

**spmatrix fromdata** — Create custom weighting matrix from data

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## Description

`spmatrix fromdata` creates custom spatial weighting matrices from Sp data.

There are two other ways to create custom weighting matrices: `spmatrix userdefined` and `spmatrix spfrommata`. Those ways may require less work, but they require knowledge of Mata.

## Quick start

Create spectral-normalized spatial weighting matrix `Wnew` from the  $N \times N$  “matrix” stored in variables `x1, x2, ..., xn`

```
spmatrix fromdata Wnew = x1 - xn
```

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## Syntax

```
spmatrix fromdata spmatname = varlist [ , options ]
```

*spmatname* is the name of the spatial weighting matrix to be created.

<i>options</i>	Description
<code>idistance</code>	store reciprocal of elements
<code>normalize(<i>normalize</i>)</code>	type of normalization; default is <code>normalized(spectral)</code>
<code>replace</code>	replace existing weighting matrix

## Options

`idistance` converts distance to inverse distance by storing the reciprocal of the elements.

`normalize(normalize)` specifies how the resulting matrix is to be scaled. `normalize(spectral)` is the default. `normalize(minmax)`, `normalize(row)`, and `normalize(none)` are also allowed. See [SP] [spmatrix create](#) for full details of the option and [Choosing weighting matrices and their normalization](#) in [SP] [spregress](#) for details about normalization.

`replace` specifies that matrix *spmatname* be overwritten if it already exists.

### Remarks and examples

The `fromdata` in `spmatrix fromdata` means that the matrix itself is stored as variables in the data. Some researchers are used to working this way, and if you are among them, `spmatrix fromdata` is for you.

If the matrix is stored with the variables because you created it using the data, you may want to consider using `spmatrix userdefined` and `spmatrix spfrommata` instead. Both require knowledge of Mata, so that is a disadvantage if you do not already know Mata. On the other hand, `spmatrix userdefined` does not require much knowledge and handles the creation of most custom weighting matrices simply and elegantly. `spmatrix spfrommata` requires more extensive knowledge of Mata, but it will handle problems that no other method can.

The problem with `spmatrix fromdata` is not that the matrix is stored in the data but that filling in the matrix is more work than it needs to be. Stata draws a distinction between rows and columns. Rows are observations and columns are variables. Stata is perfectly willing to sweep down observations, but few Stata commands will sweep across variables. Mata, being a matrix language, draws no such distinction.

### Also see

[SP] [spmatrix](#) — Categorical guide to the `spmatrix` command

[SP] [spmatrix spfrommata](#) — Copy Mata matrix to Sp

[SP] [spmatrix userdefined](#) — Create custom weighting matrix

[SP] [Intro](#) — Introduction to spatial data and SAR models

*Mata Reference Manual*