COLLABORATE 12

Building Map-based Dashboards

Participant Handbook

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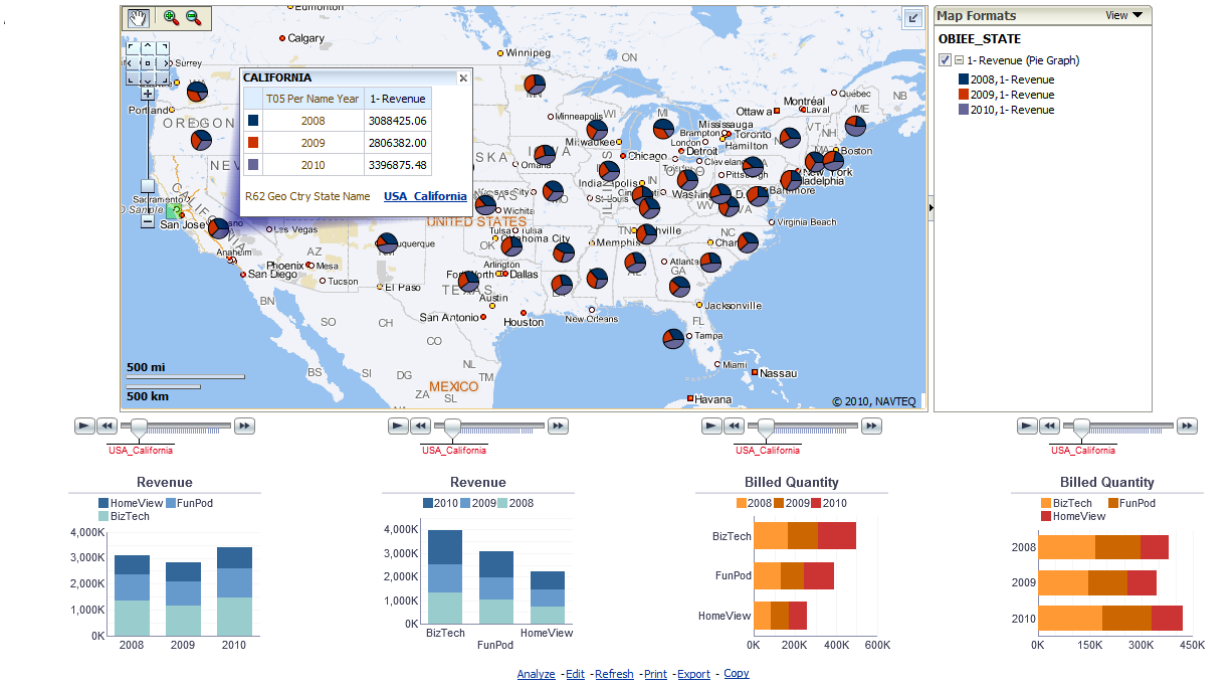
April, 2012



Purpose

The following workshop material is designed to introduce the new Map View feature of Oracle Business Intelligence Suite Enterprise Edition Plus (OBIEE 11g) through a set of simple hands-on exercises.

Topics

This hands-on portion workshop will cover the following topics.

- Creating a simple map view
- Adding charts to a map view
- Master-detail linking via map views
- Action Links and Map Views

Participants who are familiar with these topics, and who prefer to explore additional topics, can jump to the sections towards the end which discuss

- Using spatial functions (queries) in an analysis
    - Prompt for postcode, distance, and business category. Use sdo_within_distance to find and display census blocks within specified distance of the businesses in that postcode. This example uses BI presentation variables, session variables, and opaque views.
    - Find stores of a specified category (e.g. pharmacies, convenience store) within specified distance (e.g. 500 meters) of given address. Use Spatial's geocoding function (sdo_gcdr.geocode_as_geometry) and sdo_within_distance to find and list the stores. This example uses a direct database request with presentation variables.
    - Compute the distance between a selected sales outlet/office and customers associated with that office. Display both locations and the distance between them. This example uses the OBIEE EVALUATE function and Spatial's sdo_distance function.
- A start to finish example of importing a table with business information, importing the related map data, setting up maps and metadata, and creating map views.

The presentation and demo portion will cover the following topics.

- Why Map Views
- Map metadata management

If time permits the demo portion may also include using spatial queries in analyses and the fully worked example mentioned above.

Workshop Environment

Participants will need a laptop or desktop machine with internet connectivity and a web browser (either Firefox 3+ or Internet Explorer 8+).

Each participant will be working on their own client machine connecting to OBIEE server instance deployed on cloud servers. Details of the URL, username, and password will be provided at the start of the workshop.

Note: You can also use this with the OBIEE 11.1.1.5 Virtual Box image with SampleApp V107 currently (April 2012) available on OTN.
http://www.oracle.com/technetwork/middleware/bi-foundation/obiee-samples-167534.html
Use an existing user such as 'abell' or 'prodney' with SampleApp.
You will need MapBuilder11g for the mapview_lab portion. That is available from the MapViewer page on OTN. Use version 11.1.1.5 or later.
http://www.oracle.com/technetwork/middleware/mapviewer/downloads/index.html

Creating a Map View

Objective

In this section participants will create interactive maps using the new OBIEE 11g "Map Views" feature. They will

- Create a simple Analysis that includes a geographic dimension
- Render it as a Map View
- Preview it and observe map drill behavior

Overview

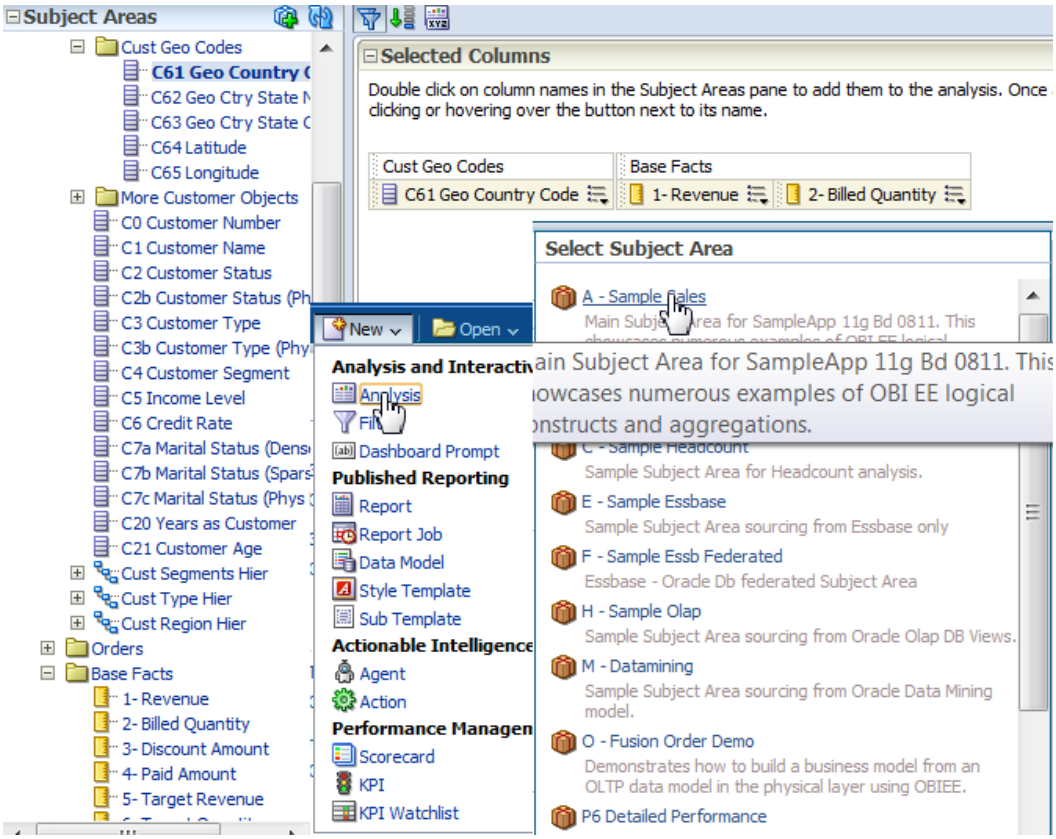
Map views are a new view type in Oracle Business Intelligence Enterprise Edition (OBIEE) 11g for displaying analysis results. This provides a valuable, rich interactive visualization capability since most BI data already contains a geographic dimension such

as store addresses, sales districts or regions. OBIEE 11g allows BI administrators to pre-associates the business model with mapping data so that analysis results are automatically map-ready. Any analysis that includes a column associated with a configured map feature is ready to be rendered in a Map View without any customization or coding whatsoever. In this lab we will create simple map views that demonstrate this capability.

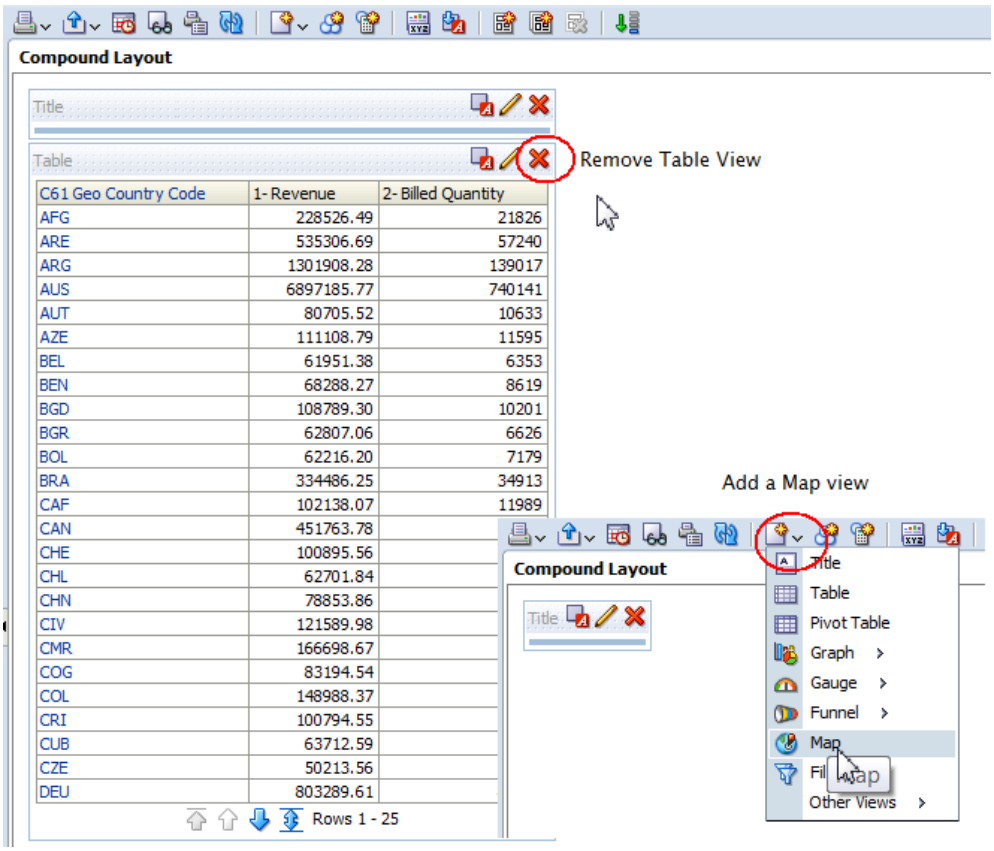
Hands On:

1. First, sign in to your hosted instance using the specified workshop username and password.

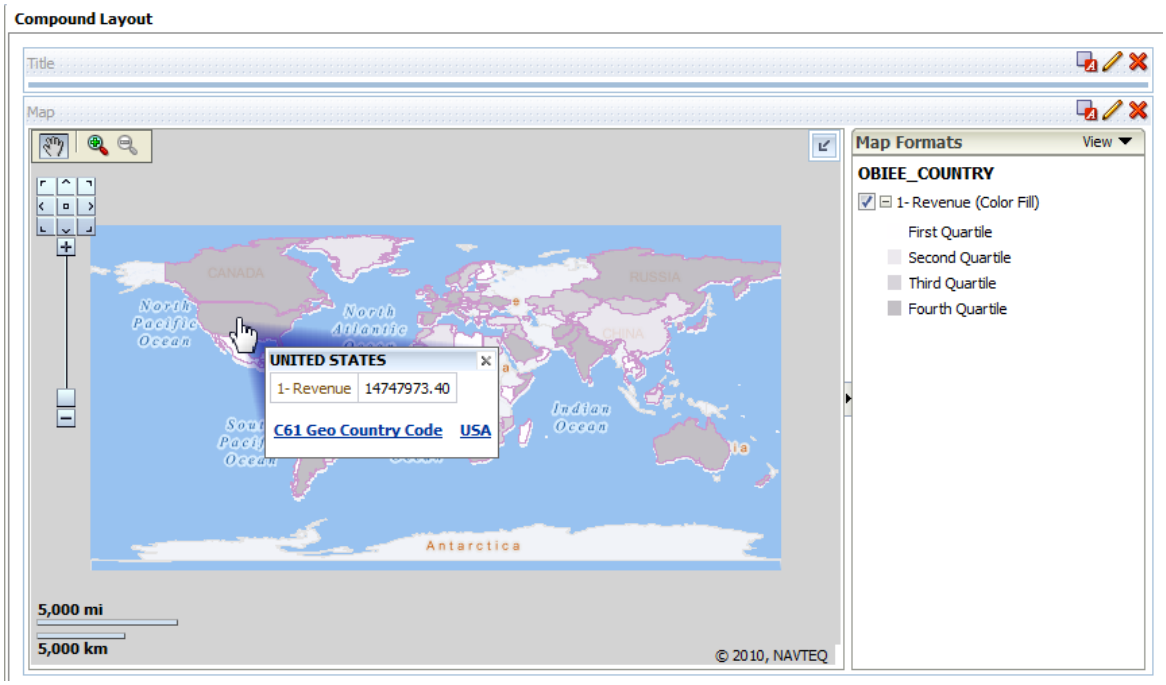
2. Create a New Analysis using the Sample Sales subject area containing Customers → Cust Geo Codes → Geo Country Code, Base Facts → Revenue, and Base Facts→ Billed Quantity as items. Note: The following and other images shown will contain relevant snippets from multiple screenshots of the steps involved in any portion of the hands-on exercise.



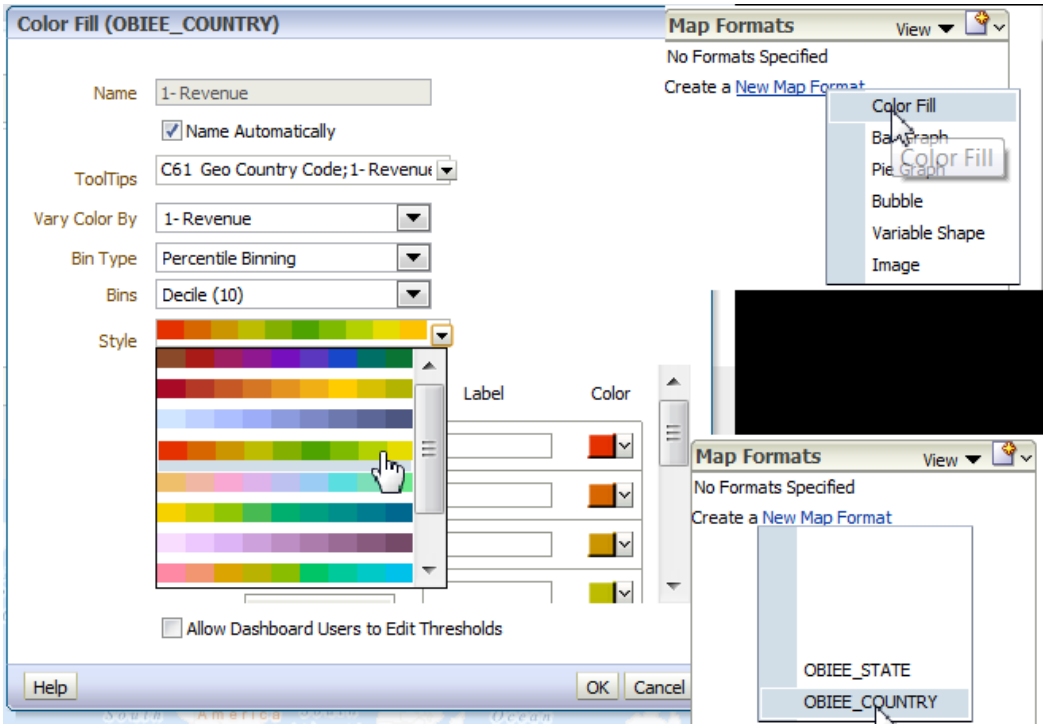
3. Click the Results tab to see a tabular view of the report. Next remove the Table View (click on the X) and click on the New View icon and select Map.



The default map view should look like the following. Click on the pencil icon to edit the map view.



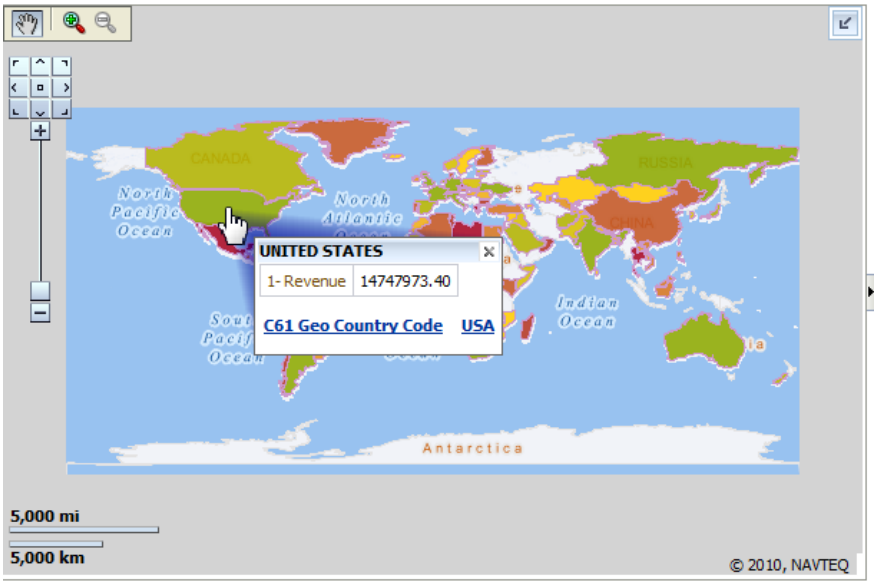
4. Hover the mouse to the right of the OBIEE_COUNTRY label in the map formats pane and edit or remove it (click on the pencil icon or X). If you removed it then next click on Create a New Map Format and select Color Fill and then select the OBIEE_COUNTRY layer.



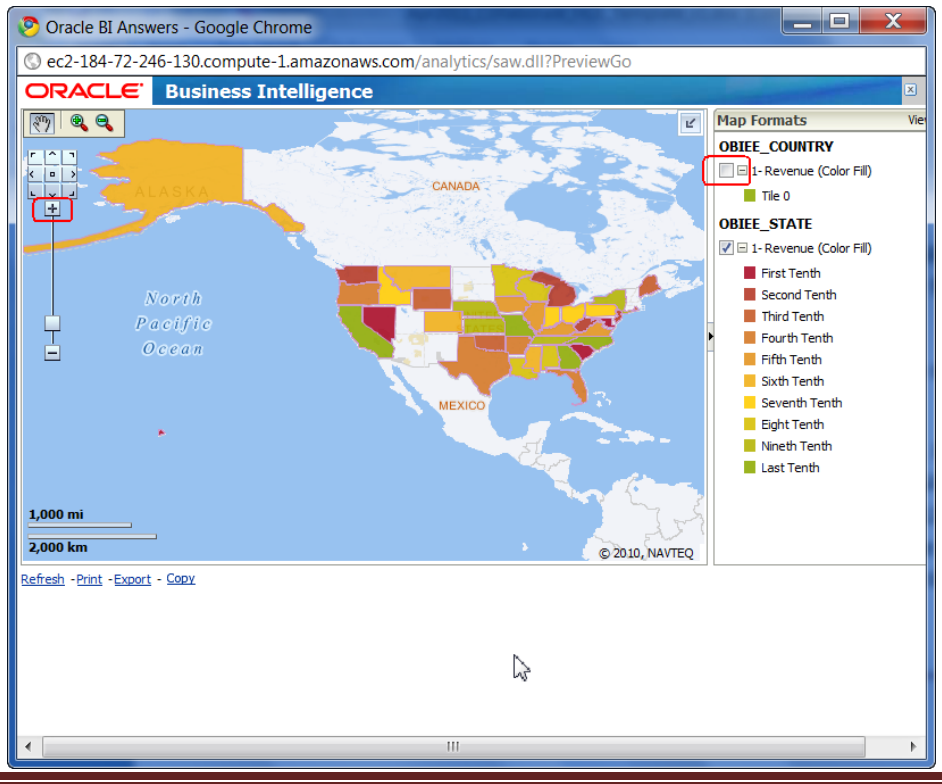
Select Percentile Binning, 10 colors, select a color ramp and click OK.

Optional: Click Edit again (but click on the edit icon next to the 1-Revenue layer) and then click "Allow Dashboard Users to edit thresholds" in the Color Fill (OBIEE_COUNTRY) dialog pane and click OK.

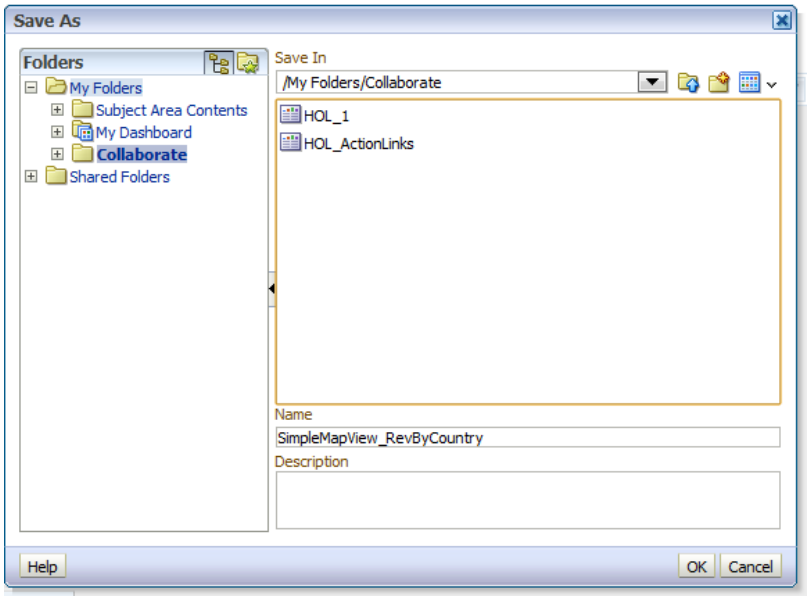
5. Next, click the "Preview" button in the Compound View toolbar to see how results would look on a Dashboard.



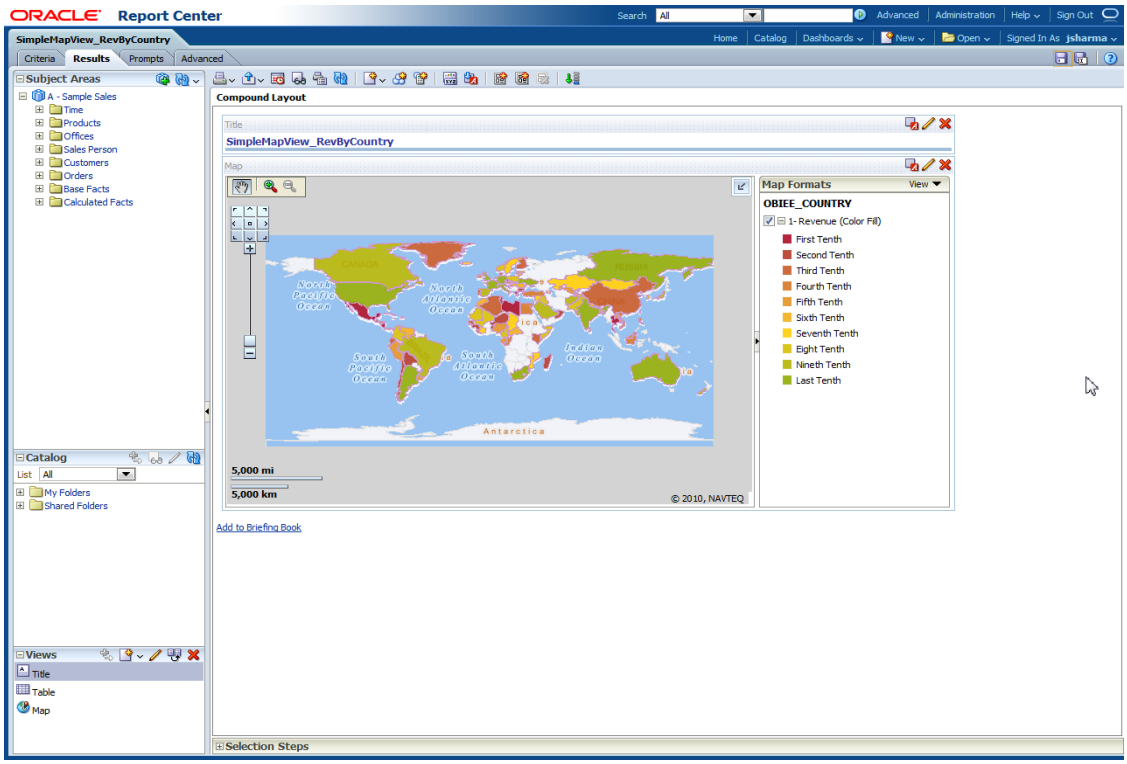
Hover over a Country, e.g. the USA, and you will see an info-window. Click on the country and then within the info-window click on the hyperlinked label USA to drill to the State level. Uncheck the box next to the map format for the OBIEE_COUNTRY layer and then either double-click someplace near the USA on the map or use the navigation panel on the map to zoom in one level and then pan over to the USA. You should see the states color-filled by Revenue.



6. Close the preview and save the newly created analysis.



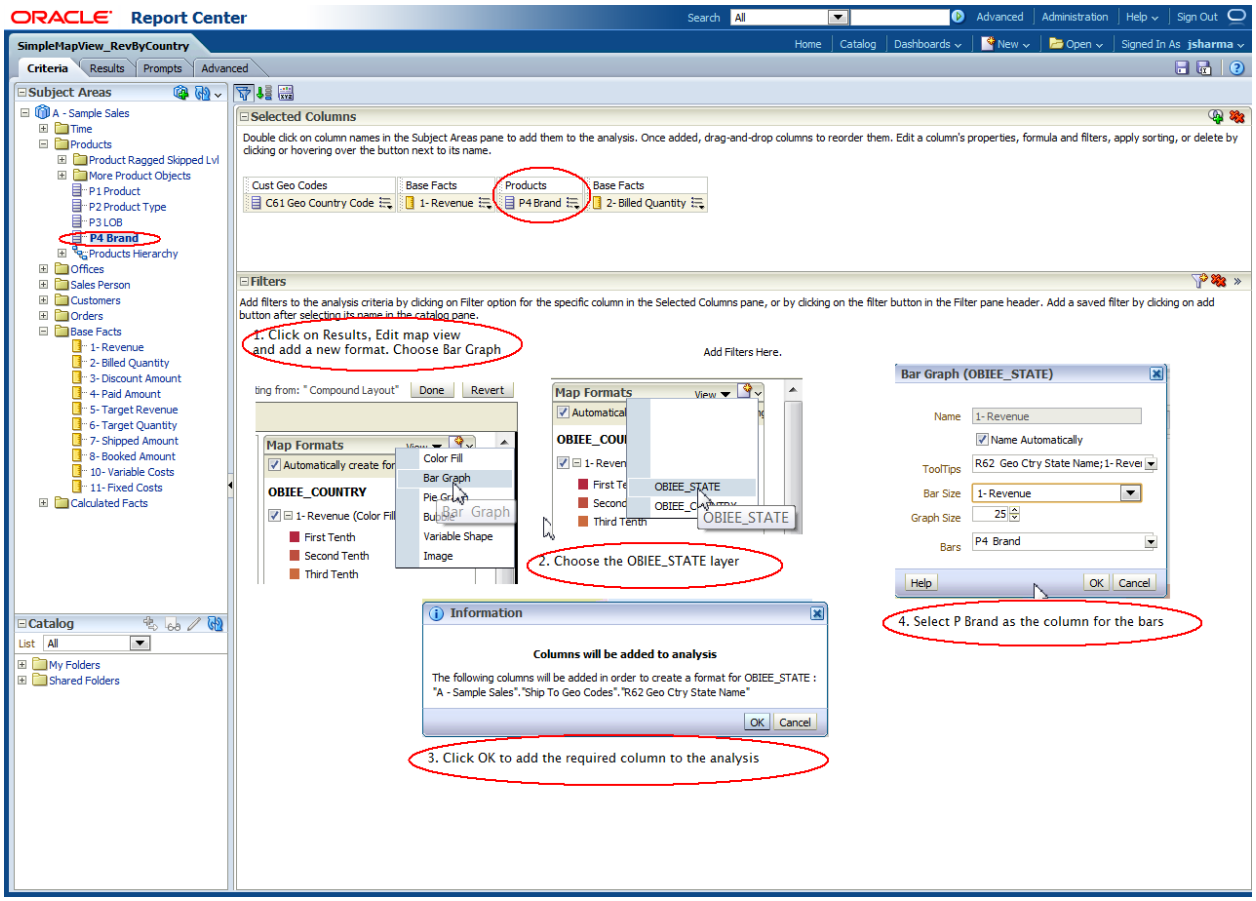
Click OK.



Adding a Bar Chart to the Map View

Now that we have a basic map view, let's add additional formats to it to display other measures. We'll add a bar chart that shows product revenue by brand by state when a user drills down from USA to US states. In order to do so we have to add Product Brand to the criteria (i.e. set of columns in the analysis), and create a new format associated with the OBIEE_STATES layer.

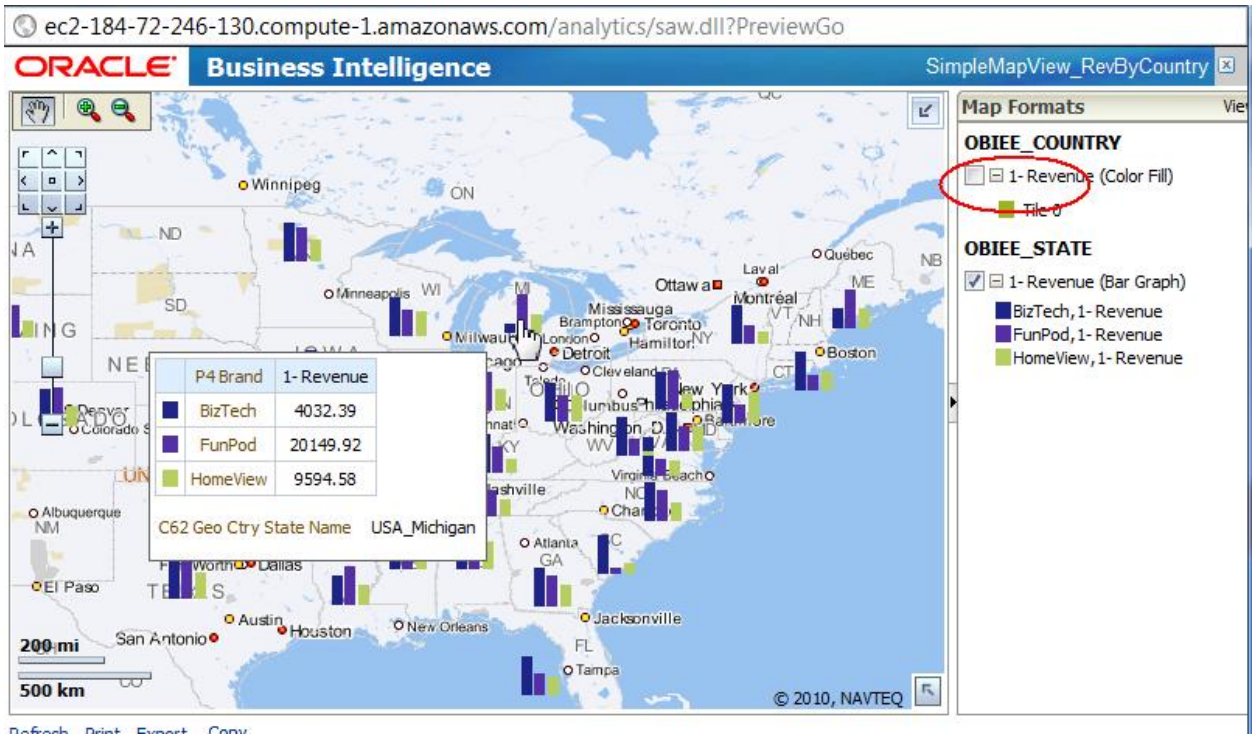
1. Click on the Criteria tab and add the Products → P4 Brand column to the set of selected columns for the analysis. The following image contains snippets from multiple screenshots.



2. Click the Results tab and edit the map view. Click on the Add a new map format icon and select Bar Graph. Then select OBIEE_STATE as the layer for this format, thereby specifying that the bar graphs will be displayed per state. Click OK when prompted that the required column (C62 Geo Ctry State Name) will be added to the analysis and finally select P4 Brand as the column for the Bars.

Pan over to the USA, zoom in once if you wish, and uncheck the OBIEE_COUNTRY layer to see the bars graphs for the states. Check the OBIEE_COUNTRY layer to turn it back on.

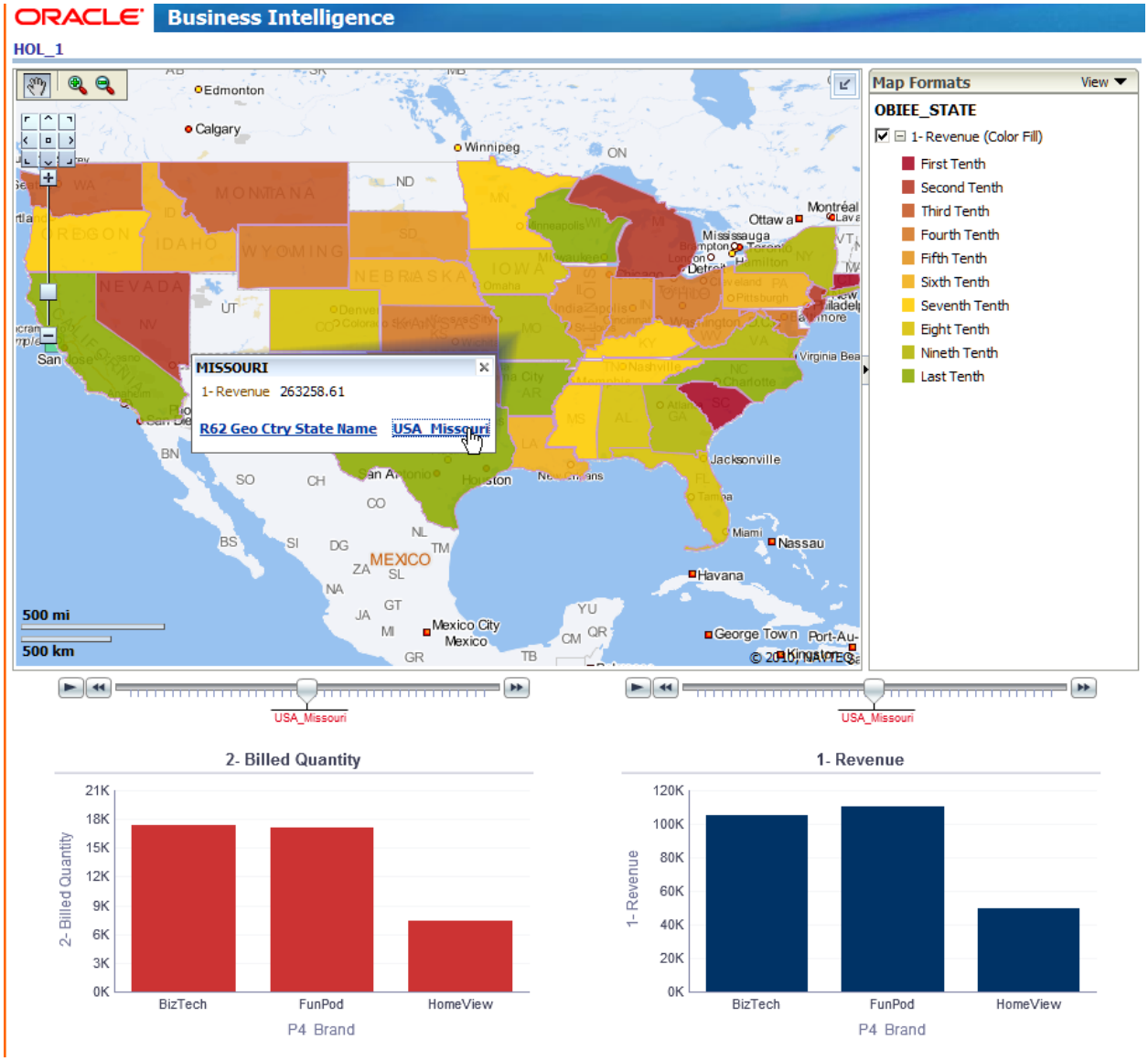
3. Click on Preview to see how it'll look on a dashboard. Click on USA, and then on the USA link in the info-window to drill down to the State level. Uncheck the OBIEE_COUNTRY layer, click on a bar chart for a state, and you should see something like the following screenshot.



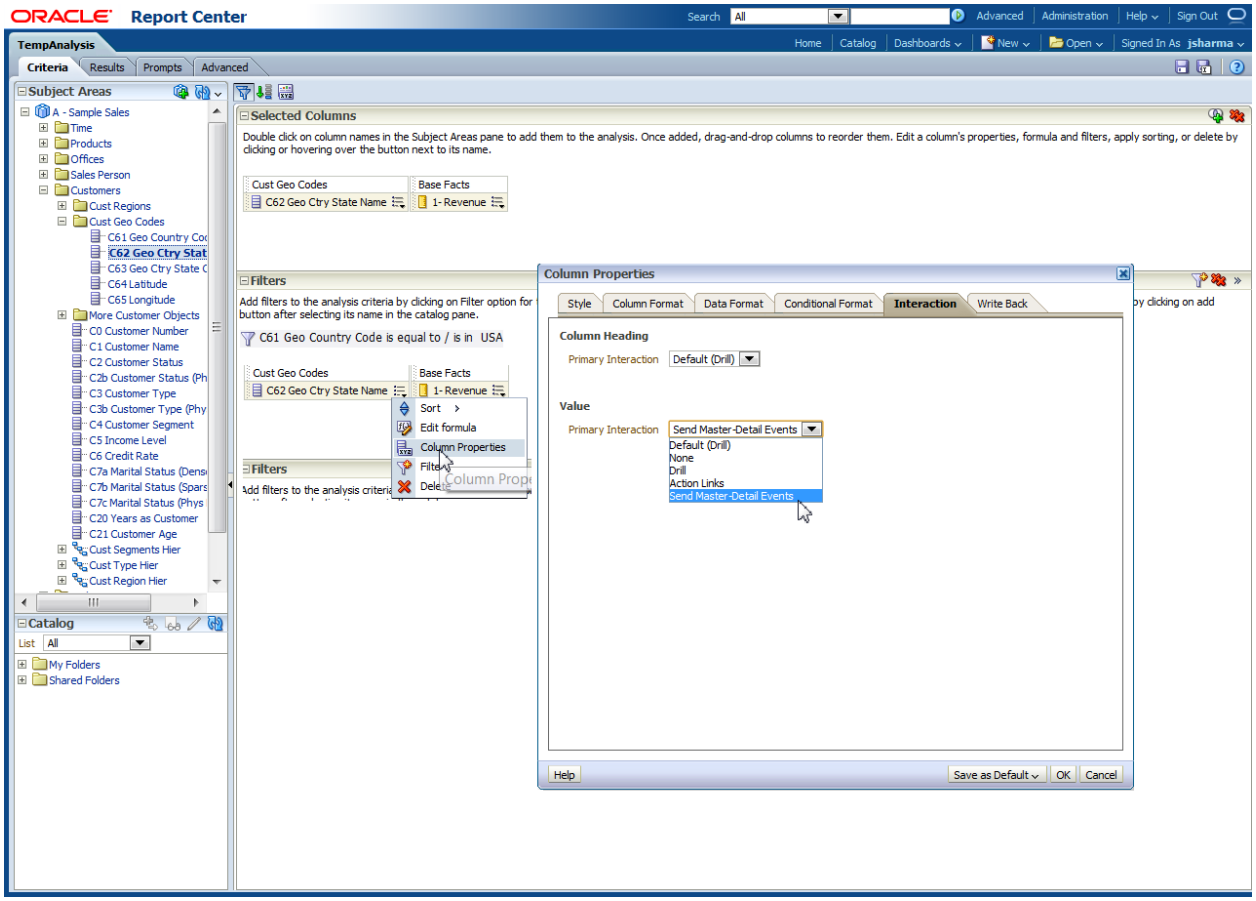
Exit the preview and save the modified analysis.

Master-Detail Linking via Map Views

This section describes simple master-detail linking with map views. We'll add some bar charts to the analysis created above and link them to the map. The map will act as the master and the bar charts will present details for the selected State in the map view. The resulting view, when previewed on a dashboard page, should look something like the screenshot below.

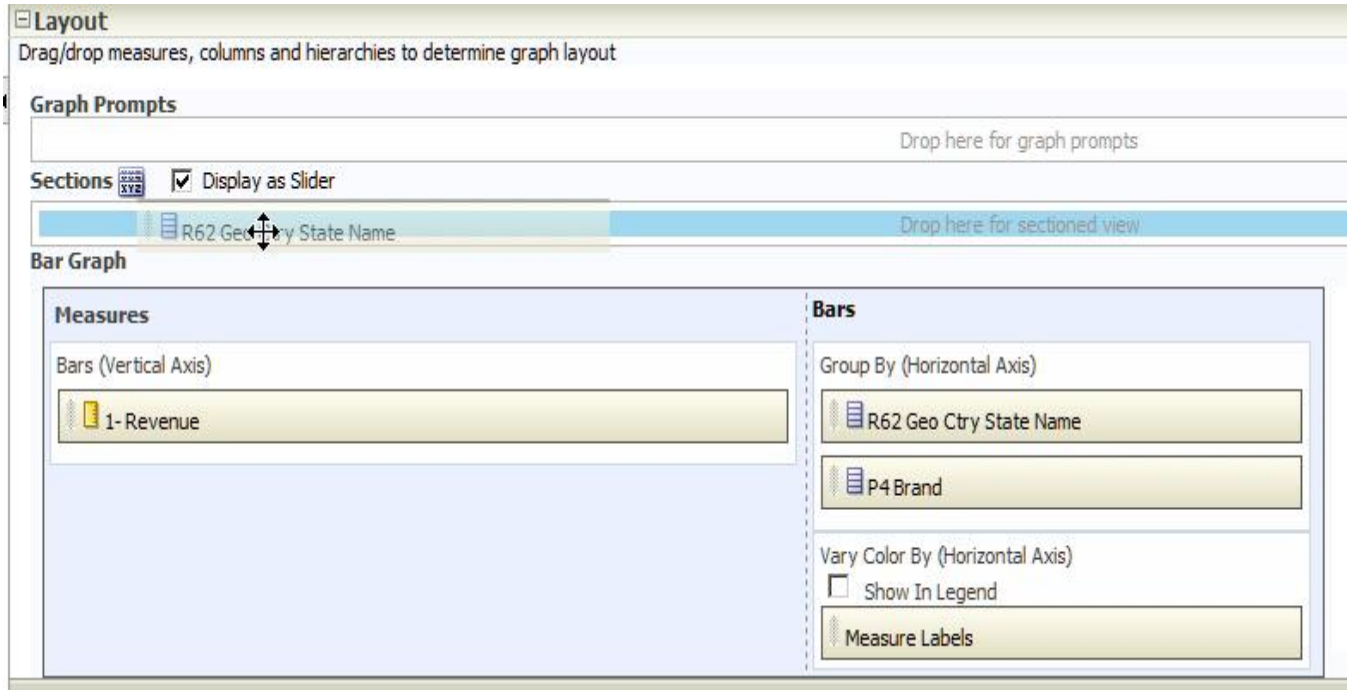


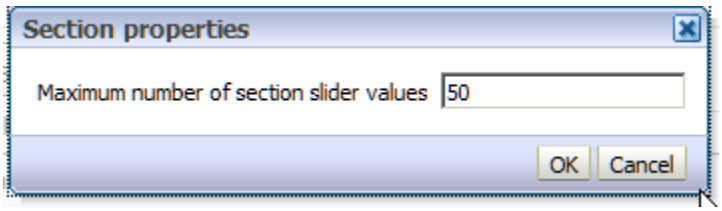
1. To get started open the previous analysis or create a new one with the C62 Geo Ctry State Name and 1-Revenue columns. Add a filter, C61 Geo Country Code is equal to/ is in USA, to the analysis. If you're creating a new analysis then add a map view and edit it to choose percentile binning (decile) and a preferred color ramp.
2. Click on Criteria again and then on the State Name column and modify the column properties. Click on the Interaction tab and select "Send Master Detail Events" for the Value property. Specify a name for the channel, e.g. M1, and click OK.



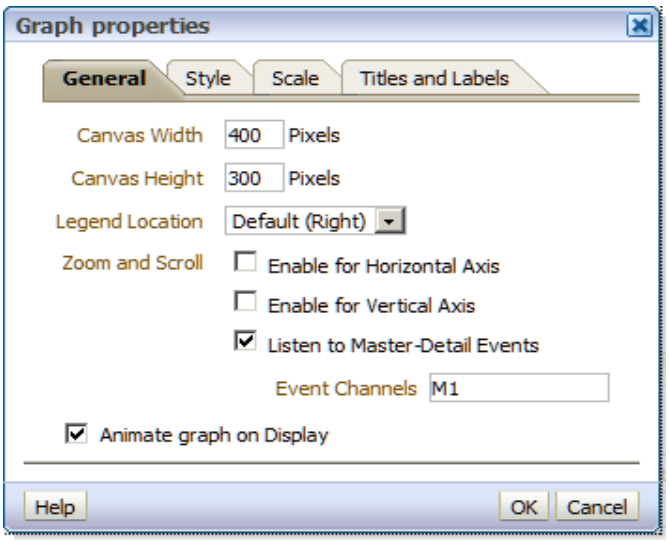
3. Next add a bar graph to the analysis (click on results, then new view → graph → bar → default (vertical)). It should add it below the map. Edit the Graph view.

   Move the State Ctry Name column to Sections area, check Display as slider, click on section properties and set the maximum number of section values to 50, and click OK.

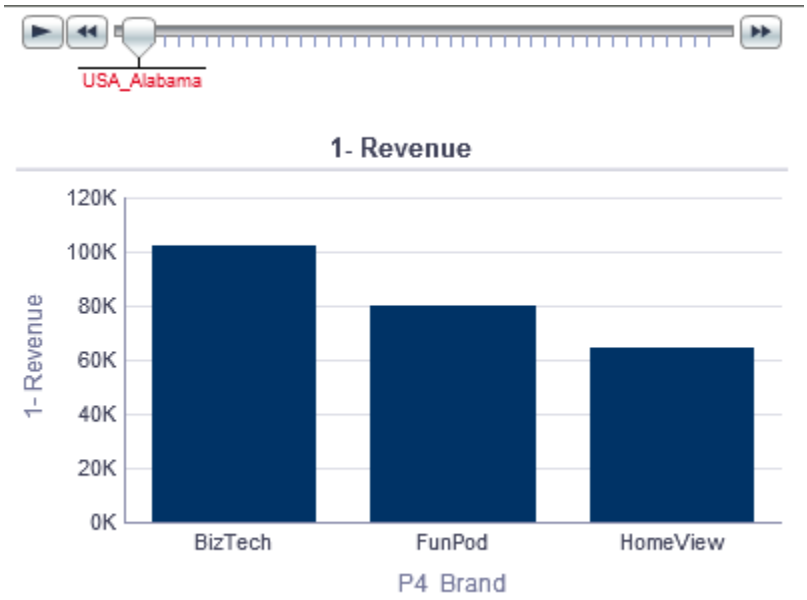




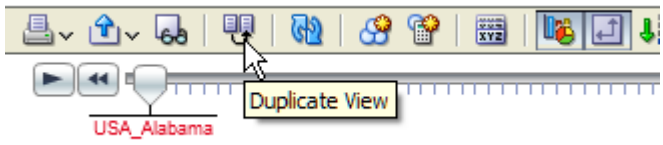
4. Add P4 Brand to the Bars, Group By (Horizontal Axis) area. Then click on the Edit icon for the graph to change its size (to 400x300 pixels), and check the box "respond to master events" on channel M1. In the Style tab select "Rectangle" and click OK.



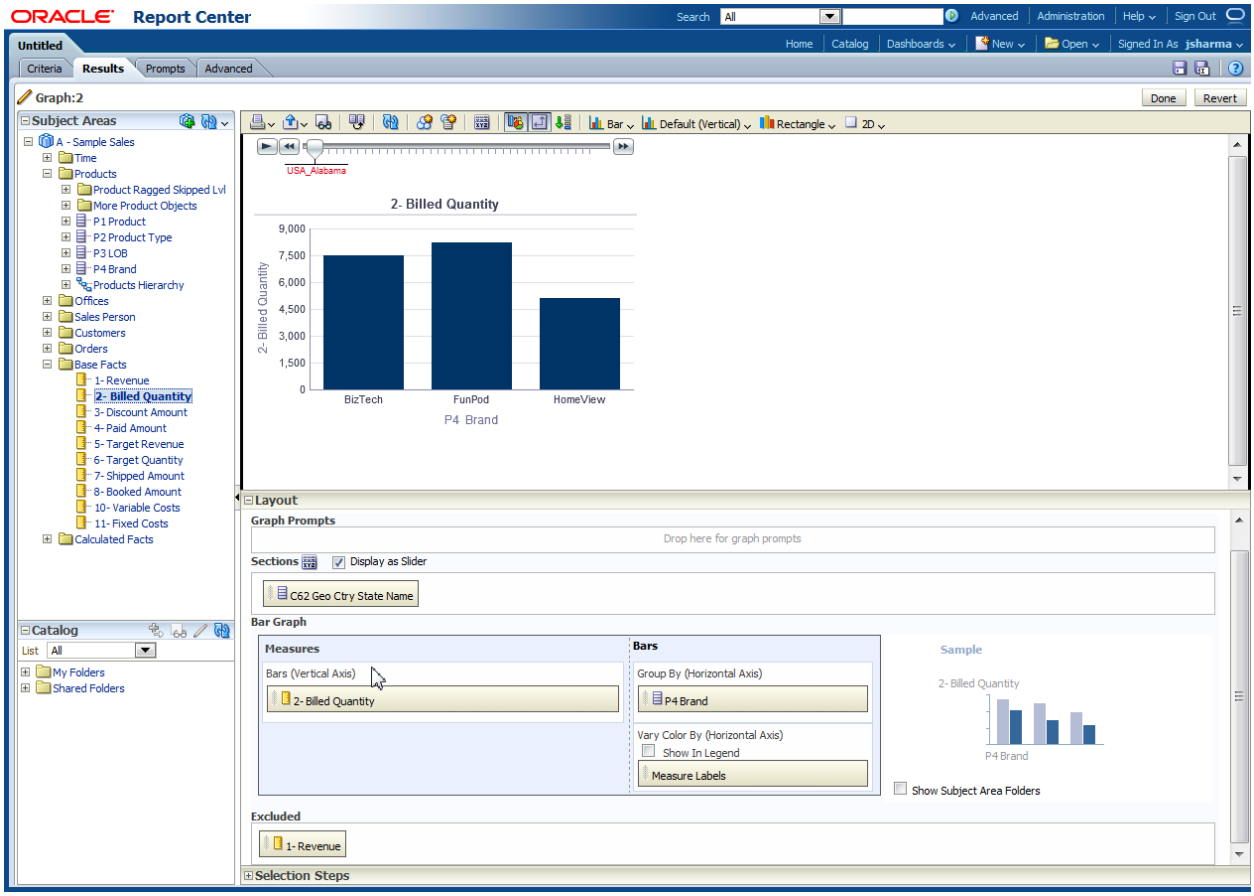
The graph should look like the one shown below.



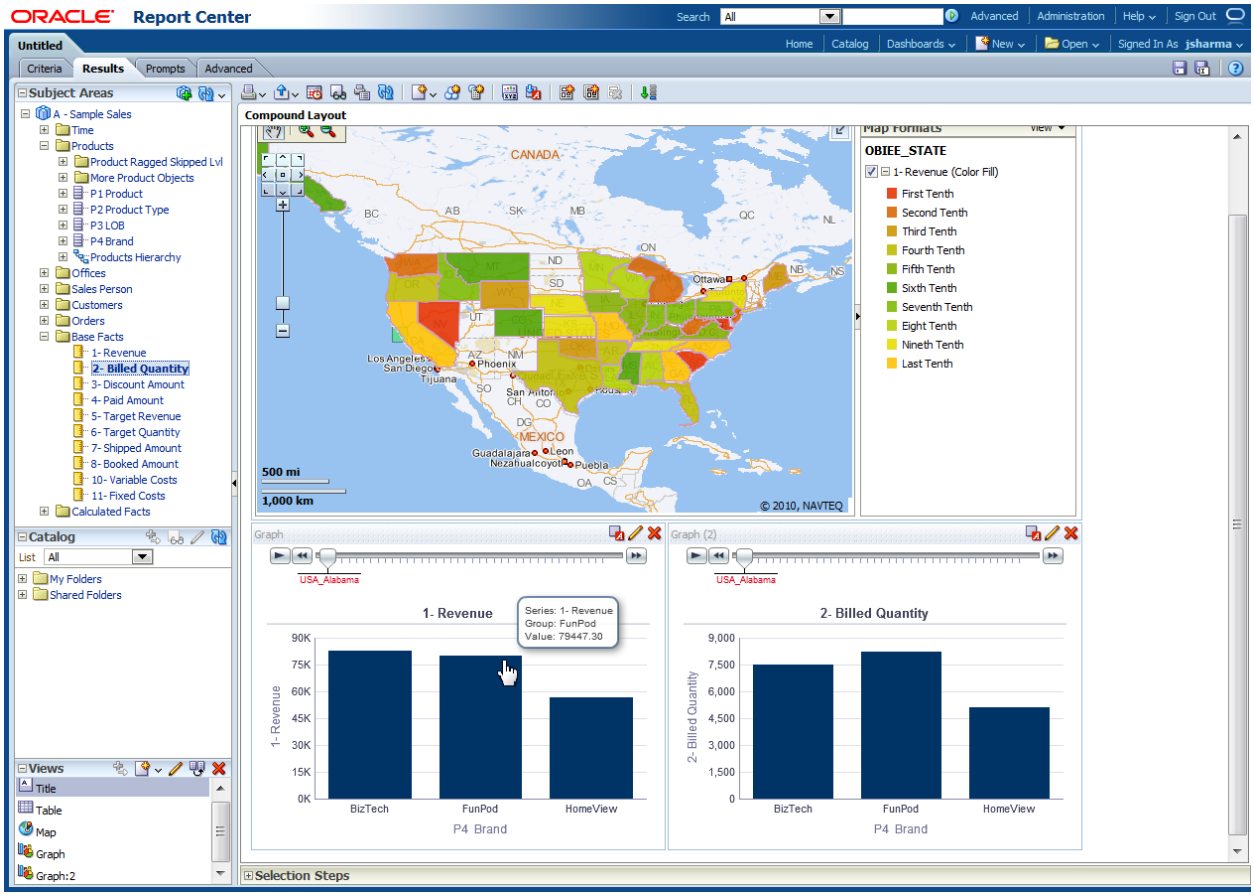
5. Now click duplicate view, and



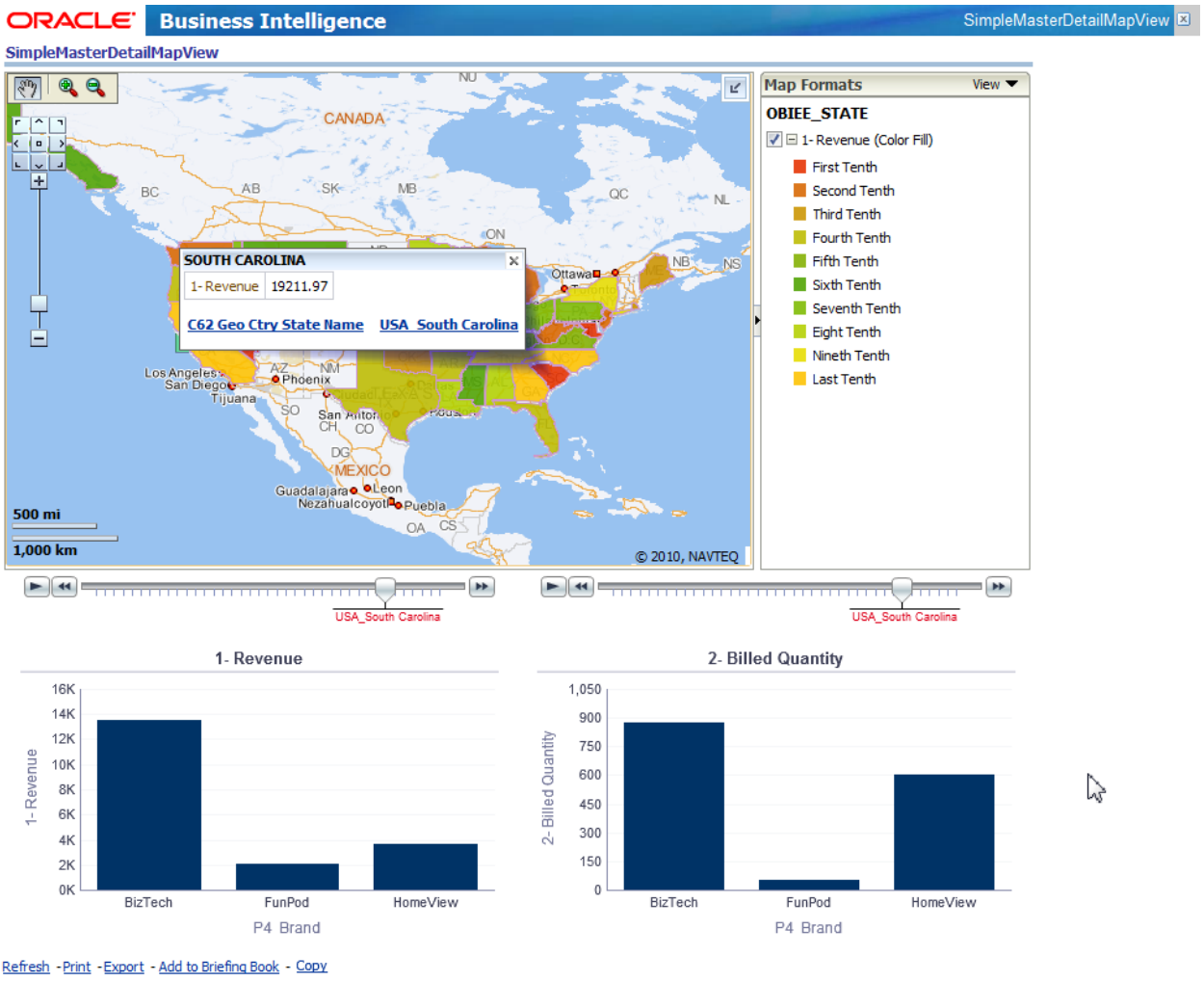
remove Revenue from the Measures and add Billed Quantity instead, and finally click Done.



6. Add Graph 2 to compound view to the right of the first graph. That is drag the Graph:2 icon from the Views pane and drop it in the Compound Layout just to the right of the existing Graph view.



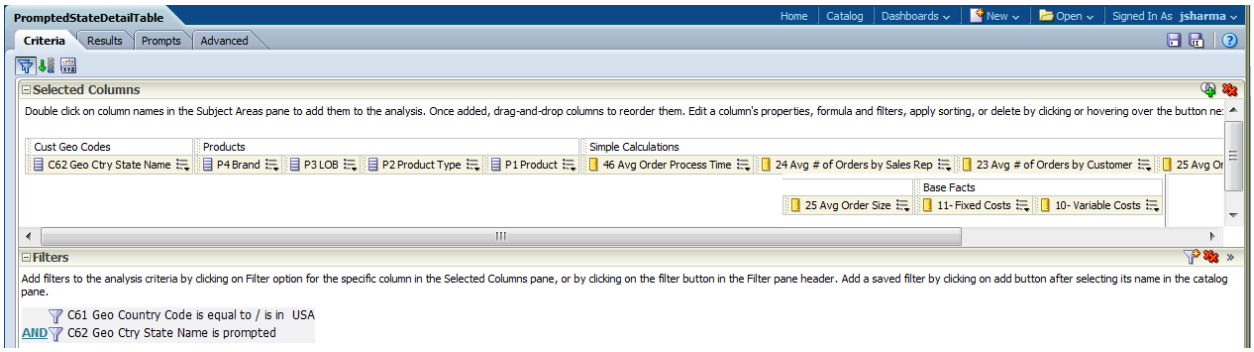
7. Click Preview and test Master Detail linking.



Action Links via Map Views

The last hands-on exercise uses action links as the Interaction mechanism instead of the master-detail events which were used above. Save the analysis with a different name, i.e. click on Save As and name it something else (e.g. SimpleActionLinkMapExample).

1. Now create a new analysis which will have details by state. Add the C62 Geo Ctry State Name column, add a filter for Country Code = USA AND C62 Geo Ctry State Name is prompted, and add other columns to the analysis. See the screenshot below for an example.



View the results and save the analysis (e.g. name it PromptedStateDetailAnalysis).

Title

PromptedStateDetailTable

Table

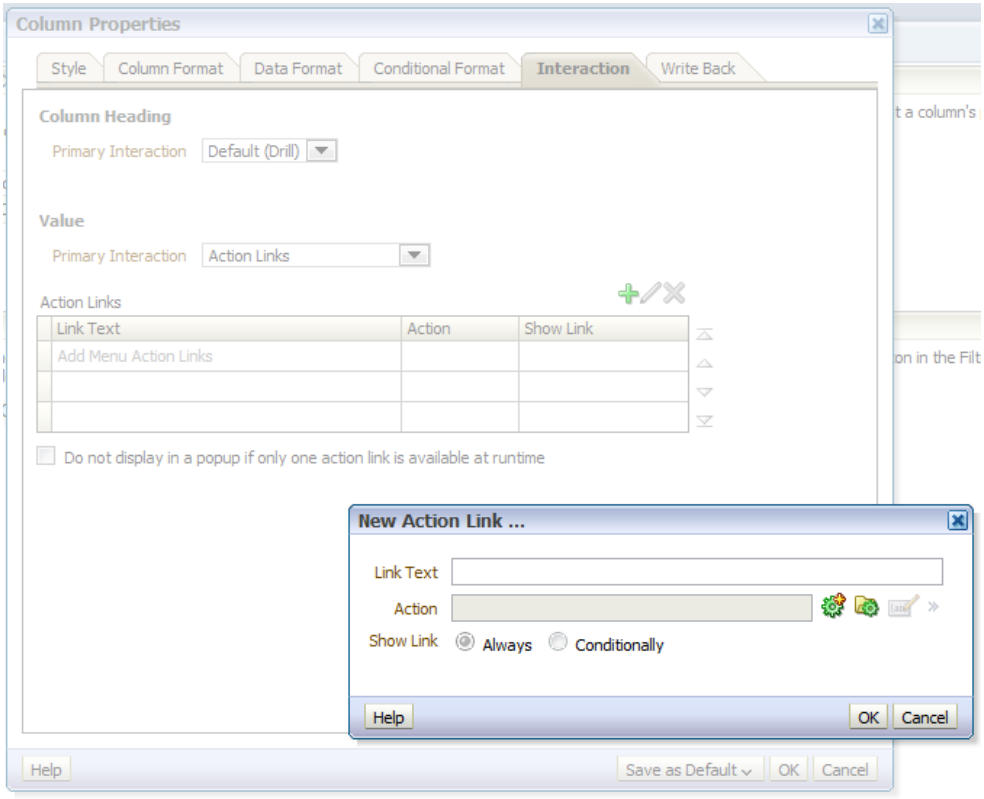
C62 Geo Ctry State Name	P4 Brand	P3 LOB	P2 Product Type	P1 Product	46 Avg Order Process Time	24 Avg # of Orders by Sales Rep	23 Avg # of Orders by Customer	25 Avg Order Size	11- Fixed Costs	10- Variable Costs
USA_Alabama	BizTech	Communication	Cell Phones	V5x Flip Phone	7.67	1.00	1.00	2332.65	1334.00	3655
				CompCell RX3	6.00	1.00	1.00	3575.27	1025.00	1884
			Smart Phones	Touch-Screen T5	10.43	1.40	1.75	2547.27	4247.00	8118
				KeyMax S-Phone	4.00	1.00	1.00	3443.68	899.00	3116
		Electronics	Accessories	Bluetooth Adaptor	10.33	1.50	1.00	1924.56	1299.00	3123
				MP3 Speakers System	9.33	1.00	1.50	3063.44	1129.00	4542
			Audio	SoundX Nano 4Gb	7.00	1.00	3.00	3299.09	1470.00	3841
				MicroPod 60Gb	7.71	1.17	2.33	3169.14	4088.00	10105
	FunPod	Digital	Camera	MPEG4 Camcorder	13.67	1.00	1.00	2893.69	1810.00	4887
				7 Megapixel Digital Camer	8.22	1.29	2.25	2633.15	3705.00	13929
		Games	Fixed	Game Station	8.85	1.44	2.60	2103.42	5919.00	12630
				HomeCoach 2000	6.67	1.00	1.00	2806.29	1821.00	3254
			Portable	PocketFun ES	7.00	1.00	1.00	2592.64	772.00	914
				MaxiFun 2000	8.25	1.00	1.33	2177.97	2098.00	5243
	HomeView	Services	Maintenance	Maintenance	1.00	1.00	1.00	3413.85	345.00	2300
		TV	LCD	LCD 36X Standard	13.50	1.20	1.50	3814.73	3450.00	14469
				LCD HD Television	10.50	1.00	2.00	2151.78	934.00	2335
			Plasma	Plasma HD Television	6.50	1.00	1.00	2229.15	1159.00	3093
				Tungsten E Plasma TV	6.11	1.29	2.25	2381.23	4243.00	11412
USA_Alaska	BizTech	Communication	Cell Phones	V5x Flip Phone	10.50	1.00	4.00	2011.19	1625.00	4902
				CompCell RX3	2.00	1.00	1.00	2343.24	598.00	993
			Smart Phones	Touch-Screen T5	5.00	1.00	2.00	1352.10	787.00	839
				KeyMax S-Phone	6.67	1.00	6.00	3139.13	3954.00	9482
		Electronics	Accessories	Bluetooth Adaptor	7.67	1.00	3.00	2051.91	1754.00	2086
				MP3 Speakers System	16.00	1.00	1.00	3155.83	882.00	2203

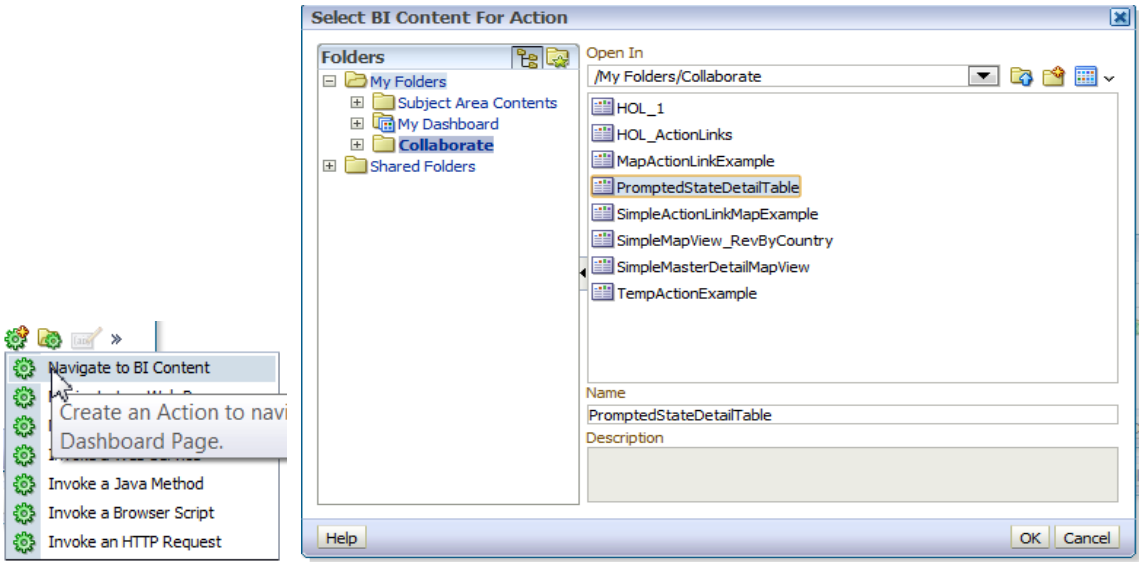
Rows 1 - 25

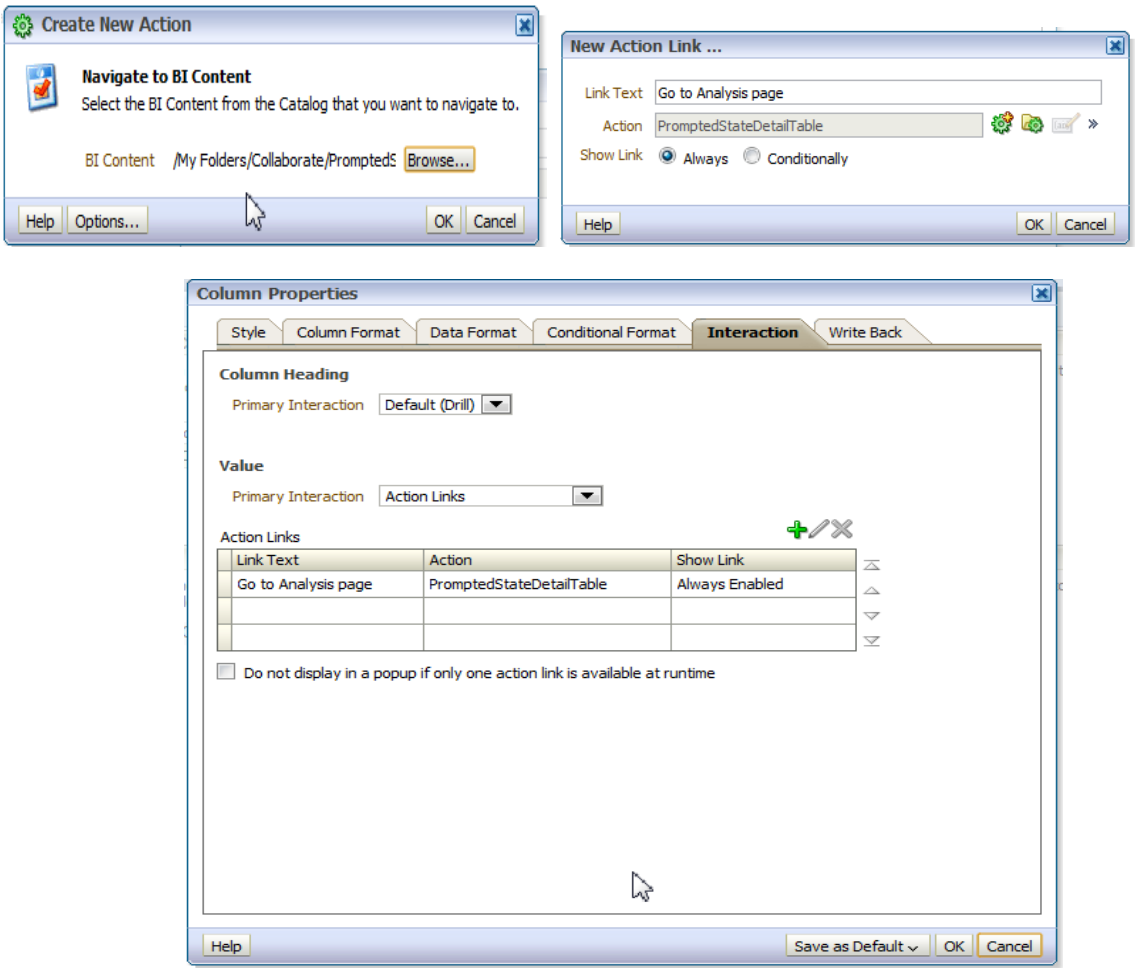
2. Next open the previously saved analysis (SimpleActionLinkMapExample), click on Results if necessary, and edit the Compound Layout. Remove the two graph views (Graph and Graph (2)).

Add a Table view below the map view (Not sure if it's a bug or a feature but a table view is needed for the action link to work in the map view).

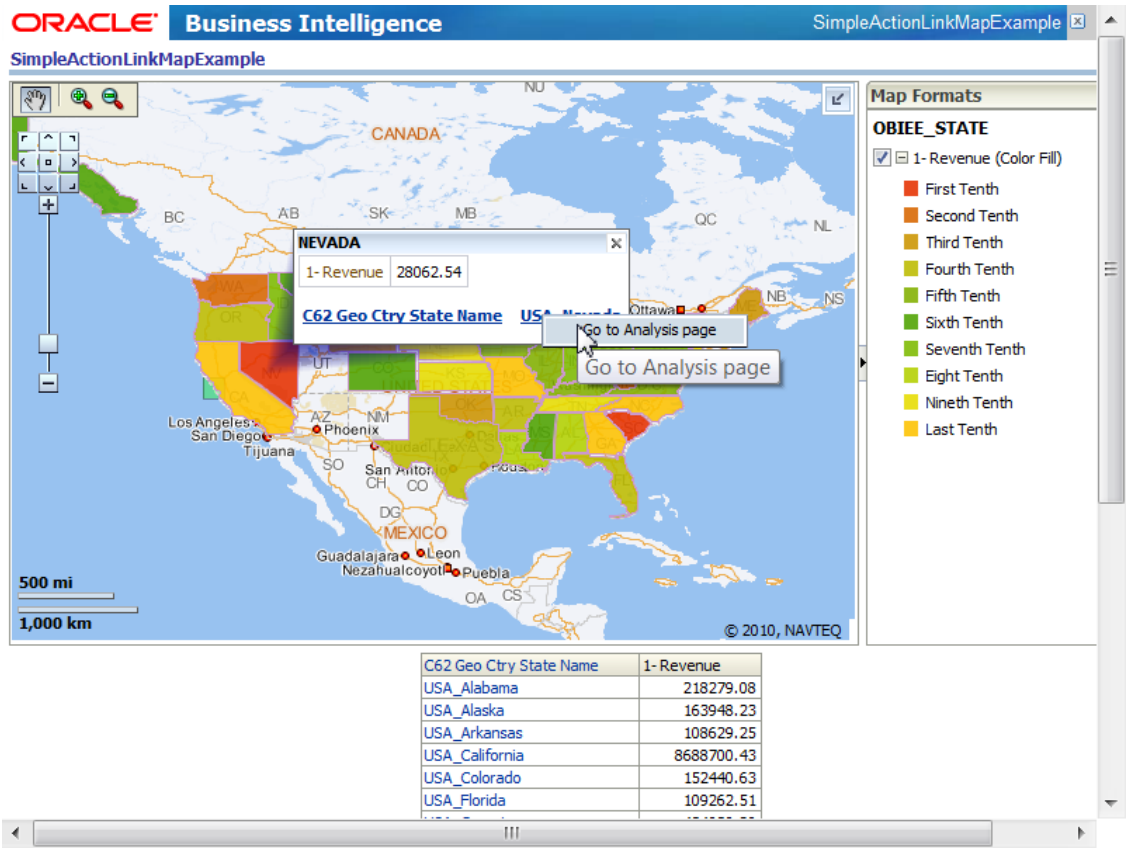
3. Now click on Criteria and edit the column properties for the Ctry State Name column to change the Interaction from Send Master-Detail Events to Action Link. In the Action Links dialog click on add Action Link, select Navigate to BI Content, choose the saved detail analysis (PromptedStateDetailAnalysis), and click OK where prompted.







4. Preview the analysis (i.e. click on show how results will look on a dashboard) and test the action link.



C62 Geo Ctry State Name	1- Revenue
USA_Alabama	218279.08
USA_Alaska	163948.23
USA_Arkansas	108629.25
USA_California	8688700.43
USA_Colorado	152440.63
USA_Florida	109262.51

ORACLE Business Intelligence PromptedStateDetailTable

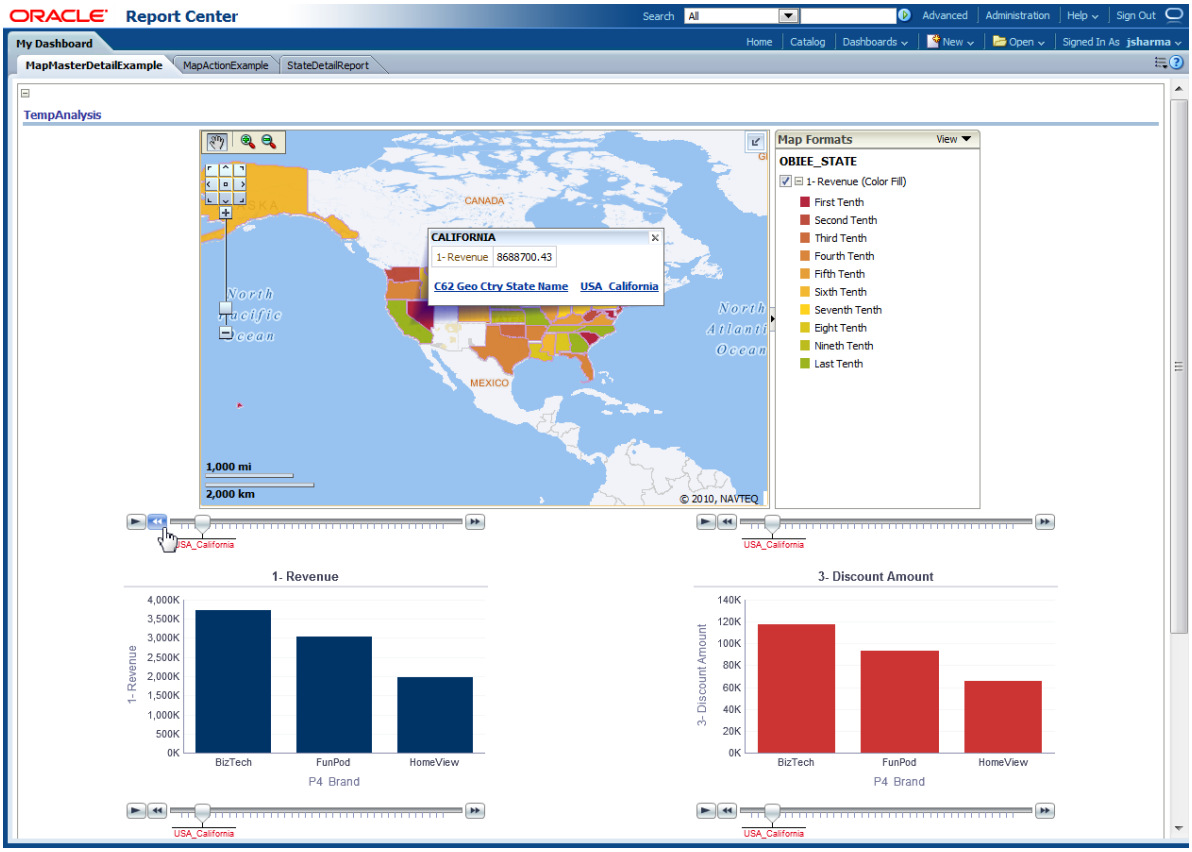
PromptedStateDetailTable

C62 Geo Ctry State Name	P4 Brand	P3 LOB	P2 Product Type	P1 Product	46 Avg Order Process Time	24 Avg # of Orders by Sales Rep	23 Avg # of Orders by Customer	25 Avg Order Size	11- Fixed Costs	10- Variable Costs
USA_Nevada	BizTech	Communication	Cell Phones	V5x Flip Phone	5.00	1.00	1.00	3535.21	591.00	1204
			Smart Phones	Touch-Screen T5	7.00	1.00	1.00	184.36	55.00	123
		Electronics	Accessories	Bluetooth Adaptor	13.00	1.00	1.00	3142.91	943.00	2177
			Audio	MicroPod 60Gb	6.00	1.00	2.00	2096.37	673.00	1668
	FunPod	Digital	Camera	MPEG4 Camcorder	11.00	1.00	2.00	1242.48	582.00	770
				7 Megapixel Digital Camer	9.00	1.00	2.00	1976.35	881.00	1425
		Games	Portable	PocketFun ES	8.00	1.00	1.00	1938.77	426.00	815
	HomeView	Services	Maintenance	Maintenance	3.00	1.00	1.00	3855.25	1082.00	1545
		TV	LCD	LCD 36X Standard	1.00	1.00	1.00	420.08	123.00	145
			Plasma	Tungsten E Plasma TV	16.00	1.00	1.00	4355.56	1301.00	3016

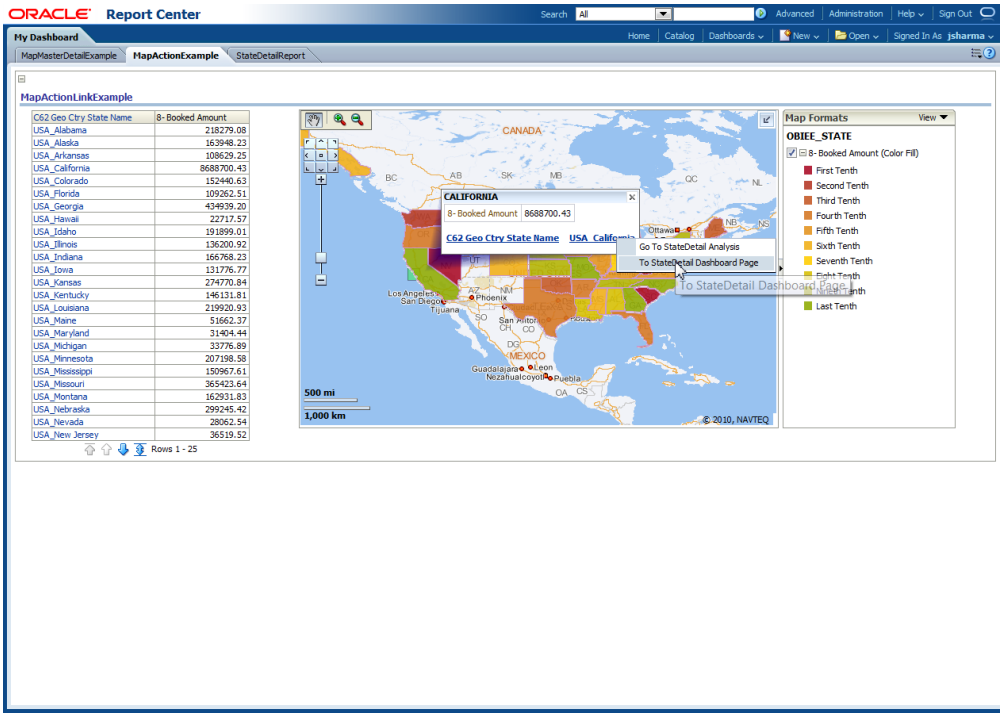
Refresh - Print - Export - Add to Briefing Book - Copy

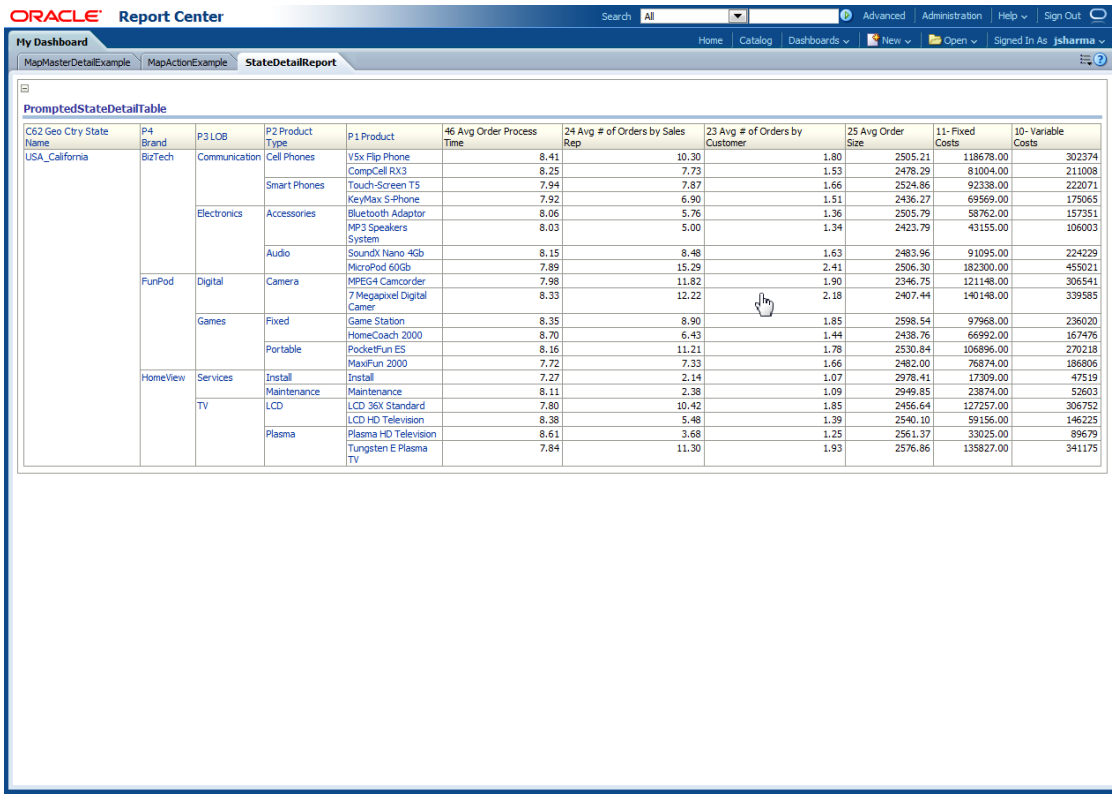
Exercises

1. Publish your analyses containing maps to a dashboard page. Optionally create a dashboard with three pages. The first one containing the master-detail linking example, the second containing the action link example, and the third containing the prompted state detail analysis which is linked to from the action link map example.



2. Modify the simple map action link analysis to add a section action link to the C62 Geo Ctry State Name column value. This one should navigate to the third dashboard page (the one with the prompted state detail analysis) you created above.





C62 Geo Ctry State Name	P4 Brand	P3 LOB	P2 Product Type	P1 Product	46 Avg Order Process Time	24 Avg # of Orders by Sales Rep	23 Avg # of Orders by Customer	25 Avg Order Size	11- Fixed Costs	10- Variable Costs
USA_California	BizTech	Communication	Cell Phones	V5x Flip Phone	8.41	10.30	1.80	2505.21	118678.00	302374
				CompCell RX3	8.25	7.73	1.53	2478.29	81004.00	211008
			Smart Phones	Touch-Screen T5	7.94	7.87	1.66	2524.86	92338.00	222071
				KeyMax S-Phone	7.92	6.90	1.51	2436.27	69569.00	175065
		Electronics	Accessories	Bluetooth Adaptor	8.06	5.76	1.36	2505.79	58762.00	157351
				MP3 Speakers System	8.03	5.00	1.34	2423.79	43155.00	106003
			Audio	SoundX Nano 4Gb	8.15	8.48	1.63	2483.96	91095.00	224229
				MicroPod 60Gb	7.89	15.29	2.41	2506.30	182300.00	455021
	FunPod	Digital	Camera	MPEG4 Camcorder	7.98	11.82	1.90	2346.75	121148.00	306541
				7 Megapixel Digital Camer	8.33	12.22	2.18	2407.44	140148.00	339585
		Games	Fixed	Game Station	8.35	8.90	1.85	2598.54	97968.00	236020
				HomeCoach 2000	8.70	6.43	1.44	2438.76	66992.00	167476
			Portable	PocketFun ES	8.16	11.21	1.78	2530.84	106896.00	270218
				MaxiFun 2000	7.72	7.33	1.66	2482.00	76874.00	186806
	HomeView	Services	Install	Install	7.27	2.14	1.07	2978.41	17309.00	47519
			Maintenance	Maintenance	8.11	2.38	1.09	2949.85	23874.00	52603
		TV	LCD	LCD 36X Standard	7.80	10.42	1.85	2456.64	127257.00	306752
				LCD HD Television	8.38	5.48	1.39	2540.10	59156.00	146225
			Plasma	Plasma HD Television	8.61	3.68	1.25	2561.37	33025.00	89679
				Tungsten E Plasma TV	7.84	11.30	1.93	2576.86	135827.00	341175

Using spatial queries in analyses

Example 1: Demographics info for census blocks near selected stores

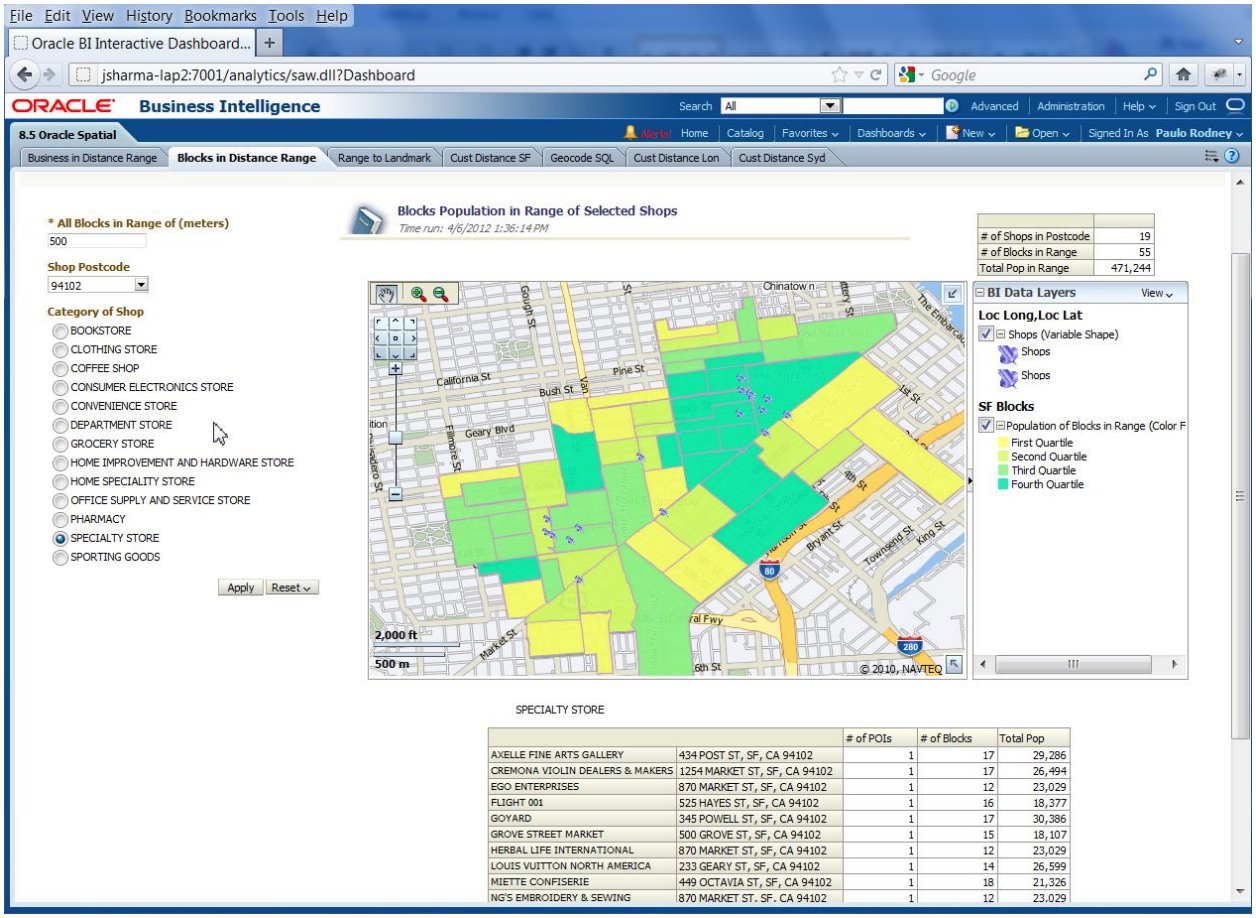
In this example we'll recreate portions of the "Blocks in Distance Range" page of the "Source Specific Features"."8.5 Oracle Spatial" dashboard in SampleApp. We will reuse the existing prompts, opaque views, and presentation and session variables. That is, we will not define them again. The rationale for, and steps involved in, defining them will be outlined however.

This example is intended to illustrate functionality and is not necessarily a realistic use case. It shows the following:

- How to use spatial functions in database queries from OBIEE
- How do use opaque views, presentation and session variables, and dashboard prompts to pass parameters to the above spatial queries

The NAVTEQ sample data contains street, postcode, and points-of-interest or business listing details, and some census block level demographics, for San Francisco, London, and Sydney.

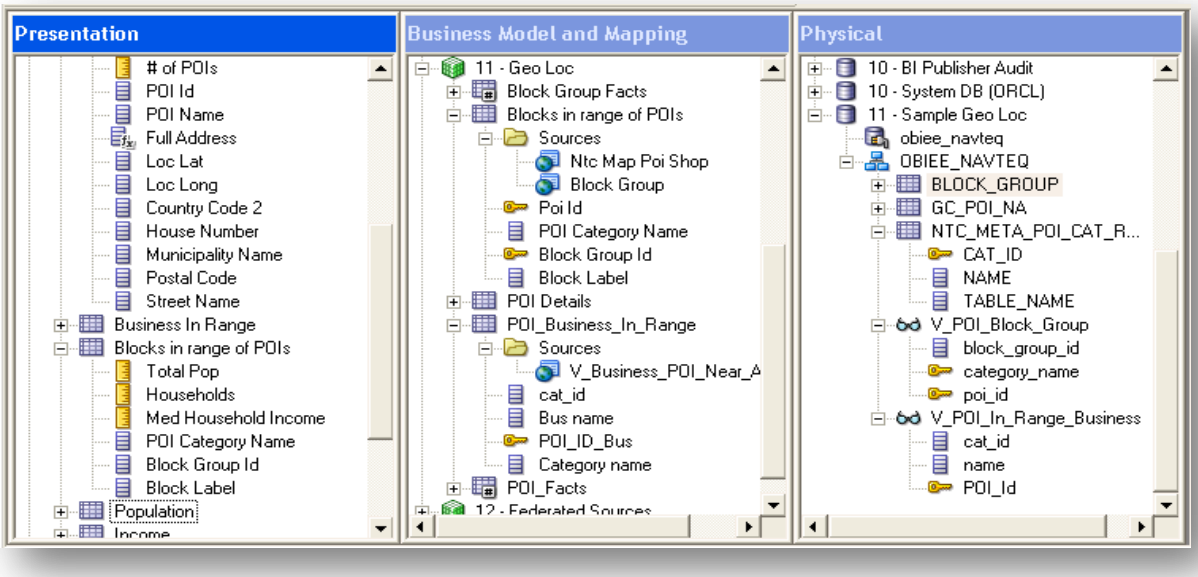
The screenshot below shows the relevant SampleApp dashboard page.



First let's look at the RPD side of things, i.e. the database query, bind variables, and corresponding business and presentation layers.

The physical layer consists of the tables and opaque views shown below. The Block_Group table contains the census block level demographics (household income, population, and education). The GC_POI_NA (points-of-interest North America) contains a sample, limited to San Francisco, of NAVTEQ's POI content. It contains information on the establishment name (e.g. Flight 001), the category ID, address, phone number and other details. The NTC_META_POI_CAT_REF table is a metadata table containing category_ids and names (e.g. 5400 = GROCERY STORE or 9567 = SPECIALTY STORE).

The view V_POI_Block_Group is the query to find block groups that are within a specified distance of selected stores. For example, block groups within 500 meters of Specialty Stores in zip 94102. The postal code, category id, and distance (in meters) values are passed in as bind variables.

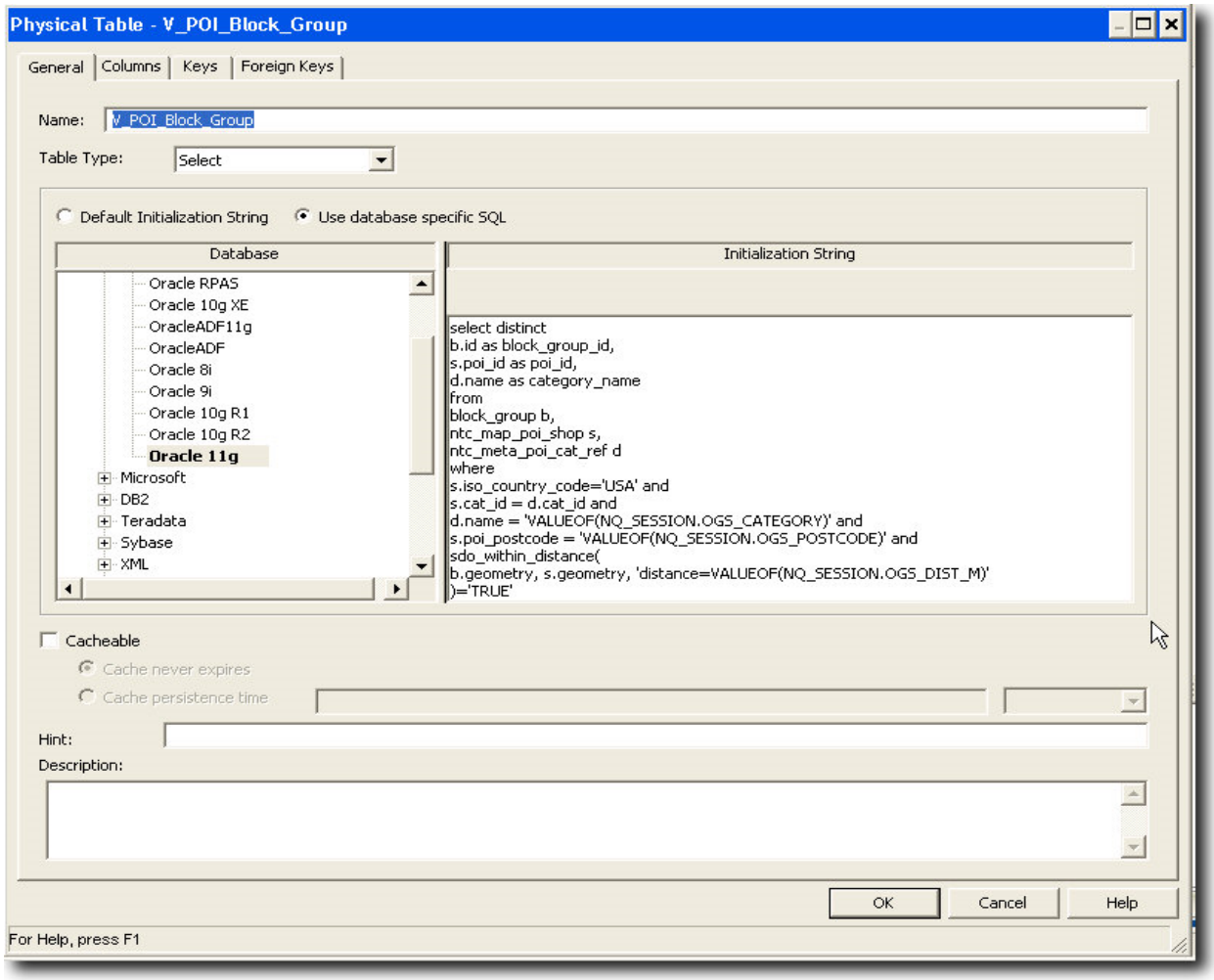


The view is defined as a SELECT table in the BI Admin tool as shown in the screenshot below. Note the use of Database specific SQL.

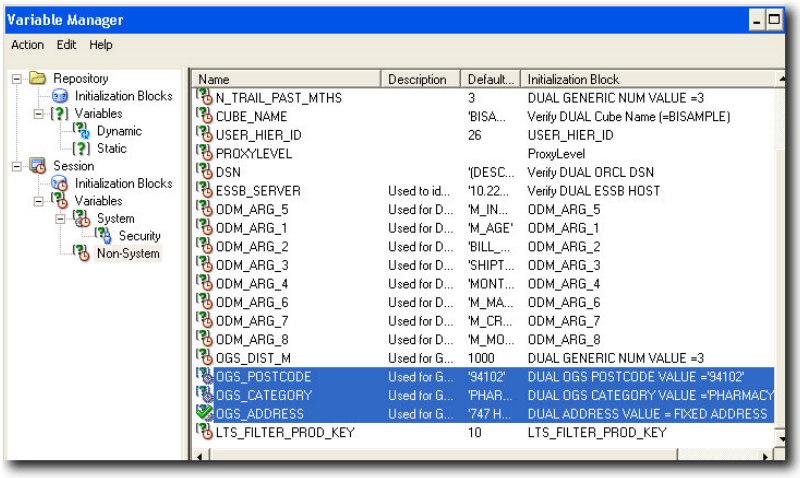
The query text is

```
select distinct
b.id as block_group_id,
s.poi_id as poi_id,
d.name as category_name
from
block_group b,
ntc_map_poi_shop s,
ntc_meta_poi_cat_ref d
where
s.iso_country_code='USA' and
s.cat_id = d.cat_id and
d.name = 'VALUEOF(NQ_SESSION.OGS_CATEGORY)' and
s.poi_postcode = 'VALUEOF(NQ_SESSION.OGS_POSTCODE)' and
sdo_within_distance(
b.geometry, s.geometry, 'distance=VALUEOF(NQ_SESSION.OGS_DIST_M)'
)='TRUE'
```

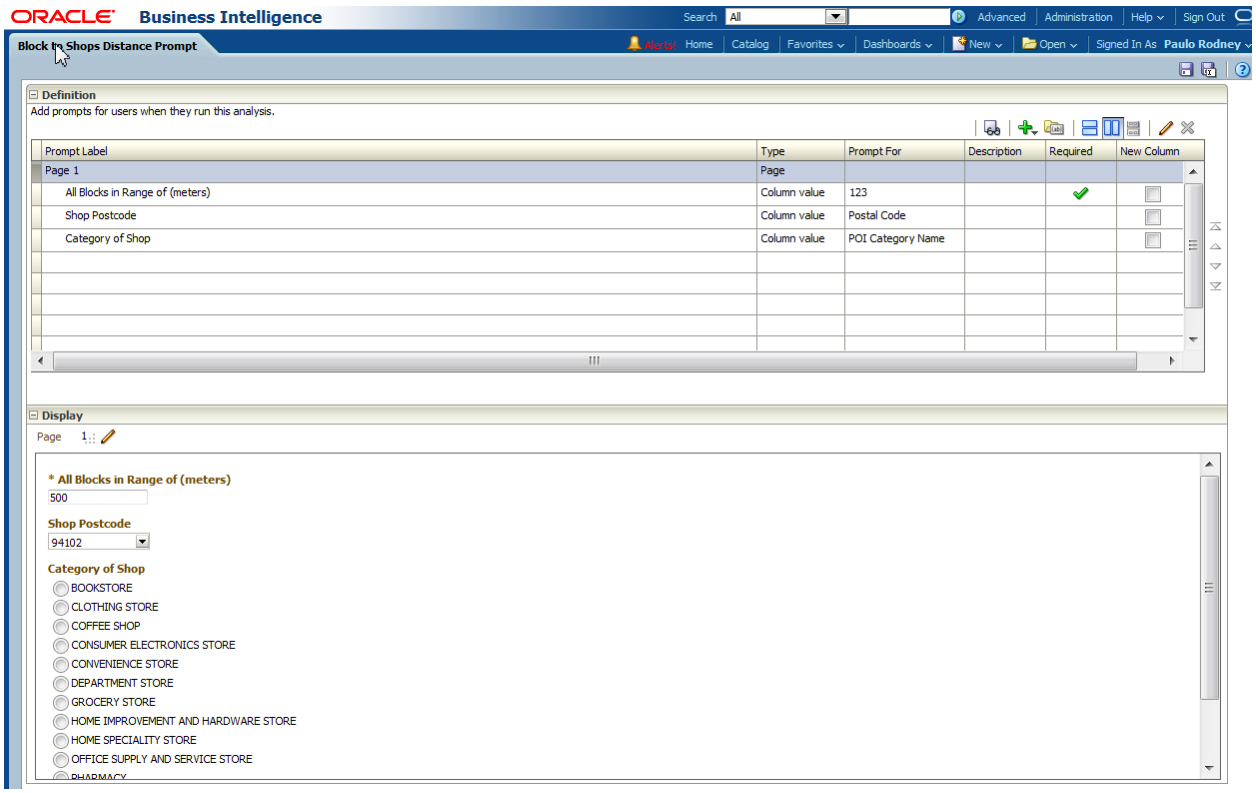
OGS_CATEGORY contains the category name (e.g. SPECIALTY STORE), OGC_POSTCODE is the zipcode (e.g. 94102), and OGC_DIST_M is the distance in meters. The spatial operator sdo_within_distance(blocks, stores, 'distance=500') returns TRUE for blocks (b.geometry) that are within 500m of a SPECIALTY STORE in 94102 and FALSE otherwise.

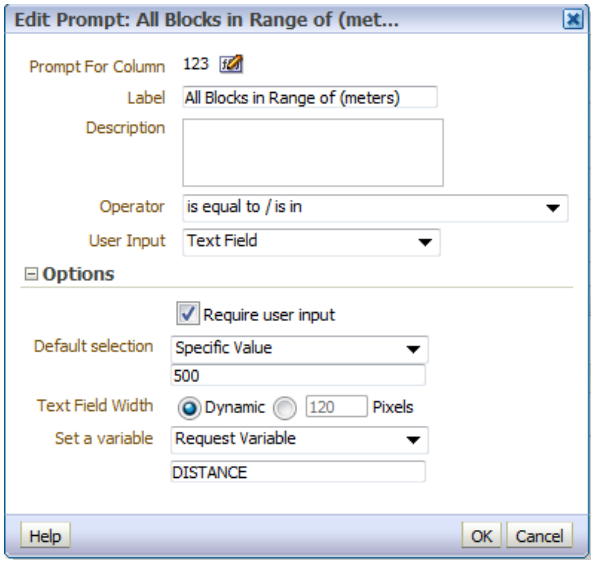


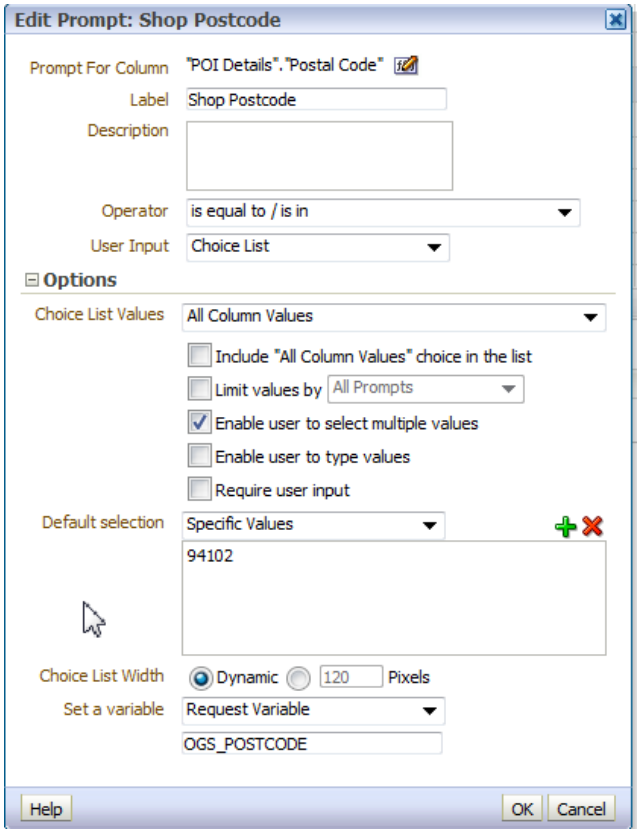
The session variables are defined as non-system with default values.

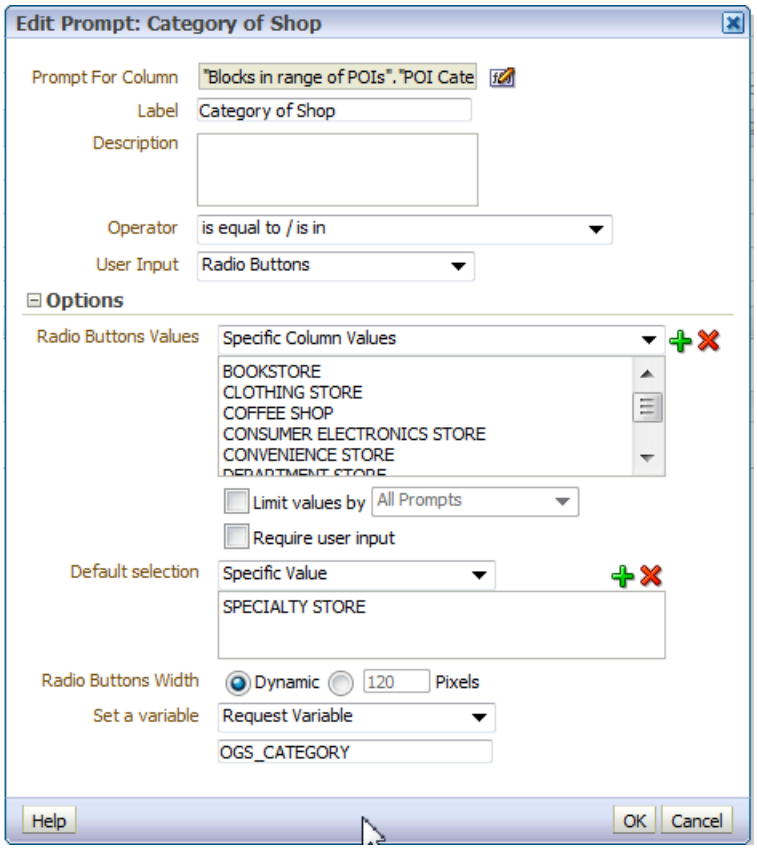


The dashboard prompts are defined as shown with each setting a request variable.


ORACLE Business Intelligence
Search All
Advanced
Administration
Help
Sign Out
Block to Shops Distance Prompt
Alerts!
Home
Catalog
Favorites
Dashboards
New
Open
Signed In As Paulo Rodney
Definition
Add prompts for users when they run this analysis.
Prompt Label
Type
Prompt For
Description
Required
New Column
Page 1
Page
All Blocks in Range of (meters)
Column value
123
Shop Postcode
Column value
Postal Code
Category of Shop
Column value
POI Category Name
Display
Page 1
* All Blocks in Range of (meters)
500
Shop Postcode
94102
Category of Shop
BOOKSTORE
CLOTHING STORE
COFFEE SHOP
CONSUMER ELECTRONICS STORE
CONVENIENCE STORE
DEPARTMENT STORE
GROCERY STORE
HOME IMPROVEMENT AND HARDWARE STORE
HOME SPECIALITY STORE
OFFICE SUPPLY AND SERVICE STORE


Edit Prompt: All Blocks in Range of (met...
Prompt For Column
123
Label
All Blocks in Range of (meters)
Description
Operator
is equal to / is in
User Input
Text Field
Options
Require user input
Default selection
Specific Value
500
Text Field Width
Dynamic
120
Pixels
Set a variable
Request Variable
DISTANCE
Help
OK
Cancel


Edit Prompt: Shop Postcode
Prompt For Column
"POI Details"."Postal Code"
Label
Shop Postcode
Description
Operator
is equal to / is in
User Input
Choice List
Options
Choice List Values
All Column Values
Include "All Column Values" choice in the list
Limit values by
All Prompts
Enable user to select multiple values
Enable user to type values
Require user input
Default selection
Specific Values
94102
Choice List Width
Dynamic
120
Pixels
Set a variable
Request Variable
OGS_POSTCODE
Help
OK
Cancel



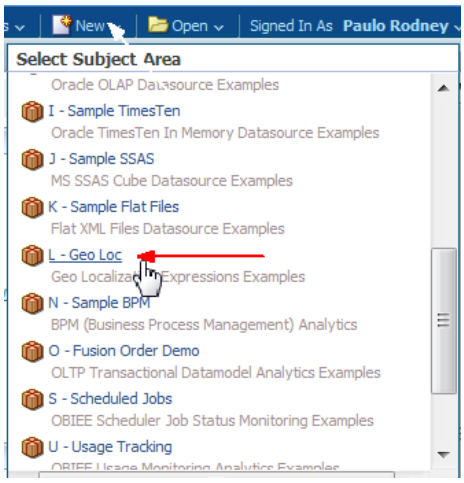
Hands-on portion of the example

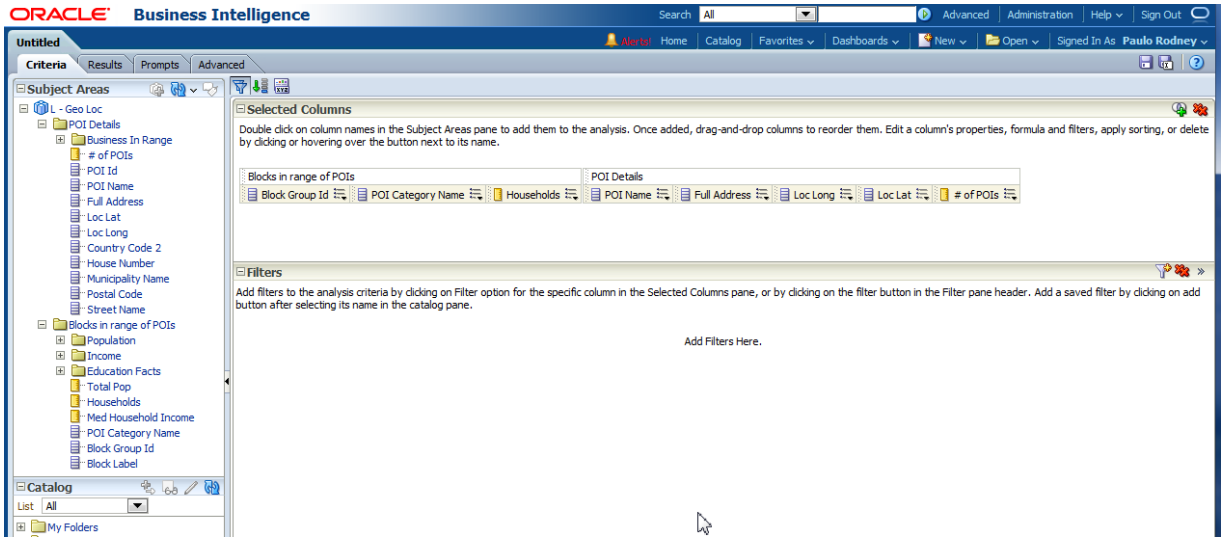
Next we'll create an analysis and a dashboard page using the elements described above.

Click on New Analysis and select the Geoloc subject area. Expand the Blocks in range of POIs folder and add the Block Group Id, POI Category Name, and Households columns to the analysis. Expand the POI Details folder and add the POI Name, Loc Long, Loc Lat, # of POIs, and Full Address columns to the analysis.

Then click on the Results tab. After the query is performed (may take a while depending on the HOL environment) edit the table properties and change them as shown in the screenshot below. Move (drag and drop) the POI category Name to the Section header in the Layout Panel. Move Block Group ID, Loc long, and Loc lat columns to the Excluded list. Rename # of POIs to be # of Blocks (since we're grouping by POI name in the table). And order the remaining columns as shown.

Then click on Done and add a map view to the analysis. Like the table, the map view may take a while to render.


New
Open
Signed In As Paulo Rodney
Select Subject Area
Oracle OLAP Datasource Examples
I - Sample TimesTen
Oracle TimesTen In Memory Datasource Examples
J - Sample SSAS
MS SSAS Cube Datasource Examples
K - Sample Flat Files
Flat XML Files Datasource Examples
L - Geo Loc
Geo Localization Expressions Examples
N - Sample BPM
BPM (Business Process Management) Analytics
O - Fusion Order Demo
OLTP Transactional Datamodel Analytics Examples
S - Scheduled Jobs
OBIEE Scheduler Job Status Monitoring Examples
U - Usage Tracking


ORACLE Business Intelligence
Search All
Advanced
Administration
Help
Sign Out
Untitled
Home
Catalog
Favorites
Dashboards
New
Open
Signed In As Paulo Rodney
Criteria
Results
Prompts
Advanced
Subject Areas
L - Geo Loc
POI Details
Business In Range
# of POIs
POI Id
POI Name
Full Address
Loc Lat
Loc Long
Country Code 2
House Number
Municipality Name
Postal Code
Street Name
Blocks in range of POIs
Population
Income
Education Facts
Total Pop
Households
Med Household Income
POI Category Name
Block Group Id
Block Label
Catalog
List All
My Folders
Selected Columns
Double click on column names in the Subject Areas pane to add them to the analysis. Once added, drag-and-drop columns to reorder them. Edit a column's properties, formula and filters, apply sorting, or delete by clicking or hovering over the button next to its name.
Blocks in range of POIs
Block Group Id
POI Category Name
Households
POI Details
POI Name
Full Address
Loc Long
Loc Lat
# of POIs
Filters
Add filters to the analysis criteria by clicking on Filter option for the specific column in the Selected Columns pane, or by clicking on the filter button in the Filter pane header. Add a saved filter by clicking on add button after selecting its name in the catalog pane.
Add Filters Here.

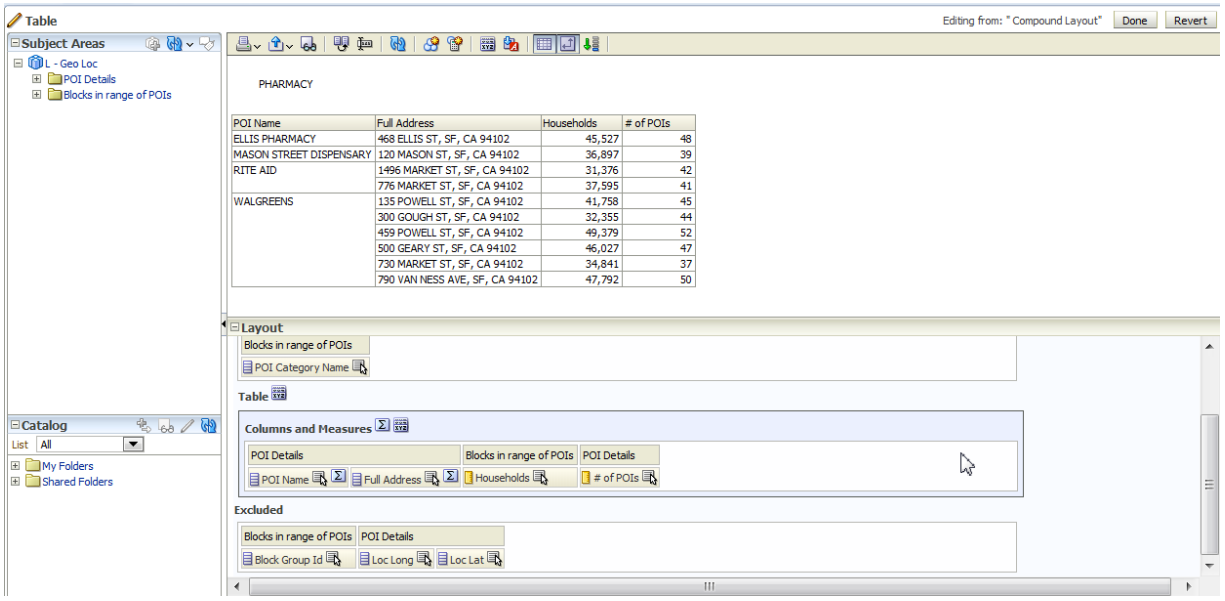
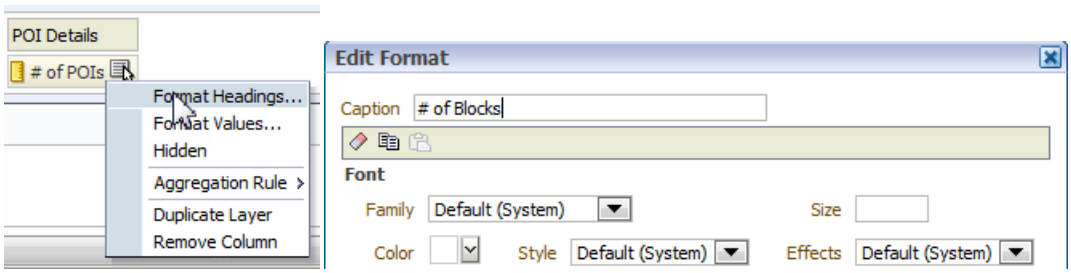
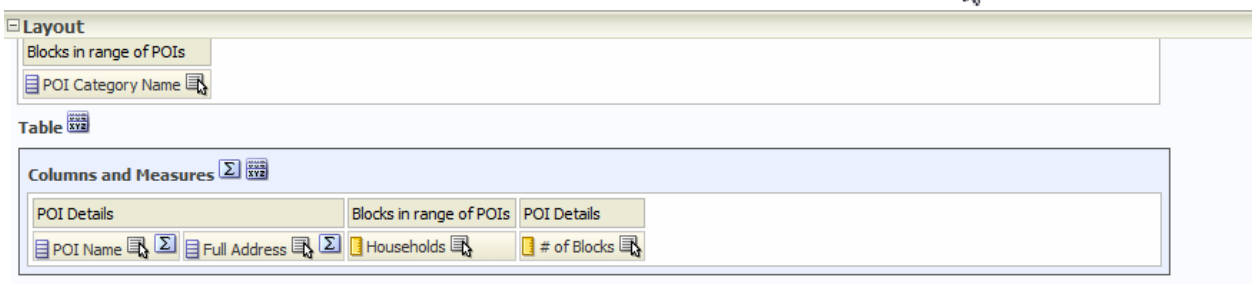


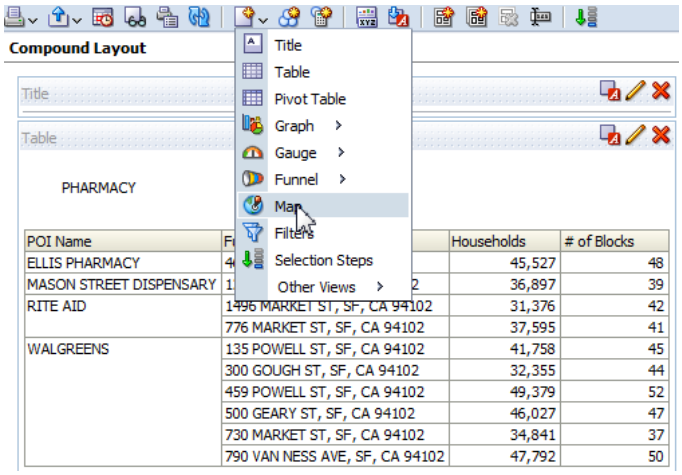
Table
Editing from: "Compound Layout"
Done
Revert
Subject Areas
L - Geo Loc
POI Details
Blocks in range of POIs
PHARMACY
POI Name | Full Address | Households | # of POIs
ELLIS PHARMACY | 468 ELLIS ST, SF, CA 94102 | 45,527 | 48
MASON STREET DISPENSARY | 120 MASON ST, SF, CA 94102 | 36,897 | 39
RITE AID | 1496 MARKET ST, SF, CA 94102 | 31,376 | 42
776 MARKET ST, SF, CA 94102 | 37,595 | 41
WALGREENS | 135 POWELL ST, SF, CA 94102 | 41,758 | 45
300 GOUGH ST, SF, CA 94102 | 32,355 | 44
459 POWELL ST, SF, CA 94102 | 49,379 | 52
500 GEARY ST, SF, CA 94102 | 46,027 | 47
730 MARKET ST, SF, CA 94102 | 34,841 | 37
790 VAN NESS AVE, SF, CA 94102 | 47,792 | 50
Layout
Blocks in range of POIs
POI Category Name
Table
Columns and Measures
POI Details
Blocks in range of POIs
POI Details
POI Name
Full Address
Households
# of POIs
Excluded
Blocks in range of POIs
POI Details
Block Group Id
Loc Long
Loc Lat
Catalog
List All
My Folders
Shared Folders

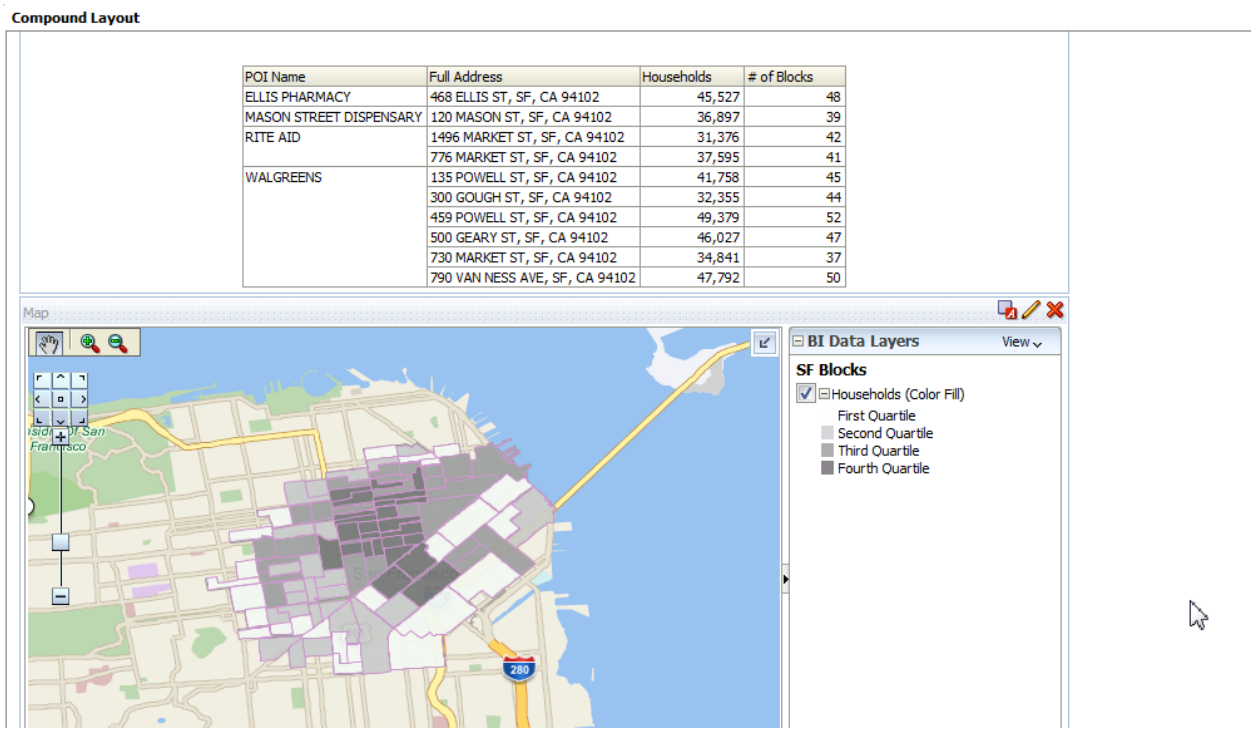


PHARMACY

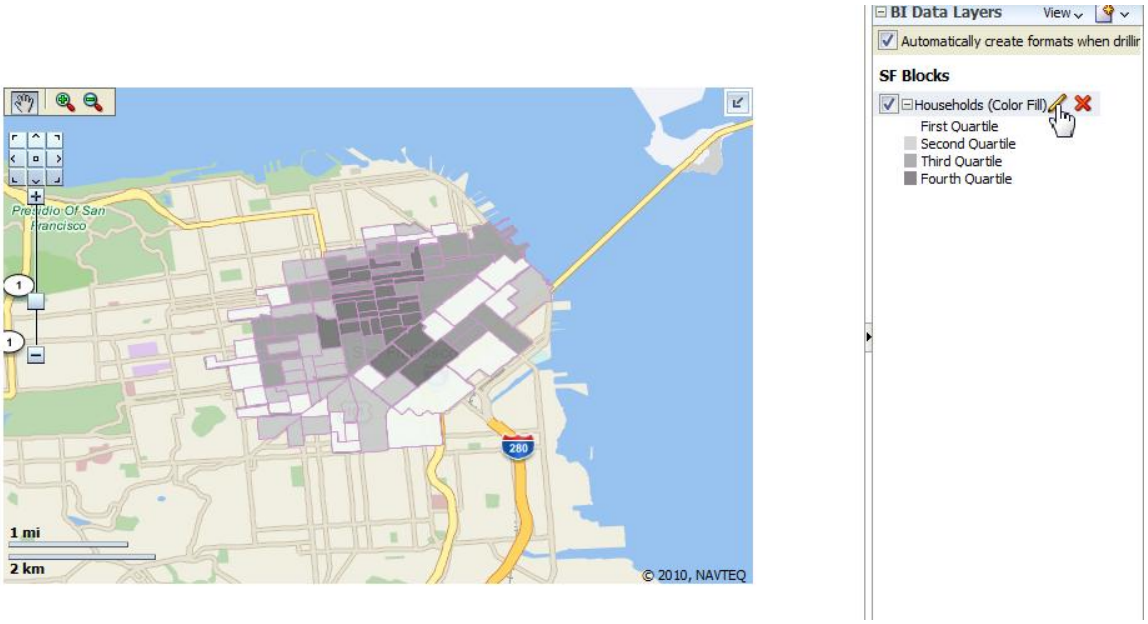
POI Name	Full Address	Households	# of Blocks
ELLIS PHARMACY	468 ELLIS ST, SF, CA 94102	45,527	48
MASON STREET DISPENSARY	120 MASON ST, SF, CA 94102	36,897	39
RITE AID	1496 MARKET ST, SF, CA 94102	31,376	42
	776 MARKET ST, SF, CA 94102	37,595	41
WALGREENS	135 POWELL ST, SF, CA 94102	41,758	45
	300 GOUGH ST, SF, CA 94102	32,355	44
	459 POWELL ST, SF, CA 94102	49,379	52
	500 GEARY ST, SF, CA 94102	46,027	47
	730 MARKET ST, SF, CA 94102	34,841	37
	790 VAN NESS AVE, SF, CA 94102	47,792	50



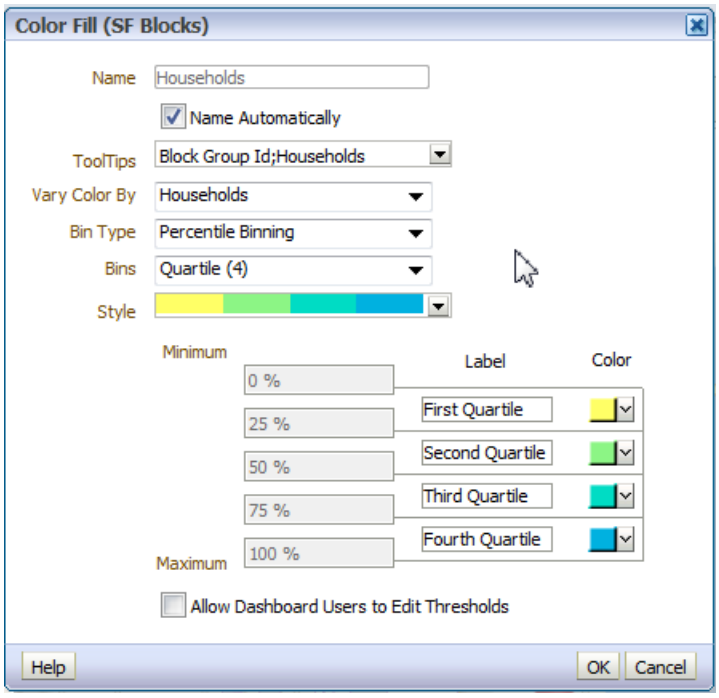




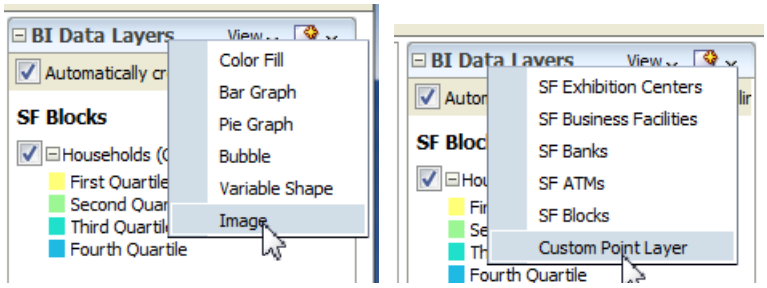
Once the map view has rendered click on Edit. You may have to navigate to San Francisco if the map view initially centers somewhere south near Sunnyvale/Cupertino or elsewhere and shows no color-fill. Use the navigation panel or simply pan down (hold down the mouse button and scroll down). Zoom in if necessary once the map is centered on SFO.



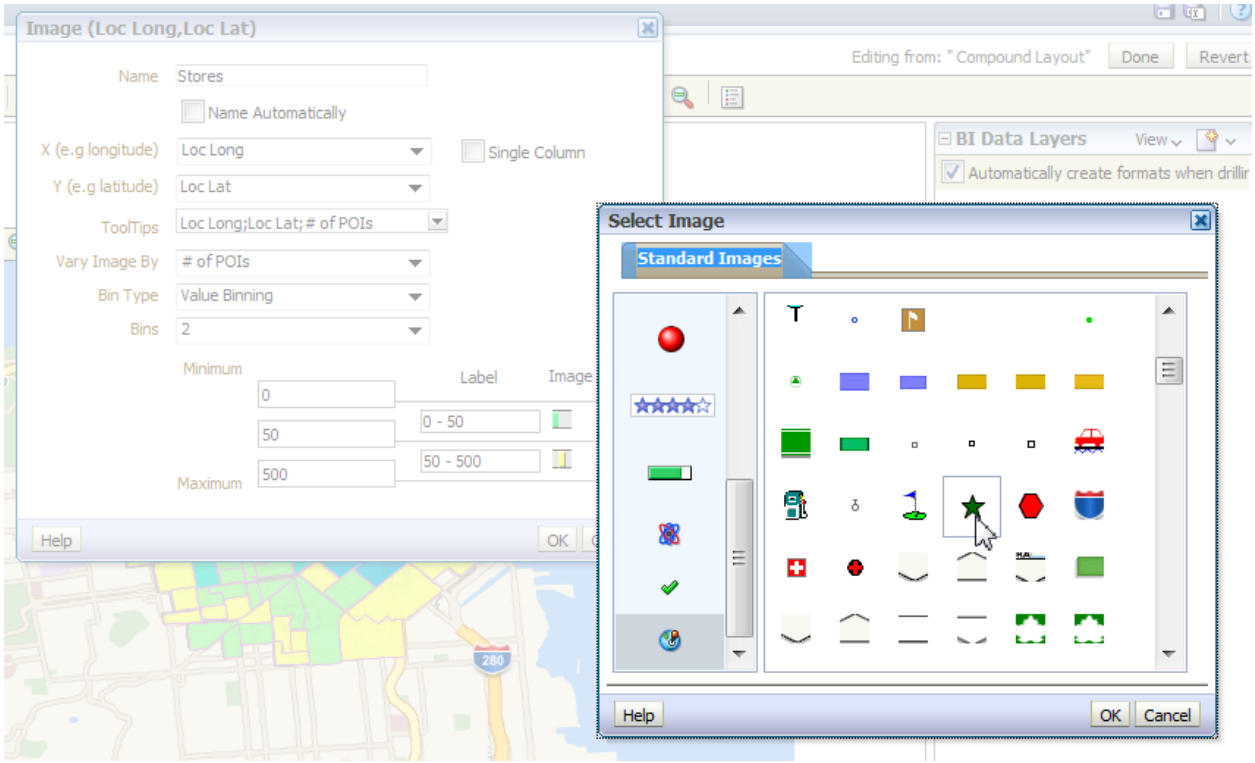
Change the color fill palette to the one shown below.

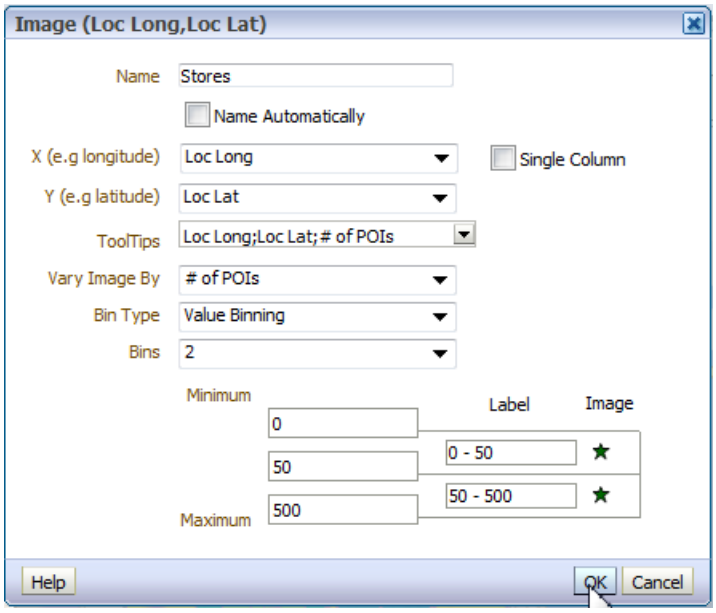


Click on the new layer icon (next to the BI Data Layers) to add a new map format to the view. Select Image and then Custom Point Layer.



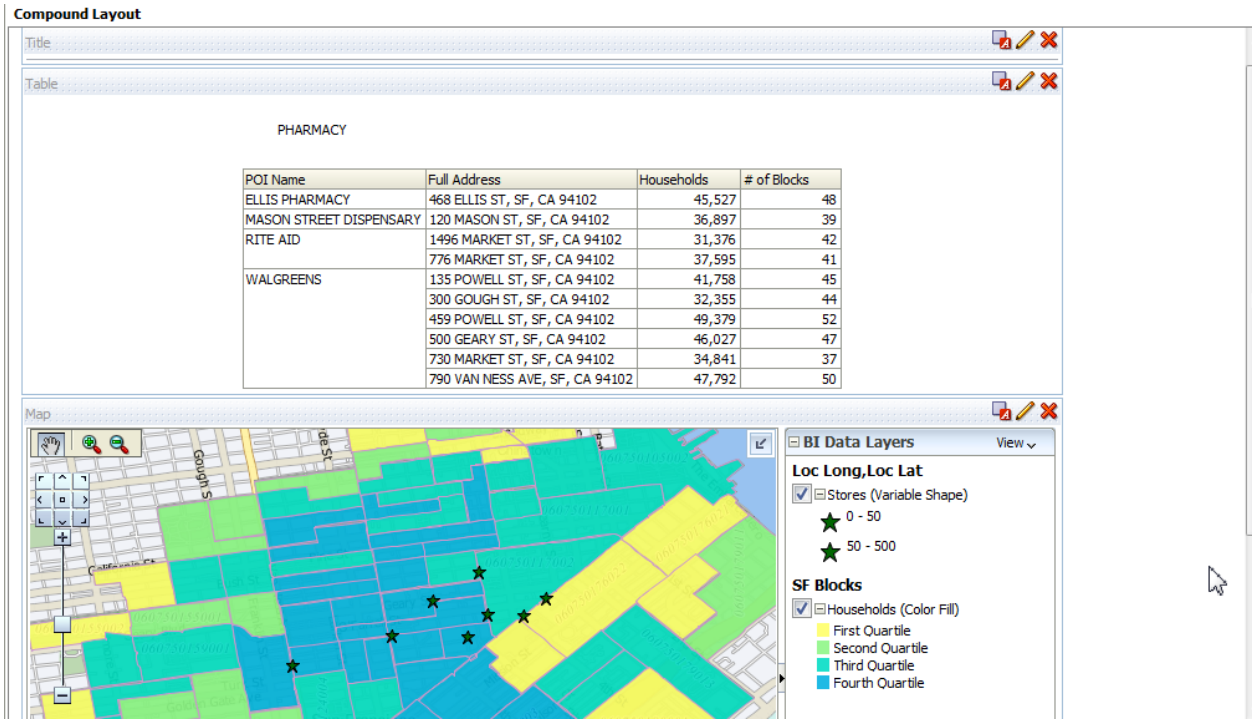
When the custom point layer dialog shows up edit it as shown below. Uncheck Name automatically and name it Stores. Select Loc Long as the Longitude column and Loc lat as the Latitude column. Click on the drop down list for Vary Image By and choose "# of POIs". Select 2 and the number of Bins and change Bin Type to Value Binning. Once the default bin value ranges and labels show up edit them to the values shown. Set the ranges to 0-50 and 50-500 and enter Stores for both labels. Click on the default image, scroll down and click on the globe with pin and then choose the green star as the image. Do this for both bins.

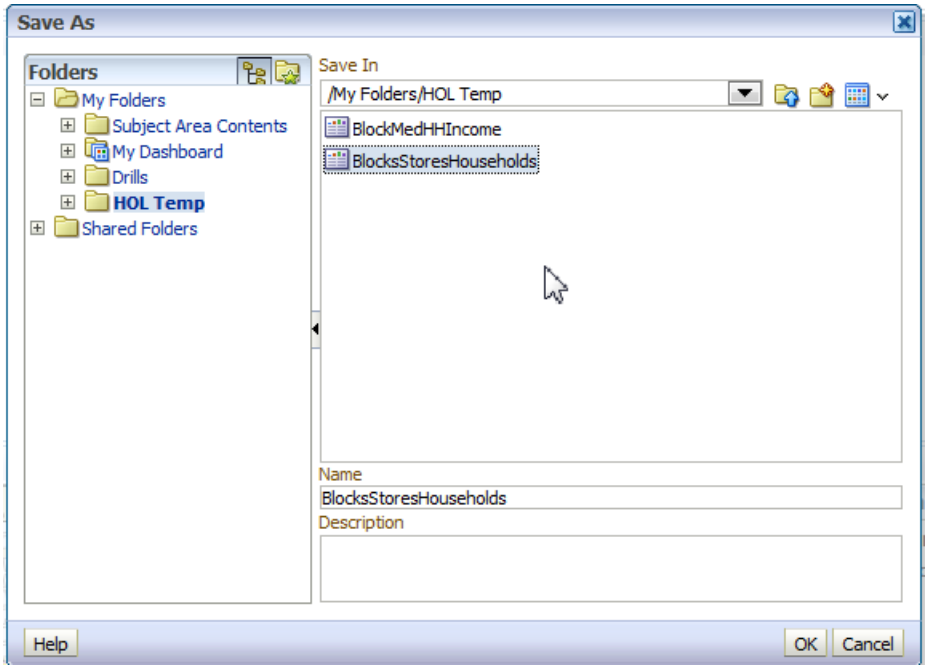




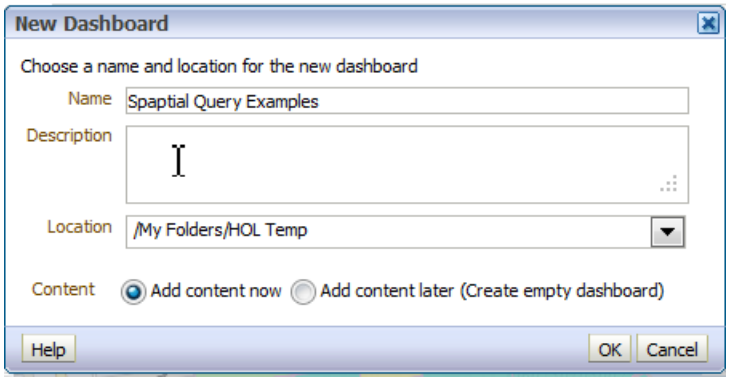
Click on Done.

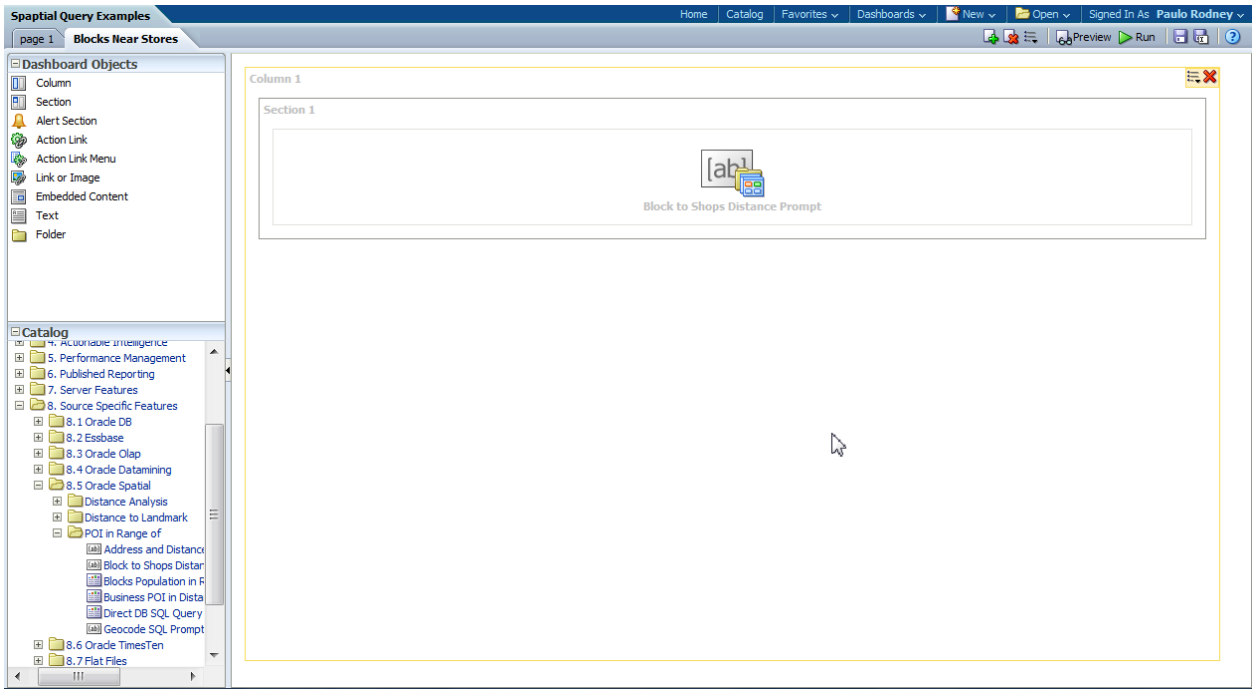
Save the analysis to your preferred folder.

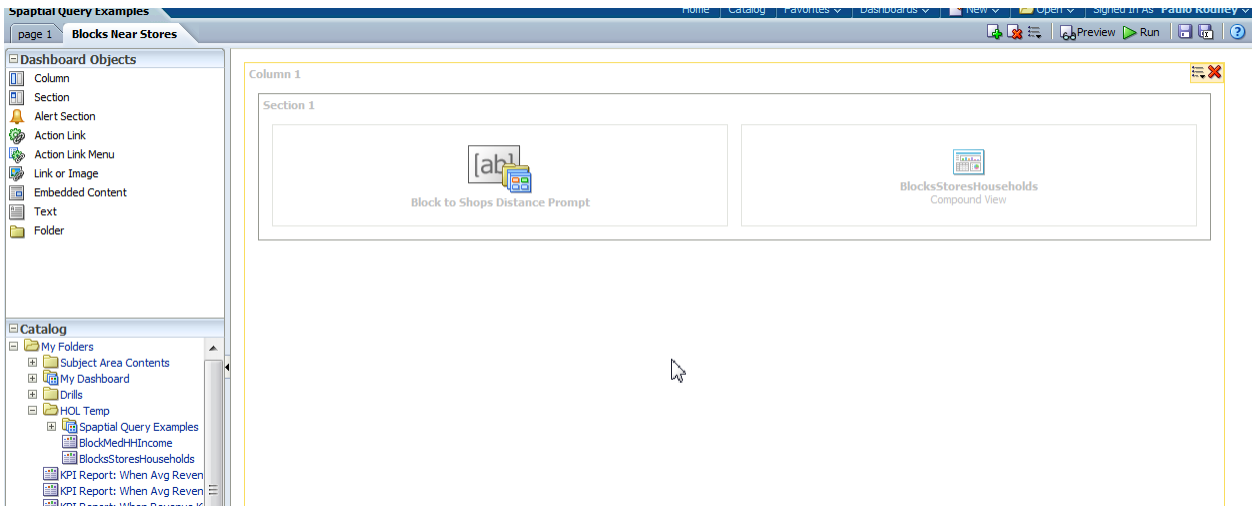




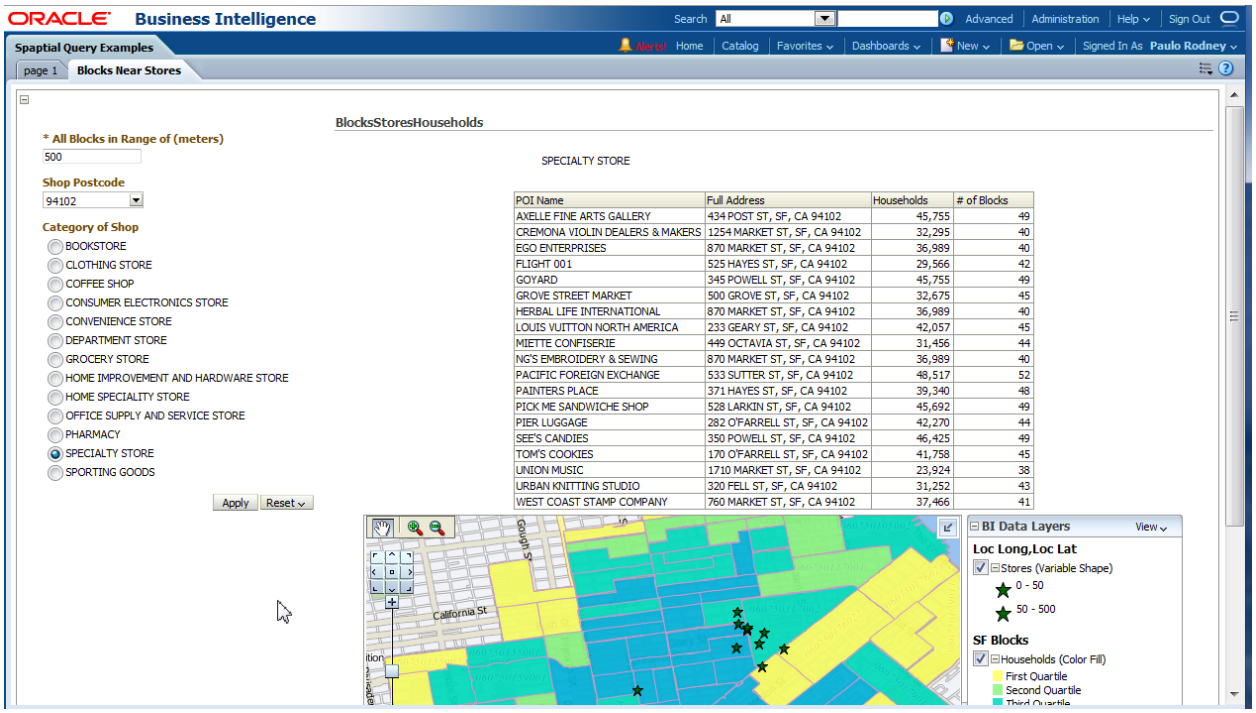
Now create a new Dashboard and add a page and then add the Blocks to Shops Distance Prompt (in the Catalog area expand the folders 8. Source Specific Features, 8.5 and then POIs in range of) and the newly created analysis to the page.


New Dashboard
Choose a name and location for the new dashboard
Name
Spaptial Query Examples
Description
Location
/My Folders/HOL Temp
Content
Add content now
Add content later (Create empty dashboard)
Help
OK
Cancel


Spaptial Query Examples
Home
Catalog
Favorites
Dashboards
New
Open
Signed In As Paulo Rodney
page 1
Blocks Near Stores
Preview
Run
Dashboard Objects
Column
Section
Alert Section
Action Link
Action Link Menu
Link or Image
Embedded Content
Text
Folder
Catalog
5. Performance Management
6. Published Reporting
7. Server Features
8. Source Specific Features
8.1 Oracle DB
8.2 Essbase
8.3 Oracle Olap
8.4 Oracle Datamining
8.5 Oracle Spatial
Distance Analysis
Distance to Landmark
POI in Range of
8.6 Oracle TimesTen
8.7 Flat Files
Column 1
Section 1
Block to Shops Distance Prompt


Spaptial Query Examples
page 1
Blocks Near Stores
Preview
Run
Dashboard Objects
Column
Section
Alert Section
Action Link
Action Link Menu
Link or Image
Embedded Content
Text
Folder
Catalog
My Folders
Subject Area Contents
My Dashboard
Drills
HOL Temp
Spaptial Query Examples
BlockMedHHIncome
BlocksStoresHouseholds
KPI Report: When Avg Reven
KPI Report: When Avg Reven
Column 1
Section 1
Block to Shops Distance Prompt
BlocksStoresHouseholds
Compound View

Save and then run the dashboard. You sould see something like the following screenshot.

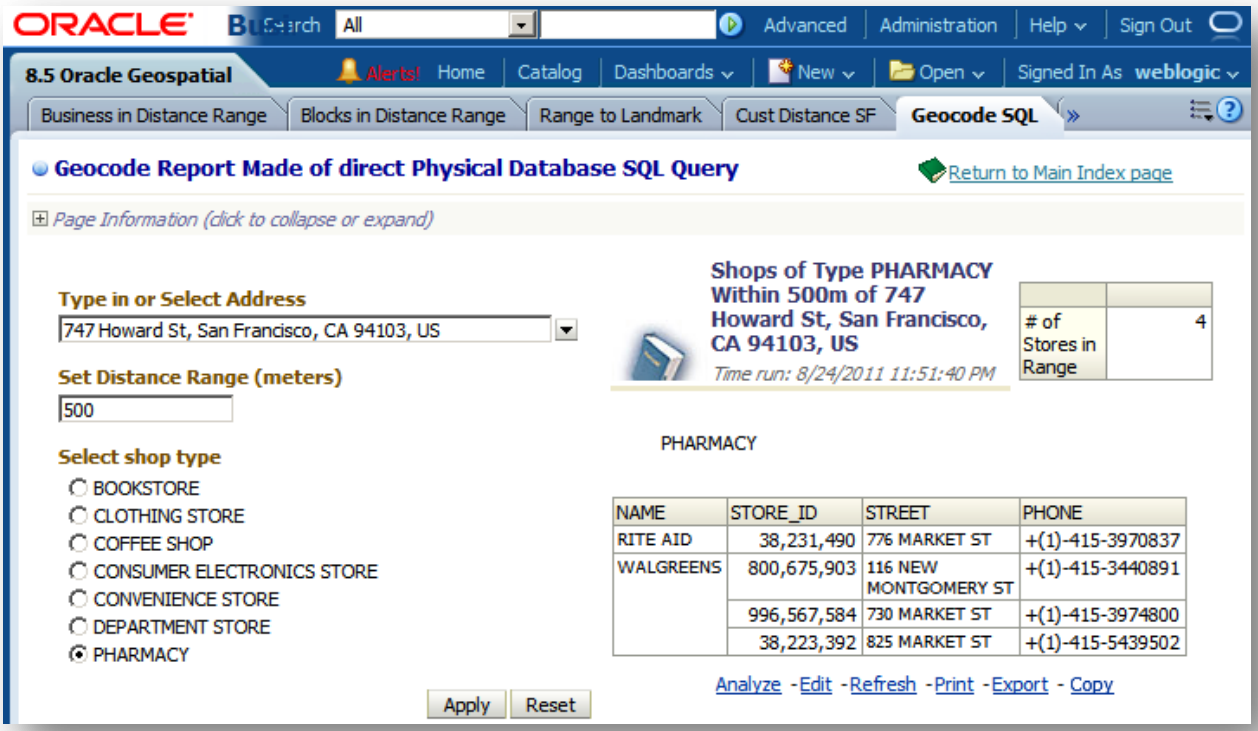


Example 2: Stores near an address

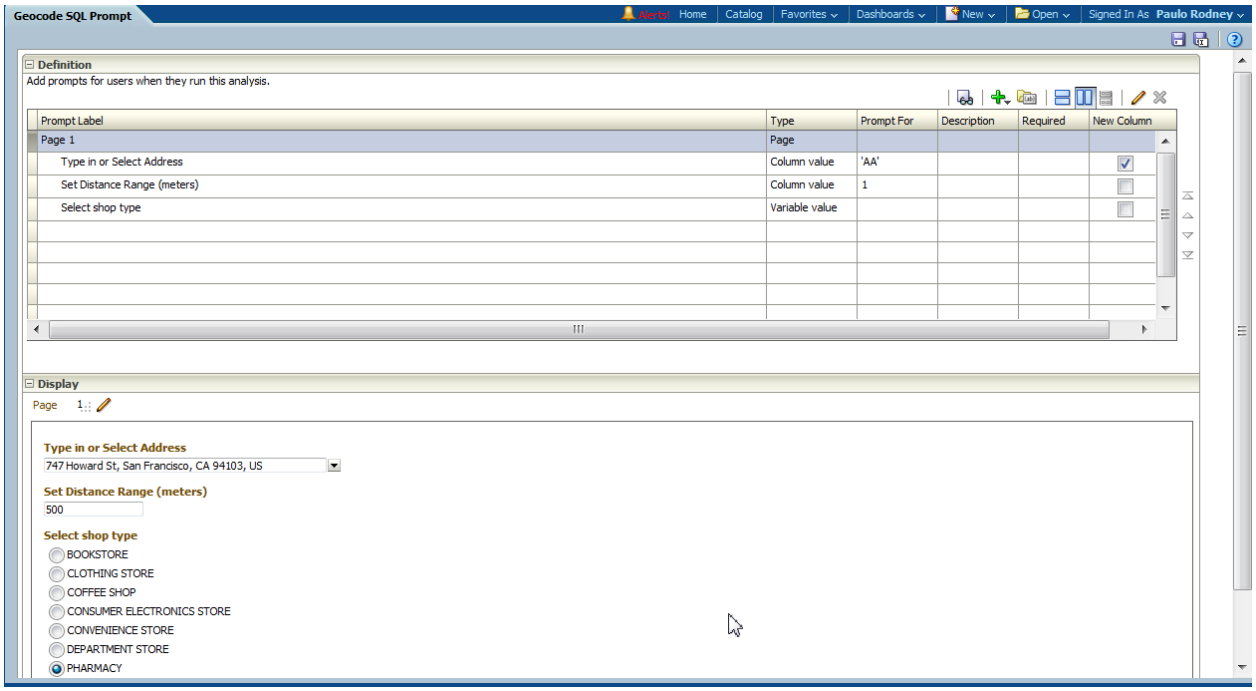
This example replicates the Geocode SQL page in the dashboard named "8.5 Oracle Spatial". It uses a Direct Database request, prompts, presentation variables, and user-defined functions in the database. We will reuse existing functions, prompts and variables.

The SampleApp dashboard screenshot is shown below. The presentation variables are used to pass in the store category (CATEGORY), the distance value (DISTANCE), and the input address (ADDRESS). The Direct database request SQL is

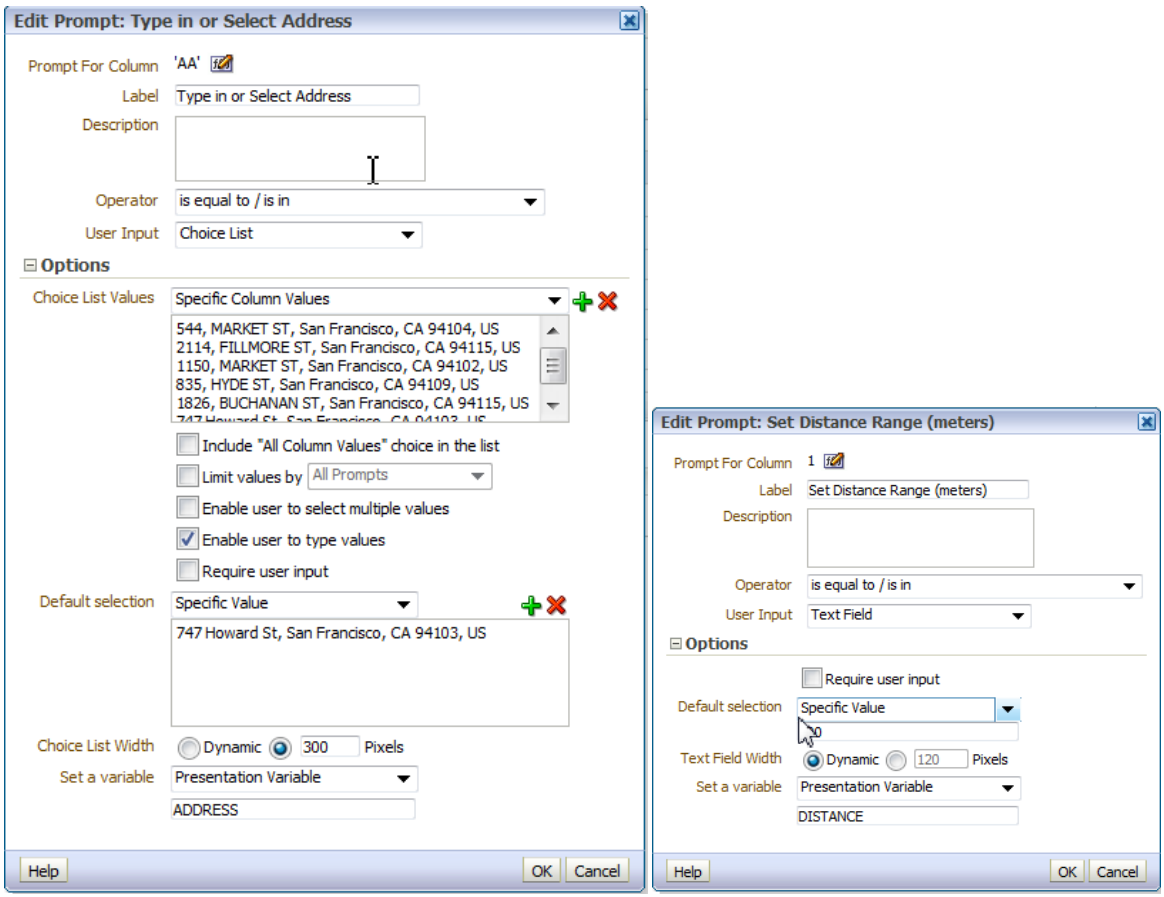
```
select s.poi_id store_id, s.name, s.poi_house_number || ' ' ||
s.poi_street_name street, s.poi_phonenumber phone ,
d.name as category_name
from ntc_map_poi_shop s ,ntc_meta_poi_cat_ref d
where s.cat_id = d.cat_id and d.name = '@{CATEGORY}{PHARMACY}' and
sdo_within_distance(geometry,
geocode_address('@{ADDRESS}{747 Howard St, San Francisco, CA 94013,
US}'),'distance=@{DISTANCE}{2000} unit=m')='TRUE'
```



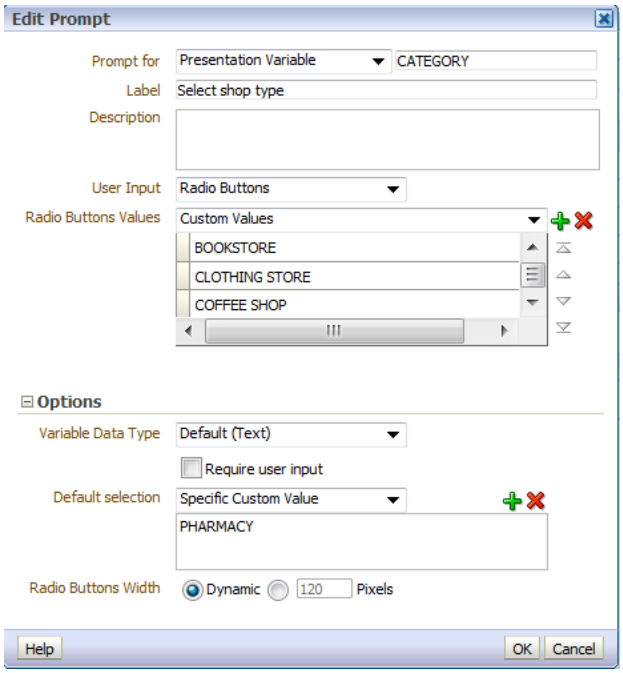
The presentation variables are defined as follows.



The address and distance prompt definitions are



The shop category prompt is



The user-defined function geocode_address takes a comma delimited address string as input and in turn calls the SDO_GCDR.GEOCODE_AS_GEOMETRY function.

```
function geocode_address(address varchar2) return sdo_geometry deterministic
as
addr_lines    sdo_keywordarray;
an_addr_line  varchar2(128);
country       varchar2(64);
num_lines     number;
input_addr    varchar2(256);
theGeom       sdo_geometry;
begin
-- assumes address is comma delimited and is
-- house no. street,city,state and/or postalcode,country(e.g.US,UK,GB, or AU)
-- parse out the address pieces. country = from last comma onwards
-- everything except country goes into a sdo_keywordarray
-- add a comma at the end so num_commas = num sections
  input_addr := address || ',';
  addr_lines := sdo_keywordarray();
-- assume database version 11g
  num_lines  := regexp_count(input_addr, ',', 1, 'i');
  addr_lines.extend(num_lines);
  for i in 1 .. (num_lines-1) loop
     an_addr_line := regexp_substr(input_addr, '[^,]+', 1,i);
     addr_lines(i) := an_addr_line ;
  end loop;
  country := regexp_substr(input_addr, '[^,]+', 1,num_lines);
  theGeom :=sdo_gcdr.geocode_as_geometry('obiee_navteq', addr_lines, country);
return theGeom;
end;
```

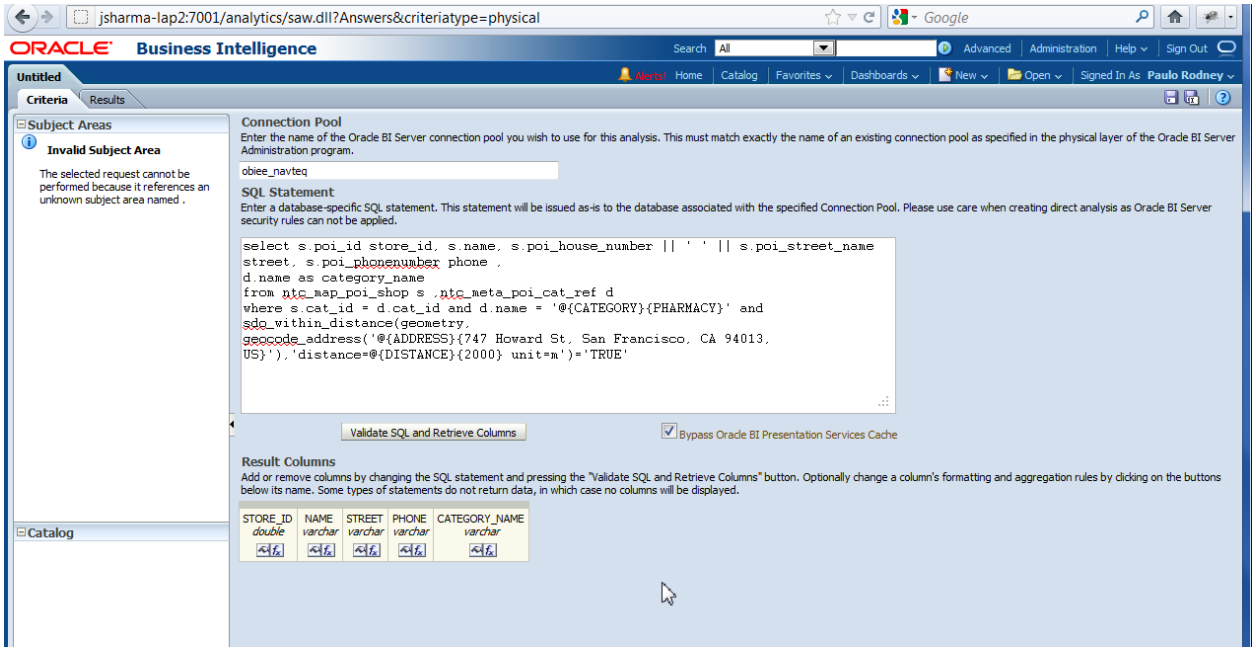
Geocode-as_geometry is an Oracle Spatial function. It requires reference data from a data vendor such as NAVTEQ.

Hands-on portion of the example

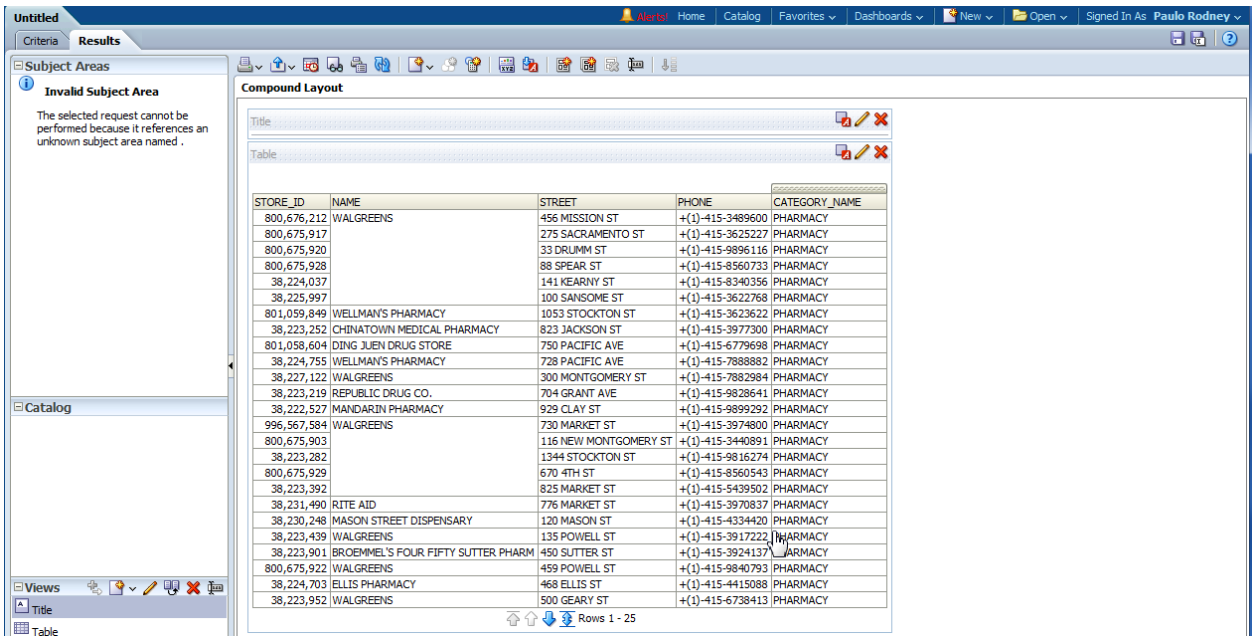
Next we'll create an analysis and a dashboard page using the elements described above.

Click on new Analysis and then Create Direct Database request. Enter obiee_navteq for the Connection Pool and the SQL text given above in the SQL Statement area. Check the Bypass Oracle BI Presentation Service cache and then on the button titled Validate SQL and Retrieve Columns.

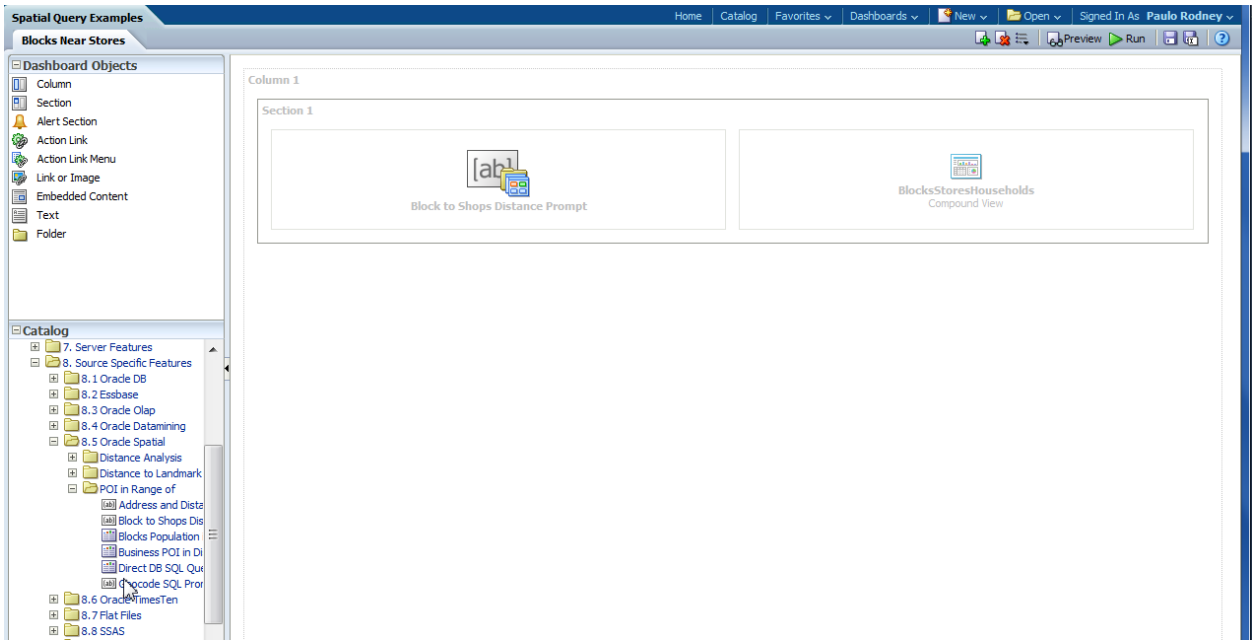
Your page should look like the one shown below.

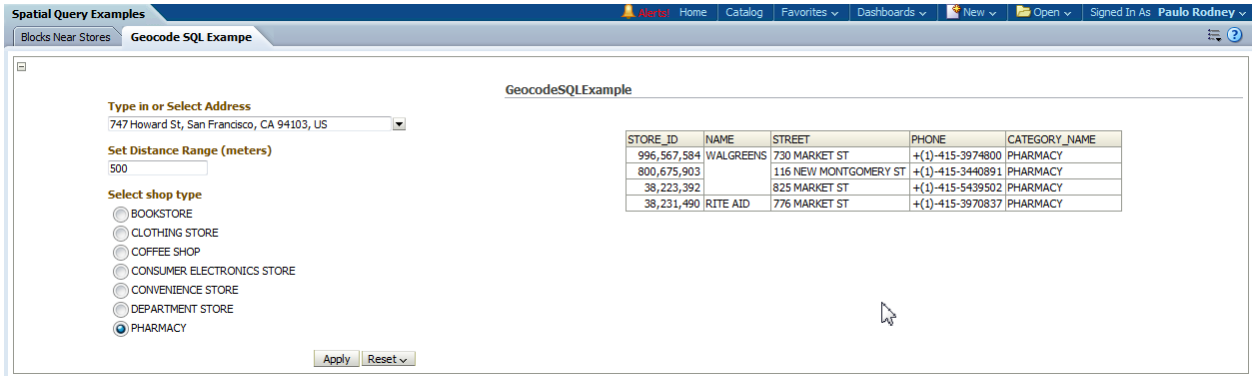


Click on Results.



And save the analysis. Open the previous dashboard (the Spatial Query Examples created in the example above) for edit and add a new page. Add the saved analysis and the Geocode SQL Prompt (from the folder named POIs in rage of) to the page. Save and run the dashboard.

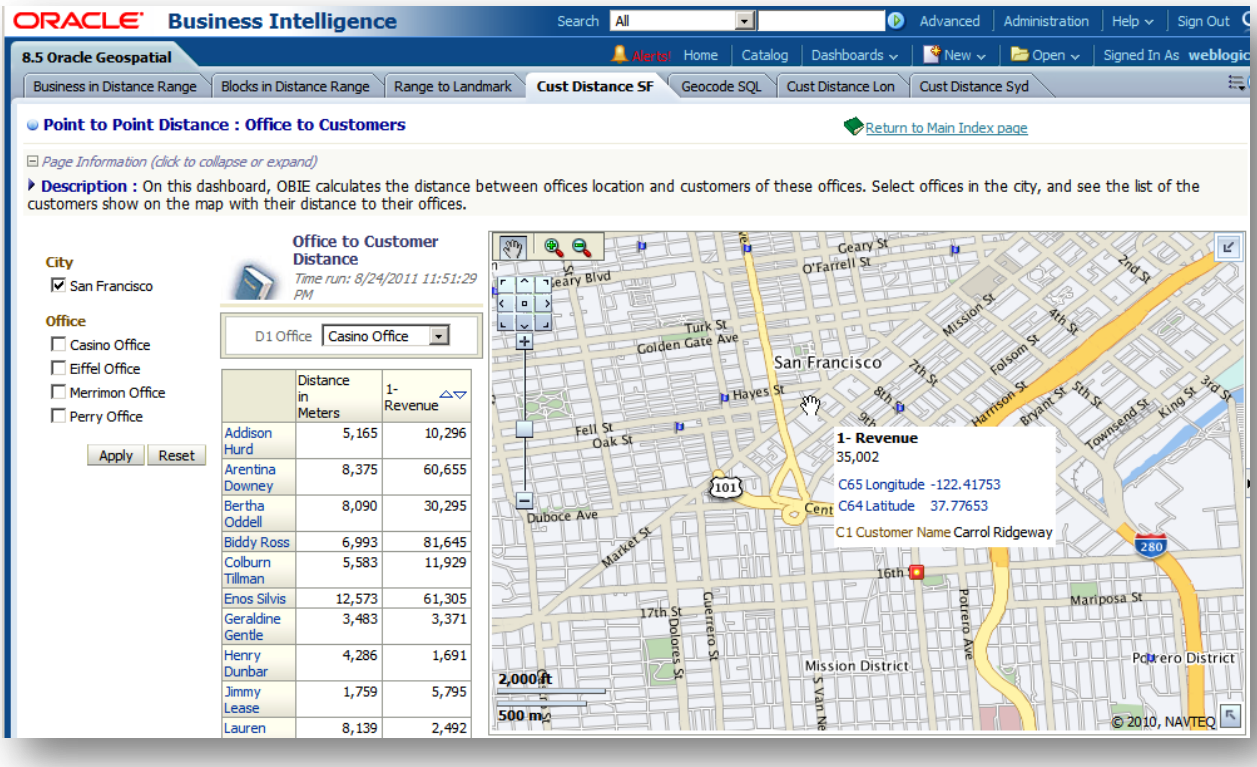




Example 3: Distance between locations

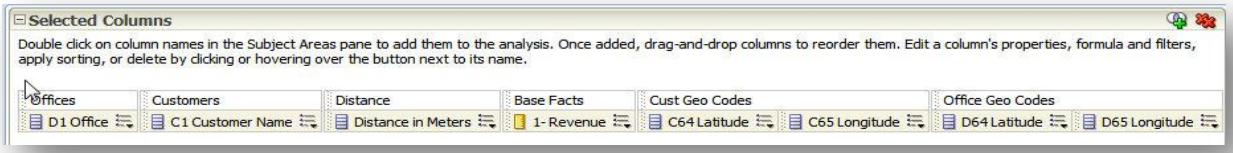
This example replicates the Cust Distance SF page in the dashboard named "8.5 Oracle Spatial". It uses the EVALUATE function in a column formula, prompts, presentation variables, and database functions. We will reuse existing functions, prompts and variables.

The example here will only describe the use of EVALUATE in a column formula to determine the distance between two points specified using Longitude, Latitude coordinates. It won't replicate the analysis or dashboard page shown below.

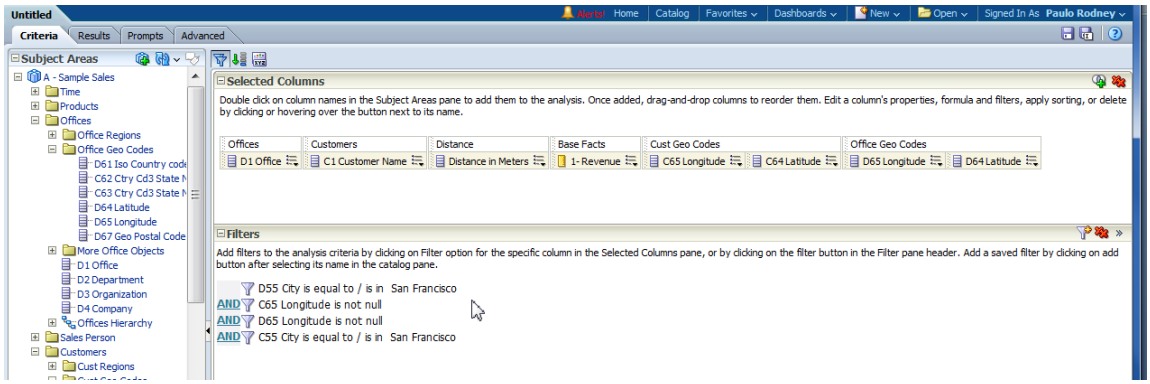


Hands-on portion of the example

Click on new Analysis and select the Sample Sales subject area. Add the columns shown below (except the Distance in Meters one) to the analysis.

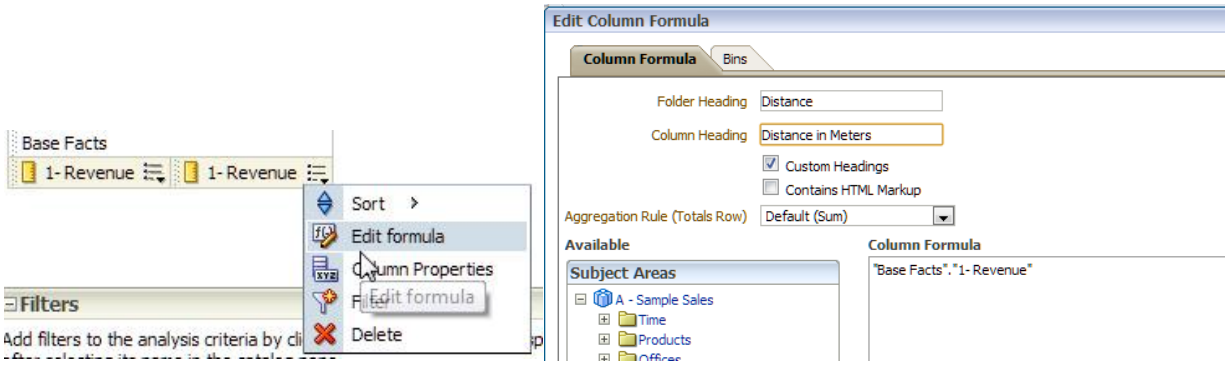


Add a Filter for D55 City and C55 City is equal to/is in San Francisco click on Results.



Modify the data format to include 3 decimal values for the D65 Longitude and D64 Latitude columns so that the Longitude/Latitude values are not truncated. That is, click on Column Properties, Data Format, Override default number format, set decimal places to 3, and uncheck Use 1000's separator.

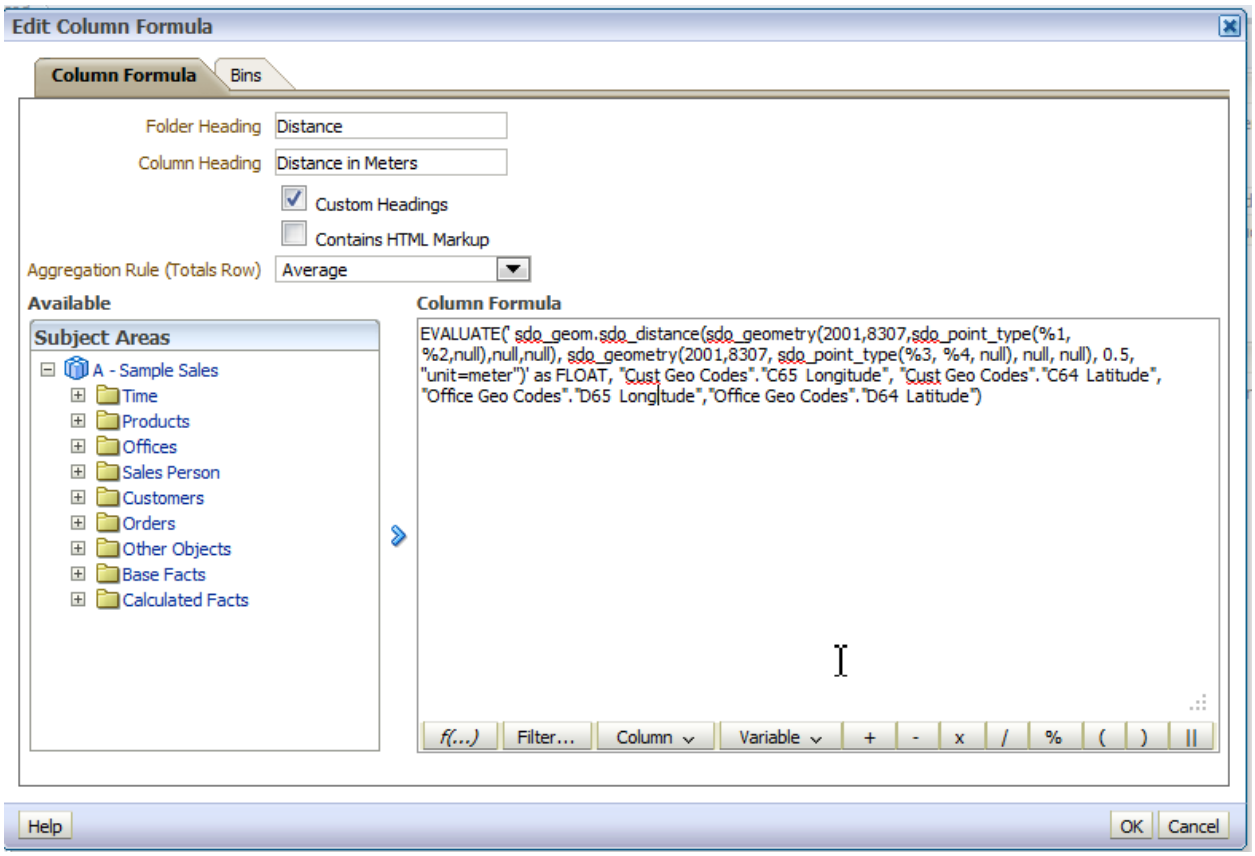
Add filters for C65 Longitude is not null and D65 Longitude is not null. Add another column for the distance. Drag and drop another copy of Base facts 1 – Revenue for example. Edit its formula and check Custom Headings. Set Folder name to Distance and column name to Distance in Meters.



Click OK and then edit the column again to set its formula.

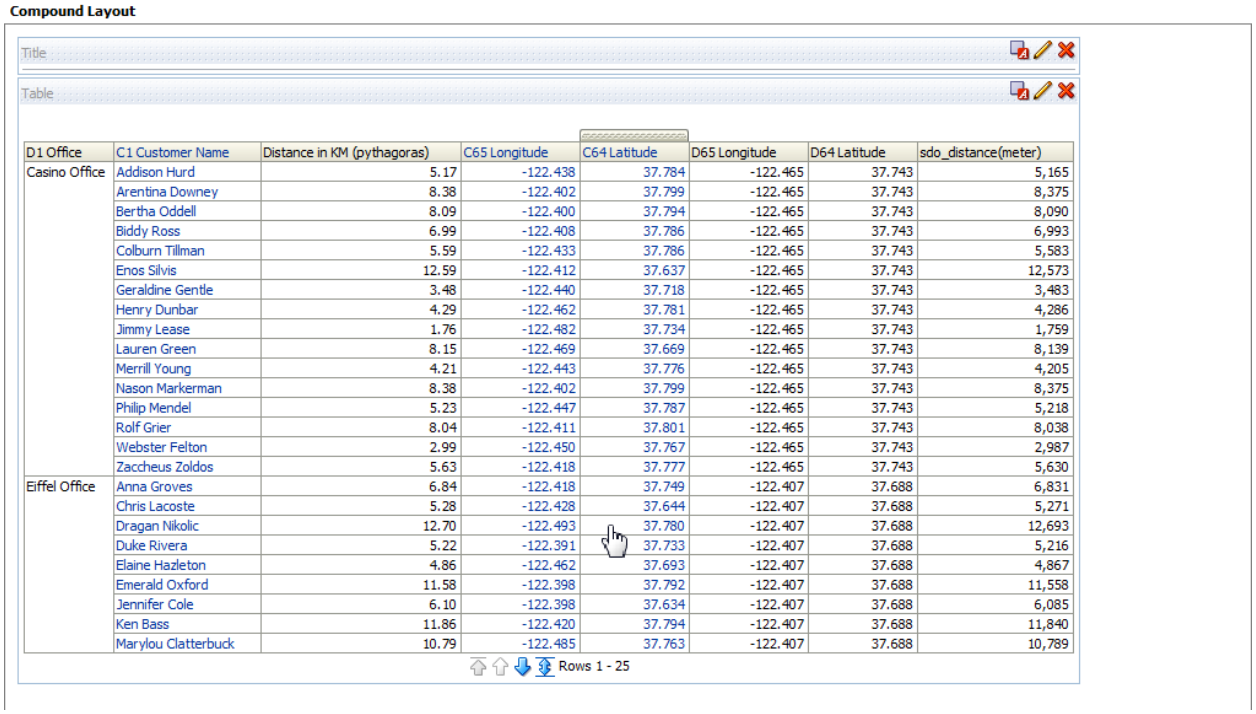
Set the column formula to

```
EVALUATE('
sdo_geom.sdo_distance(sdo_geometry(2001,8307,sdo_point_type(%1, %2,null),null,null), sdo_geometry(2001,8307,
sdo_point_type(%3, %4, null), null, null), 0.5, "unit=meter")' as FLOAT, "Cust Geo Codes"."C65  Longitude", "Cust Geo Codes"."C64  Latitude", "Office Geo Codes"."D65 Longitude","Office Geo Codes"."D64  Latitude")
```



This uses the database function sdo_geom.sdo_distance() to compute the distance in meters between the two points. The SDO_GEOMETRY object contructor used in the sdo_distance function creates a point geometry instance. It takes 5 parameters. The first (2001) specifies that the geometry is a 2-D point. The second (8307) identifies the spatial reference system (WGS84 Longitude/Latitude in this case. AKA GPS coordinates). The third creates a point using the supplied Longitude and Latitude values. The fourth and fifth parameters are null here. They're used when defining lines, polygons, or collections.

Click OK and then on the Results tab.



You can also choose to use some other function to compute the distance between two Longitude/Latitude pairs. For example, the Pythagoras theorem on an equiangular projection as described at the website
http://www.movable-type.co.uk/scripts/latlong.html

The formula is
$x = \Delta lon.\cos(lat)$
$y = \Delta lat$
$d = R.\sqrt{x^2 + y^2}$

where R = 6371 Km, the approximate radius of the earth at the equator. The latitude.longitude values must be in radians (e.g. D55 Longitude * 180/PI in this case). The column formula then becomes

SQRT((("Office Geo Codes"."D65 Longitude" *(180/PI())) - ("Cust Geo Codes"."C65 Longitude" *(180/PI())))*COS((("Office Geo Codes"."D64 Latitude" * (180/PI())) + ("Cust Geo Codes"."C64 Latitude" *(180/PI())))/2)) * ((("Office Geo Codes"."D65 Longitude" *(180/PI())) - ("Cust Geo Codes"."C65 Longitude" *(180/PI())))*COS((("Office Geo Codes"."D64 Latitude" * (180/PI())) + ("Cust Geo Codes"."C64 Latitude" *(180/PI())))/2)) + (("Cust Geo Codes"."C64 Latitude" * (180/PI()) - "Office Geo Codes"."D64 Latitude" * (180/PI())) * ("Cust Geo Codes"."C64 Latitude" * (180/PI()) - "Office Geo Codes"."D64 Latitude" *(180/PI())))) * 6371