A Summary of
State DOT GIS Activities

Prepared for the
2006 AASHTO GIS-T Symposium
Columbus, OH

Introduction

This is the 11th year that the GIS-T Symposium has conducted a survey of GIS activities at State DOTs. This year, the survey was combined with an information request for the State roll call, and administered using a web-based survey instrument. The response rate improved significantly over last year, with 48 States plus the District of Columbia and the Commonwealth of Puerto Rico completing the survey. These responses were tabulated and are presented in a separate summary table.

A new question was added this year about the technical background of GIS core staff, and two questions on database management software used for enterprise GIS were reinstated after being dropped from last year's survey. Questions on the maintenance of physical mile markers on state roads were dropped from this year's survey.

GIS Organizational Structure and Development Stage

The most prevalent organizational structure for GIS units in State DOTs (49%) continues to be a GIS core unit, providing technical support to a much larger group of end-users throughout the agency. Another 32 percent of the States report having an "enterprise" organizational structure with agency-wide data integration. Four States (AR, ID, ND & SD) report that, although they have "pockets" of GIS applications, there is no agency-wide coordination of geo-spatial data or services.

The organizational location of GIS core units is about equally split between Planning (47%) and Information Services (49%). This appears to reverse a trend over the past few years toward consolidating GIS core units in Information Services. Even in those States that have instituted an enterprise GIS, there is no significant difference in where the GIS core unit is located.

The allocation of GIS staff time across core functions shows more staff time being devoted to road centerline base map maintenance and enhancement (22%), end user support and training (17%) and web applications (15%), compared to last year. However, the distribution of staff activities varies considerably across agencies, and even within an agency from one year to the next.

The number of GIS core staff shows a moderate decrease, compared to last year's survey. The average GIS core staff size for all responding agencies was 7.0, down from 7.4, as reported last year.

GIS professional certification is a small but growing factor in hiring of GIS staff. Twelve (24%) of the States reported that they had at least one certified GIS professional on their staff, and five additional (10%) States reported that certification would be considered in future hiring of GIS staff.

A new question in this year's survey asked about the principal technical backgrounds of GIS core staff. Most of the States (84%) responded that at least one staff member has a geography or cartography background, and at least one staff member has an information technology or computer science background (75%). Staff with engineering or planning backgrounds (37% each) the other principal disciplines identified.

States reported a small increase in the percentage of GIS application development work that was outsourced (from 39% to 43%). Not surprisingly, the annual amount spent on GIS contracts increased by a similar percentage, from an average of $315,000 to $342,000 per agency. These relatively modest increases may reflect caution by States in starting new work, due to uncertainty in the amount of transportation planning and research (SPR) funds, prior to passage of SAFETEA-LU.

GIS Software

Seventy-four (74) percent of the States use GIS software from at least two vendors, and 50 percent report having software packages from 3 or more different vendors. All of the "single vendor" States use GIS software from ESRI.

Respondents were also asked to identify what software products were used "principally" by GIS core staff for desktop/workstation applications and for web applications. For desktop operations, 73 percent of those responding use ESRI products, 25 percent use Intergraph products, and 2 percent use Caliper products as their principal GIS software. For web applications, 70 percent of those responding use ESRI's ArcIMS®, and 26 percent use Intergraph's WebMap®.

Most States use commercial relational database management software (RDBMS) in combination with GIS software to manage their geo-spatial data. Oracle® is used by over 70 percent of the States, either alone or in combination with other database software. Other commercial database software used by the States include SQL Server® (36%), Microsoft Access® (32%), DB2 (6%), and Sybase (4%).

ArcSDE® (80%) and Oracle Spatial® (48%) are the principal software packages used to manage the geo-spatial attributes in enterprise data warehouses. A significant number of States (28%) report using both spatial data managers in combination.

Road Centerline Networks and Other Geo-Spatial Databases

A key component of most transportation GIS activities is the road centerline network database. All States that responded to this year's survey reported that they maintain a digital road centerline database. Both the spatial accuracy and coverage of these

databases continue to improve. Nearly two-thirds (64%) of the States report that their road centerline databases have a spatial resolution of 1:12,000 scale or better. Much of the improved accuracy has been achieved through the use of high-resolution orthoimagery and/or kinematic GPS. With respect to coverage, 60 percent of the States report that their road centerline database includes all public roads, and another 22 percent include all State and county routes.

The majority of States (68%) distribute their road centerline database free of charge to whoever wants it. Most other States (22%) have policies that allow the data to be shared with other public agencies, but place restrictions on its use and/or redistribution. Two States (KS & OH) sell their road databases, and three States (CT, HI & OR) do not distribute their databases outside their agency.

States were asked if they maintain any other statewide geo-spatial data layers, beyond the road centerline database. Seventy two (72) percent of those responding reported that they also maintain some other geo-spatial database. Over two thirds (68%) of the State DOTs maintain other transportation networks or features, such as rail lines, airports, etc. Other "framework" geo-spatial data maintained by State DOTs include political and administrative boundaries (50%), geodetic control points (36%), and orthoimagery (32%). State DOTs are less likely to maintain other framework layers such as elevation (14%), water features (22%), or land parcels (10%).

The primary sources of geo-spatial data used by State DOTs are other state and local agencies (identified by 92% of those responding), followed by statewide geo-spatial clearinghouses (66%), and geo-spatial data maintained by federal agencies (58%). Less common sources include data purchased from commercial data vendors (18%), data provided or purchased from GIS software vendors (22%), and data acquired through the Geo-Spatial One-Stop (28%).

Benefits and Costs of GIS Applications

Several questions introduced last year regarding the perceived benefits and costs of geo-spatial technology were continued in this year's survey. Similar to last year's responses, enterprise data integration was cited by a majority of the States as yielding the greatest current benefits (54%), but also being the most difficult and costly to implement (54%). CAD/GIS integration was cited as the next application having the greatest current benefits (32%) and most difficult to implement (32%). Asset management was most cited as the application having the greatest potential future benefit (56%), followed by enterprise data integration (48%).

Current Activities

Respondents were asked to list up to four of their current GIS activities for the State roll call. Listed activities were grouped into similar categories and then ranked based on the number of times that they were cited by the respondents. Table 1 lists those GIS activities cited five or more times by the State DOTs.

GIS Activity	# of Citations
Development of web-based GIS application	44
Linear referencing system development / enhancement	15
Enterprise data warehouse	14
Road inventory management system / attribute data	13
Migration to new GIS hardware and software	13
Road centerline database development / enhancement	13
Data sharing partnerships / coordination	12
Orthoimagery data collection / integration	10
Traveler advisory / information system application	10
Development of other geo-spatial databases	10
Safety / crash analysis	9
ITS / traffic management applications	8
Project management applications	8
Environmental / cultural mitigation applications	7
Bridge management applications	7
GIS strategic planning / needs assessment	6
GPS data collection / integration	5

Table 1. High priority GIS activities at State DOTs

Summary
GIS has become recognized in nearly every State DOT as an important tool for data management and integration, analysis, and visualization. The key question is no longer whether the agency should invest in GIS, but rather how much of the agency program data should be integrated using geo-spatial technology. Most State DOTs are either investigating or are actively developing an enterprise GIS data warehouse. Enterprise data integration is seen as yielding the greatest agency benefits from geo-spatial technology, but it is also cited as one of the most difficult applications to implement.

Web-based GIS applications continue to grow, facilitating information exchange both to the traveling public and to DOT field staff. GIS also seems to be used more frequently in specific analysis and planning applications, particularly safety and crash analyses, environmental impact studies, and traffic and bridge management systems.

The recent trend of relocating the GIS core unit from Planning to Information Services seems to have abated. GIS core staff seem to function effectively in either organizational division. Important GIS core staff activities continue to include the maintenance and enhancement of the road centerline database, linear referencing, and migration of legacy applications to new and upgraded commercial software. Increasingly, however, application-specific geo-spatial analyses and map products are being carried out by end-users throughout the agency, both with and without assistance from GIS core staff.

A Summary of State DOT GIS Activities

Presented at the

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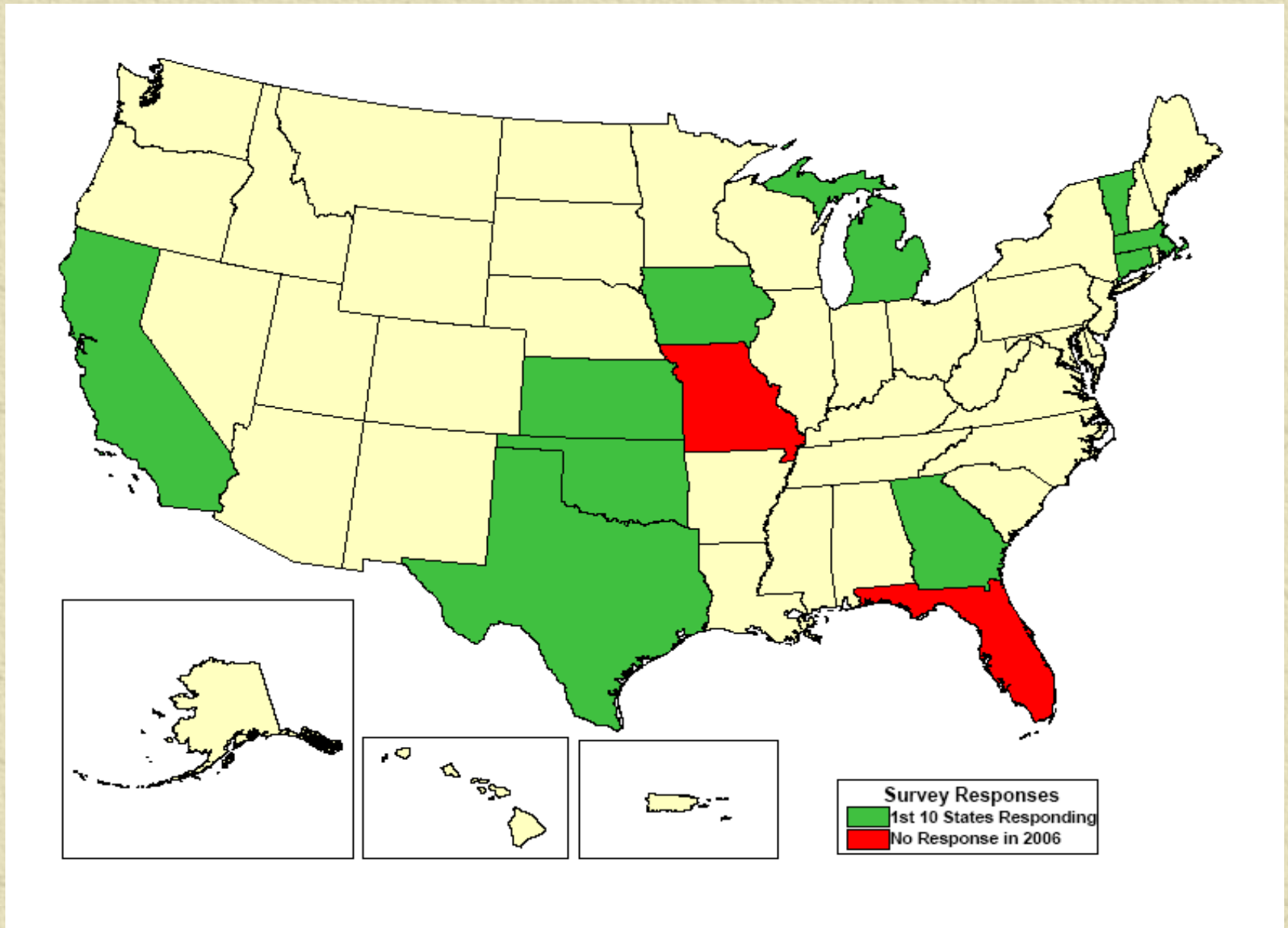
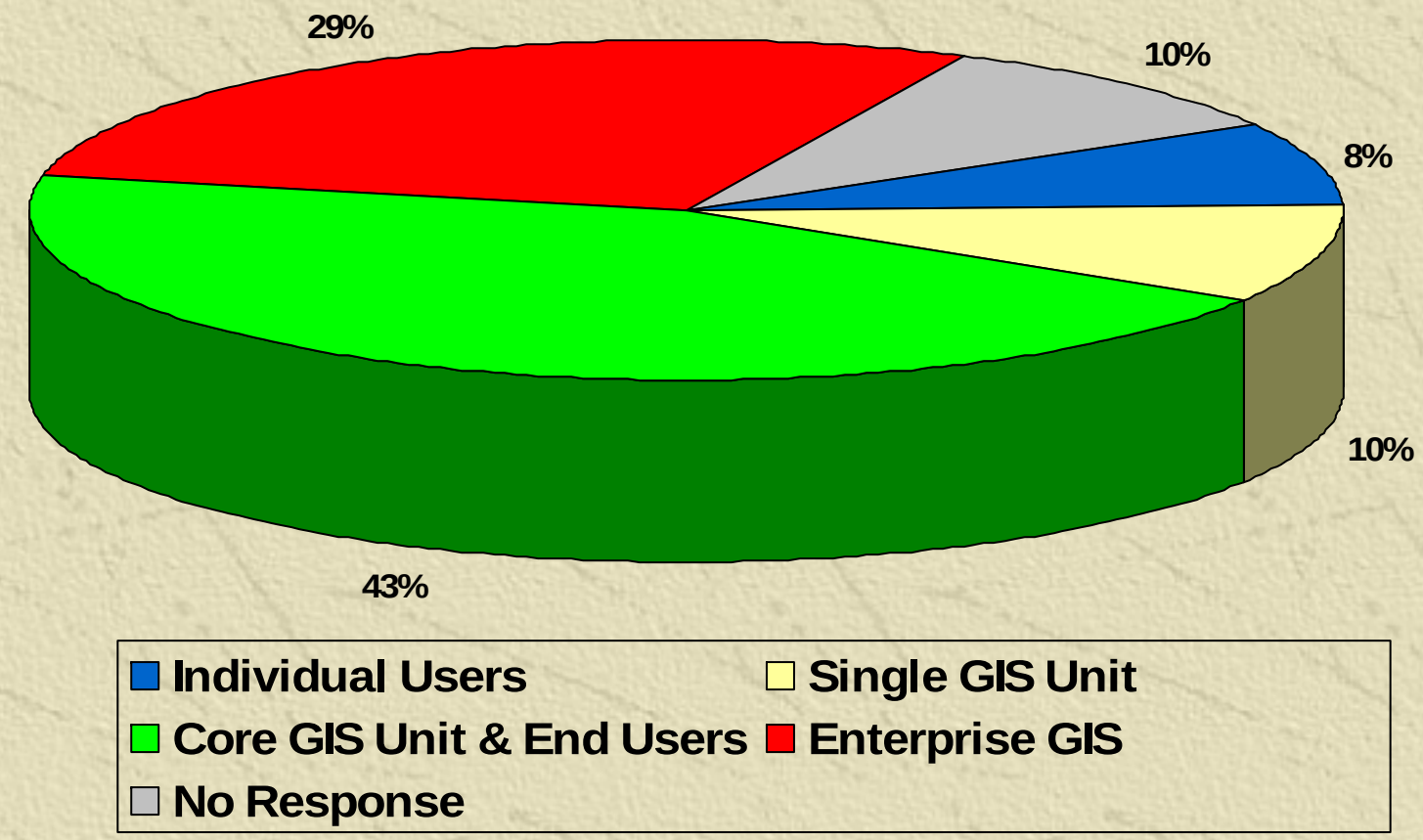
Information Sources

- Web-based survey of state DOT GIS managers
  - 48 State DOTs (plus DC & PR) responded
- New questions added:
  - Staff technical background
  - Enterprise RDBMS software
- Questions deleted
  - Maintenance of milepost markers

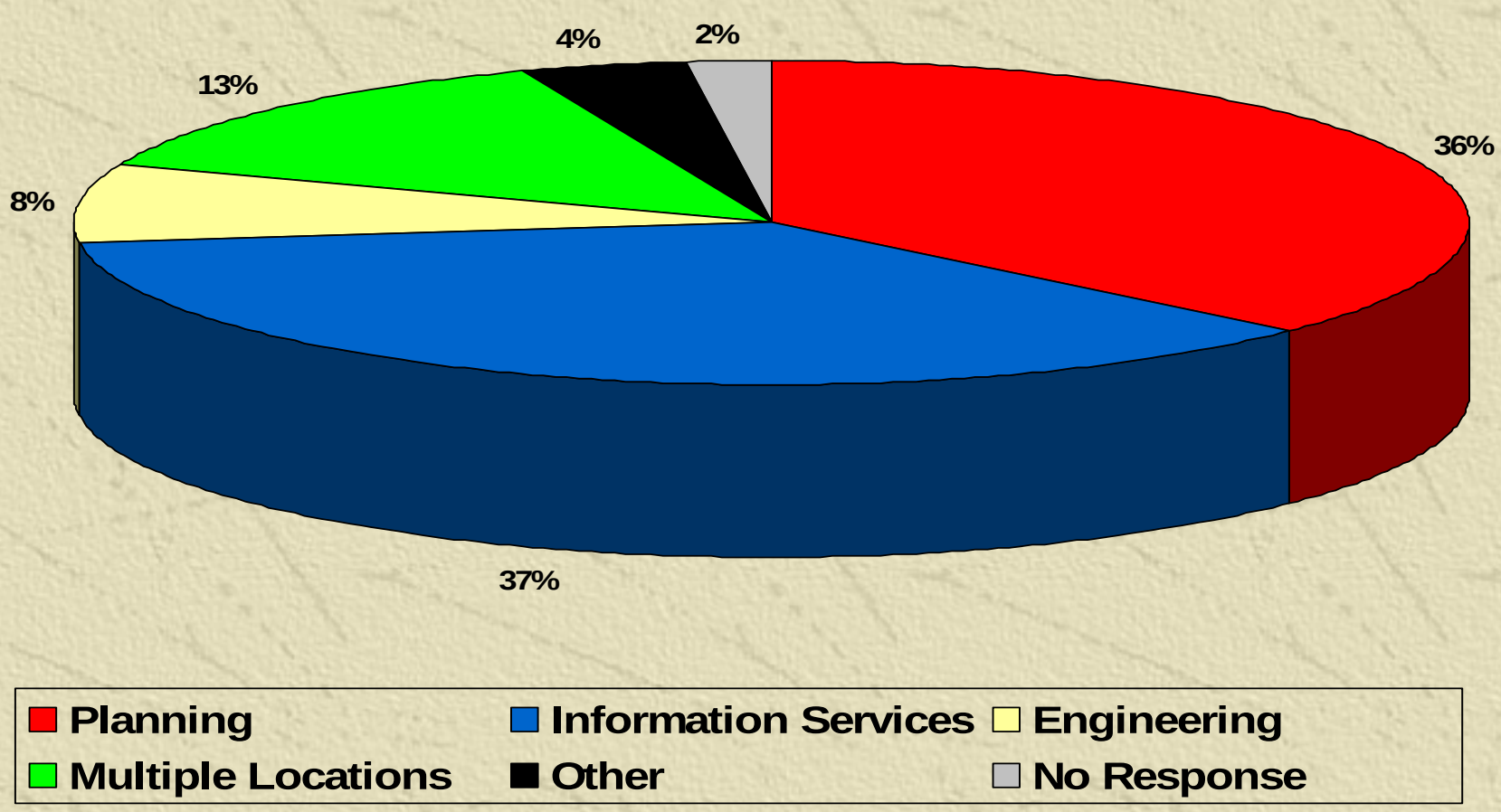
2006 Survey Responses



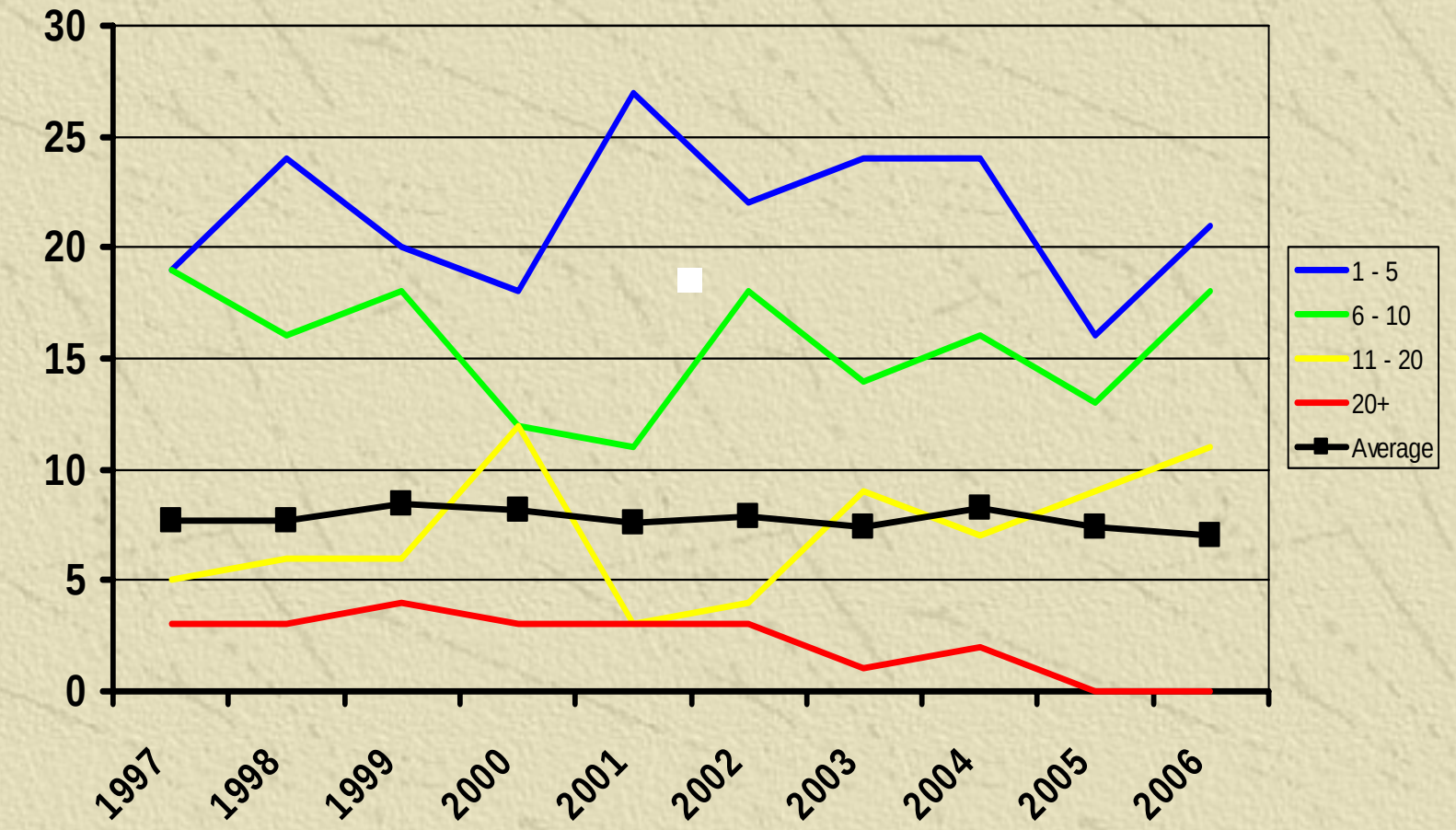
GIS Deployment in the DOT



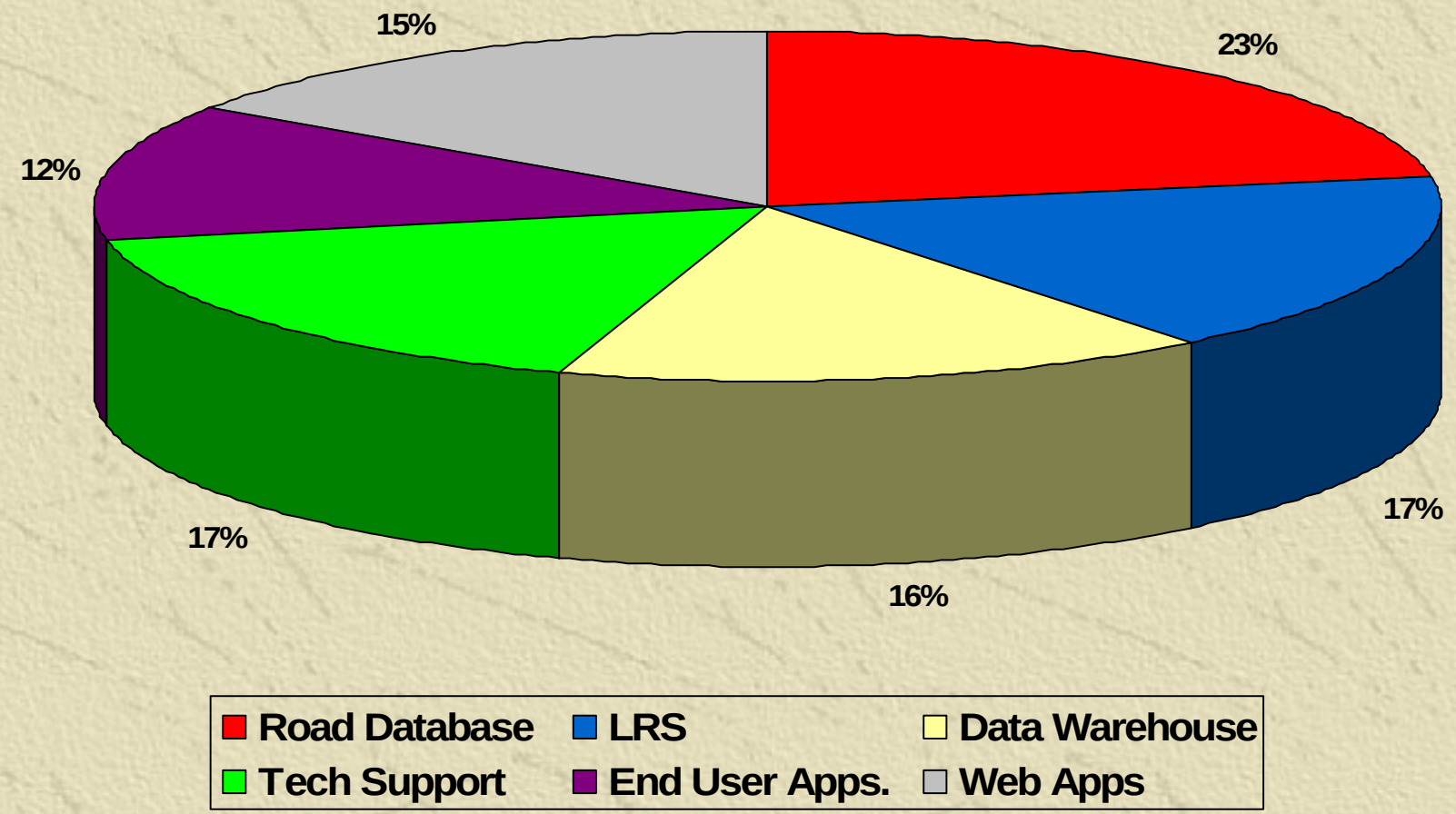
Location of GIS Unit



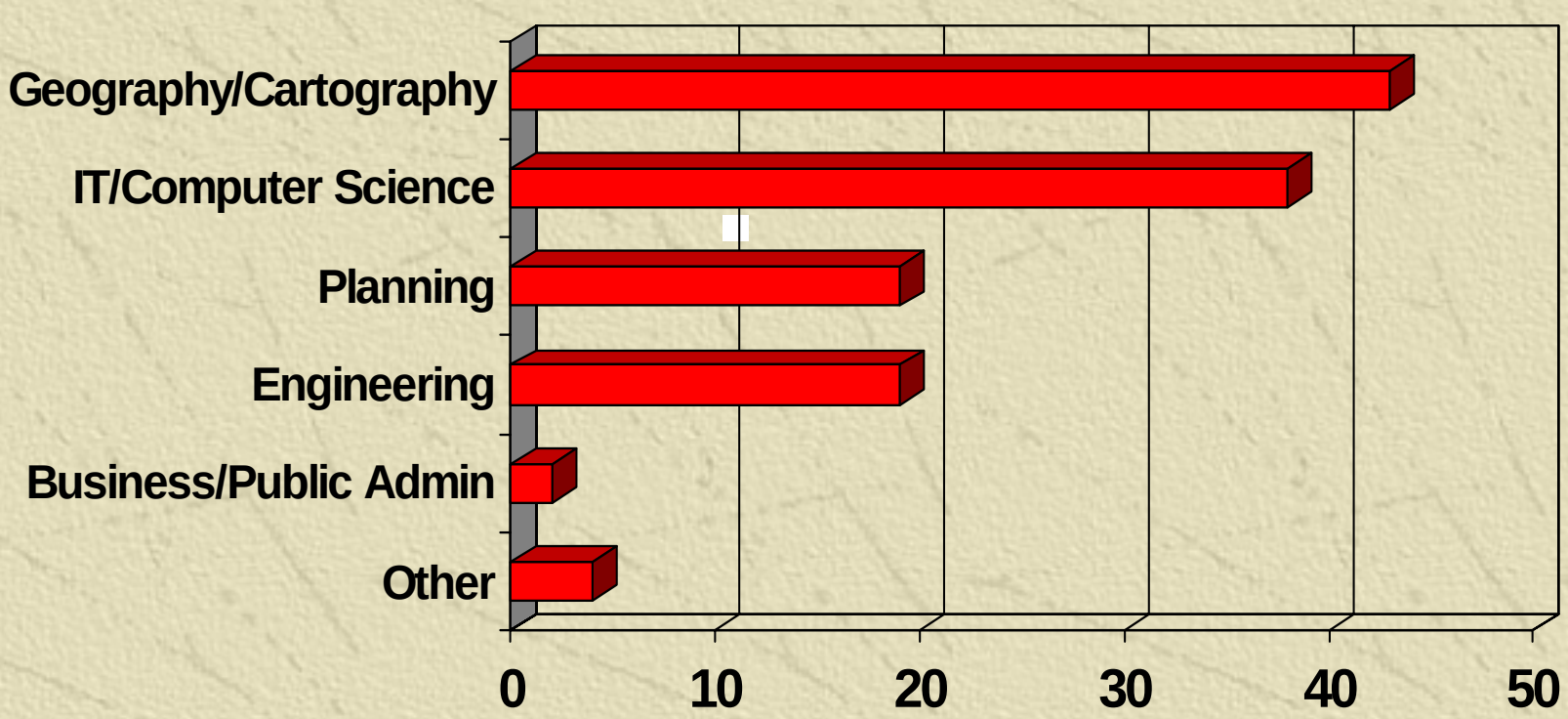
GIS Core Staff Size



GIS Staff Time Allocation



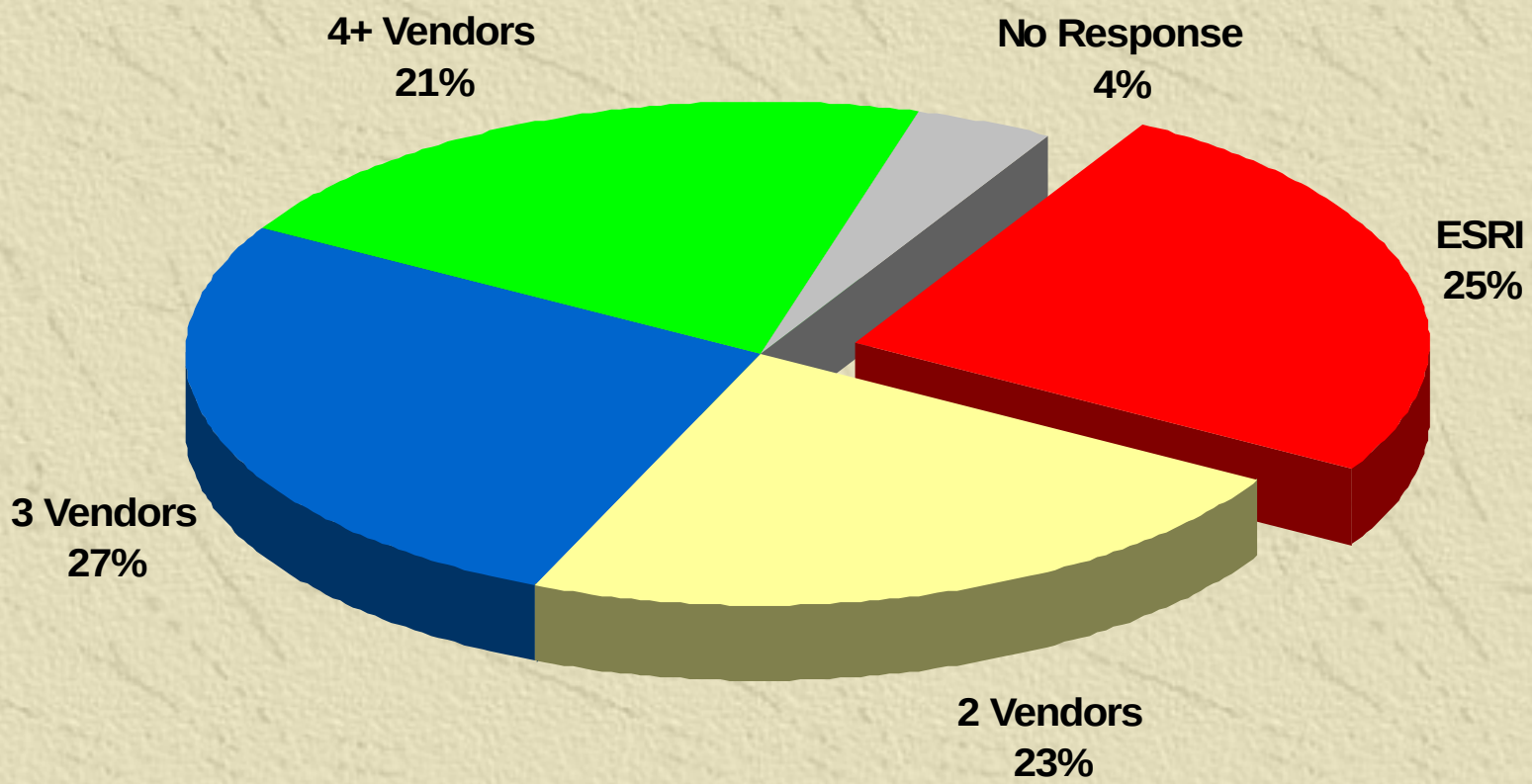
GIS Staff Expertise



GIS Staffing & Contracting

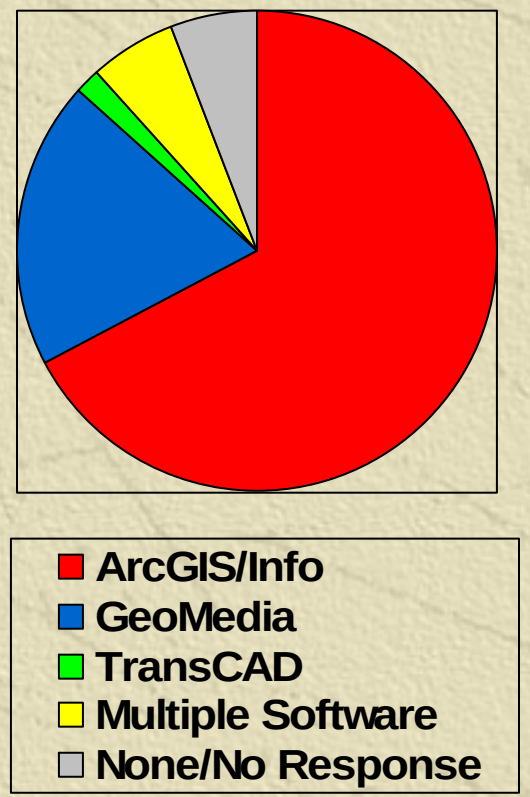
- Almost 25% of DOTs have staff with GIS professional certification (50% increase from 2005).
- About 43% of GIS work is outsourced (~10% increase from 2005).
- Average annual contract budget for GIS is about $341,000 (~8% increase from 2005).

Current GIS Software Mix

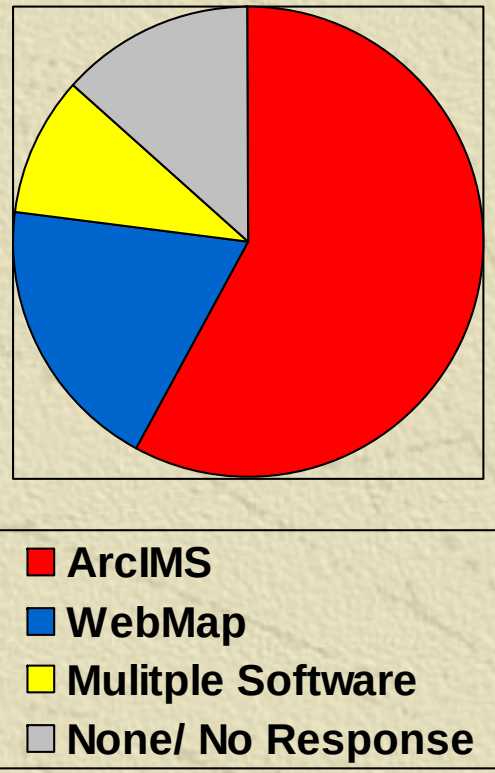


Primary GIS Software

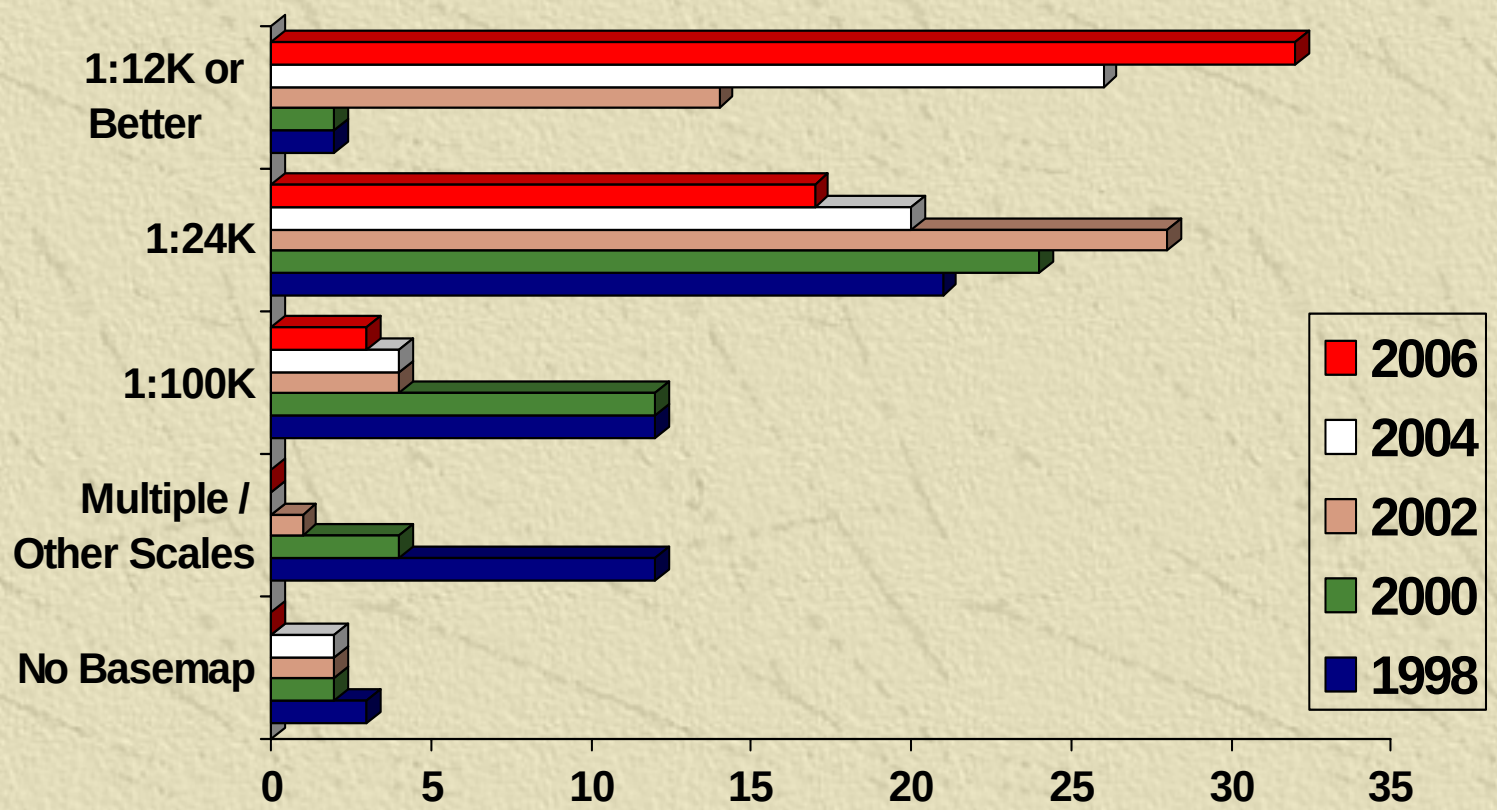
Desktop GIS



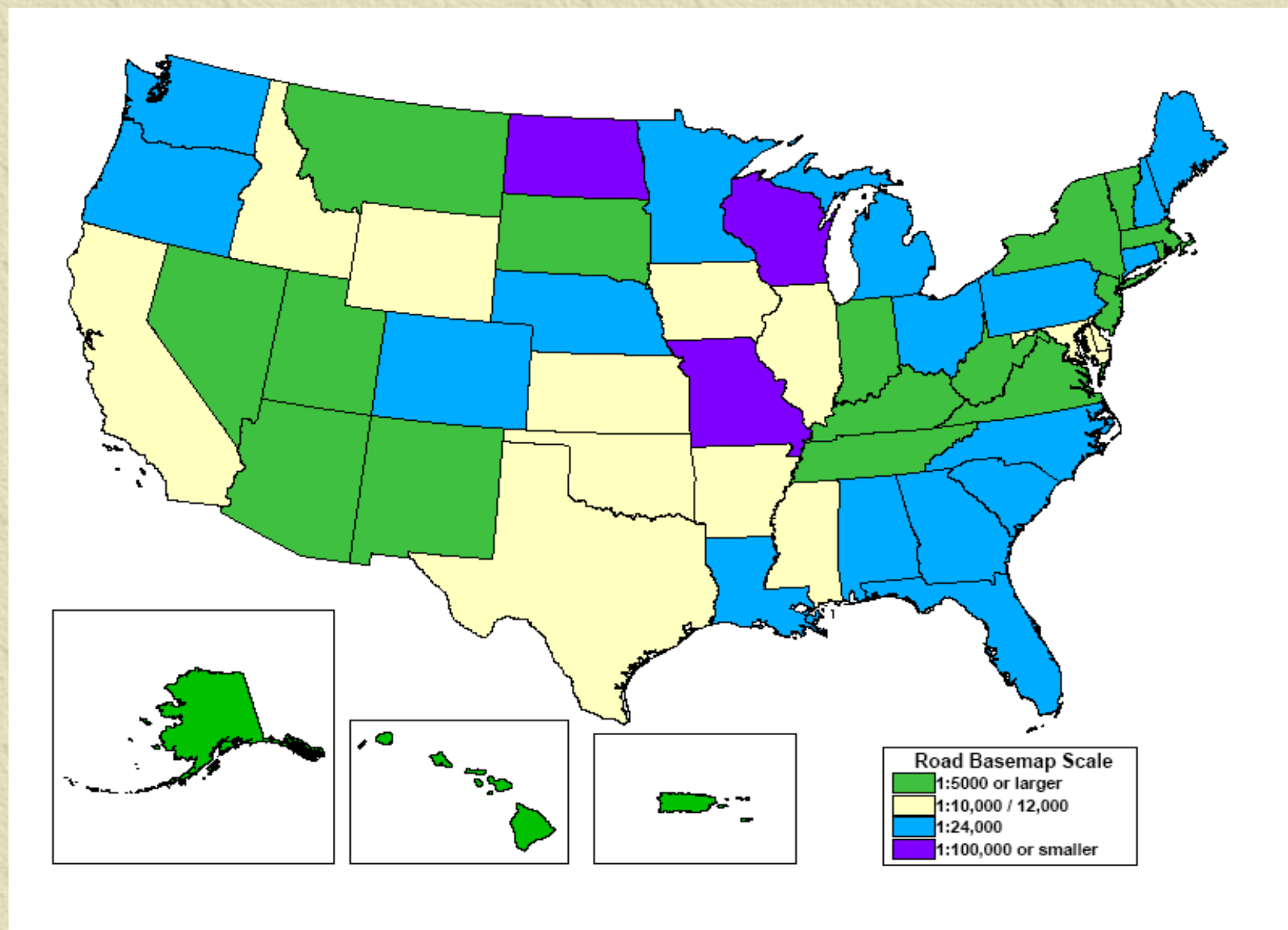
Web GIS



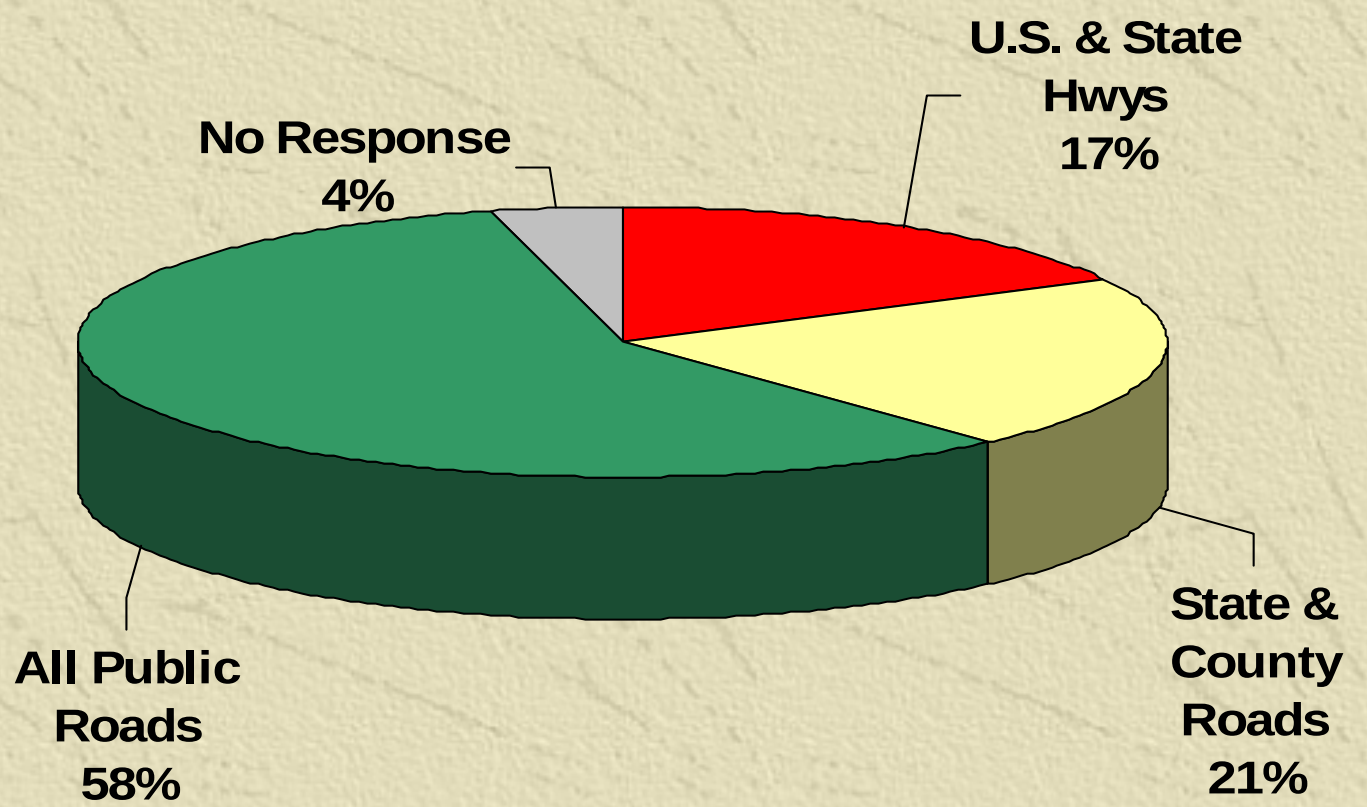
Base Map Scales



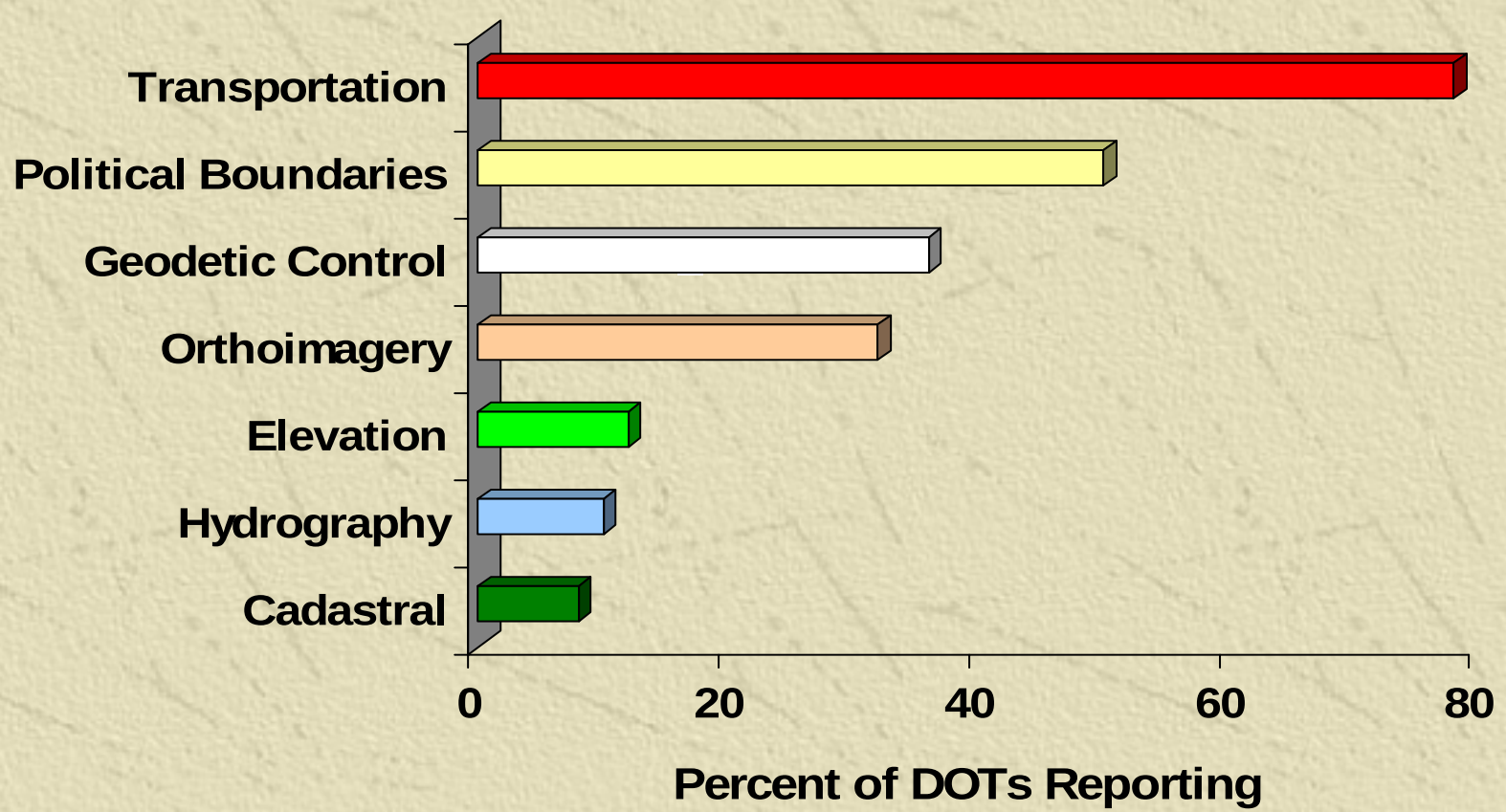
Road Base Map Scales



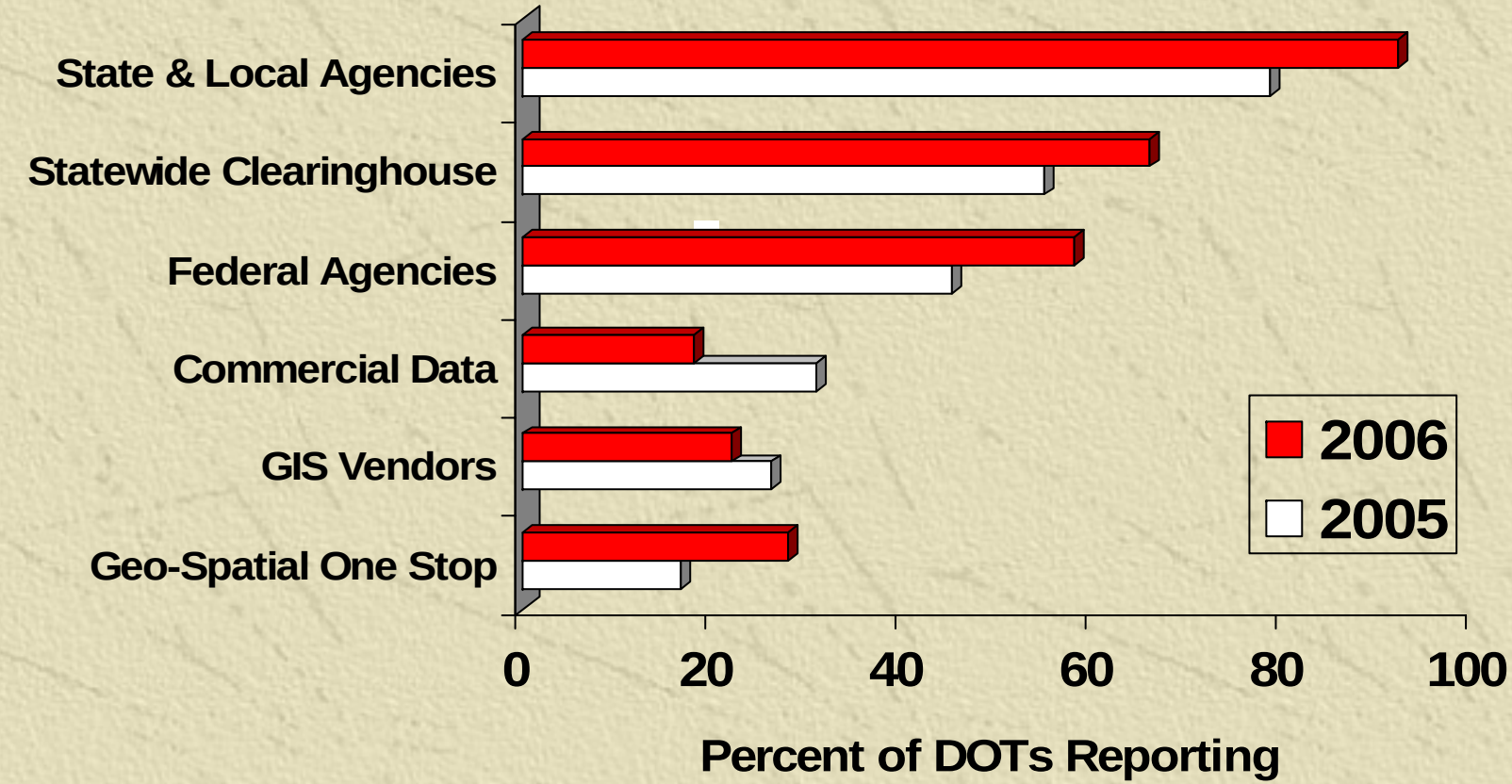
Road Network Coverage



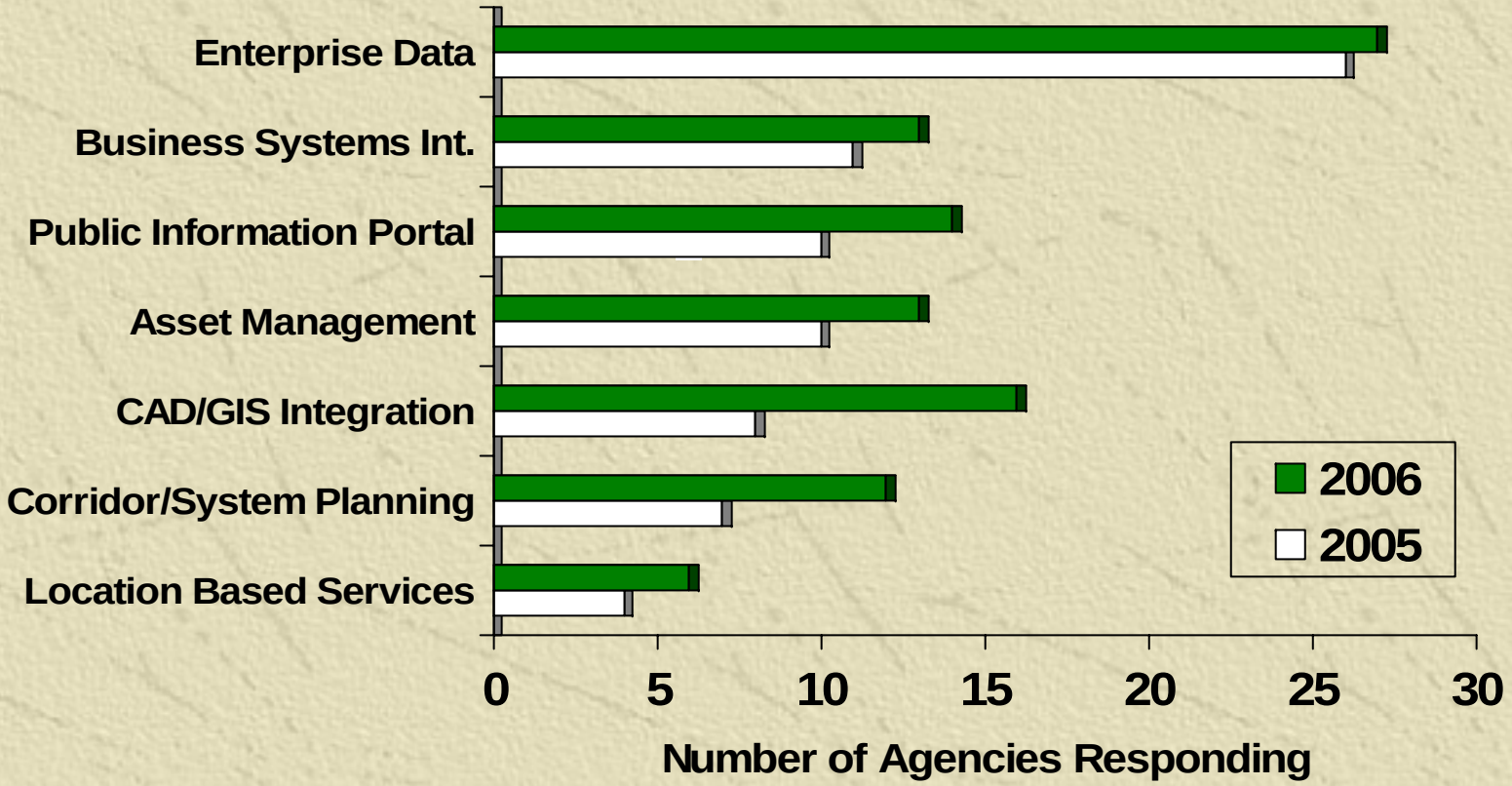
Other Geo-Spatial Data



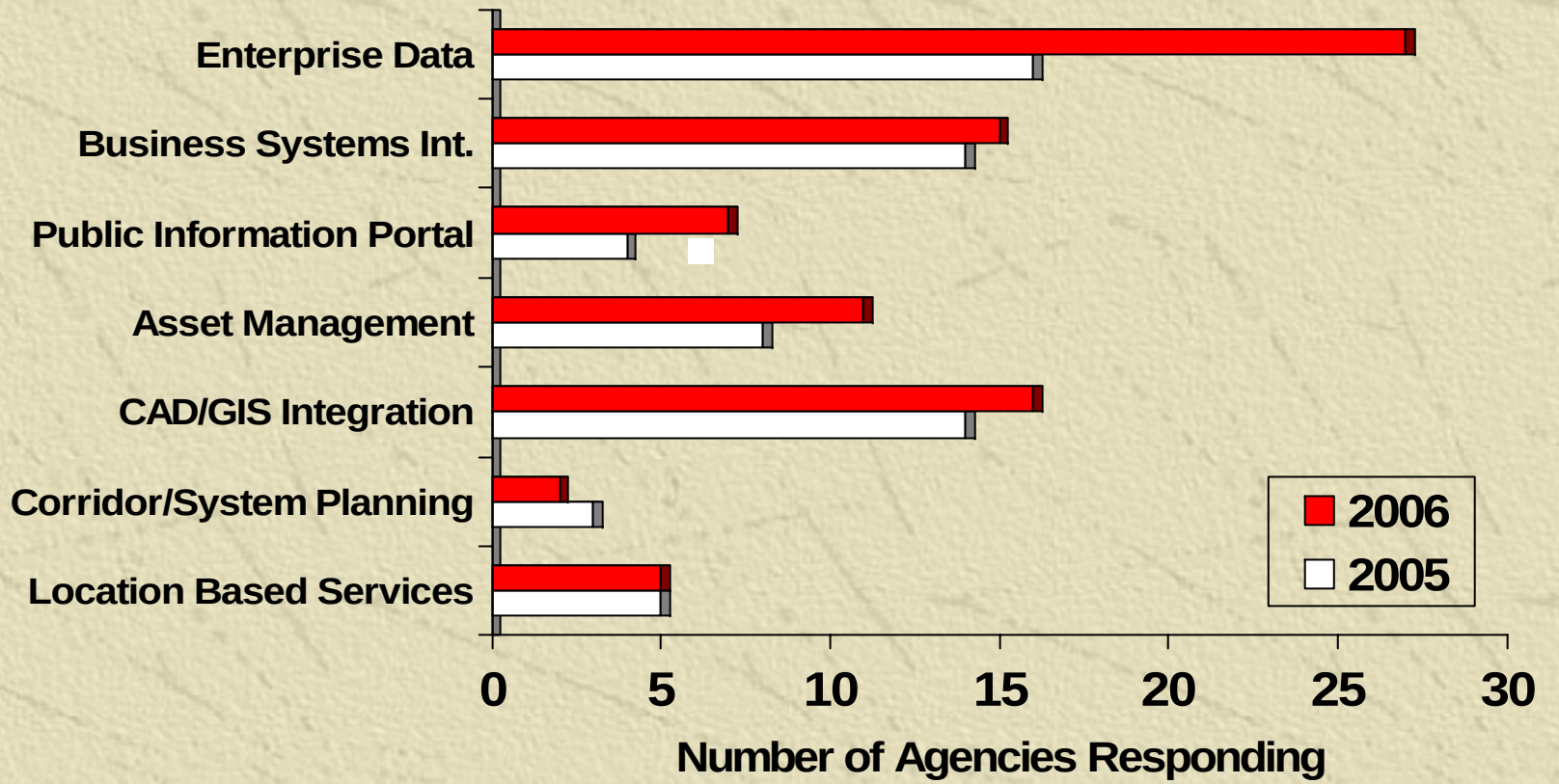
Geo-Spatial Data Sources



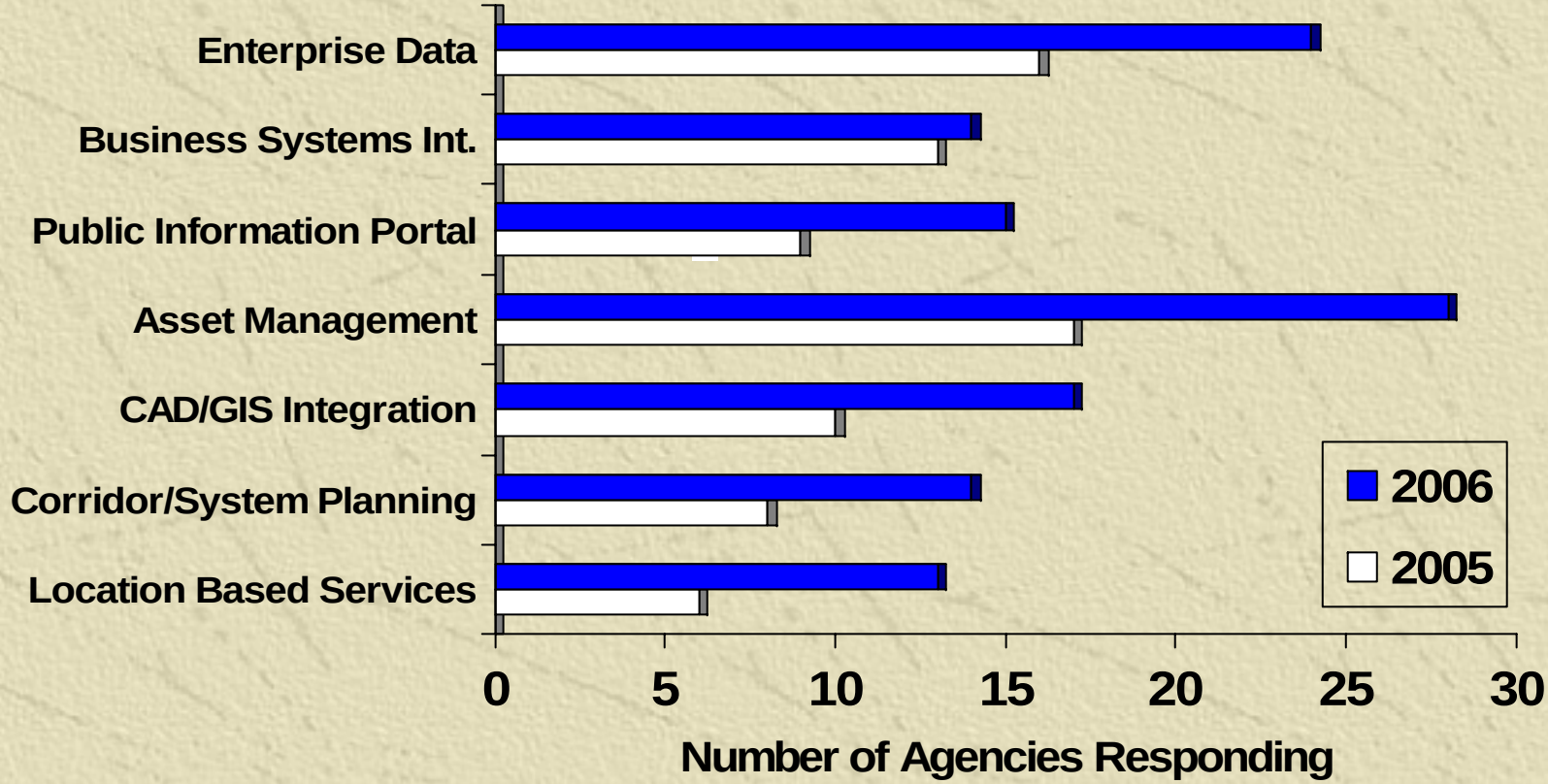
GIS Technology: Greatest Current Benefits



GIS Technology: Most Difficult to Implement



GIS Technology: Expected Future Benefits



Current GIS Staff Activities

- Core Functions
  - Develop web applications (44)
  - Location referencing (15)
  - Data warehouse / Enterprise GIS (14)
  - Base map maintenance / updates (12)
  - Develop Other GIS Databases (10)

Current GIS Staff Activities

- Other Activities
  - Software / hardware migration (12)
  - Data sharing partnerships (12)
  - Integrate imagery data with GIS (11)
  - Map production / publication (7)
  - Strategic Planning / Needs (6)
  - GPS data collection / integration (5)

Current GIS Applications

- Road Inventory Management (13)
- Traveler Advisory / Information (10)
- Safety / Crash Analysis (9)
- ITS / Traffic Management (8)
- Project Management (8)
- Bridge Management (7)
- Environment / Cultural Mitigation (7)

GIS Activities: Summary

- Web-based applications continue to be a major activity area.
- Enterprise data integration expanding to include imagery, CAD, and GPS.
- Data partnerships and software migration continue to occupy staff time.
- Variety of GIS applications with increasing emphasis on analysis.

GIS-T 2006 SURVEY OF STATES

Organizational Structure, Staffing, & Contracts

State	Deployment						Staff Location					Staff Education						GIS Certified		Core Functions (% of staff time)						Contracts	
	No GIS Function	No Agencywide Coord.	Single GIS Unit	Core GIS Unit /w End Users	Enterprise GIS	GIS Core Staff Size (FTE)	Planning	Engineering	IT/Information Services	Mapping/Surveying	OTHER	Engineering/Surveying	Planning	Geography/Cartography	IT/Computer Science	Business/Public Admin.	OTHER	Certified GIS Professional	Considered in Hiring	Road Base Map	LRS	Data Warehouse	Tech Support / Training	End-User Applications	Web Applications	Percent Outsourced	Annual GIS Contract Budget (in $000)
Alabama			1			14			1			1		1	1			No	No	25	15	20	10	20	10	0	0
Alaska						3	1							1	1			No	No								
Arizona				1		6.5	1					1		1			1	Yes	?	50	0	0	25	10	15		
Arkansas		1				6	1			1	1			1	1			No	?	20	20	20	20	10	10	?	?
California				1		14	1					1		1	1			No	Yes	10	35	10	10	10	25	75	500
Colorado				1		14	1					1	1	1	1			No	No	30	4	20	20	13	13	65	250
Connecticut			1			6	1					1	1	1	1			Yes	?	30	25	15	10	10	10	0	250
Delaware					1	5			1			1	1	1				No	No	0	15	30	55	0	0	100	500
Dist. of Columbia				1		6			1			1	1		1	1		No	No	25	20	15	30	5	5	90	1000
Florida				1		0		1																			
Georgia					1	6			1						1			No	Yes	5	10	10	10	5	60	25	120
Hawaii					1	1.5	1					1						Yes	No	20	20	20	10	10	20	95	300
Idaho		1				4	1							1				No	No	60	5	5	20	10	0	5	?
Illinois				1		5			1						1			No	?	20	20	10	10	20	20	50	
Indiana				1		12	1		1			1	1	1	1			No	?	20	20	5	20	15	20	20	
Iowa				1		2			1			1		1	1			No	No	0	30	20	30	10	10	95	1000
Kansas					1	9	1							1	1			No	?	25	5	5	10	15	40	75	200
Kentucky				1		10	1		1				1	1	1			No	?	40	5	5	10	30	10	10	
Louisiana					1	5			1					1	1		1	No	No	5	5	20	40	20	10	10	500
Maine				1		13	1		1	1			1	1	1		1	Yes	No	10	20	20	10	20	20	10	10
Maryland					1	5	1					1		1	1			Yes	?	0	35	15	0	25	25	90	500
Massachusetts			1			6	1						1	1	1			No	?	30	20	15	5	5	25	75	300
Michigan					1	6	1						1	1	1			No	?	15	15	15	25	25	5	0	0
Minnesota					1	8.5			1					1	1			No	No	5	50	10	10	10	15	75	200
Mississippi				1		3	1						1	1	1			No	?	30	30	10	10	10	10	80	
Missouri																											
Montana				1		4			1						1			Yes	Yes	20	30	20	20	10	0	15	25
Nebraska				1		6			1					1	1			No	No	10	10	5	25	25	25	10	500
Nevada				1		5		1						1				No	No	25	5	20	10	20	20	85	500
New Hampshire			1			10	1					1			1			No	No	50	10	15	5	10	10	5	
New Jersey				1		10			1					1	1			Yes	?							100	
New Mexico				1		3			1					1	1			No	No	45	5	30	15	5	0	5	90
New York					1	5			1					1				No	Yes	10	20	10	50	0	10	20	200
North Carolina			1			14			1					1	1			Yes	?	20	40	20	5	10	5	0	0
North Dakota		1				5	1		1				1	1	1			No	No	60	5	5	10	10	10	0	0
Ohio					1	14	1						1	1	1			No	No	10	30	10	30	10	10	10	200
Oklahoma				1		6.5	1						1	1				No	No	20	5	30	10	10	25	75	300
Oregon						13.5	1							1	1			Yes	No	20	5	15	20	20	20	25	300
Pennsylvania					1	4.5	1					1	1	1	1			No	No	5	30	5	10	20	30	70	1200
Puerto Rico					1	5	1					1	1	1		1		No	No	50	10	10	15	10	5	50	60
Rhode Island				1		6			1					1	1			No	No	10	10	20	20	10	30	40	100
South Carolina				1		11		1						1				No	Yes	60	15	10	5	5	5	70	1500
South Dakota		1				3					1		1	1				No	No	30	10	10	30	20	0	50	
Tennessee					1	14			1					1				Yes	?	25	10	20	15	10	20	80	800
Texas				1		4			1					1	1			No	No	10	0	50	20	0	20	50	500
Utah						1		1				1	1	1	1			No	No	5	40	40	5	5	5	2	0
Vermont				1		6			1	1		1		1	1			No	No	30	15	15	20	0	20	100	
Virginia					1	6			1			1		1	1			Yes	No	20	20	10	10	20	20	5	100
Washington				1		8.5			1	1				1	1		1	Yes	?	15	40	10	10	20	5	5	50
West Virginia						5	1					1	1					No	?	20	15	15	30	5	15	0	
Wisconsin					1	13			1				1	1	1			No	No	0	10	25	25	25	15	50	500
Wyoming				1		4.5					1	1		1	1			No	Yes	25	0	25	0	10	40	50	80
Total	**0**	**4**	**5**	**23**	**15**	**7.02**	**24**	**4**	**25**	**4**	**3**	**19**	**19**	**43**	**38**	**2**	**4**	**12**	**6**	**22.3**	**17.0**	**15.8**	**17.0**	**12.5**	**15.5**	**42.9**	**$341.5**

Agency Software

State	GIS Software																Enterprise RDBMS Software						Spatial Data Manager		
	ESRI - ArcGIS	ESRI - ArcINFO	ESRI - ArcView	ESRI - ArcIMS	Intergraph - MGE	Intergraph - GeoMedia	Intergraph - WebMap	Caliper - TransCAD	Caliper - Maptitude	Bentley - Microstation	AutoCAD	MapInfo	OTHER	Total Vendors	Primary GIS Software	Primary Web GIS Software	No Enterprise GIS	MS Access	Oracle	SQL Server	DB2	Sybase	Arc SDE	Oracle Spatial	OTHER
Alabama	1	1	1	1		1				1				3	ESRI/Inter.	ArcIMS		1	1				1	1	
Alaska	1		1	1							1			2	ESRI	ArcIMS			1				1		
Arizona	1	1	1	1						1	1			3	ESRI	ArcIMS				1			1		
Arkansas	1				1	1				1			1	4	Intergraph			1		1					
California	1	1	1	1		1	1			1			1	4	ESRI	ArcIMS			1				1	1	
Colorado	1	1	1	1						1				2	ESRI	ArcIMS			1				1		
Connecticut	1	1	1	1	1	1	1			1				3	?	ArcIMS/WebMap		1	1	1			1	1	
Delaware	1	1	1	1		1				1		1		4	ESRI	ArcIMS			1				1	1	
Dist. of Columbia	1	1	1	1										1	ESRI	ArcIMS		1	1	1			1		
Florida																									
Georgia	1	1	1	1										1	ESRI	ArcIMS			1				1		
Hawaii	1		1		1	1	1		1	1		1	1	6	Intergraph	WebMap			1					1	
Idaho	1	1	1	1	1	1				1				3	ESRI	None	1								
Illinois	1	1	1	1						1				2	ESRI	ArcIMS				1			1		
Indiana	1	1	1	1										1	ESRI	ArcIMS		1	1				1	1	
Iowa	1	1	1			1	1			1				3	Intergraph	WebMap		1	1					1	
Kansas			1			1	1	1	1	1				4	Intergraph	WebMap			1					1	
Kentucky	1	1	1	1		1		1	1	1				4	ESRI	ArcIMS			1	1			1	1	
Louisiana	1	1	1	1										1	ESRI	ArcIMS		1			1		1		
Maine	1	1	1	1						1				2	ESRI	ArcIMS		1	1				1	1	
Maryland	1		1	1						1				2	ESRI	ArcIMS			1				1		
Massachusetts	1	1	1	1				1			1			3	ESRI	ArcIMS				1			1		
Michigan	1		1			1		1	1					3	Caliper	Maptitude/ArcIMS			1					1	
Minnesota	1	1	1	1						1				2	ESRI	ArcIMS/custom			1				1	1	
Mississippi	1		1		1	1	1	1		1	1			4	Intergraph	WebMap		1	1	1		1		1	1
Missouri																									
Montana	1	1	1											1	ESRI				1				1	1	
Nebraska					1	1	1			1				2	Intergraph	WebMap		1		1	1		1		
Nevada	1	1	1			1	1	1		1	1	1	1	4	ESRI/Inter.	WebMap		1	1	1				1	1
New Hampshire	1	1	1	1										1	ESRI	ArcIMS		1	1				1		
New Jersey	1	1	1	1						1				2	ESRI			1	1				1		
New Mexico	1	1	1	1										1	ESRI	ArcIMS			1				1	1	
New York	1		1	1										1	ESRI	ArcIMS			1				1		
North Carolina	1	1	1	1						1				2	ESRI								1		
North Dakota	1	1	1	1										1	ESRI	ArcIMS				1	1		1		
Ohio			1		1	1	1	1	1	1				4	Intergraph	WebMap		1				1			
Oklahoma	1				1	1	1			1				3	Intergraph	WebMap			1					1	
Oregon	1	1	1	1		1	1			1				3	ESRI/Inter.	ArcIMS/WebMap				1			1		
Pennsylvania	1				1	1	1			1			1	4	Inergraph	WebMap			1					1	
Puerto Rico	1	1	1	1							1			2	ESRI	ArcIMS		1							
Rhode Island	1	1	1	1				1			1			3	ESRI	ArcIMS			1	1			1		
South Carolina	1		1		1	1	1			1				3	Intergraph	WebMap			1					1	
South Dakota	1	1	1											1	ESRI	ARCIMS				1			1		
Tennessee	1		1	1	1	1	1	1		1				4	ESRI	WebMap/ArcIMS			1				1	1	
Texas	1	1	1	1				1		1				3	ESRI	ArcIMS			1	1			1	1	
Utah	1	1	1	1						1			1	3	ESRI	ArcIMS			1				1	1	
Vermont	1	1	1	1										1	ESRI	ArcIMS				1			1		
Virginia	1	1	1	1										1	ESRI	ArcIMS			1				1		
Washington	1	1	1	1						1				2	ESRI	ArcIMS	1			1			1		
West Virginia	1	1	1	1										1	ESRI	ArcIMS		1	1	1			1		
Wisconsin	1	1	1	1	1					1				3	ESRI	ArcIMS			1				1		
Wyoming	1	1	1	1						1				2	ESRI	ArcIMS			1				1		
Total	**47**	**36**	**46**	**36**	**12**	**20**	**14**	**10**	**5**	**32**	**7**	**3**	**6**	**2.5**			**2**	**16**	**35**	**18**	**3**	**2**	**37**	**22**	**2**

Digital Road Database

State	Digital Road Database	Coverage			Resolution					Distribution Policy			
		US & State Routes Only	US, State & County Routes	All Public Roads	1:100,000 or lower	1:24,000	1:10,000 / 12,000	1:5,000 or higher	OTHER	Free Distribution	Free to public agencies	Can be purchased	Restricted Use
Alabama	Yes		1						1	1			
Alaska	Yes	1						1		1			
Arizona	Yes			1				1			1		
Arkansas	Yes			1			1			1			
California	Yes	1					1			1			
Colorado	Yes			1		1				1			
Connecticut	Yes	1				1							1
Delaware	Yes			1			1			1			
Dist. of Columbia	Yes			1				1			1		
Florida													
Georgia	Yes			1		1				1			
Hawaii	Yes		1					1					1
Idaho	Yes	1					1			1			
Illinois	Yes			1			1				1		
Indiana	Yes			1				1		1			
Iowa	Yes			1			1			1			
Kansas	Yes			1			1					1	
Kentucky	Yes			1				1		1			
Louisiana	Yes	1				1				1			
Maine	Yes			1		1				1			
Maryland	Yes			1			1			1			
Massachusetts	Yes			1				1		1			
Michigan	Yes			1		1				1			
Minnesota	Yes			1		1				1			
Mississippi	Yes		1				1				1		
Missouri	Yes												
Montana	Yes			1				1			1		
Nebraska	Yes		1			1					1		
Nevada	Yes		1					1			1		
New Hampshire	Yes			1		1				1			
New Jersey	Yes			1					1	1			
New Mexico	Yes	1						1		1			
New York	Yes			1				1			1		
North Carolina	Yes	1				1				1			
North Dakota	Yes			1	1					1			
Ohio	Yes			1		1						1	
Oklahoma	Yes		1				1				1		
Oregon	Yes			1		1							1
Pennsylvania	Yes			1		1				1			
Puerto Rico	Yes		1					1			1		
Rhode Island	Yes			1				1		1			
South Carolina	Yes		1			1				1			
South Dakota	Yes			1				1		1			
Tennessee	Yes		1					1		1			
Texas	Yes	1					1			1			
Utah	Yes		1					1		1			
Vermont	Yes			1				1		1			
Virginia	Yes		1					1		1			
Washington	Yes	1				1				1			
West Virginia	Yes			1					1		1		
Wisconsin	Yes			1	1					1			
Wyoming	Yes			1			1			1			
Total	**49**	**9**	**11**	**30**	**2**	**15**	**12**	**18**	**3**	**34**	**11**	**2**	**3**

GIS-T 2006 SURVEY OF STATES

State	Other Geo-Spatial Data															Benefits and Costs of GIS Technology																							
	Features Maintained									Data Sources						Greatest Current Benefits								Greatest Difficulty & Cost								Expected Future Benefits							
	Number of Data Categories	Orthoimagery	Political Boundaries	Transportation Features	Water Features	Cadastral	Elevation Data	Geodetic Control	Other Features	State & Local Agencies	Statewide Clearinghouse	Federal Agency Websites	Geo-Spatial Onestop	Provided by GIS Vendors	Purchase Commercial	CAD/GIS Integration	Corridor / System Planning	Asset Management	Enterprise Data Integration	Public Information Portals	Business System Integration	Location Based Services	OTHER	CAD/GIS Integration	Corridor / System Planning	Asset Management	Enterprise Data Integration	Public Information Portals	Business System Integration	Location Based Services	OTHER	CAD/GIS Integration	Corridor / System Planning	Asset Management	Enterprise Data Integration	Public Information Portals	Business System Integration	Location Based Services	OTHER
Alabama	0									1		1					1		1					1														1	
Alaska	0																																						
Arizona	0									1		1				1												1						1				1	
Arkansas	5	1	1	1	1				1	1	1	1		1		1	1	1		1		1		1										1				1	
California	1			1						1	1	1		1					1		1		1				1								1		1		
Colorado	5	1	1	1	1			1		1		1		1	1		1		1					1			1						1		1				
Connecticut	4	1		1			1	1		1					1	1		1	1							1			1			1		1	1				
Delaware	0									1	1								1	1									1			1		1					
Dist. of Columbia	1			1						1	1		1				1	1								1	1	1		1		1	1	1	1	1		1	
Florida																																							
Georgia	2		1	1						1	1	1	1	1	1				1	1	1						1					1	1	1				1	1
Hawaii	2		1	1						1		1							1		1			1					1			1		1					
Idaho	0									1	1					1															1				1	1			
Illinois	0									1	1	1			1					1	1	1					1		1						1		1		
Indiana	2		1				1			1	1	1	1					1	1												1				1	1			
Iowa	2		1	1						1	1	1	1			1			1		1			1			1		1	1		1		1	1		1	1	
Kansas	0										1					1											1							1					
Kentucky	2			1				1		1		1				1			1							1	1								1		1		
Louisiana	4		1	1				1	1	1	1	1		1	1					1			1	1			1					1				1			
Maine	0									1	1	1	1			1			1			1				1	1	1	1	1				1	1	1	1		
Maryland	1								1	1			1			1											1										1		
Massachusetts	2		1	1						1	1							1		1						1		1						1		1			
Michigan	3		1	1	1					1	1							1	1								1								1				
Minnesota	7	1	1	1	1	1		1	1	1	1	1	1						1	1						1	1							1		1			
Mississippi	0									1	1	1	1	1	1	1		1	1		1			1			1					1	1						
Missouri																																							
Montana	0									1	1	1	1					1			1								1			1	1	1	1	1			
Nebraska	2			1				1		1		1								1	1										1				1				
Nevada	6	1	1	1	1			1	1	1		1											1				1				1			1					1
New Hampshire	6	1	1	1	1			1	1	1	1	1						1	1					1		1		1				1	1	1	1	1			
New Jersey	5		1	1		1		1	1	1	1	1	1				1		1								1						1		1				
New Mexico	4	1	1	1				1		1	1					1	1	1	1					1								1		1	1	1			
New York	2			1				1		1	1			1			1		1	1	1					1								1		1			
North Carolina	5	1	1	1	1		1			1	1					1																		1	1		1		
North Dakota	3		1	1	1						1									1							1					1			1				
Ohio	5	1	1	1			1	1		1	1	1	1	1					1		1			1													1	1	
Oklahoma	2		1	1						1	1						1		1											1	1			1		1			
Oregon	6	1	1	1	1	1		1		1	1		1		1		1										1	1	1			1	1	1	1	1	1		
Pennsylvania	3		1	1					1	1					1			1					1						1					1			1		
Puerto Rico	4	1		1				1	1	1		1		1	1	1	1					1				1	1	1	1				1		1		1		
Rhode Island	4	1	1	1			1			1	1						1		1								1							1			1		
South Carolina	2		1	1						1		1				1			1					1			1						1		1				
South Dakota	0									1		1	1					1	1		1			1	1							1		1				1	
Tennessee	0									1		1							1	1				1					1			1	1						
Texas	0										1	1							1								1						1	1					
Utah	8	1	1	1	1	1	1	1	1	1									1								1		1					1	1		1		
Vermont	2			1				1		1	1					1				1							1		1					1				1	
Virginia	1			1						1	1									1	1			1					1				1					1	
Washington	7	1	1	1	1	1		1	1	1	1	1		1		1						1					1			1						1		1	
West Virginia	0									1	1						1					1			1	1	1						1	1	1	1			
Wisconsin	5	1	1	1			1	1		1		1						1			1			1			1					1						1	
Wyoming	2	1		1						1	1	1	1	1					1	1				1		1			1			1		1	1		1	1	
Total	**2.5**	**16**	**25**	**34**	**11**	**5**	**7**	**18**	**11**	**46**	**33**	**29**	**14**	**11**	**9**	**16**	**12**	**13**	**27**	**14**	**13**	**6**	**4**	**16**	**2**	**11**	**27**	**7**	**15**	**5**	**5**	**17**	**14**	**28**	**24**	**15**	**14**	**13**	**2**