

PRESERVE.  
SET DECIMAL DOT.

GET DATA /TYPE=TXT  
/FILE="\\kc.umkc.edu\kc-users\home\as9nb\My Documents\GP3\MLdata.csv"  
/DELIMITERS=","  
/QUALIFIER='''  
/ARRANGEMENT=DELIMITED  
/FIRSTCASE=2  
/DATATYPEMIN PERCENTAGE=95.0  
/VARIABLES=  
case AUTO  
mode AUTO  
mean AUTO  
median AUTO  
std AUTO  
PC1 AUTO  
PC2 AUTO  
PC3 AUTO  
PC4 AUTO  
PC5 AUTO  
outcome AUTO  
prediction AUTO  
/MAP.  
RESTORE.  
CACHE.  
EXECUTE.

Data written to the working file.  
12 variables and 200 cases written.

Variable: case	Type: Number	Format : F3
Variable: mode	Type: Number	Format : F3
Variable: mean	Type: Number	Format : F7.3
Variable: median	Type: Number	Format : F3
Variable: std	Type: Number	Format : F6.3
Variable: PC1	Type: Number	Format : E9.2
Variable: PC2	Type: Number	Format : F9.3
Variable: PC3	Type: Number	Format : F10.4
Variable: PC4	Type: Number	Format : F9.3
Variable: PC5	Type: Number	Format : F9.3

Variable: outcome                   Type: Number   Format : F1  
Variable: prediction                Type: Number   Format : F1

Substitute the following to build syntax for these data.

```
/VARIABLES=  
case F3  
mode F3  
mean F7.3  
median F3  
std F6.3  
PC1 E9.2  
PC2 F9.3  
PC3 F10.4  
PC4 F9.3  
PC5 F9.3  
outcome F1  
prediction F1
```

DATASET NAME DataSet1 WINDOW=FRONT.

\*Multilayer Perceptron Network.

MLP outcome (MLEVEL=N) WITH mode mean median std PC1 PC2 PC3 PC4 PC5

```
/RESCALE COVARIATE=STANDARDIZED  
/PARTITION TRAINING=7 TESTING=3 HOLDOUT=0  
/ARCHITECTURE AUTOMATIC=YES (MINUNITS=1 MAXUNITS=50)  
/CRITERIA TRAINING=BATCH OPTIMIZATION=GRADIENTDESCENT LEARNINGINITIAL= 0.4 M  
OMENTUM= 0.9  
INTERVALCENTER=0 INTERVALOFFSET=0.5 MEMSIZE=1000  
/PRINT CPS NETWORKINFO SUMMARY CLASSIFICATION  
/PLOT NETWORK ROC  
/STOPPINGRULES ERRORSTEPS= 1 (DATA=AUTO) TRAININGTIMER=ON (MAXTIME=15) MAXEP  
OCHS=AUTO  
ERRORCHANGE=1.0E-4 ERRORRATIO=0.001  
/MISSING USERMISSING=EXCLUDE .
```

## Multilayer Perceptron

## Notes

Output Created		14-APR-2021 17:36:15
Comments		
Input	Data	\\kc.umkc.edu\kc-users\home\as9nb\My Documents\GP3\MLdata.csv
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	200
Missing Value Handling	Definition of Missing	User- and system-missing values are treated as missing.
	Cases Used	Statistics are based on cases with valid data for all variables used by the procedure.
Weight Handling		not applicable

## Notes

Syntax		MLP outcome (MLEVEL=N) WITH mode mean median std PC1 PC2 PC3 PC4 PC5 /RESCALE COVARIATE=STANDARD IZED /PARTITION TRAINING=7 TESTING=3 HOLDOUT=0 /ARCHITECTURE AUTOMATIC=YES (MINUNITS=1 MAXUNITS=50) /CRITERIA TRAINING=BATCH OPTIMIZATION=GRADIE NTDESCENT LEARNINGINITIAL= 0.4 MOMENTUM= 0.9 INTERVALCENTER=0 INTERVALOFFSET=0.5 MEMSIZE=1000 /PRINT CPS NETWORKINFO SUMMARY CLASSIFICATION /PLOT NETWORK ROC /STOPPINGRULES ERRORSTEPS= 1 (DATA=AUTO) TRAININGTIMER=ON (MAXTIME=15) MAXEPOCHS=AUTO ERRORCHANGE=1. 0E-4 ERRORRATIO=0. 001 /MISSING ...
Resources	Processor Time	00:00:03.94
	Elapsed Time	00:00:02.20

[DataSet1]

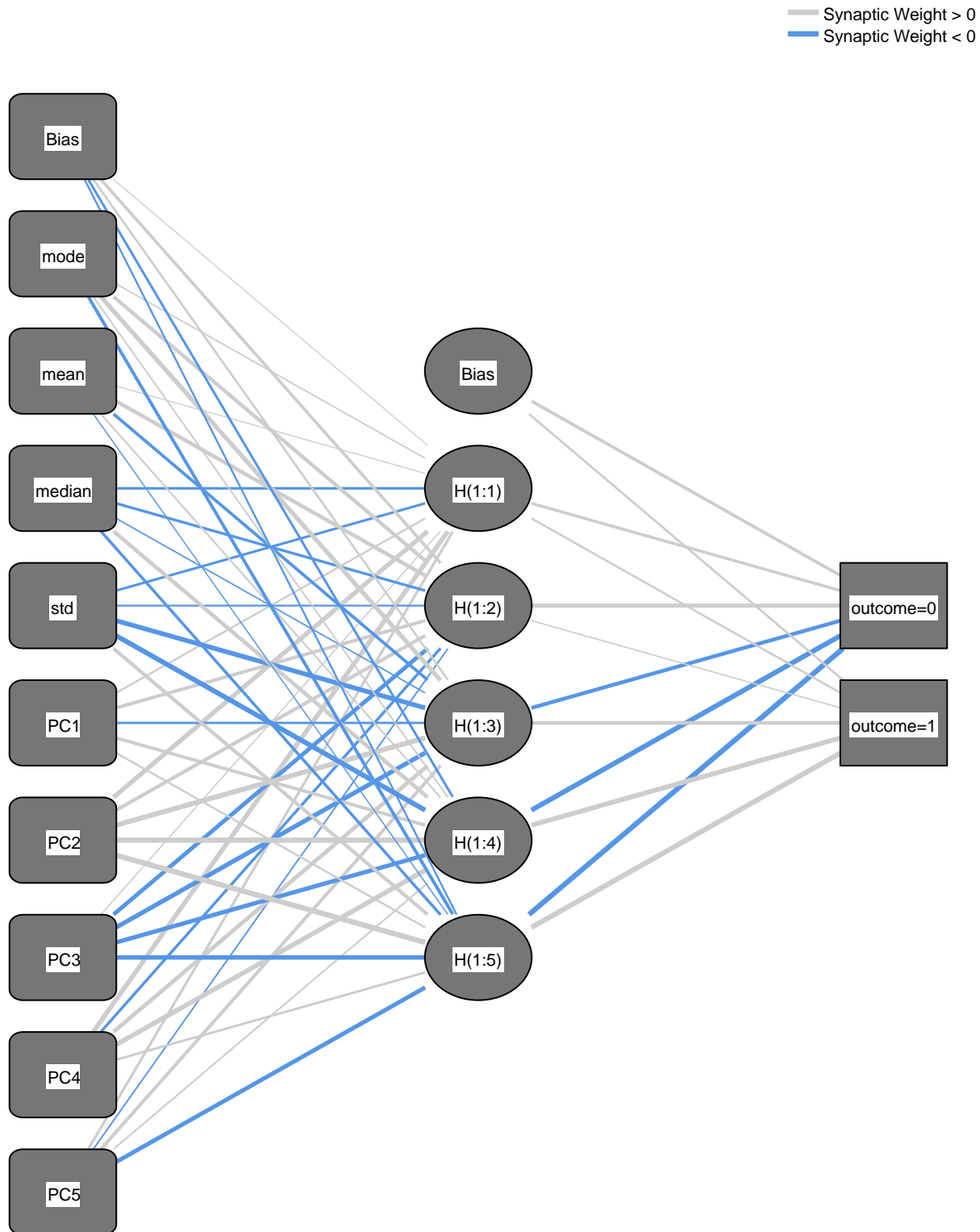
## Case Processing Summary

		N	Percent
Sample	Training	142	71.0%
	Testing	58	29.0%
Valid		200	100.0%
Excluded		0	
Total		200	

## Network Information

Input Layer	Covariates	1	mode
		2	mean
		3	median
		4	std
		5	PC1
		6	PC2
		7	PC3
		8	PC4
		9	PC5
		Number of Units <sup>a</sup>	
	Rescaling Method for Covariates		Standardized
Hidden Layer(s)	Number of Hidden Layers		1
	Number of Units in Hidden Layer 1 <sup>a</sup>		5
	Activation Function		Hyperbolic tangent
Output Layer	Dependent Variables	1	outcome
	Number of Units		2
	Activation Function		Softmax
	Error Function		Cross-entropy

a. Excluding the bias unit



Hidden layer activation function: Hyperbolic tangent

Output layer activation function: Softmax

### Model Summary

Training	Cross Entropy Error	3.967
	Percent Incorrect Predictions	1.4%
	Stopping Rule Used	1 consecutive step(s) with no decrease in error <sup>a</sup>
	Training Time	0:00:00.02
Testing	Cross Entropy Error	9.543
	Percent Incorrect Predictions	3.4%

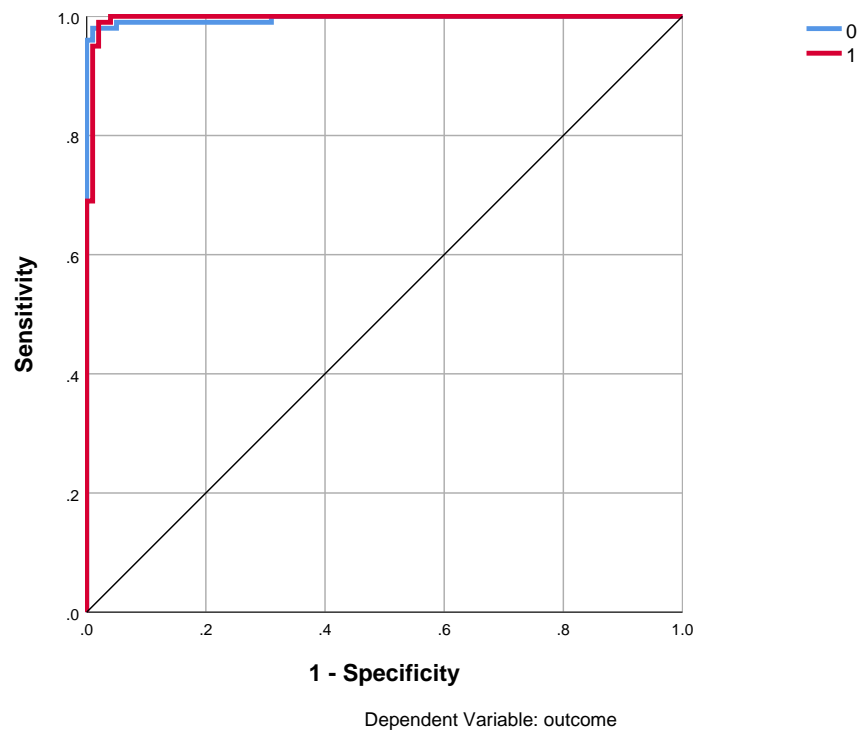
Dependent Variable: outcome

a. Error computations are based on the testing sample.

### Classification

Sample	Observed	Predicted		Percent Correct
		0	1	
Training	0	71	1	98.6%
	1	1	69	98.6%
	Overall Percent	50.7%	49.3%	98.6%
Testing	0	27	1	96.4%
	1	1	29	96.7%
	Overall Percent	48.3%	51.7%	96.6%

Dependent Variable: outcome



### Area Under the Curve

		Area
outcome	0	.996
	1	.996