# Designing Interactive Reports in Power BI Desktop

**Lab Time**: 60 minutes

**Lab Folder**: C:\Student\Modules\05_Reports\Lab

**Lab Overview**: In this module you will begin by publishing and certifying the **Wingtip Sales Model** dataset in the Power BI Service. After that you will create a new project in Power BI Desktop named Wingtip Sales Report that connects to the Wingtip Sales Model dataset running in the Microsoft cloud.

**Lab Dependency:** This lab assumes you have completed the previous lab titled **Writing Advanced DAX Expressions** in which you extended the dataset in **Wingtip Sales Model.pbix** with new measures, dimensional hierarchies and a calendar table. If you would like to begin work on this lab without completing the earlier lab, copy the lab solution file named **Wingtip Sales Model.pbix** which is located in the student folder at **C:\Student\Modules\04_AdvancedDAX\Lab\Solution** into the folder at **C:\Student\Projects**.

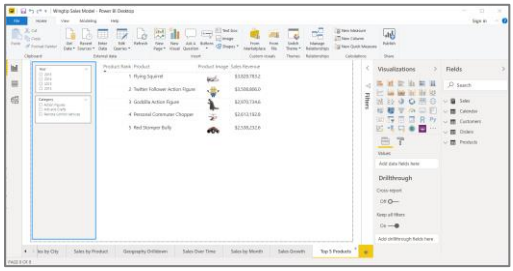
## Exercise 1: Publish, Promote and Certify the Wingtip Sales Model Dataset

In this exercise, you will publish and certify the Wingtip Sales Model dataset to make it available to other report authors.

1. Open the Power BI Desktop project named **Wingtip Sales Model.pbix**
   a) Launch Power BI Desktop.
   b) Open the Power BI Desktop project named **Wingtip Sales Model.pbix** from the previous lab located at the following path.

```
C:\Student\Projects\Wingtip Sales Model.pbix
```

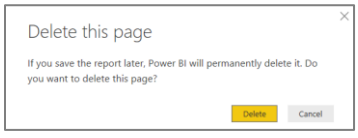
   c) When the project opens, click the report icon on the top of the sidebar to enter report view mode.
   d) You should see all the report pages you created in the previous lab.



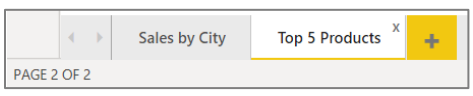
Many of the report pages you created in the previous lab allowed you to test your data modeling work, but he pages themselves are not that interesting. In the next step you will delete every report page except for the page named **Sales by Geography**.and **Top 5 Products**

2. Remove all the report pages except for the **Sales by City** page and the **Top 5 Products** page.
   a) Remove the Sales by State page by clicking the X in the top right corner of its page tab.

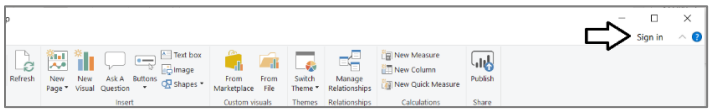

   b) When prompted with the Delete this page dialog, click the Delete button to confirm



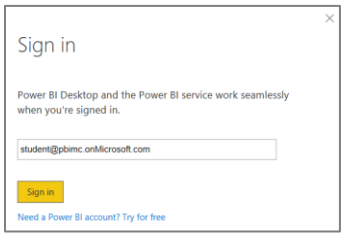

   c) Repeat the same steps to delete all pages in the report except for **Sales by City** and **Top 5 Products**.



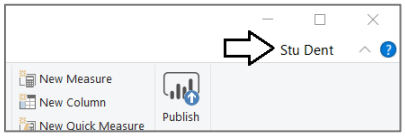
1. Publish the **Wingtip Sales Model.pbix** project to the Power BI Service.
   a) Save your changes to the **Wingtip Sales Model.pbix** project.
   b) Navigate to the **Home** tab in the ribbon and click the **Publish** button on the far right-hand side.



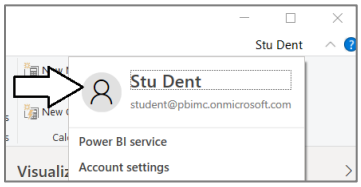

   c) When promoted with the **Sign in to Power BI** dialog, click the **Sign In** button



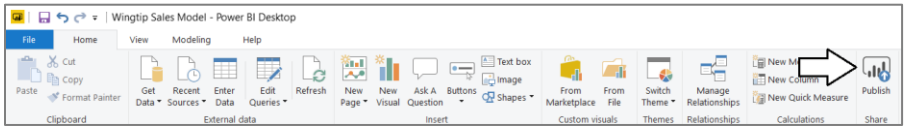

   d) When prompted for your password, sign into the Power BI service.
   e) Once you have logged in, click on the logged-in user name in the upper right corner of the main Power BI Desktop window.



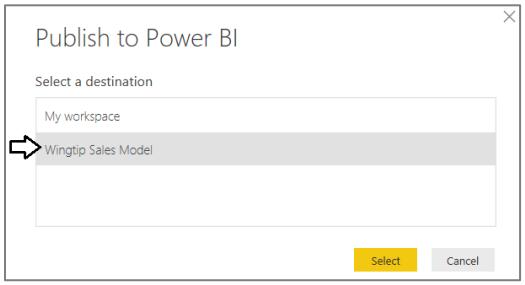

   f) Verify that you are logged in using the same organizational account that you created earlier for this training course.



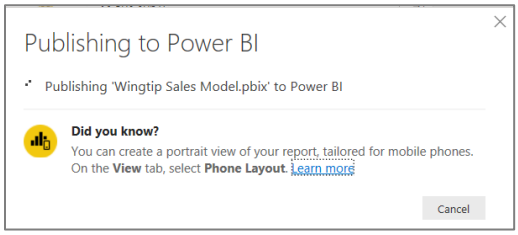

2. Publish the data model of **Wingtip Sales Model.pbx** project to the **Wingtip Sales Model** workspace.
   a) Click the **Publish** button in the **Home** tab.




   b) When Power BI Desktop prompts you with the **Publish to Power BI** dialog, select **Wingtip Sales Model** then click **Select**.

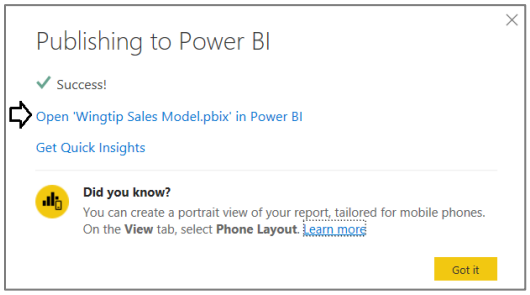


c) Power BI Desktop will display the **Publishing to Power BI** dialog as the publishing process begins.




d) Once the publishing process has completed, the **Publishing to Power BI** dialog will display a success message and link.

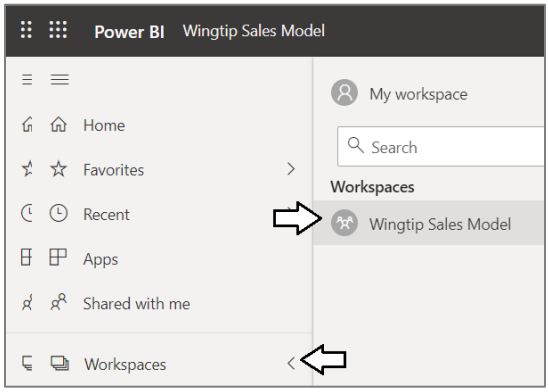
e) You can click the **Open Wingtip Sales Model.pbix in Power BI** link to navigate to the Power BI service using the browser.



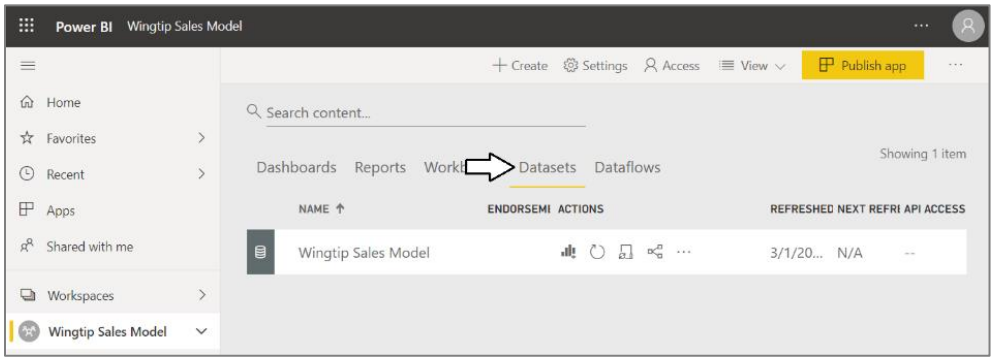

3. Navigate to the **Wingtip Sales Model** workspace using the browser.

a) Navigate to the Power BI Service at https://app.poerbi.com and log in using your organizational account.

b) Navigate to the **Wingtip Sales Model** workspace.

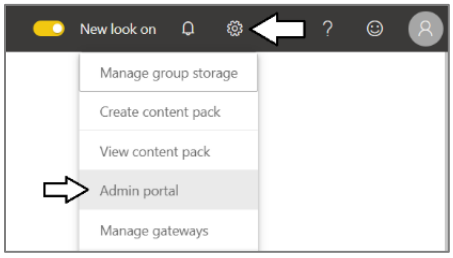



c) Navigate to the **Datasets** view and verify you can see the dataset named **Wingtip Sales Model**.

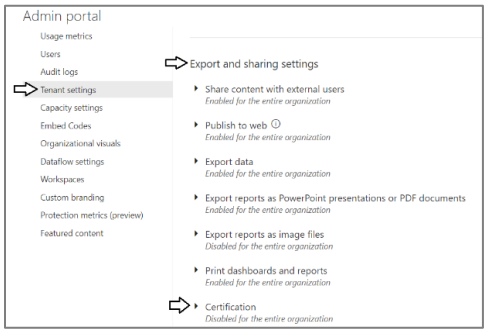


Power BI does not allow an organization to certify datasets with the default settings. You must configure a tenant-level setting to allow for dataset certification. This is what you will do in the next step.

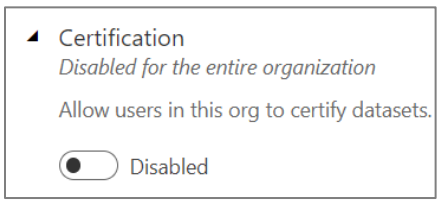
4. Configure the tenant-level setting to allow for dataset certification.
   a) Drop down the **Settings** menu (*the menu with the gear icon*) and select the **Admin portal** command.



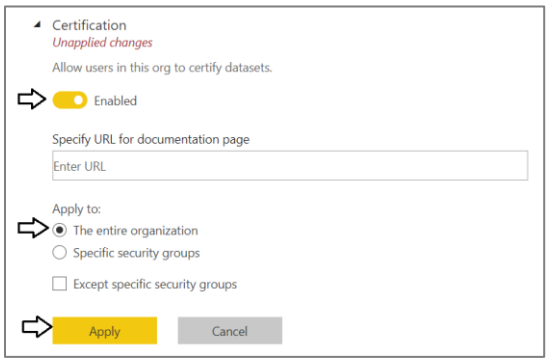

   b) On the **Portal admin** page, select **Tenant settings** in the left navigation.
   c) Scroll down to the **Export and sharing settings** section and expand the **Certification** section.



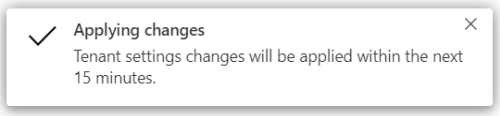

   d) You can see that, by default, the **Certification** feature is disabled.




   e) Enabled the Certification feature.
   f) For the **Apply to** setting, select **The entire organization**.
   g) Click the **Apply** button to save your changes.

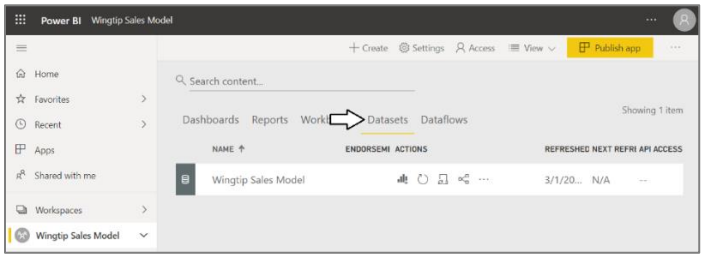


h) You might see an **Applying changes** notification that indicates the setting might take up to 15 minutes to be applied.

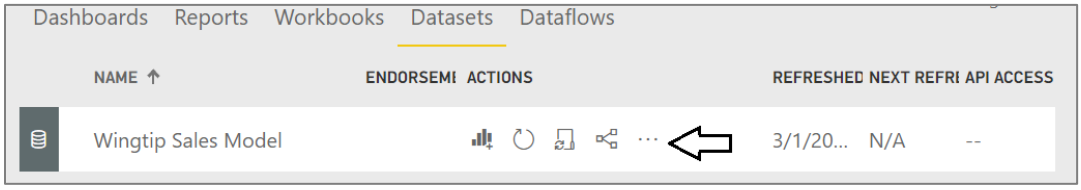



5. Configure datasource credentials for the **Wingtip Sales Model** dataset.

a) Navigate to the **Datasets** tabs on the summary page for the **Wingtip Sales Model** workspace.




b) Click the context dropdown menu (*with the ellipse icon*) for the **Wingtip Sales Model** dataset.

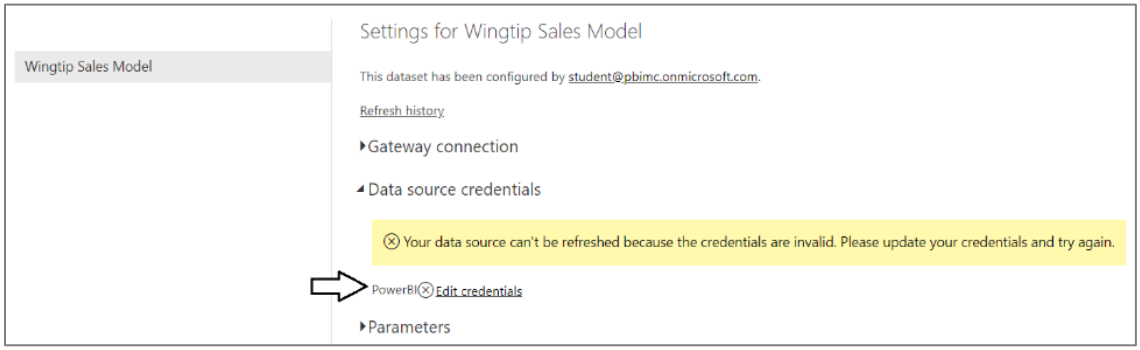



c) Select the **Settings** command for the **Wingtip Sales Model** dataset.


d) On the **Settings for Wingtip Sales Model** page, expand the **Data source credentials** section.

e) You should see a yellow message indicating that the data source credentials have not been set.

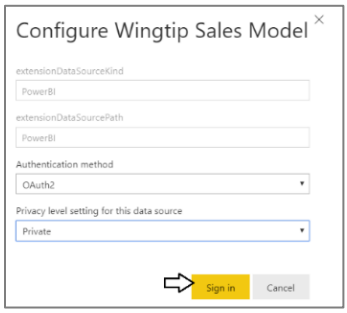
f) Click the **Edit credentials** link to set credentials to access the underlying dataflow.



g) On the **Configure Wingtip Sales Model** dialog, select **OAuth2** as the **Authentication method**.

h) Select **Private** as the **Privacy level setting**.

i) Click **Sign in** to set the credentials for the dataset's data source.



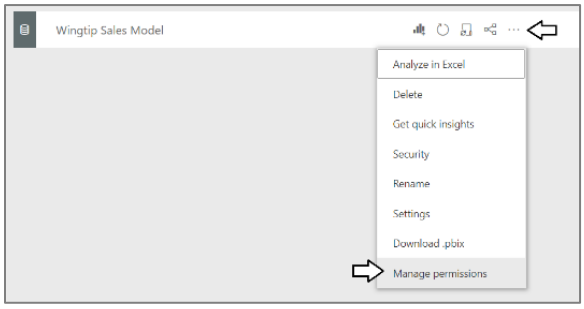

j) Once the credentials have been set, the big yellow message should disappear.


At this point you should be able to perform a dataset refresh. You can test it if you want to ensure that this dataset can be refreshed from the data in the underlying dataflow named **Wingtip Sales Data**. Of course, the refresh will have not real effect as the data in the underlying dataflow has not changed. And even if you update the dataflow, the data in the underlying Azure SQL database is a read-only sample database that is never updated.

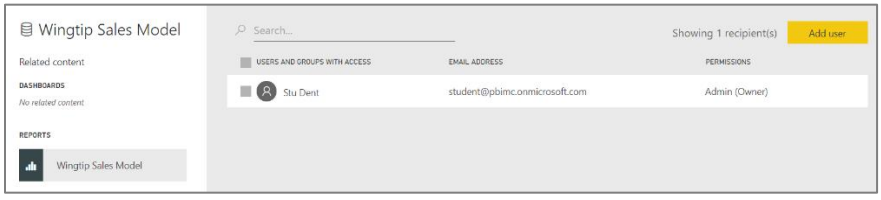
1. Manage permissions for the **Wingtip Sales Model** dataset.

a) Click the context dropdown menu (*with the ellipse icon*) for the **Wingtip Sales Model** dataset.

b) Select the **Manage permissions** command.

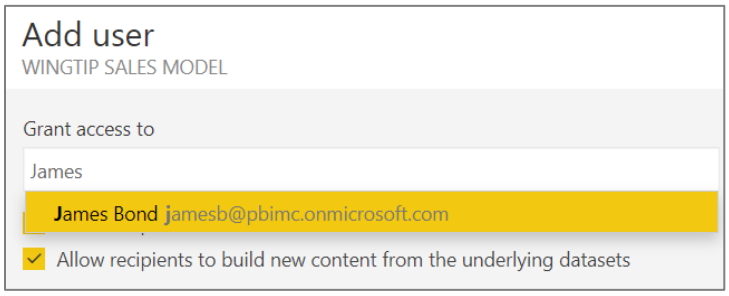



c) By default, your account should be the only one that has permissions to this dataset.

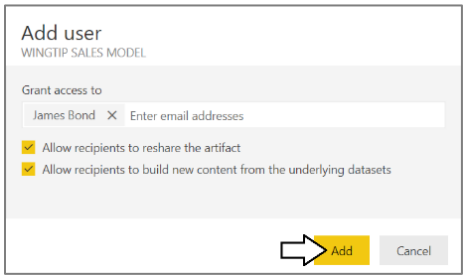


d) Click the **Add user** button.

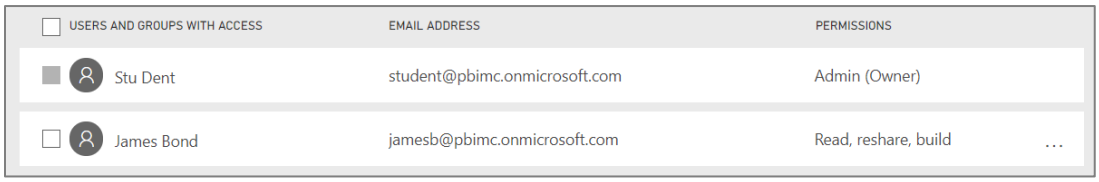

e) Add the user James Bond.



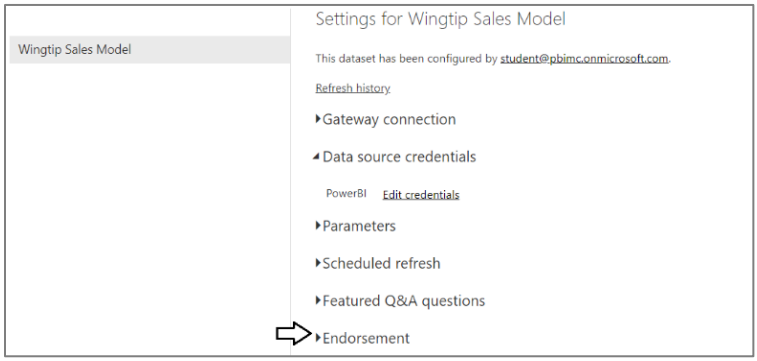

f) Click **Add** to add the permissions for user James Bond.



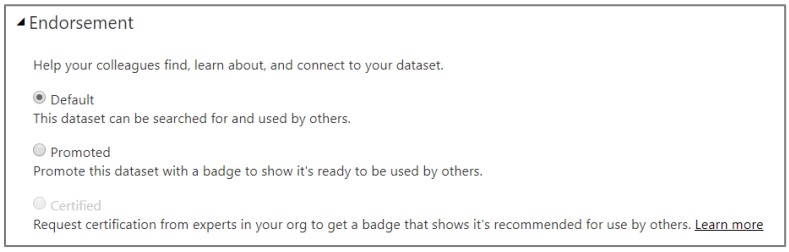

g) You should be able to see that the new user has been added with three permissions which are **Read**, **Reshare** and **Build**.




2. Configure the **Wingtip Sales Model** dataset as a promoted dataset.
   a) Click the context dropdown menu (*with the ellipse icon*) for the **Wingtip Sales Model** dataset.
   b) Select the **Settings** command for the **Wingtip Sales Model** dataset.
   c) On the **Settings for Wingtip Sales Model** page, expand the **Endorsement** section.



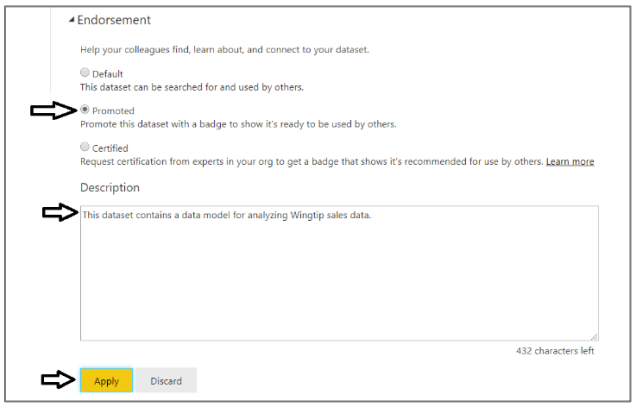
d) The **Endorsement** should currently be set to **Default** which is the default setting.




e) Change the Endorsement setting from **Default** to **Promoted**.

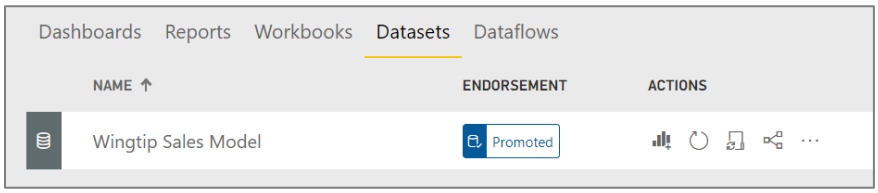
f) Add a description such as “This dataset contains a data model for analyzing Wingtip sales data.”

g) Click the **Apply** button to save your changes.



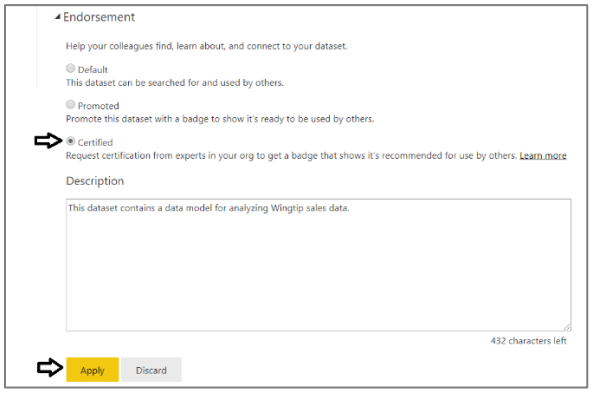

h) Navigate to the **Datasets** tabs on the summary page for the **Wingtip Sales Model** workspace.

i) You should see that the **Wingtip Sales Model** dataset now has a **Promoted** banner.



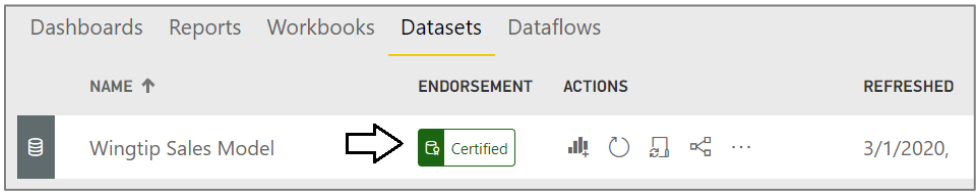

j) Return to the **Endorsements** section on the **Settings for Wingtip Sales Model** page.

k) Switch the **Endorsement** setting from **Promoted** to **Certified** and then click **Apply** to save your changes.



l) Navigate to the **Datasets** tabs on the summary page for the **Wingtip Sales Model** workspace.

m) You should see that the **Wingtip Sales Model** dataset now has a **Certified** banner.




## Exercise 2: Create a Report on a Published Dataset

In this exercise you will create a new **Power BI Desktop** project named **Wingtip Sales Report** which connects to the data model which has been published by the **Wingtip Sales Model** dataset.

1. Create a new Power BI Desktop project named **Wingtip Sales Report**.

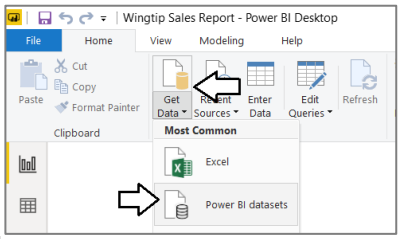
   a) Launch a new instance of Power BI Desktop to start a new project.

   b) Save the new project as **Wingtip Sales Report.pbix** using the following path.

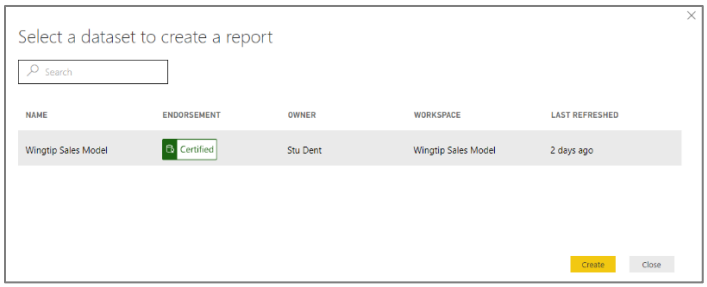
```
C:\Student\Projects\Wingtip Sales Report.pbix
```

2. Create a connection to the **Wingtip Sales Model** dataset.

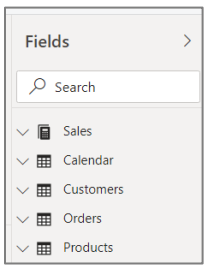
   a) Drop down the **Get Data** menu and select the **Power BI datasets** command.




   b) In the **Select a dataset to create a report** dialog, select the **Wingtip Sales Model** dataset and click **Create**.



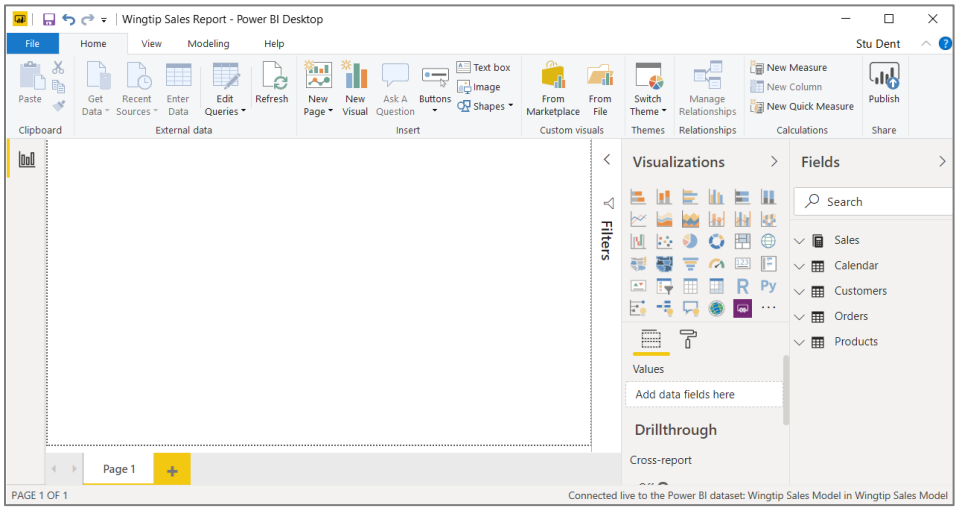

   c) Once you connect to the **Wingtip Sales Model** dataset, you should see its tables in the **Fields** list.



Once you connect a Power BI Desktop project to a Power BI dataset, you cannot import data from any other data source. That means that the report you create in this project must solely rely on data provided by the one dataset to which you have connected.

d) Note the project now only supports **Report** view. **Data** view and **Model** view are disabled once you connect to a dataset.

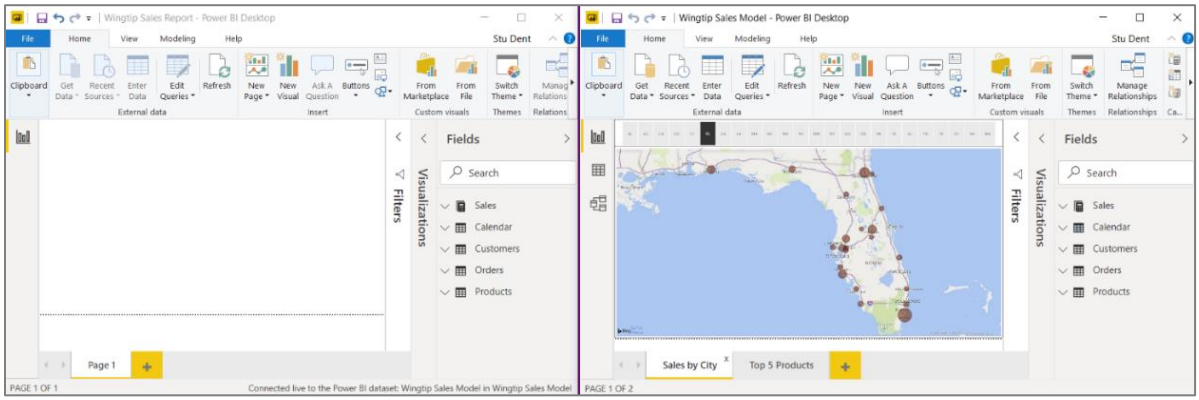
e) You should also observe that all the controls in the **External data** section in the ribbon are disabled.




When you connect to a dataset in this fashion, the dataset is read-only in the sense that you cannot add new datasource. You are also prevented from making changes to the tables, calculated columns, measures and hierarchies defined in the the data model. However, you do have the ability to add measures on top of an existing model. You will add a custom measure in an upcoming lab exercise.

3. Copy and paste report visuals from the **Wingtip Sales Model** project to the **Wingtip Sales Report** project.

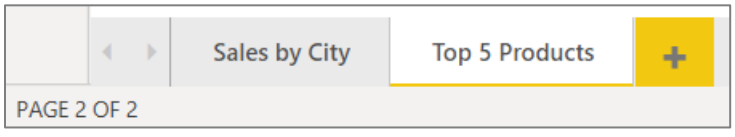
a) You should now have both Power BI Desktop projects open on your computer.




b) Navigate the **Wingtip Sales Report** project.

c) Rename the page named **Page1** to **Sales by City**.

d) Create a second page and rename it to **Top 5 products**.

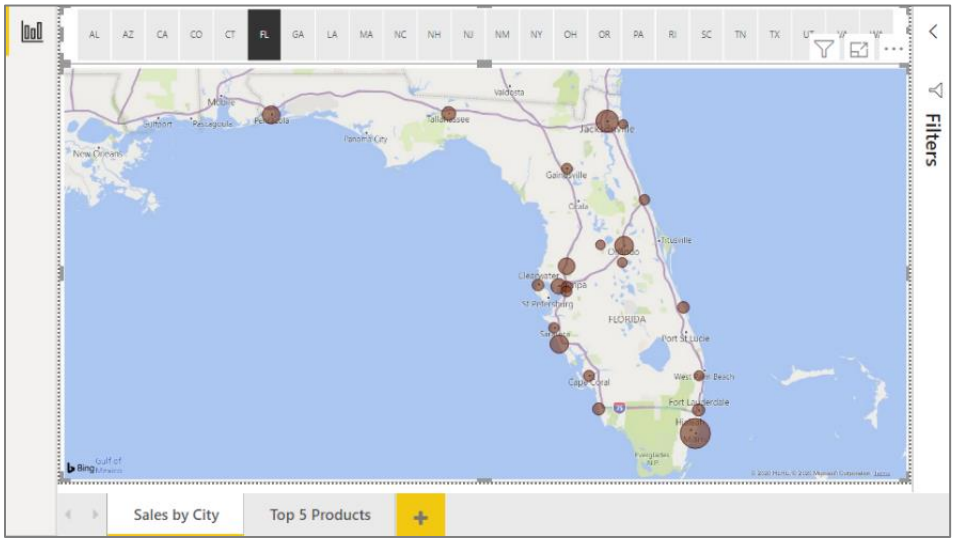



e) Navigate to the **Wingtip Sales Model** project and then navigate to the **Sales by City** page.

f) Select all the visuals on the **Sales by City** page and copy them to the Windows clipboard.

g) Navigate back to the **Wingtip Sales Report** project and then navigate to the **Sales by City** page.

h) Paste the visuals from the Windows clipboard to the **Sales by City** page.



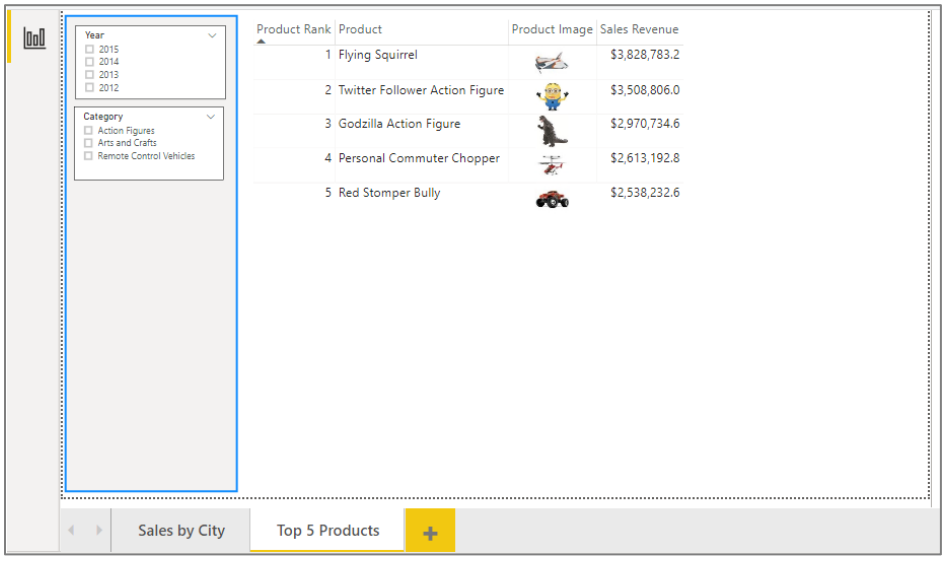

Now that you've copied visuals from the **Sales by City** page, you will follow the same steps to copy the visuals from **Top 5 Products**.

a) Navigate to the **Wingtip Sales Model** project and then navigate to the **Top 5 Products** page.

b) Select all the visuals on the **Top 5 Products** page and copy them to the Windows clipboard.

c) Navigate back to the **Wingtip Sales Report** project and then navigate to the **Top 5 Products** page.

d) Paste the visuals from the Windows clipboard to the **Top 5 Products** page.

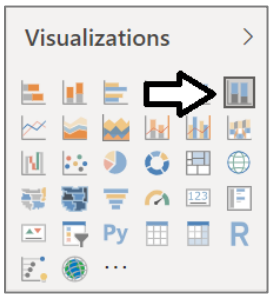



4. Create a new report page named **Revenue Breakdown**.

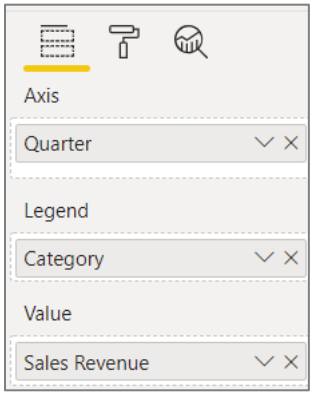
a) Create a new report page.

b) Rename the page **Revenue Breakdown**.

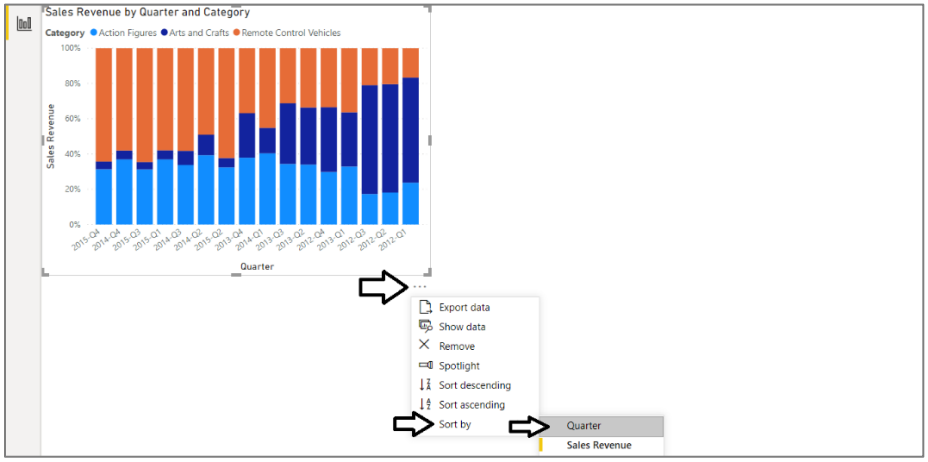
5. Add a new visual to the report to show sales revenue broken down by product category.
   a) Make sure the **Home** tab is active on the ribbon.
   b) Click on the **New Visual** button to add a new visual to the page.
   c) Click the **100% Stacked column chart** button in the **Visualizations** list to change the visualization type.




   d) Drag the **Quarter** column from the **Calendar** table in the **Fields** list and drop it into the **Axis** well in the **Visualizations** pane.
   e) Drag the **Category** column from the **Products** table and drop it into the **Legend** well in the **Visualizations** pane.
   f) Drag the **Sales Revenue** measure from the **Sales** table and drop it into the **Value** well in the **Visualizations** pane.



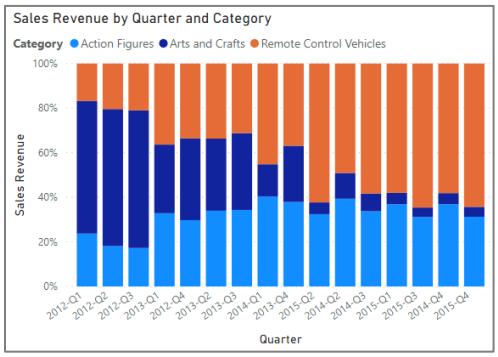

   g) Using the mouse, resize the visual to take up the entire top, left corner of the page.
   h) Change the visual sorting by dropping down the visual flyout menu (**…**) and selecting **Sort by > Quarter**.




The visual flyout menu (**…**) menu can be confusing because it is usually displayed at the top of a visual. However, when a visual is positioned at the top of the page or near the top of the page, the flyout ellipse menu (**…**) menu is moved to the bottom right corner.

i) Drop down the visual ellipse menu (**…**) again and select **Sort Ascending**.

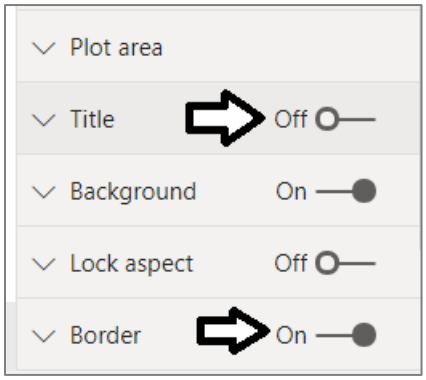

j) Now you should see that the months on the X axis are displayed chronologically from left to right.



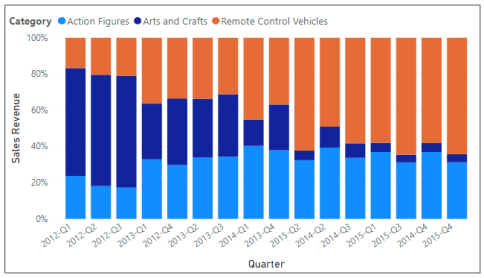

k) With the visual selected, navigate to the **Format** pane to view the properties for the visual.

l) Change the **Title** setting to **Off**.

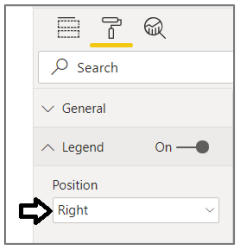
m) Change the **Border** setting to On.



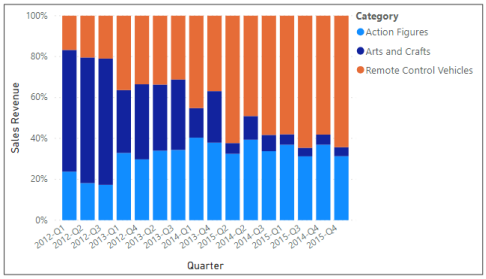

n) Now the visual should display with a solid border.



o) Modify the legend settings for the visual




p) Now it should look like this.




q) Reposition the visual so it takes up the entire upper, left-hand corner of the page.

6. Create a second visual to display a breakdown of sales revenue by customer type.

a) Select the existing visual and copy it to the Windows clipboard.

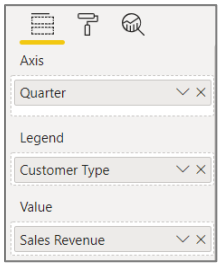
b) Perform a paste operation to add a second copy of the visual to the report page.

c) Reposition the visual so it takes up the entire lower, left-hand corner of the page.

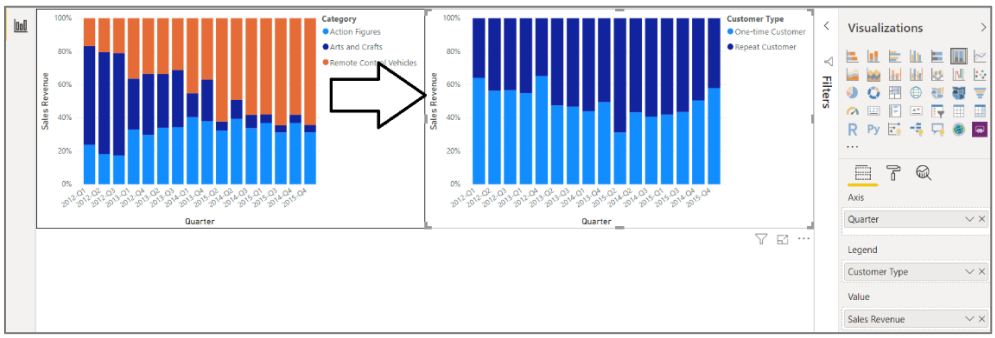
d) Make sure the second visual is selected and examine its properties in the **Visualizations** pane.

e) Remove the **Categories** column from the **Legend** well.

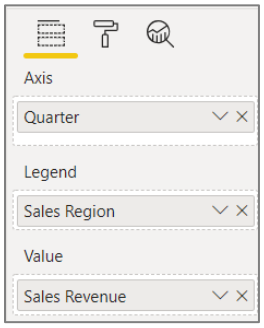
f) Drag the **Customer Type** column from the **Customers** table and drop it into the **Legend** well in the **Visualizations** pane.



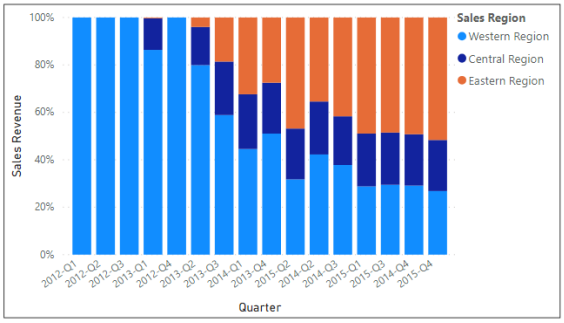

g) The new visual should now match the that is visual shown in the following screenshot.



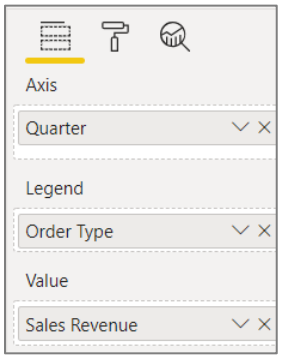
7. Create a third visual to display a breakdown of sales revenue by sales region.
   a) Select the first visual on the top, left of the page and copy it to the Windows clipboard.
   b) Perform a paste operation to add a new copy of the visual to the report page.
   c) Reposition the visual so it takes up the entire upper, right-hand corner of the page.
   d) Make sure the third visual is selected and examine its properties in the **Visualizations** pane.
   e) Remove the **Categories** column from the **Legend** well.
   f) Drag the **Sales Region** column from the **Customers** table and drop it into the **Legend** well in the **Visualizations** pane.



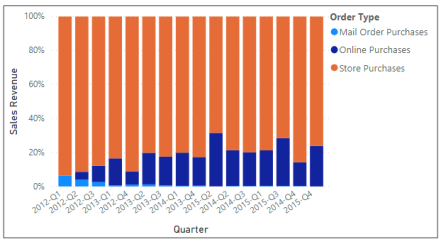

   g) The new visual should now match the visual shown in the following screenshot.



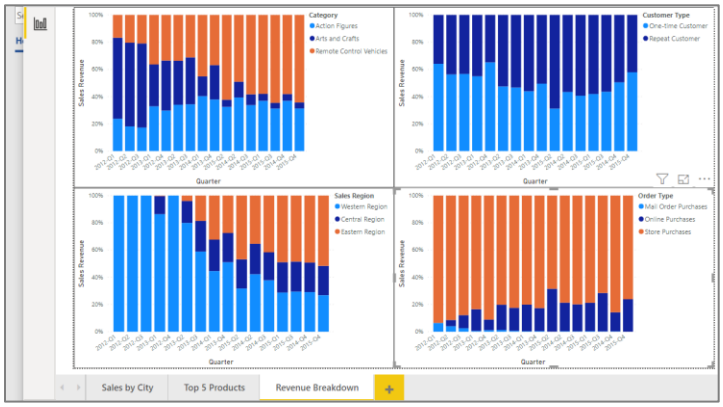

8. Create a fourth visual to display a breakdown of sales revenue by purchase type.
   a) Select the first visual on the top, left of the page and copy it to the Windows clipboard.
   b) Perform a paste operation to add a new copy of the visual to the report page.
   c) Reposition the visual so it takes up the entire lower, right-hand corner of the page.
   d) Make sure the new visual is selected and examine its properties in the **Visualizations** pane.
   e) Remove the **Categories** column from the **Legend** well.
   f) Drag the **Order Type** column from the **Orders** table and drop it into the **Legend** well in the **Visualizations** pane.



g) The new visual should now match the visual shown in the following screenshot.




h) Make sure that the four visuals are laid out on the page as shown in the following screenshot.

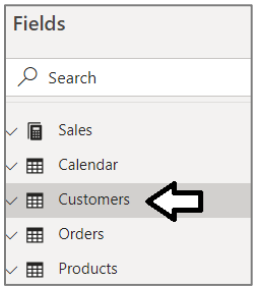



9. Save the work you have done by clicking the **Save** button in the upper left corner of the Power BI Desktop window.

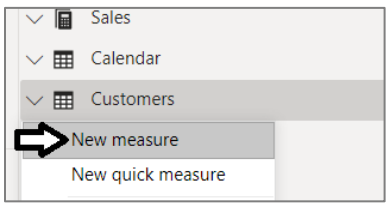
## Exercise 3: Create the Top 10 Customers Report

In this exercise you will create a measure named **Customer Rank** that ranks customers according to their sales revenue. You will then work to create a report page that displays the top 10 customers. You will also design this report page to be interactive allowing the user to filter on a specific year or a specific sales region to see what customers have contributed the greatest amount of sales revenue.

1. Create a new measure named **Customer Rank** to determine the top ranked customers with respect to sales revenue.
   a) Locate the **Sales** table in the **Fields** list.




   b) Right-click on the **Customers** table and then select **New Measure** command.

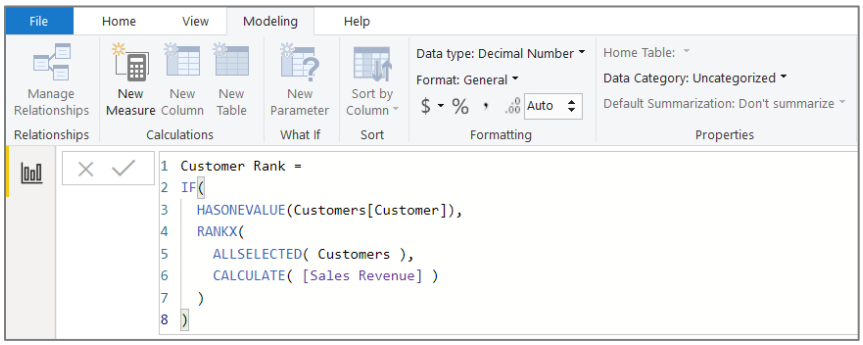


c) Enter to following DAX expression into the formula bar to create the measure named **Customer Rank**.

```
Customer Rank =
IF(
  HASONEVALUE(Customers[Customer]),
  RANKX(
    ALLSELECTED( Customers ),
    CALCULATE( [Sales Revenue] )
  )
)
```

d) Press the **ENTER** key to add the measure to the data model.

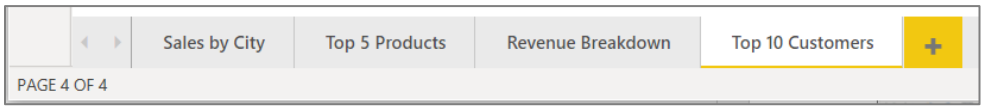
e) Ensure the formatting for this measure is set to **Whole Number** as shown in the following screenshot.




2. Create a new report page named **Top 10 Customers**.

a) Navigate to **Report** view.

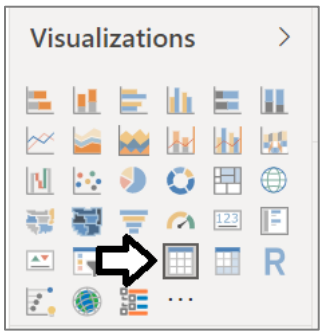
b) Create a new report page and rename it to **Top 10 Customers**.




3. Add a new table visual to display the top 10 customers.

a) Click the **New Visual** button on the ribbon to add a new visual to the page.

b) Change the visual to a table by clicking the **Table** button in the **Visualizations** list.




c) Drag and drop the **Customer Rank** measure from the **Customers** table into the **Values** well.

d) Drag and drop the **Customer** column from the **Customers** table into the **Values** well.

e) Drag and drop the **Age** column from the **Customers** table into the **Values** well.

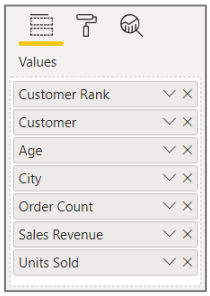
f) Drag and drop the **City** column from the **Customers** table into the **Values** well.

g) Drag and drop the **Order Count** measure from the **Sales** table into the **Values** well.

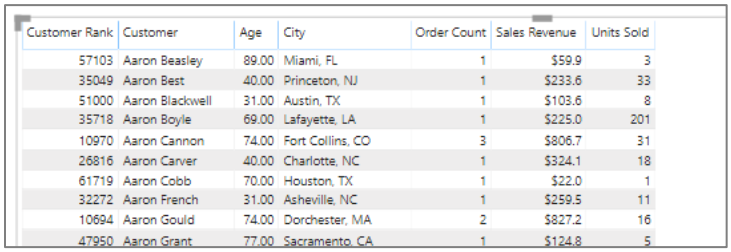
h) Drag and drop the **Sales Revenue** measure from the **Sales** table into the **Values** well.

i) Drag and drop the **Units Sold** measure from the **Sales** table into the **Values** well.

j) The **Values** well for your visual should match the following screenshot.

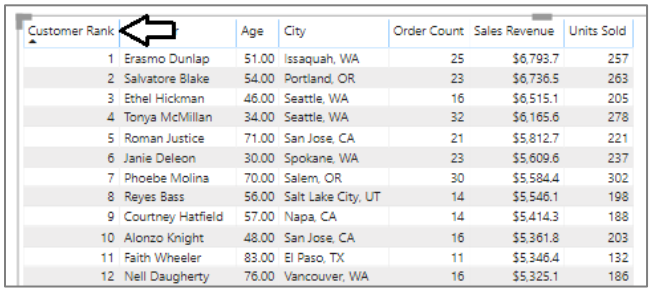



k) The new table visual should now display as the visual shown in the following screenshot.



| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 57103 | Aaron Beasley | 89.00 | Miami, FL | 1 | $59.9 | 3 |
| 35049 | Aaron Best | 40.00 | Princeton, NJ | 1 | $233.6 | 33 |
| 51000 | Aaron Blackwell | 31.00 | Austin, TX | 1 | $103.6 | 8 |
| 35718 | Aaron Boyle | 69.00 | Lafayette, LA | 1 | $225.0 | 201 |
| 10970 | Aaron Cannon | 74.00 | Fort Collins, CO | 3 | $806.7 | 31 |
| 26816 | Aaron Carver | 40.00 | Charlotte, NC | 1 | $324.1 | 18 |
| 61719 | Aaron Cobb | 70.00 | Houston, TX | 1 | $22.0 | 1 |
| 32272 | Aaron French | 31.00 | Asheville, NC | 1 | $259.5 | 11 |
| 10694 | Aaron Gould | 74.00 | Dorchester, MA | 2 | $827.2 | 16 |
| 47950 | Aaron Grant | 77.00 | Sacramento, CA | 1 | $124.8 | 5 |

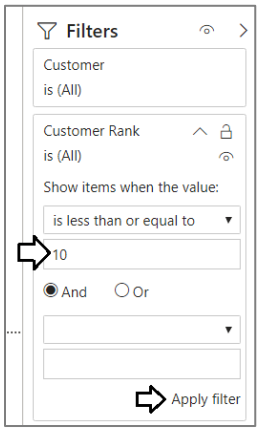
l) Click on the **Customer Rank** column header twice to sort the visual so the customers with the lowest rank and the greatest amount of sales revenue are sorted to the top.



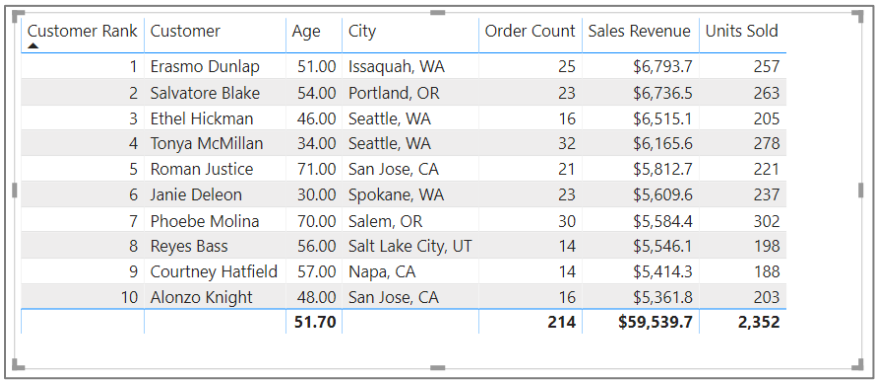
| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51.00 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54.00 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46.00 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34.00 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71.00 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30.00 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70.00 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56.00 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57.00 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48.00 | San Jose, CA | 16 | $5,361.8 | 203 |
| 11 | Faith Wheeler | 83.00 | El Paso, TX | 11 | $5,346.4 | 132 |
| 12 | Nell Daugherty | 76.00 | Vancouver, WA | 16 | $5,325.1 | 186 |

m) In the Field properties pane, locate the **Customer Rank** measure in **Visual level filters** well of the **Filters** section.

n) Configure the **Customer Rank** filter to only display customers with a rank of 10 or lower as shown in the following screenshot and then click the **Apply Filter** link to apply the filter to the visual.

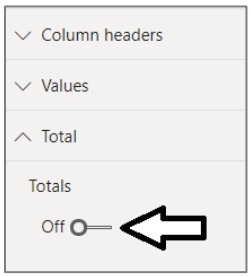


o) Your visual should now display the top 10 customers as shown in the following screenshot. Note that the visual is still showing the **Totals** row at the bottom which needs to be removed.

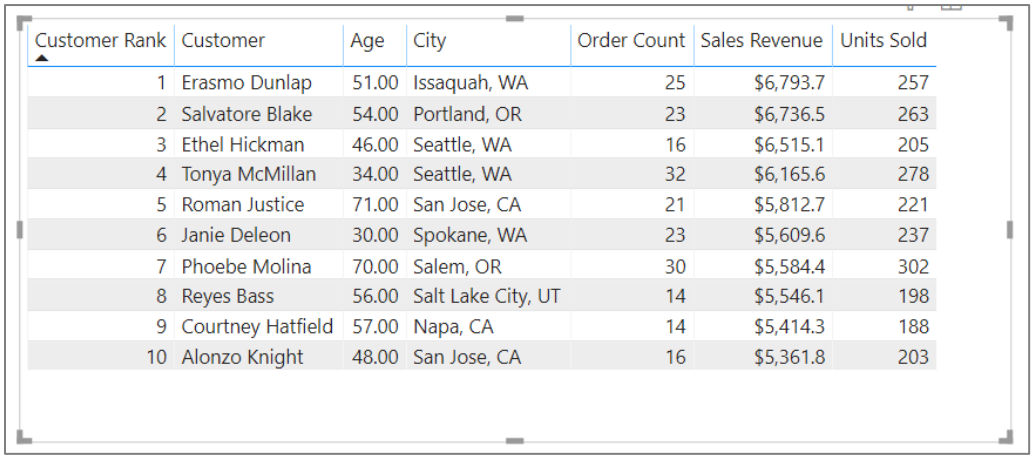


| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51.00 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54.00 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46.00 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34.00 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71.00 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30.00 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70.00 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56.00 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57.00 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48.00 | San Jose, CA | 16 | $5,361.8 | 203 |
| | | **51.70** | | **214** | **$59,539.7** | **2,352** |

p) Locate the **Totals** property in the **Total** section of the property sheet for the table visual and set it to a value of **Off**.

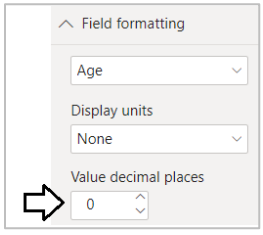



q) You visual should now look better when it is displayed without the **Totals** row.

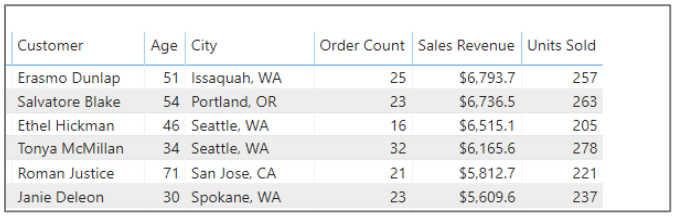


| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51.00 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54.00 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46.00 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34.00 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71.00 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30.00 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70.00 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56.00 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57.00 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48.00 | San Jose, CA | 16 | $5,361.8 | 203 |

r) Configure the **Field Formatting** of the **Age** field so it displays as a whole number by assigning the Value decimal places property with a value of **0**.

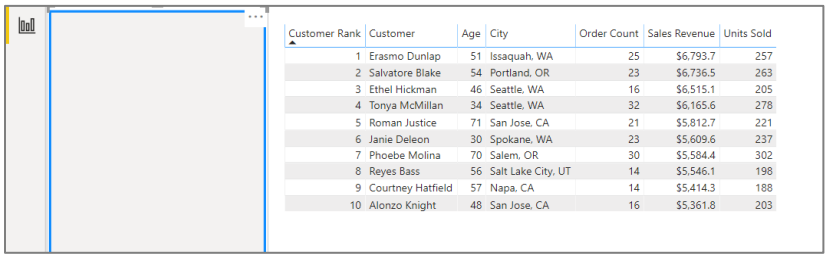


s) The **Age** values should now display as whole numbers with no significant digits after the decimal point.



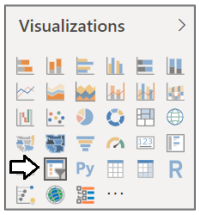
| Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|
| Erasmo Dunlap | 51 | Issaquah, WA | 25 | $6,793.7 | 257 |
| Salvatore Blake | 54 | Portland, OR | 23 | $6,736.5 | 263 |
| Ethel Hickman | 46 | Seattle, WA | 16 | $6,515.1 | 205 |
| Tonya McMillan | 34 | Seattle, WA | 32 | $6,165.6 | 278 |
| Roman Justice | 71 | San Jose, CA | 21 | $5,812.7 | 221 |
| Janie Deleon | 30 | Spokane, WA | 23 | $5,609.6 | 237 |

4. Create a rectangle shape to provide background formatting for the report page.
   a) Drop down the **Shapes** menu and select the **Rectangle** command to add a new shape to the report.
   b) Using the mouse, resize the rectangle share to take up the full height of the report page and about 20% of the width.

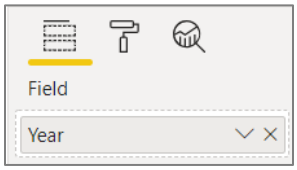


| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48 | San Jose, CA | 16 | $5,361.8 | 203 |

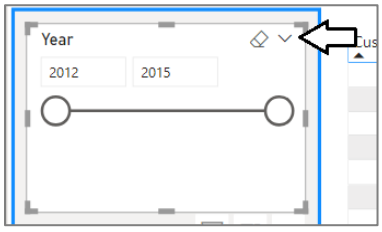
5. Add a new slicer visual to the page to filter the top 10 customers visual by **Year**.
   a) Click the **New Visual** button on the ribbon to add a new visual to the page.
   b) Change the visual to a slicer by clicking the Slicer button in the **Visualizations** list.



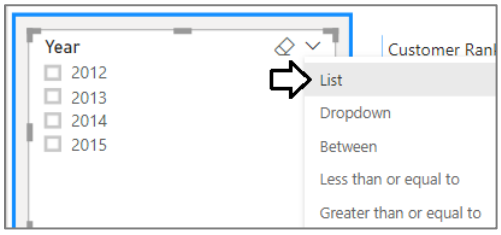

   c) Position the slicer on top of the rectangle.
   d) Drag and drop the **Year** column from the **Sales** table into the **Values** well.



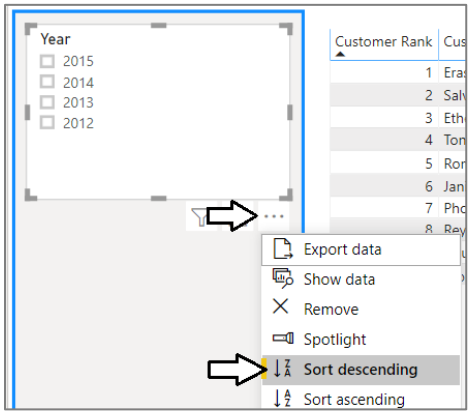

   e) The slicer should be initialized with a slider because the **Year** field is a whole number.
   f) Drop down the slicer type menu.



g) Switch the slicer type to **List**.



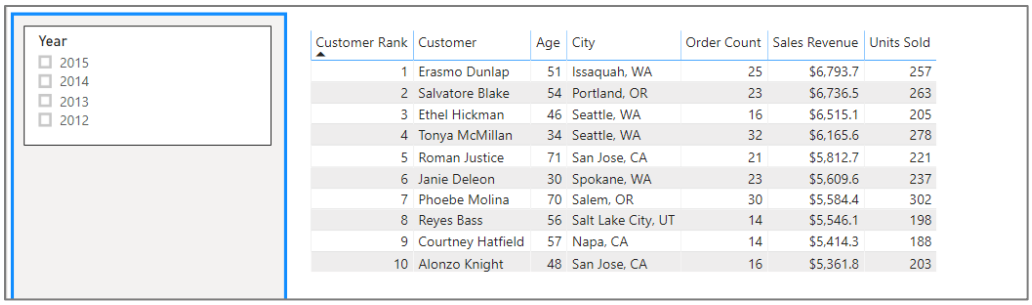

h) Sort the slicer values in a descending values so the year 2015 is on top.




i) Set the **Title** of the slicer visual to **Off**.

j) Set the **Border** of the slicer visual to **On**.

k) The slicer visual should now appear like the one on the following screenshot.



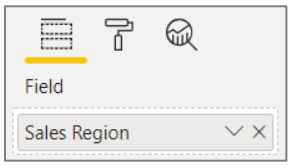

| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48 | San Jose, CA | 16 | $5,361.8 | 203 |

l) Try using the slicer by selecting individual years.

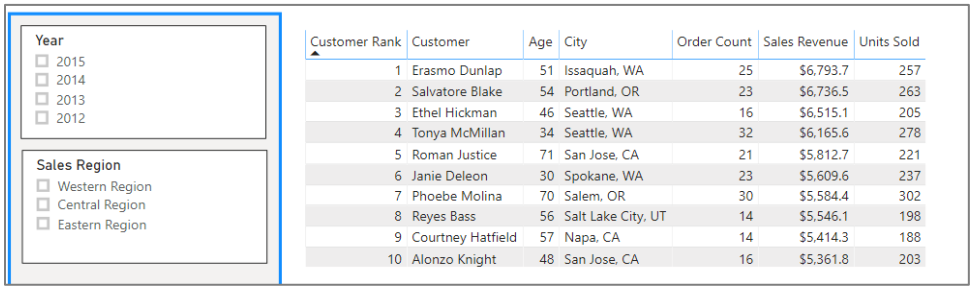

| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Tonya McMillan | 34 | Seattle, WA | 20 | $3,884.2 | 182 |
| 2 | Phoebe Molina | 70 | Salem, OR | 17 | $3,567.2 | 196 |
| 3 | Dorthy Richard | 66 | Folsom, CA | 13 | $3,481.1 | 132 |
| 4 | Celia Lambert | 30 | Napa, CA | 14 | $3,419.5 | 168 |
| 5 | Karla Orr | 50 | Salem, OR | 14 | $3,044.1 | 156 |
| 6 | Alexis Salinas | 77 | Salem, OR | 16 | $3,005.3 | 151 |
| 7 | Jackie Osborne | 30 | Sacramento, CA | 12 | $2,991.6 | 130 |
| 8 | Marcus Morin | 64 | Portland, OR | 14 | $2,839.8 | 172 |
| 9 | Jerry Barker | 75 | Albany, OR | 14 | $2,784.6 | 165 |
| 10 | Colton Weber | 65 | Napa, CA | 14 | $2,749.4 | 124 |

You should see that the visual with the top 10 customers list changes when you select a different year.

6. Add a second slicer visual to filter the top 10 customers visual by **Sales Region**.
   a) Copy and paste the slicer visual to make a second copy.
   b) Change the **Field** data role of the new slicer by removing Year and replacing it with **Sales Region**.

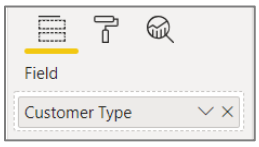



   c) Reposition the new visual to match the page layout shown in the following screenshot.

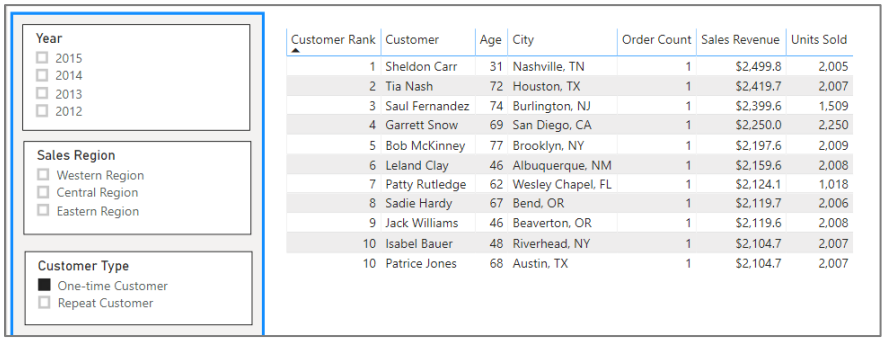



| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48 | San Jose, CA | 16 | $5,361.8 | 203 |

7. Add a third slicer visual to filter the top 10 customers visual by **Customer Type**.
   a) Copy and paste one of the slicer visuals to make a third copy.
   b) Drag and drop the **Customer Type** column from the **Customers** table into the **Values** well.

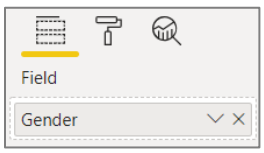



   c) Reposition the new visual to match the page layout shown in the following screenshot.

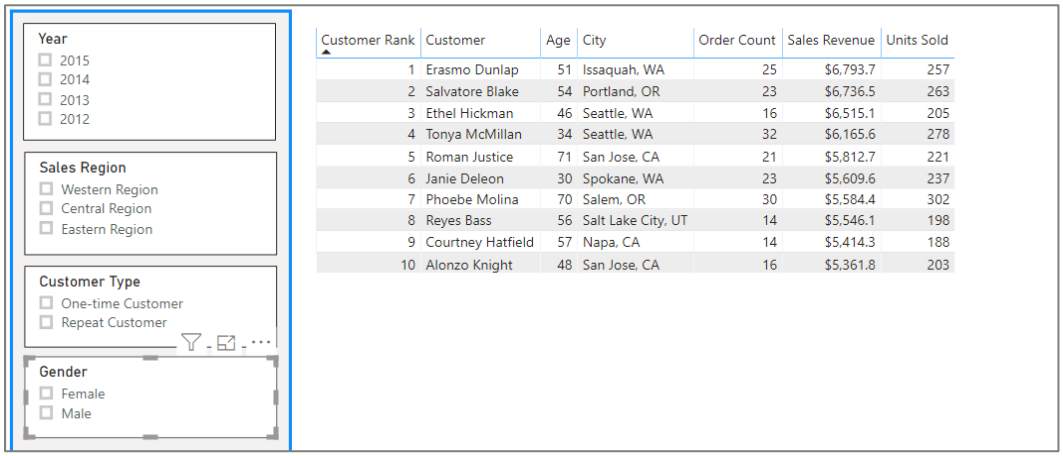



| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Sheldon Carr | 31 | Nashville, TN | 1 | $2,499.8 | 2,005 |
| 2 | Tia Nash | 72 | Houston, TX | 1 | $2,419.7 | 2,007 |
| 3 | Saul Fernandez | 74 | Burlington, NJ | 1 | $2,399.6 | 1,509 |
| 4 | Garrett Snow | 69 | San Diego, CA | 1 | $2,250.0 | 2,250 |
| 5 | Bob McKinney | 77 | Brooklyn, NY | 1 | $2,197.6 | 2,009 |
| 6 | Leland Clay | 46 | Albuquerque, NM | 1 | $2,159.6 | 2,008 |
| 7 | Patty Rutledge | 62 | Wesley Chapel, FL | 1 | $2,124.1 | 1,018 |
| 8 | Sadie Hardy | 67 | Bend, OR | 1 | $2,119.7 | 2,006 |
| 9 | Jack Williams | 46 | Beaverton, OR | 1 | $2,119.6 | 2,008 |
| 10 | Isabel Bauer | 48 | Riverhead, NY | 1 | $2,104.7 | 2,007 |
| 10 | Patrice Jones | 68 | Austin, TX | 1 | $2,104.7 | 2,007 |

8. Add a fourth slicer visual to filter the top 10 customers visual by **Gender**.
   a) Copy and paste one of the slicer visuals to make a third copy.
   b) Drag and drop the **Gender** column from the **Customers** table into the **Values** well.



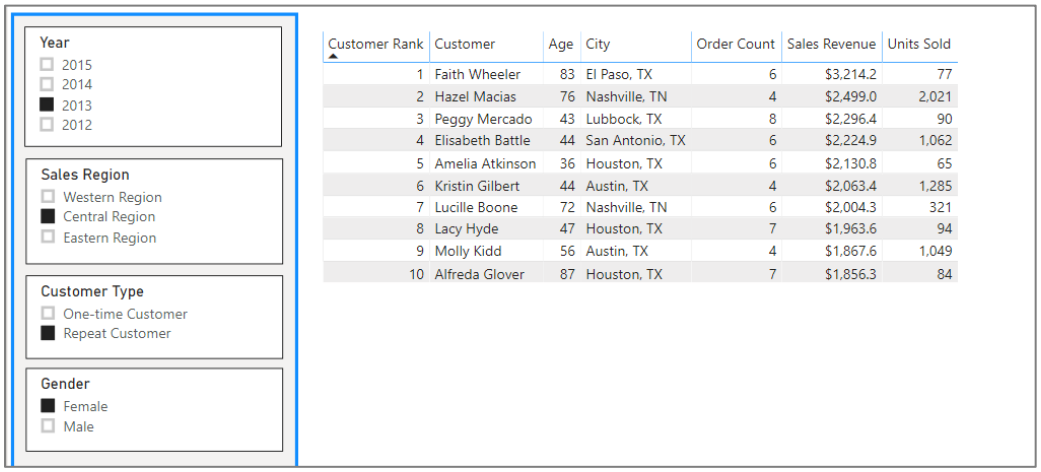
c) Reposition the new visual to match the page layout shown in the following screenshot.




| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Erasmo Dunlap | 51 | Issaquah, WA | 25 | $6,793.7 | 257 |
| 2 | Salvatore Blake | 54 | Portland, OR | 23 | $6,736.5 | 263 |
| 3 | Ethel Hickman | 46 | Seattle, WA | 16 | $6,515.1 | 205 |
| 4 | Tonya McMillan | 34 | Seattle, WA | 32 | $6,165.6 | 278 |
| 5 | Roman Justice | 71 | San Jose, CA | 21 | $5,812.7 | 221 |
| 6 | Janie Deleon | 30 | Spokane, WA | 23 | $5,609.6 | 237 |
| 7 | Phoebe Molina | 70 | Salem, OR | 30 | $5,584.4 | 302 |
| 8 | Reyes Bass | 56 | Salt Lake City, UT | 14 | $5,546.1 | 198 |
| 9 | Courtney Hatfield | 57 | Napa, CA | 14 | $5,414.3 | 188 |
| 10 | Alonzo Knight | 48 | San Jose, CA | 16 | $5,361.8 | 203 |

9. Now interact with the slicers on the page to answer the following questions.

a) Who were the top 10 customers in 2013 who were repeat female customers living in the Central Region?



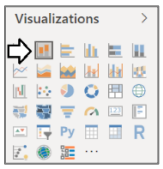

| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Faith Wheeler | 83 | El Paso, TX | 6 | $3,214.2 | 77 |
| 2 | Hazel Macias | 76 | Nashville, TN | 4 | $2,499.0 | 2,021 |
| 3 | Peggy Mercado | 43 | Lubbock, TX | 8 | $2,296.4 | 90 |
| 4 | Elisabeth Battle | 44 | San Antonio, TX | 6 | $2,224.9 | 1,062 |
| 5 | Amelia Atkinson | 36 | Houston, TX | 6 | $2,130.8 | 65 |
| 6 | Kristin Gilbert | 44 | Austin, TX | 4 | $2,063.4 | 1,285 |
| 7 | Lucille Boone | 72 | Nashville, TN | 6 | $2,004.3 | 321 |
| 8 | Lacy Hyde | 47 | Houston, TX | 7 | $1,963.6 | 94 |
| 9 | Molly Kidd | 56 | Austin, TX | 4 | $1,867.6 | 1,049 |
| 10 | Alfreda Glover | 87 | Houston, TX | 7 | $1,856.3 | 84 |

b) Who were the top 10 male customers from the Eastern Region in 2015?

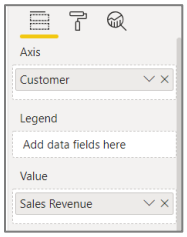

| Customer Rank | Customer | Age | City | Order Count | Sales Revenue | Units Sold |
|---|---|---|---|---|---|---|
| 1 | Rashad Reilly | 90 | Jacksonville, FL | 5 | $2,566.2 | 56 |
| 2 | Frank David | 25 | Schenectady, NY | 5 | $2,432.2 | 56 |
| 3 | Palmer Roberson | 74 | Marlborough, MA | 4 | $2,292.1 | 1,042 |
| 4 | Jamey Keller | 58 | Charlottesville, VA | 4 | $2,267.1 | 59 |
| 5 | Bob McKinney | 77 | Brooklyn, NY | 1 | $2,197.6 | 2,009 |
| 6 | Omar Osborne | 50 | Jacksonville, FL | 3 | $2,104.6 | 48 |
| 7 | Mitch Camacho | 36 | Princeton, NJ | 4 | $2,098.2 | 49 |
| 8 | Clifton Wilcox | 52 | Athens, GA | 4 | $2,082.7 | 67 |
| 9 | Emerson Patrick | 58 | Charlotte, NC | 6 | $2,080.4 | 73 |
| 10 | Cedrick Beck | 85 | Venice, FL | 1 | $2,079.8 | 2,004 |

c) Clear the filter on all the slicers on the page so the table shows results for all sales.

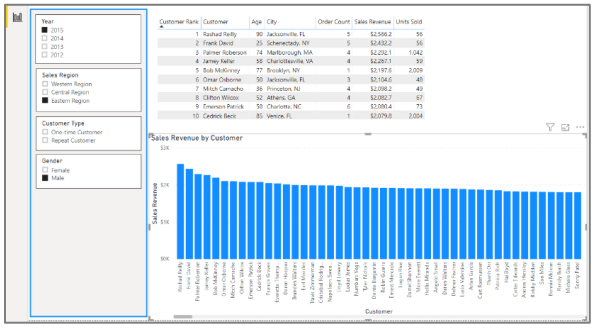
10. Add a new bar chart to show the sales revenue breakdown for the top 10 customers.
    a) Click the **New Visual** button on the **Home** tab of the ribbon to add a new visual to the **Top 10 Customers** page.
    b) Change the visual type to a **Stacked column chart** by clicking the second button in the **Visualizations** list.



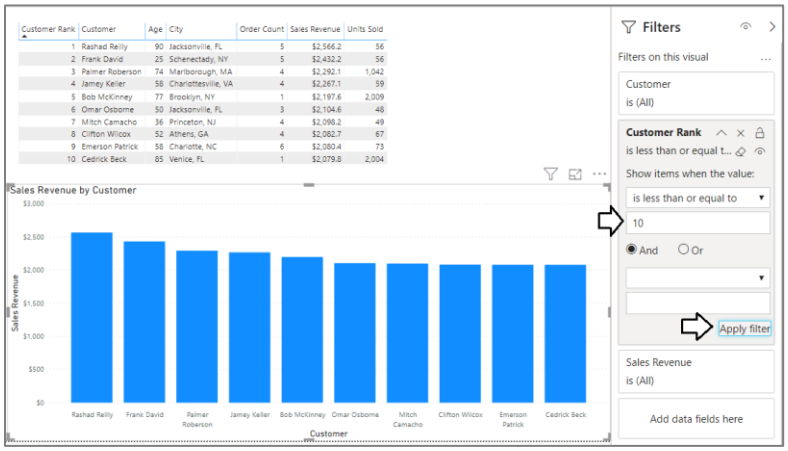

    c) Drag and drop the **Customer** column from the **Customers** table into the **Axis** well.
    d) Drag and drop the **Sales Revenue** measure from the **Sales** table into the **Values** well.



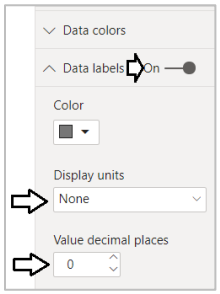

    e) At this point, your column chart visual should match the one shown in the following screenshot.



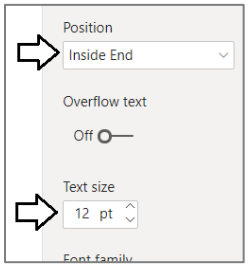

    f) Resize the column chart visual so it takes up the remaining width of the report page so it matches the following screenshot.
    g) Drag and drop the **Customer Rank** measure from the **Customers** table into the **Filter** pane.
    h) Configure the **Customer Rank** filter to only display customers with a rank of 10 or lower as shown in the following screenshot and then click the **Apply Filter** link to apply the filter to the visual.



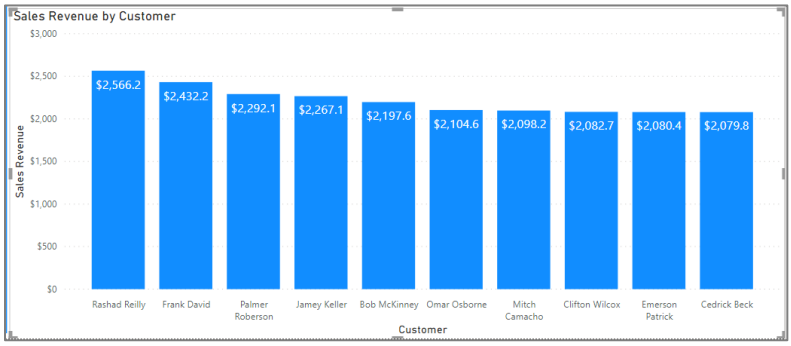
i) Add a small bit of formatting by selecting the bar chart and then changing the **Data labels** property setting from **Off** to **On**.



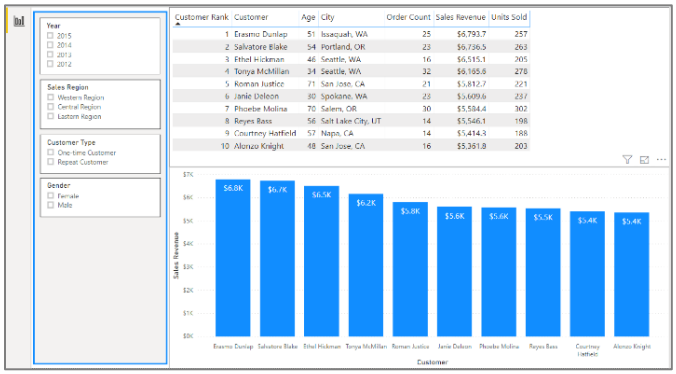

j) Update the **Position** property to **Inside End** and the **Text size** property to **12**.



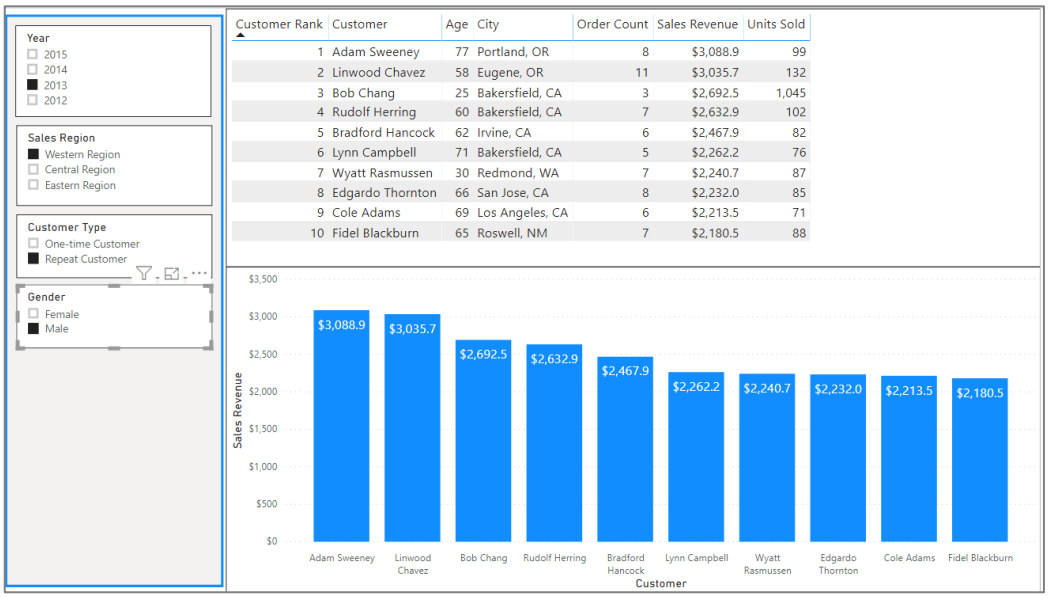

k) Now the visual should display an individual sales revenue total for each of the top 10 customers.




11. Make a few more changes to the formatting of the **Top 10 Customers** page.
    a) Disable the title for the column chart visual
    b) Increase the font size of the table visual by modifying the **Text size** property in the **Grid** section to a value of **12**.
    c) Set the **Border** property to **On** for both the table visual and the column chart visual to match the following screenshot.



12. Test you work by using the four slicers to select different combinations of years, sales region, customer type and gender. Both the table and the bar chart with the top 10 customers should update together and stay in sync as you change the filter selection.

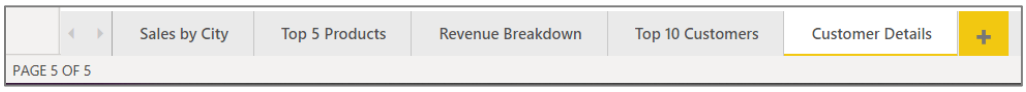



13. Save the work you have done by clicking the **Save** button in the upper left corner of the Power BI Desktop window.

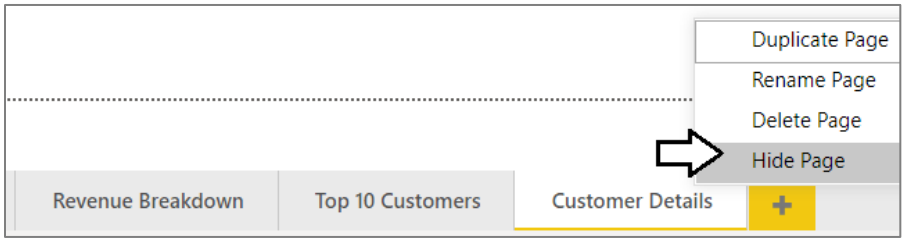
## Exercise 4: Create a Drillthrough Page to Display Customer Details

In this exercise you will create and configure a drillthrough page to show the details of a single customer at a time.

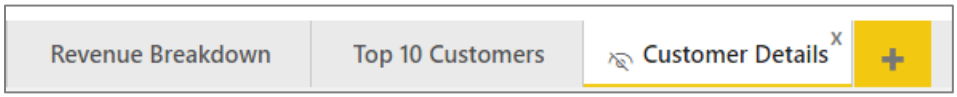
1. Create a new hidden report page named **Customer Details**.to serve as a drillthrough page.
   a) Navigate to report view.
   b) Create a new report page and rename it to **Customer Details**.




   c) Right-click on the **Customer Details** page tab and select the **Hide Page** menu command.

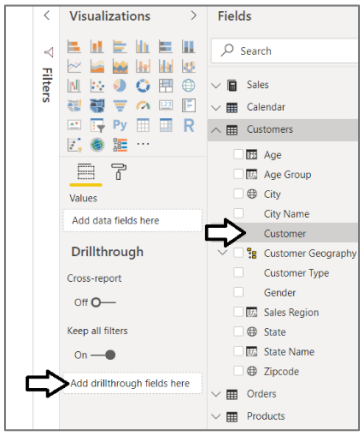



   d) The page tab for the Customer Details pages should be dimmed indicating that it is a hidden page.



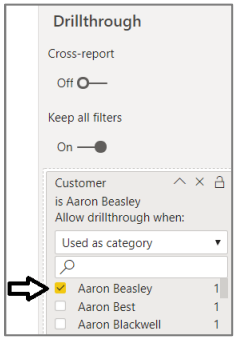

Remember that reports are always in edit mode when you're are working in Power BI Desktop. Therefore, a hidden page is not totally hidden. However, when the report is accessed through browser in the default read-only view, the page will be completely hidden.

2. Configure the **Customer Details** page to be a drillthrough page.
   a) Before you add any visuals, inspect the **Properties** pane for the **Customer Details** page.
   b) Locate the **DRILLTHROUGH** section underneath the **FILTERS** section.
   c) Drag and drop the **Customer** field from the **Customers** table into the well inside the **DRILLTHROUGH** section.

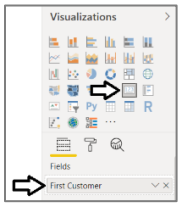



   d) When you configured the page as a drillthrough page, you should be able to see that Power BI Desktop has automatically added a back button to the top, left corner of the page.

   e) Click the page to deselect the back button. This will make it so you can see the page drillthrough settings.
   f) Select a drillthrough filter setting by checking the checkbox for the first customer named **Aaron Beasley**.

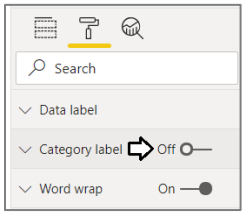



3. Add a card visual to the **Customer Details** drillthrough page to display the customer name.
   a) Add a new **Card** visual to the page.
   b) Drag the **Customer** field from the **Customers** table inside the **Fields** well.
   c) The **Fields** well should now show **First Customer**.

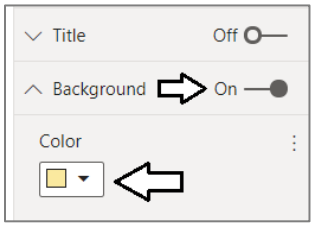


d) The Card visual should now display the customer name and the field name below.

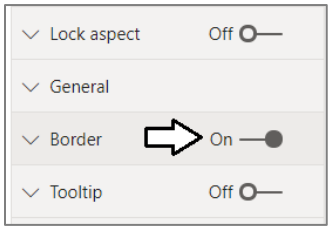

e) In the **Format** properties pane, set **Category label** property to Off.




f) Set the **Color** property in the **Background** section to light yellow.



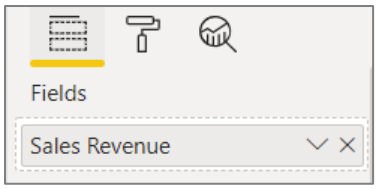

g) Set the **Border** property to **On**.




h) Reposition the Card visual to the top of the page and make it wide as shown in the following screenshot.


4. Add a few more card visuals to show more customer details.

a) Add a second card visual based on the **Sales Revenue** field.

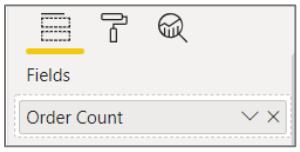


b) Reduce the font size of the new Card to **18** and make the background color light blue.

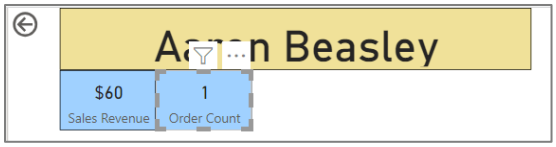
c) Enable the **Border** property.

d) Reposition the new Card visual underneath the Card with the customer name as shown in the following screenshot.

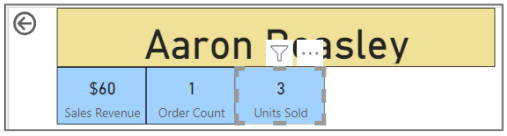

e) Copy and paste the **Sales Revenue** card and change the field used by the new Card to **Order Count**.



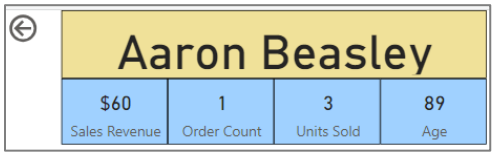

f) Reposition the **Purchase Count** card as shown in the following screenshot.




g) Copy and paste the card again to create a new card based on **Units Sold** as shown in the following screenshot.




h) Copy and paste the card again to create a new card based on **Age** as shown in the following screenshot..




5. Add a new table visual to display the products that a customer has purchased.

a) Add a new table visual to the report.

b) Add the following fields to the **Values** well of the table visual.

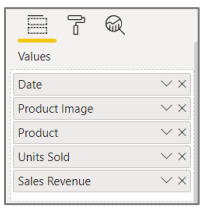
**i)** **Date** from the **Calendar** table

**ii)** **Product Image** from the **Products** table

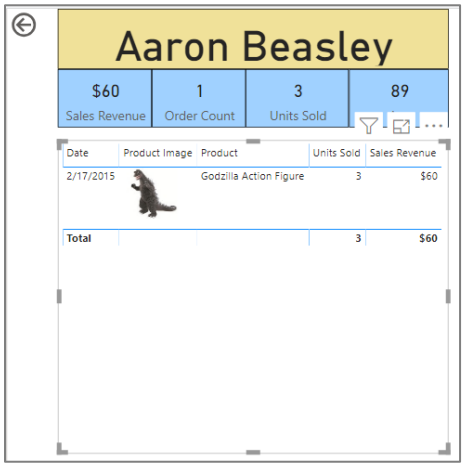
**iii)** **Product** from the **Products** table

**iv)** **Units Sold** from the **Sales** table

**v)** **Sales Revenue** from the **Sales** table



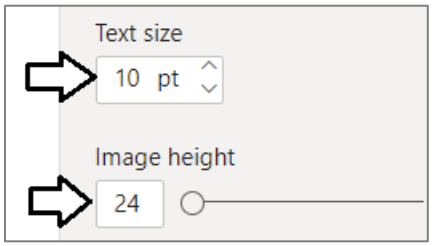
c) Your table visual should appear like the one shown in the following screenshot/




d) With the table visual selected, navigate to the **Grid** section for the **Format** properties pane.

e) zz

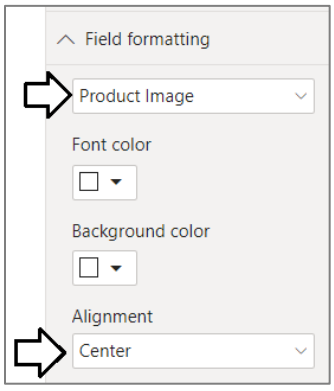

f) Modify the **Text size** property to a value of **10 pt** and modify the image height to a value of **24**.




g) Move down in the **Format** properties pane and locate the **Field formatting** section.

h) In the dropdown menu at the top of the **Field formatting** section, select the field named **Product Image**.

i) With **Product Image** field selected, set the **Alignment** property to **Center**.

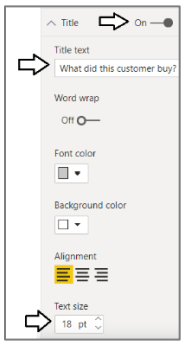


j) The display of the product image should now be in the center of the column width.


k) Move down in the **Format** properties pane and locate the **Title** section.

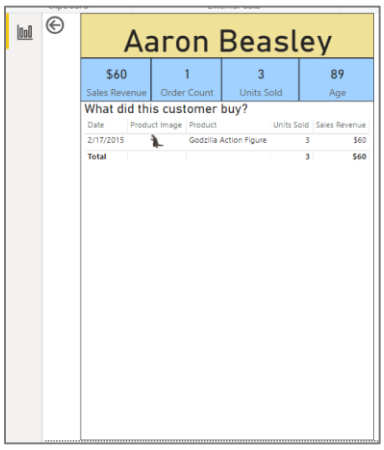
l) Modify the **Title text** property to **What did this customer buy?**

m) Change the **Text size** property of the title to **18**.

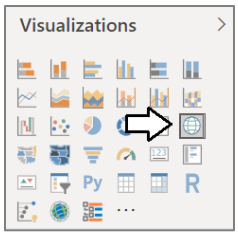



n) Enable the border for the table visual.

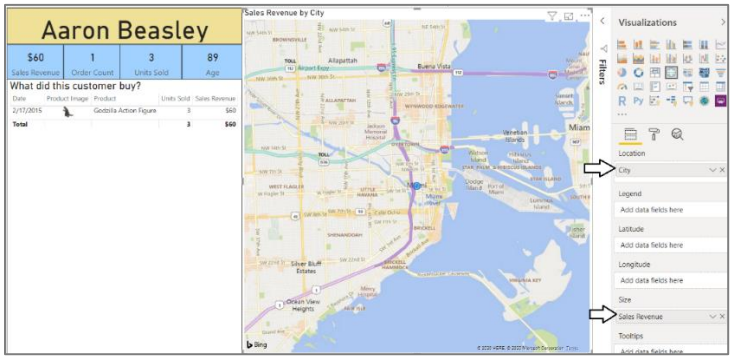

o) Position the table to underneath the card visuals as shown in the following screenshot.



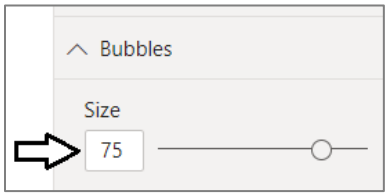
6. Add a new map visual to show where the customer lives.
   a) Add a new map visual to the report page.



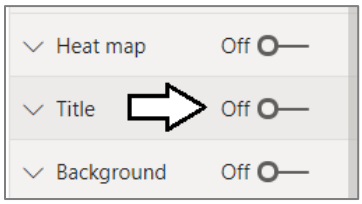

   b) Add the **City** field from the **Customers** table into the **Location** well of the map.
   c) Add the **Sales Revenue** field from the **Sales** table into the **Size** well of the map visual.



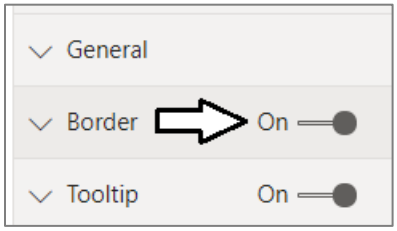

   d) Inside the **Bubbles** section in the **Format** properties pane for the map visual, increase the **Size** property to **75%**.



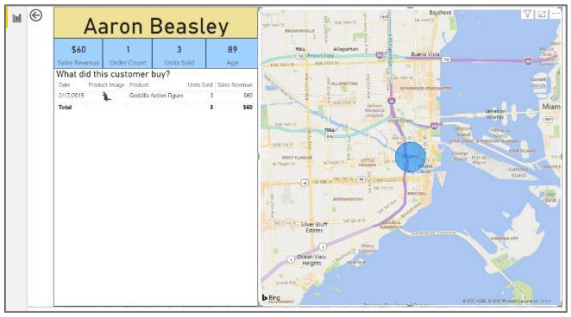

   e) Set the **Title** property of the map visual to **Off** to hide the visual title.



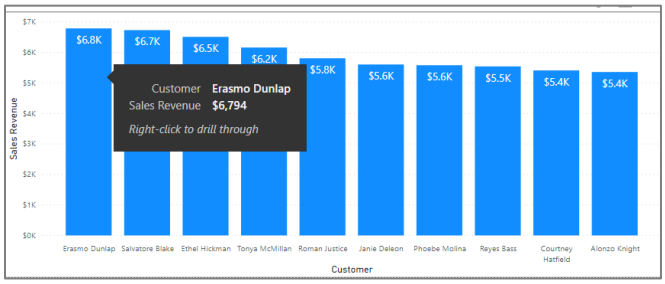

   f) Set the **Border** property of the map visual to **On**.



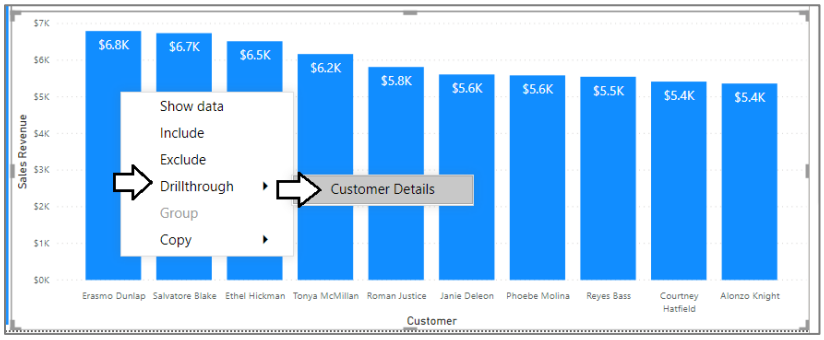
g) Here what it should look like.



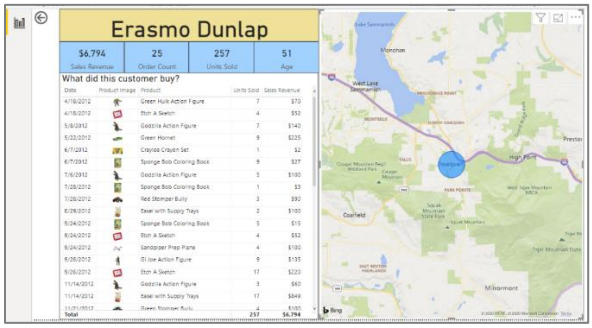

7. Save your work by clicking the **Save** button in the top-left corner of the Power BI Desktop window.
8. Test it out the drillthrough.
   a) Navigate to the **Top 10 Customers** page.
   b) Hover you mouse over the column on the left for the customer **Erasmo Dunlap**.



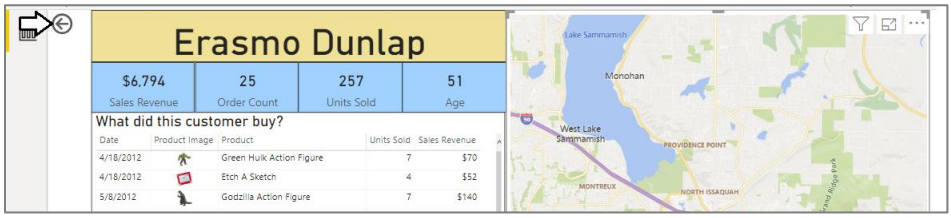

   c) Right-click the column for the customer **Erasmo Dunlap** and then select **Drillthrough > Customer Details**.



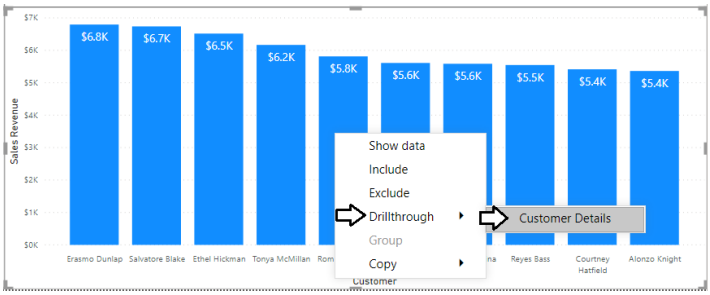

   d) You should be redirected to the **Customer Details** page and the filter should be automatically set to **Erasmo Dunlap**.



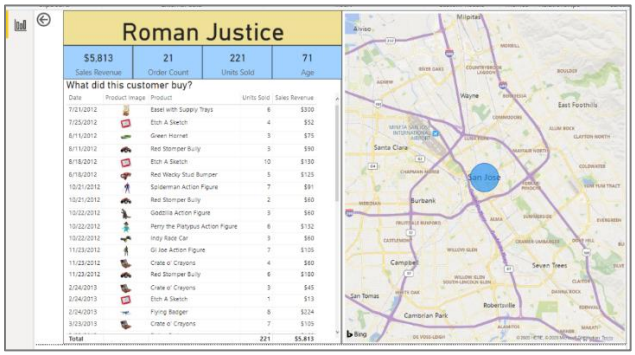
e) Hold down the **Ctrl** key and click the back button to return to **Top 10 Customers** page.




f) Now drillthrough to another customer such as **Janie Deleon**.




g) You should be redirected to the **Customer Details** page and the filter should be automatically set to **Erasmo Dunlap**.




9. Make the back button a little bigger.


At this point, you are done testing the functionality of your drillthrough page.