Integrating Excel Workbooks into the Power BI Service

Lab Time: 60 minutes

Lab Folder: C:\Student\Modules\06_Excel\Lab

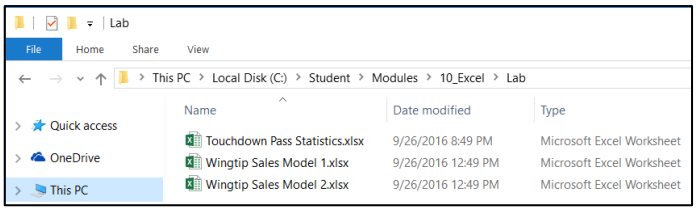
Lab Overview: In this lab you will experiment with several different techniques to integrate Excel workbooks into Power BI within the context of your personal workspace. You will begin by uploading a set of Excel workbooks to OneDrive for Business which is the first step to integrate them into Power BI. After that you will connect to an Excel workbook from Power BI. This will show you how the Power BI service can leverage Excel Online by rendering Excel workbooks in the browser within the context of a Power BI workspace. Next, you will import an Excel workbook into Power BI so you can experience the differences between connecting to workbooks and importing them. You will also learn how to convert Excel workbooks which contain Power View reports into Power BI reports that contain no dependencies on Microsoft Silverlight.

In this lab you will also install and work with an Excel add-in named **Power BI publisher for Excel** which allows you to pin elements from an Excel worksheet such as PivotCharts onto a Power BI Dashboard. In the final exercise, you will experiment with the **Analyze in Excel** feature of Power BI to connect an Excel workbook to a Power BI dataset which makes it possible to directly analyze data in a Power BI dataset using familiar Excel data analytics tools such as PivotTable and PivotCharts.

Exercise 1: Upload Two Excel Workbooks to OneDrive for Business

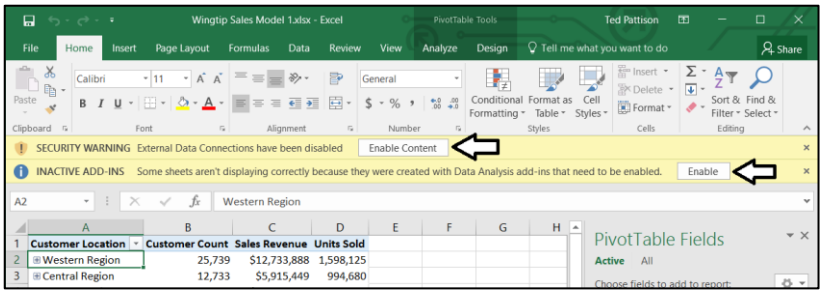
You'll start this exercise with two identical Excel workbook files named **Wingtip Sales Model 1.xslx** and **Wingtip Sales Model 2.xslx**. The reason this lab provides two identical workbook files is that you will connect to one of these Excel workbooks in Exercise 2 and then you will import the other workbook in Exercise 3. Your first task will be to launch Microsoft Excel 2016 and inspect the worksheets and the data model inside one of these workbooks. After that, you will upload both Excel workbook files to OneDrive for Business to prepare them for integration with Power BI. In the final step of this exercise, you will open one of these workbooks in Excel Online to see how it renders through the browser and provides the user with interactive behavior.

1. Using Windows Explorer, navigate to the folder at **C:\Student\Modules\06_Excel\Lab**. You should see this folder contains three Excel workbook files named **Touchdown Pass Statistics.xlsx**, **Wingtip Sales Model 1.xslx** and **Wingtip Sales Model 2.xslx**.



In this exercise, you will not be required to make changes to any Excel workbook file. Instead, the lab provides Excel workbook files which already contain queries and a data model for a complete data analytics solution. As you will see, these Excel workbooks contain a data model built using the same SQL Azure database that you used when working with the Power BI Desktop project named **Wingtip Sales Analysis.pbix**. One of the key takeaways from this lab is to observe that the data modeling process in Excel is very similar to the data modeling process in Power BI desktop. However, there are a few noteworthy differences. For example, Excel makes it possible to add a KPI directly into the data model. Power BI Desktop does not.

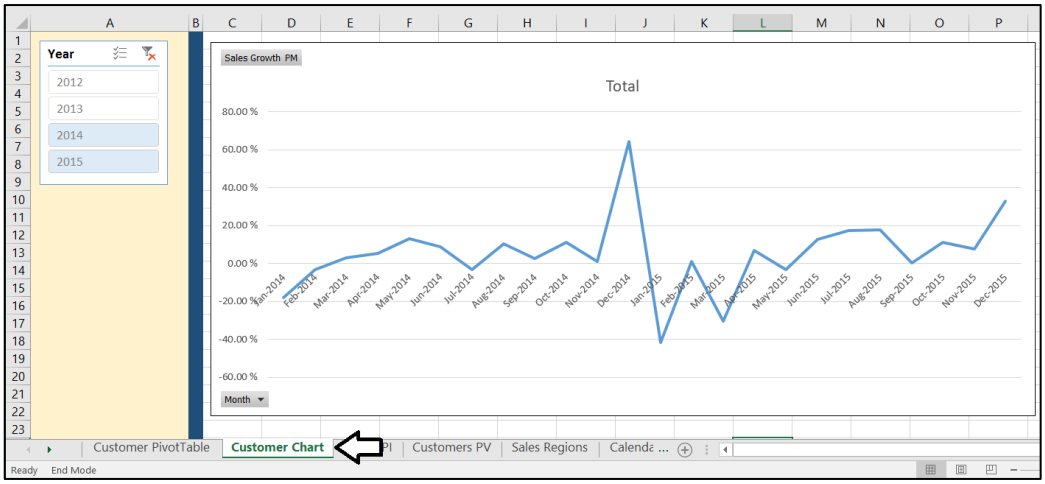
2. Launch Microsoft Excel 2016.
3. In Excel 2016, open the Excel workbook file named **Wingtip Sales Model 1.xslx**.
4. You will see a **SECURITY WARNING** indicating external data connections have been disabled. Click the **Enable Content** button.
5. You might also see an **INACTIVE ADD**-INS warning. If so, click the **Enable** button to active any required data analysis add-ins.



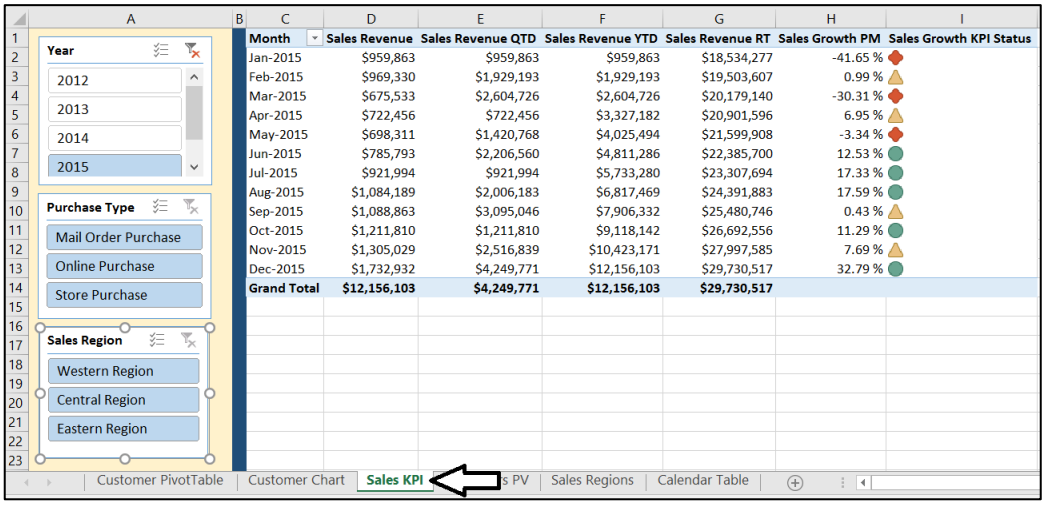
6. You can see that the first worksheet in this workbook contains an Excel PivotTable. Experiment with the PivotTable by drilling down to the level of zipcodes. For example, drill down to inspect the two zipcodes in Tempe, AZ.

Customer Location	Customer Count	Sales Revenue	Units Sold
Western Region	**25,739**	**$12,733,888**	**1,598,125**
AZ	**3,133**	**$1,515,935**	**223,647**
Phoenix	849	$422,551	76,076
Scottsdale	518	$253,770	40,646
Surprise	180	$75,097	14,386
Tempe	435	$207,790	23,205
85281	224	$110,508	13,964
85283	211	$97,282	9,241
Tucson	1,151	$556,727	69,334
CA	**10,682**	**$5,255,912**	**623,260**
Alameda	193	$105,660	13,704

7. Use the worksheet navigation tab at the bottom of the workbook to navigate to the worksheet named **Customer Chart**. Experiment with the **Year** slicer to see how the chart updates when you select individual years such as 2012, 2013, 2014 and 2015.

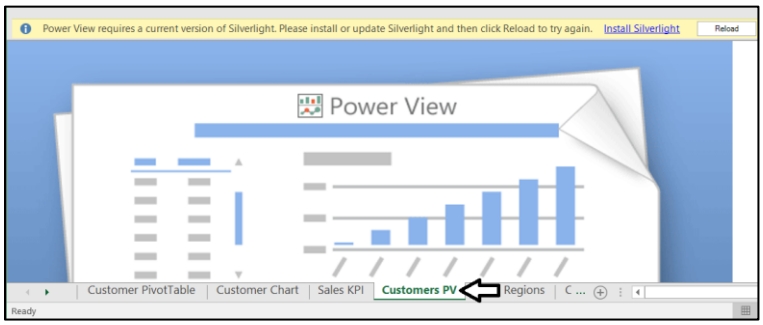


8. Navigate to the worksheet named **Sales KPI**. Experiment with slicers on the left to drill down into more granular levels of detail.

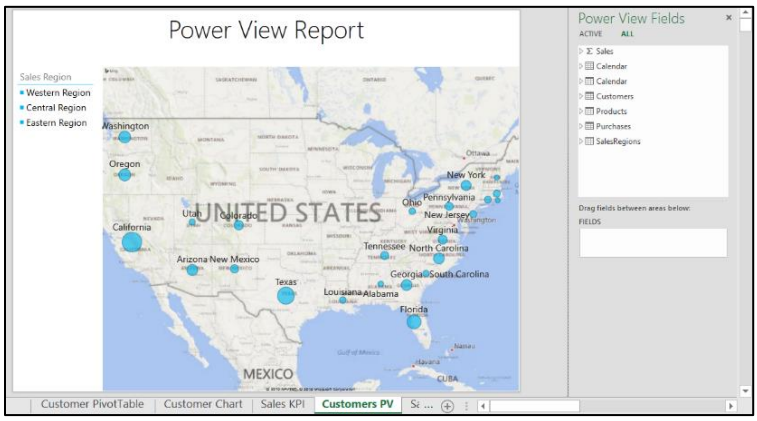


Month	Sales Revenue	Sales Revenue QTD	Sales Revenue YTD	Sales Revenue RT	Sales Growth PM	Sales Growth KPI Status
Jan-2015	$959,863	$959,863	$959,863	$18,534,277	-41.65 %	
Feb-2015	$969,330	$1,929,193	$1,929,193	$19,503,607	0.99 %	
Mar-2015	$675,533	$2,604,726	$2,604,726	$20,179,140	-30.31 %	
Apr-2015	$722,456	$722,456	$3,327,182	$20,901,596	6.95 %	
May-2015	$698,311	$1,420,768	$4,025,494	$21,599,908	-3.34 %	
Jun-2015	$785,793	$2,206,560	$4,811,286	$22,385,700	12.53 %	
Jul-2015	$921,994	$921,994	$5,733,280	$23,307,694	17.33 %	
Aug-2015	$1,084,189	$2,006,183	$6,817,469	$24,391,883	17.59 %	
Sep-2015	$1,088,863	$3,095,046	$7,906,332	$25,480,746	0.43 %	
Oct-2015	$1,211,810	$1,211,810	$9,118,142	$26,692,556	11.29 %	
Nov-2015	$1,305,029	$2,516,839	$10,423,171	$27,997,585	7.69 %	
Dec-2015	$1,732,932	$4,249,771	$12,156,103	$29,730,517	32.79 %	
Grand Total	**$12,156,103**	**$4,249,771**	**$12,156,103**	**$29,730,517**		

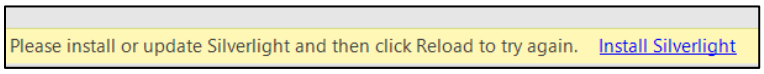
9. Navigate to the worksheet named **Customers PV** which contains a Power View report.
   a) If you are running on a Windows PC or a virtual machine that does not have Silverlight Installed, you will see the error message as the one shown in the following screenshot.



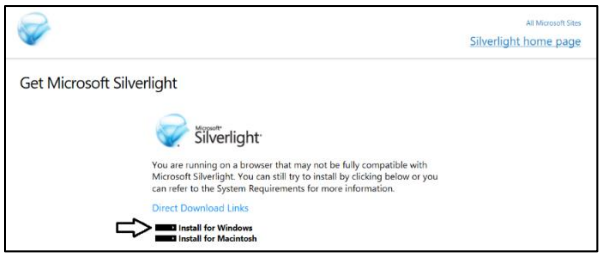
   b) If you are running on a Windows PC or a virtual machine that does already have Silverlight Installed, you should see the report loaded inside the Power View environment as shown in the following screenshot.



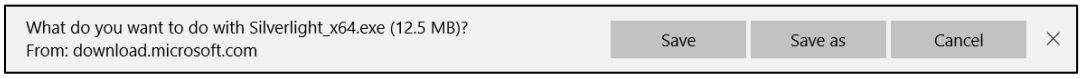
10. Install Microsoft Silverlight if it is not already installed.
   a) If Silverlight is already installed and the Power View report opened without any errors, skip ahead to the next step.
   b) Click the **Install Silverlight** link.



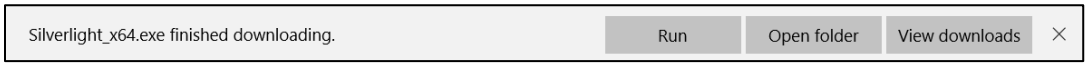
   c) You will be redirected in Internet Explorer to the download page for the Silverlight installation files.



   d) If prompted what to do with **Silverlight_x64.exe**, click the **Save** button.

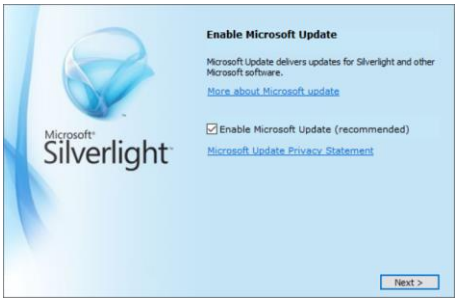


e) When prompted what to do with **Silverlight_x64.exe** after download, click **Run** to begin the installation.



f) When prompted by the **Install Silverlight** screen, click **Install Now**.

g) At the next screen, click **Next**.

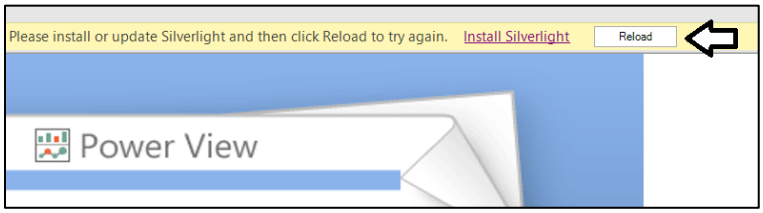


h) When you see the **Installation successful** screen, click **Close** to complete the installation.

Now that you have installed Silverlight, you can return to Excel and reload the Power View Report.

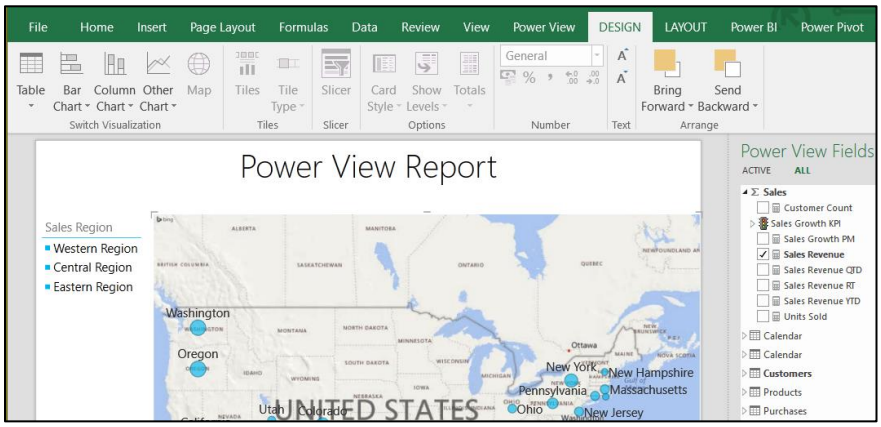
i) Return to Excel.

j) Click the **Reload** button to reload the Power View report named **Customers PV**.

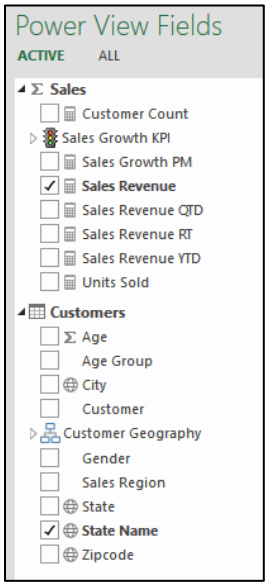


At this point, the Power View report named **Customers PV** should have opened inside Microsoft Excel without any errors.

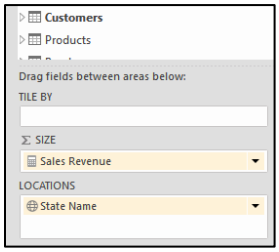
11. Take a moment to inspect the **Customers PV** report in the Power View environment.
    a) Click on the map visual in the middle of the Power View report to select it.
    b) Inspect the commands in the ribbon which can be used to change the visualization type.



    c) When a Power View report visual such as the map is selected in the Power View report designer, you can see the fields that this visual is using in the **Power View Fields** list to the right.

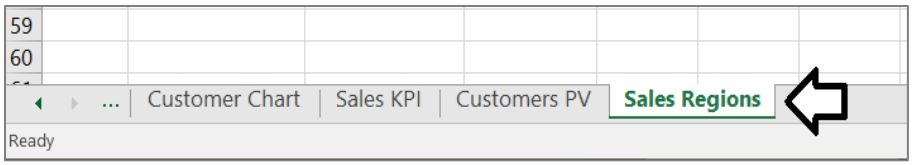


    d) Below the **Fields** list there are wells into which you can add fields.



If you have never used Power View before, you can observe that the Power View reports designer has some similarities to the report designers which are used in Power BI. While there are some similarities, the Power BI report designers are much easier to use and, at the same time, far more powerful than what is available within the Power View environment.

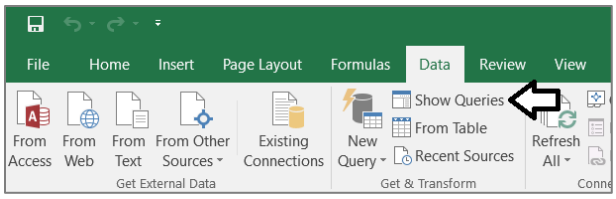
12. Inspect the data inside the worksheet named **Sales Regions**.
    a) Navigate to the worksheet named **Sales Regions**.



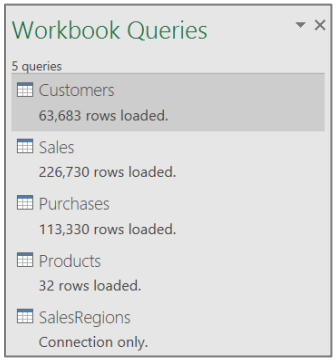
    b) This worksheet contains the raw data which associates each state with a specific sales region.

	A	B	C	D
1	State	State Name	Sales Region	SalesRegionSort
2	AK	Alaska	Western Region	1
3	AL	Alabama	Central Region	2
4	AR	Arkansas	Central Region	2
5	AZ	Arizona	Western Region	1
6	CA	California	Western Region	1
7	CO	Colorado	Western Region	1
8	CT	Connecticut	Eastern Region	3

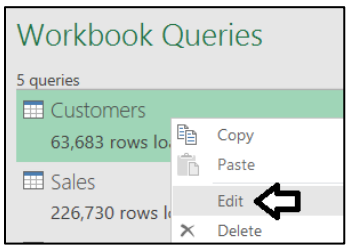
13. Inspect the queries that are stored inside the current workbook.
    a) Navigate to the **Data** tab in the ribbon and click the **Show Queries** button to display the **Workbook Queries** pane.



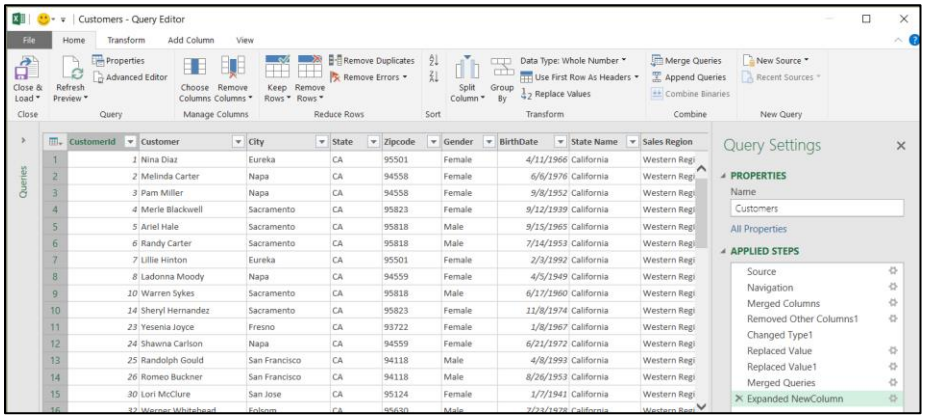
    b) Inspect the set of queries in the **Workbook Queries** pane.



    c) Right-click on the **Customers** query and then click **Edit** to open the query in the Query Editor window.



d) When the Query Editor window in Excel opens, you'll notice it's quite similar to the Query Editor window in Power BI Desktop.



e) If you examine each of the tabs in the ribbon of the Query Editor window, you will notice that the commands are very similar to the ribbon commands available in the Query Editor window of Power BI Desktop.

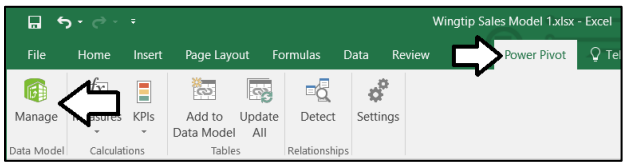
f) Click on each of the steps inside the **APPLIED STEPS** list and see how the Query Editor window in Excel behaves just like it does in Power BI Desktop.

g) Close the Query Editor windows and return back to the main Excel application window.

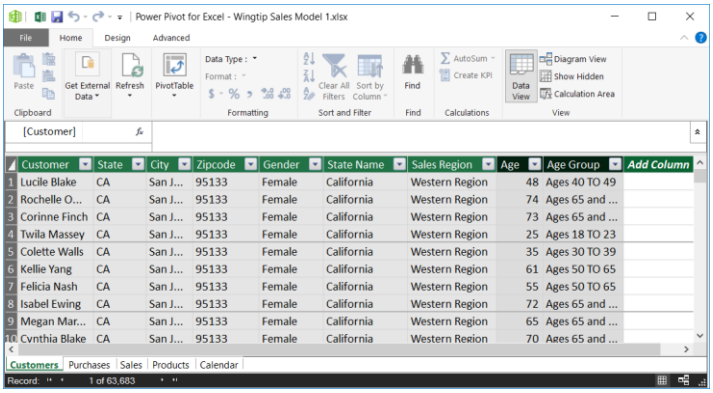
Now that you have seen the queries for this workbook, it's time to examine the data model. In order to view or modify the data model for an Excel workbook, you must start by opening the **Power Pivot for Excel** window.

14. Open the **Power Pivot for Excel** window to examine the data model behind this Excel workbook.

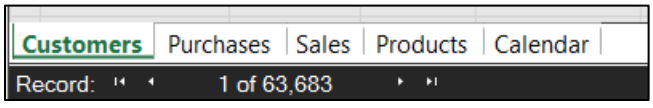
a) Navigate to the **Power Pivot** tab in the ribbon and click the **Manage** button to open the **Power Pivot for Excel** window.



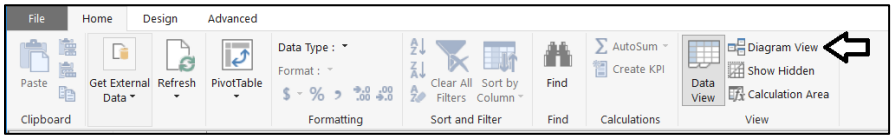
b) When you first open the **Power Pivot for Excel** window, it displays the data model in *Data View* mode. Data View allows you to see the data inside each of the tables in the data model using a tabular grid view.



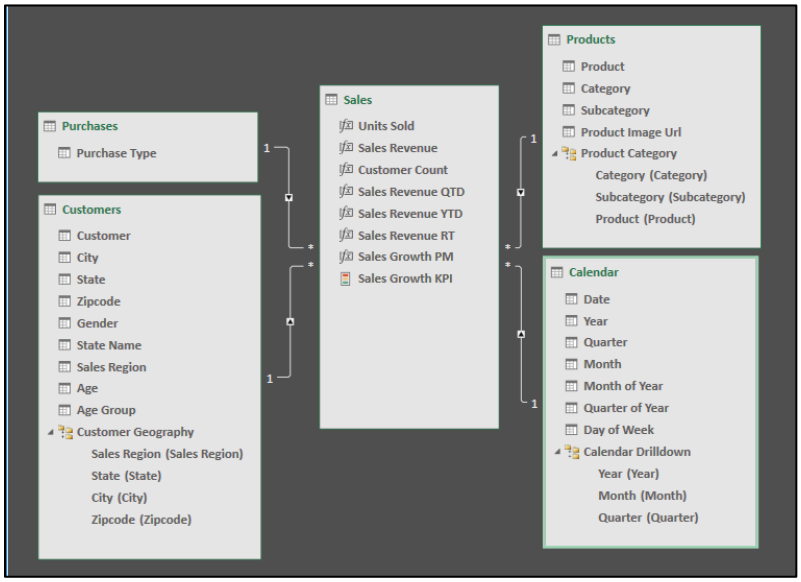
c) Use the table navigation menu displayed at the bottom of Data View to inspect the data in each table in the data model.



d) In the **Home** tab of the ribbon, click the **Diagram View** button to move into **Diagram View**.



e) You can see that **Diagram View** in the **Power Pivot for Excel** window is just like **Relationship View** in **Power BI Desktop**. It displays a full data model view which includes all tables along with each table's relationships, fields, KPIs and hierarchies.



f) Close the **Power Pivot for Excel** window and return back to the main Excel application window.

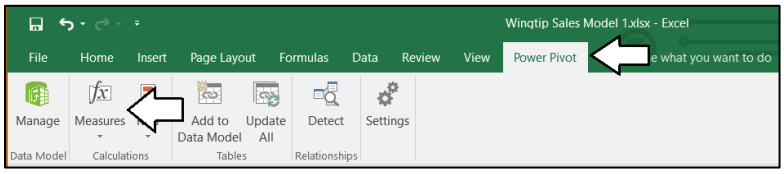
While it's possible to view and edit the DAX code for measures and KPIs in the **Power Pivot for Excel** window, it's usually quicker and easier to do this work from the main Excel application window using the **Power Pivot** ribbon tab.

15. Inspect a measure and a KPI from the data model.

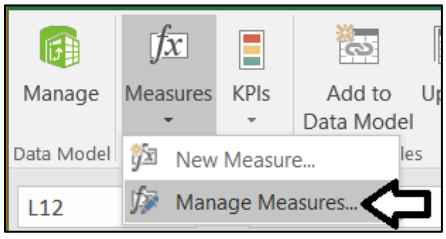
a) Make sure you have navigated to the main Excel application window.

b) Navigate to the **Power Pivot** tab.

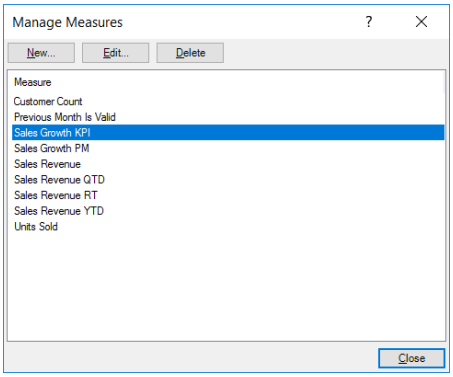
c) Click the **Measures** dropdown menu button.



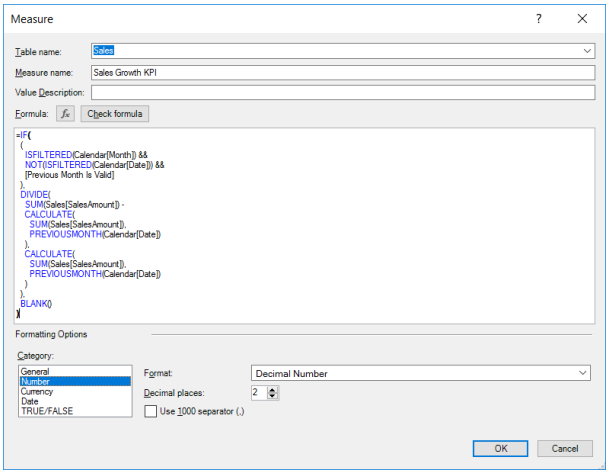
d) Select the **Manage Measures…** menu command to display the **Manage Measures** dialog.



e) Select the measure named **Sales Growth KPI** and then click the **Edit** button.

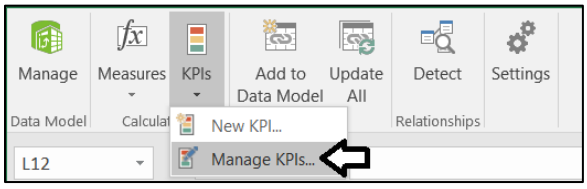


f) You should now see the **Measure** dialog which displays the measure properties including its name, its DAX code and its formatting properties.

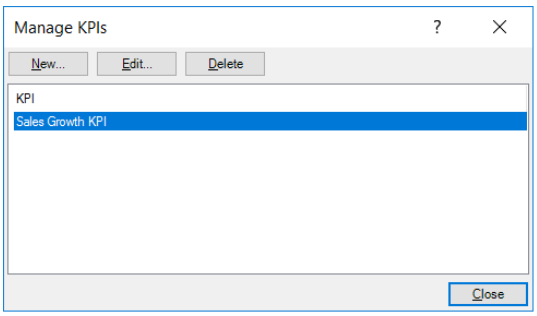


g) Click **Close** to close the **Measure** dialog.

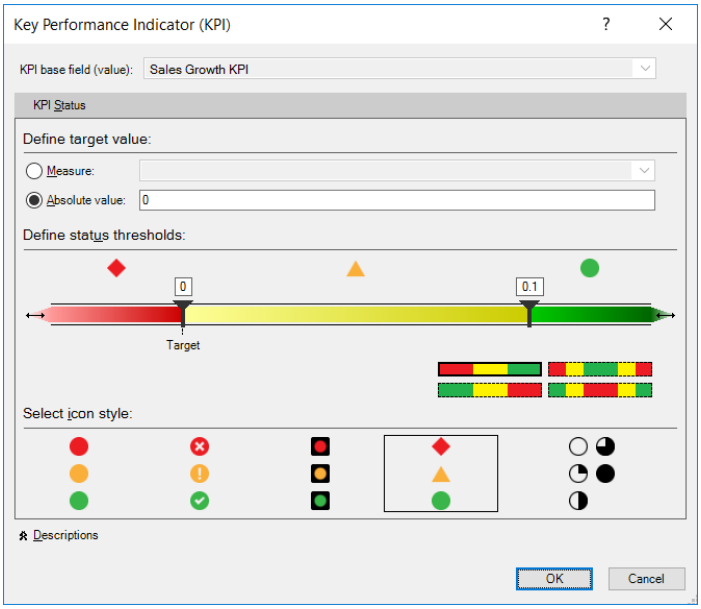
h) In the **Power Pivot** tab in the ribbon, click the **Manage KPIs…** dropdown menu button and then select **Manage KPIs**.



i) Select the KPI named **Sales Growth KPI** and click **Edit**.



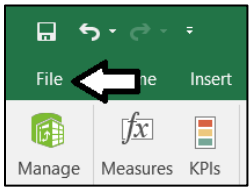
j) At this point you should see that **Key Performance Indicator (KPI)** dialog which provides you with the ability to create, view and modify KPIs. Now that KPIs are added directly into the data model for the current Excel workbook.



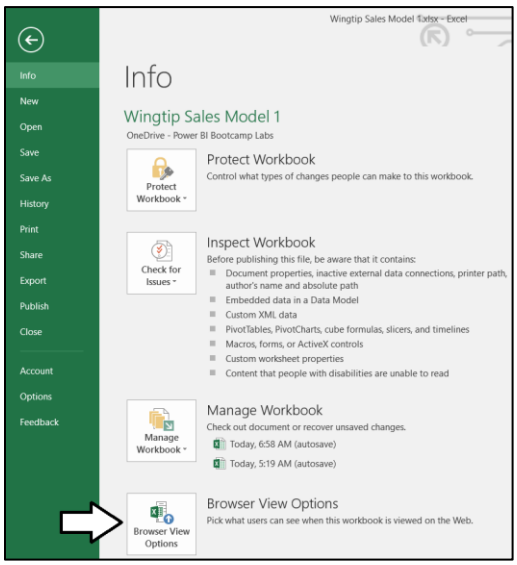
k) Click the **Cancel** button to close the **Key Performance Indicator (KPI)** dialog.

16. Inspect the **Browser View Options** for the current Excel workbook file.

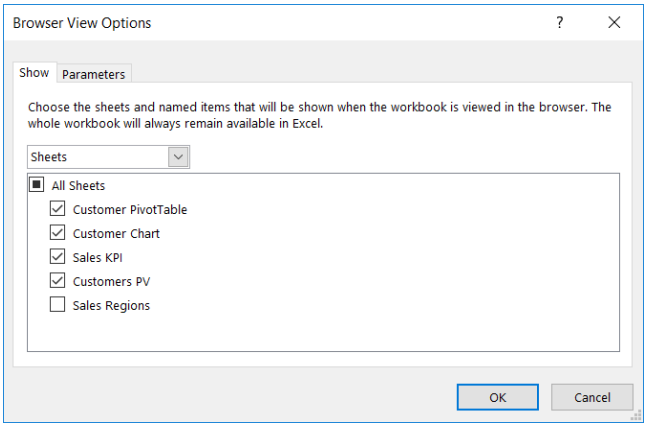
a) In the main Excel application window, click the **File** menu to open the **Info** page for the current Excel workbook file.



b) At the bottom of the **Info** page, click on the **Browser View Options** button to display the **Browser View Options** dialog.



c) the **Browser View Options** dialog, examine worksheets listed in the **Show** tab. You can see that all worksheets are configured to be displayed when rendering this Excel worksheet with Excel Online except for the table named **Sales Regions**.



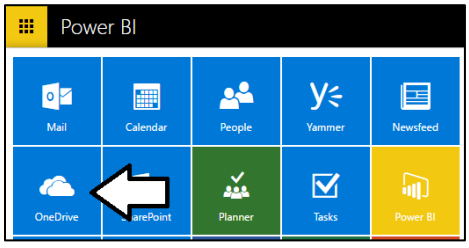
d) Click **Cancel** to close the **Browser View Options** dialog.

The key takeaway from this step is that **Browser View Options** make it possible for you to hide any worksheets you do not want to display when an Excel workbook is rendered in the browser by Excel Online. Worksheets with lookup tables such as **Sales Regions** are often better of hidden when deploying a custom solution in Excel Online.

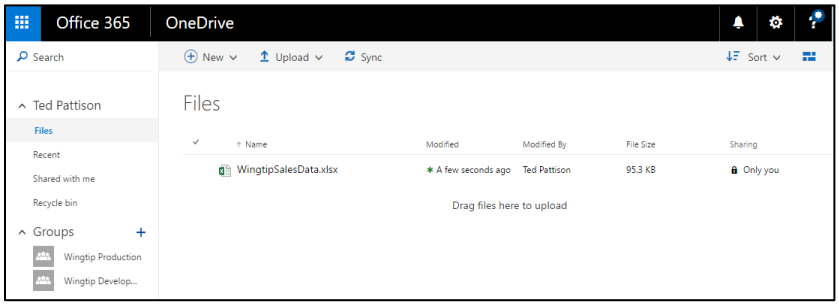
17. Close the Excel workbook file named **Wingtip Sales Model 1.xslx** without saving any changes.
18. Close Microsoft Excel.

At this point, you have seen what is inside the workbook file named **Wingtip Sales Model 1.xslx**. Keep in mind that the Excel workbook file named **Wingtip Sales Model 2.xslx** is an exact copy of **Wingtip Sales Model 1.xslx**. It contains the exact same worksheets, queries and data model. The only difference between these two files is the actual file name.

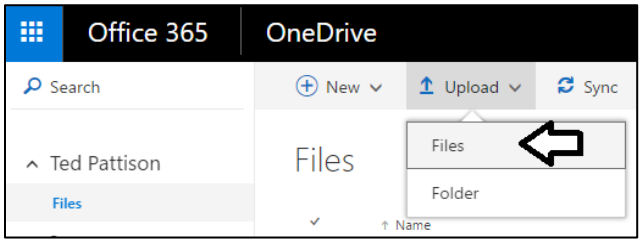
19. Upload the two Excel workbook files to OneDrive for Business.
    a) In the browser, navigate to https://app.powerbi.com and log in using your primary Office 365 account.
    b) Drop down the Office 365 App Launcher menu and navigate to **OneDrive for Business**.



c) At this point, you should see the **Files** view for your personal site in OneDrive for Business. There might already be a few other files that you previously uploaded in earlier lab exercises.

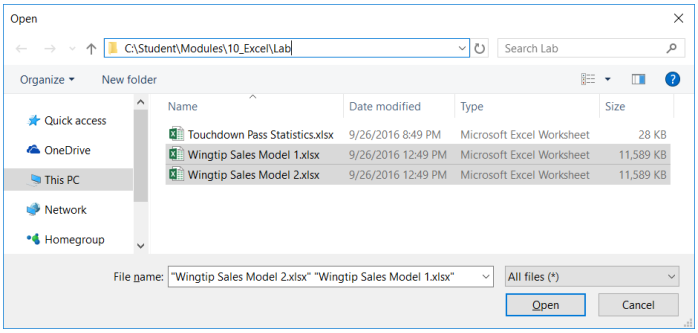


d) Drop down the **Upload** menu and select the **Files** menu command.



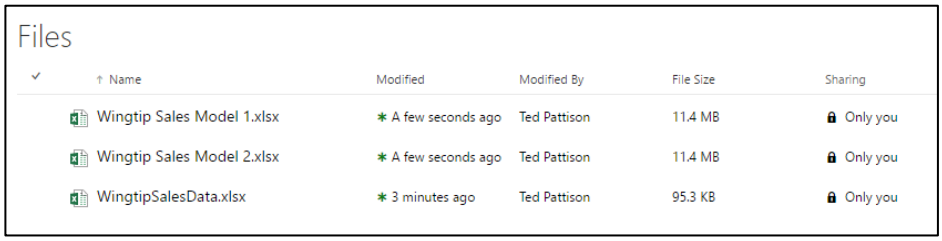
e) Select the two worksheets named **Wingtip Sales Model 1.xslx** and **Wingtip Sales Model 2.xslx**.

f) Click the **Open** button to begin the upload process.



g) The top toolbar in **OneDrive** displays a spinning animation while the files are uploading.

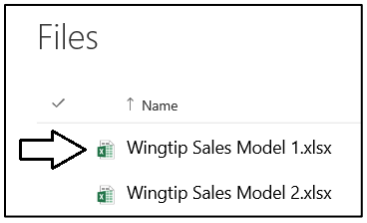
h) After the files have uploaded, you should see **Wingtip Sales Model 1.xslx** and **Wingtip Sales Model 2.xslx** in the **Files** view.



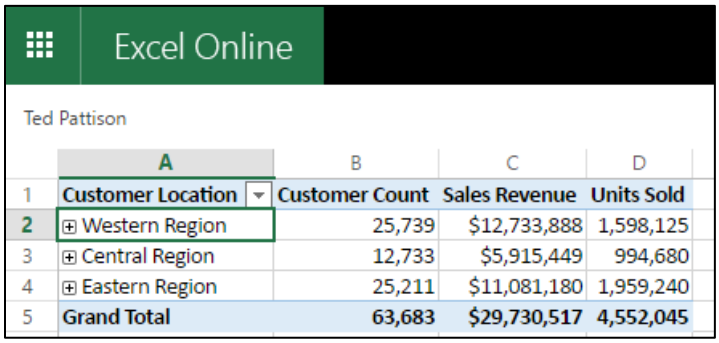
Before you integrate these two Excel workbook files into Power BI, you will first open one of them in Excel Online from its OneDrive location to see what the experience is like when Power BI is not involved.

20. Open **Wingtip Sales Model 1.aspx** in Excel Online.

a) In **Files** view of **OneDrive for Business**, click on **Wingtip Sales Model 1.xlsx** to open this workbook in Excel Online.

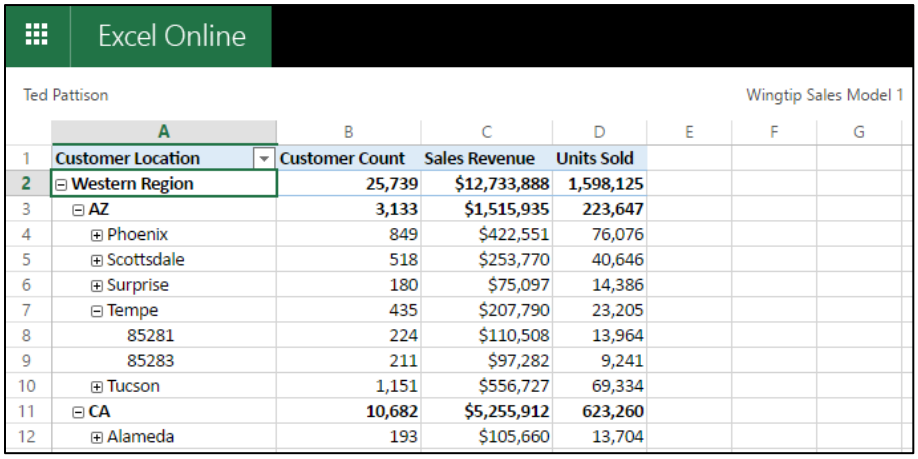


b) You should now see the Excel workbook file named on **Wingtip Sales Model 1.xlsx** as it is rendered in the browser by Excel Online. The workbook should display the first worksheet named **Customers PivotTable** as its default view.



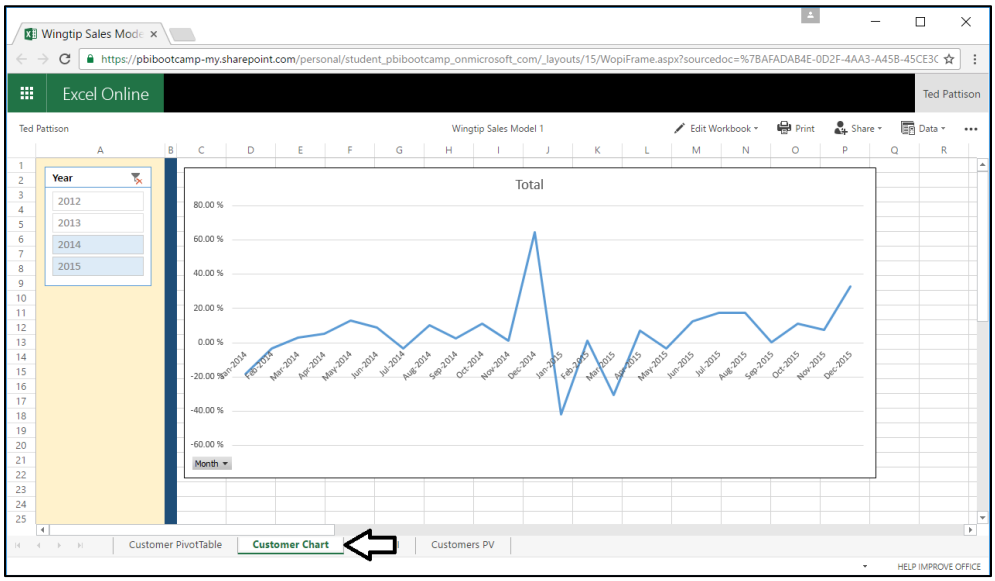
	A	B	C	D
1	Customer Location	Customer Count	Sales Revenue	Units Sold
2	⊞ Western Region	25,739	$12,733,888	1,598,125
3	⊞ Central Region	12,733	$5,915,449	994,680
4	⊞ Eastern Region	25,211	$11,081,180	1,959,240
5	**Grand Total**	**63,683**	**$29,730,517**	**4,552,045**

c) Experiment drilling down into the PivotTable as you did earlier when the workbook was opened in Microsoft Excel. The browser-based version lets you drill down from sales region into state then into city then into zipcode.

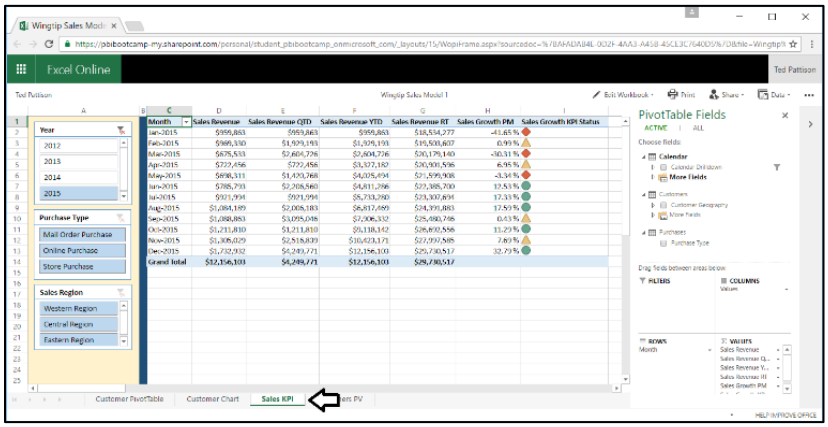


	A	B	C	D	E	F	G
1	Customer Location	Customer Count	Sales Revenue	Units Sold			
2	⊟ Western Region	25,739	$12,733,888	1,598,125			
3	⊟ AZ	3,133	$1,515,935	223,647			
4	⊞ Phoenix	849	$422,551	76,076			
5	⊞ Scottsdale	518	$253,770	40,646			
6	⊞ Surprise	180	$75,097	14,386			
7	⊟ Tempe	435	$207,790	23,205			
8	85281	224	$110,508	13,964			
9	85283	211	$97,282	9,241			
10	⊞ Tucson	1,151	$556,727	69,334			
11	⊟ CA	10,682	$5,255,912	623,260			
12	⊞ Alameda	193	$105,660	13,704			

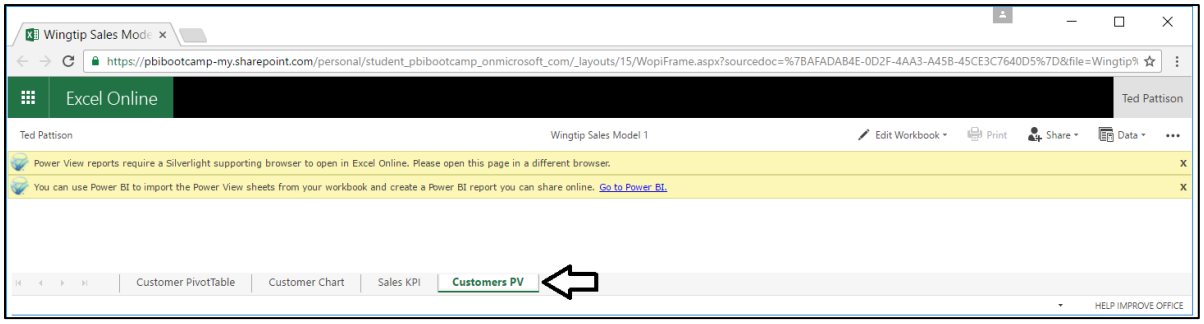
d) Use the worksheet navigation menu to move over to the second worksheet named **Customer Chart** and then experiment with the worksheet's interactive behavior by using the slicer on the left to filter by year.



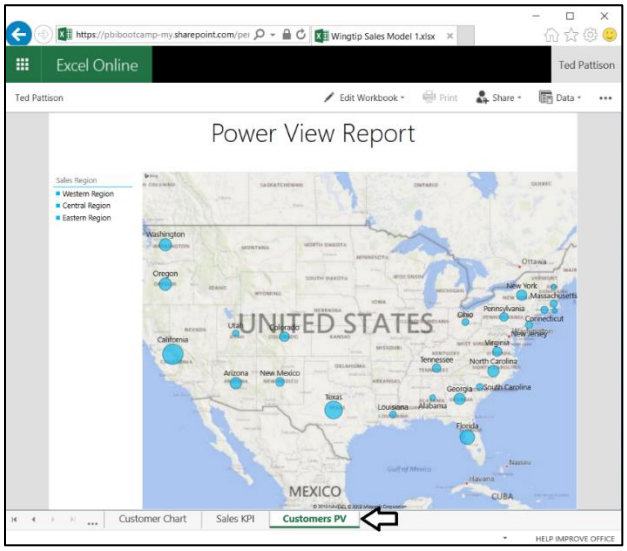
e) Use the worksheet navigation menu to move over to the second worksheet named **Sales KPI**. Experiment by using the slicers on the left to filter by year, purchase type and sales region.



f) Use the worksheet navigation menu to move over to the Power View report named **Customers PV**. If you don't have Silverlight Installed or if you are using a browser other than Internet Explorer, you will likely see the following error message.



g) If you are using the Internet Explorer as your browser and you also have Silverlight installed, you will be able to view the Power View report as shown in the following screenshot.

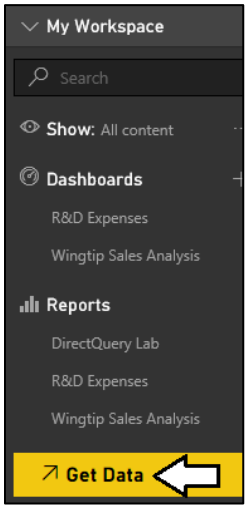


At this point, you have experienced working with this Excel workbook in Excel Online. Now it's time to move ahead and see how to open the workbook with Excel Online from inside the context of a Power BI workspace.

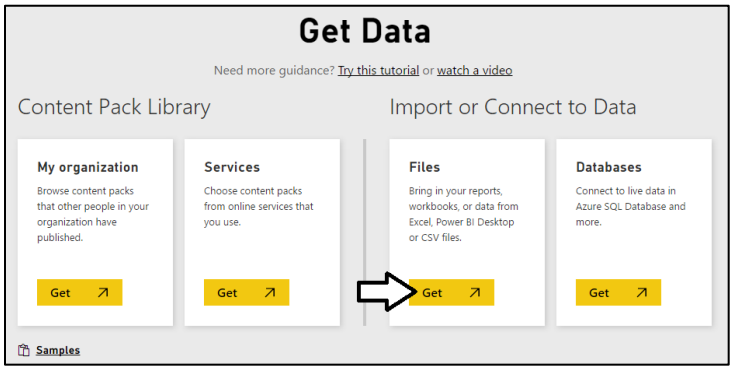
Exercise 2: Connect to an Excel Workbook from the Power BI Service

In this exercise you connect the Excel workbook file named **Wingtip Sales Model 1.xlsx** from your personal workspace in Power BI. As you will see, this technique makes it possible to leverage the integration between Excel Online and the Power BI service to render an Excel worksheet which exhibits interactive behavior within the context of a Power BI workspace.

1. In the browser, navigate to the Power BI service at https://app.powerbi.com.
2. Connect to the Excel workbook named **Wingtip Sales Model 1.xslx** from your personal workspace in Power BI.
   a) Expand the left navigation menu.
   b) Make sure you are running inside the context of your personal workspace.
   c) Click the **Get Data** button at the bottom of the left navigation menu to navigate to the **Get Data** page.

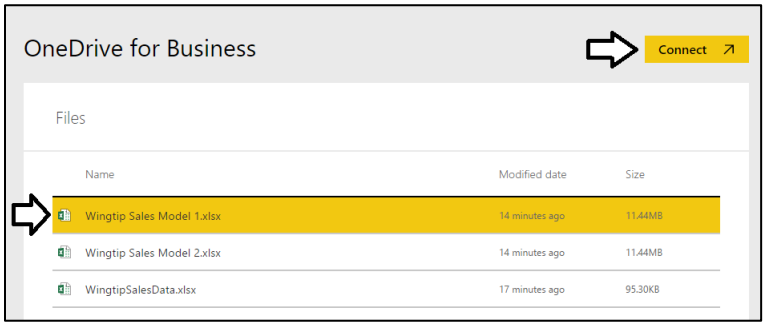


   d) On the **Get Data** page, click the **Get** button the **Files** section



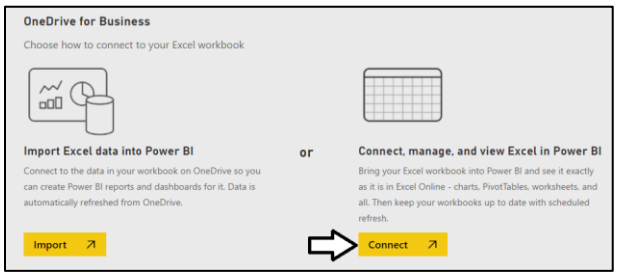
   e) On the next page, click the **OneDrive - Business** button

f) On the next page, select the Excel workbook file named **Wingtip Sales Model 1.xlsx** and then click the **Connect** button.

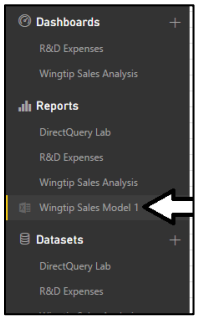


Don't be fooled by the first **Connect** button. You will click this button regardless of whether you are connecting to a workbook or importing it. It's the buttons on the next page where you actually choose between connecting to or importing a workbook.

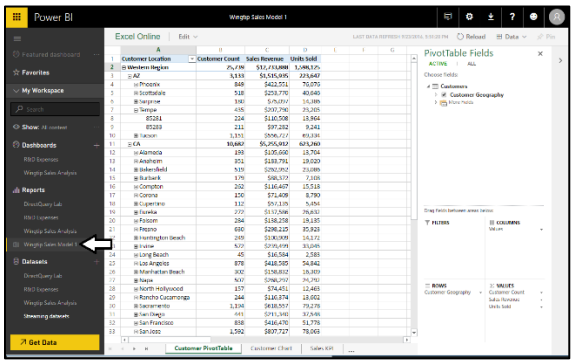
g) On the next page, click the **Connect** button to connect the workbook to your personal workspace.



h) After a few seconds, you should see a new report named **Wingtip Sales Model 1** show up in the left navigation menu.

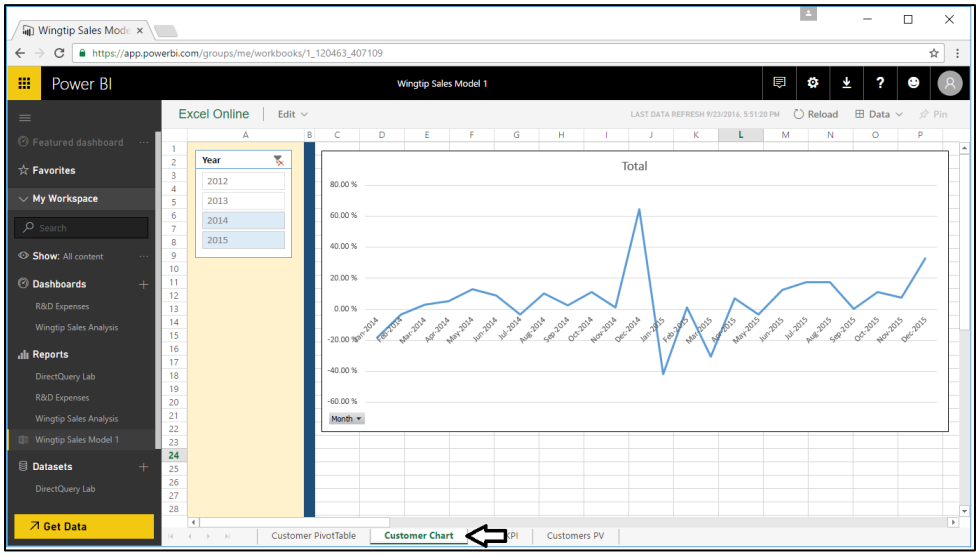


i) Click on the **Wingtip Sales Model 1** link in the **Reports** section of the left navigation menu. This should open the Excel workbook in Excel Online.

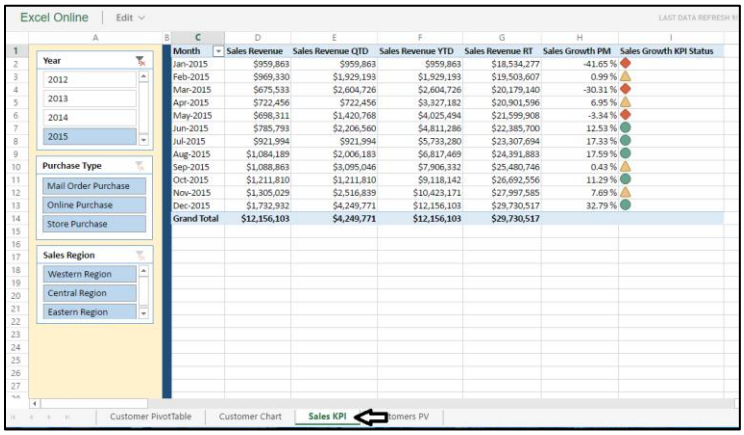


You should be able to navigate around and interact with the Excel workbook just as you did in the previous exercise. The big difference is that now the Excel workbook is being rendered inside the context of your personal workspace.

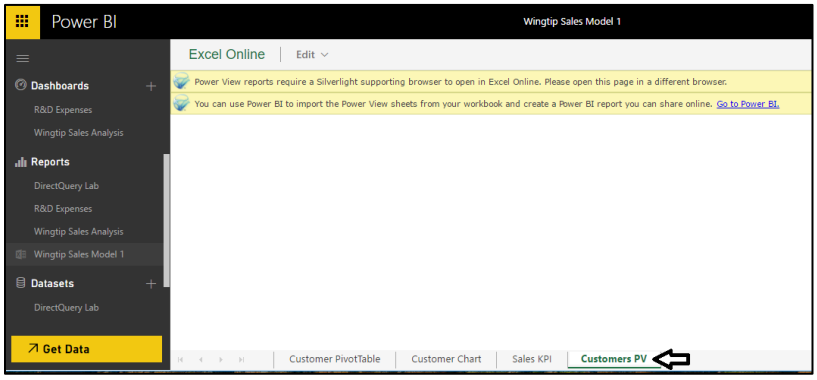
j) Navigate to the worksheet named **Customers Chart** and interact with the year slicer.



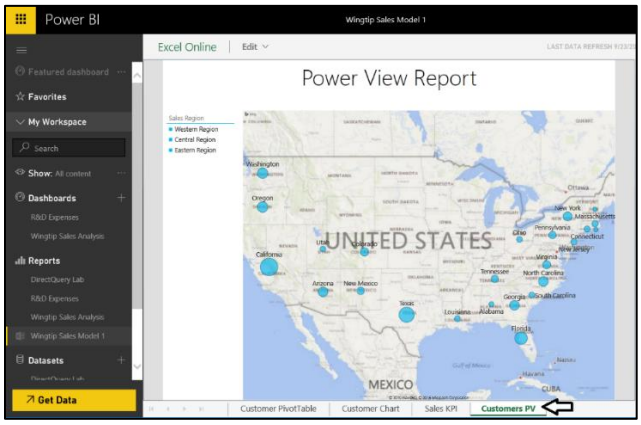
k) Navigate to the worksheet named **Sales KPI** and interact with the slicers on the left.



l) Navigate to the Power View report named **Customers PV**. If you don't have Silverlight Installed or if you are using a browser other than Internet Explorer, you will likely see the following error message.



m) If you are using the Internet Explorer as your browser and you also have Silverlight installed, you will be able to view the Power View report as shown in the following screenshot.

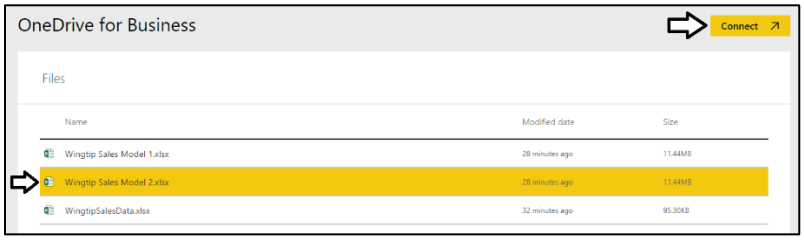


You might get the feeling that the Power View requirements of installing Silverlight and using the Internet Explorer will pose a problem for some of your users. In the next exercise, you will see how to covert a Power View report to remove these Silverlight dependencies.

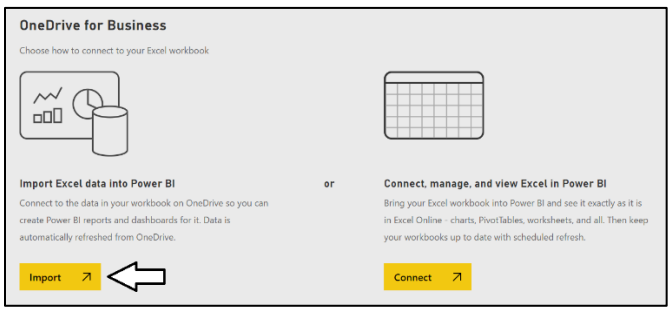
Exercise 3: Import an Excel Workbook into the Power BI Service

In this exercise you will import the Excel workbook named **Wingtip Sales Model 2.xlsx** into Power BI. This will allow you to experience the differences between connecting to an Excel workbook file versus importing it.

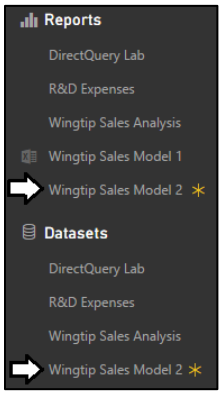
1. Import the Excel workbook named **Wingtip Sales Model 2.xslx** into your personal workspace in Power BI.
   a) Expand the left navigation menu.
   b) Make sure you are running inside the context of your personal workspace.
   c) Click the **Get Data** button at the bottom of the left navigation menu to navigate to the **Get Data** page.
   d) On the **Get Data** page, click the **Get** button the **Files** section
   e) On the next page, click the **OneDrive - Business** button
   f) On the next page, select the Excel workbook file named **Wingtip Sales Model 2.xlsx** and then click the **Connect** button.



   g) On the next page, click the **Import** button to start to import process for **Wingtip Sales Model 2.xlsx**.



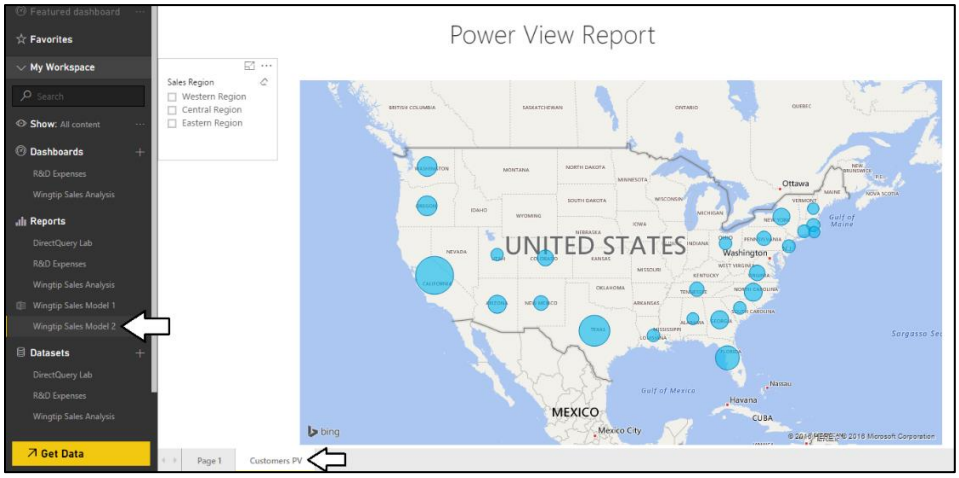
h) After a few seconds, you should see a new report and a new dataset named **Wingtip Sales Model 2** appear in the left navigation menu.



2. Examine the new report that was generated during the Excel workbook import process.

a) Click on the **Wingtip Sales Model 2** link in the **Reports** section of the left navigation menu.

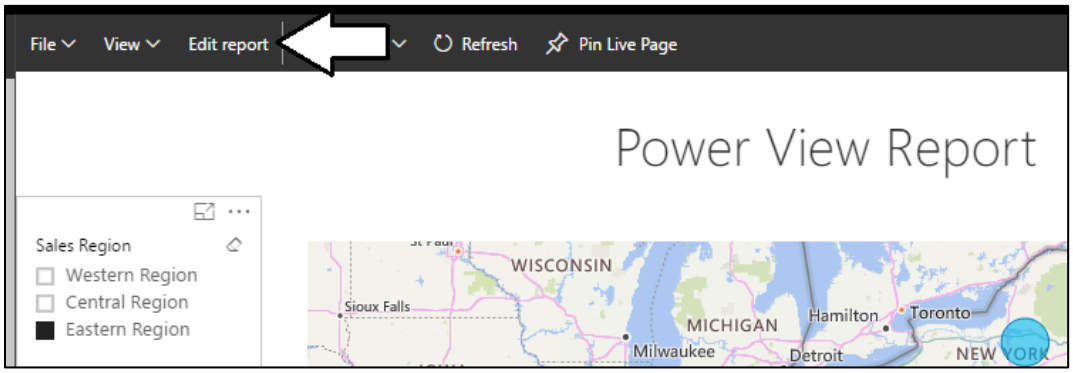
b) Use the page navigation menu at the bottom of the report to navigate to the page named **Customers PV**. You will see that this report page has been generated by converting the Power View report from inside **Wingtip Sales Model 2.xlsx**.



An important observation is that a report page generated from a Power View report does not rely on Microsoft Silverlight. Instead, a report page generated from Power View report is created using standard Power BI visuals. For companies that already have an investment in Excel workbooks created with Power View reports, the process of importing these worksheets into Power BI provides a migration path for removing unwanted Silverlight dependencies in order to reach a wider array of browsers and mobile devices.

c) Experiment with the **Customers PV** report page by interacting with the slicer on the left to filter the data shown in the map.

d) Click on the **Edit** report button to move the report into Edit View. You should now be able to verify that all Power View and Silverlight dependencies have been removed from the report and have been replaced with standard Power BI visuals.

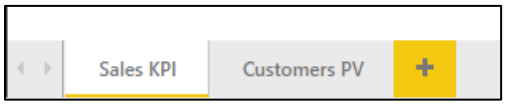


Note that the conversion process during workbook import only generates new report pages for Power View reports. It does not generate report pages for any of the standard worksheets from **Wingtip Sales Model 2.xlsx**. The new report contains one other empty report page named **Page 1**. While the report page named **Page 1** is initially empty, it is provided so you can begin to add new visuals using the **Fields** list provided by the dataset named **Wingtip Sales Model 2** that was created during the workbook import process

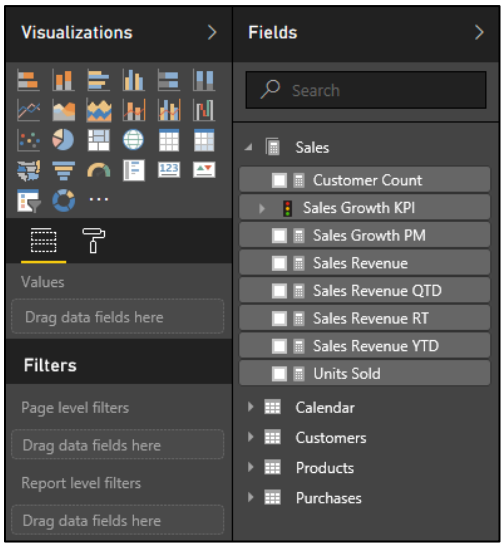
3. Modify the new Power BI report by adding new visuals.

a) In the report page navigation menu, navigate to the page named **Page 1**. You find that this report page is initially empty.

b) Rename **Page 1** to **Sales KPI**.



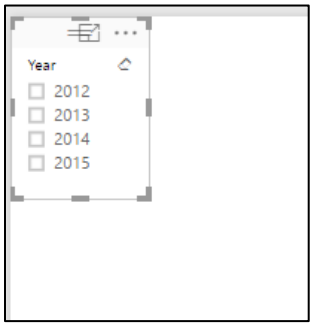
c) Examine the fields inside the **Fields** list on the right. You should see that the data model from **Wingtip Sales Model 2.xlsx** has been imported to create a new Power BI dataset which includes a set of tables and fields.



At this point, you can now extend this report using all the Power BI report design techniques you have learned in this training class.

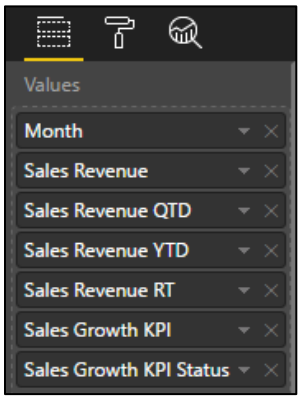
d) Add a new slicer visual based on the **Year** field in the **Calendar** table.

e) Reposition the slicer to the top left corner of the page.



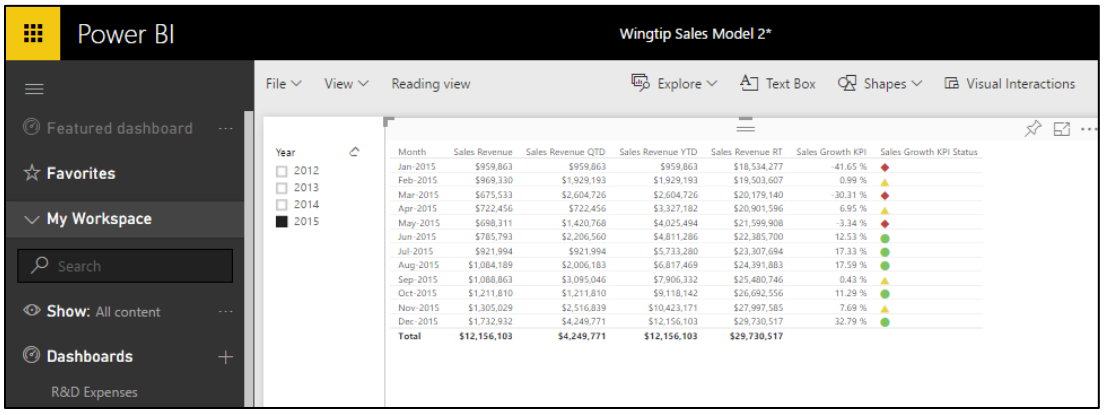
f) Add a second visual to the page based on the **Table** visualization type.

g) Configure the new table visual by adding the following fields to the **Values** well.



Note that while Power BI Desktop does not support adding KPIs directly into the data model of a project, you can surface a KPI from a data model imported from an Excel workbook by using standard table visual in a Power BI report.

h) The **Sales KPI** page should display the KPI inside the table visual as shown in the following screenshot.



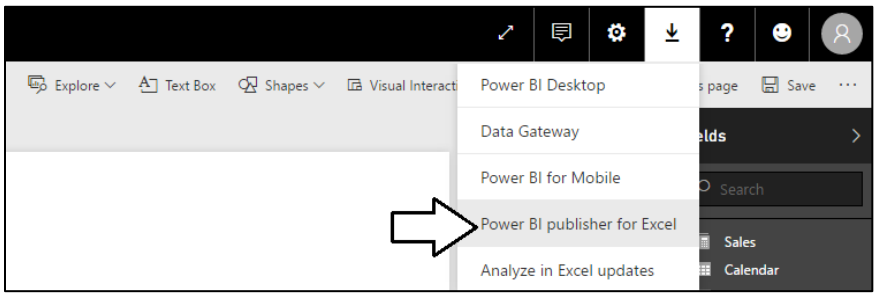
i) Drop down the **File** menu and click the **Save** menu command to save your changes to the report.

If you want to continue and experiment, you can add more pages and visuals to the report named **Wingtip Sales Model 2**. You also have the options of creating additional new reports based on the imported dataset named **Wingtip Sales Model 2**.

Exercise 4: Pin a PivotChart to a Dashboard using the Power BI Publisher for Excel

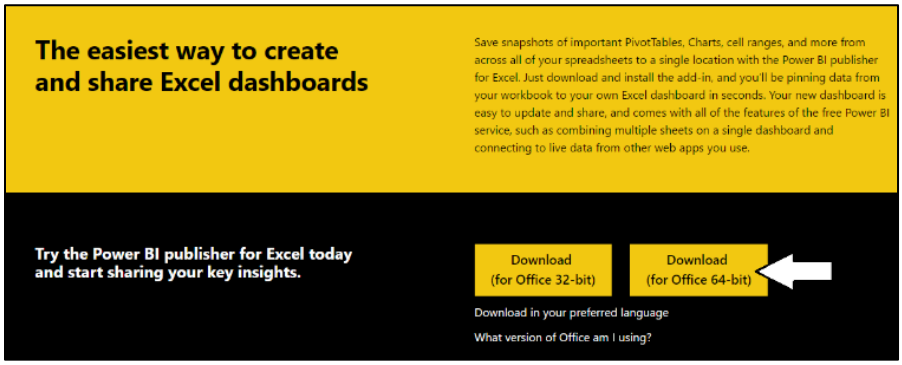
In this exercise you will begin by installing the Power BI Publisher for Excel add-in. After that, you will use this add-in to pin a PivotChart from an Excel worksheet to a new Power BI dashboard in your personal workspace.

1. Install the **Power BI publisher for Excel** add-in.
   a) Close Microsoft Excel if it is currently running.
   b) Navigate to the Power BI service in the browser.
   c) Drop down the Power BI service **Download** menu and select the **Power BI publisher for Excel** menu command.

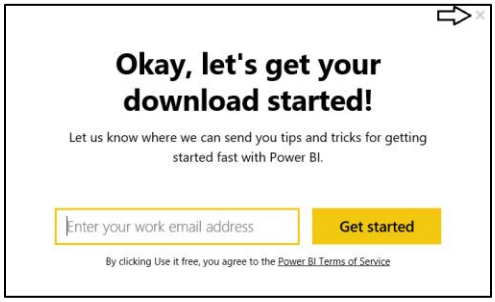


When you select the **Power BI publisher for Excel** menu command, you will be redirected to a web page where you can download the installation files for the **Power BI publisher for Excel** add-in

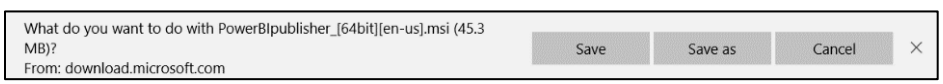
   d) Click the button with the caption **Download (for Office 64-bit)** to begin the download of the installation files.



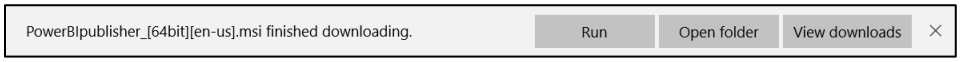
   e) If you are prompted with a dialog asking for an email address, close it by clicking the **X** button in the top right corner.



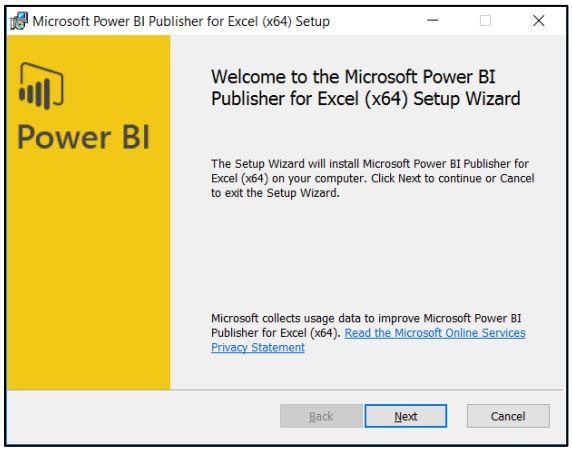
   f) If prompted what to do with **PowerBIpublisher.msi**, click the **Save** button.



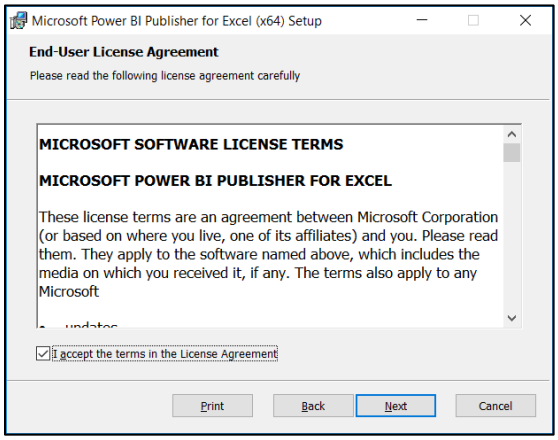
g) When prompted what to do with **PowerBIpublisher.msi** after download, click **Run** to begin the installation.



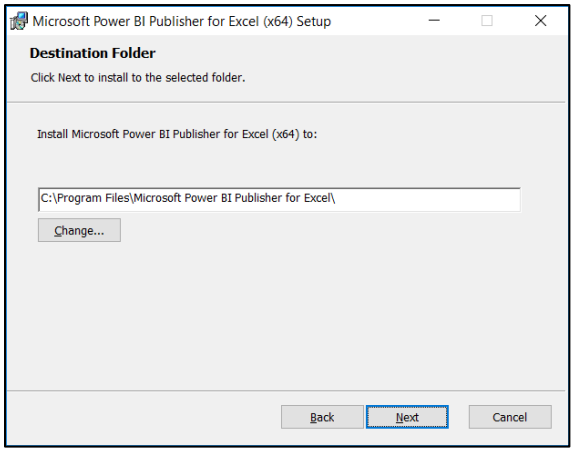
h) On the **Welcome** page of the installer program, click **Next**.



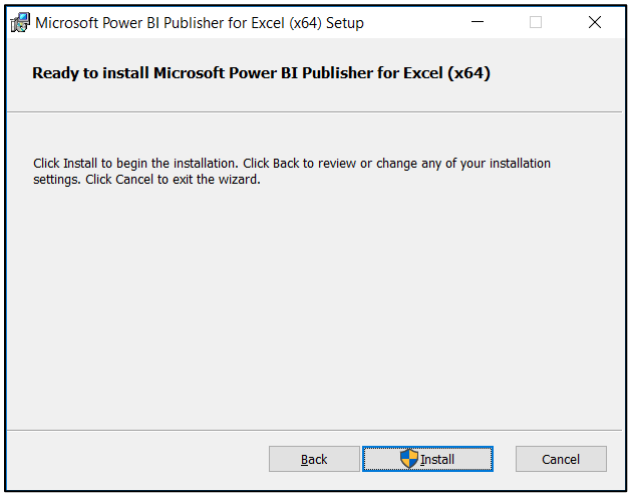
i) On the **End-User License Agreement** page, check the checkbox to accept the licensing agreement and click **Next**.



j) On the **Destination Folder** page, accept the default location and click **Next**.

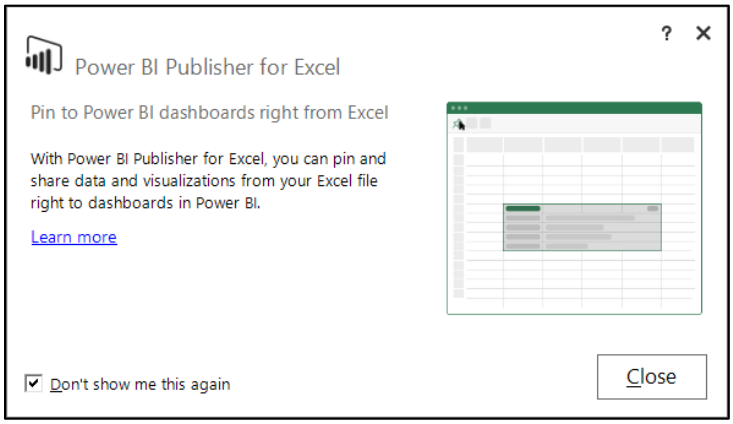


k) On the **Ready to Install** page, click **Install** to begin the installation.



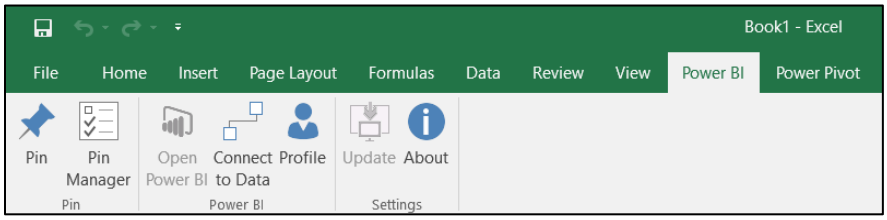
l) When you see the **Completed** page of the Setup Wizard, make sure the **Launch Excel Application** checkbox is checked and then click the **Finish** button to complete the installation and start up Microsoft Excel 2016.

m) When Microsoft Excel 2016 starts, you will be prompted by the dialog shown in the following screenshot. Check the checkbox with the caption **Don't show me this again** and then click the **Close** button.



n) Create a new Excel workbook.

o) Activate the **Power BI** ribbon tab to see the commands available through the **Power BI publisher** add-in.

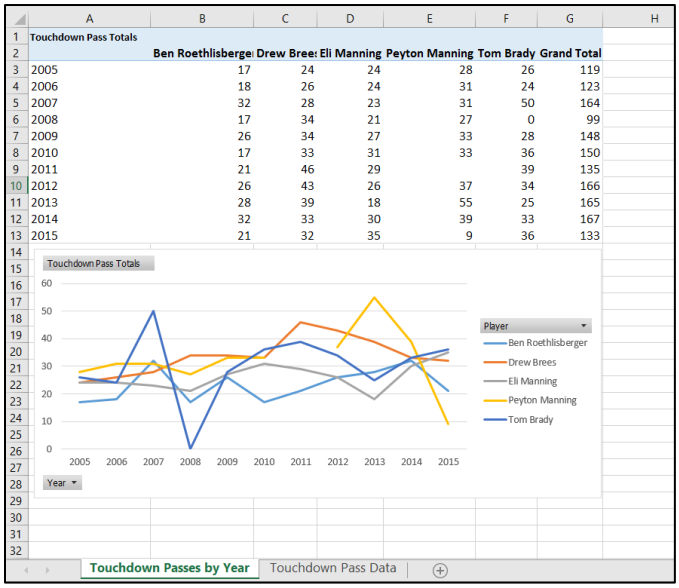


The **Power BI** ribbon tab provides command buttons that allow you to make use of the **Power BI publisher** add-in. You will use these ribbon commands to log into the Power BI service and to pin Excel worksheet elements to dashboards in Power BI.

2. Open the Excel workbook file named **Touchdown Pass Statistics.xslx**.

a) In Microsoft Excel, open the Excel workbook file at **C:\Student\Modules\06_Excel\Lab\Touchdown Pass Statistics.xslx**.

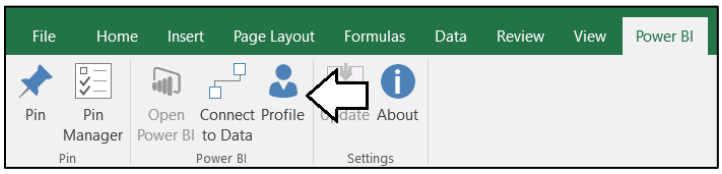
b) Examine the PivotTable and the PivotChart in the worksheet named **Touchdown Pass by Year**.



3. Pin an Excel PivotChart to a new Power BI Dashboard.

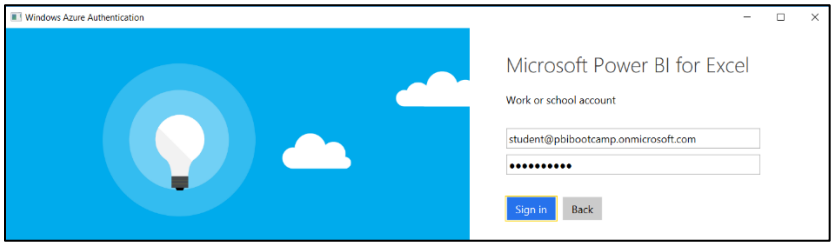
a) Make sure the **Power BI** ribbon tab is active so you can see the **Power BI publisher** add-in command.

b) Click the **Profile** button in the ribbon to log in to the Power BI service.



c) When presented with the following screenshot, click the **Sign In** link.

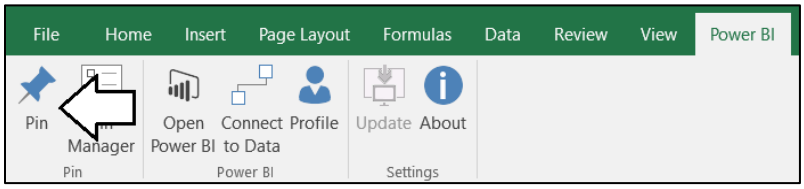
d) When prompted to log into the Power BI service, sign in using your primary Office 365 user account.



Now that you're logged in, you can begin to pin worksheet elements from an Excel workbook to dashboards in the Power BI service.

e) In the **Touchdown Passes by Year** worksheet, click the PivotChart once to select it.

f) With the PivotChart selected, click the **Pin** button in the **Power BI** ribbon tab to display the **Pin to dashboard** dialog.



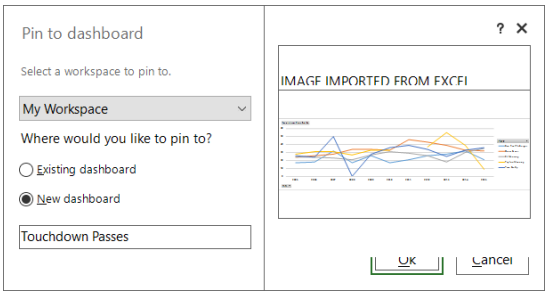
g) In the **Pin to dashboard** dialog…

i) For the option to **Select a workspace to pin to**, select **My Workspace**.

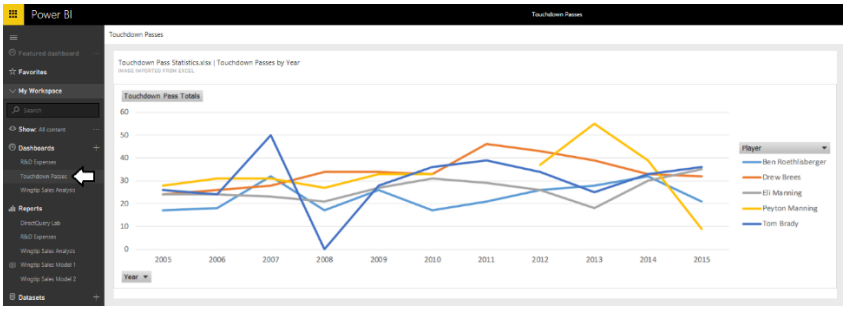
ii) For the **Where would you like to pin to** option, select **New dashboard**.

iii) Enter a new dashboard name of **Touchdown Passes**.

iv) Click the **OK** button to complete the pinning operation.



4. Navigate to your personal workspace in the browser and inspect the new dashboard named **Touchdown Passes**.

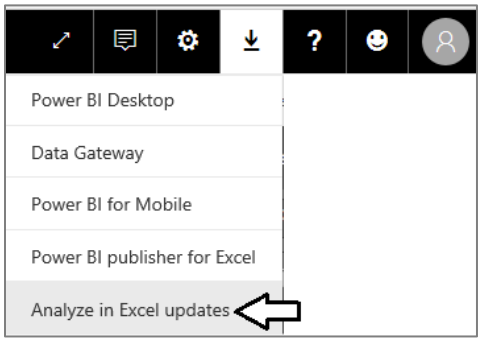


Remember that pinning Excel worksheet elements using the **Power BI publisher** add-in creates snapshot images. If the underlying data and pinned worksheet elements change, you must explicitly update them with the **Power BI publisher** add-in for the changes to be seen in the Power BI dashboard.

Exercise 5: Use Analyze in Excel to Connect an Excel Workbook to a Power BI Dataset

In this exercise you will install the latest version of the OLE DB provider that allows Microsoft Excel to connect directly to a dataset that has been published in the Power BI service. You will then use the **Analyze in Excel** feature to create a new Excel workbook with a pre-established connection to a Power BI dataset so you can analyze it directly from inside Microsoft Excel.

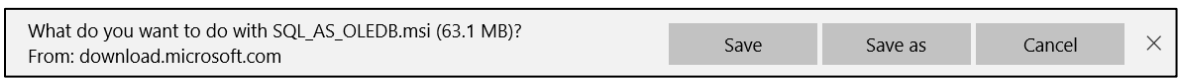
1. Install the OLE DB drivers required to use the **Analyze in Excel** integration feature between Microsoft Excel and Power BI.
   a) Close Microsoft Excel if it is currently running.
   b) Navigate to the Power BI service in the browser.
   c) Drop down the Power BI service **Download** menu and select the **Analyze in Excel updates** menu command.



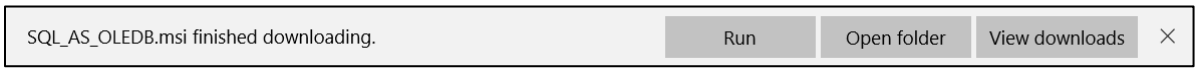
When you click the **Analyze in Excel updates** menu command, you will be redirected to a web page with a **Download** button.

   d) Click the **Download** button to download the OLE DB provider installation file named **SQL_AS_OLEDB.msi**.

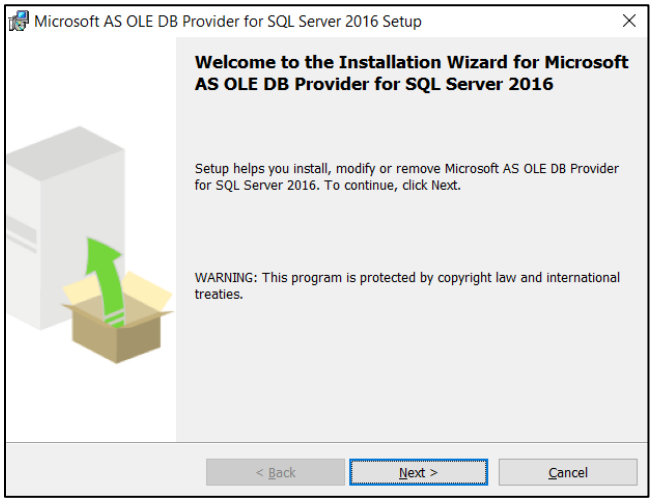
   e) If prompted whether to download **SQL_AS_OLEDB.msi**, click the **Save** button.



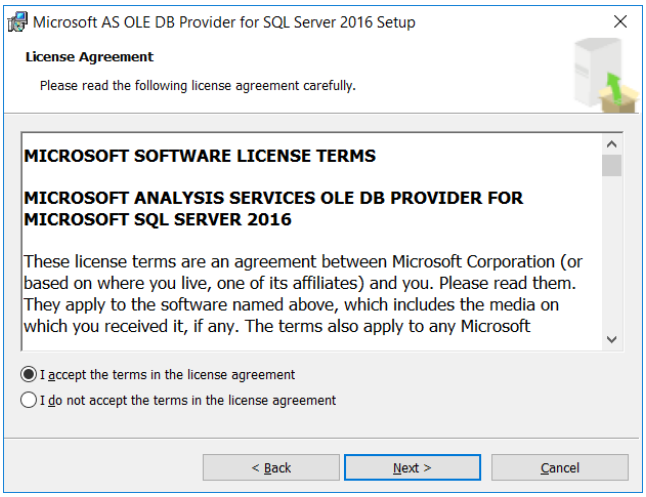
When prompted what to do with **SQL_AS_OLEDB.msi** after download, click **Run** to begin the installation



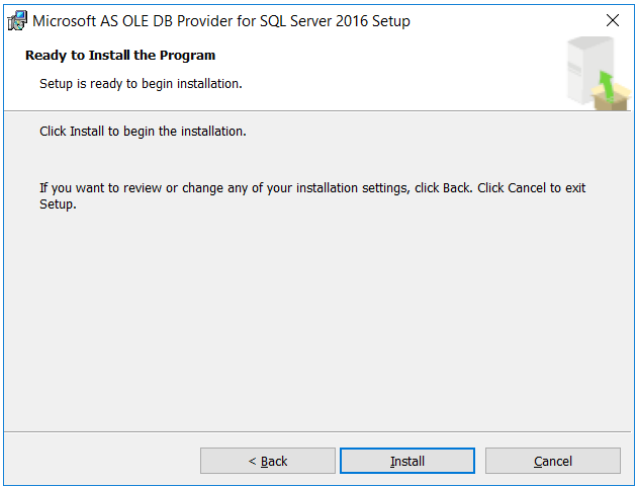
f) On the **Welcome** page of the installation program, click **Next** to continue.



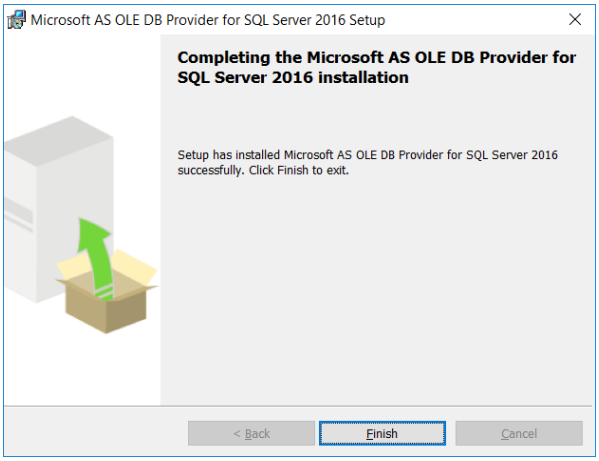
g) On the **License Agreement** page, select the radio button to accept the licensing agreement and click **Next**.



h) On the **Ready to Install** page, click the **Install** button to begin the installation.

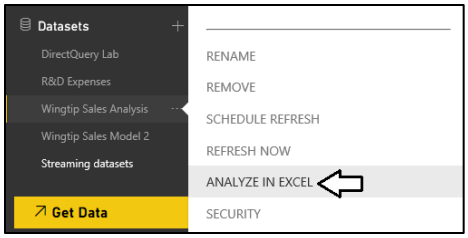


i) Wait for the installation process to complete. You should see a dialog that indicates that the installation has completed successfully. Click the **Finish** button on this dialog to dismiss it and to close the installation program.

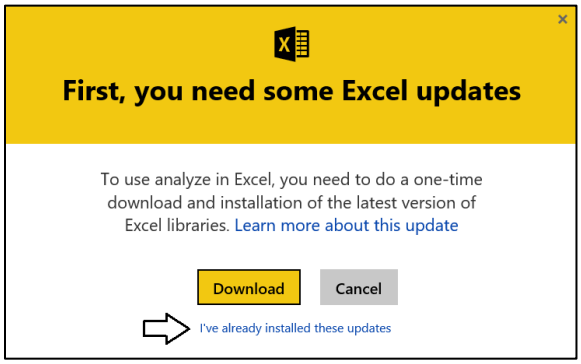


You have now installed the OLE DB provider required to use the **Analyze in Excel** feature when running Microsoft Excel on your PC.

2. Create a new Excel workbook with a connection to a Power BI dataset.
   a) In the browser, navigate to your personal workspace in the Power BI service.
   b) Expand the left navigation menu.
   c) Click the ellipse menu to the right of the **Wingtip Sales Analysis** dataset and then click **ANALYZE IN EXCEL**.

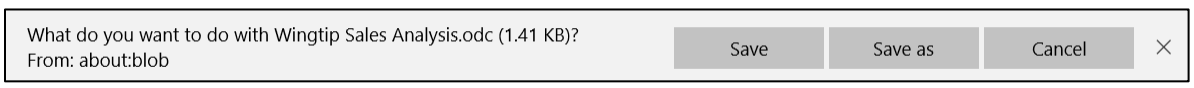


   d) If you are prompted with the page shown in the following screenshot, click the **I've already installed these updates** link.

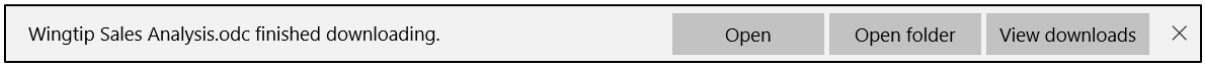


At this point, the browser will begin to download a text-based connection file named **Wingtip Sales Analysis.odc**.

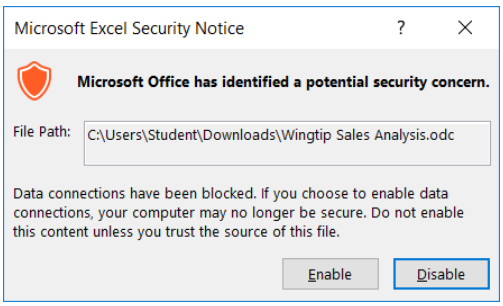
   e) If prompted whether to download **Wingtip Sales Analysis.odc**, click the **Save** button.



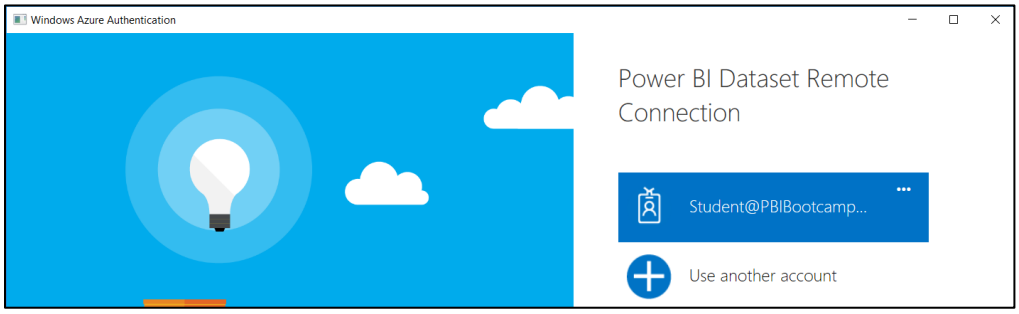
f) When prompted what to do with **Wingtip Sales Analysis.odc** after download, click **Open**.



g) When prompted with the **Microsoft Excel Security Notice** dialog, click the **Enable** button to continue.

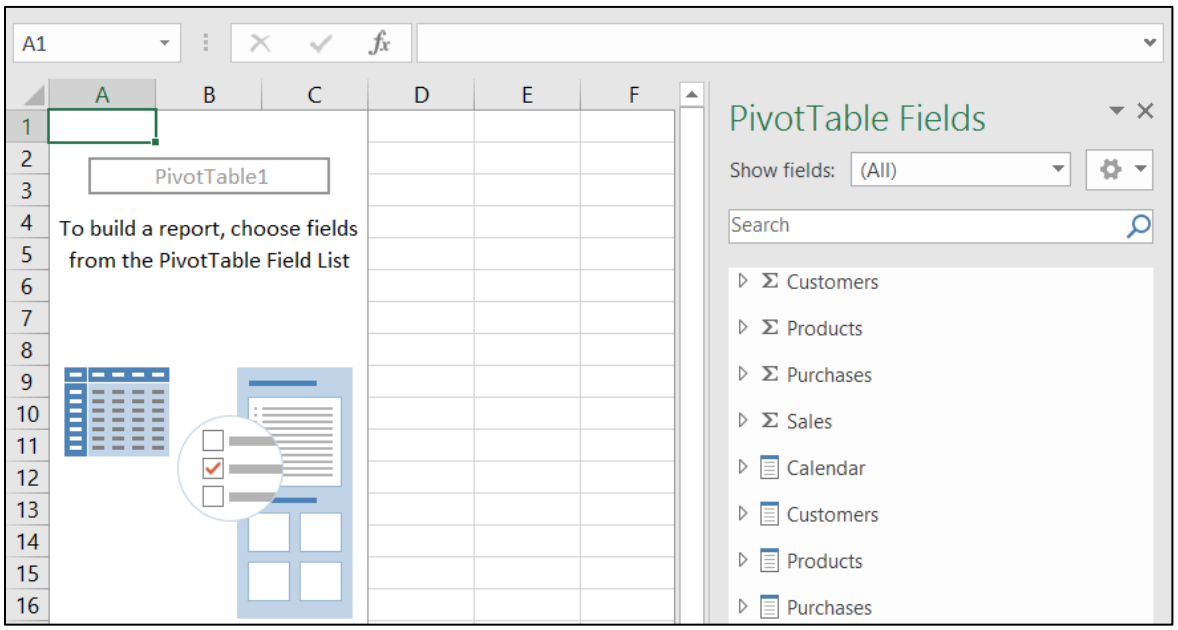


h) If you are prompted to log into the Power BI service, sign in with your primary Office 365 user account.



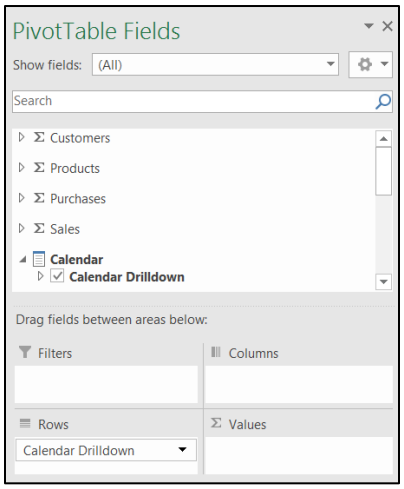
At this point, Excel should create a new workbook file with a pre-established connection to the **Wingtip Sales Analysis** dataset.

i) You should be able to see a new worksheet with a PivotTable named **PivotTable1**. You should also be able to see the tables and fields from the **Wingtip Sales Analysis** dataset in the **PivotTable Fields** list on the right side of the worksheet.

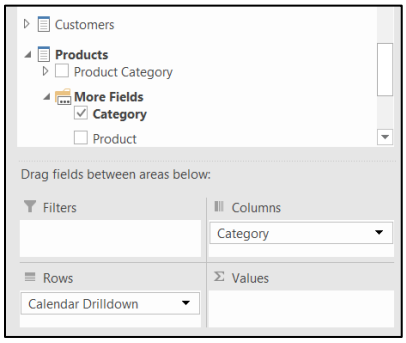


3. Create an Excel PivotTable from a Power BI Dataset.

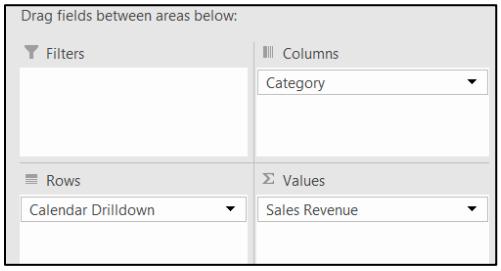
a) Drag and drop the **Sales Revenue** field from the **Sales** table into the **Values** well.



b) Drag the **Category** field from the **Products** table into the **Columns** well.



c) Add the **Sales Revenue** field from the **Sales** table into the **Values** well.



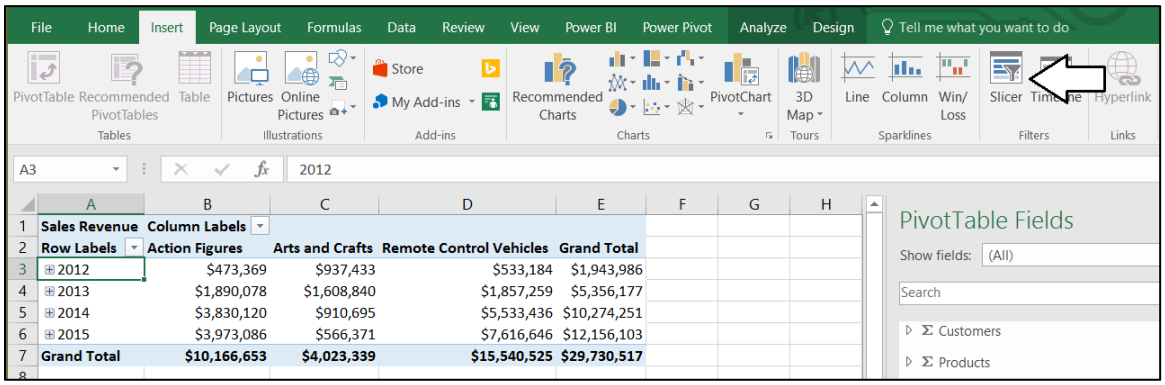
d) At this point, you should have a functional PivotTable you can use to directly analyze the **Wingtip Sales Analysis** dataset.

	A	B	C	D	E
1	**Sales Revenue**	**Column Labels**			
2	**Row Labels**	**Action Figures**	**Arts and Crafts**	**Remote Control Vehicles**	**Grand Total**
3	⊞2012	$473,369	$937,433	$533,184	$1,943,986
4	⊞2013	$1,890,078	$1,608,840	$1,857,259	$5,356,177
5	⊞2014	$3,830,120	$910,695	$5,533,436	$10,274,251
6	⊞2015	$3,973,086	$566,371	$7,616,646	$12,156,103
7	**Grand Total**	**$10,166,653**	**$4,023,339**	**$15,540,525**	**$29,730,517**

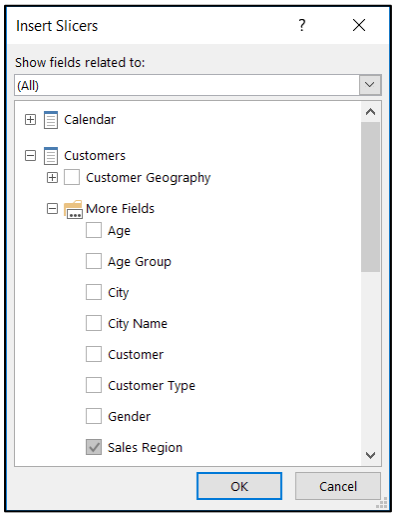
e) Experiment by drilling into PivotTable to see details at the quarterly level and monthly level.

Sales Revenue	Column Labels			
Row Labels	Action Figures	Arts and Crafts	Remote Control Vehicles	Grand Total
⊞2012	$473,369	$937,433	$533,184	$1,943,986
⊟2013	$1,890,078	$1,608,840	$1,857,259	$5,356,177
⊟2013-Q1	$310,755	$290,710	$343,846	$945,310
Jan 2013	$98,767	$96,647	$111,769	$307,182
Feb 2013	$92,852	$89,542	$109,548	$291,942
Mar 2013	$119,136	$104,521	$122,528	$346,186
⊞2013-Q2	$377,823	$359,628	$374,380	$1,111,831
⊞2013-Q3	$471,508	$472,775	$428,334	$1,372,617
⊞2013-Q4	$729,992	$485,727	$710,700	$1,926,420
⊞2014	$3,830,120	$910,695	$5,533,436	$10,274,251
⊞2015	$3,973,086	$566,371	$7,616,646	$12,156,103
Grand Total	$10,166,653	$4,023,339	$15,540,525	$29,730,517

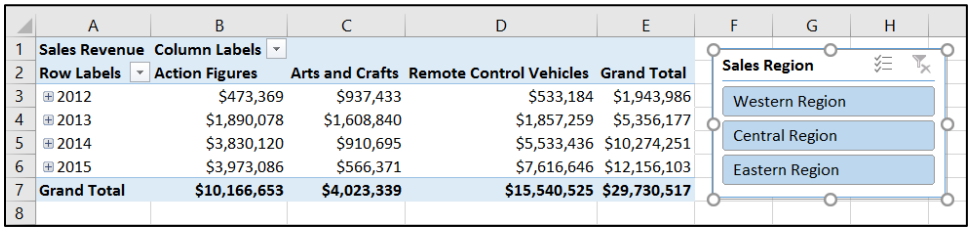
4. Add a slicer to filter the PivotTable.
   a) Select one of the cells inside the PivotTable.
   b) Navigate to the **Insert** tab in the ribbon.
   c) Click the **Slicer** button to add a new slicer onto the worksheet.



d) In the **Insert Slicers** dialog, select the **Sales Region** field from the **Customers** table and then click **OK**.

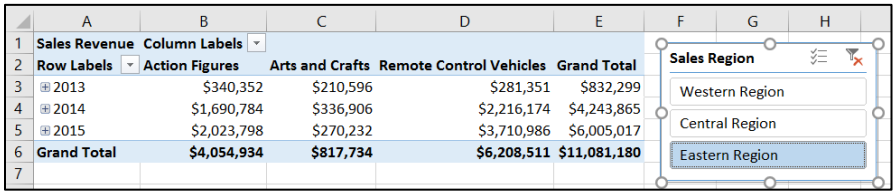


e) When the new slicer is added to the current worksheet, use the mouse to position it to the right of the PivotTable.



Sales Revenue	Column Labels			
Row Labels	Action Figures	Arts and Crafts	Remote Control Vehicles	Grand Total
2012	$473,369	$937,433	$533,184	$1,943,986
2013	$1,890,078	$1,608,840	$1,857,259	$5,356,177
2014	$3,830,120	$910,695	$5,533,436	$10,274,251
2015	$3,973,086	$566,371	$7,616,646	$12,156,103
Grand Total	**$10,166,653**	**$4,023,339**	**$15,540,525**	**$29,730,517**

f) Experiment with the slicer by select different sales regions. The PivotTable should update accordingly.



Sales Revenue	Column Labels			
Row Labels	Action Figures	Arts and Crafts	Remote Control Vehicles	Grand Total
2013	$340,352	$210,596	$281,351	$832,299
2014	$1,690,784	$336,906	$2,216,174	$4,243,865
2015	$2,023,798	$270,232	$3,710,986	$6,005,017
Grand Total	**$4,054,934**	**$817,734**	**$6,208,511**	**$11,081,180**

5. Save the new worksheet as a local file in the **C:\Student\Projects** folder named **Wingtip Sales PivotTable.xlsx**.
6. You have now reached the end of this lab.
   a) If you'd like, you can continue to experiment in this Excel worksheet by analyzing the **Wingtip Sales Analysis** dataset in Power BI using all the data analytics skills you have learned over the years in Microsoft Excel.

There is one important limitation to keep in mind when using the **Analyze in Excel** feature. That is an Excel worksheet with a connection to Power BI datasets works much better in the desktop version of Microsoft Excel than it does when rendered in the browser by Excel Online. If you save this worksheet to Excel Online and render through the browser, it will not provide interactive behavior. The interactive behavior only works correctly when the workbook is opened using the desktop version of Microsoft Excel.