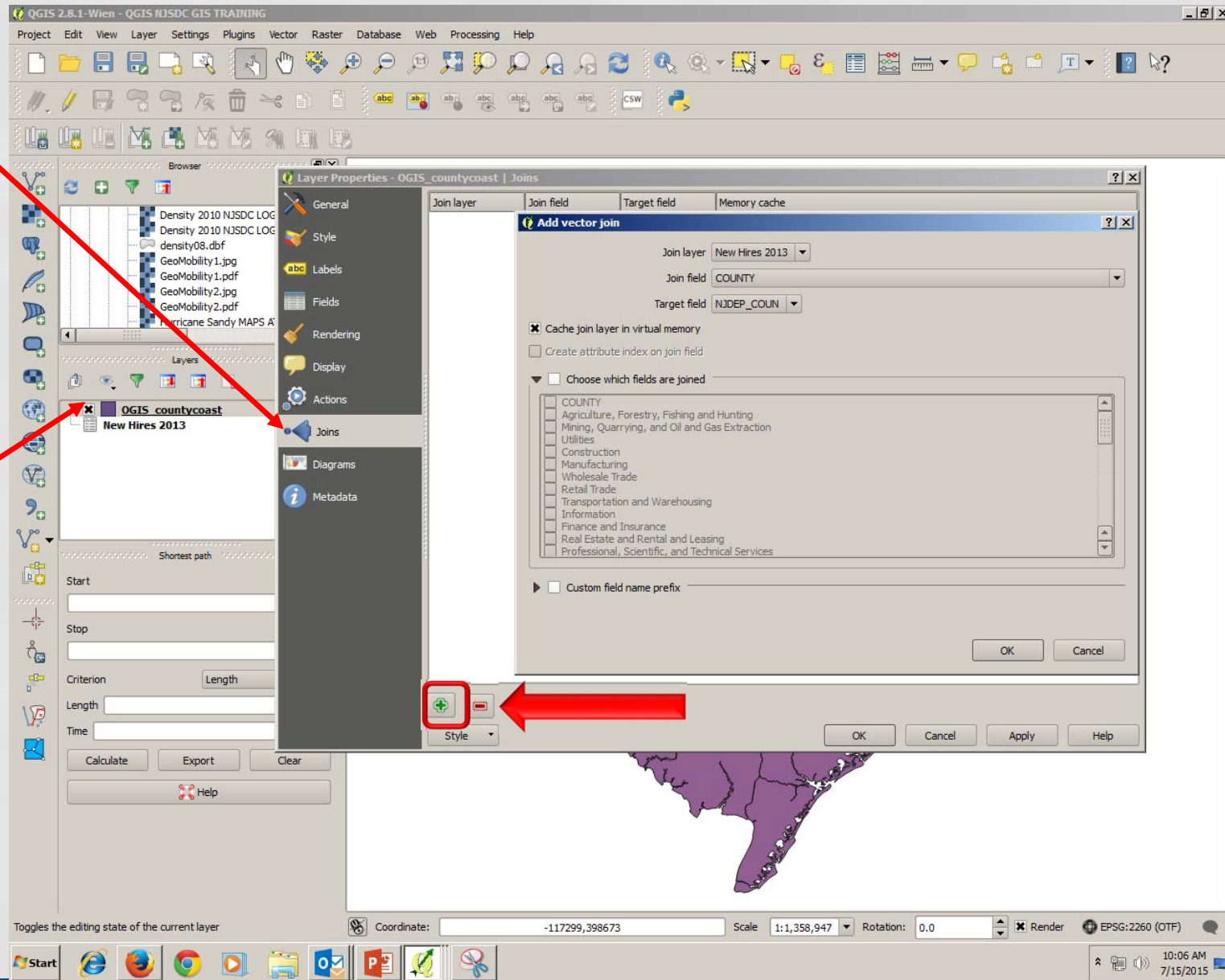
COUNTY	Forestry, Fishing and Hunting, and Oil and Gas	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Arts and Entertainment	
SUSSEX	29	12	NULL	427	221	103	869	76
HUNTERDON	118	NULL	NULL	547	237	199	953	82
CAPE MAY	52	15	8	335	189	65	1175	85
WARREN	79	3	NULL	203	224	121	746	117
SALEM	135	NULL	75	306	140	39	275	157
CUMBERLAND	712	NULL	5	599	816	501	1120	258
ATLANTIC	1888	NULL	33	1299	206	371	2657	326
OCEAN	32	NULL	48	1991	464	485	4429	336
SOMERSET	45	27	9	901	915	846	3187	500
MERCER	48	NULL	25	984	591	617	3042	522
GLOUCESTER	344	14	8	1299	583	600	2704	530
PASSAIC	17	14	27	1395	1423	814	4527	557
BURLINGTON	251	NULL	19	1475	807	919	3968	746
MONMOUTH	159	NULL	39	2428	708	725	6096	769
CAMDEN	94	NULL	25	1774	1041	1041	4079	898
MORRIS	89	NULL	15	1836	1328	1657	4308	1185
UNION	NULL	NULL	28	1900	1309	1196	4953	1295
BERGEN	51	7	55	3151	2454	2987	8765	1635
ESSEX	NULL	NULL	29	2024	1370	1233	4918	1982
HUDSON	NULL	NULL	38	1015	888	1269	4044	2965
MIDDLESEX	63	31	53	2722	1768	2694	7353	3670

# Joining the Shape and Data Files

On the Layer Properties screen select the “Join” tab and click on the green plus button on the bottom left of the window.

Since “Properties” was selected while OGIS\_countycoast was highlighted, you will be indicating which file you want to join to it and by which field the join will occur.

In this example, New Hires 2013 is the Join Layer and the field we want to use to join to the shapefile is “COUNTY”.



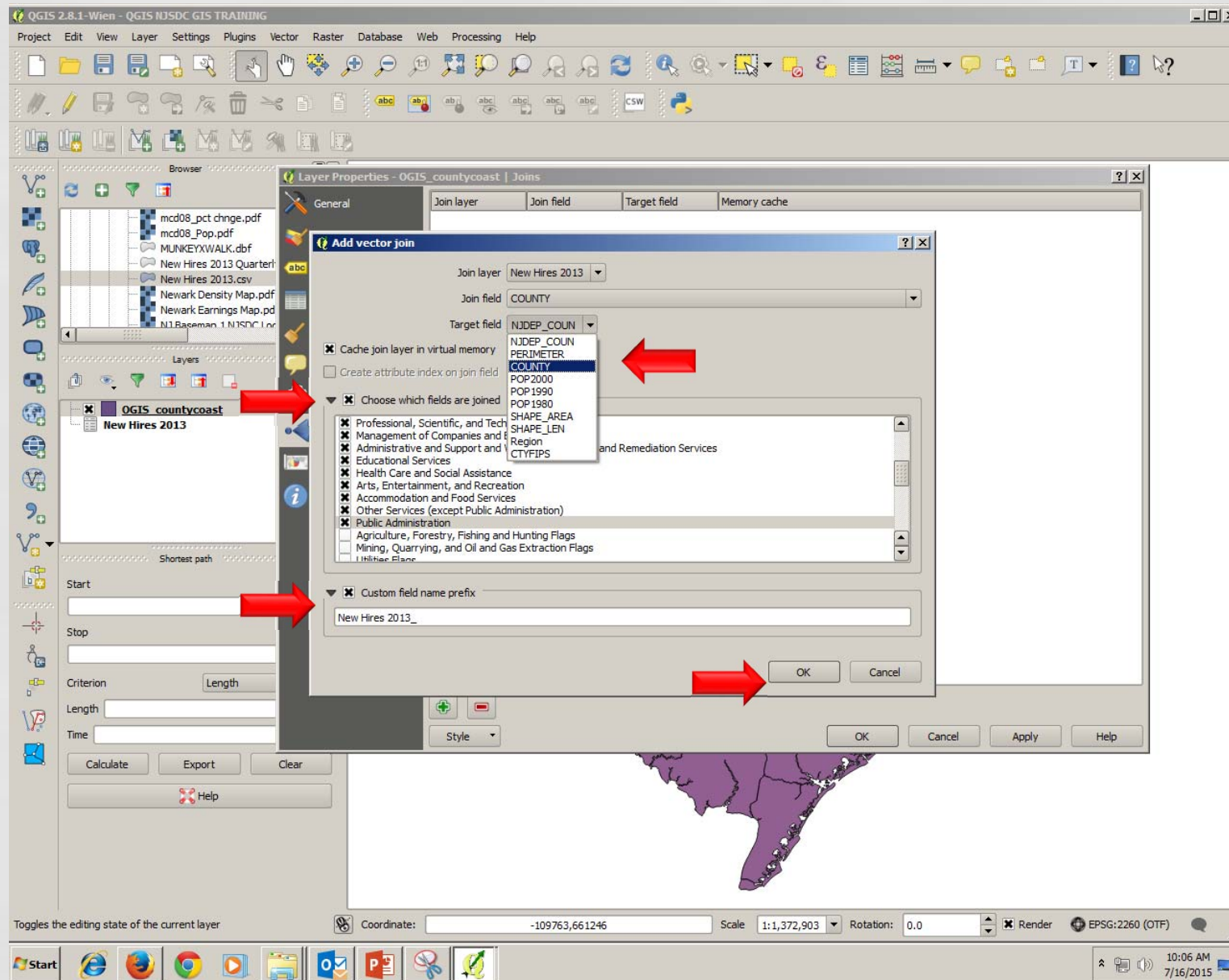
# Joining the Shape and Data Files

OGIS\_countycoast is your selected target layer. You want to join "New Hires 2013" on the target field "COUNTY". Select COUNTY from the drop down box.

Check the "Choose fields" box and select those fields you wish to join. In this example we joined all fields except the flag fields.

Field Name Prefix is not necessary to check but helps keeping track of data source.

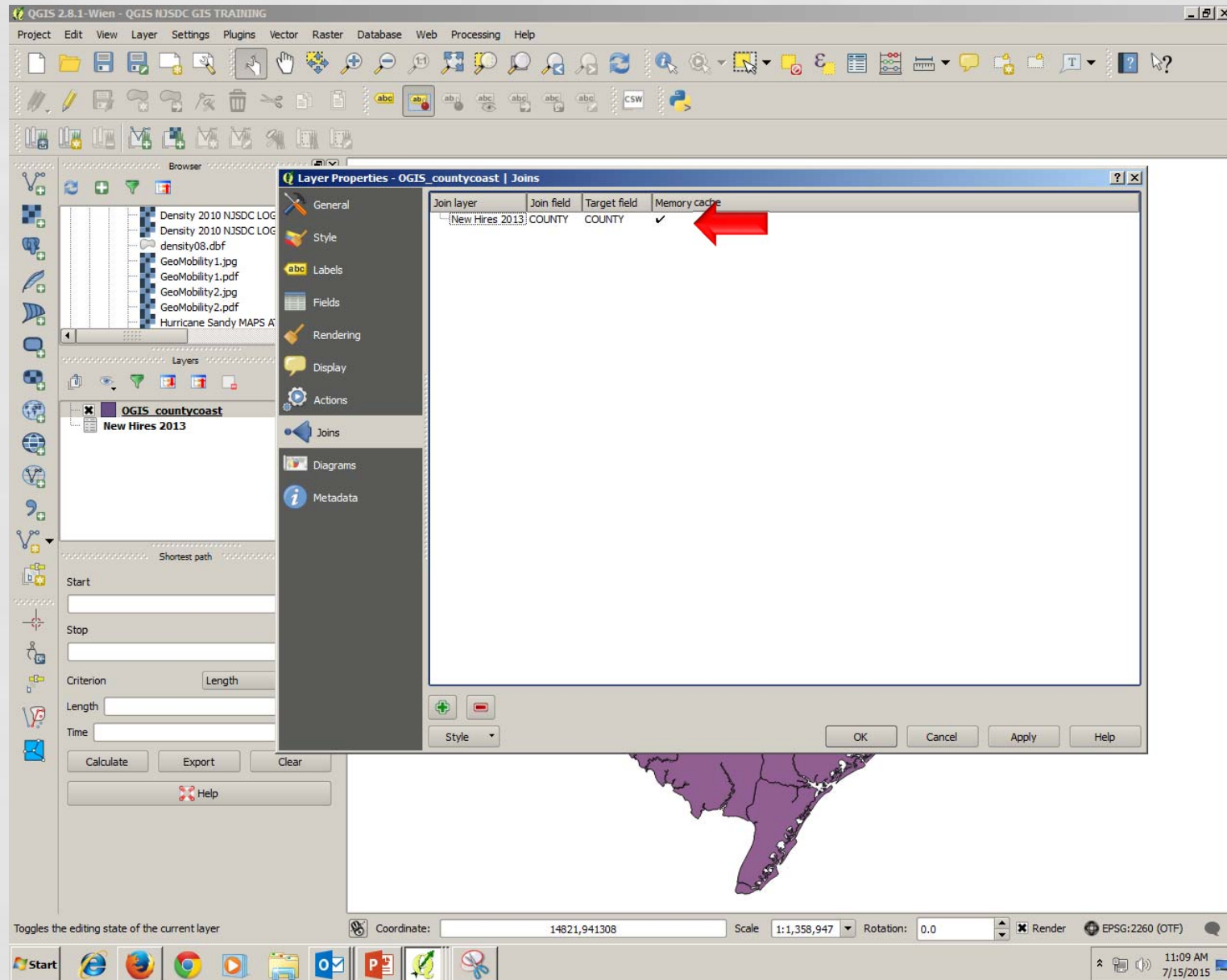
Select the "OK" button to complete the join.





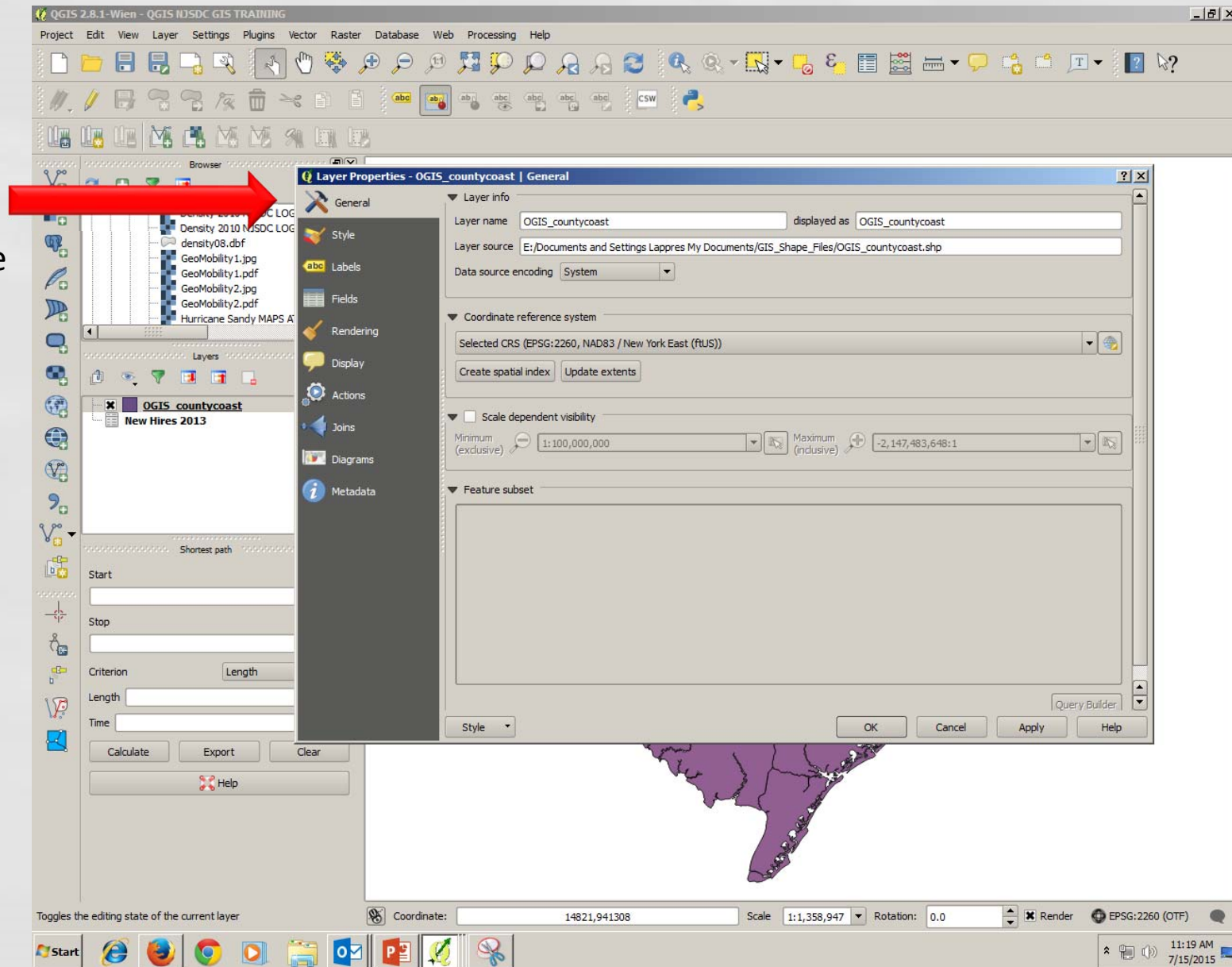
# Joining the Shape and Data Files

Join is now Complete.



# Changing the Layer Properties

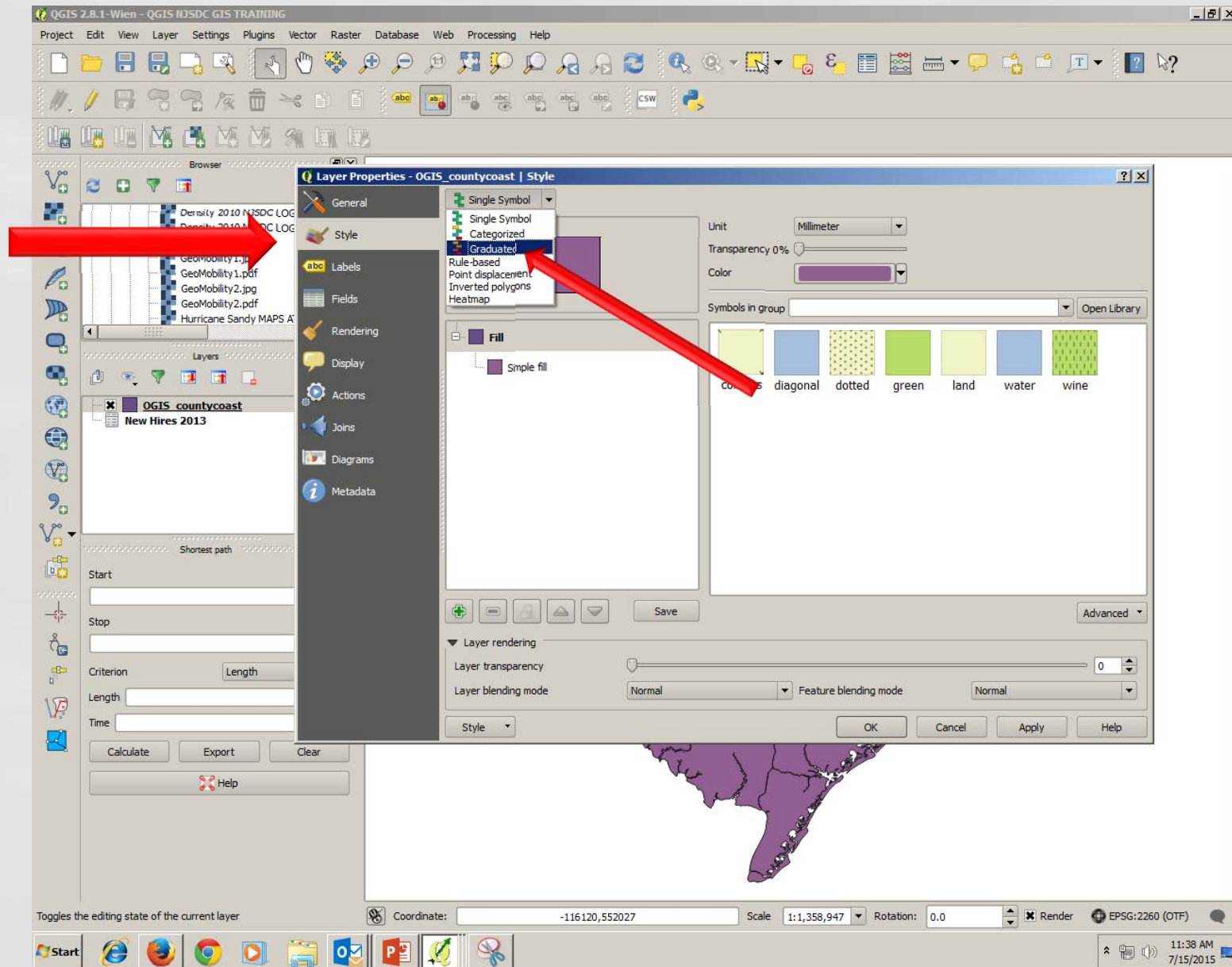
The General Tab is where you will find basic information about the highlighted shapefile such as the Coordinate Reference System (CRS) used for your map.



# Changing the Layer Properties

The Style Tab is where you will make choices on how your Thematic Map will display the data you are working with.

For our example, we will create a Graduated Thematic Map.



# Changing the Layer Properties

Select the data you wish to analyze. In our example it is Accommodation and Food Services.

Select this industry from the “Column” drop down box.

The screenshot displays the QGIS 2.8.1 interface with the 'Layer Properties - OGIS\_countycoast | Style' dialog box open. The 'Column' dropdown menu is expanded, listing various industry categories. A red arrow points to the selected item, 'New Hires 2013\_Accommodation and Food Services'. The dialog also shows 'Classes: 5', 'Mode: Equal Interval', and 'Precision: 4'. The background map shows a purple-shaded area of New Jersey.

Column
New Hires 2013_Finance and Insurance
New Hires 2013_Real Estate and Rental and Leasing
New Hires 2013_Professional, Scientific, and Technical Services
New Hires 2013_Management of Companies and Enterprises
New Hires 2013_Administrative and Support...aste Management and Remediation Services
New Hires 2013_Educational Services
New Hires 2013_Health Care and Social Assistance
New Hires 2013_Arts, Entertainment, and Recreation
New Hires 2013_Accommodation and Food Services
New Hires 2013_Other Services (except Public Administration)

# Changing the Layer Properties

In the “Classes” drop down, select 7 for the number of data groups.

Select Equal Interval as the “Mode” and set the “Precision” to 0 and leave the “Trim” box unchecked.

Select Browns 2 in the “Color Ramp” dropdown (Custom Color) and check the “Invert” box so the color ramps from light to dark brown.

When highlighting the “Legend Format” box, an informational appears to explain the Legend format.

Hit “Apply” and “OK”

Layer Properties - OGIS\_countycoast | Style

Column: New Hires 2013\_Accommodation and Food Services

Classes: 7

Mode: Equal Interval

Precision: 0

Trim:

Color ramp: Browns 2

Invert

Legend Format: %1 - %2

Symbol Values

Symbol	Values	Template for the legend text associated with each classification. Use "%1" for the lower bound of the classification, and "%2" for the upper bound.
☒	303.00 - 1173.57	
☒	1173.57 - 2044.14	1174 - 2044
☒	2044.14 - 2914.71	2044 - 2915
☒	2914.71 - 3785.29	2915 - 3785
☒	3785.29 - 4655.86	3785 - 4656
☒	4655.86 - 5526.43	4656 - 5526
☒	5526.43 - 6397.00	5526 - 6397

Don't Forget Thousands Separators

Classify Add class Delete Delete all  Link class boundaries Advanced

Layer rendering

Layer transparency: 0

Layer blending mode: Normal

Feature blending mode: Normal

Style

OK Cancel Apply Help

# Changing the Layer Properties

Your Map is now color coded by the 7 classes that you previously defined.

Visibility of the 7 classes are selectable and any class can be removed by unchecking the box beside any of the 7 classes.

You can also turn on or off the entire OGIS\_countycoast layer by clicking on the box beside the layer name. This is handy when superimposing different geographies over each other.

The screenshot shows the QGIS 2.8.1-Wien interface. The main map displays a choropleth map of New Jersey counties, color-coded according to the 'New Hires 2013' legend. The legend is located in the 'Layers' panel on the left, showing seven classes with their respective ranges and colors. A red arrow points to the legend. The 'Layers' panel also shows the 'OGIS\_countycoast' layer, which is currently checked. The 'Shortest path' panel is visible below the legend, with fields for Start, Stop, Criterion (set to Length), Length, and Time, and buttons for Calculate, Export, and Clear. The status bar at the bottom shows the coordinate 534977,222680, scale 1:1,372,903, rotation 0.0, and EPSG:2260 (OTF). The Windows taskbar at the bottom shows the Start button and several application icons, including Internet Explorer, Firefox, Chrome, and the Start menu.

Class Range	Color
303 - 1174	Lightest Brown
1174 - 2044	Light Brown
2044 - 2915	Medium-Light Brown
2915 - 3785	Medium Brown
3785 - 4656	Dark Brown
4656 - 5526	Very Dark Brown
5526 - 6397	Darkest Brown

# Labeling the Map

Now we want to label our map. From “Layer Properties”, select the “Labels” tab or the “Labels” button on the top menu.

Check the “Layer Label With” box. We will create the expression in the box with the expression creator (button to the right)

Select your Font, Style, Size, and Color of your label. You are also able to select Transparency level, Type Case and Spacing of the label as well.

Now click on the Expression Creator button in the upper right corner of the “Labels” tab.

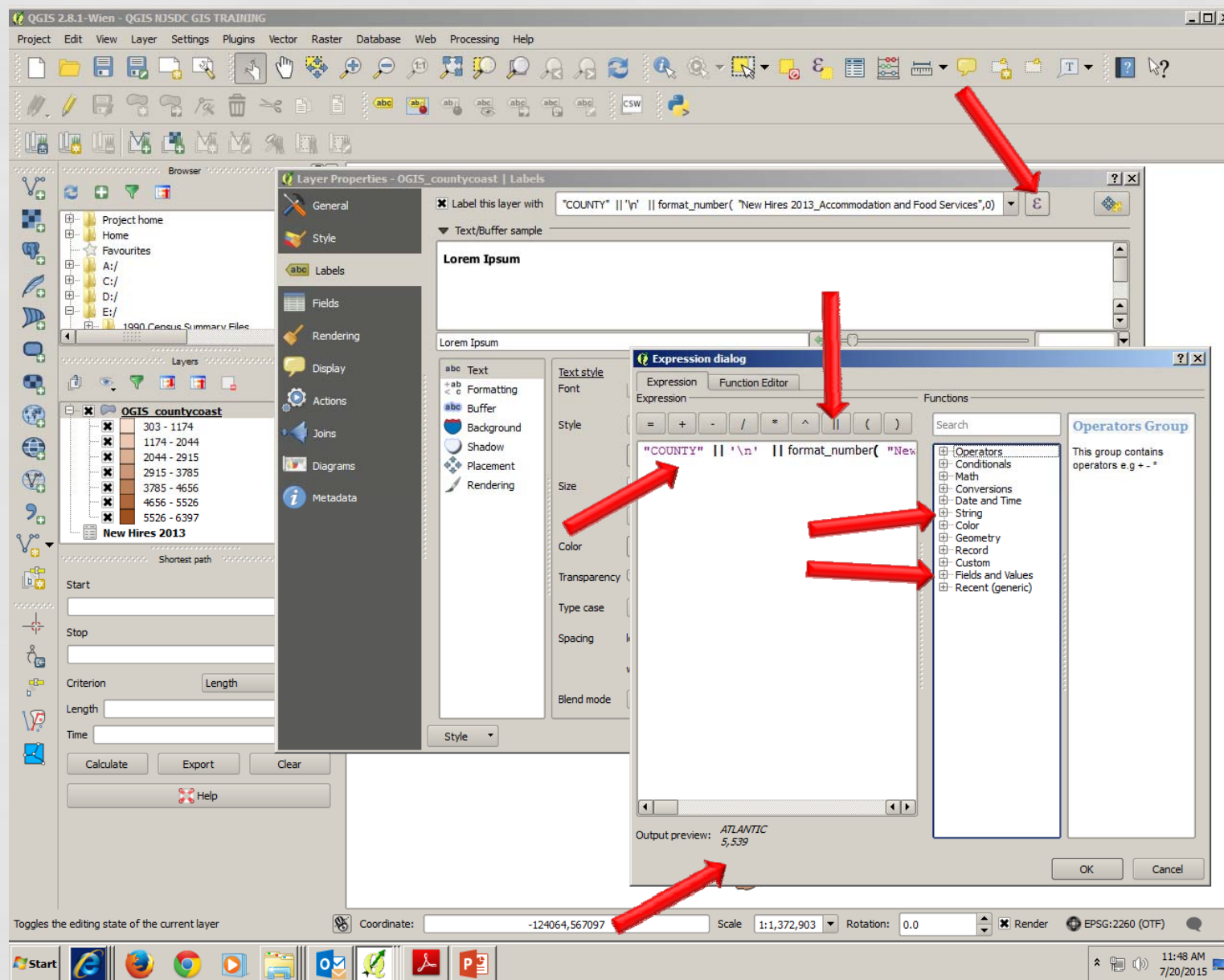
The screenshot displays the QGIS 2.8.1 interface. The main window shows a map of New Jersey with county boundaries. The 'Layer Properties' dialog is open for the 'OGIS\_countycoast' layer, with the 'Labels' tab selected. The 'Label this layer with' field contains the expression: `"COUNTY" || '\n' || 'New Hires 2013_Accommodation and Food Services'`. The 'Text style' section is visible, showing settings for font (MS Shell Dlg 2), style (Bold), size (9.5000 points), and color (black). Red arrows highlight the 'Labels' tab, the 'Label this layer with' field, the 'Expression Creator' button, and the 'Text style' section.

# Labeling the Map

Use the Expression Creator to build an expression that formats your label.

In the Fields and Values Function, select the field “County” then hit the “Concatenate Button”(||). Next type in the visual basic code for “next line” (\n). Expand the String Functions and select the format\_number() function. The first item in the parenthesis is the “Accomodation and Food Services” field followed by a comma and then the number of decimal places and the end parenthesis.

If your expression is valid you will see the result in the Output Preview.





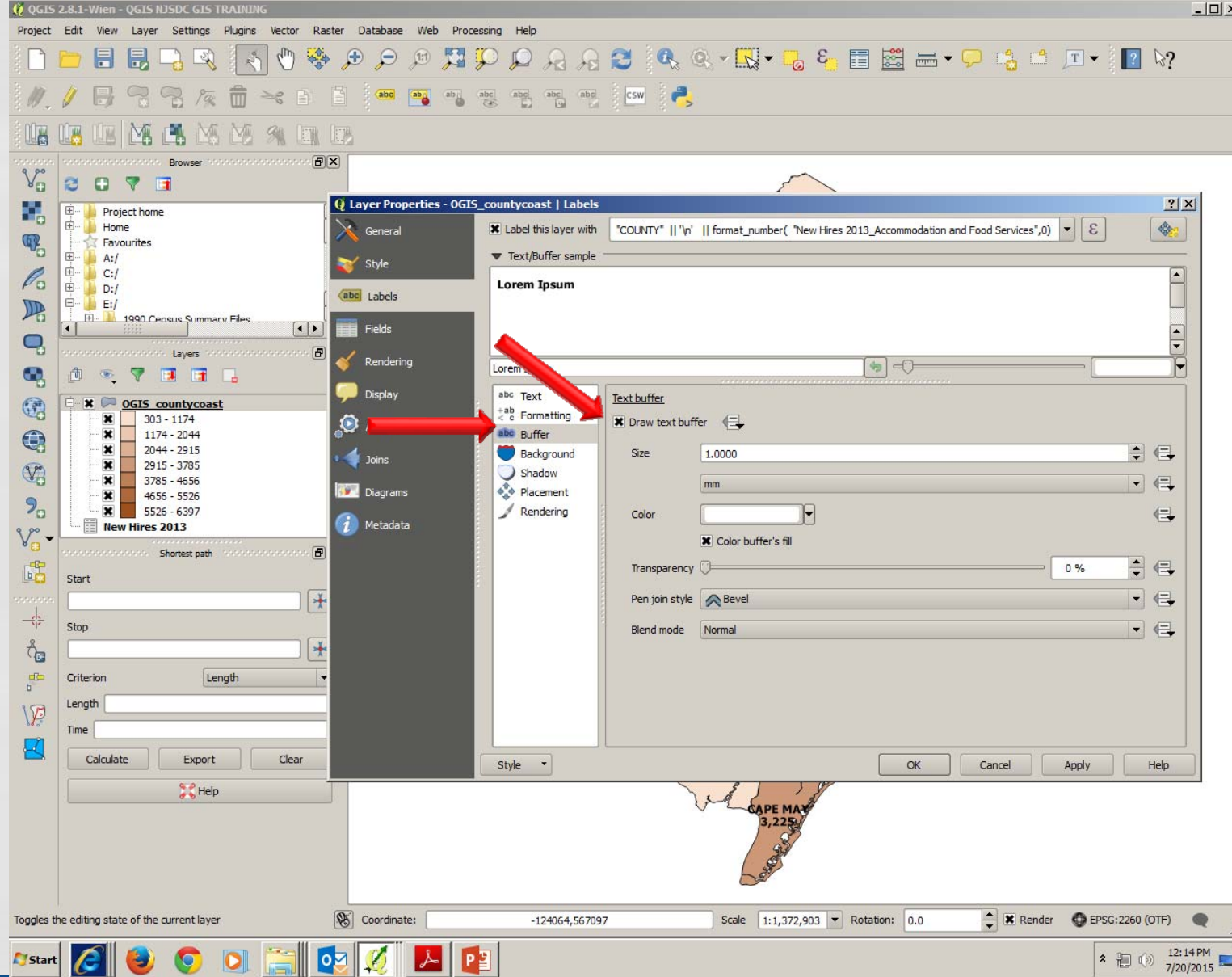
# Labeling the Map

In the “Formatting” Tab select the alignment. In our example the alignment is set to “Center”

The screenshot shows the QGIS 2.8.1 interface. The main window displays a map of Cape May with a layer named 'OGIS\_countycoast'. The 'Layer Properties' dialog is open, showing the 'Formatting' tab. The 'Text formatting' section is visible, with the 'Alignment' dropdown set to 'Center'. Two red arrows point to the 'Formatting' and 'Placement' tabs in the dialog's left sidebar. The 'Text' field contains the expression: `"COUNTY" || "\n" || format_number("New Hires 2013_Accommodation and Food Services",0)`. The 'Text/Buffer sample' area shows 'Lorem Ipsum' text. The 'Text formatting' section includes options for 'Multiple lines', 'Wrap on character', 'Line height' (1.00 line), 'Alignment' (Center), 'Formatted numbers', and 'Decimal places' (0). The 'Placement' section includes 'Show plus sign'. The 'Style' dropdown is set to 'Text'. The 'OK', 'Cancel', 'Apply', and 'Help' buttons are at the bottom of the dialog. The QGIS status bar at the bottom shows the coordinate as -124064,567097, scale as 1:1,372,903, rotation as 0.0, and the coordinate system as EPSG:2260 (OTF). The system tray shows the time as 12:04 PM on 7/20/2015.

# Labeling the Map

In the “Buffer” Tab, check “Draw Text Buffer” box and select the Size, Color, and Transparency Level of your buffer to give your label a 3D quality and visibility over geographic boundaries.



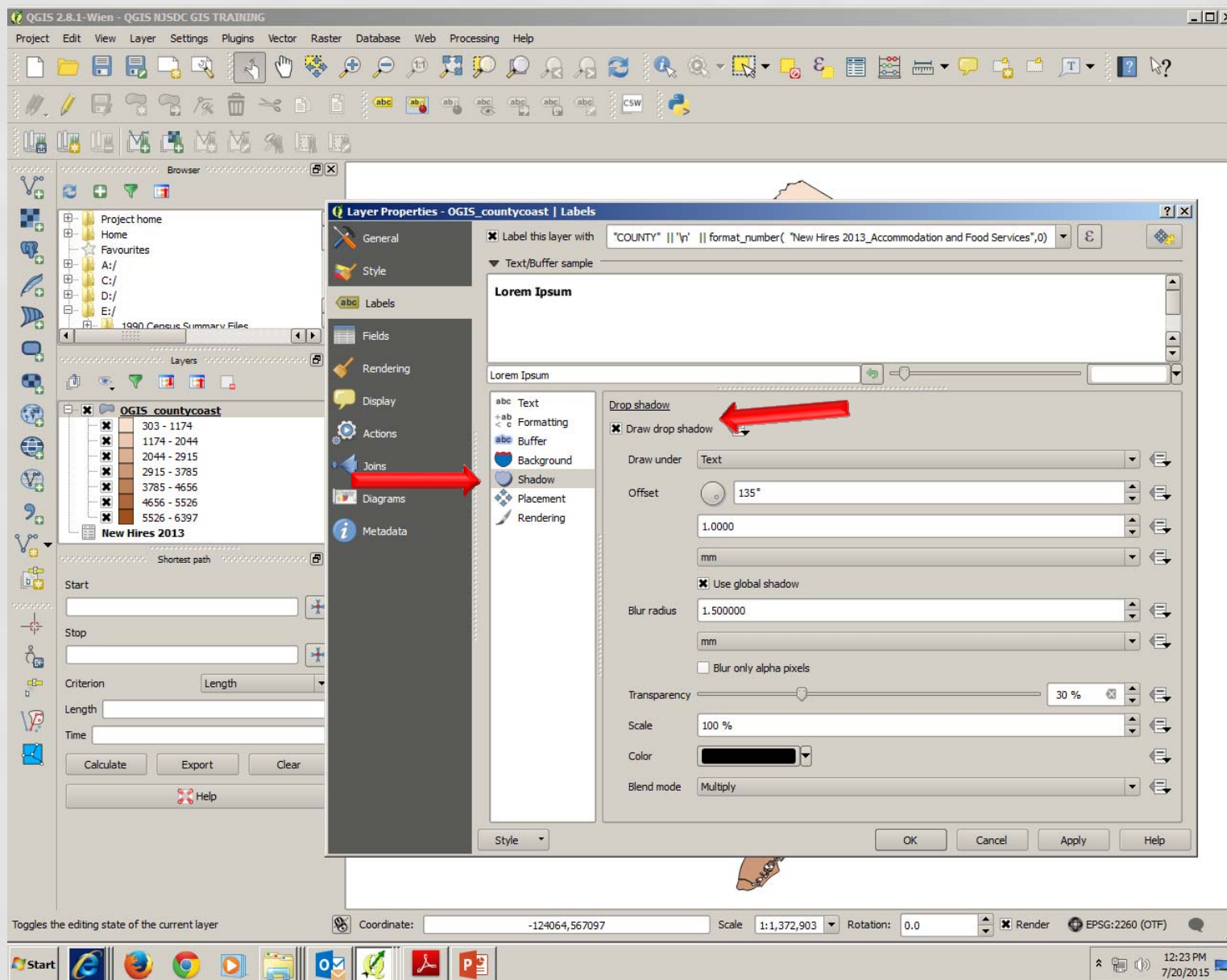
# Labeling the Map

Skip the “Background” tab and move to the “Shadow” Tab. This is another tool to give your labels better visibility.

Check the “Draw Drop Shadow” box and select that it be drawn under the text of the label. Next, select the offset angle, blur radius, transparency, and color of the shadow.

The settings for the “Placement” and “Rendering” tabs are left in their default settings.

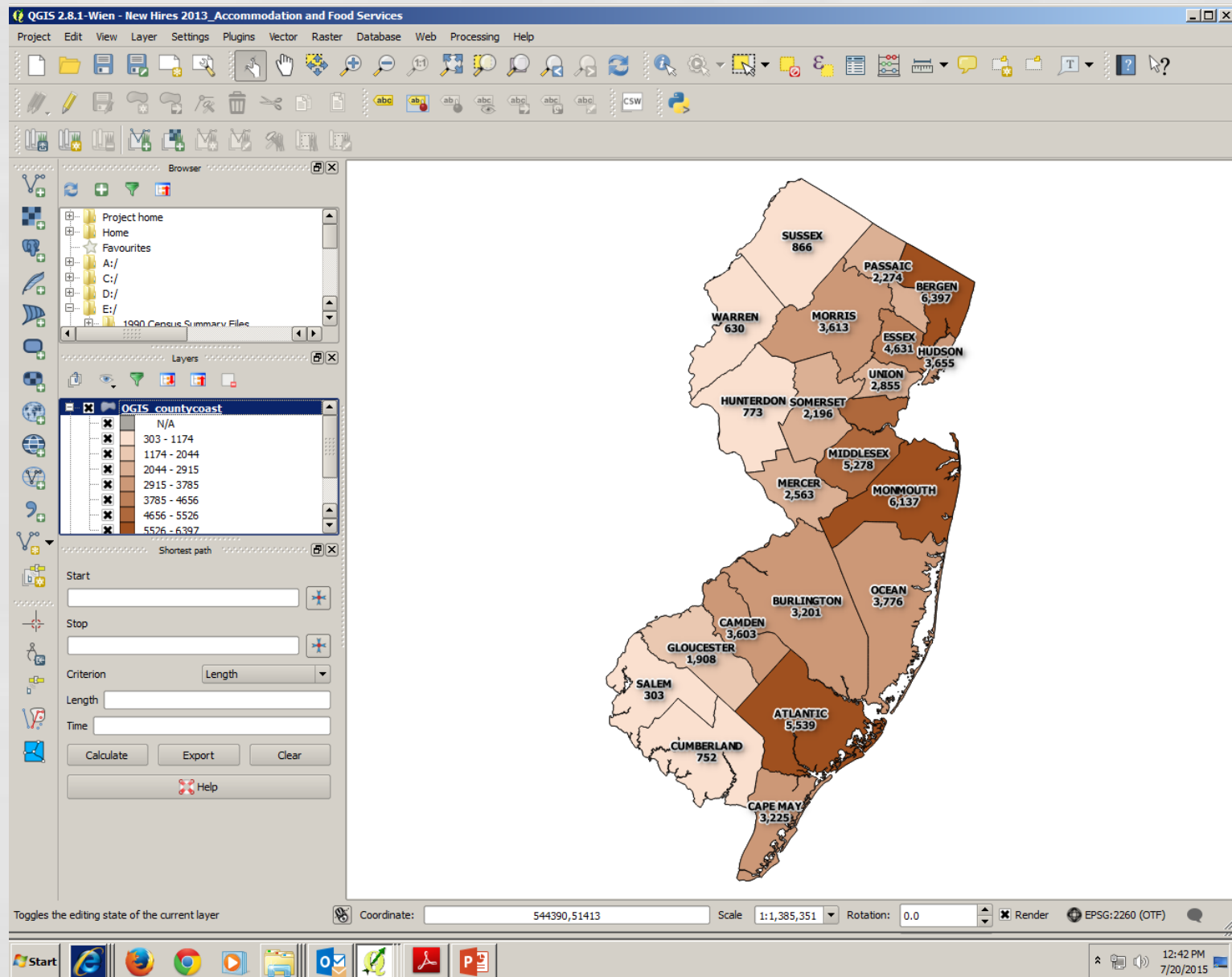
You can now click on “Apply” and “OK” to see the changes to your map.



# Labeling the Map

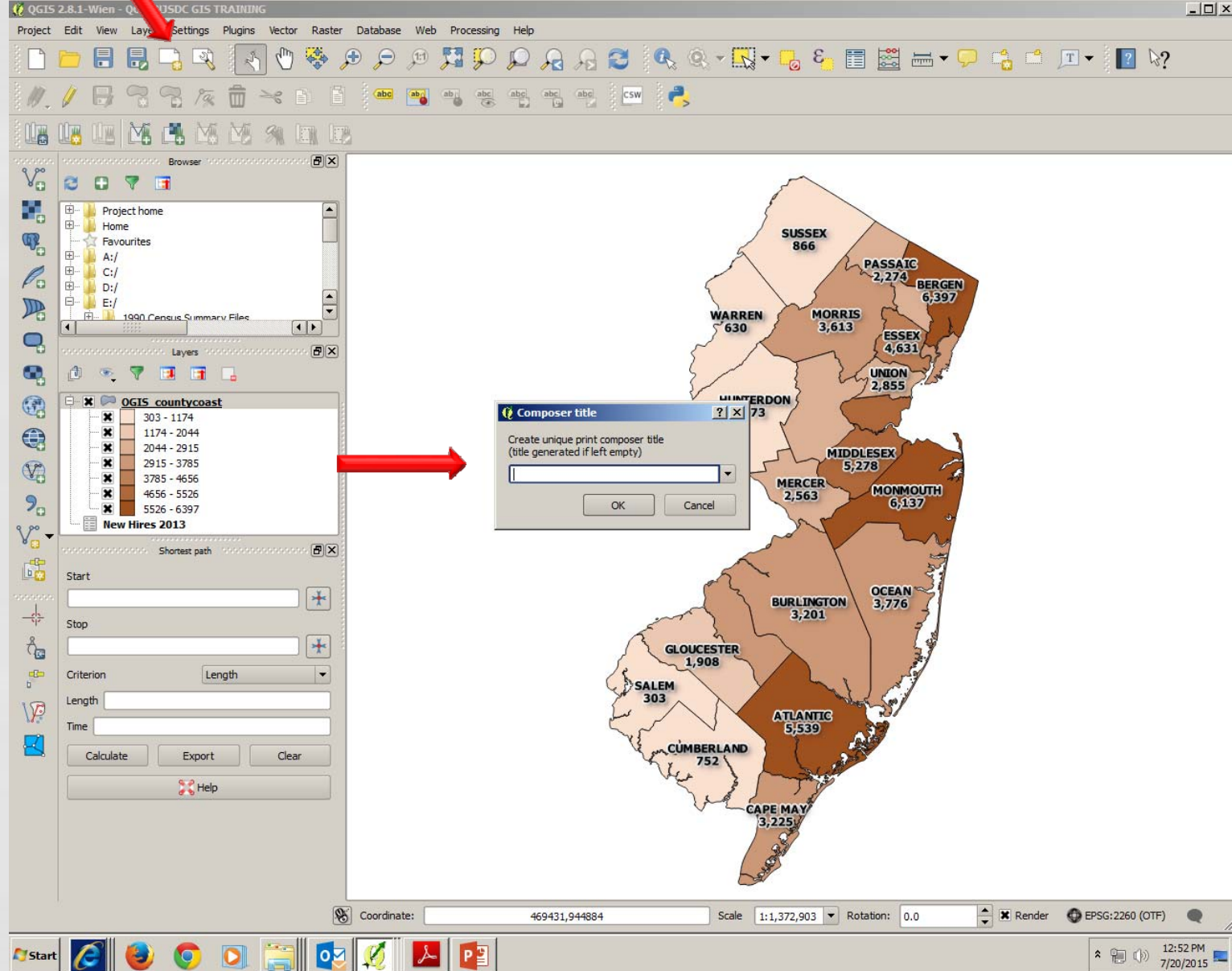
Your Map is now labeled.

QGIS has a separate process for finishing the map for printing.



# Print Composer

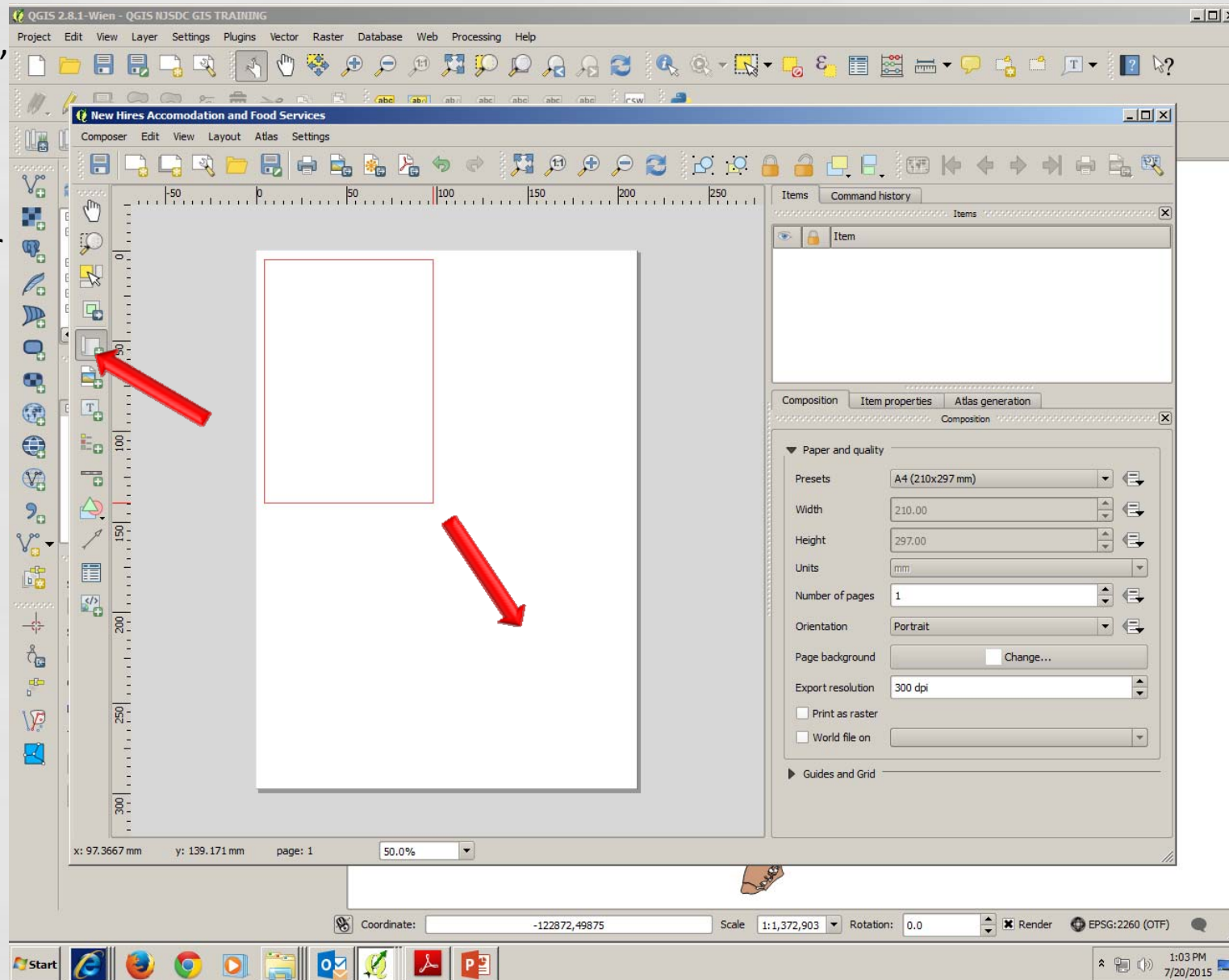
To start the Print Composer, click on the “New Print Composer” button and give the composer a name.



# Print Composer – Add Map

Click on the “Add new Map” button and move the cross hairs to the upper left corner click and hold as you drag down to the lower right corner to set the visible area for the map.

Release the mouse button and the map will appear in the window.

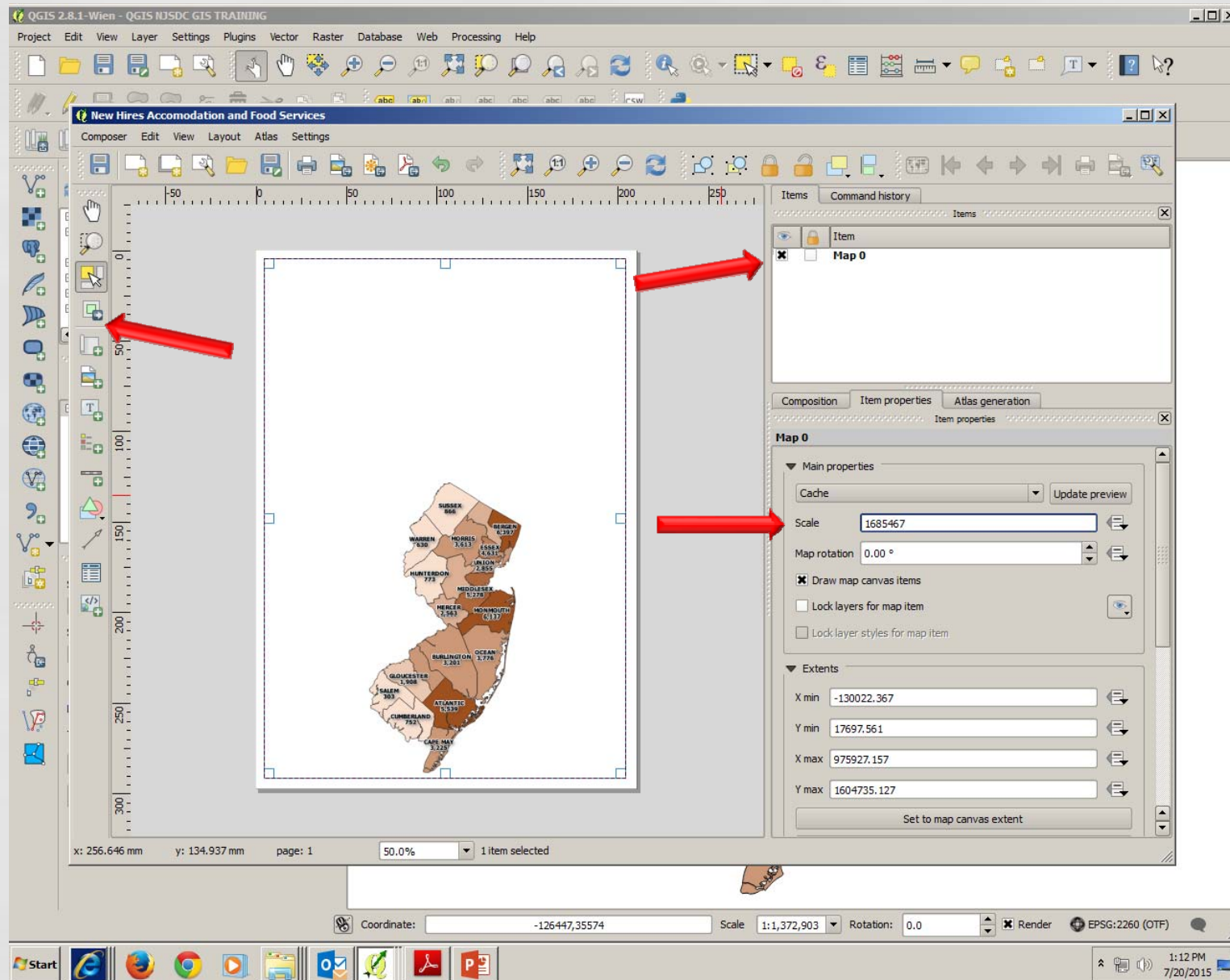


# Print Composer – Add Map

As you can see the map looks small and is at the shift bottom of the frame.

Set “Scale” to 1050000 to bring map to size of the specified area.

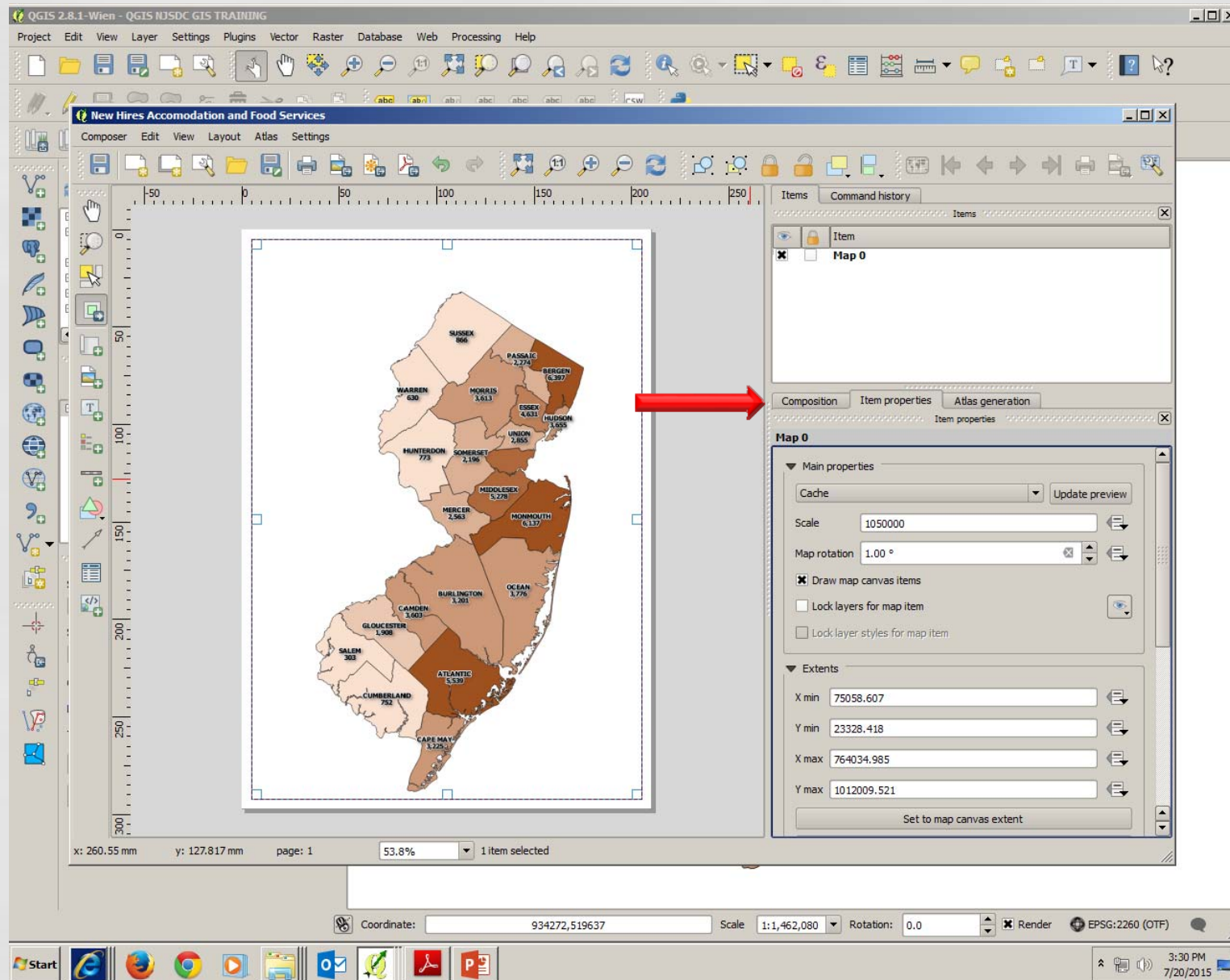
Click on the “Move item content” and drag the map to where you want it on the work area.



# Print Composer – Add Map

Here is how your map should look. All additional settings on the “Item Properties Tab” are in their default position.

All settings on the “Atlas Generation” Tab are also in their default positions.

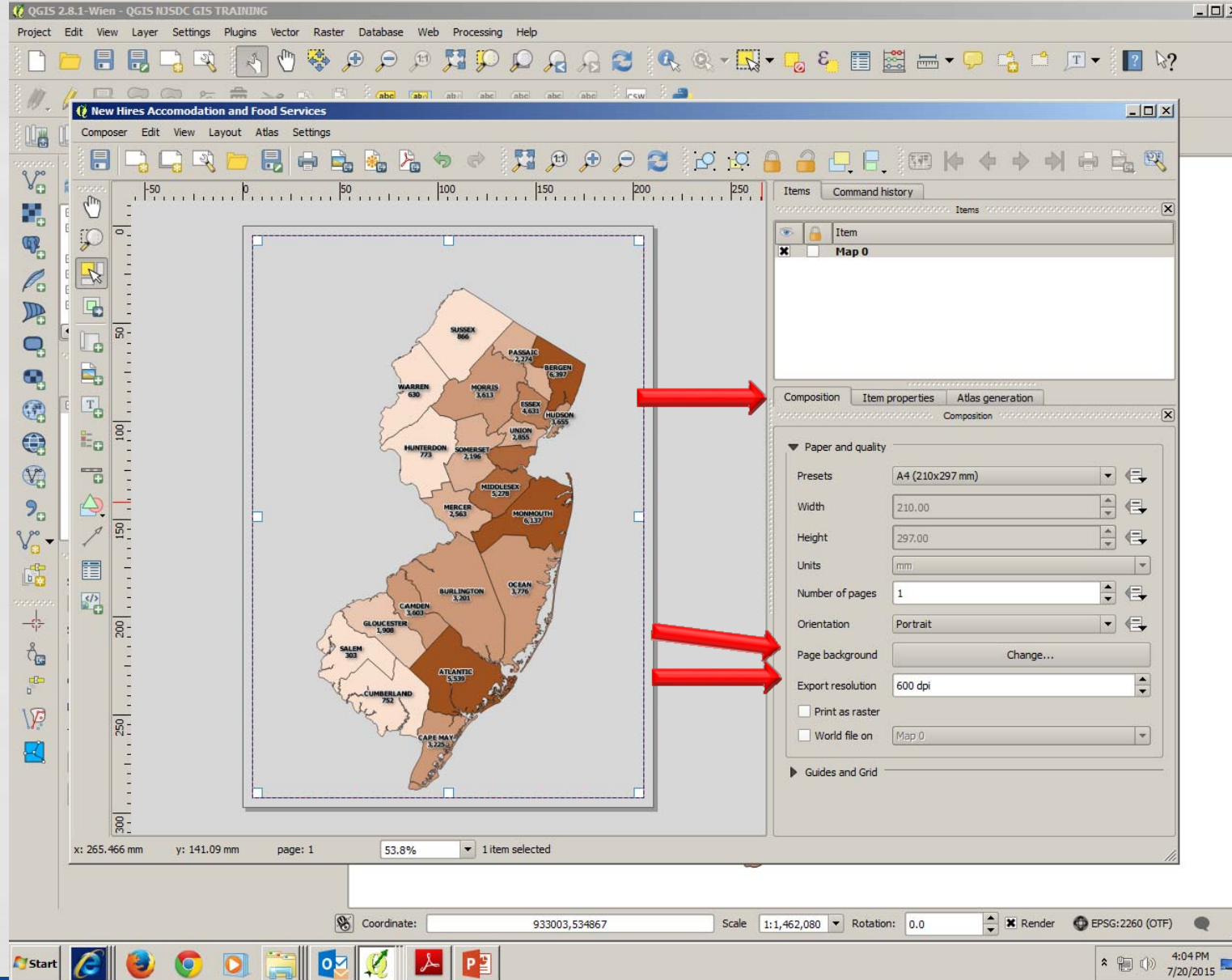




# Print Composer – Add Map

On the “Composition” tab, the default resolution is 300 dpi. In our example we increased the resolution to 600 dpi.

Click on the “Change” button for “Page Background” to make the page transparent. (Under “Item Properties” the background box must be unchecked)

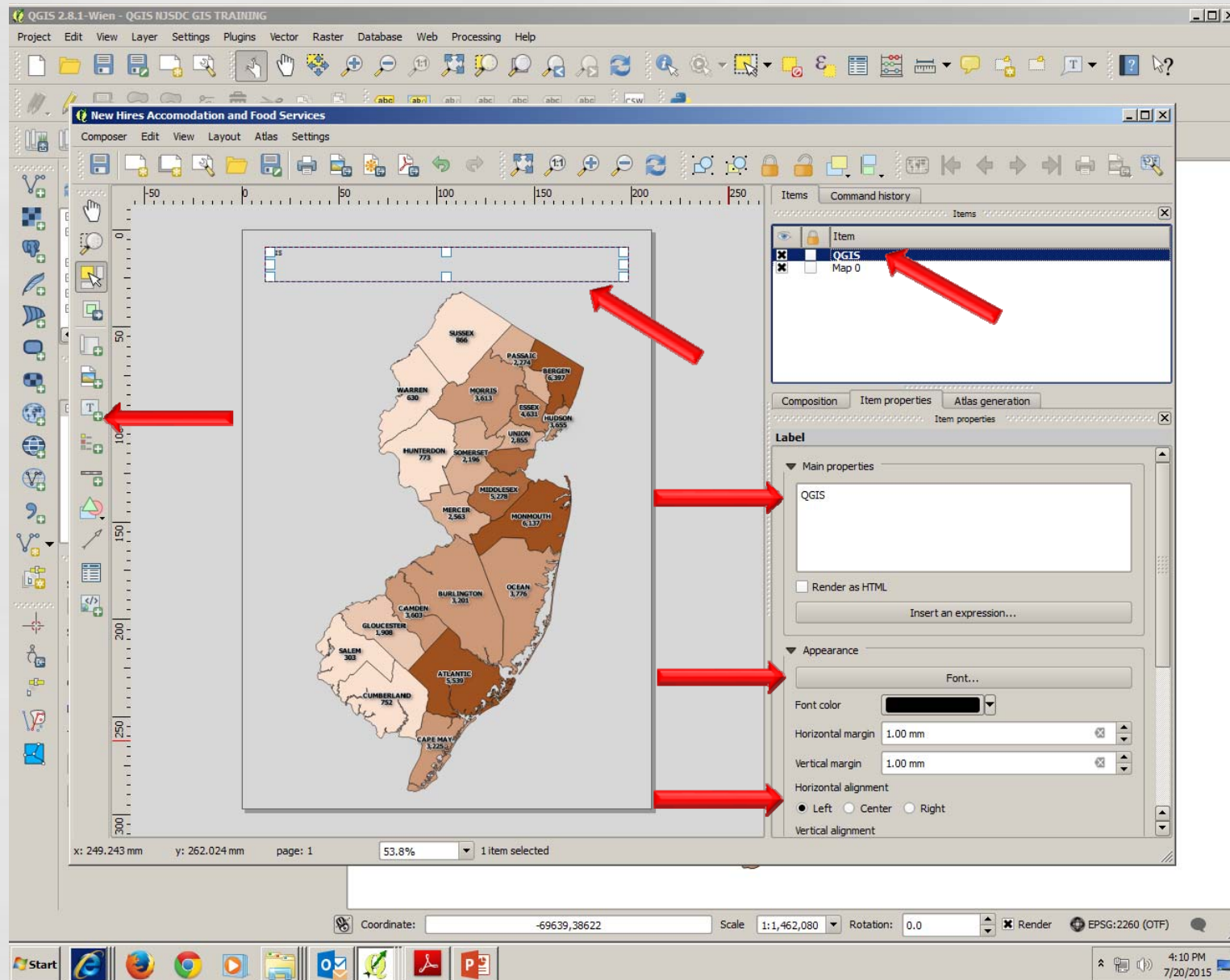


# Print Composer – Add A Title

Click on the “Add New Label” button and with the crosshairs drag from upper left corner to lower right to form a title box at top of page.

Under “Item Properties” Change the title to “Accommodation and Food Services”, Change the Font Size to 22/Bold, and select the “Center” radio button for horizontal alignment and “Middle” for Vertical Alignment.

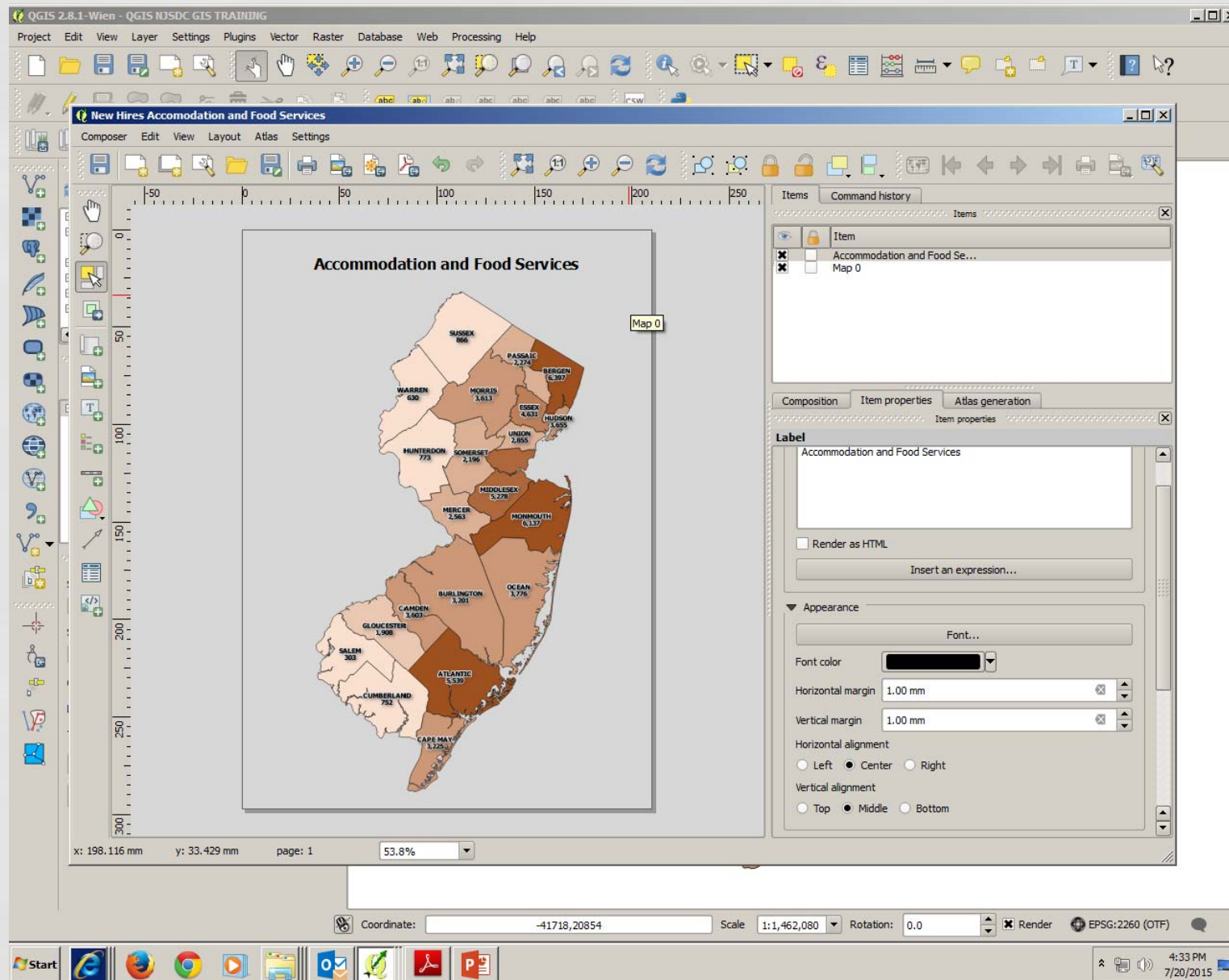
All other settings on the “Composition”, “Item Properties”, and “Atlas Generation” tabs are in default position.



# Print Composer – Add A Title

Click the Save button to save your map with its title.

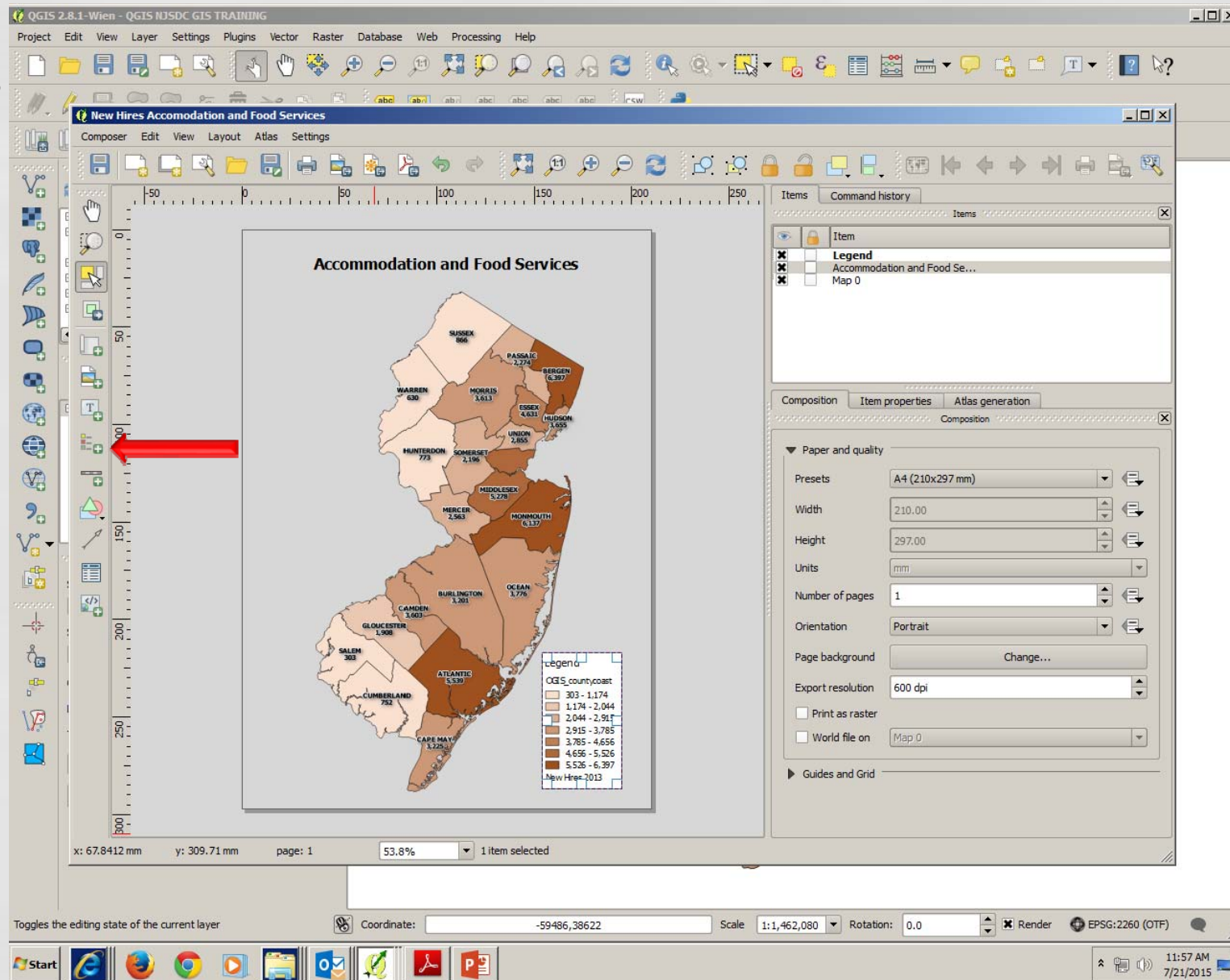
Your map should now look like this.



# Print Composer – Add A Legend

Click on the “Add Legend” button, place the crosshairs in the upper left corner of the space where you want the legend, left click and hold as you drag the box down and to the bottom right corner and release the mouse button.

Your Map Legend should look like our example. No changes need to be made to the Composition and Atlas Generation tabs.



# Print Composer – Add A Legend

In the “Item Properties” tab in the “Main Properties” box, change the title to New HiresbAverage ofb2013 Q1-Q4, set title alignment to “Center” and set “Wrap text on” to the letter b. This changes the title of the Legend.

Next, under Legend Items, Uncheck the box that reads “Auto Update” right click on “New Hires 2013” and check the box labeled “hidden”. Right click on OGIS\_countycoast and check the box labeled “hidden”.

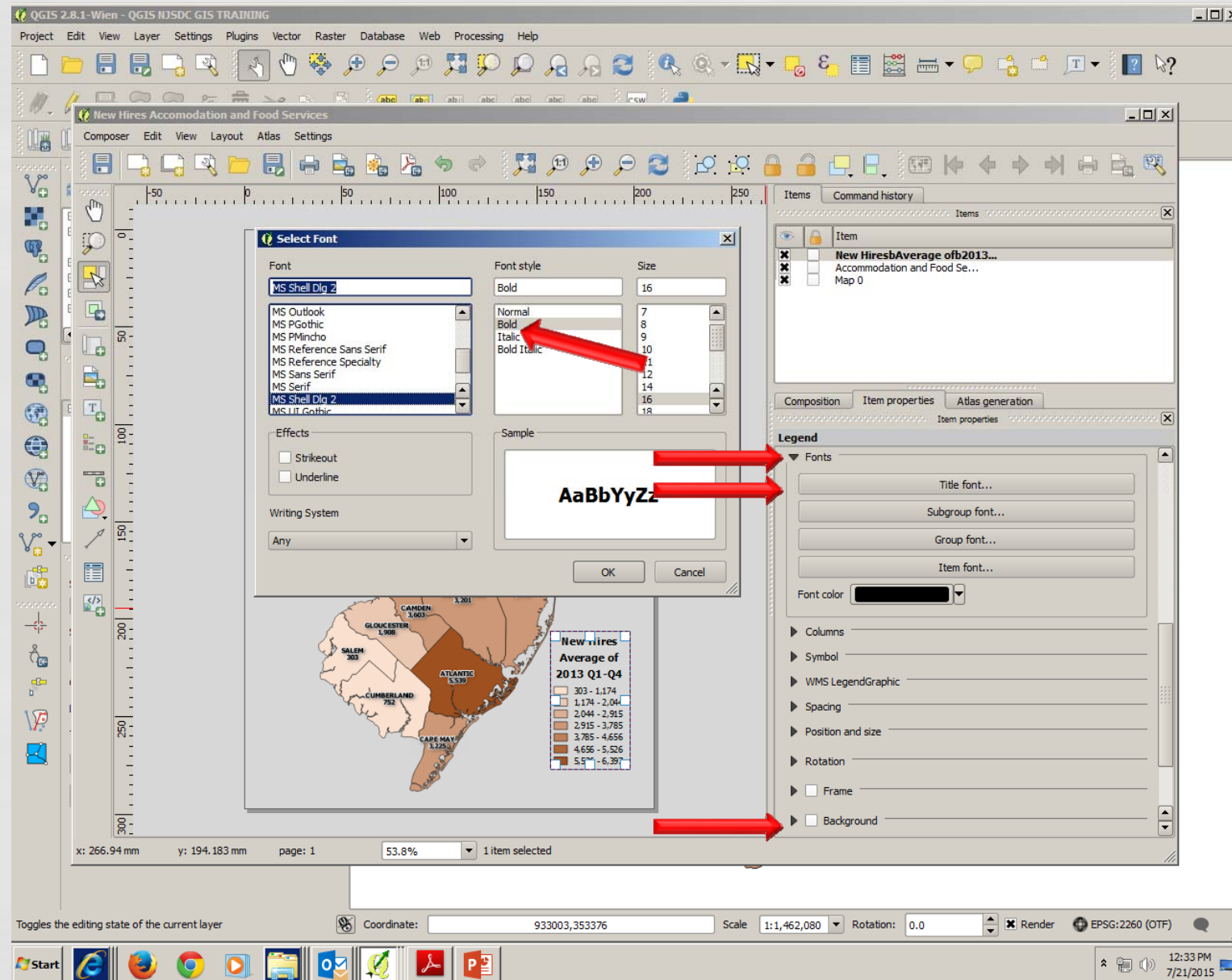
The screenshot shows the QGIS 2.8.1 Print Composer interface. The main map displays a choropleth map of New Jersey counties, titled "Accommodation and Food Services". The legend is visible in the bottom right, with the title "New HiresbAverage ofb2013 Q1-Q4". The legend items include "OGIS\_countycoast" and "New Hires 2013". The "OGIS\_countycoast" item has the "Hidden" checkbox checked. The "New Hires 2013" item has the "Hidden" checkbox checked. The "Auto update" checkbox is unchecked. The legend title is centered and wrapped on the letter 'b'. The map shows the following data for New Jersey counties:

County	New Hires
SUSSEX	666
PASSAIC	2,274
BERGEN	6,397
MORRIS	3,613
ESSEX	4,631
HUDSON	3,955
UNION	2,855
MIDDLESEX	5,278
MERCER	2,563
MONMOUTH	6,137
BURLINGTON	3,261
OCEAN	1,776
CAMDEN	1,603
GLOUCESTER	1,908
SALEM	303
CUMBERLAND	72
ATLANTIC	5,526
CAPE MAY	1,225

# Print Composer – Add A Legend

Scroll down the “Item Properties” and uncheck the background box so the legend has a transparent background.

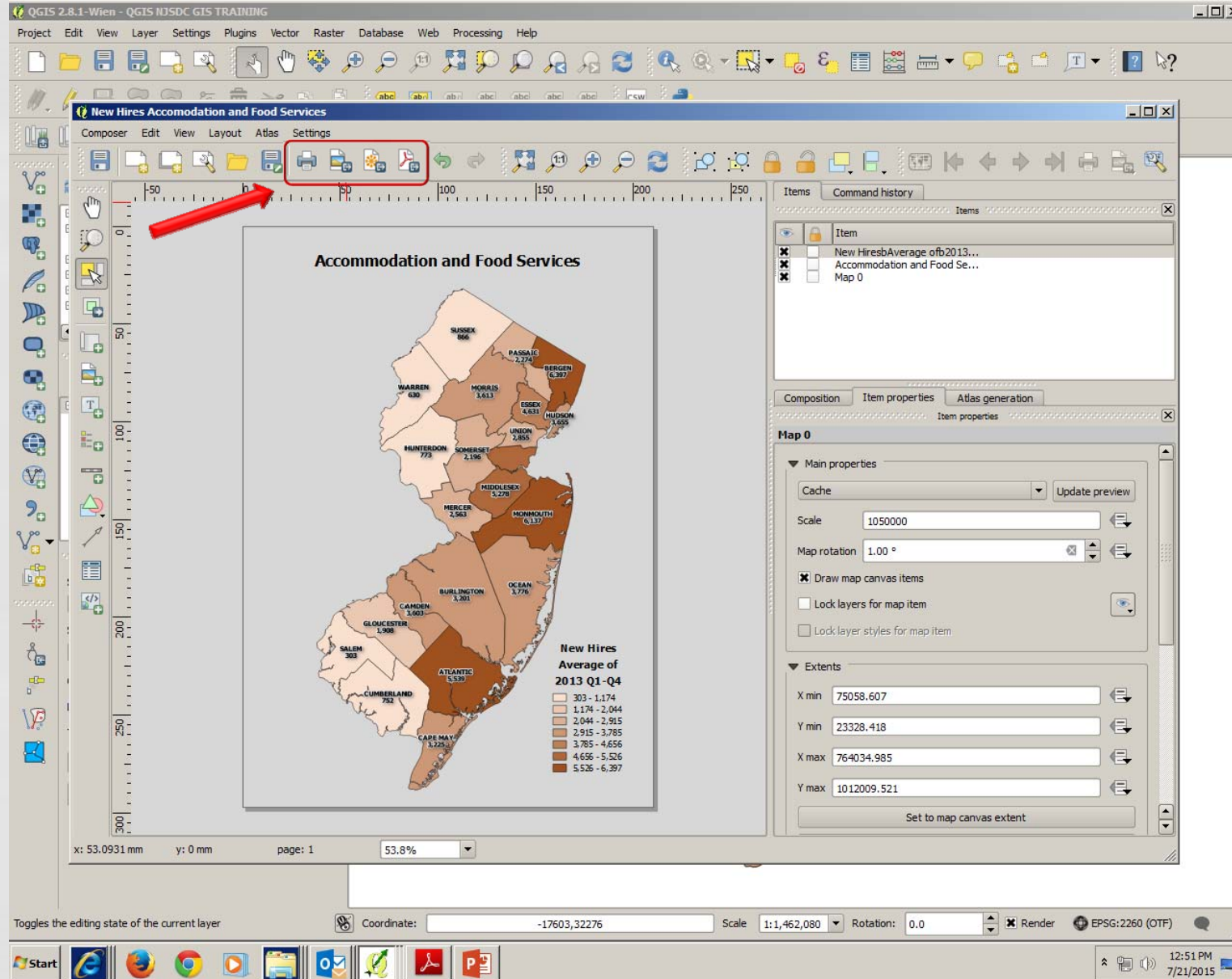
Click on the “Fonts” arrow and then click on the “Title Font” button and select “Bold” to make the Legend Title stand out.



# Finished Map

Your finished map is now ready for print or export as an image file, vector based output/SVG file, or a .pdf file.

Be sure to save your work before closing the Print Composer and QGIS desktop.





## Contact Information

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- [lpreston@dol.state.nj.us](mailto:lpreston@dol.state.nj.us)
- [www.nj.gov/labor](http://www.nj.gov/labor)
  - “Labor Market Information” on Left Navigation Bar
  - Look for the NJSDC Logo