
Calculations

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Calculations

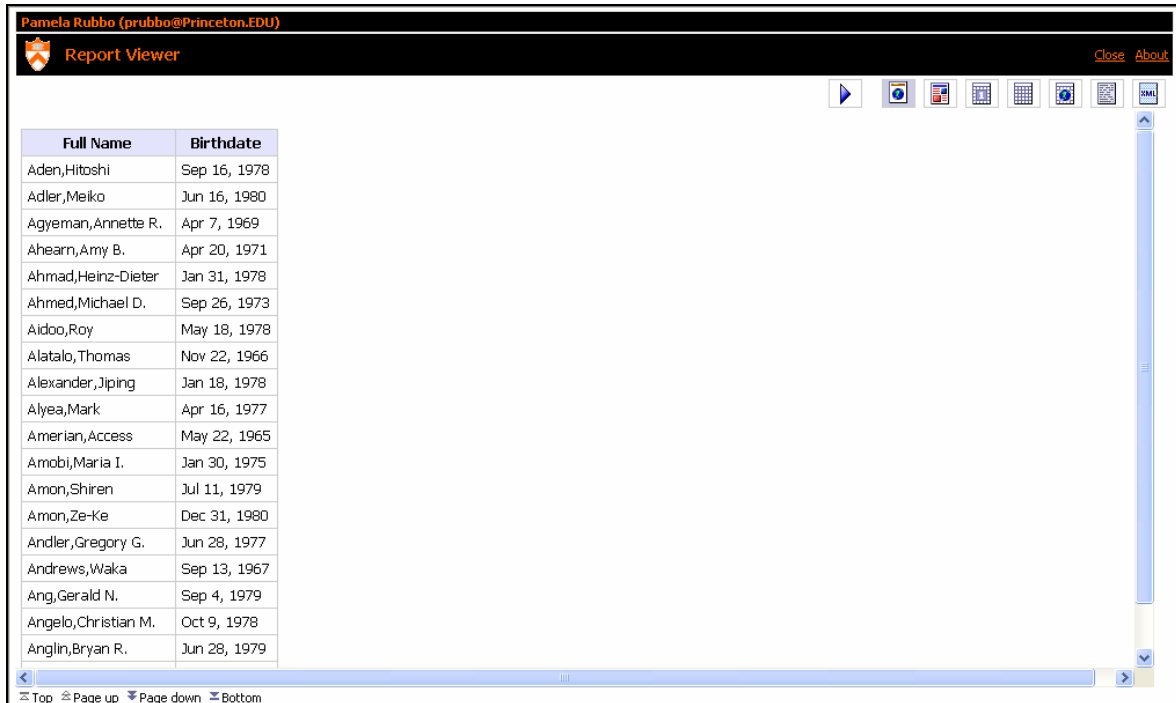
Complex and involved calculations are possible within Report Studio. This chapter will focus on the easier and more commonly used calculations.

For instance, we can create a calculated column by multiplying one column with another. Grouping a column allows you to keep all the similar data together, and to add summaries for each group. Some of the summaries available are counting the number of rows, averaging the numbers in a group and totaling.

GOAL: To build a report to use within this chapter.

STEPS:

1. Click the **New** icon and select **List**.
2. Add **Full Name** and **Birthdate**.
3. Save the report as **Calc**.
4. **Run** the report. **Close** the Report Viewer.






The screenshot shows the Report Viewer interface. The title bar reads "Pamela Rubbo (prubbo@Princeton.EDU) Report Viewer". The main area displays a table with two columns: "Full Name" and "Birthdate". The table contains 20 rows of data. The status bar at the bottom shows navigation options: "Top", "Page up", "Page down", and "Bottom".

Full Name	Birthdate
Aden,Hitoshi	Sep 16, 1978
Adler,Meiko	Jun 16, 1980
Agyeman,Annette R.	Apr 7, 1969
Ahearn,Amy B.	Apr 20, 1971
Ahmad,Heinz-Dieter	Jan 31, 1978
Ahmed,Michael D.	Sep 26, 1973
Aidoo,Roy	May 18, 1978
Alatalo,Thomas	Nov 22, 1966
Alexander,Jiping	Jan 18, 1978
Alyea,Mark	Apr 16, 1977
Amerian,Access	May 22, 1965
Amobi,Maria I.	Jan 30, 1975
Amon,Shiren	Jul 11, 1979
Amon,Ze-Ke	Dec 31, 1980
Andler,Gregory G.	Jun 28, 1977
Andrews,Waka	Sep 13, 1967
Ang,Gerald N.	Sep 4, 1979
Angelo,Christian M.	Oct 9, 1978
Anglin,Bryan R.	Jun 28, 1979

Adding a Calculated Column

A calculated column is a column created by the user, usually because the column does not exist in the model. There are three types of calculated columns: Detail, Group, and Layout.

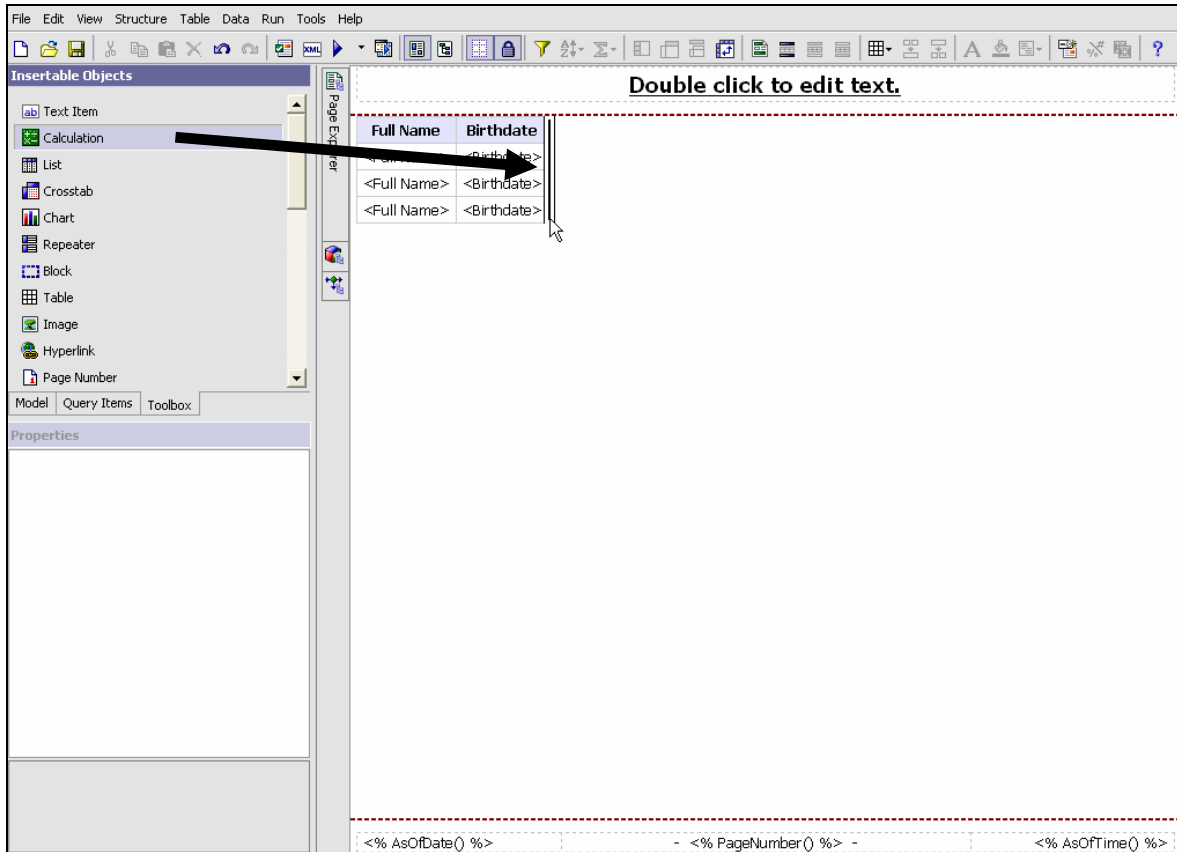
 Detail	Detail. Creates a calculation that is applied to non-aggregated records.
 Group	Group. Creates a calculation that is applied to grouped values. This type of calculation is applied to values after they have been aggregated.
 Layout	Layout. Creates a calculation containing run-time information anywhere in the report. Use it to create dynamic layout objects, such as a customized title.

GOAL: To create a new Age column by using Birthdate.

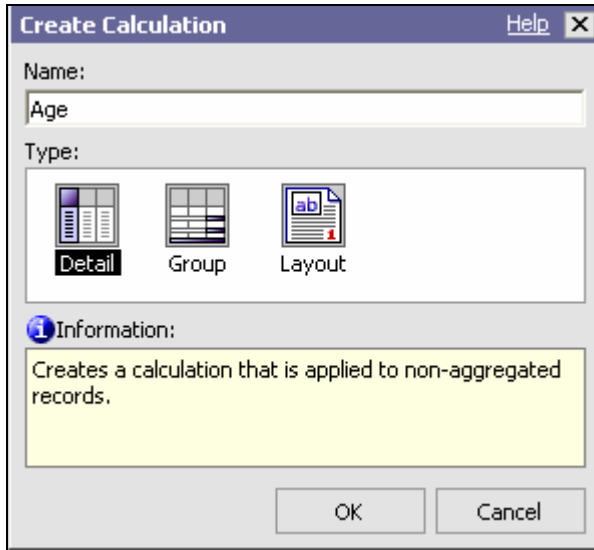
STEPS:

1. Click the **Toolbox** tab.

2. Click and drag **Calculation** to the right of the Birthdate column.

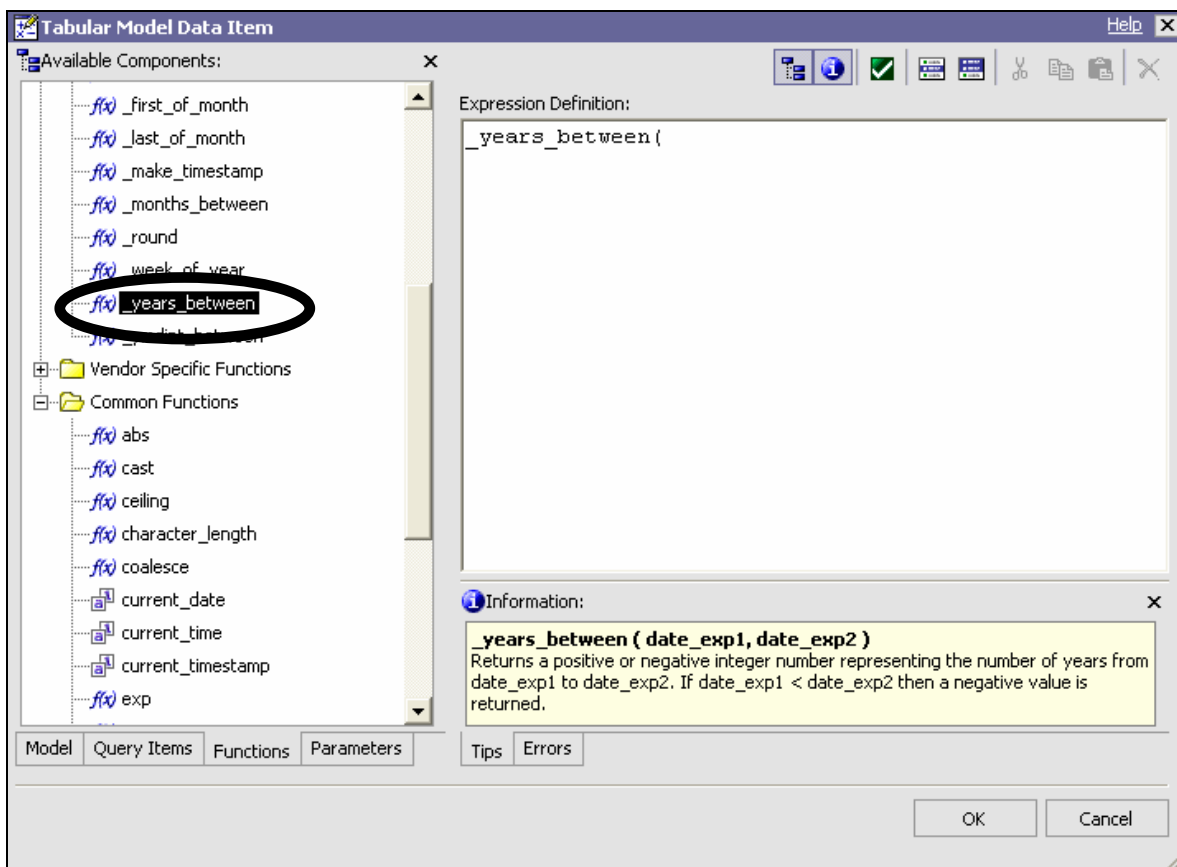


3. In the **Create Calculation** window, under Name, type **Age**.

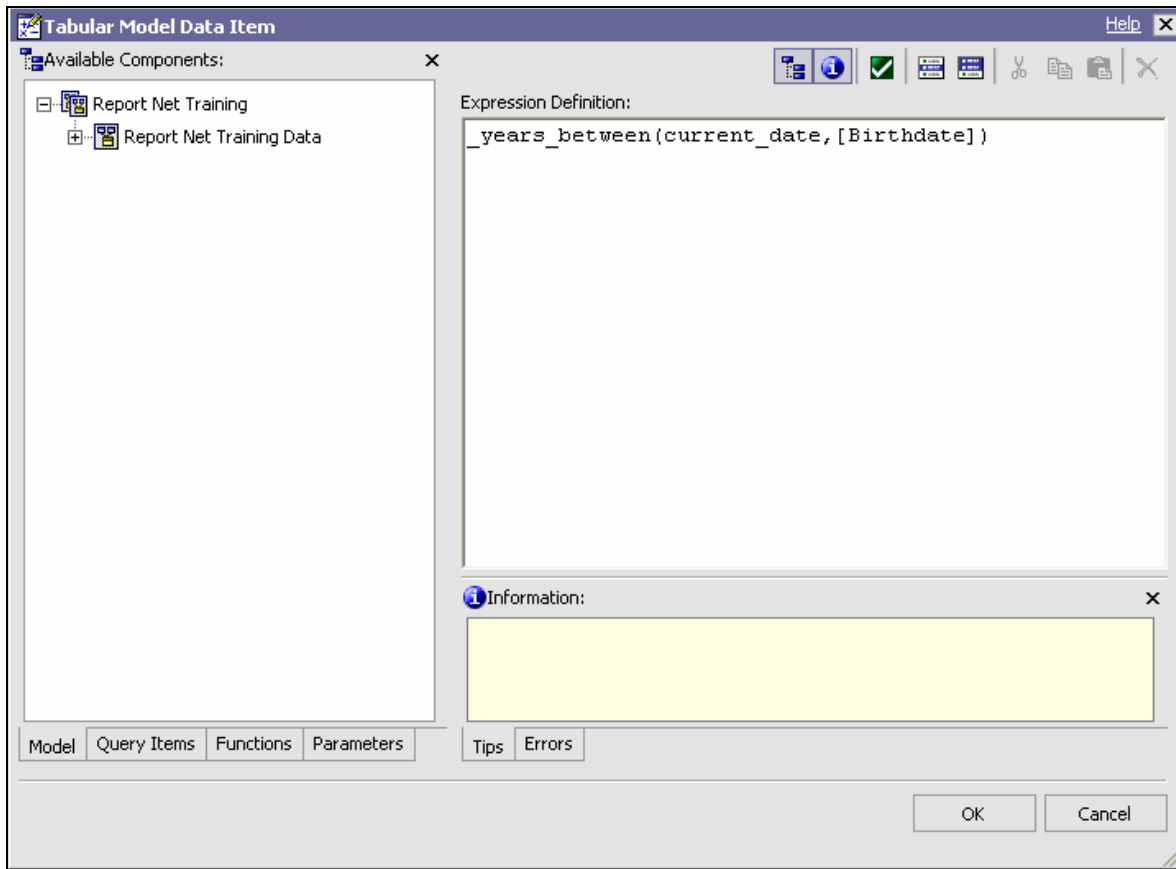


4. Click **OK**.

5. Click the **Functions** tab and open the **Business Date/Time Functions** folder. Scroll down and double-click **_years_between** to add it to the right.



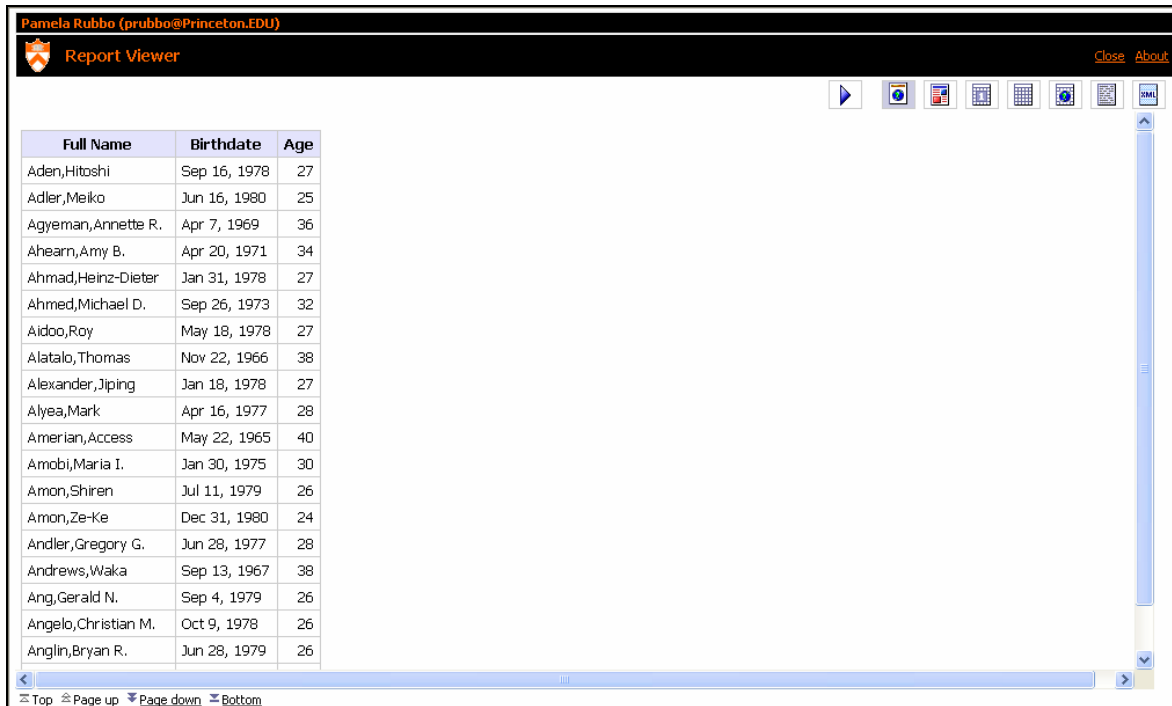
6. Open the **Common Functions** folder and double-click **current_date**.
7. Type a **comma** and a **space** after **current_date**.
8. Click the **Query Items** tab and double-click **Birthdate**. Type a **)** after **Birthdate**.
9. Click the **Validate** icon and make sure there are no errors.



Note: You can also type directly into the *Expression Definition* area.

10. Click **OK**.

11. **Run** the report.



The screenshot shows a window titled "Report Viewer" with a user name "Pamela Rubbo (prubbo@Princeton.EDU)". The window contains a table with three columns: "Full Name", "Birthdate", and "Age". The table lists 20 rows of data. The window also features a toolbar with various icons and a status bar at the bottom with navigation options like "Top", "Page up", "Page down", and "Bottom".

Full Name	Birthdate	Age
Aden,Hitoshi	Sep 16, 1978	27
Adler,Meiko	Jun 16, 1980	25
Agyeman,Annette R.	Apr 7, 1969	36
Ahearn,Amy B.	Apr 20, 1971	34
Ahmad,Heinz-Dieter	Jan 31, 1978	27
Ahmed,Michael D.	Sep 26, 1973	32
Aidoo,Roy	May 18, 1978	27
Alatalo,Thomas	Nov 22, 1966	38
Alexander,Jiping	Jan 18, 1978	27
Alyea,Mark	Apr 16, 1977	28
Amerian,Access	May 22, 1965	40
Amobi,María I.	Jan 30, 1975	30
Amon,Shiren	Jul 11, 1979	26
Amon,Ze-Ke	Dec 31, 1980	24
Andler,Gregory G.	Jun 28, 1977	28
Andrews,Waka	Sep 13, 1967	38
Ang,Gerald N.	Sep 4, 1979	26
Angelo,Christian M.	Oct 9, 1978	26
Anglin,Bryan R.	Jun 28, 1979	26

12. **Close** the Report Viewer.

13. Click **Save**.

Adding Summary Totals to a Footer (Totaling a Column)


You can also create additional aggregates within the report. You can group a report and add summaries to the group footers.

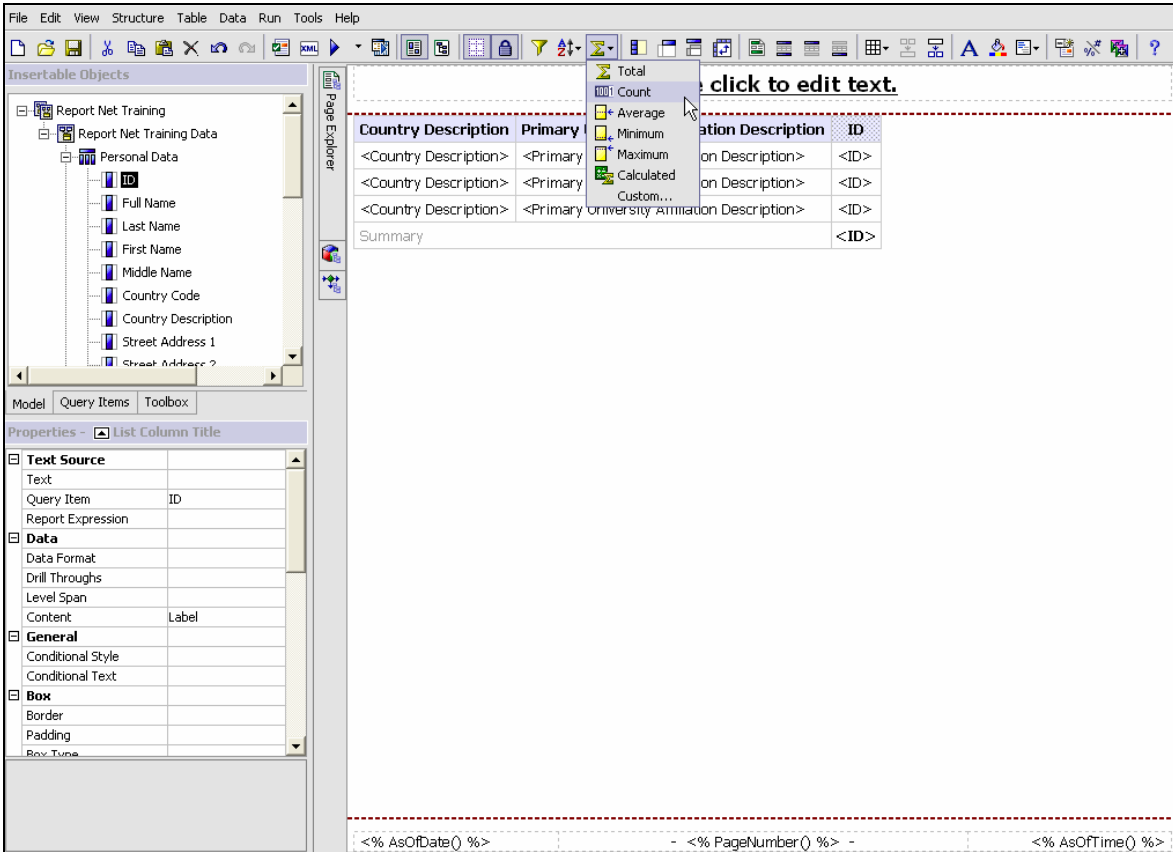
An ungrouped report will show counts, totals, etc. for the entire report. However, if the report is grouped, and then counts, totals, etc. are added, the report will show the summaries for each individual group and for the report as a whole.

GOAL: To total ID's for the entire report

STEPS:

1. **Create** a new list report with **Country Description, Primary University Affiliation Description**, and **ID** as columns.
2. Save the report as **Count ID**.
3. Highlight the **ID** column.

4. Click the drop down arrow to the right of the **Aggregate** icon .



The screenshot shows the ReportNet-Report Studio 1.1 interface. The main window displays a table with the following data:

Country Description	Primary	ation Description	ID
<Country Description>	<Primary	on Description>	<ID>
<Country Description>	<Primary	on Description>	<ID>
<Country Description>	<Primary	on Description>	<ID>
Summary			<ID>

The 'Aggregate' dropdown menu is open, showing the following options:

- Total
- Count
- Average
- Minimum
- Maximum
- Calculated
- Custom...

The 'Count' option is highlighted. A text box above the table says "click to edit text." The Properties window on the left shows the following sections:

- Text Source**
 - Text
 - Query Item: ID
 - Report Expression
- Data**
 - Data Format
 - Drill Throughs
 - Level Span
 - Content: Label
- General**
 - Conditional Style
 - Conditional Text
- Box**
 - Border
 - Padding
 - Box Type

5. In the drop down list, choose **Count**.

6. **<ID>** in bold is added at the bottom of the column, indicating a summary.

Country Description	Primary University Affiliation Description	ID
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
Summary		<ID>

7. **Run** the report.

8. Click the **Bottom** link to go to the bottom of the report to view the footer.

The screenshot shows a web browser window titled "Report Viewer" with a user profile "Pamela Rubbo (prubbo@Princeton.EDU)". The window contains a table with three columns: Country, Primary University Affiliation, and ID. The table lists various countries and their corresponding IDs. The last row, labeled "Summary", shows a total count of 1059 in the ID column, which is circled in black. The browser's status bar at the bottom shows "Oct 5, 2005" and "5:30:40 PM". Navigation links for "Top", "Page up", "Page down", and "Bottom" are visible at the bottom of the page.

United States	Miscellaneous	000001041
United States	Miscellaneous	000001042
United States	Miscellaneous	000001043
United States	Miscellaneous	000001044
United States	Miscellaneous	000001045
Canada	Miscellaneous	000001046
United States	Miscellaneous	000001047
United States	Miscellaneous	000001048
New Zealand	Miscellaneous	000001049
Australia	Miscellaneous	000001050
Bulgaria	Miscellaneous	000001051
Yugoslavia	Miscellaneous	000001052
United States	Miscellaneous	000001053
United States	Miscellaneous	000001054
Canada	Miscellaneous	000001055
Canada	Miscellaneous	000001056
United States	Miscellaneous	000001057
United States	Miscellaneous	000001058
United States	Miscellaneous	000001059
Summary		1059

9. The number of ID's for the entire report is shown in the last row in bold. **Close** the Report Viewer.

10. Save the report as **Count ID List**.

To remove the summary footer:

1. Click in the **Summary footer** at the bottom of the report. The footer is selected.

Country Description	Primary University Affiliation Description	ID
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
Summary		<ID>

2. Press the **Delete** key.
3. The Summary footer and the ID count are deleted from the report.


Country Description	Primary University Affiliation Description	ID
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>

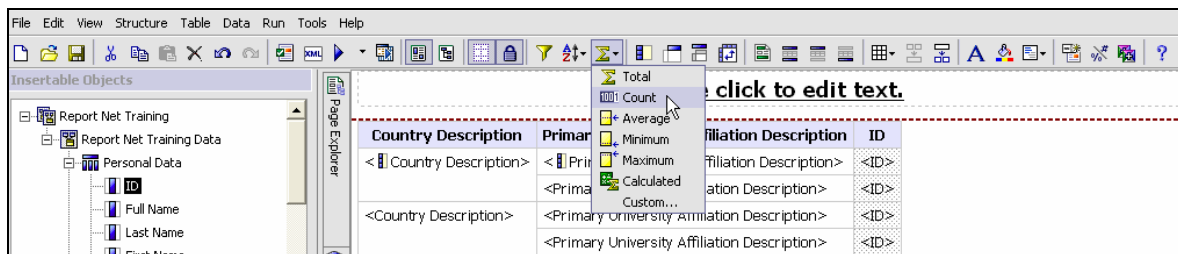
4. **Save** the report.

Grouped Summary Footers

GOAL: To count per individual group.

STEPS:

1. Use the **Count ID List** report.
2. Group the report by **Country Description** and **Primary University Affiliation Description**.
3. Click on the **ID** column.
4. Click the down arrow to the right of the **Aggregate** icon .



5. In the drop down list, choose **Count**.
6. Because the report is grouped by Country Description, and Primary University Affiliation Description, a summary footer is added for each grouping. The last footer (labeled <Summary> will show a summary for the entire report.

Country Description	Primary University Affiliation Description	ID
<Country Description>	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
<Country Description>		<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
	<Primary University Affiliation Description>	<ID>
<Country Description>		<ID>
Summary		<ID>

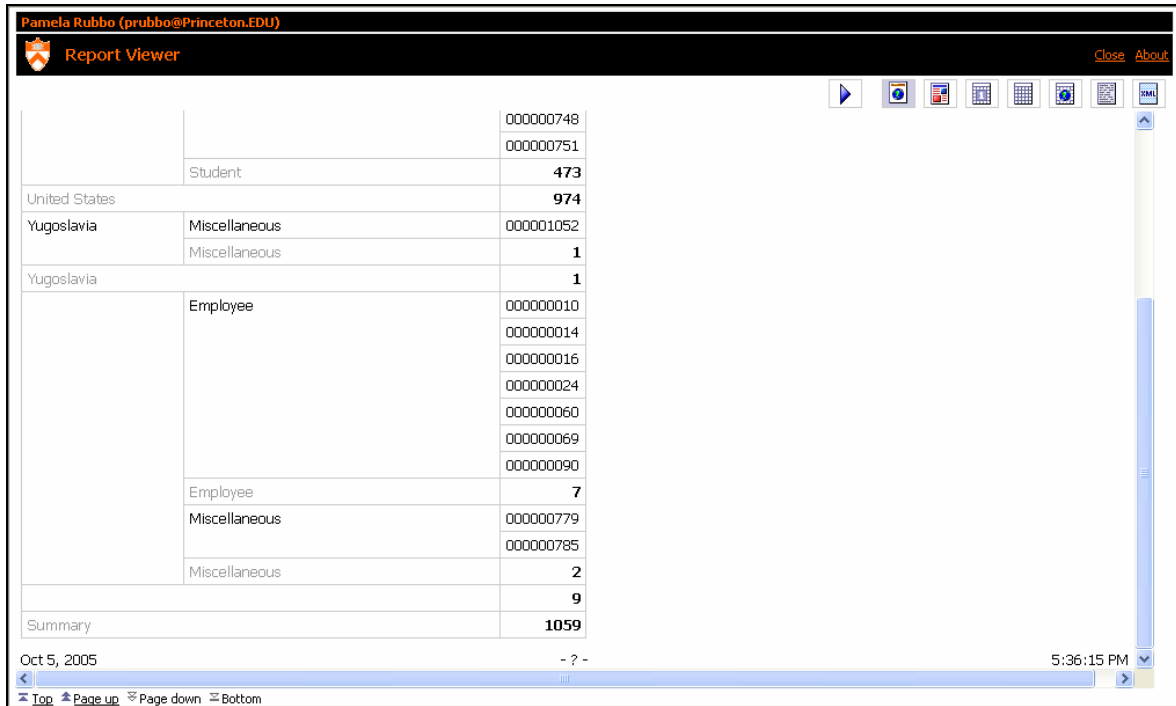
7. Run the report.

Country Description	Primary University Affiliation Description	ID
Australia	Miscellaneous	000001050
	Miscellaneous	1
Australia		1
Austria	Student	000000710
	Student	1
Austria		1
Belgium	Miscellaneous	000001033
	Miscellaneous	1
Belgium		1
Bulgaria	Miscellaneous	000001051
	Miscellaneous	1
Bulgaria		1
Canada	Employee	000000043
		000000073
		000000097
		000000108
		000000213
	Employee	5
	Miscellaneous	000000756

8. Click the **Page Down** link and examine the groupings for Canada.

Country Description	Primary University Affiliation Description	ID
Canada	Miscellaneous	000000990
		000000996
		000001027
		000001029
		000001046
		000001055
		000001056
	Miscellaneous	18
	Student	000000269
		000000314
		000000452
		000000479
		000000481
		000000496
		000000633
		000000643
		000000693
		Student
Canada		32

9. Click the **Bottom** link.



The screenshot shows a web browser window titled "Report Viewer" with a user profile "Pamela Rubbo (prubbo@Princeton.EDU)". The window contains a table with the following data:

		000000748
		000000751
	Student	473
United States		974
Yugoslavia	Miscellaneous	000001052
	Miscellaneous	1
Yugoslavia		1
	Employee	000000010
		000000014
		000000016
		000000024
		000000060
		000000069
		000000090
	Employee	7
	Miscellaneous	000000779
		000000785
	Miscellaneous	2
		9
Summary		1059

At the bottom of the window, the date is "Oct 5, 2005" and the time is "5:36:15 PM". Navigation links include "Top", "Page up", "Page down", and "Bottom".

10. The report shows the number of people for each country, for each affiliation, and for the entire report.

11. **Close** the Report Viewer and **Save** the report as **Group Count ID**.

Summary Calculation without detail

You may wish to show aggregate data without showing the detail. To do this, we will create a column that shows only the count of ID's, without showing the actual ID numbers.

GOAL: To create a basic summary calculated column.

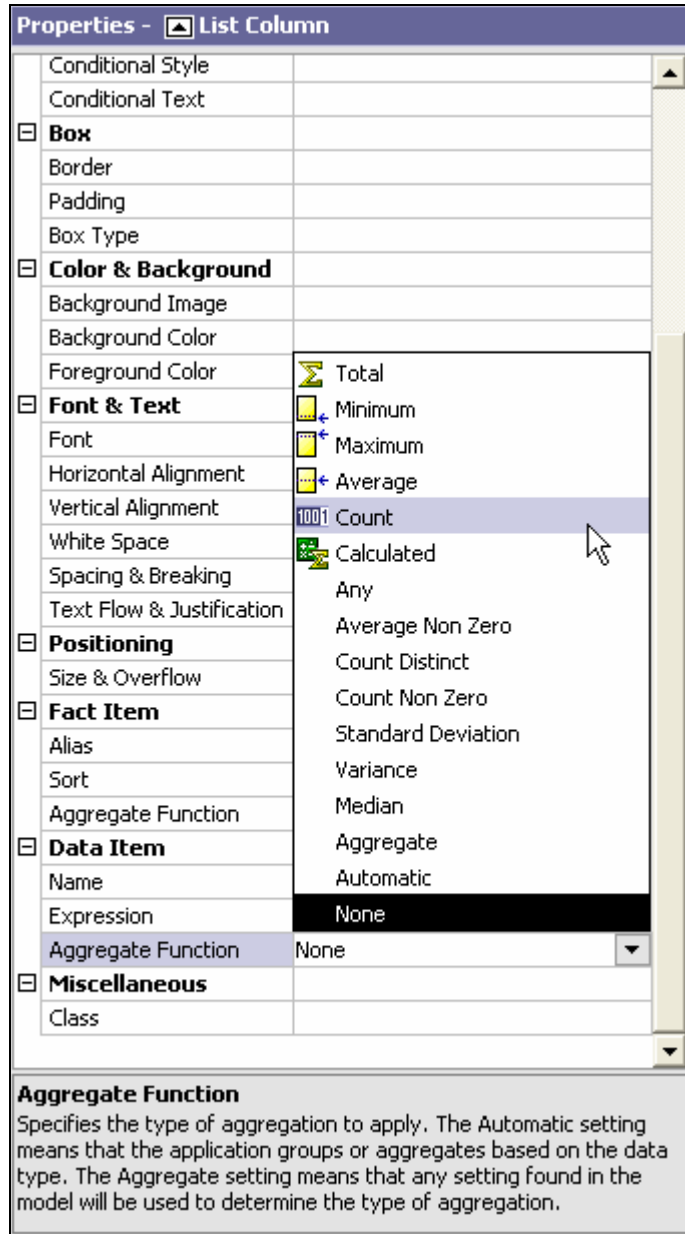
STEPS:

1. **Open** the original **Count ID** report, without footers.

Country Description	Primary University Affiliation Description	ID
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>
<Country Description>	<Primary University Affiliation Description>	<ID>

2. Group the **Country Description** and **Primary University Affiliation Description** columns.
3. Click on the **ID** column. In the **Properties** window, scroll down to **Data Item**.

- Click the **Aggregate Function** area and then click the **down arrow**.



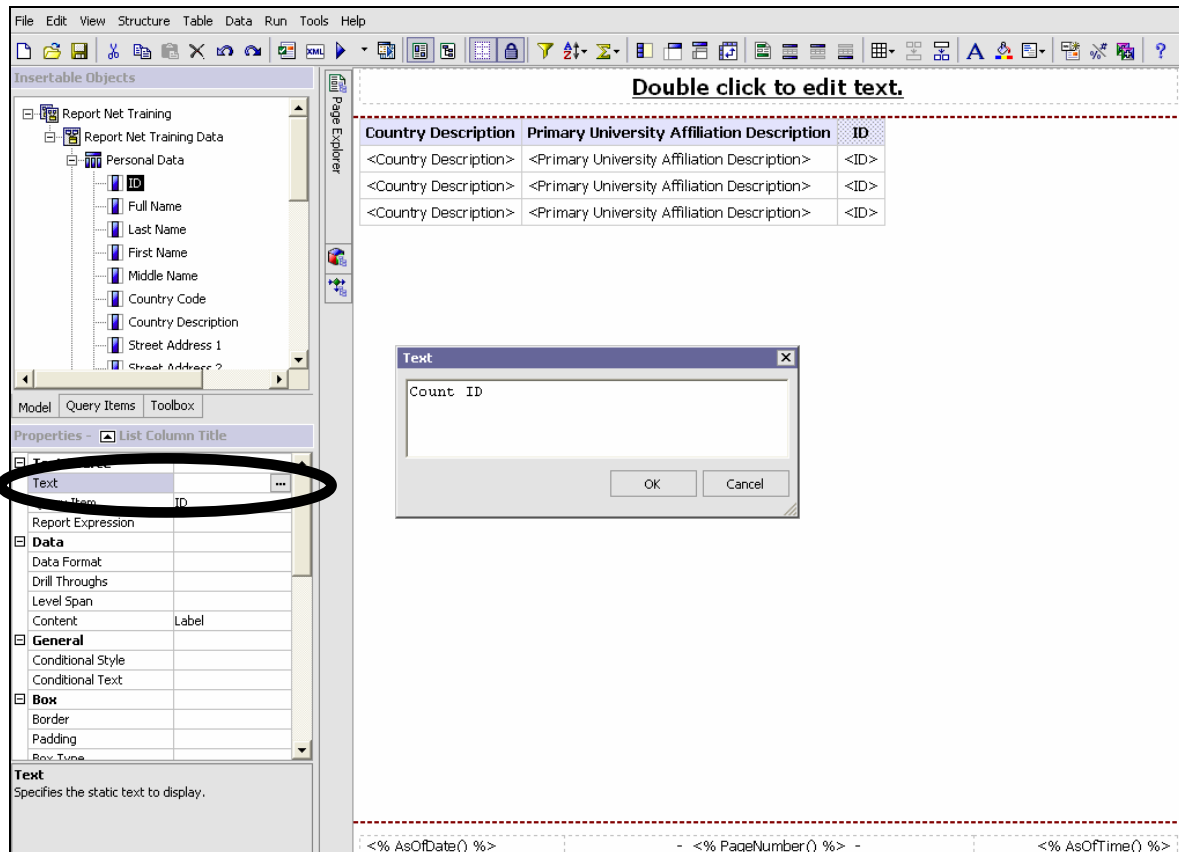
The screenshot shows the 'Properties - List Column' dialog box. The 'Aggregate Function' dropdown menu is open, displaying a list of options: Total, Minimum, Maximum, Average, Count (highlighted), Calculated, Any, Average Non Zero, Count Distinct, Count Non Zero, Standard Deviation, Variance, Median, Aggregate, Automatic, and None. The 'Count' option is selected, and a mouse cursor is visible over it. The 'Aggregate Function' dropdown in the main dialog is also set to 'None'.

Category	Property	Value
	Conditional Style	
	Conditional Text	
[-]	Box	
	Border	
	Padding	
	Box Type	
[-]	Color & Background	
	Background Image	
	Background Color	
	Foreground Color	
[-]	Font & Text	
	Font	
	Horizontal Alignment	
	Vertical Alignment	
	White Space	
	Spacing & Breaking	
	Text Flow & Justification	
[-]	Positioning	
	Size & Overflow	
[-]	Fact Item	
	Alias	
	Sort	
	Aggregate Function	
[-]	Data Item	
	Name	
	Expression	
	Aggregate Function	None
[-]	Miscellaneous	
	Class	

Aggregate Function
Specifies the type of aggregation to apply. The Automatic setting means that the application groups or aggregates based on the data type. The Aggregate setting means that any setting found in the model will be used to determine the type of aggregation.

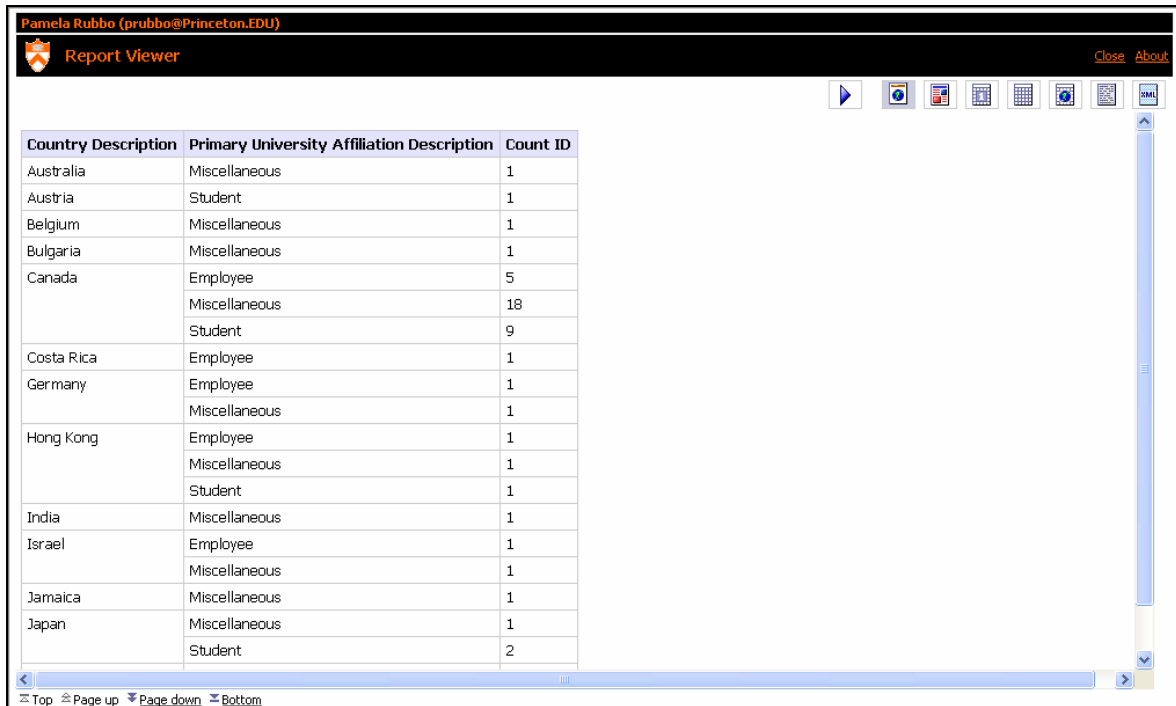
- Choose **Count**.

6. Highlight the **ID** column heading.
7. In the **Properties** window, locate **Text Source**. Click on **Text** and then click on the **ellipse button**.
8. Inside the Text window, type the new column name “**Count ID**”.



9. Click **OK**.
10. Save the report as **Count ID Summary**.

11. **Run** the report. (Instead of showing each individual ID, Report Studio summarizes by counting the number of ID's associated with each Country and Affiliation.)



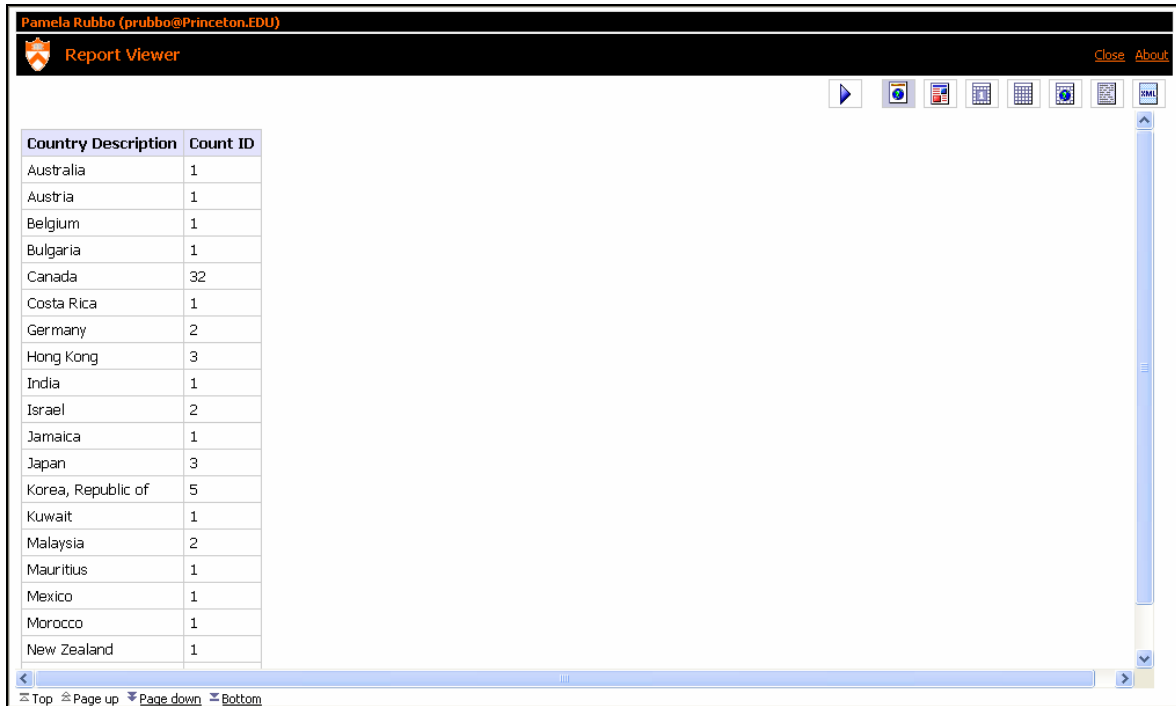
The screenshot shows the Report Viewer interface with a table of summarized data. The table has three columns: Country Description, Primary University Affiliation Description, and Count ID. The data is as follows:

Country Description	Primary University Affiliation Description	Count ID
Australia	Miscellaneous	1
Austria	Student	1
Belgium	Miscellaneous	1
Bulgaria	Miscellaneous	1
Canada	Employee	5
	Miscellaneous	18
	Student	9
Costa Rica	Employee	1
Germany	Employee	1
	Miscellaneous	1
Hong Kong	Employee	1
	Miscellaneous	1
	Student	1
India	Miscellaneous	1
Israel	Employee	1
	Miscellaneous	1
Jamaica	Miscellaneous	1
Japan	Miscellaneous	1
	Student	2

12. **Close** Report Viewer.

13. Delete the **Primary University Affiliation Description** column.

14. **Run** the report and now you will see the counts of ID's per country.



The screenshot shows a web browser window titled "Report Viewer" with the user "Pamela Rubbo (prubbo@Princeton.EDU)". The window contains a table with two columns: "Country Description" and "Count ID". The table lists 18 countries with their corresponding counts. The browser interface includes a toolbar with icons for navigation and printing, and a status bar at the bottom with navigation links like "Top", "Page up", "Page down", and "Bottom".

Country Description	Count ID
Australia	1
Austria	1
Belgium	1
Bulgaria	1
Canada	32
Costa Rica	1
Germany	2
Hong Kong	3
India	1
Israel	2
Jamaica	1
Japan	3
Korea, Republic of	5
Kuwait	1
Malaysia	2
Mauritius	1
Mexico	1
Morocco	1
New Zealand	1

15. **Close** the Report Viewer.

16. **Do not Save** the report.