

The GeoViz Toolkit

Insight Into Spatial Data

Benefit: *The GeoViz Toolkit supports systematic analysis of spatial, temporal, and attribute data sets. It allows analysts to discover previously hidden patterns in data, moving from spatial patterns to statistical patterns and back again. Potential applications range from support for academic research into patterns of and situations that foster terrorism to support of analysts working to uncover hidden patterns in complex data related to financial fraud, spread of infectious disease, border crossings, and others.*

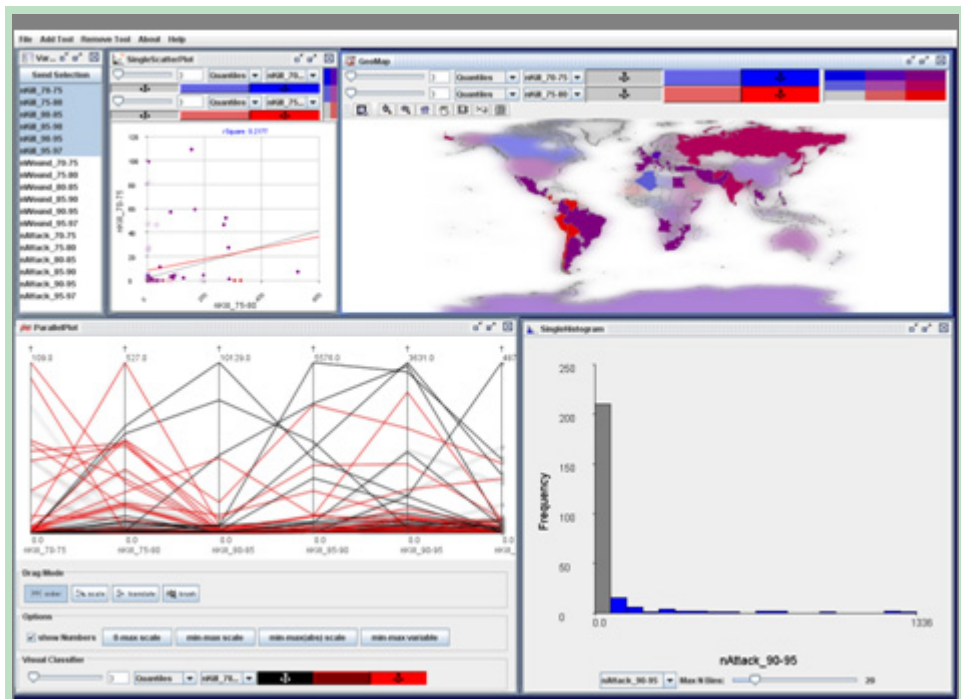
The GeoViz Toolkit allows analysts to mix and match data visualization components to quickly construct custom analysis tools. Components are automatically coordinated across multiple views to enable insight into highly multivariate data, especially geographically organized data, such as tabular data by country, state, or city.

The Toolkit provides a large selection of mapping and statistical graphing components for depicting univariate and multivariate data in dynamically linked views. Univariate data is represented in histograms, statistical maps, and cartograms (a map form that scales places to match their data value). Relationships among pairs of variables are explored with bivariate maps and graphs, while multivariate relationships are explored using matrixes of views (with many variables in pairwise views) and multivariate glyphs. The matrixes can combine other graphs in novel ways (see figure below).

Additionally, the components within the variety of available spatio-statistical views are automatically coordinated. Data loaded into one of the components is reflected in the rest and interaction in one view produces relevant actions or highlighting in other views, enabling analysts to quickly explore relationships among many attributes geographically, e.g., identifying unusual places.

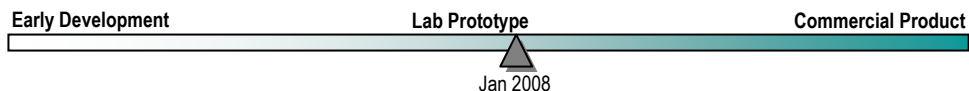
Collaborator:

- *START (National Consortium for the Study of Terrorism and Responses to Terrorism)*



Global patterns of terrorism: *The matrix view supports linked bivariate maps and graphs depicting cross-relations for deaths, hostages taken, people wounded, and total victims of terrorist attacks from 2004 to 2006 (data from National Counterterrorism Center). Overall spatio-temporal patterns of those countries that experienced attacks in the period between 199-1995 are highlighted.*

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