

## 3.2 Data Analysis on Cloud

- Move the Data Set to Azure Synapse Storage Gen2

To move our Loan Dataset to Azure Storage, we used synapseforrdbi which was given already.

The screenshot displays the Microsoft Azure portal interface. At the top, the 'Azure Synapse Analytics' workspace 'synapseforrdbi' is selected. Below the header, a table lists the workspace details:

Name	Type	Resource group	Location	Subscription
synapseforrdbi	Synapse workspace	RDBI	West US 2	RDBI

Below the table, the workspace configuration details are shown:

- Subscription ID: b6bc3592-0767-4ed1-b34d-24eb40cb6add
- Managed virtual network: No
- Managed Identity object ID: feff38c8-abd7-4c8d-8cd2-1eb0abdf4fd7
- Workspace web URL: <https://web.azuresynapse.net?workspace=%2f...>
- SQL Active Directory admin: RDBI
- Dedicated SQL endpoint: synapseforrdbi.sql.azuresynapse.net
- Serverless SQL endpoint: synapseforrdbi-ondemand.sql.azuresynapse.net
- Development endpoint: <https://synapseforrdbi.dev.azuresynapse.net>

The bottom section of the screenshot shows the 'Data' tab with a list of linked resources:

- Azure Data Lake Storage Gen2
- synapseforrdbi (Primary - synapref...)
- synapseforrdbi (Primary)
- (Attached Containers)

A 'Select an item' prompt is visible, encouraging the user to use the resource explorer to select or create a new item.

Next step is, we created folder named Capstone5 to upload datafiles from local system to azure data storage.

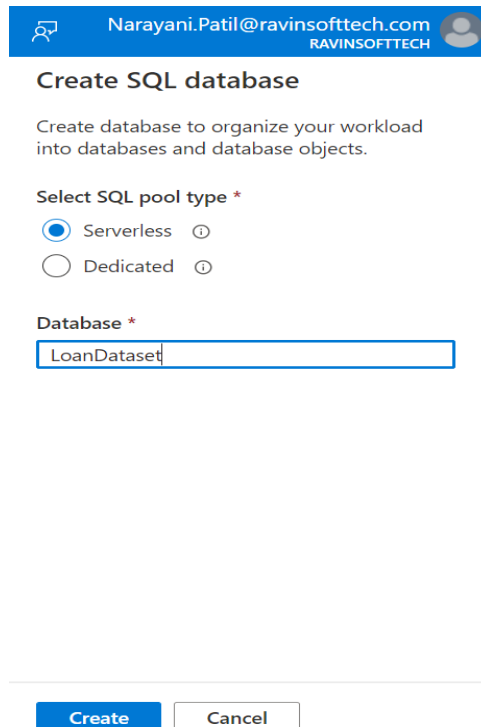
The screenshot displays the Microsoft Azure Synapse Analytics interface. The top navigation bar shows 'Synapse live' and 'Validate all' buttons. The left sidebar contains a 'Data' section with a 'Workspace' tab and a 'Linked' tab. The 'Linked' tab is active, showing a list of resources including 'Azure Data Lake Storage Gen2' and 'synapseforrdbi (Primary)'. The main content area shows a table of folders under the 'synapseforrdbi' workspace. The table has columns for 'Name', 'Last Modified', 'Content Type', and 'Size'. The folders listed are 'Capstone2', 'capstone3', 'Capstone4', and 'Capstone5'. Below this, a detailed view of the 'Capstone5' folder is shown, displaying a table of files with columns for 'Name', 'Last Modified', and 'Content Type'. The files listed are 'Branch\_region\_mapping.csv', 'Loan\_details.csv', and 'Loan\_status.csv'.

Name	Last Modified	Content Type	Size
Capstone2	11/29/2021, 6:05:28 PM	Folder	
capstone3	11/29/2021, 5:49:06 PM	Folder	
Capstone4	11/29/2021, 6:17:52 PM	Folder	
Capstone5	11/29/2021, 6:08:10 PM	Folder	

Name	Last Modified	Content Type
Branch_region_mapping.csv	11/29/2021, 6:09:57 PM	
Loan_details.csv	11/29/2021, 6:10:30 PM	
Loan_status.csv	11/29/2021, 6:10:51 PM	

- Create a serverless SQL pool to query the data from Storage gen1



**Create SQL database**

Create database to organize your workload into databases and database objects.

Select SQL pool type \*

☒ Serverless ⓘ

☐ Dedicated ⓘ

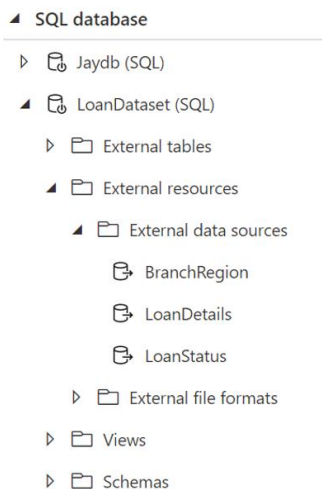
Database \*

LoanDataset

Create Cancel

After creating serverless SQL pool, we create three external data sources.

1. CREATE EXTERNAL DATA SOURCE BranchRegion  
WITH ( LOCATION = 'https://synapse2811.blob.core.windows.net/Capstone5')
1. CREATE EXTERNAL DATA SOURCE LoanDetails  
WITH ( LOCATION = 'https://synapse2811.blob.core.windows.net/Capstone5')
1. CREATE EXTERNAL DATA SOURCE LoanStatus  
WITH ( LOCATION = 'https://synapse2811.blob.core.windows.net/Capstone5')



Next step is after creating external data sources, we created three views for each data source.

1. CREATE VIEW BranchRegion\_view AS  
SELECT  
C1 as branch\_id,  
C2 as region  
FROM OPENROWSET  
(BULK 'https://synapseforrdbi.dfs.core.windows.net/synapseforrdbi/Capstone5/Branch\_region\_mapping.csv',  
format = 'csv', parser\_version = '2.0', firstrow = 2 ) as rows
  
2. CREATE VIEW LoanDetails\_view AS  
SELECT  
C1 as Loan\_id,  
C2 as disbursed\_amount,  
C3 as asset\_cost,  
C4 as ltv, C5 as branch\_id,  
C6 as [Date.of.Birth],  
C7 as [Employment.Type],  
C8 as DisbursalDate,  
C9 as MobileNo\_Av1\_Flag,  
C10 as Aadhar\_flag,  
C11 as PAN\_flag,  
C12 as VoterID\_flag,  
C13 as Driving\_flag,  
C14 as Passport\_flag,  
C15 as [PERFORM\_CNS.SCORE],  
C16 as [DELINQUENT.ACCTS.IN.LAST.SIX.MONTHS],  
C17 as [CREDIT.HISTORY.LENGTH],  
C18 as [NO.OF\_INQUIRIES]  
FROM OPENROWSET  
(BULK 'https://synapseforrdbi.dfs.core.windows.net/synapseforrdbi/Capstone5/Loan\_details.csv',  
format = 'csv', parser\_version = '2.0', firstrow = 2 ) as rows
  
3. CREATE VIEW LoanStatus\_view AS  
SELECT  
C1 as Loan\_default,  
C2 as loan\_id  
FROM OPENROWSET  
(BULK 'https://synapseforrdbi.dfs.core.windows.net/synapseforrdbi/Capstone5/Loan\_status.csv',  
format = 'csv', parser\_version = '2.0', firstrow = 2 ) as rows

- Views
  - dbo.BranchRegion\_view
  - dbo.LoanDetails\_view
  - dbo.LoanStatus\_view
  - System views
- Schemas
- Security
- testsql (SQL)

After creating views, we queried our dataset to view data.

1 select \* from dbo.BranchRegion\_view

Results Messages

View Table Chart Export results

Search

C1	C2
1	East
2	East
3	East
5	East
7	East
8	East
9	East

SQL script 2

Run Undo Publish Query plan Connect to Built-in

1 select \* from dbo.LoanStatus\_view

Results Messages

View Table Chart Export results

Search

C1	C2
1	0
2	0
3	1
4	0
5	0
6	0
7	0

00:00:03 Query executed successfully.

SQL script 2

Run Undo Publish Query plan Connect to Built-in

1 select \* from dbo.LoanDetails\_view

Results Messages

View Table Chart Export results

Search

C1	C2	C3	C4	C5
1	36439	65850	56.19	64
2	48749	69303	72.15	67
3	55348	66340	85	2
4	48849	64133	77.96	217
5	40394	59386	70.72	74
6	51803	67466	79.3	162

00:00:09 Query executed successfully.

## Notifications

Dismiss all

✓

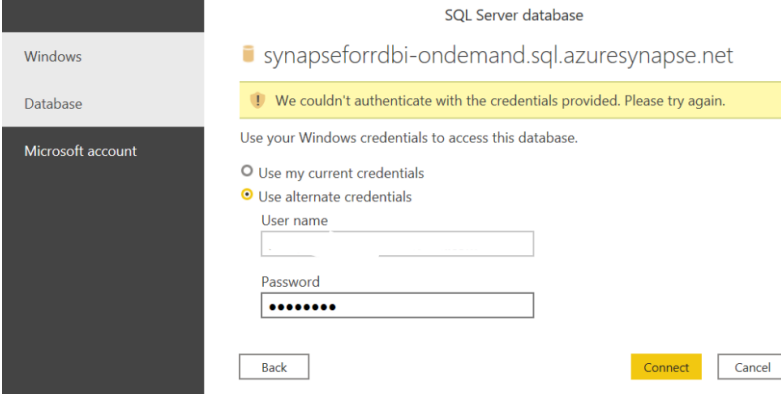
Publishing completed

Successfully published

a few seconds ago

## ● Create a Linked service to PowerBI

To link azure with PowerBI, in the desktop Power Bi “Get Data” from azure.



SQL Server database

synapseforrdbi-ondemand.sql.azuresynapse.net

We couldn't authenticate with the credentials provided. Please try again.

Use your Windows credentials to access this database.

☐ Use my current credentials

☒ Use alternate credentials

User name

Password

Back Connect Cancel

Navigator

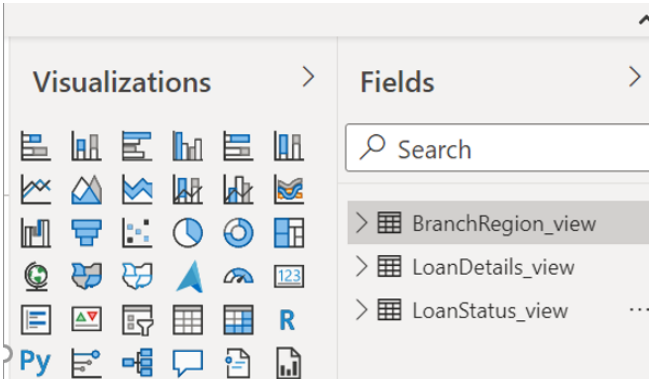
Display Options

- synapseforrdbi-ondemand.sql.azuresynapse.net
  - Capstone2Db
  - capstone3db
  - capstone4db
  - l1db
  - Jaydb
  - LoanDataset (3)
    - BranchRegion\_view
    - LoanDetails\_view**
    - LoanStatus\_view
  - master\_loan\_df
  - testsql

LoanDetails\_view

C1	C2	C3	C4	C5	C6	C7
1	36439	65850	56.19	64	14-06-1990	Self emplc
2	48749	69303	72.15	67	01-01-1991	Salaried
3	55348	66340	85	2	16-08-1993	Self emplc
4	48849	64133	77.96	217	01-01-1989	Self emplc
5	40394	59386	70.72	74	31-12-1974	Self emplc
6	51803	67466	79.3	162	23-11-1964	Self emplc
7	61947	109094	58.21	251	01-10-1989	Self emplc
8	51301	61815	85	67	01-01-1995	Salaried
9	65882	80461	84.51	255	15-06-1994	Self emplc
10	34639	69717	50.49	34	23-11-1982	Self emplc
11	51996	63051	85	147	01-01-1984	Salaried
12	64269	85632	77.07	146	15-02-1990	Salaried
13	68377	90512	79.55	20	05-12-1975	Self emplc
14	61256	73000	84.99	2	11-09-1995	Salaried
15	46949	64600	74.92	67	29-10-1975	Self emplc
16	56333	80271	73.5	7	28-02-1984	Self emplc
17	73717	94315	79.41	165	02-11-1975	Salaried
18	54373	73891	77.14	152	21-10-1990	Self emplc
19	72817	82820	89.35	2	11-10-1994	Salaried
20	78151	107074	74.25	135	05-06-1987	Self emplc
21	58409	70669	84.9	5	29-05-1996	Salaried
22	46349	68751	69.82	159	13-12-1993	Self emplc
23	67760	91363	75.53	161	28-04-1996	Salaried

After loading dataset in Local system Power Bi from Azure Storage, will be able to see data fields.



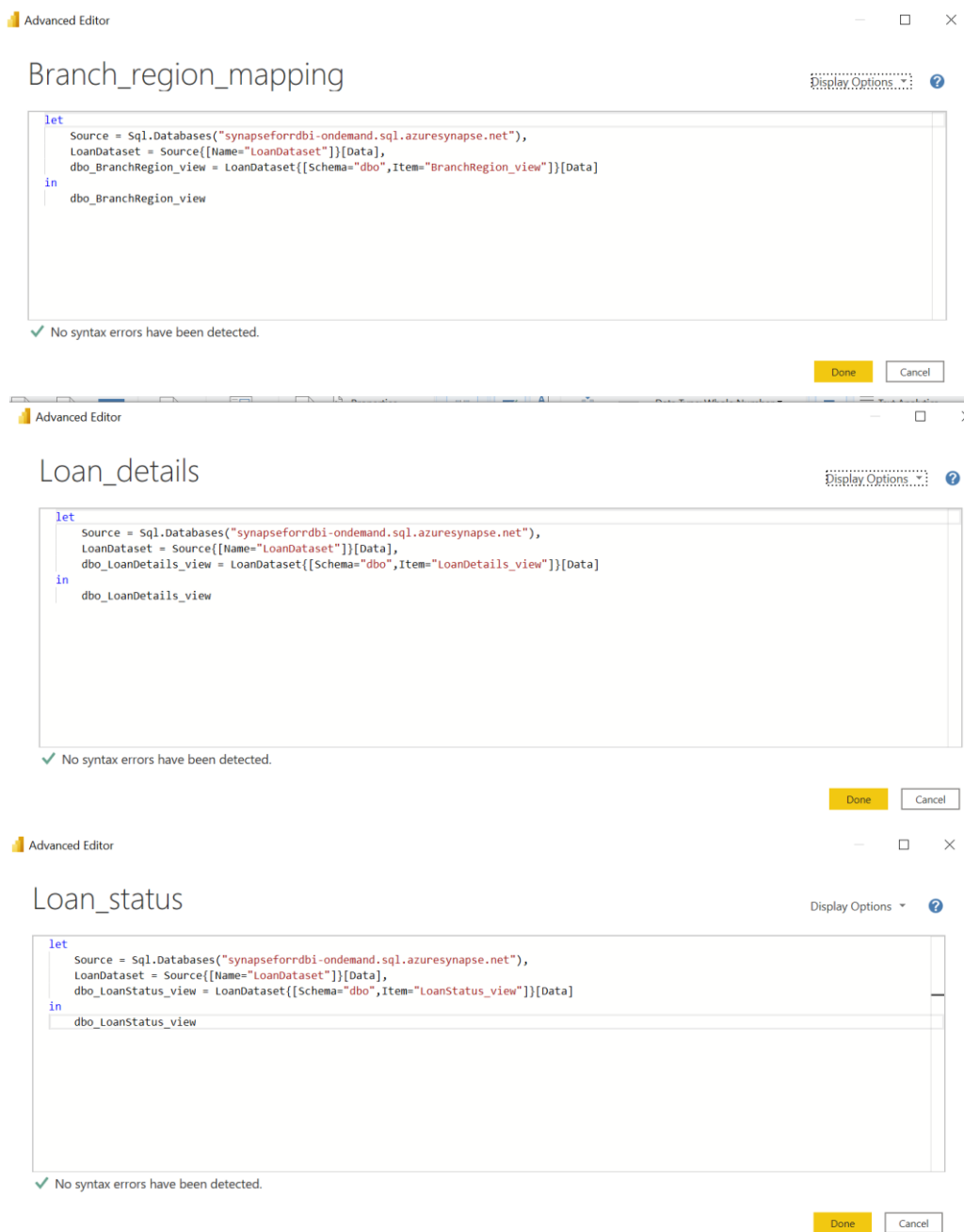
Visualizations

Fields

Search

- BranchRegion\_view
- LoanDetails\_view
- LoanStatus\_view

Below queries shows, how dataset is connected to azure synapse.

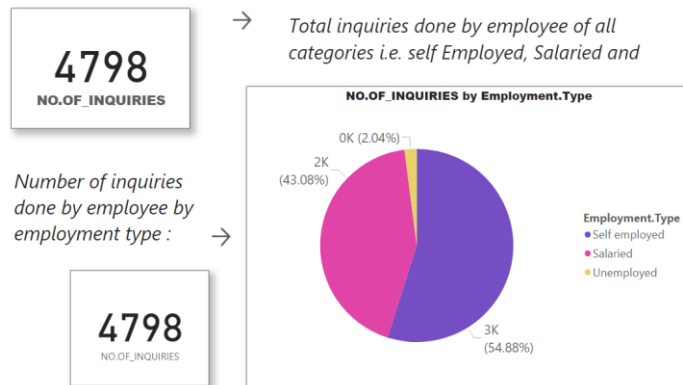


- Perform various analytics on PowerBI

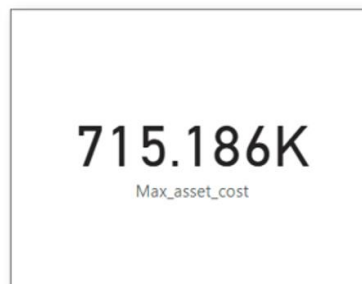
After loading dataset successfully, various analytics performed as given below.

- Ensure you have sufficient privileges on Synapse to access the serverless sql pool.
- Perform the tasks mentioned in Task 2.3

- What were the total enquiries done?



- What was the maximum asset cost?  
What was the maximum asset cost?



- What is the average asset cost for each employment type?



- What is the average asset cost for each employment type?

→

Employment.Type	Average of asset_cost
Self employed	76536.20
Salaried	74384.49
	82966.04
<b>Total</b>	<b>75842.18</b>

Total average asset cost is :

**75.84K**

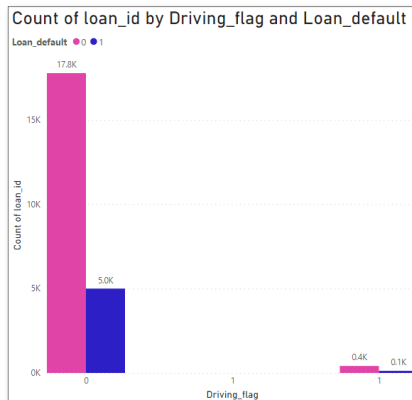
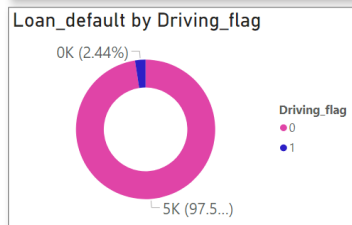
Average of asset\_cost

- What is the average loan default for each driving flag?

- What is the average loan default for each driving flag?

→

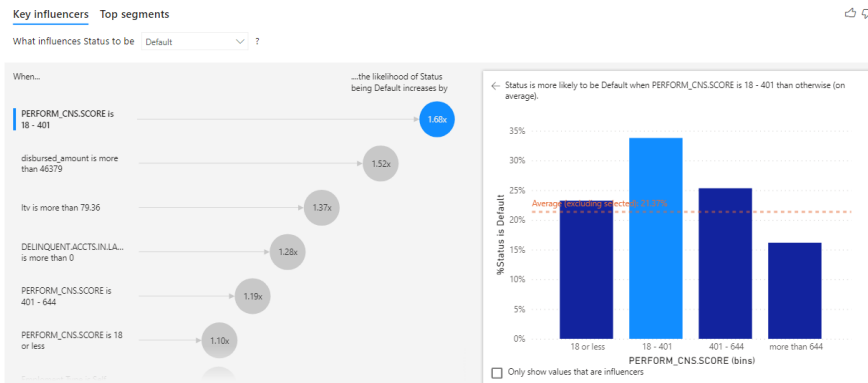
Driving_flag	0	1	Total
0	17774	5001	<b>22775</b>
1	415	125	<b>540</b>
<b>Total</b>	<b>18189</b>	<b>5126</b>	<b>23315</b>



- Display to Key Influencer Visual for the appropriate columns and indicate your inferences.

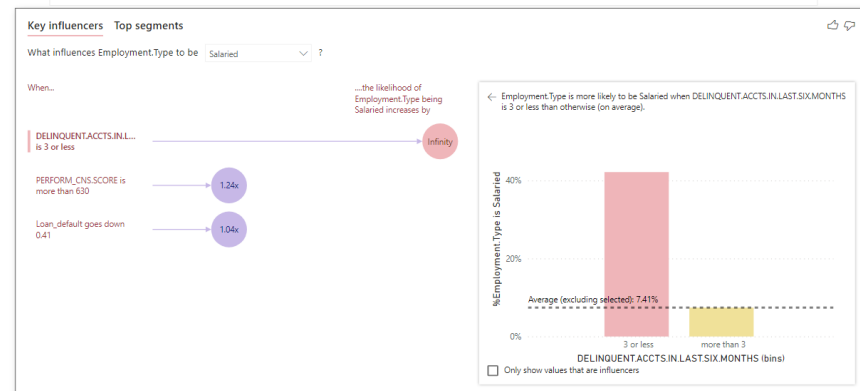
- Display to Key Influencer Visual for the appropriate columns and indicate your inferences.

→ It is showing the top contributors to the data metric.



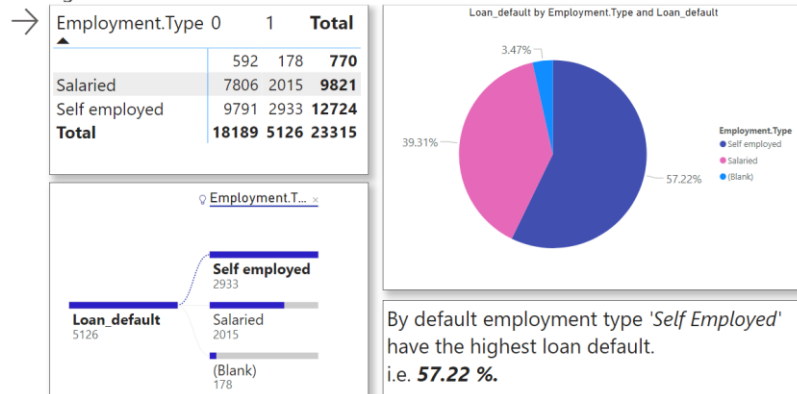
- Display to Key Influencer Visual for the appropriate columns and indicate inferences.

→ It is showing the top contributors i.e. here, **Employment Type** to the data metric.



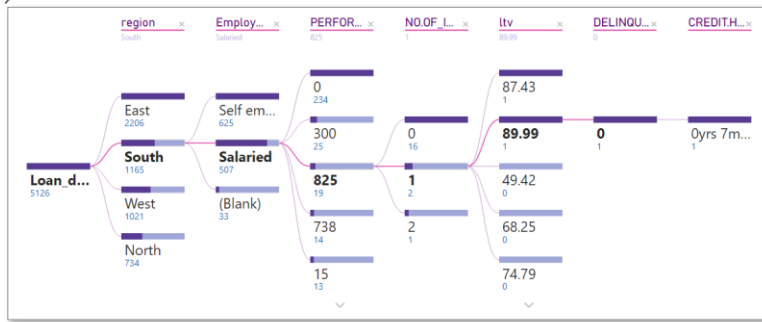
- Display loan default by employment type and indicate which employment type has the highest loan default.

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- Display a decomposition tree for the data.

- 



Decomposition tree for 'Loan Data', helping us to ***understand and visualize across multiple dimensions***.