Types of Calculated Items

The following types of data items can be created in SAS Visual Analytics, using code, or in SAS Data Studio or SAS Enterprise Guide:

Custom category	A custom category creates labels for groups of values of category or measure data items. When you create a custom category from a measure data item, you can use intervals, ranges, or distinct values to group the data. For more information about custom categories, see "Working with Custom Categories in a Report" in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.
Duplicate	Both measures and categories can be duplicated (copied) in Visual Analytics. Duplicating measures enables you to compare the data using different aggregations in a table or graph or change the classification to a category for grouping other values in tables or graphs. Duplicating datetime values enables you to apply different formats to the values for use in tables or graphs. Duplicating calculated items enables you to make variations to a calculation. For more information about duplicating data items, see "Working with Data Items in a Report" in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.
Calculated item	Calculated items are created by performing mathematical calculations on numeric values, or by performing operations on datetime data items or categories. All calculations are performed on unaggregated data. That is, the expression is evaluated for each row in the data source. For more information about creating calculated data items, see "Working with Calculated Items in a Report" in the SAS® Visual Analytics: Working with Report Data documentation. For more information about operators, see "Reference: Operators for Data Expressions" in the SAS® Visual Analytics: Working with Report Data documentation.

The following types of data items must be created in Visual Analytics:

Distinct count	A distinct count counts the number of distinct values of a category data item as an aggregated measure. This means that the calculation changes depending on the other data items available in the graph. For example, you can see the number of orders placed for each gender or the number of orders placed for each country by creating a distinct count from Order ID. For more information about creating distinct counts, see "Working with Data Items in a Report" in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation. **Note:** If the category contains missing values, the distinct count is increased by 1. A configuration setting can modify this behavior.	
Calculated	The following types of calculated items can be created:	
	Calculated item	Calculated items are created by performing mathematical calculations on numeric values, or by performing operations on datetime data items or categories. All calculations are performed on unaggregated data. That is, the expression is evaluated for each row in the data source.
	Aggregated measure	Aggregated measures enable you to calculate new data items using aggregated values. This means that the calculation changes depending on the other data items available in the graph. For example, you can see the profit margin for each region or by each store.
	For more information about creating calculated data items, see "Working with Calculated Items in a Report" in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation. For more information about operators, see "Reference: Operators for Data Expressions" in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.	
Geography	A geography data item is a category whose values are mapped to geographical locations or regions. Geography data items can be used with geo maps and other report objects. Geography data items can be created using predefined roles (for example, country names), by associating	

	latitude and longitude coordinates with the values (custom), or by associating polygon data from a separate data source with map regions (custom). For more information about creating geography data items, see “Working with Geography Data Items” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.
Aggregated Measure	Aggregated measures enable you to calculate new data items using aggregated values. This means that the calculation changes depending on the other data items available in the graph. For example, you can see the profit margin for each region or by each store. For more information about creating calculated data items, see “Working with Calculated Items in a Report” in the SAS Visual Analytics: Working with Report Data documentation.
Hierarchy	A hierarchy is a defined arrangement of category data items based on a parent-child relationship. In many cases, the levels of the hierarchy are arranged with the more general information at the top (for example, year) and the more specific information at the bottom (for example, month). Hierarchies enable you to add drill-down functionality to graphs and tables. Hierarchies that consist of all geographic data items are considered geographic hierarchies and can be used in geo maps. **Note:** You can create a date hierarchy from a date data item. By default, a date hierarchy has levels for year, quarter, month, and day. By default, a date hierarchy ***created from a datetime data item*** has levels for year, quarter, month, day, hour, minute, and second. For more information about hierarchies, see “Working with Hierarchies in a Report” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.
Distinct count	A distinct count counts the number of distinct values of a category data item as an aggregated measure. This means that the calculation changes depending on the other data items available in the graph. For example, you can see the number of orders placed for each gender or the number of orders placed for each country by creating a distinct count from Order ID. For more information about creating distinct counts, see “Working with Data Items in a Report” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation. **Note:** If the category contains missing values, the distinct count is increased by 1. A configuration setting can modify this behavior.
Parameter	A parameter is a variable whose value can be changed and that can be referenced by other report objects. Parameters can be used in control objects in Visual Analytics. When the value of the control changes, the parameter is updated with that value, and any report objects that reference that parameter are updated as well. Parameters can be used in calculations, display rules, filters, ranks, URLs, and text objects. For more information about parameters, see “Working with Parameters in Reports” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.
Derived items	Derived data items are aggregated measures that display values for the measure and the formula type on which the derived item is based. The following types of derived items can be created from category data items:
	Distinct count — Displays the number of distinct values for the selected category. For more information, see the distinct count definition above.
	Count — Displays the number of nonmissing values for the selected category.
	Number missing — Displays the number of missing values for the selected category.
	The following types of derived data items can be created from measure data items:
	Cumulative total — Displays a running total of all the values for the measure on which it is based.
	Data suppression — Obscures aggregated data if individual data values could easily be inferred. Data suppression replaces all values for the measure on which it is based with an asterisk (*) unless a value represents the aggregation of a specified minimum number of values. For more

	information, see “Reference: Operators for Data Expressions” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation
Difference from previous period	Displays the difference between the value for the current time period and the value for the previous time period.
Difference from previous parallel period	Displays the difference between the value for the current time period and the value for the previous parallel time period within a longer time interval.
Moving average	Displays a moving average (rolling average) for the measure on which it is based. The moving average calculates the average for each value with the specified number of preceding values
Percent difference from previous period	Displays the percentage difference between the value for the current time period and the value for the previous time period.
Percent difference from previous parallel period	Displays the percentage difference between the value for the current time period and the value for the previous parallel time period within a longer time interval.
Percent of subtotals	Displays the percentage of the subtotal value for the measure on which it is based. You can create a percentage of subtotal only when the source data item has an aggregation of sum or count. **Note:** The Percent of subtotals derived item is available for use only in crosstabs. **Note:** The Percent of subtotals derived item is relative to the subset of data that is selected by your filters and ranks.
Percent of total – sum	Displays the percentage of the total value for the measure on which it is based. You can create a percentage of total only when the source data item has an aggregation of sum or count. **Note:** The Percent of total – sum derived item is relative to the subset of data that is selected by your filters and ranks.
Period to date	Displays the aggregated value for the current time period and all of the previous time periods within a larger time interval.
Year to date	Displays the aggregated value for the current time period and all of the previous time periods within the year. The year-to-date calculation subsets the data for each year using today’s date (where today is evaluated each time you view the report).
Year to date growth	Displays the percentage difference between the year-to-date value for the current time period and the year-to-date value for the same time period of the previous year. The year-to-date calculation subsets the data for each year using today’s date (where today is evaluated each time you view the report).
Year over year growth	Displays the percentage difference between the current time period and an equivalent time period from the previous year. The year-over-year calculation subsets the data for each year using today’s date (where today is evaluated each time you view the report).

For more information about derived items, see “Working with Data Items in a Report” in the *SAS® Visual Analytics 8.3: Working with Report Data* documentation.