

LAB 2: CONNECTING MULTIPLE DATA SOURCES

**BY
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LAB: CONNECTING TO AN ONLINE DATA SOURCE

MODULE OUTCOMES

- ▶ Connect multiple data sets in power query
- ▶ Creating a new data model
- ▶ Create interesting charts with those connections

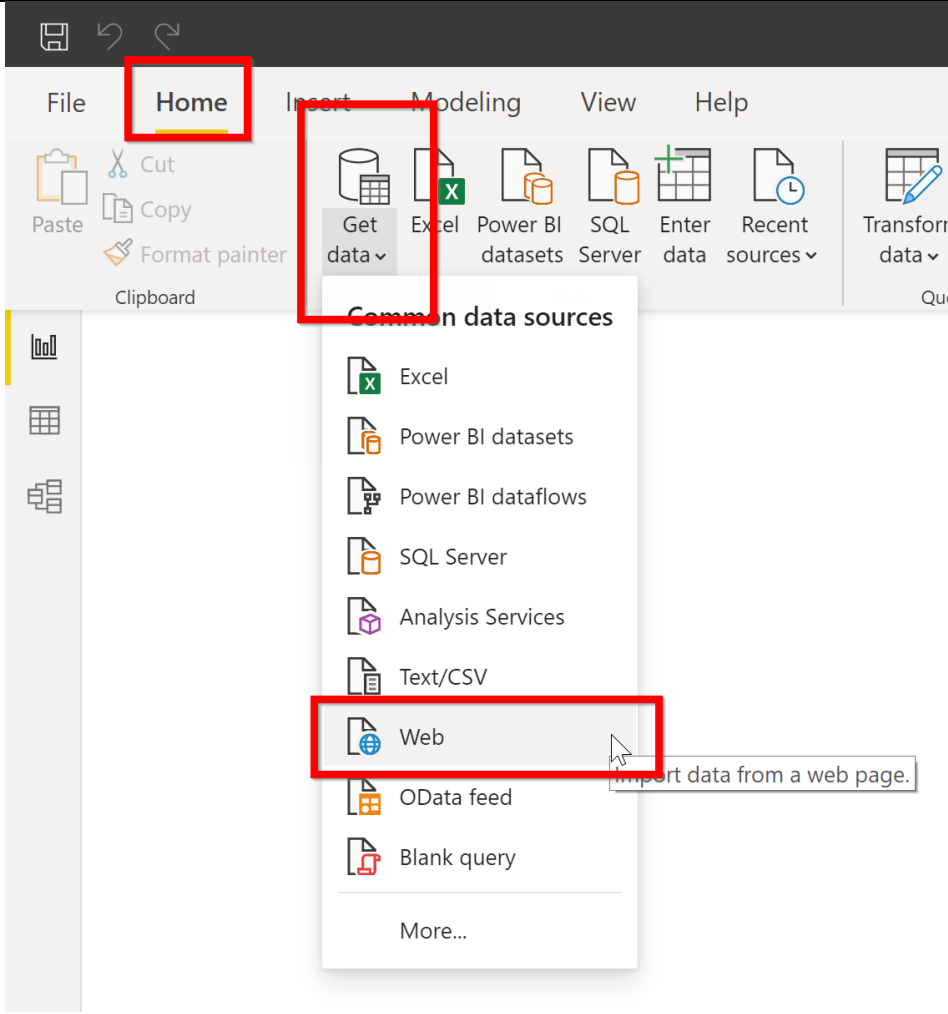
DESCRIPTION

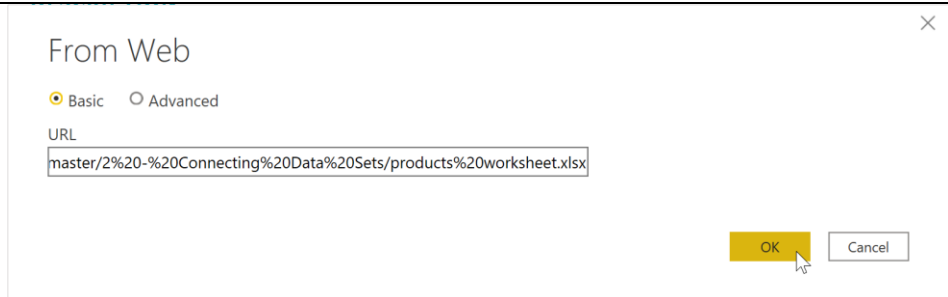
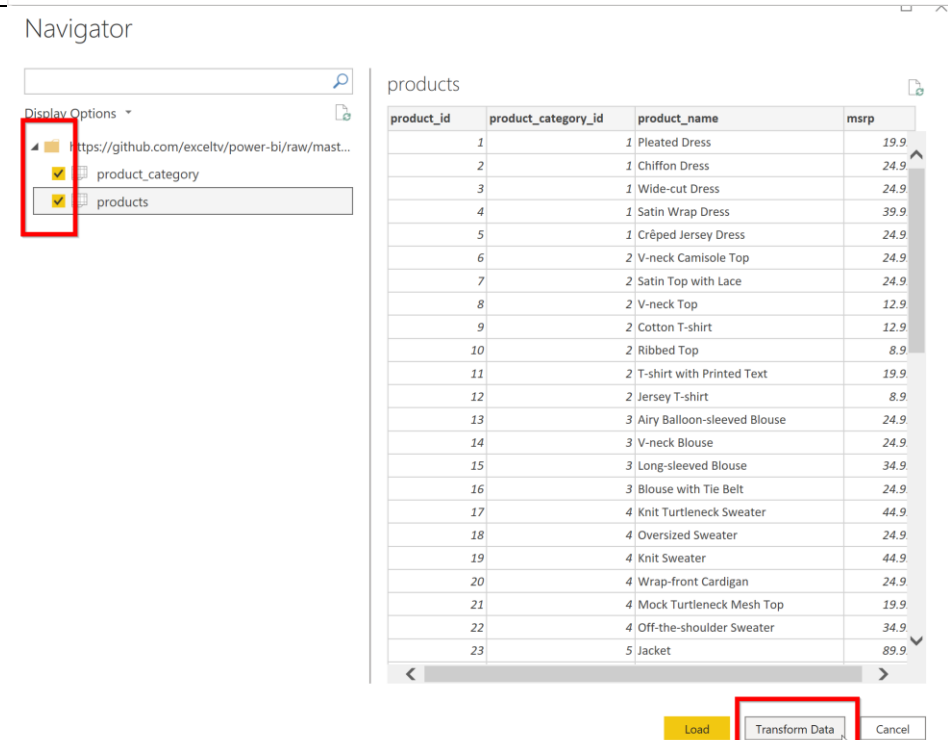
This lab relies on the following files:

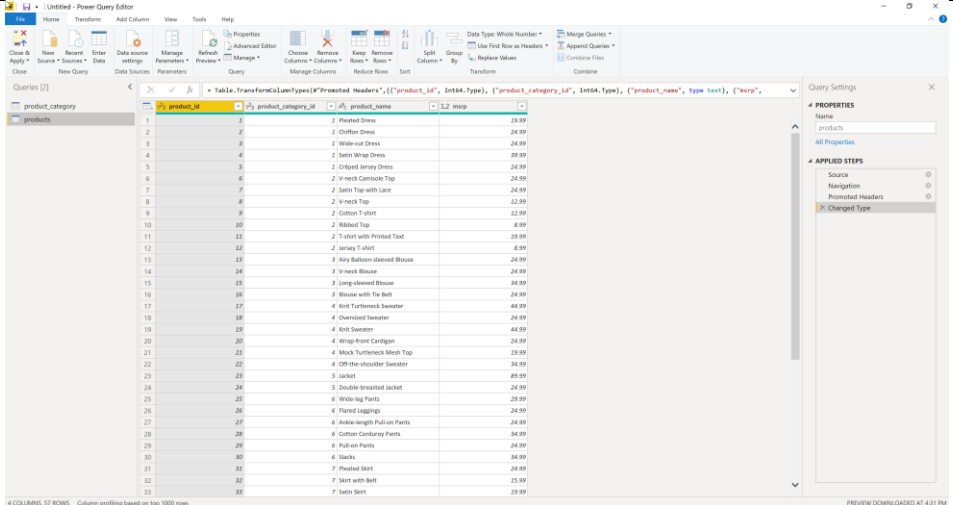
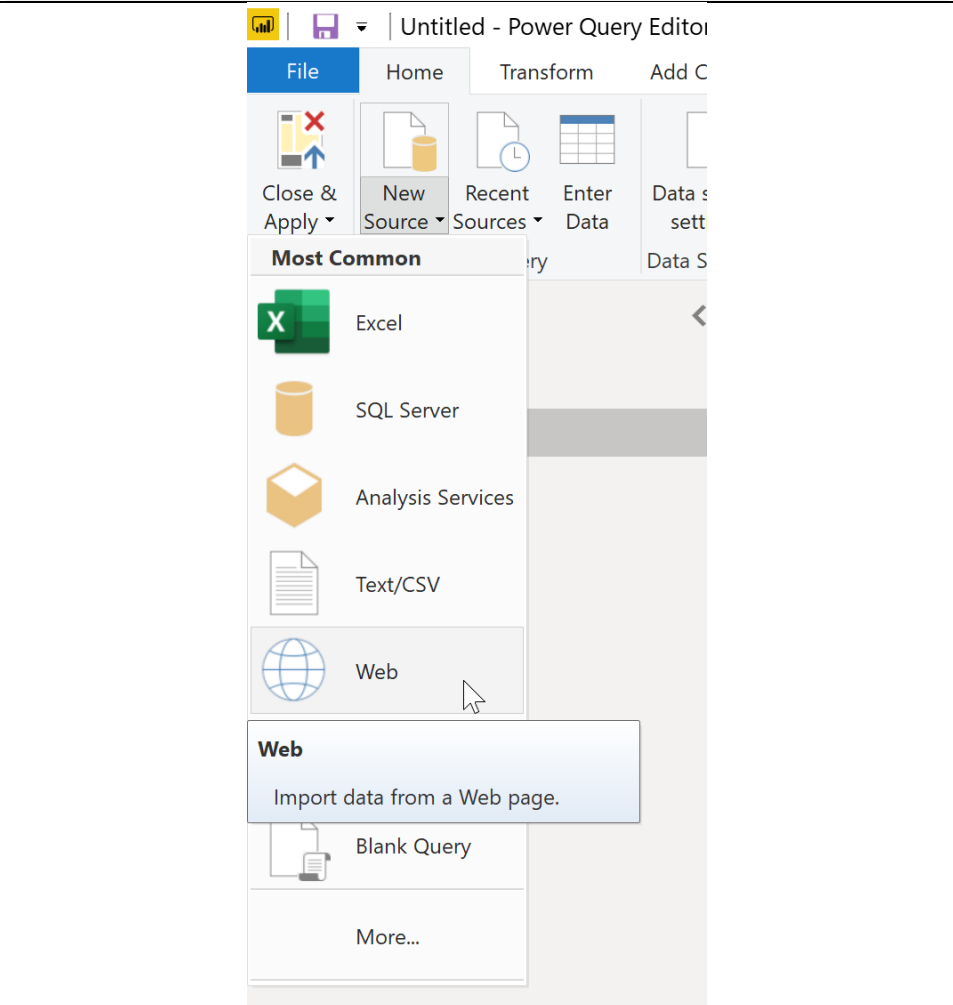
- ▶ products worksheet.xlsx - <https://github.com/exceltv/power-bi/raw/master/2%20-%20Connecting%20Data%20Sets/products%20worksheet.xlsx>
- ▶ store list.xlsx – <https://github.com/exceltv/power-bi/raw/master/2%20-%20Connecting%20Data%20Sets/store%20list.xlsx>
- ▶ transactions.csv – <https://github.com/exceltv/power-bi/raw/master/2%20-%20Connecting%20Data%20Sets/transactions.csv>


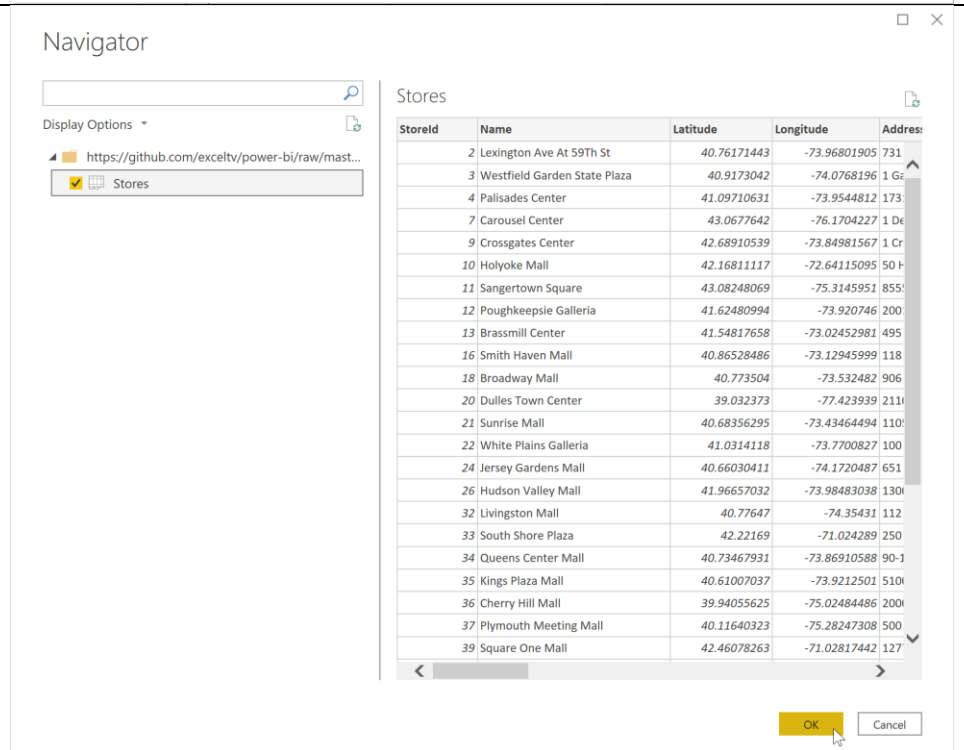

Use the links next to each of the files to connect the files.


STEP-BY-STEP INSTRUCTIONS

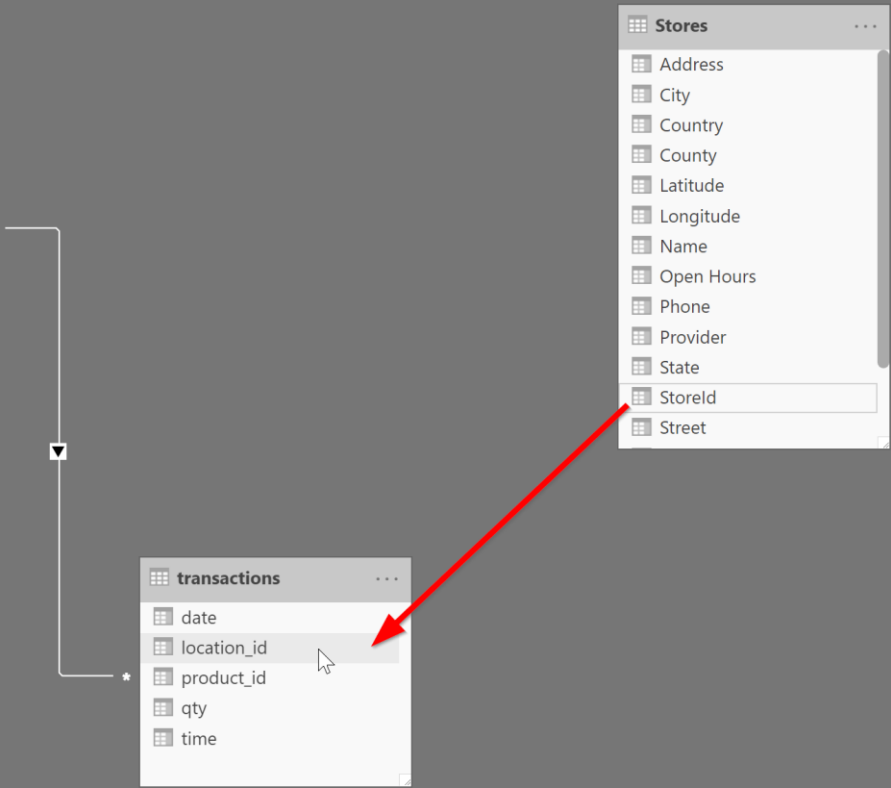
Click Steps	Screen Shots
<div>1. Open Power BI</div> <div>2. Click Home > Get data > Web</div>	 <p>The screenshot shows the Power BI ribbon with the 'Home' tab selected. The 'Get data' button is highlighted, and the 'Common data sources' dropdown menu is open, showing 'Web' as the selected option. A tooltip for 'Web' says 'Import data from a web page.'</p>
<div>3. We're going to bring the products worksheet.xlsx workbook into Power BI.</div> <div>Scroll up. Copy the URL next to the</div>	<div><div>DESCRIPTION</div><div>This lab relies on the following files:</div><div><div>▶ products worksheet.xlsx - https://github.com/exceltv/power-bi/raw/master/2%20Connecting%20Data%20Sets/products%20worksheet.xlsx</div></div></div>

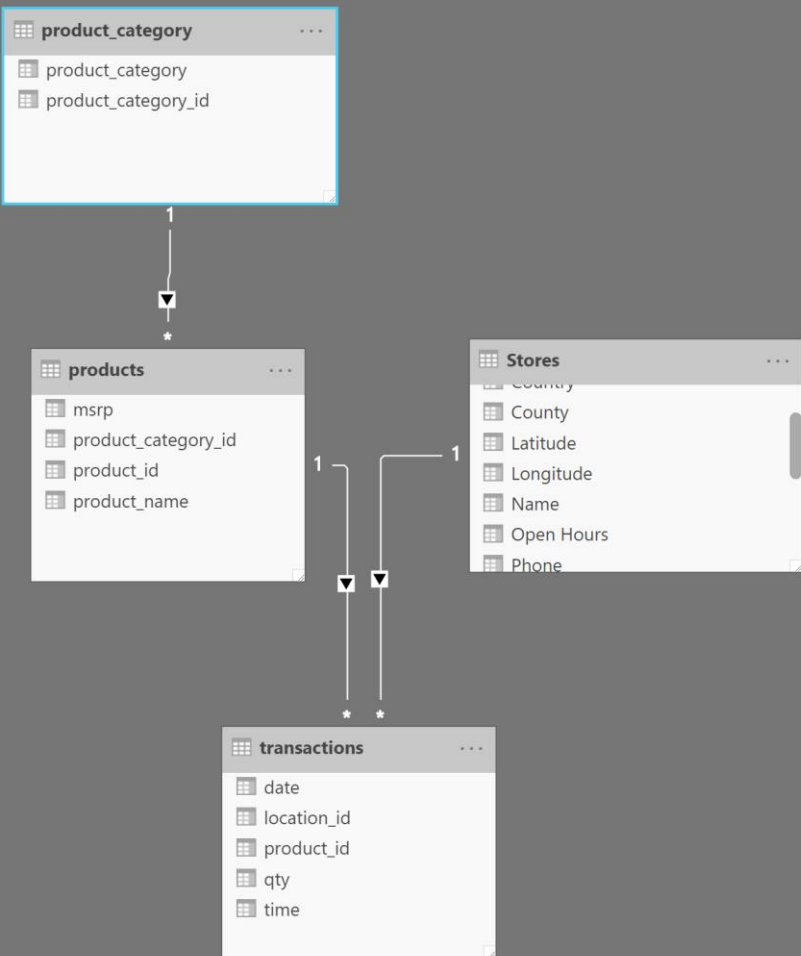
Click Steps	Screen Shots
filename. This is the URL we will use to connect to the file stored on GitHub	
<p>4. Paste the filepath into the URL text field.</p> <p>5. Click OK</p>	
<p>6. Check the product_category and products tables to bring them in.</p> <p>7. Click Transform Data.</p>	

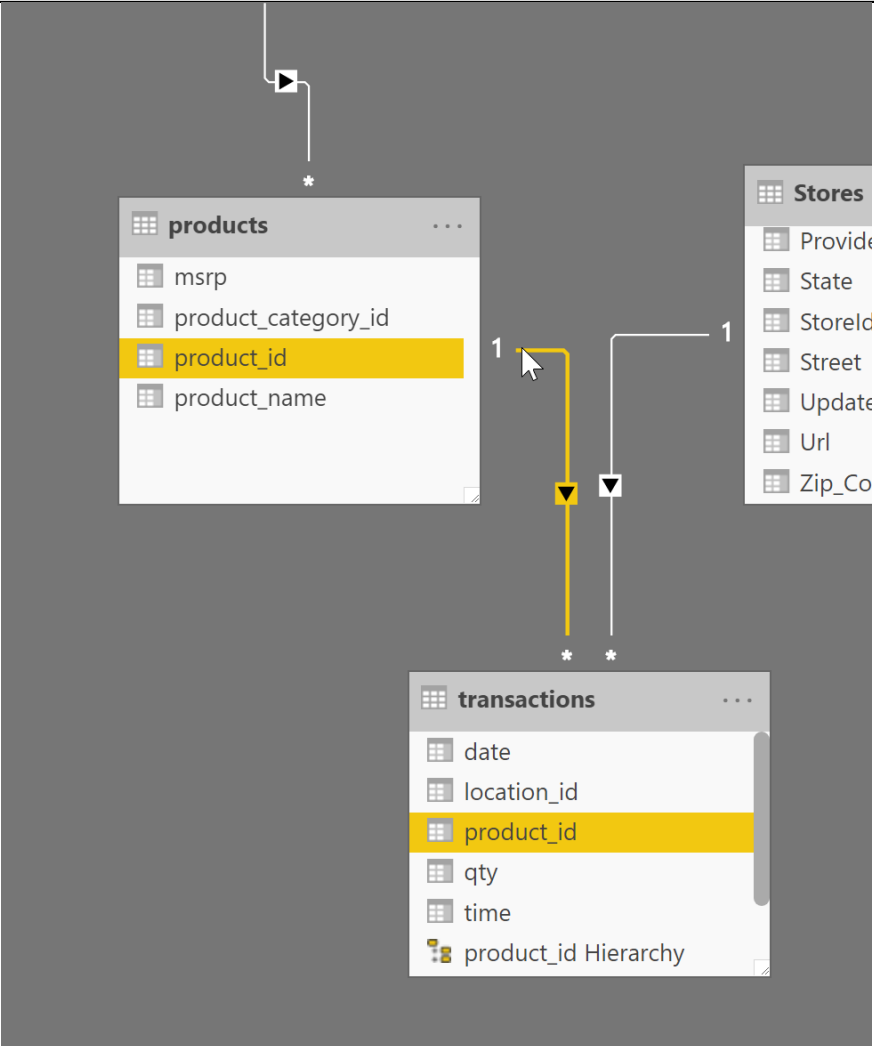
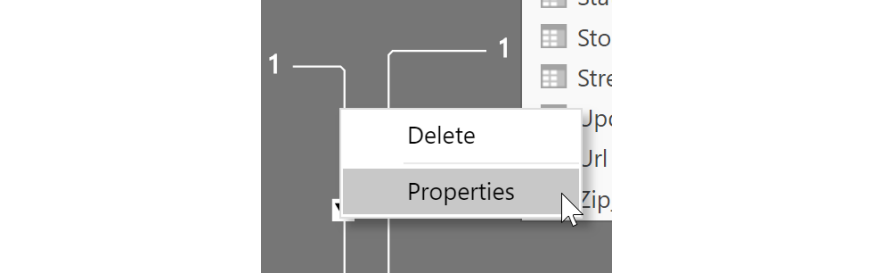
Click Steps	Screen Shots
<p>8. If everything goes according to plan, your screen should look like this.</p>	
<p>9. Now let's bring in store list.xlsx.</p> <p>10. From inside Power Query, click on the Home Ribbon. Then click New Source > Web.</p>	

Click Steps	Screen Shots
<p>11. Copy the URL next to store list.xlsx. Paste it in the URL text field.</p> <p>12. Click OK.</p>	
<p>13. Click the checkbox next to Stores.</p> <p>14. Click OK.</p>	
<p>15. Now let's add the transactions.csv file. Click Home > Get data > Web.</p> <p>16. Copy the URL next to transactions.csv and paste it in the URL text field in the From Web dialog box. Click OK.</p> <p>17. If all went well, you should see the list of</p>	

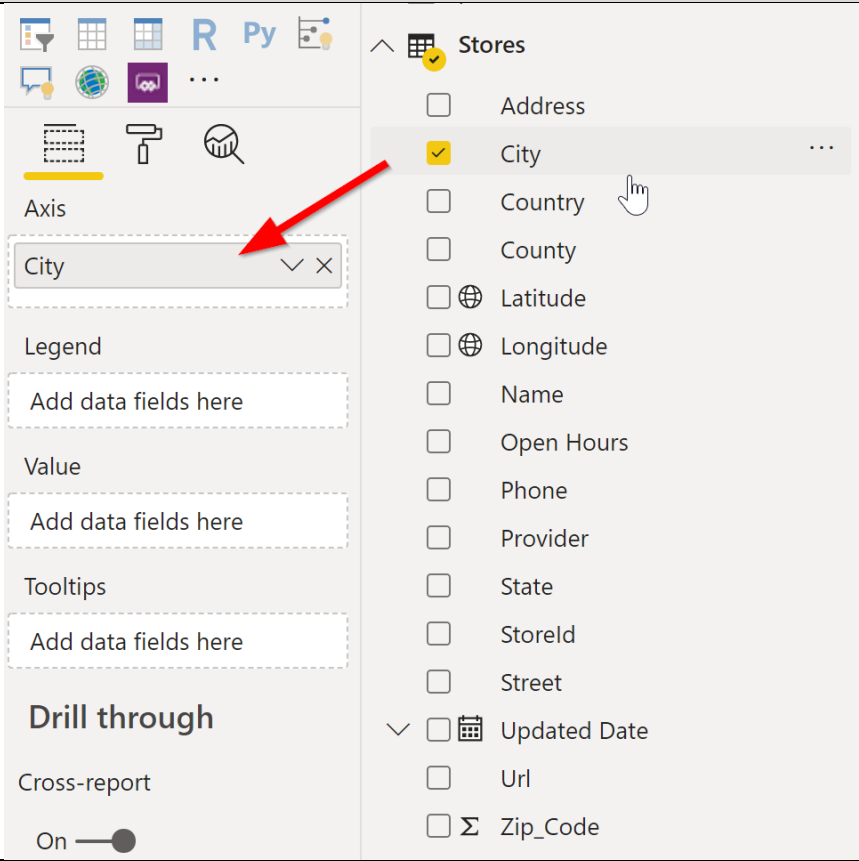
Click Steps	Screen Shots
<p>queries as shown in the screen shot.</p> <p>18. Click Close & Apply in the upper left hand corner.</p>	
Creating the Data Model	
<p>19. Now let's create the data model. This part is very similar to Microsoft Access.</p> <p>20. Click the Model view button on the left hand side.</p>	 <p>The screenshot shows the Power BI ribbon with the 'View' tab selected. The 'Model' button, represented by a database cylinder icon, is highlighted with a yellow dashed border. A tooltip labeled 'Model' is visible next to the button.</p>

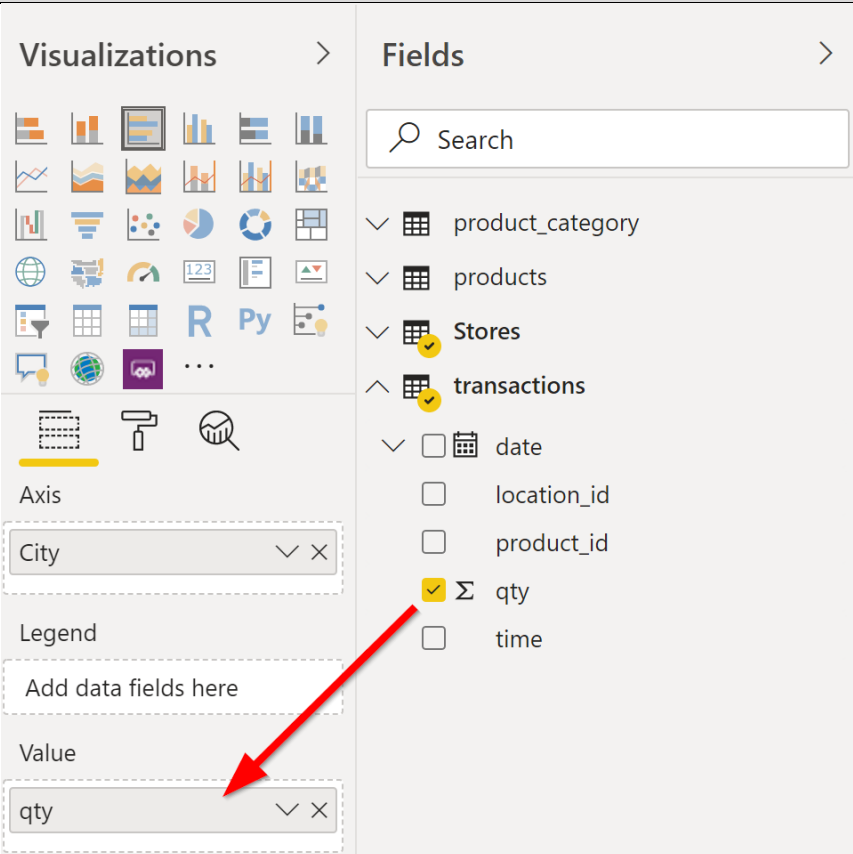
Click Steps	Screen Shots
<p>21. Notice Power BI has already connected multiple tables</p> <p>22. Make the final connection by dragging StoreID on top of location_id. Store ID is the primary key to location_id.</p>	 <p>The screenshot displays the Power BI Data Model view. Two tables are visible: 'transactions' and 'Stores'. The 'transactions' table has fields: date, location_id, product_id, qty, and time. The 'Stores' table has fields: Address, City, Country, County, Latitude, Longitude, Name, Open Hours, Phone, Provider, State, StoreID, and Street. A relationship line connects the 'location_id' field in the 'transactions' table to the 'StoreID' field in the 'Stores' table. A red arrow points to the 'StoreID' field in the 'Stores' table.</p>

Click Steps	Screen Shots
<p>23. Redraw the tables so that they appear in a funnel shape.</p>	 <pre> graph TD PC[product_category] -- "1 to *" --> P[products] P -- "1 to *" --> T[transactions] P -- "1 to *" --> S[Stores] S -- "1 to *" --> T </pre> <p>The screenshot displays a data model in Power BI with the following tables and relationships:</p> <ul style="list-style-type: none"> product_category (top): Contains fields <code>product_category</code> and <code>product_category_id</code>. products (middle-left): Contains fields <code>msrp</code>, <code>product_category_id</code>, <code>product_id</code>, and <code>product_name</code>. Stores (middle-right): Contains fields <code>Country</code>, <code>County</code>, <code>Latitude</code>, <code>Longitude</code>, <code>Name</code>, <code>Open Hours</code>, and <code>Phone</code>. transactions (bottom): Contains fields <code>date</code>, <code>location_id</code>, <code>product_id</code>, <code>qty</code>, and <code>time</code>. <p>Relationships are shown as follows:</p> <ul style="list-style-type: none"> product_category to products: 1 to many relationship. products to transactions: 1 to many relationship. products to Stores: 1 to many relationship. Stores to transactions: 1 to many relationship.

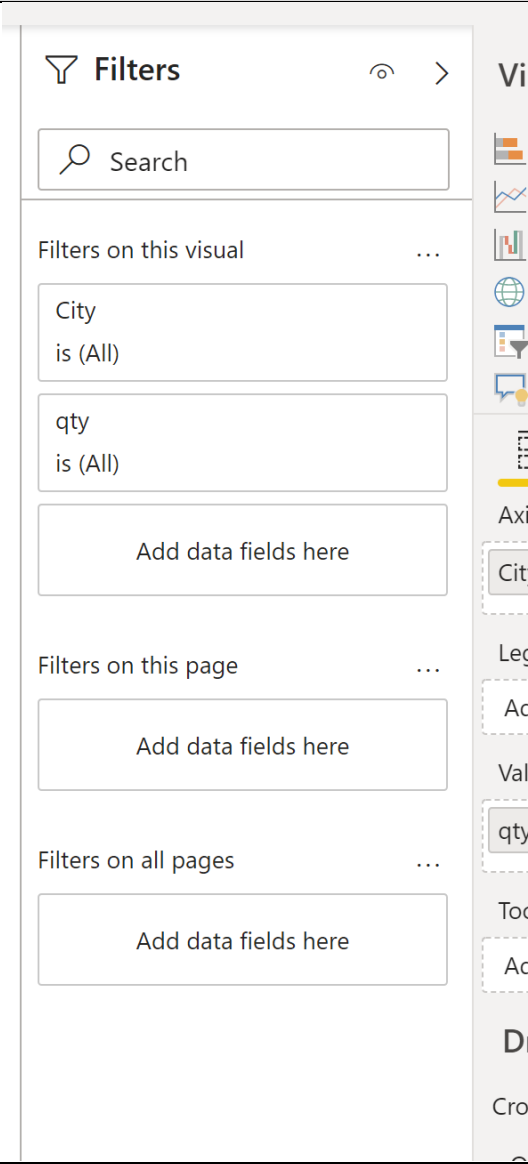
Click Steps	Screen Shots
<p>24. Place your mouse over the relationship between products and transactions. The link will highlight product_id between both links.</p>	 <p>The screenshot shows the Power BI data model. Two tables, 'products' and 'transactions', are displayed. The 'products' table has fields: msrp, product_category_id, product_id, and product_name. The 'transactions' table has fields: date, location_id, product_id, qty, time, and product_id Hierarchy. A relationship line connects the 'product_id' field in the 'products' table to the 'product_id' field in the 'transactions' table. The relationship is a one-to-many relationship, indicated by '1' on the 'products' side and '*' on the 'transactions' side. The 'product_id' field in both tables is highlighted in yellow. A mouse cursor is hovering over the relationship line, which is also highlighted in yellow. A 'Stores' table is partially visible on the right side of the screen.</p>
<p>25. Right click onto the link and select properties.</p>	 <p>The screenshot shows the same Power BI data model as the previous screenshot. A right-click context menu is open over the relationship line between the 'products' and 'transactions' tables. The menu has two options: 'Delete' and 'Properties'. The 'Properties' option is selected. The 'product_id' field in both tables is highlighted in yellow. A 'Stores' table is partially visible on the right side of the screen.</p>

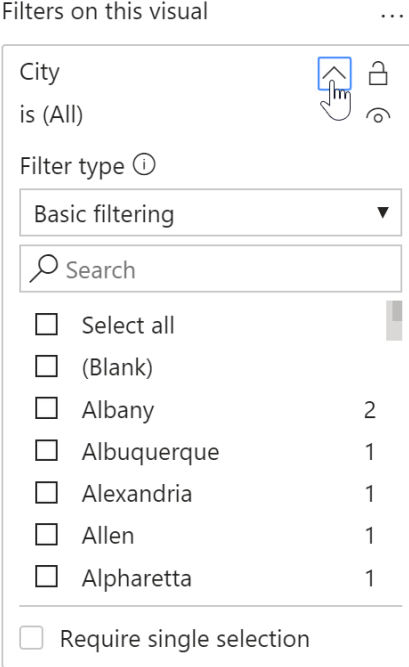
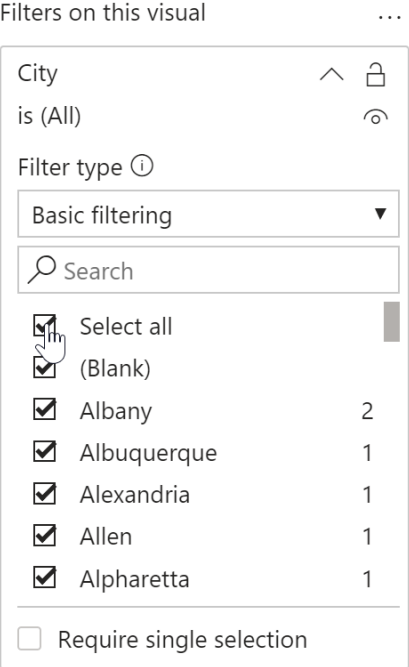
Click Steps	Screen Shots																																				
<p>26. From the Cross filter direction dropdown select Both to make the connection cross directional.</p> <p>27. Click OK.</p>	<div><div>Edit relationship</div><div>Select tables and columns that are related.</div><div><div>transactions</div><table><thead><tr><th>date</th><th>time</th><th>location_id</th><th>product_id</th><th>qty</th></tr></thead><tbody><tr><td>Sunday, May 5, 2013</td><td>4:55:00 PM</td><td>189</td><td>24</td><td>3</td></tr><tr><td>Saturday, December 28, 2013</td><td>4:57:00 PM</td><td>178</td><td>24</td><td>3</td></tr><tr><td>Sunday, March 24, 2013</td><td>10:31:00 AM</td><td>368</td><td>24</td><td>3</td></tr></tbody></table></div><div><div>products</div><table><thead><tr><th>product_id</th><th>product_category_id</th><th>product_name</th><th>msrp</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>Pleated Dress</td><td>19.99</td></tr><tr><td>2</td><td>1</td><td>Chiffon Dress</td><td>24.99</td></tr><tr><td>3</td><td>1</td><td>Wide-cut Dress</td><td>24.99</td></tr></tbody></table></div><div>Cardinality</div><div>Many to one (*:1)</div><div><div><input checked="" type="checkbox"/> Make this relationship active</div><div><input type="checkbox"/> Assume referential integrity</div></div><div><div>Cross filter direction</div><div>Both</div></div><div><input type="checkbox"/> Apply security filter in both directions</div><div><div>OK</div><div>Cancel</div></div></div>	date	time	location_id	product_id	qty	Sunday, May 5, 2013	4:55:00 PM	189	24	3	Saturday, December 28, 2013	4:57:00 PM	178	24	3	Sunday, March 24, 2013	10:31:00 AM	368	24	3	product_id	product_category_id	product_name	msrp	1	1	Pleated Dress	19.99	2	1	Chiffon Dress	24.99	3	1	Wide-cut Dress	24.99
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<p>28. Click the Report view button</p>	<div><div><div><div></div><div></div><div></div></div><div>Report</div><div></div></div></div>																																				
<p>29. Let's create chart for sales by the top cities.</p> <p>Click the clustered bar chart to insert a new bar chart.</p>	<div><div>Clustered bar chart</div><div><div>Filters</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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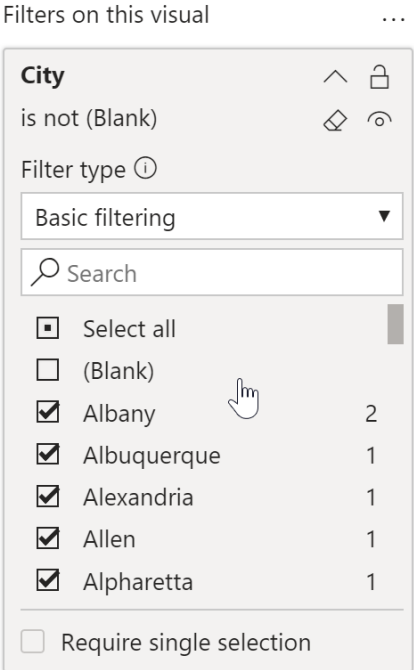
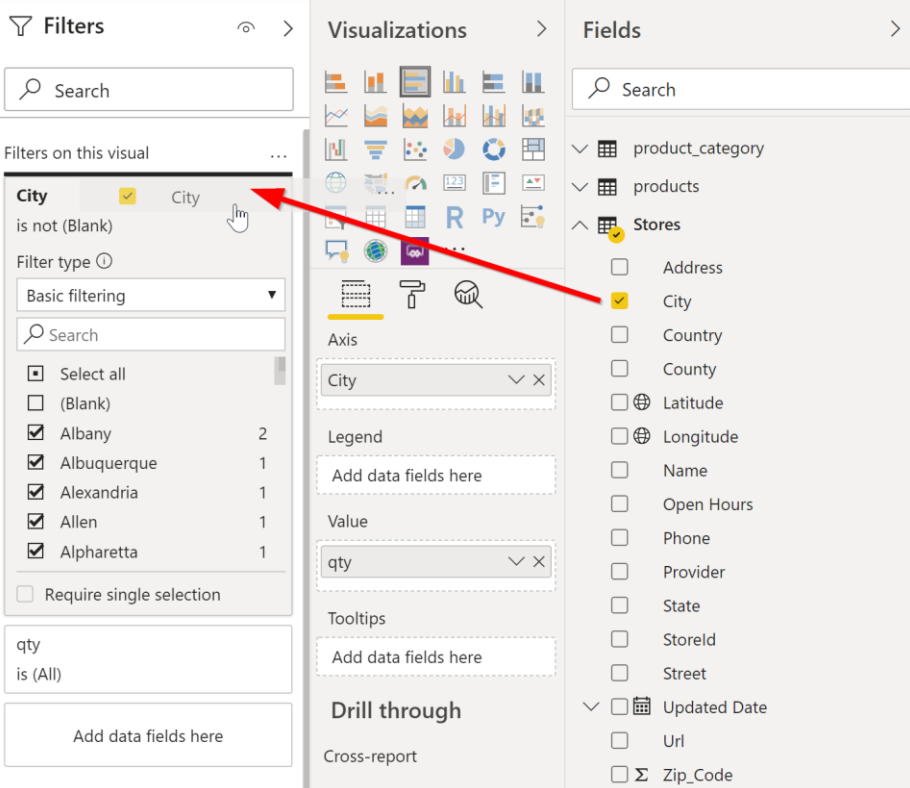
Click Steps	Screen Shots
<p>30. Drag City (from the Stores table)</p>	 <p>The screenshot shows the Power BI interface. On the right, the 'Stores' table is expanded in the Fields pane, listing fields: Address, City (checked), Country, County, Latitude, Longitude, Name, Open Hours, Phone, Provider, State, StoreId, Street, Updated Date (expanded), Url, and Zip_Code. On the left, the Visuals pane shows the 'Axis' section with 'City' added. A red arrow points from the 'City' field in the Fields pane to the 'City' field in the 'Axis' section.</p>

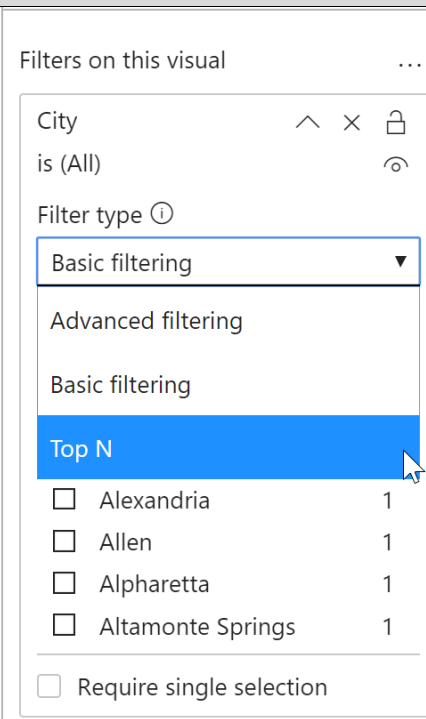
Click Steps	Screen Shots
<p>31. Drag qty over to the Value field well.</p>	 <p>The screenshot shows the Power BI interface. On the left, the 'Visualizations' pane has four field wells: 'Axis' (containing 'City'), 'Legend', 'Add data fields here', and 'Value' (containing 'qty'). A red arrow points from the 'qty' field in the 'Value' well to the 'qty' field in the 'Fields' pane. The 'Fields' pane on the right shows a list of tables: 'product_category', 'products', 'Stores', and 'transactions'. The 'transactions' table is expanded, showing fields: 'date', 'location_id', 'product_id', 'qty' (checked with a yellow checkmark and a sum symbol), and 'time'.</p>

Click Steps	Screen Shots																																												
<p>32. Notice the are a lot of blank rows in our city column in the database. Let's remove those.</p>	<p>A horizontal bar chart titled "qty by City". The y-axis is labeled "City" and lists the following categories: (Blank), New York City, Washington, Houston, Los Angeles, Atlanta, Las Vegas, Glendale, Louisville, Paramus, Columbus, San Francisco, Forth Worth, Tampa, Portland, Philadelphia, San Jose, San Antonio, Cincinnati, Farmington, and New Orleans. The x-axis is labeled "qty" and ranges from 0K to 30K with major gridlines every 5K. The bar for "(Blank)" is the longest, extending to approximately 29K. The bars for the other cities are much shorter, all below 5K. A vertical scrollbar on the right side of the chart indicates that the list of cities is scrollable, which corresponds to the many blank rows mentioned in the text.</p> <table border="1"><thead><tr><th>City</th><th>qty (approx.)</th></tr></thead><tbody><tr><td>(Blank)</td><td>29K</td></tr><tr><td>New York City</td><td>3K</td></tr><tr><td>Washington</td><td>2K</td></tr><tr><td>Houston</td><td>2K</td></tr><tr><td>Los Angeles</td><td>2K</td></tr><tr><td>Atlanta</td><td>2K</td></tr><tr><td>Las Vegas</td><td>2K</td></tr><tr><td>Glendale</td><td>2K</td></tr><tr><td>Louisville</td><td>2K</td></tr><tr><td>Paramus</td><td>2K</td></tr><tr><td>Columbus</td><td>2K</td></tr><tr><td>San Francisco</td><td>2K</td></tr><tr><td>Forth Worth</td><td>2K</td></tr><tr><td>Tampa</td><td>2K</td></tr><tr><td>Portland</td><td>2K</td></tr><tr><td>Philadelphia</td><td>2K</td></tr><tr><td>San Jose</td><td>2K</td></tr><tr><td>San Antonio</td><td>2K</td></tr><tr><td>Cincinnati</td><td>2K</td></tr><tr><td>Farmington</td><td>2K</td></tr><tr><td>New Orleans</td><td>2K</td></tr></tbody></table>	City	qty (approx.)	(Blank)	29K	New York City	3K	Washington	2K	Houston	2K	Los Angeles	2K	Atlanta	2K	Las Vegas	2K	Glendale	2K	Louisville	2K	Paramus	2K	Columbus	2K	San Francisco	2K	Forth Worth	2K	Tampa	2K	Portland	2K	Philadelphia	2K	San Jose	2K	San Antonio	2K	Cincinnati	2K	Farmington	2K	New Orleans	2K
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Click Steps	Screen Shots
<p>33. Make sure your Filters tab is expanded.</p>	 A screenshot of the Power BI interface showing the 'Filters' pane on the right side. The pane is titled 'Filters' and has a search bar at the top. Below the search bar, there are three sections: 'Filters on this visual', 'Filters on this page', and 'Filters on all pages'. Each section has a list of filters and an 'Add data fields here' button. The 'Filters on this visual' section shows two filters: 'City is (All)' and 'qty is (All)'. The 'Filters on this page' and 'Filters on all pages' sections are currently empty. To the right of the Filters pane, a portion of the 'Visualizations' pane is visible, showing various chart icons and a list of fields including 'City', 'Leg', 'Ac', 'Val', 'qty', 'To', 'Ac', 'D', and 'Cro'.

Click Steps	Screen Shots	
<p>34. Click on City to expand it.</p>		 <p>Filters on this visual ...</p> <p>City is (All)</p> <p>Filter type ⓘ</p> <p>Basic filtering ▼</p> <p>Search</p> <ul style="list-style-type: none"> <input type="checkbox"/> Select all <input type="checkbox"/> (Blank) <input type="checkbox"/> Albany 2 <input type="checkbox"/> Albuquerque 1 <input type="checkbox"/> Alexandria 1 <input type="checkbox"/> Allen 1 <input type="checkbox"/> Alpharetta 1 <p><input type="checkbox"/> Require single selection</p>
<p>35. Click Select All to select everything.</p>		 <p>Filters on this visual ...</p> <p>City is (All)</p> <p>Filter type ⓘ</p> <p>Basic filtering ▼</p> <p>Search</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Select all <input checked="" type="checkbox"/> (Blank) <input checked="" type="checkbox"/> Albany 2 <input checked="" type="checkbox"/> Albuquerque 1 <input checked="" type="checkbox"/> Alexandria 1 <input checked="" type="checkbox"/> Allen 1 <input checked="" type="checkbox"/> Alpharetta 1 <p><input type="checkbox"/> Require single selection</p>

Click Steps	Screen Shots
<p>36. Uncheck (blank) to remove it.</p>	
<p>37. Now let's show only the top 10.</p> <p>You'll need to place another city filter onto the visual.</p>	

Click Steps	Screen Shots
<p>38. When the new filter is placed. Click the Filter Type drop down and select Top N.</p>	
<p>39. Type 10 in the Show Items value field.</p> <p>40. Drag qty from the transactions table to the By value field well.</p>	