

Chapter 111

Unstacking Data

Introduction

The Unstack Data tool in **NCSS** can be used to quickly break up data from a single column into several columns. The tool allows you to unstack information in associated “label” columns as well so that information about each observation is maintained in the unstacked data. The Unstack Data tool can be accessed from the Data menu on the Data window.

This chapter will provide information about the various options available on the unstacking tool and also provide several examples to help you use the tool effectively.

Unstack Data Tool Options

The options on Unstack Data tool window are described below. Unless otherwise indicated, all examples will assume that unstacking using grouping values is used.

Type

Choose how the data will be unstacked. The options are

- **Unstack Data using Grouping Values**

In this unstacking type, each column is unstacked according to the values in associated grouping columns. You must specify at least one Grouping Value Column when using this method.

*Example – Result of unstacking **X** using grouping values with **Group** as the grouping value column:*

Group	X					
None	1	→	None	Low	Medium	High
Medium	2		1	3	2	4
Low	3		8	6	7	5
High	4		10	9	12	11
High	5					
Low	6					
Medium	7					
None	8					
Low	9					
None	10					
High	11					
Medium	12					

Unstacking Data

- **Unstack Data Column by Column**

In this unstacking type, columns are created one at a time in sequence from the input data. You must specify the number of output columns to create when using this method.

Example – Result of unstacking X column by column into 3 output columns:

X	X1	X2	X3
1	1	5	9
2	2	6	10
3	3	7	11
4	4	8	12
5			
6			
7			
8			
9			
10			
11			
12			

- **Unstack Data Row by Row**

In this unstacking type, data is written one row at a time to the output columns. You must specify the number of output columns to create when using this method.

Example – Result of unstacking X row by row into 3 output columns:

X	X1	X2	X3
1	1	2	3
2	4	5	6
3	7	8	9
4	10	11	12
5			
6			
7			
8			
9			
10			
11			
12			

Input Columns to Unstack

The options in this section allow you to specify the input data columns to be unstacked, grouping columns if required, and optional label columns to be carried along with the unstacked data.

Data Columns to Unstack

Click on the column selection button at the right to select columns from the dataset to unstack. When multiple columns are entered, the unstacking procedure will be carried out separately for each column.

Example – Result of unstacking X and Y with Group as the grouping value column:

Group	X	Y	X, Group = A	X, Group = B	Y, Group = A	Y, Group = B
A	1	a	1	2	a	b
B	2	b	3	6	c	f
A	3	c	4	7	d	g
A	4	d	5	8	e	h
A	5	e	9	11	i	k
B	6	f	10		j	
B	7	g	12		l	
B	8	h				
A	9	i				
A	10	j				
B	11	k				
A	12	l				

Unstacking Data

Grouping Value Columns (Displayed only when Unstack Type = Unstack Data using Grouping Values)

Click on the column selection button at the right to select grouping columns by which to unstack the data columns. When multiple columns are entered, a separate output column is create for each combination of the grouping values.

Example – Result of unstacking X with Grp1 and Grp2 as grouping value columns:

Grp1	Grp2	X
1	A	1
1	B	2
1	A	3
1	A	4
1	A	5
1	B	6
2	B	7
2	B	8
2	A	9
2	A	10
2	B	11
2	A	12

→

Grp1 = 1, Grp2 = A	Grp1 = 1, Grp2 = B	Grp1 = 2, Grp2 = A	Grp1 = 2, Grp2 = B
1	2	9	7
3	6	10	8
4		12	11
5			

Unstack each data column into [Value] output columns (Displayed only when Unstack Type = Unstack Data Column by Column or Unstack Data Row by Row)

Select the number of output columns to create when using column by column or row by row unstacking.

Example – Result of unstacking X column by column into 4 output columns:

X
1
2
3
4
5
6
7
8
9
10
11
12

→

X1	X2	X3	X4
1	4	7	10
2	5	8	11
3	6	9	12

Label Columns (Optional)

Choose one or more columns whose values will be used to label the unstacked data. Each unstacked data value will be labeled with the values in corresponding rows from these columns. When values in a single output row have different labels, all corresponding labels will be listed. This entry is optional.

*Example – Result of unstacking X with **Group** as the grouping value column and **Label** as the label column:*

Label	Group	X
Item 1	None	1
Item 1	Medium	2
Item 1	Low	3
Item 1	High	4
Item 2	High	5
Item 2	Low	6
Item 2	Medium	7
Item 2	None	8
Item 3	Low	9
Item 3	None	10
Item 3	High	11
Item 3	Medium	12

→

Label	None	Low	Medium	High
Item 1	1	3	2	4
Item 2	8	6	7	5
Item 3	10	9	12	11

*Example – Result of unstacking X with **Grp2** as the grouping value column and **Grp1** as the label column (output has multiple labels on two rows):*

Grp1	Grp1	X
1	A	1
1	B	2
1	A	3
1	A	4
1	A	5
1	B	6
2	B	7
2	B	8
2	A	9
2	A	10
2	B	11
2	A	12

→

Grp1	A	B
1	1	2
1	3	6
1, 2	4	7
1, 2	5	8
2	9	11
2	10	
2	12	

Output

The options in this section allow you to specify where to store the unstacked data and labels and how to arrange the unstacked data. Additional output options are also provided as described below.

First Output Storage Column for Unstacked Data and Labels

Choose the first column in which to store the unstacked data and labels. The data and labels will be stored in contiguous columns, starting with the column specified here. The required number of columns to store everything will be calculated by the tool. The input columns, grouping columns, and label columns cannot be included among the output storage columns.

Usually, you'll select an empty range of columns for the unstacked data storage.

Warning: Existing data in any of the required storage columns will be overwritten and lost. Choose the first output storage column carefully so that needed data is not lost.

*Example – Result of unstacking X with **Group** as the grouping value column and **C5** as the first output storage column:*

Group	X		C5 (None)	C6 (Low)	C7 (Medium)	C8 (High)
None	1	→	1	3	2	4
Medium	2		8	6	7	5
Low	3		10	9	12	11
High	4					
High	5					
Low	6					
Medium	7					
None	8					
Low	9					
None	10					
High	11					
Medium	12					

Data Order (Only used when unstacking multiple data columns at once)

Choose how the unstacked data columns are ordered when there are multiple data column being unstacked. The options are

- Arrange Unstacked Data by Column then Group**

Output columns are presented in blocks created column by column.

Example – Result of unstacking X and Y with Group as the grouping value column and Data Order = Arrange Unstacked Data by Column then Group:

Group	X	Y
A	1	a
B	2	b
A	3	c
A	4	d
A	5	e
B	6	f
B	7	g
B	8	h
A	9	i
A	10	j
B	11	k
A	12	l

→

X, Group = A	X, Group = B	Y, Group = A	Y, Group = B
1	2	a	b
3	6	c	f
4	7	d	g
5	8	e	h
9	11	i	k
10		j	
12		l	

- Arrange Unstacked Data by Group then Column**

Output columns are presented in blocks created group by group.

Example – Result of unstacking X and Y with Group as the grouping value column and Data Order = Arrange Unstacked Data by Group then Column:

Group	X	Y
A	1	a
B	2	b
A	3	c
A	4	d
A	5	e
B	6	f
B	7	g
B	8	h
A	9	i
A	10	j
B	11	k
A	12	l

→

X, Group = A	Y, Group = A	X, Group = B	Y, Group = B
1	a	2	b
3	c	6	f
4	d	7	g
5	e	8	h
9	i	11	k
10	j		
12	l		

Unstacking Data

Label Order

Choose how the unstacked data and labels are ordered, relative to each other. The options are

- **Output Label Columns before Unstacked Data**

Labels are output first, followed by the columns of unstacked data.

Example – Result of unstacking X row by row into 4 columns with Label as the label column and Label Order = Output Label Columns before Unstacked Data:

Label	X
Item 1	1
Item 1	2
Item 1	3
Item 1	4
Item 2	5
Item 2	6
Item 2	7
Item 2	8
Item 3	9
Item 3	10
Item 3	11
Item 3	12

→

Label	X1	X2	X3	X4
Item 1	1	2	3	4
Item 2	5	6	7	8
Item 3	9	10	11	12

- **Output Label Columns after Unstacked Data**

The columns of unstacked data are output first, followed by the columns of labels.

Example – Result of unstacking X row by row into 4 columns with Label as the label column and Label Order = Output Label Columns after Unstacked Data:

Label	X
Item 1	1
Item 1	2
Item 1	3
Item 1	4
Item 2	5
Item 2	6
Item 2	7
Item 2	8
Item 3	9
Item 3	10
Item 3	11
Item 3	12

→

X1	X2	X3	X4	Label
1	2	3	4	Item 1
5	6	7	8	Item 2
9	10	11	12	Item 3

Rename output columns using input data information

Check this box to rename the output storage columns with identifying names from the input columns.

Example – Result of unstacking X with Group as the grouping value column, Rename output columns... checked, and first output storage column = C3:

Group	X
None	1
Medium	2
Low	3
High	4
High	5
Low	6
Medium	7
None	8
Low	9
None	10
High	11
Medium	12

→

X_Group_None	X_Group_Low	X_Group_Medium	X_Group_High
1	3	2	4
8	6	7	5
10	9	12	11

Example – Result of unstacking X with Group as the grouping value column, Rename output columns... unchecked, and first output storage column = C3:

Group	X
None	1
Medium	2
Low	3
High	4
High	5
Low	6
Medium	7
None	8
Low	9
None	10
High	11
Medium	12

→

C3	C4	C5	C6
1	3	2	4
8	6	7	5
10	9	12	11

Write output notes to column info table

Check this box to store information about the unstacking input and options used to create the output columns.

*Example – Column info note in an output column (corresponding to **Group = None**) after unstacking **X** with **Group as the grouping value column** and **Write output notes... checked**.*

Unstacked Column Details:
 Name = X__Group_None
 Number = 1 of 4
 Column Unstacked = X
 Unstacking Type = Using Grouping Values

Grouping Column(s) and Value(s) Used to Create This Column:
 Number of Grouping Columns = 1
 Group = "None"

Remove missing values

Check this box to remove missing values from the unstacked output columns.

*Example – Result of unstacking **X** with **Group as the grouping value column** and **Remove Missing Values checked**:*

Group	X
None	1
Medium	2
Low	3
High	
High	5
Low	6
Medium	7
None	
Low	9
None	10
High	11
Medium	12

→

None	Low	Medium	High
1	3	2	5
10	6	7	11
	9	12	

Unstacking Data

Example – Result of unstacking **X** with **Group as the grouping value column** and **Remove Missing Values unchecked**:

Group	X		None	Low	Medium	High
None	1	→	1	3	2	
Medium	2			6	7	5
Low	3		10	9	12	11
High						
High	5					
Low	6					
Medium	7					
None						
Low	9					
None	10					
High	11					
Medium	12					