

# Package ‘SpatialPOP’

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**Type** Package

**Title** Generation of Spatial Data with Spatially Varying Model  
Parameter

**Version** 0.1.0

**Author** Nobin Chandra Paul

**Maintainer** Nobin Chandra Paul<ncp375@gmail.com>

**Depends** R(>= 2.10)

**Suggests** knitr, rmarkdown, testthat (>= 3.0.0)

**VignetteBuilder** knitr

**Description** A spatial population can be generated based on spatially varying regression model under the assumption that observations are collected from a uniform two-dimensional grid consist of  $(m * m)$  lattice points with unit distance between any two neighbouring points. For method details see Chao, Liu., Chuanhua, Wei. and Yunnan, Su. (2018).<[DOI:10.1080/10485252.2018.1499907](https://doi.org/10.1080/10485252.2018.1499907)>. This spatially generated data can be used to test different issues related to the statistical analysis of spatial data. This generated spatial data can be utilized in geographically weighted regression analysis for studying the spatially varying relationships among the variables.

**License** GPL (>= 2.0)

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Imports** base,MASS,stats, qpdf, numbers

**NeedsCompilation** no

**Repository** CRAN

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spatialPOP	<i>Generation of Spatial Data with Spatial Coordinates and Spatially Varying Model Parameters</i>
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**Description**

Generation of Spatial Data with Spatial Coordinates and Spatially Varying Model Parameters

**Usage**

```
spatialPOP(N, m, xlat, ylong)
```

**Arguments**

N	integer; population size i.e. $N = (m * m)$
m	integer
xlat	numeric vector
ylong	numeric vector

**Value**

returns a dataframe of spatially generated population consist of simulated response variable (i.e. Y) along with their spatial coordinates, spatially varying model parameters and one explanatory variable (i.e. X)

**References**

1. Leung, Y., Mei, C. L. and Zhang, W. X. (2000). Statistical tests for spatial non-stationarity based on the geographically weighted regression model. *Environment and Planning A*, 32(1), 9-32.
2. Chao, Liu., Chuanhua, Wei. and Yunan, Su. (2018). Geographically weighted regression model-assisted estimation in survey sampling. *Journal of Nonparametric Statistics*. <DOI:10.1080/10485252.2018.1499907>.

**Examples**

```
lattice_points<-spatial_grid(c(1:10),c(1:10))  
spatial_data<-spatialPOP(100,10,c(1:10),c(1:10))
```

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spatial_grid	<i>a uniform two dimensional grid of lattice points</i>
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**Description**

a uniform two dimensional grid of lattice points

**Usage**

```
spatial_grid(lat, long)
```

**Arguments**

lat	numeric vector
long	numeric vector

**Value**

returns a dataframe of lattice points

**Examples**

```
spatial_grid(c(1:10),c(1:10))
```

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