Business Analytics

Greetings & Best Wishes

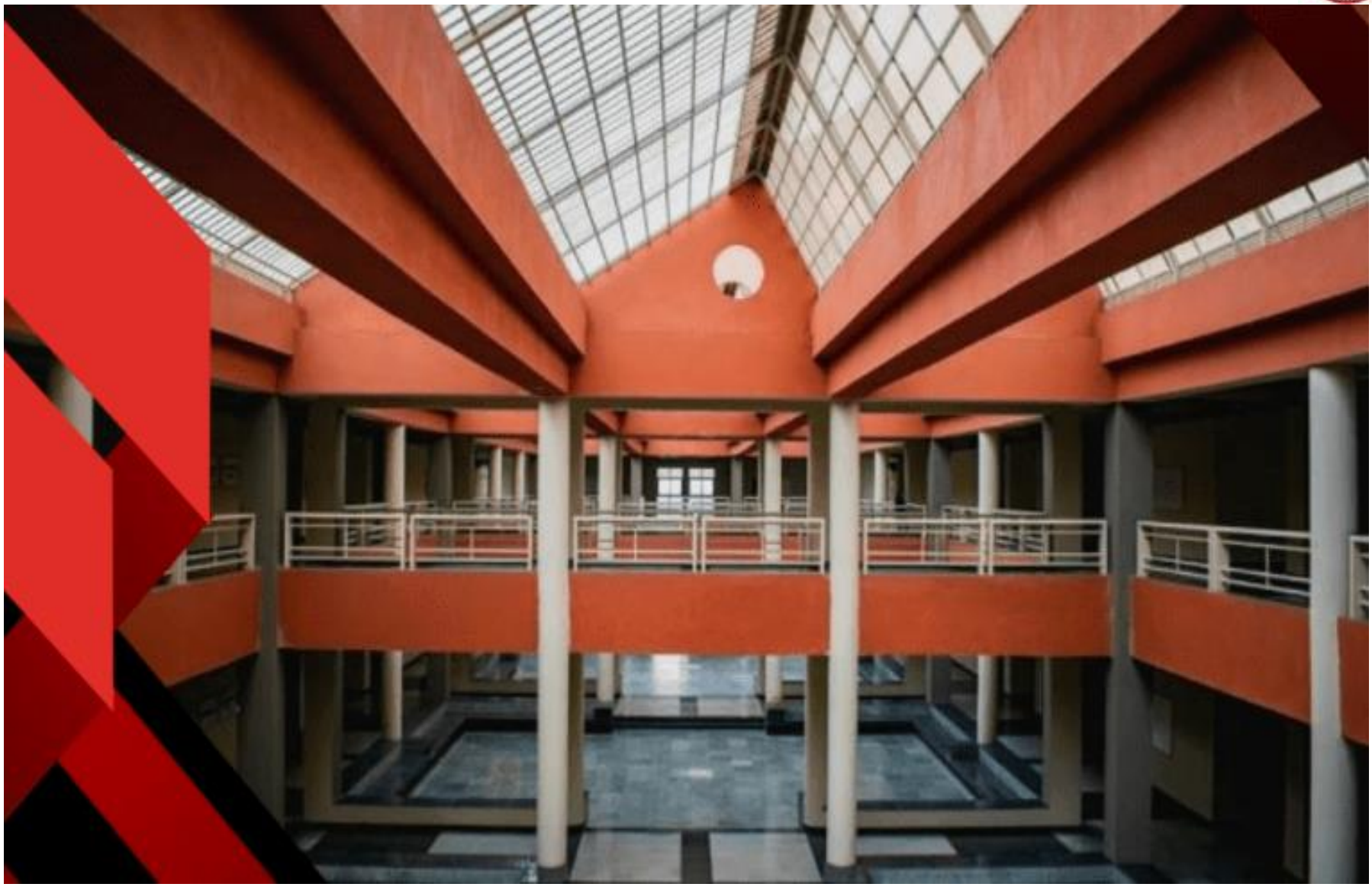
Business Analytics

Data Warehouse Analysis

Data Analytics

Data Analytics

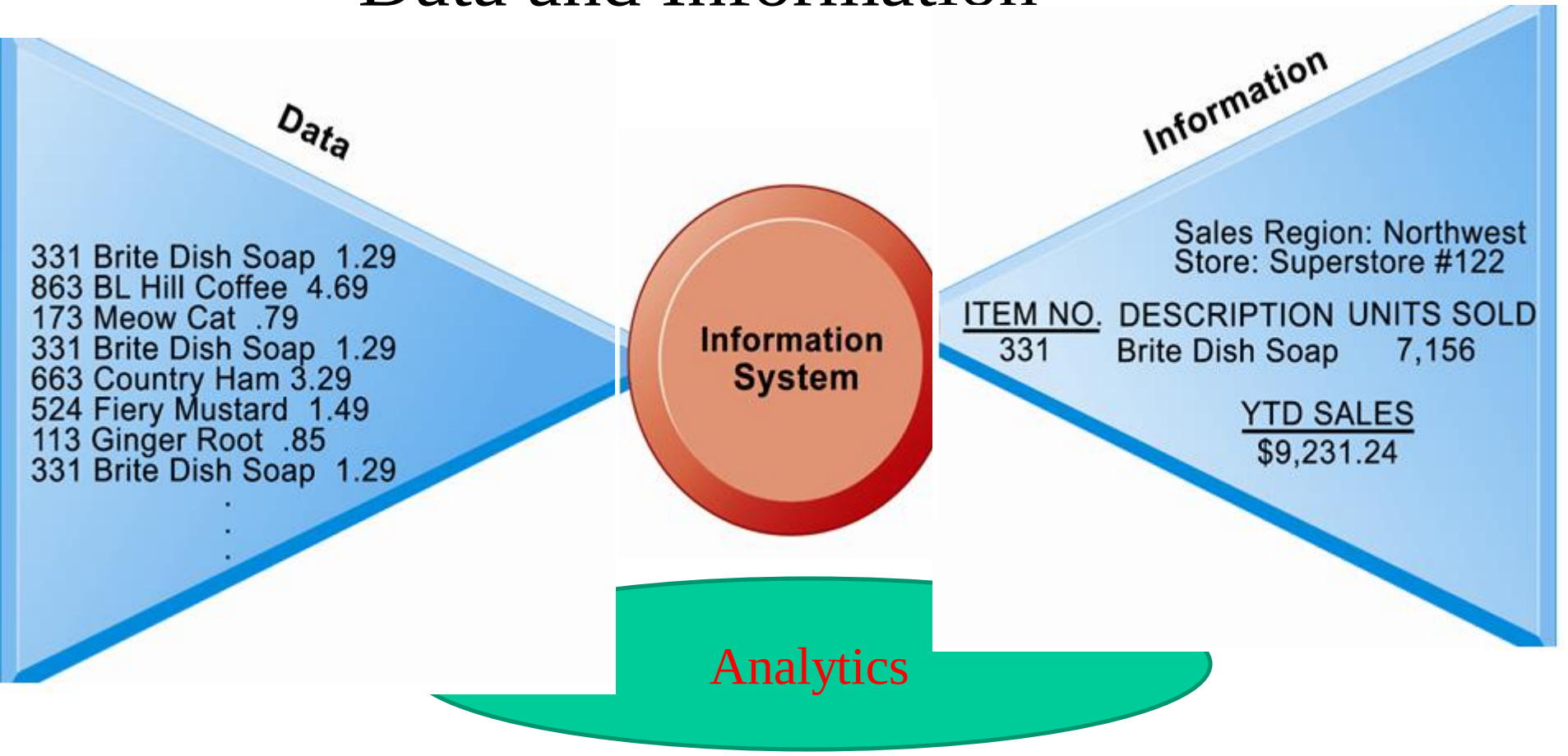
Data Analytics



Data Analytics

Perspectives on Information Systems

Data and Information



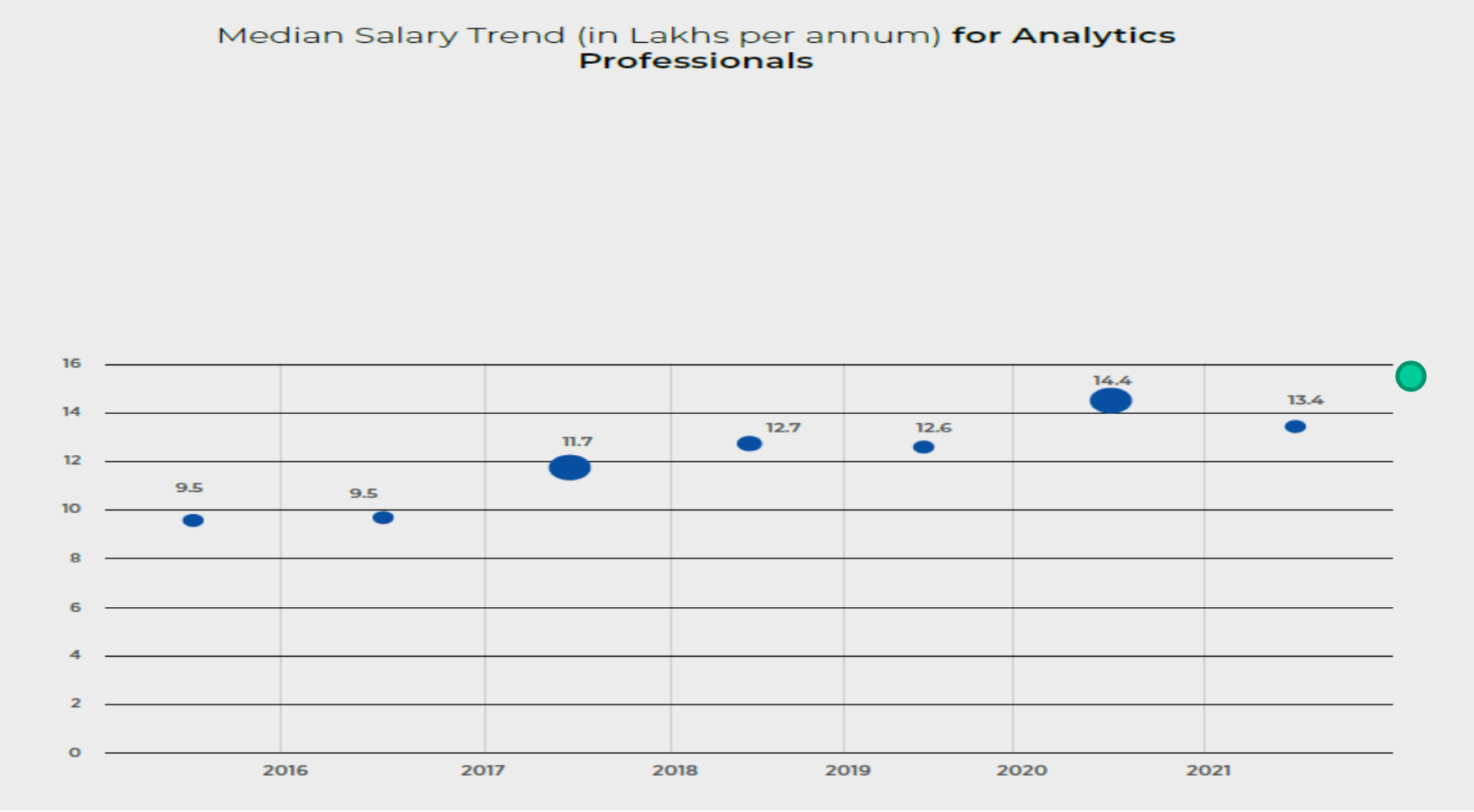
Why We are here today ?

Answer of “Why are you here today ?”

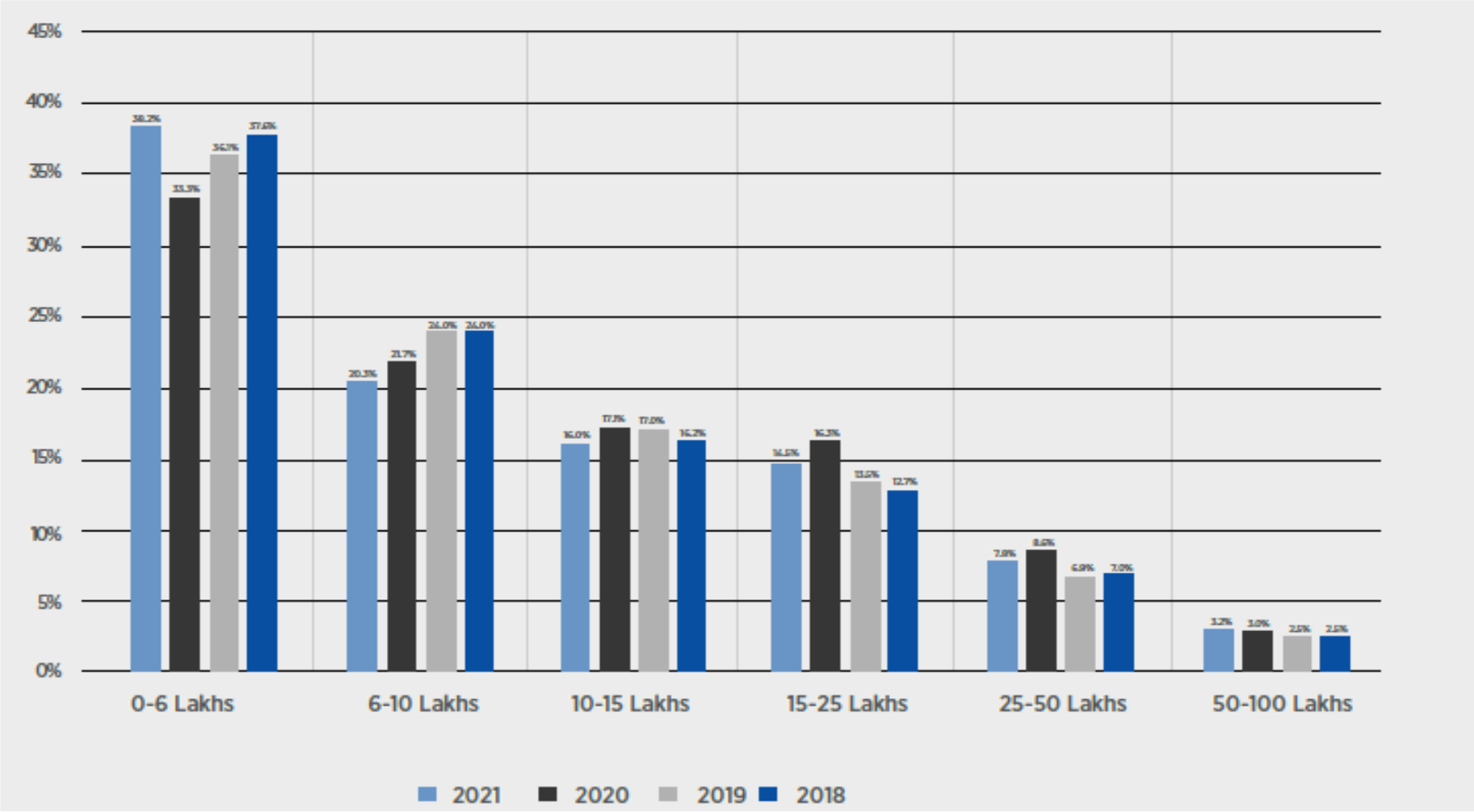
Salary Study with AnalytixLabs, Analytics India finds out that over the last Five years - 2016 to 2021 - there has been a pronounced growth in median salary across all experience levels, increasing from 9.5 lakh in 2016 to 11.7 lakh in 2017 and touching 12.7 lakh per annum in 2018 and 12.7 in the year 2019.

The median salary of Analytics professionals in India stands at 13.4 Lakhs per annum in 2021, a 6.9% drop as compared to 2020 (when it was 14.4 Lakhs). Much of the decrease in salary can be attributed to pandemic. In spite of this, the median has remained above the 2019 median. **Again In 2022 11.96% Jump.**

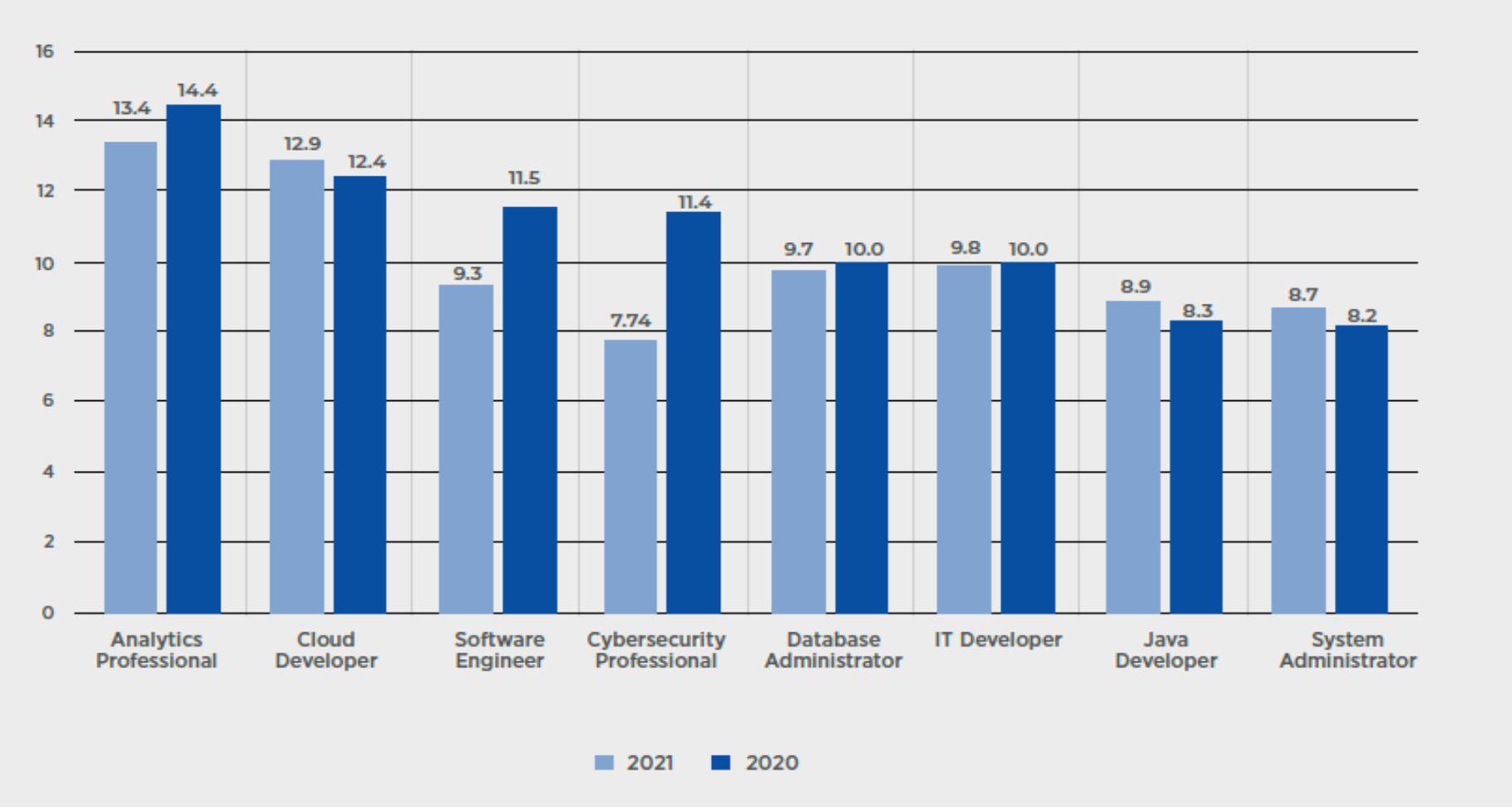
Answer of “Why are you here today ?”



Answer of “Why are you here today ?”

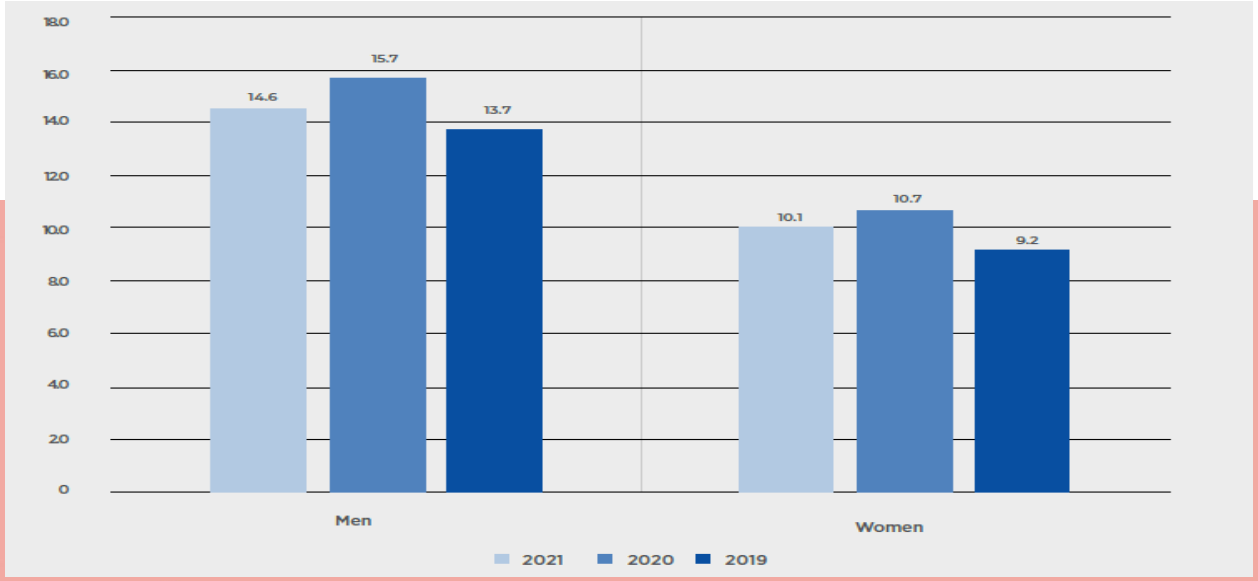


Answer of “Why are you here today ?”



Answer of “Why are you here today ?”

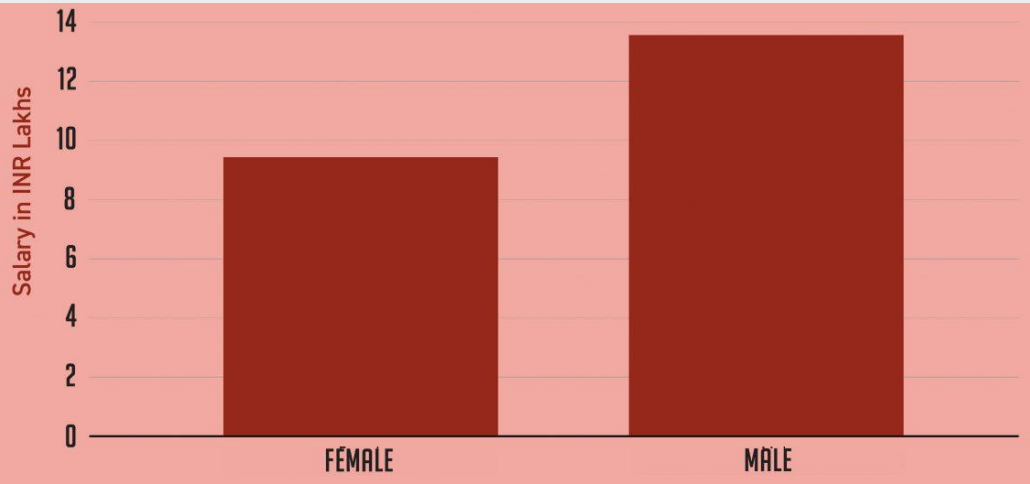
Gender Gap



WOMEN ANALYTICS PROFESSIONALS GET

32%

LESSER SALARIES THAN THEIR MALE COUNTERPARTS



MALE VS FEMALE ANALYTICS SALARY

Answer of “Why are you here today ?”

Why Data Science & Business Analytics is a versatile skills that opens new doors across sectors THE HINDU DECEMBER 07, 2021

Nearly 90% of all small, mid-size, and large organizations have adopted analytical capabilities over the last 5 years to stay relevant in a market where large volumes of data are recorded every day. They use it to formulate solutions to build analysis models, simulate scenarios, understand realities and predict future states.

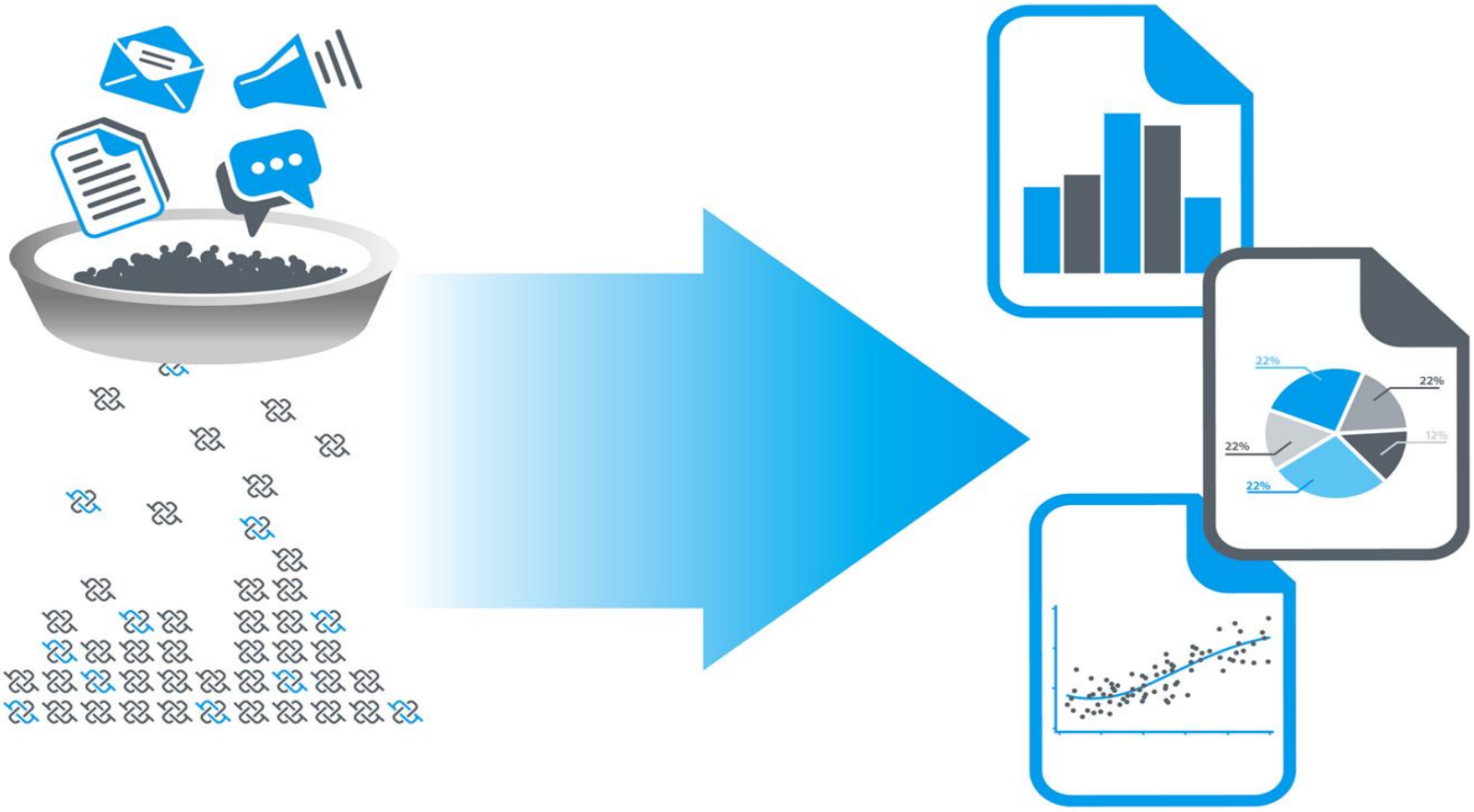
According to a recent report by LinkedIn here’re some of the fastest-growing in-demand jobs of the past year and the next few years to come. Hiring for the roles of Data Scientist, Data Science Specialist, Data Management Analyst, Statistical Modelling has gone up by 46% since 2019.

According to Report published by Gartner on Decision intelligence: By 2023, more than 33% of large organizations will have analysts practicing decision intelligence, including decision modelling.

What is Analytics ??

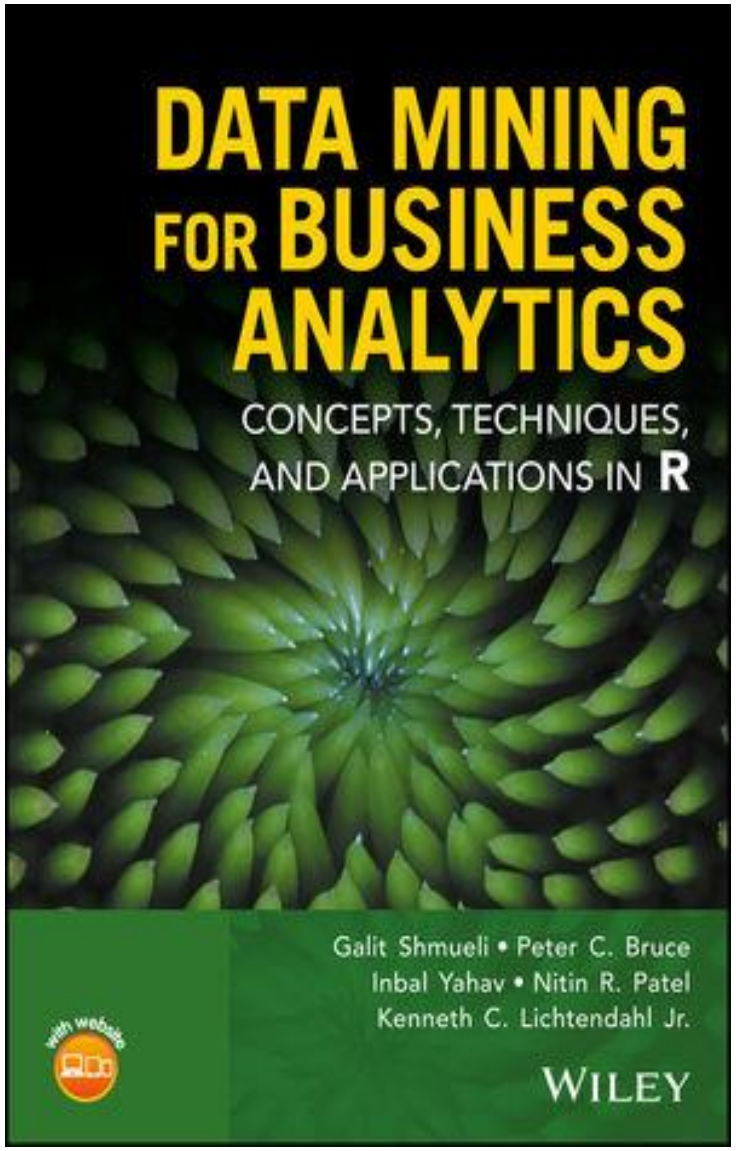
Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance.

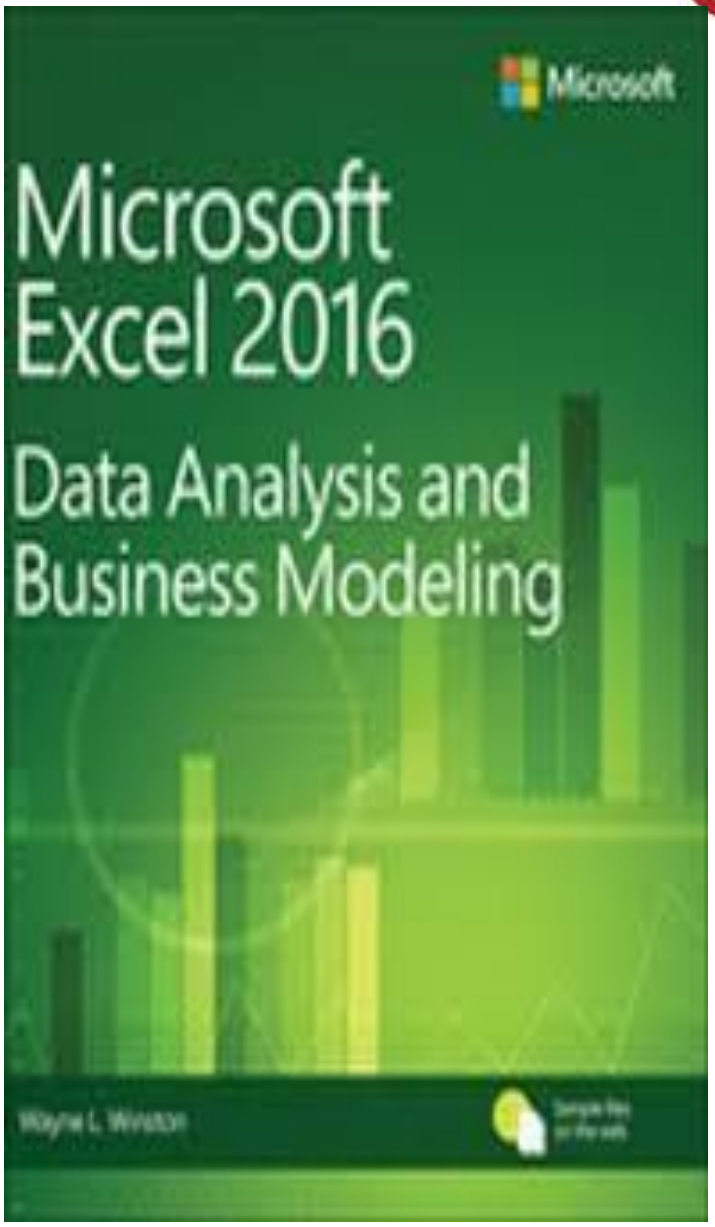
What is Data Analytics?



Types of Analytics

- **Descriptive** Analytics is, which use data aggregation and data mining to provide insight into the past and answer: “What has happened?”
- **Predictive** Analytics is, which use statistical models and forecasts techniques to understand the future and answer: “What could happen?”
- **Prescriptive** Analytics is, which use optimization and simulation algorithms to advice on possible outcomes and answer: “What should we do?”


DATA MINING
FOR BUSINESS
ANALYTICS
CONCEPTS, TECHNIQUES,
AND APPLICATIONS IN R
Galit Shmueli • Peter C. Bruce
Inbal Yahav • Nitin R. Patel
Kenneth C. Lichtendahl Jr.
WILEY


Microsoft
Microsoft
Excel 2016
Data Analysis and
Business Modeling

Business Analytics

Data size growing

Need some knowledge to enhance my business

Variety of data

Amount of Data

HAPPY
for future also

Many more ??

Data Warehouse

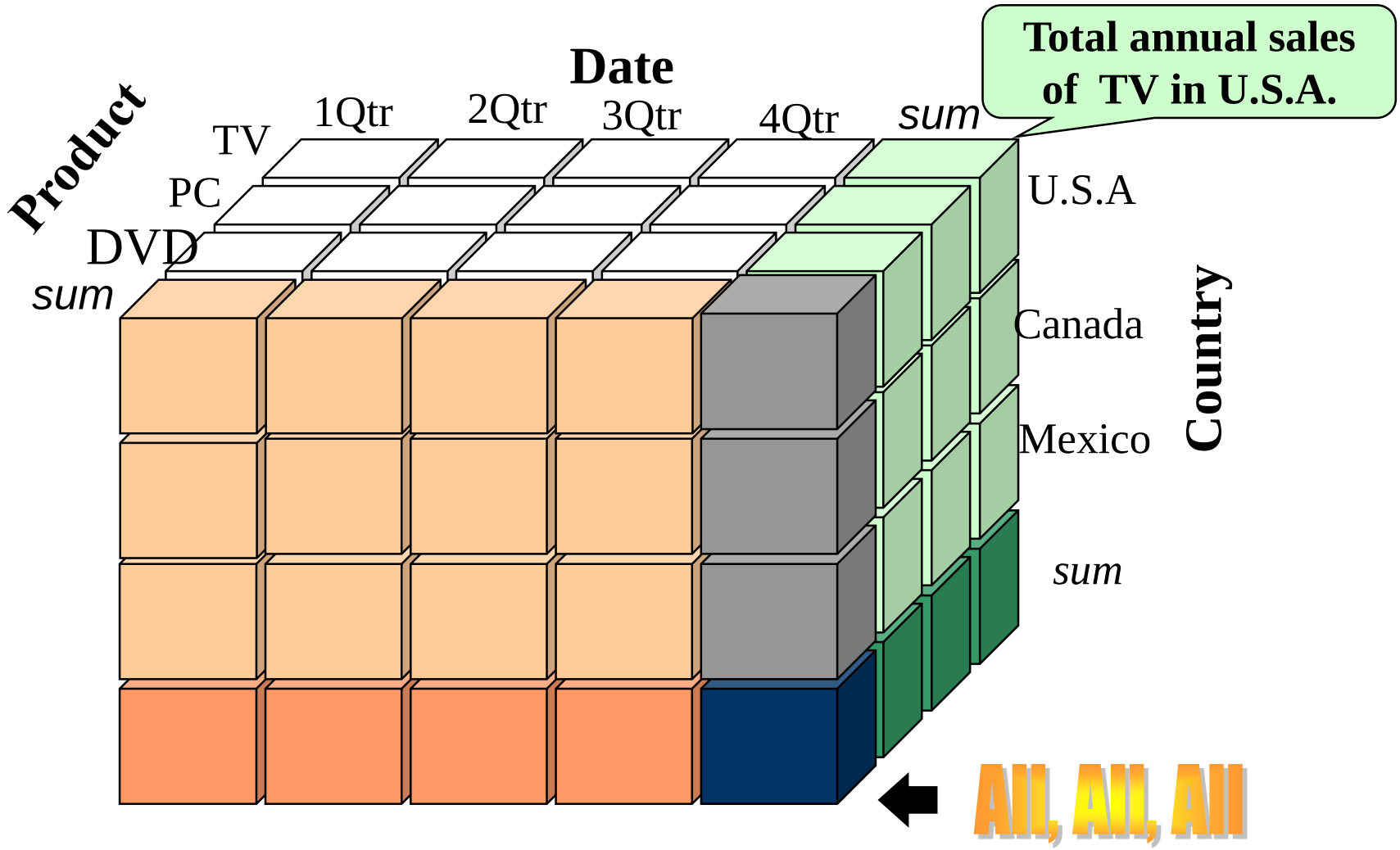
Data Warehouse?

- **Defined in many different ways, but not rigorously.**
  - **A decision support database that is maintained separately from the organization's operational database**
  - **Support information processing by providing a solid platform of consolidated, historical data for analysis.**
- **"A data warehouse is a subject-oriented, integrated, time-variant, and nonvolatile collection of data in support of management's decision-making process."—W. H. Inmon**
- **Data warehousing: useful for formulating knowledge**

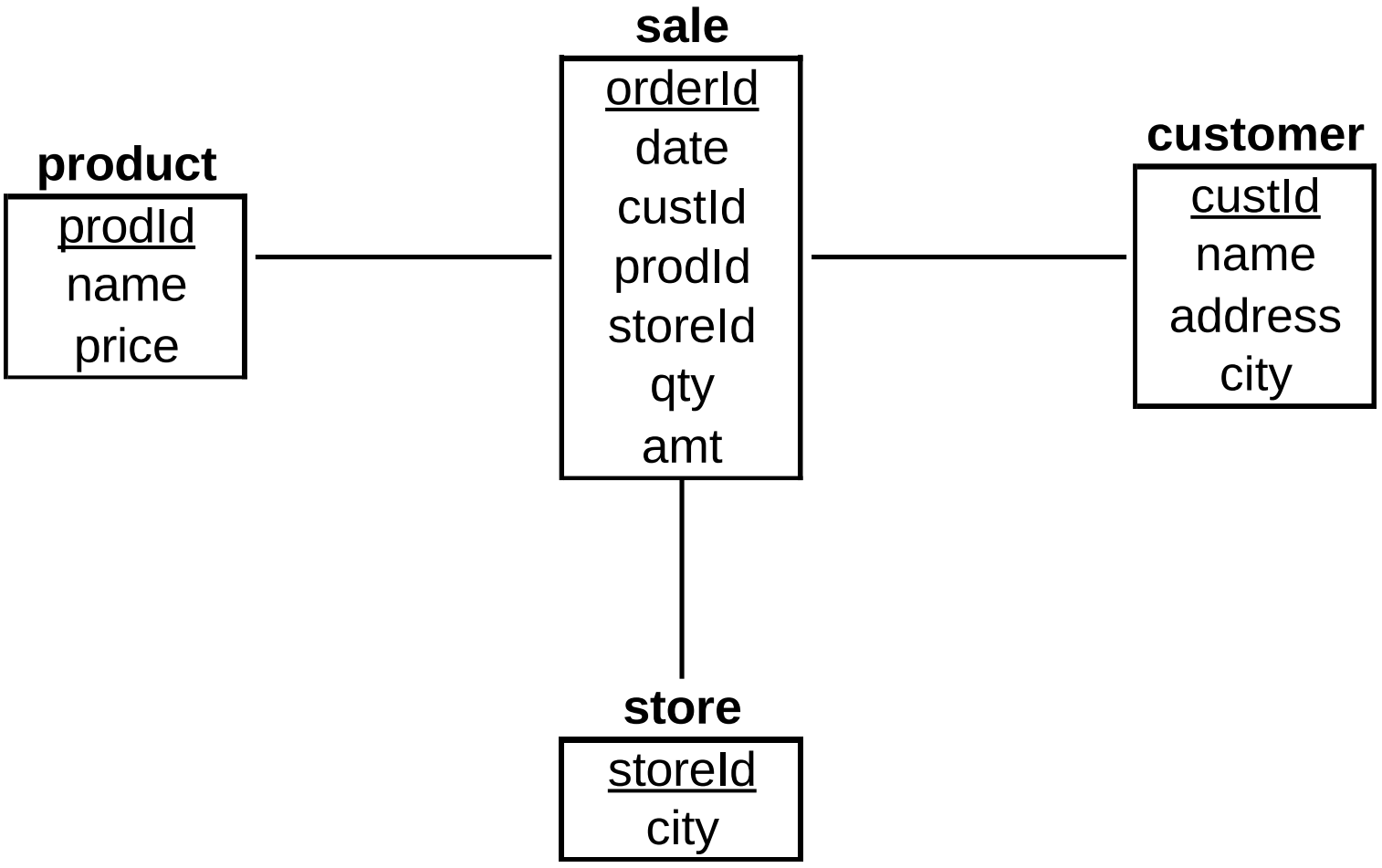
OLTP vs. OLAP

	DB	DW
users	clerk, IT professional	knowledge worker
function	day to day operations	decision support
DB design	application-oriented	subject-oriented
data	current, up-to-date detailed, flat relational isolated	historical, summarized, multidimensional integrated, consolidated
usage	repetitive	ad-hoc
access	read/write index/hash on prim. key	lots of scans
unit of work	short, simple transaction	complex query
# records accessed	tens	millions
#users	thousands	hundreds
DB size	100MB-GB	100GB-TB
metric	transaction throughput	query throughput, response

A Sample Data Cube



Example


sale
orderId
date
custId
prodId
storeId
qty
amt
product
prodId
name
price
customer
custId
name
address
city
store
storeId
city

Cube

Fact table view:

sale	prodId	storeId	amt
	p1	c1	12
	p2	c1	11
	p1	c3	50
	p2	c2	8

Multi-dimensional cube:

	c1	c2	c3
p1	12		50
p2	11	8	

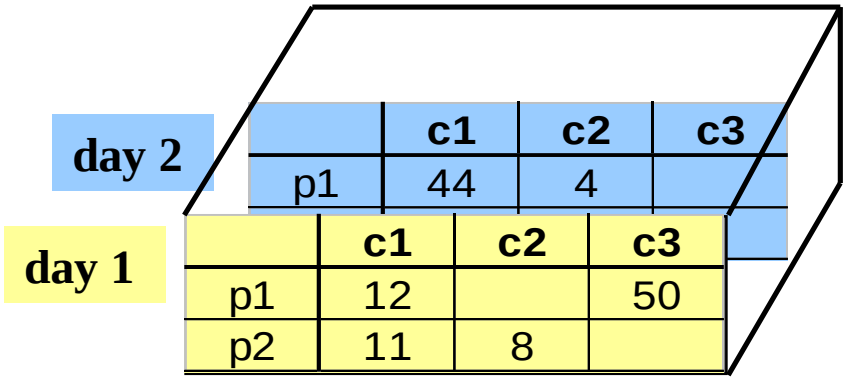
dimensions = 2

3-D Cube

Fact table view:

sale	prodId	storeId	date	amt
	p1	c1	1	12
	p2	c1	1	11
	p1	c3	1	50
	p2	c2	1	8
	p1	c1	2	44
	p1	c2	2	4

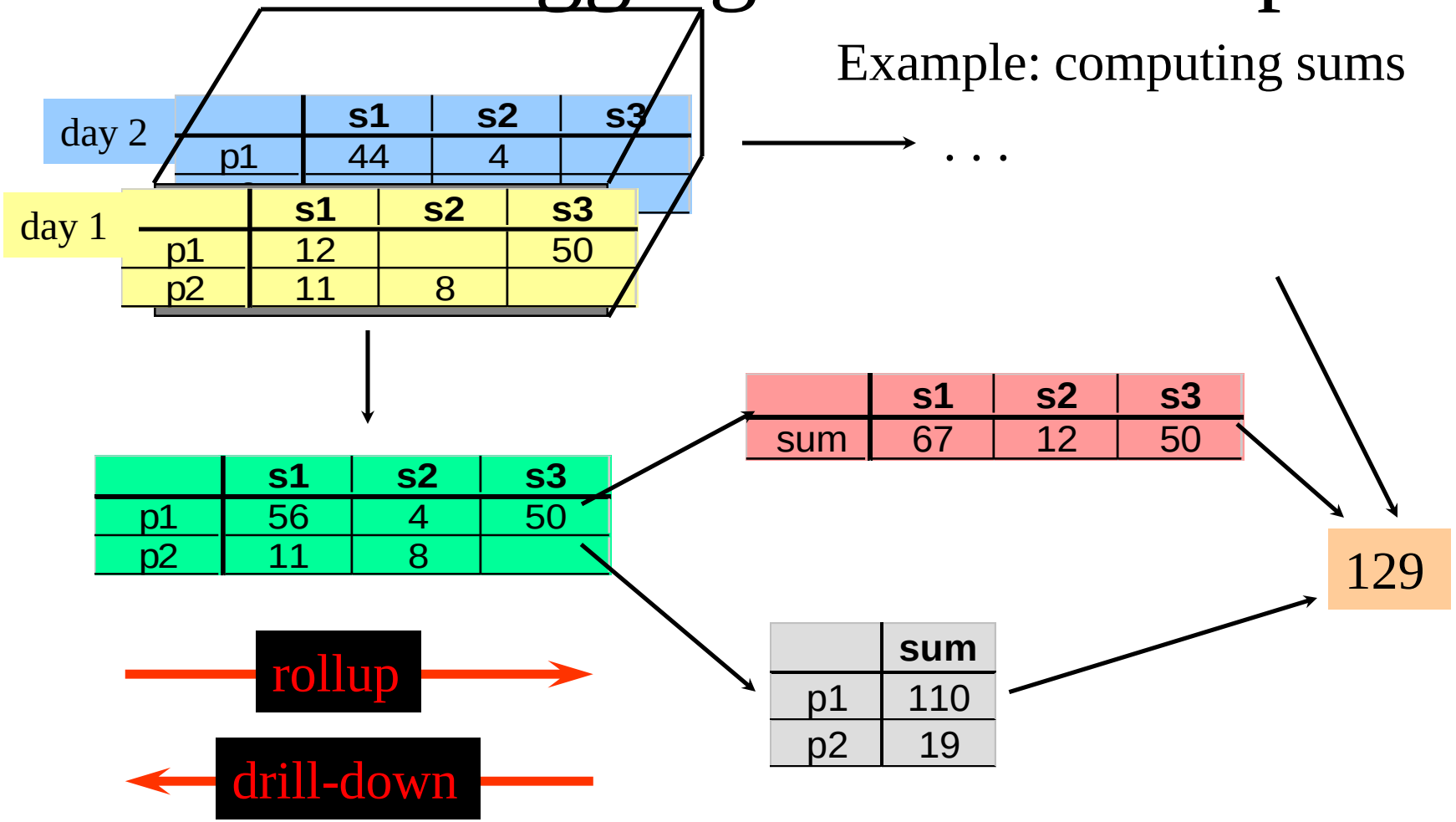
Multi-dimensional cube:



dimensions = 3

Cube Aggregation: Roll-up

Example: computing sums



A PIVOT TABLE is a program tool used to reorganize data in a spreadsheet to obtain a desired report more effectively.

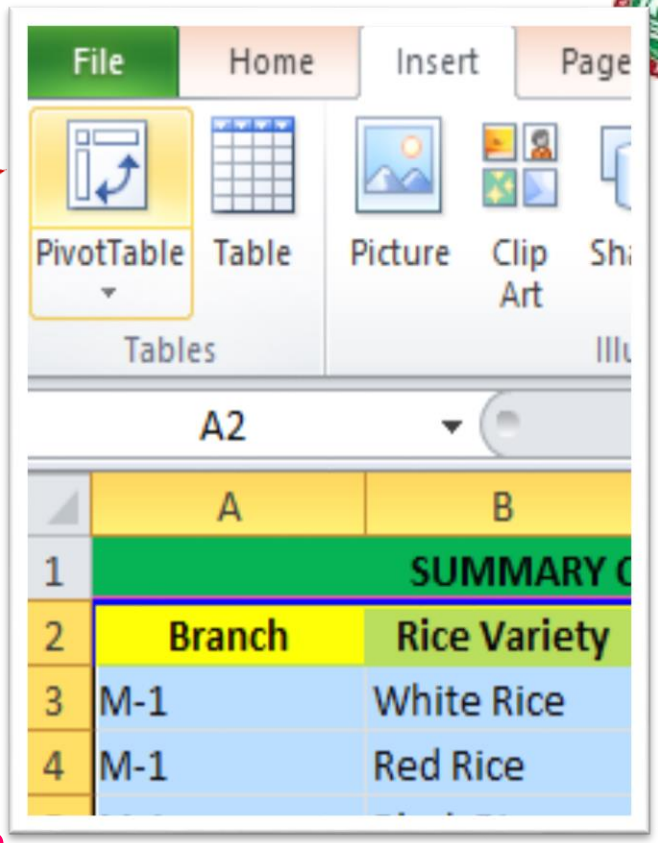
A PIVOT TABLE is a program tool used to reorganize data in a spreadsheet to obtain a desired report more effectively.

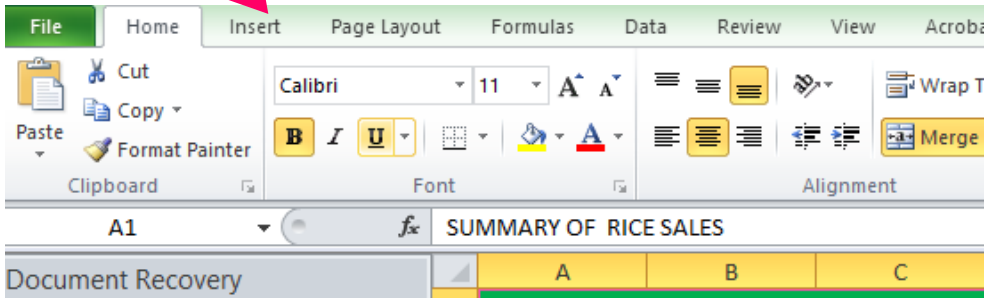
What are the advantages of using Pivot Table?

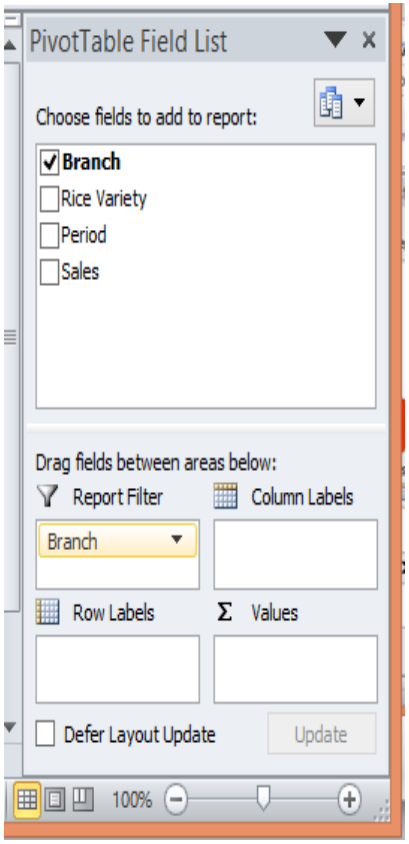
It sums up large amount of Data into a small amount of space.

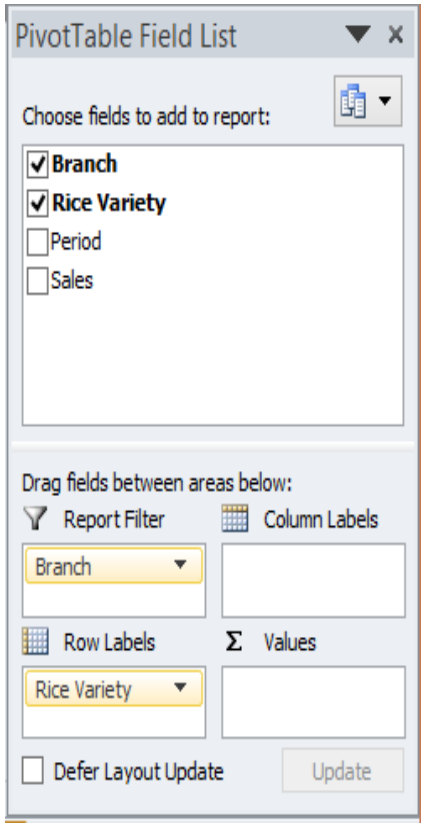
- It helps decision-makers use data more efficiently.
- Keeps presentation of information more organized.
- It provides interactive data analysis.
- Data can be combined from multiple sheets.
- Can create chart of summarized data in the Pivot Table.

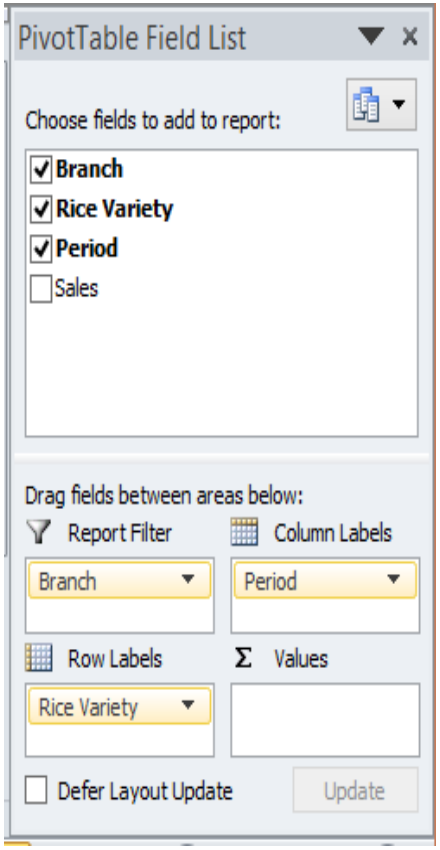
	A	B	C	D
1	SUMMARY OF RICE SALES			
2	Branch	Rice Variety	Period	Sales
3	M-1	White Rice	Qtr 1	$30,000
4	M-1	Red Rice	Qtr 2	$25,000
5	M-1	Black Rice	Qtr 3	$45,000
6	M-1	Brown Rice	Qtr 4	$55,000
7	M-2	White Rice	Qtr 1	$15,000
8	M-2	Red Rice	Qtr 2	$40,000
9	M-2	Black Rice	Qtr 3	$20,00
10	M-2	Brown Rice	Qtr 4	$50,00
11	M-3	White Rice	Qtr 1	$25,000
12	M-3	Red Rice	Qtr 2	$75,000
13	M-3	Black Rice	Qtr 3	$55,000
14	M-3	Brown Rice	Qtr 4	$25,000
15	M-4	White Rice	Qtr 1	$39,000
16	M-4	Red Rice	Qtr 2	$40,000
17	M-4	Black Rice	Qtr 3	$40,000
18	M-4	Brown Rice	Qtr 4	$45,000

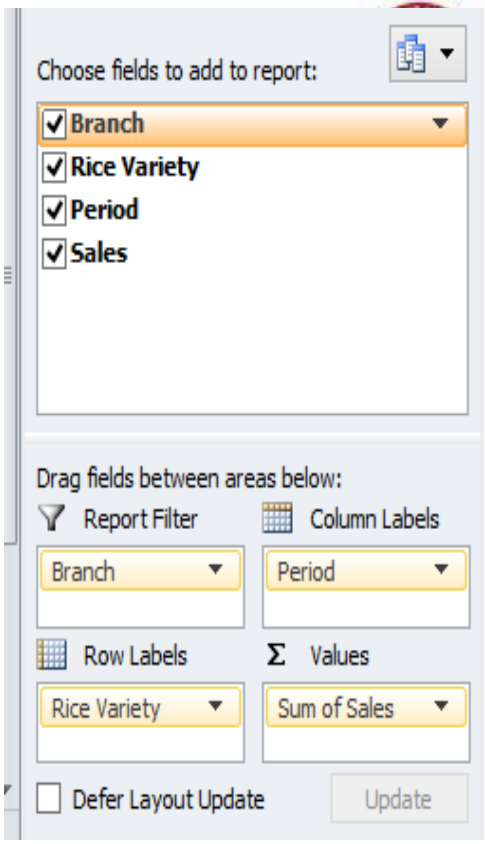












1	Branch	(All)				
2						
3	Sum of Sales	Column Labels				
4	Row Labels	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Grand Total
5	Black Rice			160,000		160,000
6	Brown Rice				175,000	175,000
7	Red Rice		180,000			180,000
8	White Rice	109,000				109,000
9	Grand Total	109,000	180,000	160,000	175,000	624,000
10						

Pivot tables are one of Excel's most powerful features.

A pivot table allows you to extract the significance from a large, detailed data set. (pivot-table.xlsx)

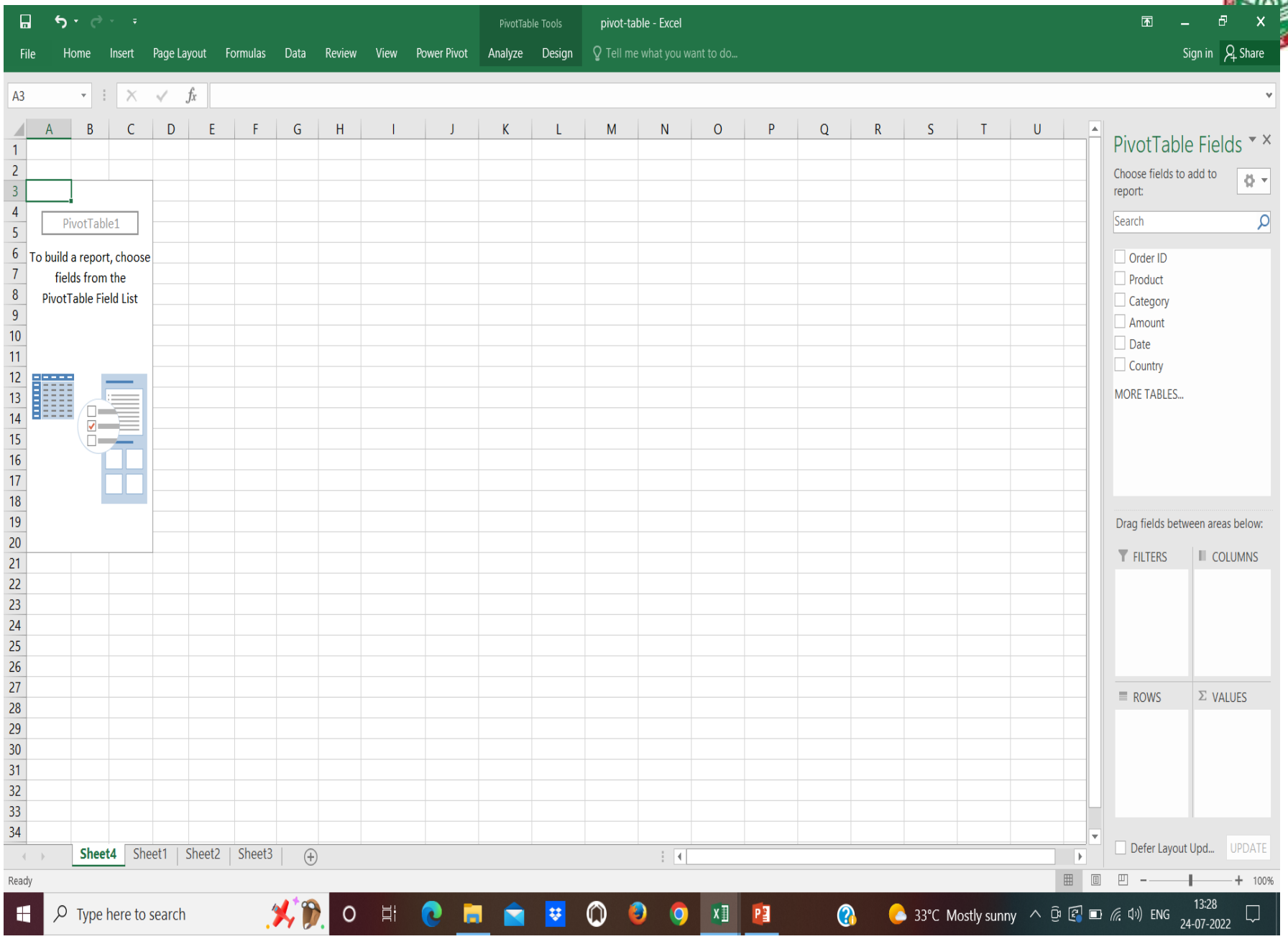
Our data set consists of 214 rows and 6 fields.

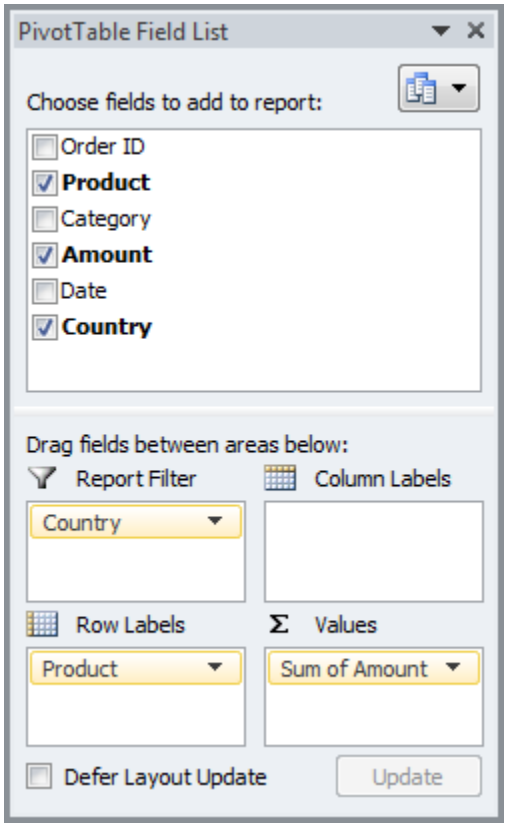
Order ID, Product, Category, Amount, Date and Country.

A2 | 1

	A	B	C	D	E	F
1	Order ID	Product	Category	Amount	Date	Country
2	1	Carrots	Vegetables	$4,270	1/6/2012	United States
3	2	Broccoli	Vegetables	$8,239	1/7/2012	United Kingdom
4	3	Banana	Fruit	$617	1/8/2012	United States
5	4	Banana	Fruit	$8,384	1/10/2012	Canada
6	5	Beans	Vegetables	$2,626	1/10/2012	Germany
7	6	Orange	Fruit	$3,610	1/11/2012	United States
8	7	Broccoli	Vegetables	$9,062	1/11/2012	Australia
9	8	Banana	Fruit	$6,906	1/16/2012	New Zealand
10	9	Apple	Fruit	$2,417	1/16/2012	France
11	10	Apple	Fruit	$7,431	1/16/2012	Canada

Simple Query?
Which one is our main product


pivot-table - Excel
PivotTable Tools
File Home Insert Page Layout Formulas Data Review View Power Pivot Analyze Design
Tell me what you want to do...
Sign in Share
A3
PivotTable1
To build a report, choose fields from the PivotTable Field List
PivotTable Fields
Choose fields to add to report:
Search
Order ID
Product
Category
Amount
Date
Country
MORE TABLES...
Drag fields between areas below:
FILTERS
COLUMNS
ROWS
VALUES
Defer Layout Upd...
UPDATE
Sheet4 Sheet1 Sheet2 Sheet3
Ready
100%
Type here to search
33°C Mostly sunny
ENG
13:28
24-07-2022



Below you can find the pivot table. Bananas are our main export product. That's how easy pivot tables can be!

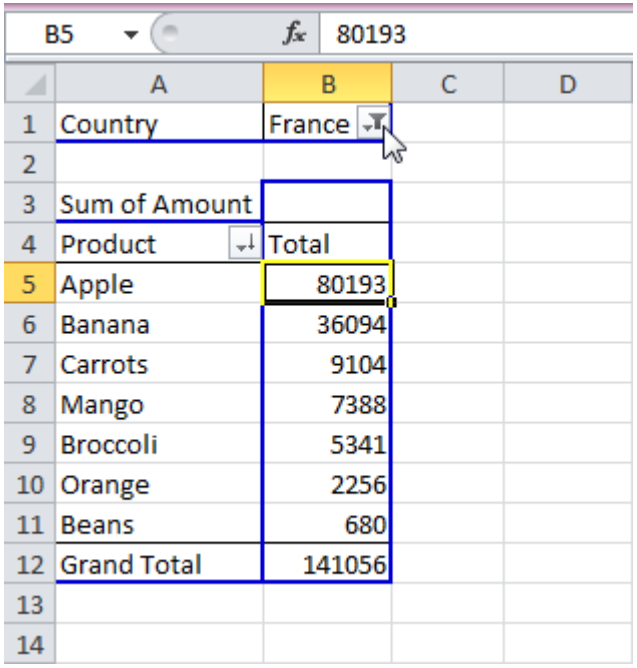
A3 | Sum of Amount

	A	B	C	D
1	Country	(All)		
2				
3	Sum of Amount			
4	Product	Total		
5	Apple	191257		
6	Banana	340295		
7	Beans	57281		
8	Broccoli	142439		
9	Carrots	136945		
10	Mango	57079		
11	Orange	104438		
12	Grand Total	1029734		
13				
14				

For example, which products do we export the most to France?

Filter

Because we added the Country field to the Report Filter area, we can filter this pivot table by Country.



B5 | 80193

	A	B	C	D
1	Country	France		
2				
3	Sum of Amount			
4	Product	Total		
5	Apple	80193		
6	Banana	36094		
7	Carrots	9104		
8	Mango	7388		
9	Broccoli	5341		
10	Orange	2256		
11	Beans	680		
12	Grand Total	141056		
13				
14				

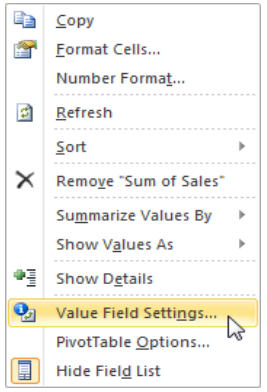
1. Click the filter drop-down and select France.

Result. Apples are our main export product to France

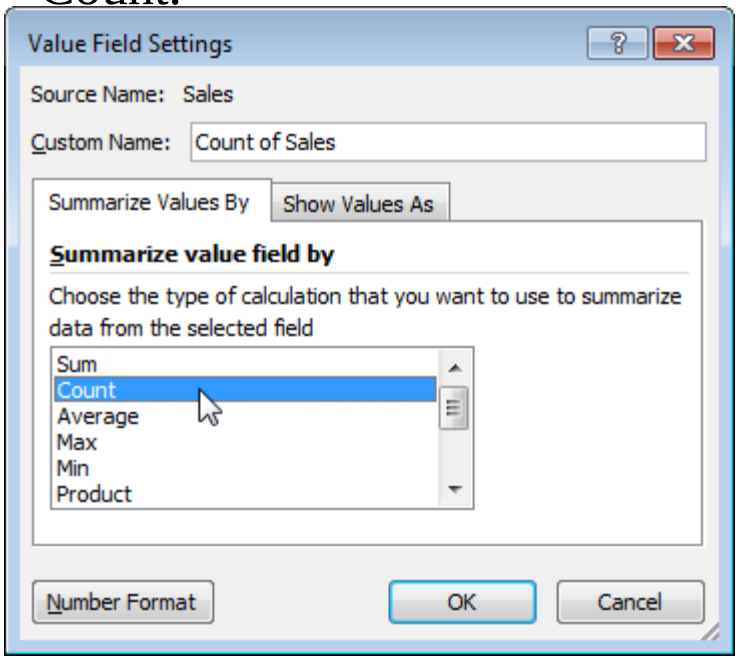
Change Summary Calculation

By default, Excel summarizes your data by either summing or counting the items. **To change the type of calculation that you want to use, execute the following steps**.

1. Click any cell inside the Total column.
2. Right click and click on Value Field Settings...



3. Choose the type of calculation you want to use. For example, click Count.



CLICK OK

Result. 16 out of the 28 orders to France were 'Apple' orders

B5 fx 16

	A	B	C	D
1	Country	France		
2				
3	Count of Amount			
4	Product	Total		
5	Apple	16		
6	Banana	7		
7	Carrots	1		
8	Mango	1		
9	Orange	1		
10	Beans	1		
11	Broccoli	1		
12	Grand Total	28		
13				
14				

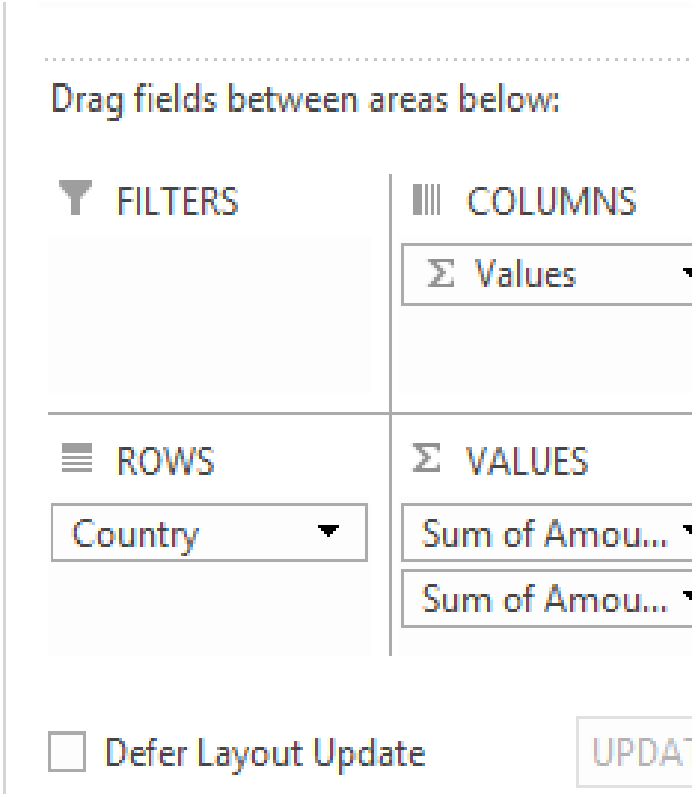
Percentage Analysis of each country

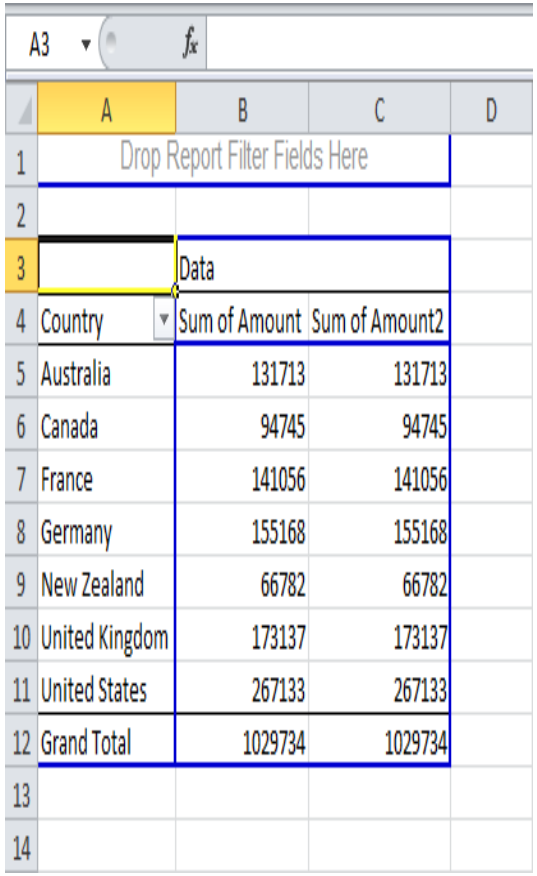
Multiple Value Fields

First, insert a pivot table. Next, drag the following fields to the different areas.

1. Country Field to the Row Labels area.
2. Amount Field to the Values area (2x).

3.Next, click any cell inside the Sum of Amount2 column.





	A	B	C	D
1	Drop Report Filter Fields Here			
2				
3		Data		
4	Country	Sum of Amount	Sum of Amount2	
5	Australia	131713	131713	
6	Canada	94745	94745	
7	France	141056	141056	
8	Germany	155168	155168	
9	New Zealand	66782	66782	
10	United Kingdom	173137	173137	
11	United States	267133	267133	
12	Grand Total	1029734	1029734	
13				
14				

Percentage Analysis of each country

C8 | 15.0687459091377%

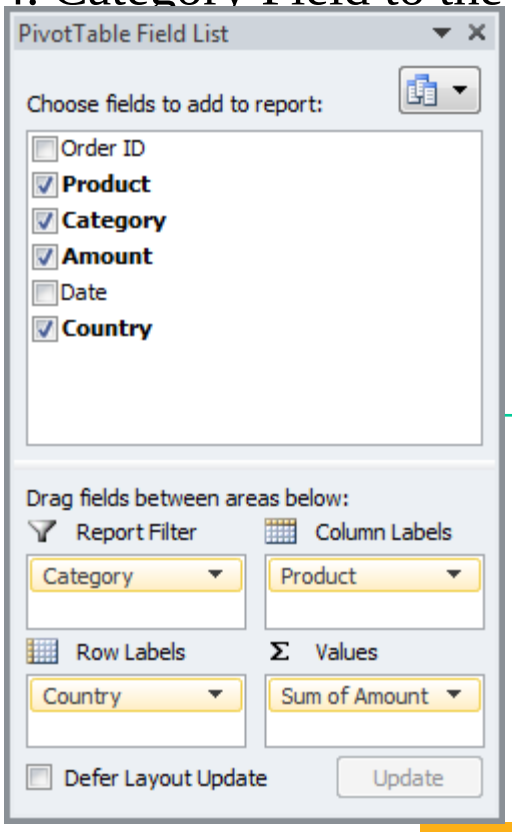
	A	B	C	D
1	Drop Report Filter Fields Here			
2				
3		Data		
4	Country	Sum of Amount	Percentage	
5	Australia	131713	12.79%	
6	Canada	94745	9.20%	
7	France	141056	13.70%	
8	Germany	155168	15.07%	
9	New Zealand	66782	6.49%	
10	United Kingdom	173137	16.81%	
11	United States	267133	25.94%	
12	Grand Total	1029734	100.00%	
13				
14				

Let say can you find out the difference between uk (apple) and US(orange)

Two-dimensional Pivot Table

If you drag a field to the Row Labels area and Column Labels area, you can create a two-dimensional pivot table. For example, to get the total amount exported to each country, of each product, drag the following fields to the different areas.

1. Country Field to the Row Labels area.
2. Product Field to the Column Labels area. 3. Amount Field to the Values area.
4. Category Field to the Report Filter area



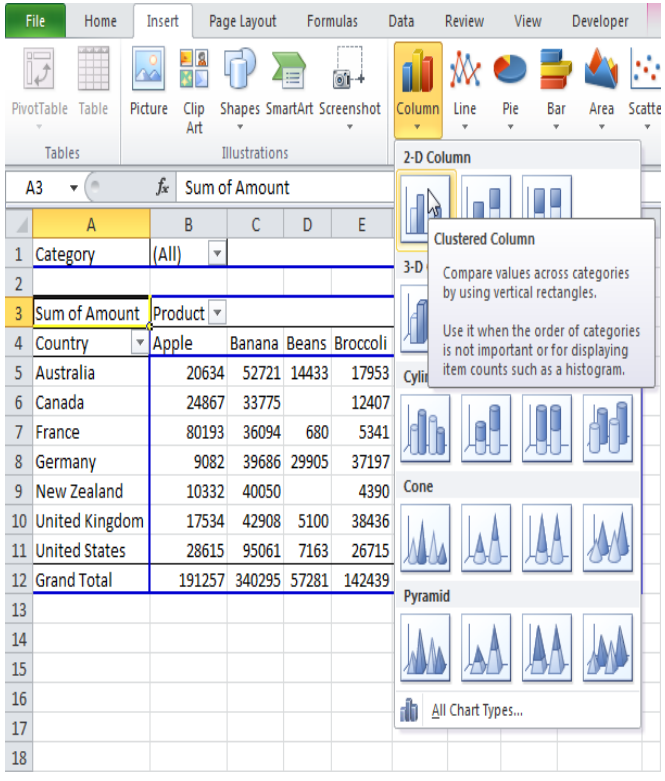
A3 fx Sum of Amount

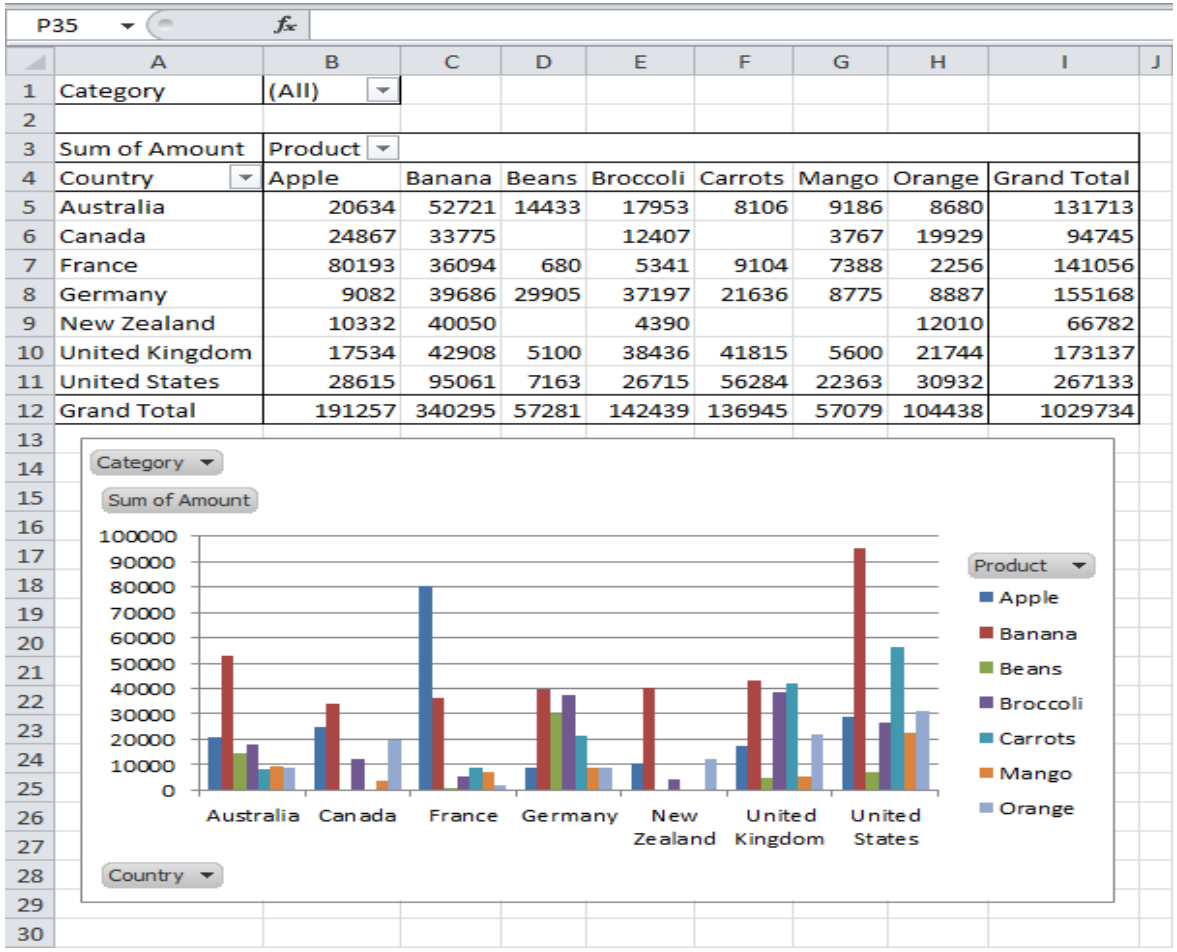
	A	B	C	D	E	F	G	H	I
1	Category	(All)							
2									
3	Sum of Amount	Product							
4	Country	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total
5	Australia	20634	52721	14433	17953	8106	9186	8680	131713
6	Canada	24867	33775		12407		3767	19929	94745
7	France	80193	36094	680	5341	9104	7388	2256	141056
8	Germany	9082	39686	29905	37197	21636	8775	8887	155168
9	New Zealand	10332	40050		4390			12010	66782
10	United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137
11	United States	28615	95061	7163	26715	56284	22363	30932	267133
12	Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734
13									
14									

Pivot Chart

Analyze each item with country (graphical and more depth analysis)

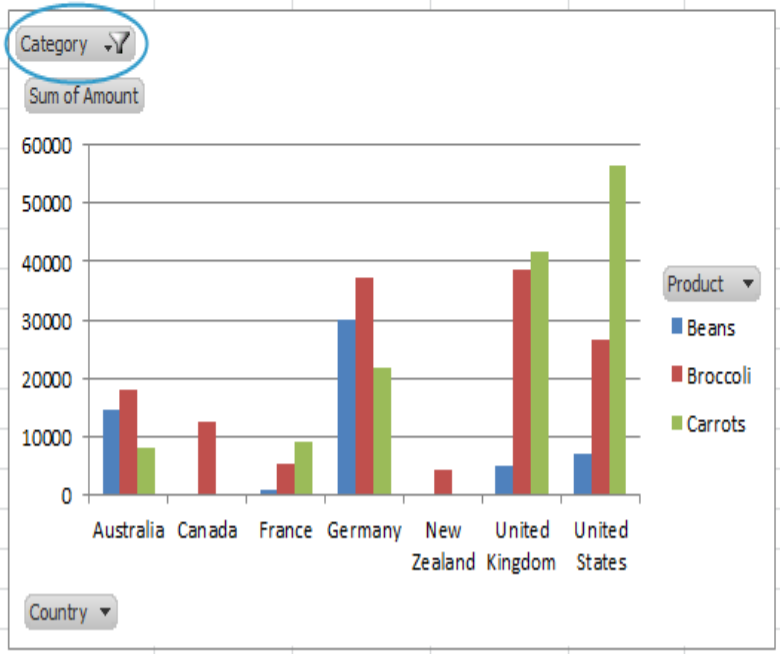
Category	(All)							
Sum of Amount	Product							
Country	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total
Australia	20634	52721	14433	17953	8106	9186	8680	131713
Canada	24867	33775		12407		3767	19929	94745
France	80193	36094	680	5341	9104	7388	2256	141056
Germany	9082	39686	29905	37197	21636	8775	8887	155168
New Zealand	10332	40050		4390			12010	66782
United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137
United States	28615	95061	7163	26715	56284	22363	30932	267133
Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734





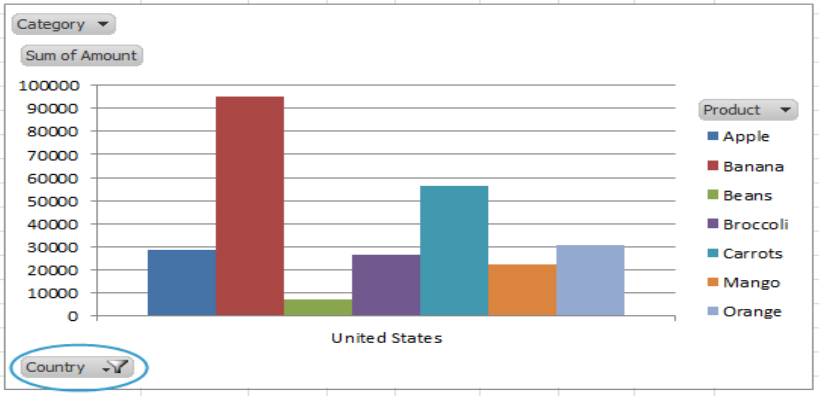
Category	Vegetables

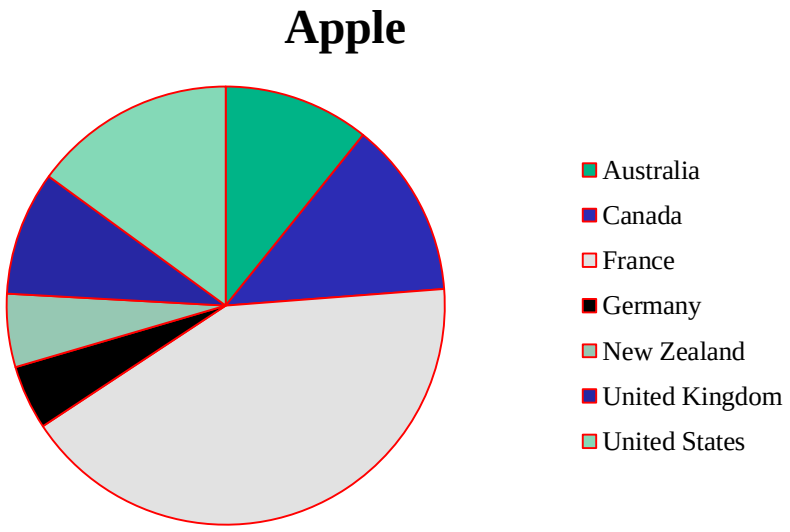
Sum of Amount	Product			
Country	Beans	Broccoli	Carrots	Grand Total
Australia	14433	17953	8106	40492
Canada		12407		12407
France	680	5341	9104	15125
Germany	29905	37197	21636	88738
New Zealand		4390		4390
United Kingdom	5100	38436	41815	85351
United States	7163	26715	56284	90162
Grand Total	57281	142439	136945	336665



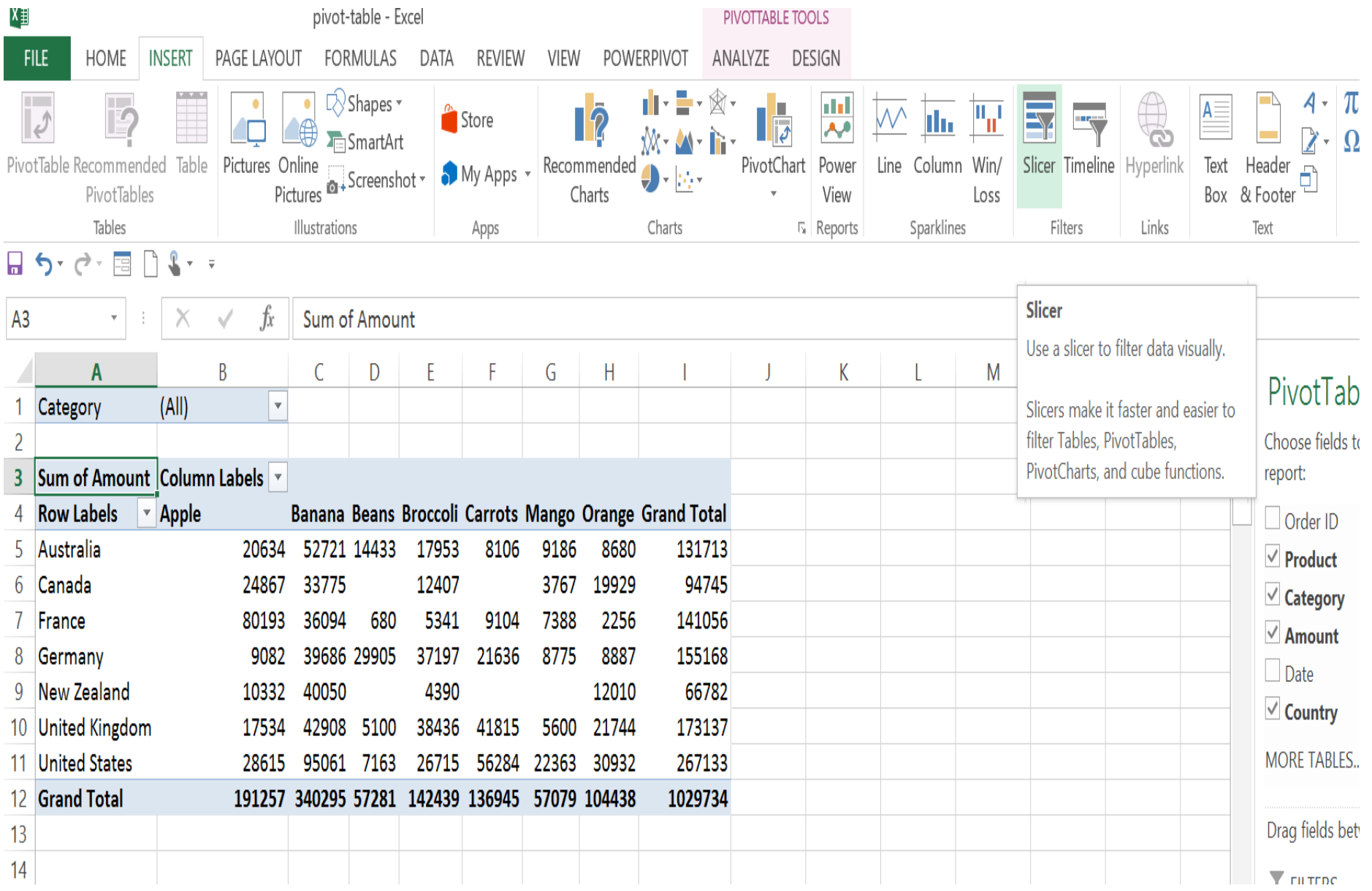
Category	(All)

Sum of Amount	Product							
Country	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total
United States	28615	95061	7163	26715	56284	22363	30932	267133
Grand Total	28615	95061	7163	26715	56284	22363	30932	267133





slicers

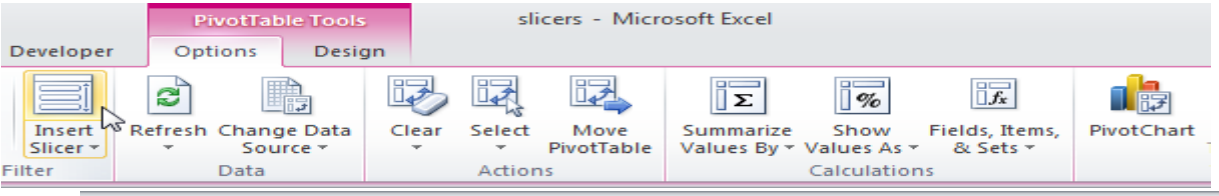


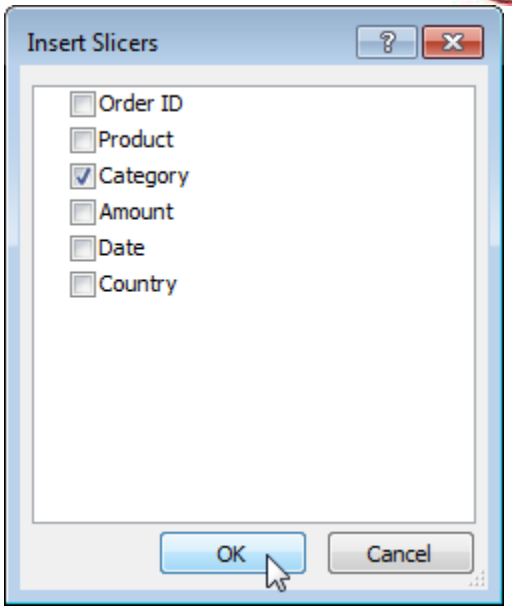
	A	B	C	D	E	F	G	H	I
1	Category	(All)							
2									
3	Sum of Amount	Column Labels							
4	Row Labels	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total
5	Australia	20634	52721	14433	17953	8106	9186	8680	131713
6	Canada	24867	33775		12407		3767	19929	94745
7	France	80193	36094	680	5341	9104	7388	2256	141056
8	Germany	9082	39686	29905	37197	21636	8775	8887	155168
9	New Zealand	10332	40050		4390			12010	66782
10	United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137
11	United States	28615	95061	7163	26715	56284	22363	30932	267133
12	Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734
13									
14									

slicers

A3 fx Sum of Amount

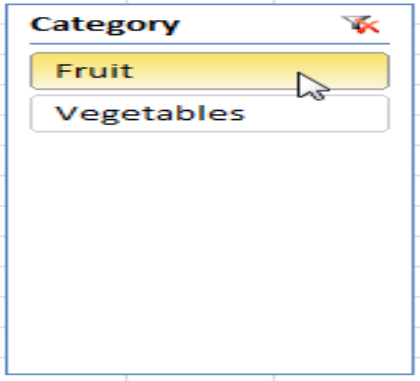
	A	B	C	D	E	F	G	H	I
1	Category	(All)							
2									
3	Sum of Amount	Product							
4	Country	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total
5	Australia	20634	52721	14433	17953	8106	9186	8680	131713
6	Canada	24867	33775		12407		3767	19929	94745
7	France	80193	36094	680	5341	9104	7388	2256	141056
8	Germany	9082	39686	29905	37197	21636	8775	8887	155168
9	New Zealand	10332	40050		4390			12010	66782
10	United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137
11	United States	28615	95061	7163	26715	56284	22363	30932	267133
12	Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734
13									
14									





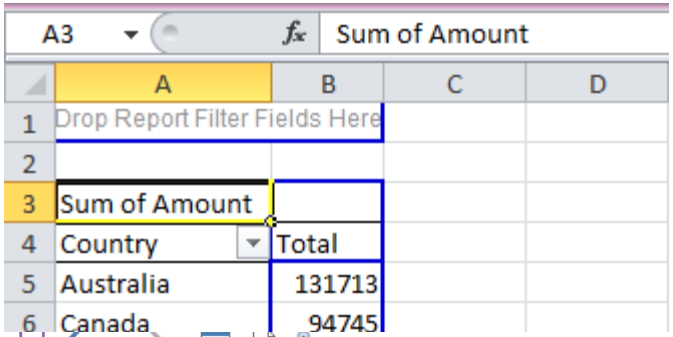
N24 fx

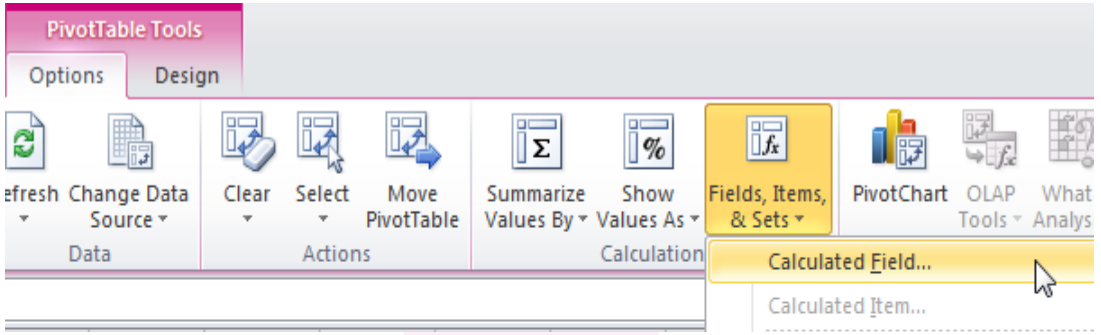
	A	B	C	D	E	F	G	H	I
1	Category	Fruit							
2									
3	Sum of Amount	Product							
4	Country	Apple	Banana	Mango	Orange	Grand Total			
5	Australia	20634	52721	9186	8680	91221			
6	Canada	24867	33775	3767	19929	82338			
7	France	80193	36094	7388	2256	125931			
8	Germany	9082	39686	8775	8887	66430			
9	New Zealand	10332	40050		12010	62392			
10	United Kingdom	17534	42908	5600	21744	87786			
11	United States	28615	95061	22363	30932	176971			
12	Grand Total	191257	340295	57079	104438	693069			
13									
14									
15									
16									

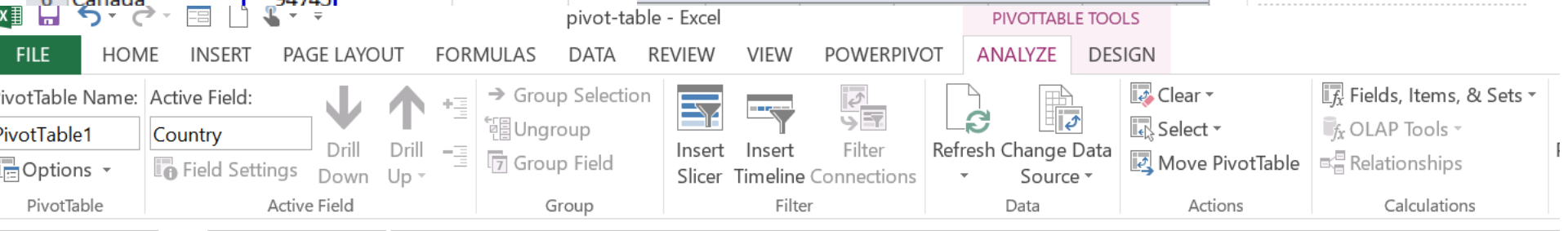


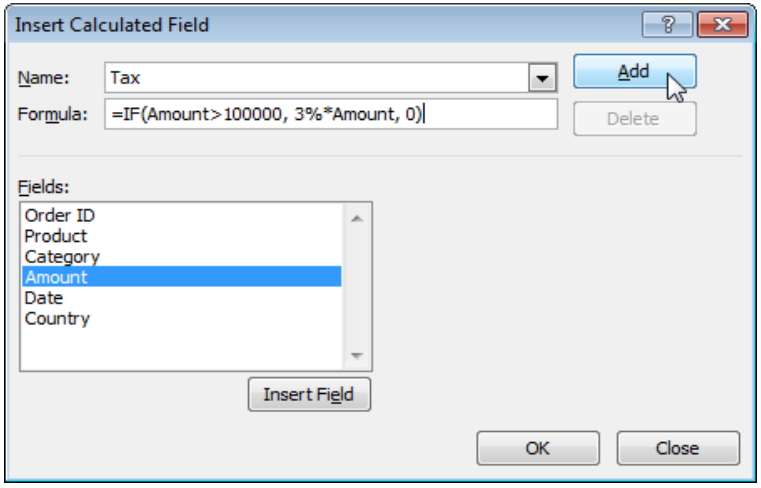
Calculated Field/Item

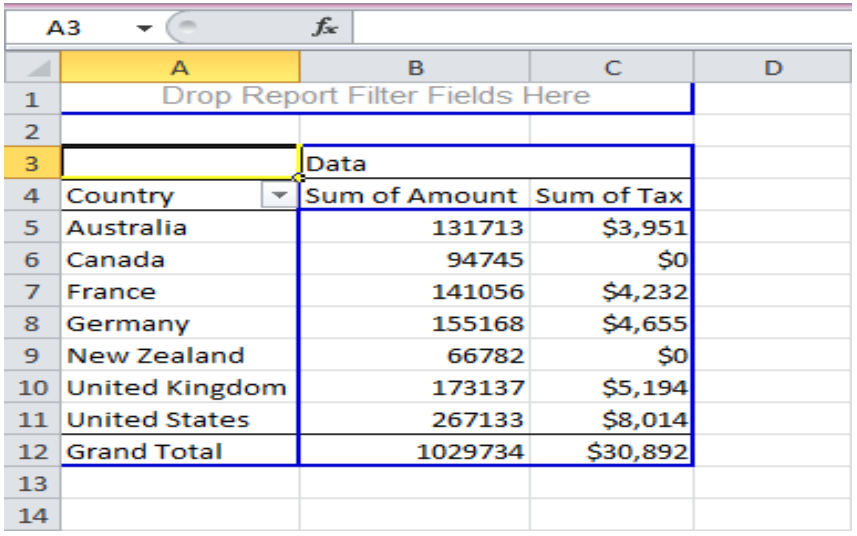
Tax calculation ? Suppose >100000 then x% of tax otherwise 0











Cases

Case (store.xlxs)

Q1.Calculate Total Prices Store wise and also calculate the percentage of sales at each store?

Q2. Summarizing prices by month with store ?

Q3. Calculate total Prices of each product ?

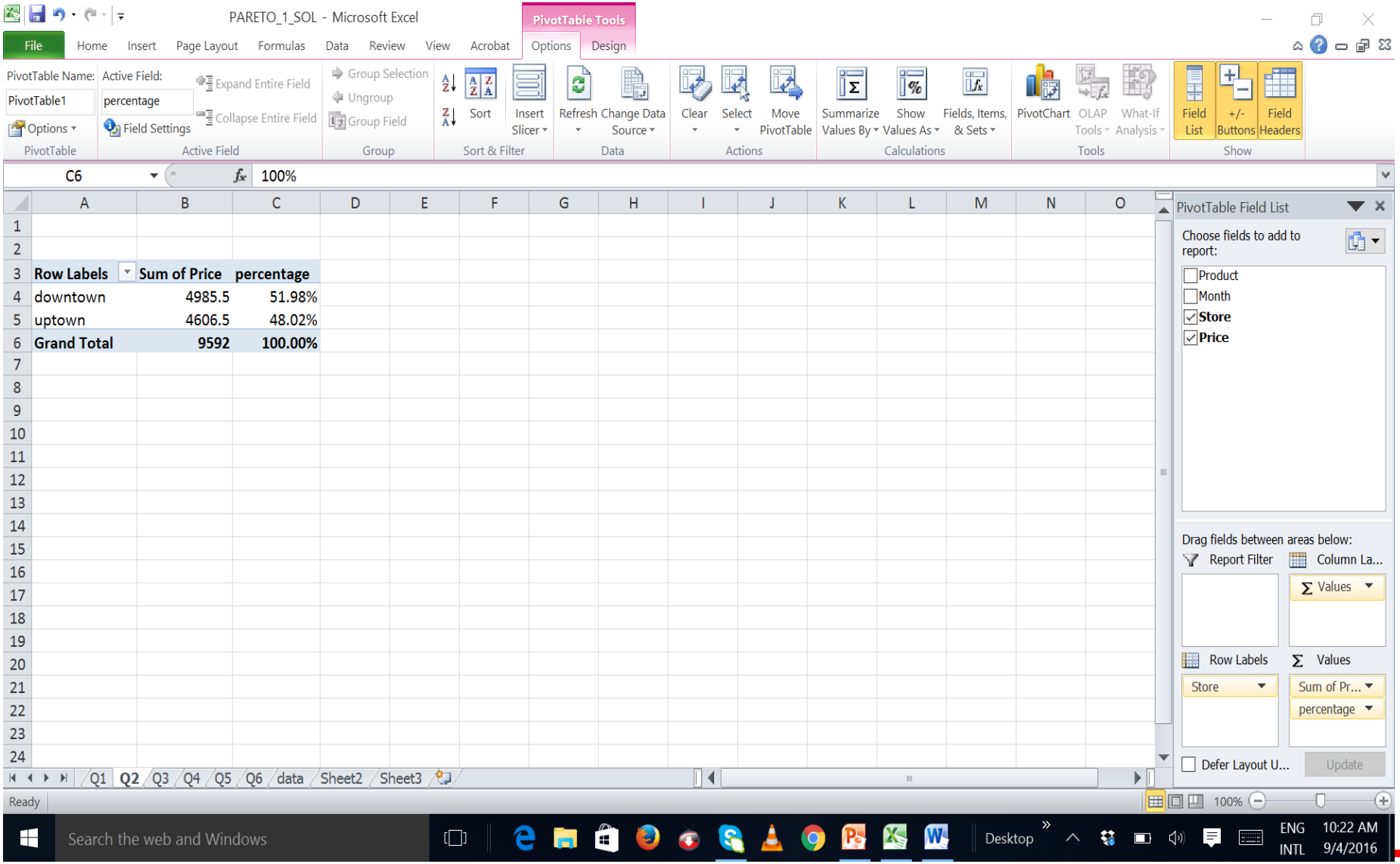
Q4. identify products names which contains 80% values

Q5. Summarizing prices by month(Feb, July and December) with store wise for products (Adhesive1, Adhesive4, Adhesive9,Saftey5,Saftey8 and Tape4) ?

Q6. Find out store wise total in each of the month for the product (Saftey1---10 and Tape1…..10)only.

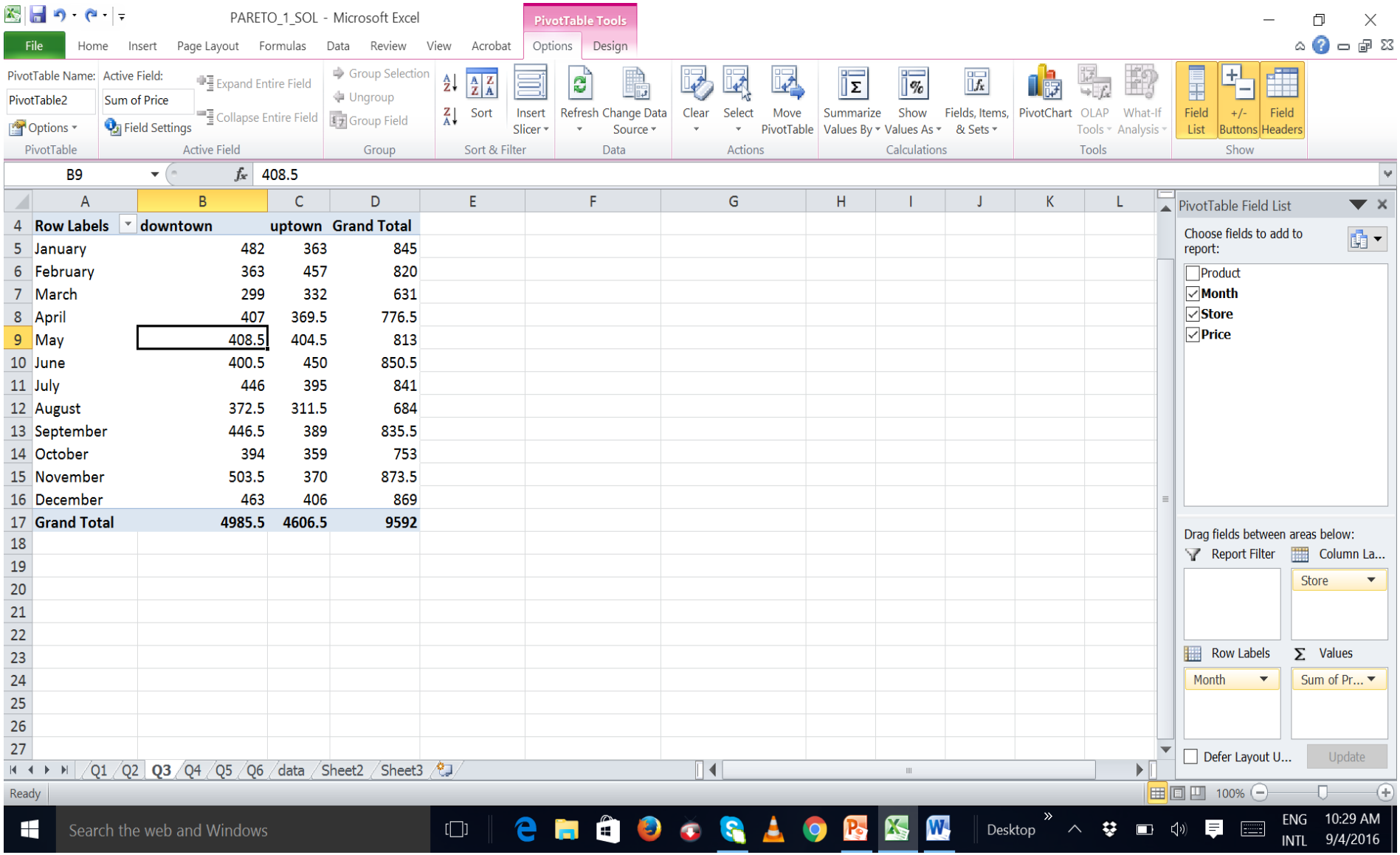
Case (store.xlxs)

Q1.Calculate Total Prices Store wise and also calculate the percentage of sales at each store?



Case (store.xlxs)

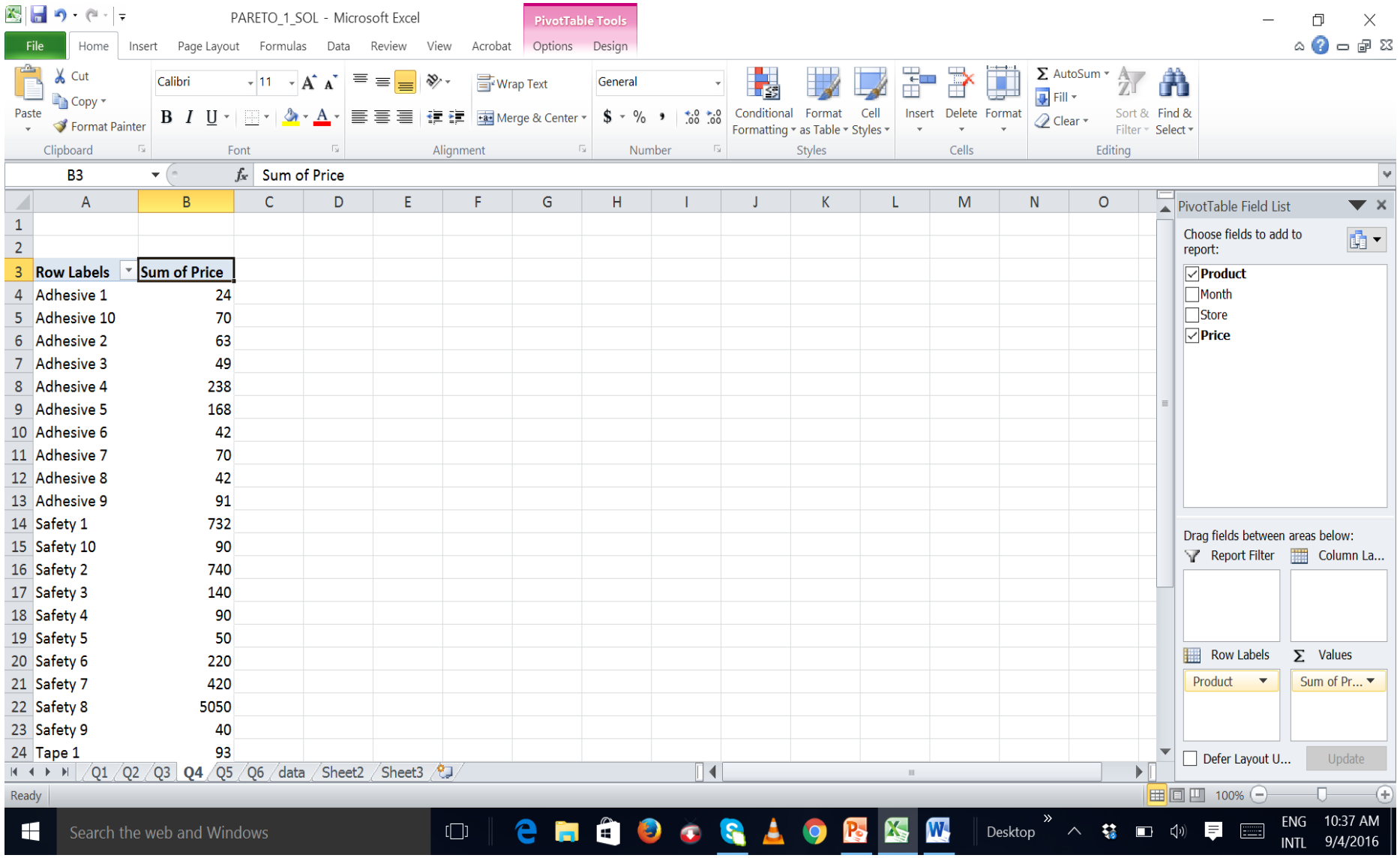
Q2. Summarizing prices by month with store ?



Row Labels	downtown	uptown	Grand Total
January	482	363	845
February	363	457	820
March	299	332	631
April	407	369.5	776.5
May	408.5	404.5	813
June	400.5	450	850.5
July	446	395	841
August	372.5	311.5	684
September	446.5	389	835.5
October	394	359	753
November	503.5	370	873.5
December	463	406	869
Grand Total	**4985.5**	**4606.5**	**9592**

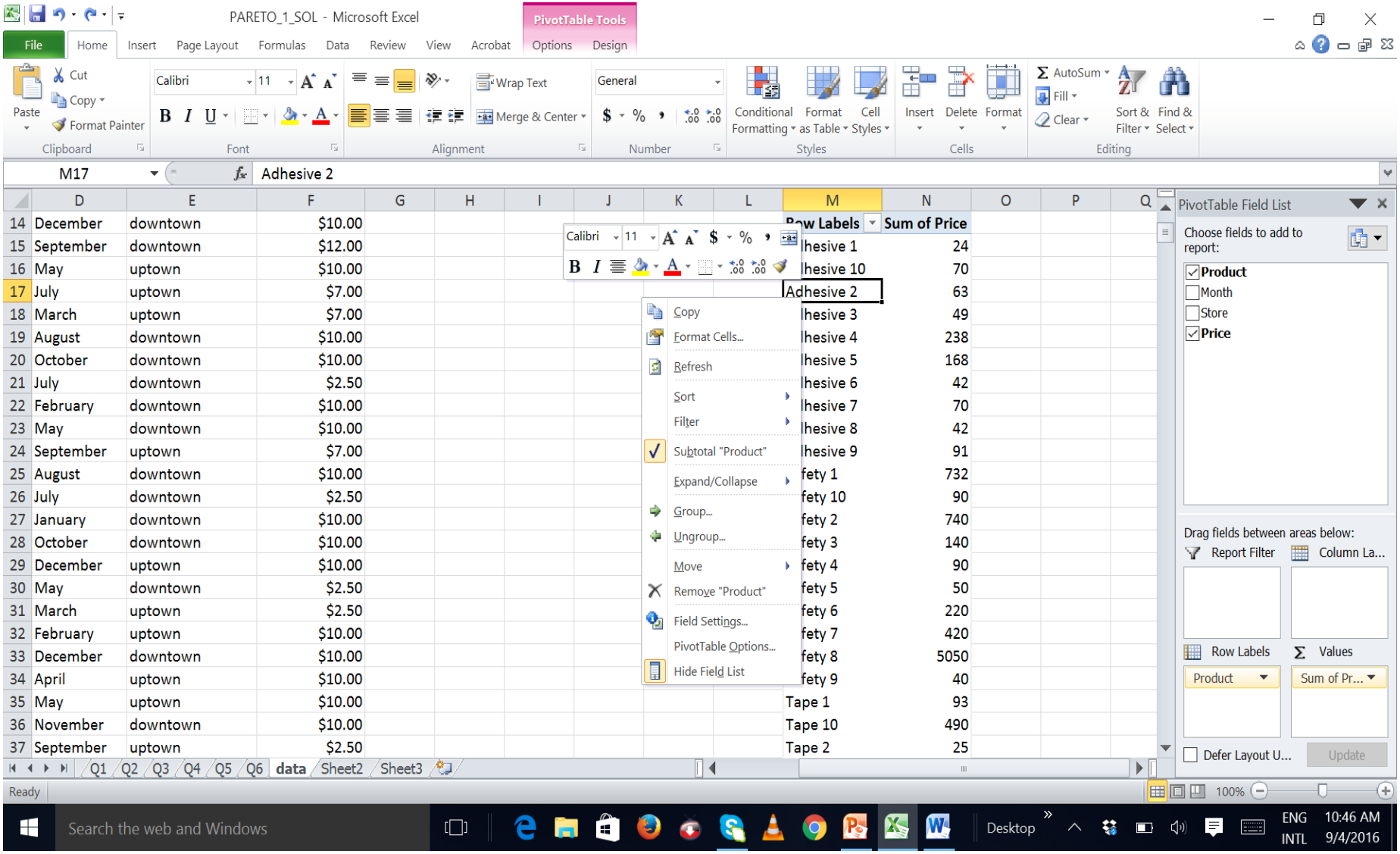
Case (store.xlxs)

Calculate total Prices of each product ?



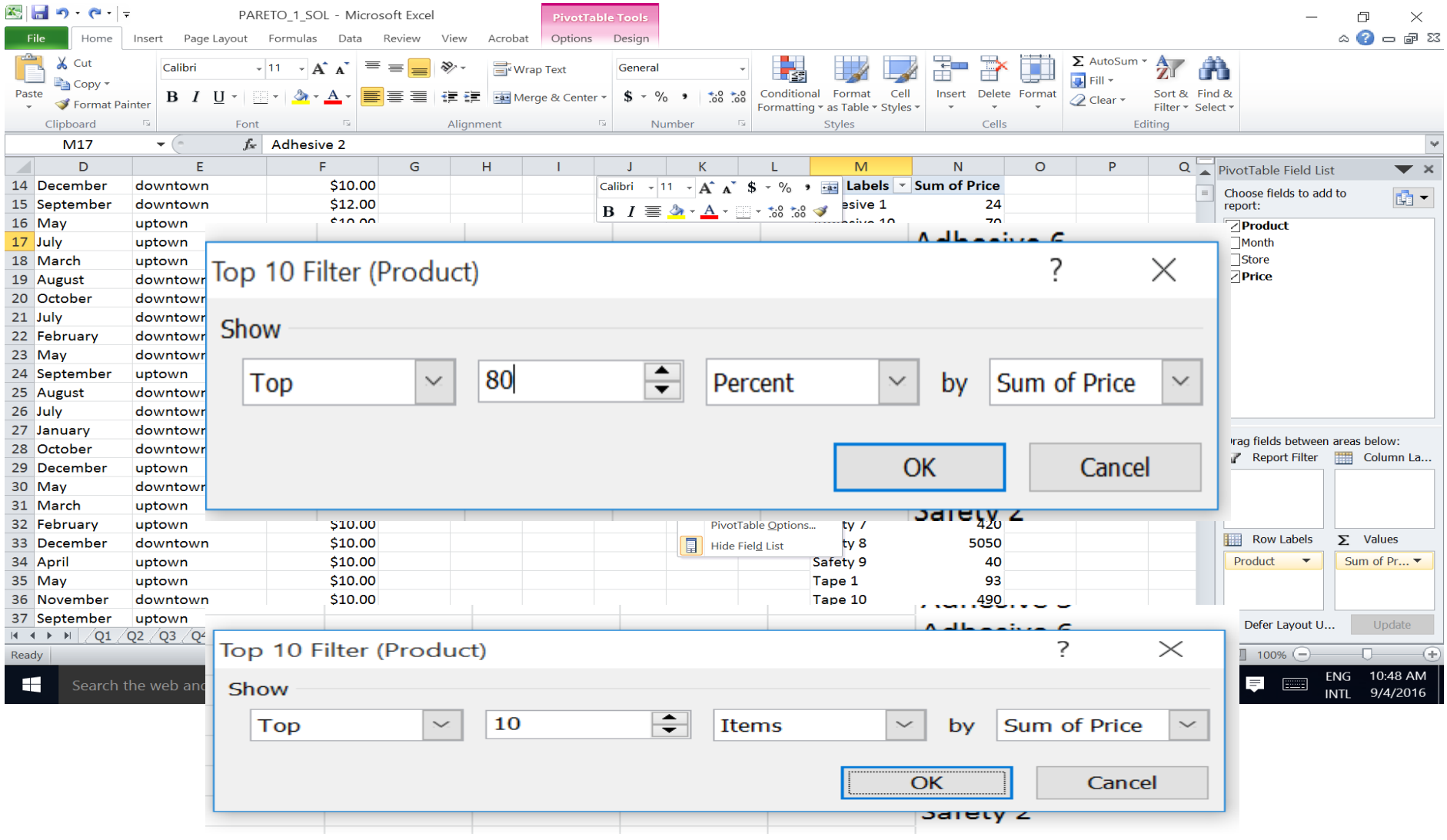
Case (store.xlxs)

Q4. identify products names which contains 80% values



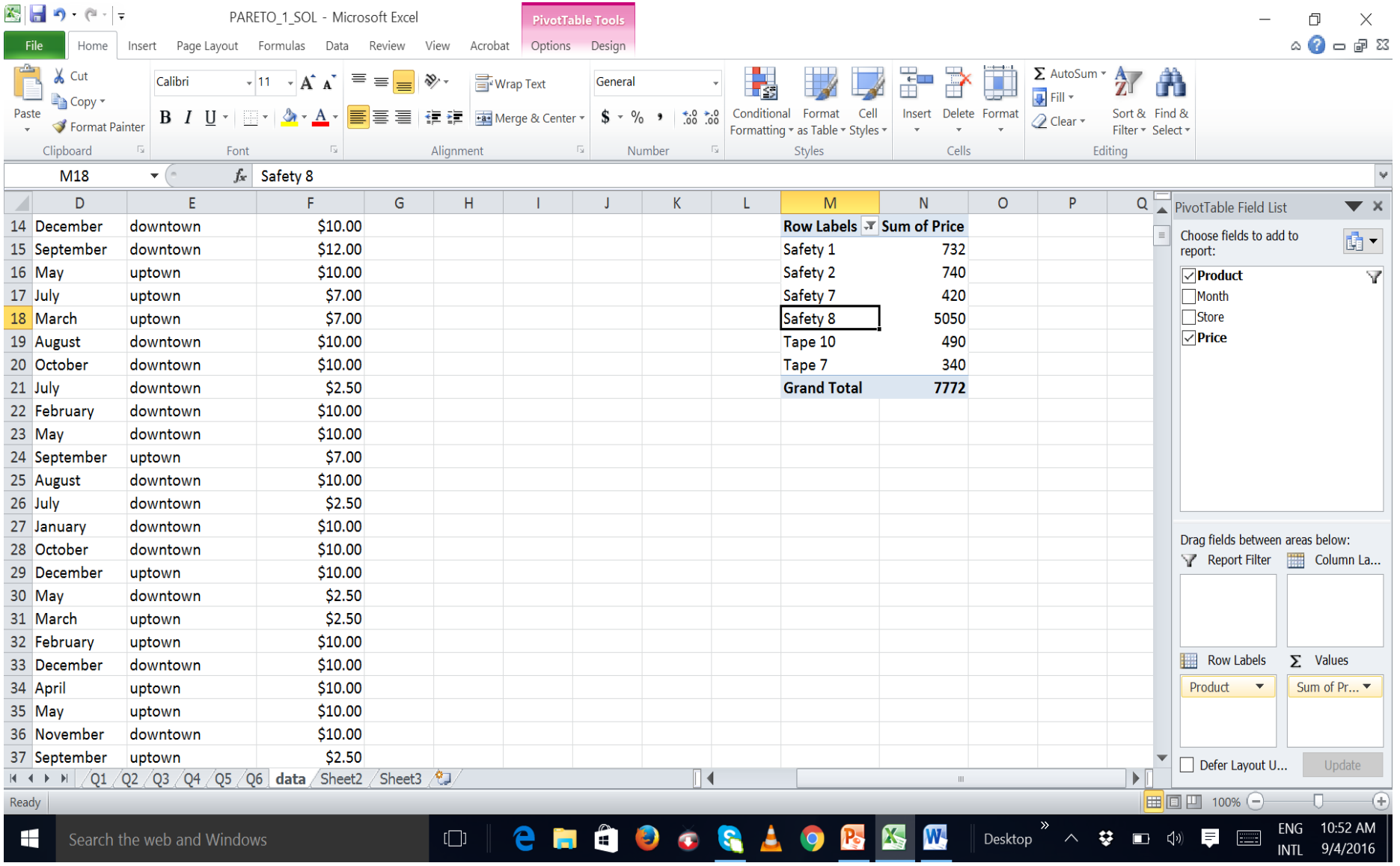
Case (store.xlxs)

Q4. identify products names which contains 80% values



Case (store.xlxs)

Q4. identify products names which contains 80% values



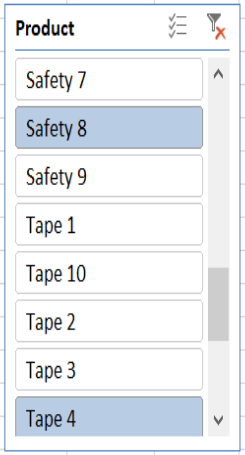
	D	E	F
14	December	downtown	$10.00
15	September	downtown	$12.00
16	May	uptown	$10.00
17	July	uptown	$7.00
18	March	uptown	$7.00
19	August	downtown	$10.00
20	October	downtown	$10.00
21	July	downtown	$2.50
22	February	downtown	$10.00
23	May	downtown	$10.00
24	September	uptown	$7.00
25	August	downtown	$10.00
26	July	downtown	$2.50
27	January	downtown	$10.00
28	October	downtown	$10.00
29	December	uptown	$10.00
30	May	downtown	$2.50
31	March	uptown	$2.50
32	February	uptown	$10.00
33	December	downtown	$10.00
34	April	uptown	$10.00
35	May	uptown	$10.00
36	November	downtown	$10.00
37	September	uptown	$2.50

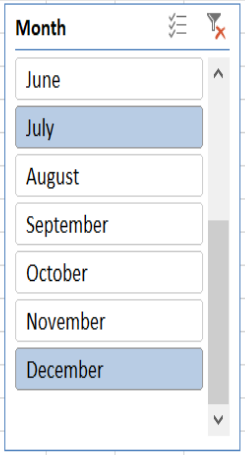
Row Labels	Sum of Price
Safety 1	732
Safety 2	740
Safety 7	420
Safety 8	5050
Tape 10	490
Tape 7	340
Grand Total	7772

Case (store.xlxs)

Q5. Summarizing prices by month(Feb, July and December) with store wise for products (Adhesive1, Adhesive4, Adhesive9,Saftey5,Saftey8 and Tape4)

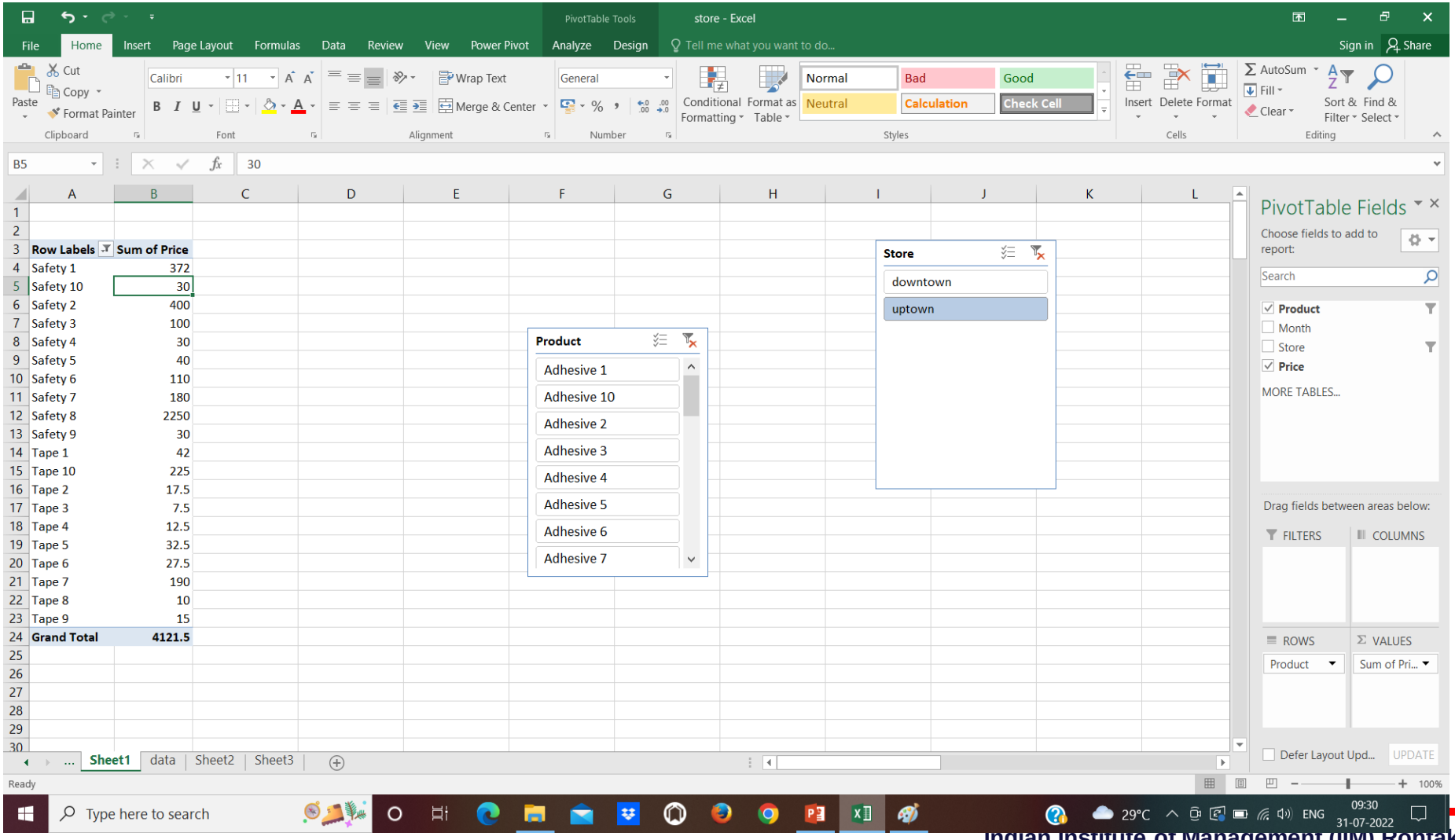
Sum of Price	Column Labels						
Row Labels	Adhesive 1	Adhesive 4	Adhesive 9	Safety 5	Safety 8	Tape 4	Grand Total
February		28		10	370	2.5	410.5
July		21		20	470		511
December	8	7	7		500	5	527
Grand Total	**8**	**56**	**7**	**30**	**1340**	**7.5**	**1448.5**





Case (store.xlxs)

Q6. Find out store wise total in each of the month for the product (Saftey1---10 and Tape1…..10))Only.



Thank you !!!