

**Title**

**scpc** — Spatial Correlation Robust Inference via SCPC.

**Syntax**

**scpc** [*, options*]

<i>options</i>	Description
<b>avc(#)</b>	overrides default value of 0.03 for the maximal average pairwise correlation (must be between 0.001 and 0.99)
<b>uncond</b>	overrides default of computing critical values conditional on regressors to compute "unconditional" SCPC inference as described in <a href="#">Müller and Watson (2021)</a> .
<b>latlong</b>	if present, expects <i>s_1</i> to contain latitude and <i>s_2</i> to be longitude and uses implied great-circle distance; if not present, computes Euclidian distance between coordinates defines by <i>s_*</i> variables
<b>k(#)</b>	overrides default value of 10 for the number of coefficients SCPC t-statistics are computed for
<b>cvs</b>	prints a table of two-sided critical values of SCPC t-statistic of level 32%, 10%, 5% and 1%

**Description**

This Stata package implements the Spatial Correlation Principal Components (SCPC) method described in [Müller and Watson \(2021, 2022\)](#) for the construction of confidence intervals that account for many forms of spatial correlation. The *scpc* command expects the locations of the observations to be stored in the variables *s\_\**. If the option *latlong* is present, then *s\_1* is interpreted as the latitude, and *s\_2* as the longitude of the observation, and distances between observations are computed with the great-circle formula. If the option *latlong* is not present, then all *p* variables beginning with *s\_* are interpreted as points in *p*-dimensional space, and distances are computed with the Euclidian norm. *scpc* is implemented as a postestimation command that can be used after the Stata commands **[R] regress**, **[R] ivregress**, **[R] areg**, **[R] logit** or **[R] probit**, as long as these are used with the standard error option *robust* or *cluster* (see **[R] vce option**). If the estimation uses the *cluster* option, then *scpc* corrects for spatial correlations between clusters, assuming that all observations within a cluster share the same location. Also by default, *scpc* computes conditional critical values described in Müller and Watson (2022). These critical values are adjusted based on the realized values of the regressors, and is implemented only for **[R] regress** and **[R] ivregress**. Standard (unconditional) SCPC inference can be obtained via the *uncond* option, which is necessary when using *scpc* after **[R] areg**, **[R] logit** or **[R] probit**. By default, *scpc* conducts spatially robust inference under the assumption that the largest

average pairwise correlation between the observations / clusters is no larger than 0.03. This default can be overridden by the `avc` option. Note that computation times increase for smaller values of `avc`. To make the algorithm faster, SCPC inference is computed only for the first 10 coefficients. This can be changed by the `k` option. The underlying algorithm can also handle large datasets; internally, a different algorithm is used when the number of observations / clusters exceeds 4500. Computing time is approximately linear in the number of observations, and is roughly one minute for 5000 observations. Note: The implementation generates and deletes variables with names starting with `scpc_*`, so variables of that name in the original data set are corrupted/deleted.

### Options

**avc(#)** overrides default value of 0.03 for the maximal average pairwise correlation; see [Müller and Watson \(2021\)](#) for details.

**avc(#)** overrides default of computing conditional critical value in regression; see [Müller and Watson \(2021\)](#) for details.

**latlong** if present, expects `s_1` to contain latitude and `s_2` to be longitude and uses implied great-circle distance; if not present, computes Euclidian distance between coordinates defines by variables beginning with "s\_".

**cvs** prints a table of one- and two-sided critical values of SCPC t-statistic of level 32%, 10%, 5% and 1%.

**k(#)** overrides default value of 10 for the number of coefficients for which SCPC inference is computed.

### Examples

```
. sysuse auto
. gen s_1=rnormal(0,1)
. gen s_2=rnormal(0,1)
. regress mpg weight length, robust
. scpc
. scpc ,avc(0.03)           (equivalent to above command)
. scpc ,k(4)(equivalent to above command)
. scpc ,avc(0.01) cvs k(1)
. gen clust=round(rnormal(0,10),1)
. regress mpg weight length, cluster(clust)
. scpc
```

### Stored results

**scpc** stores the following in `e()`:

#### Matrices

<b>e(spcstats)</b>	Matrix of SCPC inference results (same as printed table)
<b>e(spc cvs)</b>	Matrix of SCPC critical values (same as printed table, only computed under <i>cvs</i> option)

Additionally, **scpc** preserves all macros and scalars of the estimated model in memory.

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#### Disclaimer

This software is provided "as is", without warranty of any kind. If you have suggestions or want to report problems, please create a new issue in the [project repository](#) or contact the project maintainer.

#### References

Müller, Ulrich K. and Mark W. Watson "Spatial Correlation Robust Inference" Working Paper. Nov 2021.  
<https://www.princeton.edu/~umueller/SHAR.pdf>.

Müller, Ulrich K. and Mark W. Watson "Spatial Correlation Robust Inference in Linear Regression and Panel Models" Working Paper. Jan 2022. <https://www.princeton.edu/~umueller/SpatialRegression.pdf>.