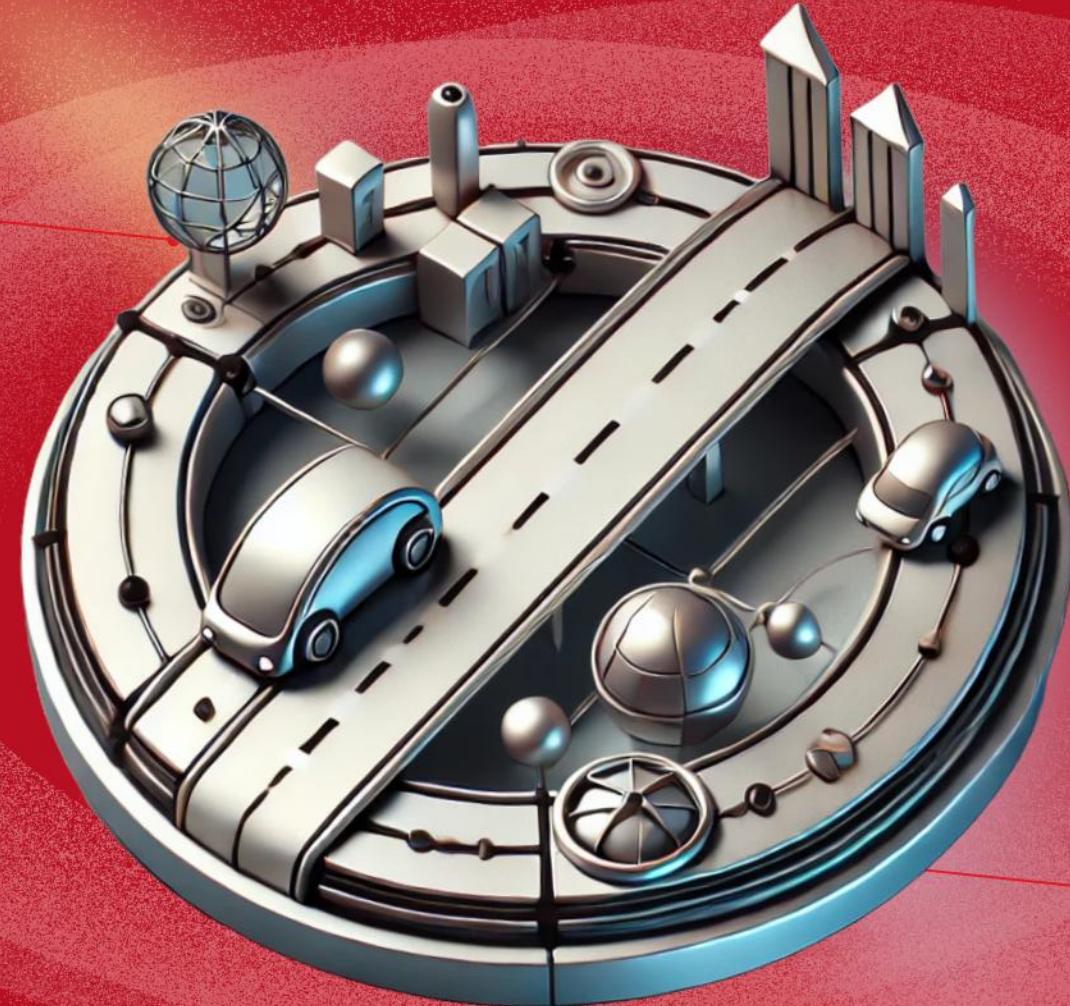


The Art and Science of Transportation Research in the AI Era

SQL and Data Visualization

M.Sc. Hiba Karam



Learning Goals

identify and
#1 correct errors of
SQL syntax

Distinguish
#3 between ‘bad’
and ‘good’ graph

#2 Use SQL query to
join tables

#4 Create graphs in
Power BI

Lecture Structure



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- #1 Recap
- #2 SQL Join
- #3 Data visualisation and examples
- #4 Power BI

#1 Recap



Look at the three SQL queries below (A, B and C).
Which query has the correct SQL syntax?

A `SELECT name, age
 FROM students;`

B `SELECT name age
 FROM students;`

C `SELECT id, name,
 FROM students;`

id	name	age	city
1	Amina	22	Berlin
2	Brian	19	Berlin
3	Carlos	21	Madrid
4	Diana	20	Berlin
5	Elena	23	Rome
6	Farhan	18	London
7	Grace	22	London
8	Hugo	20	Paris
9	Isabella	24	Madrid
10	Jonas	19	Rome
11	Katia	21	Paris
12	Leo	22	Berlin
13	Maria	20	Madrid
14	Noura	23	Rome
15	Omar	19	London
16	Paolo	24	Rome
17	Quentin	21	Paris
18	Rania	18	Berlin
19	Sara	22	London
20	Tariq	23	Madrid



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Table called students

#1 Recap



A SELECT name, age
FROM students;

B SELECT name, age
FROM students;

C SELECT id, name,
FROM students;

id	name	age	city
1	Amina	22	Berlin
2	Brian	19	Berlin
3	Carlos	21	Madrid
4	Diana	20	Berlin
5	Elena	23	Rome
6	Farhan	18	London
7	Grace	22	London
8	Hugo	20	Paris
9	Isabella	24	Madrid
10	Jonas	19	Rome
11	Katia	21	Paris
12	Leo	22	Berlin
13	Maria	20	Madrid
14	Noura	23	Rome
15	Omar	19	London
16	Paolo	24	Rome
17	Quentin	21	Paris
18	Rania	18	Berlin
19	Sara	22	London
20	Tariq	23	Madrid



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Table called students

#1 Recap



1. Which query has the correct SQL syntax?

2. For the other two, describe the part that makes the syntax wrong?

A

```
SELECT id, name, age, city  
WHERE city = 'Berlin'  
    AND age >= 22  
FROM students;
```

B

```
SELECT id, name, age, city  
FROM students  
WHERE city = 'Berlin'  
    AND age >= 22;
```

C

```
SELECT id, name, age, city,  
FROM students  
WHERE city = 'Berlin'  
    AND age >= 22;
```



#1 Recap



1. Which query has the correct SQL syntax?

2. For the other two, describe the part that makes the syntax wrong?

A

```
SELECT id, name, age, city  
WHERE city = 'Berlin'  
    AND age >= 22  
FROM students;
```

Order

B

```
SELECT id, name, age, city  
FROM students  
WHERE city = 'Berlin'  
    AND age >= 22;
```

Extra

C

```
SELECT id, name, age, city,  
FROM students  
WHERE city = 'Berlin'  
    AND age >= 22;
```



#2 SQL JOIN



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Table 1: Road_Segments

Segment_ID	Road_Name	Length_km	Speed_Limit_kmph
RS001	Highway 101	15.2	100
RS002	Elm Street	2.5	50
RS003	Oak Avenue	1.8	40
RS004	Main Boulevard	12.0	60
RS005	Pine Street	3.0	45

Name the Primary Key/s?

Name the foreign Key/s?



Table 2: Traffic_Lights

Light_ID	Segment_ID	Light_Type	Timing_Sec
TL001	RS002	Red-Yellow-Green	60
TL002	RS003	Pedestrian-Only	45
TL003	RS004	Red-Yellow-Green	90
TL004	RS005	Red-Yellow-Green	60
TL005	RS002	Red-Yellow-Green	70

#2 SQL JOIN

Primary Key

Table 1: Road_Segments

Segment_ID	Road_Name	Length_km	Speed_Limit_kmph
RS001	Highway 101	15.2	100
RS002	Elm Street	2.5	50
RS003	Oak Avenue	1.8	40
RS004	Main Boulevard	12.0	60
RS005	Pine Street	3.0	45

Foreign Key

Table 2: Traffic_Lights

Primary Key	Light_ID	Segment_ID	Light_Type	Timing_Sec
TL001	RS002	Red-Yellow-Green	60	
TL002	RS003	Pedestrian-Only	45	
TL003	RS004	Red-Yellow-Green	90	
TL004	RS005	Red-Yellow-Green	60	
TL005	RS002	Red-Yellow-Green	70	



#2 SQL JOIN



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Table 3: Accidents

Accident_ID	Segment_ID	Date	Severity	Vehicles_Involved
A001	RS001	2023-07-10	High	3
A002	RS002	2023-06-15	Medium	2
A003	RS003	2023-08-05	Low	1
A004	RS004	2023-07-25	High	4
A005	RS005	2023-09-01	Medium	2

What is the Primary Key here?

To which table can I connect this table? How?



#2 SQL JOIN



Table 1: Road_Segments

Segment_ID	Road_Name	Length_km	Speed_Limit_kmph
RS001	Highway 101	15.2	100
RS002	Elm Street	2.5	50
RS003	Oak Avenue	1.8	40
RS004	Main Boulevard	12.0	60
RS005	Pine Street	3.0	45

Foreign Key

Table 3: Accidents

Accident_ID	Segment_ID	Date	Severity	Vehicles_Involved
A001	RS001	2023-07-10	High	3
A002	RS002	2023-06-15	Medium	2
A003	RS003	2023-08-05	Low	1
A004	RS004	2023-07-25	High	4
A005	RS005	2023-09-01	Medium	2

Foreign Key

Table 2: Traffic_Lights

Light_ID	Segment_ID	Light_Type	Timing_Sec
TL001	RS002	Red-Yellow-Green	60
TL002	RS003	Pedestrian-Only	45
TL003	RS004	Red-Yellow-Green	90
TL004	RS005	Red-Yellow-Green	60
TL005	RS002	Red-Yellow-Green	70

#2 SQL JOIN



When performing joins, it's easiest to give your table names aliases.

ON indicates how the two tables (the one after the FROM and the one after the JOIN) relate to each other.

```
SELECT *
FROM Road_Segments rs
JOIN Traffic_Lights tl
ON rs.Segment_ID = tl.Segment_ID;
```

Segment_ID	Road_Name	Length_km	Speed_Limit_kmph	Light_ID	Light_Type	Timing_Sec
RS002	Elm Street	2.5	50	TL001	Red-Yellow-Green	60
RS002	Elm Street	2.5	50	TL005	Red-Yellow-Green	70
RS003	Oak Avenue	1.8	40	TL002	Pedestrian-Only	45
RS004	Main Boulevard	12.0	60	TL003	Red-Yellow-Green	90
RS005	Pine Street	3.0	45	TL004	Red-Yellow-Green	60

#2 SQL JOIN



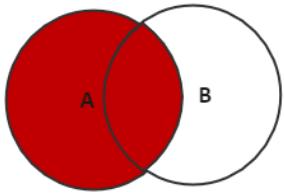
I need the columns segment id, road name and speed limit WHERE severity column is = high.

The filter happens after the tables are joined.

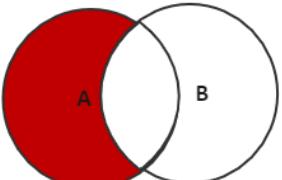
```
SELECT R.Segment_ID, R.Road_Name, R.Speed_Limit_kmph
FROM Accidents A
JOIN Road_Segments R ON A.Segment_ID = R.Segment_ID
WHERE A.Severity = 'High';
```

Segment_ID	Road_Name	Speed_Limit_kmph
RS001	Highway 101	100
RS004	Main Boulevard	60

#2 SQL JOIN



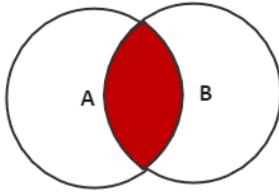
```
SELECT <select_list>
FROM Table A A
LEFT JOIN TableB B
ON A.Key = B. Key
```



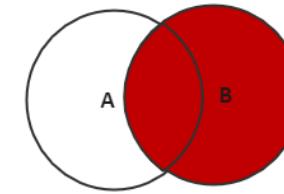
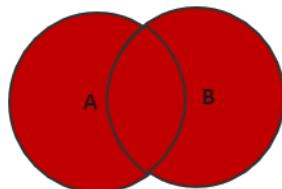
```
SELECT <select_list>
FROM Table A A
LEFT JOIN TableB B
ON A.Key = B. Key
WHERE B.Key IS NULL
```

```
SELECT <select_list>
FROM Table A A
FULL OUTER JOIN TableB B
ON A.Key = B. Key
```

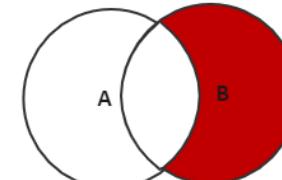
SQL JOINS



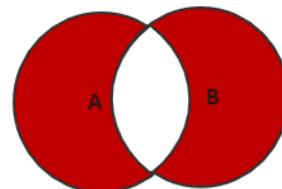
```
SELECT <select_list>
FROM Table A A
INNER JOIN TableB B
ON A.Key = B. Key
```



```
SELECT <select_list>
FROM Table A A
RIGHT JOIN TableB B
ON A.Key = B. Key
```



```
SELECT <select_list>
FROM Table A A
RIGHT JOIN TableB B
ON A.Key = B. Key
WHERE A.Key IS NULL
```



```
SELECT <select_list>
FROM Table A A
FULL OUTER JOIN TableB B
ON A.Key = B. Key
WHERE A.Key IS NULL
OR B.Key IS NULL
```



#2 SQL JOIN



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Exercise: SQL Joins

Insert the missing parts in the `JOIN` clause to join the two tables `Orders` and `Customers`, using the `CustomerID` field in both tables as the relationship between the two tables.

```
SELECT *  
FROM Orders  
LEFT JOIN Customers  
[ ] = [ ];
```

Show Answer

https://www.w3schools.com/sql/sql_exercises.asp

#2 SQL JOIN



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Exercise: SQL Joins

Insert the missing parts in the `JOIN` clause to join the two tables `Orders` and `Customers`, using the `CustomerID` field in both tables as the relationship between the two tables.

```
SELECT *  
FROM Orders  
LEFT JOIN Customers  
[ ] = [ ];
```

Show Answer

```
SELECT *  
FROM Orders  
LEFT JOIN Customers  
ON Orders.CustomerID=Customers.CustomerID;
```



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#3 Data Visualization



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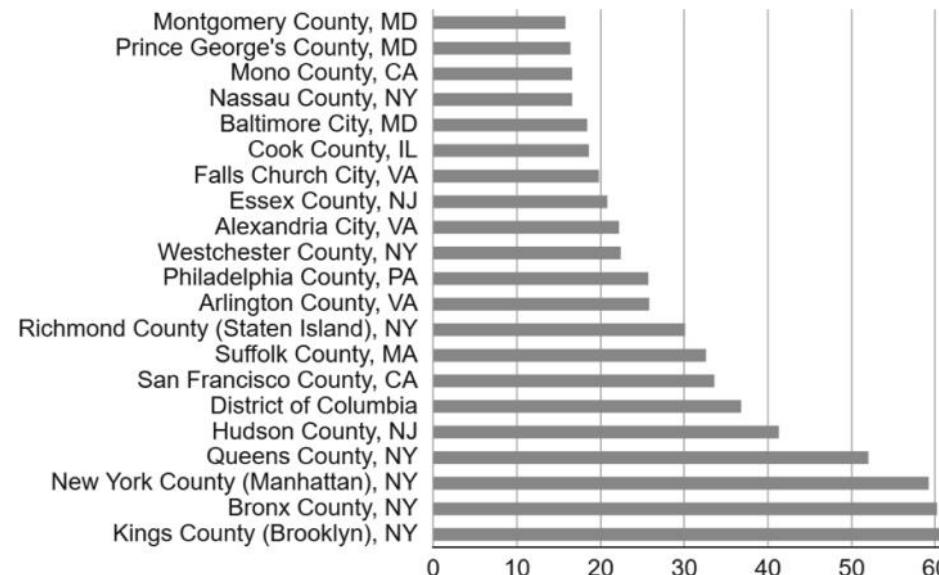


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Efficiently summarize large amounts of data through a graphical format.

Counties with the Most Transit Commuters

Percent of Workers Who Commute by Public Transportation



GGWash.org

Source: U.S. Census. 2012-2016 ACS 5-Year Estimates

Source: <https://ggwash.org/view/65862/these-graphs-show-where-people-are-commuting-by-transit>



What is the process of
visualizing your data?

#3 Data Visualization



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The process of visualizing your data:

1. Understand the context and have your questions and aim ready.

Build a clear understanding of **who** you are communicating to, **what** you need them to know or do, **how** you will communicate to them, and **what** data you have to back up your case.



#3 Data Visualization

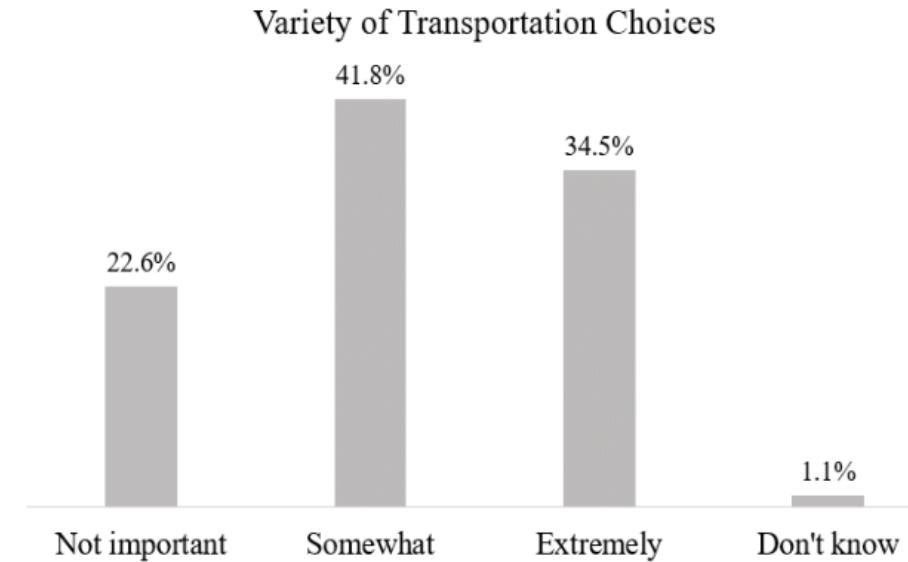
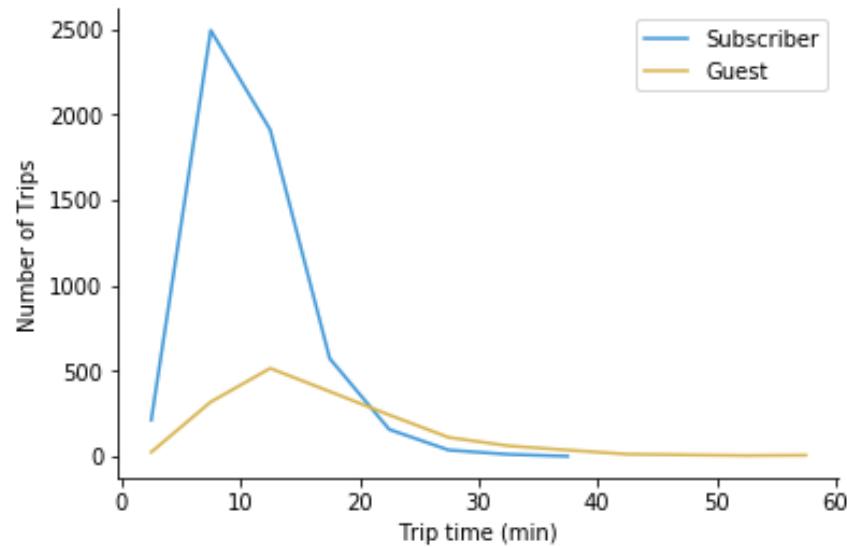


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2. Choose an appropriate visual display.



Visual Vocabulary:

<https://public.tableau.com/app/profile/andy.kriebel/viz/VisualVocabulary/VisualVocabulary>

When to use a bar graph
and line chart?



#3 Data Visualization



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3. Identify elements that don't add informative value and remove them from your visuals.

Remember: **clutter is your enemy!**

Visual clutter creates excessive **cognitive load** that can **hinder** the transmission of our message.

We do not see visuals with our eyes really; we see them with **our brains**.



#3 Data Visualization



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Gestalt principle of proximity



Gestalt principle of similarity



#3 Data Visualization



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We tend to think of objects that are physically close together as belonging to part of a group.



Gestalt principle of proximity

Objects that are of similar color, shape, size, or orientation are perceived as related or belonging to part of a group.



Gestalt principle of similarity

#3 Data Visualization



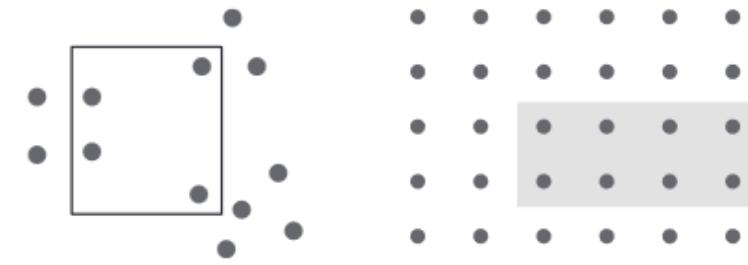
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Gestalt principle of closure



Gestalt principle of enclosure



#3 Data Visualization



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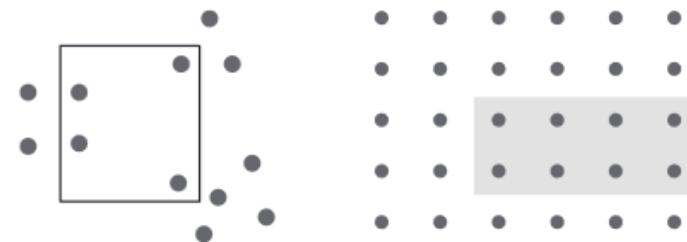
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When parts of a whole are missing, our eyes naturally fill in the gap. Your brain already sees the boundaries, so adding a box is redundant.



Gestalt principle of closure

We think of objects that are physically enclosed together as belonging to part of a group. The aim is to highlight and group related content.



Gestalt principle of enclosure

#3 Data Visualization



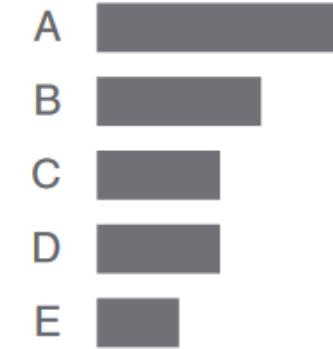
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Gestalt principle of connection



Gestalt principle of simplicity



#3 Data Visualization



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We tend to think of objects that are physically connected as part of a group.

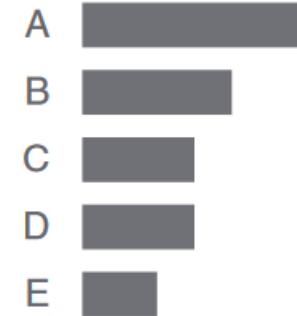
Note when looking at the figure below, your eyes probably pair the shapes connected by lines (rather than similar color, size, or shape).



Gestalt principle of connection

People tend to perceive and interpret visual elements in the simplest and most organized form possible.

Y-axis line removed stripping away unnecessary elements allows our data to stand out more.



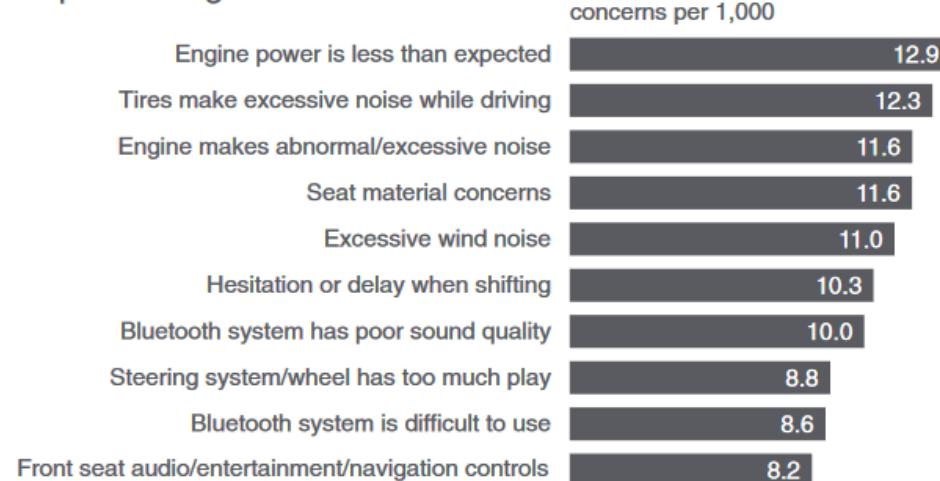
Gestalt principle of simplicity

#3 Data Visualization



3. Focus attention where you want it.

Top 10 design concerns



Draw attention with black



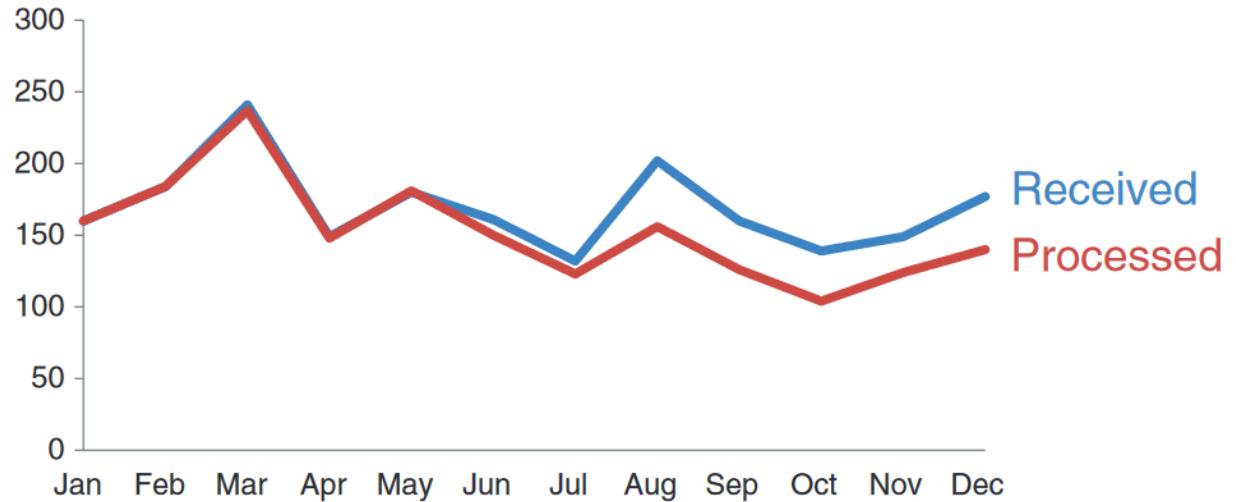
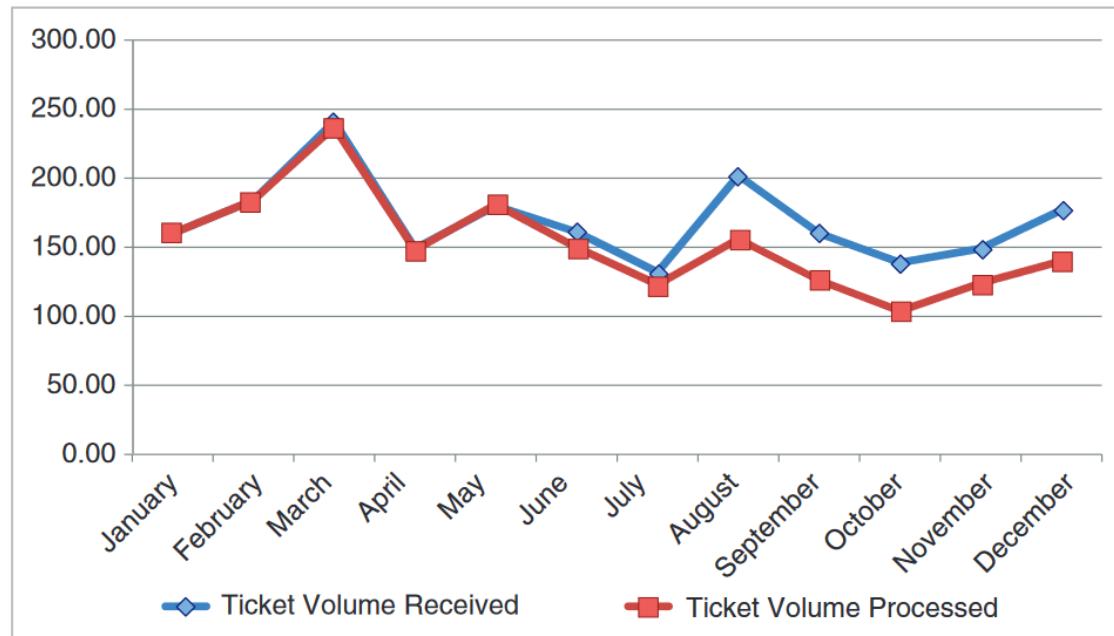
Use complementary color



No preattentive attributes

Preattentive attributes

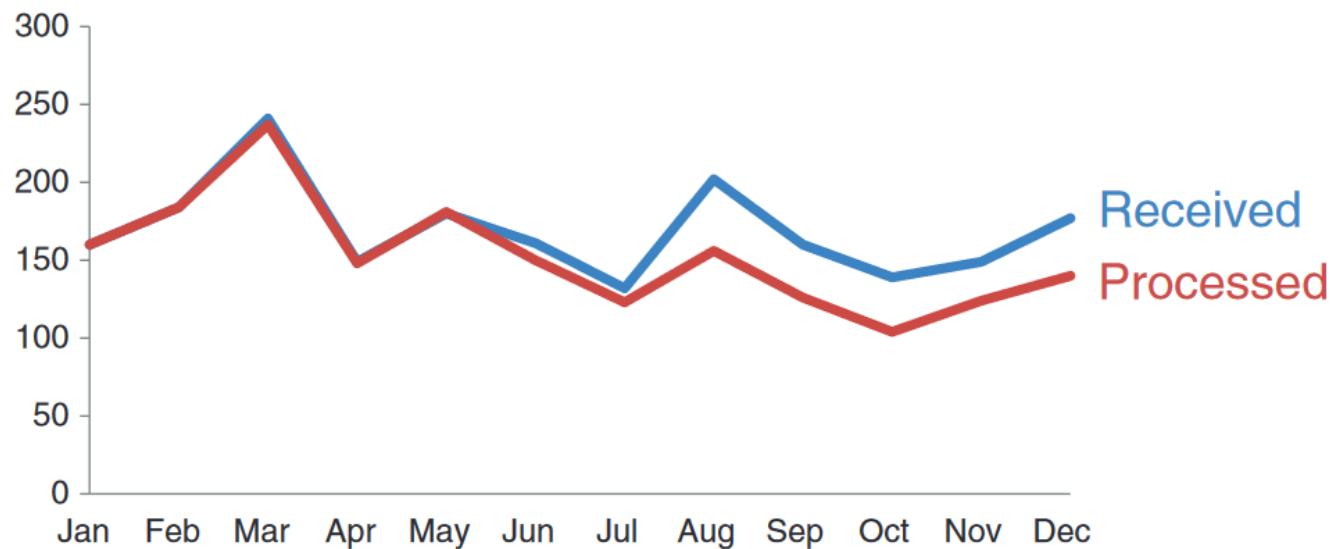
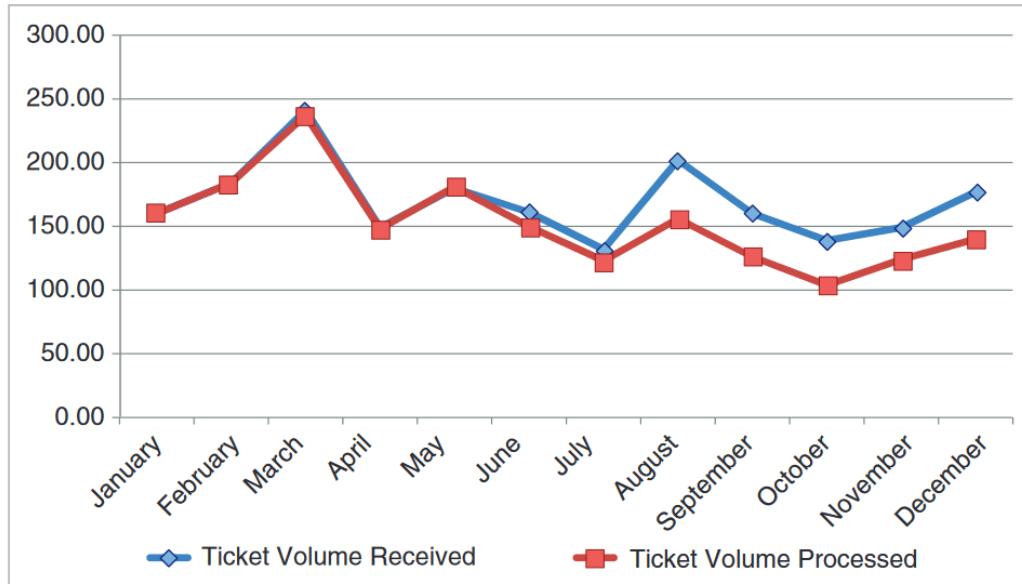
#3 Examples



Which of the two graphs you think is clearer and better? Why?



#3 Examples



1. Remove chart border. Closure Principle
2. Remove gridlines: This allows for greater contrast, and your data will stand out more. Simplicity Principle
3. Remove data markers. Simplicity Principle
4. Clean up axis labels: will fit horizontally on the x-axis, eliminating the diagonal text and zeros. Simplicity Principle
5. Label data directly: Proximity and put the data labels right next to the data they describe. Proximity Principle
6. Leverage consistent color: Make the data labels the same color as the data they describe. Similarity Principle

#3 Examples



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What is your opinion about the graph?
Can you suggest something to make it better?





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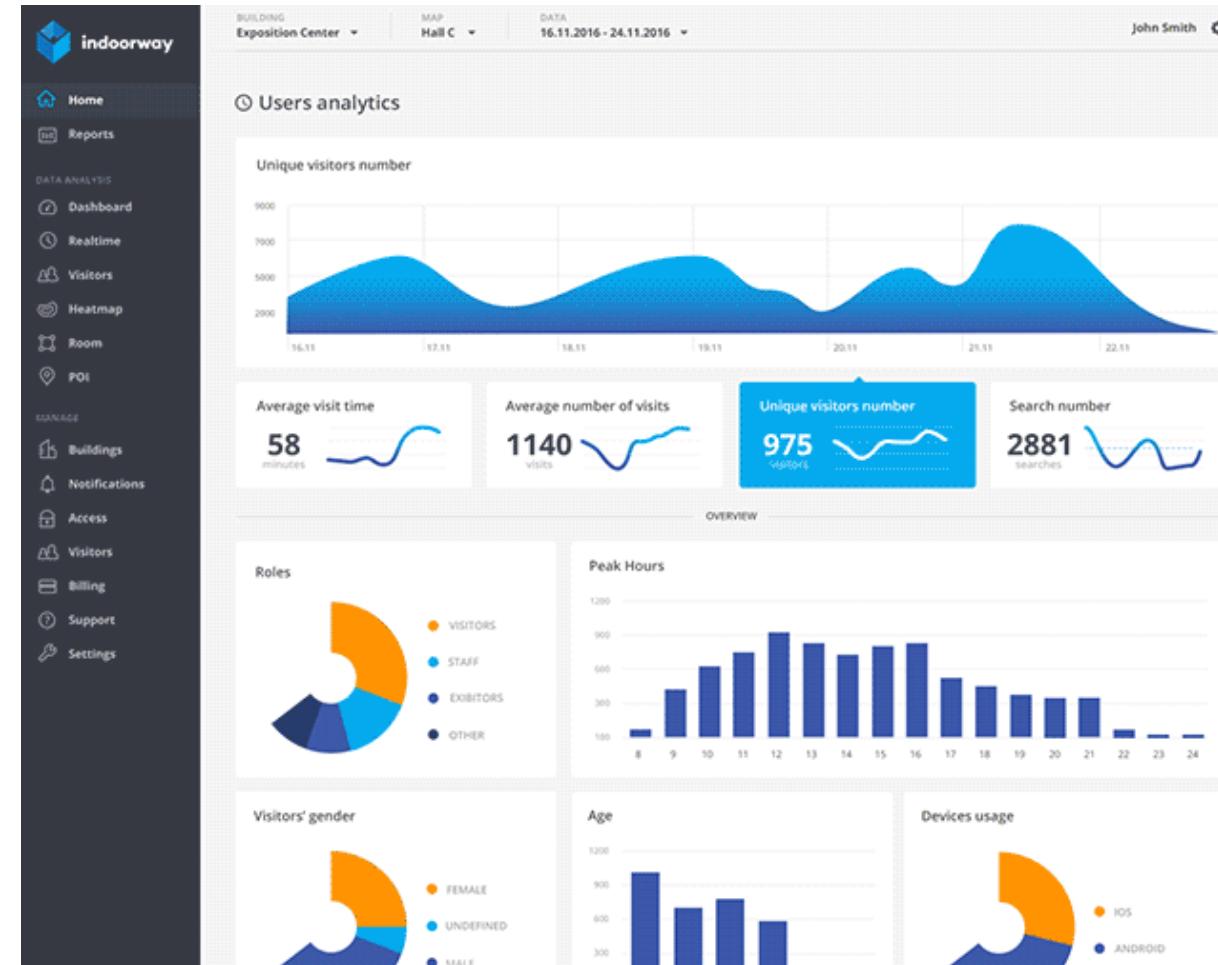
#4 Interactive Dashboards



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An Interactive Dashboard

#4 Power BI



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Power BI is a **business intelligence (BI)** and **data visualization tool** developed by Microsoft that allows users to connect to various data sources, analyze data, and create interactive dashboards and reports.

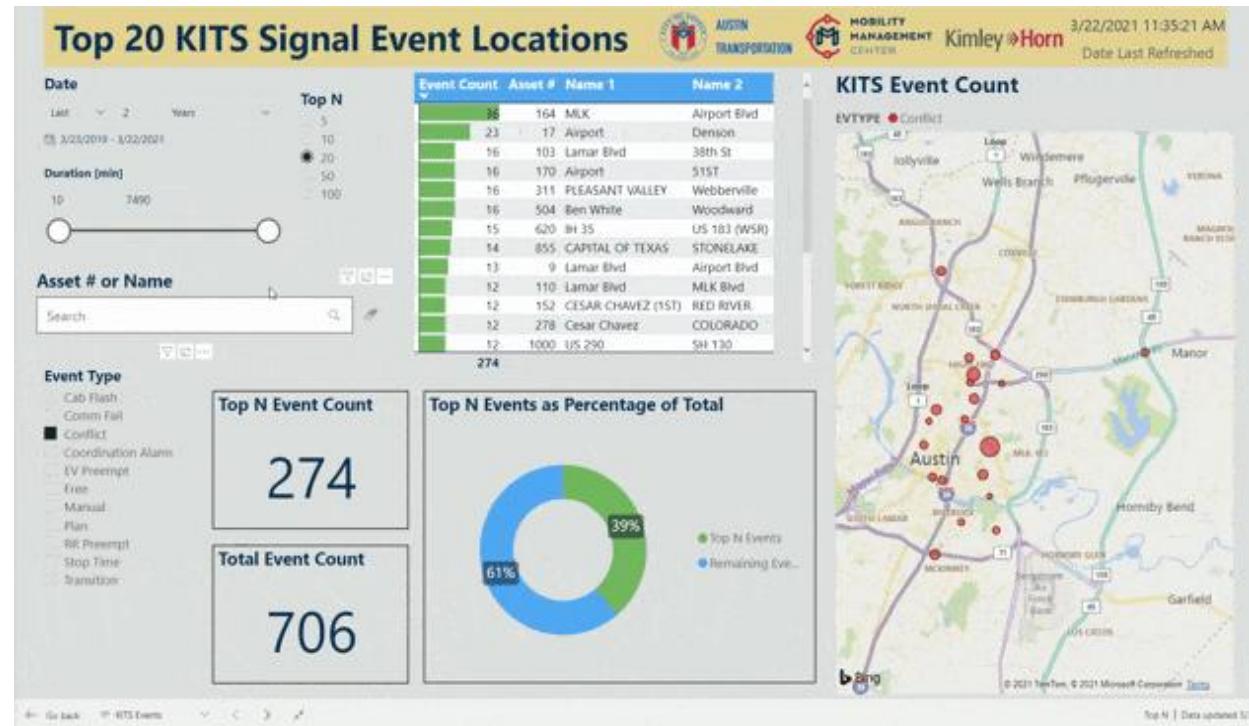
Visualize traffic volumes using line charts, heatmaps, or geographic maps.

Monitor peak traffic hours and bottlenecks using dashboards.

Track metrics like on-time performance, passenger counts, and route efficiency.

Monitor warehouse-to-delivery route efficiency and identify cost-saving opportunities.

Visualize accident hotspots on a map using geospatial data.



KITS Signal Events: A breakdown of signal events by categories (e.g., alarms, conflicts).
Traffic Engineer

#4 Student Research



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X0843 - Gespeichert
1 Article
General

General

Article	X0843	Title	Overtaking Feasibility Prediction for Mixed Connected and Connectionless Vehicles		
Reference	Zhao, Qian...	Application Area	AI to assist connected vehicles in lane-changing overtaking maneuvers		
Date (Year)	2024	Country (Author)	China	Region (Author)	Asiatic Region

Classification

Mode	Road	Objective	Safety	Trend	Autonomous Veh...
------	------	-----------	--------	-------	-------------------

Capabilities

Capabilities	Barriers
--------------	----------

↑↓ ↑↓

PI Planning RL

Dq Data quality and availability

Ca Complexity and limitations of AI

Microsoft Power Apps

Integrating Artificial Intelligence in Transportation: Challenges, and Strategic Solution



Microsoft Power BI



The screenshot shows the Power BI Desktop application window. The title bar reads "Untitled - Power BI Desktop". The main area has a banner for "FabCon Las Vegas" and a section titled "Select a data source or start with a blank report". Below this are several options: "Blank report" (which is being selected), "OneLake data hub", "Excel workbook", "SQL Server", "Learn with sample data", and "Get data from other sources". A "Recommended" section below shows "Getting started" content and a "Intro—What is Power BI?" link.

Untitled - Power BI Desktop

Search

Sign in

Home

Open

Blank report

OneLake data hub

Excel workbook

SQL Server

Learn with sample data

Get data from other sources

Get data from other sources

Getting started

Intro—What is Power BI?

Sign in

Options and settings

About

#4 Interface



Ribbon

The screenshot shows the Microsoft Power BI desktop application. A red arrow points from the word "Ribbon" to the top navigation bar, which includes tabs like File, Home, Insert, Modeling, View, etc., and various data import and visualization tools.

Add data to your report

Once loaded, your data will appear in the Data pane.

Import data from Excel Import data from SQL Server Paste data into a blank table Use sample data

Get data from another source →

Visualizations pane on the right side shows:

- Build visual
- Filters
- Values
- Drill through
- Cross-report
- Keep all filters
- Add drill-through fields here

Bottom navigation includes Page 1, a plus sign for new pages, and a zoom control at 112%.

#4 Interface



The screenshot shows the Microsoft Power BI Data Studio interface. The top navigation bar includes File, Home, Transform, Add Column, View, Tools, and Help. The main area displays a table titled 'Traffic_Count' with columns: Intersection_ID, Timestamp, Vehicle_Count, Day_of_Week, and Weather_Condition. The 'Intersection_ID' column contains values like I001, I002, I003, etc. The 'Timestamp' column shows dates and times from January 2024. The 'Vehicle_Count' column contains numerical values. The 'Day_of_Week' column shows days of the week. The 'Weather_Condition' column shows weather types like Sunny, Foggy, Rainy, and Snowy. A red box highlights the 'Remove Columns' button in the toolbar. The 'Data Type: Text' dropdown is also highlighted. To the right, there's a 'Query Settings' pane with sections for 'PROPERTIES' (Name: Traffic_Count) and 'APPLIED STEPS' (Source: Promoted Headers, Step: Changed Type). The bottom status bar indicates 6 COLUMNS, 100 ROWS, Column profiling based on top 1000 rows, and PREVIEW DOWNLOADED AT 5:12 PM.

Intersection_ID	Timestamp	Vehicle_Count	Day_of_Week	Weather_Condition
I001	1/1/2024 10:00:00 AM	184	Friday	Sunny
I001	1/2/2024 4:00:00 AM	109	Friday	Foggy
I001	1/3/2024 6:00:00 AM	59	Friday	Rainy
I001	1/4/2024 6:00:00 AM	225	Friday	Snowy
I001	1/4/2024 5:00:00 PM	245	Friday	Cloudy
I002	1/2/2024 9:00:00 PM	233	Friday	Sunny
I002	1/4/2024 3:00:00 PM	80	Friday	Rainy
I003	1/1/2024 11:00:00 PM	135	Friday	Snowy
I004	1/1/2024 11:00:00 AM	94	Friday	Cloudy
I004	1/1/2024 1:00:00 PM	208	Friday	Foggy
I004	1/4/2024 12:00:00 AM	155	Friday	Cloudy
I004	1/4/2024 5:00:00 AM	179	Friday	Foggy
I005	1/1/2024 9:00:00 PM	236	Friday	Rainy
I005	1/3/2024 12:00:00 PM	81	Friday	Cloudy
I005	1/5/2024 3:00:00 AM	92	Friday	Rainy
I001	1/1/2024 8:00:00 AM	162	Monday	Snowy
I001	1/1/2024 10:00:00 PM	130	Monday	Cloudy
I001	1/2/2024 1:00:00 AM	85	Monday	Foggy
I001	1/4/2024 11:00:00 PM	160	Monday	Cloudy
I002	1/1/2024 7:00:00 AM	83	Monday	Snowy

#4 Interface



You can expand and collapse the **Filters**, **Visualizations**, and **Data** panes by selecting the arrows at the tops of the panes. Collapsing the panes provides more space on the canvas.

The screenshot shows the Microsoft Power BI desktop application interface. The ribbon menu is visible at the top with tabs like File, Home, Insert, Modeling, View, Optimize, and Help. Below the ribbon, there are several toolbars: Clipboard, Data, Queries, Insert, Calculations, and a ribbon tab. The main workspace contains two tables: one for 'Intersection_ID' and 'Count of Day_of_Week', and another for 'Day_of_Week' and 'Traffic_Count'. The ribbon tab is currently selected, displaying three panes: 'Filters', 'Visualizations', and 'Data'. The 'Filters' pane contains sections for 'Filters on this page' and 'Filters on all pages', each with an 'Add data fields here' button. The 'Visualizations' pane contains a 'Build visual' section with various chart icons and a search bar. The 'Data' pane contains a 'Values' section with a similar search bar and a 'Drill through' section with 'Cross-report' and 'Keep all filters' options. Red arrows point from the descriptive text on the right to the 'Visualizations' and 'Data' panes.

Displays the fields (columns) from your dataset. You can drag and drop fields onto visualizations.

Helps you add visual to your dashboard and format it.

#4 Interface



The screenshot shows the Microsoft Power BI desktop application interface. The top navigation bar includes File, Home (selected), Insert, Modeling, View, Optimize, and Help. The Home tab has sections for Clipboard, Data, Queries, Insert, Calculations, and Share. A red box highlights the 'New visual' button in the Insert section. The main workspace displays two tables: 'Intersection_ID Count of Day_of_Week' and 'Day_of_Week'. A red box highlights the first table. To the right, there are sections for Filters, Visualizations, and Data, each with search bars and icons for different types of visualizations. A red box highlights the 'Build visual' icon in the Visualizations section. At the bottom, a red box highlights the 'Page 1' tab and the '+' button for adding new pages. A red arrow points from the text 'Dashboard Canvas / Workspace' to the workspace area.

Report View: is the default view

Data View: shows your data

Model View: Build relationships in data

Dashboard Canvas / Workspace

Page 1 +

The pages tab area at the bottom, which lets you select or add report pages.

#4 Table



The screenshot shows the Power BI Desktop interface with the following details:

- Top Bar:** Untitled - Power BI Desktop, Search, Sign in, Share.
- File Tab:** Standard file operations like Paste, Cut, Copy, Format painter, Get data, OneLake, SQL, Enter data, Data source, Recent sources, Transform data, Refresh data, New visual, Text box, More visuals, New visual calculation, New measure, Quick measure, Sensitivity, Publish, Copilot.
- Home Tab:** Selected. Contains sections for Filters, Visualizations, and Data.
- Filters Section:** Search bar, Add data fields here, Filters on this page, Filters on all pages, Add data fields here.
- Visualizations Section:** Build visual, Add data fields here, Table icon (123).
- Data Section:** Search bar, Traffic_Count category expanded, Day_of_Week, Intersection_ID, Timestamp, Traffic_Volume_..., Vehicle_Count, Weather_Condi... items listed.
- Bottom Navigation:** Page 1 of 1, Page navigation icons, + button, Page settings.
- Bottom Status:** Page 1 of 1, 53% zoom.

#4 Matrix



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The screenshot shows the Power BI Desktop interface. The ribbon is at the top with tabs: File, Home, Insert, Modeling, View, Optimize, Help. The Home tab is selected. The main area shows a clipboard with a table:

Intersection_ID	Count of Day_of_Week
I001	26
I002	24
I003	9
I004	21
I005	20
Total	100

The Data tab in the ribbon has options: Get data (workbook, data hub, OneLake, Server, data), Transform Refresh data, New visual, Text box, More visuals, New visual calculation, New measure, Quick measure, Sensitivity, Publish, Copilot.

The Visualizations pane on the right lists various visualization types: Matrix (selected), Gauge, Map, Timeline, Card, Bar chart, Line chart, Scatter chart, Radar chart, Pyramid chart, Treemap, Gantt chart, Radar chart, Waterfall chart, KPI, and Scorecard.

The Filters pane shows sections for Filters on this page and Filters on all pages, both with "Add data fields here" buttons. The Data pane shows a search bar and a list of fields under "Traffic_Count": Day_of_Week, Intersection_ID, Timestamp, Traffic_Volume_..., Vehicle_Count, Weather_Condi... . It also includes sections for values, Drill through, Cross-report (Off), and Keep all filters (On).

At the bottom, there are navigation icons for desktop, mobile, and browser, a page header "Page 1 of 1", and a zoom control "53%".

#4 Card



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The screenshot shows the Microsoft Power BI desktop interface. On the left, there's a card visual with the text "15K Sum of Vehicle_Count". Below it are two tables:

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251	312	620	1761	
Sunday	835	534	291	366	362	2388
Thursday	358	106	329	562	57	1412
Tuesday	175	475	920	811	2381	
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638

Intersection_ID	Count of Day_of_Week
I001	26
I002	24
I003	9
I004	21
I005	20
Total	100

On the right, the Power BI ribbon is visible with tabs like File, Home, Insert, etc. The Home tab is selected. The ribbon also includes sections for Data / Drill, Transform Refresh data, New visual, Insert, Calculations, Visualizations, and Data.

The Visualizations pane shows various chart and report icons. The Fields pane shows "Sum of Vehicle_Count" selected. The Data pane lists fields: Traffic_Count, Day_of_Week, Intersection_ID, Timestamp, Traffic_Volume..., and Vehicle_Count (which is checked). The Filters pane shows a filter for "Vehicle_Count" with a value of 123.

File Home Insert Modeling View Optimize Help Format Data / Drill Share ↗

Paste Cut Copy Format painter Clipboard Get data workbook Data hub OneLake Server Enter data Dataverse Recent sources Transform Refresh data New visual Text box More visuals New visual calculation New measure Quick Sensitivity Publish Copilot Calculations Sensitivity Share Copilot

Visualizations

Build visual

Filters

Search

Traffic_Count

- Day_of_Week
- Intersection_ID
- Timestamp
- Traffic_Volume...
- ∑ Vehicle_Count
- Weather_Condi...

Data

Sum of Vehicle_Count by Weather_Condition

Weather_Condition

0K 1K 2K 3K 4K

Weather_Condition	Sum of Vehicle_Count
Snowy	~3500
Foggy	~3200
Rainy	~2800
Cloudy	~2500
Sunny	~2200

15K Sum of Vehicle_Count

Day_of_Week I001 I002 I003 I004 I005 Total

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251	312	620	1761	
Sunday	835	534	291	366	362	2388
Thursday	358	106	329	562	57	1412
Tuesday	175	475	920	811	2381	
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638

Intersection_ID Count of Day_of_Week

Intersection_ID	Count of Day_of_Week
I001	26
I002	24
I003	9
I004	21
I005	20
Total	100

Page 1 +

Page 1 of 1

62%

#4 Slicer



Screenshot of Microsoft Power BI showing a dashboard with three visualizations and a slicer.

The dashboard includes:

- A large text visualization "15K" (Sum of Vehicle_Count).
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition".
- A table titled "Intersection_ID Count of Day_of_Week".

The "Data / Drill" ribbon tab is selected. The "Visualizations" pane shows a list of available visualizations, and the "Filters" pane shows a selected filter for "Intersection_ID".

Visualizations pane (available filters):

- Traffic_Count
- Day_of_Week
- Intersection_ID
- Timestamp
- Traffic_Volume...
- Σ Vehicle_Count
- Weather_Condi...

Filters pane (selected filter):

- Intersection_ID

Bottom navigation: Page 1 of 1, Page 1, +, 62%

#4 Line Chart



SUMMARY

Sum of Vehicle_Count

Intersection_ID

Intersection_ID	Count of Day_of_Week
I001	26
I002	24
I003	9
I004	21
I005	20
Total	100

Day_of_Week

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251		312	620	1761
Sunday	835	534	291	366	362	2388
Thursday	358	106		562	57	1412
Tuesday	175	475		920	811	2381
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638

Sum of Vehicle_Count by Year, Quarter, Month and Day

Sum of Vehicle_Count by Weather_Condition

Visualizations

Build visual

Filters

Data

Search

Traffic_Count

- Day_of_Week
- Intersection_ID

> Timestamp

- Traffic_Volume...
- ∑ Vehicle_Count
- Weather_Condi...

Y-axis

Sum of Vehicle_Count

Secondary y-axis

Page 1

Page 1 of 1

62%

#4 Formatting



The screenshot shows a Microsoft Power BI workspace with several visualizations and the 'Format page' pane open on the right.

Visualizations:

- A card visualization displays the value "15K" and the text "Sum of Vehicle_Count".
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition" shows vehicle counts for Snowy, Foggy, Rainy, Cloudy, and Sunny conditions.
- A line chart titled "Sum of Vehicle_Count by Year, Quarter, Month and Day" shows vehicle counts over time from Jan 01 to Jan 05.
- A bar chart titled "Count of Day_of_Week by Intersection_ID" shows the count of days of the week for five intersections.
- A table titled "Day_of_Week" provides the count of each day of the week for five intersections (I001-I005).

Format page pane:

- Type:** Set to "4:3".
- Height:** Set to "720 px".
- Width:** Set to "960 px".
- Vertical alignment:** Set to "Top".
- Canvas background:**
 - Color:** Set to black.
 - Image:** Set to "Browse...".
 - Image fit:** Set to "Normal".
 - Transparency:** Set to "0 %".
- Wallpaper:** Set to "Reset to default".
- Filter pane:** Set to "Reset to default".
- Filter cards:** Set to "Reset to default".

#4 Formatting



The screenshot shows a Microsoft Power BI dashboard with the following components:

- Top Navigation:** File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill.
- Clipboard:** Paste, Cut, Copy, Format painter.
- Data:** Get data, OneLake, SQL Server, Enter data, Recent sources, Transform data, Refresh data, New visual, Text box, More visual, Insert, Calculations, Quick measure, Sensitivity, Share, Publish, Copilot.
- Visuals:** A large card visualization showing "15K Sum of Vehicle_Count".
- Bar Chart:** "Sum of Vehicle_Count by Weather_Condition" (highlighted with a red box).

Weather_Condition	Sum of Vehicle_Count
Snowy	~3.8K
Foggy	~3.5K
Rainy	~3.2K
Cloudy	~2.8K
Sunny	~2.2K
- Line Chart:** "Sum of Vehicle_Count by Year, Quart".

Year	Sum of Vehicle_Count
Jan 01	~3K
Jan 02	~3.5K
Jan 03	~3.2K
Jan 04	~3.5K
Jan 05	~1.5K
- Table:** "Day_of_Week" (Intersection_ID I001-I005).

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251	312	620	1761	
Sunday	835	534	291	366	362	2388
Thursday	358	106	329	562	57	1412
Tuesday	175	475	920	811	2381	
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638
- Bar Chart:** "Count of Day_of_Week by Intersection_ID".

Intersection_ID	Count of Day_of_Week
I001	~22
I002	~21
I004	~18
I005	~18
I003	~10
- Properties Panel:** Shows settings for Size (Height: 280, Width: 450, Lock aspect ratio: Off), Position, Padding, Advanced options, Reset to default, Title (On), Effects, Data format, Header icons (On), Tooltips (On), Alt text.

#4 Formatting



The screenshot shows a Microsoft Power BI interface with the following elements:

- Top Bar:** File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill.
- Clipboard:** Cut, Copy, Format painter.
- Data:** Get data (Excel, OneLake, SQL Server, Data, Recent sources), Transform data (New visual, Text box, More visuals), New calculation, New measure, Quick measure, Sensitivity, Publish, Copilot.
- Queries:** New visual, Insert.
- Calculations:** New visual calculation, New measure, Quick measure.
- Sensitivity:** Share, Copilot.
- Share:** Share icon.

Visualizations:

- Intersection_ID:** A card visualization showing "15K Sum of Vehicle_Count".
- Sum of Vehicle_Count by Weather_Condition:** A horizontal bar chart showing vehicle counts for different weather conditions: Snowy (~3800), Foggy (~3500), Rainy (~3000), Cloudy (~2800), and Sunny (~2500).
- Sum of Vehicle_Count by Year, Quarter, Month and Day:** A line chart showing vehicle counts over five days in January: Jan 01 (~3000), Jan 02 (~3500), Jan 03 (~3200), Jan 04 (~3500), and Jan 05 (~1800).
- Count of Day_of_Week by Intersection_ID:** A bar chart showing the count of days of the week for each intersection ID: I001 (~22), I002 (~21), I004 (~19), I005 (~19), and I003 (~14).

Properties Panel: Shows settings for the currently selected visualization (Format visual). The "Position" section is highlighted with a red border. Other sections include Size (Height: 280, Width: 430, Lock aspect ratio: Off), Padding, Advanced options, Reset to default, Title (On), Effects, and Data format.

Formatting



Astro! Last saved: Today at 2:10 PM

File Home Insert Modeling View Optimize Help Format Data / Drill

Cut Copy Format painter Paste Get data from workbook data hub OneLake Server Enter data Recent sources Transform Refresh data New visual Text box More visuals Insert Calculations Sensitivity Share Publish Copilot

Intersection_ID

- I001
- I002
- I003
- I004
- I005

15K
Sum of Vehicle_Count

Sum of Vehicle_Count by Weather_Condition

Weather_Condition	Sum of Vehicle_Count
Snowy	~3500
Foggy	~3200
Rainy	~2800
Cloudy	~2500
Sunny	~2200

Sum of Vehicle_Count by Year, Quart ↑ ↓ ↻ ↺ ↻ ↺

Count of Day_of_Week by Intersection_ID

Intersection_ID	Count of Day_of_Week
I001	~25
I002	~22
I004	~20
I005	~18
I003	~15

Visualizations Format visual Filters Visual General ...

Search Traffic_Count

Width: 450px Lock aspect ratio: Off

Position: Horizontal: 480px, Vertical: 200px

Padding, Advanced options, Reset to default, Title (On), Effects, Data format, Header icons (On), Tooltips (On), Alt text

Page 1

Page 1 of 1

113%

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with the following components:

- Top Bar:** File, Home, Insert, Modeling, View, Optimize, Help.
- Clipboard:** Paste, Cut, Copy, Format painter.
- Data:** Get data, Excel, OneLake, SQL Server, Data hub, Enter data, Refresh data, Recent sources.
- Queries:** Transform data, New visual, Text box, More visuals.
- Insert:** New visual calculation, Quick measure measure, Sensitivity, Publish, Copilot.
- Calculated:** Sensitivity, Share, Copilot.
- Visuals:** Build visual, Search, Visualizations, Data.
- Filters:** Add data fields here, Drill through, Cross-report, Keep all filters, Add drill-through fields here.

Visuals:

- Intersection_ID:** A list of intersection IDs: I001, I002, I003, I004, I005.
- 15K:** A large text visualization showing "15K" with the subtitle "Sum of Vehicle_Count".
- Sum of Vehicle_Count by Weather_Condition:** A horizontal bar chart showing the sum of vehicle counts for different weather conditions: Snowy (~3800), Foggy (~3500), Rainy (~3200), Cloudy (~2800), and Sunny (~2500).
- Sum of Vehicle_Count by Year, Quarter, Month and Day:** A line chart showing the sum of vehicle counts over time from Jan 01 to Jan 05. The values fluctuate between approximately 1500 and 4000.
- Day_of_Week:** A table showing the count of days of the week for each intersection ID. The total counts are: Friday (2165), Monday (1761), Saturday (2388), Thursday (1412), Tuesday (2381), Wednesday (2216), and Total (14638).
- Count of Day_of_Week by Intersection_ID:** A bar chart showing the count of days of the week for each intersection ID. The counts are: I001 (~22), I002 (~21), I004 (~19), I005 (~19), and I003 (~14).

Page Navigation: Page 1, +, Page 1 of 1, 113%.

#4 Formatting



The screenshot shows the Microsoft Power BI desktop interface. The ribbon menu at the top includes File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill, and several specific icons for data sources like Excel, OneLake, SQL Server, and Data. The main workspace displays four visualizations:

- A matrix visualization showing data for Intersection_IDs I001, I002, I003, I004, and I005.
- A large text box visualization displaying "15K Sum of Vehicle_Count".
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing counts for Foggy (~1000), Snowy (~700), Cloudy (~550), Sunny (~450), and Rainy (~100).
- A line chart titled "Sum of Vehicle_Count by Year, Quarter, Month and Day" showing traffic volume over five days in January.

Below these charts is a table titled "Day_of_Week I004 Total" with the following data:

Day_of_Week	I004	Total
Friday	636	636
Monday	322	322
Saturday	312	312
Sunday	366	366
Thursday	562	562
Tuesday	920	920
Wednesday	147	147
Total	3265	3265

At the bottom right, a small chart titled "Count of Day_of_Week by Intersection_ID" is highlighted with a red border. The chart shows a single data point for Intersection_ID I004 with a value of approximately 20.

The Power BI ribbon on the right side of the interface includes sections for Filters, Visualizations, and Data, each with various configuration options like Slicer settings, Options, and Values.

#4 Formatting



ASTRAI - Last saved: Today at 2:52 PM

File Home Insert Modeling View Optimize Help Format Data / Drill

New page Visuals Pages

Q&A Key influencers Decomposition Narrative tree Power report Apps Automate

Text box Buttons Shapes Image Add a sparkline Sparklines

AI visuals Power Platform Elements

Sum of Vehicle_Count

15K

Sum of Vehicle_Count by Weather_Condition

Weather_Condition

Weather_Condition	Sum of Vehicle_Count
Snowy	3800
Foggy	3500
Rainy	3000
Cloudy	2800
Sunny	2500

Sum of Vehicle_Count by Year, Quart

Jan 01 Jan 02 Jan 03 Jan 04 Jan 05

4K 3K 2K 1K

Timestamp - Day is (All)

Timestamp - Month is (All)

Timestamp - Quarter is (All)

Timestamp - Year is (All)

Add data fields here

Y-axis

Range

Filters on this visual

Sum of Vehicle_Count is (All)

Visual General

Values On

Title

Reset to default

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Range

Minimum Auto

Maximum Auto

Logarithmic scale Off

Invert range Off

Values On

Title

Reset to default

Secondary y-axis

Legend Off

Small multiples

Day_of_Week I001 I002 I003 I004 I005 Total

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251		312	620	1761
Sunday	835	534	291	366	362	2388
Thursday	358	106	329	562	57	1412
Tuesday	175	475		920	811	2381
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638

Count of Day_of_Week by Intersection_ID

Intersection_ID

I001 I002 I004 I005 I003

20 0

Page 1 +

Page 1 of 1

113%

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with the 'Format' ribbon selected. The main area displays five visualizations:

- A matrix visual titled "Sum of Vehicle_Count" showing data for five intersection IDs (I001-I005).
- A large text visual displaying "15K Sum of Vehicle_Count".
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing traffic volume for different weather conditions.
- A line chart titled "Total Number of Vehicle by Day" showing traffic volume over five days in January.
- A table titled "Day_of_Week" showing the count of vehicles by day of the week across five intersection IDs.
- A bar chart titled "Count of Day_of_Week by Intersection_ID" showing the count of vehicles for each day of the week at specific intersection IDs.

The 'Format' ribbon on the right provides various styling options for the selected visual, such as filters, visualizations, data, and general properties like title, subtitle, and spacing.

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with several visualizations:

- A matrix visualization titled "Sum of Vehicle_Count" showing data for five categories (I001, I002, I003, I004, I005) with a total value of 15K.
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing vehicle counts for different weather conditions: Snowy (~3.5K), Foggy (~3.2K), Rainy (~2.8K), Cloudy (~2.5K), and Sunny (~2.2K).
- A line chart titled "Total Number of Vehicle by Day" showing vehicle counts over five days in January (Jan 01 to Jan 05), with values fluctuating between 2.8K and 3.5K.
- A table titled "Day_of_Week" showing the count of vehicles for each day of the week across five intersection IDs (I001 to I005).

Day_of_Week	I001	I002	I003	I004	I005	Total
Friday	822	313	135	636	409	2315
Monday	537	604	495	322	207	2165
Saturday	578	251		312	620	1761
Sunday	835	534	291	366	362	2388
Thursday	358	106	329	562	57	1412
Tuesday	175	475		920	811	2381
Wednesday	269	1140	151	147	509	2216
Total	3574	3423	1401	3265	2975	14638
- A bar chart titled "Count of Day_of_Week by Intersection_ID" showing the count of vehicles for each day of the week across five intersection IDs (I001 to I005).

Intersection_ID	Count
I001	~22
I002	~21
I004	~19
I005	~19
I003	~14

The right side of the screen shows the "Format" ribbon with the "Visualizations" tab selected, displaying filters, visual properties, and effects like background color and transparency.

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with the following elements:

- Top Bar:** File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill.
- Clipboard:** Paste, Cut, Copy, Format painter.
- Data:** Get data, Excel, OneLake, Server, Data, Recent sources, Transform data, Refresh data, New visual, Text box, More visuals, Insert, Calculations, Sensitivity, Share, Publish, Copilot.
- Visuals:** Five visualizations are displayed:
 - A matrix visual titled "Sum of Vehicle_Count" showing data for five intersection IDs (I001-I005).
 - A large text visual displaying "15K" with the subtitle "Sum of Vehicle_Count".
 - A bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing vehicle counts for Snowy, Foggy, Rainy, Cloudy, and Sunny conditions.
 - A line chart titled "Total Number of Vehicle by Day" showing daily vehicle counts from Jan 01 to Jan 05.
 - A table titled "Day_of_Week" showing the count of vehicles for each day of the week across five intersection IDs.
 - A bar chart titled "Count of Day_of_Week by Intersection_ID" showing the count of days for each intersection ID.
- Filters:** Filters on this visual, Filters on this page, Filters on all pages.
- Visualizations:** Format visual, Visual, General, Properties, Title, Text, Heading, Font, Text color, Background color, Horizontal alignment, Text wrap, Subtitle, Divider, Spacing.
- Data:** Format visual, General, Properties, Title, Text, Heading, Font, Text color, Background color, Horizontal alignment, Text wrap, Subtitle, Divider, Spacing.

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with the following components:

- Top Bar:** File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill.
- Clipboard:** Cut, Copy, Format painter.
- Data:** Get data (Excel, OneLake, SQL, Enter data, Dataverse, Recent sources), Transform Refresh data, New visual, Text box, More visuals, New calculation, New measure, Quick calculation, Sensitivity, Publish, Copilot.
- Queries:** Insert, Calculations, Share.
- Home Screen:** A large text box displays "15K Sum of Vehicle_Count". Below it is a bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing counts for Snowy, Foggy, Rainy, Cloudy, and Sunny conditions. To its right is a line chart titled "Total Number of Vehicle by Day" showing traffic volume over five days in January.
- Table:** A grid table titled "Day_of_Week" showing vehicle counts for five intersections (I001-I005) across the week, with a total row.
- Bar Chart:** A bar chart titled "Count of Day_of_Week by Intersection_ID" showing the count of vehicles per day of the week for each intersection.
- Right Panel (Format Visual):** This panel contains several sections:
 - Filters:** Includes filters for "Sum of Vehicle_Count" (All), "Timestamp - Day" (All), "Timestamp - Month" (All), "Timestamp - Quarter" (All), "Timestamp - Year" (All), and "Add data fields here".
 - Visualizations:** Shows the current visual being formatted.
 - Data:** Shows the data source "Traffic_Count" with fields "Day_of_Week", "Intersection_ID", "Timestamp", "Traffic_Volume", and "Weather_Condition".
 - Format visual:** Includes sections for Range (Minimum: Auto, Maximum: Auto, Logarithmic scale: Off, Invert range), Values (Font: Segoe UI, 9pt, Bold, Italic, Underline, Color: black, Display units: Auto, Value decimal places: Auto, Switch axis position: Off), and Title (Title: Off, Reset to default).
 - Secondary y-axis:** An option to enable a secondary y-axis.

#4 Formatting



The screenshot shows a Microsoft Power BI desktop interface with several visualizations and the 'Format' pane open on the right.

Visualizations:

- A matrix visual titled "Sum of Vehicle_Count" showing data for five intersection IDs (I001, I002, I003, I004, I005) with a total value of 15K.
- A bar chart titled "Sum of Vehicle_Count by Weather_Condition" showing vehicle counts for Snowy, Foggy, Rainy, Cloudy, and Sunny conditions.
- A line chart titled "Total Number of Vehicle by Day" showing vehicle counts over five days in January (Jan 01 to Jan 05).
- A table titled "Day_of_Week" showing the count of vehicles for each day of the week across five intersection IDs.
- A bar chart titled "Count of Day_of_Week by Intersection_ID" showing the count of vehicles for each intersection ID across the days of the week.

Format Pane (Visible on the right):

- Gridlines:** Horizontal gridlines are selected (indicated by a red box).
- Vertical gridlines:** Vertical gridlines are selected (indicated by a red box).
- Color:** Set to blue.
- Transparency:** 0%.
- Line style:** Dotted.
- Scale by width:** Off.
- Width:** 1 px.
- Filters:** Shows filters applied to the visual, including "Sum of Vehicle_Count is (All)", "Timestamp - Day is (All)", and "Timestamp - Month is (All)".
- Visualizations:** Shows general settings for the visualization.
- Data:** Shows the data source "Traffic_Count" with fields like "Day_of_Week", "Intersection_ID", "Timestamp", "Traffic_Volume", and "Vehicle_Count".



#4 Formatting



The screenshot shows the Microsoft Power BI desktop interface with the following elements:

- Format ribbon:** The "Format" tab is selected in the ribbon.
- Clipboard icon:** The "Format painter" icon is highlighted with a red box.
- Visualizations:**
 - Total Number of Vehicle:** A 2x3 grid visualization with cells containing "I001", "I004", "I002", "I005", "I003", and an empty cell.
 - Total Number of Vehicle by Weather Condition:** A horizontal bar chart showing vehicle counts for Rainy, Cloudy, Snowy, Foggy, and Sunny conditions.
 - Total Number of Vehicle by Day:** A line chart showing vehicle counts over time from Jan 01 to Jan 05.
 - Total Number of Vehicles by Day at Each Intersection:** A table showing the total number of vehicles for each day of the week across different intersections.
 - Count of Day of Week by Intersection:** A stacked bar chart showing the count of days of the week for intersection I005.
- Filters pane:** Shows filters applied to the visualizations, such as "Intersection_ID is (All)".
- Visualizations pane:** Shows the current visualizations in the report.
- Data pane:** Shows the data source "Traffic_Count" with fields like Day_of_Week, Intersection_ID, Timestamp, Traffic_Volume, Vehicle_Count, and Weather_Condition.
- Effects pane:** Shows various styling options like background color, transparency, and borders.

#4 Formatting



The screenshot shows a Microsoft Power BI report titled "ASTRAI". The report contains several visualizations:

- A large text box visualization titled "Total Number of Vehicle" showing the value 409.
- A bar chart titled "Total Number of Vehicle by Weather Condition" showing traffic counts for Rainy, Cloudy, Snowy, Foggy, and Sunny conditions.
- A line chart titled "Count of Day of Week by Intersection" showing traffic counts over time from Jan 01 to Jan 05.
- A table titled "Total Number of Vehicles by Day at Each Intersection" showing traffic counts for each day of the week across different intersections.

The "Format" ribbon is open on the right side of the interface, specifically the "Text box" tab under the "Elements" section. A red box highlights the "Background" section, which includes options for color, transparency, and visual border.

Visualizations in the report:

- Total Number of Vehicle**: Value 409
- Total Number of Vehicle by Weather Condition**:

Weather Condition	Value
Rainy	~700
Cloudy	~600
Snowy	~500
Foggy	~400
Sunny	~300
- Count of Day of Week by Intersection**:

Day of Week	I005	Total
Tuesday	811	811
Saturday	620	620
Wednesday	509	509
Friday	409	409
Sunday	362	362
Monday	207	207
Thursday	57	57
Total	2975	2975

#4 Formatting



The screenshot shows a Microsoft Power BI dashboard titled "Traffic Analysis Dashboard for Martinsviertel, Darmstadt". The dashboard includes the following visualizations:

- Total Number of Vehicle:** A large text visualization showing "15K".
- Total Number of Vehicle by Weather Condition:** A horizontal bar chart showing vehicle counts for Snowy, Foggy, Rainy, Cloudy, and Sunny conditions.
- Total Number of Vehicle by Day:** A line chart showing vehicle counts over five days in January.
- Total Number of Vehicles by Day at Each Intersection:** A table showing daily vehicle counts for five intersections (I001-I005).
- Count of Day of Week by Intersection:** A bar chart showing the count of days of the week for each intersection.

The Power BI interface is visible, including the ribbon menu (File, Home, Insert, Modeling, View, Optimize, Help), the AI visuals section, and the Elements tab where the "Text box" button is highlighted with a red box.

Day_of_Week	I001	I002	I003	I004	I005	Total
Sunday	835	534	291	366	362	2388
Tuesday	175	475		920	811	2381
Friday	822	313	135	636	409	2315
Wednesday	269	1140	151	147	509	2216
Monday	537	604	495	322	207	2165
Saturday	578	251		312	620	1761
Thursday	358	106	329	562	57	1412
Total	3574	3423	1401	3265	2975	14638



TECHNISCHE
UNIVERSITÄT
DARMSTADT



Institut für
Verkehrsplanung
und Verkehrstechnik
TU Darmstadt

