Experiment No. 9

Title: Exploration of Data Visualization and Interpretation Techniques

Batch:A1 **Roll No: 1914078** **Experiment No.: 9**

Aim: Create Dashboard using Data Visualization and Interpretation tool(tableau/PowerBI).

Resources needed: Tableau/PowerBI

Data visualization is the graphical representation of information and data. With visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

In the world of big data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions. Our culture is visual, including everything from art and advertisements to TV and movies, and our eyes are drawn to colours and patterns. Our interaction with data should reflect this reality.

Dashboard:

A dashboard is a collection of several views, letting you compare a variety of data simultaneously. For example, if you have a set of views that you review every day, you can create a dashboard that displays all the views at once, rather than navigate to separate worksheets. Like worksheets, you access dashboards from tabs at the bottom of a workbook. Data in sheets and dashboards is connected; when you modify a sheet, any dashboards containing it change, and vice versa. Both sheets and dashboards update with the latest available data from the data source

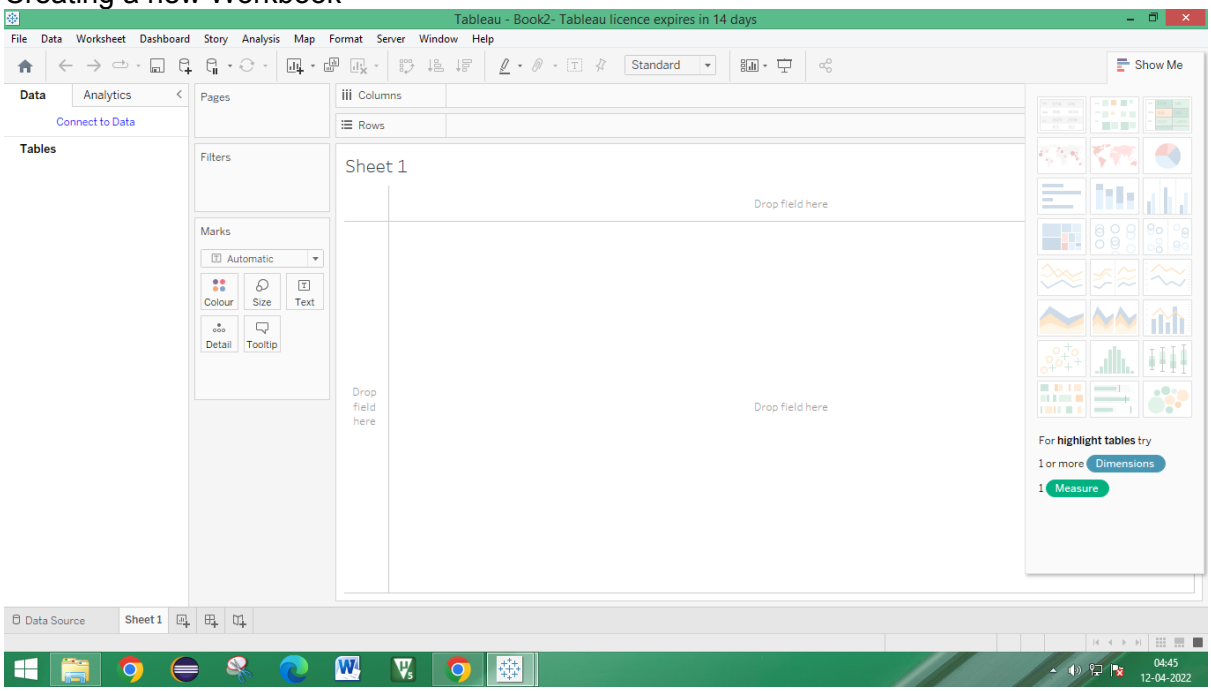
Procedure:

1. Install tableau on your machine.
2. Understand the data you wish to visualize.
3. Connect to your data
4. Create a view by analyze the data, you decide to drill into the project's findings.
5. Create a chart in a view that works for you. Additionally, add fields to get the right level of detail in your view.
6. Add Filters and colors of your interest
7. Interact with your view and draw the conclusions

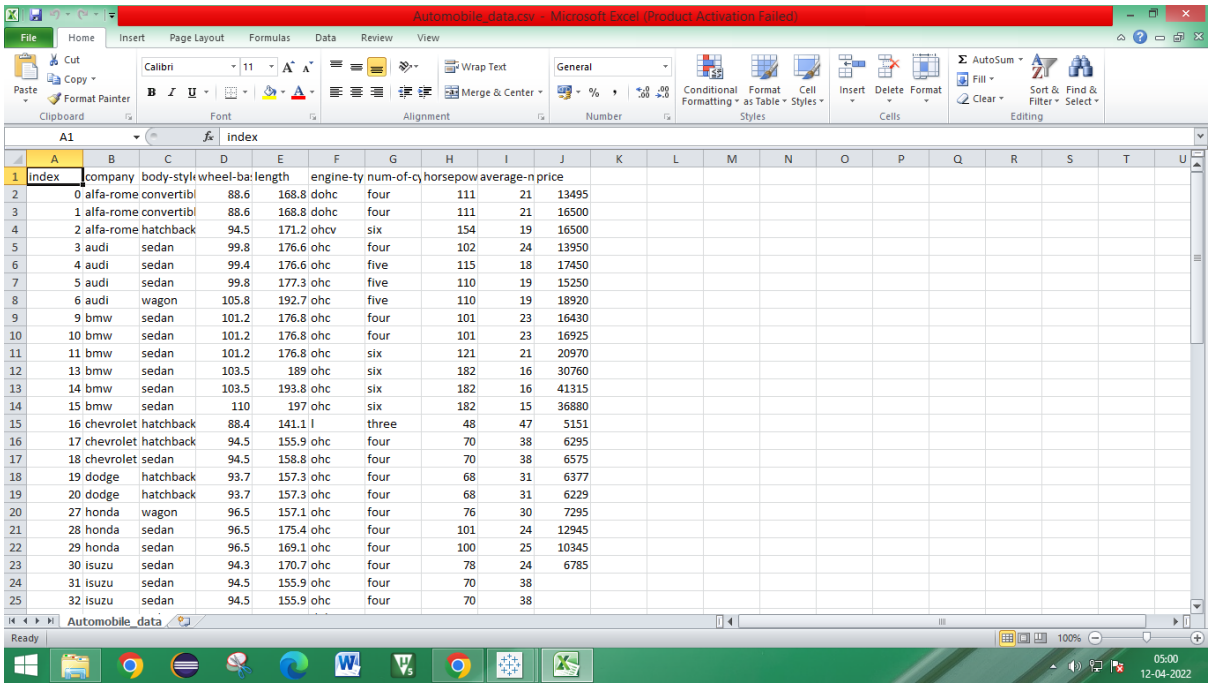
8. Build a dashboard to show your insights
9. Share your findings with others

Results: (Program printout with output / Document printout as per the format)

Creating a new Workbook

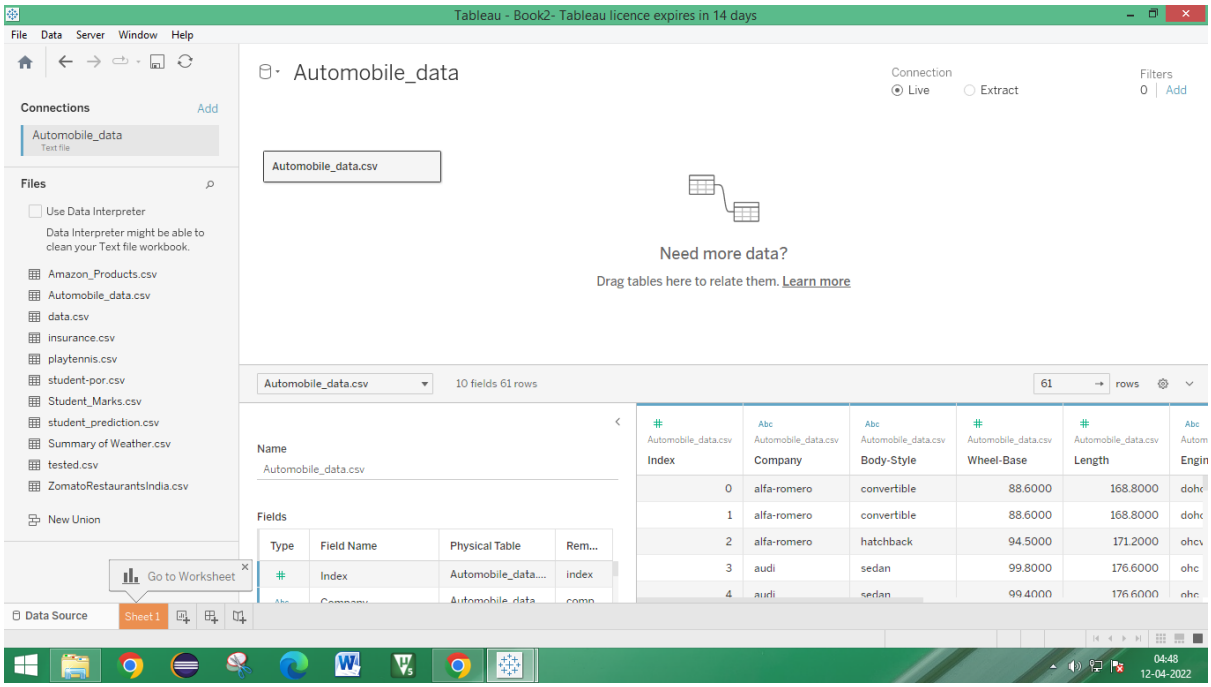


Dataset

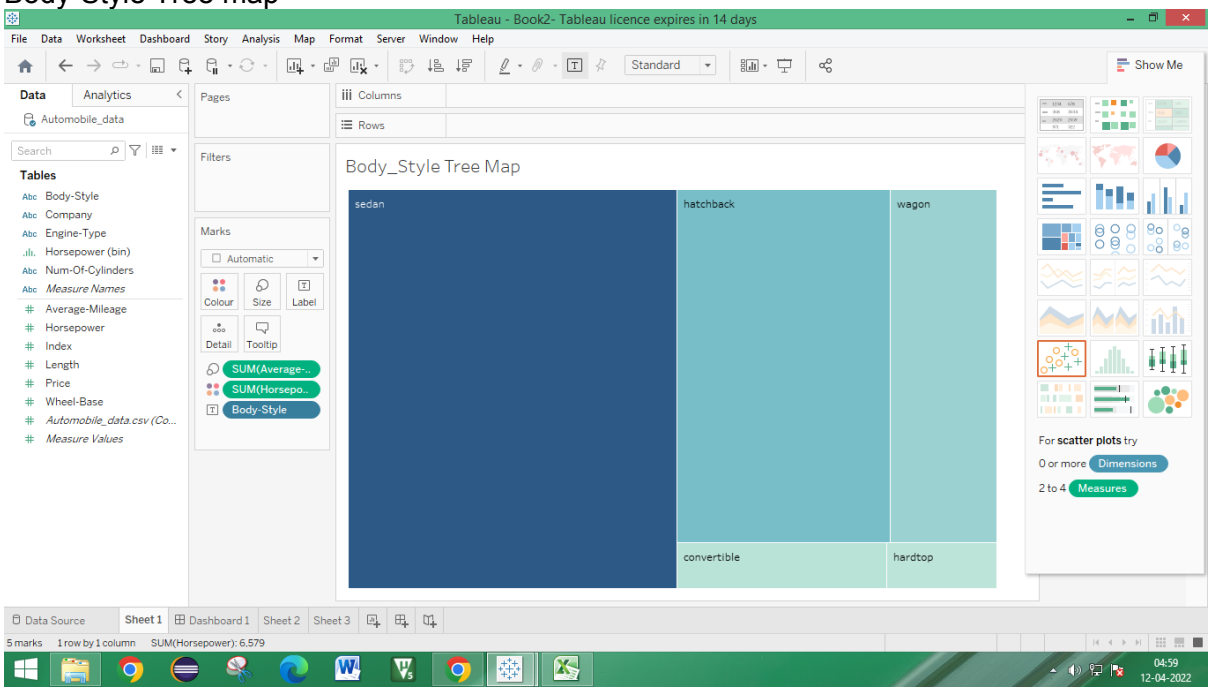


index	company	body-style	wheel-base	length	engine-type	num-of-cylinders	horsepower	average-mileage	price
0	alfa-romero	convertible	88.6	168.8	dohc	four	111	21	13495
1	alfa-romero	convertible	88.6	168.8	dohc	four	111	21	16500
2	alfa-romero	hatchback	94.5	171.2	ohcv	six	154	19	16500
3	audi	sedan	99.8	176.6	ohc	four	102	24	13950
4	audi	sedan	99.4	176.6	ohc	five	115	18	17450
5	audi	sedan	99.8	177.3	ohc	five	110	19	15250
6	audi	wagon	105.8	192.7	ohc	five	110	19	18920
9	bmw	sedan	101.2	176.8	ohc	four	101	23	16430
10	bmw	sedan	101.2	176.8	ohc	four	101	23	16925
11	bmw	sedan	101.2	176.8	ohc	six	121	21	20970
13	bmw	sedan	103.5	189	ohc	six	182	16	30760
14	bmw	sedan	103.5	193.8	ohc	six	182	16	41315
15	bmw	sedan	110	197	ohc	six	182	15	36880
16	chevrolet	hatchback	88.4	141.1	l	three	48	47	5151
17	chevrolet	hatchback	94.5	155.9	ohc	four	70	38	6295
18	chevrolet	sedan	94.5	158.8	ohc	four	70	38	6575
19	dodge	hatchback	93.7	157.3	ohc	four	68	31	6377
20	dodge	hatchback	93.7	157.3	ohc	four	68	31	6229
27	honda	wagon	96.5	157.1	ohc	four	76	30	7295
28	honda	sedan	96.5	175.4	ohc	four	101	24	12945
29	honda	sedan	96.5	169.1	ohc	four	100	25	10345
30	isuzu	sedan	94.3	170.7	ohc	four	78	24	6785
31	isuzu	sedan	94.5	155.9	ohc	four	70	38	
32	isuzu	sedan	94.5	155.9	ohc	four	70	38	

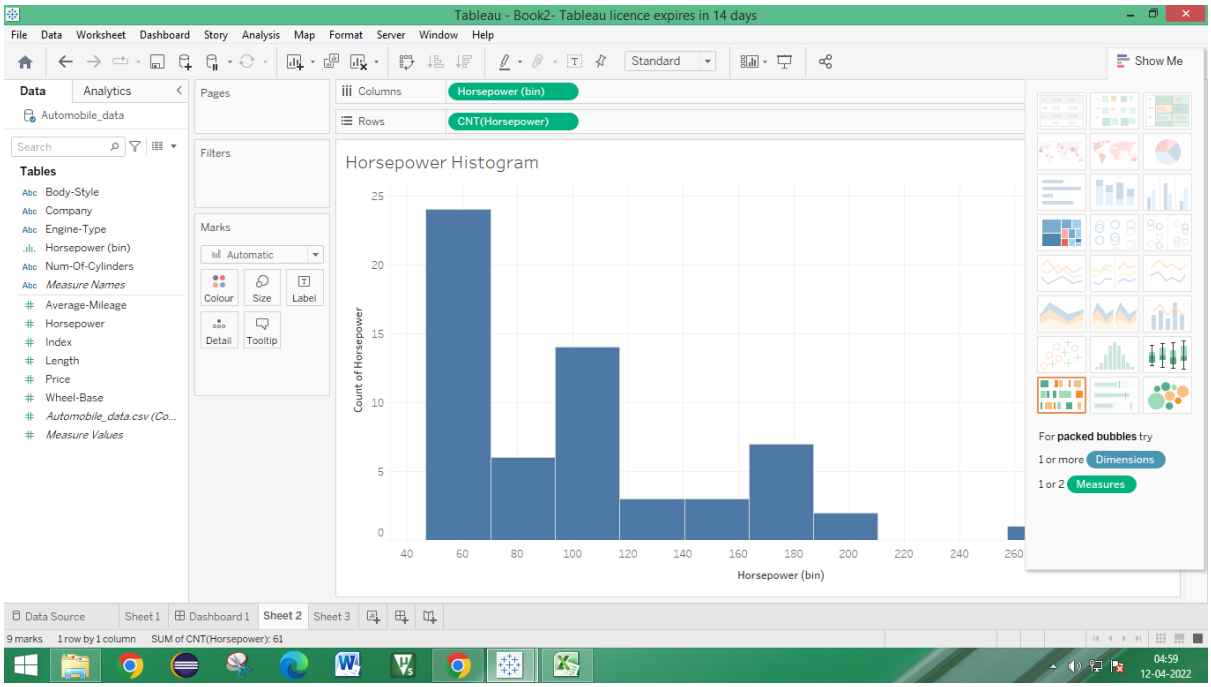
Connect to Data



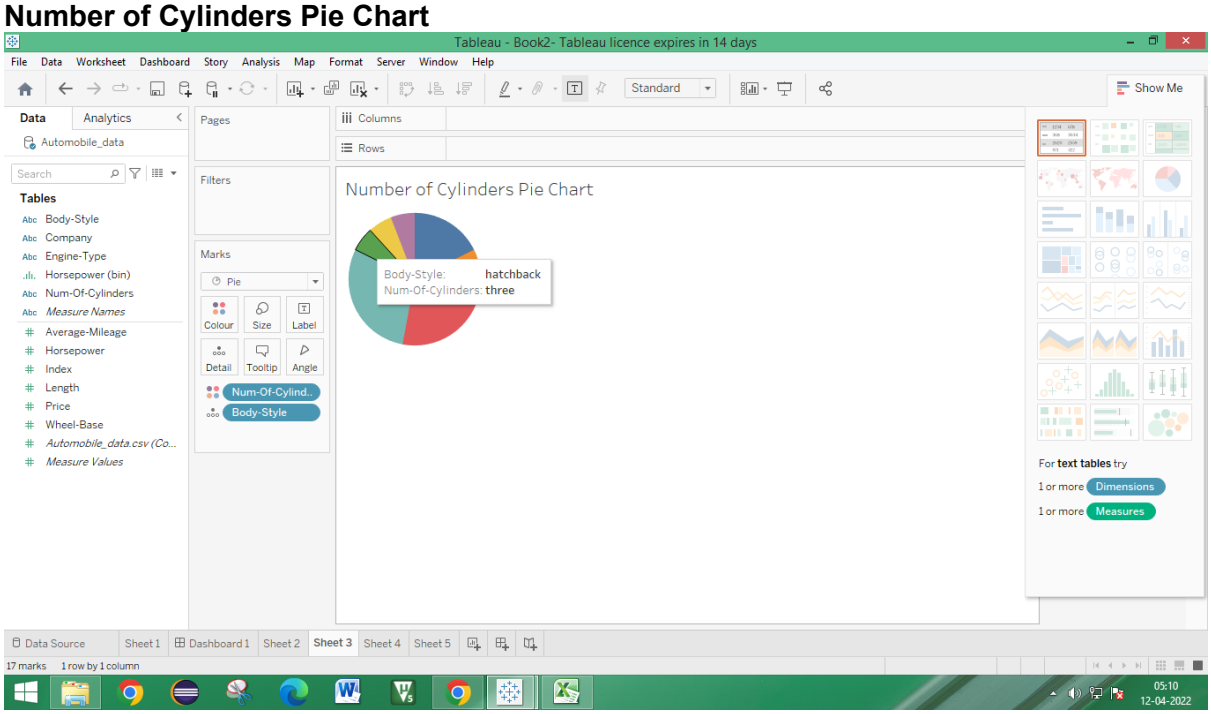
Body-Style Tree map



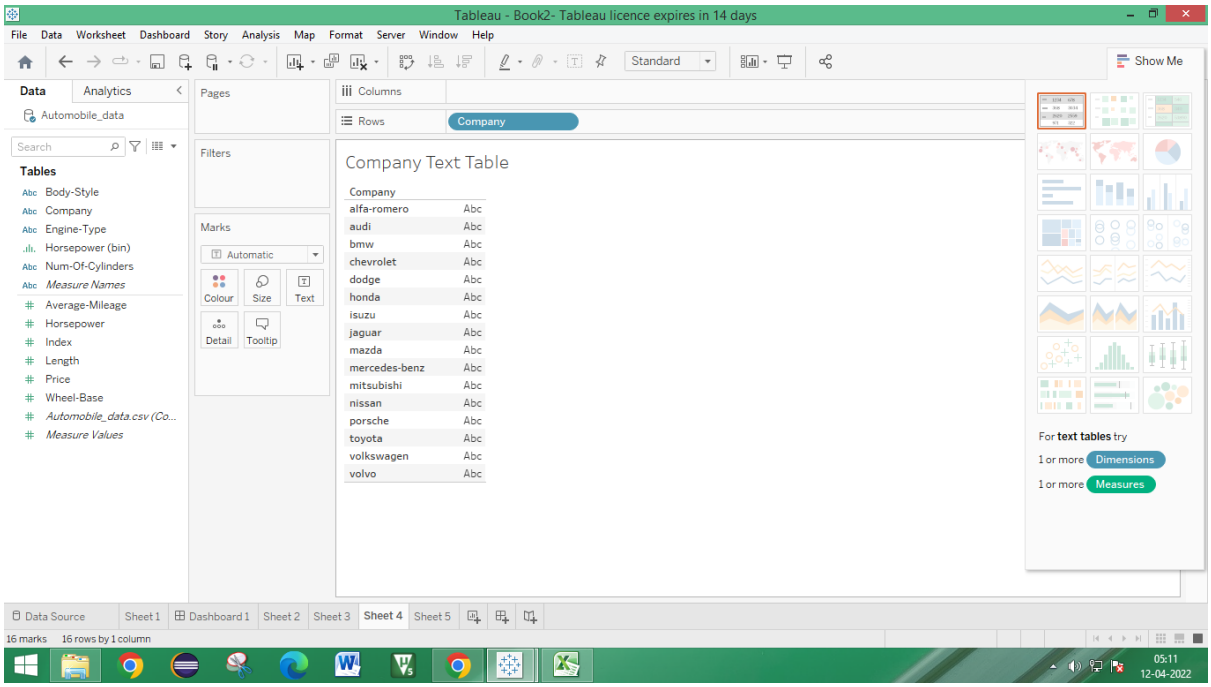
Horsepower Histogram



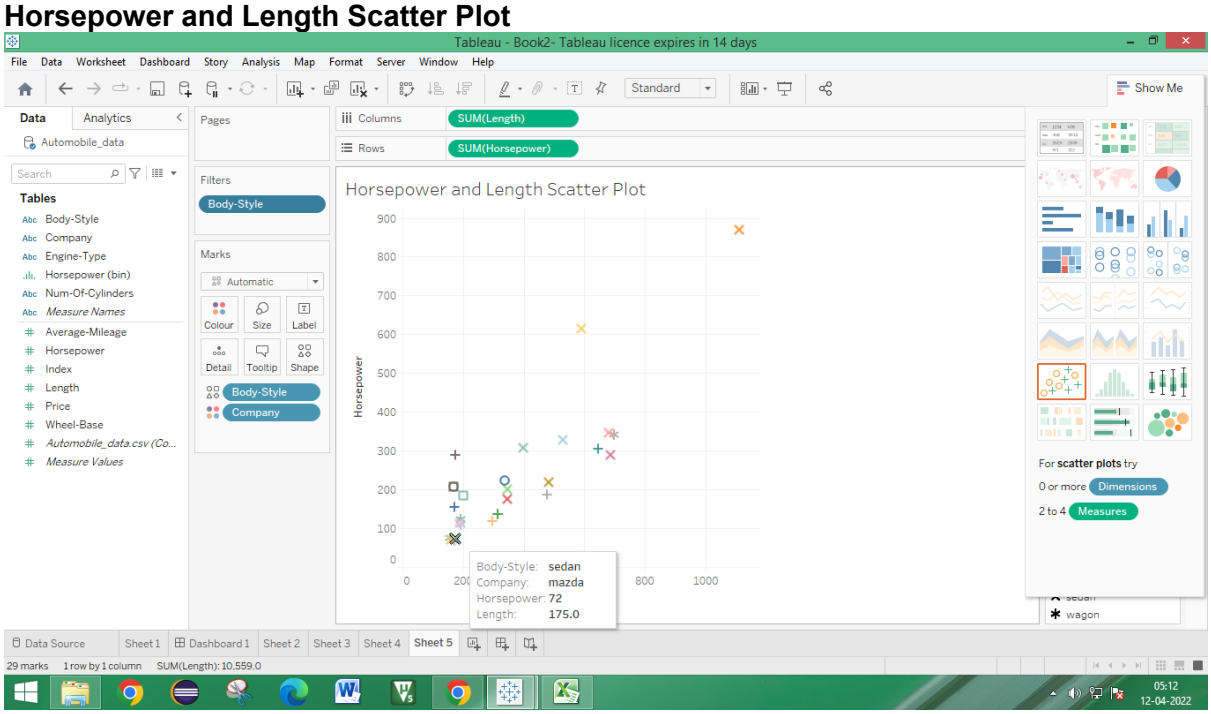
Number of Cylinders Pie Chart



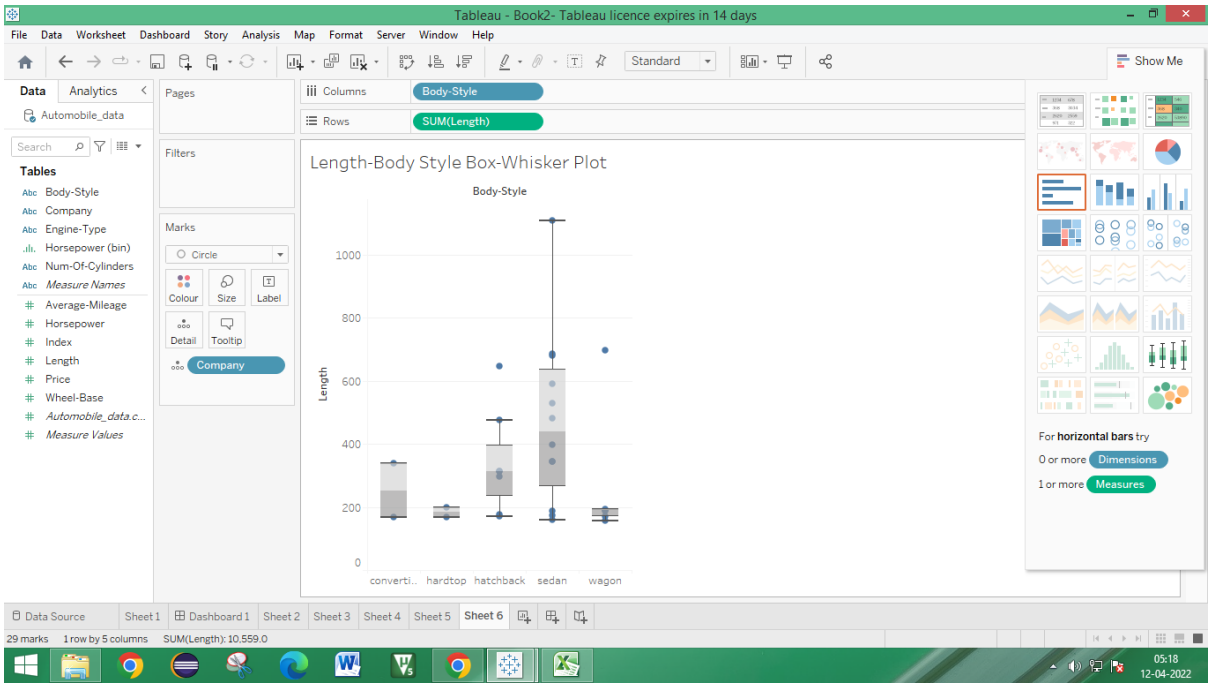
Company Text Table



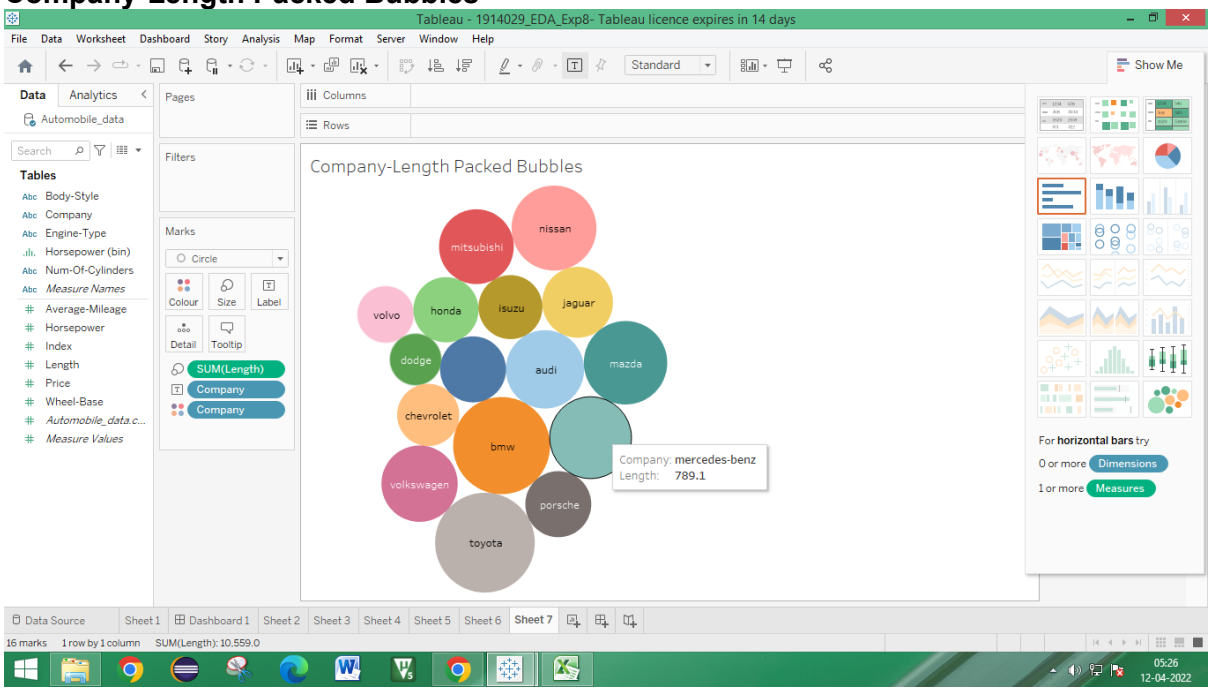
Horsepower and Length Scatter Plot



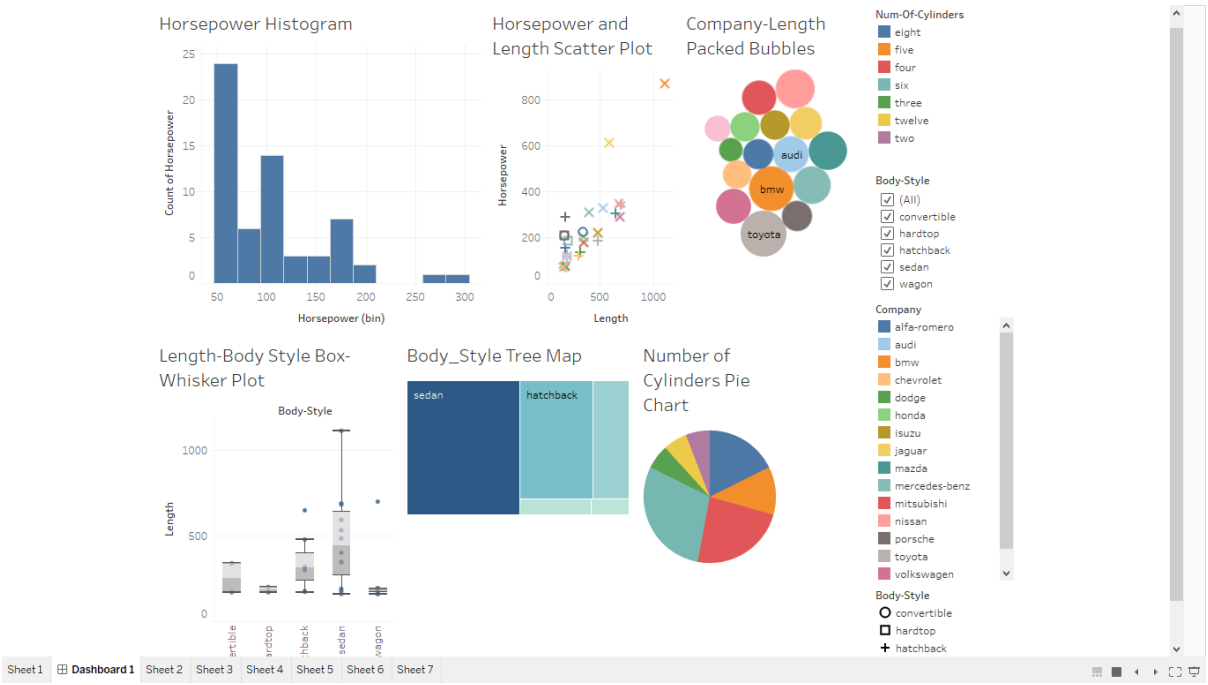
Length-BodyStyle Box-WHisker Plot



Company-Length Packed Bubbles



DASHBOARD



Questions:

1. **Which are the different visualization techniques available for EDA? Explain one technique in details**.

   Following are the visualization techniques available for Tableau Software:

1. Text Tables – 1 or more dimension and measure
2. Heat maps – 1 or more dimension and 1 or 2 measure
3. Highlight tables – 1 or more dimension and 1 measure
4. Symbol maps – 1 geo and 0 or more dimension and 0 to 2 measure
5. Maps – 1 geo and 0 or more dimension and 0 or 1 measure
6. Pie Chart – 1 or more dimension and 1 or 2 measure
7. Horizontal bars – 0 or more dimension and 1 or more measure
8. Stacked bars – 1 or more dimension and measure
9. Side by side bars – 1 or more dimension and measure
10. Treemaps – 1 or more dimension and 1 or 2 measure
11. Circle view – 1 or more dimension and measure
12. Side by Side circles – 1 or more dimension and measure
13. Line chart (Continuous) – 1 date and 0 or more dimension and 1 or more measure
14. Line chart (Discrete) – 1 date and 0 or more dimension and 1 or more measure
15. Dual lines – 1 date and 0 or more dimension and 2 measure
16. Area charts(Continuous) – 1 date and 0 or more dimension and 1 or more measure
17. Area charts(Discrete) – 1 date and 0 or more dimension and 1 or more measure
18. Dual combination – 1 date and 0 or more dimension and 2 measure
19. Scatter plot – 0 or more dimensions and 2 to 4 measures.
20. Histogram – 1 measure

21. Box and whisker plots – 0 or more dimension and 1 or more measure
22. Gnatt – 1 date and 1 or more dimension and 1 to 2 measure
23. Bullet graph – 0 or more dimension and 2 measure
24. Packed bubbles – 1 or more dimensions and 1 to 2 measure

Histogram

A histogram is a value distribution plot of numerical columns. It basically creates bins in various ranges in values and plots it where we can visualize how values are distributed. We can have a look where more values lie like in positive, negative, or at the center(mean).

2. What are the different visualization tools available in the market? Which you will recommend for data science aspirants and why?

1. Tableau

Tableau is a data visualization tool that can be used to create interactive graphs, charts, and maps. It allows you to connect to different data sources and create visualizations in minutes.

2. QlikView

QlikView is not just another data visualization tool, It is a data discovery platform that empowers the users to make faster, more informed decisions by accelerating analytics, revealing new business insights, and increasing the accuracy of results.

3. Microsoft Power BI

The Microsoft Power BI is the data visualization tool that is used for business intelligence type of data. It is and can be used for reporting, self-service analytics, and predictive analytics.

4. Datawrapper

Datawrapper is an online data visualization tool that can be used in various contexts. It is very easy to use, and it has a clean and intuitive user interface.

5. Plotly

Plotly is a data visualization tool that is used to create interactive graphs, charts, and maps. You can also use Plotly to create a visualization of a dataset, then share the link of that visualization with your readers on social media or on your blog.

6. Sisense

Sisense is a data visualization tool that allows you to easily create interactive visualizations from your data. With Sisense, you can quickly and easily create extensive, informative dashboards that will help you understand your data better.

7. Excel

Microsoft Excel is a data visualization tool that has an easy interface, so it doesn't have to be difficult to work with.

8. Zoho analytics

Zoho Analytics is a data visualization and reporting tool that can help you to easily create custom reports and dashboards.

Outcomes:

CO 4 Comprehend various data visualization techniques and its interpretation

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Conclusion: We successfully created Dashboard using Data Visualization and Interpretation tool: Tableau for Automobile Data and made 6 different data visualizations.

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of faculty in-charge with date

References:

Books/ Journals/ Websites:

1. https://help.tableau.com/current/pro/desktop/en-us/dashboards.htm