

GEO χ P:an R package for interactive exploratory spatial data analysis

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Abstract. Exploratory analysis of georeferenced data must take into account their spatial nature. GEO χ P is a tool for researchers in spatial statistics, spatial econometrics, geography, ecology etc allowing to link dynamically statistical plots with elementary maps. This coupling consists in the fact that the selection of a zone on the map results in the automatic highlighting of the corresponding points on the statistical graph or reversely the selection of a portion of the graph results in the automatic highlighting of the corresponding points on the map. GEO χ P includes tools from different areas of spatial statistics including geostatistics as well as spatial econometrics and point processes. Besides elementary plots like boxplots, histograms or simple scatterplots, GEO χ P also couples with maps Moran scatterplots, variogram clouds, Lorentz curves, etc. In order to make the most of the multidimensionality of the data, GEO χ P includes some dimension reduction techniques such as principal components analysis, sliced inverse regression and projection pursuit whose results are also linked to the map. It is flexible and easily adaptable. We illustrate the use of GEO χ P with a data basis from education in the French Midi-Pyrénées region.

Key Words. Exploratory analysis, spatial econometrics, spatial statistics, interactive graphics, dimension reduction.

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