

Dynamic Conditioned Choropleth Maps: Examples and Innovations

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Dynamic condition choropleth maps (CCmaps) serves many purposes. CCmaps provides

- broad access to interactive mapping of region values,
- user-controlled dynamic sliders that encourage involvement, and
- annotation and alternative views that facilitate comparison and provide a gentle path toward sophisticated hypothesis generation about map patterns.

The software, examples, and documentation can be downloaded from www.galaxy.gmu.edu/~dcarr/ccmaps. CCmaps is designed to read region boundary files and comma delimited data files so people can develop new examples using their own data. Examples included with CCmaps provide boundaries files that can be reused with new data. The examples also suggest possibilities. Three suggestive examples are:

Education:

Regions: Elementary school districts for Loudoun County, VA
Data: Standardized test scores and demographic variables

Environment:

Regions: Hexagon grids covering MidAtlantic states
Data: Biodiversity (number of species for birds, reptiles, mammals, amphibians, fish)
Environment/Climate variables (land cover, streams, roads, elevation, slope, temperature, precipitation, etc.)

Health:

Regions: Continental U. S counties
Data: Cancer mortality rates (for selected sites lung, breast, colon, prostate, cervix and select race and sex combinations.)
Risk factors (smoking, obesity, socioeconomic status...)
Screening rates (mammograms, pap test, psa test...)

The combination of noteworthy views and features in CCmaps provide an innovative capability for hypothesis generation and education. Current noteworthy views include

- A matrix layout of map panels to highlight subsets of regions produce by dynamic partitioning
- Two-way tables showing means, effects, and model assessment statistics
- One-way conditioned interactive scatterplot smoothing with outlier treatment
- Dynamic conditioned matrix of QQplot panels for comparing distributions

Noteworthy features include

- Variable selection for use with sliders and for case weights
- Missing data casewise deletion for selected variables
- Dynamic partitioning sliders for creating three classes

- Use of weights in dynamic calculation of statistics
- Automatic outlier treatment with an option for user revision
- Reversible and clickable panel enlargement plus additional rubber band box zooming
- Mouseovers in enlarged views
- Snapshots with optional annotation for storing and replaying program states
 - Live interaction at any restored program state
- Feature of merit calculations for generated slider setting (cognostics)
 - Snapshot like replay of most interesting slider setting
- Intermediate bivariate binning to speed scatterplot smoothing for larger data sets

CCmaps continues to evolve with new view planned and period updates to provide improvements and new examples.

Acknowledgements:

Work supported by NSF digital government EIA-9983461 grant and EPA grant #825564