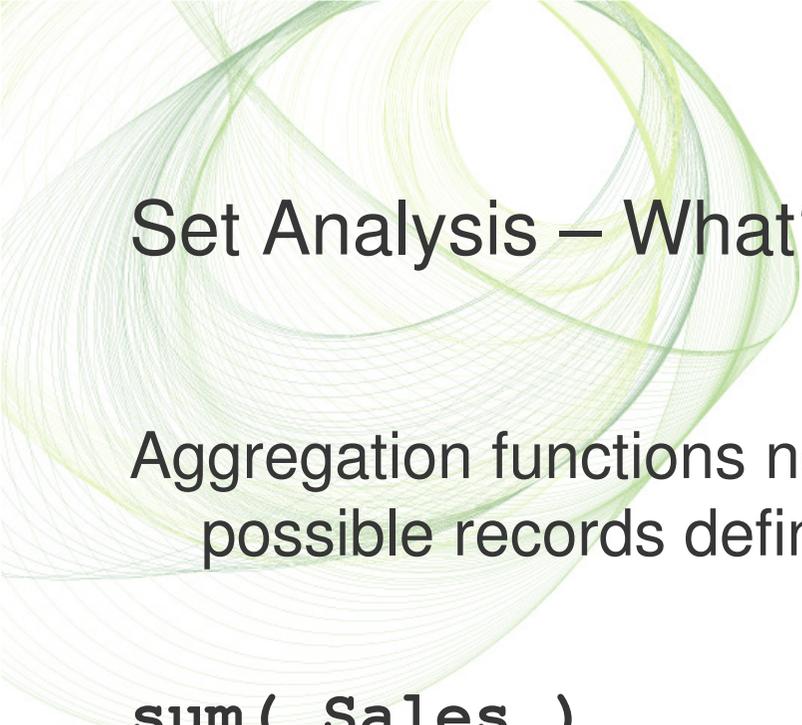# QlikLearn

QlikView Set Analysis

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Agenda

1. What is Set Analysis?
2. Why do we use it?
3. How do we use it (syntax)?
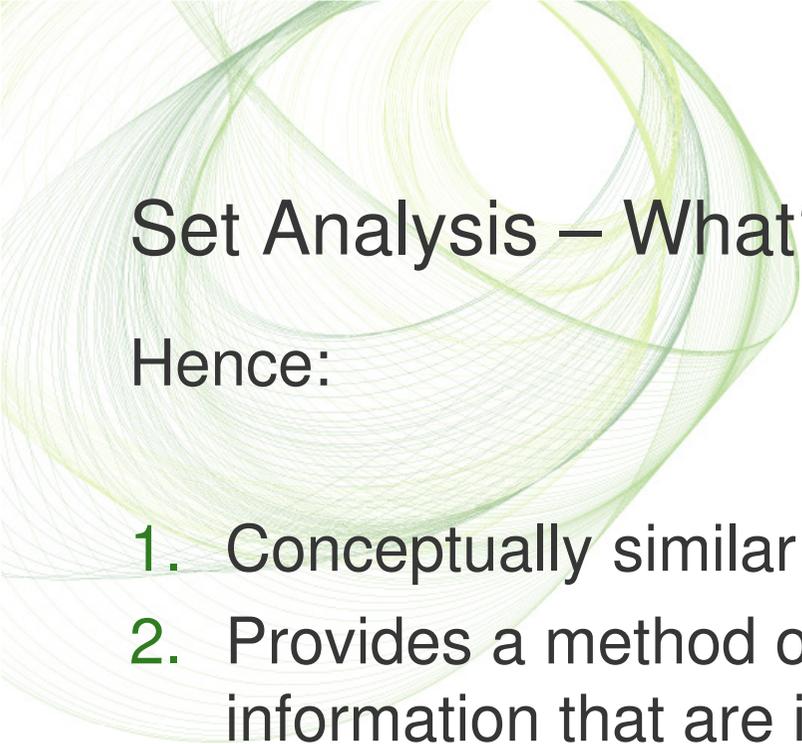4. Examples

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Set Analysis – What?

Aggregation functions normally aggregate over the set of possible records defined by the current selection.

```
sum( Sales )
```

But an alternative set of records can be defined by a set expression.

```
sum( {$<Year={2008}>} Sales )
```

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Set Analysis – What?

Hence:

1. Conceptually similar to a selection.
2. Provides a method of defining groups (sets) of information that are independent of the current selections.
3. Can create sets based on other sets.
4. Must be used in aggregation function.
5. Always begin and end with curly brackets {}
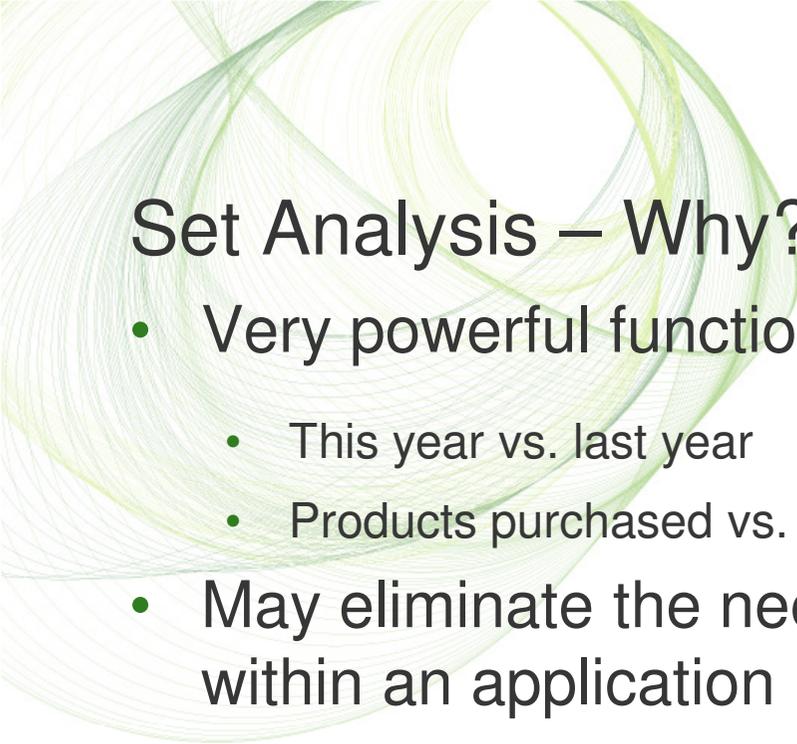
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Set Analysis – Why?

- Very powerful functionality for comparison analysis.
  - This year vs. last year
  - Products purchased vs. not purchased
- May eliminate the need for additional, complex coding within an application
  - No need for data islands (but data islands sometimes useful in conjunction with sets)
  - Reduces the need for macros
- Provides much more flexibility in the analysis' you can create
  - Expressions can be added for data outside of your current selection criteria

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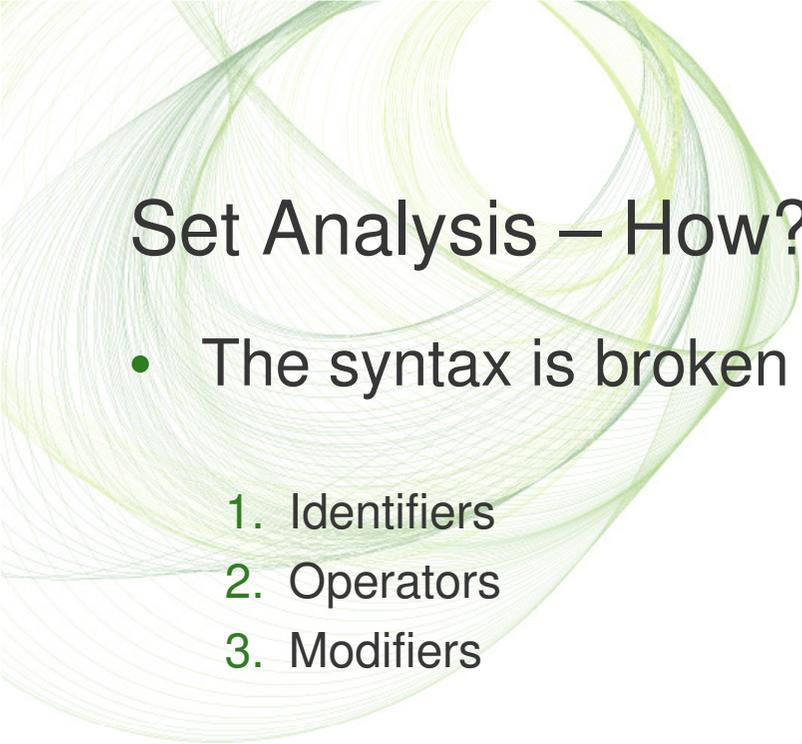
Set Analysis – How?

- The syntax is broken down into 3 categories:

  1. Identifiers
  2. Operators
  3. Modifiers

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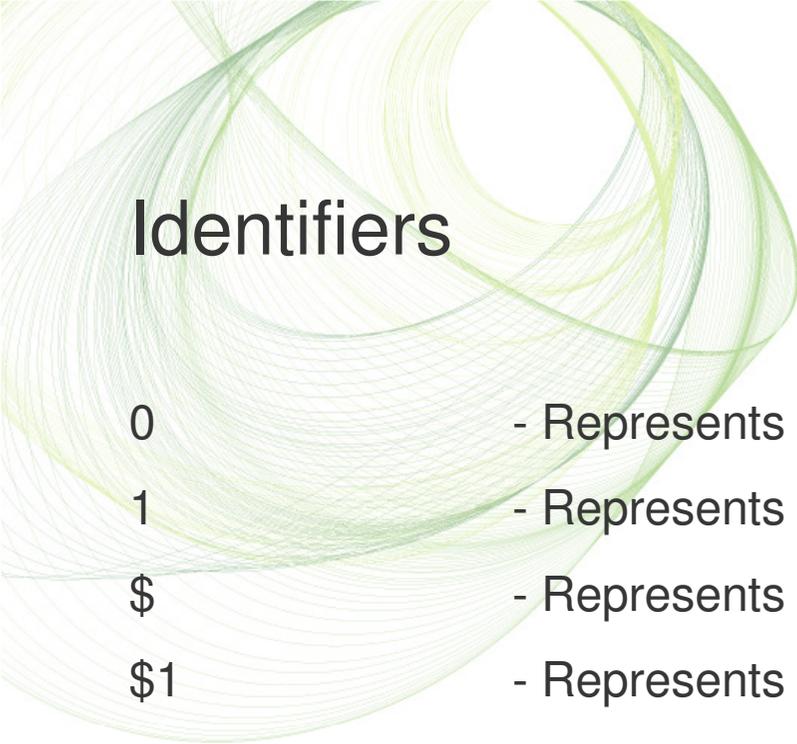
Set Analysis – How?

- The syntax is broken down into 3 categories:

1. **Identifiers**

```
sum({1 – $} Sales)
```

```
sum({Bookmark01 <CategoryName={'Babywear'}>} Sales)
```

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Identifiers

0   - Represents an empty set

1   - Represents the full set of all the records in the application

$ - Represents the records of the current selection

$1   - Represents the previous selection

$_1   - Represents the next (forward) selection

Bookmark01   - Represents the bookmark ID or the bookmark name

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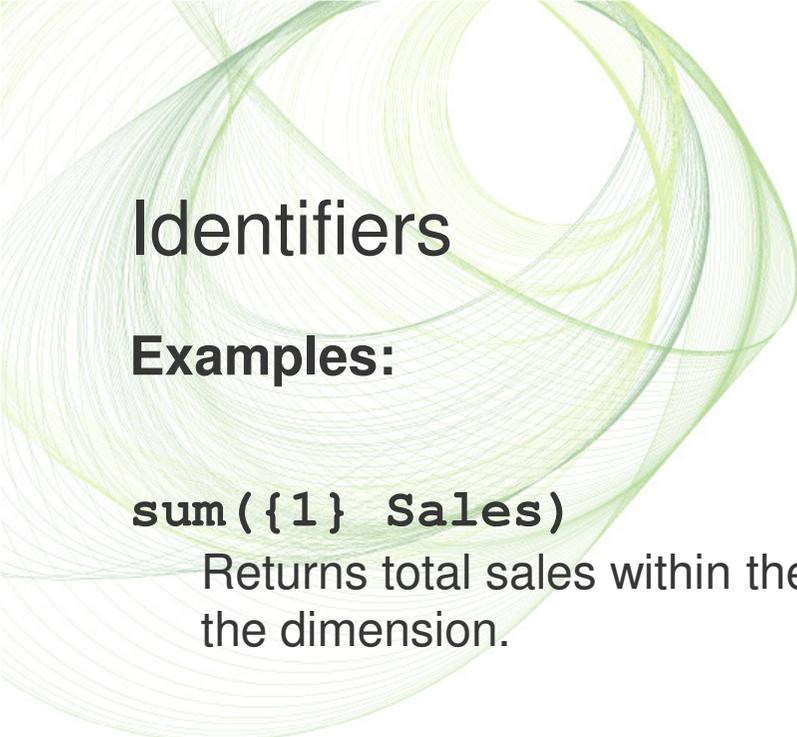
Identifiers

Examples:

`sum({1} Sales)`
   Returns total sales within the application, disregarding selections but not the dimension.

`sum({$} Sales)`
   Returns sales for the current selection, i.e. the same as sum(Sales).

`sum({$1} Sales)`
   Returns sales for the previous selection.

`sum({Bookmark01} Sales)`
   Returns sales for the bookmark named "Bookmark01".

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Set Analysis – How?

- The syntax is broken down into 3 categories:

  - Identifiers
  - **Operators**

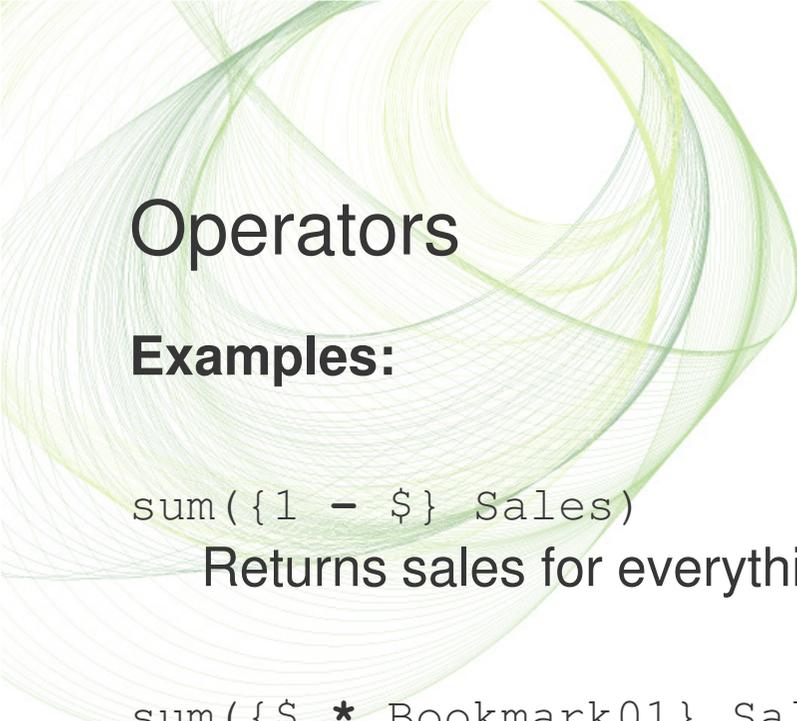|		
+	Union	Returns the set of all records that belong to the unioned sets
-	Exclusion	Returns records that belong to the first but not the other of the two set identifiers.
*	Intersection	Returns records that belong to both of the set identifiers.
/	Symmetric Difference	Returns a set that belongs to either, but not both of the set identifiers.

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Operators

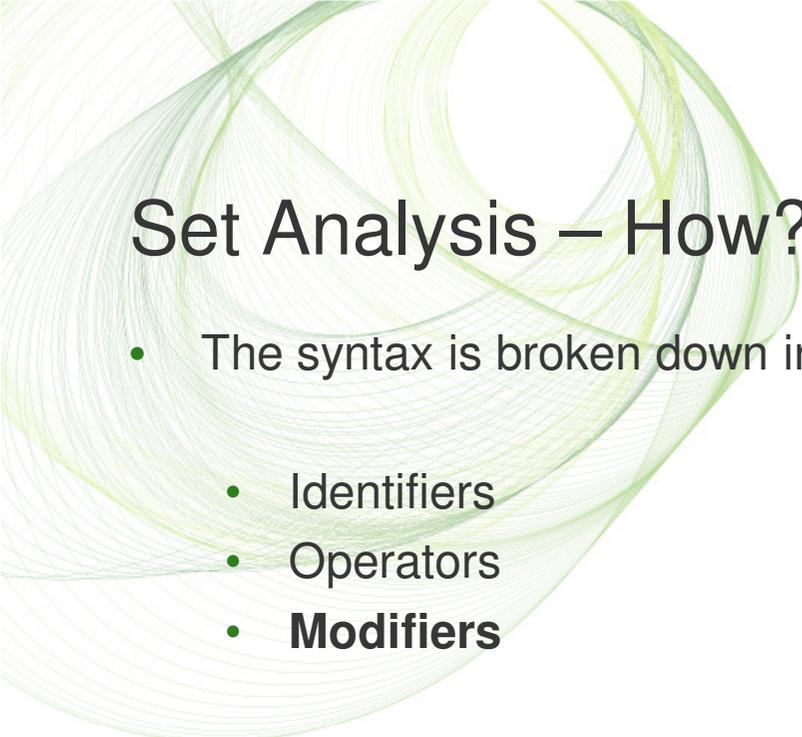**Examples:**

```
sum({1 – $} Sales)
```
Returns sales for everything excluded by the current selection.

```
sum({$ * Bookmark01} Sales)
```
Returns sales for the intersection between the current selection and the bookmark "Bookmark01".

```
sum({ – ($ + Bookmark01)} Sales)
```
Returns sales excluded by current selection and the bookmark "Bookmark01".

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Set Analysis – How?

- The syntax is broken down into 3 categories:

  - Identifiers
  - Operators
  - **Modifiers**

```
sum({BM01 <CategoryName={'Babywear'), Office={4}>} Sales)
```

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Modifiers

Set Modifiers

A set can be modified by additional or changed selections. Such a modification can be written in the set expression. The modifier consists of one or several field names, each followed by selection(s) that can be made in the field. Modifiers begin and end with angle brackets <>.

Modifiers - Examples

`sum({$<OrderDate = DeliveryDate>} Sales)`

Returns the sales for the current selection where OrderDate = DeliveryDate.

`sum({1<Region = {US}>} Sales)`

Returns the sales for region US disregarding the current selection.

`sum({$<Region = >} Sales)`

Returns the sales for current selection, but with the selection in "Region" removed.

`sum({<Region = >} Sales)`

Returns same as the example above. When the set to modify is omitted, $ is assumed.

`sum({$<Year={2000}, Region={"U*"}>} Sales)`

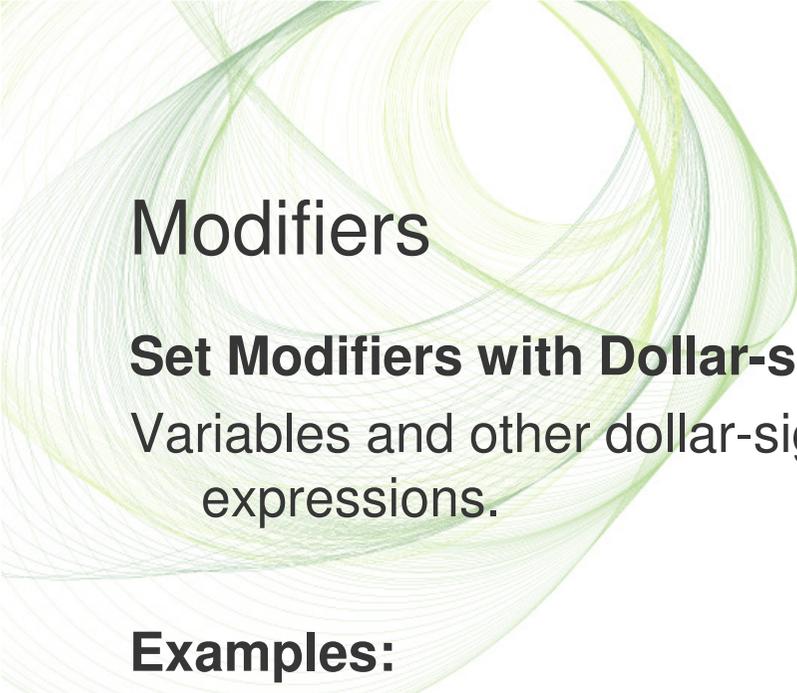Returns the sales for current selection, but with new selections both in "Year" and in "Region".

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Solution Demonstration

Advanced Set Analysis

1. Dollar sign expansion
2. Indirect Set Analysis

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Modifiers

Set Modifiers with Dollar-sign expansions

Variables and other dollar-sign expansions can be used in set expressions.

Examples:

```
sum( {$<Year = {$(vLastYear)}>} Sales )
```

returns the sales for the previous year in relation to the current selection. Here, a variable **vLastYear containing the** relevant year is used in a dollar-sign expansion.

```
sum( {$<Year = {$(=Only(Year)-1)}>} Sales )
```

returns the sales for the previous year in relation to the current selection. Here, a dollar-sign expansion is used to calculate previous year.

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Example

Annual Comparison

Customer	2009	2008	2009 vs 2008
Total	**772,576**	**600,569**	**+172,006**
Warp AG	10,615	38,959	-28,344
Eintrach GS	23,757	48,611	-24,854
Boombastic	13,578	29,615	-16,037
Paintho da Gama	435	14,378	-13,942
Davenport Fashion	1,845	13,998	-12,153
Don Balón	25,184	34,922	-9,738
Th Fashing	48,181	57,507	-9,325
The Corner Store	28,029	36,610	-8,581
Cloe do Pau	146	5,092	-4,945
Too Hot 4U	848	5,628	-4,780
Stephanies	910	5,618	-4,708
La Ropa Vieja	1,407	4,862	-3,456
Autokleider	566	3,347	-2,781
Bobby Socks	0	2,458	-2,458
Casual Clothing	5,006	7,341	-2,334
De la Vita	1,532	3,380	-1,847
Fast Sunglasses	0	1,700	-1,700

1. Label
=Only(Year)

1. Expression
Sum({$<Year={$(=Only(Year))}>} Sales)

2. Label
=Only(Year)-1

2. Expression
Sum({$<Year={$(=Only(Year)-1)}>} Sales)
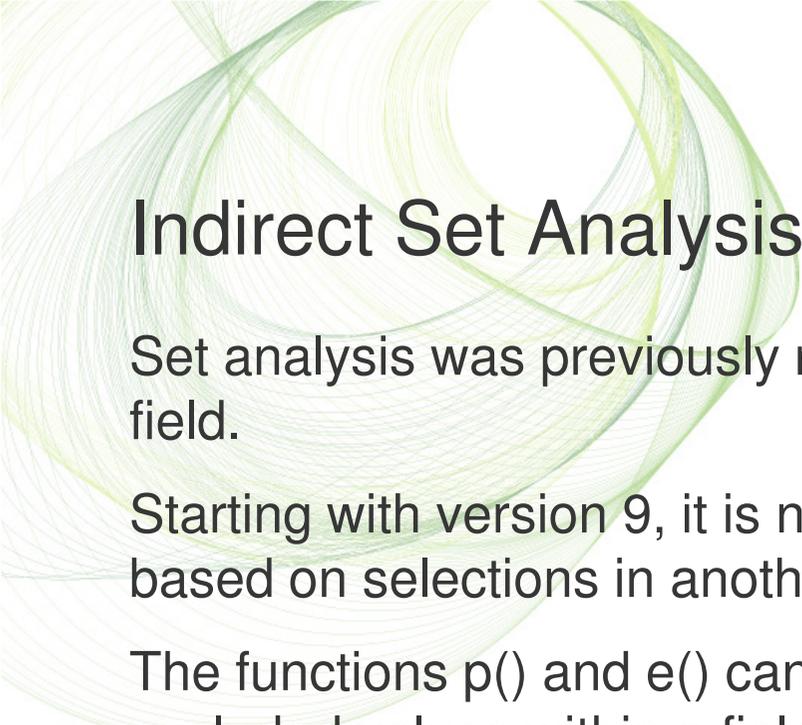
3. Label
=Only(Year) & ' vs ' & (Only(Year)-1)

3. Expression
Sum({$<Year={$(=Only(Year))}>} Sales) - Sum({$<Year={$(=Only(Year)-1)}>} Sales)

Year
2006
2007
2008
2009
2010

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Indirect Set Analysis

Set analysis was previously restricted to stating direct selections in a field.

Starting with version 9, it is now possible to state selections in a field based on selections in another field.

The functions p() and e() can be used to select the set of possible or excluded values within a field.

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Indirect Set Analysis

- **p( )** = Possible
- **e( )** = Excluded

Year	
2007	
2008	
2009	

2007, 2008 → Excluded

2009 → Possible

```
Customer = p({<Year={$(=max(Year)-1)}>} Customer)
```
   Returns customers who had an association to last year.

```
sum(({<Year={$(=max(Year))},
Customer = p({<Year={$(=max(Year)-1)} Customer>}) Sales)
```
   Returns this year's sales for customers who had sales last year.

Indirect Set Analysis

```
sum({$<CompanyName = p({$<CategoryName={'Baby Clothes'}>}
CompanyName)>} Sales)
```

Sales for Customers who purchased Baby Clothes.

The set p({}) returns the values of CompanyName (Customer) that purchased Baby Clothes.

```
sum({$<CompanyName = p({$<CategoryName={'Baby Clothes'}>}
CompanyName) - p({$<CategoryName={'SportsWear'}>}
CompanyName)>} Sales)
```

Sales for Customers who purchased Baby Clothes but not Sportswear.The first set p({}) returns CompanyName that purchased Baby Clothes.The second set p({}) returns CompanyName that Purchased SportsWear.The Unary Operator "-" between the two gives a list of Customers (CompanyName)that belong to the first but not the other set.

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Questions ?

For specific questions regarding your utilization of set analysis, please contact your local QlikView representative…