Microsoft Power Platform

Power BI Paginated Reports in a Day

Lab 05A - January 2021 release

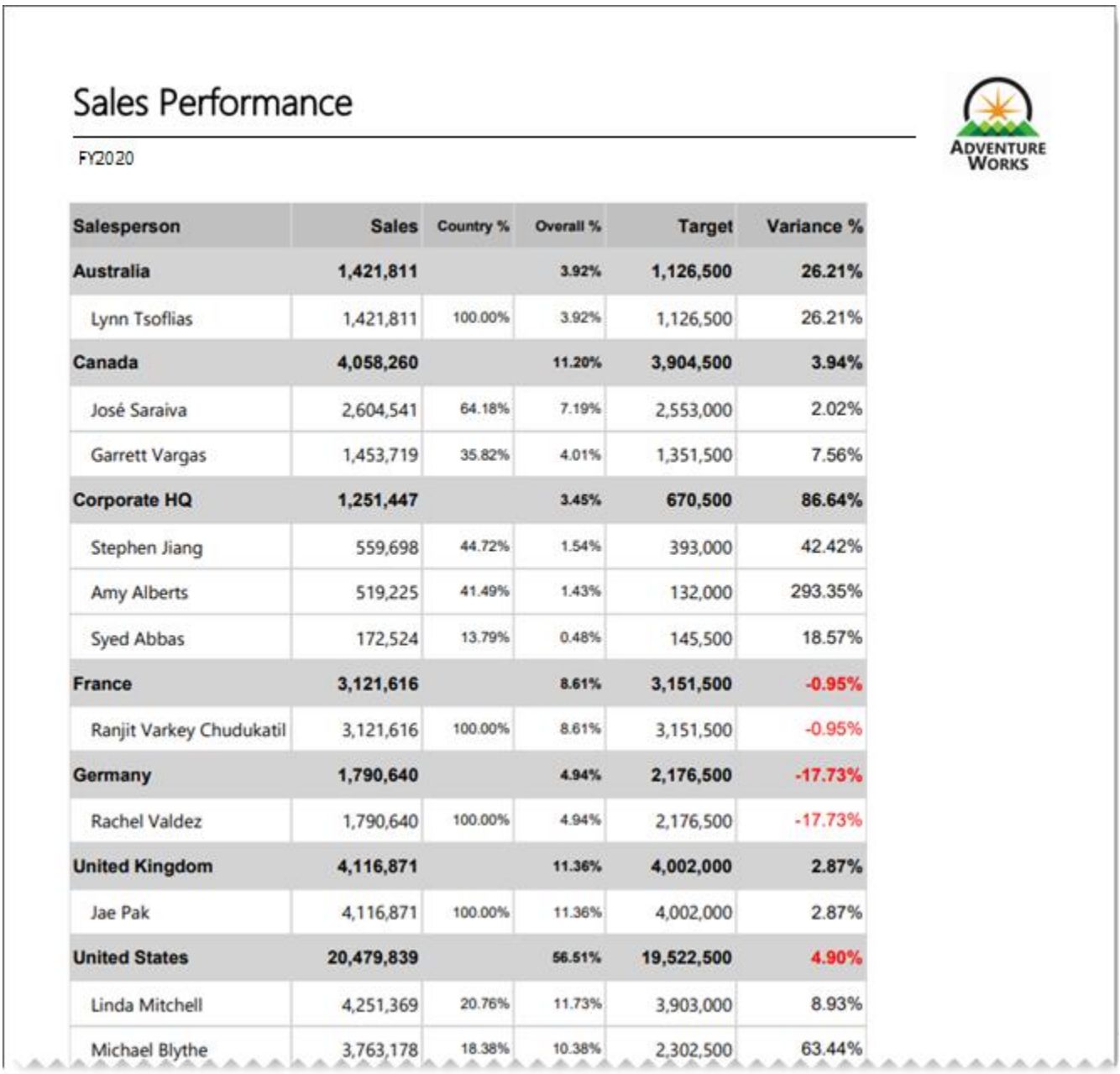
Develop a Table Report – Part 1

Overview

The estimated time to complete this lab is 60 minutes.

In this lab, you will develop a report named **Sales Performance**. It will include a Table based on a Power BI dataset that presents salespeople statistics grouped by country.

The final report will look like the following:



Sales Performance

FY2020

ADVENTURE WORKS

Salesperson	Sales	Country %	Overall %	Target	Variance %
Australia	**1,421,811**		**3.92%**	**1,126,500**	**26.21%**
Lynn Tsoflias	1,421,811	100.00%	3.92%	1,126,500	26.21%
Canada	**4,058,260**		**11.20%**	**3,904,500**	**3.94%**
José Saraiva	2,604,541	64.18%	7.19%	2,553,000	2.02%
Garrett Vargas	1,453,719	35.82%	4.01%	1,351,500	7.56%
Corporate HQ	**1,251,447**		**3.45%**	**670,500**	**86.64%**
Stephen Jiang	559,698	44.72%	1.54%	393,000	42.42%
Amy Alberts	519,225	41.49%	1.43%	132,000	293.35%
Syed Abbas	172,524	13.79%	0.48%	145,500	18.57%
France	**3,121,616**		**8.61%**	**3,151,500**	**-0.95%**
Ranjit Varkey Chudukatil	3,121,616	100.00%	8.61%	3,151,500	-0.95%
Germany	**1,790,640**		**4.94%**	**2,176,500**	**-17.73%**
Rachel Valdez	1,790,640	100.00%	4.94%	2,176,500	-17.73%
United Kingdom	**4,116,871**		**11.36%**	**4,002,000**	**2.87%**
Jae Pak	4,116,871	100.00%	11.36%	4,002,000	2.87%
United States	**20,479,839**		**56.51%**	**19,522,500**	**4.90%**
Linda Mitchell	4,251,369	20.76%	11.73%	3,903,000	8.93%
Michael Blythe	3,763,178	18.38%	10.38%	2,302,500	63.44%

Exercise 1: Develop a table report

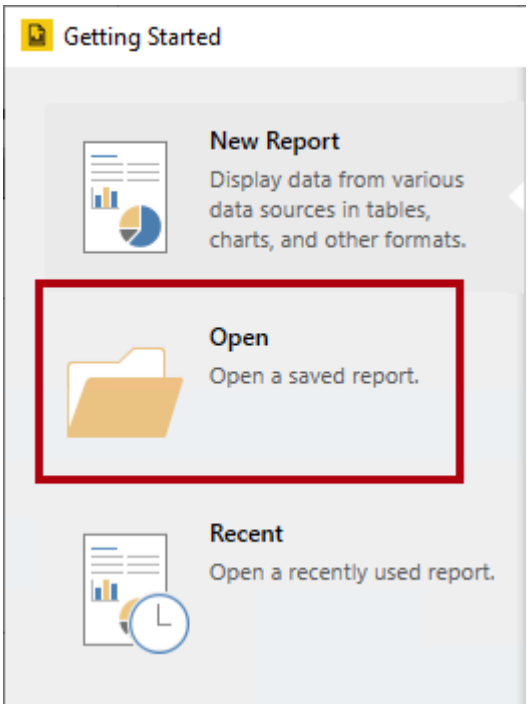
In this exercise, you will create a report named **Sales Performance**. It will include a Table data region based on a Power BI dataset that presents salespeople statistics grouped by country.

Important: There are many repetitive tasks when developing reports. The labs in this course will progressively reduce the detailed step-by-step instructions when detailed steps have already been provided.

Task 1: Create the report

In this task, you will create a report.

1. Open a new instance of Power BI Report Builder.
2. In the **Getting Started** pane, select **Open**.

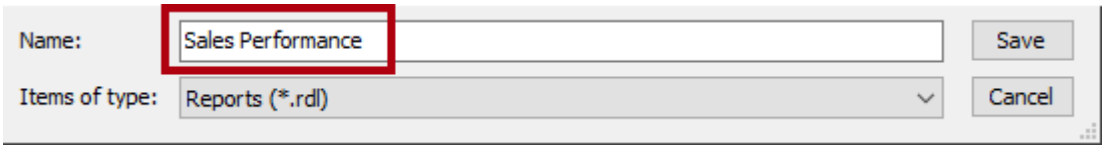


3. In the **Open** window, navigate to the **<CourseFolder>\PowerBIPRIAD\MySolution** folder.

   *Important: If you didn't successfully complete **Lab 02B**, you can open the report template found in the **<CourseFolder>\PowerBIPRIAD\Lab02B\Solution** folder.*

4. Select the **Portrait Template** report, and then click **Open**.
5. On the **File** ribbon tab, select **Save As**.

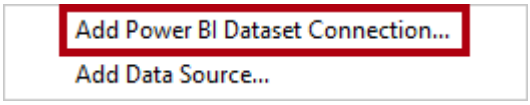
6. Save the report as **Sales Performance** to the **<CourseFolder>\PowerBIPRIAD\MySolution** folder.



Task 2: Create the data source

In this task, you will create a dataset based on the **Sales Analysis** Power BI dataset.

1. In the **Report Data** pane, right-click the **Data Sources** folder, and then select **Add Power BI Dataset Connection**.



2. In the **Select a Dataset From the Power BI Service** window, at the left, select the workspace you created in **Lab 01A**.
3. At the right side, select the **Sales Analysis** Power BI dataset.

   *If you don't see the **Sales Analysis** dataset, it could be because you didn't upload the Power BI Desktop file in **Lab 01A**. In this case, return to **Lab 01A**, and complete the steps to upload the Power BI Desktop file.*

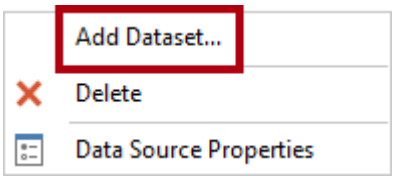
4. Click **Select**.

5. In the **Report Data** pane, notice the addition of the data source.

Task 3: Create the dataset

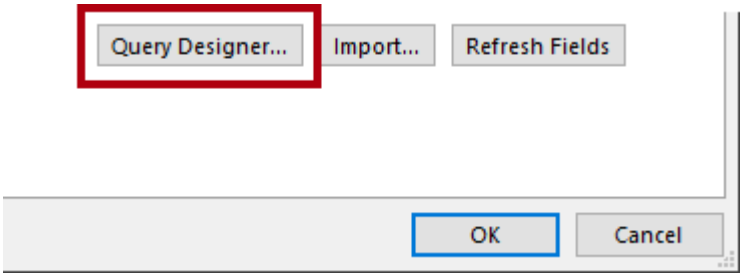
In this task, you will create the main report dataset by using the Analysis Services DAX query designer.

1. In the **Report Data** pane, right-click the data source, and then and then select **Add Dataset**.



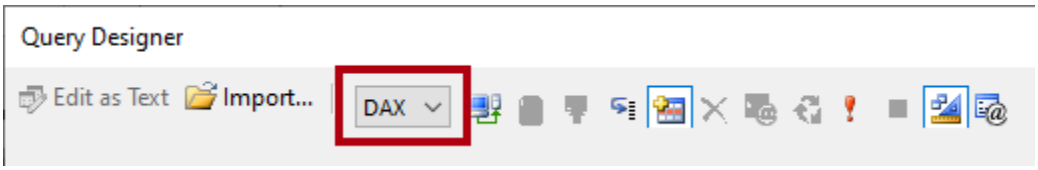
2. In the **Dataset Properties** window, in the **Name** box, replace the text with **dsMain**.

3. To define the dataset query, click **Query Designer**.

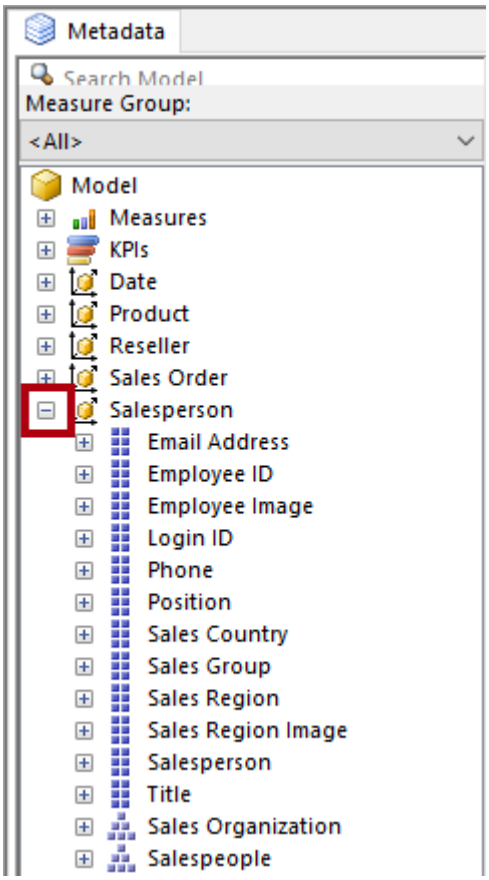


4. If necessary, maximize the **Query Designer** window.

5. In the **Query Designer** window, on the toolbar, notice that the query designer is set to **DAX**.



6. In the **Metadata** pane (located at the left), expand the **Salesperson** table.



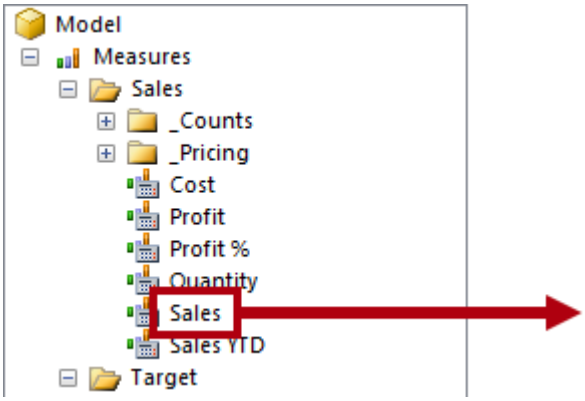
7. Expand the **Salespeople** hierarchy (last item in the list).

8. To add a level to the query, drag the **Country** level, and drop it into the query pane (the large pane, located at the right).

9. Drag-drop the **Salesperson** level also.

10. In the **Metadata** pane, expand **Measures** (located at the top), and then expand the **Sales** measure group.

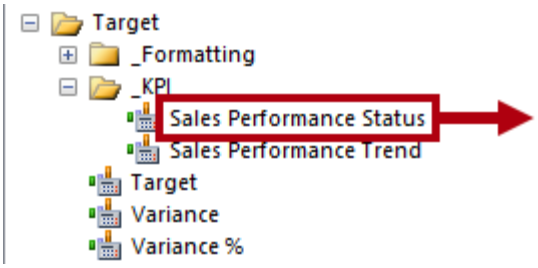
11. Drag-drop the **Sales** measure to the query pane.



12. Expand the **Target** measure group, and then drag-drop the following two measures to the query pane:

    - Target
    - Variance %

13. In the **Target** measure group, expand the **_KPI** folder, and then drag-drop the **Sales Performance Status** measure to the query pane.

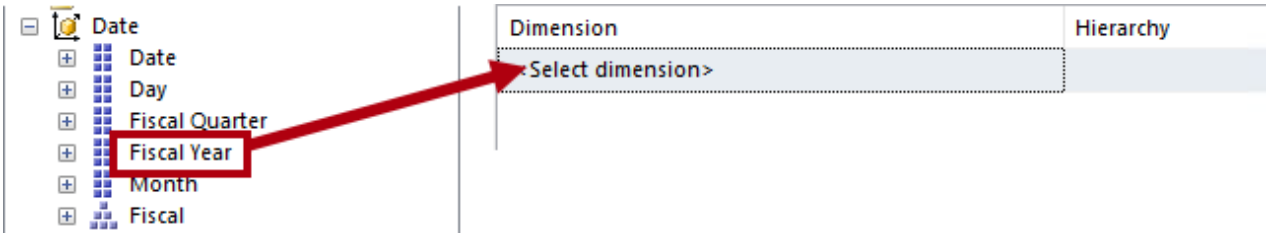


14. In the query pane, verify that there are six columns headers:

    - Country
    - Salesperson
    - Sales
    - Target
    - Variance %
    - Sales Performance Status

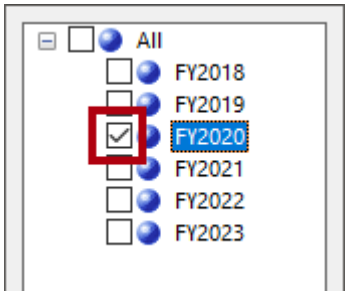
15. To apply a filter, in the **Metadata** pane, expand the **Date** dimension.

16. Drag-drop the **Fiscal Year** attribute into the filter pane (located above the query pane).



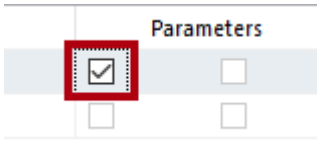
17. In the **Filter** pane, click inside the **Filter Expression** column.

18. Open the dropdown list, expand the **All** member, and then check the **FY2020** member.



19. Click **OK**.

20. To the right of the filter expression, check the **Parameters** checkbox (you may need to scroll horizontally to reveal the checkbox).



21. In the middle of the query pane, click the link to execute the query.

22. Review the query result, noticing the values in the **Sales Performance Status** column.

    *The values are 1, 0, or -1. 1 means "on track", 0 means "slightly off track", and -1 means "off track". You will visualize these values as indicators in **Lab 05B**.*

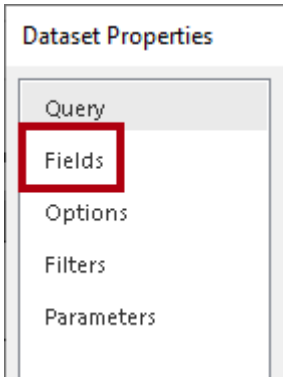
23. To finalize the query design, click **OK** (located at the bottom-right).

24. In the **Dataset Properties** window, in the **Query** box, review the DAX query statement, noticing the **@DateFiscalYear** query parameter.

    It's not important that you understand the query statement.

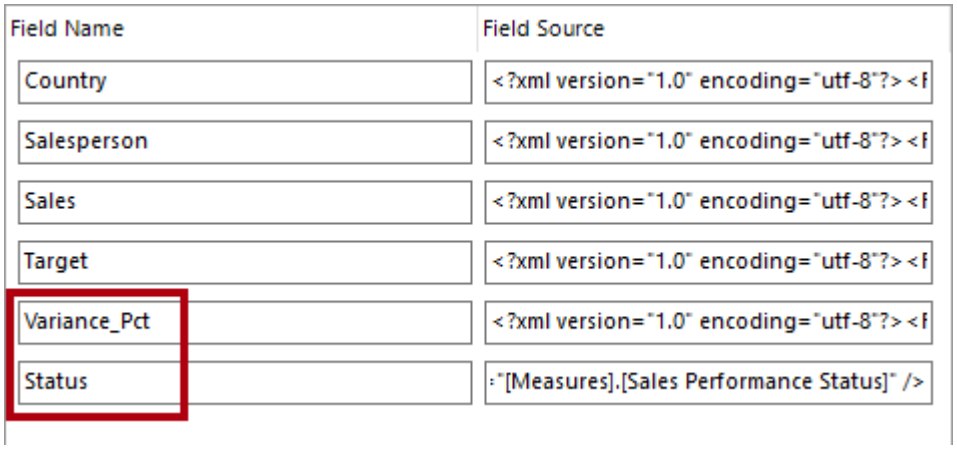
    The Analysis Services designer will create a hidden dataset to provide available values to the report parameter.

25. In the **Dataset Properties** window, select the **Fields** page.



26. Rename the following two fields:

    - Variance__: **Variance_Pct**—one underscore (_) character only
    - Sales_Performance_Status: **Status**

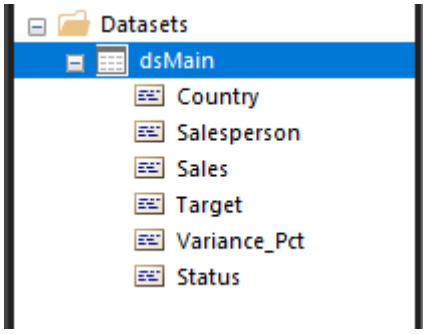


Some characters used in the model object names are invalid in report designs, and therefore they can't be used as report object identifiers. Invalid characters are converted to the underscore (_) character.

As a report author you can rename field names to make them more concise and easier to understand. It's a good practice to rename fields before they are used in report expressions.

27. In the **Dataset Properties** window, click **OK**.

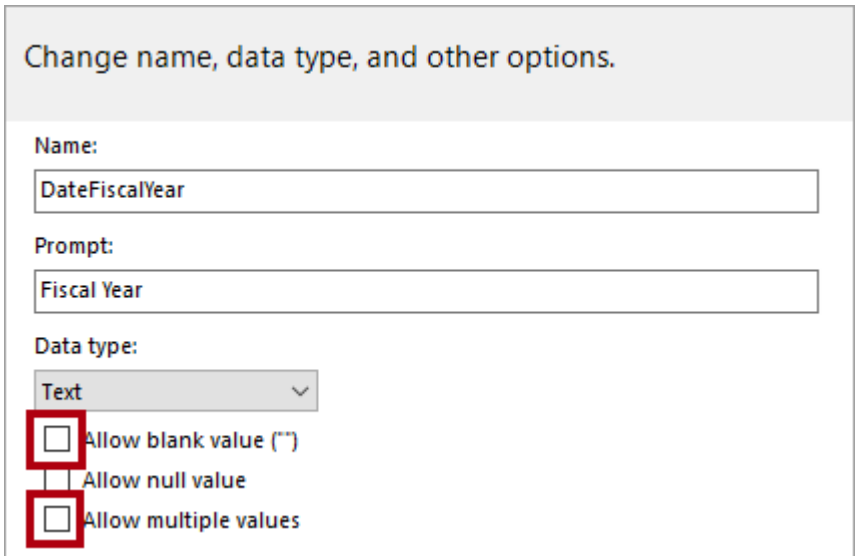
28. In the **Report Data** pane, verify that the **dsMain** dataset consists of the following six fields:



Task 4: Configure the report parameter

In this task, you will configure the report parameter created by the query designer, by setting it to single-value.

1. Open the **DateFiscalYear** report parameter.
2. Uncheck the following two checkboxes:
   - Allow blank value (“”)
   - Allow multiple values



3. Click **OK**.

4. Add the following expression to the report subtitle text box:

   For convenience, the expression can be copied from the ***<CourseFolder>\PowerBIPRIAD\Lab05A\Assets\Snippets.txt*** *file.*

   VB.NET

   ```
   =Trim(Parameters!DateFiscalYear.Label)
   ```

   This expression trims any leading or trailing white space from the parameter label Trimming is necessary because the available values for years include proceeding spaces, which achieve indentation.

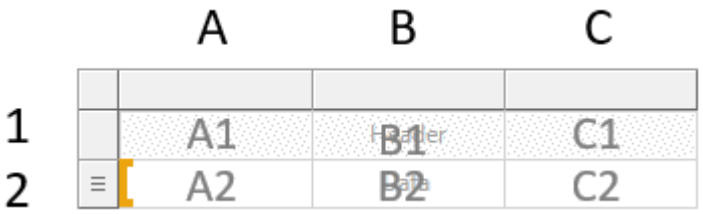
Task 5: Develop the table

In this task, you will add a Table to the report body, and layout selected dataset fields as columns.

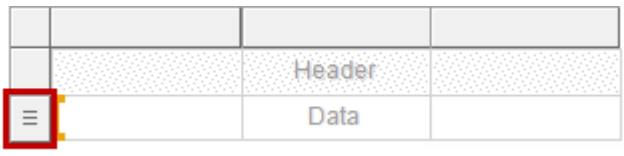
1. To add a Table, right-click inside the report body, and then select **Insert | Table**.
2. Notice that the Table template consists of three columns, and two rows: the header and a detail row.

   Each cell of the Table is in fact a text box. Yet, they work together as a template. At render time, data retrieved by the dataset is used to inflate the template into a grid layout.

   To clearly communicate lab step instructions, at times a text box location may be expressed by using Excel-like column and row coordinates within square brackets. The first column is column A. The first row is row 1. The first text box in the first row is therefore [A1]. Ranges of text boxes may be similarly expressed by using Excel notation within square brackets. For example, the range of all three text boxes in the first row is [A1:A3].

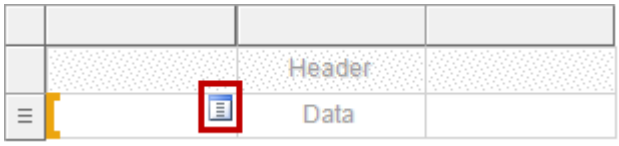


3. Position the table at the top-left corner:
   - Location, left: **0**
   - Location, top: **0**
4. Notice the icon that signifies the detail row.



   The detail row specifies the rows retrieved by the dataset query, in this case a row for each salesperson.

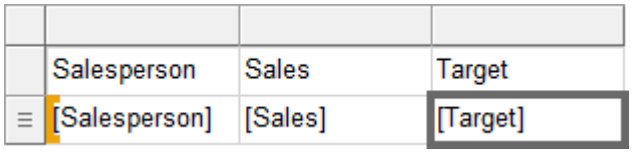
5. To reveal the **Field List**, the cursor in the top right corner of the first detail text box [A2].



6. Click the **Field List**, select **<YourDataset> | dsMain | Salesperson**.

   *This step configures the Table to use the **dsMain** dataset and updates the text box [A1] **Value** property with an expression to display the value property of the selected field. It also places the field name into the text box [A1] in the table header*

7. Repeat the last step to add the **Sales** and **Target** fields to the next two columns.

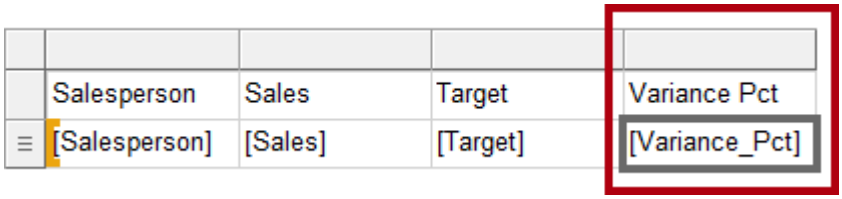


   *The **Field List** selection no longer requires the selection of a data source or dataset. A data region can only be bound to a single dataset. The first field selection set the associated dataset.*

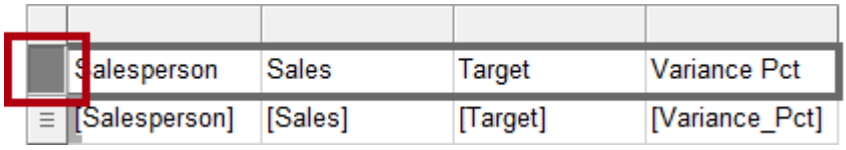
8. To add a new column, right-click the column guide (located above the Table header text box) for the **Sales** column, and then select **Insert Column | Right**.

   The column and row guides are only available when the Table is in focus. If the Table isn't in focus, simply select any text box within the Table.

9. In the detail text box of the new column [D2], select the **Variance_Pct** field.



10. To format the table header, and to select all text boxes in the table header, select the table header row guide.



11. Format the following text box properties:

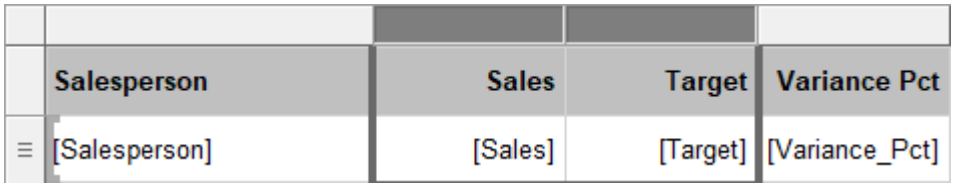
    - Alignment, vertical align: **Middle**
    - Fill, background color: **Silver**
    - Font, font weight: **Bold**

12. Select any table header text box, and then set the height to **0.35**.

13. Select all detail row text boxes, and then set the vertical alignment to **Middle**.
14. Select any detail row text box, and then set the height to **0.35**.
15. To resize the width of the first column, select any text box in the first column, and then set the width to **1.7**.

    It's also possible to resize row and column sizes by dragging the guide edges. However, this technique won't allow a precise size adjustment.

16. To multi-select the **Sales** and **Target** column guides, first select the **Sales** column guide, and then drag to select the **Target** column guide.



17. Set the following text box properties:

    - Alignment, text align: **Right**
    - Number, format: **N0** (0 is zero)—use the **Properties** pane

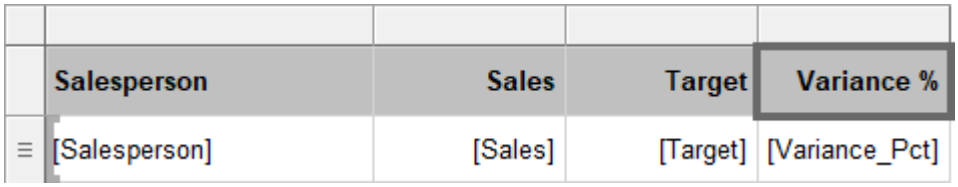
    *The **N** format code formats numeric values as numbers with a thousand separator; **N0** displays zero decimal places. **C** can be used for currency formats, and **P** for percentage, and each also can be followed by a number indicating the number of decimal places.*

    *Tip: The **Text Box Properties** window includes a **Number** page that can be used to apply many different formatting options.*

18. Select the **Variance_Pct** column guide, and apply the following formats:

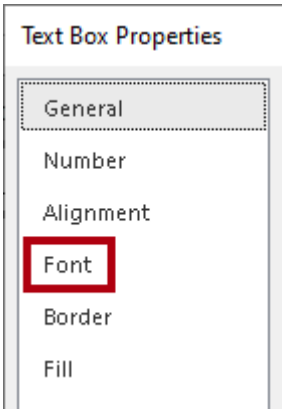
    - Right align the text
    - Set the format to **P2**

19. In the **Variance_Pct** column header text box [D1], modify the value to **Variance %**.
20. Verify that that the Table layout looks like the following:

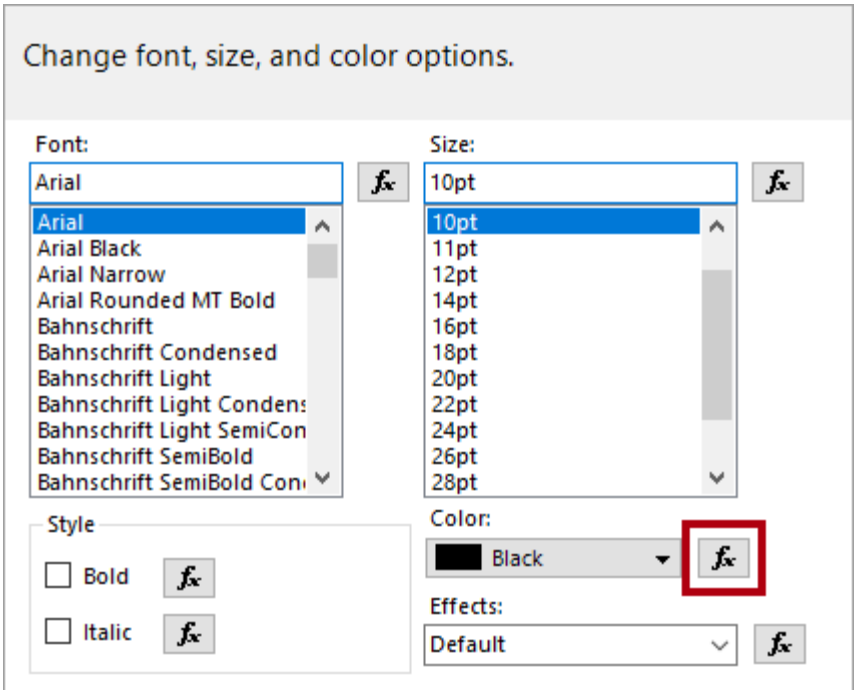


21. To configure conditional formatting, right-click the **Variance %** detail row text box [D2], and then select **Text Box Properties**.

22. In the **Text Box Properties** window, select the **Font** page.



23. Open the **Expression** window for the **Color** property.



24. Set the following expression:

    For convenience, the expression can be copied from the ***<CourseFolder>\PowerBIPRIAD\Lab05A\Assets\Snippets.txt*** *file.*

VB.NET

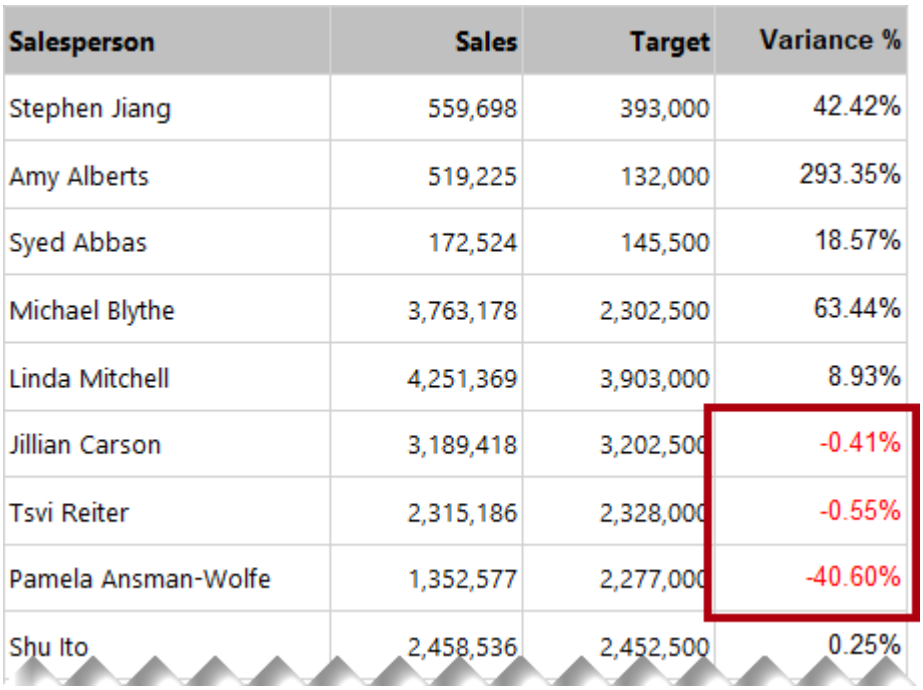
```
=Iif(Fields!Variance_Pct.Value < 0, "Red", "Black")
```

This expression tests the value of the ***Variance_Pct*** *field. When it's less than zero the value "Red" is returned, otherwise "Black" is returned.*

25. Click **OK**.

26. In the **Text Box Properties** window, click **OK**.

27. Preview the report, and then review the report and notice that negative **Variance %** values are red.



Salesperson	Sales	Target	Variance %
Stephen Jiang	559,698	393,000	42.42%
Amy Alberts	519,225	132,000	293.35%
Syed Abbas	172,524	145,500	18.57%
Michael Blythe	3,763,178	2,302,500	63.44%
Linda Mitchell	4,251,369	3,903,000	8.93%
Jillian Carson	3,189,418	3,202,500	-0.41%
Tsvi Reiter	2,315,186	2,328,000	-0.55%
Pamela Ansman-Wolfe	1,352,577	2,277,000	-40.60%
Shu Ito	2,458,536	2,452,500	0.25%

*Conveying status with color may not work for some people with vision challenges. In **Lab 05B** you will enhance the table with indicators that can convey status using both shape and color.*

Task 6: Add table totals

In this task, you will add a table footer to display total values. You will also configure expressions to retrieve aggregate values from the data source.

1. Switch to the report designer.
2. Multi-select the **[Sales]**, **[Target]**, and **[Variance_Pct]** text boxes [B2:D2].
3. Right-click the selection, and then select **Add Total**.
4. Notice that a table footer row has been added, and that the last three text boxes [B3:D3] each include an expression to sum the field values.

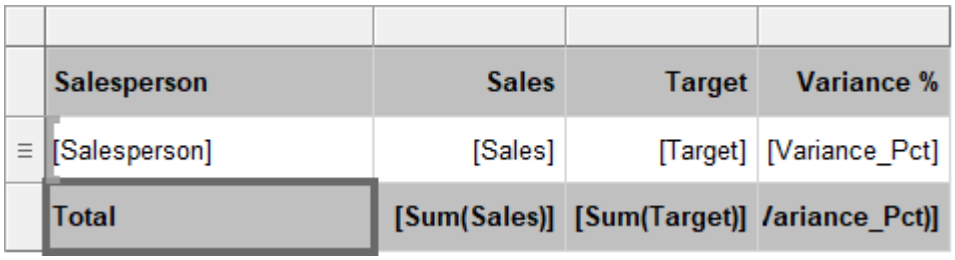
   Numeric fields added to non-detail row text boxes usually should be aggregated to summarize the values contained in numerous detail rows.

5. In the first text box of the footer row [A3], enter the value **Total**.

6. Select the footer row guide, and then apply the same alignment, background color, font weight, and height used in the table header:

   - Alignment, vertical align: **Middle**
   - Fill, background color: **Silver**
   - Font, font weight: **Bold**
   - Height: **0.35**—sometimes setting the height for multiple text boxes is not possible, in which case select a single text box, and then set its height

7. Verify that that the Table layout looks like the following:



Salesperson	Sales	Target	Variance %
[Salesperson]	[Sales]	[Target]	[Variance_Pct]
Total	[Sum(Sales)]	[Sum(Target)]	/ariance_Pct)]

8. Preview the report.

9. In the table footer, notice that the **Variance %** total of **411.51%** represents the sum of the individual salespeople's variances values.

   This summary variance percent value is incorrect. Summing ratios to produce a total ratio does not produce a meaningful result.

10. Switch to the report designer.

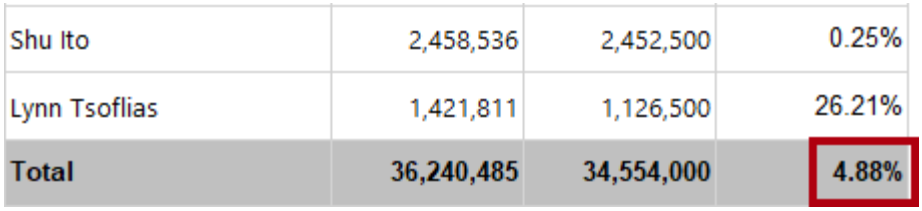
11. Modify the expression for the **Sales** footer text box [D3] to the following expression:

    For convenience, the expression can be copied from the ***<CourseFolder>\PowerBIPRIAD\Lab05A\Assets\Snippets.txt*** *file.*

VB.NET

```
=Sum(Fields!Sales.Value - Fields!Target.Value) / Sum(Fields!Target.Value)
```

12. Preview the report, and then review the table total values that are now correct.



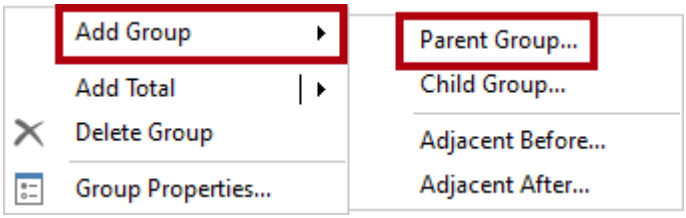
Shu Ito	2,458,536	2,452,500	0.25%
Lynn Tsoflias	1,421,811	1,126,500	26.21%
Total	**36,240,485**	**34,554,000**	**4.88%**

The correct aggregation is now achieved by a report expression.

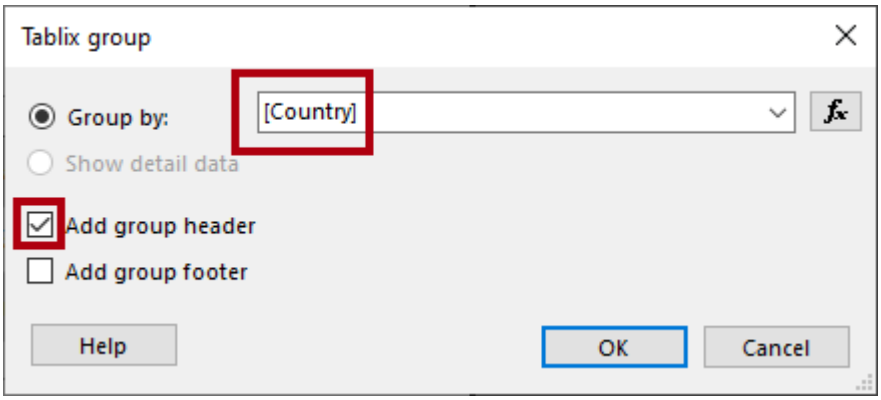
Task 7: Add a row group

In this task, you will add a nested group to group salespeople by their respective country.

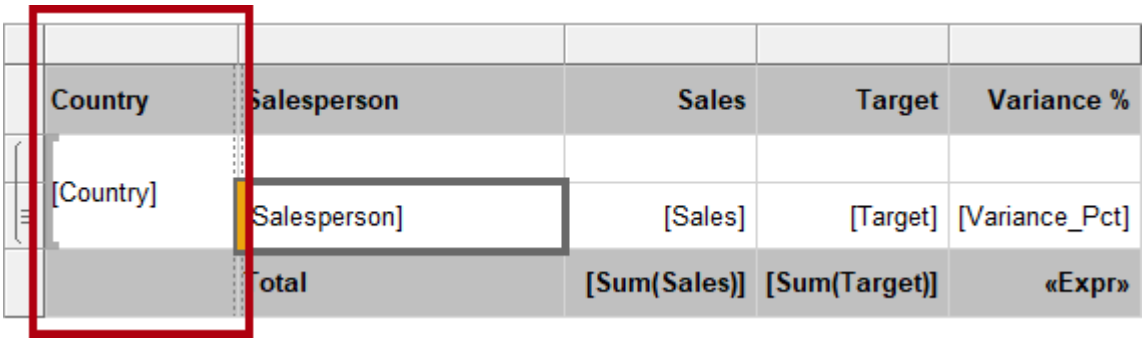
1. Switch to the report designer.
2. In the **Group** pane (located beneath the report canvas), inside the **Row Groups**, right-click the **(Details)** group, and the select **Add Group | Parent Group**.



3. In the **Tablix Group** window, set the following group properties:
   - Group by: **[Country]**
   - Add group header: **Check**

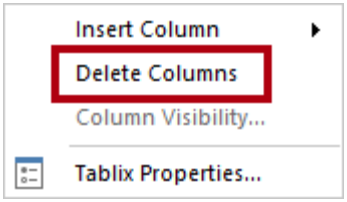


4. Click **OK**.
5. In the Table, notice the addition of a new column.

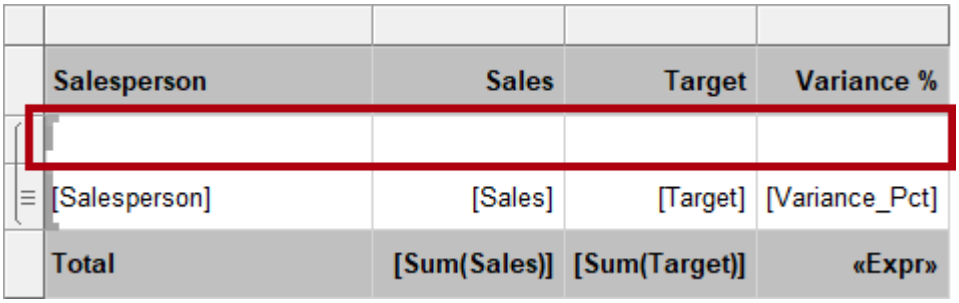


The new column isn't required in this table design.

6. To remove the new column, right-click the column guide for the new column, and then select **Delete Columns**.



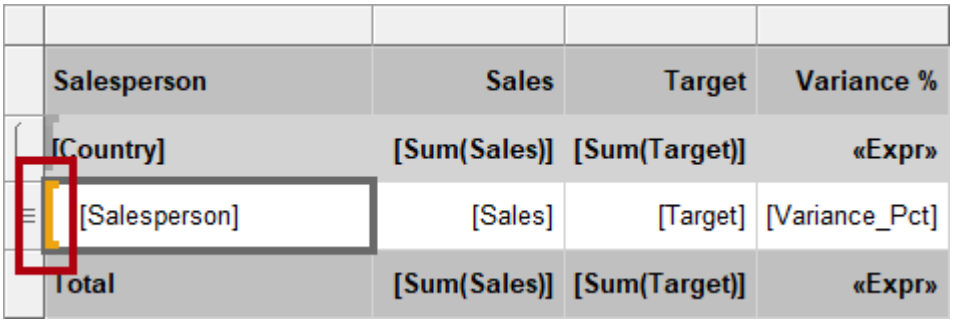
7. Notice the new row which represents the **Country** group header [A2:D2].



8. Use the **Field List** to add the **Country** field to the first group header text box [A2].
9. Multi-select the three table footer numeric text boxes [B4:D4], then right-click the selection, and then select **Copy**.
10. Inside the **Country** group header row, right-click the **Sales** text box [B2], and then select **Paste**.

    The aggregate expressions used in the table footer work when aggregating at the country level.

11. Select the **Country** group header row guide, and then set the following properties:
    - Alignment, vertical align: **Middle**
    - Fill, background color: **LightGrey**
    - Font, font weight: **Bold**
    - Height: **0.35**
12. To indent the detail rows, select the **Salesperson** text box [A3], and then set the **Alignment | Padding | Left** property to **12pt**.



13. To sort the salespeople by descending sales value within their country, in the **Grouping** pane (located beneath the report canvas), right-click the **(Details)** group, and then select **Group Properties**.

14. In the **Group Properties** window, select the **Sorting** page.

15. Click **Add**.

16. Set the following sort option:

    - Sort by: **[Sales]**
    - Order: **Z to A**

17. Click **OK**.

18. Preview the report, and then notice that the United States salespeople are ordered by descending sales.

Task 8: Add non-default aggregation logic

In this task, you will add two additional columns to compute **Country %** (ratio of a salesperson's sales over their country's sales), and **Overall %** (ratio of a salesperson or country's sales over total sales).

1. Switch to the report designer.

2. Insert a column to the right of the **Sales** column.

3. Select the column guide of the new column, and then on the toolbar, set the font size to **8pt**.

4. Set the width of the new column to **0.7**–you may need to select a single text box, and then set the width.

5. Format the column by using the format code **P2**.

6. In the table header text box of the new column [C1], enter **Country %**.

7. In the detail text box of the new column [C3], enter the following expression:

   For convenience, the expression can be copied from the ***<CourseFolder>\PowerBIPRIAD\Lab05A\Assets\Snippets.txt*** *file.*

   VB.NET

   ```
   =Fields!Sales.Value / Sum(Fields!Sales.Value, "Country")
   ```

   This expression divides sales by the sum of the sales at the ***Country*** *group level.*

8. Preview the report, and then notice that the new calculation produces the ratio of a salesperson's sales over their country's sales.

9. Switch to the report designer.

10. Repeat the steps in this task to:

    - Add a new column to the right of the **Country %** column
    - Name the column header **Overall %**
    - Set the new column width to **0.7**
    - Format the new column as **P2**

11. In the detail text box [D3], enter the following expression:

    For convenience, the expression can be copied from the ***<CourseFolder>\PowerBIPRIAD\Lab05A\Assets\Snippets.txt*** *file.*

    VB.NET

    ```
    =Fields!Sales.Value / Sum(Fields!Sales.Value, "dsMain")
    ```

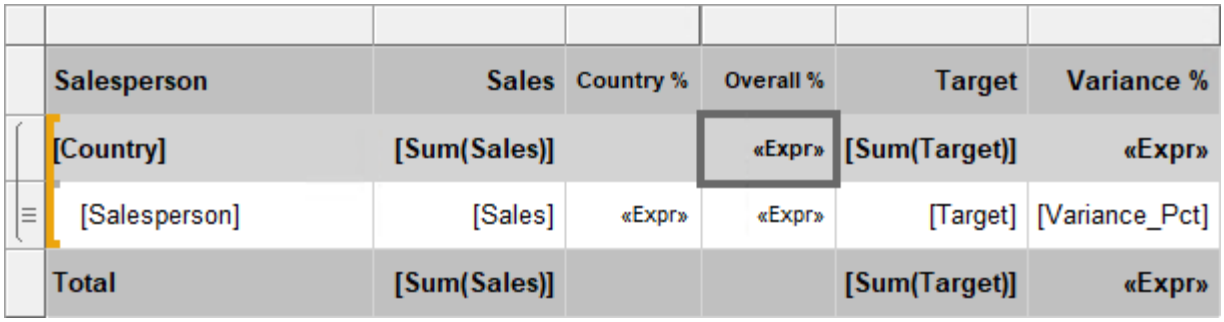
    This expression divides sales by the sum of the sales at the dataset level.

12. In the **Country** group header text box of the new column [D2], enter the following expression.

    VB.NET

    ```
    =Sum(Fields!Sales.Value) / Sum(Fields!Sales.Value, "dsMain")
    ```

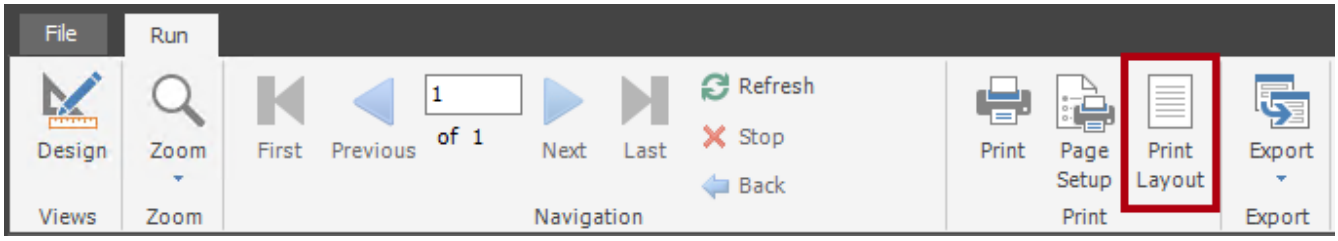
13. Verify that the Table design looks like the following:



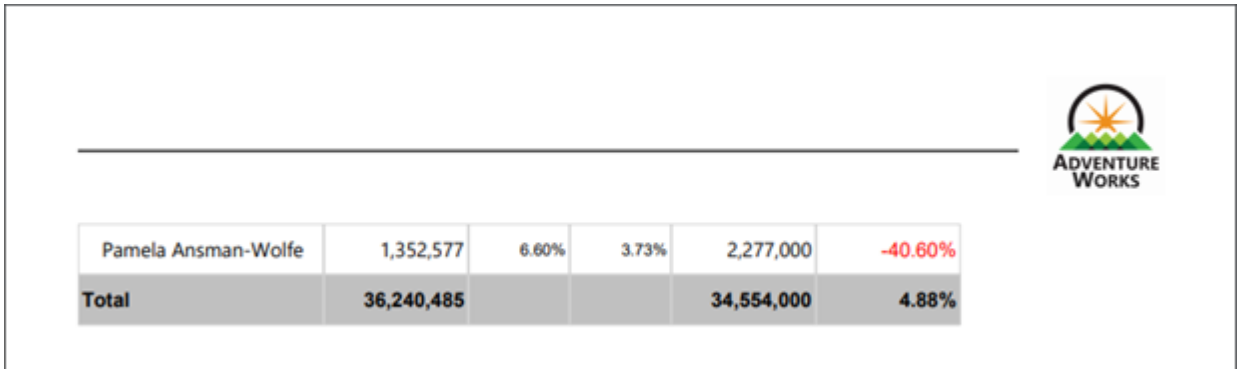
Salesperson	Sales	Country %	Overall %	Target	Variance %
[Country]	[Sum(Sales)]		«Expr»	[Sum(Target)]	«Expr»
[Salesperson]	[Sales]	«Expr»	«Expr»	[Target]	[Variance_Pct]
Total	[Sum(Sales)]			[Sum(Target)]	«Expr»

This expression divides the sum of sales at ***Country*** *group level by the sum of the sales at the dataset level. There's no need to specify a scope in the first sum function as the expression is evaluated at the* ***Country*** *group level.*

14. Remove any excess body height (trailing white space beneath the table).
15. Ensure that the body width is **7.5**.
16. Preview the report, and then notice that the new calculation produces the ratio of a salesperson or country's sales over total sales.
17. On the **Run** ribbon tab, from inside the **Print** group, click **Print Layout**.



18. Navigate to the second page, and then notice that the table header did not repeat on the second page.



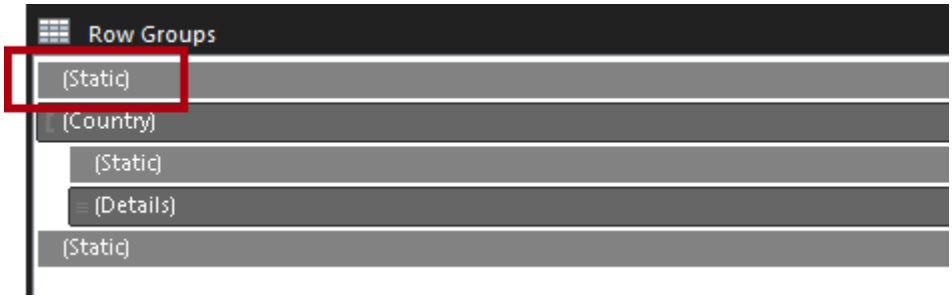
You will configure a repeating table header in the next task.

Task 9: Configure a repeating header row

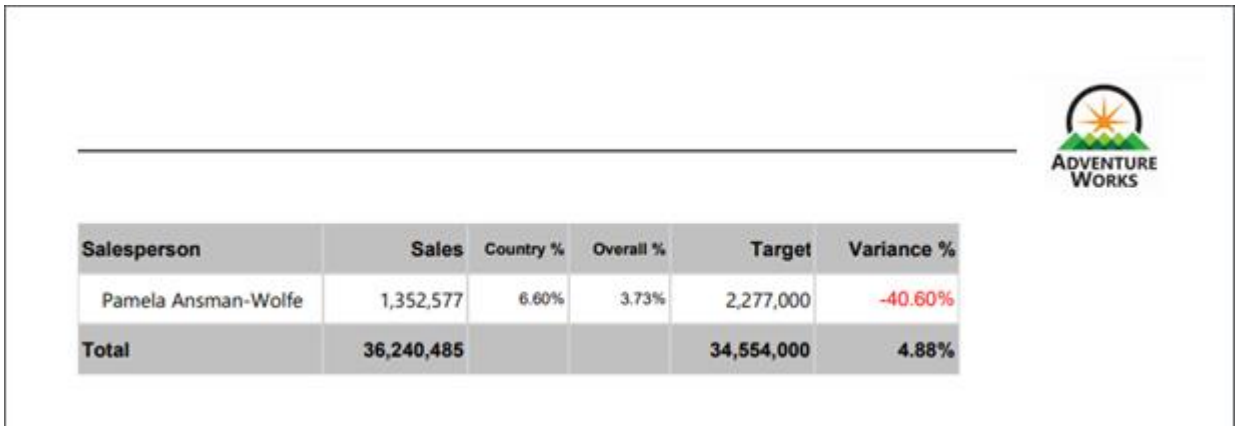
In this task, you will configure the Table to repeat the header row.

1. Switch to the report designer.
2. Located at the far right of the **Grouping** pane, click the down arrow, and then select **Advanced Mode**.

3. In **Row Groups** section, select the first static group.



4. In the **Properties** pane, set the following properties:
   - Other, KeepWithGroup: **After**
   - Other, RepeatOnNewPage: **True**
5. To turn off advanced mode, at the far right of the **Grouping** pane, click the down arrow, and then select **Advanced Mode** again.
6. Preview the report again, and then navigate to page 2.
7. Verify that the table header repeats on the second page.



Salesperson	Sales	Country %	Overall %	Target	Variance %
Pamela Ansman-Wolfe	1,352,577	6.60%	3.73%	2,277,000	-40.60%
Total	**36,240,485**			**34,554,000**	**4.88%**

8. Leave the report open.

   *In the next lab, you will continue the development of the **Sales Performance** report by adding data visualizations.*

Summary

In this lab, you developed a report named **Sales Performance**. It included a Table based on a Power BI dataset that presents salespeople statistics grouped by country.

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