

Data and Artificial Intelligence

Cyber Shujaa Program

Week 4 Assignment

Business Intelligence on Power BI

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Introduction

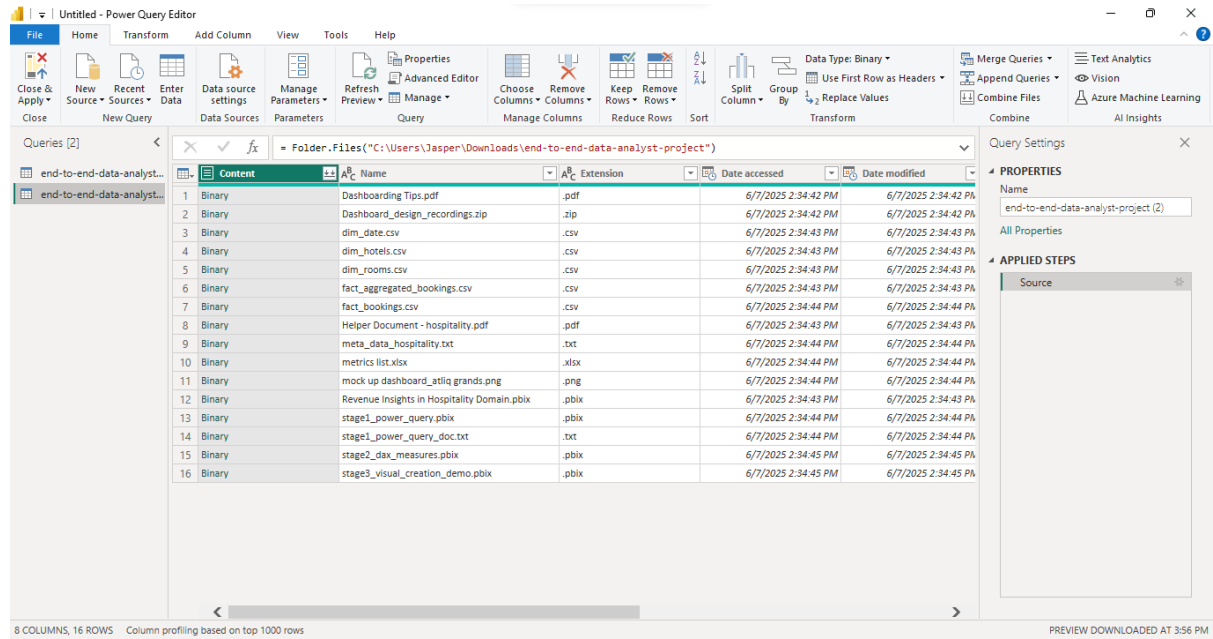
This week's assignment was mainly aimed at us developing hands-on experience in Business Intelligence using Power BI for Hotel Management and publishing our work on the cloud. Learning Power BI tool was amazing and a great learning experience.

The purpose of the assignment was for us to gain hands-on practice:

1. Understanding the Hotel business and client needs
2. Load Data
3. Transform Data
4. Build DAX
5. Visualize Dashboard
6. Publish your project as part of your portfolio collection

Tasks Completed

First Step was for us to load and transform data from csv files;



Power Query Editor - Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Binary Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning

Queries [2] end-to-end-data-analyst... end-to-end-data-analyst...

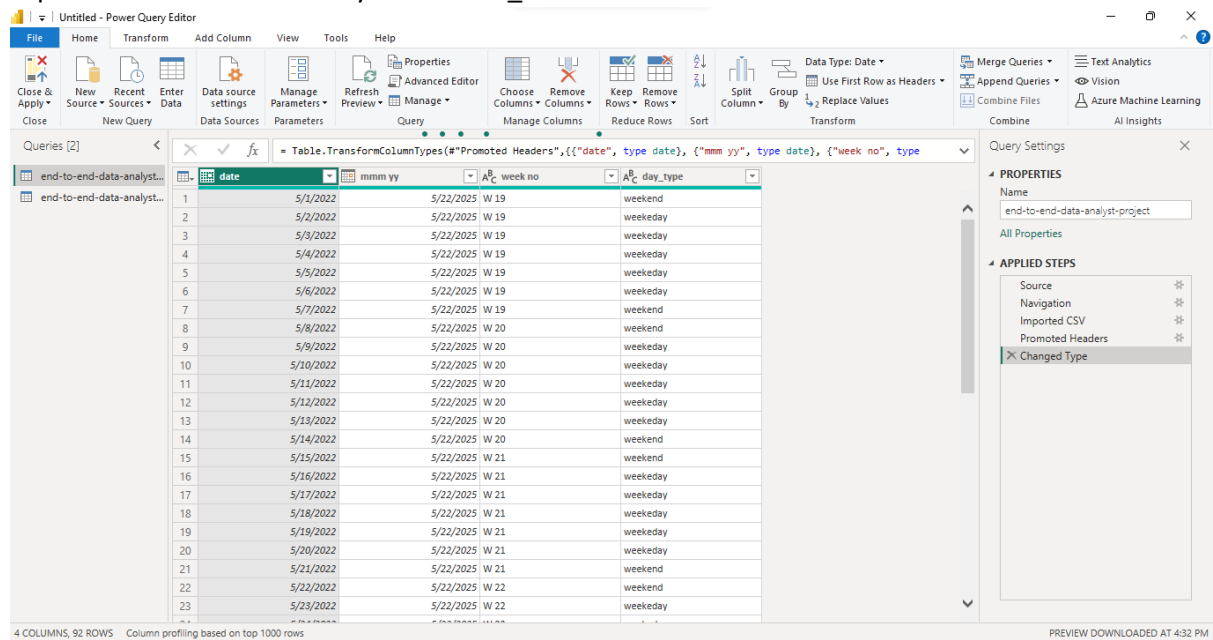
Content AB Name Extension Date accessed Date modified

AB	Name	Extension	Date accessed	Date modified
1	Binary	Dashboarding Tips.pdf	6/7/2025 2:34:42 PM	6/7/2025 2:34:42 PM
2	Binary	Dashboard_design_recordings.zip	6/7/2025 2:34:42 PM	6/7/2025 2:34:42 PM
3	Binary	dim_date.csv	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
4	Binary	dim_hotels.csv	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
5	Binary	dim_rooms.csv	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
6	Binary	fact_aggregated_bookings.csv	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
7	Binary	fact_bookings.csv	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
8	Binary	Helper Document - hospitality.pdf	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
9	Binary	meta_data_hospitality.txt	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
10	Binary	metrics_list.xlsx	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
11	Binary	mock up dashboard_atlq grands.png	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
12	Binary	Revenue Insights in Hospitality Domain.pbix	6/7/2025 2:34:43 PM	6/7/2025 2:34:43 PM
13	Binary	stage1_power_query.pbix	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
14	Binary	stage1_power_query_doc.txt	6/7/2025 2:34:44 PM	6/7/2025 2:34:44 PM
15	Binary	stage2_dax_measures.pbix	6/7/2025 2:34:45 PM	6/7/2025 2:34:45 PM
16	Binary	stage3_visual_creation_demo.pbix	6/7/2025 2:34:45 PM	6/7/2025 2:34:45 PM

8 COLUMNS, 16 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 3:56 PM

Expand file when I click binary for the dim_date.csv file



Power Query Editor - Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Date Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning

Queries [2] end-to-end-data-analyst... end-to-end-data-analyst...

Table.TransformColumnTypes(*Promoted Headers*,{"date", type date}, {"mmm yy", type date}, {"week no", type

AB	date	mmm yy	week no	day_type
1	5/1/2022	5/22/2025	W 19	weekend
2	5/2/2022	5/22/2025	W 19	weekday
3	5/3/2022	5/22/2025	W 19	weekday
4	5/4/2022	5/22/2025	W 19	weekday
5	5/5/2022	5/22/2025	W 19	weekday
6	5/6/2022	5/22/2025	W 19	weekday
7	5/7/2022	5/22/2025	W 19	weekend
8	5/8/2022	5/22/2025	W 20	weekend
9	5/9/2022	5/22/2025	W 20	weekday
10	5/10/2022	5/22/2025	W 20	weekday
11	5/11/2022	5/22/2025	W 20	weekday
12	5/12/2022	5/22/2025	W 20	weekday
13	5/13/2022	5/22/2025	W 20	weekday
14	5/14/2022	5/22/2025	W 20	weekend
15	5/15/2022	5/22/2025	W 21	weekend
16	5/16/2022	5/22/2025	W 21	weekday
17	5/17/2022	5/22/2025	W 21	weekday
18	5/18/2022	5/22/2025	W 21	weekday
19	5/19/2022	5/22/2025	W 21	weekday
20	5/20/2022	5/22/2025	W 21	weekday
21	5/21/2022	5/22/2025	W 21	weekend
22	5/22/2022	5/22/2025	W 22	weekend
23	5/23/2022	5/22/2025	W 22	weekday

4 COLUMNS, 92 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 4:32 PM

Load and Transform data

- dim_date

Queries [5]

dim_date

dim_hotels

dim_rooms

fact_aggregated_bookings

fact_bookings

Table.TransformColumnTypes(*Promoted Headers*,{"date", type date}, {"mm yy", type date}, {"week no", type

	date	mm yy	week no	day_type
1	5/1/2022	5/22/2025	W 19	weekend
2	5/2/2022	5/22/2025	W 19	weekday
3	5/3/2022	5/22/2025	W 19	weekday
4	5/4/2022	5/22/2025	W 19	weekday
5	5/5/2022	5/22/2025	W 19	weekday
6	5/6/2022	5/22/2025	W 19	weekday
7	5/7/2022	5/22/2025	W 19	weekend
8	5/8/2022	5/22/2025	W 20	weekend
9	5/9/2022	5/22/2025	W 20	weekday
10	5/10/2022	5/22/2025	W 20	weekday
11	5/11/2022	5/22/2025	W 20	weekday
12	5/12/2022	5/22/2025	W 20	weekday
13	5/13/2022	5/22/2025	W 20	weekday
14	5/14/2022	5/22/2025	W 20	weekend
15	5/15/2022	5/22/2025	W 21	weekend
16	5/16/2022	5/22/2025	W 21	weekday
17	5/17/2022	5/22/2025	W 21	weekday
18	5/18/2022	5/22/2025	W 21	weekday
19	5/19/2022	5/22/2025	W 21	weekday
20	5/20/2022	5/22/2025	W 21	weekday
21	5/21/2022	5/22/2025	W 21	weekend
22	5/22/2022	5/22/2025	W 22	weekend
23	5/23/2022	5/22/2025	W 22	weekday

Query Settings

PROPERTIES

Name

dim_date

APPLIED STEPS

Source

Navigation

Imported CSV

Promoted Headers

Changed Type

- dim_hotels

Queries [5]

dim_date

dim_hotels

dim_rooms

fact_aggregated_bookings

fact_bookings

Table.TransformColumnTypes(*Promoted Headers*,{"property_id", Int64.Type}, {"property_name", type text}, {"

	property_id	property_name	category	city
1	16558	Atliq Grands	Luxury	Delhi
2	16559	Atliq Exotica	Luxury	Mumbai
3	16560	Atliq City	Business	Delhi
4	16561	Atliq Blu	Luxury	Delhi
5	16562	Atliq Bay	Luxury	Delhi
6	16563	Atliq Palace	Business	Delhi
7	17558	Atliq Grands	Luxury	Mumbai
8	17559	Atliq Exotica	Luxury	Mumbai
9	17560	Atliq City	Business	Mumbai
10	17561	Atliq Blu	Luxury	Mumbai
11	17562	Atliq Bay	Luxury	Mumbai
12	17563	Atliq Palace	Business	Mumbai
13	18558	Atliq Grands	Luxury	Hyderabad
14	18559	Atliq Exotica	Luxury	Hyderabad
15	18560	Atliq City	Business	Hyderabad
16	18561	Atliq Blu	Luxury	Hyderabad
17	18562	Atliq Bay	Luxury	Hyderabad
18	18563	Atliq Palace	Business	Hyderabad
19	19558	Atliq Grands	Luxury	Bangalore
20	19559	Atliq Exotica	Luxury	Bangalore
21	19560	Atliq City	Business	Bangalore
22	19561	Atliq Blu	Luxury	Bangalore
23	19562	Atliq Bay	Luxury	Bangalore

Query Settings

PROPERTIES

Name

dim_hotels

APPLIED STEPS

Source

Navigation

Imported CSV

Promoted Headers

Changed Type

- dim_rooms

Queries [5]

dim_date

dim_hotels

dim_rooms

fact_aggregated_bookings

fact_bookings

Table.TransformColumnTypes(*Promoted Headers*,{"room_id", type text}, {"room_class", type text})

	room_id	room_class
1	RT1	Standard
2	RT2	Elite
3	RT3	Premium
4	RT4	Presidential

Query Settings

PROPERTIES

Name

dim_rooms

APPLIED STEPS

Source

Navigation

Imported CSV

Changed Type

Promoted Headers

Changed Type1

- fact_aggregated bookings

Queries [5]

dim_date
dim_hotels
dim_rooms
fact_aggregated_bookings
fact_bookings

fx = Table.TransformColumnTypes(*Promoted Headers*,{{"property_id", Int64.Type}, {"check_in_date", type date}},

	i23 property_id	check_in_date	A6 room_category	i23 successful_bookings	i23 capacity
1	16559	5/1/2022	RT1	25	30
2	19562	5/1/2022	RT1	28	30
3	19563	5/1/2022	RT1	23	30
4	17558	5/1/2022	RT1	13	19
5	16558	5/1/2022	RT1	18	19
6	17560	5/1/2022	RT1	28	40
7	19558	5/1/2022	RT1	25	40
8	19560	5/1/2022	RT1	23	26
9	17561	5/1/2022	RT1	22	26
10	16560	5/1/2022	RT1	24	34
11	16561	5/1/2022	RT1	16	18
12	16562	5/1/2022	RT1	20	31
13	16563	5/1/2022	RT1	36	41
14	17559	5/1/2022	RT1	26	32
15	17562	5/1/2022	RT1	12	20
16	17563	5/1/2022	RT1	21	25
17	18558	5/1/2022	RT1	11	15
18	18559	5/1/2022	RT1	29	42
19	18561	5/1/2022	RT1	31	33
20	18562	5/1/2022	RT1	34	38
21	18563	5/1/2022	RT1	18	27
22	19559	5/1/2022	RT1	18	24
23	19561	5/1/2022	RT1	25	36

5 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows

Query Settings

PROPERTIES

Name
fact_aggregated_bookings

APPLIED STEPS

Source
Navigation
Imported CSV
Promoted Headers
X Changed Type

PREVIEW DOWNLOADED AT 4:51 PM

- fact_bookings

Queries [5]

dim_date
dim_hotels
dim_rooms
fact_aggregated_bookings
fact_bookings

fx = Table.TransformColumnTypes(*Promoted Headers*,{{"booking_id", type text}, {"property_id", Int64.Type}},

	A6 booking_id	i23 property_id	booking_date	check_in_date	checkout_date	i23 no_guests
1	May012216558RT11	16558	4/27/2022	5/1/2022	5/2/2022	
2	May012216558RT12	16558	4/30/2022	5/1/2022	5/2/2022	
3	May012216558RT13	16558	4/28/2022	5/1/2022	5/4/2022	
4	May012216558RT14	16558	4/28/2022	5/1/2022	5/2/2022	
5	May012216558RT15	16558	4/27/2022	5/1/2022	5/2/2022	
6	May012216558RT16	16558	5/1/2022	5/1/2022	5/3/2022	
7	May012216558RT17	16558	4/27/2022	5/1/2022	5/6/2022	
8	May012216558RT18	16558	4/26/2022	5/1/2022	5/3/2022	
9	May012216558RT19	16558	4/30/2022	5/1/2022	5/2/2022	
10	May012216558RT110	16558	4/28/2022	5/1/2022	5/2/2022	
11	May012216558RT111	16558	4/29/2022	5/1/2022	5/7/2022	
12	May012216558RT112	16558	4/26/2022	5/1/2022	5/2/2022	
13	May012216558RT113	16558	4/26/2022	5/1/2022	5/7/2022	
14	May012216558RT114	16558	4/30/2022	5/1/2022	5/5/2022	
15	May012216558RT115	16558	4/29/2022	5/1/2022	5/2/2022	
16	May012216558RT116	16558	4/27/2022	5/1/2022	5/3/2022	
17	May012216558RT117	16558	4/29/2022	5/1/2022	5/2/2022	
18	May012216558RT118	16558	4/27/2022	5/1/2022	5/2/2022	
19	May012216558RT21	16558	4/7/2022	5/1/2022	5/6/2022	
20	May012216558RT22	16558	4/30/2022	5/1/2022	5/3/2022	
21	May012216558RT23	16558	4/10/2022	5/1/2022	5/7/2022	
22	May012216558RT24	16558	4/29/2022	5/1/2022	5/3/2022	
23	May012216558RT25	16558	4/16/2022	5/1/2022	5/1/2022	

Query Settings

PROPERTIES

Name
fact_bookings

APPLIED STEPS

Source
Navigation
Imported CSV
Promoted Headers
X Changed Type

- Remove column day_type
- Close and apply changes on power query

File Home Insert Modeling View Optimize Help Table tools Column tools

Name date Format Wednesday, Mar... Summarization Don't summarize Data category Uncategorized Sort by column Data groups Manage relationships New column

Structure Formatting Properties Sort Groups Relationships Calculations

Build visuals with your data

Select or drag fields from the Data pane onto the report canvas.

Visualizations

Build visual

Filters

Values

Add data fields here

Drill through

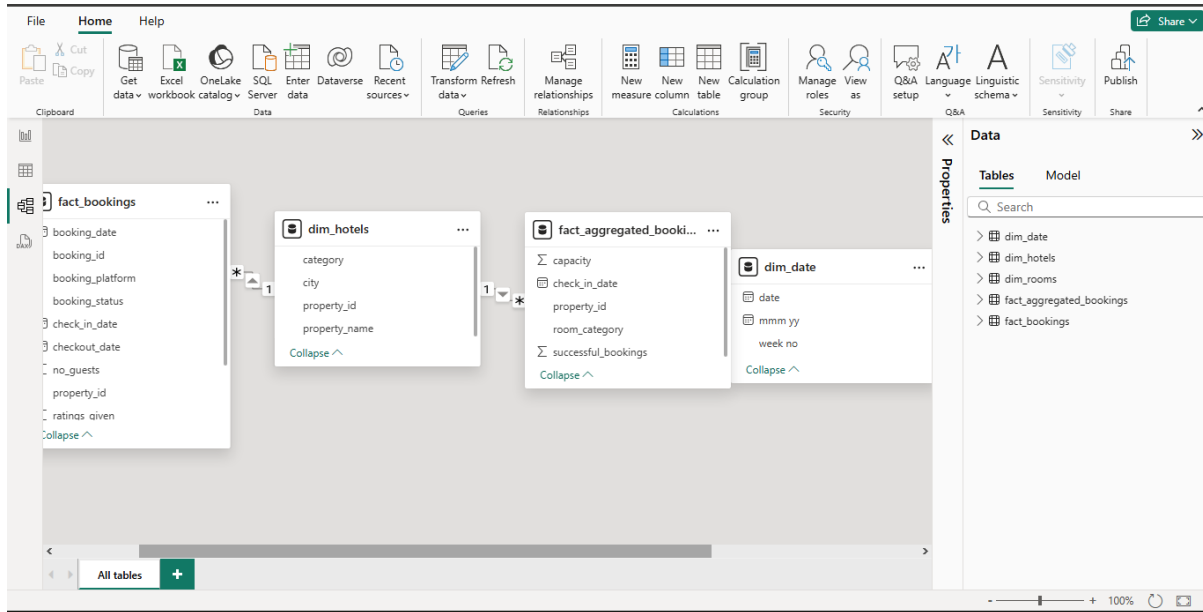
Cross-report On

Keep all filters On

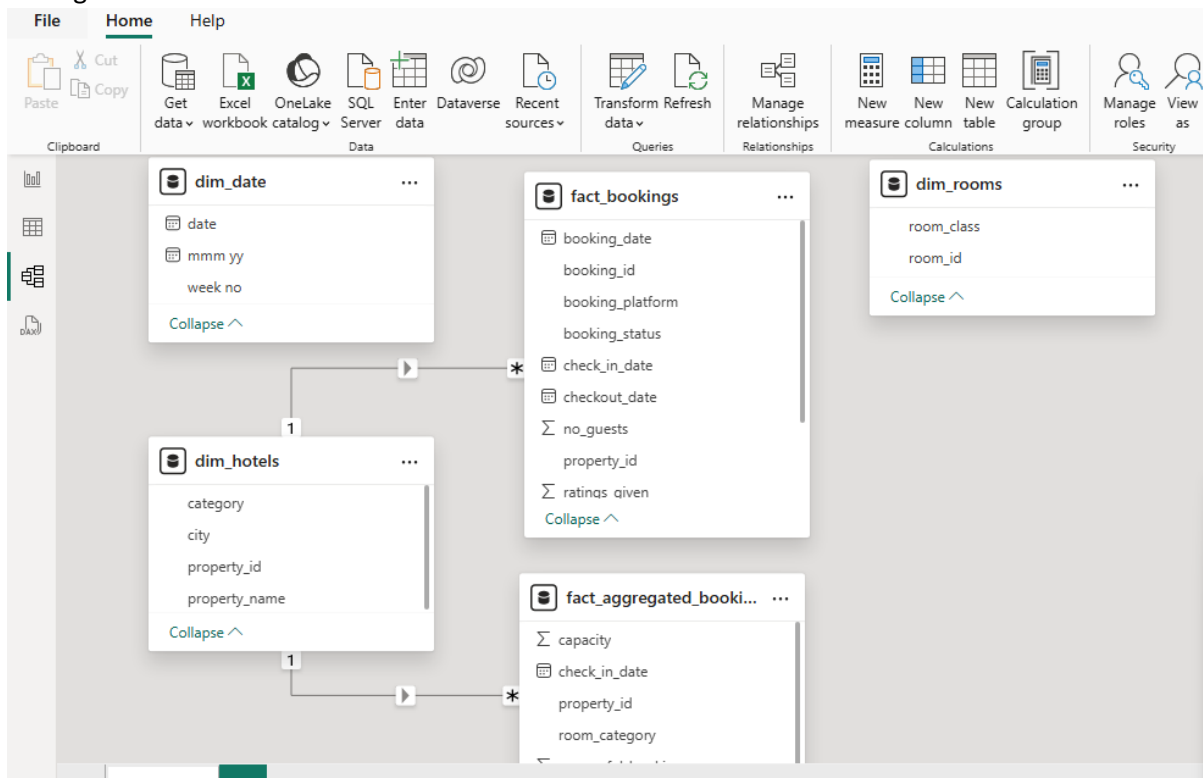
Add drill-through fields here

Page 1

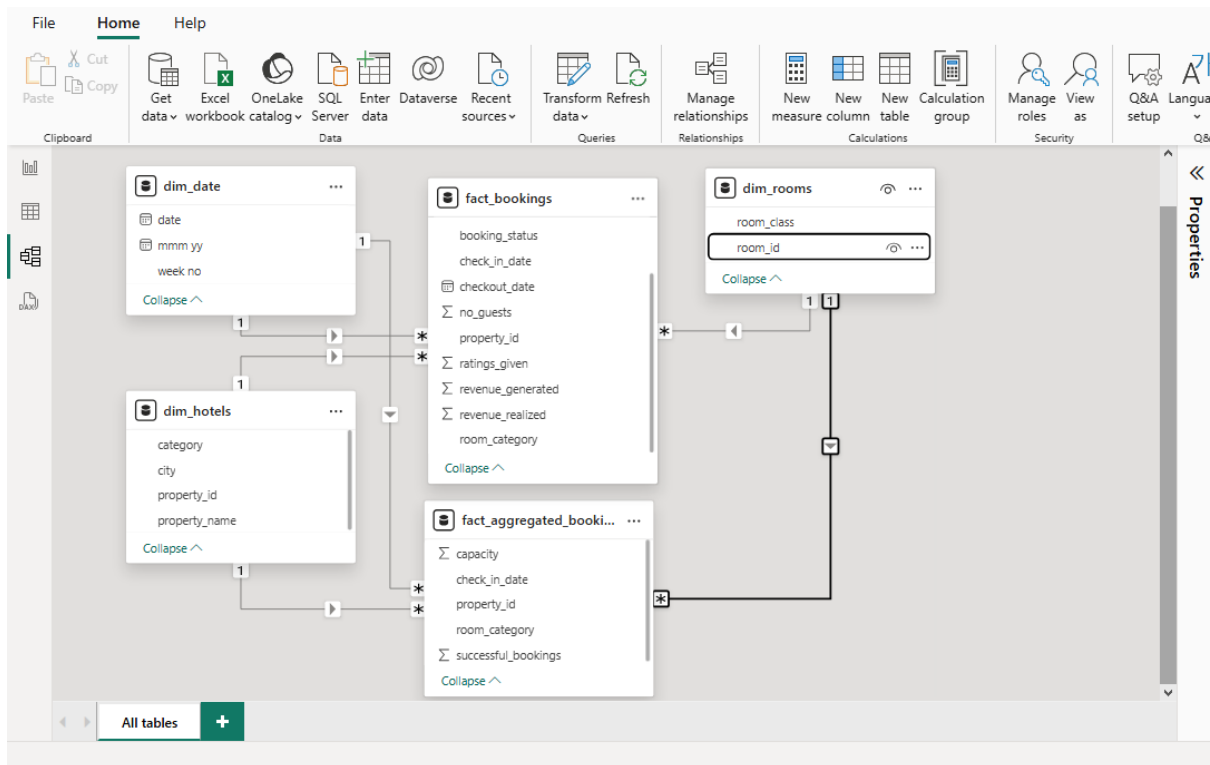
Navigate to data modelling tab to establish relationships



Arrange in star schema format

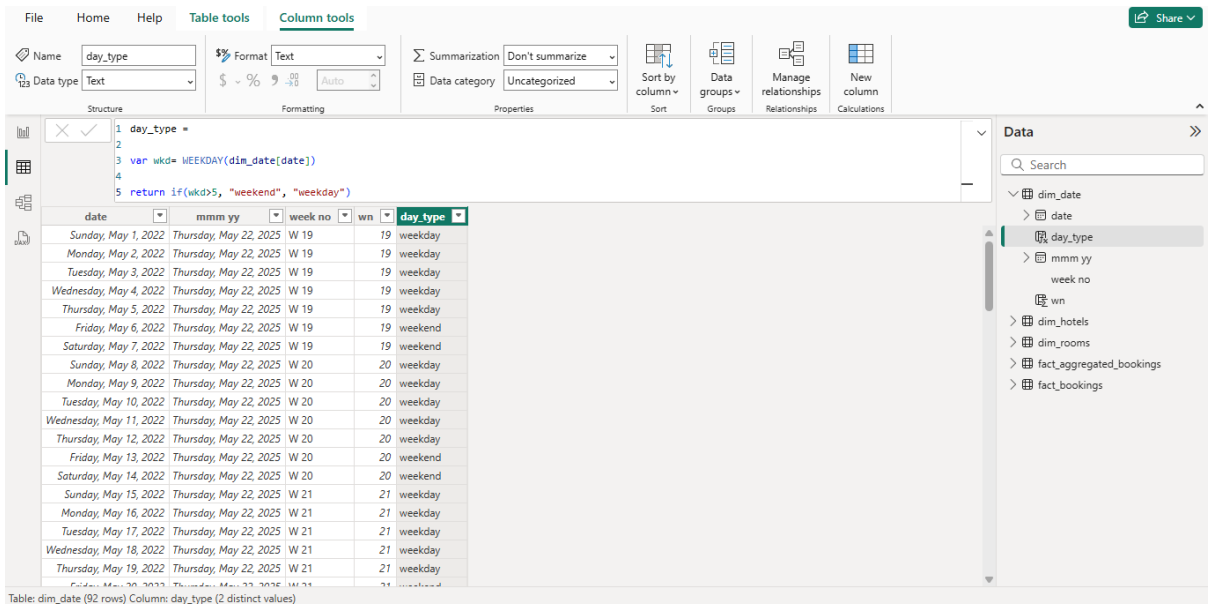


Establish relationships



DAX-Data Analysis Expression

Create extra columns and derive calculated columns



The screenshot shows the 'Table tools' ribbon with the 'Column tools' tab selected. A DAX formula is being entered in the formula bar:

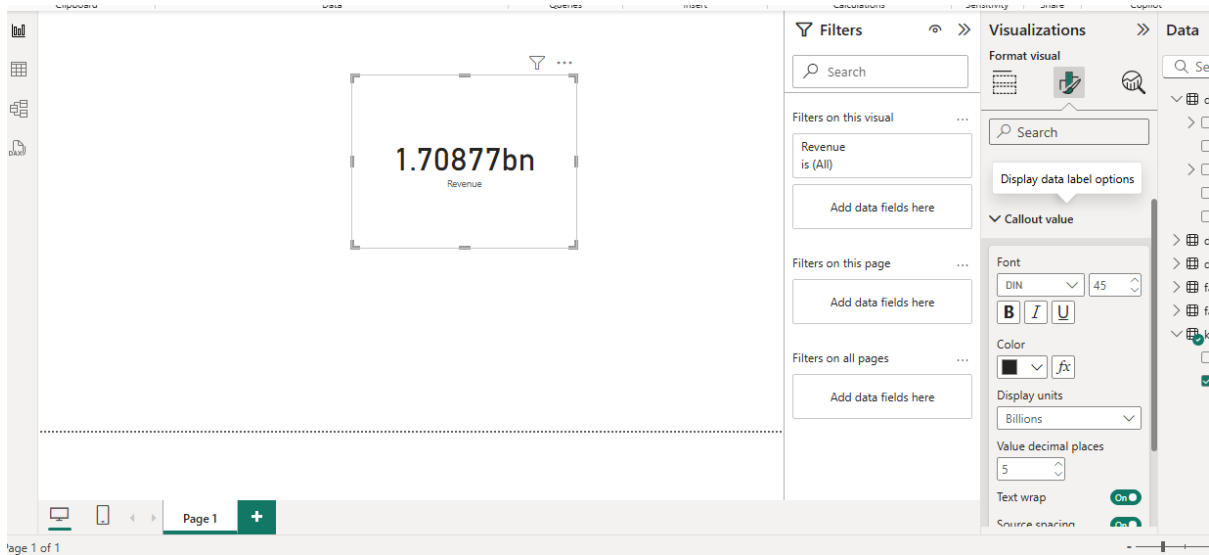
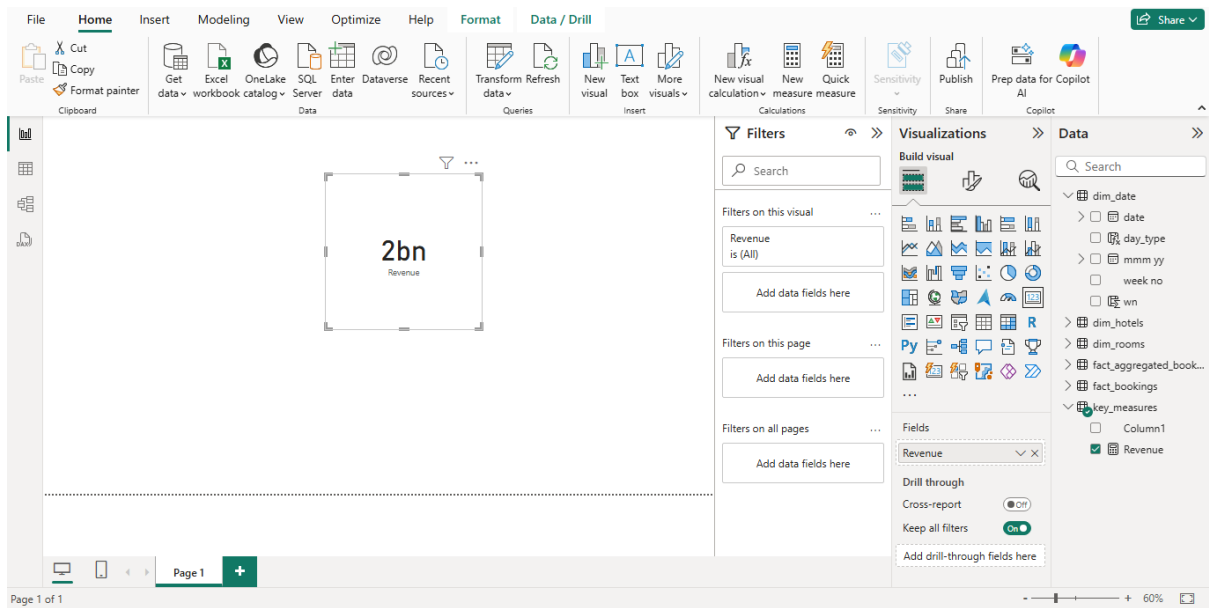
```
1 day_type =
2
3 var wkday = WEEKDAY(dim_date[date])
4
5 return if(wkday > 5, "weekend", "weekday")
```

The resulting table is shown below:

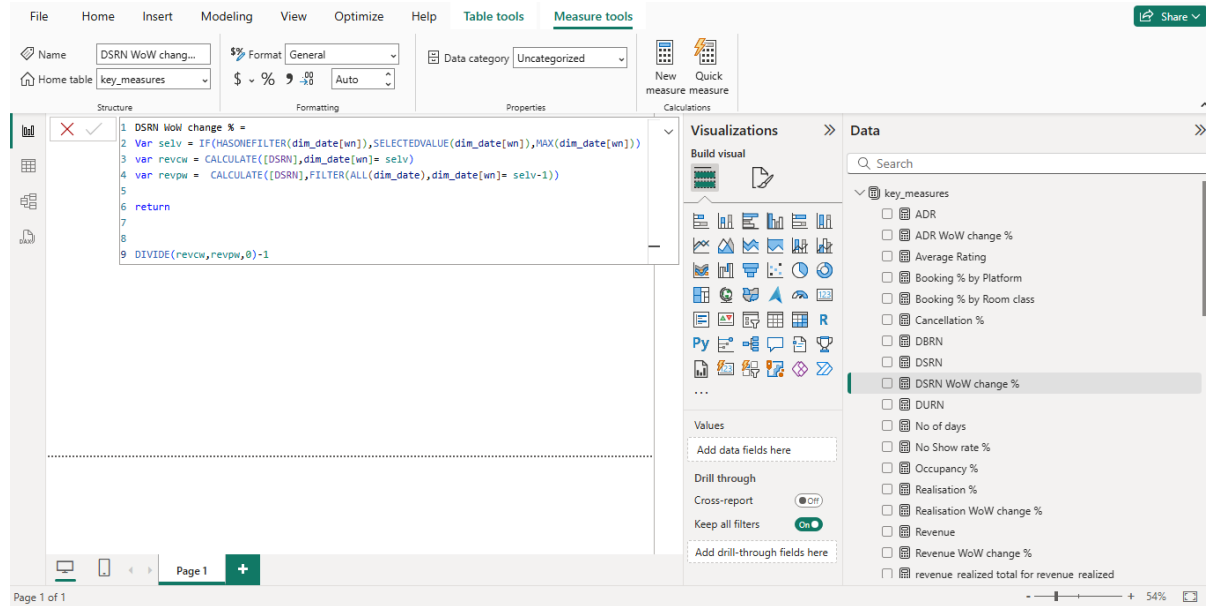
date	mmm yy	week no	wn	day_type
Sunday, May 1, 2022	Thursday, May 22, 2025	W 19	19	weekday
Monday, May 2, 2022	Thursday, May 22, 2025	W 19	19	weekday
Tuesday, May 3, 2022	Thursday, May 22, 2025	W 19	19	weekday
Wednesday, May 4, 2022	Thursday, May 22, 2025	W 19	19	weekday
Thursday, May 5, 2022	Thursday, May 22, 2025	W 19	19	weekday
Friday, May 6, 2022	Thursday, May 22, 2025	W 19	19	weekend
Saturday, May 7, 2022	Thursday, May 22, 2025	W 19	19	weekend
Sunday, May 8, 2022	Thursday, May 22, 2025	W 20	20	weekday
Monday, May 9, 2022	Thursday, May 22, 2025	W 20	20	weekday
Tuesday, May 10, 2022	Thursday, May 22, 2025	W 20	20	weekday
Wednesday, May 11, 2022	Thursday, May 22, 2025	W 20	20	weekday
Thursday, May 12, 2022	Thursday, May 22, 2025	W 20	20	weekend
Friday, May 13, 2022	Thursday, May 22, 2025	W 20	20	weekend
Saturday, May 14, 2022	Thursday, May 22, 2025	W 20	20	weekend
Sunday, May 15, 2022	Thursday, May 22, 2025	W 21	21	weekday
Monday, May 16, 2022	Thursday, May 22, 2025	W 21	21	weekday
Tuesday, May 17, 2022	Thursday, May 22, 2025	W 21	21	weekday
Wednesday, May 18, 2022	Thursday, May 22, 2025	W 21	21	weekday
Thursday, May 19, 2022	Thursday, May 22, 2025	W 21	21	weekday
Friday, May 20, 2022	Thursday, May 22, 2025	W 21	21	weekend

Table: dim_date (92 rows) Column: day_type (2 distinct values)

Find Revenue made



Generate various formulas to be used in the dashboard creation



The screenshot shows the Power BI Desktop interface with the DAX editor open. The formulas are as follows:

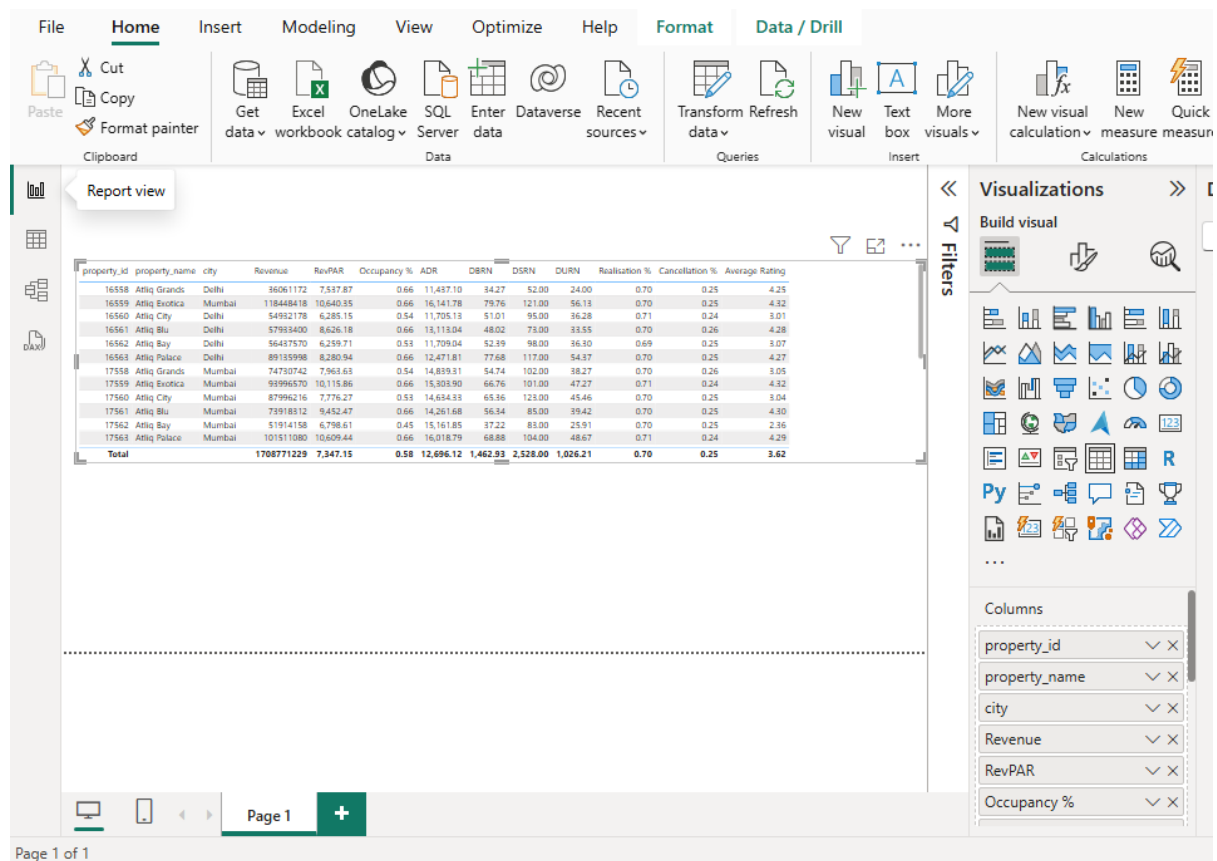
```

1 DSRN WoW change % =
2 Var selv = IF(HASONEFILTER(dim_date[wn]),SELECTEDVALUE(dim_date[wn]),MAX(dim_date[wn]))
3 var revcw = CALCULATE([DSRN],dim_date[wn]= selv)
4 var revpw = CALCULATE([DSRN],FILTER(ALL(dim_date),dim_date[wn]= selv-1))
5
6 return
7
8
9 DIVIDE(revcw,revpw,0)-1

```

The interface also shows the Visualizations pane on the right with a list of measures including DSRN, DSRN WoW change %, and RevPAR.

Transfer data to be used in creating dashboard



The screenshot shows the Power BI Desktop interface with the Report view open. The table displays the following data:

property_id	property_name	city	Revenue	RevPAR	Occupancy %	ADR	DBRN	DSRN	DURN	Realisation %	Cancellation %	Average Rating
16558	Atliq Grands	Delhi	36061172	7,537.87	0.66	11,437.10	34.27	52.00	24.00	0.70	0.25	4.25
16559	Atliq Exotica	Mumbai	118448418	10,640.35	0.66	16,141.78	79.76	121.00	56.13	0.70	0.25	4.32
16560	Atliq City	Delhi	54932178	6,285.15	0.54	11,705.13	51.01	95.00	36.28	0.71	0.24	3.01
16561	Atliq Blu	Delhi	57933400	8,626.18	0.66	13,113.04	48.02	73.00	33.55	0.70	0.26	4.28
16562	Atliq Bay	Delhi	56437570	6,259.71	0.53	11,709.04	52.39	98.00	36.30	0.69	0.25	3.07
16563	Atliq Palace	Delhi	89135998	8,260.94	0.66	12,471.81	77.68	117.00	54.37	0.70	0.25	4.27
17558	Atliq Grands	Mumbai	74730742	7,963.63	0.54	14,839.31	54.74	102.00	39.27	0.70	0.26	3.05
17559	Atliq Exotica	Mumbai	93996570	10,115.86	0.66	15,303.90	66.76	101.00	47.27	0.71	0.24	4.32
17560	Atliq City	Mumbai	87996216	7,776.27	0.53	14,654.33	65.36	123.00	45.46	0.70	0.25	3.04
17561	Atliq Blu	Mumbai	73918312	9,452.47	0.66	14,261.68	56.34	85.00	39.42	0.70	0.25	4.30
17562	Atliq Bay	Mumbai	51914158	6,798.61	0.45	15,161.85	17.22	83.00	25.91	0.70	0.25	2.36
17563	Atliq Palace	Mumbai	101511080	10,609.44	0.66	16,018.79	68.88	104.00	48.67	0.71	0.24	4.29
Total			1708771229	7,347.15	0.58	12,696.12	1,462.93	2,528.00	1,026.21	0.70	0.25	3.62

The interface also shows the Visualizations pane on the right with a list of measures including DSRN, DSRN WoW change %, and RevPAR.

Filter countries by city

File Home Insert Modeling View Optimize Help Format Data / Drill

Clipboard: Paste, Cut, Copy, Format painter

Get data: data, workbook, catalog, OneLake, SQL Server, Enter data, Dataverse, Recent sources

Transform data: Refresh, Queries

New visual: Text box, More visuals

Calculations: New visual calculation, New measure, Quick measure

Sensitivity: Sensitivity, Publish, Prep data for Copilot AI

Visualizations: Build visual, Filters, Field, Tooltips, Drill through, Cross-report

Data: city, key_measures, dim_hotels, fact_aggregated_bookings

Table:

property_id	property_name	city	Revenue	RevPAR	Occupancy %	ADR	DBRN	DSRN	DURN	Realisation %	Cancellation %	Average Rating
17564	Atliq Seasons	Mumbai	65M	7,397	44.57%	16,597	43	97	31	70.59%	24.81%	2.30
16559	Atliq Exotica	Mumbai	117M	10,629	65.85%	16,141	80	121	56	70.39%	24.63%	4.32
17563	Atliq Palace	Mumbai	100M	10,592	66.13%	16,016	69	104	49	70.67%	24.38%	4.29
17559	Atliq Exotica	Mumbai	93M	10,107	66.09%	15,293	67	101	47	70.81%	24.04%	4.32
17562	Atliq Bay	Mumbai	51M	6,803	44.86%	15,167	37	83	26	69.60%	25.44%	2.37
17558	Atliq Grands	Mumbai	74M	7,953	53.60%	14,839	55	102	38	69.91%	25.67%	3.05
17560	Atliq City	Mumbai	87M	7,763	53.07%	14,629	65	123	45	69.51%	25.12%	3.04
17561	Atliq Blu	Mumbai	73M	9,447	66.19%	14,271	56	85	39	70.14%	24.41%	4.30
19562	Atliq Bay	Bangalore	81M	9,312	65.66%	14,183	63	96	44	70.47%	24.29%	4.28
19560	Atliq City	Bangalore	81M	8,965	65.53%	13,680	65	99	45	69.00%	26.46%	4.28
16561	Atliq Blu	Delhi	57M	8,612	65.66%	13,115	48	73	33	69.85%	25.56%	4.28
19559	Atliq Exotica	Bangalore	59M	6,851	53.73%	12,751	51	95	36	70.76%	24.54%	3.04
Total			1688M	7,337	57.79%	12,696	1,461	2,528	1,025	70.14%	24.84%	3.62

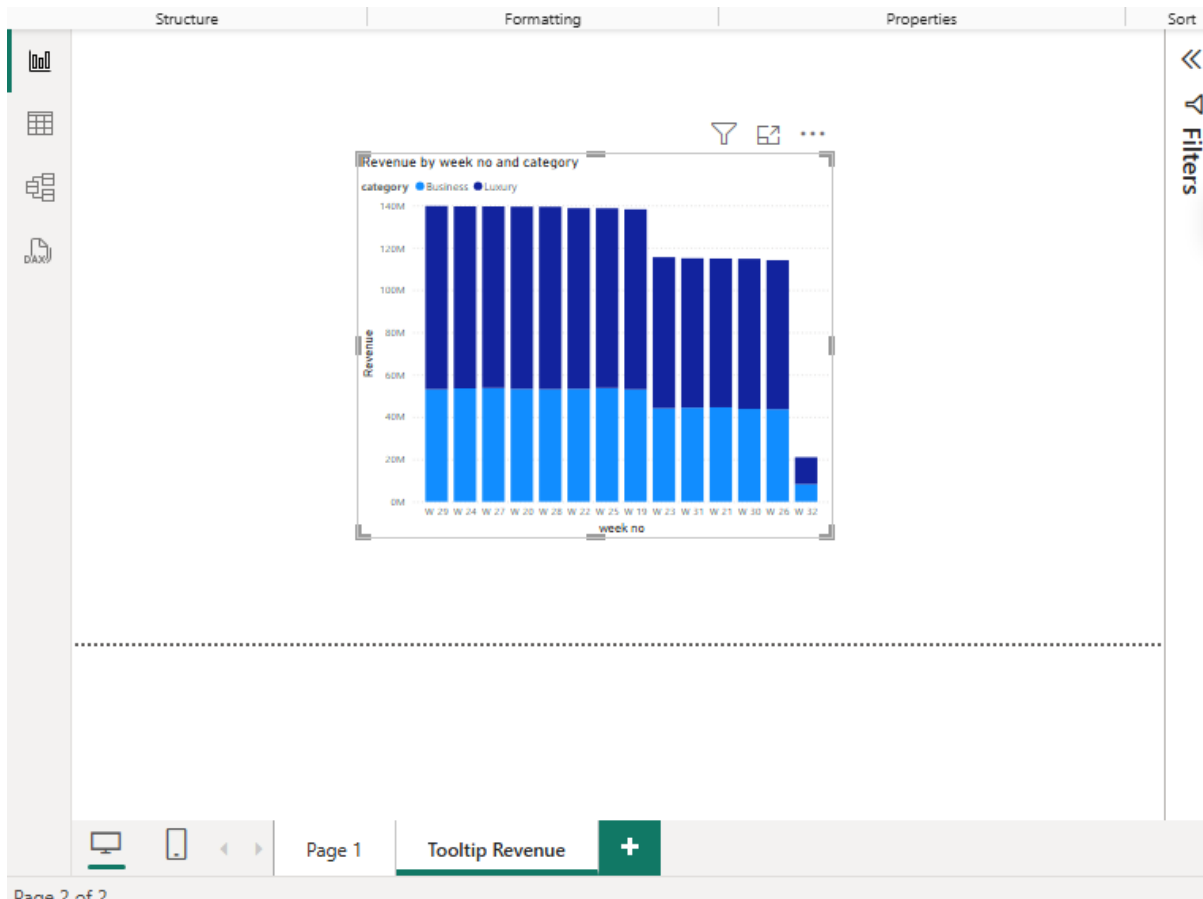
Filter by room type

Filter by city: Bangalore, Delhi, Hyderabad, Mumbai

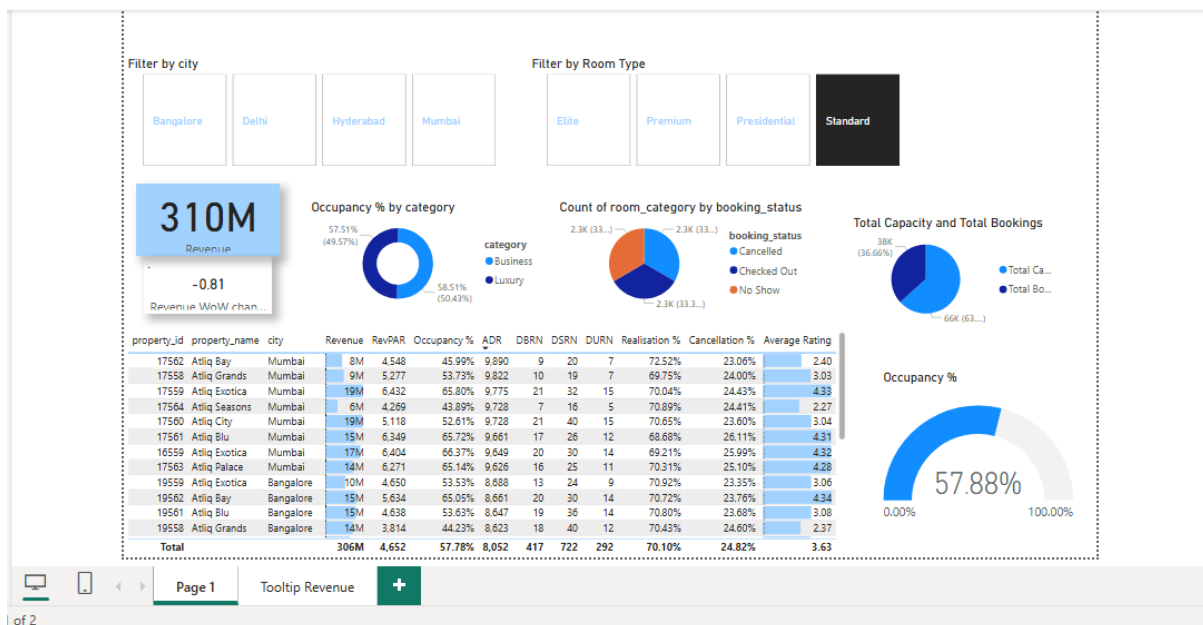
Filter by Room Type: Elite, Premium, Presidential, Standard

Table:

property_id	property_name	city	Revenue	RevPAR	Occupancy %	ADR	DBRN	DSRN	DURN	Realisation %	Cancellation %	Average Rating
17564	Atliq Seasons	Mumbai	65M	7,397	44.57%	16,597	43	97	31	70.59%	24.81%	2.30
16559	Atliq Exotica	Mumbai	117M	10,629	65.85%	16,141	80	121	56	70.39%	24.63%	4.32
17563	Atliq Palace	Mumbai	100M	10,592	66.13%	16,016	69	104	49	70.67%	24.38%	4.29
17559	Atliq Exotica	Mumbai	93M	10,107	66.09%	15,293	67	101	47	70.81%	24.04%	4.32
17562	Atliq Bay	Mumbai	51M	6,803	44.86%	15,167	37	83	26	69.60%	25.44%	2.37
17558	Atliq Grands	Mumbai	74M	7,953	53.60%	14,839	55	102	38	69.91%	25.67%	3.05
17560	Atliq City	Mumbai	87M	7,763	53.07%	14,629	65	123	45	69.51%	25.12%	3.04
17561	Atliq Blu	Mumbai	73M	9,447	66.19%	14,271	56	85	39	70.14%	24.41%	4.30
19562	Atliq Bay	Bangalore	81M	9,312	65.66%	14,183	63	96	44	70.47%	24.29%	4.28
19560	Atliq City	Bangalore	81M	8,965	65.53%	13,680	65	99	45	69.00%	26.46%	4.28
16561	Atliq Blu	Delhi	57M	8,612	65.66%	13,115	48	73	33	69.85%	25.56%	4.28
19559	Atliq Exotica	Bangalore	59M	6,851	53.73%	12,751	51	95	36	70.76%	24.54%	3.04
Total			1688M	7,337	57.79%	12,696	1,461	2,528	1,025	70.14%	24.84%	3.62



Final Dashboard



Conclusion

Working on the Power BI was quite enjoyable as I got to explore various layouts and modes of presenting the charts and I look forward to future projects and to the coming week.