

## Chapter 110

# Stacking Data

## Introduction

The Stack Data tool in **NCSS** can be used to quickly organize data from several columns into a single column. The tool allows you to stack information in associated “label” columns as well so that information about each observation is maintained in the stacked data. The data stacking tool can also be used to augment the data in one or more columns by replicating the stack process  $N$  number of times. A single column can also be stacked upon itself in place to either remove missing values or to augment the data in the column. The Stack 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 stacking tool and also provide several examples to help you use the tool effectively.

## Stack Data Tool Options

The options on Stack Data tool window are described below. Unless otherwise indicated, all examples will assume that column by column stacking is used.

### Type

Choose how the data will be stacked. The options are

- **Stack Data Column by Column**

In this stacking type, each column is stacked as a whole, one column upon another.

*Example – Result of stacking X, Y, and Z column by column:*

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

→

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

Stacking Data

- **Stack Data Row by Row**

In this stacking type, values from each column are read row by row and then stacked.

*Example – Result of stacking X, Y, and Z row by row:*

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

→

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

## Input Columns to Stack

The options in this section allow you to specify the input data columns to be stacked and optional label columns to be carried along with the stacked data.

### Data Columns to Stack

Enter the names (or numbers) and order of columns to stack, with columns separated by commas. Click on the column selection button at the right to load the Column Selection window to select columns to stack from the list of columns in the dataset. Use the up and down arrows on Column Selection window to arrange the stacking order.

*Example – Columns = X, Z:*

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

→

Result
1
2
3
4
9
10
11
12

Stacking Data

Example - **Columns = Z, Y, X:**

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

→

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

**Store the names of data columns as labels**

Check this option if you want to add an additional column of labels with values derived from the input column names.

Example - Result of stacking **X, Y, and Z** with **Label** as a label column and **Store the names of data columns as labels** checked:

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

→

Label	Column	Result
None	X	1
Low	X	2
Medium	X	3
High	X	4
None	Y	5
Low	Y	6
Medium	Y	7
High	Y	8
None	Z	9
Low	Z	10
Medium	Z	11
High	Z	12

### Label Columns (Optional)

Choose one or more columns whose values will be used to label the stacked data. Each stacked data value will be labeled with the values in corresponding rows from these columns. This entry is optional.

*Example – Result of stacking X, Y, and Z with Label as a label column:*

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

→

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

*Example – Result of stacking X and Z with two label columns, Label1 and Label2:*

Label1	Label2	X	Y	Z
Item 1	Low	1	5	9
Item 2	High	2	6	10
Item 3	Low	3	7	11
Item 4	High	4	8	12

→

Label1	Label2	Result
Item 1	Low	1
Item 2	High	2
Item 3	Low	3
Item 4	High	4
Item 1	Low	9
Item 2	High	10
Item 3	Low	11
Item 4	High	12

---

## Output

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

### First Output Storage Column for Stacked Data and Labels

Choose the first column in which to store the stacked 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 and label columns cannot be included among the output storage columns. The only exception to this rule is when you are stacking a single column in place upon itself (with replicates as described below) without labels.

Stacking Data

Usually, you'll select an empty range of columns for the stacked 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 stacking X, Y, and Z with Label as a label column and First Output Storage Column = C4:*

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

→

C4	C5
None	1
Low	2
Medium	3
High	4
None	5
Low	6
Medium	7
High	8
None	9
Low	10
Medium	11
High	12

*Example – Result of stacking X with Replicates = 3 and First Output Storage Column = X:*

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

→

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

## Label Order

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

- **Output Label Columns before Stacked Data**

Labels are output first, followed by the column of stacked data.

*Example – Result of stacking X, Y, and Z with a label column, **Label**, and **Label Order = Output Label Columns before Stacked Data**:*

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

→

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

- **Output Label Columns after Stacked Data**

The column of stacked data is output first, followed by the columns of labels.

*Example – Result of stacking X, Y, and Z with a label column, **Label**, **Label Order = Output Label Columns after Stacked Data** and **Store the names of data columns as labels** checked.*

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

→

Result	Label	Column
1	None	X
2	Low	X
3	Medium	X
4	High	X
5	None	Y
6	Low	Y
7	Medium	Y
8	High	Y
9	None	Z
10	Low	Z
11	Medium	Z
12	High	Z

## Replicates

Specify how many times to apply the stack. The data will be stacked completely and then the procedure repeated for each replicate.

*Example – Stack Y and Z row by row with Replicates = 2:*

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

→

Result
5
9
6
10
7
11
8
12
5
9
6
10
7
11
8
12

*Example – Stack Z into a new column with Replicates = 4:*

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

→

Result
9
10
11
12
9
10
11
12
9
10
11
12
9
10
11
12

## Rename output columns using input data information

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

*Example - Rename output columns... checked:*

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

→

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

*Example - Rename output columns... unchecked:*

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

→

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



### Write output notes to column info table

Check this box to store information about the stacking input and options used to create the output column.

Example – **Column info note** in the output column after stacking **X**, **Y**, and **Z** with **Write output notes... checked**.

Stacked Column Details:  
 Name = DataSt  
 Number of Columns Stacked = 3  
 Names of Columns Stacked = X, Y, Z  
 Stacking Type = Column by Column  
 Replicates = 1

### Remove missing values

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

Example – Stack **X**, **Y**, and **Z** with **Remove missing values checked**:

X	Y	Z
1	5	9
	6	10
3		11
4	8	

→

Result
1
3
4
5
6
8
9
10
11

Example – Result of stacking **X** with **Remove missing values checked** and **First Output Storage Column = X**:

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

→

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