

# **The Matlab Based ArcMat Spatial Data Analysis Toolbox**

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This paper presents an overview of the Arc\_Mat, a public domain Matlab-based spatial data analysis software. The Arc\_Mat toolbox was firstly developed to extract map polygon and database information from ESRI shapefile for use in statistical software environments and use map polygon information to produce high quality mapping.

The Arc\_Mat toolbox is recently revised and upgrade to: utilize Matlab enhanced computing and graphing capability, restructure toolbox with Matlab new Object-oriented programming feature, and provide more comprehensive spatial data analytical functionality.

The Arc\_Mat toolbox functionality includes basic choropleth mapping, which may render thousands of polygons with less than a fraction of a second; exploratory spatial data analysis, which may provides illustrative views of data through different graphs, e.g., histogram, moran scatterplot, and parallel coordinate plots; and confirmatory spatial data analysis, which is built on the basis of an extensive spatial econometrics/statistics Matlab toolbox.

A brief review of the toolbox design is described, as well as some illustrative examples that highlight representative functionalities of the Arc\_Mat, and programming with and customizing the Arc\_Mat.