Putting Redistricting Software to Work After Redistricting is Over

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GIS uses after redistricting

- District maps for display and information
- Policy maps for legislative use
- Lessons learned
District Maps

- Use GIS to help your legislators learn about their new districts
- District maps for display and newsletters
- Basic information – streets, boundaries, school districts, voting precincts
- Demographic information from the census
- Overlay districts on various policy area maps: schools, hospitals, prisons, colleges
Maps for Members

- Create individual district maps for each member with name and district
  Learned to omit session so that map does not need to be reproduced every two years for incumbents (budget consideration)

- Custom-design to maximize content
  - Geography: rural vs. urban
  - Multiple layouts: portrait vs landscape

- Use static data (not precincts)
How District Maps Are Used

- Suitable for framing or foam board
- Different sizes for display or distribution
- Constituents can indicate where they live
- Maintenance
  - Significant developmental work
  - Additional production easy
District Maps

Can be printed ledger or much larger sizes for mounting

Urban have more streets; rural more rural roads and towns and water
District Maps

- For consistency, determine road sizes and patterns and water patterns; city shading; font types and sizes
- Put in the time to design the different layers to work well next to each other
- Predetermine what will display at various extents so that large districts and small districts both look good
LEGISLATIVE DISTRICT 29A, 29B & 29C
As Ordered by the Court of Appeals June 21, 2002
(Amended July 1, 2002)
Calvert, Charles and St. Mary's Counties
Maps just shown were run from a mapping system we built

- Consider creating a mapping system for maps that you produce on a regular basis, such as precincts by legislative district or legislative district newsletter maps

- A major development project, but worthwhile in the long term
Use Census Information

- Per capita income by block group with Senate Districts overlaid
- red and pink are below poverty level; green are $30,000 to >$100,000
- shown for El Paso, Dallas, Fort Worth, and Brownsville
- could do a series for one district or show the state with districts overlaid
Per Capita Income
In El Paso County
with Senate Lines

Per Capita Income
In Dallas County
with Senate Lines

The average per capita income in Texas was $19,617 in 2000.

Source: 2000 Census
Plan4188

Source: 2000 Census
Plan4188

Texas Legislative
Per Capita Income
In Tarrant County
with Senate Lines

The average per capita income in Texas was $19,617 in 2000.

Capita Income Block Group
- No Population
- 1 to 10,000
- 10,001 to 19,999
- 19,999 to 30,000
- 30,001 to 50,000
- 50,001 to 75,000
- 75,001 to 100,000
- Greater than 100,000

Source: 2000 Census
Plan01188S
Texas Legislative Council

Per Capita Income
In Cameron County
with Senate Lines

The average per capita income in Texas was $19,617 in 2000.

Capita Income Block Group
- No Population
- 1 to 10,000
- 10,001 to 19,999
- 19,999 to 30,000
- 30,001 to 50,000
- 50,001 to 75,000
- 75,001 to 100,000
- Greater than 100,000

Source: 2000 Census
Plan01188S
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Supporting State Issues with GIS

- Policy Maps
- Data Analysis
GIS for Policy Makers

- GIS is widely available in many state agencies, especially environmental and transportation agencies.

- What differentiates legislative use of GIS?
  - Used for policy decisions
  - Used to demonstrate purpose for a bill
  - Used to show other policy makers why they may have an interest in a topic
Think of ways to inform policy

- NJ mapped municipalities affected by reductions in state aid
- MN mapped projects that received money from a sales tax increase
- MN mapped predominant home languages by school district for planning ESL classes
- MO is mapping seismic zones for emergency officials and building standards
Policy Maps

- Create / maintain geographic databases and collect other data to develop maps related to policy issues of interest to the legislature
  - school accountability measures, school finance
  - availability of health care facilities
  - availability of higher education facilities
  - energy and environmental issues relating to permitting of coal-powered plants

- As with drafts of legislation or other research requests, map requests are confidential until made public by the requestor.
TYPES OF MAPS

- Geographic area maps
- Thematic maps
- Point location maps
- Combinations of area, thematic, and point location features
- Maps with senate or house district boundaries overlaid
- Statewide or single region, district, or other geographic area
Geographic Areas

Geographic areas show boundaries or extent of areas such as school districts, state district courts, hospital districts, and junior college taxing districts.
Junior College District Service Areas

As defined in Chapter 130, Texas Education Code, amended by 80th Legislature, 2007
Thematic Maps

Thematic maps are shaded to show comparative data for each geographic area, such as average daily attendance, tax rate, or completion rate by school district.
Total Tax Rate
by School District
(Tax Year 2009)
2008-2009 School Funding Year

Total Tax Rate
(with number of school districts in each category)
- 1.400 to 1.670 (134)
- 1.200 to 1.399 (380)
- 1.000 to 1.199 (490)
- 0.725 to 0.999 (31)
- Non-taxing districts (4)

The total tax rate is the combined rate for a district’s debt service taxes and its maintenance and operations taxes.

Note: South Texas ISD is comprised of four schools that serve junior and senior high school students from Cameron, Hidalgo, and Willacy counties. South Texas ISD overlaps the 28 other school districts in these counties. It is not represented geographically and does not collect taxes.
Point Location Maps

- Point locations show where facilities such as schools, hospitals, colleges and universities, junior college campuses, military bases, or prisons are located.

- Additional information, such as types of hospitals or colleges, can be associated with each point using symbols or colors.
Combine area, thematic, and point location features on one map for additional information or for geographic analysis--showing proximity, frequency, etc.
ABC Boards with Wet/Dry Counties

North Carolina Local ABC Boards

- Merged Boards
- Municipal Boards
- Counties with County Board
- Dry Counties
North Carolina – Landfills and Natural Areas and Parks

Existing Sanitary Landfills
National Wildlife Refuge, State Gameland, & State Park System Buffers

Legend:
- NC Solid Waste Facilities
- NC Gamelands
- NC Gamelands 1-mile
- National Wildlife Refuges
- Federal Refuge 5-mile
- State Parks & Natural Areas
- State Parks & Natural Areas 2-mile
- Great Dismal Swamp NWR
- Great Dismal Swamp NWR 5-mile
- Counties
- Major Surface Water
The State of Texas
with Counties All or Partially Within 100 Miles
and Within 150 Miles of the Gulf Coast
North Carolina – projected noise contours from a farm location
How has U.S. population changed since 2000?

The U.S. population grew by 9.7% from 2000 to 2010, to 308 million.

U.S.'s population grew by 20.6% from 2000 to 2010, to 25.1 million.

gain

loss

each dot represents 25 people

current congressional districts

source for U.S. and state totals: U.S. Census Bureau
source for block group estimates: Esri
Map Results of 50-State Surveys for Legislature

State Starting Point for Calculating Individual Income Tax

- Federal AGI
- FTI
- Stand Alone
- No Broad Income Tax

Map of the United States showing states with different tax types.
Overlay Legislative Districts

- Senate or house district boundaries can be overlaid on any of these maps, so that you can see information by district
- Map extent can be statewide or a single region, district, or other geographic area
Senate District 5

Per Weighted Average Daily Attendance (WADA)
by School District
2004-2005 School Year

For the 2004-2005 school year, equalized wealth could not exceed $305,000 per pupil. In general, districts with property wealth above $271,400 per pupil did not receive Foundation School Program Tier 2 funds. Chapter 41 Districts are districts with property wealth above $305,000 and are subject to recapture.

Property Wealth by WADA

- <= $100,000
- $100,001 to $199,999
- $200,000 to $271,999
- $271,000 to $305,000
- $305,001 to $500,000
- $500,001 to $1,000,000
- > $1,000,000

Non-testing districts
The statutory cap on school district maintenance and operations taxes is currently $1.50 per $100 valuation.

M&O Tax Rate

- 0.8 - 1.1999
- 1.2 - 1.2999
- 1.3 - 1.3999
- 1.4 - 1.4999
- 1.5
- 1.515 - 1.6
- Non-taxing districts

Source: TEA State Funding Division (Tax Year 2004)
Data Analysis with GIS

- Proximity – how many of x are within y distance of z?
- How far is x from y?
- What is the area of x?
- What would a 5-mile buffer look like? A 50-mile-buffer? A 200-mile buffer?
- How much population is within x miles of a school? How much population is farther than x miles from a school?
Data Analysis Projects

- Determined proximity of schools to vendors of alcohol and tobacco
- Demonstrated areas within a county underserved by community colleges and universities
- Showed schools within 1000 feet of RRs for requiring an evacuation plan in case of spills
- Showed existence of nursing homes and location of over-65 population
- Rural definition in law – multiple definitions – which is appropriate for a certain bill?
Caveat

Major research or mapping projects that involve collecting and analyzing new information or designing new maps cannot be turned around quickly.
Looking to the Future

- Document work: should be reproducible at a later time by different staff
- Train your staff – utilize on-line GIS classes
- Maintain data: USPS-quarterly; ISDs and precincts-annually
- Maintain and periodically upgrade hardware and software
- Promote your services—but be aware of consequences —may lead to complicated research and products — are you staffed?
Final thoughts

Build your databases

- When you identify topics that may be coming up, take the initiative to locate the data so that you will have current databases in place
- Look at interim studies and see where you can use maps to supplement the reports

Develop a style and templates or layouts

Develop a review process

Join the state GIS community to standardize projections and share data