Comparing KPIs over different periods in Qlik

Qlik's modeling and chart expressions allow for multiple ways to achieve this.

I will focus on a method I've found very flexible and easy to operate once it's set up properly.

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Specifics

- Customer is from RETAIL market.
- Needs to observe INFLATION impact on sales: YTD vs LYTD vs L2YTD.
- Observing weekly SEASONALITY is VERY important since sales spikes occur during the weekend: Date by Date and Day by Day comparisons.

Business use case

Compare year-to-date sales performance to last year and the year before.

Two analysis types:

- date by date (ex: 16/9/24 vs 16/9/23 vs 16/9/22)

- day by day (ex: Mon 16/9/24 vs Mon 18/9/23 vs Mon 19/9/22)

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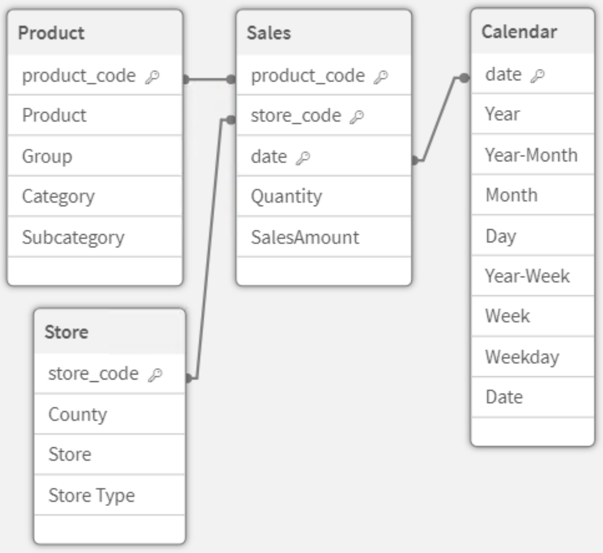
Modeling

- We start with a standard STAR SCHEMA model: Sales fact data with various dimensions tables linked to it.

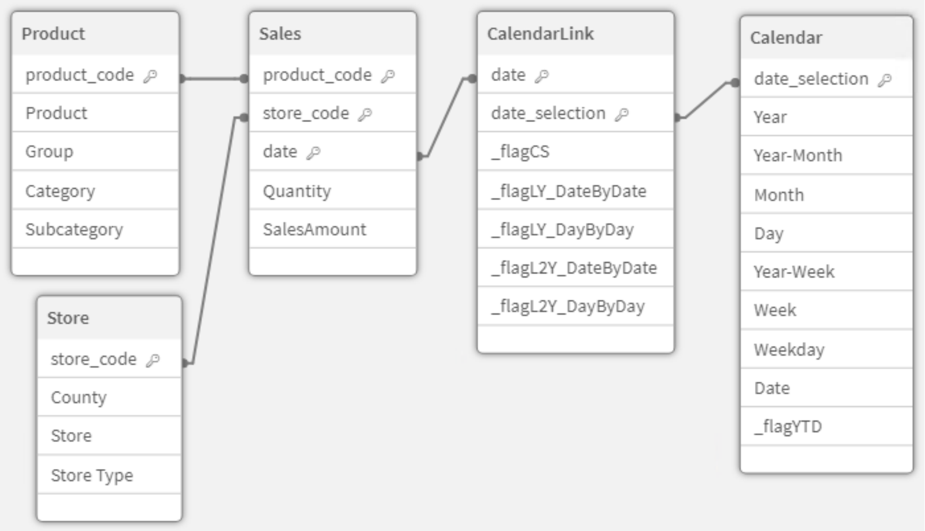
- We will use a LINK TABLE between the Sales fact table and Calendar dimension table.

- We add BOOLEAN FLAGS (1 or 0) in calendar tables to mark the periods we wish to compare.

Initial Model



Proposed Model



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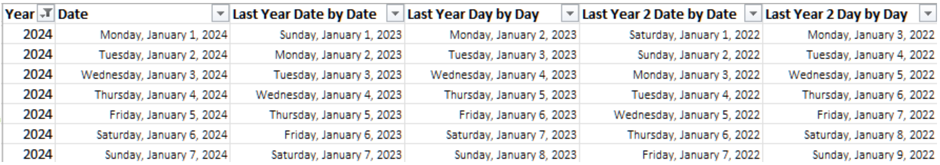
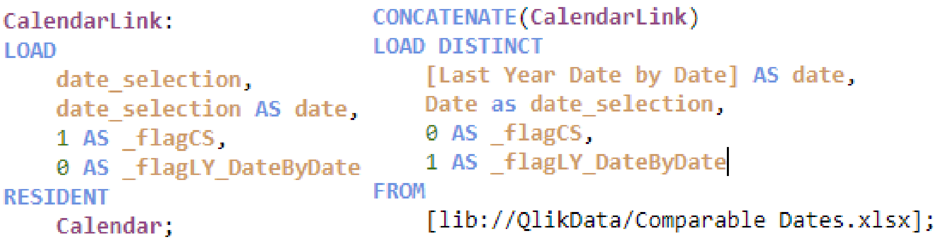
CalendarLink

- Use an excel sheet to specify each date for comparisons.



Year	Date	Last Year Date by Date	Last Year Day by Day	Last Year 2 Date by Date	Last Year 2 Day by Day
2024	Monday, January 1, 2024	Sunday, January 1, 2023	Monday, January 2, 2023	Saturday, January 1, 2022	Monday, January 3, 2022
2024	Tuesday, January 2, 2024	Monday, January 2, 2023	Tuesday, January 3, 2023	Sunday, January 2, 2022	Tuesday, January 4, 2022
2024	Wednesday, January 3, 2024	Tuesday, January 3, 2023	Wednesday, January 4, 2023	Monday, January 3, 2022	Wednesday, January 5, 2022
2024	Thursday, January 4, 2024	Wednesday, January 4, 2023	Thursday, January 5, 2023	Tuesday, January 4, 2022	Thursday, January 6, 2022
2024	Friday, January 5, 2024	Thursday, January 5, 2023	Friday, January 6, 2023	Wednesday, January 5, 2022	Friday, January 7, 2022
2024	Saturday, January 6, 2024	Friday, January 6, 2023	Saturday, January 7, 2023	Thursday, January 6, 2022	Saturday, January 8, 2022
2024	Sunday, January 7, 2024	Saturday, January 7, 2023	Sunday, January 8, 2023	Friday, January 7, 2022	Sunday, January 9, 2022

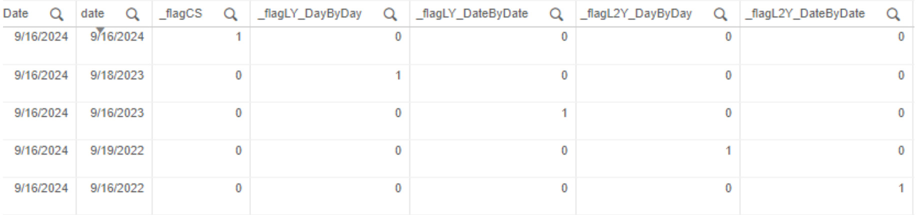
- Implement the steps to generate the "CalendarLink" table via script.



```
CalendarLink:
LOAD
    date_selection,
    date_selection AS date,
    1 AS _flagCS,
    0 AS _flagLY_DateByDate
RESIDENT
    Calendar;
```

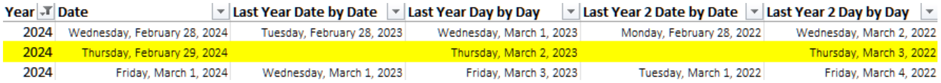
```
CONCATENATE(CalendarLink)
LOAD DISTINCT
    [Last Year Date by Date] AS date,
    Date as date_selection,
    0 AS _flagCS,
    1 AS _flagLY_DateByDate
FROM
    [lib://QlikData/Comparable Dates.xlsx];
```

- Resulting table helps us determine comparable dates for any given date.

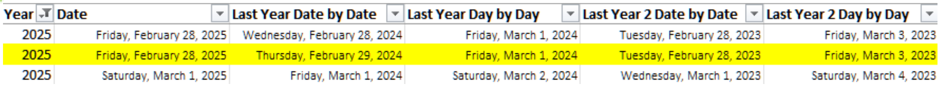


Date	date	_flagCS	_flagLY_DayByDay	_flagLY_DateByDate	_flagL2Y_DayByDay	_flagL2Y_DateByDate
9/16/2024	9/16/2024	1	0	0	0	0
9/16/2024	9/18/2023	0	1	0	0	0
9/16/2024	9/16/2023	0	0	1	0	0
9/16/2024	9/19/2022	0	0	0	1	0
9/16/2024	9/16/2022	0	0	0	0	1

- Careful with leap year specific dates!



Year	Date	Last Year Date by Date	Last Year Day by Day	Last Year 2 Date by Date	Last Year 2 Day by Day
2024	Wednesday, February 28, 2024	Tuesday, February 28, 2023	Wednesday, March 1, 2023	Monday, February 28, 2022	Wednesday, March 2, 2022
2024	Thursday, February 29, 2024		Thursday, March 2, 2023		Thursday, March 3, 2022
2024	Friday, March 1, 2024	Wednesday, March 1, 2023	Friday, March 3, 2023	Tuesday, March 1, 2022	Friday, March 4, 2022



Year	Date	Last Year Date by Date	Last Year Day by Day	Last Year 2 Date by Date	Last Year 2 Day by Day
2025	Friday, February 28, 2025	Wednesday, February 28, 2024	Friday, March 1, 2024	Tuesday, February 28, 2023	Friday, March 3, 2023
2025	Friday, February 28, 2025	Thursday, February 29, 2024	Friday, March 1, 2024	Tuesday, February 28, 2023	Friday, March 3, 2023
2025	Saturday, March 1, 2025	Friday, March 1, 2024	Saturday, March 2, 2024	Wednesday, March 1, 2023	Saturday, March 4, 2023

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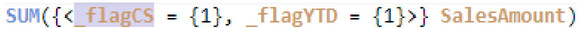
Formulas

- With such a model, EVERY formula must contain a SET expression to select the correct period.
- Changing the period inside a formula is determined by a single flag.

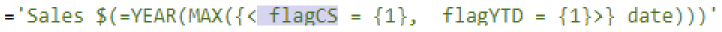
Sales YTD

Expression



```
SUM({<_flagCS = {1}, _flagYTD = {1}>} SalesAmount)
```

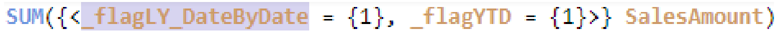
Label



```
='Sales $(=YEAR(MAX({< flagCS = {1},  flagYTD = {1}>} date)))'
```

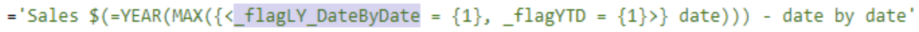
Sales LYTD – Date by Date

Expression



```
SUM({<_flagLY_DateByDate = {1}, _flagYTD = {1}>} SalesAmount)
```

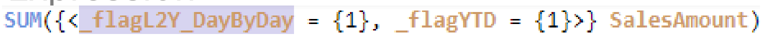
Label



```
='Sales $(=YEAR(MAX({<_flagLY_DateByDate = {1}, _flagYTD = {1}>} date))) - date by date'
```

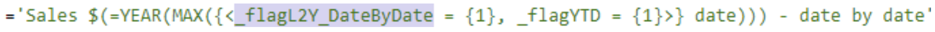
Sales L2YTD – Day by Day

Expression



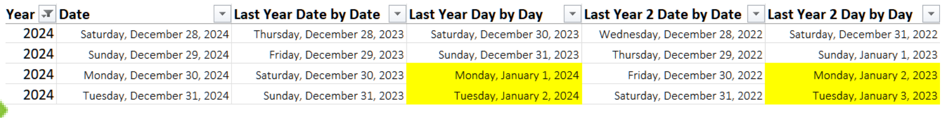
```
SUM({<_flagL2Y_DayByDay = {1}, _flagYTD = {1}>} SalesAmount)
```

Label



```
='Sales $(=YEAR(MAX({<_flagL2Y_DateByDate = {1}, _flagYTD = {1}>} date))) - date by date'
```

!!!Notice the last label expression uses a Date by Date flag, otherwise it would return the wrong year on the last 1-2 days of the year.



Year	Date	Last Year Date by Date	Last Year Day by Day	Last Year 2 Date by Date	Last Year 2 Day by Day
2024	Saturday, December 28, 2024	Thursday, December 28, 2023	Saturday, December 30, 2023	Wednesday, December 28, 2022	Saturday, December 31, 2022
2024	Sunday, December 29, 2024	Friday, December 29, 2023	Sunday, December 31, 2023	Thursday, December 29, 2022	Sunday, January 1, 2023
2024	Monday, December 30, 2024	Saturday, December 30, 2023	Monday, January 1, 2024	Friday, December 30, 2022	Monday, January 2, 2023
2024	Tuesday, December 31, 2024	Sunday, December 31, 2023	Tuesday, January 2, 2024	Saturday, December 31, 2022	Tuesday, January 3, 2023

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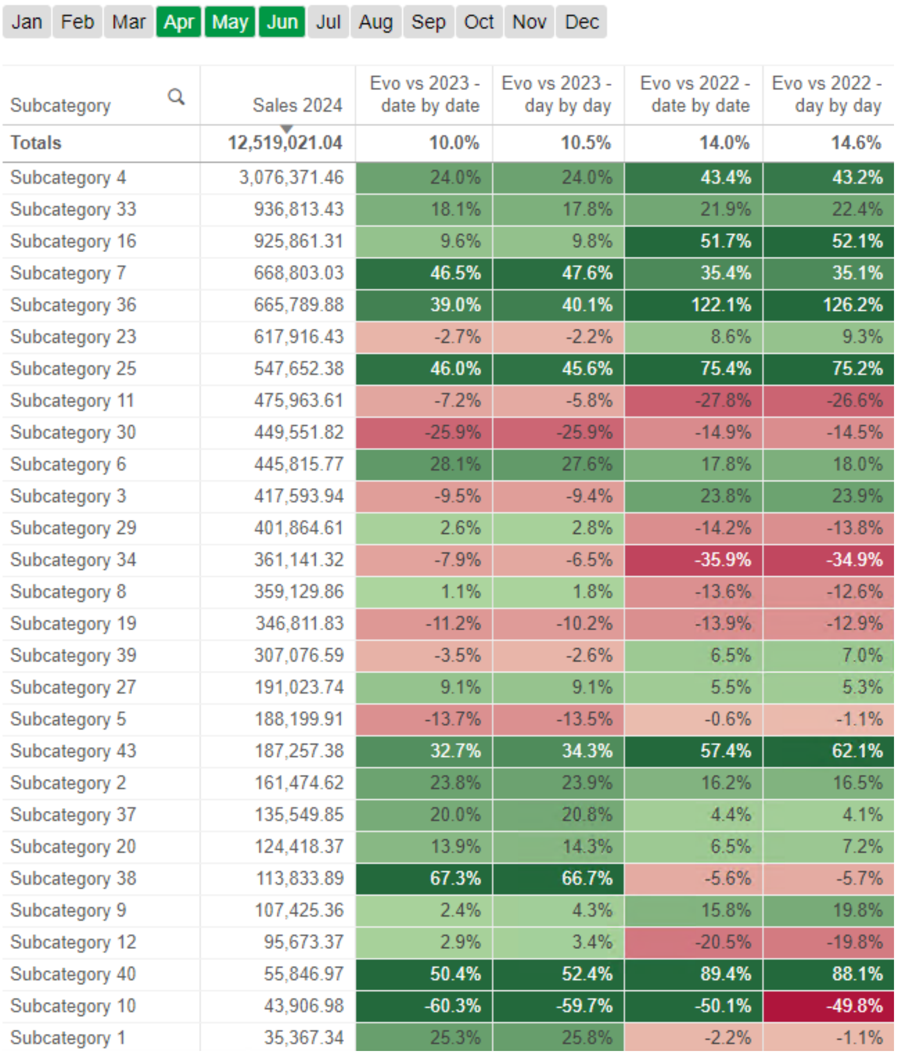
Results

- Using the formulas described we build the required reports.
- What I love about this method is the fact that it handles calendar selections DYNAMICALY.



Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

Subcategory	Sales 2024	Evo vs 2023 - date by date	Evo vs 2023 - day by day	Evo vs 2022 - date by date	Evo vs 2022 - day by day
Totals	**12,519,021.04**	**10.0%**	**10.5%**	**14.0%**	**14.6%**
Subcategory 4	3,076,371.46	24.0%	24.0%	43.4%	43.2%
Subcategory 33	936,813.43	18.1%	17.8%	21.9%	22.4%
Subcategory 16	925,861.31	9.6%	9.8%	51.7%	52.1%
Subcategory 7	668,803.03	46.5%	47.6%	35.4%	35.1%
Subcategory 36	665,789.88	39.0%	40.1%	122.1%	126.2%
Subcategory 23	617,916.43	-2.7%	-2.2%	8.6%	9.3%
Subcategory 25	547,652.38	46.0%	45.6%	75.4%	75.2%
Subcategory 11	475,963.61	-7.2%	-5.8%	-27.8%	-26.6%
Subcategory 30	449,551.82	-25.9%	-25.9%	-14.9%	-14.5%
Subcategory 6	445,815.77	28.1%	27.6%	17.8%	18.0%
Subcategory 3	417,593.94	-9.5%	-9.4%	23.8%	23.9%
Subcategory 29	401,864.61	2.6%	2.8%	-14.2%	-13.8%
Subcategory 34	361,141.32	-7.9%	-6.5%	-35.9%	-34.9%
Subcategory 8	359,129.86	1.1%	1.8%	-13.6%	-12.6%
Subcategory 19	346,811.83	-11.2%	-10.2%	-13.9%	-12.9%
Subcategory 39	307,076.59	-3.5%	-2.6%	6.5%	7.0%
Subcategory 27	191,023.74	9.1%	9.1%	5.5%	5.3%
Subcategory 5	188,199.91	-13.7%	-13.5%	-0.6%	-1.1%
Subcategory 43	187,257.38	32.7%	34.3%	57.4%	62.1%
Subcategory 2	161,474.62	23.8%	23.9%	16.2%	16.5%
Subcategory 37	135,549.85	20.0%	20.8%	4.4%	4.1%
Subcategory 20	124,418.37	13.9%	14.3%	6.5%	7.2%
Subcategory 38	113,833.89	67.3%	66.7%	-5.6%	-5.7%
Subcategory 9	107,425.36	2.4%	4.3%	15.8%	19.8%
Subcategory 12	95,673.37	2.9%	3.4%	-20.5%	-19.8%
Subcategory 40	55,846.97	50.4%	52.4%	89.4%	88.1%
Subcategory 10	43,906.98	-60.3%	-59.7%	-50.1%	-49.8%
Subcategory 1	35,367.34	25.3%	25.8%	-2.2%	-1.1%

If you want to learn how to color cels in your table like in the picture above, please consult my earlier posts:

https://www.linkedin.com/feed/update/urn:li:activity:7223569740898660353/

https://www.linkedin.com/feed/update/urn:li:activity:7226461784407175168/

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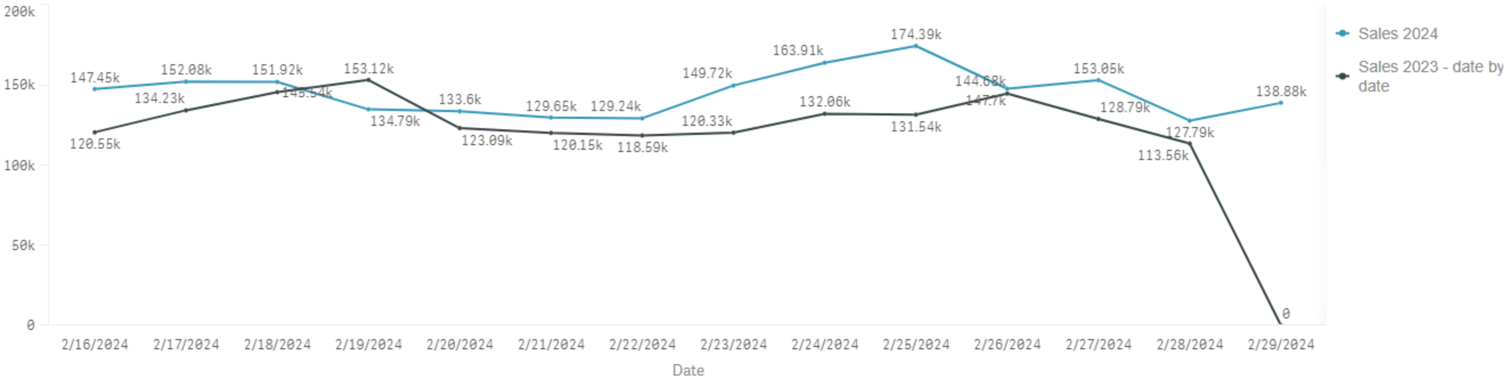
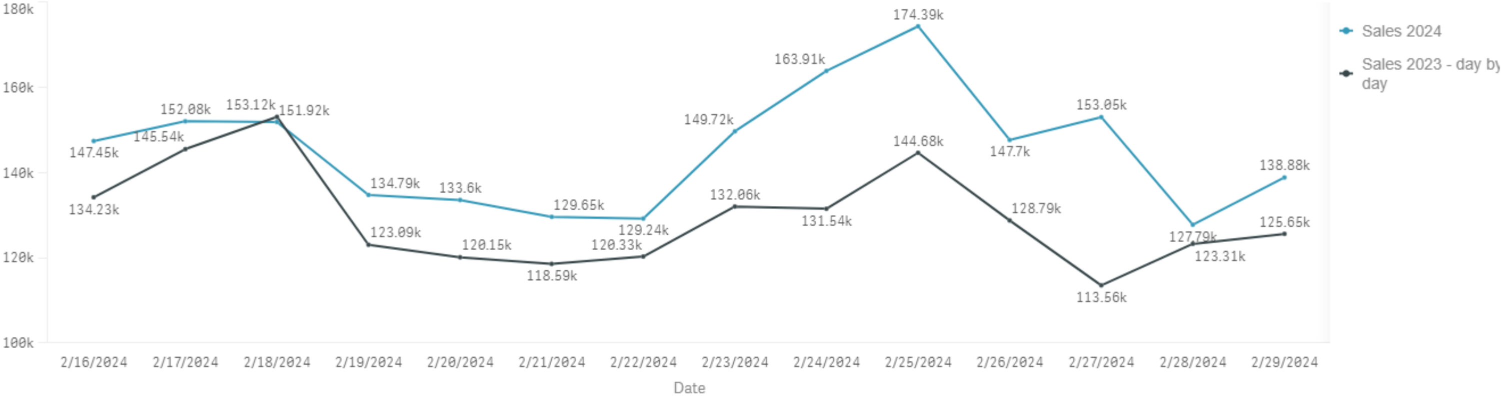
Observe the line chart to understand the need for a day by day comparison.





Day by day comparison has a comparable date for 29th Feb and weekly trends overlap for both periods.

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