

# **Babu Banarasi Das University**



## **Case Study on Hospital staffs schedule using SPSS**

**SUBMITTED TO:**

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# PRACTICAL

**Definition:-** As a data miner in a hospital, I wanted to show relationships between two categorical fields, one categorical and one continuous field and two continuous fields.  
Used the set to flag node, derive node and reclassify node to enhance the data.

**Dataset used:-** staff\_schedule.csv

**Outcomes/Learning:-** Understood the use of graphs such as distribution graph, plot, histogram and outputs such as matrix, statistics, means.  
Also, gained experience that how to derive field from existing fields using derive node, the use of reclassify and set to flag.

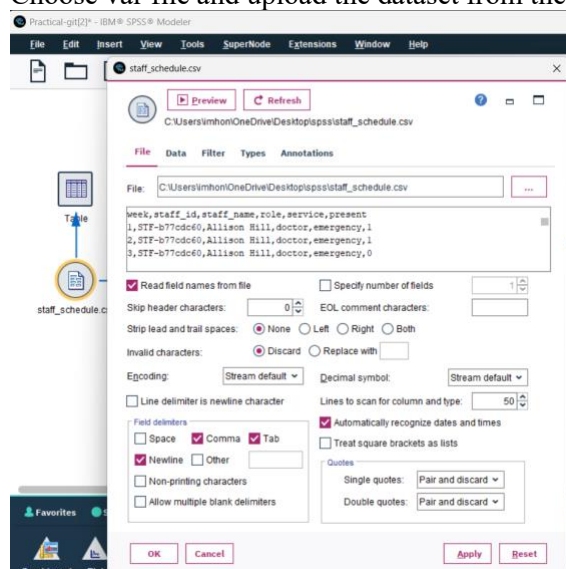
**Required Tool:-** IBM SPSS MODELER.

**Working:-**

- To examine the relationship between two categorical fields:  
For tabular output, use a Matrix.  
For graphical output, use a Distribution chart.
- To examine the relationship between one categorical field and one continuous field:  
For tabular output, use Means.  
For graphical output, use a Histogram.
- To examine the relationship between two continuous fields:  
For tabular output, use Statistics.  
For graphical output, use a Plot.
- And also gained the knowledge of how to work with derive, reclassify and set to flag node.

**Step 1:-**

Choose var file and upload the dataset from the saved location. Further click on apply and ok.



**Step 2:-**

Connect table with the dataset and click on run to run the values.

Table (6 fields, 6,552 records)

	week	staff_id	staff_name	role	service	present
1	1	STF-b77cdc60	Allison Hill	doctor	emergency	1
2	2	STF-b77cdc60	Allison Hill	doctor	emergency	1
3	3	STF-b77cdc60	Allison Hill	doctor	emergency	0
4	4	STF-b77cdc60	Allison Hill	doctor	emergency	1
5	5	STF-b77cdc60	Allison Hill	doctor	emergency	1
6	6	STF-b77cdc60	Allison Hill	doctor	emergency	0
7	7	STF-b77cdc60	Allison Hill	doctor	emergency	1
8	8	STF-b77cdc60	Allison Hill	doctor	emergency	1
9	9	STF-b77cdc60	Allison Hill	doctor	emergency	0
10	10	STF-b77cdc60	Allison Hill	doctor	emergency	1
11	11	STF-b77cdc60	Allison Hill	doctor	emergency	1
12	12	STF-b77cdc60	Allison Hill	doctor	emergency	0
13	13	STF-b77cdc60	Allison Hill	doctor	emergency	1
14	14	STF-b77cdc60	Allison Hill	doctor	emergency	1
15	15	STF-b77cdc60	Allison Hill	doctor	emergency	0
16	16	STF-b77cdc60	Allison Hill	doctor	emergency	1

OK

### Step 3:-

Connect type node with the dataset.

The screenshot shows the IBM SPSS Modeler interface. A workflow is visible with a 'Table' node connected to a 'Type' node. The 'Type' node's properties window is open, displaying the following table:

Field	Measurement	Values	Missing	Check	Role
week	Continuous	[1,52]	None		Input
staff_id	Nominal	STF-038ff	None		Input
staff_name	Nominal	*Aaron W...	None		Input
role	Nominal	doctor,nur...	None		Input
service	Nominal	ICU,emer...	None		Input
present	Continuous	[0,1]	None		Input

Buttons at the bottom of the window include OK, Cancel, Apply, and Reset.

### Step 4:-

Connect matrix node with the type node. Mark staff\_id as row and service as column. Click apply and ok.

The screenshot shows the IBM SPSS Modeler interface. A workflow is visible with a 'Table' node connected to a 'Matrix' node. The 'Matrix' node's settings window is open, displaying the following settings:

- Fields:** ☒ Selected ☐ All flags (true values) ☐ All Numerics
- Rows:** staff\_id
- Columns:** service
- ☒ Include missing values
- Cell contents:** ☒ Cross-tabulations ☐ Function
- Field:** (empty)
- Function:** ☐ Mean ☐ Sum ☐ SDev ☐ Max ☐ Min

Buttons at the bottom of the window include OK, Run, Cancel, Apply, and Reset.

### Step 5:-

Double click on the matrix node and run the values.

events

File Edit Generate

Matrix Appearance Annotations

service

staff_id		ICU	emergency	general_m...	surgery
STF-038ff4c9	Count	0	0	52	0
	Row %	0.000	0.000	100.000	0.000
	Total %	0.000	0.000	0.794	0.000
STF-03fbdddc	Count	0	52	0	0
	Row %	0.000	100.000	0.000	0.000
	Total %	0.000	0.794	0.000	0.000
STF-052894a3	Count	52	0	0	0
	Row %	100.000	0.000	0.000	0.000
	Total %	0.794	0.000	0.000	0.000
STF-05591498	Count	52	0	0	0

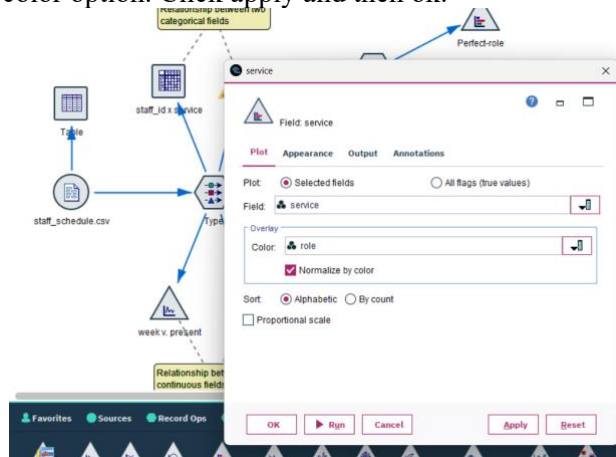
Cells contain: cross-tabulation of fields (including missing values)

Chi-square = 19,656, df = 375, probability = 0

OK

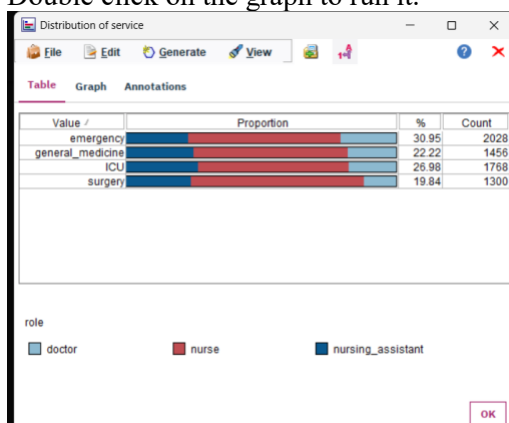
### Step 6:-

Connect distribution graph node with the type node. Select field as a service and choose normalize by color option. Click apply and then ok.



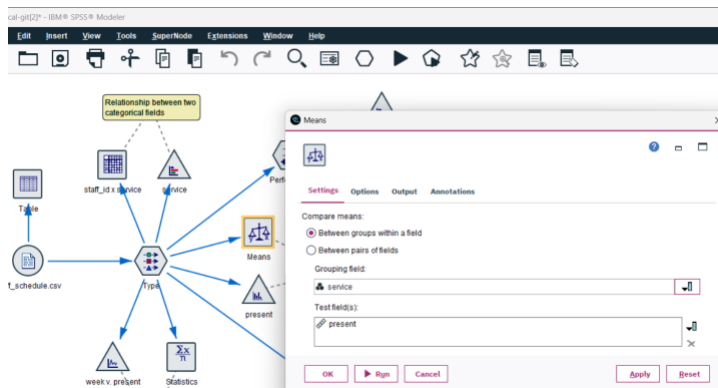
### Step 7:-

Double click on the graph to run it.



### Step 8:-

Connect means node with the type node. Choose service as a grouping field and present as a test field. Click apply and then ok.



### Step 9:-

Double click on the means node and run the values.

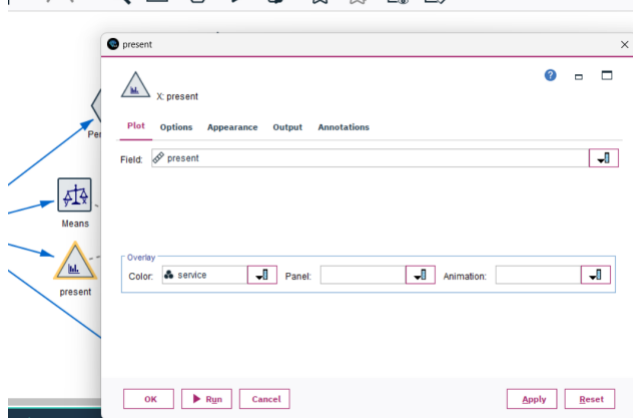
The screenshot shows the 'Means of [service][present]' dialog box. The 'Means' tab is active. The 'Sort by' is set to 'Field' and the 'View' is set to 'Simple'. The 'Grouping field' is 'service'. The 'Cells contain: Mean' section shows a table with the following data:

Field	ICU*	emergency*	general_m	surgery*	Importance
present	0.601	0.604	0.590	0.602	0.147

The 'Importance' value for 'present' is highlighted as 'Unimportant'. The 'OK' button is highlighted.

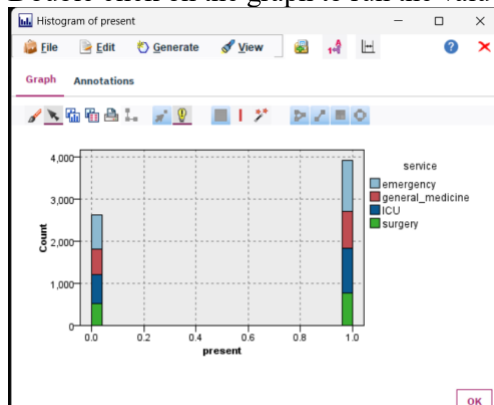
### Step 10:-

Connect histogram graph node with the type node. Select field as a present. Click apply and then ok.



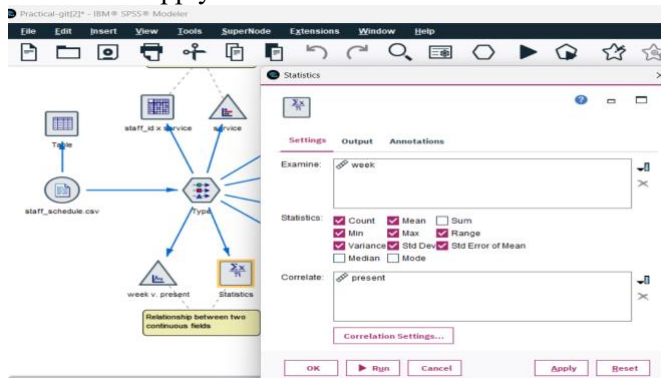
### Step 11:-

Double click on the graph to run the values.



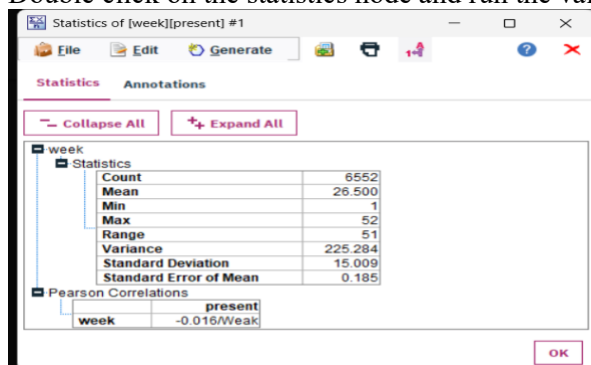
### Step 12:-

Connect statistics node with the type node. Choose week as a examine field and present as a correlate field. Click apply and then ok.



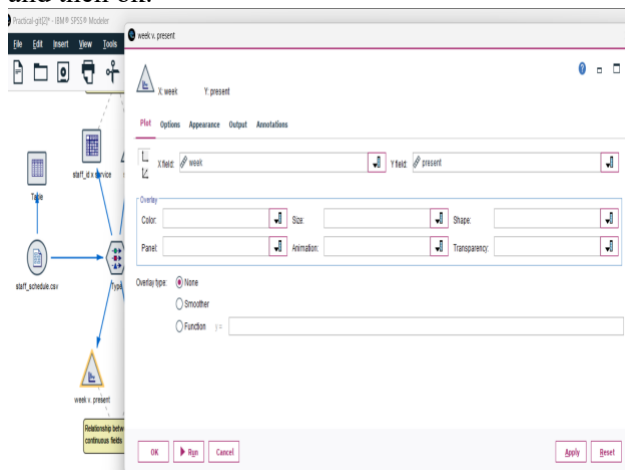
### Step 13:-

Double click on the statistics node and run the values.



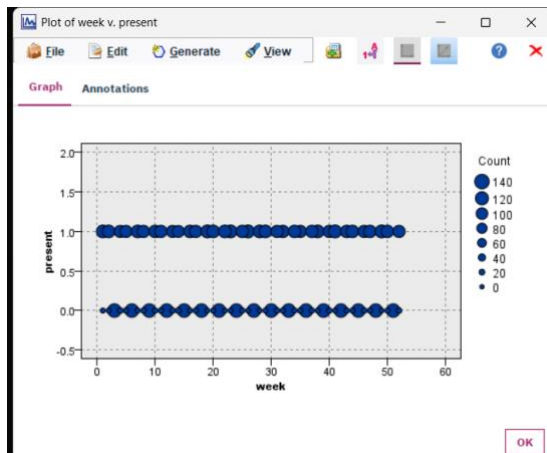
### Step 14:-

Connect plot graph node with the type node. Select x-field as week and y-field as present. Click apply and then ok.



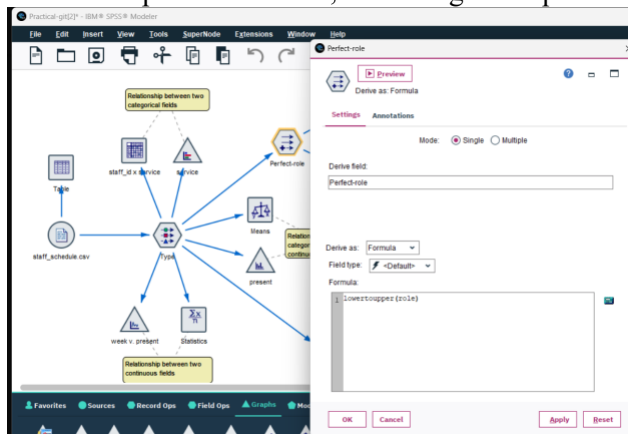
### Step 15:-

Double click on the graph to run the values.



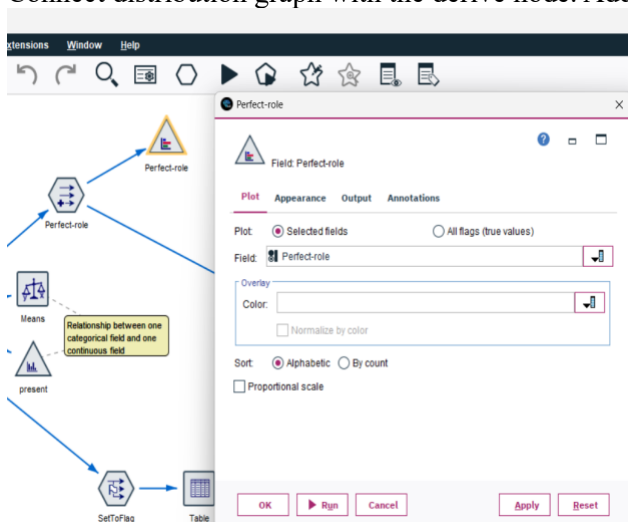
### Step 16:-

Connect derive node with the type node. Double click on the node, write perfect-role in derive field. Click on expression builder, adds the given equation (lowertoupper(role)). Click apply and ok.



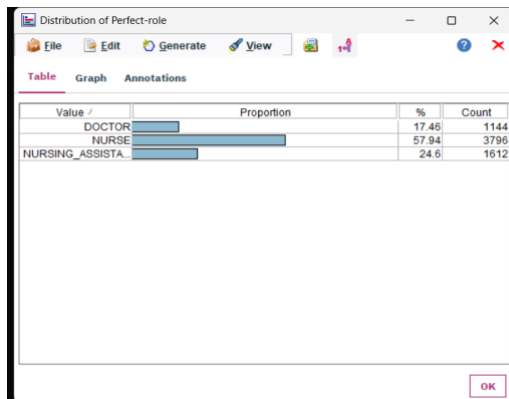
### Step 17:-

Connect distribution graph with the derive node. Add perfect-role in the field. Click apply and ok.



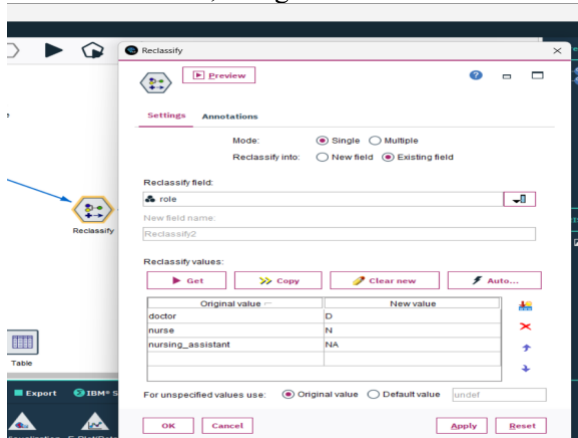
### Step 18:-

Double click on the graph to run the values.



### Step 19:-

Connect reclassify node with the perfect-role (derived) node. Double click on the node to reclassify the field as a role, and give them a new values. Further, click on apply and ok.



### Step 20:-

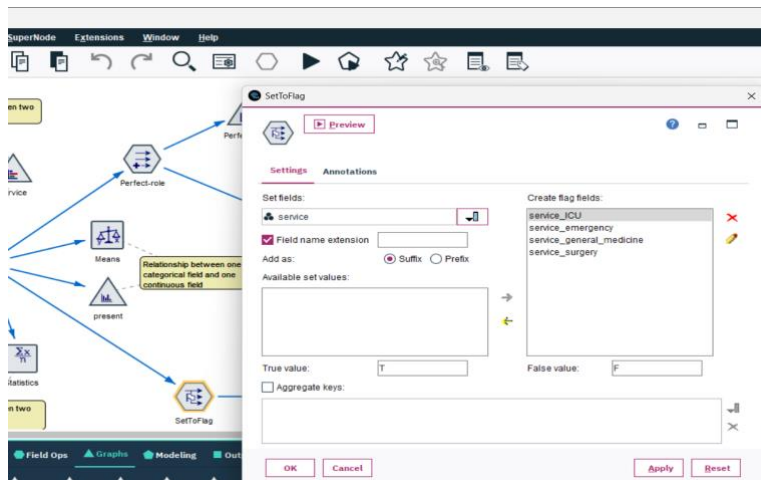
Connect table with the reclassify node and run the values.

	week	staff_id	staff_name	role	service	present	Perfect-role
1	1	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
2	2	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
3	3	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
4	4	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
5	5	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
6	6	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
7	7	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
8	8	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
9	9	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
10	10	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
11	11	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
12	12	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
13	13	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
14	14	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
15	15	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
16	16	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
17	17	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
18	18	STF-b77dc60	Allison Hill	doctor	emergency	0	DOCTOR
19	19	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR
20	20	STF-b77dc60	Allison Hill	doctor	emergency	1	DOCTOR

### Step 21:-

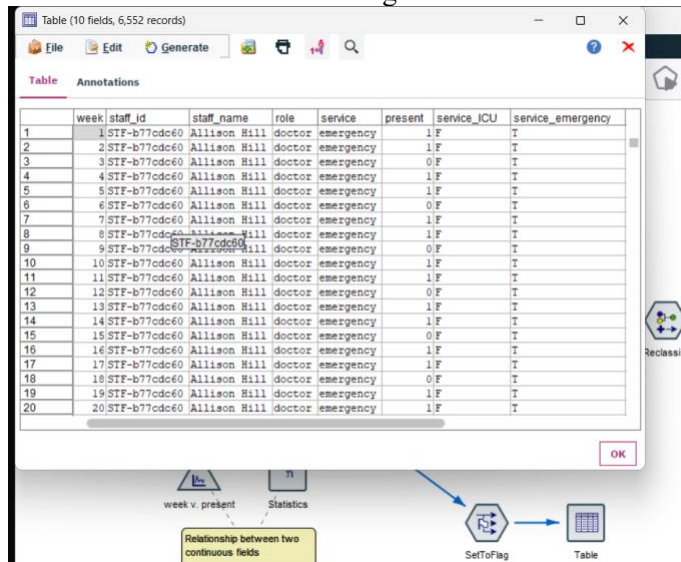
Connect set to flag node with the type node, set field as service. Create flag fields and appoint values as T and F, where T belongs to true value and F belongs to false value. Click apply and then ok.





## Step 22:-

Connect table with the set to flag node and run the values.



## Step 23:-

Final view of the practical.

