

# PROJECT DEVELOPMENT PHASE

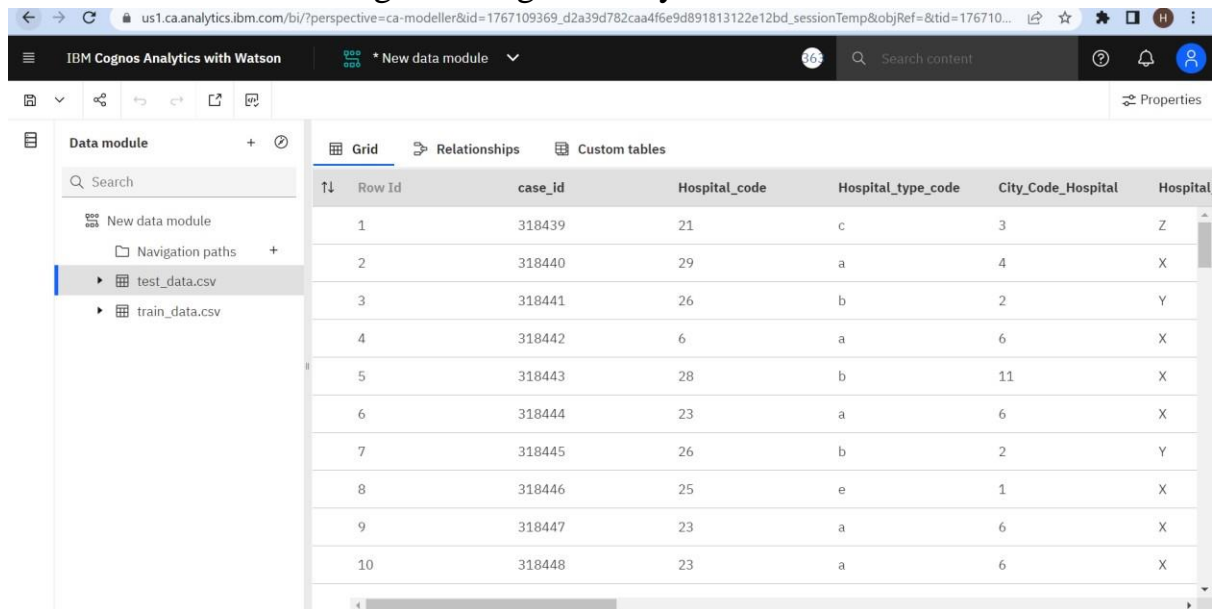
|              |   |
|--------------|---|
| TEAM ID      | PNT2022TMID20389                          |
| DATE         | 29/10/2022                                |
| PROJECT NAME | Analytics for Hospital's Health Care Data |

## Project Development Phase :

**Data Collection :** The data set used is shared in this drive link

[https://drive.google.com/file/d/1slC0MhsJHeuODVkhIXrdNOX\\_aBDySSBh/view](https://drive.google.com/file/d/1slC0MhsJHeuODVkhIXrdNOX_aBDySSBh/view)

### 1. Load the dataset : Using IBM cognos analytics

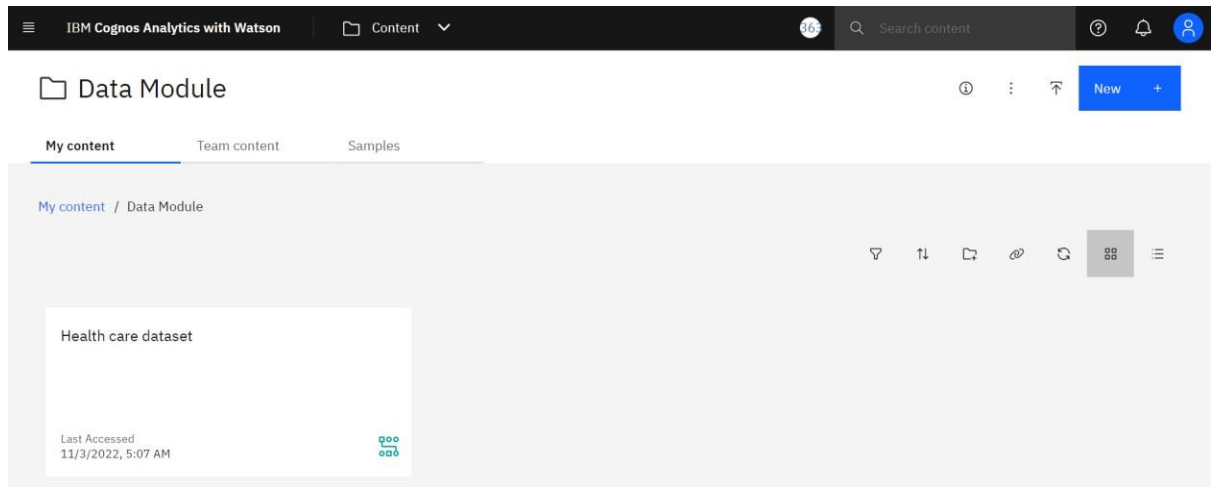


The screenshot displays the IBM Cognos Analytics interface. On the left, the 'Data module' pane shows a search bar and a list of data modules: 'test\_data.csv' and 'train\_data.csv'. The main area shows a table with the following data:

| Row Id | case_id | Hospital_code | Hospital_type_code | City_Code_Hospital | Hospital |
|--------|---------|---------------|--------------------|--------------------|----------|
| 1      | 318439  | 21            | c                  | 3                  | Z        |
| 2      | 318440  | 29            | a                  | 4                  | X        |
| 3      | 318441  | 26            | b                  | 2                  | Y        |
| 4      | 318442  | 6             | a                  | 6                  | X        |
| 5      | 318443  | 28            | b                  | 11                 | X        |
| 6      | 318444  | 23            | a                  | 6                  | X        |
| 7      | 318445  | 26            | b                  | 2                  | Y        |
| 8      | 318446  | 25            | e                  | 1                  | X        |
| 9      | 318447  | 23            | a                  | 6                  | X        |
| 10     | 318448  | 23            | a                  | 6                  | X        |

## 2. Save the datasets inside a **Data Module**

[https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&pathRef=.my\\_folders%2FData%2BModule%2FHealth%2Bcare%2Bdataset](https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&pathRef=.my_folders%2FData%2BModule%2FHealth%2Bcare%2Bdataset)



### 3. Data Preparation ( includes data cleaning ) :

Prepare the dataset in the aim to find right insights

IBM Cognos Analytics with Watson | Health care dataset

Grid Relationships Custom tables

Data module

Health care dataset

test\_data.csv

train\_data.csv

| Row Id | case_id | Hospital_code | Hospital_type_code | City_Code_Hospital | Hospital_region_code | Available E...in Hospital | Department   |
|--------|---------|---------------|--------------------|--------------------|----------------------|---------------------------|--------------|
| 1      | 1       | 8             | c                  | 3                  | Z                    | 3                         | radiotherapy |
| 2      | 2       | 2             | c                  | 5                  | Z                    | 2                         | radiotherapy |
| 3      | 3       | 10            | e                  | 1                  | X                    | 2                         | anesthesia   |
| 4      | 4       | 26            | b                  | 2                  | Y                    | 2                         | radiotherapy |
| 5      | 5       | 26            | b                  | 2                  | Y                    | 2                         | radiotherapy |
| 6      | 6       | 23            | a                  | 6                  | X                    | 2                         | anesthesia   |
| 7      | 7       | 32            | f                  | 9                  | Y                    | 1                         | radiotherapy |
| 8      | 8       | 23            | a                  | 6                  | X                    | 4                         | radiotherapy |
| 9      | 9       | 1             | d                  | 10                 | Y                    | 2                         | gynecology   |
| 10     | 10      | 10            | e                  | 1                  | X                    | 2                         | gynecology   |
| 11     | 11      | 22            | g                  | 9                  | Y                    | 2                         | radiotherapy |
| 12     | 12      | 26            | b                  | 2                  | Y                    | 4                         | radiotherapy |
| 13     | 13      | 16            | c                  | 3                  | Z                    | 2                         | radiotherapy |
| 14     | 14      | 9             | d                  | 5                  | Z                    | 3                         | radiotherapy |
| 15     | 15      | 6             | a                  | 6                  | X                    | 4                         | gynecology   |

Search

# Row Id

# case\_id

# Hospital\_code

Hospital\_type\_code

City\_Code\_Hospital

Hospital\_region\_code

Available E...in Hospital

Department

Ward\_Type

Ward\_Type\_Code

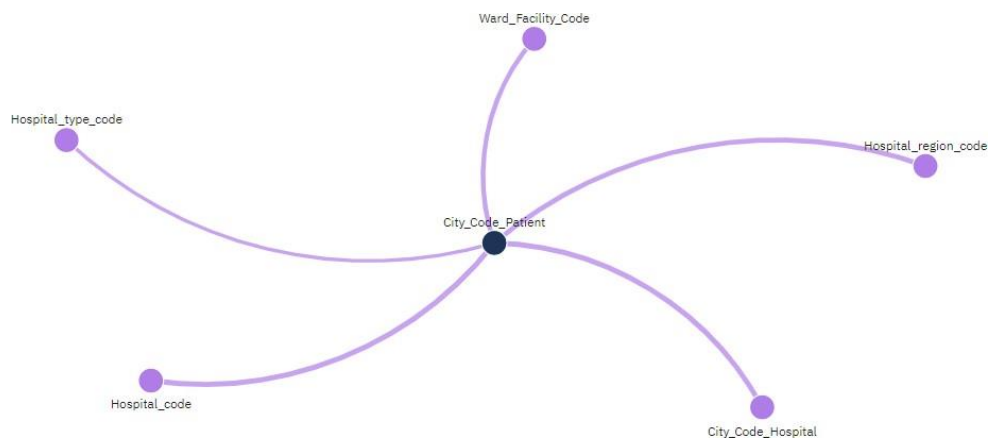
Bed Grade

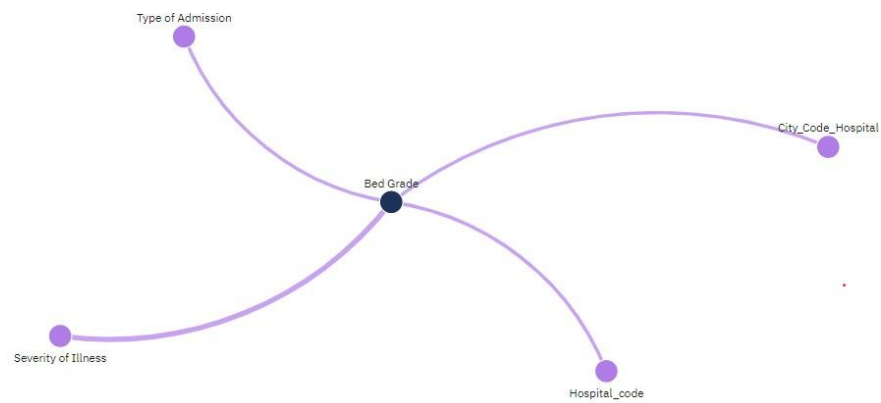
patientid

City\_Code\_Patient

Type of Illness

Severity Illness





Relationship diagram ①

## 1.Null values cleaning process :

Edit calculation

Name City\_Code\_Patient

Components

Expression

14

Search

train\_data.csv

- # Row Id
- # case\_id
- # Hospital\_code
- abc Hospit...\_code
- City\_Co...spital
- Hospit...\_code
- Availabl...Hospital
- abc Department
- abc Ward\_Type
- abc Ward\_...\_Code

```
1 if(City_Code_Patient is missing)
2 then(median (City_Code_Patient ))
3 else(City_Code_Patient)
```

Validation Results

✓ The expression is valid.

us1.ca.analytics.ibm.com/bi/?perspective=ca-modeler&id=i848EB8CF59434CC49F8BA69791347F10&objRef=i848EB8CF59434CC49F8BA69...

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Health care dataset

Search content

Properties

Data module

Grid Relationships Custom tables

Search

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward\_...\_Code

Bed Grade

patientid

City\_C...atient

Type o...ission

Severi...Illness

Visitor...atient

Age

Admiss...posit

| Bed Grade | patientid | City_Code_Patient | Type of Admission | Severity of Illness | Visitors with Patient | Age   | Admission_Deposit |
|-----------|-----------|-------------------|-------------------|---------------------|-----------------------|-------|-------------------|
| 2         | 31397     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 4911              |
| 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5954              |
| 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 4745              |
| 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 7272              |
| 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5558              |
| 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 4449              |
| 3         | 31397     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 6167              |
| 3         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5571              |
| 4         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 7223              |
| 3         | 31397     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 6056              |
| 2         | 31397     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 5797              |
| 1         | 31397     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 5993              |
| 3         | 31397     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 5141              |
| 3         | 31397     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 8477              |
| 3         | 63418     | 8                 | Emergency         | Extreme             | 2                     | 71-80 | 2685              |

## Edit calculation

Name Bed Grade

### Components

Search

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward\_...\_Code

Bed Grade

patientid

### Expression

```
1 if(Bed_Grade is missing)
2 then(median (Bed_Grade ))
3 else(Bed_Grade)
```

Validation Results

The expression is valid.

Cancel

OK

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Health care dataset

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Properties

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Search

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Navigat... paths

test\_data.csv

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward\_...\_Code

Bed Grade

patientid

City\_C...atient

Type o...ission

Severi...Illness

| T1 | pital_type_code | City_Code_Hospital | Hospital_region_code | Available E...in Hospital | Department | Ward_Type | Ward_Facility_Code | Bed Grade |
|----|-----------------|--------------------|----------------------|---------------------------|------------|-----------|--------------------|-----------|
|    | 3               | Z                  | 3                    | radiotherapy              | R          | F         | 2                  |           |
|    | 5               | Z                  | 2                    | radiotherapy              | S          | F         | 2                  |           |
|    | 1               | X                  | 2                    | anesthesia                | S          | E         | 2                  |           |
|    | 2               | Y                  | 2                    | radiotherapy              | R          | D         | 2                  |           |
|    | 2               | Y                  | 2                    | radiotherapy              | S          | D         | 2                  |           |
|    | 6               | X                  | 2                    | anesthesia                | S          | F         | 2                  |           |
|    | 9               | Y                  | 1                    | radiotherapy              | S          | B         | 3                  |           |
|    | 6               | X                  | 4                    | radiotherapy              | Q          | F         | 3                  |           |
|    | 10              | Y                  | 2                    | gynecology                | R          | B         | 4                  |           |
|    | 1               | X                  | 2                    | gynecology                | S          | E         | 3                  |           |
|    | 9               | Y                  | 2                    | radiotherapy              | S          | B         | 2                  |           |
|    | 2               | Y                  | 4                    | radiotherapy              | R          | D         | 1                  |           |
|    | 3               | Z                  | 2                    | radiotherapy              | R          | A         | 3                  |           |
|    | 5               | Z                  | 3                    | radiotherapy              | S          | F         | 3                  |           |
|    | 6               | X                  | 4                    | gynecology                | Q          | F         | 3                  |           |

# Hospital Health Care Data :

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Health care dataset

Search content

Properties

Data module

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Search

Health care dataset

Navigat... paths

test\_data.csv

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward...\_Code

Bed Grade

patientid

City\_C...atient

Type o...ission

Severi...Illness

Visitor...atient

| Row Id | case_id | Hospital_code | Hospital_type_code | City_Code_Hospital | Hospital_region_code | Available E...In Hospital | Department   |
|--------|---------|---------------|--------------------|--------------------|----------------------|---------------------------|--------------|
| 1      | 1       | 8             | c                  | 3                  | Z                    | 3                         | radiotherapy |
| 2      | 2       | 2             | c                  | 5                  | Z                    | 2                         | radiotherapy |
| 3      | 3       | 10            | e                  | 1                  | X                    | 2                         | anesthesia   |
| 4      | 4       | 26            | b                  | 2                  | Y                    | 2                         | radiotherapy |
| 5      | 5       | 26            | b                  | 2                  | Y                    | 2                         | radiotherapy |
| 6      | 6       | 23            | a                  | 6                  | X                    | 2                         | anesthesia   |
| 7      | 7       | 32            | f                  | 9                  | Y                    | 1                         | radiotherapy |
| 8      | 8       | 23            | a                  | 6                  | X                    | 4                         | radiotherapy |
| 9      | 9       | 1             | d                  | 10                 | Y                    | 2                         | gynecology   |
| 10     | 10      | 10            | e                  | 1                  | X                    | 2                         | gynecology   |
| 11     | 11      | 22            | g                  | 9                  | Y                    | 2                         | radiotherapy |
| 12     | 12      | 26            | b                  | 2                  | Y                    | 4                         | radiotherapy |
| 13     | 13      | 16            | c                  | 3                  | Z                    | 2                         | radiotherapy |
| 14     | 14      | 9             | d                  | 5                  | Z                    | 3                         | radiotherapy |
| 15     | 15      | 6             | a                  | 6                  | X                    | 4                         | gynecology   |
| 16     | 16      | 6             | a                  | 6                  | X                    | 3                         | gynecology   |

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Health care dataset

Navigat... paths

test\_data.csv

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward...\_Code

Bed Grade

patientid

City\_C...atient

Type o...ission

Severi...Illness

Visitor...atient

| Ward_Type | Ward_Facility_Code | Bed Grade | patientid | City_Code_Patient | Type of Admission | Severity of Illness | Visitors with Patient |
|-----------|--------------------|-----------|-----------|-------------------|-------------------|---------------------|-----------------------|
| R         | F                  | 2         | 31397     | 7                 | Emergency         | Extreme             | 2                     |
| S         | F                  | 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | E                  | 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| R         | D                  | 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | D                  | 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | F                  | 2         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | B                  | 3         | 31397     | 7                 | Emergency         | Extreme             | 2                     |
| Q         | F                  | 3         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| R         | B                  | 4         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | E                  | 3         | 31397     | 7                 | Trauma            | Extreme             | 2                     |
| S         | B                  | 2         | 31397     | 7                 | Urgent            | Extreme             | 2                     |
| R         | D                  | 1         | 31397     | 7                 | Urgent            | Extreme             | 2                     |
| R         | A                  | 3         | 31397     | 7                 | Emergency         | Extreme             | 2                     |
| S         | F                  | 3         | 31397     | 7                 | Urgent            | Extreme             | 2                     |
| Q         | F                  | 3         | 63418     | 8                 | Emergency         | Extreme             | 2                     |
| O         | F                  | 3         | 63418     | 8                 | Emergencv         | Extreme             | 2                     |

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Health care dataset

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Properties

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Health care dataset

Navigat... paths

test\_data.csv

train\_data.csv

# Row Id

# case\_id

# Hospital\_code

Hospit...\_code

City\_C...spital

Hospit...\_code

Availab...spital

Department

Ward\_Type

Ward...\_Code

Bed Grade

patientid

City\_C...atient

Type o...ission

Severi...Illness

Visitor...atient

| entid | City_Code_Patient | Type of Admission | Severity of Illness | Visitors with Patient | Age   | Admission_Deposit | Stay  |
|-------|-------------------|-------------------|---------------------|-----------------------|-------|-------------------|-------|
| 7     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 4911              | 0-10  |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5954              | 41-50 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 4745              | 31-40 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 7272              | 41-50 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5558              | 41-50 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 4449              | 11-20 |
| 7     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 6167              | 0-10  |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 5571              | 41-50 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 7223              | 51-60 |
| 7     | 7                 | Trauma            | Extreme             | 2                     | 51-60 | 6056              | 31-40 |
| 7     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 5797              | 21-30 |
| 7     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 5993              | 11-20 |
| 7     | 7                 | Emergency         | Extreme             | 2                     | 51-60 | 5141              | 0-10  |
| 7     | 7                 | Urgent            | Extreme             | 2                     | 51-60 | 8477              | 21-30 |
| 8     | 8                 | Emergency         | Extreme             | 2                     | 71-80 | 2685              | 0-10  |
| 8     | 8                 | Emergency         | Extreme             | 2                     | 71-80 | 9398              | 0-10  |

Prepared Data Set Link :

[https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&pathRef=.my\\_folders%2FData%2BModule%2FHealth%2Bcare%2Bdataset](https://us1.ca.analytics.ibm.com/bi/?perspective=ca-modeller&pathRef=.my_folders%2FData%2BModule%2FHealth%2Bcare%2Bdataset)