Recent Developments for Interactive Statistical Graphics on the Web using "nViZn"

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Digital Government Initiative

- Research funded by NSF and Federal Agencies (EPA, USDA-NASS, NCI, Census, …)
- Multiple aspects of Federal data: Visualization, Access, Security, Disclosure, ...
- DGQG: Digital Government Quality Graphics
- http://www.diggov.org

Earlier Work: EPA's Cumulative Exposure Project (CEP)

- Conducted by EPA's Office of Policy
- Collection of analyses, addressing multiple pollutants from multiple sites
- National analyses of
  - Air Toxics (Outdoor Concentrations)
  - Food Contaminants (Exposures)
  - Drinking Water Contaminants (Exposures)

Web-based Access of Federal Data

- Goals:
  - Concise display
  - Easy access
  - Understandable to nonstatistical audience
- Solution:
  - WWW
  - nViZn
  - Micromaps & Interactive Tables

Micromaps

- Link of row-labeled univariate (or multivariate) statistical summaries to corresponding geographical region
- Focus on statistical display and not on maps

History of Micromaps

- First presented at 1995 American Statistical Association's annual meeting (Olsen, Carr, Courbois, Pierson)
- Main references:
  - Carr, Pierson (1996) Emphasizing Statistical Summaries …with Micromaps, SCSG*, Vol.7, No.3
  - Carr, Olsen, Courbois, Pierson, Carr (1998) Linked Micromap Plots …, SCSG, Vol. 9, No.1

*Statistical Computing & Statistical Graphics Newsletter:
http://cm.bell-labs.com/cm/ms/who/cocteau/newsletter/index.html

nViZn

- Follow-up to the Graphics Production Library (GPL)
- JAVA-based software development kit (SDK) for the creation and modification of interactive statistical graphics applications (tables, charts, micromaps, ...)
- WWW: http://www.illumitek.com
- Related book “The Grammar of Graphics” by Leland Wilkinson

nViZn Features

- Follows guidelines of modern statistical graphics with analytics completed within the SDK
- Interactive abilities include dynamic data filtering, brushing/linking, mouse roll-overs, pan-and-zoom, drill-down, 3-D rotation, and animation
-  Demo

Early Work (as of JSM 2001)

- Development of unrelated segments of sample code for tables & micromaps
- No interaction
- Working Experiences with nViZn
  - Little documentation available
  - JAVA knowledge required
  - Sensitive to browsers and plugins

Recent Work

- Interactive displays: Queries & Meta Data
- Access of multiple micromaps and tables through main display
- Scrollable maps and tables
-  Demo

Future Work

- Final goal: Hierarchical clickable micromaps and tables for the display of Federal statistical data
  - Hierarchy of maps and tables
  - Full selection of variables
  - Sorting w.r.t. multiple criteria
  - Access to Federal data bases
- Usability study: how do non-statisticians understand these displays?

Future of nViZn

- New versions released every few months
- Training courses offered by Illumitek
- Good communication with users
- Might become a very useful tool to deliver interactive statistical graphics on the Web
- Huge potential for use with Federal statistical data

QUESTIONS ?