

PHASE1: The stakeholders need

- 1 Number of sales took place in California in October
- 2 Total profit made by all states in Australia
- 3 Which age groups made the maximum and minimum orders
- 4 What is the total revenue made on mountain bikes
- 5 Is there any trend in the number of orders placed by different countries
- 6 What is the product of order number 000261780 and what is the age and gender of the buyer

PHASE 2: Obtaining the Dataset

Let's demonstrate the data analysis process using the dataset [Bike_Sales 1.xlsx](#). This dataset contains records of all the bike sales in the year 2021 in different countries with multiple rows and columns representing different aspects of business elements.

PHASE 3: Load and Prepare the Dataset

we will upload the dataset on Microsoft Excel

PHASE 4: Cleaning

Data integrity refers to the quality of data being accurate, complete, consistent, and trustworthy throughout its entire lifecycle, ensuring its reliability and suitability for analysis. Cleaning data, in this context, signifies that the data possesses these attributes before undergoing analysis.

For Data Cleaning, we will use below tools and techniques:

- [Conditional Formatting](#)
- Remove Duplicates
- Split
- Concatenate

The screenshot shows an Excel spreadsheet with the following data:

Sales_Order #	Date	Day	Month	Year	Customer_Age	Age_Group	Customer_Cou	State	Product
000261273	10/1/2021	1	October	2021	48	Adults (35-64)	F	Unit	Greater Than...
000261274	10/1/2021	1	October	2021	27	Young Adults (25-34)	M	Can	Less Than...
000261275	10/1/2021	1	October	2021	28	Young Adults (25-34)	M	Unit	Between...
000261276	10/1/2021	1	October	2021	40	Adults (35-64)	F	Ausi	Equal To...
000261277	10/1/2021	1	October	2021	28	Young Adults (25-34)	M	Ausi	Text that Contains...
000261278	10/1/2021	1	October	2021	36	Adults (35-64)	F	Unit	A Date Occurring...
000261279	10/1/2021	1	October	2021	53	Adults (35-64)	M	Ausi	Duplicate Values...
000261280	10/1/2021	1	October	2021	62	Adults (35-64)	M	Unit	
000261281	10/2/2021	2	October	2021	28	Young Adults (25-34)	F	Ausi	
000261282	10/2/2021	2	October	2021	29	Young Adults (25-34)	F	Ausi	
000261283	10/2/2021	2	October	2021	28	Young Adults (25-34)	F	Ausi	
000261284	10/2/2021	2	October	2021	47	Adults (35-64)	F	United States	California
000261285	10/2/2021	2	October	2021	38	Adults (35-64)	F	United Kingdom	England
000261286	10/2/2021	2	October	2021	43	Adults (35-64)	M	Australia	New South Wales
000261287	10/2/2021	2	October	2021	46	Adults (35-64)	M	United States	California
000261288	10/2/2021	2	October	2021	50	Adults (35-64)	M	Australia	Queensland
000261289	10/3/2021	3	October	2021	34	Young Adults (25-34)	F	Australia	New South Wales
000261290	10/3/2021	3	October	2021	46	Adults (35-64)	M	Australia	New South Wales

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Order #	Date	Day	Month	Year	Customer Age	Age Group	Customer	Country	State									
000261273	10/1/2021	1	October	2021	48	Adults (35-64)	F	United States	California									
000261274	10/1/2021	1	October	2021		Young Adults (25-34)	M		British Columbia									
000261275	10/1/2021	1	October	2021	28	Young Adults (25-34)	M	United Kingdom										
000261276	10/1/2021		October	2021	40	Adults (35-64)	F	Australia	Queensland									
000261277	10/1/2021	1	October	2021	28	Young Adults (25-34)	M	Australia	South Australia									
000261278	10/1/2021	1	October	2021	36	Adults (35-64)	F	United States	California									
000261279	10/1/2021	1	October	2021	53	Adults (35-64)	M	Australia	New South Wales									
000261280	10/1/2021	1	October	2021	62	Adults (35-64)		United States	California									
000261281	10/2/2021	2	October	2021	28	Young Adults (25-34)	F	Australia	New South Wales									
000261282	10/2/2021	2	October	2021	29	Young Adults (25-34)	F	Australia	New South Wales									
000261283	10/2/2021	2	October	2021	28	Young Adults (25-34)	F	Australia	New South Wales									
000261284	10/2/2021	2	October	2021	47	Adults (35-64)	F	United States	California									
000261285	10/2/2021	2	October	2021	38	Adults (35-64)	F	United Kingdom	England									
000261286	10/2/2021	2	October	2021	43	Adults (35-64)	M	Australia	New South Wales									
000261287	10/2/2021	2	October	2021	46	Adults (35-64)	M	United States	California									
000261288	10/2/2021	2	October	2021	50	Adults (35-64)	M	Australia	Queensland									
000261289	10/3/2021	3	October	2021	34	Young Adults (25-34)	F	Australia	New South Wales									
000261290	10/3/2021	3	October	2021	46	Adults (35-64)	M	Australia	New South Wales									

PHASE 4: solving the queries 1. Number of sales took place in California in October

- Sorting the state column in ascending order

The diagram illustrates the steps to sort the 'State' column in ascending order. It begins with a list of states: Victoria, California, Washington, California, Victoria, England, Queensland, New South Wales, New South Wales, New South Wales, British Columbia, Washington, Hauts de Seine, Victoria, Victoria, New South Wales, and Queensland. A blue arrow points to a 'Sort & Filter' menu where 'Sort Ascending' is selected. Another blue arrow points to the resulting sorted list of states: Bayern, Bayern, Bayern, Bayern, Brandenburg, British Columbia, British Columbia, British Columbia, British Columbia, British Columbia, British Columbia, British Columbia, British Columbia, and British Columbia.

- Highlighting all the cells with “California” using conditional Formatting

The screenshot shows the 'Conditional Formatting' dialog box. The 'Rule Type' is set to 'Highlight cells with'. Under 'Specific text', the 'Containing' option is selected, and 'California' is entered in the text box. The 'Format with' section shows a light red fill with dark red text. The 'Done' button is highlighted.

	A	B	C	D	E	F	G	H	I	J
1	Sales_Order #	Date	Day	Month	Year	Customer_Age	Age_Group	Customer	Country	State
43	000261445	10/24/2021	24	October	2021	19	Youth (<25)	M	Canada	British Colum
44	000261448	10/24/2021	24	October	2021	41	Adults (35-64)	F	Canada	British Colum
45	000261450	10/24/2021	24	October	2021	27	Young Adults (25-34)	M	Canada	British Colum
46	000261460	10/25/2021	25	October	2021	37	Adults (35-64)	F	Canada	British Colum
47	000261470	10/27/2021	27	October	2021	47	Adults (35-64)	M	Canada	British Colum
48	000261471	10/27/2021	27	October	2021	30	Young Adults (25-34)	M	Canada	British Colum
49	000261695	12/1/2021	1	October	2021	39	Adults (35-64)	F	United States	California
50	000261700	12/1/2021	1	October	2021	23	Youth (<25)	F	United States	California
51	000261702	12/1/2021	1	October	2021	28	Young Adults (25-34)	F	United States	California
52	000261711	12/2/2021	2	October	2021	37	Adults (35-64)	M	United States	California
53	000261714	12/2/2021	2	October	2021	31	Young Adults (25-34)	F	United States	California
54	000261715	12/3/2021	3	October	2021	31	Young Adults (25-34)	F	United States	California
55	000261723	12/3/2021	3	October	2021	37	Adults (35-64)	F	United States	California
56	000261730	12/3/2021	3	October	2021	54	Adults (35-64)	M	United States	California
57	000261733	12/4/2021	4	October	2021	27	Young Adults (25-34)	M	United States	California
58	000261734	12/5/2021	5	October	2021	39	Adults (35-64)	F	United States	California
59	000261736	12/5/2021	5	October	2021	60	Adults (35-64)	M	United States	California
60	000261740	12/5/2021	5	October	2021	28	Young Adults (25-34)	F	United States	California

- Now applying the SUM function on all the corresponding highlighted cell ranges with the Order_quantity column

	B	C	D	E	F	G	H	I	J	K
1	Date	Day	Month	Year	Customer_Age	Age_Group	Customer	Country	State	total sales in october in california
49	12/1/2021	1	October	2021	39	Adults (35-64)	F	United States	California	=SUM(O49:O164)
50	12/1/2021	1	October	2021	23	Youth (<25)	F	United States	California	
51	12/1/2021	1	October	2021	28	Young Adults (25-34)	F	United States	California	
52	12/2/2021	2	October	2021	37	Adults (35-64)	M	United States	California	
53	12/2/2021	2	October	2021	31	Young Adults (25-34)	F	United States	California	
54	12/3/2021	3	October	2021	31	Young Adults (25-34)	F	United States	California	
55	12/3/2021	3	October	2021	37	Adults (35-64)	F	United States	California	
56	12/3/2021	3	October	2021	54	Adults (35-64)	M	United States	California	
57	12/4/2021	4	October	2021	27	Young Adults (25-34)	M	United States	California	
58	12/5/2021	5	October	2021	39	Adults (35-64)	F	United States	California	
59	12/5/2021	5	October	2021	60	Adults (35-64)	M	United States	California	
60	12/5/2021	5	October	2021	28	Young Adults (25-34)	F	United States	California	
61	12/5/2021	5	October	2021	37	Adults (35-64)	F	United States	California	
62	12/7/2021	7	October	2021	30	Young Adults (25-34)	M	United States	California	
63	12/7/2021	7	October	2021	38	Adults (35-64)	M	United States	California	
64	12/7/2021	7	October	2021	43	Adults (35-64)	F	United States	California	
65	12/7/2021	7	October	2021	19	Youth (<25)	M	United States	California	
66	12/7/2021	7	October	2021	41	Adults (35-64)	F	United States	California	

We get the final sum of total sales(order_quantity) in California in October

	D	E	F	G	H	I	J	K
	Month	Year	Customer_Age	Age_Group	Customer	Country	State	total sales in october in california
1	October	2021	39	Adults (35-64)	F	United States	California	215
1	October	2021	23	Youth (<25)	F	United States	California	
1	October	2021	28	Young Adults (25-34)	F	United States	California	
2	October	2021	37	Adults (35-64)	M	United States	California	
2	October	2021	31	Young Adults (25-34)	F	United States	California	
3	October	2021	31	Young Adults (25-34)	F	United States	California	
3	October	2021	37	Adults (35-64)	F	United States	California	
3	October	2021	54	Adults (35-64)	M	United States	California	
4	October	2021	27	Young Adults (25-34)	M	United States	California	
5	October	2021	39	Adults (35-64)	F	United States	California	
5	October	2021	60	Adults (35-64)	M	United States	California	
5	October	2021	28	Young Adults (25-34)	F	United States	California	
5	October	2021	37	Adults (35-64)	F	United States	California	
7	October	2021	30	Young Adults (25-34)	M	United States	California	
7	October	2021	38	Adults (35-64)	M	United States	California	
7	October	2021	43	Adults (35-64)	F	United States	California	
7	October	2021	19	Youth (<25)	M	United States	California	
7	October	2021	41	Adults (35-64)	F	United States	California	

2 Total profit made by all states in Australia

- Inserting a pivot table is an easy way to solve this

Insert>pivot table> existing worksheet> select an empty cell where you want the pivot table

File Home Insert Share Page Layout Formulas Data Review View Help Draw

PivotTable Table Forms Pictures Shapes Checkbox Slicer Link New Co

Create PivotTable

Choose the data that you want to analyze

Select a table or range

Table/Range: Sales Data!\$A:\$T

Choose where you want the PivotTable report to be placed

☐ New Worksheet

☒ Existing Worksheet

Location:

OK Cancel

1	Sales_Order #	Date	Day	Month	Year	Customer	Age_Group	Gender	State	total sales in October
2	000261963	12/25/2021	25	October	2021				Bayern	
3	000261611	11/20/2021	20	October	2021				Bayern	
4	000261689	11/30/2021	30	October	2021				Bayern	
5	000261338	10/11/2021	11	October	2021				Bayern	
6	000261345	10/12/2021	12	October	2021				Bayern	
7	000261370	10/14/2021	14	October	2021				Bayern	
8	000261389	10/17/2021	17	October	2021				Bayern	
9	000261431	10/22/2021	22	October	2021				Bayern	
10	000261697	12/1/2021	1	October	2021				Brandenburg	
11	000261739	12/5/2021	5	October	2021				British Columbia	
12	000261741	12/5/2021	5	October	2021				British Columbia	
13	000261750	12/6/2021	6	October	2021				British Columbia	
14	000261773	12/8/2021	8	October	2021				British Columbia	
15	000261780	12/8/2021	8	October	2021				British Columbia	
16	000261806	12/11/2021	11	October	2021	27	Young Adults (25-34)	M	Canada	
17	000261862	12/16/2021	16	October	2021	48	Adults (35-64)	F	Canada	
18	000261911	12/20/2021	20	October	2021	29	Young Adults (25-34)	M	Canada	
19	000261916	12/20/2021	20	October	2021	27	Young Adults (25-34)	F	Canada	

Sales Data

Workbook Statistics

Average: 5283.754155 Count: 14309 Sum: 39739115

Value Filters

Search

(Select All)

☒ Australia

☐ Canada

☐ France

☐ Germany

☐ United Kingdom

☐ United States

OK Cancel

PivotTable Fields

Choose fields to add to report:

Search

Age_Group

Cost

☒ Country

Customer_Age

Customer_Gender

Date

Day

Month

Order_Quantity

Product

Drag fields between areas below:

Filters

Country

Rows

Columns

Values

Defer Layout Update

Update

W	X	Y	Z
Row Labels			
Australia			
Canada			
France			
Germany			
United Kingdom			
United States			
Grand Total			

Drag the fields into rows and columns by setting the Profit into values to get the total profit by all states in Australia.

Sum of Profit	State	New South Wales	Queensland	South Australia	Tasmania	Victoria	Grand Total
\$407.00		22385	14245	2849	814	12617	52910
\$814.00		10582	9768	4884	814	6512	32560
\$1,221.00		23199	12210	1221	2442	10989	50061
\$1,628.00		39072	19536	6512	3256	21164	89540
Grand Total		95238	55759	15466	7326	51282	225071

3 Which age groups made the maximum and minimum orders

- Again by using a new pivot table by placing the order_quantity to the values and dragging Age_group into rows we get the age group of minimum and maximum placed orders

Age_Group	Sum of Order_Quantity
Adults (35-64)	705 max
Seniors (64+)	3 min
Young Adults (25-34)	548
Youth (<25)	227
Grand Total	1483

4 What is the total revenue made on mountain bikes

- Sorting the sub_category in descending order to get all the duplicate values of “Mountain Bikes”

The screenshot shows an Excel spreadsheet with the following data:

Product_C	Sub_Category	Product	Order_Quantity	Revenue	Profit
Bikes	Road Bikes	Road-750 Black, 48			\$1,628.00
Bikes	Road Bikes	Road-550-W Yellow, 42			\$814.00
Bikes	Road Bikes	Road-750 Black, 48			\$814.00
Bikes	Road Bikes	Road-250 Red, 48			\$407.00
Bikes	Mountain Bikes	Mountain-200 Black, 46			\$407.00
Bikes	Mountain Bikes	Mountain-200 Silver, 38			\$1,628.00
Bikes	Road Bikes	Road-750 Black, 44			\$407.00
Bikes	Mountain Bikes	Mountain-200 Black, 46			\$407.00
Bikes	Road Bikes	Road-750 Black, 58	4	\$713.00	\$1,120.00
Bikes	Mountain Bikes	Mountain-500 Black, 52	3	\$713.00	\$1,120.00
Bikes	Road Bikes	Road-550-W Yellow, 48	1	\$713.00	\$1,221.00
Bikes	Mountain Bikes	Mountain-200 Black, 46	1	\$713.00	\$407.00
Bikes	Mountain Bikes	Mountain-200 Black, 42	1	\$713.00	\$407.00
Bikes	Road Bikes	Road-350-W Yellow, 48	1	\$713.00	\$407.00
Bikes	Road Bikes	Road-750 Black, 44	2	\$713.00	\$1,120.00
Bikes	Road Bikes	Road-750 Black, 44	3	\$713.00	\$814.00
Bikes	Road Bikes	Road-750 Black, 44	3	\$713.00	\$1,221.00

The 'Sort & Filter' menu is open, showing 'Sort Descending' selected for the 'Sub_Category' column.

- Highlighting all the “Mountain Bikes” and the corresponding revenue values using conditional formatting and adding all the revenue values in the selected range using the SUM function we get the total revenue

The screenshot shows the same Excel spreadsheet as above, but with the 'Conditional Formatting' menu open. The 'Mountain Bikes' sub-category is highlighted in light red fill with dark red text. The 'Format with' section shows the 'AaBbCc' format.

Product_C	Sub_Category	Product	Order_Quantity	Revenue	Profit
Bikes	Road Bikes	Road-650 Red, 58			
Bikes	Mountain Bikes	Road-350-W Yellow, 40			
Bikes	Mountain Bikes	Mountain-200 Black, 38			
Bikes	Mountain Bikes	Road-250 Black, 44			
Bikes	Mountain Bikes	Road-150 Red, 62			
Bikes	Mountain Bikes	Road-250 Black, 44			
Bikes	Mountain Bikes	Road-550-W Yellow, 42			
Bikes	Mountain Bikes	Mountain-200 Black, 38			
Bikes	Mountain Bikes	Road-350-W Yellow, 40			
Bikes	Mountain Bikes	Mountain-500 Black, 44			
Bikes	Mountain Bikes	Mountain-200 Silver, 42			
Bikes	Mountain Bikes	Road-350-W Yellow, 44			
Bikes	Mountain Bikes	Road-250 Black, 48			
Bikes	Mountain Bikes	Road-350-W Yellow, 48			
Bikes	Mountain Bikes	Road-550-W Yellow, 42			
Bikes	Mountain Bikes	Road-250 Black, 48			

1	Sub_Category	Product	Order_Quantity	Unit_Cost	Unit_Price	Profit	Cost	Revenue	total revenue of Mountain Bikes
520	Road Bikes	Road-750 Black, 52	2	\$713.00	\$1,120.00	\$814.00	\$1,426.00	\$2,240.00	
521	Road Bikes	Road-650 Red, 58	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
522	Mountain Bikes	Road-350-W Yellow, 40	4	\$713.00	\$1,120.00	\$1,628.00	\$2,852.00	\$4,480.00	=SUM(T522:T753)
523	Mountain Bikes	Mountain-200 Black, 38	2	\$713.00	\$1,120.00	\$814.00	\$1,426.00	\$2,240.00	
524	Mountain Bikes	Road-250 Black, 44	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
525	Mountain Bikes	Road-150 Red, 62	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
526	Mountain Bikes	Road-250 Black, 44	3	\$713.00	\$1,120.00	\$1,221.00	\$2,139.00	\$3,360.00	
527	Mountain Bikes	Road-550-W Yellow, 42	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
528	Mountain Bikes	Mountain-200 Black, 38	2	\$713.00	\$1,120.00	\$814.00	\$1,426.00	\$2,240.00	
529	Mountain Bikes	Road-350-W Yellow, 40	2	\$713.00	\$1,120.00	\$814.00	\$1,426.00	\$2,240.00	
530	Mountain Bikes	Mountain-500 Black, 44	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
531	Mountain Bikes	Mountain-200 Silver, 42	3	\$713.00	\$1,120.00	\$1,221.00	\$2,139.00	\$3,360.00	
532	Mountain Bikes	Road-350-W Yellow, 44	3	\$713.00	\$1,120.00	\$1,221.00	\$2,139.00	\$3,360.00	
533	Mountain Bikes	Road-250 Black, 48	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
534	Mountain Bikes	Road-350-W Yellow, 48	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	
535	Mountain Bikes	Road-550-W Yellow, 42	1	\$713.00	\$1,120.00	\$407.00	\$713.00	\$1,120.00	

5 Is there any trend in the number of orders placed by different countries

- Creating a pivot table for the countries and profits respectively

PivotTable

Table

Forms

Pictures

Shapes

Checkbox

Slicer

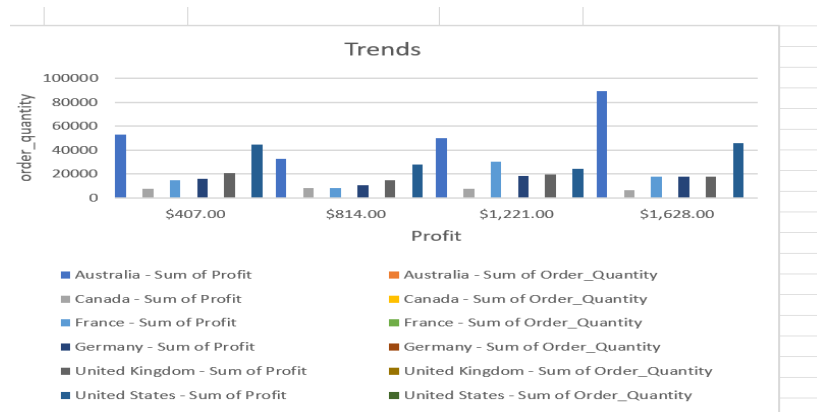
Link

New Comment

Text Box

AH10

- Using the line chart to represent the trend by choosing y axes as the num



6 What is the product of order number 000261780 and what is the age and gender of the buyer

- To solve this I am using the function LOOKUP which makes it easy to locate a specific unique value in large data sets

11	B							General
	AD	AE	AF					
		who bought order 000261780						
	Sales_Order #	000261780						
	Customer_Age	47						
	Product	=LOOKUP(A15,A2:A30,N2:N200)						
	Customer_Gender	F						

The formula goes like this =LOOKUP(lookup value, range of the lookup column, range of the desired column)

11	B							General
	AD	AE	AF					
		who bought order 000261780						
	Sales_Order #	000261780						
	Customer_Age	47						
	Product	Road-750 Black, 44						
	Customer_Gender	=LOOKUP(A15,A2:A30,H2:H200)						

Overall, the project highlights the effectiveness of our sales strategies and provides actionable recommendations for future growth. Continued monitoring and adaptation based on these insights will be crucial for sustaining success and driving further performance improvements.

