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RIGA: A Rich Internet Geospatial Analytics Application for Area-based Data

Tin Seong KAM

Singapore Management University, tskam@smu.edu.sg

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RIGA: A Rich Internet Geospatial Analytics Application for Area-based Data

Dr. Kam Tin Seong. PhD

Associate Professor of Information Systems (Practice)

School of Information Systems

Singapore Management University

tskam@smu.edu.sg

Content

- Motivations
- RIGA design architecture
- RIGA in action
- Q & A

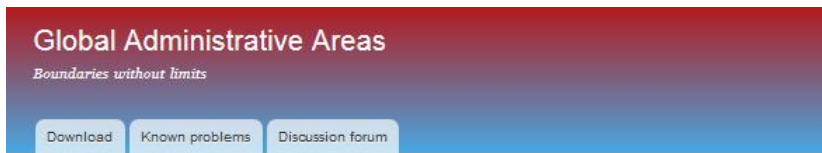
What are Area-based Geospatial Data

- A representation of geographical features in the form of polygon or lattice.
- Formal
 - political boundary, administrative boundary, election boundary.
- Informal
 - analytical grid, hexagon, etc



Motivation 1: data.gov initiative

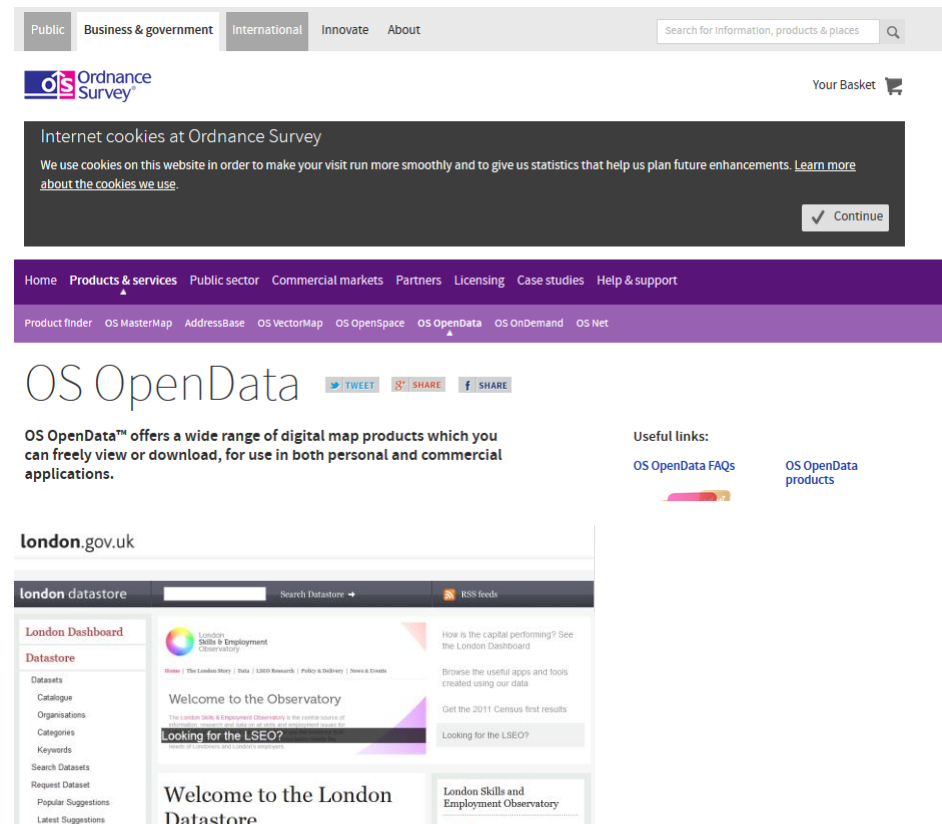
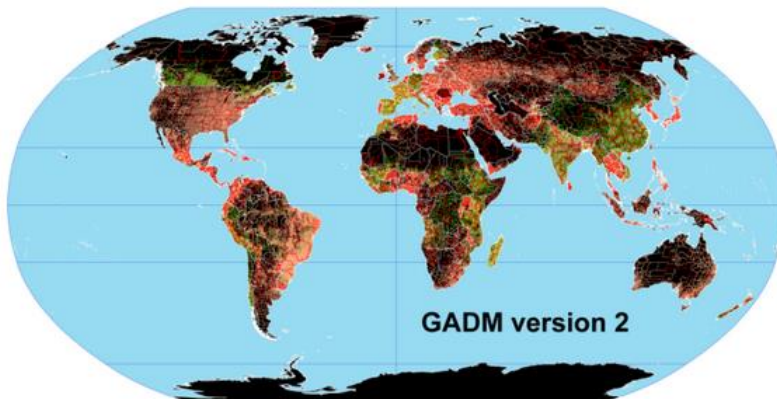
- Availability and easy accessible to highly disaggregated public and government data.



GADM database of Global Administrative Areas

GADM is a spatial database of the location of the world's administrative areas (or administrative boundaries) for use in GIS and similar software. Administrative areas in this database are countries and lower level subdivisions such as provinces, departments, bibhag, bundeslander, daerah istimewa, fivondronana, krong, landsvæðun, opština, sous-préfectures, counties, and thana. GADM describes where these administrative areas are (the "spatial features"), and for each area it provides some attributes, such as the name and variant names.

The current version is 2.0 (January 2012)



Motivation 2: The Myth of Geography matters!

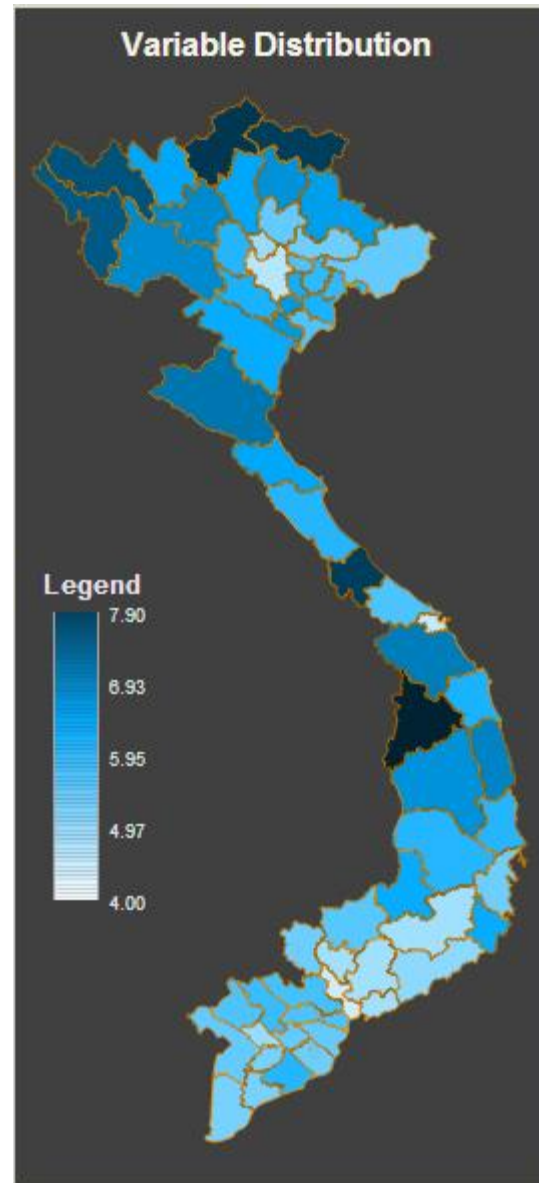
- About 80% of all data maintained by organizations around the world has a location component (source: BusinessWeek Research Services, 2006)

issues related to the business processes...

....happen in places

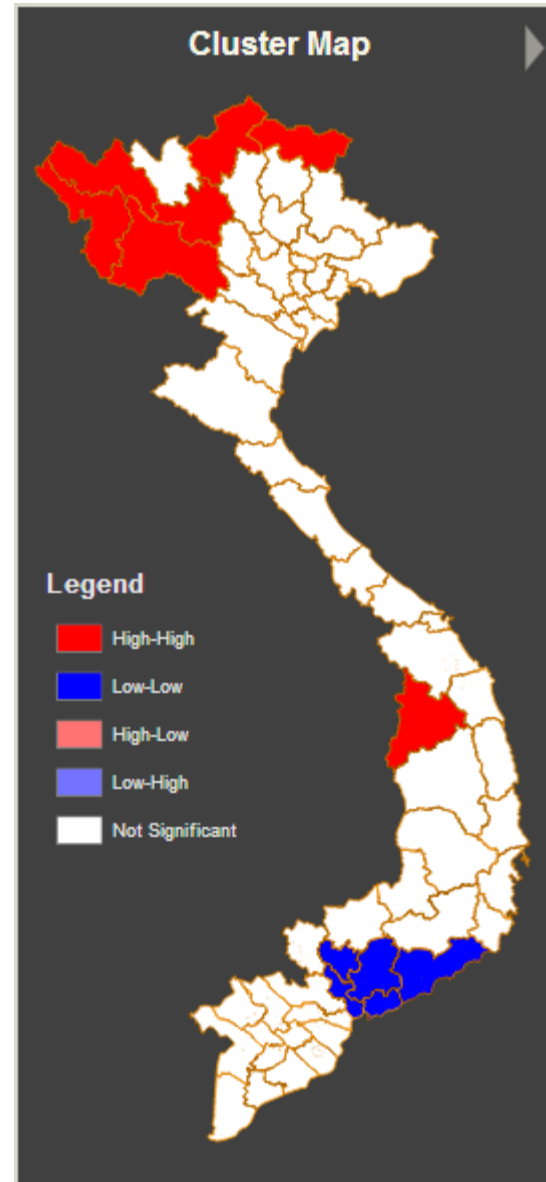
GIS map

- A choropleth map showing the distribution of a geographical theme.
 - For example, where are the provinces with high crude death rate.



Geospatial Analytics map

- A hotspot area map identify spatial association of the geographical theme
 - For example, where are the clusters of provinces with high crude death rates.





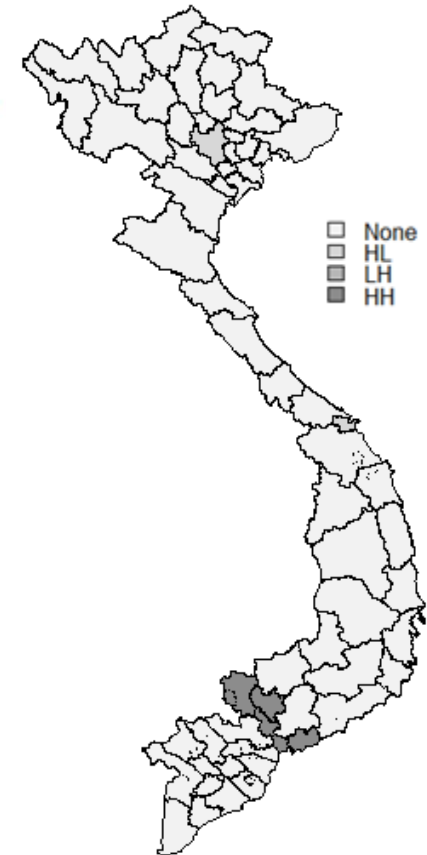
- spdep, spgwr



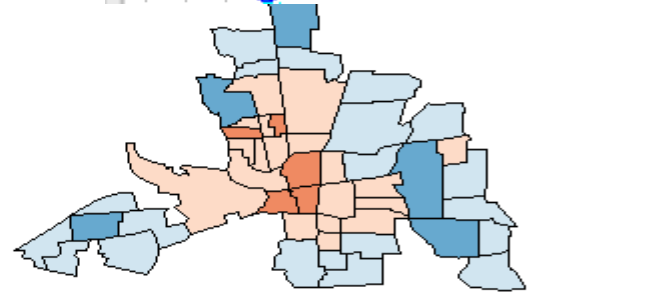
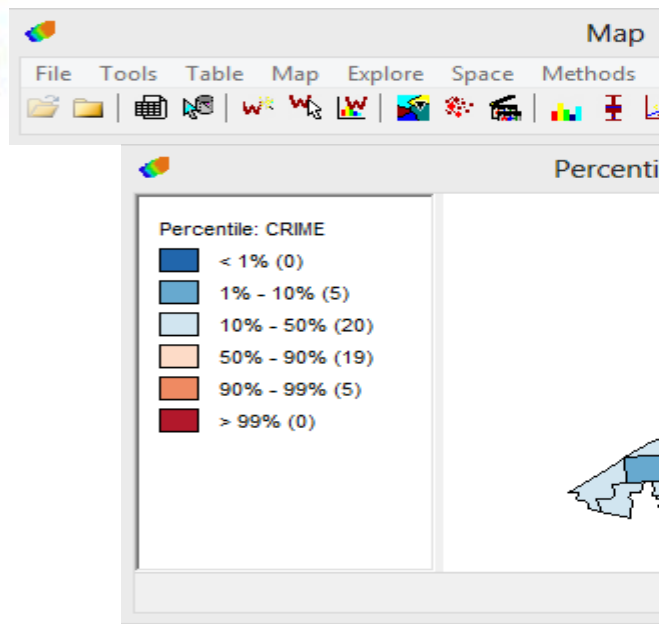
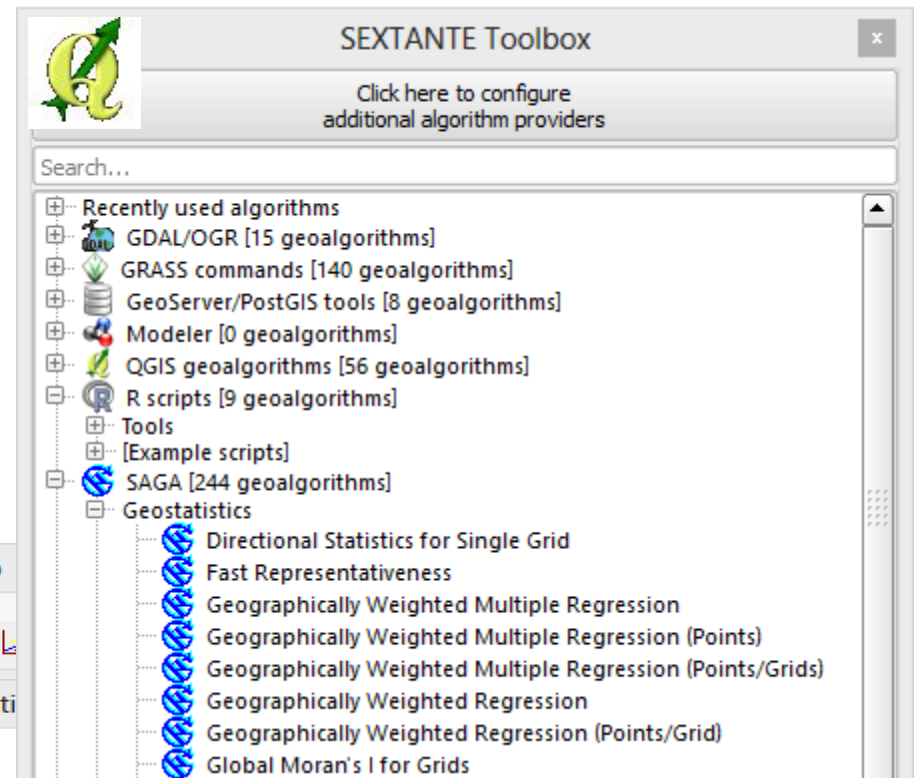
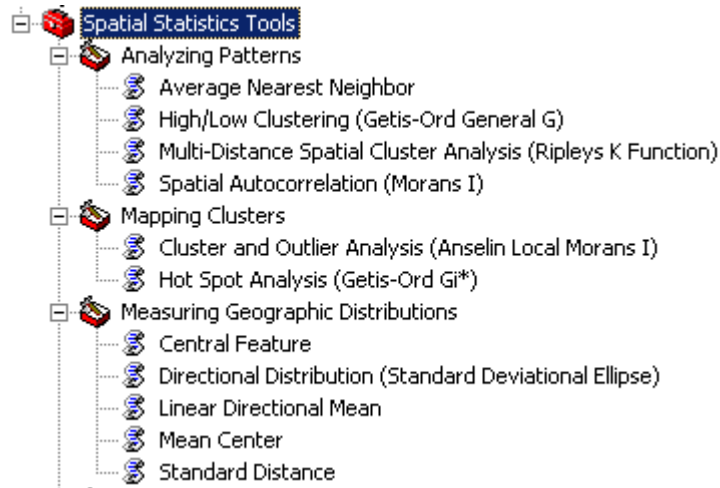
Local Moran

```
> fips <- order(vnminc$FIPSNO)
> nclocI <- localmoran(vnminc$IPC04_AVG, listw=vnm_cnq_w)
> printCoefmat(data.frame(nclocI[fips,],
row.names=vnminc$ADM2CODE[fips]), check.names=FALSE)
```

	Ii	E.Ii	Var.Ii	Z.Ii	Pr.z...0.
101	-0.61846060	-0.01612903	0.09705275	-1.93344442	0.9734
103	0.32286480	-0.01612903	0.27842097	0.64245220	0.2603
104	-0.05436380	-0.01612903	0.20587368	-0.08426710	0.5336
106	0.22572253	-0.01612903	0.20587368	0.53302610	0.2970
107	0.04587465	-0.01612903	0.13332640	0.16980849	0.4326
109	-0.00298277	-0.01612903	0.16234531	0.03262739	0.4870
111	-0.05206503	-0.01612903	0.13332640	-0.09841734	0.5392
113	0.06614244	-0.01612903	0.27842097	0.15591874	0.4380
115	-0.01154417	-0.01612903	0.16234531	0.01137906	0.4955
117	0.22770252	-0.01612903	0.20587368	0.53738987	0.2955

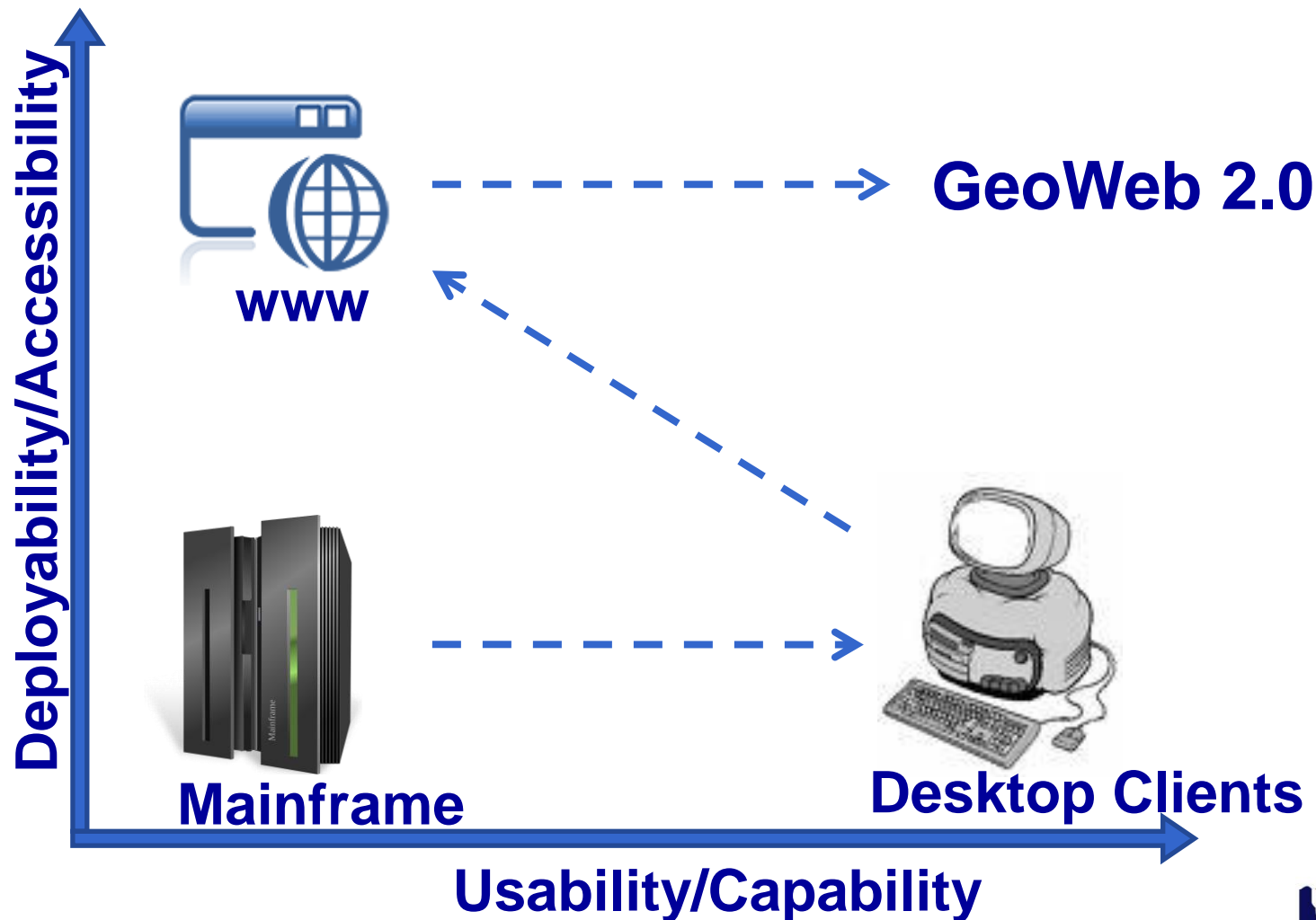


Geospatial Analytics Toolkit - desktop

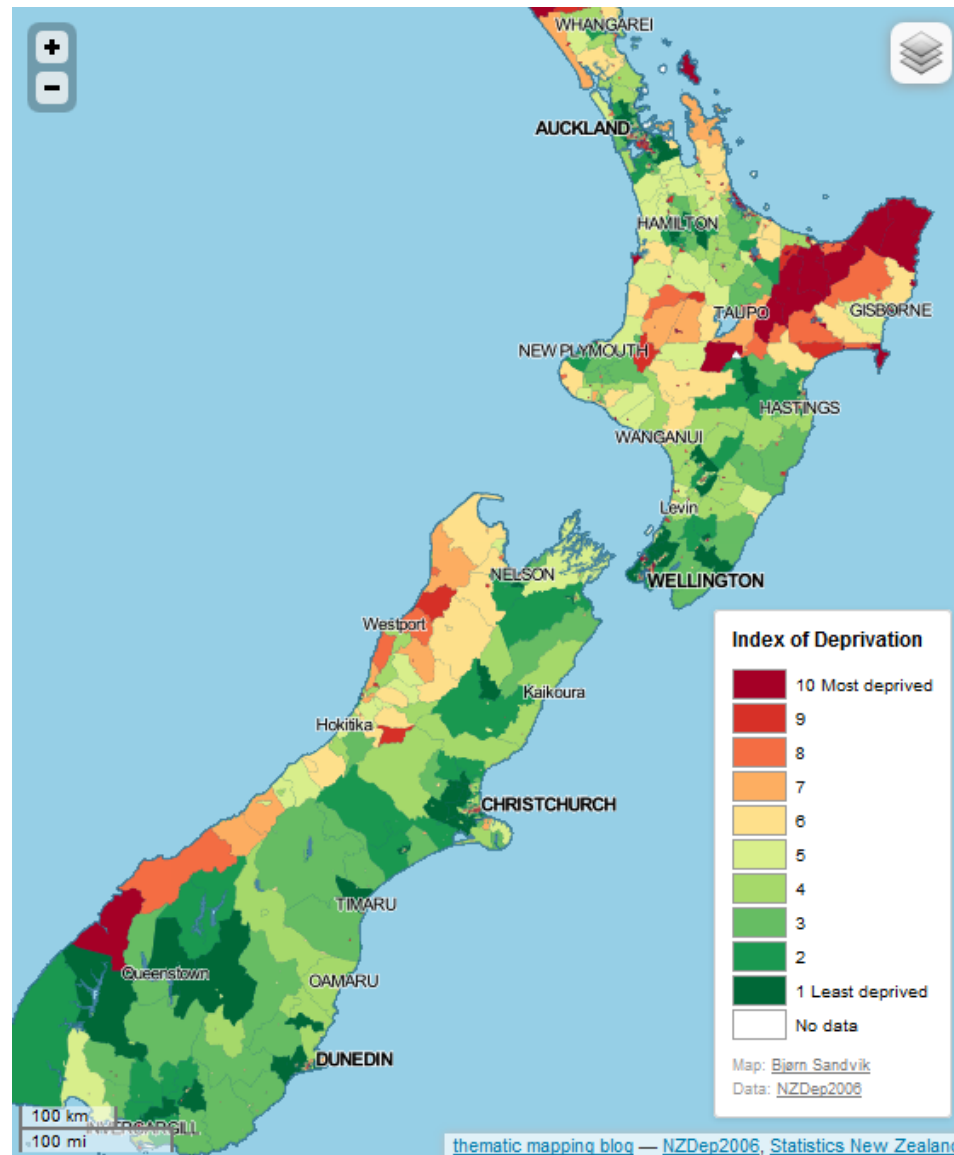


Motivation 3: GeoWeb 2.0

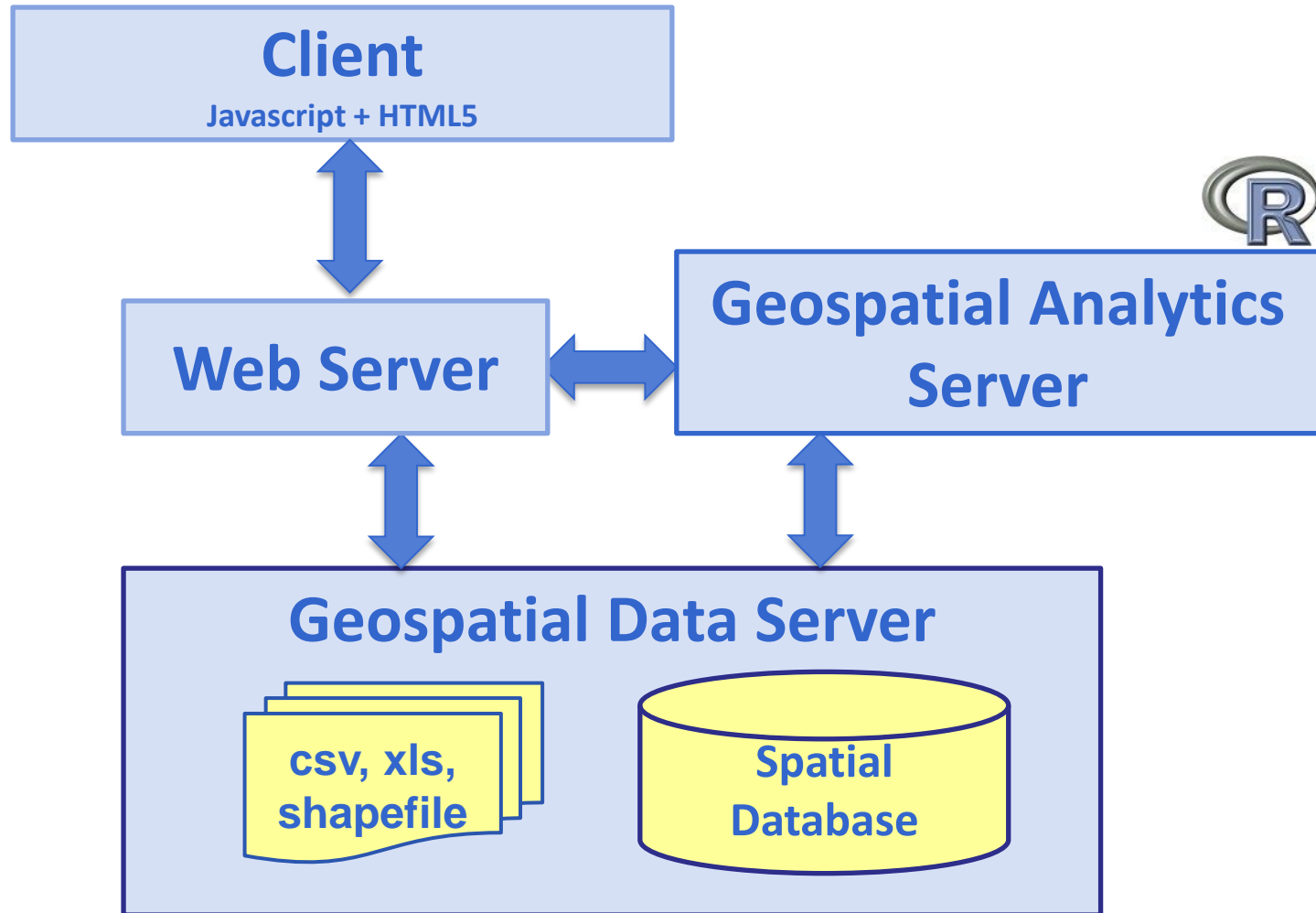
- From www GIS to GeoWeb 2.0



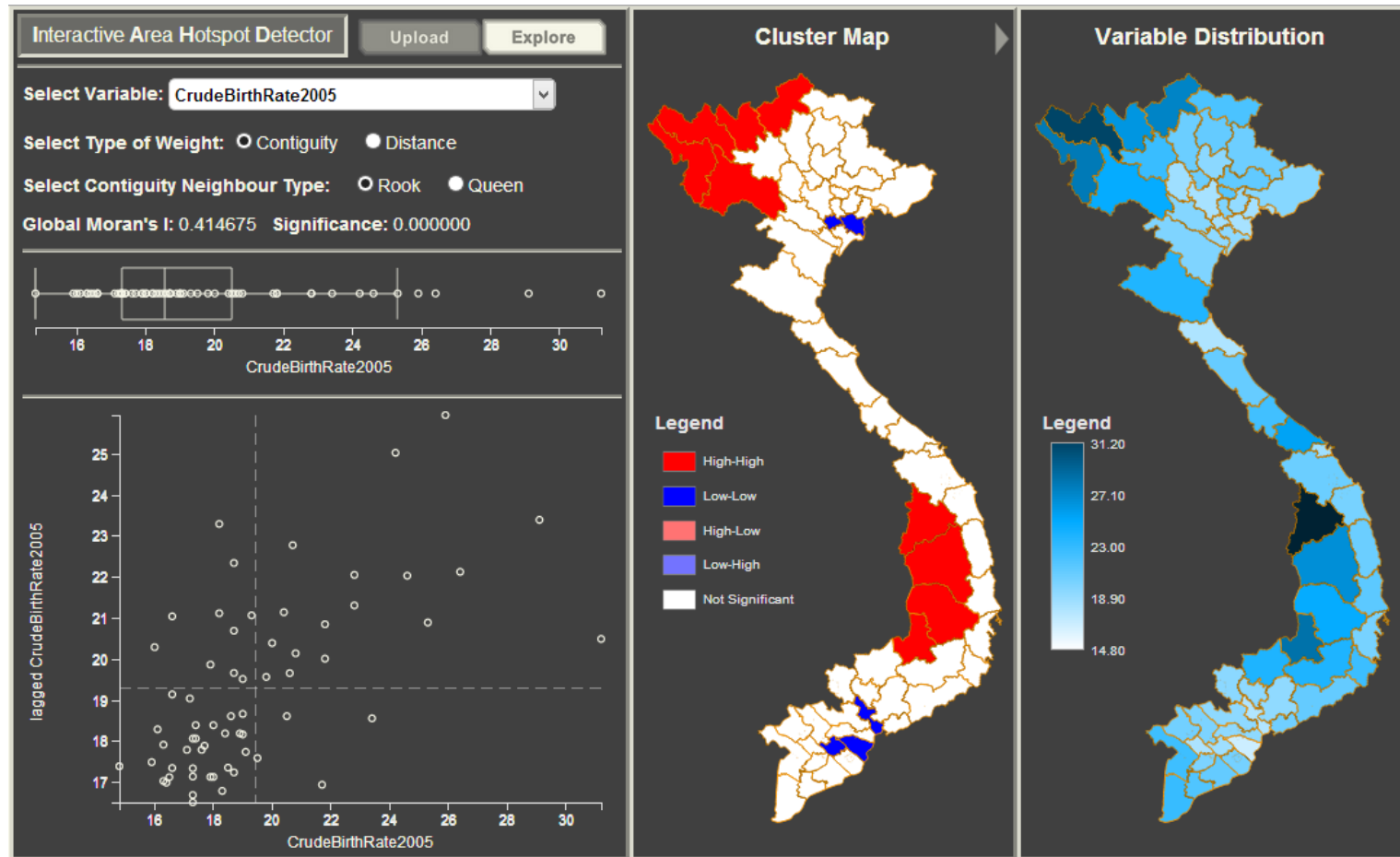
Modern web map



RIGA Architecture

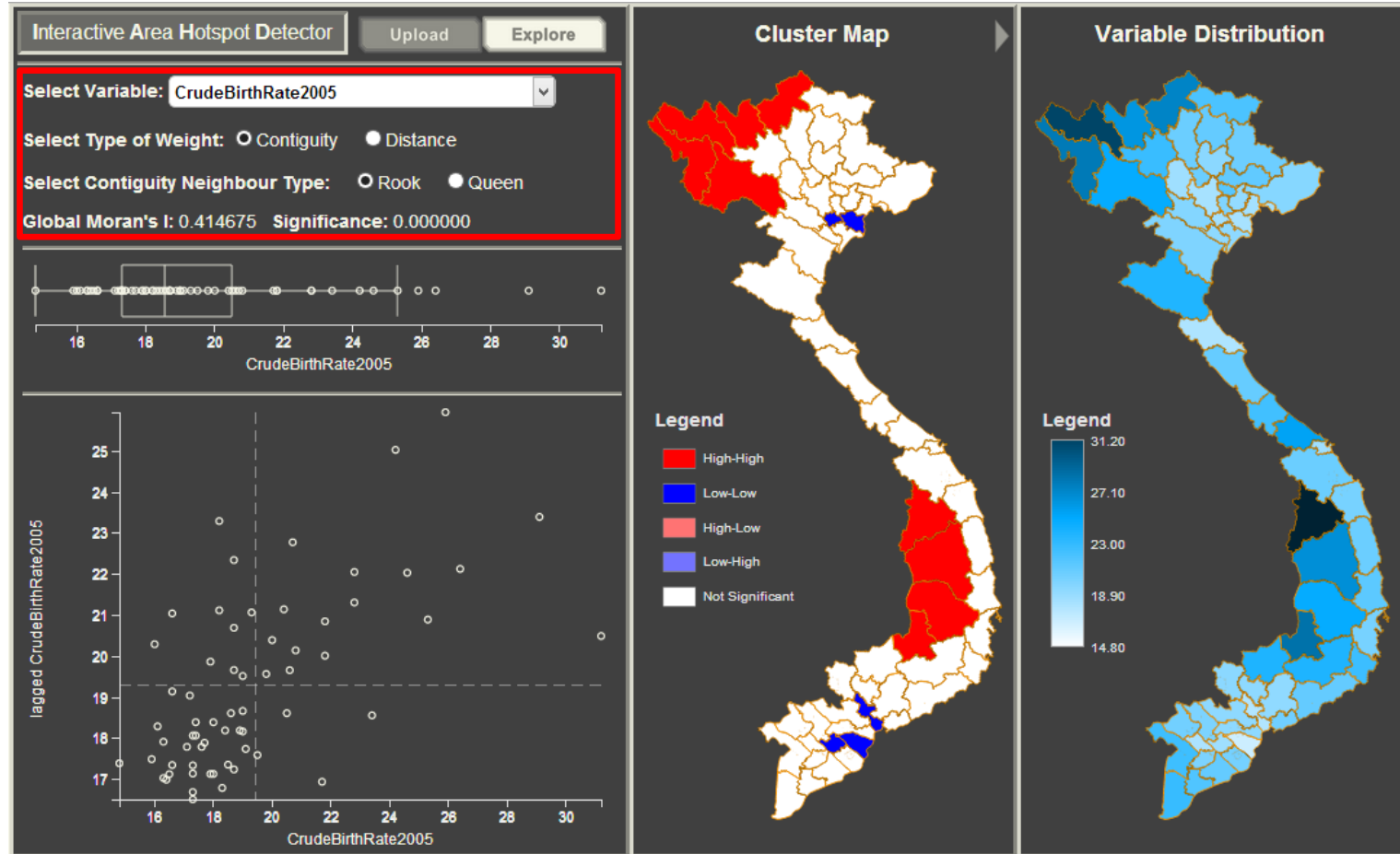


RIGA- Exploratory Spatial Data Analysis (ESDA)



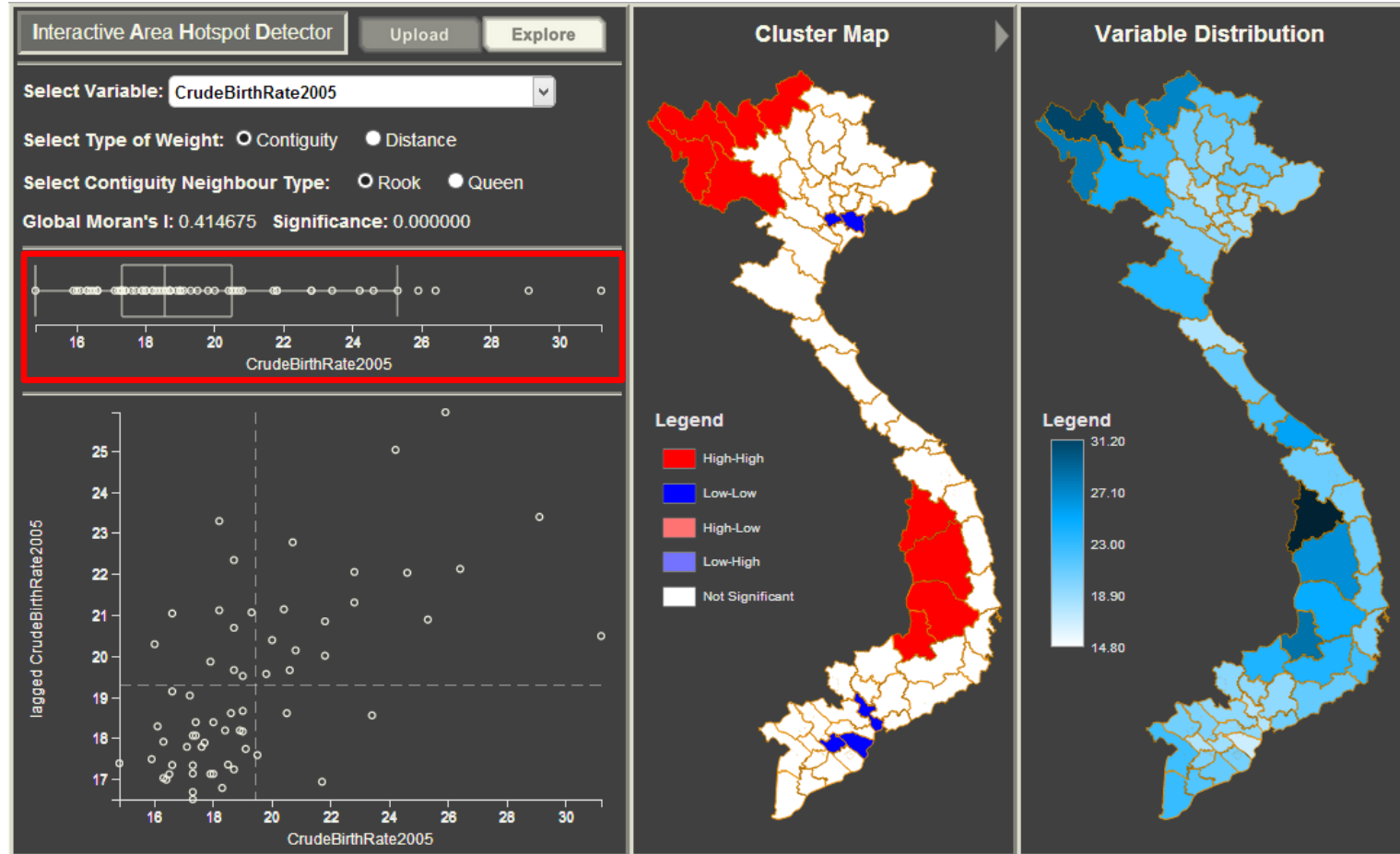
RIGA- Exploratory Spatial Data Analysis (ESDA)

- Interactive GUIs



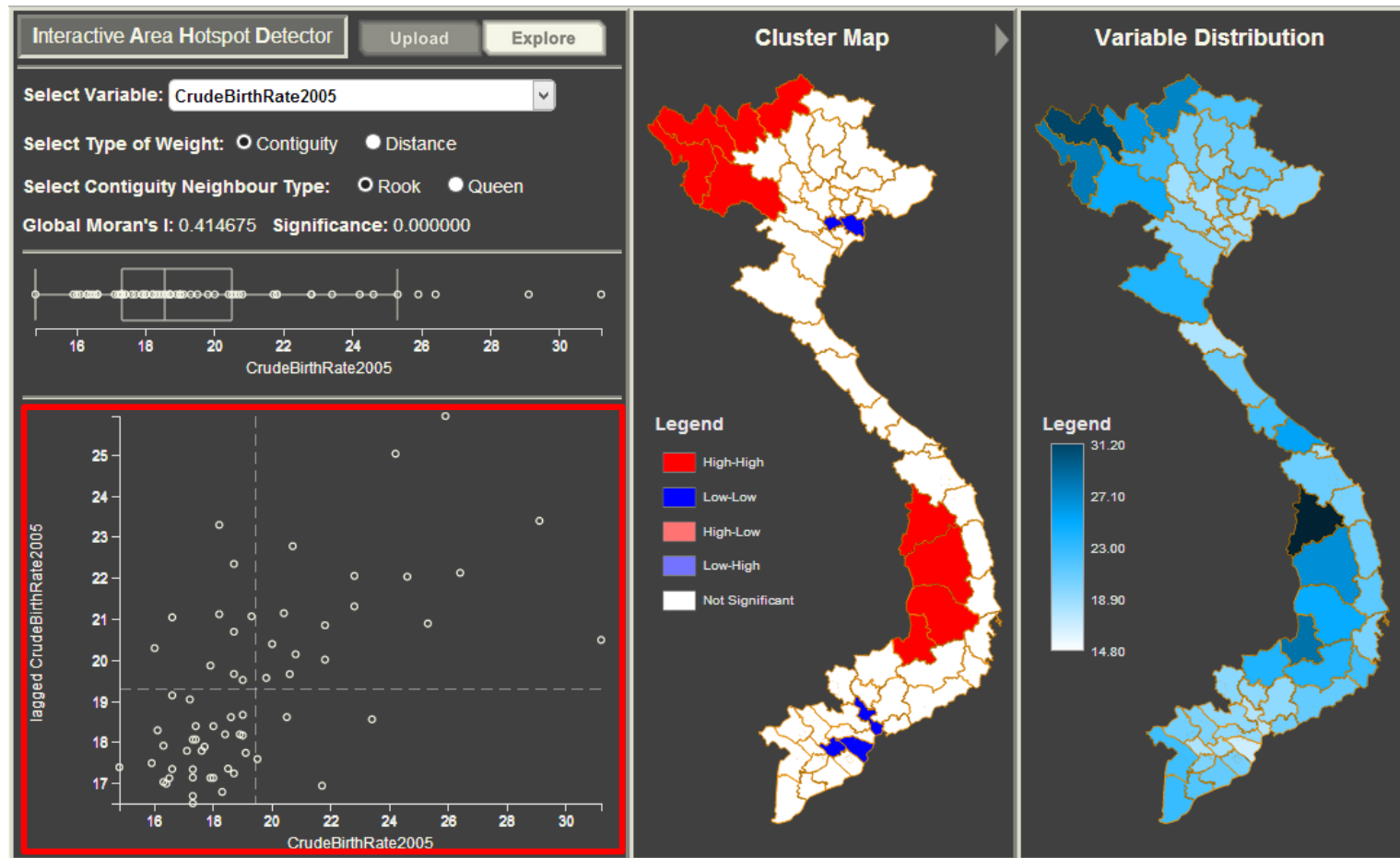
RIGA- Exploratory Spatial Data Analysis (ESDA)

- Interactive boxplot



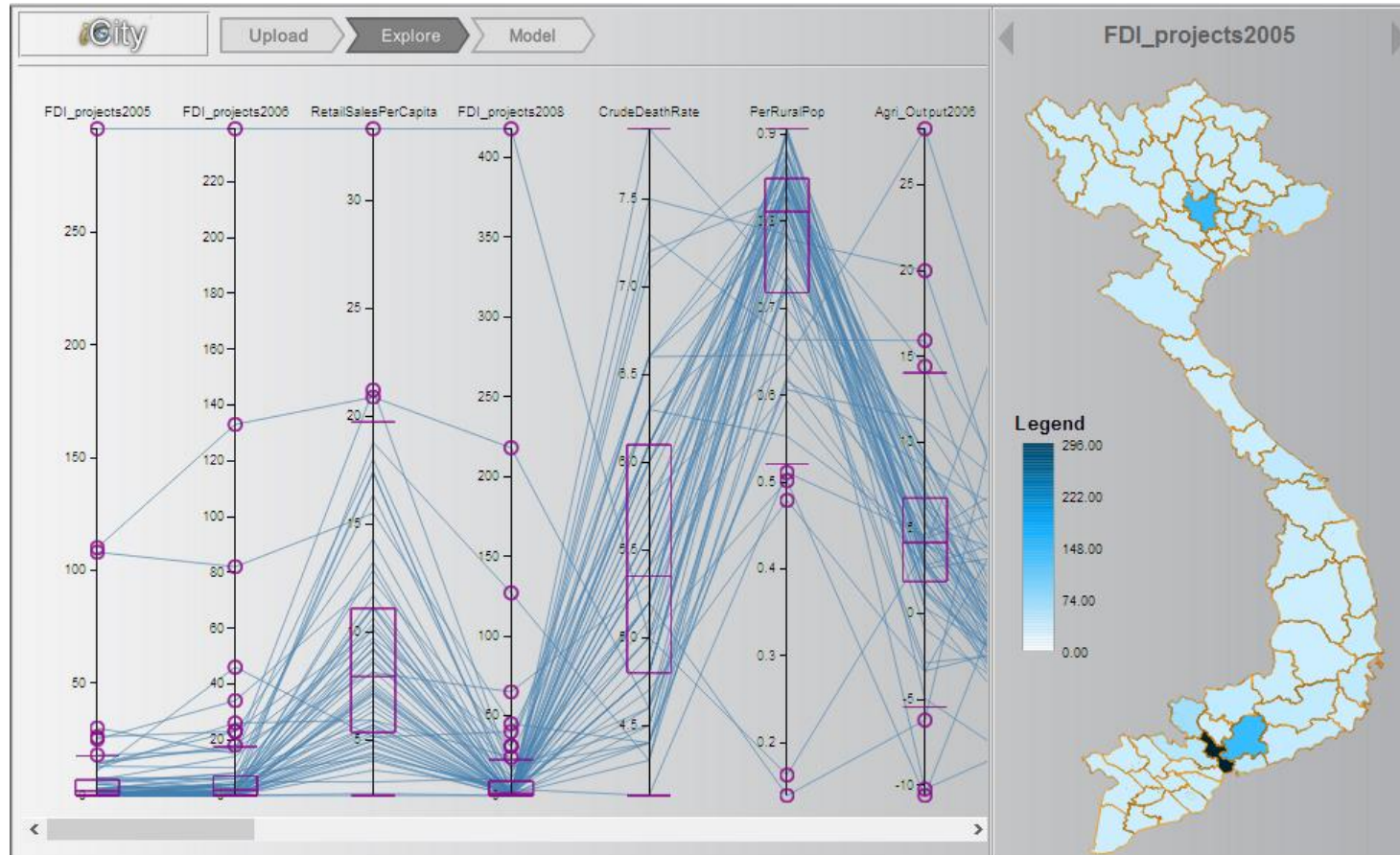
RIGA- Exploratory Spatial Data Analysis (ESDA)

- Interactive Moran scatter plot



RIGA – Exploratory Regression models

- Parallel coordinate plot and choropleth map for visualising and analysing multivariate data.



RIGA – Exploratory Regression models

- Multiple regression models (OLS and GWR)

