Power BI exercises

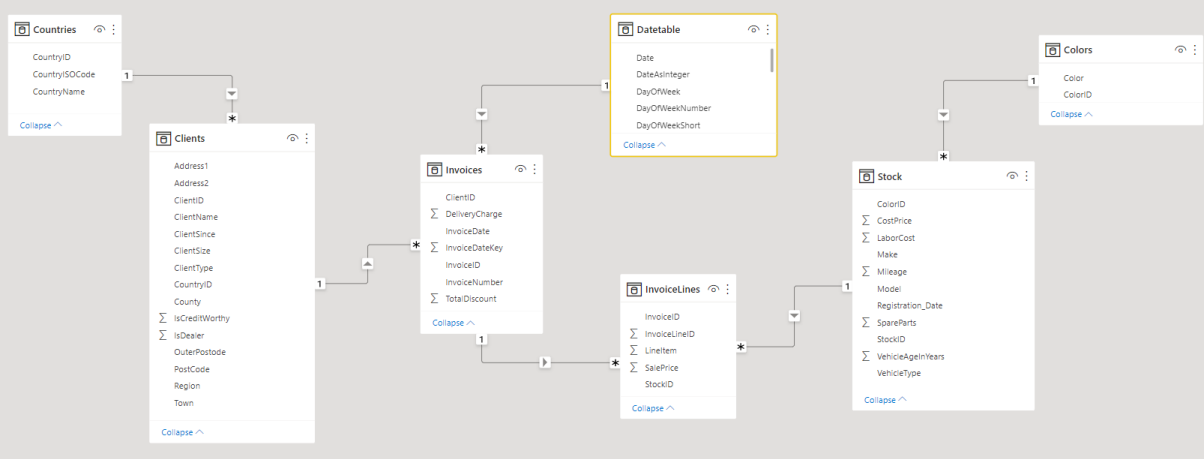
Ynte Jan Kuindersma, 15-11-2023

File to be used as datasource: CarSalesData.xlsx

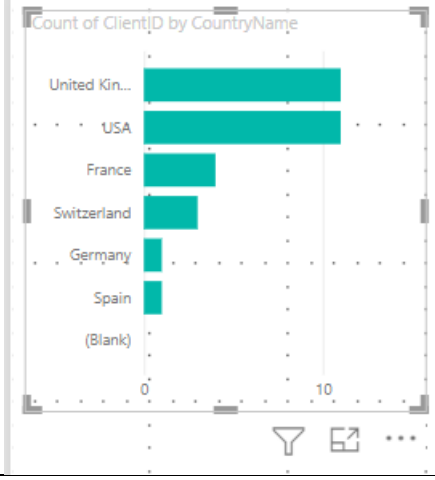
At the end of this document you will find the DAX for a Datedimension called Datetable.

The CarSalesData tables should be related like this:

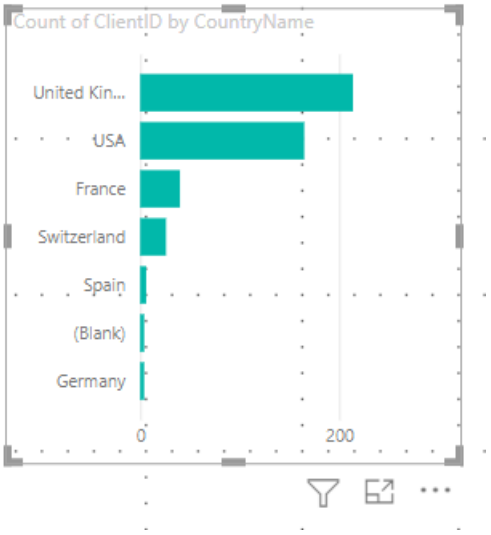
1. Countries to Clients
2. Clients to Invoices
3. Invoices to Invoicelines
4. Stock to Invoicelines
5. Colors to Stock. (Stock is the table with cars that were bought and are then sold again)
6. Datetable to invoices (Date to invoiceDate)



Exercises

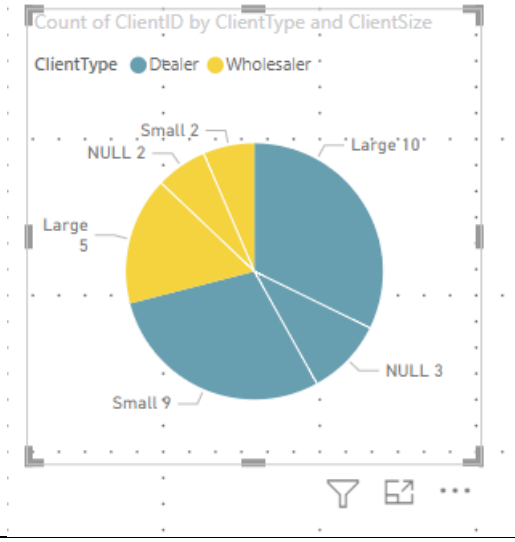
#	
	Number of customers per country Visual: Stacked Bar Chart Tables: Clients, Countries Fields: Country name, count of clientid Options • Sort on count of clientid, highest at the top 

Question: Are they really customers, ie did they buy a car? Or do we need another field for that? Look at this: clientId from table invoices



Number of customers per Client Type, Client Size
Visual: Pie Chart
Table: Clients
Fields: ClientType, ClientSize, count of clientid
Options:

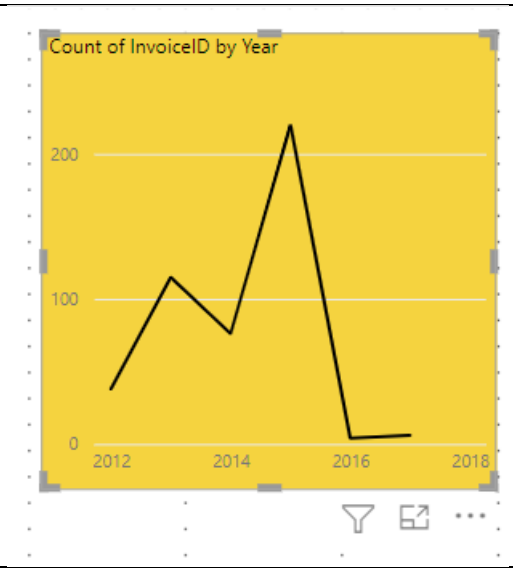
- Legend ON
- Change colors of both Client types



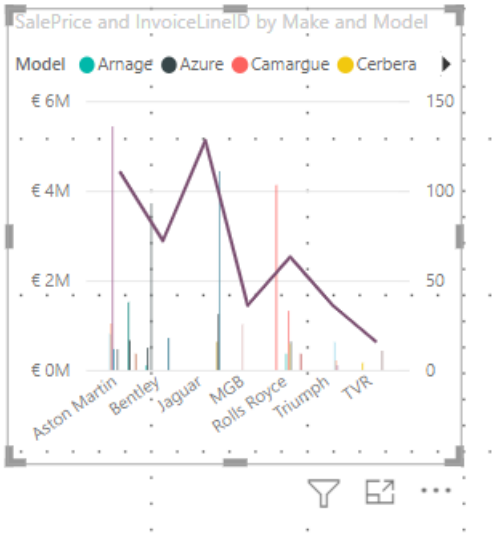
Number of invoices per Year
Visual: Line Chart
Tables: Invoices, DateDimension (make sure to have one…)
Fields: Year, count of invoiceid

Options:

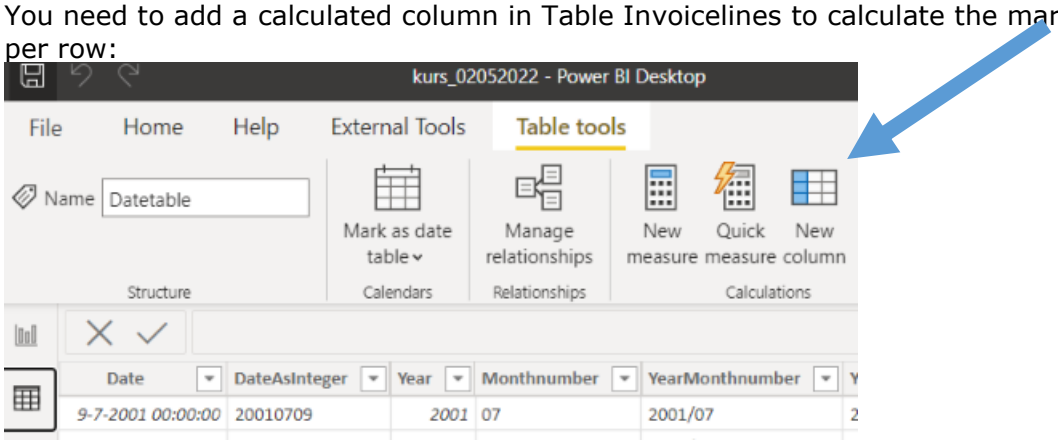
- Change background to 100% Yellow
- Change line color to Black

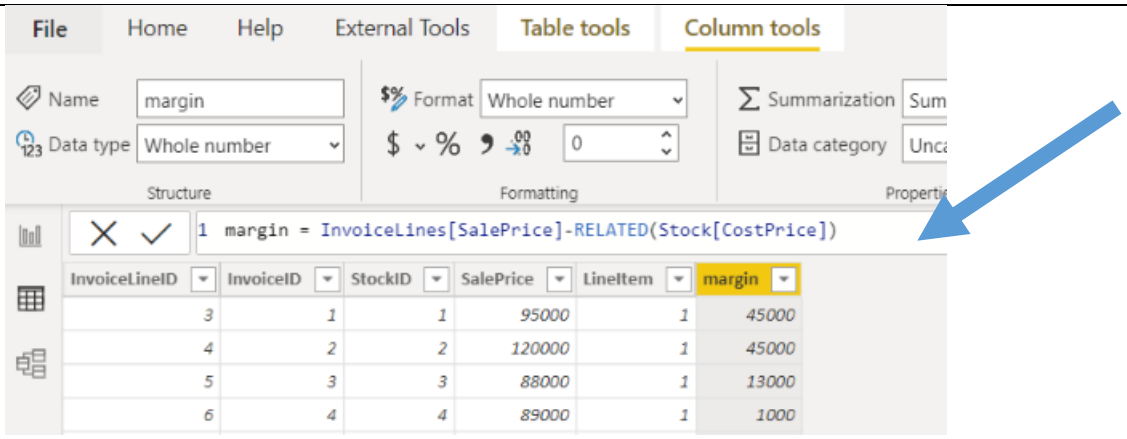


Turnover versus number of invoicelines per Make
Visual: Line and clustered chart
Tables: Invoicelines, Stock
Fields: count of invoicelineid, Make and Salesprice



Extra: Try to use Margin instead of Salesprice. This is how:
You need to add a calculated column in Table Invoicelines to calculate the margin per row:






```
margin = InvoiceLines[SalePrice]-
RELATED(Stock[CostPrice])
```

Options:

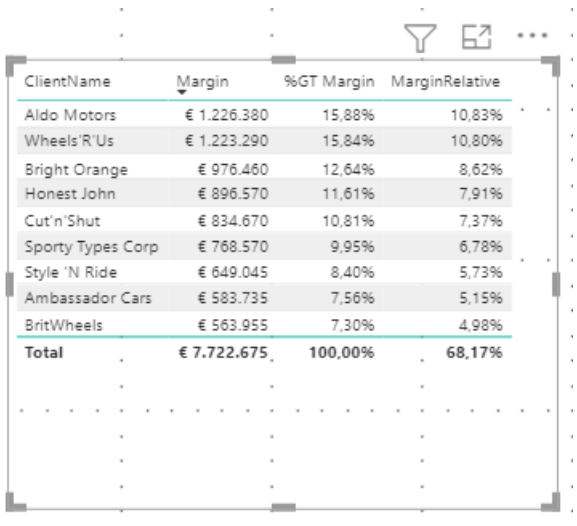
- Sorted on Margin

Customername, Margin, Margin as a Percentage of Total and Margin as a Percentage of COMPLETE Total. Complete means over all the records, neglecting all filters. Filter the Visual on Margin > 500.000
Visual: Table
Tables: Clients, Invoicelines
Fields: Clientsname, Margin, MarginPercentage (via Show Value as Percentage of Grand Total) and use a measure MarginRelative for calculate Percentage of Complete Total:

```
MarginRelative =
DIVIDE(sum(InvoiceLines[margin]),CALCULATE(SUM(Inv
oiceLines[margin]),ALL(InvoiceLines)))
```

Options:

- Sort op Margin descending



ClientName	Margin	%GT Margin	MarginRelative
Aldo Motors	€ 1.226.380	15,88%	10,83%
Wheels'R'Us	€ 1.223.290	15,84%	10,80%
Bright Orange	€ 976.460	12,64%	8,62%
Honest John	€ 896.570	11,61%	7,91%
Cut'n'Shut	€ 834.670	10,81%	7,37%
Sporty Types Corp	€ 768.570	9,95%	6,78%
Style 'N Ride	€ 649.045	8,40%	5,73%
Ambassador Cars	€ 583.735	7,56%	5,15%
BritWheels	€ 563.955	7,30%	4,98%
Total	**€ 7.722.675**	**100,00%**	**68,17%**

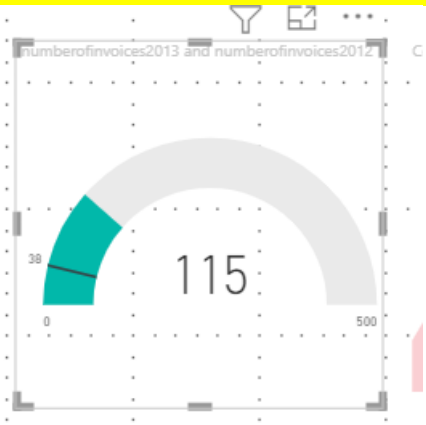
Comparison Number of Invoices 2013 versus 2012
Visual: Gauge
Table: Invoices
Fields: 2 measures:

Target Value =

```
invoices2012 =
calculate(count(Invoices[InvoiceID]),year(Invoices
[InvoiceDate])=2012)
```

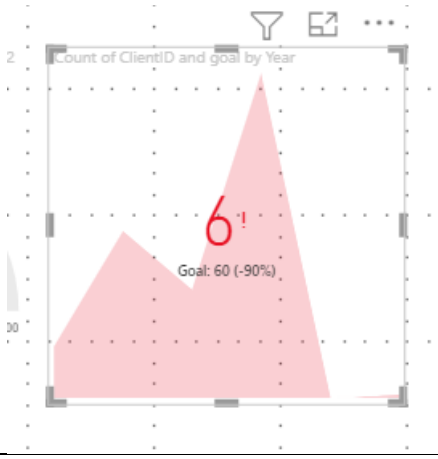
Value =

```
invoices2013 =
calculate(count(Invoices[InvoiceID]),year(Invoices
[InvoiceDate])=2013)
```



Number of invoices of the last year in the database, with trendline over the years
Visual: KPI
Tables: Datedimension, Invoices
Fields:
Indicator = count of invoiceid
Trend axis = year
Target goals: measure

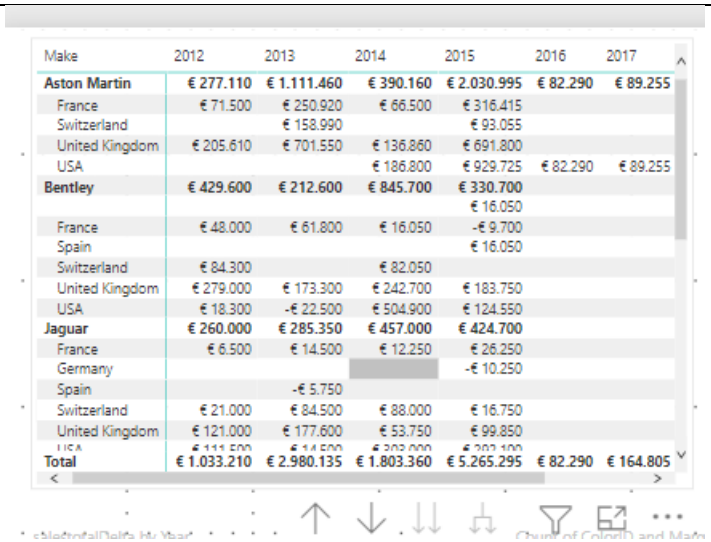
```
goal = 60
```



Place on Page 2:
Visual: Matrix
Crosstab of margin per Make, Country, Year
Tables: Countries, Datedimension, Invoicelines, Stock
Fields: Countryname, Year, Margin, Make
Rows: Make, Countryname
Columns: Year
Values: Margin

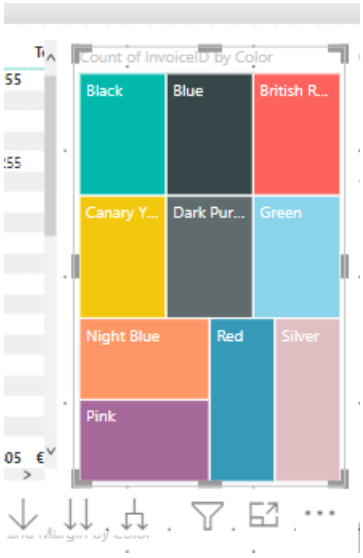
Options:

- Play with Drill down and Drill Through



Make	2012	2013	2014	2015	2016	2017
Aston Martin	**€ 277.110**	**€ 1.111.460**	**€ 390.160**	**€ 2.030.995**	**€ 82.290**	**€ 89.255**
France	€ 71.500	€ 250.920	€ 66.500	€ 316.415		
Switzerland		€ 158.990		€ 93.055		
United Kingdom	€ 205.610	€ 701.550	€ 136.860	€ 691.800		
USA			€ 186.800	€ 929.725	€ 82.290	€ 89.255
Bentley	**€ 429.600**	**€ 212.600**	**€ 845.700**	**€ 330.700**		
				€ 16.050		
France	€ 48.000	€ 61.800	€ 16.050	-€ 9.700		
Spain				€ 16.050		
Switzerland	€ 84.300		€ 82.050			
United Kingdom	€ 279.000	€ 173.300	€ 242.700	€ 183.750		
USA	€ 18.300	-€ 22.500	€ 504.900	€ 124.550		
Jaguar	**€ 260.000**	**€ 285.350**	**€ 457.000**	**€ 424.700**		
France	€ 6.500	€ 14.500	€ 12.250	€ 26.250		
Germany				-€ 10.250		
Spain		-€ 5.750				
Switzerland	€ 21.000	€ 84.500	€ 88.000	€ 16.750		
United Kingdom	€ 121.000	€ 177.600	€ 53.750	€ 99.850		
Total	**€ 1.033.210**	**€ 2.980.135**	**€ 1.803.360**	**€ 5.265.295**	**€ 82.290**	**€ 164.805**

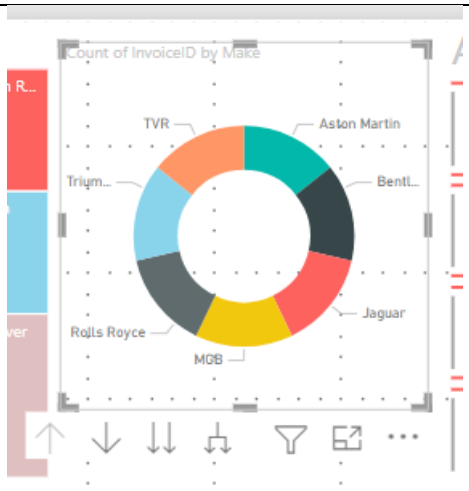
Count of invoices per Color per Country
Visual: Treemap
Tables: Colors, Countries, Invoices
Category: Color, Country
Values: count of invoiceid



Options:

- Play with Drill down and Drill Through

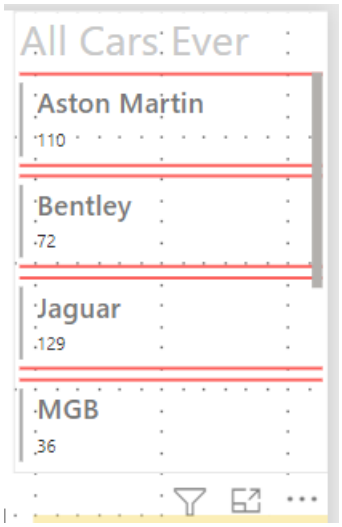
Count of invoices per Make per Country
Visual: Donut Chart
Tables: Stock, Countries, Invoices
Legend: Make, Country
Values: count of invoiceid



Options:

- Play with Drill down and Drill Through

Count of cars per Make
Visual: Multi row Card
Table: Stock
Fields: Make, count of stockid



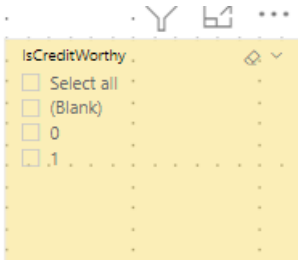
Differences in Number of invoices per Year
Visual: Water Fall chart
Tables: Invoicelines, DateDimension
Category: Year
Y axis: salestotalDelta

Add 3 measures:

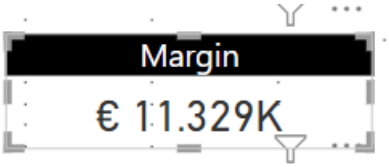
```
salestotalcurrentyear = COUNT(Invoices[InvoiceID])

salestotallastyear =
CALCULATE
(
    COUNT(
        Invoices[InvoiceID]),
        SAMEPERIODLASTYEAR(Datetable[Date]
        )
)
```

```
salestotalDelta = [salestotalcurrentyear]-
[salestotallastyear]
```

Add a filter to page 2
Visual: Slicer
Table: Clients
Fields: IsCreditWorthy

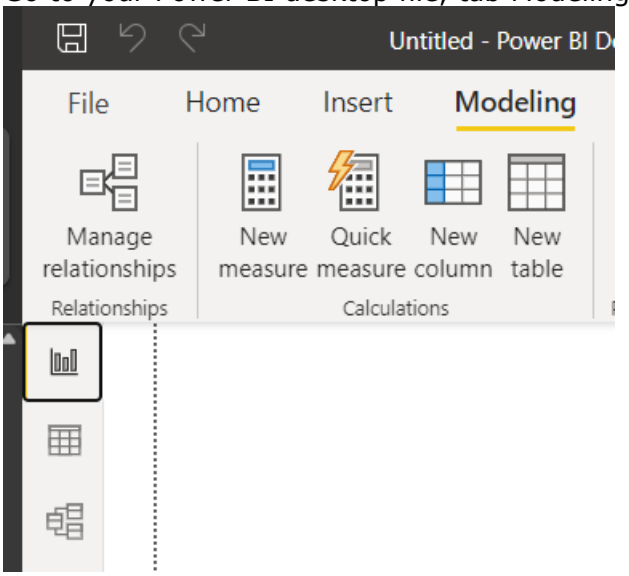


Visual: Card
Table: Invoicelines
Fields: Margin



Dax for creating the datedimension called Datetable

1. Copy the text in courier below (CTRL-C)
2. Go to your Power BI desktop file, tab Modeling and click New Table



3. Paste the DAX (CTRL-V)

```
Datetable =
ADDCOLUMNS (
CALENDAR (DATE(2000,1,1), DATE(2025,12,31)),
"DateAsInteger", FORMAT ( [Date], "YYYYMMDD" ),
"Year", YEAR ( [Date] ),
"Monthnumber", FORMAT ( [Date], "MM" ),
"YearMonthnumber", FORMAT ( [Date], "YYYY/MM" ),
"YearMonthShort", FORMAT ( [Date], "YYYY/mmm" ),
"MonthNameShort", FORMAT ( [Date], "mmm" ),
"MonthNameLong", FORMAT ( [Date], "mmmm" ),
"DayOfWeekNumber", WEEKDAY ( [Date] ),
"DayOfWeek", FORMAT ( [Date], "dddd" ),
"DayOfWeekShort", FORMAT ( [Date], "ddd" ),
"Quarter", "Q" & FORMAT ( [Date], "Q" ),
"YearQuarter", FORMAT ( [Date], "YYYY" ) & "/Q" &
FORMAT ( [Date], "Q" ),
"IsoWeeknum", weeknum([date],21),
"Weeknum1", weeknum([date],1),
"IsoWeeknum2", weeknum([date],2),
"YearWeek21", FORMAT ( [Date], "YYYY" ) & "/W" &
weeknum([date],21),
"YearWeek21Number", FORMAT ( [Date], "YYYY" ) &
format(weeknum([date],21),"00"),
"YearWeek21_correct", SWITCH(TRUE(),
        MONTH([Date]) = 1 && WEEKNUM([Date], 21) in
{52,53}, YEAR([Date]) - 1 & "-" & WEEKNUM([Date],
21),
```

```
        MONTH([Date]) = 12 && WEEKNUM([Date], 21) =
1, YEAR([Date]) + 1 & "-0" & WEEKNUM([Date], 21),
        len(WEEKNUM([Date], 21)) < 2, YEAR([Date]) &
"-0" & WEEKNUM([Date], 21),
        YEAR([Date]) & "-" & WEEKNUM([Date], 21)
        )
)
```

Datamodelling: create Sales Facttable

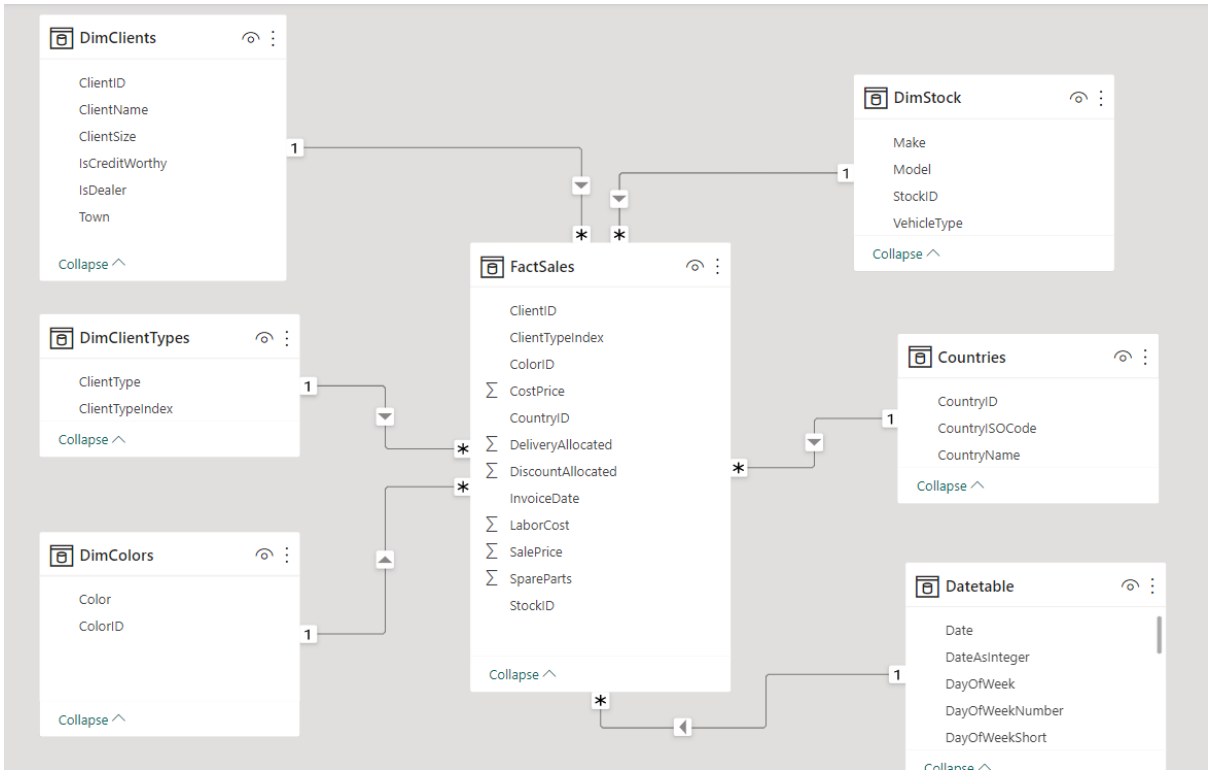
- Clients: Countryid
- Invoices: Clientid
- Invoices: Invoicedate
- Invoicelines: Salesprice
- Invoicelines: Stockid
- Stock: Costprice
- Stock:ColorID

Extra

- Invoices: Totaldiscount divided by # rows
- Invoices: DeliveryCharge divided by # rows

Modelling: Create Dimensions

- Colors
- Countries
- Clients
- Stock: Make + Model
- Datetime


DimClients
ClientID
ClientName
ClientSize
IsCreditWorthy
IsDealer
Town
Collapse
DimStock
Make
Model
StockID
VehicleType
Collapse
FactSales
ClientID
ClientTypeIndex
ColorID
CostPrice
CountryID
DeliveryAllocated
DiscountAllocated
InvoiceDate
LaborCost
SalePrice
SpareParts
StockID
Collapse
DimClientTypes
ClientType
ClientTypeIndex
Collapse
Countries
CountryID
CountryISOCode
CountryName
Collapse
DimColors
Color
ColorID
Collapse
Datetable
Date
DateAsInteger
DayOfWeek
DayOfWeekNumber
DayOfWeekShort
Collapse
1
*