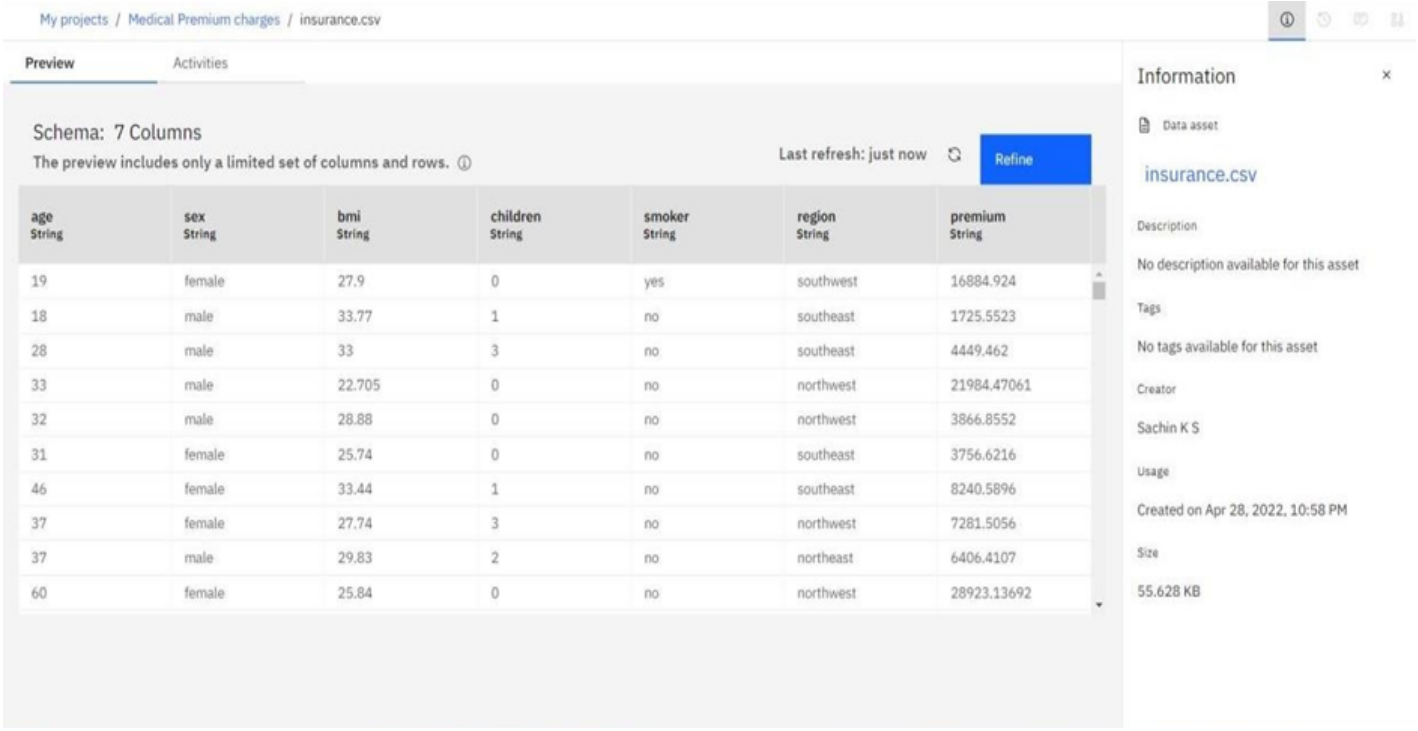
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

DATA ANALYTICS

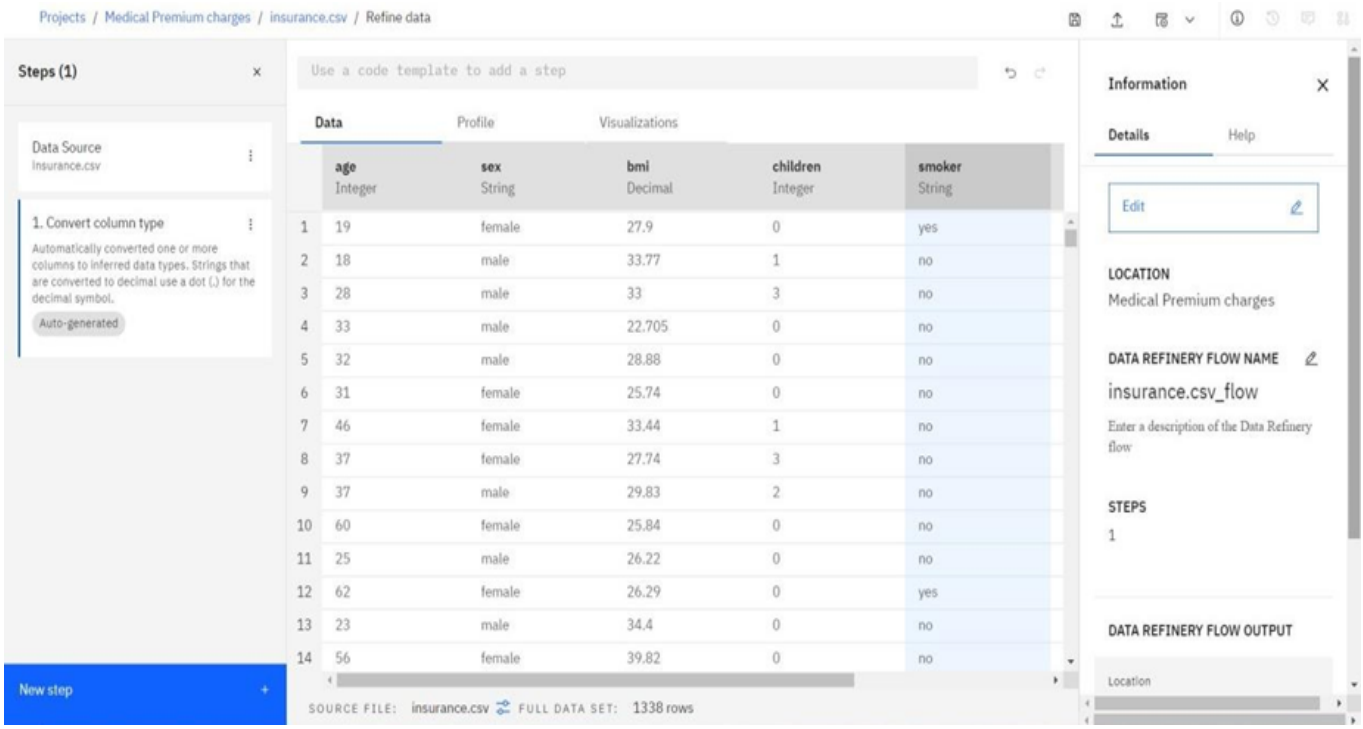
Assignment-4

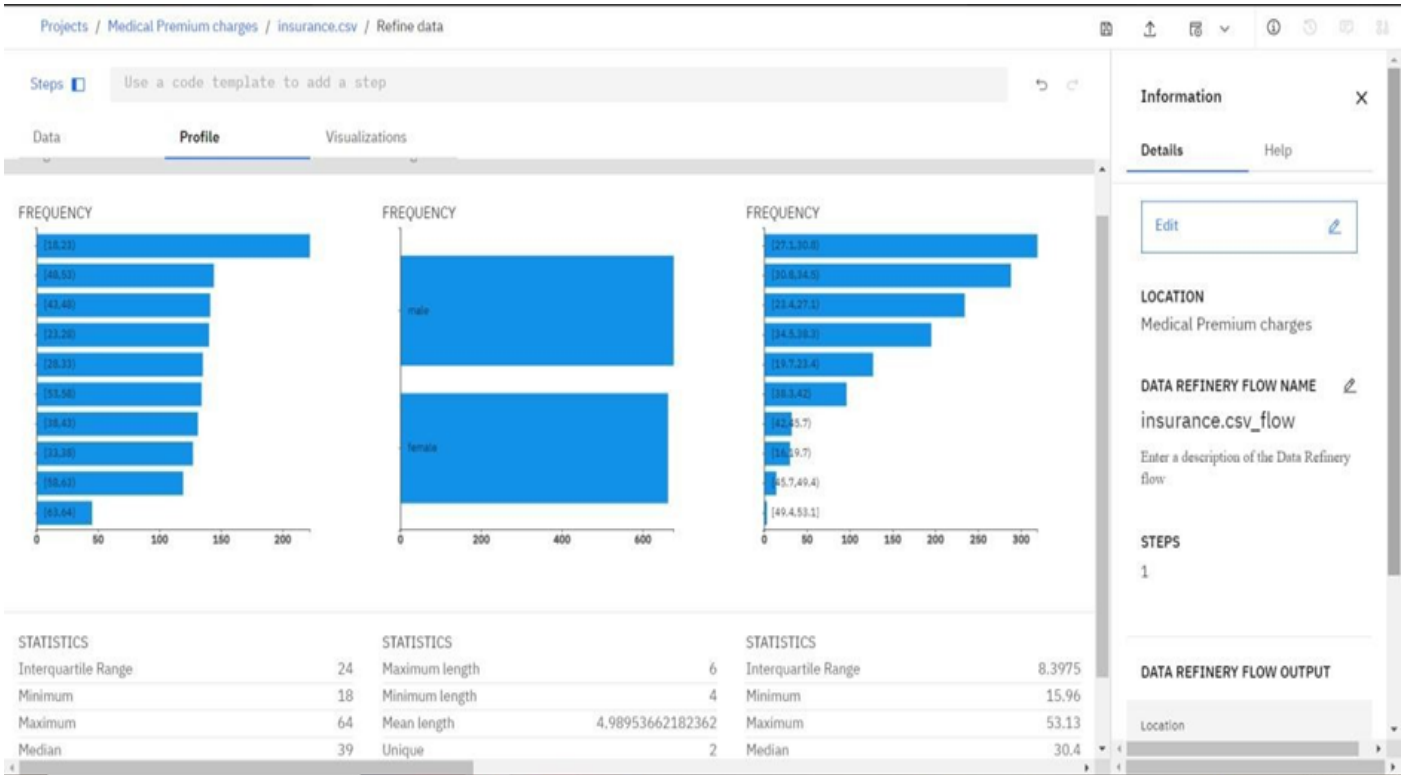
NAME: Dhinesh.B
REG NO: 19BEC0684
CAMPUS: Vellore

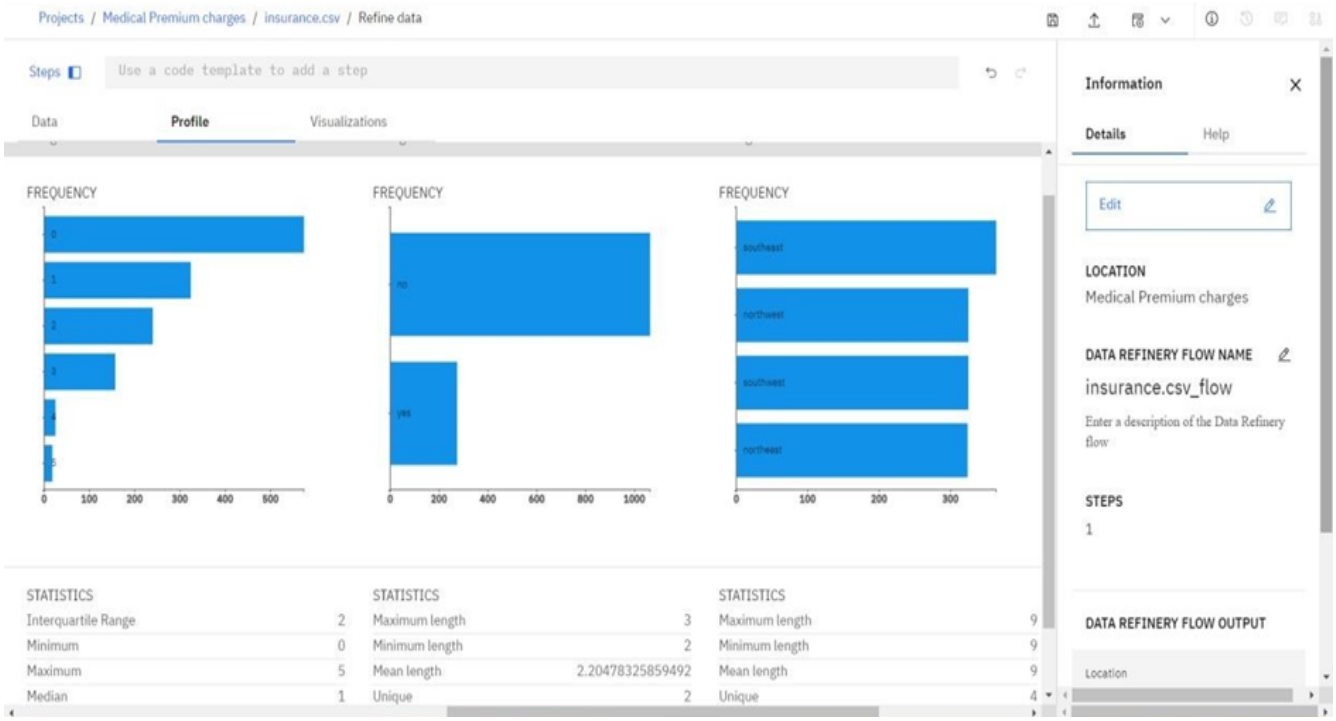
CLUSTERING MEDICAL PREMIUM CHARGES



age String	sex String	bmi String	children String	smoker String	region String	premium String
19	female	27.9	0	yes	southwest	16884.924
18	male	33.77	1	no	southeast	1725.5523
28	male	33	3	no	southeast	4449.462
33	male	22.705	0	no	northwest	21984.47061
32	male	28.88	0	no	northwest	3866.8552
31	female	25.74	0	no	southeast	3756.6216
46	female	33.44	1	no	southeast	8240.5896
37	female	27.74	3	no	northwest	7281.5056
37	male	29.83	2	no	northeast	6406.4107
60	female	25.84	0	no	northwest	28923.13692


Projects / Medical Premium charges / insurance.csv / Refine data
Steps (1)
Data Source
insurance.csv
1. Convert column type
Automatically converted one or more columns to inferred data types. Strings that are converted to decimal use a dot (.) for the decimal symbol.
Auto-generated
New step
Use a code template to add a step
Data
Profile
Visualizations
age Integer
sex String
bmi Decimal
children Integer
smoker String
1 19 female 27.9 0 yes
2 18 male 33.77 1 no
3 28 male 33 3 no
4 33 male 22.705 0 no
5 32 male 28.88 0 no
6 31 female 25.74 0 no
7 46 female 33.44 1 no
8 37 female 27.74 3 no
9 37 male 29.83 2 no
10 60 female 25.84 0 no
11 25 male 26.22 0 no
12 62 female 26.29 0 yes
13 23 male 34.4 0 no
14 56 female 39.82 0 no
SOURCE FILE: insurance.csv FULL DATA SET: 1338 rows
Information
Details
Help
Edit
LOCATION
Medical Premium charges
DATA REFINERY FLOW NAME
insurance.csv_flow
Enter a description of the Data Refinery flow
STEPS
1
DATA REFINERY FLOW OUTPUT
Location


Projects / Medical Premium charges / insurance.csv / Refine data
Steps
Use a code template to add a step
Data
Profile
Visualizations
FREQUENCY
FREQUENCY
FREQUENCY
STATISTICS
Interquartile Range 24
Minimum 18
Maximum 64
Median 39
STATISTICS
Maximum length 6
Minimum length 4
Mean length 4.98953662182362
Unique 2
STATISTICS
Interquartile Range 8.3975
Minimum 15.96
Maximum 53.13
Median 30.4
Information
Details
Help
Edit
LOCATION
Medical Premium charges
DATA REFINERY FLOW NAME
insurance.csv_flow
Enter a description of the Data Refinery flow
STEPS
1
DATA REFINERY FLOW OUTPUT
Location



View Output: Data Audit of [7 fields]

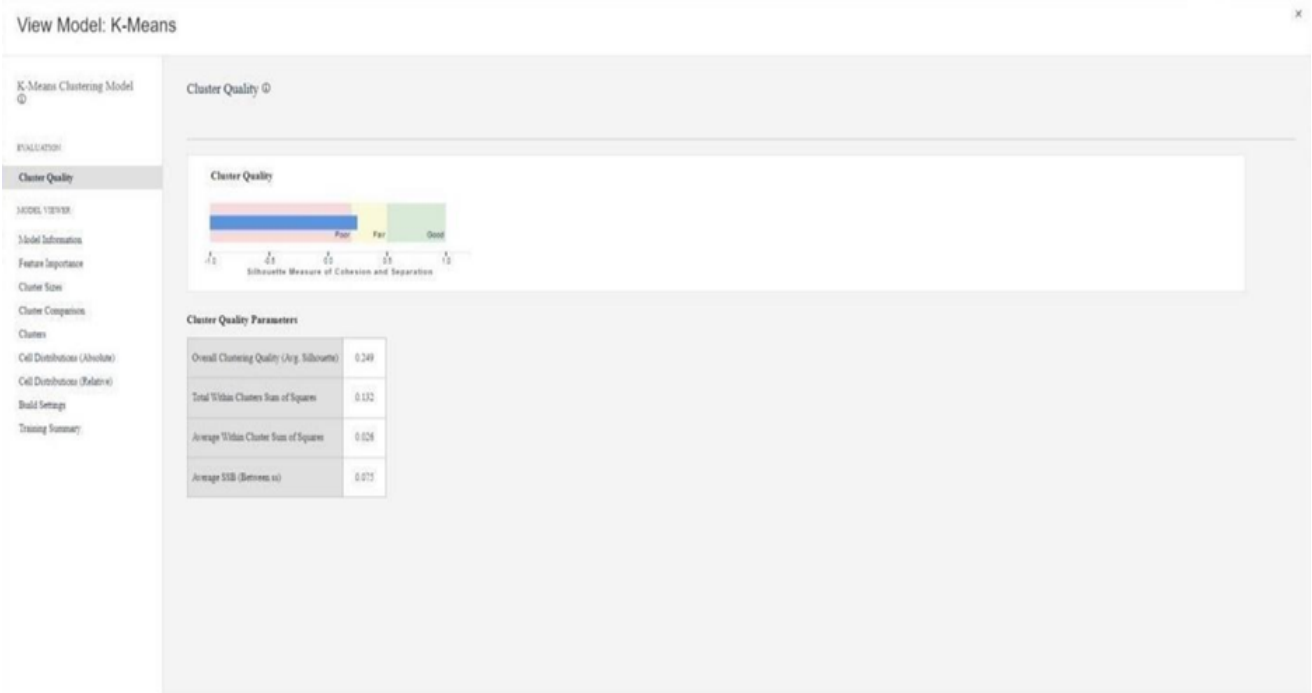
	Field	Graph	Measurement	Min	Max	Mean	Std. Dev	Skewness	Unique	Valid
1	age		Continuous	18	64	39.207	14.050	0.056	--	1338
2	sex		Categorical	--	--	--	--	--	2	1338
3	bmi		Continuous	15.960	53.130	30.663	6.098	0.284	--	1338
4	children		Continuous	0	5	1.095	1.205	0.938	--	1338
5	smoker		Categorical	--	--	--	--	--	2	1338
6	region		Categorical	--	--	--	--	--	4	1338

View Output: Data Audit of [7 fields]

6	region		Categorical	--	--	--	--	--	4	1338
7	premium		Continuous	1121.874	63770.428	13270.422	12110.011	1.516	--	1338

	Field	Measurement	Outliers	Extremes	Action	Impute Missing	Method	% Complete	Valid Records	Null Value	Empty String
1	age	Continuous	0	0	None	Never	Fixed	100.000	1338	0	0
2	sex	Categorical	--	--	--	Never	Fixed	100.000	1338	0	0
3	bmi	Continuous	4	0	None	Never	Fixed	100.000	1338	0	0
4	children	Continuous	18	0	None	Never	Fixed	100.000	1338	0	0
5	smoker	Categorical	--	--	--	Never	Fixed	100.000	1338	0	0
6	region	Categorical	--	--	--	Never	Fixed	100.000	1338	0	0
7	premium	Continuous	7	0	None	Never	Fixed	100.000	1338	0	0

View Model: K-Means



View Model: K-Means

K-Means Clustering Model ⓘ

EVALUATION

Cluster Quality

MODEL VIEWER

Model Information

Feature Importance

Cluster Sizes

Cluster Comparison

Clusters

Cell Distributions (Absolute)

Cell Distributions (Relative)

Build Settings

Training Summary

Model Information ⓘ

Algorithm		K-Means
Model Class		Center Based
Number of Features		7
Distance Measure		Euclidean
Number of Clusters		5
Number of instances in each cluster	Cluster 1	81 (8.7%)
	Cluster 2	368 (39.57%)
	Cluster 3	112 (12.05%)
	Cluster 4	190 (20.41%)
	Cluster 5	180 (19.35%)
Ratio of sizes (Largest to smallest)		4.543

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K-Means Clustering Model ⓘ

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Cell Distributions (Relative)

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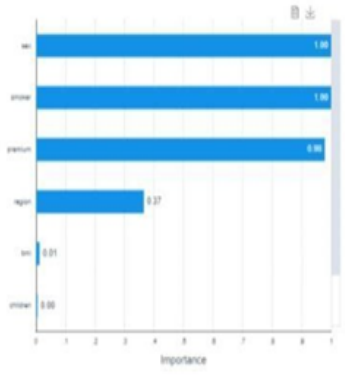
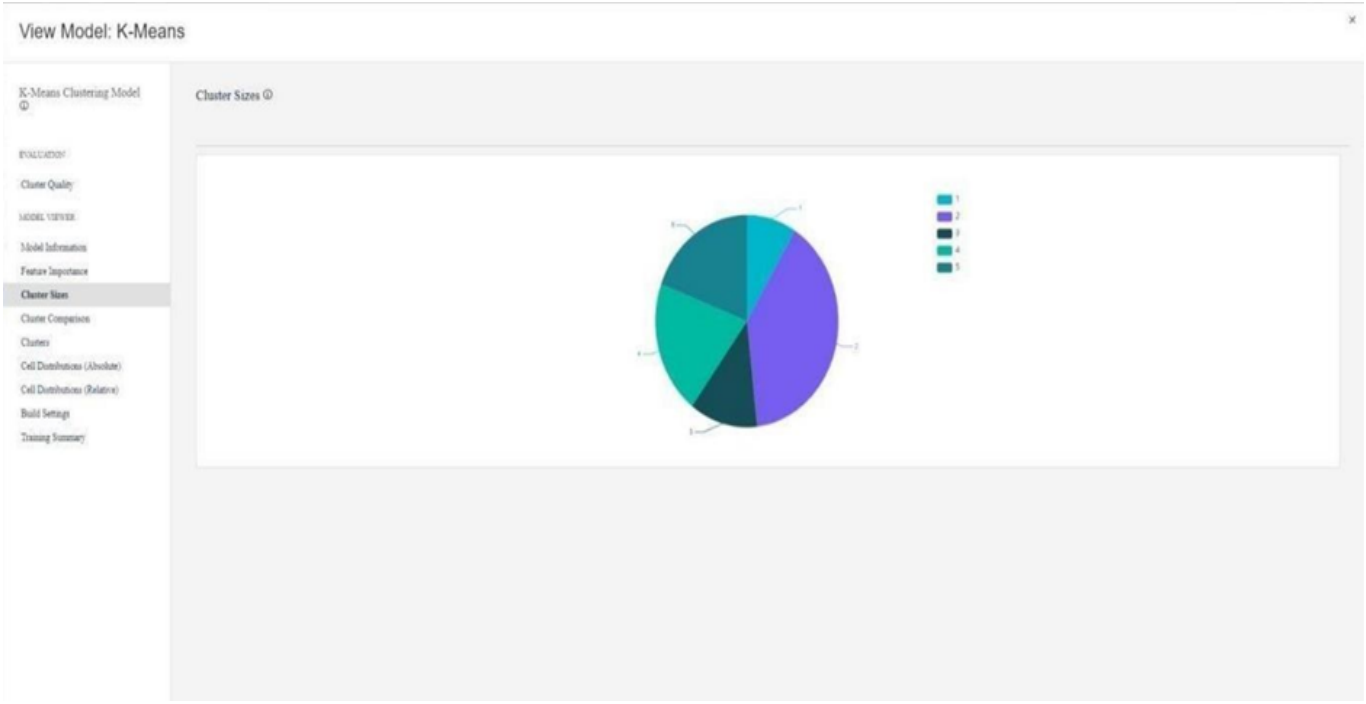
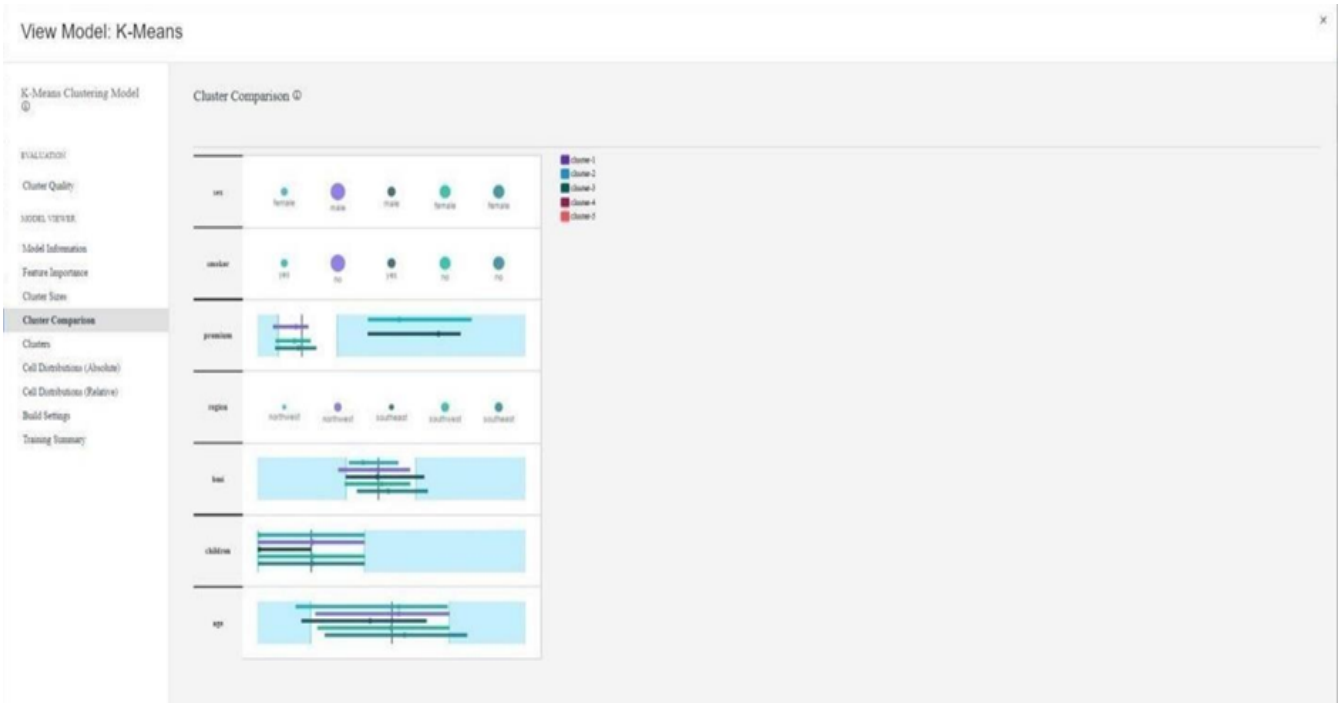
Feature Importance ⓘ




View Model: K-Means
K-Means Clustering Model
Cluster Sizes
Cluster Quality
Model Information
Feature Importance
Cluster Sizes
Cluster Comparison
Clusters
Cell Distributions (Absolute)
Cell Distributions (Relative)
Build Settings
Training Summary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Cell Distributions (Relative)
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Training Summary
sex
smoker
region
bmi
children
age


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K-Means Clustering Model
EVALUATION
Cluster Quality
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Clusters
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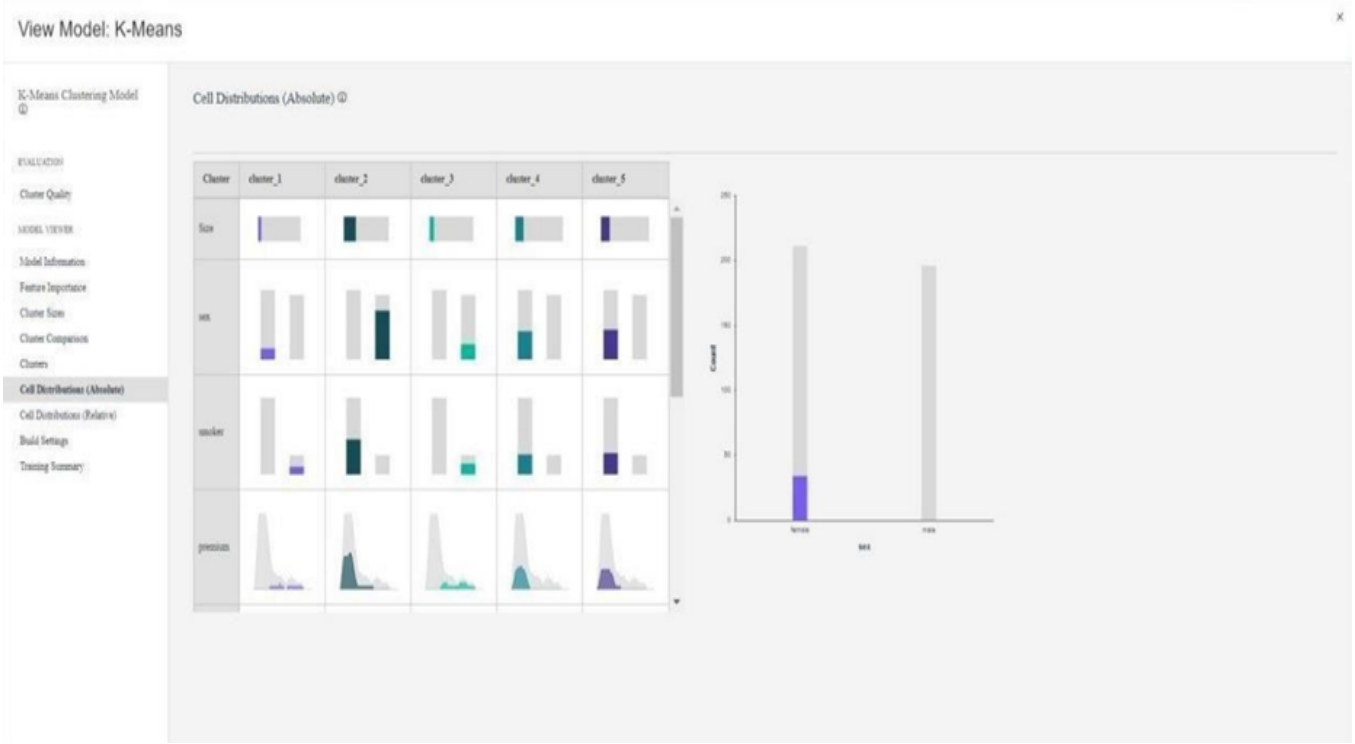
Cell Distributions (Relative)
Build Settings
Training Summary
Clusters
Input Importance
Cluster
cluster_1
cluster_2
cluster_3
cluster_4
cluster_5
Size
Inputs
sex
female (100.00%)
male (100.00%)
male (100.00%)
female (100.00%)
female (100.00%)
smoker
yes (100.00%)
no (100.00%)
yes (100.00%)
no (100.00%)
no (100.00%)
premium
30921.55
8866.62
31714.55
8191.76
8842.23
region
northwest
(35.29%)
northwest
(27.52%)
southwest
(38.30%)
southwest
(53.49%)
southwest
(51.65%)
bmi
29.95
30.52
30.70
30.39
31.77
Count
sex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EVALUATION
Cluster Quality
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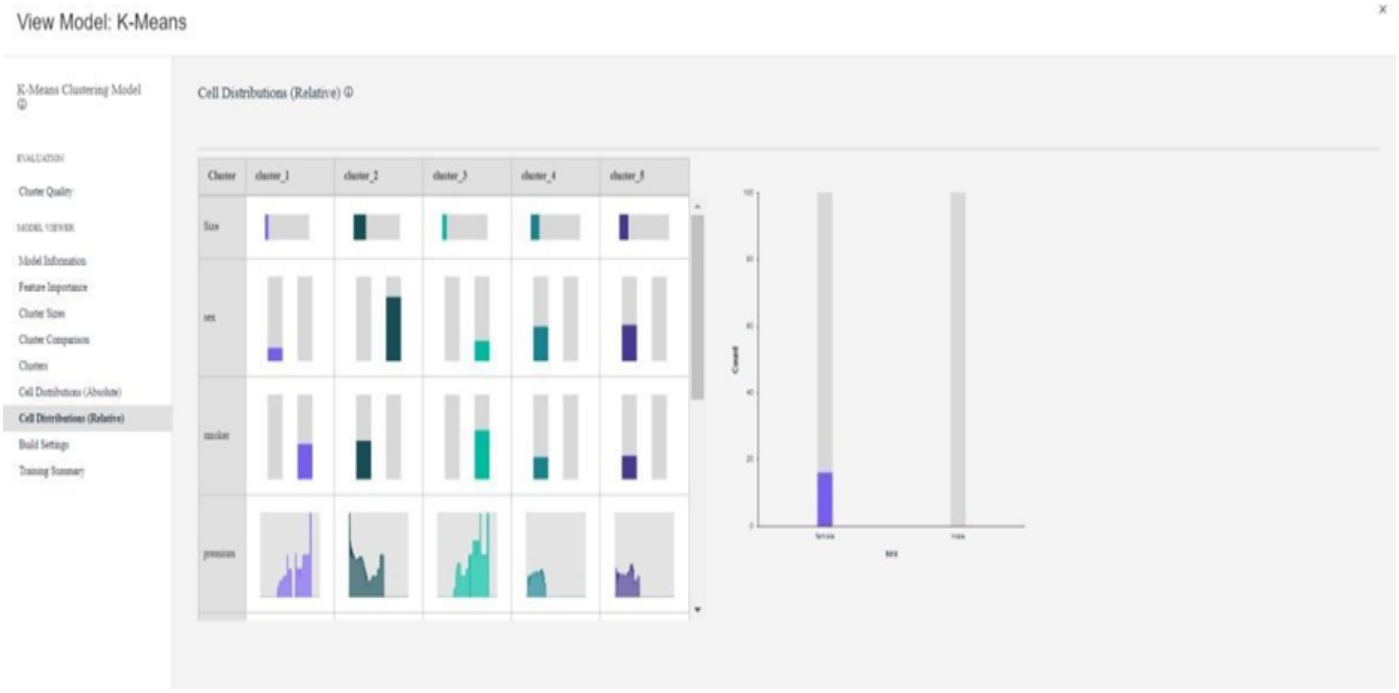
Model Information
Feature Importance
Cluster Sizes
Cluster Comparison
Clusters
Cell Distributions (Absolute)
Cell Distributions (Relative)
Build Settings
Training Summary
Cell Distributions (Absolute)
Cluster
cluster_1
cluster_2
cluster_3
cluster_4
cluster_5
Size
sex
smoker
premium
Count
sex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Cluster Quality
MODEL VIEWER
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Cluster Comparison
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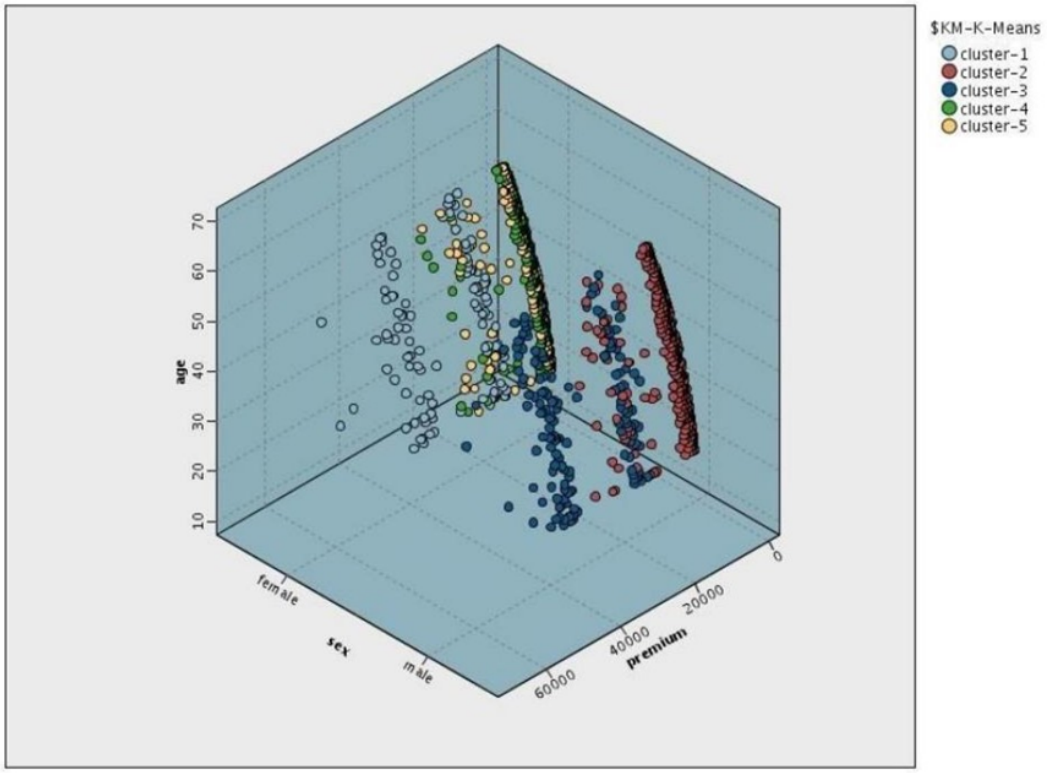
Cell Distributions (Absolute)
Cell Distributions (Relative)
Build Settings
Training Summary
Cell Distributions (Relative)
Cluster
cluster_1
cluster_2
cluster_3
cluster_4
cluster_5
Size
sex
smoker
premium
Count
sex


$KM-K-Means
cluster-1
cluster-2
cluster-3
cluster-4
cluster-5
age
10
20
30
40
50
60
70
female
sex
male
60000
40000
20000
0
premium