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P E N S

Pathway in Enterprise Systems Engineering

Pathway in Enterprise Systems Engineering (PENS)

Business Intelligence (BI)

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20-June-2022

Al-Quds University, Online via Zoom



BUSINESS INTELLIGENCE



Business Intelligence



Collection

BI



Reporting

Data
Engineering



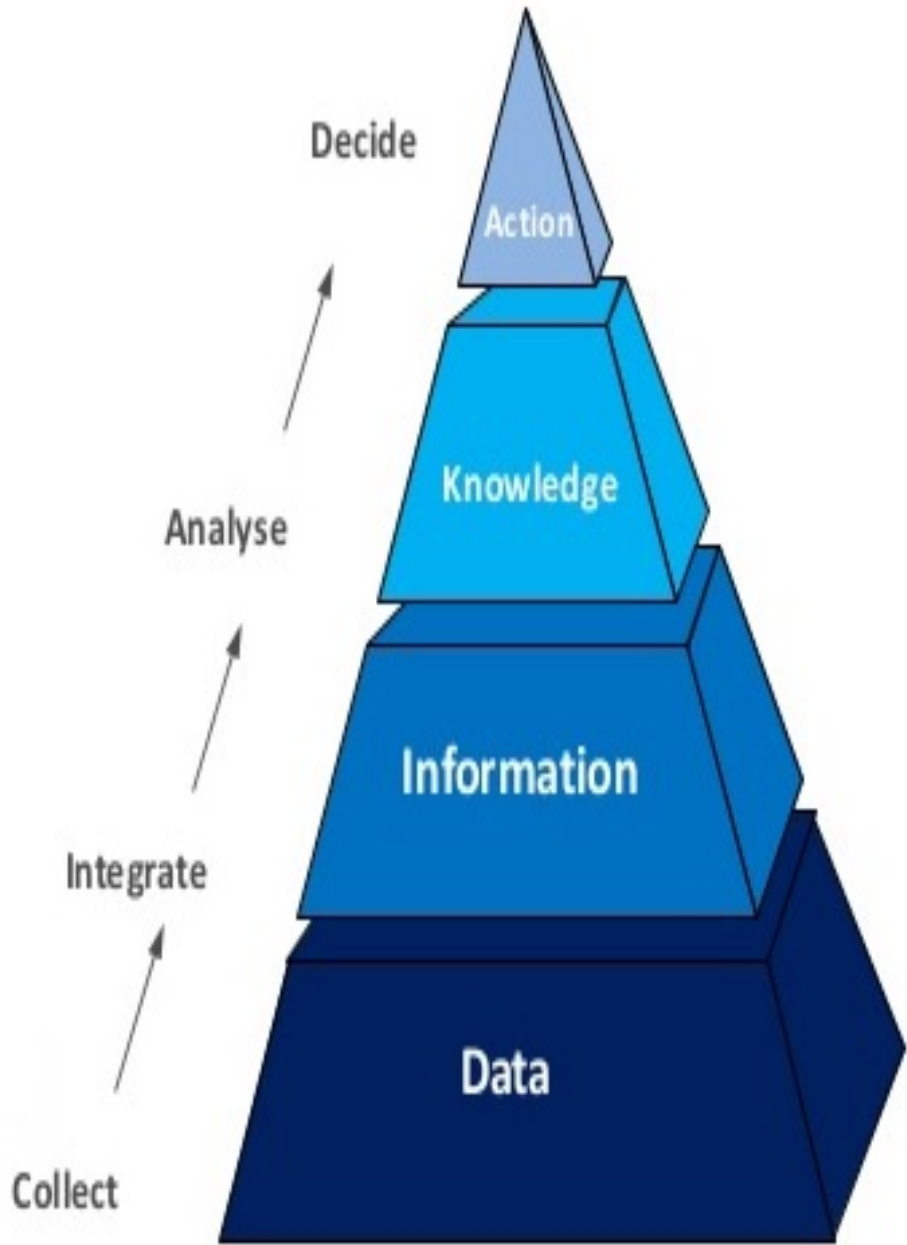
Storage



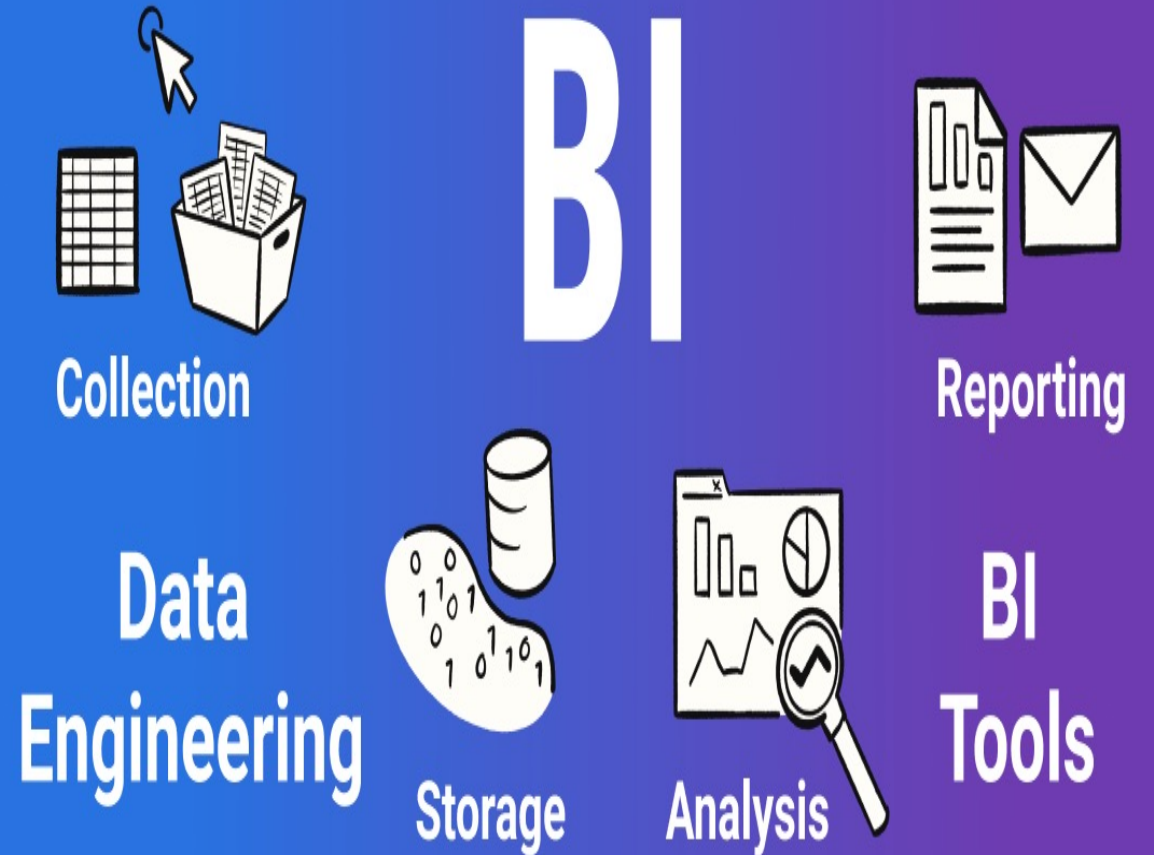
Analysis

BI
Tools





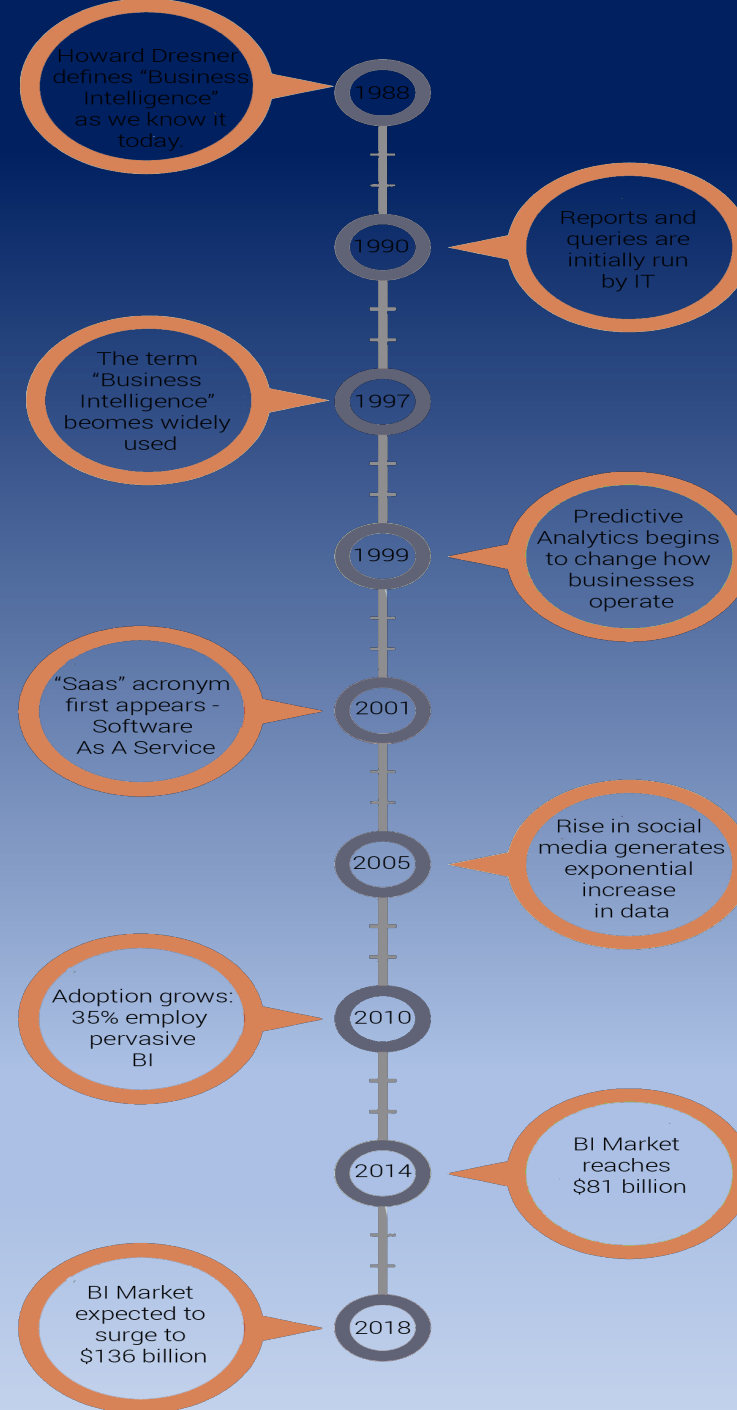
Business Intelligence



A Brief History of Business Intelligence

The term business intelligence came into use around the 1950s, and it grew out of technology called decision support

Business intelligence platforms sift through this data to find patterns and trends.

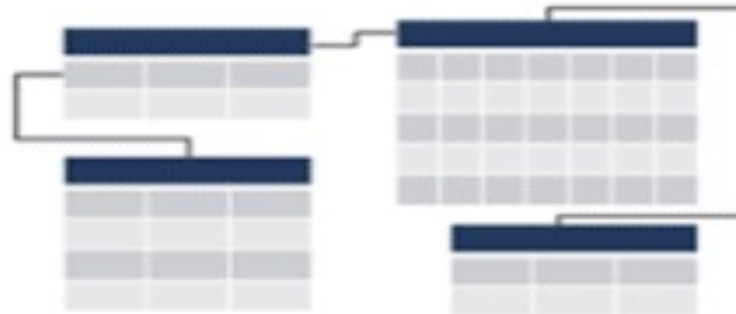




Three main forms of data

Structured

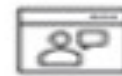
Table					



Semi-structured

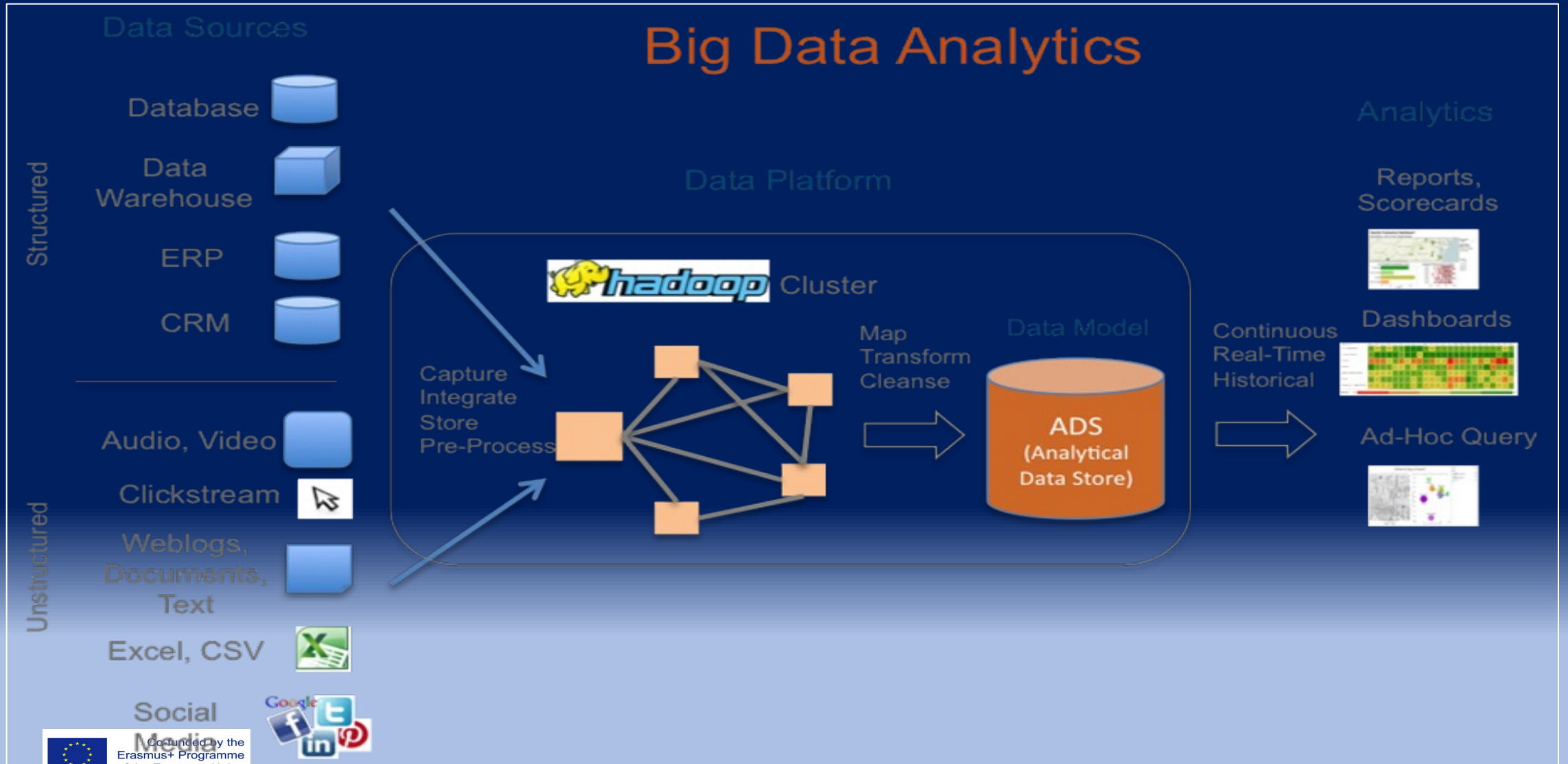
```
## Document 1 ## (  
  "customerID": "103248",  
  "name": { "first": "AAA",  
            "last": "BBB" }, "address": {  
    "street": "Main Street",  
    "number": "101", "city":  
    "Acity", "state": "NY" },  
  "ccOnFile": "yes",  
  "firstOrder": "02/28/2003" )  
## Document 2 ## (  
  "customerID": "103249",  
  "name": { "title": "Mr",  
            "forename": "AAA",  
            "lastname": "BBB" },  
  "address": { "street":  
    "Another Street", "number":  
    "202", "city": "Bcity",  
    "county": "Gloucestershire",  
    "country-region": "UK" },  
  "ccOnFile": "yes" )
```

Unstructured

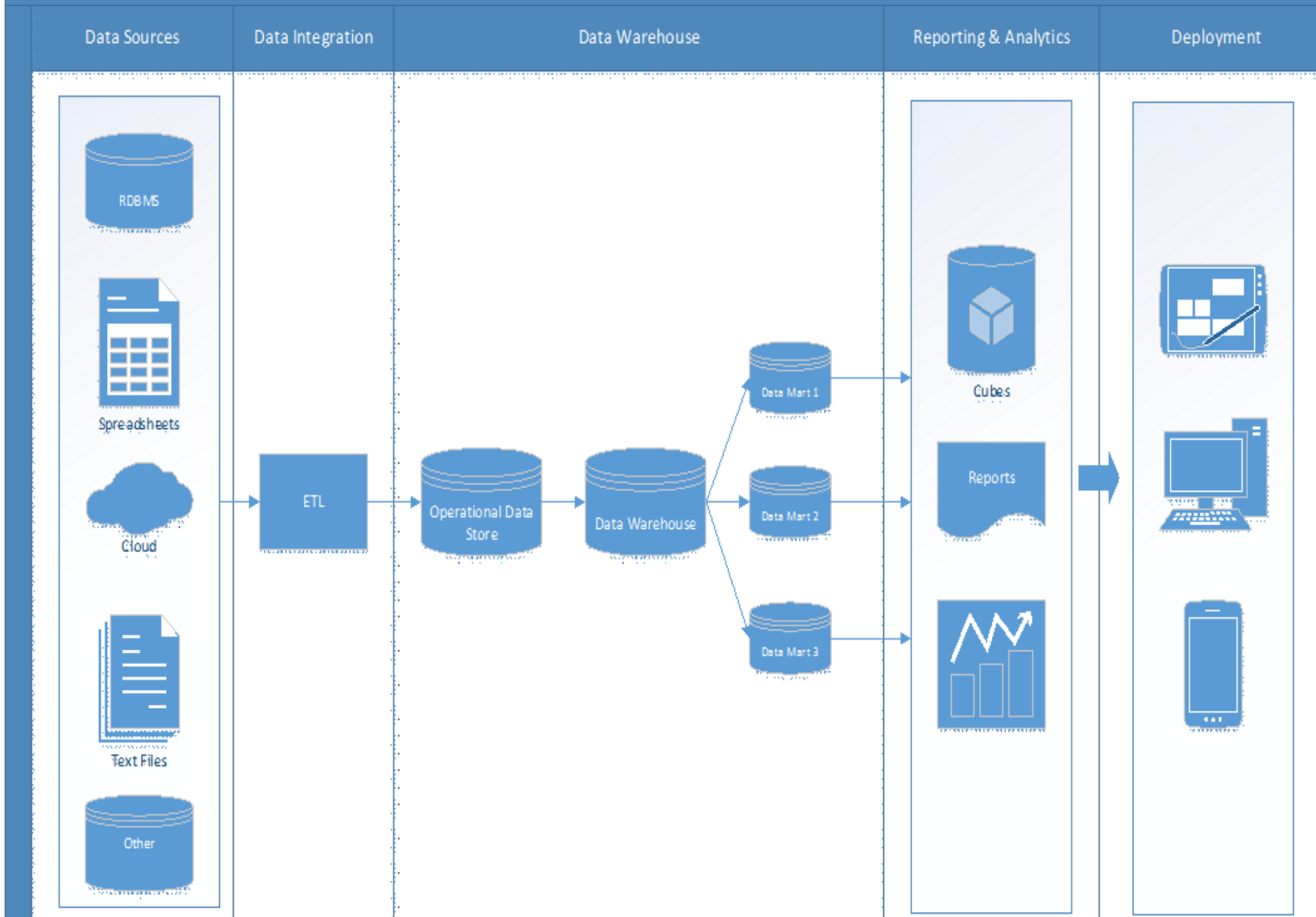


How do companies store and manage all this data?

Big Data Analytics

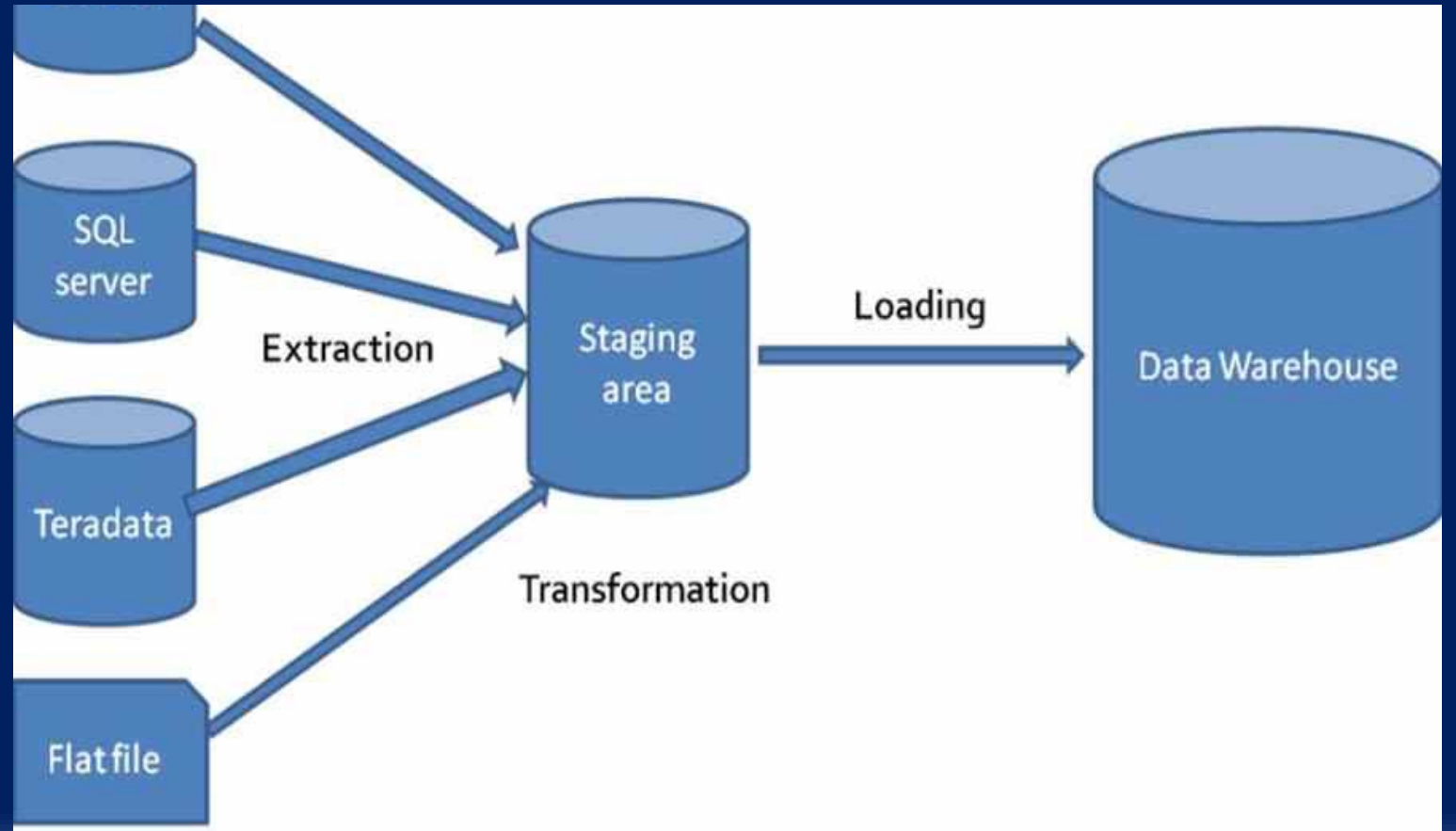


Data Warehouses are used to consolidate disparate data in a central location



So you may ask know how does information get to a central location?

Extract, Transform, and Load



Extract

Raw data is extracted from a source program (such as CRM or ERP software)

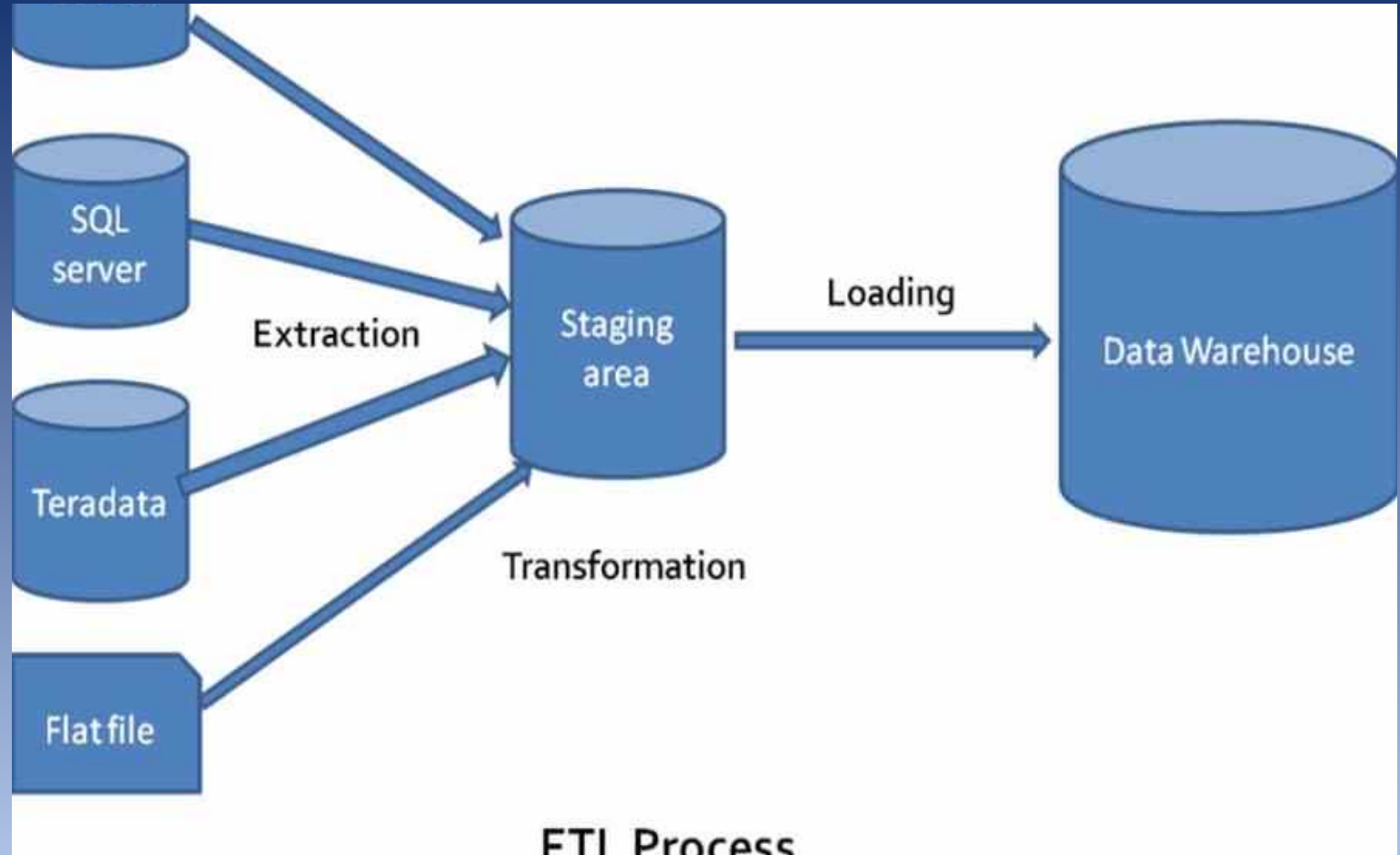
This is often the step where unstructured data (such as notes, or author information) is tagged with metadata to make it easier to find.



Transform

During this step, the data is normalized.

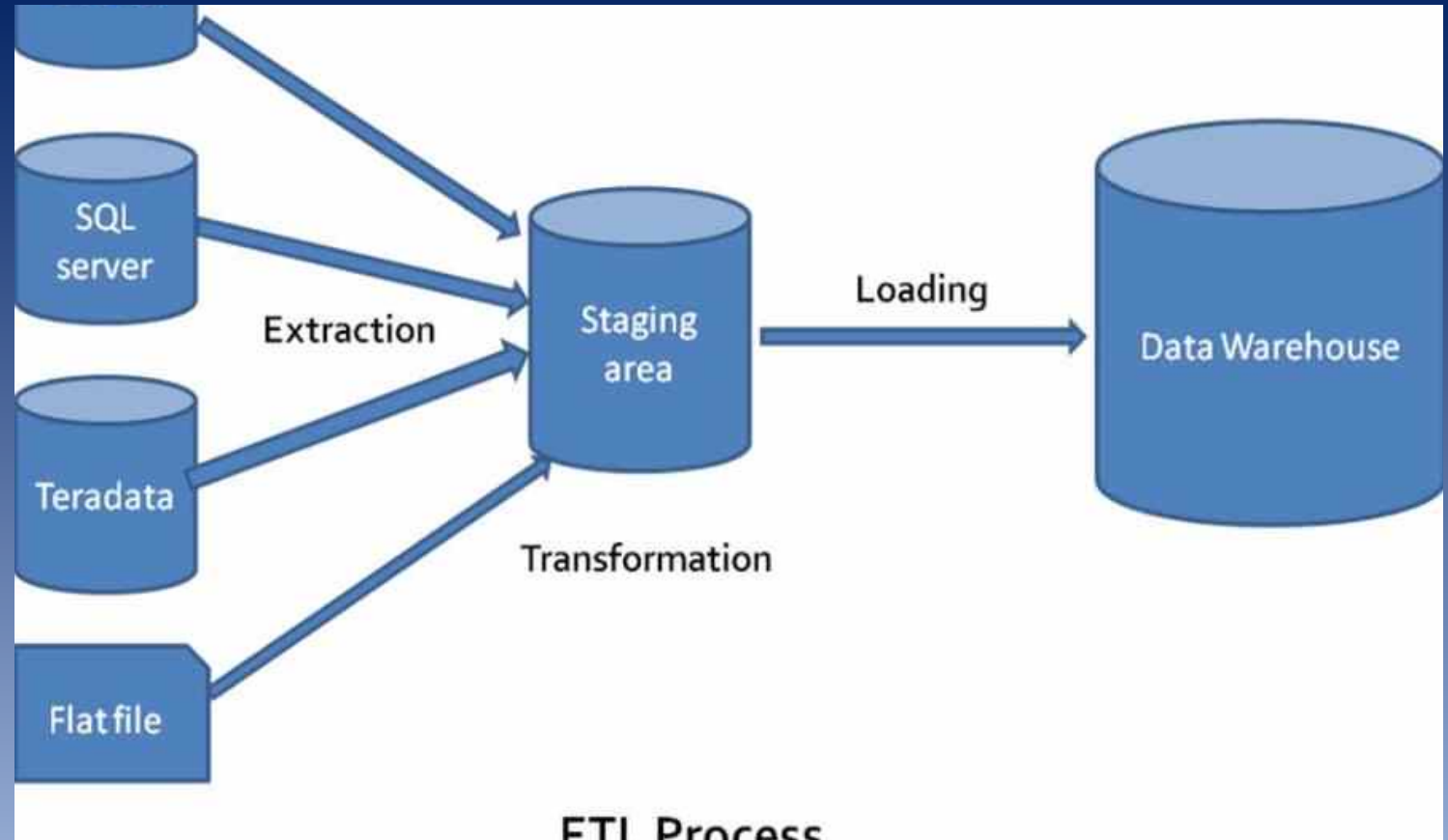
In order to properly analyze data, it must be in the same format- think apples to apples



Load

This process can occur every week, day, hour, or even minute.

The more often this is done, the more up to date analytic reports will be.



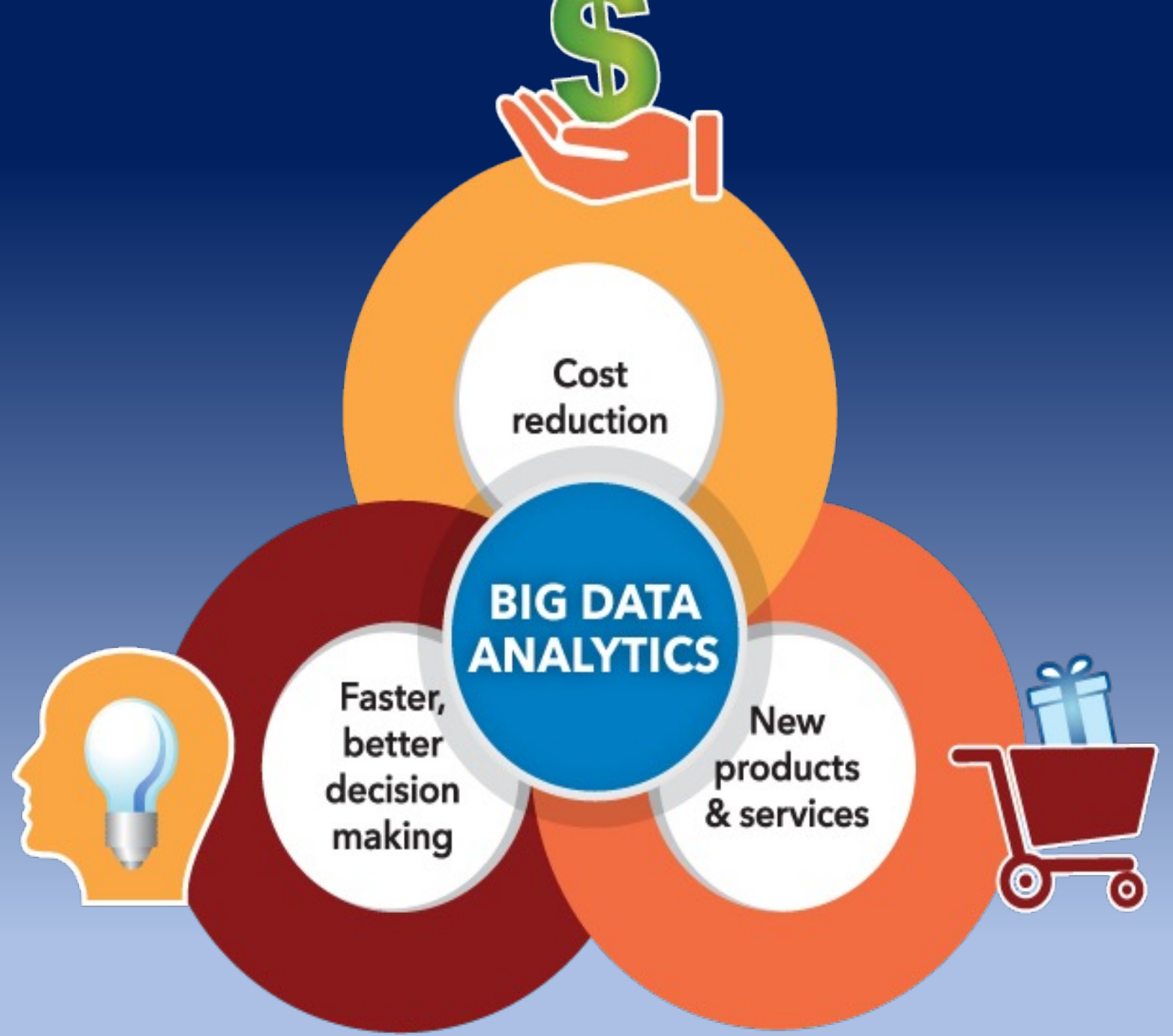
When talking
about big data
and BI,
Hadoop
comes up a lot

Hadoop is an infrastructure
for storing and processing
large sets of data across
multiple servers

Instead of centralizes files,
Hadoop uses a cluster
system that allows files to
be stored on multiple
servers



Data mining
Text analyzing
Business Analytics



Data mining



Text Analytics

Software come's through unstructured textual data to find patterns

Sources of Data

Customer Support

Technical Support

Emails & Memos

Advertising & Marketing

Human Resources

Competitors

Text Mining

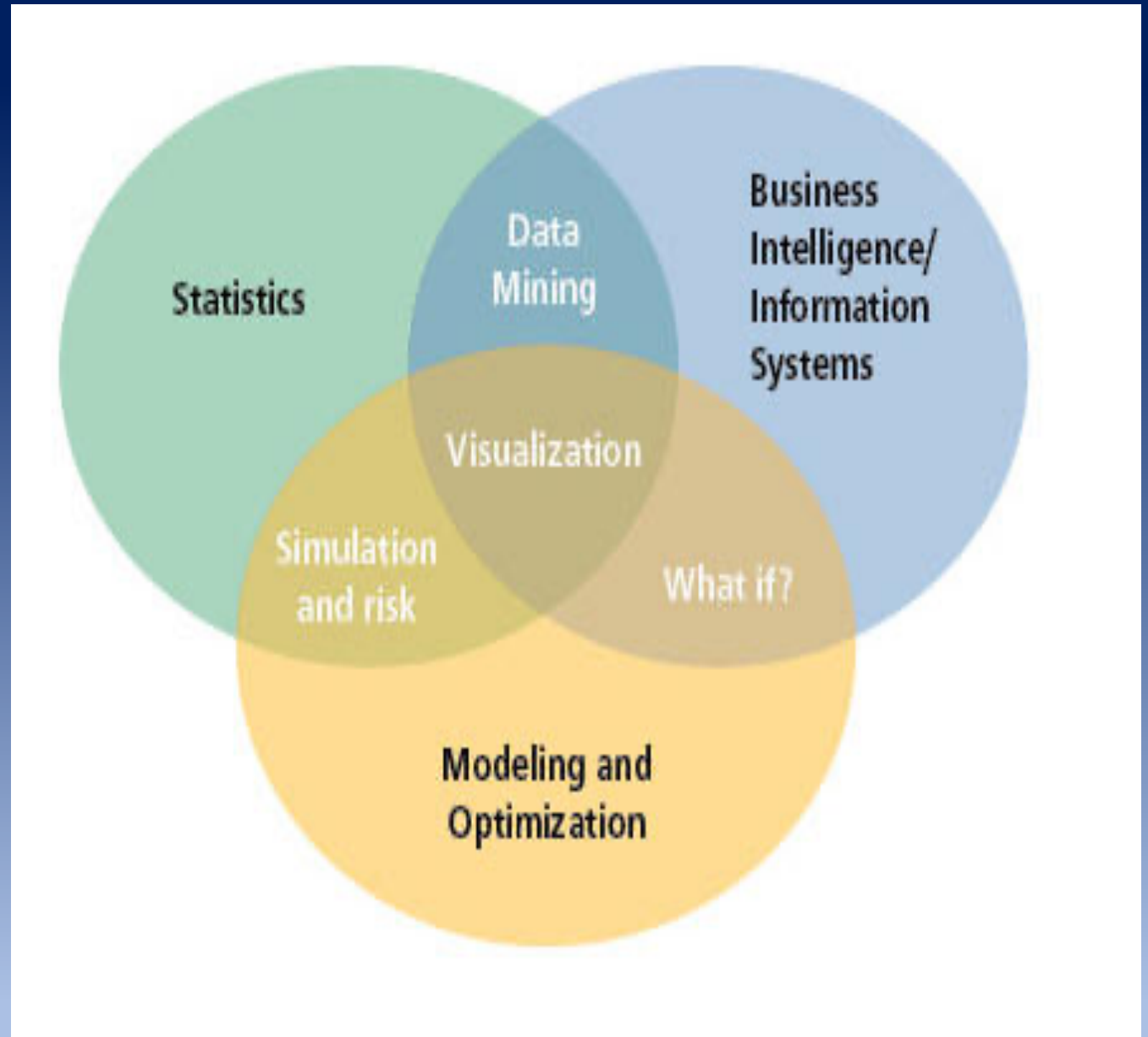


Business Analytics

Predict future trends

Gain competitive advantages

Reveal unknown inefficiencies



Three are three main forms of business analytics



Descriptive Analytics

- The base upon which other types of analytics are built
- Descriptive programs analyze past data and identify trends and relationships
- Raw data can be grouped into easily digestible pieces, such as the number of unique page-views, or the sales numbers for a specific department.

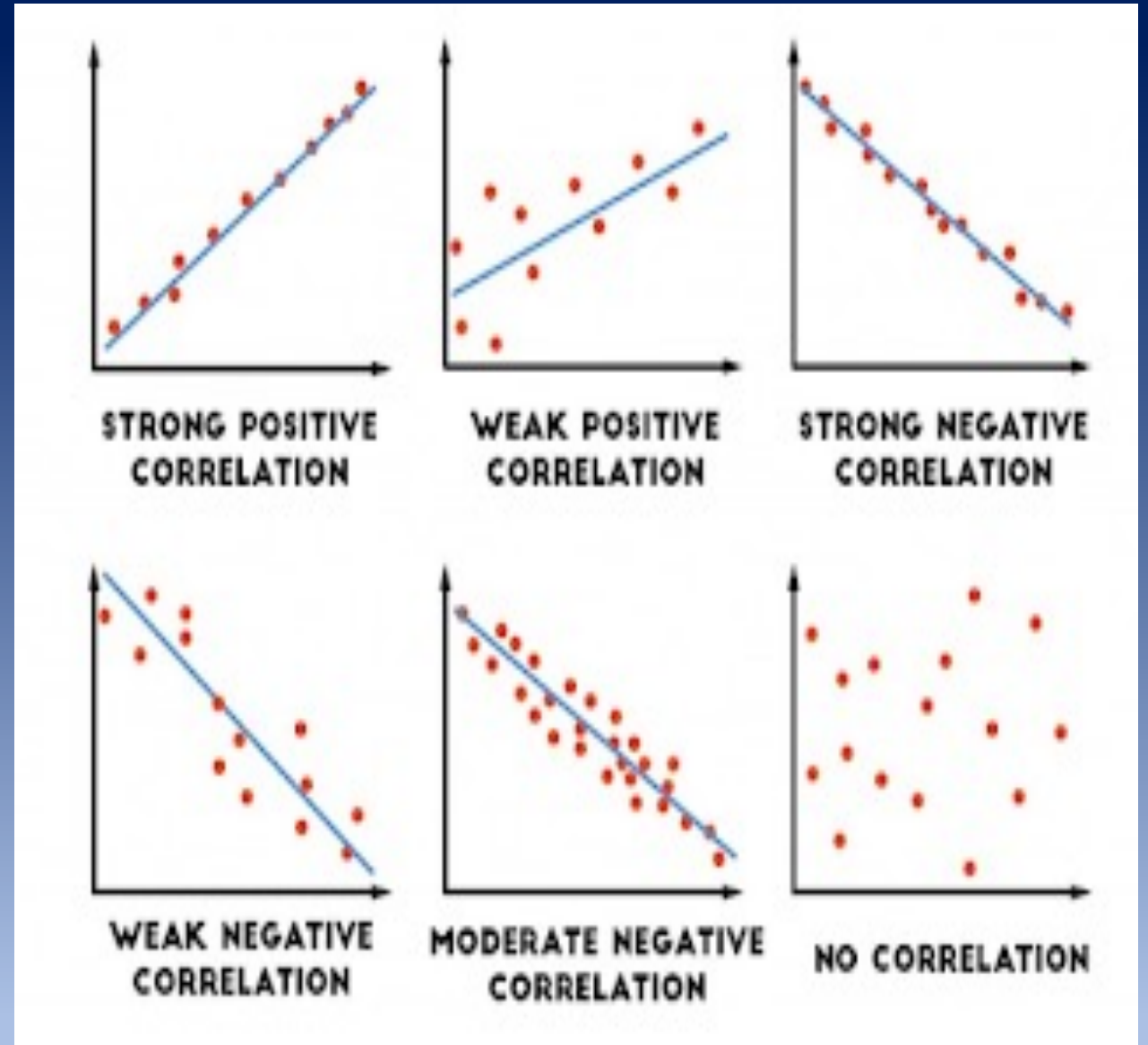


Predictive Analytics

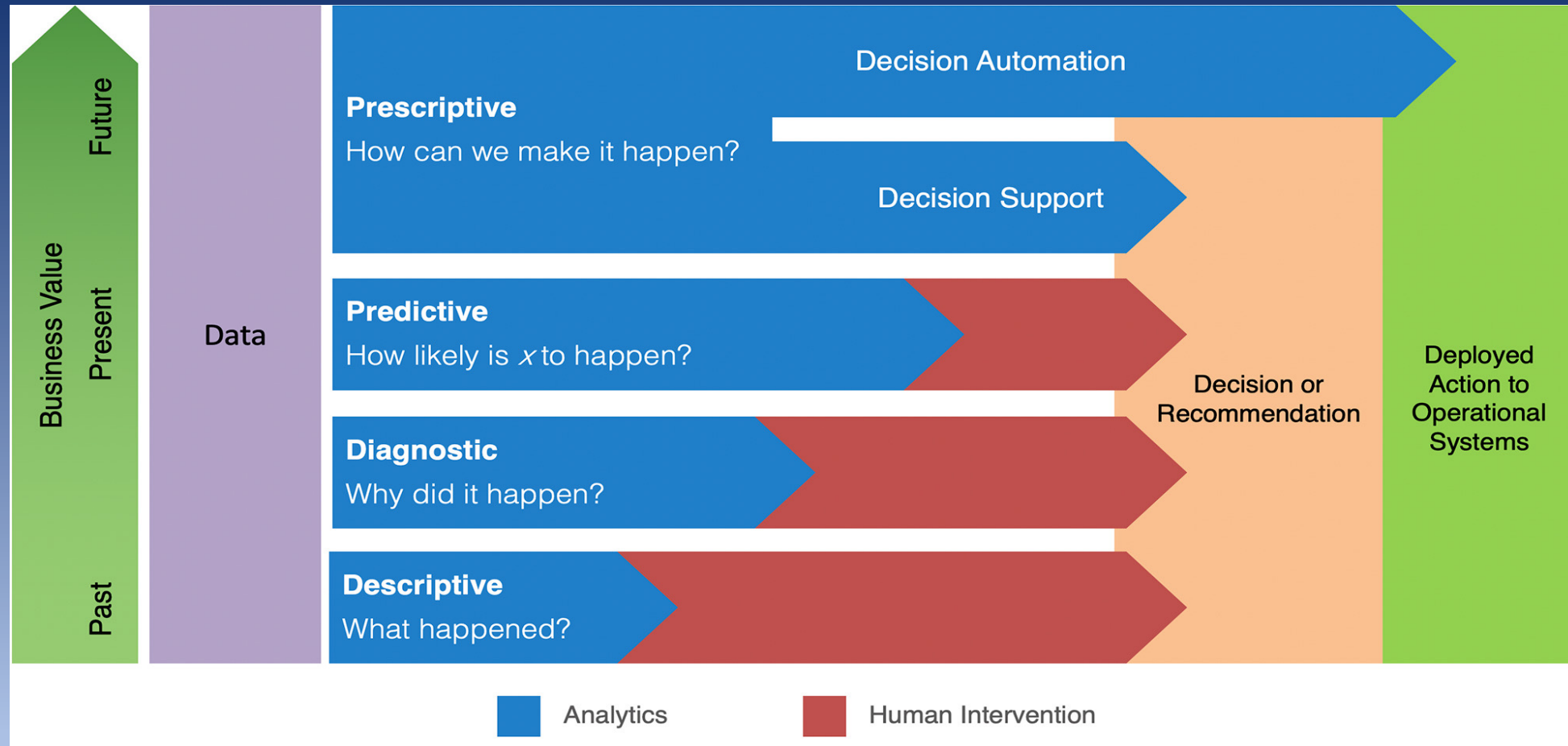
Searches for correlation between a single unit or factor, and the features that pertain to it

Find the same correlation across different data sets

Allow companies to infer future patterns from past trends



Decision Analytics



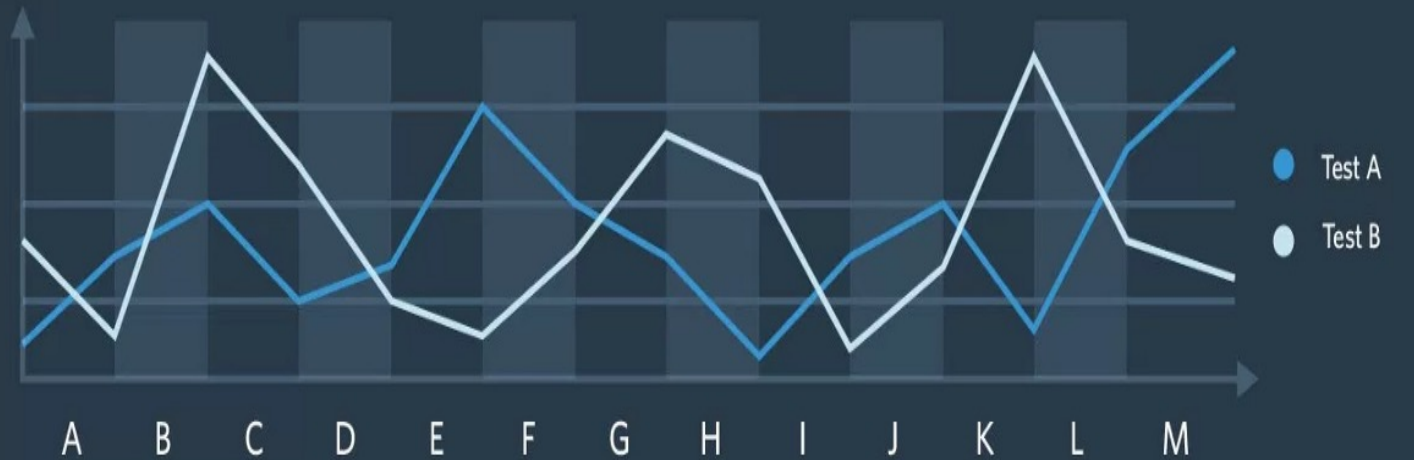
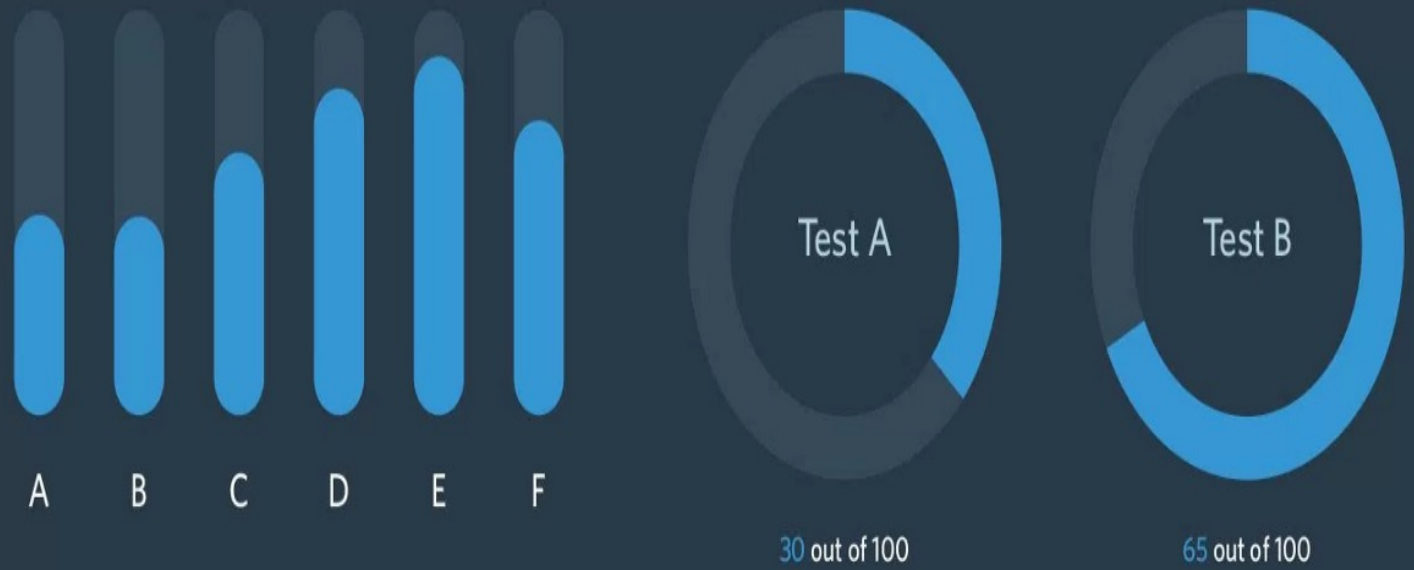
Turning data into Presentations

Business Intelligence Reporting



Co-funded by the
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Data visualization



Dashboards

Interfaces that represent specific analytics



Please Select One Customer

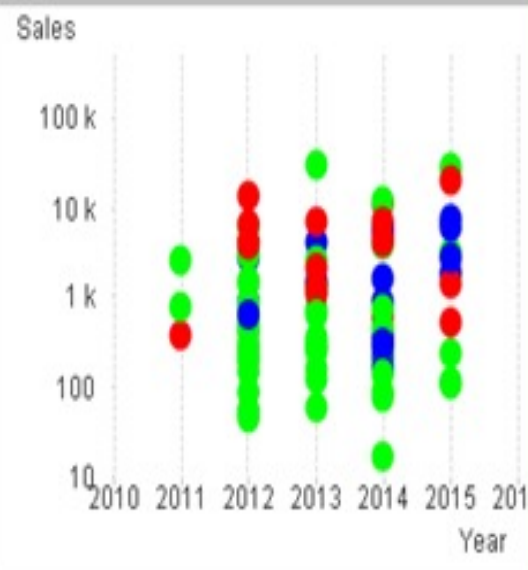
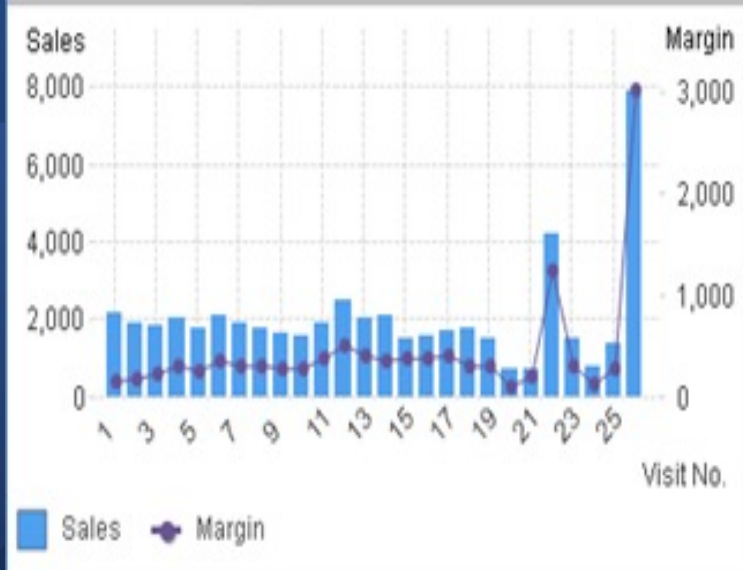
Avg Basket Price	Item per Basket	Avg No. of Days between Orders	Customer Class
\$3,345	1.7	104.2	C
Avg Basket Qty	No. of Promoted Products Bought	No. of Un-Promoted Products Bought	Total Orders
43.6	4831	4556	5492



Returns % (YTD)



Product Categorywise Sales (%)



Product Name	Sales	Margin	%Margin	Class	Support	Support Both	Confidence	Lift	/ Marketing Costs	Avg Discount
DMI Eclipse Exe...	\$21,196	\$4,556	0.2%	A	0.000107	0.000107	1.000000	9,387.00	\$3,735.61	0%
Epson FX-980 D...	\$12,144	\$2,148	0.1%	A	0.000107	0.000107	1.000000	9,387.00	\$1,399.41	6%
Global Enterpri...	\$5,827	\$1,342	0.1%	A	0.000107	0.000107	1.000000	9,387.00	\$1,049.72	2%
O'Sullivan Cherr...	\$7,208	\$1,180	0.0%	B	0.000107	0.000107	1.000000	9,387.00	\$1,004.68	7%
Sauder Camden...	\$5,115	\$1,066	0.0%	B	0.000107	0.000107	1.000000	9,387.00	\$595.48	4%
Canon 5750 Col...	\$4,952	\$885	0.0%	A	0.000107	0.000107	1.000000	9,387.00	\$1,070.34	9%
Fellowes Mobile...	\$3,028	\$851	0.0%	C	0.000107	0.000107	1.000000	9,387.00	\$155.49	4%
3.6 Cubic Foot ...	\$4,128	\$843	0.0%	A	0.000107	0.000107	1.000000	9,387.00	\$878.04	1%
Dot Matrix Print	\$2,361	\$721	0.0%	B	0.000107	0.000107	1.000000	9,387.00	\$215.22	3%

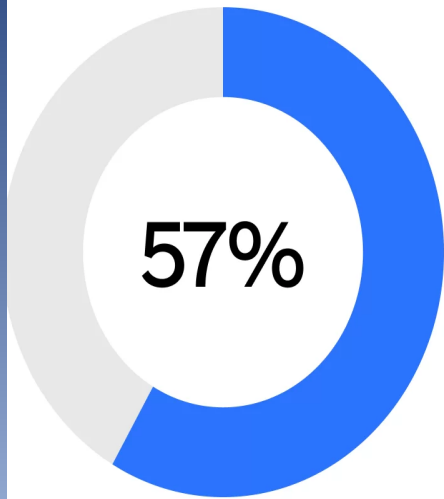
State of the Market

Where is BI headed

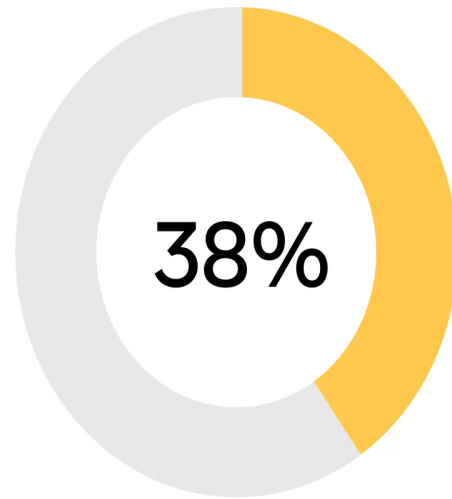
Who are the main companies...



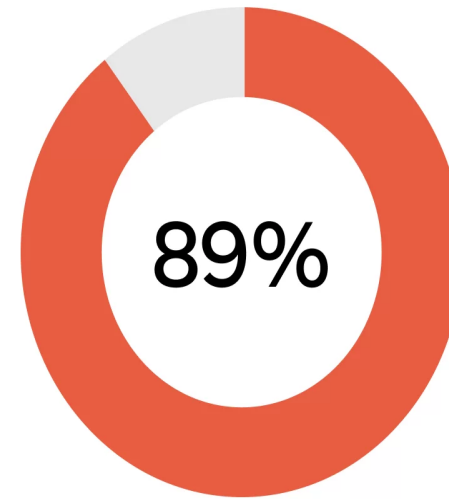
TDWI's latest survey



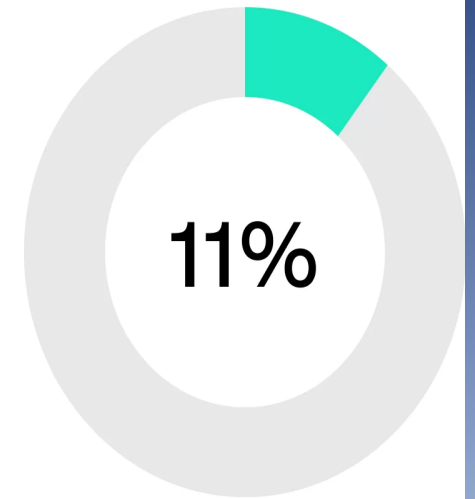
Had standardized one or more BI application in their business



Are not using business intelligence in their business



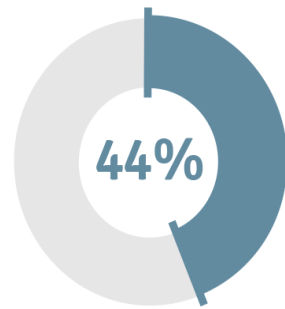
See big data & business intelligence as an opportunity



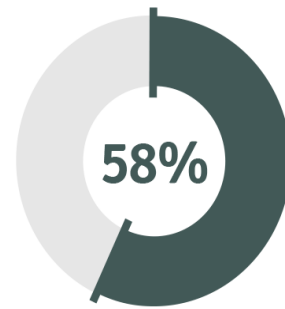
See BI as a problem



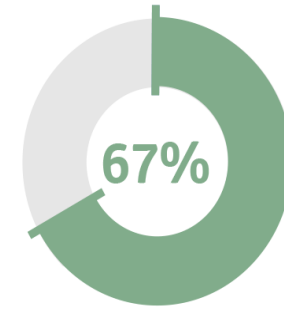
A survey by Information Week shows why companies are adopting business intelligence



List predicting customer behavior as the biggest factor driving their interest in big data



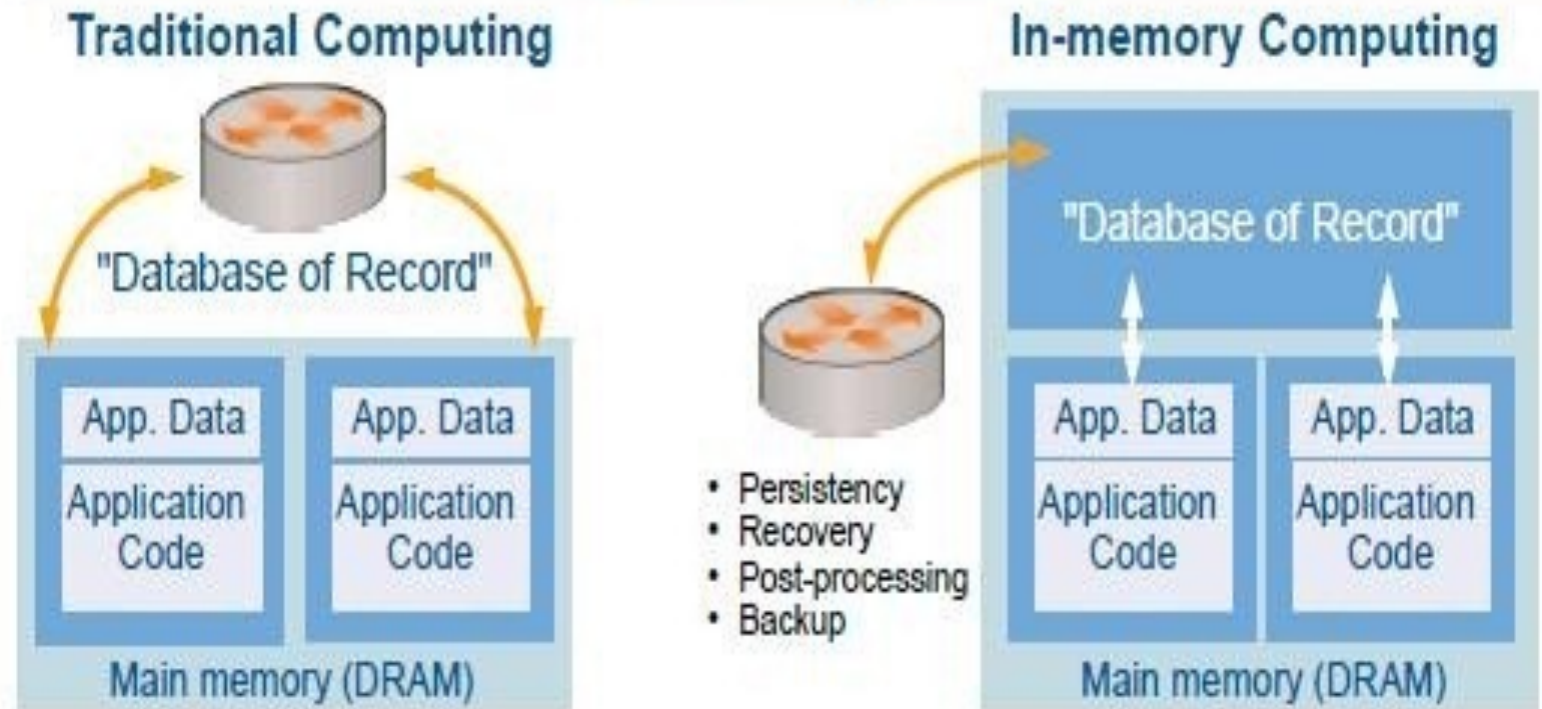
Claim accessing timely, reliable data stands as their biggest information obstacle



Answered that they were interested in using business intelligence applications in their business

Current Trends

In-Memory Processing



Why Now?

- 64-bit processors can address **up to 16 exabytes** of data
- DRAM production costs **drop by 32% every 12 months**
- 1GB of NAND flash memory **average price is 56\$ cents***
- Commodity hardware provide **multi terabyte** of DRAM
- In-memory-enabling **software** is available and proven
- IMC software is often **embedded** in products/services



Business intelligence in Action

02 IrealD Case Study

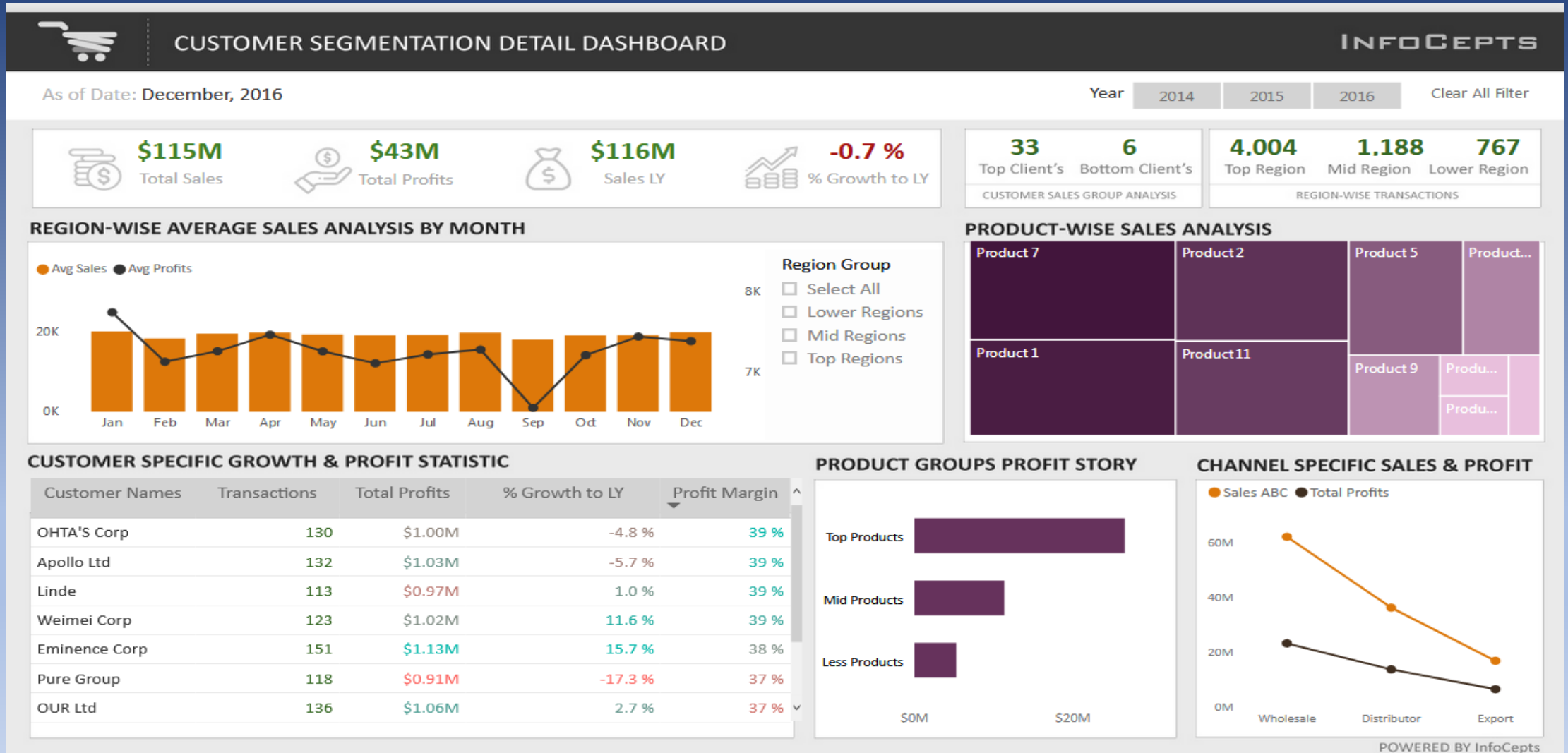
02

O2 Ireland is a large cell-phone carrier, and Telefonica Europe subsidiary

Customers were buying their pre-paid SIM cards for their phones, then leaving the country.

O2 Ireland did not want to spend marketing resources on these customers but didn't have a way to segment from their marketing efforts.

Customer Analysis Dashboard



Sales Scorecard Dashboard

SALES SCORECARD

WHERE ARE WE LOSING MONEY?

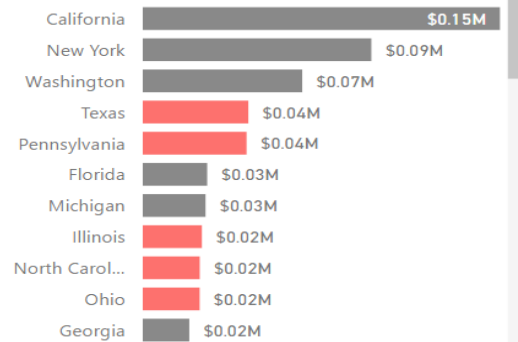
● Profitable
● Unprofitable

Segment Consumer Corporate Home Office
Year 2012 2013 2014

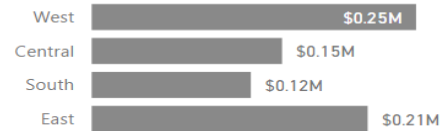
How much are we selling by Product?



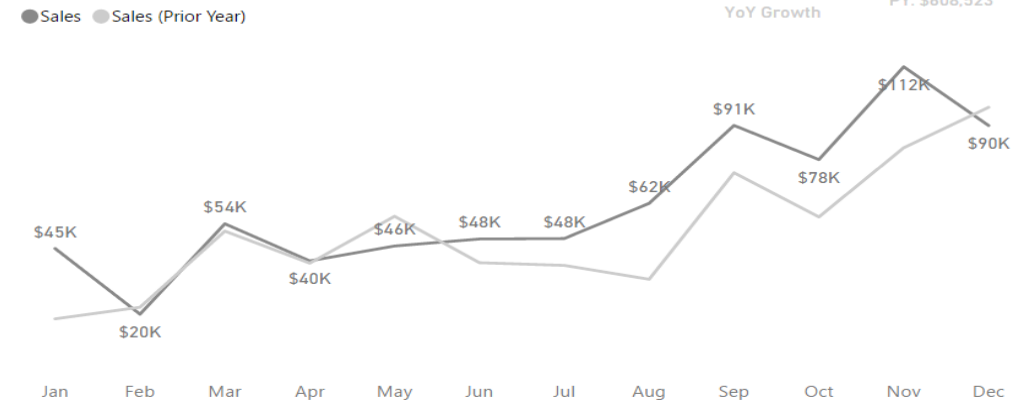
How much are we selling by State?



How much are we selling by Region?



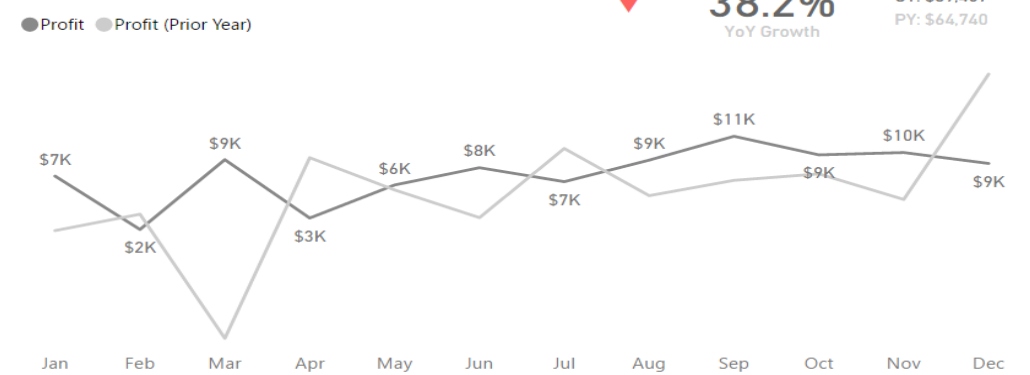
What is our Sales Trend?



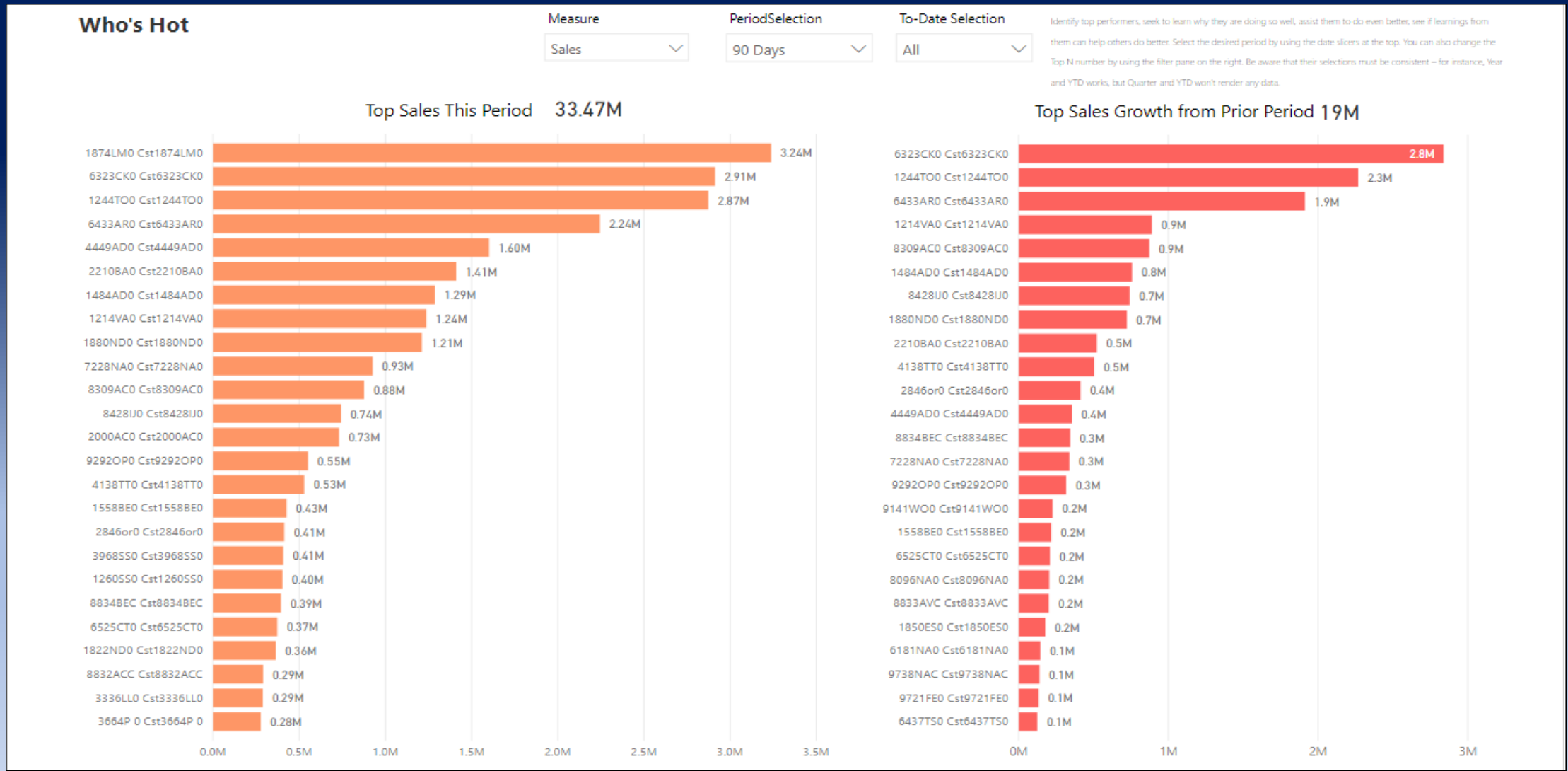
Where are we unprofitable?

	West	Central	South	East
Benjamin Swanson				
William McIntosh				
Melonie Wiesner				
Sara Kaminski				
Accident Reporting	\$3,841	(\$313)	\$1,513	\$2,825
Books, Guides & Publications	\$2,585	(\$1,318)	\$569	\$2,267
Document Holders	\$4,306	\$2,473	\$1,941	\$3,322
Driver Supplies	\$3,457	\$413	\$994	\$2,508
First Aid Kits	\$250	\$485	\$337	\$367
Forms	(\$483)	\$4,790	(\$676)	\$6,369
Labels, Markings and Stickers	\$7,424	\$2,942	\$1,946	\$3,362
Load Signs & Warning Flags	(\$166)	\$120	\$74	(\$983)
Log Books	\$12,063	\$1,014	\$2,382	\$9,573
OSHA Supplies	\$8,727	(\$3,957)	\$401	\$2,554
Placards	\$760	\$503	\$281	\$686
Seals / Security	\$82	\$112	\$42	\$70
Training	(\$2,893)	(\$986)	(\$1,153)	(\$83)
Vehicle Supplies	\$925	\$260	\$207	\$356

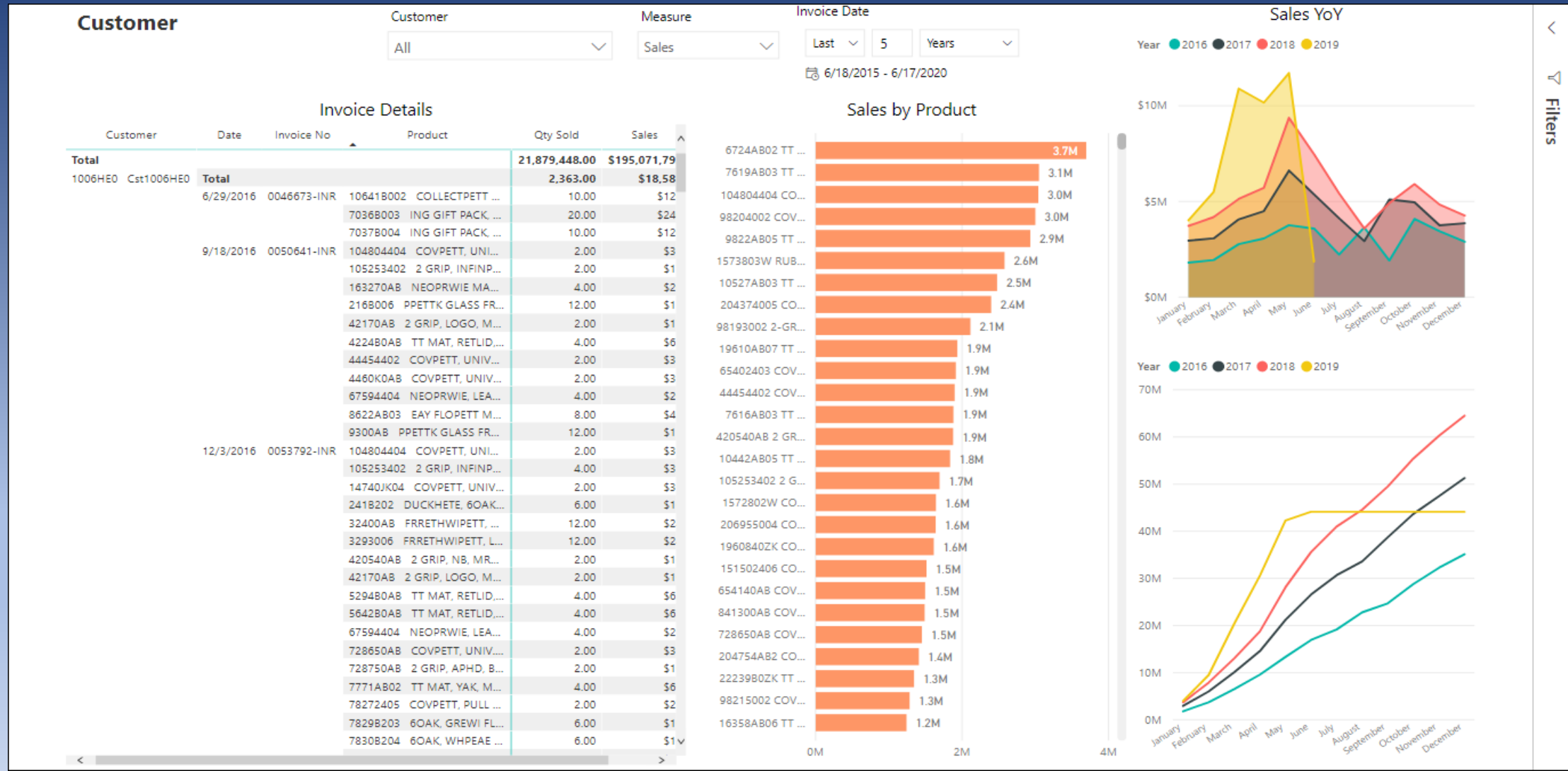
What is our Profit Trend?



Salesperson Dashboard



Salesperson dashboard



Sales Analysis Dashboard.

Customer Overview: Sales

Drop-downs set dashboard's KPIs.

Click on customer(s) to filter product chart. Right-click on a customer and select Drillthrough > Product Report for more detail.

Measure

Sales

Period Selection

Year

To-Date Selection

- After YTD
- All
- YTD

Data refreshed:

6/4/2019 12:00:00 AM



1,511,436
 Var from Prior Period
21.91 %
 Var % from Prior Period

Customer	Prior Period Selection	This Period Selection	Var from Prior Period
1214VA0 Cst1214VA0	685,175	695,966	10,790
2000ACO Cst2000ACO	583,177	391,791	-191,386
1244TOO Cst1244TOO	566,450	928,748	362,299
6433ARO Cst6433ARO	500,834	689,749	188,915
8428IU0 Cst8428IU0	450,193	326,759	-123,433
1260SS0 Cst1260SS0	383,628	163,544	-220,084
1484AD0 Cst1484AD0	333,536	549,128	215,592
3336LL0 Cst3336LL0	318,927	171,108	-147,819
7228NA0 Cst7228NA0	243,150	650,879	407,729
1822ND0 Cst1822ND0	239,498	22,204	-217,294
6333CK0 Cst6333CK0	186,545	8,860	-177,685
1850ES0 Cst1850ES0	176,168	149,721	-26,447
6824BE0 Cst6824BE0	168,302	1,440	-166,862
8096NA0 Cst8096NA0	151,253	130,620	-20,633
1558BE0 Cst1558BE0	133,947	167,943	33,996
6203IU0 Cst6203IU0	124,148	60,054	-64,095
5371LL0 Cst5371LL0	116,073	141,033	24,960
2846or0 Cst2846or0	107,506	66,256	-41,250
5137RT0 Cst5137RT0	91,214	8,310	-82,904
7208OLO Cst7208OLO	84,661		-84,661
3664P 0 Cst3664P 0	83,612	209,596	125,984
676OR0 Cst676OR0	80,082	80,916	834
7973CK0 Cst7973CK0	66,140	27,711	-38,429
4969EDO Cst4969EDO	54,749	31,243	-23,505
3968SS0 Cst3968SS0	50,877	135,850	84,973
8618AC0 Cst8618AC0	50,022	10,424	-39,598
6477MA0 Cst6477MA0	43,411	59,125	15,714
3668MA0 Cst3668MA0	40,160	1,600	-38,560
Total	6,899,607	8,411,043	1,511,436

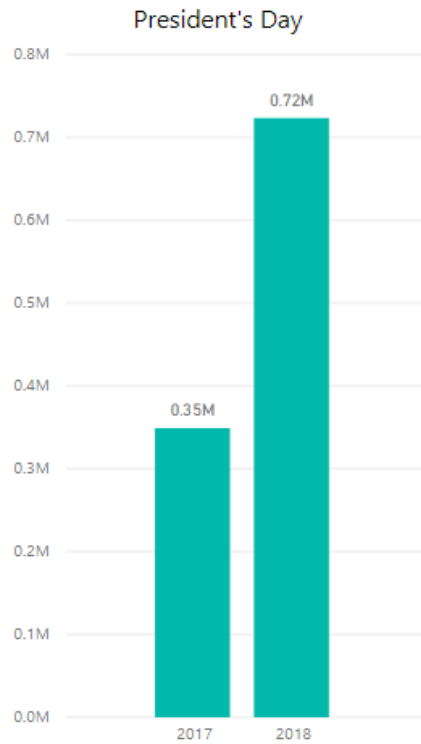
Product	This Period Selection	Var from Prior Period
19610A807 TT MAT, YAK, INFINPEAY, MRETSY ...	676,516	293,570
1960840ZK COVPETT, UNIVPETTPETL, INFINPE...	593,060	202,740
104804404 COVPETT, UNIVPETTPETL F, INFINP...	587,436	149,016
10527A803 TT MAT, YAK, INFINPEAY, STWIEING	573,814	289,088
196073403 2-GRIP, INFINPEAY, MRETSY OAK	355,322	142,744
105253402 2 GRIP, INFINPEAY, STWIEING	336,769	89,269
10442A805 TT MAT, YAK, LEAFBU, PINK, MO	327,146	53,245
104815402 COVPETT, BWICH, INFINPEAY, STWI...	195,830	9,124
10532A804 TT MAT, YAK, LEAFBU PINK, STWIEI...	171,702	66,576
196095404 COVPETT, BWICH, INFINPEAY, MRE...	160,733	-84,492
106314003 NIV. F, APHD, RT OUTFPEATPETTS, ...	156,506	-10,056
20474A8AB COVPETT, UNIVPETTPETL, INFINPE...	123,447	-46,078
14740JK04 COVPETT, UNIVPETTPETL F, MAX-4,...	108,441	23,472
106325003 WICH, AP, RT OUTFPEATPETTS, ZWIE	73,599	14,382
202545403 COVPETT, BWICH, PINK, LEAFBU, ST...	72,731	65,787
171958034 WRAP, LARGEPK, MRETSY OAK	71,497	55,873
171940AB6 WRAP, LARGEPK, STWIEING	68,218	42,082
10514A803 EAY FLOPETT MAT, AP YAK, RTO	67,566	40,572
1006284.L S BUCKMPPETTK YAK YAKLEAF.CHR...	66,551	13,487
163778028 A-POCKET FSTWIEPETT, MRETSY O...	64,512	64,512
163798028 A POCKET FSTWIEPETT, STWIE OUT...	63,864	63,864
204765405 COVPETT, BWICH, INFINPEAY, MRE...	63,842	61,471
100664.XL S BUCKMPPETTK YAK YAKLEAF.CHR...	62,378	10,286
14867A802 TT MAT, YAK, AP, BWIE COLLECTPE...	59,944	-121,781
153978008 OOK, MRETSY OAK INFINPEAY	58,426	58,066
154118008 OOK, STWIE OUTFPEATPETTS	58,140	58,140
196715002 FRRETHWIPETT, PLRETTIMSTWIETE,...	57,334	48,078
1583920.L LEAF'S BUCKMPPETTK YAK YAKLEAF,...	51,996	4,914
1583720.M LEAF'S BUCKMPPETTK YAK YAKLEA...	49,977	11,810
10070.XXL S BUCKMPPETTK YAK YAKLEAF.CHR...	48,334	15,884
171968036 WRAP, LARGEPK, STWIE OUTFPEAT...	47,979	17,138
1583500.C LEAF'S BUCKMPPETTK YAK YAKLEAF...	46,577	30,253
Total	8,411,043	1,511,436

Filters

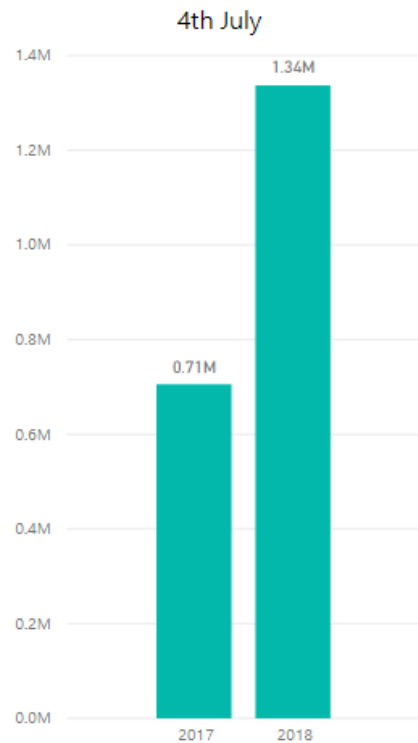
Seasonal Analysis

Seasonal Sales: Holidays

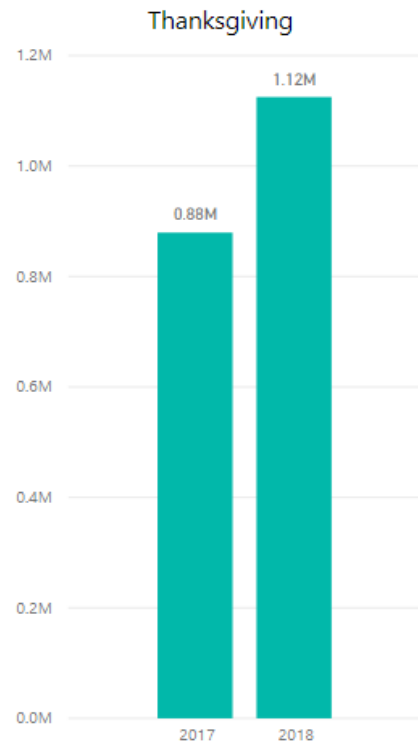
Data refreshed
6/4/2019 9:23:45 AM



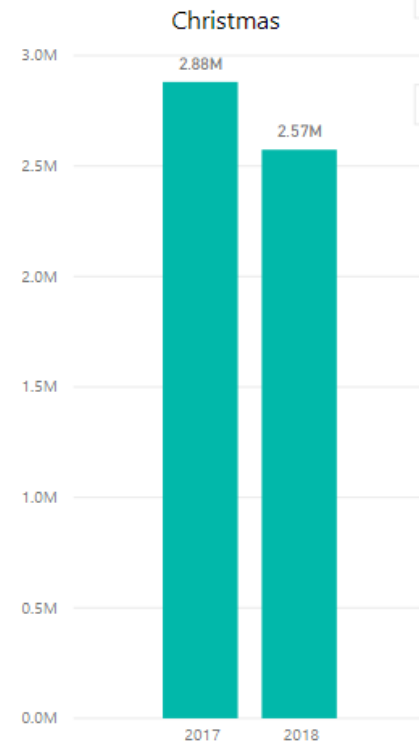
Year	Season Pres Day Var %
2018	107.25 %
2017	-35.00 %



Year	Season 4th July Var %
2018	89.50 %
2017	42.38 %



Year	Season Thanksgiving Var %
2018	27.91 %
2017	0.77 %



Year	Season Christmas Var %
2018	-10.65 %
2017	26.39 %

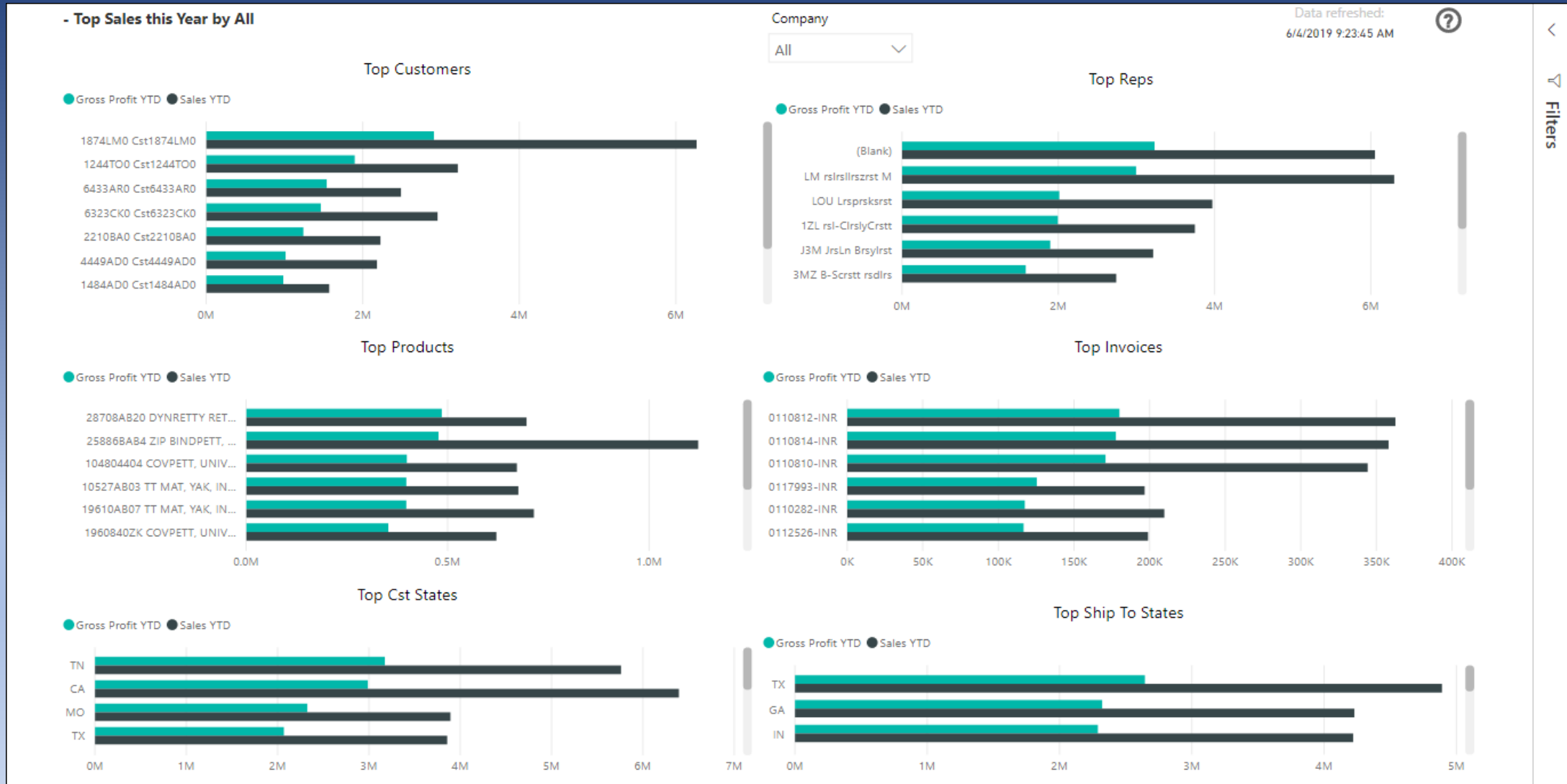
Company ID
All

Salesperson
All

- Year
- Select all
 - 2010
 - 2011
 - 2012
 - 2013
 - 2014
 - 2015
 - 2016
 - 2017
 - 2018
 - 2019
 - 2020
 - 2021
 - 2022

Filters

Top Sales



Top Sales Increase and Decrease by Customer

- Top Sales Change this YTD vs PYTD by Customer

Company

Data refreshed:
6/4/2019 9:23:45 AM

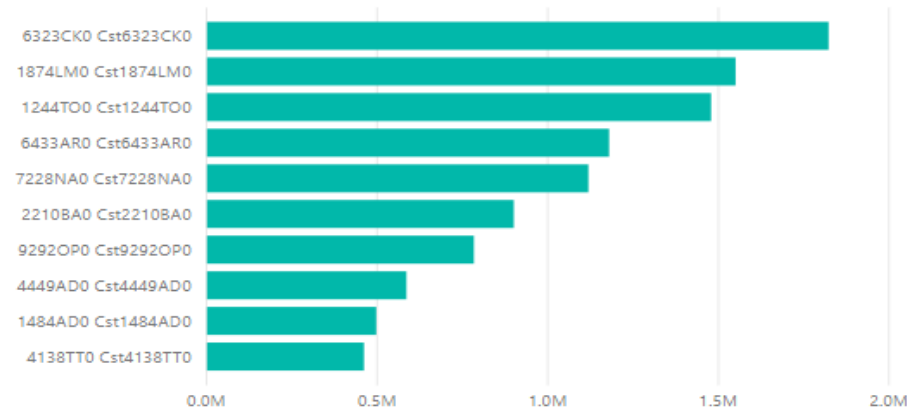


All

Top Increase

Customer	Sales LYTD	Sales YTD	Difference from LYTD
6323CK0 Cst6323CK0	1,132,923.70	2,955,810.45	1,822,886.75
1874LM0 Cst1874LM0	4,713,200.15	6,263,569.50	1,550,369.35
1244TO0 Cst1244TO0	1,736,170.00	3,214,697.58	1,478,527.58
6433AR0 Cst6433AR0	1,308,814.66	2,488,557.36	1,179,742.70
7228NA0 Cst7228NA0	289,070.99	1,408,081.78	1,119,010.79
2210BA0 Cst2210BA0	1,325,673.97	2,226,146.53	900,472.56
9292OP0 Cst9292OP0		783,450.24	783,450.24
4449AD0 Cst4449AD0	1,595,669.05	2,181,432.69	585,763.64
1484AD0 Cst1484AD0	1,074,840.66	1,572,166.91	497,326.25
4138TT0 Cst4138TT0	86,713.39	548,000.05	461,286.66

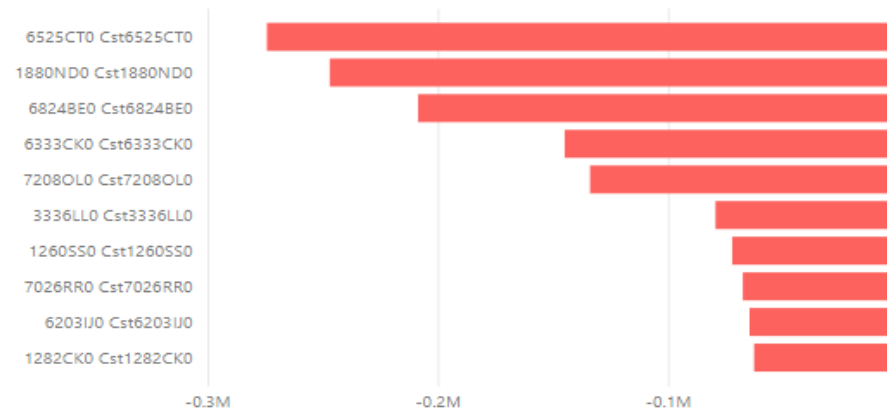
Difference from LYTD by Customer



Top Decrease

Customer	Sales LYTD	Sales YTD	Difference from LYTD
6525CT0 Cst6525CT0	727,179.00	452,679.29	-274,499.71
1880ND0 Cst1880ND0	1,851,707.12	1,604,492.25	-247,214.87
6824BE0 Cst6824BE0	212,048.20	3,184.88	-208,863.32
6333CK0 Cst6333CK0	250,807.77	105,602.82	-145,204.95
7208OL0 Cst7208OL0	152,773.95	18,581.52	-134,192.43
3336LL0 Cst3336LL0	482,843.86	403,107.79	-79,736.07
1260SS0 Cst1260SS0	719,274.79	646,799.55	-72,475.24
7026RR0 Cst7026RR0	88,399.41	20,558.47	-67,840.94
6203IJ0 Cst6203IJ0	312,652.70	247,714.15	-64,938.55
1282CK0 Cst1282CK0	94,336.33	31,377.89	-62,958.44

Difference from LYTD by Customer



Filters

Sales by Ship-To

Ship To: Sales



Period Selecti... To-Date Selection Data refreshed: 6/4/2019 12:00:00 AM

Year

To-Date Selection
 After YTD
 All
 YTD

ShipTo State	Prior Period Selection	This Period Selection	Var from Prior Period	Var % from Prior Period
ON	446,230	1,232,351	786,121	176.17 %
TX	628,258	855,377	227,119	36.15 %
GA	697,449	628,899	-68,549	-9.83 %
WI	228,770	578,426	349,656	152.84 %
OH	428,726	382,371	-46,356	-10.81 %
MO	354,709	366,240	11,531	3.25 %
MI	425,893	331,179	-94,714	-22.24 %
NE	86,716	330,110	243,393	280.68 %
IN	434,743	306,965	-127,778	-29.39 %
PA	268,073	266,968	-1,106	-0.41 %
CA	126,556	243,924	117,368	92.74 %
NC	250,826	219,617	-31,209	-12.44 %
MN	285,728	215,068	-70,660	-24.73 %
IL	169,176	213,109	43,933	25.97 %
KS	181,213	204,462	23,249	12.83 %
AB	67,151	198,188	131,037	195.14 %
UT	206,241	194,576	-11,665	-5.66 %
TN	128,752	176,214	47,463	36.86 %
MB	174,598	164,644	-9,954	-5.70 %
ID	450	112,762	112,312	24958.27 %
AZ	70,519	109,463	38,944	55.22 %
FL	107,562	102,947	-4,615	-4.29 %
VA	134,115	95,506	-38,609	-28.79 %
AR	148,320	82,171	-66,149	-44.60 %
MD	97,357	78,948	-18,409	-18.91 %
KY	88,150	75,845	-12,305	-13.96 %
WV	62,157	74,440	12,283	19.76 %
WA	85,729	72,370	-13,358	-15.58 %
OR	47,654	69,899	22,244	46.68 %
IA	15,591	67,002	51,411	329.75 %
NY	26,020	65,610	39,589	152.15 %
MS	118,739	60,034	-58,706	-49.44 %
Total	6,899,607	8,411,043	1,511,436	21.91 %

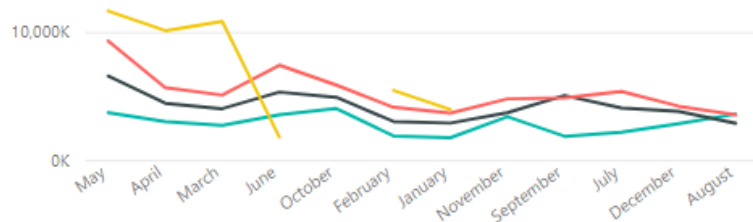
Filters

Company wide Monthly Sales Trends

- Sales Trends by Month: Trends

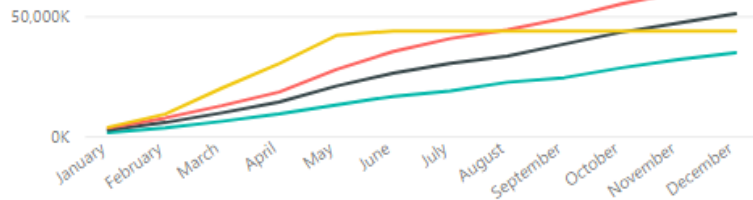
Monthly Sales

Year ● 2016 ● 2017 ● 2018 ● 2019



Monthly Accumulated Sales

Year ● 2016 ● 2017 ● 2018 ● 2019



Data refreshed:
6/4/2019 9:23:45 AM



Company

All

Invoice Date

L... 5 Years

6/18/2015 - 6/17/2020

Inv YTD

- Select all
- After YTD
- YTD

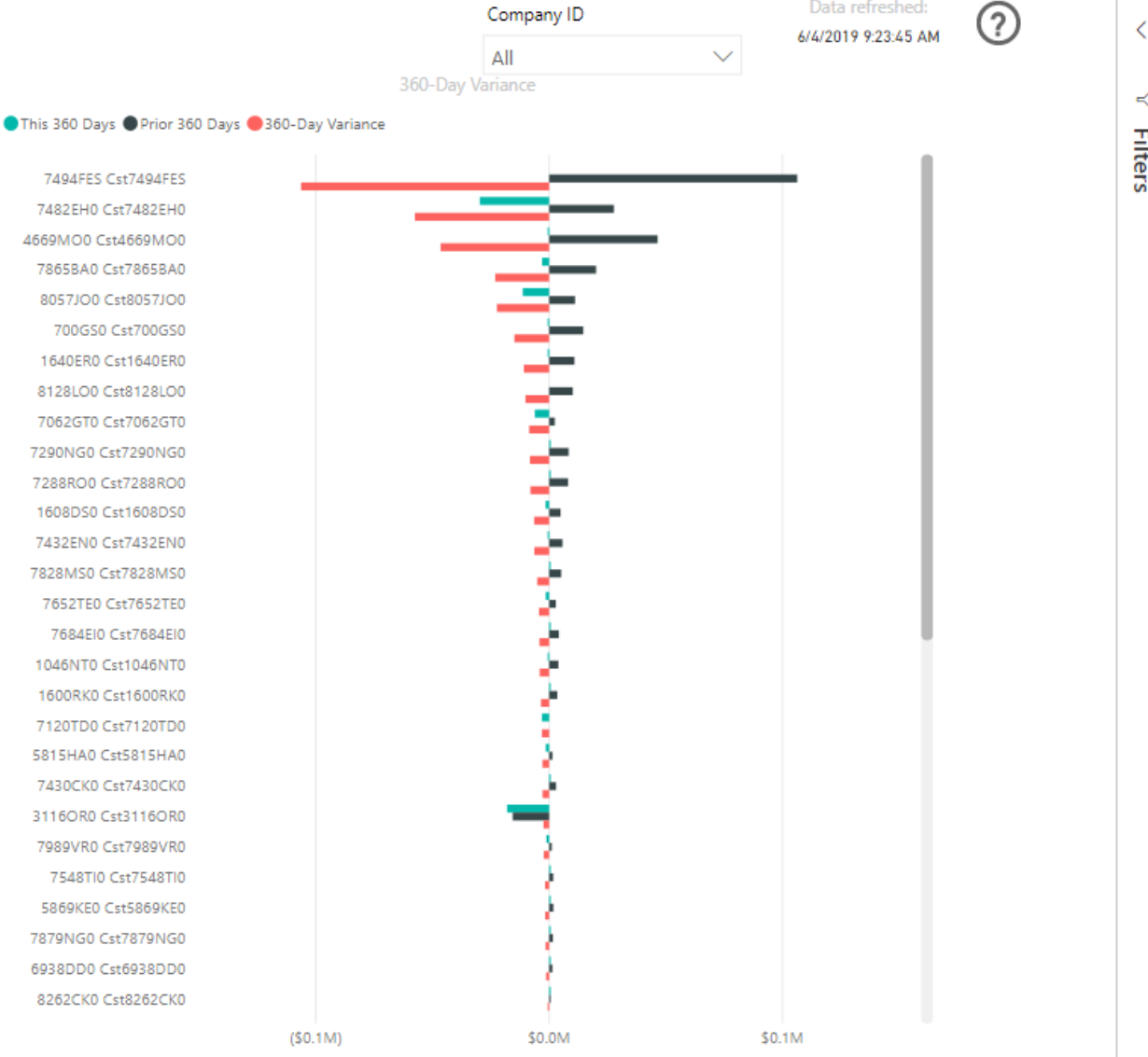
Year	Month	Sales	% Difference in Sales from the Prev. Yr	Sales YTD	Sales LYTD	% Difference in Sales from the Prev. Yr TD
2017	January	2,949,529.08	63.55 %	2,949,529.08	1,803,450.68	63.55 %
	February	3,069,966.30	58.36 %	6,019,495.38	3,742,087.75	60.86 %
	July	4,119,685.57	84.96 %	30,679,227.86	19,150,164.27	60.20 %
	May	6,613,684.30	75.85 %	21,190,641.41	13,337,567.49	58.88 %
	June	5,368,900.88	49.75 %	26,559,542.29	16,922,821.52	56.95 %
	September	5,105,600.22	166.93 %	38,711,488.54	24,703,339.16	56.71 %
	March	4,065,126.68	46.66 %	10,084,622.06	6,513,930.65	54.82 %
	April	4,492,335.05	46.68 %	14,576,957.11	9,576,639.12	52.21 %
	October	4,960,106.45	21.34 %	43,671,594.99	28,791,109.50	51.68 %
	August	2,926,660.46	-19.61 %	33,605,888.32	22,790,595.19	47.46 %
	November	3,751,678.70	8.74 %	47,423,273.69	32,241,250.53	47.09 %
	December	3,861,870.32	33.50 %	51,285,144.01	35,133,939.57	45.97 %
2018	June	7,465,450.72	39.05 %	35,581,616.67	26,559,542.29	33.97 %
	July	5,419,340.07	31.55 %	41,000,956.74	30,679,227.86	33.64 %
	May	9,369,094.88	41.66 %	28,116,165.95	21,190,641.41	32.68 %
	August	3,587,831.08	22.59 %	44,588,787.82	33,605,888.32	32.68 %
	February	4,181,579.63	36.21 %	7,904,962.59	6,019,495.38	31.32 %
	March	5,131,460.53	26.23 %	13,036,423.12	10,084,622.06	29.27 %
	April	5,710,647.95	27.12 %	18,747,071.07	14,576,957.11	28.61 %
	September	4,916,212.90	-3.71 %	49,505,000.72	38,711,488.54	27.88 %
	November	4,834,797.97	28.87 %	60,249,792.74	47,423,273.69	27.05 %
	October	5,909,994.05	19.15 %	55,414,994.77	43,671,594.99	26.89 %
	January	3,723,382.96	26.24 %	3,723,382.96	2,949,529.08	26.24 %
	December	4,266,697.90	10.48 %	64,516,490.64	51,285,144.01	25.80 %
2016	January	1,803,450.68		1,803,450.68		
	February	1,938,637.07		3,742,087.75		
	March	2,771,842.90		6,513,930.65		
	April	3,062,708.47		9,576,639.12		
	May	3,760,928.37		13,337,567.49		
	June	3,585,254.03		16,922,821.52		

Filters

Top Sales Decline by Customer (no sales in this vs last period)

- Sales Decline by Customer: This 360 Days

Customer	Prior 360 Days	This 360 Days	360-Day Variance
6525CT0 Cst6525CT0	1,489,256.00	\$948,950	(\$540,306)
1260SS0 Cst1260SS0	2,061,409.57	\$1,694,978	(\$366,431)
6824BE0 Cst6824BE0	466,942.66	\$137,647	(\$329,296)
6333CK0 Cst6333CK0	375,482.53	\$61,054	(\$314,428)
6203IU0 Cst6203IU0	722,213.70	\$476,966	(\$245,248)
1558BE0 Cst1558BE0	1,080,529.94	\$865,058	(\$215,472)
7208OL0 Cst7208OL0	191,294.66	\$53,465	(\$137,830)
1850ES0 Cst1850ES0	758,875.09	\$630,688	(\$128,187)
7494FES Cst7494FES	106,300.24	\$0	(\$106,300)
7026RR0 Cst7026RR0	153,124.84	\$55,927	(\$97,198)
6556NNO Cst6556NNO	147,439.12	\$55,320	(\$92,119)
5439AGO Cst5439AGO	125,334.82	\$41,750	(\$83,584)
5371LLO Cst5371LLO	535,945.46	\$455,911	(\$80,034)
1282CK0 Cst1282CK0	164,507.03	\$91,671	(\$72,836)
7064ENO Cst7064ENO	98,977.78	\$26,542	(\$72,436)
5661ELO Cst5661ELO	109,240.65	\$44,711	(\$64,530)
4969EDO Cst4969EDO	240,717.22	\$176,969	(\$63,748)
6980NDO Cst6980NDO	63,050.08	\$433	(\$62,618)
7482EHO Cst7482EHO	27,779.00	(\$29,732)	(\$57,511)
6261RTO Cst6261RTO	112,645.90	\$57,000	(\$55,646)
3348GRO Cst3348GRO	127,407.40	\$72,345	(\$55,063)
7436INO Cst7436INO	52,496.88		(\$52,497)
7220RRO Cst7220RRO	87,458.80	\$36,871	(\$50,588)
4669MO0 Cst4669MO0	46,476.50	(\$30)	(\$46,507)
3686RMO Cst3686RMO	55,733.58	\$10,928	(\$44,806)
4084PP0 Cst4084PP0	48,068.94	\$13,791	(\$34,278)
752UTO Cst752UTO	320,251.83	\$287,666	(\$32,586)
1578SS0 Cst1578SS0	27,698.35	\$2,462	(\$25,237)
5829ST0 Cst5829ST0	47,981.67	\$23,591	(\$24,390)
7973CK0 Cst7973CK0	161,781.50	\$137,910	(\$23,872)
7206AHO Cst7206AHO	45,384.85	\$21,806	(\$23,579)
7865BA0 Cst7865BA0	20,097.30	(\$2,990)	(\$23,087)
8057JO0 Cst8057JO0	11,089.91	(\$11,275)	(\$22,365)
7308ORO Cst7308ORO	21,599.99		(\$21,600)
Total	10,823,891.29	\$6,863,893	(\$3,959,998)



Sales of Top Products to Top Customers

- Top Customers and Top Products by Sales: Cst Address

Invoice Date

Last 3 Years

Company ID

All

Data refreshed:
6/4/2019 9:23:45 AM



6/18/2017 - 6/17/2020

Sales by Cst State



Top Customers

Customer	Sales
1874LMO Cst1874LMO	27,106,857.14
1244TOO Cst1244TOO	9,138,947.41
4449ADO Cst4449ADO	8,594,299.99
1880NDO Cst1880NDO	5,746,246.58
6433ARO Cst6433ARO	5,603,664.15
6323CKO Cst6323CKO	5,048,721.75
2210BAO Cst2210BAO	4,947,611.71
1484ADO Cst1484ADO	4,756,030.24
1214VAO Cst1214VAO	4,516,152.44
2000ACO Cst2000ACO	3,948,363.51
Total	79,406,894.92

Top Products

Product	Sales
104804404 COVPETT, UNIVPETTPETL F, INFINPEAY, STWIE	2,621,305.28
98204002 COVPETT, UNIVPETTPETL F, AP, RTO	2,446,507.04
9822AB05 TT MAT, YAK, APHD, RT OUTFPEATPETTS	2,400,380.09
204374005 COVPETT, UNIVPETTPETL, AP, STWIE, WM	2,396,901.00
10527AB03 TT MAT, YAK, INFINPEAY, STWIEING	2,132,158.43
7619AB03 TT MAT, RETLID W/ YAK, STWIE AP WM	1,967,984.44
10610AB07 TT MAT, YAK, INFINPEAY, MRETSY	1,935,751.28
Total	20,950,889.14

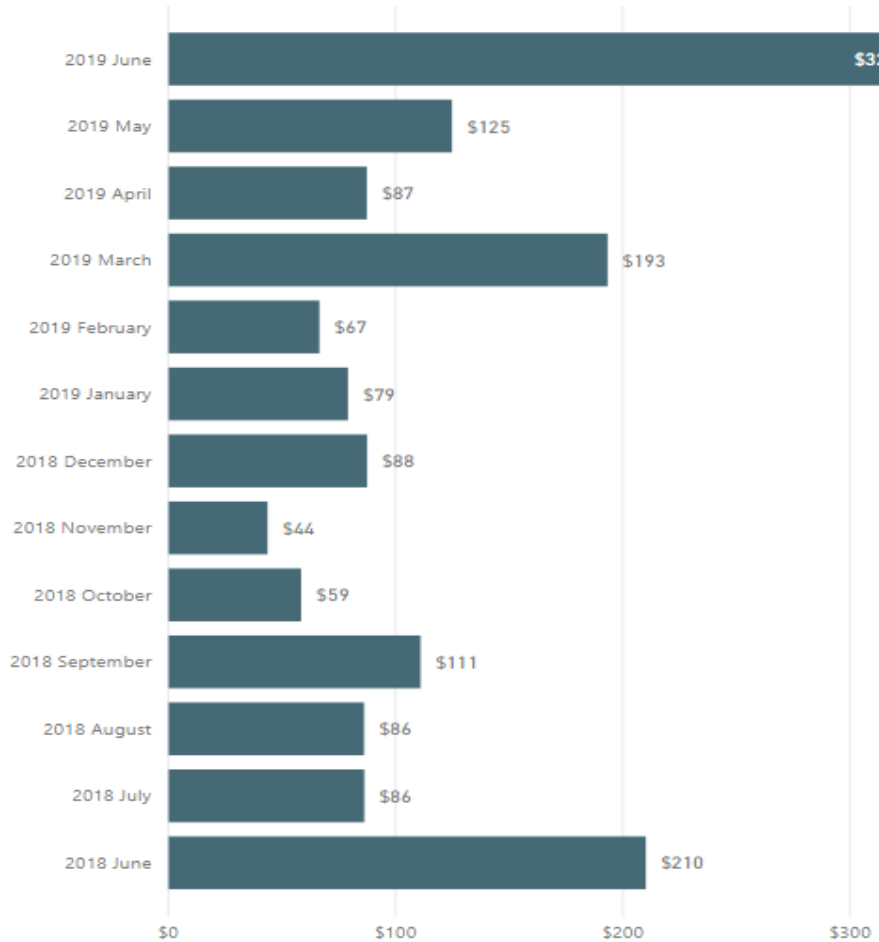
Cst Country	Cst State	Customer	Product	Sales
USA	CA	1874LMO Cst1874LMO	204374005 COVPETT, UNIVPETTPETL, AP, STWIE, WM	2,396,901.00
			7619AB03 TT MAT, RETLID W/ YAK, STWIE AP WM	1,967,984.44
			1573803W RUBBPETT, AP, STWIE, WM	1,759,411.68
			206955004 COVPETT, BWICH, AP, STWIE, WM	1,611,318.40
			204754AB2 COVPETT, UNIVPETTPETL, INFINPEAY, MO, WM	1,387,276.00
			2223980ZK TT MAT, INFINPEAY, MRETSY OAK, WM	1,316,103.48
			151502406 COVPETT, PULL OVPETT LEAFBU PINK, WM	1,142,137.00
			25886BAB4 ZIP BINDPETT, MO/RT, WM	1,121,688.00
			16358AB06 TT MAT, PINK MRETSY OAK LEAFBU WM	1,059,908.16
			222383404 2-GRIP, INFINPEAY, MRETSY OAK, WM	950,776.06
			204775406 COVPETT, BWICH, INFINPEAY, MRETSYOAK, WM	899,302.80
			65402403 COVPETT, UNIVPETTPETL F, NB, BRETE, MO, WM	865,694.50
			151514405 NEOPRWIE, LEAFBU, PINK, WM	858,556.20
			7616AB03 TT MAT, RETLID W/ YAK, LEAF, MRETSY WM	836,770.44
			151542505 COVPETT, PULL OVPETT, MAX-1, PINK, WM	717,623.00

Invoice Trends

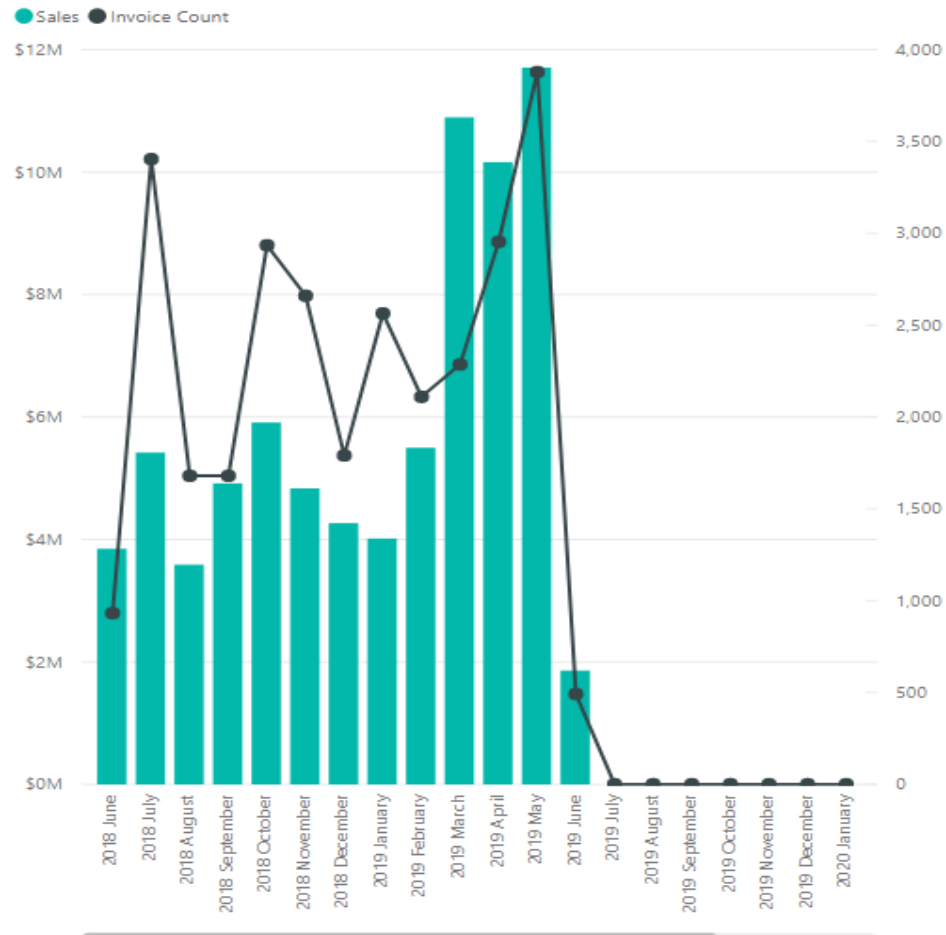
- Sales Trends by Invoice: Avg Invoice Amt per Month

Data refreshed: 6/4/2019 9:23:45 AM

Avg Invoice Amt by Year and Month



Sales and Invoice Count by Year and Month



Invoice Date

Last 2 Years

6/18/2018 - 6/17/2020

Company ID

All

Customer

All

Product

All

Month

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Website Visitor Analysis

Website Visitor Analysis

2,825,966
Visitors Count

826,131
Purchasers Count

42,021
Added To Cart Count

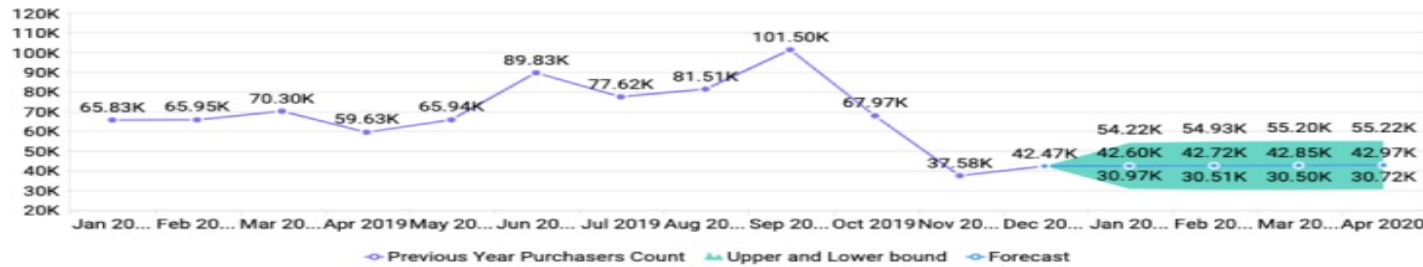
Select Date

01/01/2019 - 12/31/2019

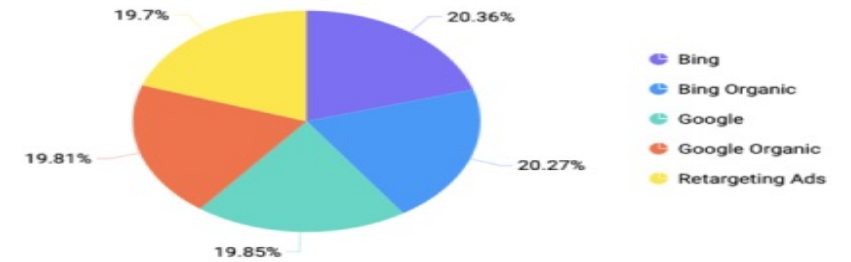
Product

All

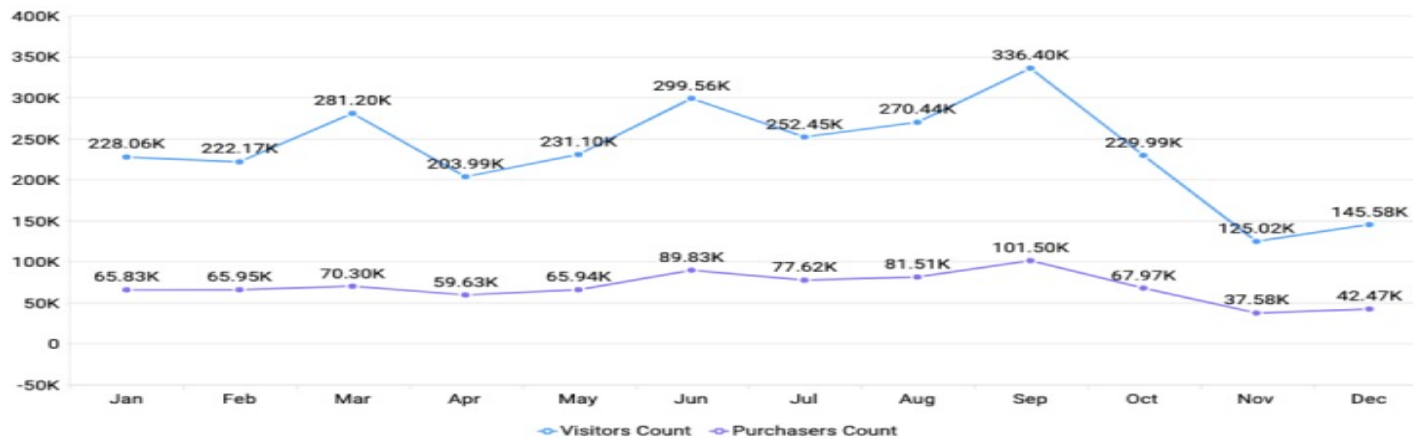
Forecast Purchasers Count by Month



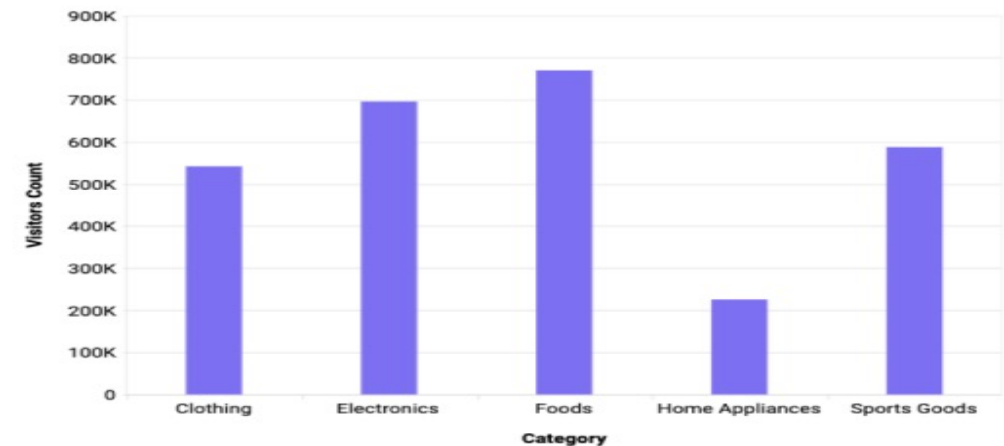
Customer Acquisition Through Referrals



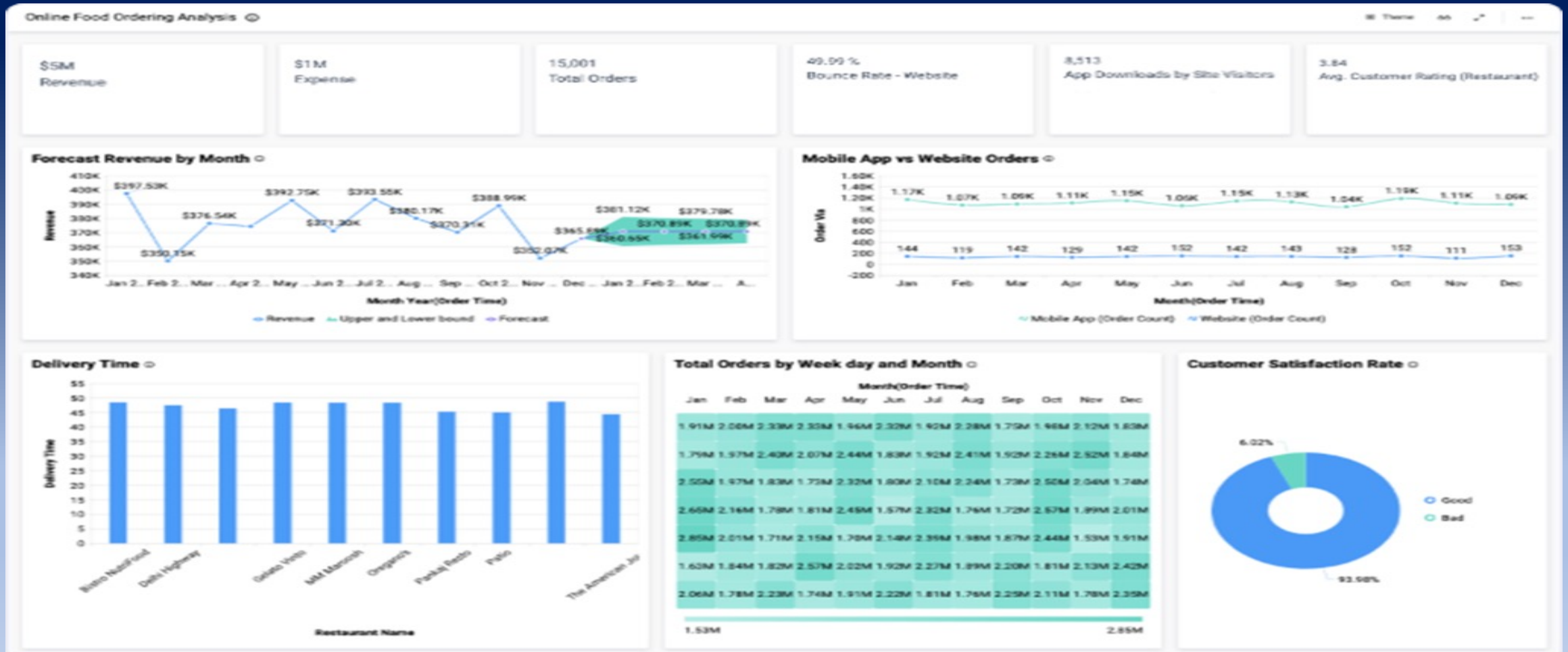
Visitors to Customers Conversion Trend [2018]



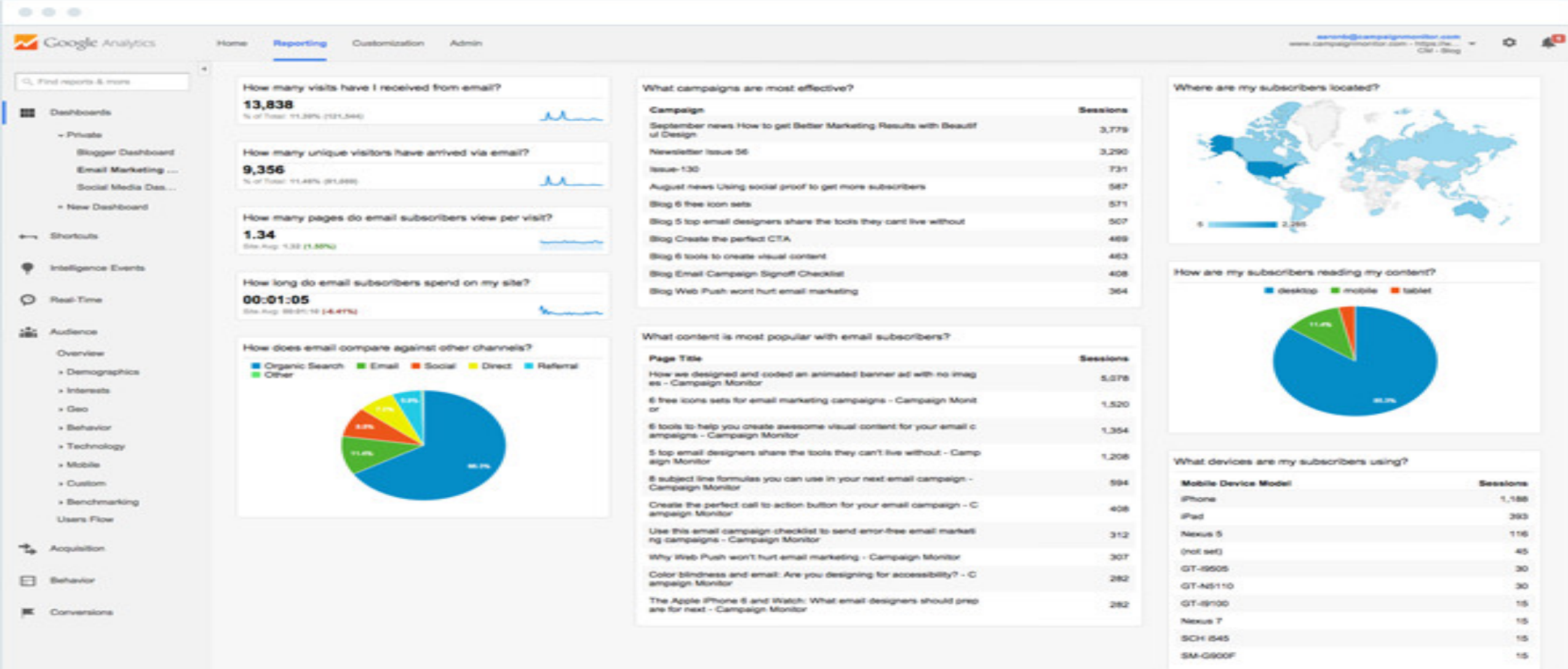
Visitors Count by Categories



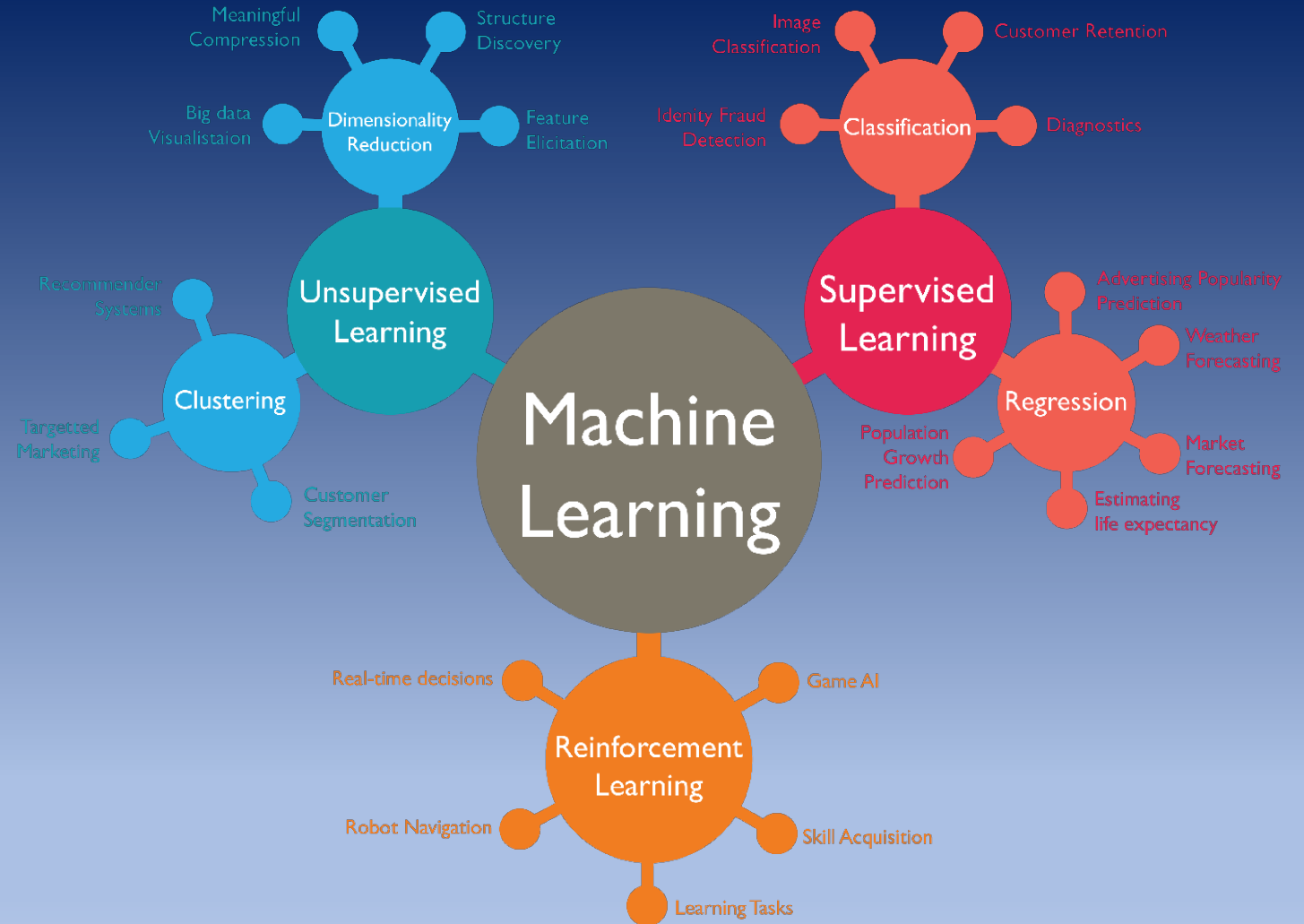
Online Food Ordering Analysis



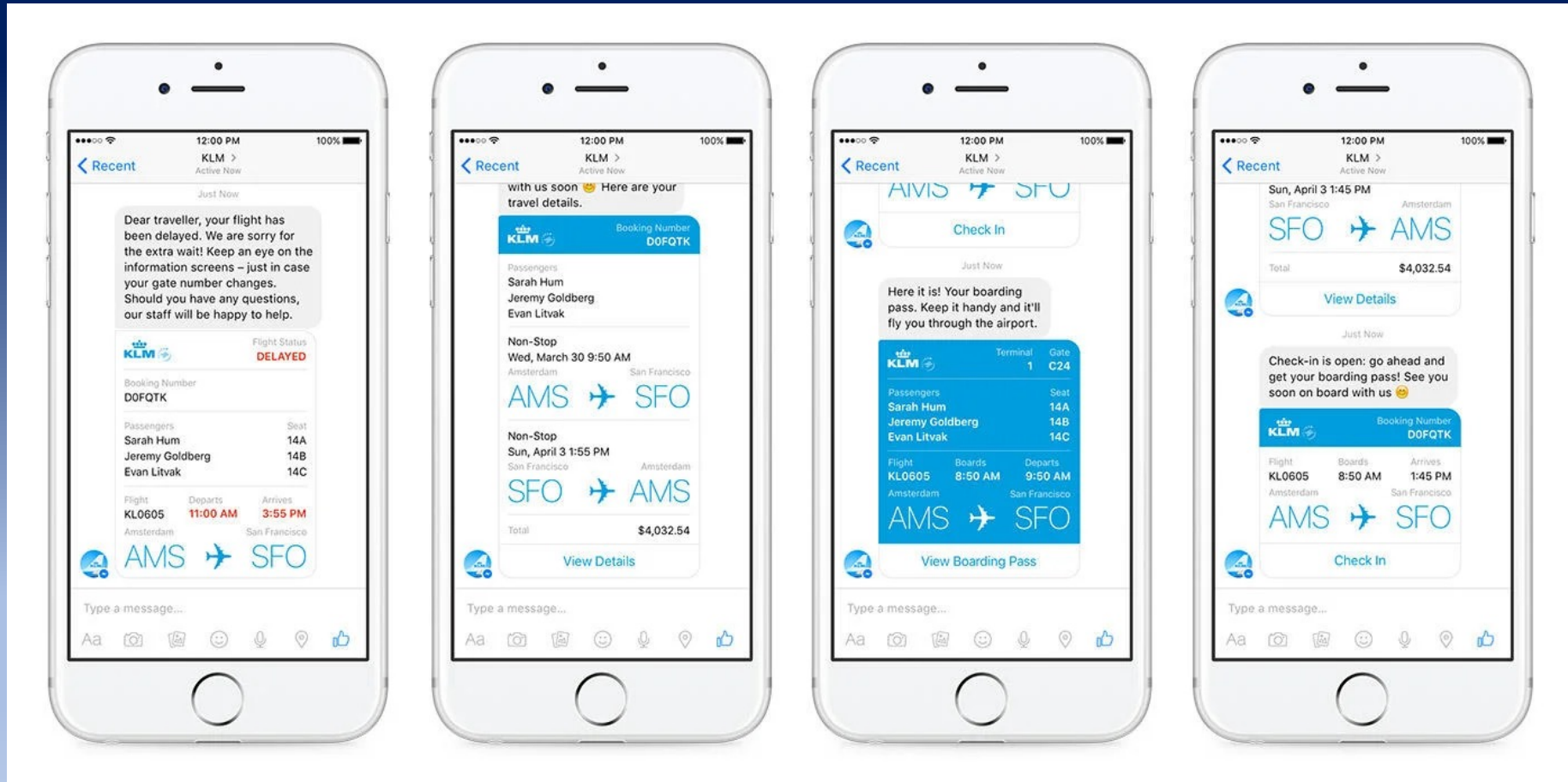
Email Engagement Analytics Dashboard



Intelligent big data management



Facebook – Chatbot Army



How Machine Learning In Business Can Transform The Modern Workforce

