

# **IBM- Naan Mudhalvan Data Analytics with Cognos**

## **Phase 4**

### **Development Part 2**

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**Year : 3<sup>rd</sup> Year**

**Topic : DATA ANALYTICS WITH COGNOS**

**Title : COVID-19 USING COGNOS**

**College : GNANAMANI COLLEGE OF TECHNOLOGY**

**Introduction :**

In the face of the ongoing global pandemic, understanding the intricate patterns and trends of COVID-19 is crucial for making informed decisions. Cognos Analysis empowers us to delve deep into the data, unraveling essential insights that aid in comprehending the virus's spread and its impact on communities worldwide

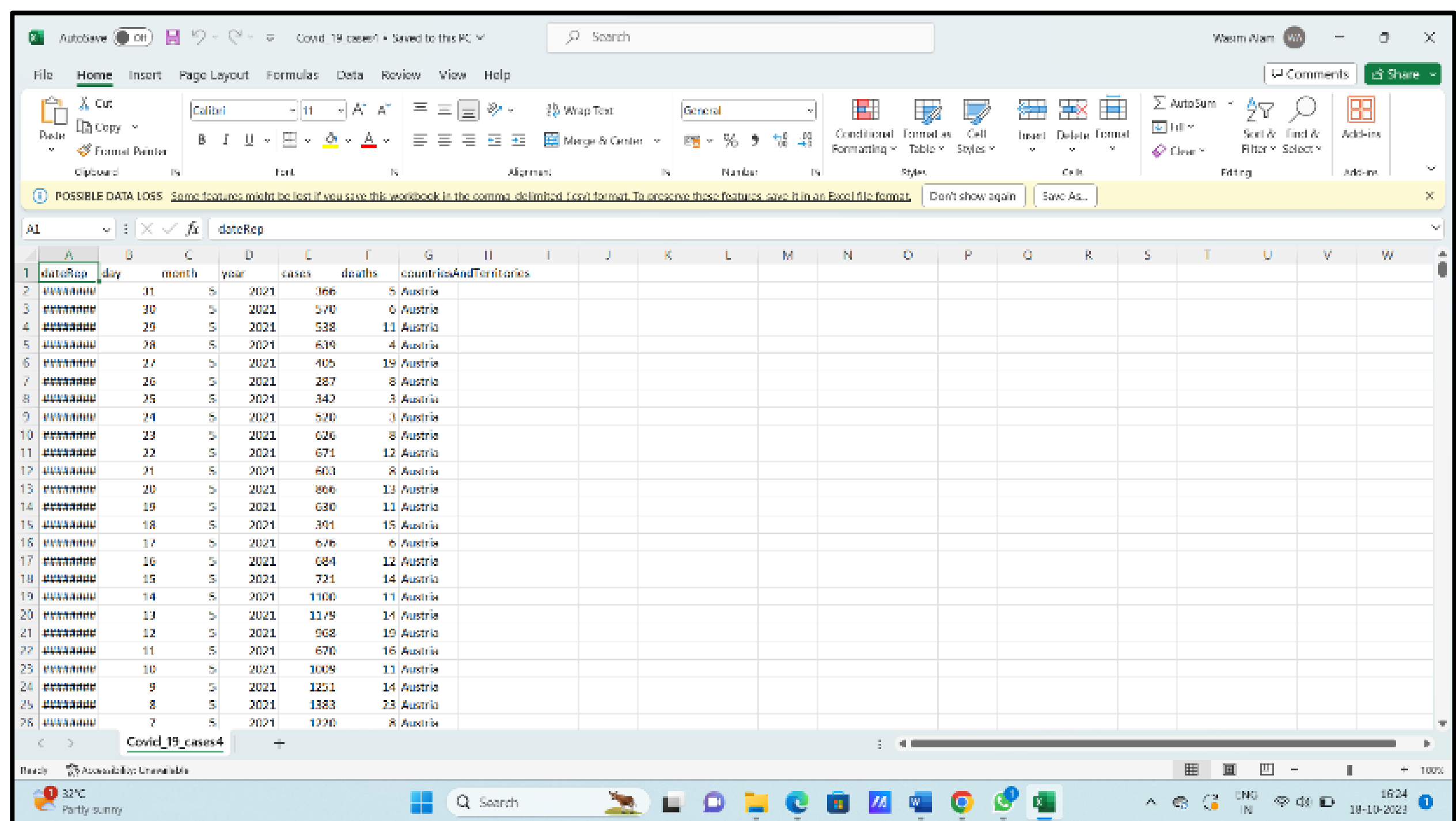
## Objectives :

Start building the product sales analysis using IBM Cognos for visualization. Define the analysis objectives and collect sales data from source shared. Process and clean the collected data to ensure its accuracy and reliability..

## Data source

Dataset is collected from the kaggle.com named “ daily-website-visitors.csv” which has a data about the Days, Day of week, Date, page Loads, Unique visits, First-time visits, Returning Visits.

Dataset link <https://www.kaggle.com/datasets/chakradharmattapalli/covid-19-cases>

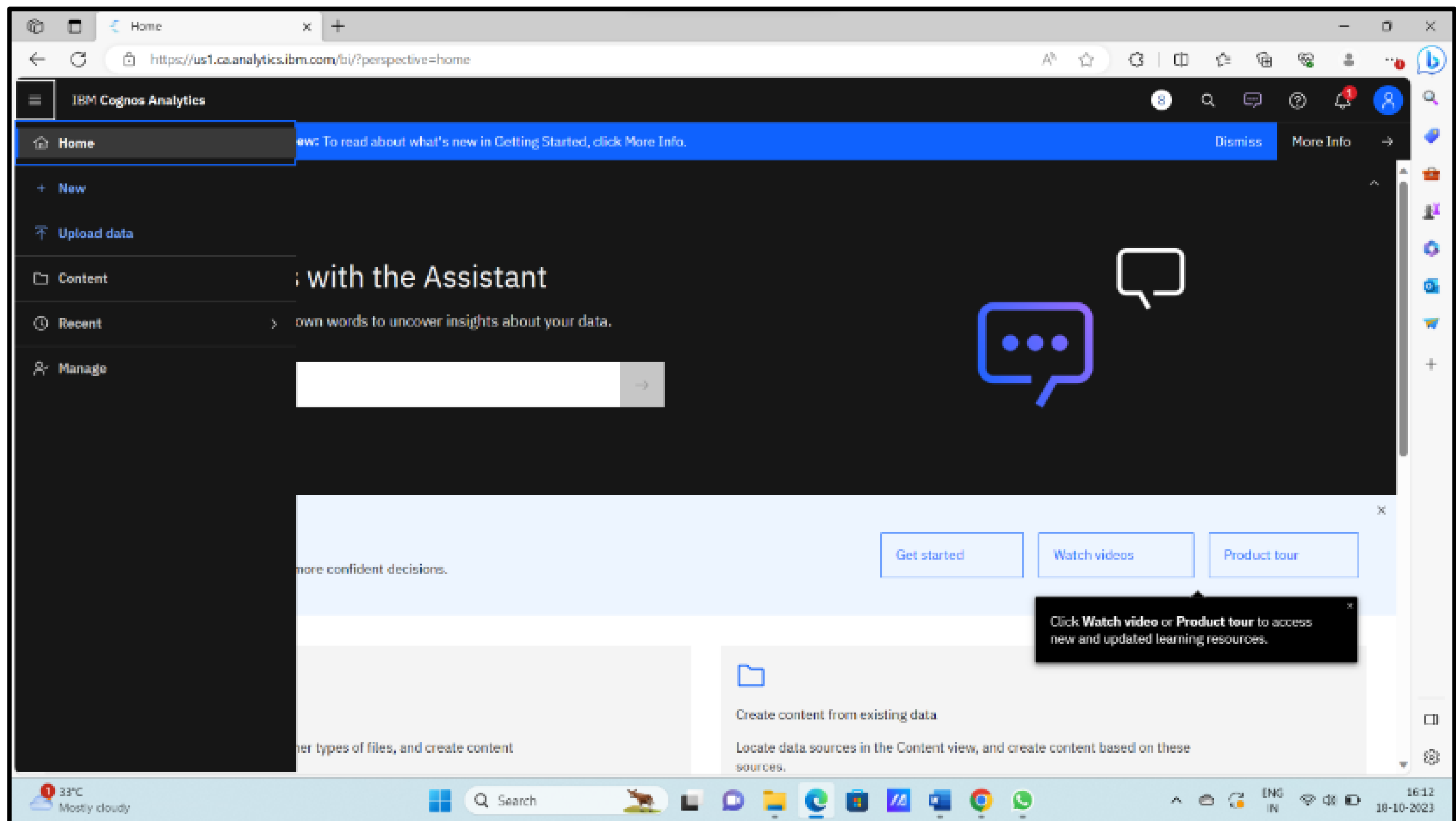


dateRep	day	month	year	cases	deaths	countriesAndTerritories
2021-07-01	01	7	2021	366	5	Austria
2021-07-02	02	7	2021	570	6	Austria
2021-07-03	03	7	2021	538	11	Austria
2021-07-04	04	7	2021	639	4	Austria
2021-07-05	05	7	2021	405	19	Austria
2021-07-06	06	7	2021	287	8	Austria
2021-07-07	07	7	2021	342	3	Austria
2021-07-08	08	7	2021	520	0	Austria
2021-07-09	09	7	2021	626	8	Austria
2021-07-10	10	7	2021	671	12	Austria
2021-07-11	11	7	2021	603	8	Austria
2021-07-12	12	7	2021	866	13	Austria
2021-07-13	13	7	2021	630	11	Austria
2021-07-14	14	7	2021	391	15	Austria
2021-07-15	15	7	2021	676	6	Austria
2021-07-16	16	7	2021	684	12	Austria
2021-07-17	17	7	2021	721	14	Austria
2021-07-18	18	7	2021	1100	11	Austria
2021-07-19	19	7	2021	1179	14	Austria
2021-07-20	20	7	2021	968	19	Austria
2021-07-21	21	7	2021	670	16	Austria
2021-07-22	22	7	2021	1009	11	Austria
2021-07-23	23	7	2021	1251	14	Austria
2021-07-24	24	7	2021	1383	23	Austria
2021-07-25	25	7	2021	1220	8	Austria

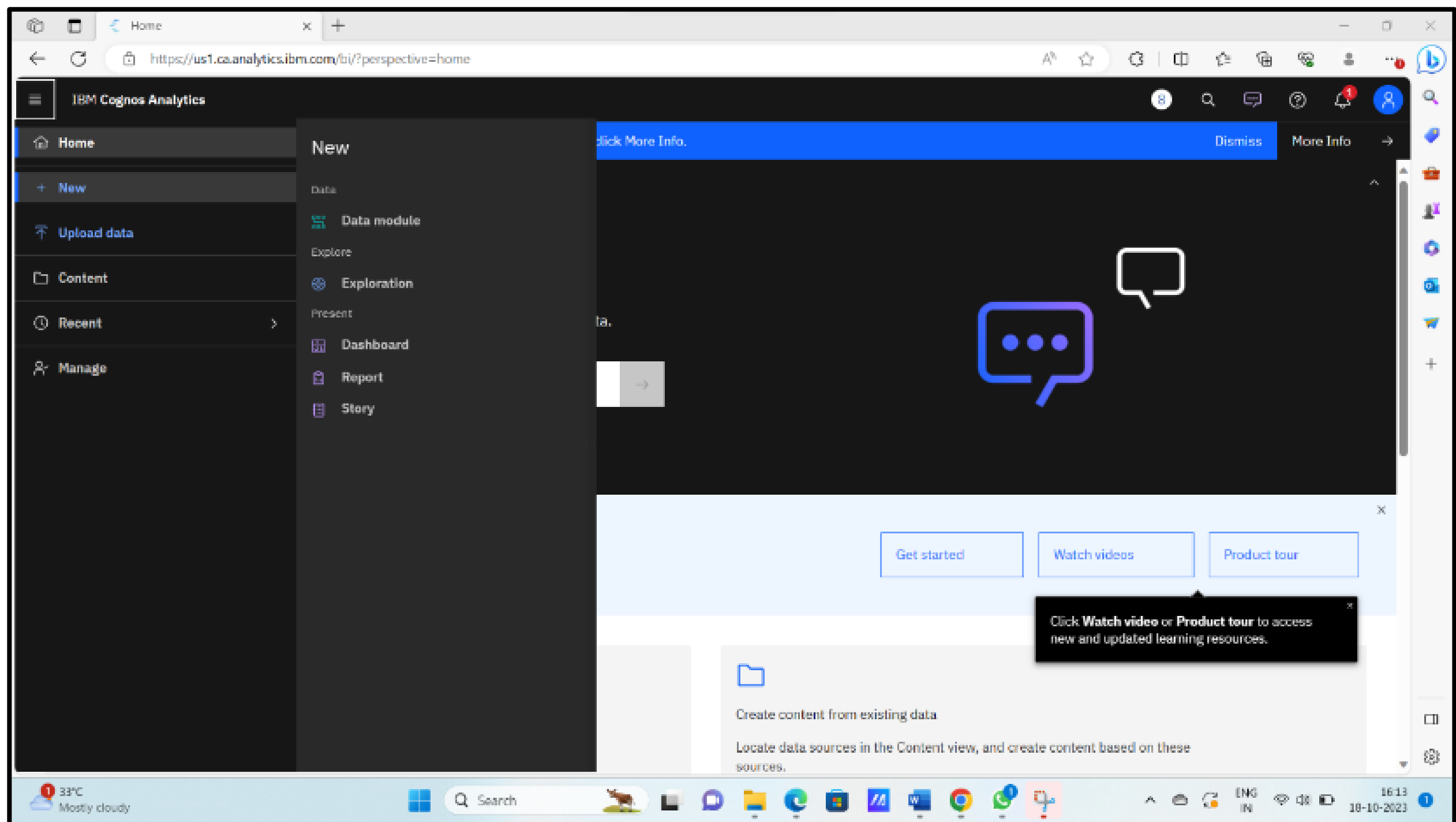
## Data Loading

Steps Involved in data loading on IBM cognos.

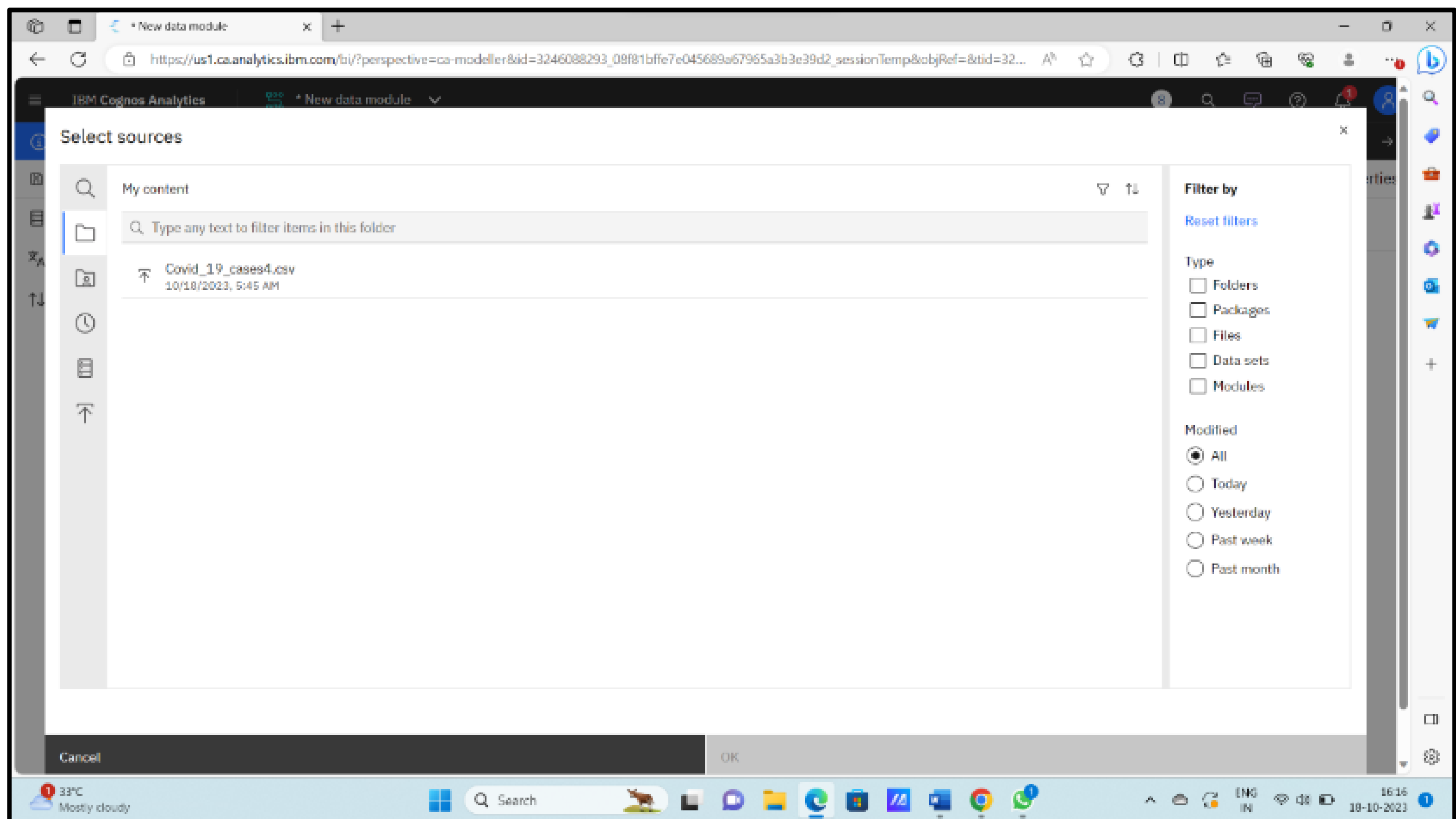
1. Login to your IBM cognos
2. Click more menu from the left side
3. Select new tab



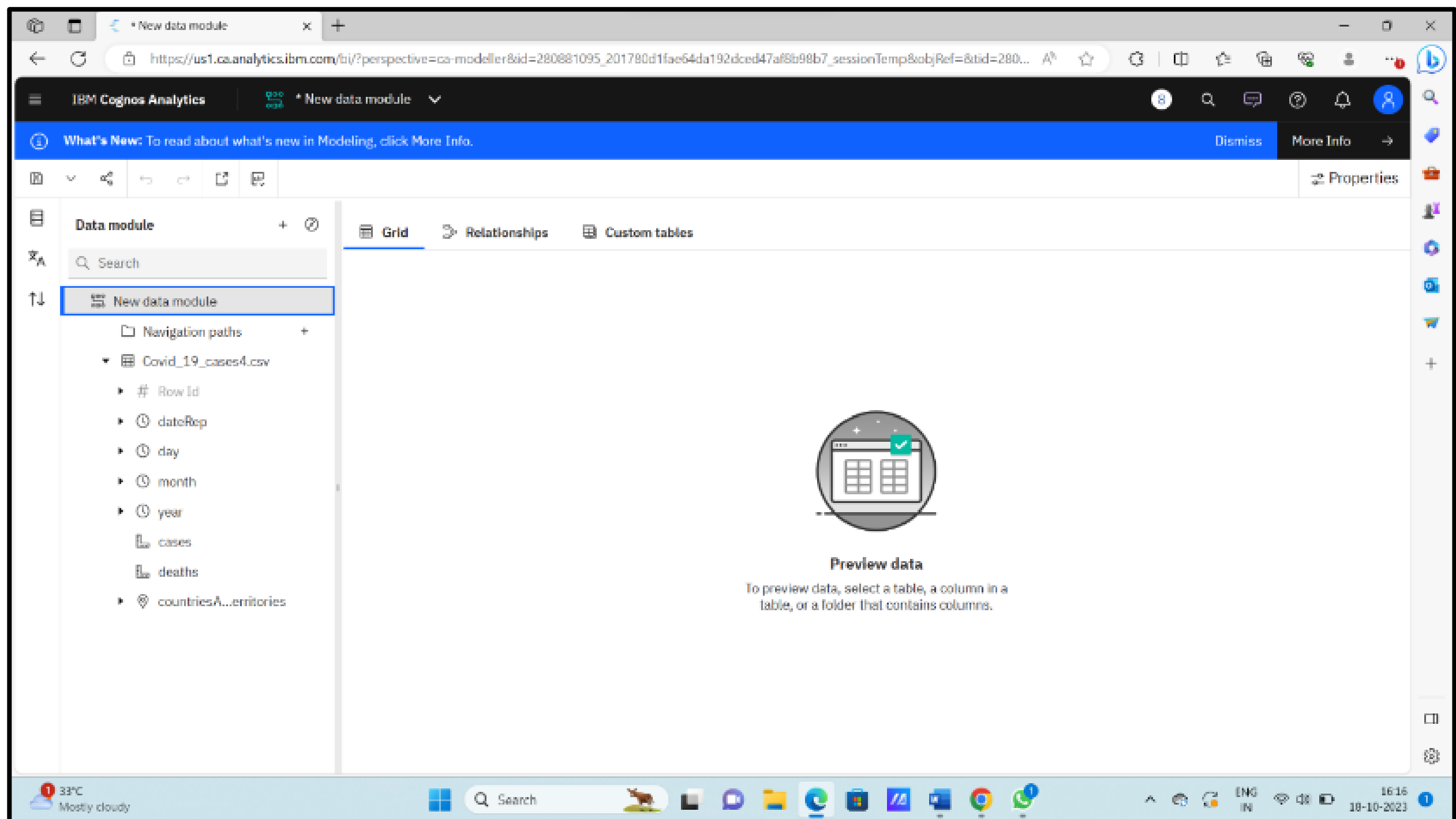
4. Click Data module tab



**5.Upload the dataset for your project and select the Corresponding file**



**6. preview the data**

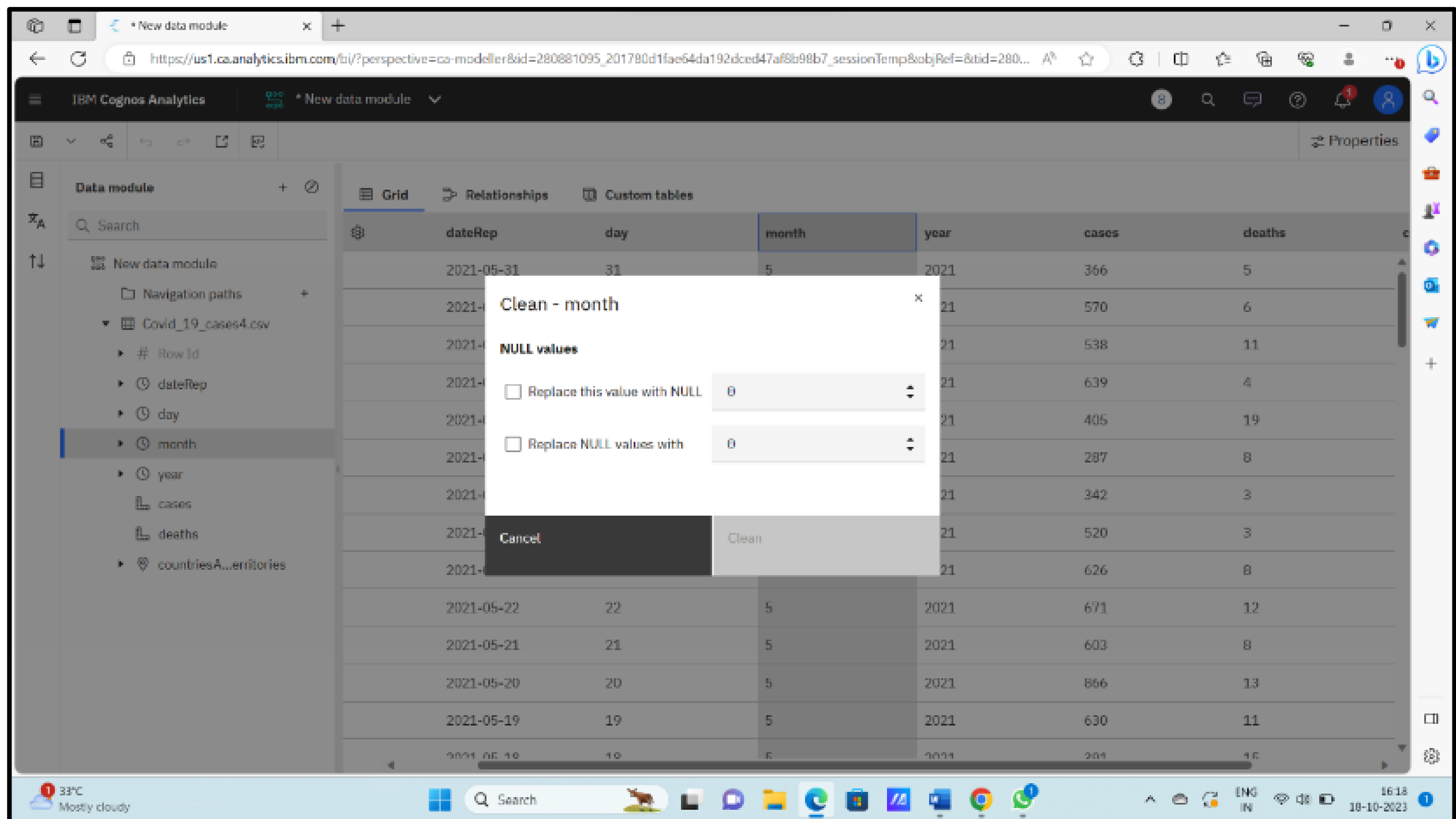


## 7. Explore the data

The screenshot shows the IBM Cognos Analytics web interface with the 'Grid' view selected. The left sidebar shows the 'Covid\_19\_cases4.csv' file selected. The main area displays a table with the following data:

Row Id	dateRep	day	month	year	cases	deaths
1	2021-05-31	31	5	2021	366	5
2	2021-05-30	30	5	2021	570	6
3	2021-05-29	29	5	2021	538	11
4	2021-05-28	28	5	2021	639	4
5	2021-05-27	27	5	2021	405	19
6	2021-05-26	26	5	2021	287	8
7	2021-05-25	25	5	2021	342	3
8	2021-05-24	24	5	2021	520	3
9	2021-05-23	23	5	2021	626	8
10	2021-05-22	22	5	2021	671	12
11	2021-05-21	21	5	2021	603	8
12	2021-05-20	20	5	2021	866	13
13	2021-05-19	19	5	2021	420	11

## 8. save the data module



## Data Preprocessing and Cleaning

In this phase the following steps will taken

- Handling missing data
- Data Transformation
- Data Type Conversion
- Removing Duplicates
- Dealing Outliers

Once you saved the data module. Click the corresponding dataset on IBM cognos and Preview the mosule

Right Click the row where you want to clean the data

It provides the UI to Clean the data and makes the task easy one, Now Updating and Replacing the Null values are simple

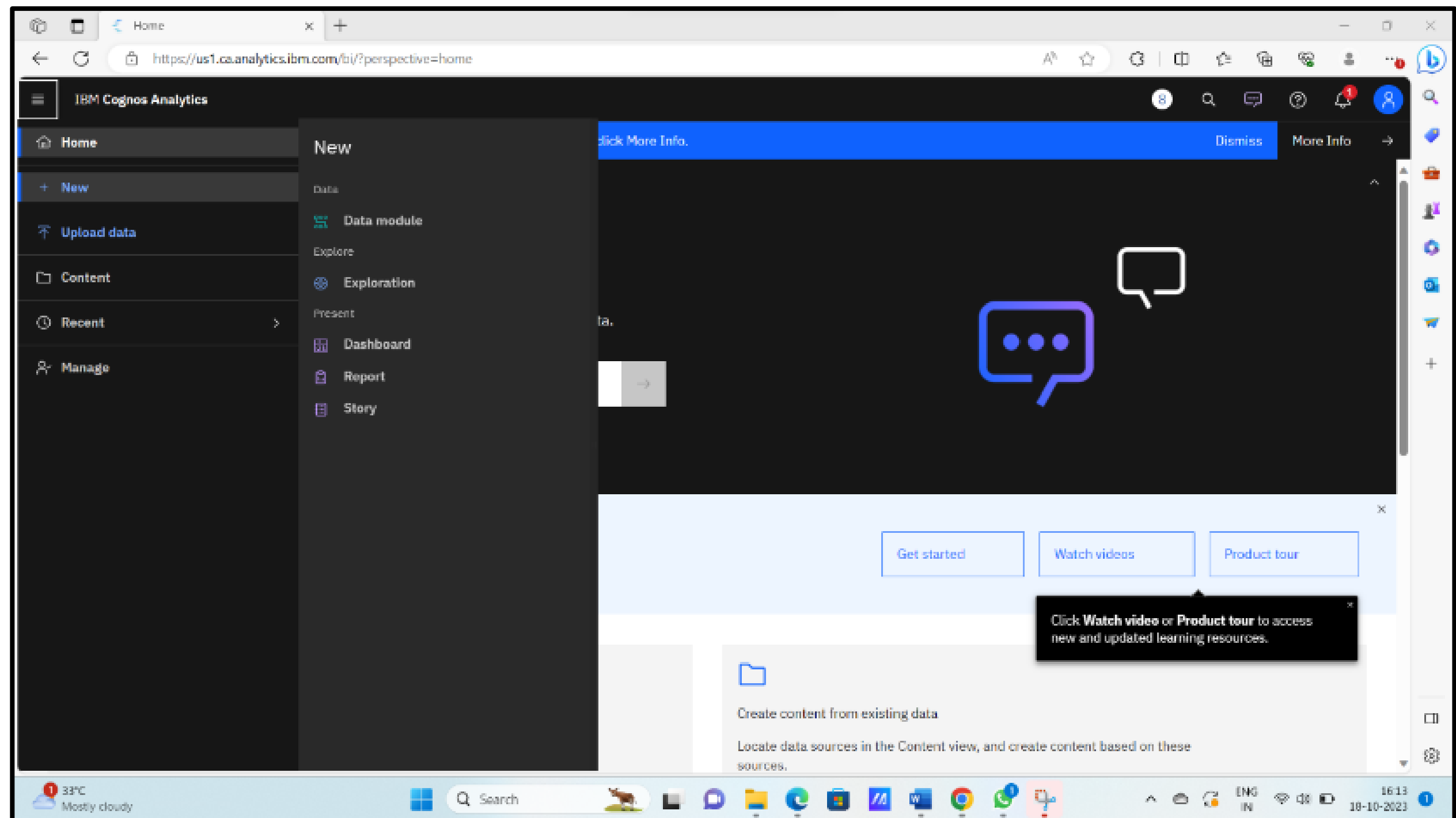
data module will be updated by doing the above process

after the completion of process start creating the dashboard for Visualization

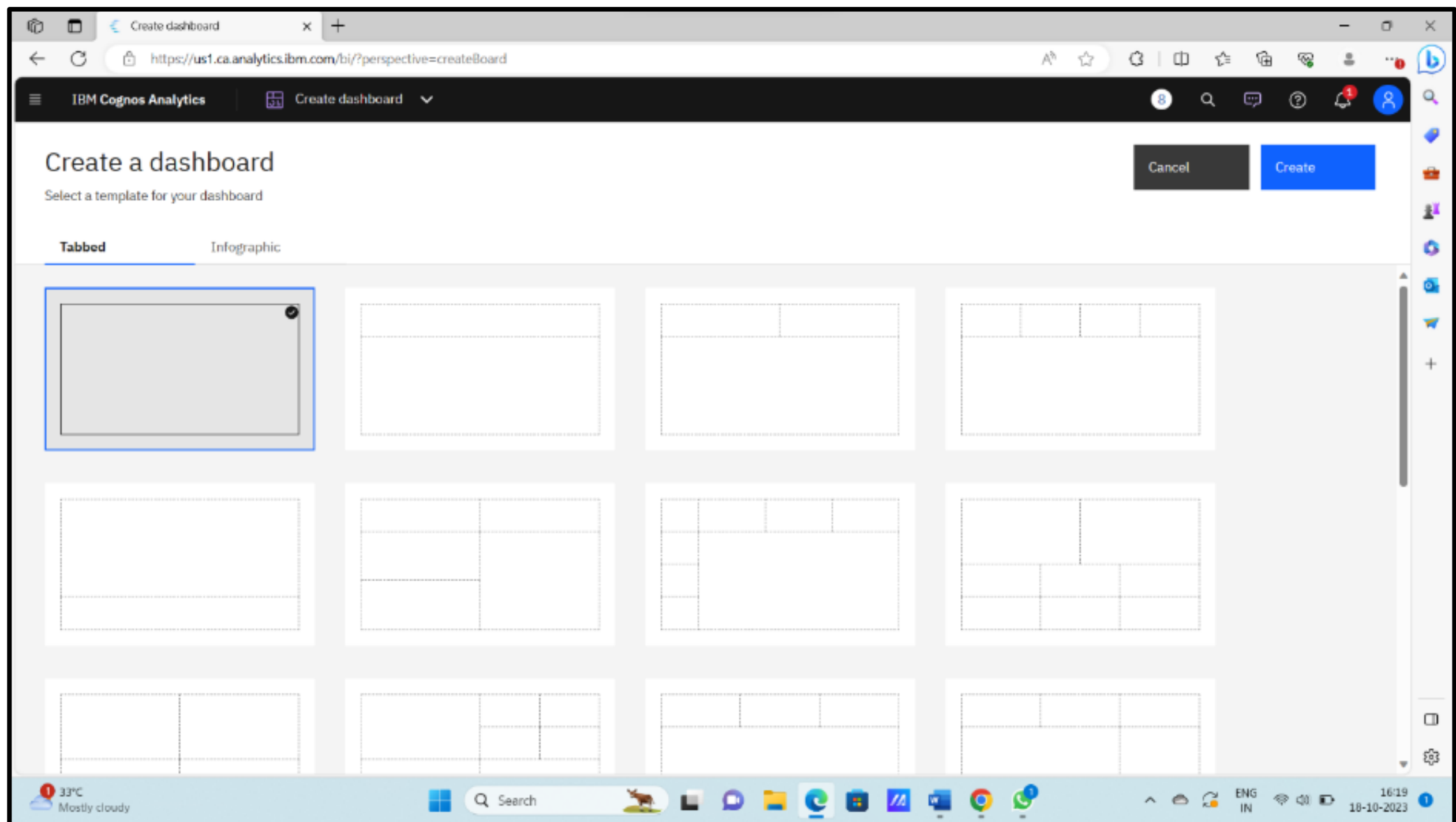
# Dashboard Creation

Dashboard creation are helpful to visualizing the data

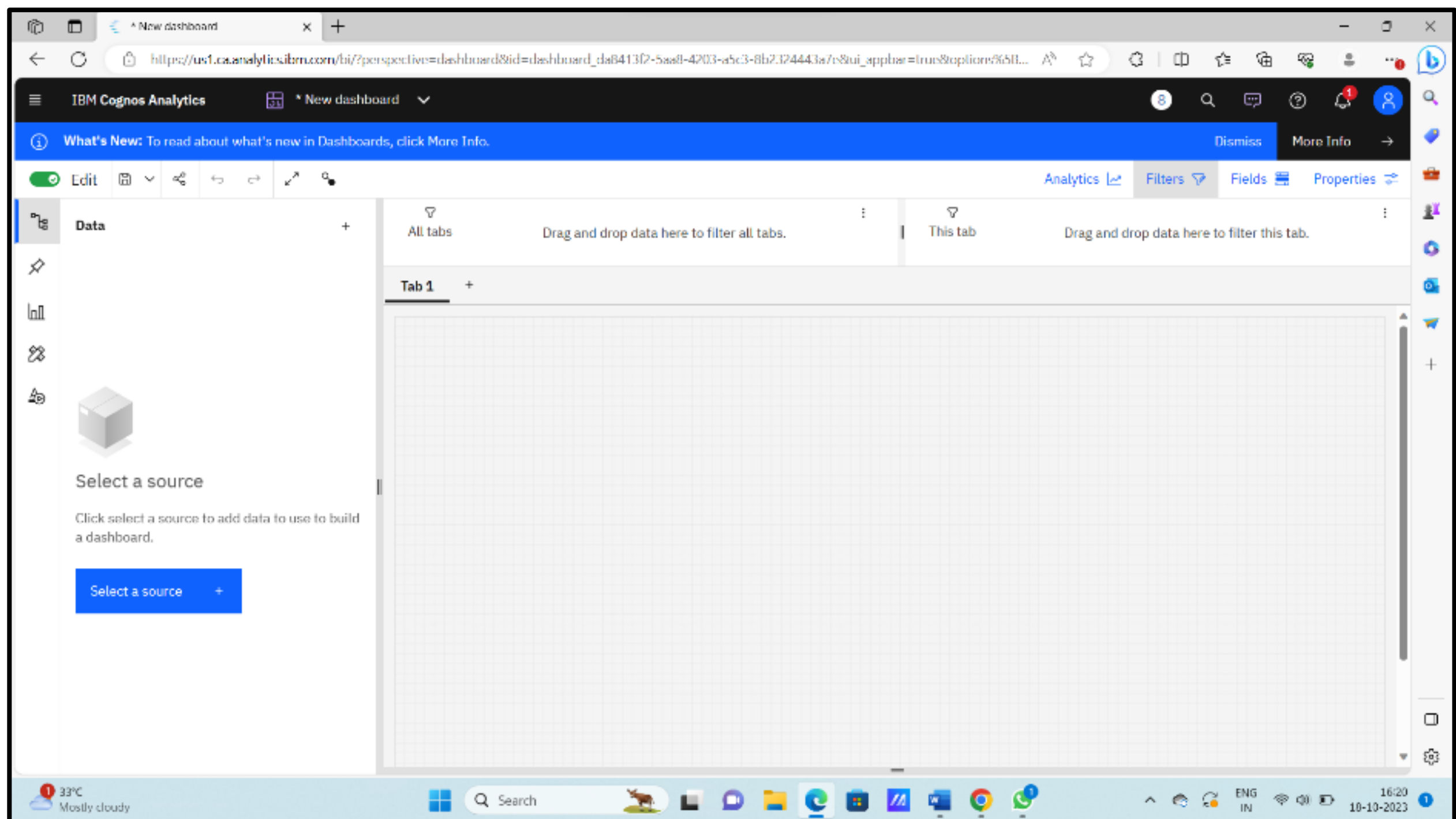
1. Goto Home menu
2. Select the new tab
3. Click dashboard



4. Choose the template for your project and click

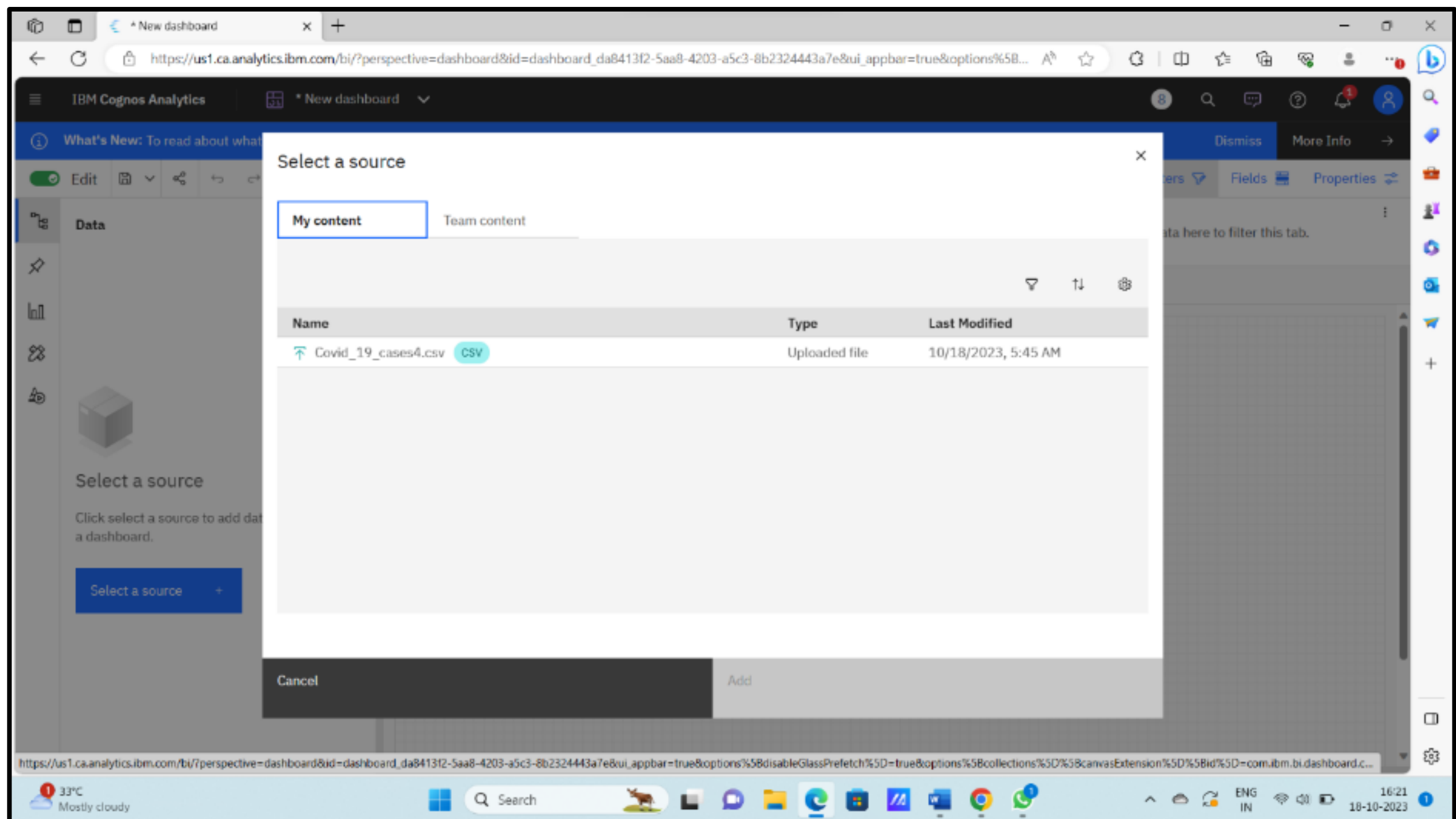


## 5. Now Dashboard is created



## 6. Select the data source



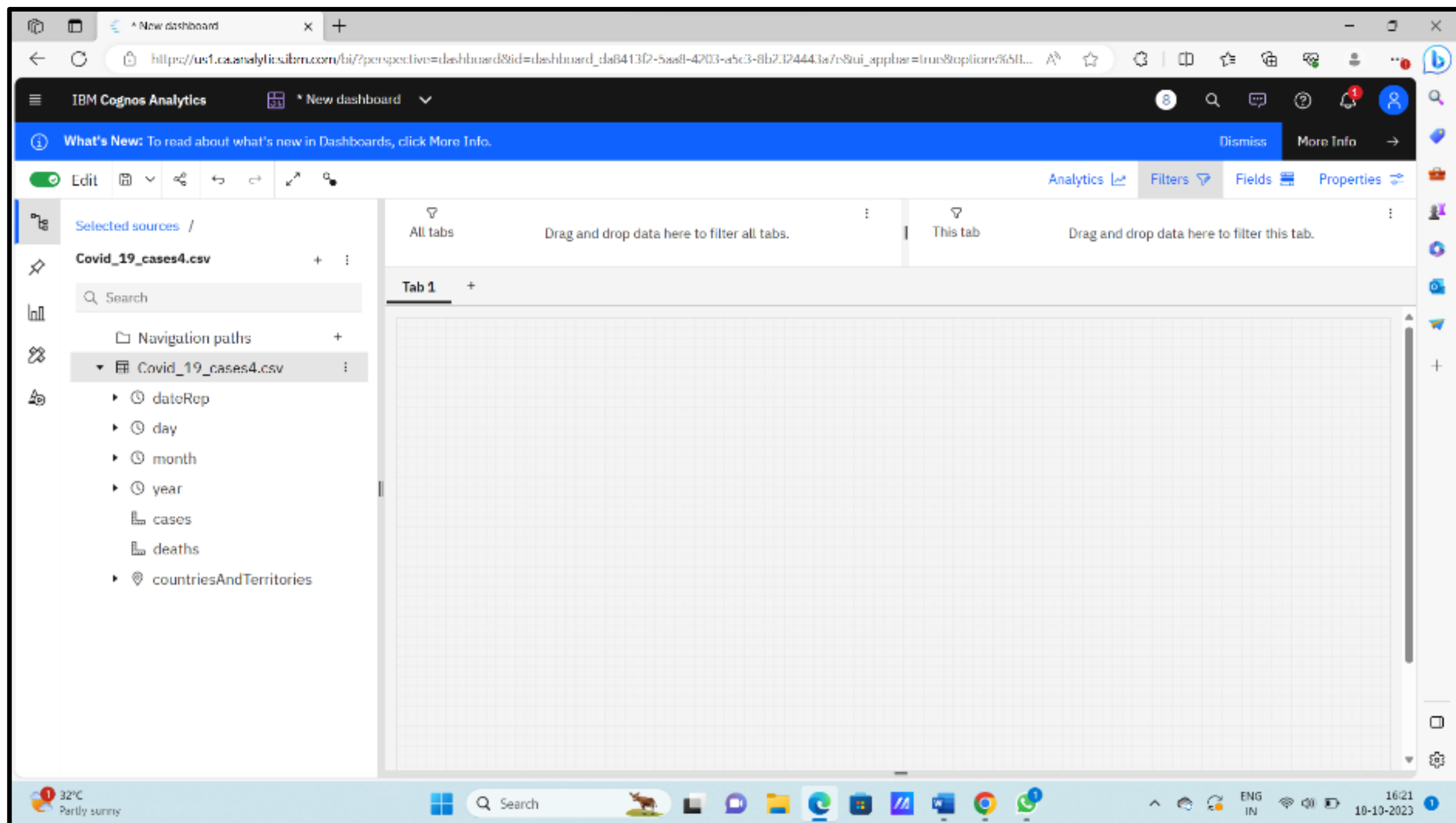


**Visualization :** After creating the dashboard, the next step is to visualize the data

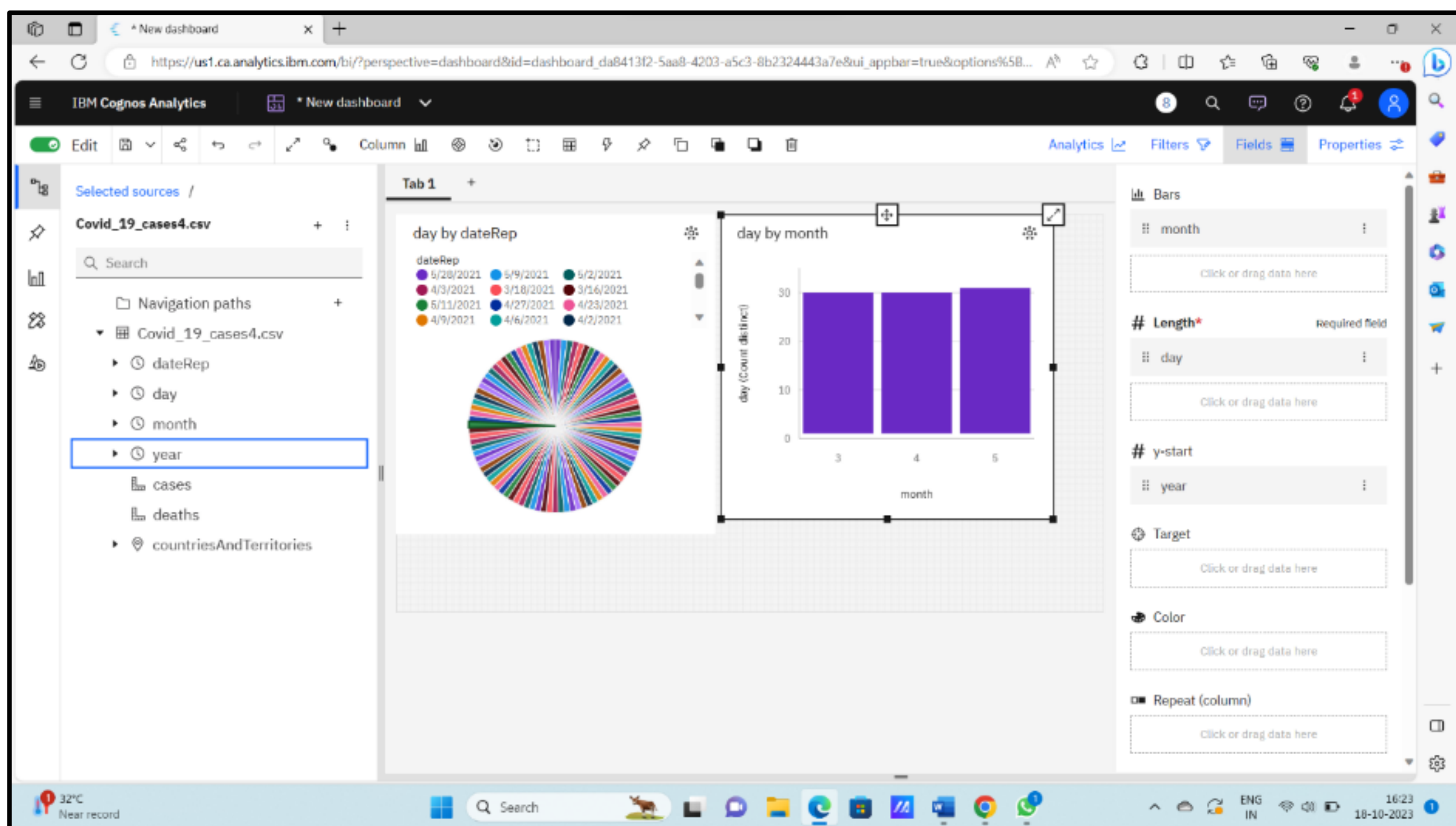
**In IBM Cognos**

**1. Goes to the Corresponding Dashboard**

**2. select the visualizations tab in the left side of title bar**



**3. Choose the system as you want and put the data source for the required columns**



**In the above screen shot displays the Pie chart and model compares the "day" and "month".**

X-axis =day

Y-axis = month

After performing these activities a comprehensive document will be created to demonstrate the ability to Communicate and share finding.

7.Code:

```
covid-19

October 27, 2023

In [5]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
data=pd.read_csv("C:\\Users\\harsh\\OneDrive\\Desktop\\country_vaccinations.
-csv\\country_vaccinations.csv")
data.head()

Out[5]:
```

	country	iso_code	date	total_vaccinations	people_vaccinated	
0	Afghanistan	AFG	2021-02-22	0.0	0.0	
1	Afghanistan	AFG	2021-02-23	NaN	NaN	
2	Afghanistan	AFG	2021-02-24	NaN	NaN	
3	Afghanistan	AFG	2021-02-25	NaN	NaN	
4	Afghanistan	AFG	2021-02-26	NaN	NaN	

```

people_fully_vaccinated    daily_vaccinations_raw    daily_vaccinations \
0                        NaN                        NaN                        NaN
1                        NaN                        NaN                        NaN
2                        NaN                        NaN                        NaN
3                        NaN                        NaN                        NaN
4                        NaN                        NaN                        NaN

total_vaccinations_per_hundred    people_vaccinated_per_hundred \
0                                0.0                                0.0
1                                NaN                                NaN
2                                NaN                                NaN
3                                NaN                                NaN
4                                NaN                                NaN

people_fully_vaccinated_per_hundred    daily_vaccinations_per_million \
0                        NaN                        NaN
1                        NaN                        NaN
2                        NaN                        NaN
3                        NaN                        NaN
4                        NaN                        NaN

vaccines \
1
```

```
1 JohnsonsJohnson, Oxford/AstraZeneca, Pfizer/Bi...
2 JohnsonsJohnson, Oxford/AstraZeneca, Pfizer/Bi...
3 JohnsonsJohnson, Oxford/AstraZeneca, Pfizer/Bi...
4 JohnsonsJohnson, Oxford/AstraZeneca, Pfizer/Bi...

source_name    source_website
0 World Health Organization https://covid19.who.int/
1 World Health Organization https://covid19.who.int/
2 World Health Organization https://covid19.who.int/
3 World Health Organization https://covid19.who.int/
4 World Health Organization https://covid19.who.int/

In [6]: data.describe()

Out[6]:
```

	total_vaccinations	people_vaccinated	people_fully_vaccinated	
count	4.382700e+04	4.128423e+04	2.880223e+04	
mean	4.582964e+07	1.770835e+07	1.419833e+07	
std	2.288361e+08	7.379711e+07	8.713823e+07	
min	2.000000e+00	0.000000e+00	1.000000e+00	
25%	8.281100e+06	3.981681e+06	2.439823e+06	
50%	3.585906e+06	2.187313e+06	1.722143e+06	
75%	1.707290e+07	6.187823e+06	7.808873e+06	
max	2.263125e+08	1.270541e+09	1.240777e+09	

```

daily_vaccinations_raw    daily_vaccinations \
count      3.038700e+04      8.021300e+04
mean        2.708906e+06      1.812530e+06
std         1.212427e+06      7.802380e+05
min         3.000000e+00      0.000000e+00
25%         4.668900e+05      5.200000e+05
50%         2.628900e+05      3.820000e+05
75%         1.224925e+06      4.405800e+05
max         2.474100e+07      2.762920e+07

total_vaccinations_per_hundred    people_vaccinated_per_hundred \
count      43607.000000      41284.000000
mean        62.108563      40.527317
std         67.941577      29.290758
min         1.000000      0.000000
25%        14.056000      11.270000
50%         67.520000      41.435000
75%        102.758000      87.820000
max        345.370000      124.780000

people_fully_vaccinated_per_hundred    daily_vaccinations_per_million
count      28802.000000      88212.000000
```

2

```

data      35.523243      3257.949157
std      28.378252      3934.312440
min      0.000000      0.000000
25%      7.020000      836.000000
50%      21.750000      2650.000000
75%      62.080000      4682.000000
max      122.070000      117697.000000

[7]: pd.to_datetime(data['date'])
data.country.value_counts()

[7]: country
Norway      482
Latvia      480
Denmark     478
United States 471
Russia      470
-           -
Rwanda Erit. Burkina and Saba  148
Togo        114
Saint Helena 82
Fiji        65
Falkland Islands 67
Name: count, Length: 223, dtype: int64

[8]: data.vaccines.value_counts()

[8]: vaccines
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech
1608
Moderna, Oxford/AstraZeneca, Pfizer/BioNTech
6268
Oxford/AstraZeneca
6022
Oxford/AstraZeneca, Pfizer/BioNTech
4829
Johnson&Johnson, Moderna, Novavax, Oxford/AstraZeneca, Pfizer/BioNTech
3864
-
Johnson&Johnson, Oxford/AstraZeneca, Novavax
212
Moderna, Oxford/AstraZeneca, Pfizer/BioNTech, Novavax, Sputnik V
211
Johnson&Johnson, Moderna
201
Johnson&Johnson, Pfizer/BioNTech, Sinopharm/Beijing
228
3

```

```

SputnikCorona, Oxford/AstraZeneca, QazVac, Sinopharm/Beijing, Sputnik V, SP2021
150
Name: count, Length: 84, dtype: int64

[9]: df = data[['vaccines', 'country']]
df.head()

[9]: vaccines country
0 Johnson&Johnson, Oxford/AstraZeneca, Pfizer/Bio. Afghanistan
1 Johnson&Johnson, Oxford/AstraZeneca, Pfizer/Bio. Afghanistan
2 Johnson&Johnson, Oxford/AstraZeneca, Pfizer/Bio. Afghanistan
3 Johnson&Johnson, Oxford/AstraZeneca, Pfizer/Bio. Afghanistan
4 Johnson&Johnson, Oxford/AstraZeneca, Pfizer/Bio. Afghanistan

[10]: dict = {}
for i in df.vaccines.unique():
    dict[i] = [df['country'][i] for j in df[df['vaccines']==i].index]

vaccines = {}
for key, value in dict.items():
    vaccines[key] = set(value)
for i, j in vaccines.items():
    print(f'{i}=>{j}')

Johnson&Johnson, Oxford/AstraZeneca, Pfizer/BioNTech,
Sinopharm/Beijing>>('Canada', 'Afghanistan', 'Russia', 'Trinidad and
Tobago', 'Malawi')
Oxford/AstraZeneca, Pfizer/BioNTech, Novavax, Sputnik V>>('Qatar', 'Albania',
'Russia and Azerbaijan', 'Azerbaijan')
Oxford/AstraZeneca, Sinopharm/Beijing, Novavax, Sputnik V>>('Algeria',
'Ecuador')
Moderna, Oxford/AstraZeneca, Pfizer/BioNTech>>('Japan', 'Burkina', 'England',
'Denmark', 'Andorra', 'Fiji', 'Australia', 'Finland', 'Jersey', 'Isle of Man',
'Saint Maurice (French part)', 'United Kingdom', 'Northern Ireland', 'Wales',
'Guernsey')
Oxford/AstraZeneca>>('Mali', 'Senegal', 'Democratic Republic of Congo',
'Vanuatu', 'Fiji', 'Papua New Guinea', 'Montenegro', 'Falkland Islands',
'Angola', 'Moldova', 'San Tomé and Príncipe', 'Togo', 'Nigeria',
'Togo', 'Liberia', 'Bosnia', 'Saint Vincent and the Grenadines', 'Solomon
Islands', 'Saint Helena')
Oxford/AstraZeneca, Pfizer/BioNTech>>('Anguilla', 'Guyana', 'Gibraltar', 'Saint
Hélène', 'New Zealand', 'Yemen', 'Bahrain', 'Saudi Arabia', 'Gibraltar', 'Saint
Hélène and Reunion', 'Fiji', 'Saint Lucia')
Oxford/AstraZeneca, Pfizer/BioNTech, Sputnik V>>('Armenia and Barbados')
Oxford/AstraZeneca, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm/Beijing,
Sputnik V>>('Azerbaijan')
Moderna, Oxford/AstraZeneca, Sinopharm/Beijing, Novavax, Sputnik V>>('Armenia')

```

```

Pfizer/BioNTech>>('Morocco', 'Togo', 'Turkey and Cyprus Islands', 'Aruba',
'Eritrea', 'New Caledonia', 'Cook Islands')
Johnson&Johnson, Moderna, Novavax, Oxford/AstraZeneca,
Pfizer/BioNTech>>('Italy', 'Bosnia', 'Lithuania', 'South Korea', 'Czechia',
'Austria', 'Germany', 'Netherlands')
Johnson&Johnson, Oxford/AstraZeneca, Pfizer/BioNTech>>('Bosnia', 'Bahrain',
'Canada')
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech,
Sinopharm/Beijing, Sputnik Light, Sputnik V>>('Bahrain')
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech,
Sinopharm/Beijing, Novavax>>('Anguilla')
Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm/Beijing>>('Dominica', 'Peru',
'Barbados', 'Maldives')
Sinopharm/Beijing, Sputnik V>>('Belarus', 'Ergonomics')
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech>>('Bosnia',
'Greece', 'Iceland', 'Poland', 'Romania', 'Belarus', 'Spain', 'Cyprus',
'Jamaica', 'Luxembourg', 'Croatia', 'Canada', 'France', 'Belgium', 'Portugal',
'Ireland', 'Malta')
Johnson&Johnson, Oxford/AstraZeneca, Pfizer/BioNTech, Novavax>>('Bosnia',
'Eritrea')
Moderna, Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm/Beijing>>('Cape Verde',
'Eritrea')
Johnson&Johnson, Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm/Beijing, Sputnik
V>>('Morocco', 'Oceania', 'Moldova', 'Bolivia')
Moderna, Pfizer/BioNTech>>('Qatar', 'Israel', 'Rwanda Erit. Burkina and
Saba', 'Faroe Islands', 'Jersey', 'Cayman')
Covax, Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech,
Novavax>>('Botswana')
Johnson&Johnson, Oxford/AstraZeneca>>('Bahrain', 'British Virgin Islands',
'South Sudan')
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech,
Sinopharm/Beijing>>('Papua', 'France', 'Ghana', 'Kenya')
Johnson&Johnson, Oxford/AstraZeneca, Sinopharm/Beijing>>('Mozambique',
'Gambia', 'Senegal', 'Liberia', 'Burkina Faso', 'Malawi', 'Gambia')
Sinopharm/Beijing>>('Burundi', 'Equatorial Guinea', 'Chad')
Johnson&Johnson, Oxford/AstraZeneca, Sinopharm/Beijing, Novavax>>('Bosnia',
'Gambia')
Covax, Oxford/AstraZeneca>>('Central African Republic')
Oxford/AstraZeneca, Pfizer/BioNTech, Novavax>>('Chile', 'Ecuador')
Oxford/AstraZeneca, Sinopharm/Beijing, Sinopharm/Beijing, Novavax, SP2021>>('China')
Johnson&Johnson, Moderna, Oxford/AstraZeneca, Pfizer/BioNTech,
Novavax>>('Morocco', 'Spain', 'Colombia')
Covax, Oxford/AstraZeneca, Sinopharm/Beijing>>('Congo', 'Mauritius')
Moderna, Oxford/AstraZeneca, Sinopharm/Beijing, Sputnik V>>('Congo')
Mali, Novavax Pfizer, Novavax2>>('Chad')
Johnson&Johnson, Moderna, Pfizer/BioNTech>>('Liechtenstein', 'Netherlands',
'United States', 'Denmark')
Johnson&Johnson, Oxford/AstraZeneca, Pfizer/BioNTech, Sinopharm/Beijing,

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