



Business Intelligence and Decision Support System

BI SOLUTION FOR SALES PROCESS OF ADVENTUREWORKS



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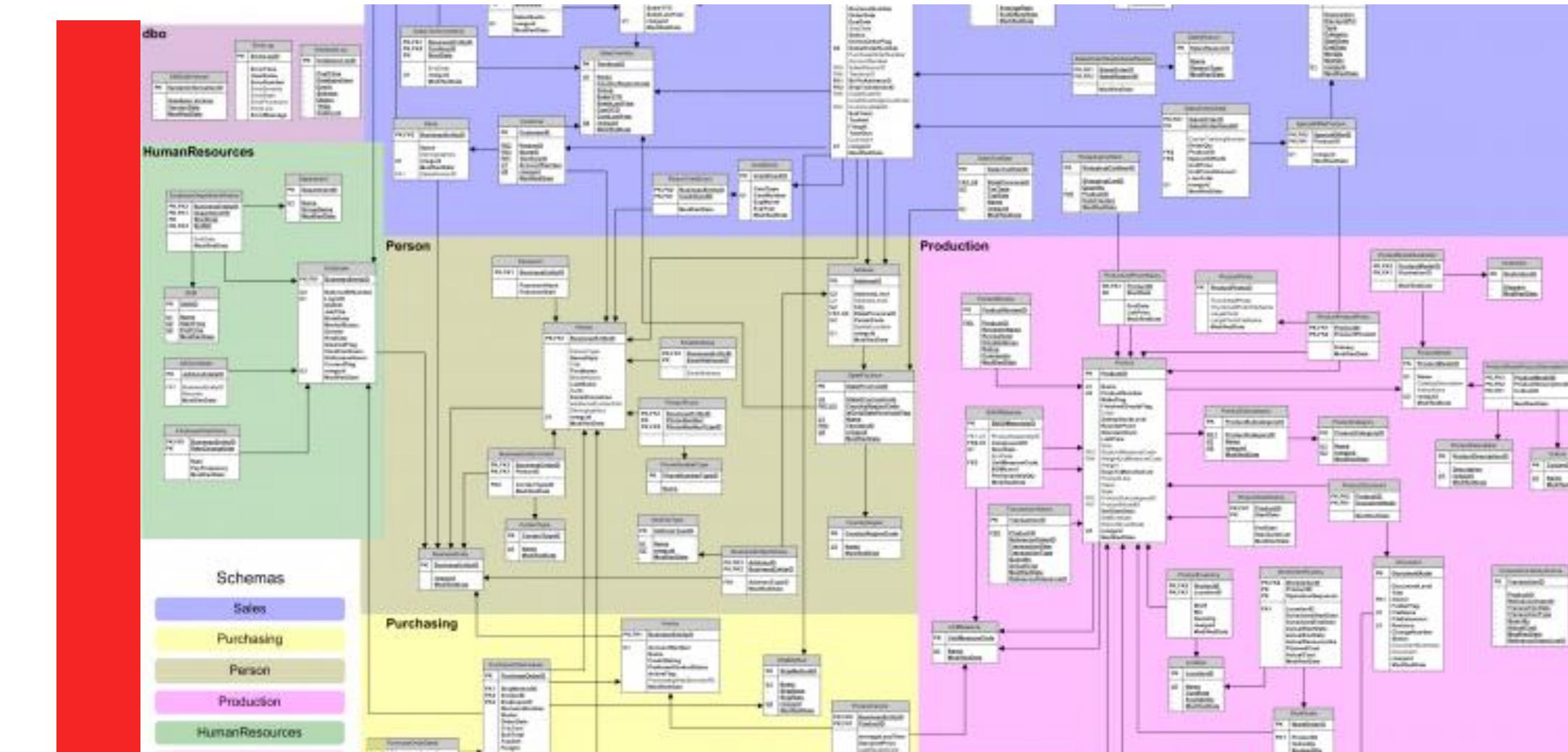


01

INTRODUCTION

01. Overview about AdventureWorks

The AdventureWorks database is set on the data of a fictional company called Adventure Works Cycles. This is said to be a large-scale multinational manufacturing company. The company manufactures and sells bicycles made of metal and synthetic materials. The company's market includes North America, Europe and Asia.



01 INTRODUCTION

02. Objectives of the project

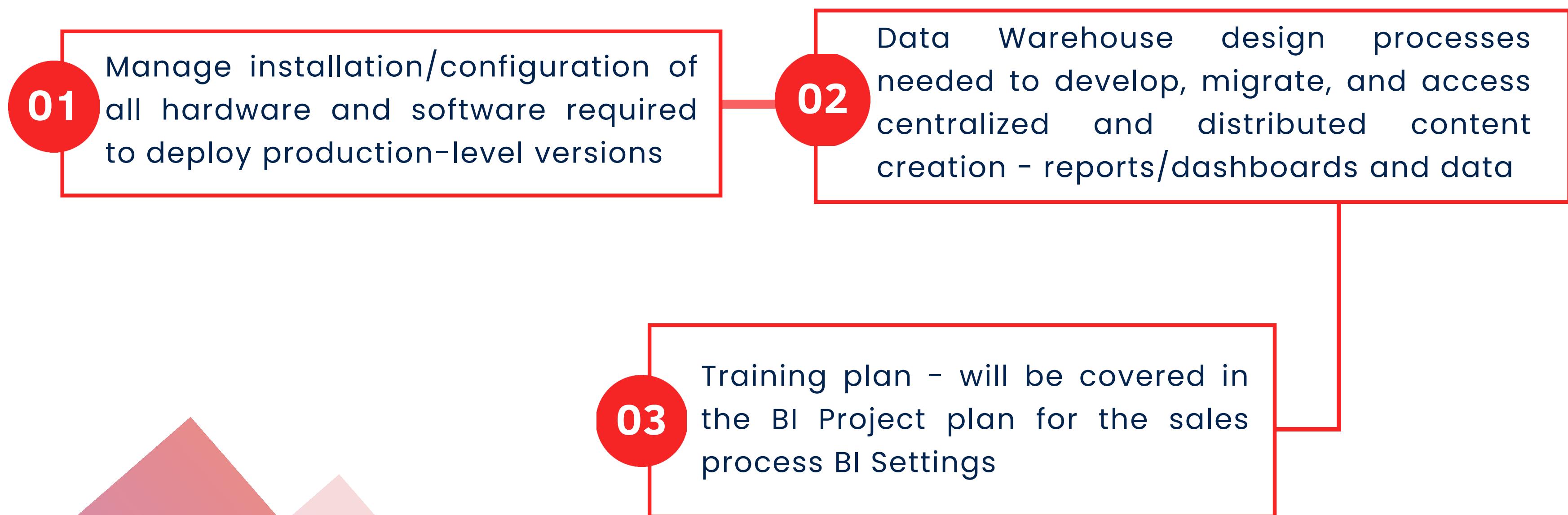
Research and analysis overview of data, decision support models and BI solutions, business performance assessment and management.

Use these studies to analyze data and build financial analysis reports that support management decision-making based on Microsoft's AdventureWorks database



01 INTRODUCTION

03. The objective of the project



02 REQUIREMENTS ANALYTICS AND INTRODUCTION TO BI SOLUTION

- ◆ Analyze and evaluate the level of consumption of goods in the areas
- ◆ Analyze and identify the purchasing needs of different customer segments, thus offering different strategies to exploit the maximum value from customers with high and low profitability
- ◆ Analyze the quantity of each type of item in the business; evaluate the business performance of each group of items, group of products in the business process
- ◆ Internal evaluation, improvement and optimization of capabilities in sales processes, improving efficiency, increasing revenue and profits
- ◆ Analyze the effectiveness of applying promotions and discounts.



03 BUILDING DATA WAREHOUSE AND INTEGRATING DATA



Designing Data Warehouse

01. Bus Matrix

SALES DATA WAREHOUSE		COMMON DIMENSIONS							
		DimCreditCard	DimCustomer	DimProduct	DimPromotion	DimSalesEmployee	DimSalesTerritory	DimTime	
FactSales		x	x	x	x		x	x	
FactSalesPerson						x	x	x	





02. Master Data

Table Name	Schema	Description
Customer	Sales	Current customer information
Person	Person	Human beings involved with AdventureWorks: employees, customer contacts, and vendor contacts
BusinessEntityAddress	Person	Cross-reference table mapping customers, vendors, and employees to their addresses
Address	Person	Street address information for customers, employees, and vendors
SalesTerritory	Sales	Sales territory lookup table
CountryRegion	Person	Lookup table containing the ISO standard codes for countries and regions
CreditCard	Sales	Customer credit card information
Product	Production	Products sold or used in the manufacturing of sold products
ProductSubcategory	Production	Product subcategories information
ProductCategory	Production	High-level product categorization
SpecialOffer	Sales	Sale discounts lookup table
Employee	HumanResource	Employee information such as salary, department, and title.





03. Transaction Data

Table Name	Schema	Description
SalesPerson	Sales	Contains detailed data of each salesperson such as sales quota, bonus, commissionPct, salesYTD
SalesOrderHeader	Sales	Details of each customer's order, transactions are shown through the total amount that the customer pays for the order, the total tax value that the customer has to pay, which staff sells the goods, how to ship the goods. Delivery of goods to customers is shown by specific regions
SalesOrderDetail	Sales	Contains detailed data about the sales process, transactions are shown with the quantity, price, payment amount of each item in the most specific time.





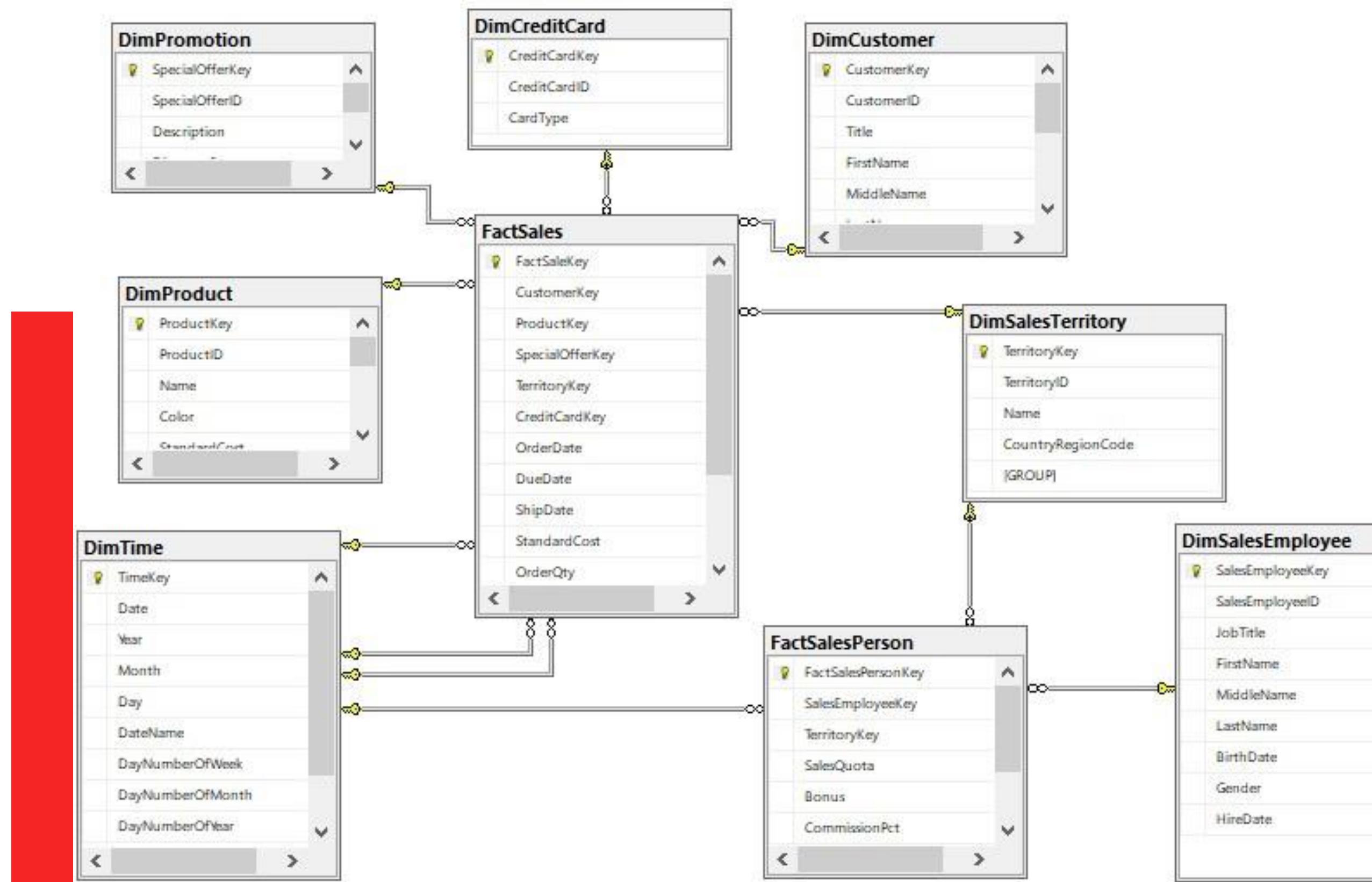
04. Fact and dimension tables

Table Name	Description
DimCustomer	Information about customers
DimCreditCard	Information about the types of credit cards that customers use
DimPromotion	Information about product statuses that will be discounted
DimProduct	Information about product
DimSalesEmployee	Information about sales person
DimSalesTerritory	Information about the list of countries, regions, territories
DimTime	Time information
FactSales	Aggregate information related to orders including customer, product, unit price, quantity, amount,... in detail.
FactSalesPerson	Aggregate information about each salesperson including revenue, bonus, commission, sales quota,... in detail.





05. Data Warehouse model

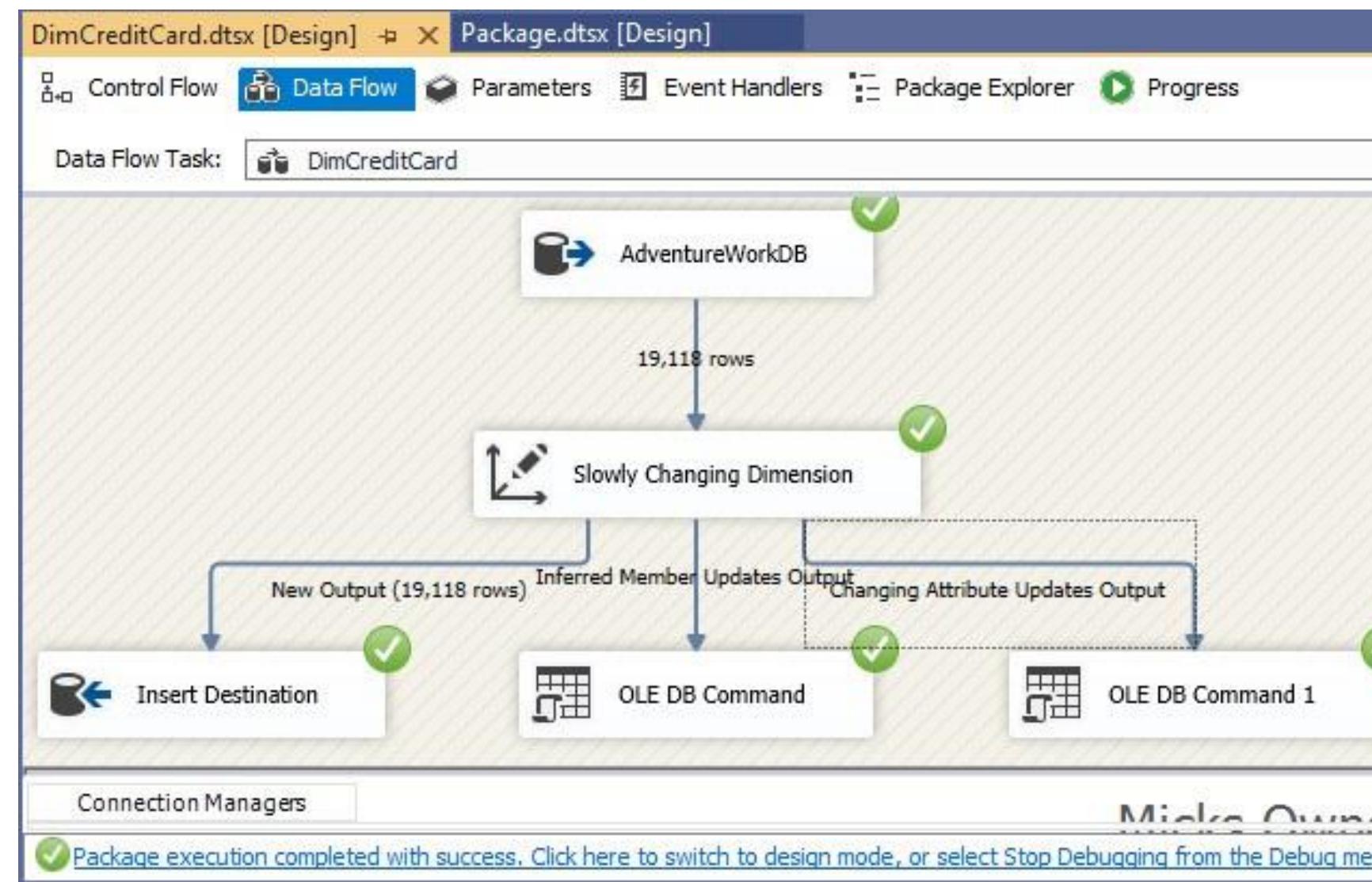




ETL processes

01. Dimension Table's ETL Process

DimCreditCard



Results Messages

	CreditCardKey	CreditCardID	CardType
1	1	1	SuperiorCard
2	2	2	Distinguish
3	3	3	ColonialVoice
4	4	4	ColonialVoice
5	5	5	Vista
6	6	6	Distinguish
7	7	7	Distinguish
8	8	8	SuperiorCard
9	9	9	Distinguish
10	10	10	SuperiorCard
11	11	11	SuperiorCard
12	12	12	SuperiorCard
13	13	13	Vista
14	14	14	Distinguish
15	15	15	SuperiorCard
16	16	16	Vista
17	17	17	ColonialVoice
18	18	18	ColonialVoice
19	19	19	ColonialVoice
20	20	20	SuperiorCard
21	21	21	SuperiorCard
22	22	22	ColonialVoice
23	23	23	

Query executed successfully.

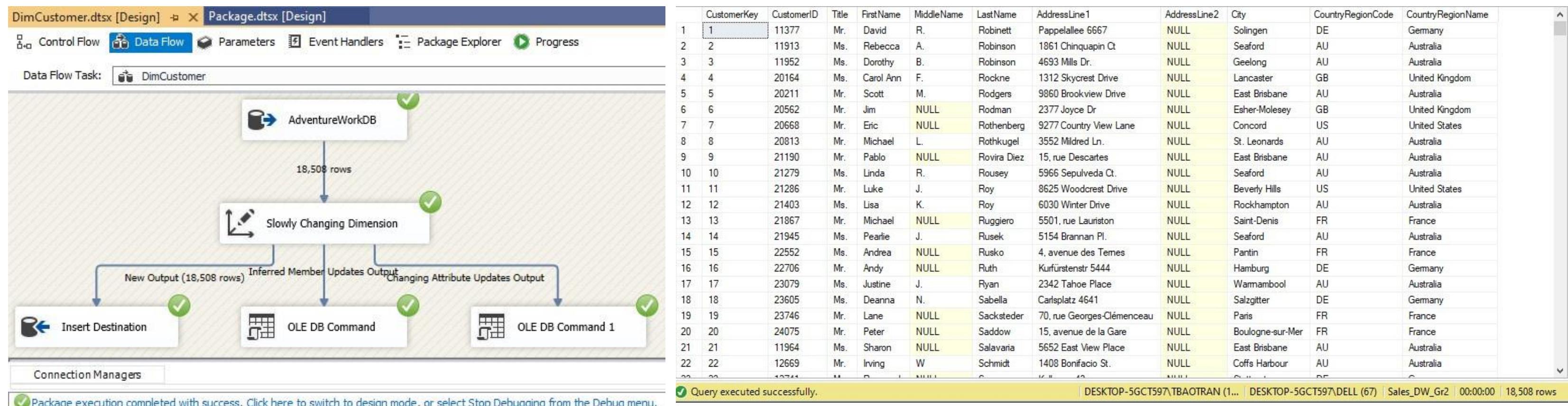
DESKTOP-5GCT597\TBAOTRA



ETL processes

01. Dimension Table's ETL Process

DimCustomer

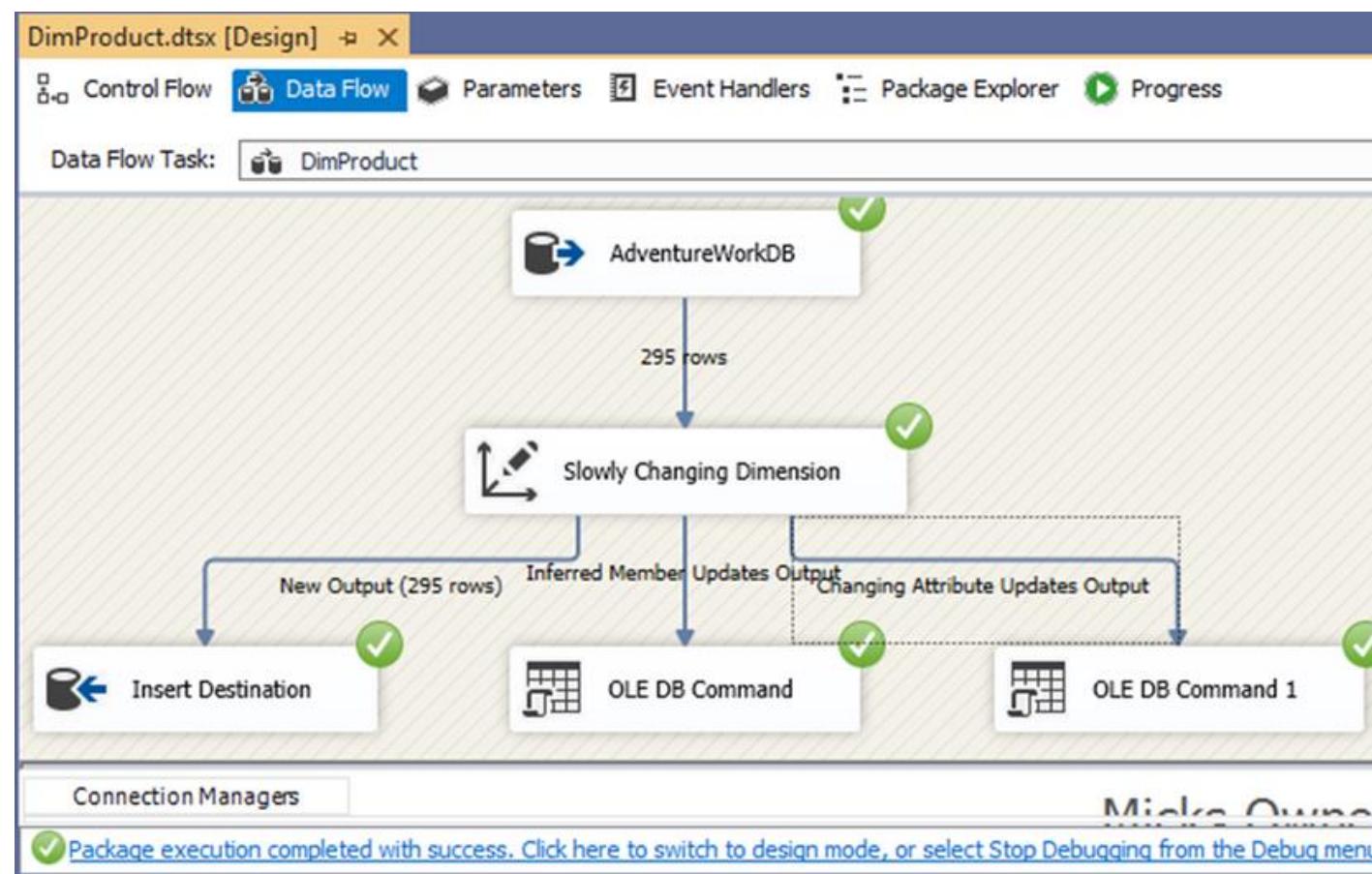




ETL processes

01. Dimension Table's ETL Process

DimProduct



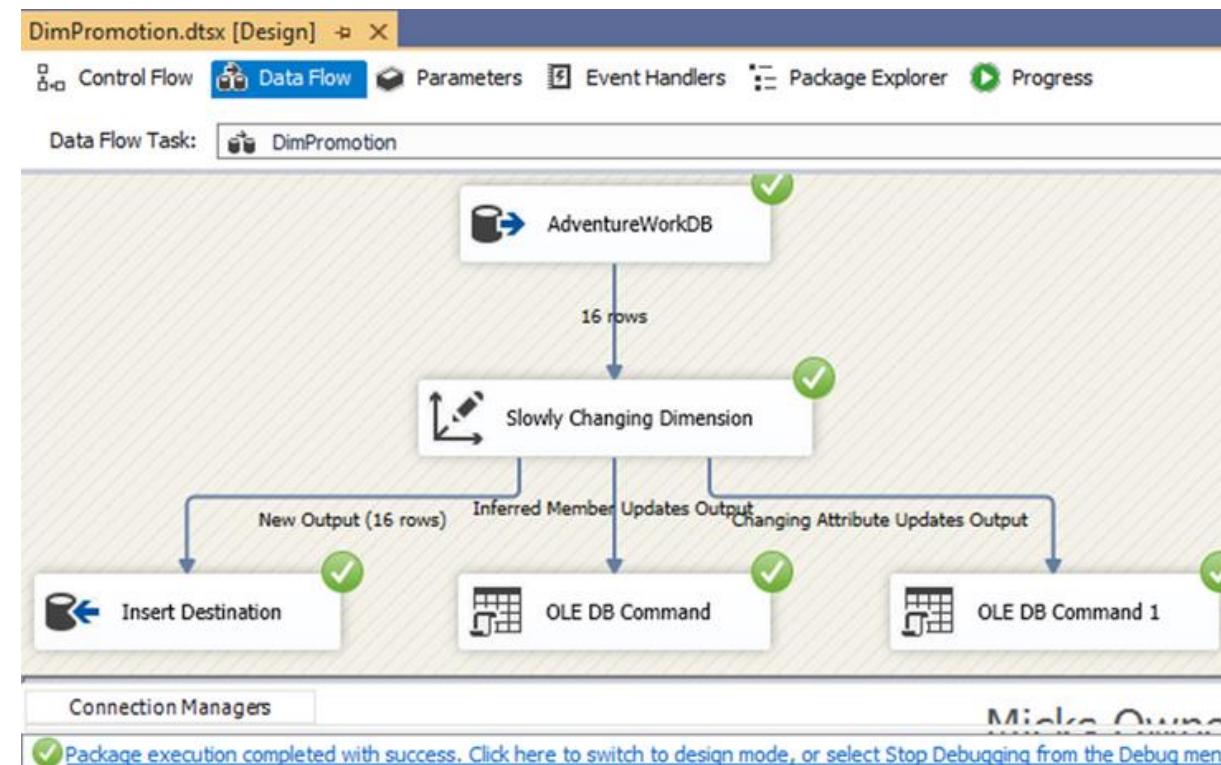
	ProductKey	ProductID	Name	Color	StandardCost	ListPrice	Size	Weight	ProductSubcategoryID	ProductSubcategoryName	ProductCategoryID	ProductCategoryName
1	1	680	HL Road Frame - Black, 58	Black	1059.31	1431.50	58	2.24	14	Road Frames	2	Components
2	2	706	HL Road Frame - Red, 58	Red	1059.31	1431.50	58	2.24	14	Road Frames	2	Components
3	3	707	Sport-100 Helmet, Red	Red	13.0863	34.99	NULL	NULL	31	Helmets	4	Accessories
4	4	708	Sport-100 Helmet, Black	Black	13.0863	34.99	NULL	NULL	31	Helmets	4	Accessories
5	5	709	Mountain Bike Socks, M	White	3.3963	9.50	M	NULL	23	Socks	3	Clothing
6	6	710	Mountain Bike Socks, L	White	3.3963	9.50	L	NULL	23	Socks	3	Clothing
7	7	711	Sport-100 Helmet, Blue	Blue	13.0863	34.99	NULL	NULL	31	Helmets	4	Accessories
8	8	712	AWC Logo Cap	Multi	6.9223	8.99	NULL	NULL	19	Caps	3	Clothing
9	9	713	Long-Sleeve Logo Jersey, S	Multi	38.4923	49.99	S	NULL	21	Jerseys	3	Clothing
10	10	714	Long-Sleeve Logo Jersey, M	Multi	38.4923	49.99	M	NULL	21	Jerseys	3	Clothing
11	11	715	Long-Sleeve Logo Jersey, L	Multi	38.4923	49.99	L	NULL	21	Jerseys	3	Clothing
12	12	716	Long-Sleeve Logo Jersey, ...	Multi	38.4923	49.99	XL	NULL	21	Jerseys	3	Clothing
13	13	717	HL Road Frame - Red, 62	Red	868.6342	1431.50	62	2.30	14	Road Frames	2	Components
14	14	718	HL Road Frame - Red, 44	Red	868.6342	1431.50	44	2.12	14	Road Frames	2	Components
15	15	719	HL Road Frame - Red, 48	Red	868.6342	1431.50	48	2.16	14	Road Frames	2	Components
16	16	720	HL Road Frame - Red, 52	Red	868.6342	1431.50	52	2.20	14	Road Frames	2	Components
17	17	721	HL Road Frame - Red, 56	Red	868.6342	1431.50	56	2.24	14	Road Frames	2	Components
18	18	722	LL Road Frame - Black, 58	Black	204.6251	337.22	58	2.46	14	Road Frames	2	Components
19	19	723	LL Road Frame - Black, 60	Black	204.6251	337.22	60	2.48	14	Road Frames	2	Components
20	20	724	LL Road Frame - Black, 62	Black	204.6251	337.22	62	2.50	14	Road Frames	2	Components
21	21	725	LL Road Frame - Red, 44	Red	187.1571	337.22	44	2.32	14	Road Frames	2	Components
22	22	726	LL Road Frame - Red, 40	Red	187.1571	337.22	40	2.26	14	Road Frames	2	Components



ETL processes

01. Dimension Table's ETL Process

DimPromotion



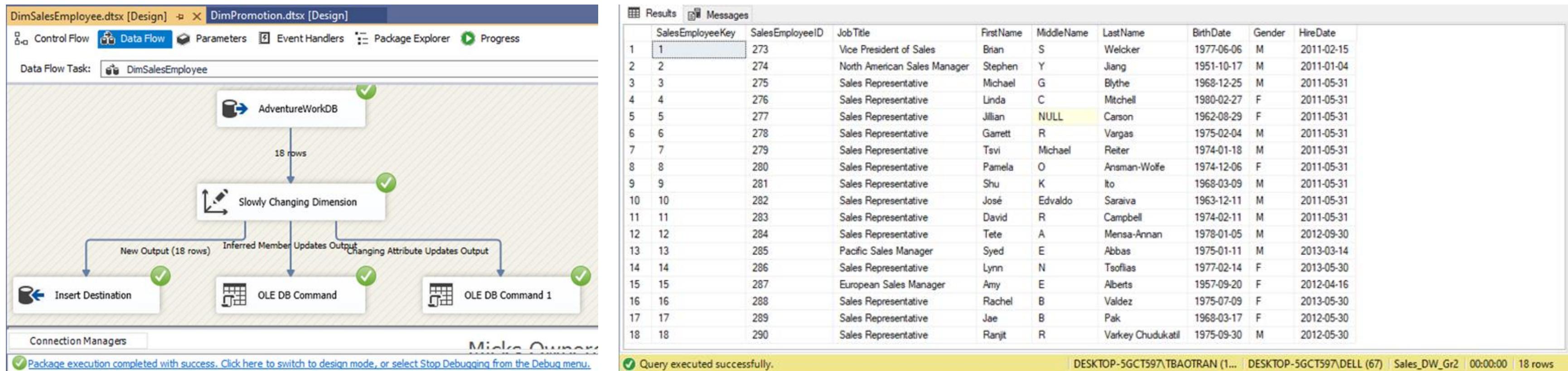
SpecialOfferKey	SpecialOfferID	Description	DiscountPct	Type	Category	StartDate	EndDate	MinQty	MaxQty
1	1	No Discount	0.00	No Discount	No Discount	2011-05-01 00:00:00.000	2014-11-30 00:00:00.000	0	NULL
2	2	Volume Discount 11 to 14	0.02	Volume Discount	Reseller	2011-05-31 00:00:00.000	2014-05-30 00:00:00.000	11	14
3	3	Volume Discount 15 to 24	0.05	Volume Discount	Reseller	2011-05-31 00:00:00.000	2014-05-30 00:00:00.000	15	24
4	4	Volume Discount 25 to 40	0.10	Volume Discount	Reseller	2011-05-31 00:00:00.000	2014-05-30 00:00:00.000	25	40
5	5	Volume Discount 41 to 60	0.15	Volume Discount	Reseller	2011-05-31 00:00:00.000	2014-05-30 00:00:00.000	41	60
6	6	Volume Discount over 60	0.20	Volume Discount	Reseller	2011-05-31 00:00:00.000	2014-05-30 00:00:00.000	61	NULL
7	7	Mountain-100 Clearance Sale	0.35	Discontinued Product	Reseller	2012-04-13 00:00:00.000	2012-05-29 00:00:00.000	0	NULL
8	8	Sport Helmet Discount-2002	0.10	Seasonal Discount	Reseller	2012-05-30 00:00:00.000	2012-06-29 00:00:00.000	0	NULL
9	9	Road-650 Overstock	0.30	Excess Inventory	Reseller	2012-05-30 00:00:00.000	2012-07-30 00:00:00.000	0	NULL
10	10	Mountain Tire Sale	0.50	Excess Inventory	Customer	2013-05-14 00:00:00.000	2013-07-29 00:00:00.000	0	NULL
11	11	Sport Helmet Discount-2003	0.15	Seasonal Discount	Reseller	2013-05-30 00:00:00.000	2013-06-29 00:00:00.000	0	NULL
12	12	LL Road Frame Sale	0.35	Excess Inventory	Reseller	2013-05-30 00:00:00.000	2013-07-14 00:00:00.000	0	NULL
13	13	Touring-3000 Promotion	0.15	New Product	Reseller	2013-05-30 00:00:00.000	2013-08-29 00:00:00.000	0	NULL
14	14	Touring-1000 Promotion	0.20	New Product	Reseller	2013-05-30 00:00:00.000	2013-08-29 00:00:00.000	0	NULL
15	15	Half-Price Pedal Sale	0.50	Seasonal Discount	Customer	2013-07-14 00:00:00.000	2013-08-14 00:00:00.000	0	NULL
16	16	Mountain-500 Silver Clearance Sale	0.40	Discontinued Product	Reseller	2014-03-31 00:00:00.000	2014-05-30 00:00:00.000	0	NULL



ETL processes

01. Dimension Table's ETL Process

DimSalesEmployee

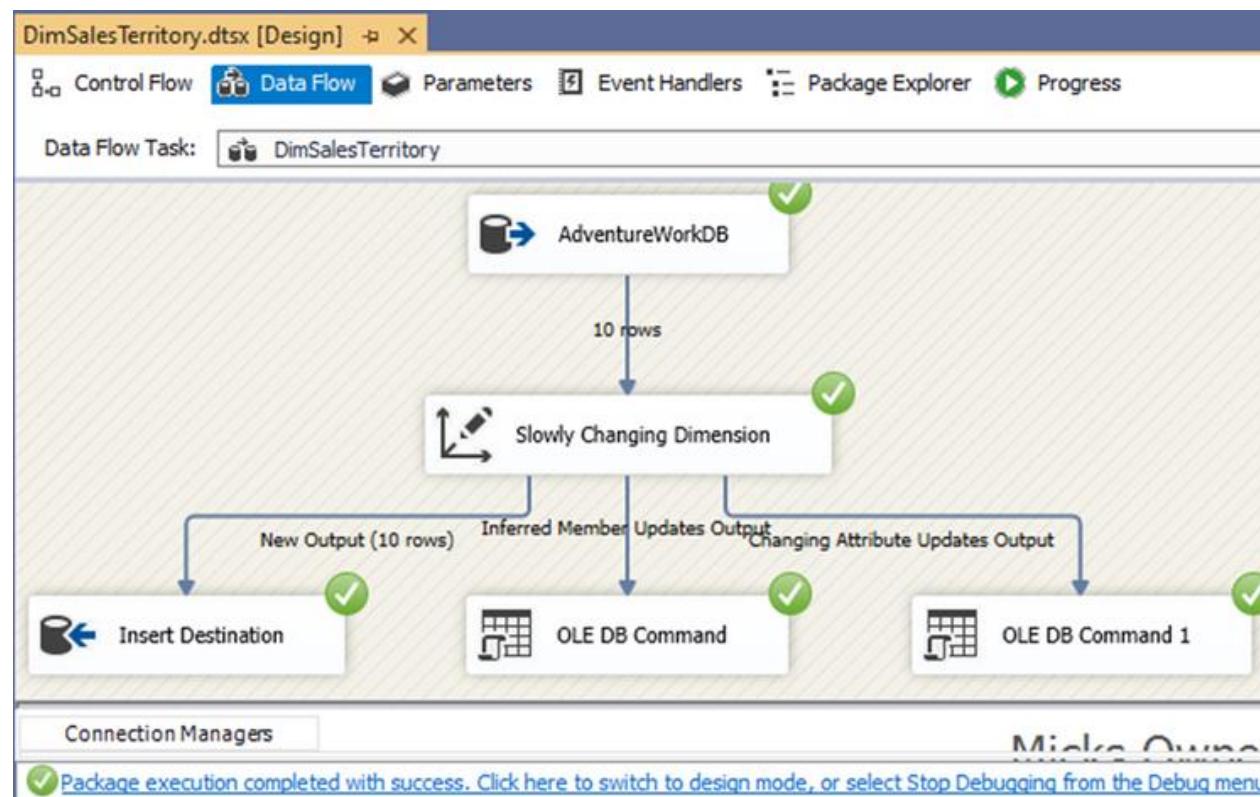




ETL processes

01. Dimension Table's ETL Process

DimSalesTerritory



TerritoryKey	TerritoryID	Name	CountryRegionCode	GROUP
1	1	Northwest	US	North America
2	2	Northeast	US	North America
3	3	Central	US	North America
4	4	Southwest	US	North America
5	5	Southeast	US	North America
6	6	Canada	CA	North America
7	7	France	FR	Europe
8	8	Germany	DE	Europe
9	9	Australia	AU	Pacific
10	10	United Kingdom	GB	Europe

Query executed successfully. | DESKTOP-5GCT597\TBAOTRAN (1... | DESKTOP-5GCT597\DELL (67) | Sales_DW_Gr2 | 00:00:00 | 10 rows



ETL processes

01. Dimension Table's ETL Process

DimTime

	TimeKey	Date	Year	Month	Day	DateName	DayNumberOfWeek	DayNumberOfMonth	DayNumberOfYear	WeekNumberOfYear	Quarter	
1	20100101	2010-01-01 00:00:00.000	2010	1	1	Friday	6	1	1	1	1	
2	20100102	2010-01-02 00:00:00.000	2010	1	2	Saturday	7	2	2	1	1	
3	20100103	2010-01-03 00:00:00.000	2010	1	3	Sunday	1	3	3	2	1	
4	20100104	2010-01-04 00:00:00.000	2010	1	4	Monday	2	4	4	2	1	
5	20100105	2010-01-05 00:00:00.000	2010	1	5	Tuesday	3	5	5	2	1	
6	20100106	2010-01-06 00:00:00.000	2010	1	6	Wednesday	4	6	6	2	1	
7	20100107	2010-01-07 00:00:00.000	2010	1	7	Thursday	5	7	7	2	1	
8	20100108	2010-01-08 00:00:00.000	2010	1	8	Friday	6	8	8	2	1	
9	20100109	2010-01-09 00:00:00.000	2010	1	9	Saturday	7	9	9	2	1	
10	20100110	2010-01-10 00:00:00.000	2010	1	10	Sunday	1	10	10	3	1	
11	20100111	2010-01-11 00:00:00.000	2010	1	11	Monday	2	11	11	3	1	
12	20100112	2010-01-12 00:00:00.000	2010	1	12	Tuesday	3	12	12	3	1	
13	20100113	2010-01-13 00:00:00.000	2010	1	13	Wednesday	4	13	13	3	1	
14	20100114	2010-01-14 00:00:00.000	2010	1	14	Thursday	5	14	14	3	1	
15	20100115	2010-01-15 00:00:00.000	2010	1	15	Friday	6	15	15	3	1	
16	20100116	2010-01-16 00:00:00.000	2010	1	16	Saturday	7	16	16	3	1	
17	20100117	2010-01-17 00:00:00.000	2010	1	17	Sunday	1	17	17	4	1	
18	20100118	2010-01-18 00:00:00.000	2010	1	18	Monday	2	18	18	4	1	
...	

Query executed successfully.

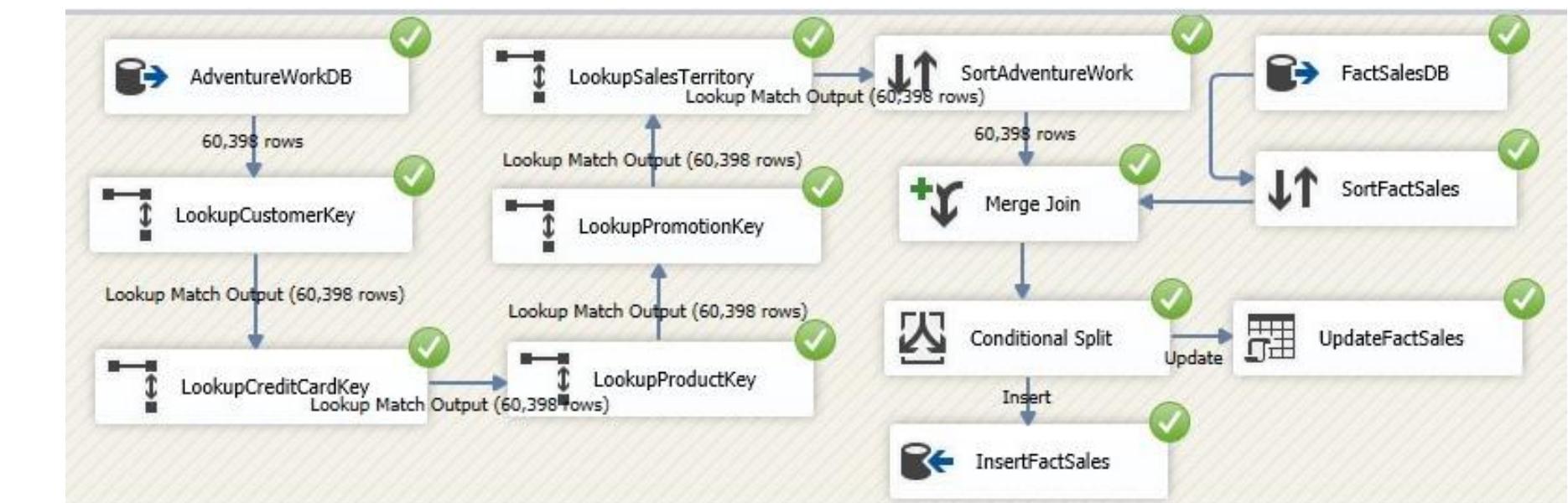
| DESKTOP-5GCT597\TBAOTRAN (1... | DESKTOP-5GCT597\DELL (67) | Sales_DW_Gr2 | 00:00:00 | 5,479 rows



ETL processes

02. Fact Table's ETL Process

FactSales



	FactSaleKey	CustomerKey	ProductKey	SpecialOfferKey	TerritoryKey	CreditCardKey	OrderDate	DueDate	ShipDate	StandardCost	OrderQty	UnitPrice	LineTotal
2	2	1	219	1	8	16567	20130731	20130812	20130807	1.8663	1	4.99	4.990000
3	3	1	230	1	8	16567	20130731	20130812	20130807	10.8423	1	28.99	28.990000
4	4	2	8	1	9	15455	20140513	20140525	20140520	6.9223	1	8.99	8.990000
5	5	2	169	2	9	15455	20140528	20140609	20140604	0.8565	1	2.29	2.290000
6	6	2	217	1	9	15455	20140528	20140609	20140604	1.8663	1	4.99	4.990000
7	7	2	224	1	9	15455	20140505	20140517	20140512	9.3463	1	24.99	24.990000
8	8	3	73	1	9	3243	20120306	20120318	20120313	1898.0944	1	3374.99	3374.9900
9	9	3	75	2	9	3243	20130811	20130823	20130818	1265.6195	1	2319.99	2319.9900
10	10	3	166	1	9	3243	20140107	20140119	20140114	1.8663	1	4.99	4.990000
11	11	3	168	1	9	3243	20140107	20140119	20140114	3.3623	1	8.99	8.990000
12	12	3	174	1	9	3243	20130811	20130823	20130818	8.2205	1	21.98	21.980000
13	13	3	179	1	9	3243	20130811	20130823	20130818	41.5723	1	53.99	53.990000
14	14	3	265	1	9	3243	20140107	20140119	20140114	1481.9379	1	2384.07	2384.0700
15	15	4	61	1	10	1133	20110926	20111008	20111003	486.7066	1	699.09...	699.0982
16	16	4	90	1	10	1133	20140218	20140302	20140225	1554.9479	1	2443.35	2443.3500
17	17	4	173	1	10	1133	20140218	20140302	20140225	2.9733	1	7.95	7.950000
18	18	5	45	1	9	1188	20120317	20120329	20120324	2171.2942	1	3578.27	3578.2700
19	19	5	179	1	9	1188	20131101	20131113	20131108	41.5723	1	53.99	53.990000
20	20	5	269	1	9	1188	20131101	20131113	20131108	1082.51	1	1700.99	1700.9900
21	21	6	63	1	10	2853	20120114	20120126	20120121	486.7066	1	699.09...	699.0982
22	22	6	79	1	10	2853	20140524	20140605	20140531	1251.9813	1	2294.99	2294.9900
23	23	7	10	1	4	7649	20130927	20131009	20131004	38.4923	1	49.99	49.990000
24	24	7	270	1	4	7649	20130927	20131009	20131004	1082.51	1	1700.99	1700.9900

Query executed successfully.

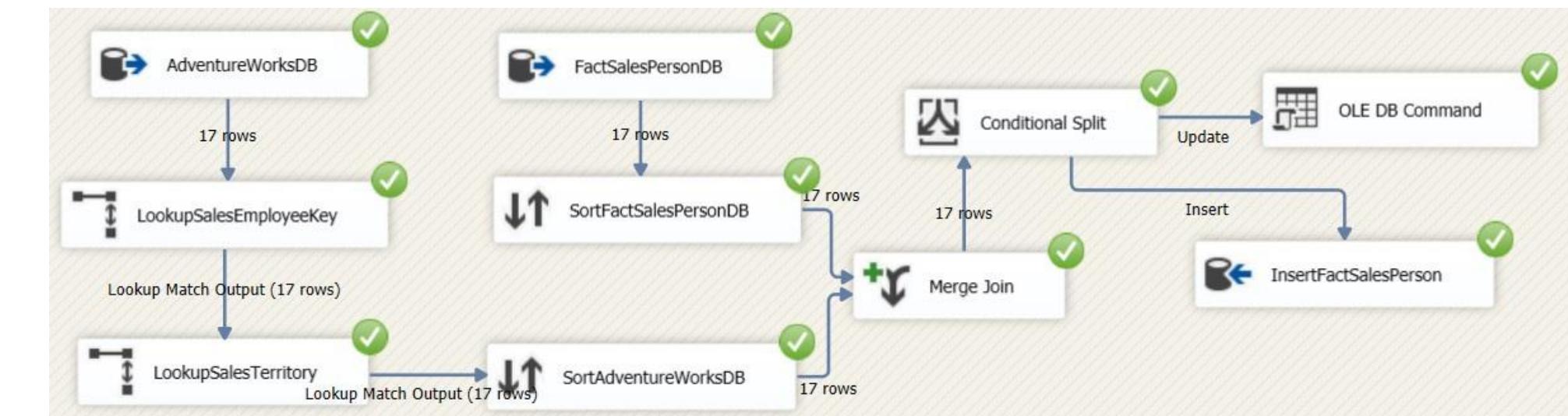
DESKTOP-5GCT597\TBAOTRAN (1...) DESKTOP-5GCT597\DELL (74) Sales_DW_Gr2 00:00:07 60,398 rows



ETL processes

02. Fact Table's ETL Process

FactSalesPerson



	FactSalesPersonKey	SalesEmployeeKey	TerritoryKey	SalesQuota	Bonus	Commission Pct	SalesYTD	SalesLastYear	ModifiedDate
1	1	2	NULL	NULL	0.00	0.00	559697.5639	0.00	20101228
2	2	3	2	300000.00	4100.00	0.012	3763178.1787	1750406.4785	20110524
3	3	4	4	250000.00	2000.00	0.015	4251368.5497	1439156.0291	20110524
4	4	5	3	250000.00	2500.00	0.015	3189418.3662	1997186.2037	20110524
5	5	6	6	250000.00	500.00	0.01	1453719.4653	1620276.8966	20110524
6	6	7	5	300000.00	6700.00	0.01	2315185.611	1849640.9418	20110524
7	7	8	1	250000.00	5000.00	0.01	1352577.1325	1927059.178	20110524
8	8	9	4	250000.00	3550.00	0.01	2458535.6169	2073505.9999	20110524
9	9	10	6	250000.00	5000.00	0.015	2604540.7172	2038234.6549	20110524
10	10	11	1	250000.00	3500.00	0.012	1573012.9383	1371635.3158	20110524
11	11	12	1	300000.00	3900.00	0.019	1576562.1966	0.00	20120923
12	12	13	NULL	NULL	0.00	0.00	172524.4512	0.00	20130307
13	13	14	9	250000.00	5650.00	0.018	1421810.9242	2278548.9776	20130523
14	14	15	NULL	NULL	0.00	0.00	519905.932	0.00	20120409
15	15	16	8	250000.00	75.00	0.018	1827066.7118	1307949.7917	20130523
16	16	17	10	250000.00	5150.00	0.02	4116871.2277	1635823.3967	20120523
17	17	18	7	250000.00	985.00	0.016	3121616.3202	2396539.7601	20120523

Query executed successfully.

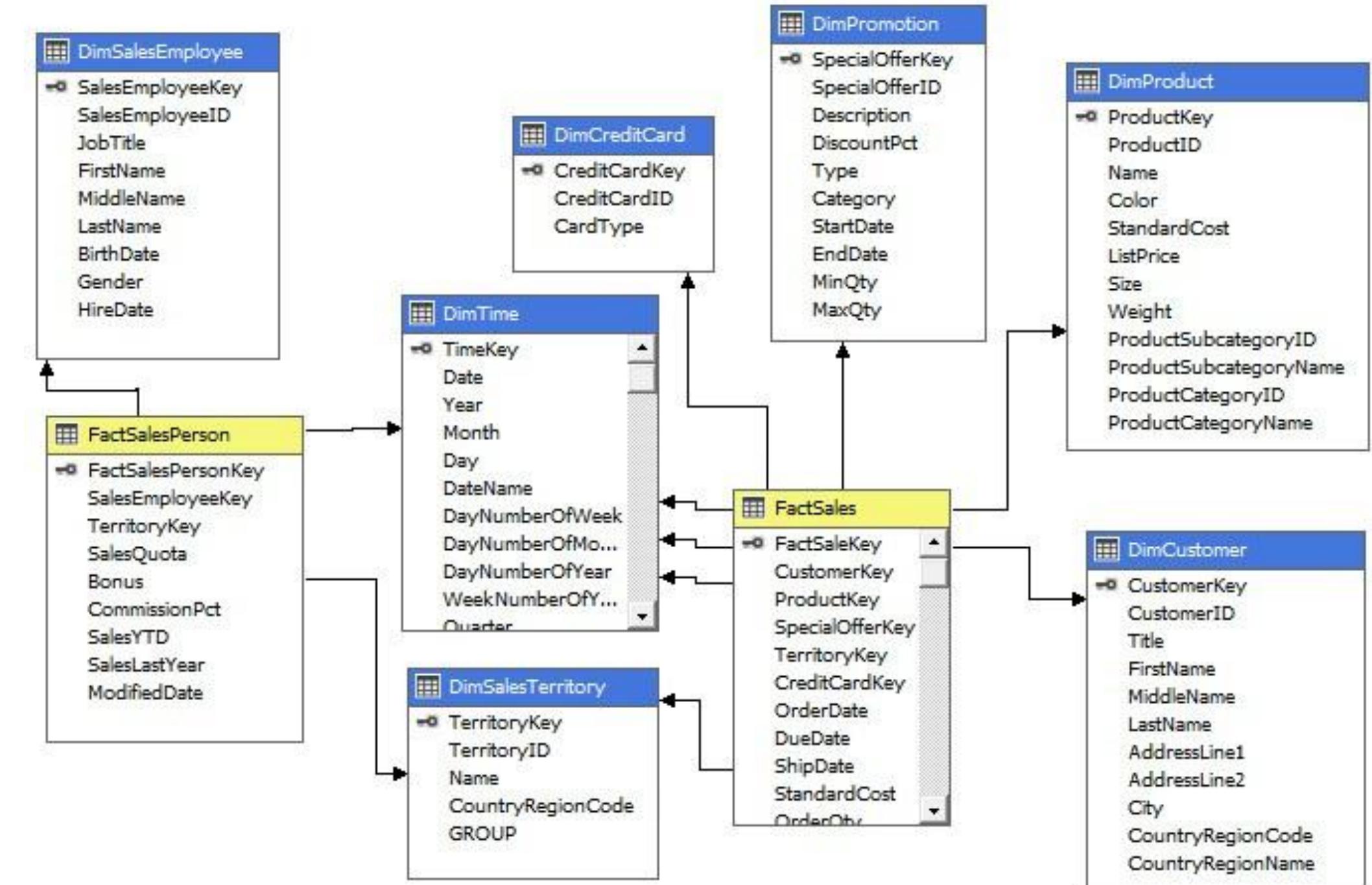
DESKTOP-5GCT597\TBAOTRAN (1... DESKTOP-5GCT597\DELL (53) Sales_DW_Gr2 00:00:00 17 rows



04 DATA ANALYTICS



01. Building the cube





02. Analysis with SSAS

City	Line Total
Ballard	45247.0356999999
Baltimore	2337.27
Barstow	3578.27
Basingstoke Hants	3271.6782
Baytown	25.48
Beaverton	161959.427
Bell Gardens	5920.24
Bellevue	2049.0982
Bellflower	302278.805699998
Bellingham	207613.253199999
Bendigo	314568.719299999
Berkeley	258138.460499999
Berks	46935.1069999999
Berkshire	58119.8632
Berlin	260930.627099998
Beverly Hills	202696.964499999
Billericay	84337.0892000001
Billings	92.08
Biloxi	82.59
Birmingham	53596.1689
Bluffton	2434.92
Bobigny	90204.4535000001
Bonn	42705.2275
Bothell	1757.42

*Sales revenue by region
(city)*

GROUP	Name	Line Total
Europe	France	2644263.60610019
Europe	Germany	2894047.87210028
Europe	United Kingdom	3392203.99450043
North America	Canada	1978090.75389997
North America	Central	3000.8296
North America	Northeast	6532.4682
North America	Northwest	3649866.55120062
North America	Southeast	12238.8496
North America	Southwest	5718150.81220126
Pacific	Australia	9060110.88920136

*Sales revenue by region
(nation)*



02. Analysis with SSAS

Customer Key	First Name	Middle Name	Last Name	Line Total
1	David	R.	Robinett	83.97
2	Rebecca	A.	Robinson	41.26
3	Dorothy	B.	Robinson	8169
4	Carol Ann	F.	Rockne	3150.3982
5	Scott	M.	Rodgers	5333.25
6	Jim		Rodman	2994.0882
7	Eric		Rothenberg	1750.98
8	Michael	L.	Rothkugel	64.47
9	Pablo		Rovira Diez	42.28
10	Linda	R.	Rousey	4.99
11	Luke	J.	Roy	68.97
12	Lisa	K.	Roy	4895.69
13	Michael		Ruggiero	13.98
14	Pearlie	J.	Rusek	4886.7
15	Andrea		Rusko	21.49
16	Andy		Ruth	66.97
17	Justine	J.	Ryan	7.28
18	Deanna	N.	Sabella	2344.96
19	Lane		Sacksteder	539.99
20	Peter		Saddow	68.97

Customer lifetime value (CLV) of AdventureWorks Company



02. Analysis with SSAS

Card Type	Fact Sales Count
ColonialVoice	14471
Distinguish	14857
SuperiorCard	14593
Vista	14032
Unknown	2445

Card Type	Name	Fact Sales Count
ColonialVoice	Australia	3241
ColonialVoice	Canada	1813
ColonialVoice	France	1327
ColonialVoice	Germany	1407
ColonialVoice	Northwest	2234
ColonialVoice	Southeast	15
ColonialVoice	Southwest	2849
ColonialVoice	United Kingdom	1585
Distinguish	Australia	3188
Distinguish	Canada	1940
Distinguish	Central	7
Distinguish	France	1390
Distinguish	Germany	1339
Distinguish	Northeast	4
Distinguish	Northwest	2170
Distinguish	Southeast	6
Distinguish	Southwest	3127
Distinguish	United Kingdom	1686
SuperiorCard	Australia	3059
SuperiorCard	Canada	1852

Statistics on the number of types of Credit Cards that customers use

Statistics on the number of types of Credit Cards that customers use by country



02. Analysis with SSAS

Month	Year	Product Category Name	Order Qty
1	2012	Bikes	193
1	2013	Bikes	294
1	2014	Accessories	3145
1	2014	Bikes	897
1	2014	Clothing	823
10	2011	Bikes	174
10	2012	Bikes	207
10	2013	Accessories	2941
10	2013	Bikes	749
10	2013	Clothing	709
11	2011	Bikes	230
11	2012	Bikes	318
11	2013	Accessories	3226
11	2013	Bikes	1004
11	2013	Clothing	795
12	2011	Bikes	188
12	2012	Bikes	246
12	2013	Accessories	3086
12	2013	Bikes	797
12	2013	Clothing	788
2	2012	Bikes	182
2	2013	Bikes	251
2	2014	Accessories	2780
2	2014	Bikes	798
2	2014	Clothing	695

Quantity of each type of item by month of each year

Month	Year	Product Category Name	Product Subcategory Name	Order Qty
1	2012	Bikes	Mountain Bikes	21
1	2012	Bikes	Road Bikes	172
1	2013	Bikes	Mountain Bikes	114
1	2013	Bikes	Road Bikes	180
1	2014	Accessories	Bike Racks	26
1	2014	Accessories	Bike Stands	18
1	2014	Accessories	Bottles and Cages	760
1	2014	Accessories	Cleaners	77
1	2014	Accessories	Fenders	163
1	2014	Accessories	Helmets	549
1	2014	Accessories	Hydration Packs	70
1	2014	Accessories	Tires and Tubes	1482
1	2014	Bikes	Mountain Bikes	318
1	2014	Bikes	Road Bikes	373
1	2014	Bikes	Touring Bikes	206
1	2014	Clothing	Caps	215
1	2014	Clothing	Gloves	135
1	2014	Clothing	Jerseys	286
1	2014	Clothing	Shorts	85
1	2014	Clothing	Socks	49
1	2014	Clothing	Vests	53
10	2011	Bikes	Mountain Bikes	33
10	2011	Bikes	Road Bikes	141
10	2012	Bikes	Mountain Bikes	49

Quantity sold by product group



02. Analysis with SSAS

Sales Employee Key	Last Name	First Name	Gender	Quarter	Year	Sales YTD
2	Jiang	Stephen	M	4	2010	559697.5639
3	Blythe	Michael	M	2	2011	3763178.1787
4	Mitchell	Linda	F	2	2011	4251368.5497
5	Carson	Jillian	F	2	2011	3189418.3662
6	Vargas	Garrett	M	2	2011	1453719.4653
7	Reiter	Tsvi	M	2	2011	2315185.611
8	Ansman-Wolfe	Pamela	F	2	2011	1352577.1325
9	Ito	Shu	M	2	2011	2458535.6169
10	Saraiva	José	M	2	2011	2604540.7172
11	Campbell	David	M	2	2011	1573012.9383
12	Mensa-Annan	Tete	M	3	2012	1576562.1966
13	Abbas	Syed	M	1	2013	172524.4512
14	Tsoflias	Lynn	F	2	2013	1421810.9242
15	Alberts	Amy	F	2	2012	519905.932
16	Valdez	Rachel	F	2	2013	1827066.7118
17	Pak	Jae	F	2	2012	4116871.2277
18	Varkey Chudukatil	Ranjit	M	2	2012	3121616.3202

SaleYTD of each salesperson is updated by year and quarter

Category	Type	Description	Line Total
No Discount	No Discount	No Discount	27306698.812978
Reseller	New Product	Touring-1000 Promotion	30992.91
Reseller	New Product	Touring-3000 Promotion	14847
Reseller	Volume Discount	Volume Discount 11 to 14	2005967.90360001

Sales revenue by each promotion period

Category	Type	Description	Order Qty
No Discount	No Discount	No Discount	58247
Reseller	New Product	Touring-1000 Promotion	13
Reseller	New Product	Touring-3000 Promotion	20
Reseller	Volume Discount	Volume Discount 11 to 14	2118

Number of products sold in each promotion



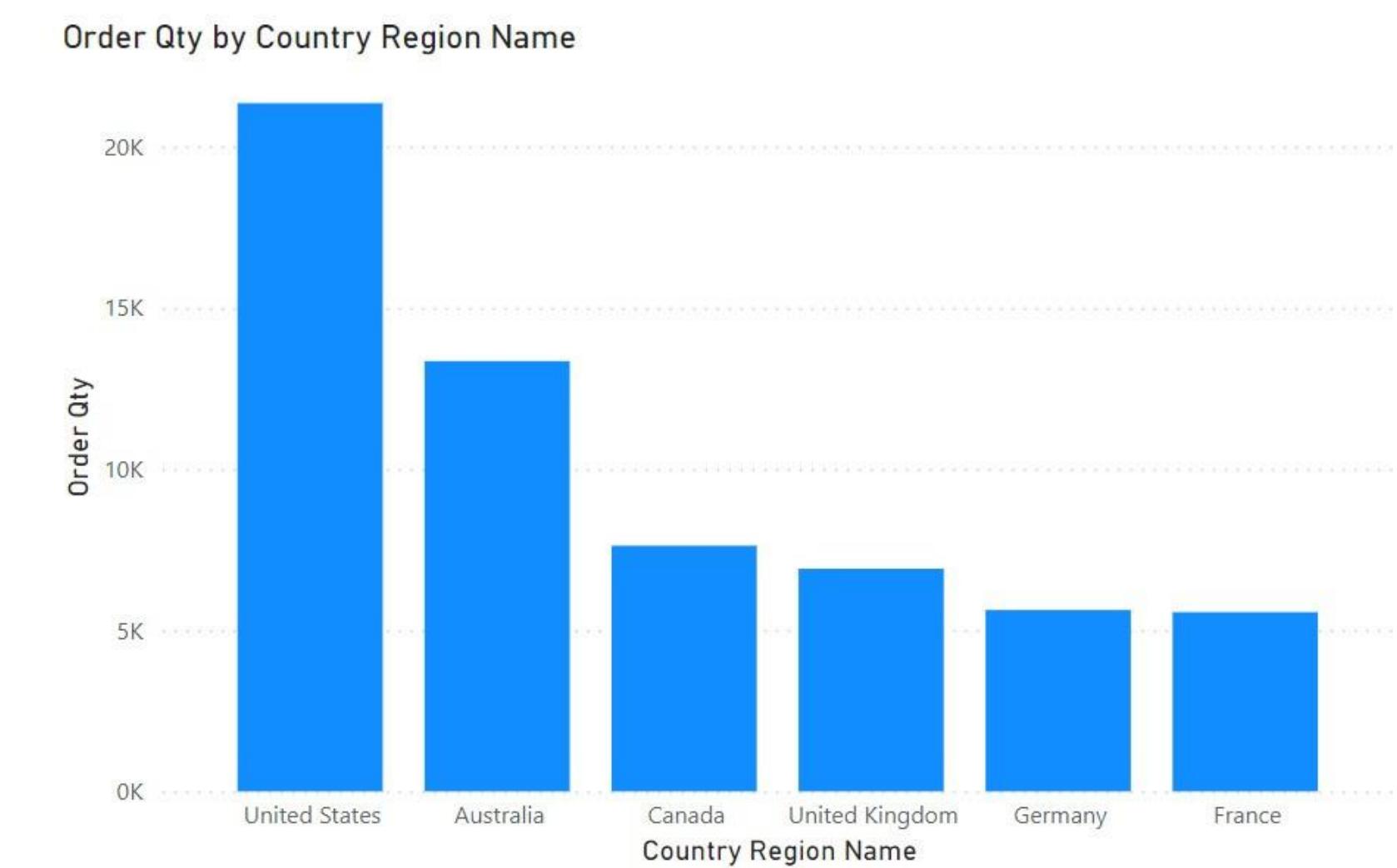
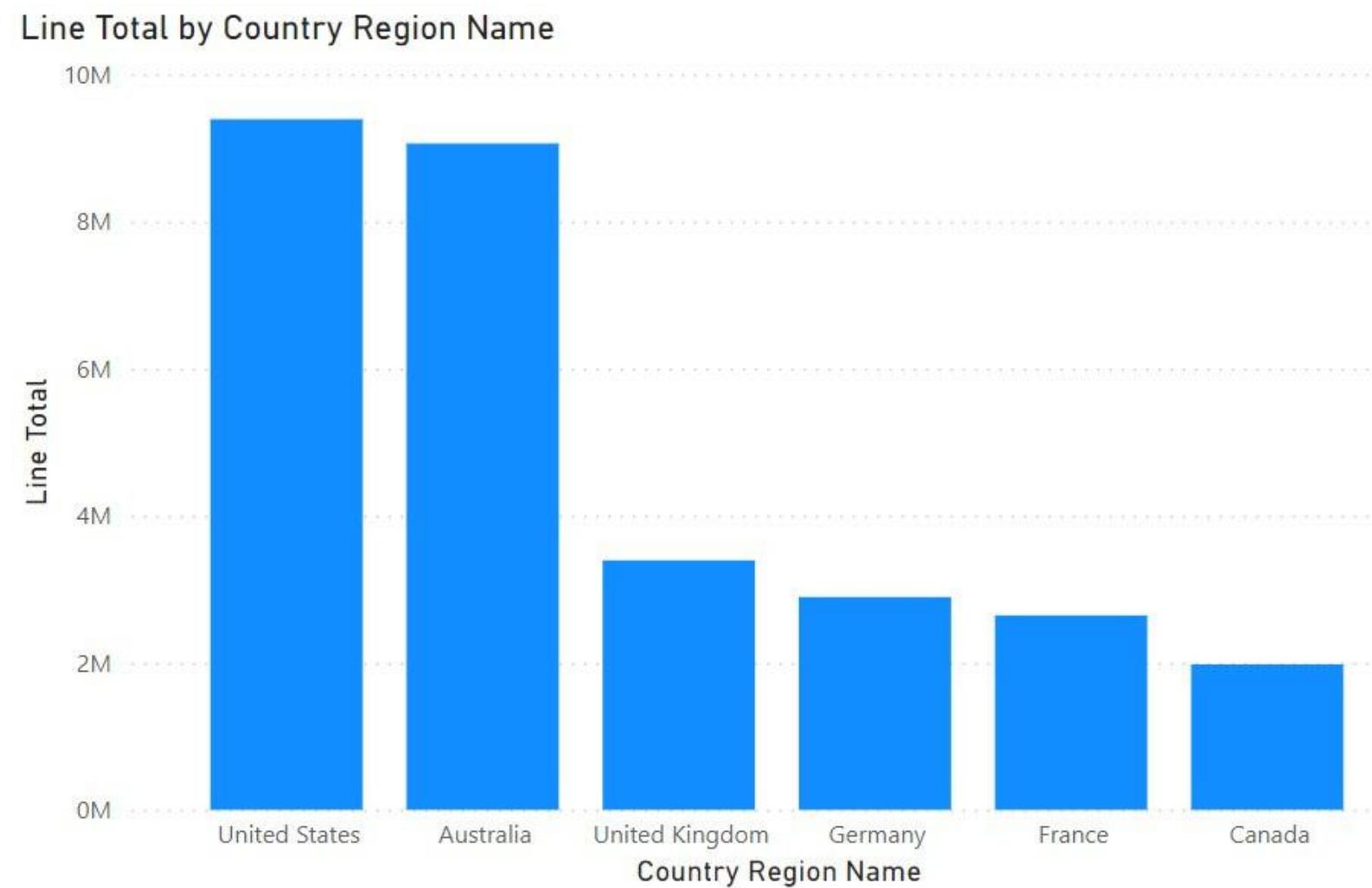
05 **VISUALIZATION AND FORECASTING OR PREDICTIVE MODEL**



Data analysis with Power BI



1. Analysis of product consumption by region

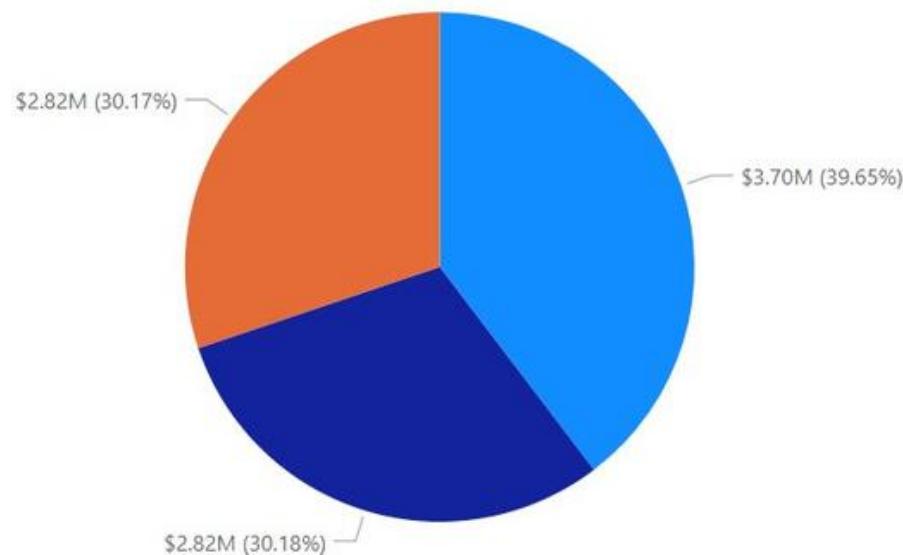


Data analysis with Power BI



1. Analysis of product consumption by region

LoiNhuan by GROUP



60.40K

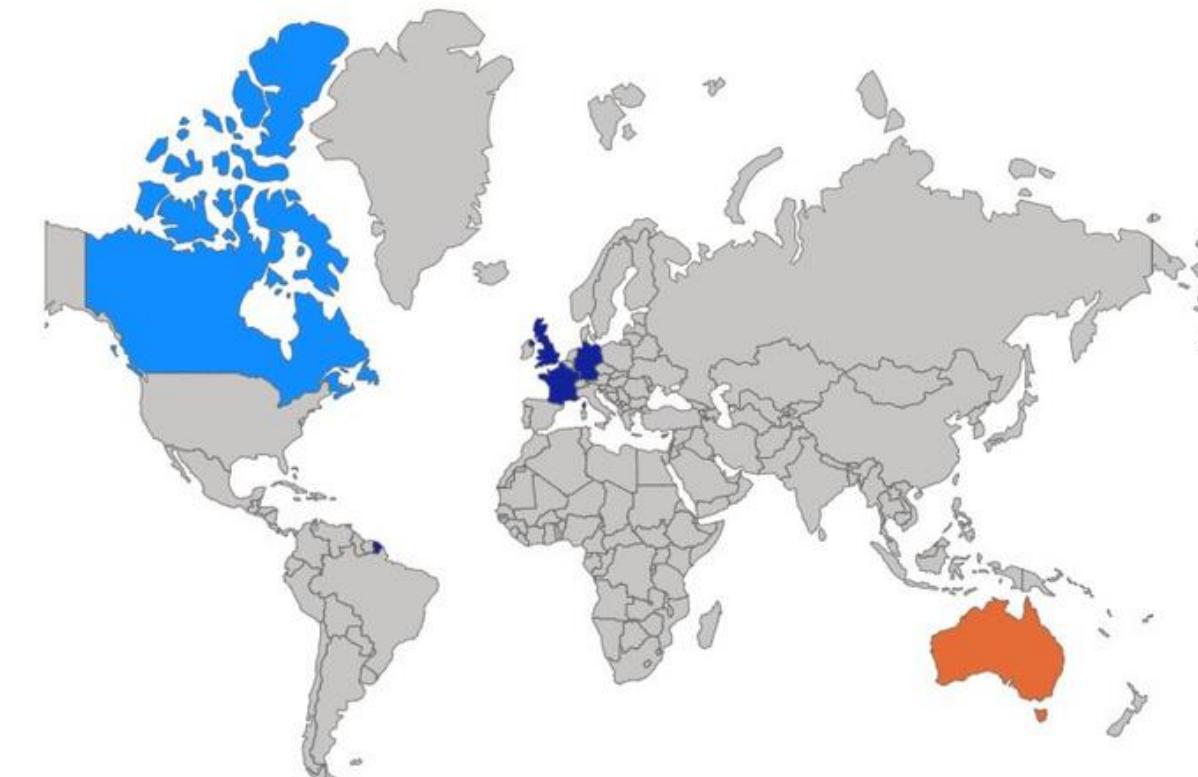
Order Qty

29.36M

Line Total

Line Total by Name and GROUP

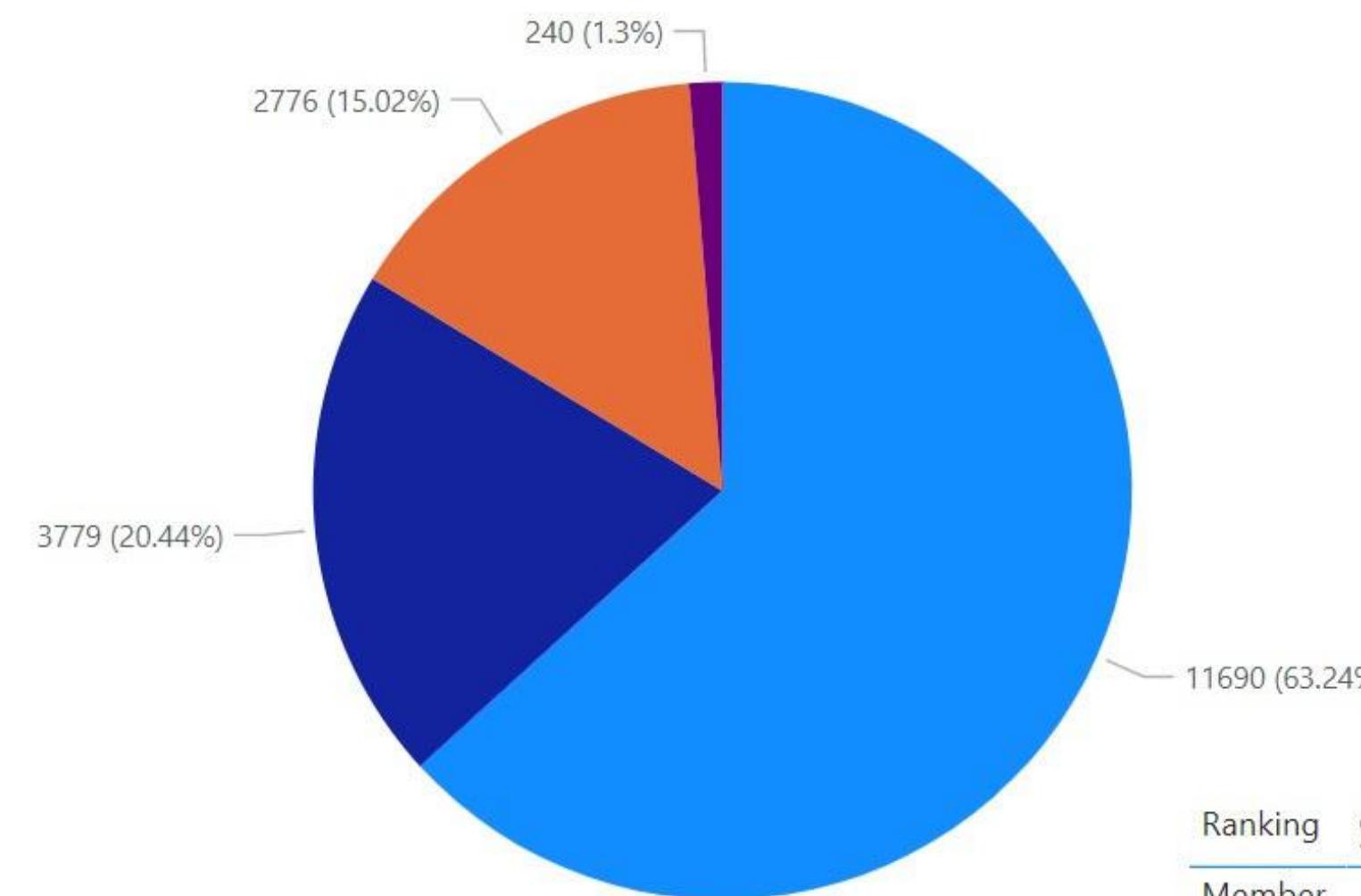
GROUP ● Europe ● North America ● Pacific



GROUP	Name	Line Total
Europe	France	2,644,263.61
Europe	Germany	2,894,047.87
Europe	United Kingdom	3,392,203.99
North America	Canada	1,978,090.75
North America	Central	3,000.83
North America	Northeast	6,532.47
North America	Northwest	3,649,866.55
North America	Southeast	12,238.85
North America	Southwest	5,718,150.81
Pacific	Australia	9,060,110.89
Total		29,358,506.63



2. Analysis of customer lifetime value (CLV) of the business



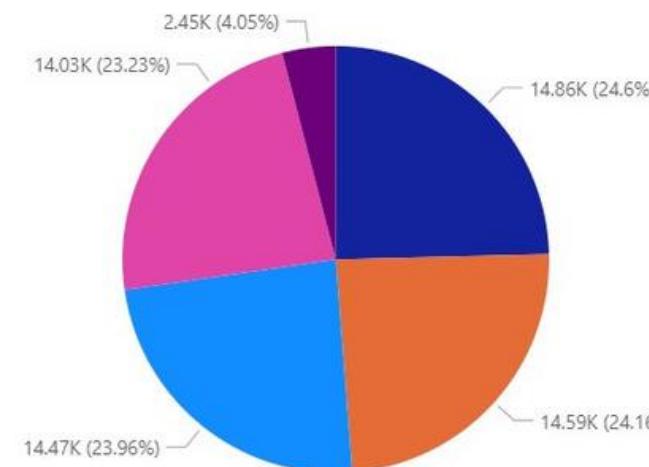
CustomerID	SumCLV	Ranking
11000	8248.99	Platinum
11001	6383.88	Gold
11002	8114.04	Platinum
11003	8139.29	Platinum
11004	8196.01	Platinum
11005	8121.33	Platinum
11006	8119.03	Platinum
11007	8211	Platinum
11008	8106.31	Platinum
11009	8091.33	Platinum
11010	8088.04	Platinum
11011	8133.04	Platinum
11012	81.26	Member
11013	113.96	Member
11014	138.45	Member
11015	2500.97	Silver
11016	2332.28	Silver
11017	6434.31	Gold
11018	6533.28	Gold
11019	882.7	Member
11020	2316.97	Silver
11021	2371.96	Silver
11022	2322.28	Silver
11023	122.24	Member

Data analysis with Power BI

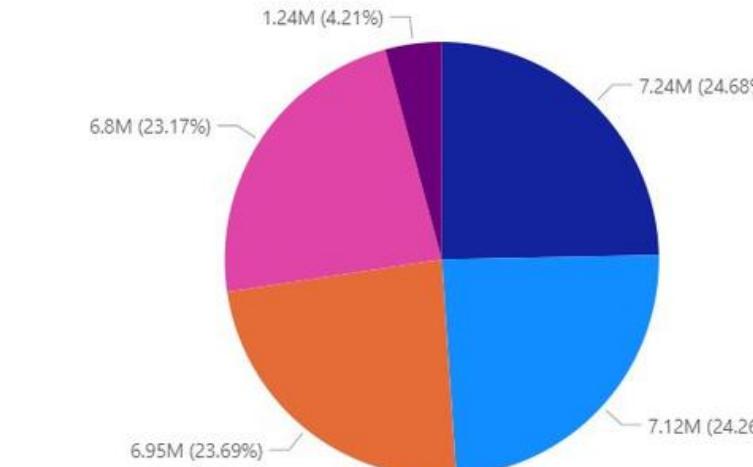


3. Analysis of customer payment card usage trends

Order Qty by Card Type

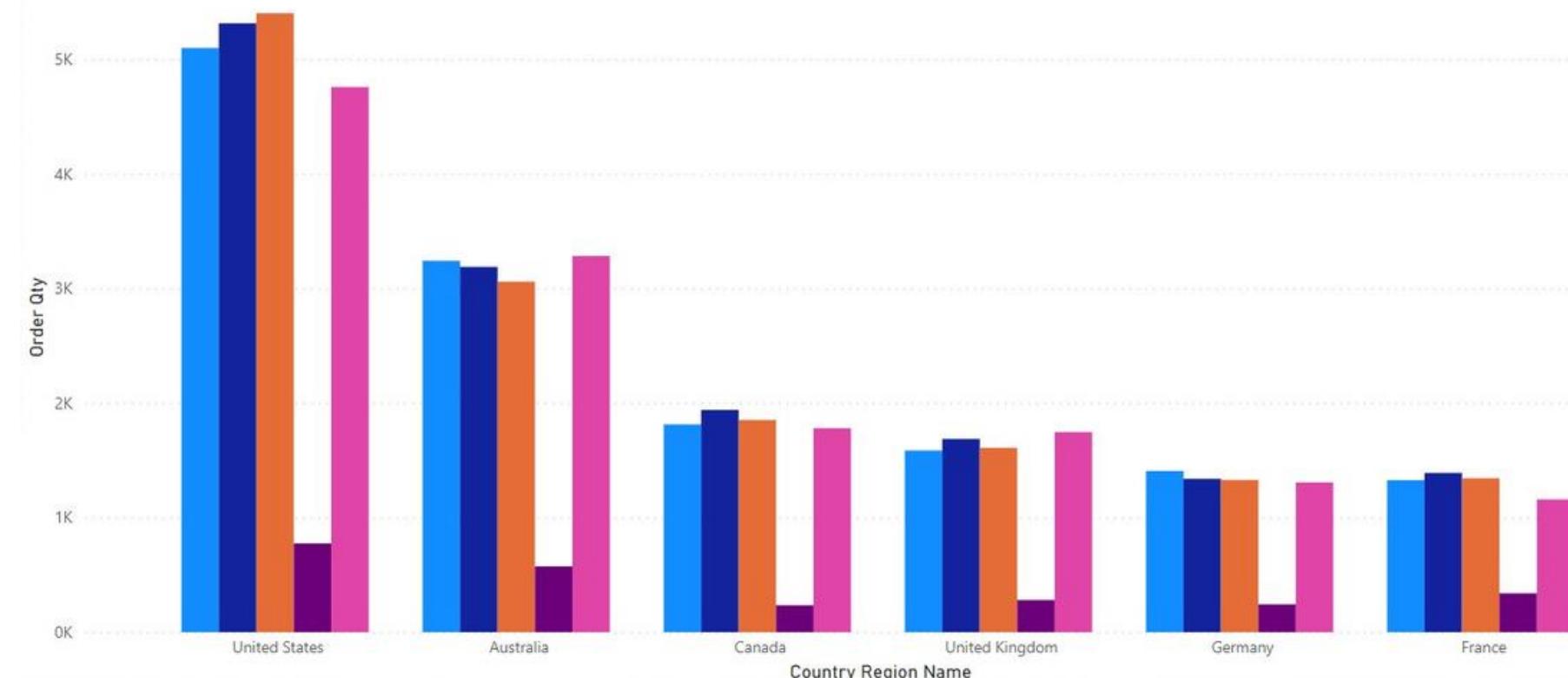


Line Total by Card Type



Order Qty by Country Region Name and Card Type

Card Type ● ColonialVoice ● Distinguish ● SuperiorCard ● Unknown ● Vista

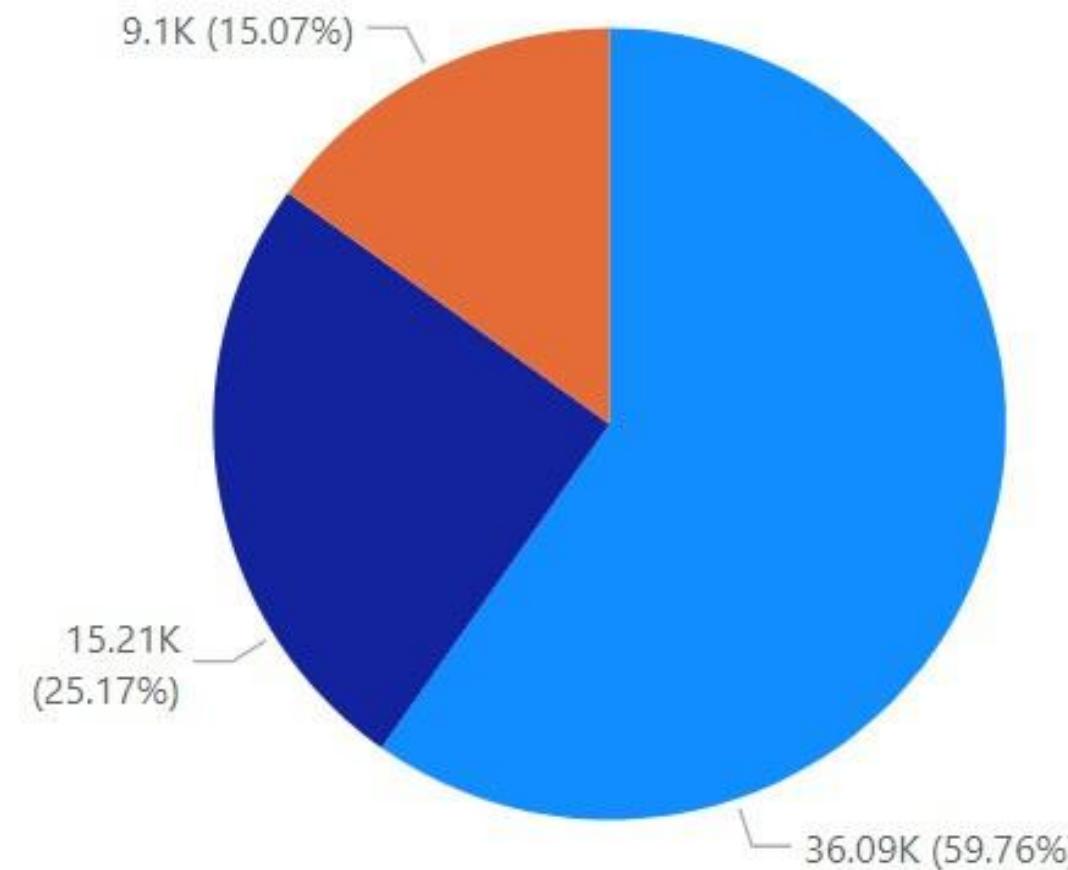


Data analysis with Power BI

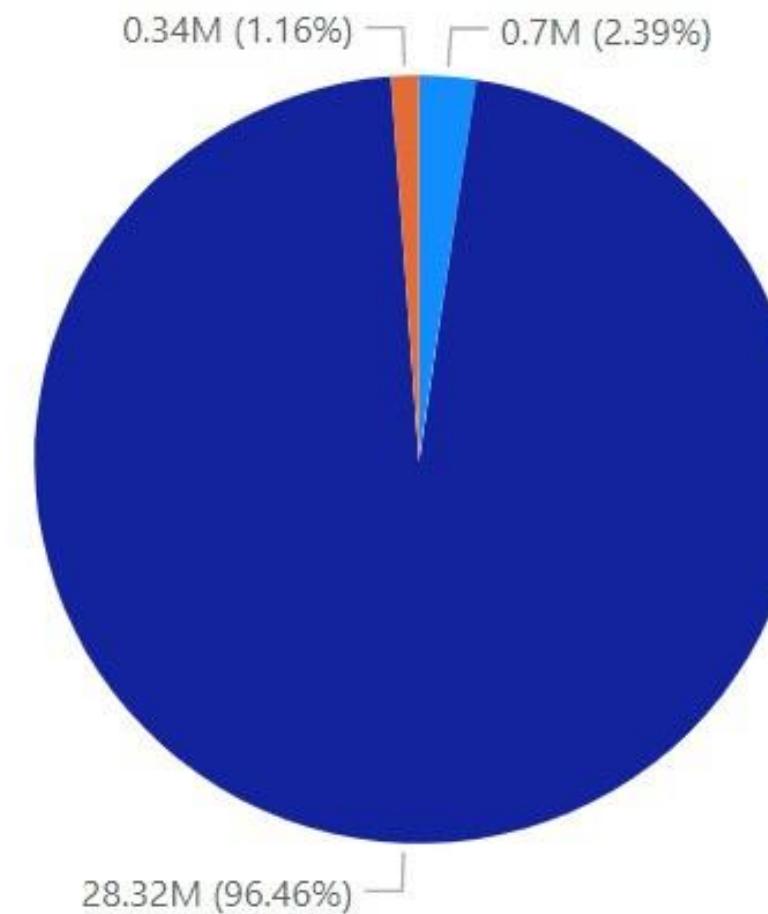


4. Analysis of products in the business

Order Qty by Product Category Name



Line Total by Product Category Name



Product Category Name

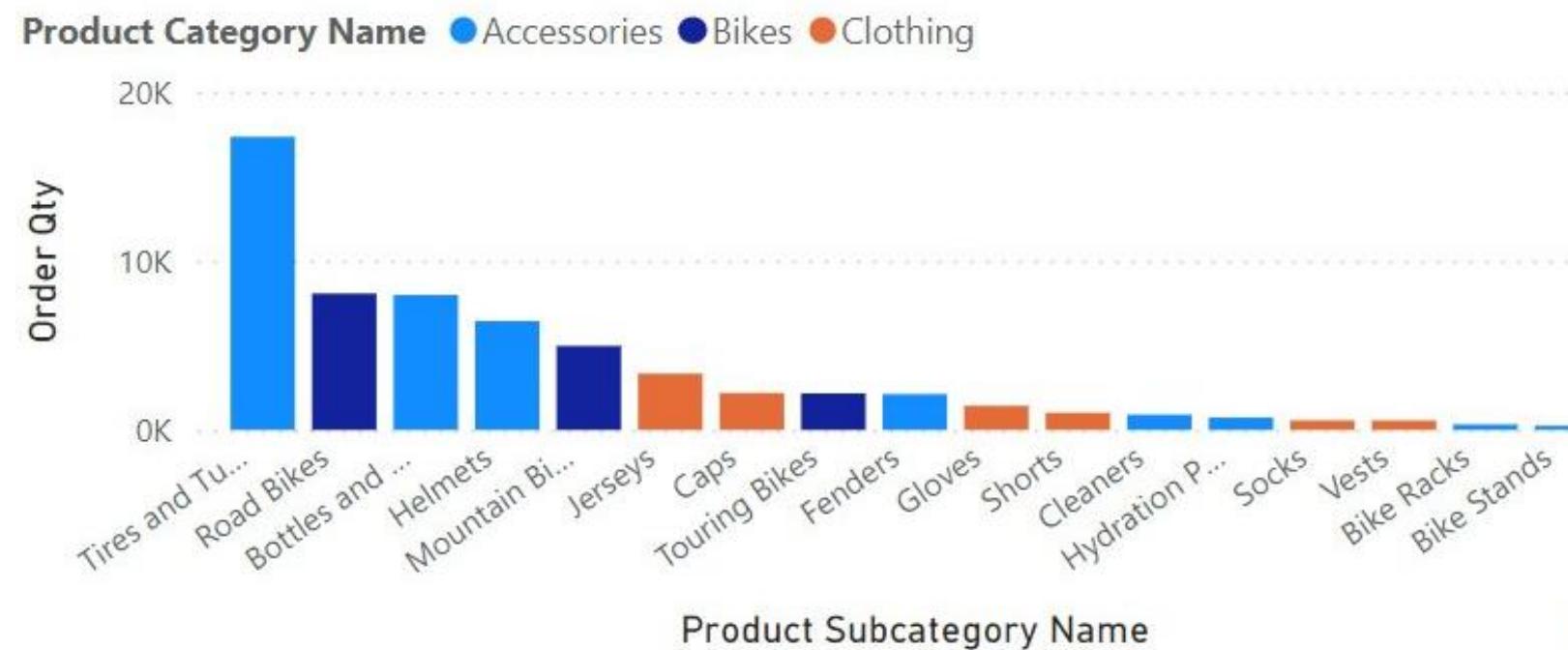
- Accessories
- Bikes
- Clothing

Data analysis with Power BI



4. Analysis of products in the business

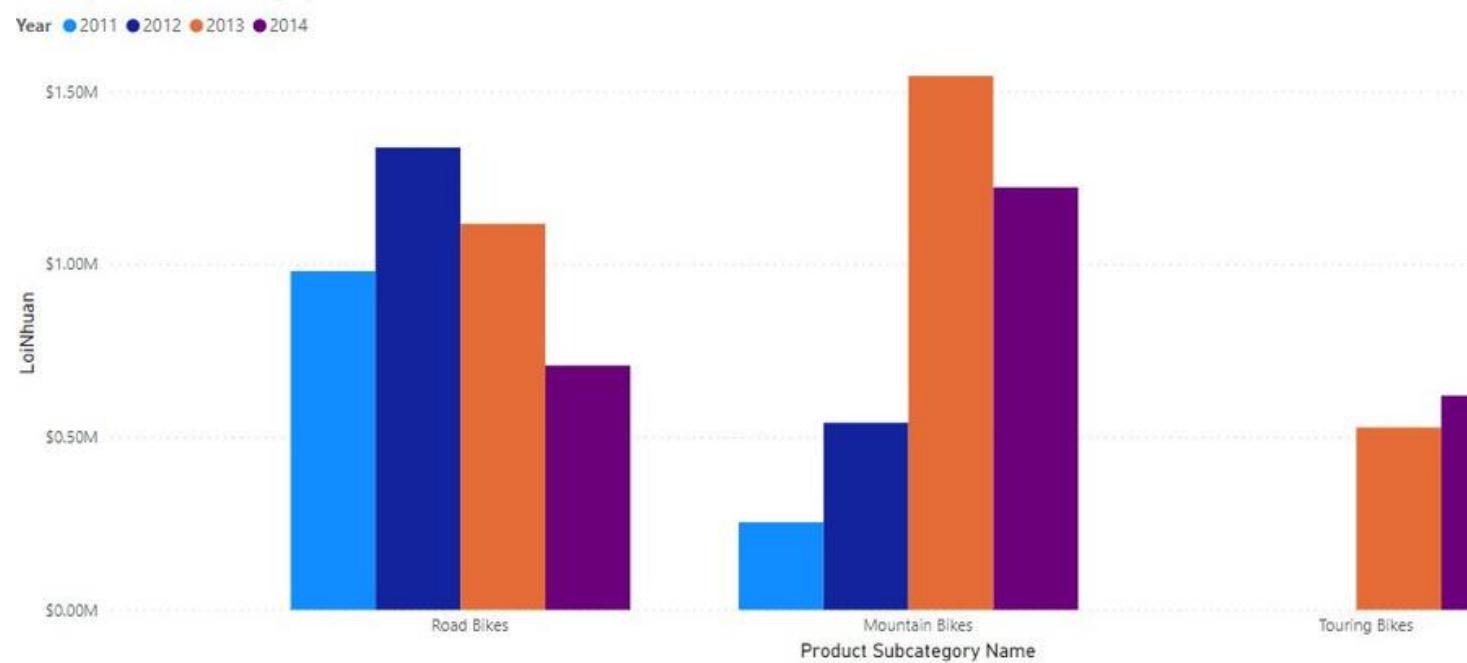
Order Qty by Product Subcategory Name and Product Category Name



Line Total by Product Subcategory Name and Product Category Name



Profit by Product Subcategory Name and Year

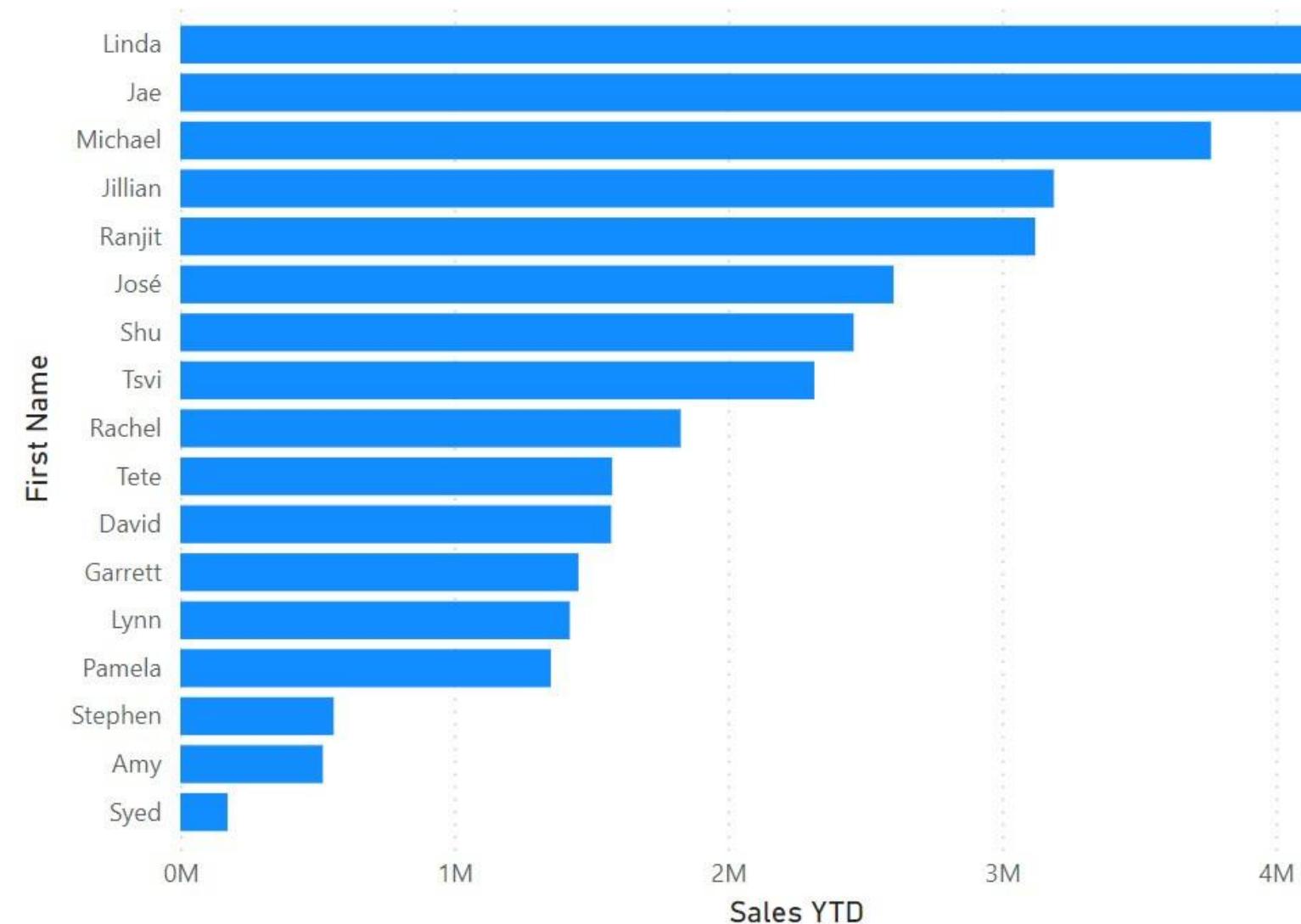


Data analysis with Power BI

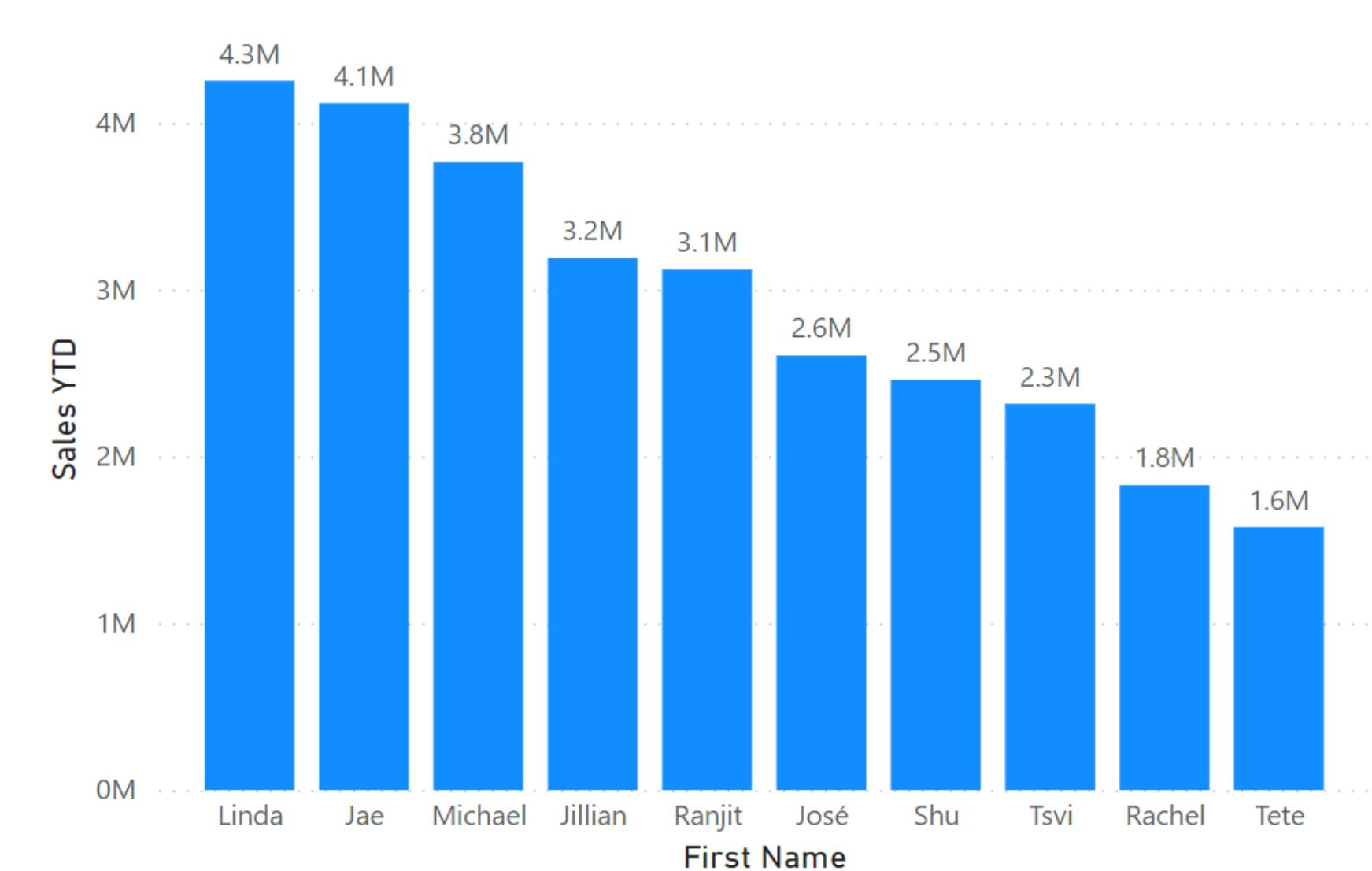


5. Salesperson's SaleYTD analysis

Sales YTD by First Name



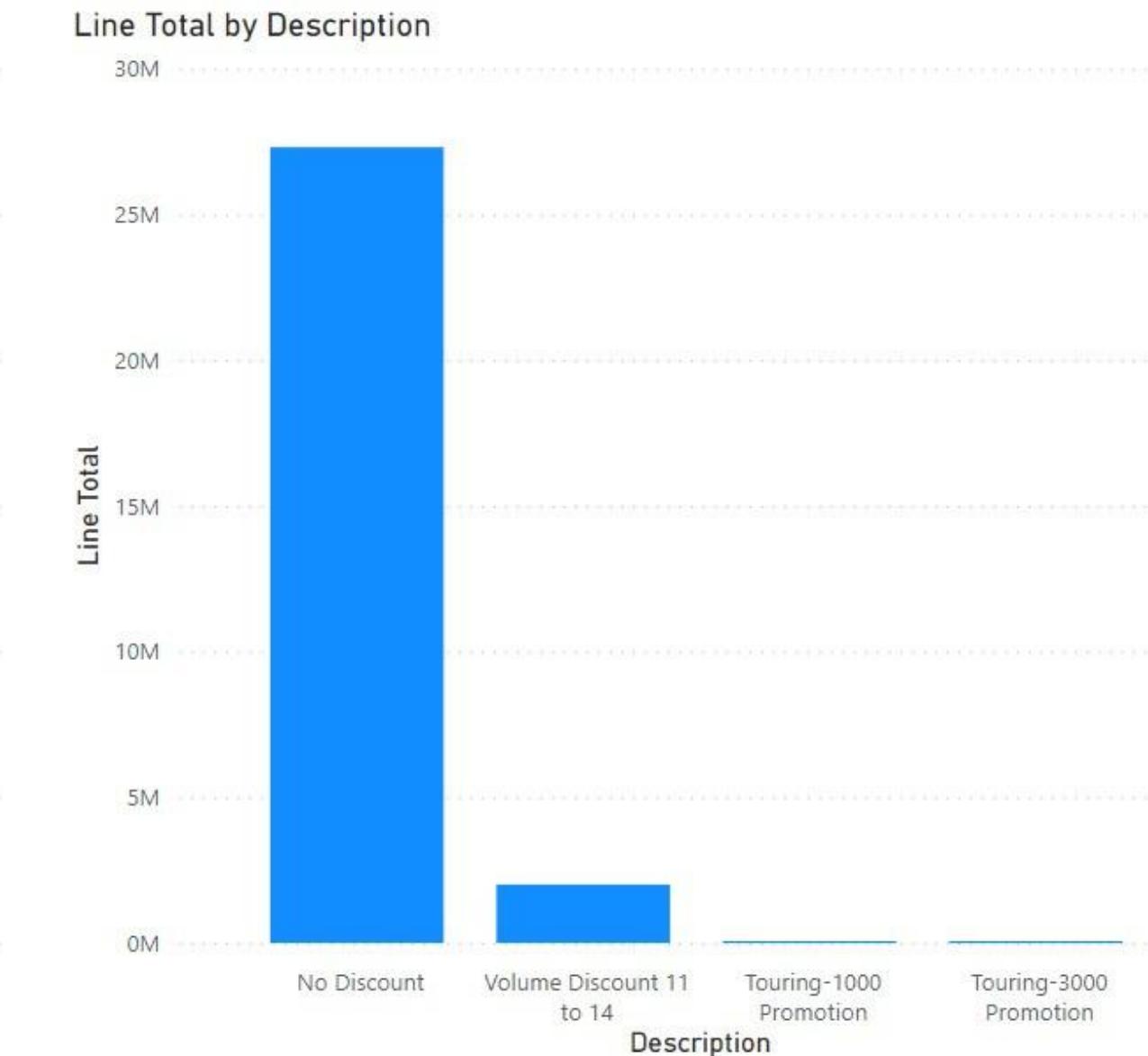
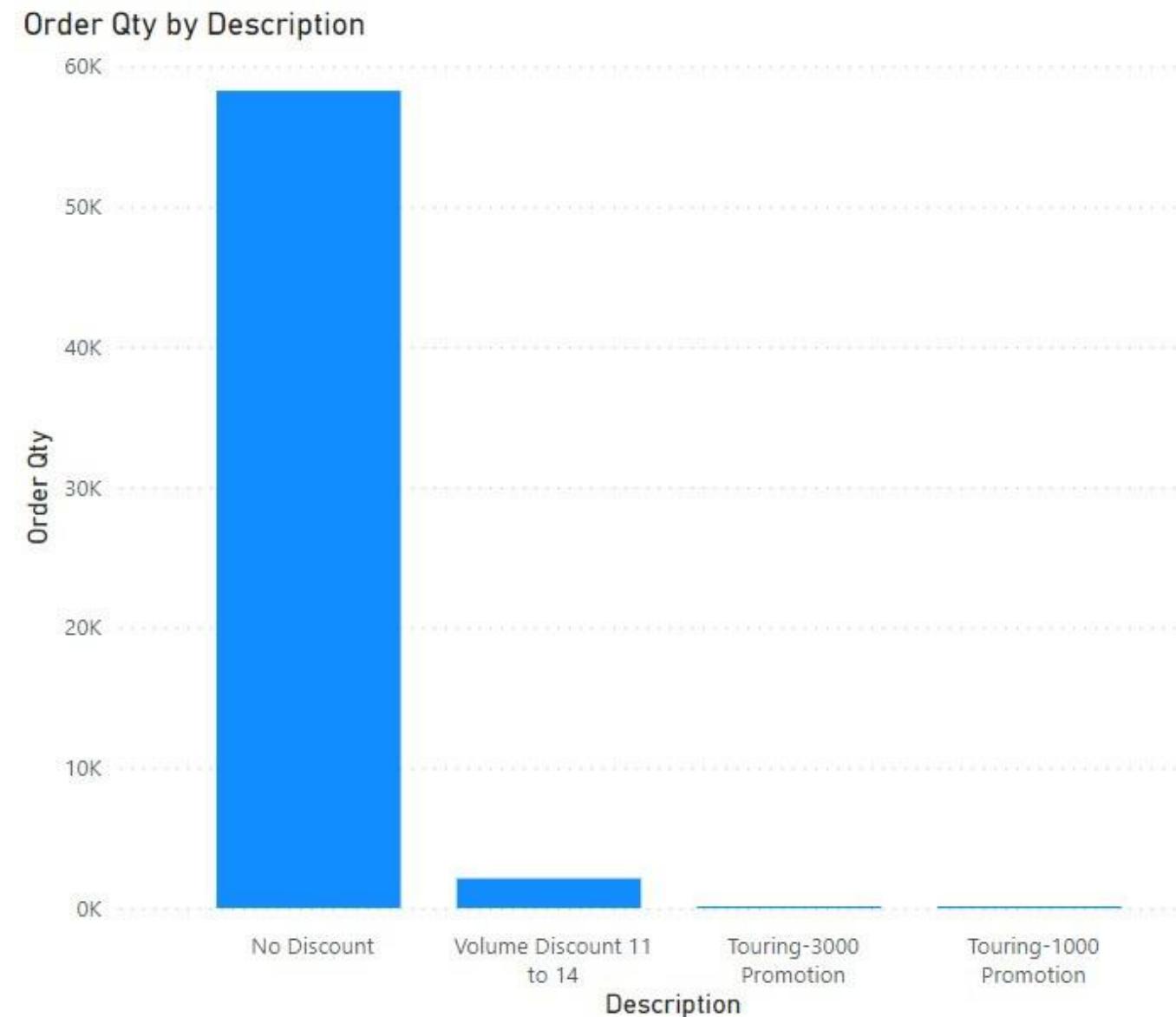
Top 10 Sales YTD by First Name



Data analysis with Power BI



6. Analysis of promotions used



Data analysis with Power BI



7. Dashboard of the sales module

AdventureWorks Sale Dashboard

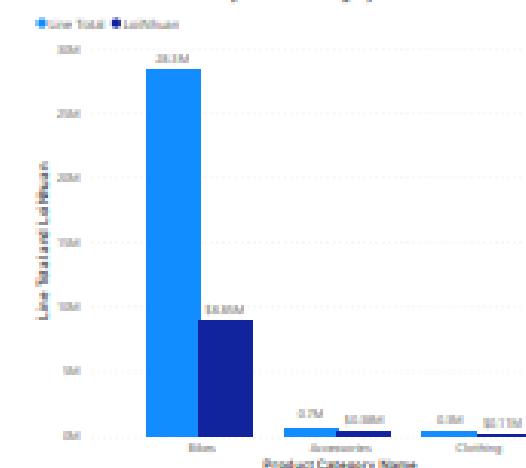
by Group 2

29.36M 60.40K \$9.34M

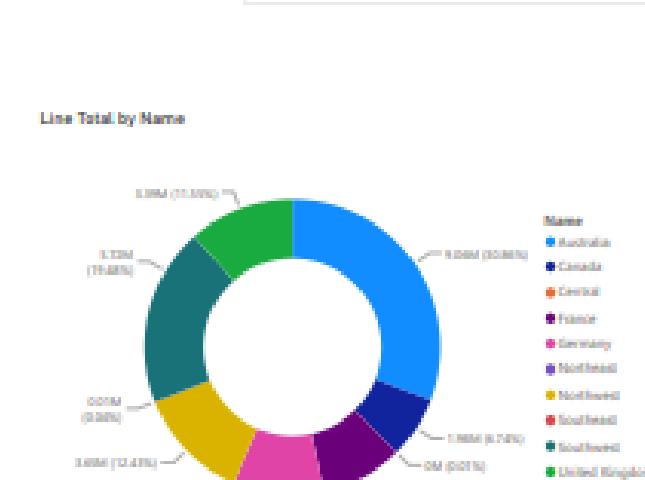
Line Total Order Qty LoINhuan

Name	Order Qty	Line Total	LoINhuan
Line Total			
Mountain-200 Black, M	620	1,074,207.23	\$488,101.25
Mountain-200 Black, L	614	1,060,007.99	\$485,623.10
Mountain-200 Silver, M	996	1,033,965.65	\$477,499.42
Mountain-200 Black, XL	582	1,276,295.62	\$460,033.78
Mountain-200 Silver, XL	180	1,003,108.82	\$460,918.85
Mountain-200 Silver, L	640	1,207,186.20	\$447,844.32
Road-100 Red, S	337	1,201,076.89	\$177,482.49
Road-100 Red, L	396	1,202,298.72	\$176,518.87
Road-100 Red, M	352	1,005,677.54	\$133,413.89
Road-100 Red, XL	295	1,021,500.65	\$133,413.89
Road-100 Red, XXL	281	1,020,490.87	\$114,025.89
Road-200 Black, S	379	713,254.05	\$170,170.87
Road-200 Black, XL	298	670,940.47	\$172,271.00
Road-200 Red, M	296	700,423.21	\$171,097.84
Road-200 Black, XL	271	621,591.80	\$116,910.84
Road-200 Black, XXL	270	622,792.06	\$116,710.86
Touring-1000 Blue, M	177	421,982.09	\$126,718.85
Touring-1000 Yellow, M	172	410,262.04	\$122,981.82
Road-1500 Yellow, S	296	418,443.54	\$118,675.80
Road-2000 Red, XL	162	399,822.70	\$118,113.49
Touring-1000 Blue, XL	160	391,471.20	\$118,025.84
Road-1500 W Yellow, L	235	399,732.63	\$118,864.79
Touring-1000 Yellow, L	158	376,680.26	\$112,402.23
Road-1500 W Yellow, XL	232	394,679.68	\$111,916.89
Touring-1000 Yellow, XL	151	393,994.57	\$107,422.38
Total			
Total	60388	29,358,506.63	\$9,339,070.11

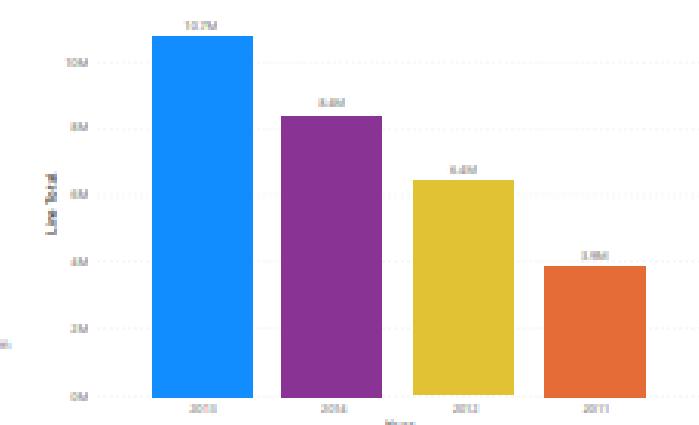
Line Total and LoINhuan by Product Category Name



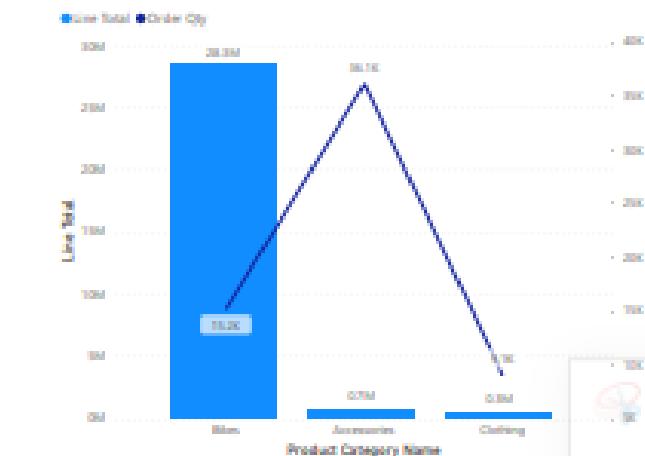
Line Total by Name



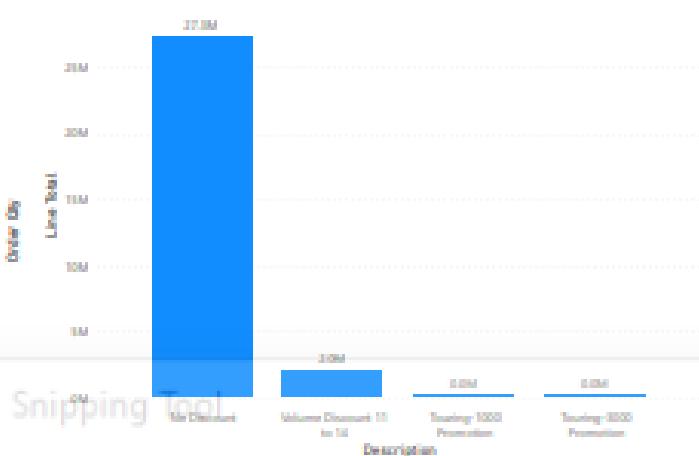
Line Total by Year



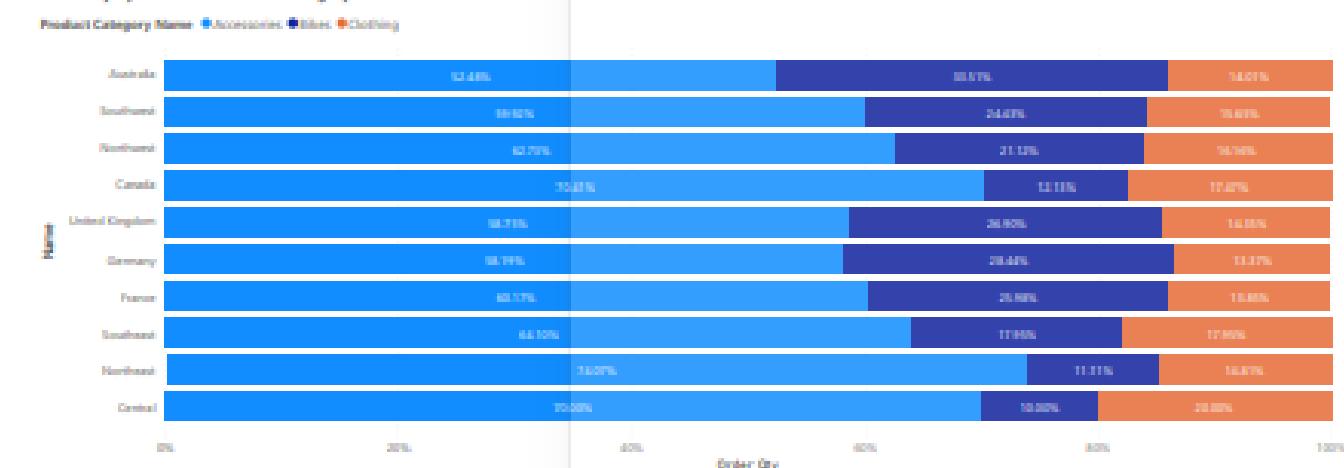
Line Total and Order Qty by Product Category Name



Line Total by Description



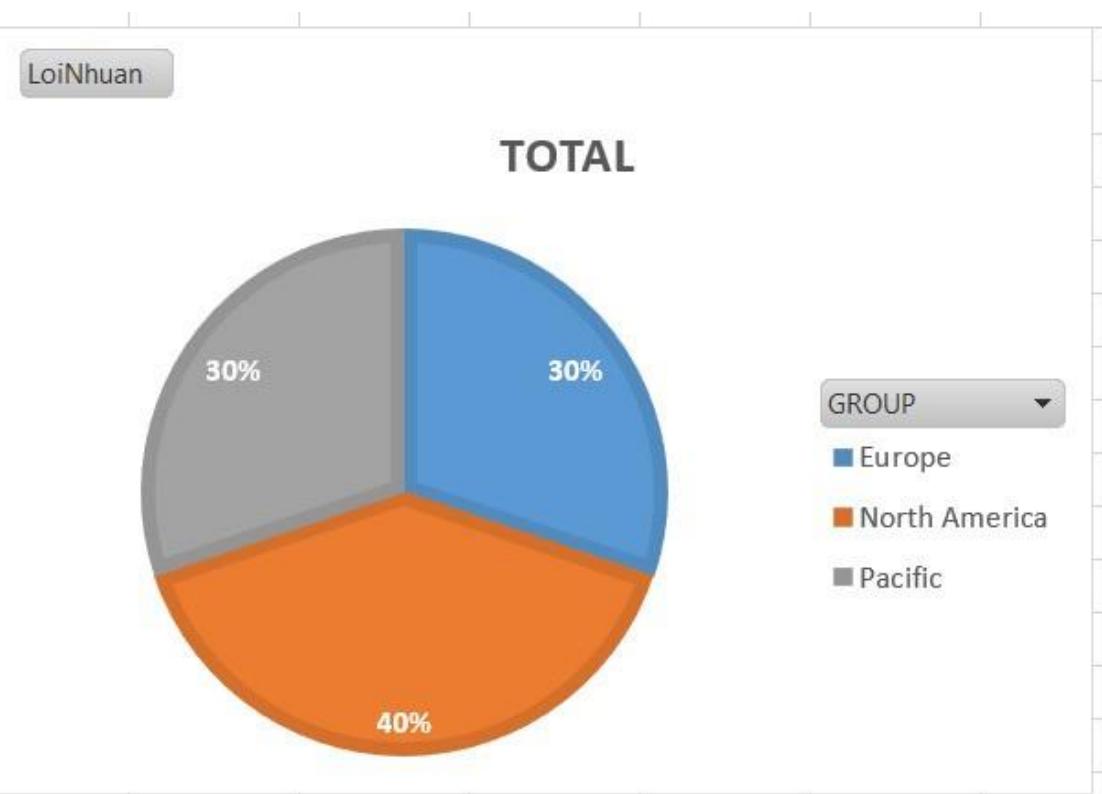
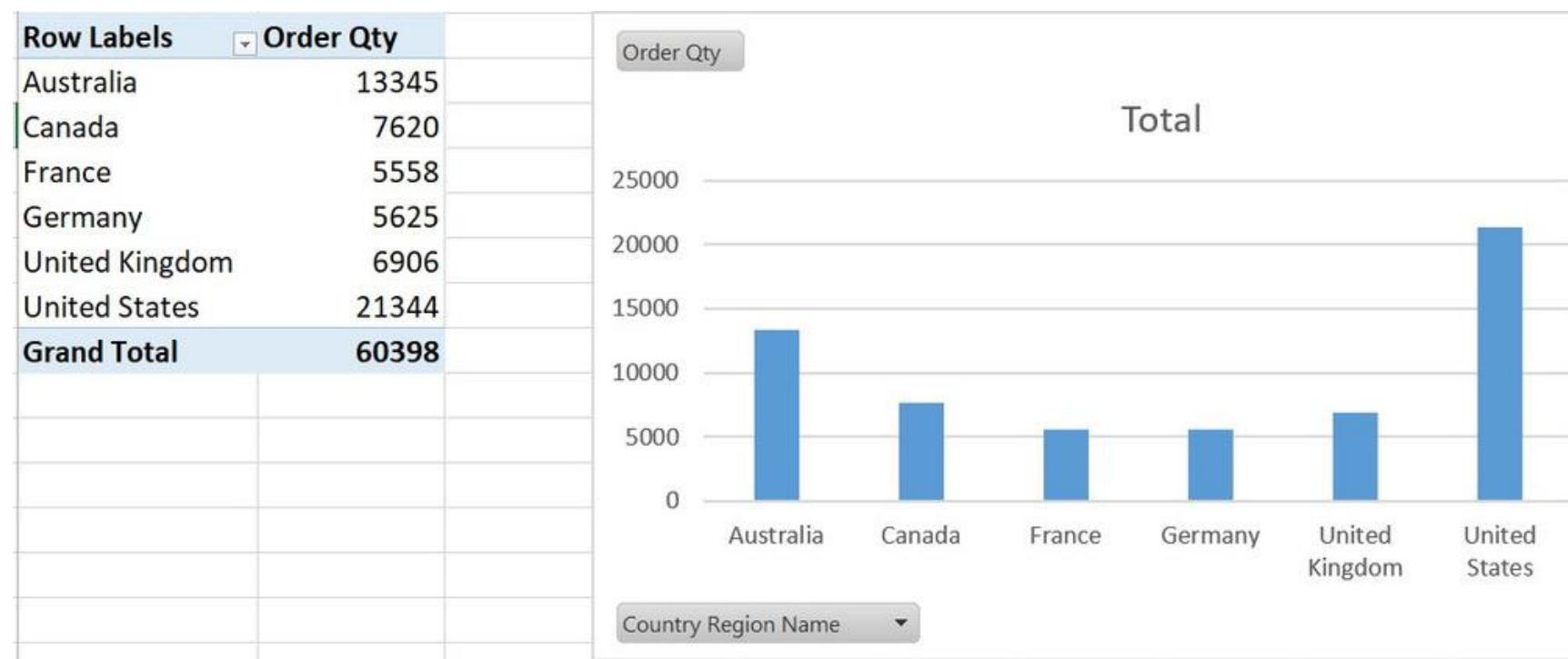
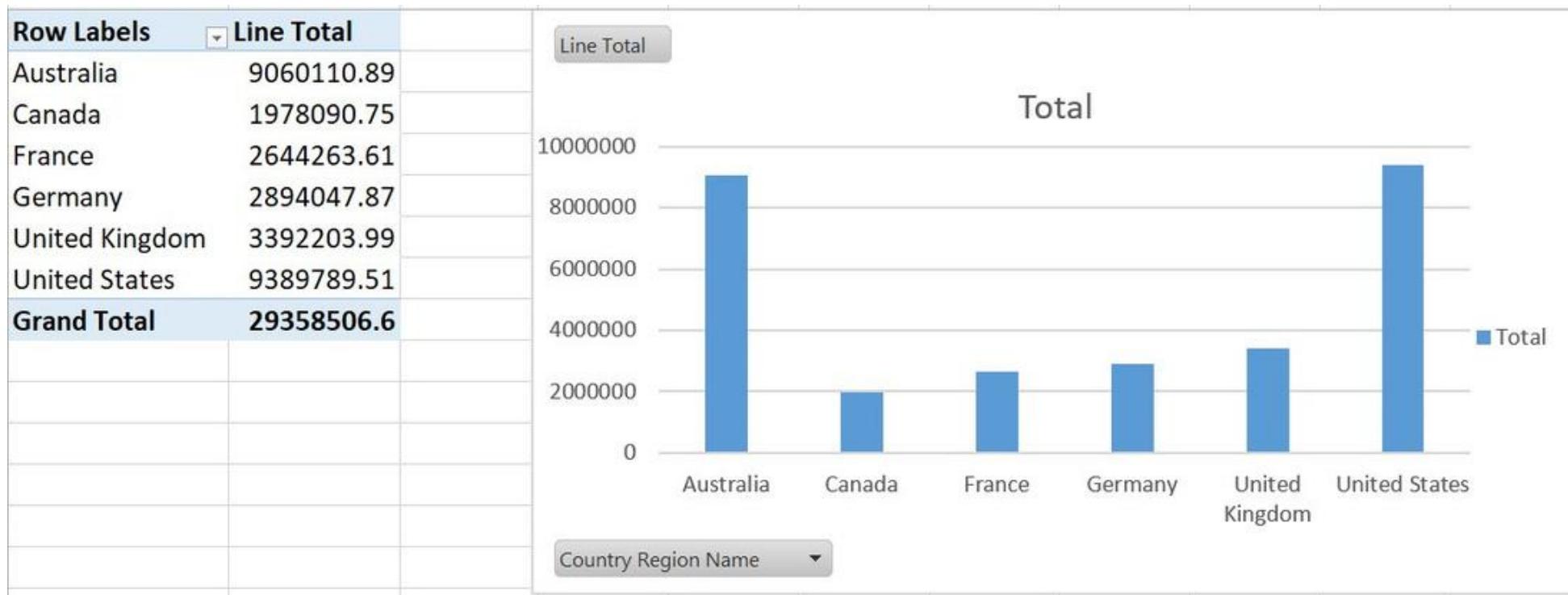
Order Qty by Name and Product Category Name





Data analysis with the Pivot Table tool in Microsoft Excel

1. Analysis of product consumption by region



Data analysis with the Pivot Table tool in Microsoft Excel



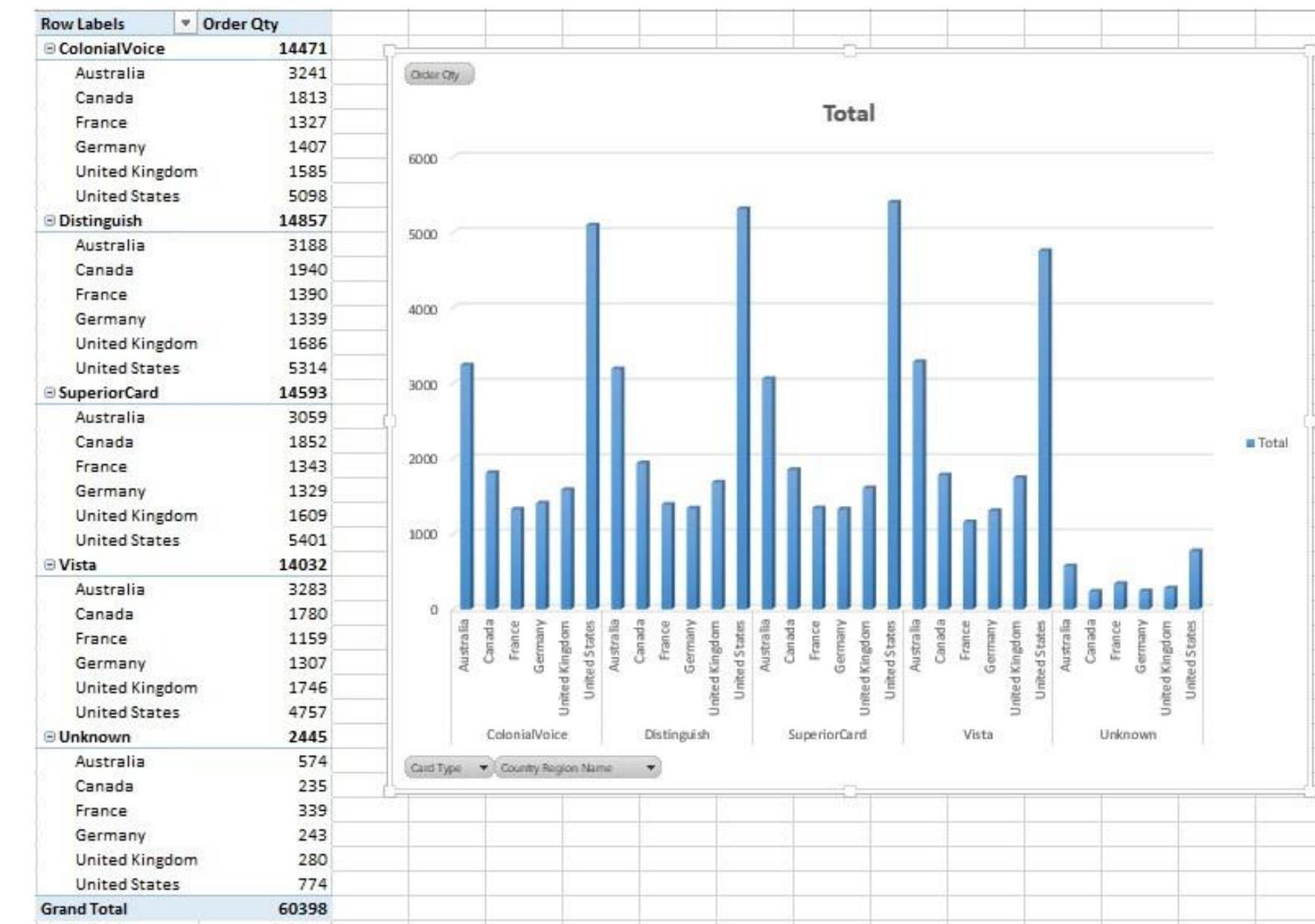
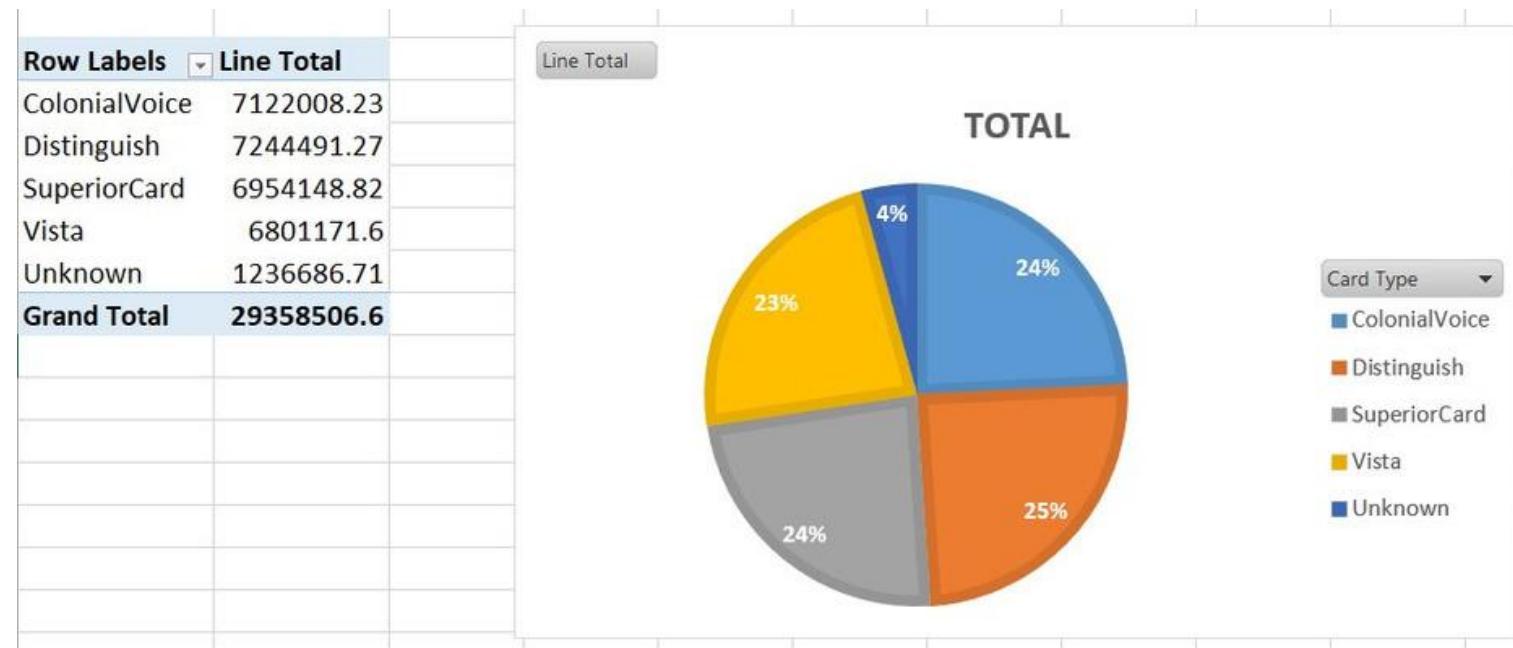
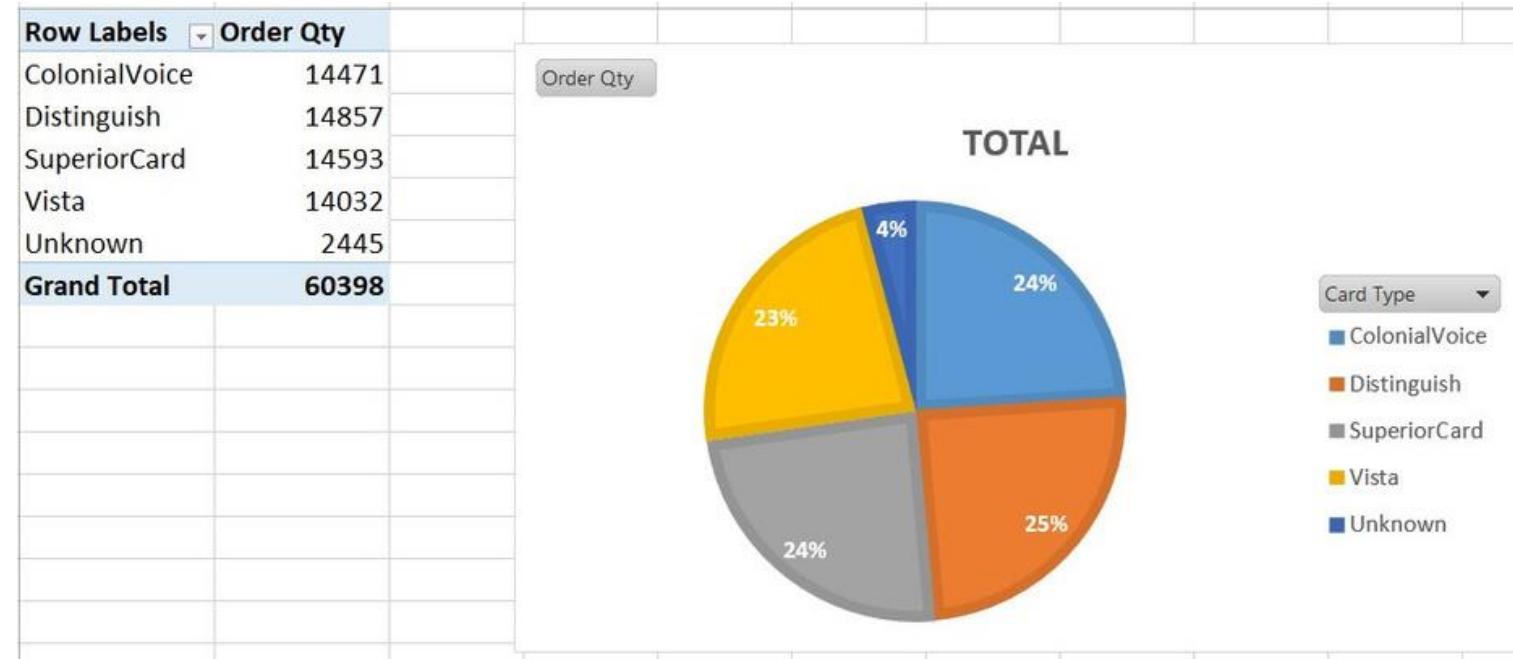
2. Top 20 of customer lifetime value (CLV) of the business



Data analysis with the Pivot Table tool in Microsoft Excel



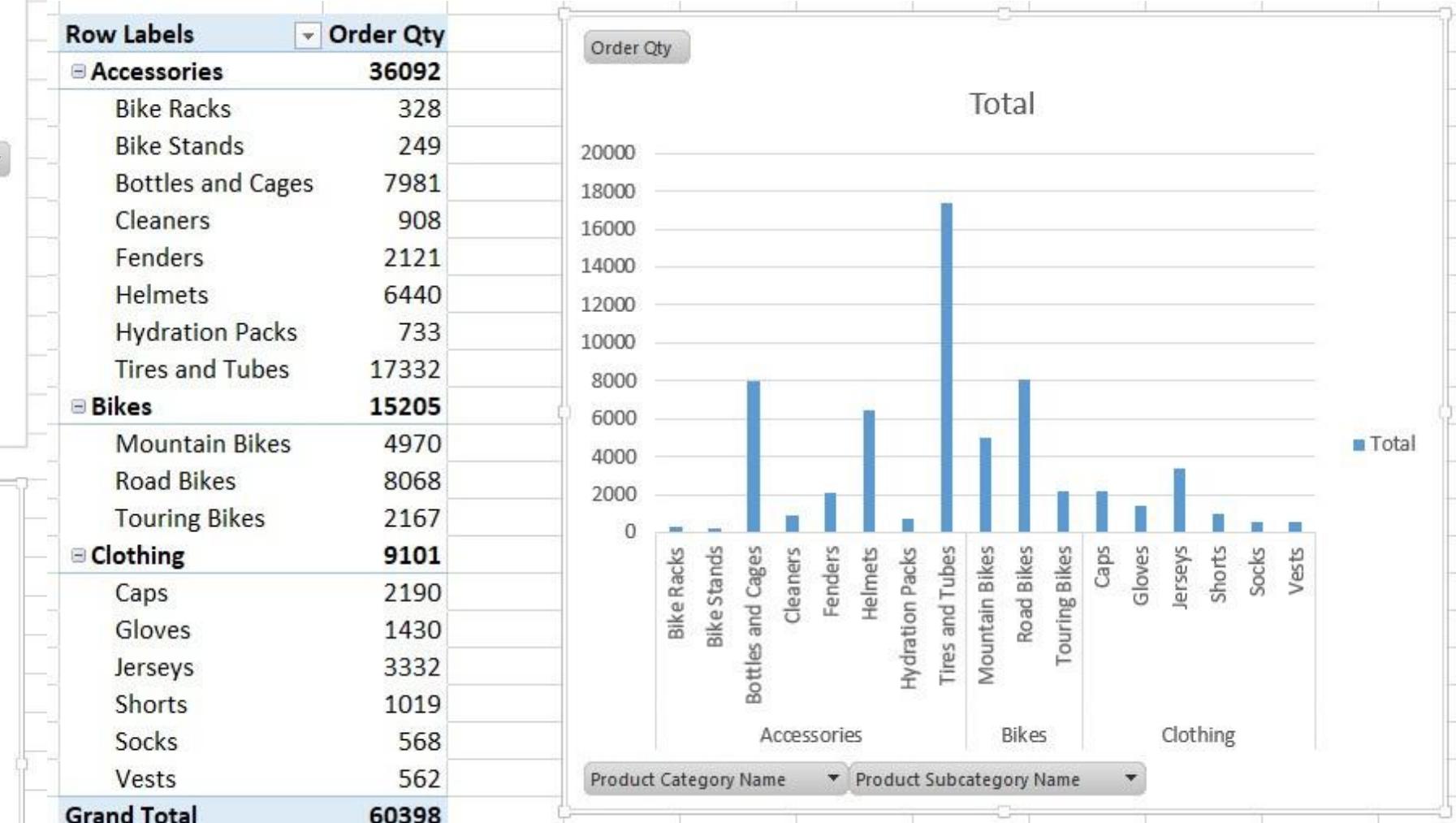
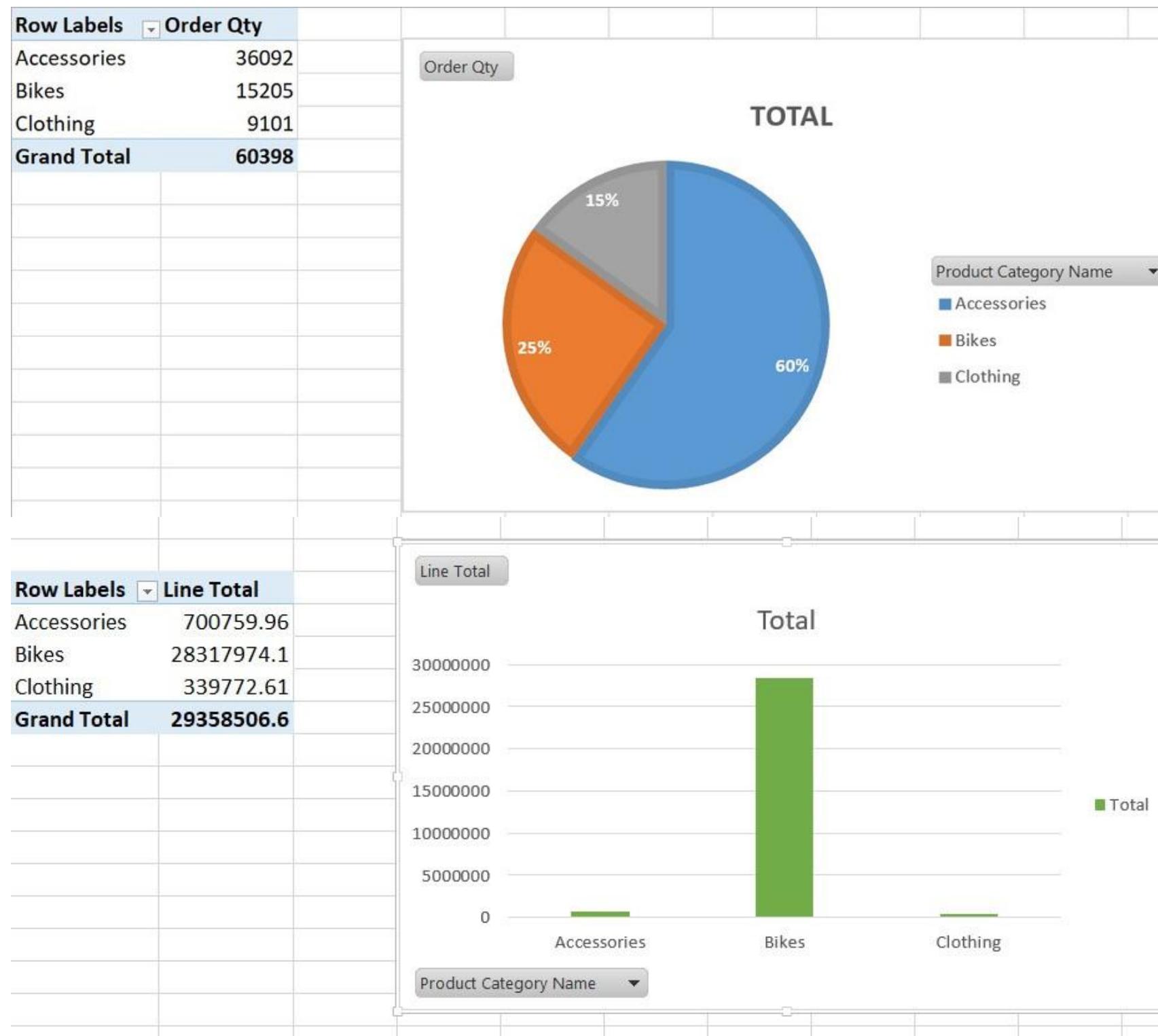
3. Analysis of customer payment card usage trends



Data analysis with the Pivot Table tool in Microsoft Excel



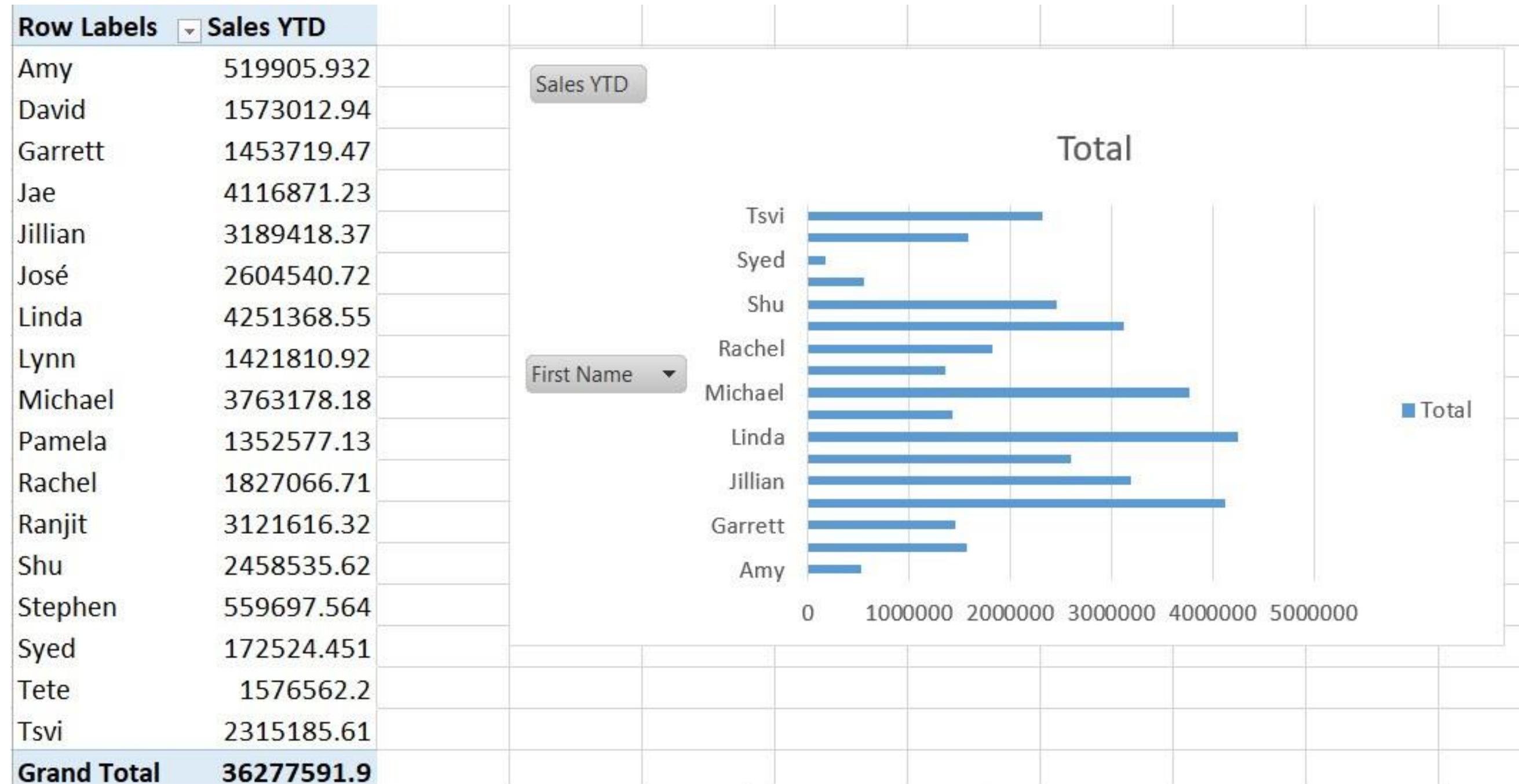
4. Analysis of products in the business



Data analysis with the Pivot Table tool in Microsoft Excel



5. Salesperson's SaleYTD analysis



Data analysis with the Pivot Table tool in Microsoft Excel



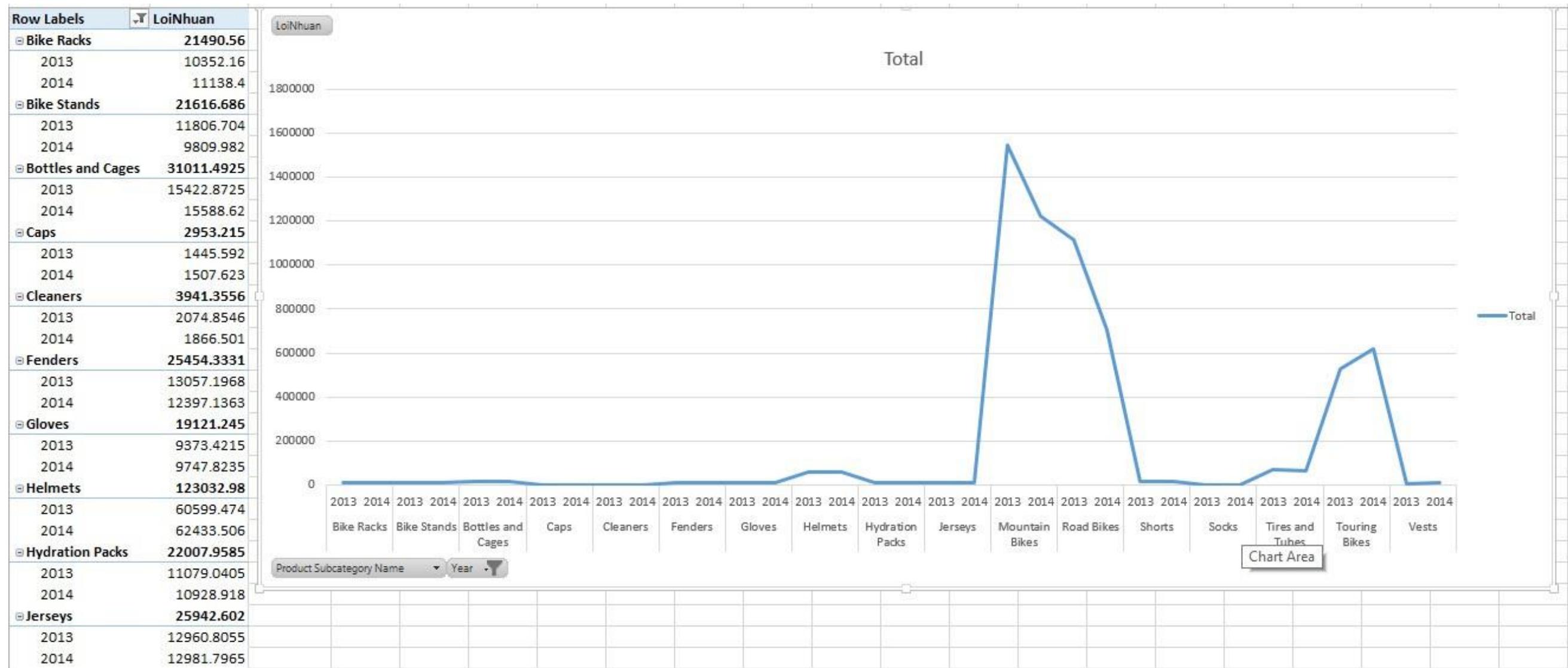
6. Analysis of promotions used



Data analysis with the Pivot Table tool in Microsoft Excel



7. Profit analysis of product sub categories in 2 years 2013 and 2014



THANKS FOR YOUR WATCHING