2010

GIS Use for Public Works Management in the United States and Canada

Compiled by Bartlett & West

BARTLETT & WEST

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Executive Summary

Bartlett & West undertook this study to provide a resource for public works professionals, offering insights into how their colleagues in the United States and Canada are using and supporting Geographic Information Systems (GIS). The report examines public works entities' use of GIS, budgets, funding, resources, technical support, and other pertinent information.

GIS has been in use for a number of years and it has taken many years for those cities that use GIS to complete the tedious base mapping and data collection that is necessary for entities to take the next step and begin using GIS as a real management tool. Not only has much data been collected, but the technology for data collection has improved rapidly with the widespread use of GPS and now LIDAR.

The other shift in technology that has aided the wide implementation of GIS is the move from primarily desktop implementation to the use of the internet to serve out GIS data to public works staff. Finally, with the advent of Google Earth and similar applications, GIS has clearly hit the mainstream, rapidly improving the ability of public works officials to educate administrators and politicians on the many uses of GIS.

The combination of these factors led Bartlett & West to wonder where the majority of cities were on the GIS continuum – the industry seems poised to take the leap from GIS mapping to GIS managing. Clearly, many of the larger cities are using GIS to manage their assets and processes, from project management and infrastructure management to permitting and analyzing complaints. What is the rest of the industry doing? Is there a clear divide among those fully utilizing GIS and those still at the starting line? Is funding an issue or has GIS become a solid competitor for budget dollars?

E-mails with links to the survey were sent to 16,701 public works professionals across the U.S. and Canada in late 2009. Surveys were completed by 1,375 respondents.

Data from competed surveys were divided into eight geographical regions and ten population segments based on size of municipality or other entity served.

Respondents represented cities, counties, or other entities providing public works management with populations roughly presenting a bell curve from less than 1000 to greater than one million.

Segmentation of data by region and size will allow easy comparison of what an organization is doing with others of similar size in a given region. Both percentages and actual counts are provided to help gauge the size of the actual regional samples when comparing practices reported with those at your own organization.

Executive Summary

Entities with populations greater than 20,000 were well-represented among survey responses. In addition, two hundred responses were from entities with populations greater than 500,000.

A total 89.0 percent of responses indicated their organizations have implemented GIS, with 46.1 percent indicating their organizations' GIS programs are tied to another entity—a county, for example.

Of those who have NOT yet implemented GIS, 40.6 percent of respondents intend to do so within the next five years. 18.2 percent have no plans to implement GIS. Of all those who DO plan to implement GIS, 37.2 percent plan to fund the program out of the general fund, while 38.8 percent have not determined how they will fund their GIS implementation.

Of the 11 percent who indicated their organizations had not yet implemented GIS, the majority rely on paper files, spreadsheets and databases to manage capital projects, permits (e.g., building, utility, etc.), utility maintenance (e.g., pipe replacement, sewer cleaning, meter replacements, etc.), and complaints (e.g., potholes, drainage, etc.).

Respondents who HAVE implemented GIS programs in their entities report using GIS for a variety of purposes, from base maps to infrastructure and utility management, planning, demographic analysis, incident tracking, and other uses. This is true across all but the smallest entities and in every region.

Of those respondents currently using GIS, 47 percent reported that the GIS was accessible to the public. This is more likely to be true the larger the entity's population.

More than 60 percent of larger entities report they have incorporated GIS into daily management of infrastructure, with that percentage tapering off sharply for populations less than 50,000.

Those reporting use of GIS as a public works management tool most commonly cite project and maintenance management as primary uses.

Only 32 percent of those surveyed provide a centralized customer service desk—a 311 phone number, for example—to their constituents.

Of those with implemented GIS programs, 72.5 percent report having on-staff GIS experts for technical support. Of those with implemented GIS programs, 9.2 percent report contracting for outside GIS support services. This is generally more likely to be true the smaller the entity

served.

Of those who have implemented GIS programs, 63.3 percent have specific budgets for GIS development and maintenance. A total of 61.4 percent expect no change in GIS budgets in the near term, with 11.9 expecting an increase in the next budget cycle, and 15 percent foreseeing a decrease. Respondents are more optimistic in the long term, with 46.5 percent predicting increases in the next two to three years and only 7.5 percent foreseeing a decrease. No change is still predicted by 34.8 percent.

A full 55 percent report funding GIS efforts out of a general fund, while 4.1 percent use sales tax funding, 11.7 use internal charges, and 19.8 percent use utility fees.

Not surprisingly, more than one-third of the respondents feel their GIS budgets are less than adequate, and offer many, many suggestions for what more they would like to do with their GIS programs if additional funds were available.

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Purpose

89% of study participants have implemented a Geographic Information System

The findings in this study are based on a survey conducted by Bartlett & West. Bartlett & West, a firm providing engineering, information management, field services, landscape architecture, sustainable design, and other professional services, has been working with public works entities for nearly 60 years.

The purpose of this research was to provide a resource for public works professionals, offering insights into how their colleagues in the United States and Canada are using and supporting GIS. The report examines public works entities' use of GIS, budgets, funding, resources, technical support, and other pertinent information.

The study also addresses the issues and plans of those public works entities not yet using GIS.

In addition, data on entities' size and location was collected, together with respondents' position titles.

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Methodology

1,375 public works professionals participated in the study

Recognizing the value of GIS in public works management, Bartlett & West crafted a web-based, 27-question survey to gather valuable data from public works professionals across the United States and Canada.

E-mails with links to the survey were sent to 16,701 public works professionals in late 2009.

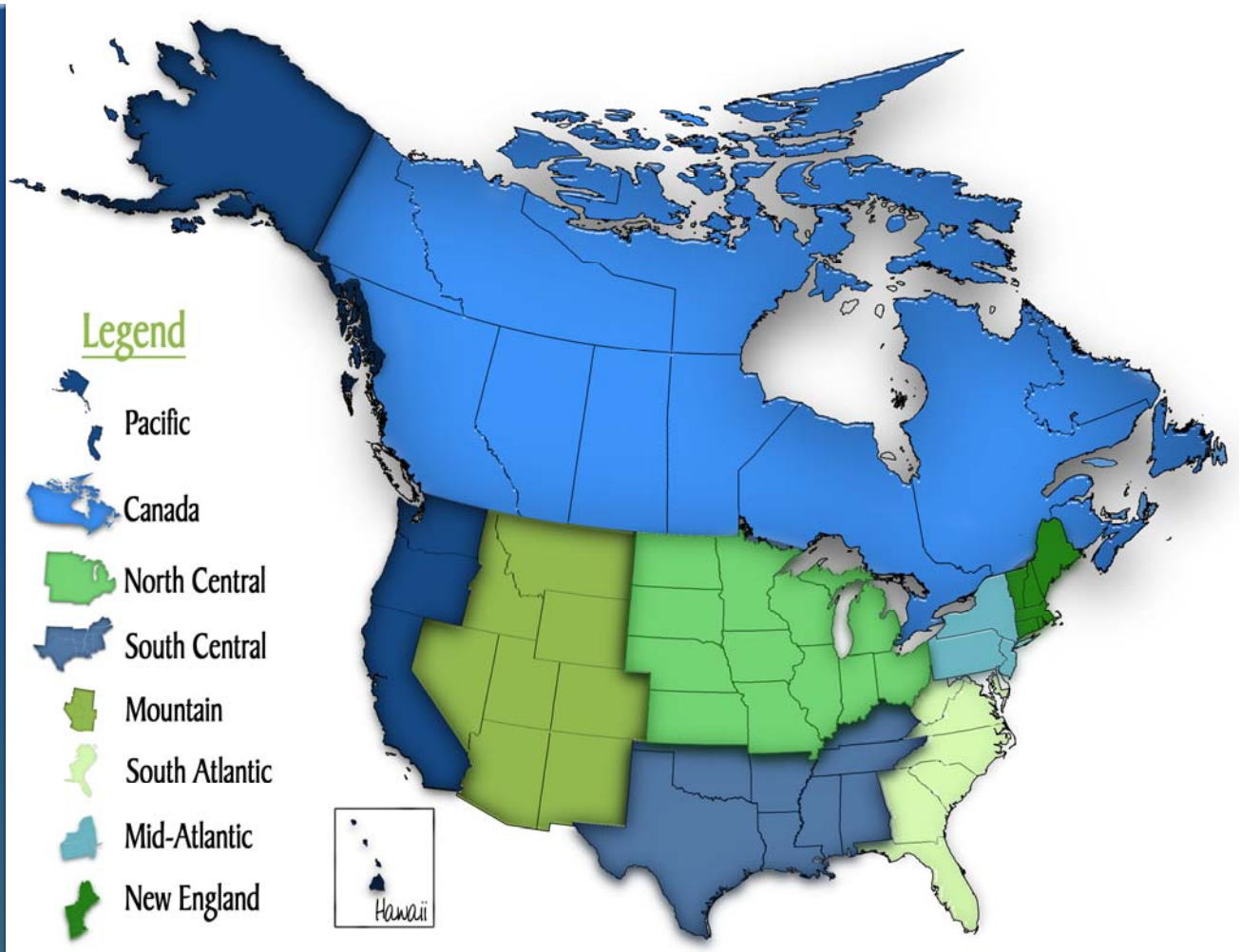
Recipients were given the choice of participating anonymously, or providing their names and contact information if they wanted to receive a complimentary, advanced copy of the final report. They were also encouraged to forward the e-mails to anyone in the organization who might also be interested in participating.

Surveys were submitted by 1,375 respondents before the survey closed.

Percentages based on all 1,375 respondents are subject to a margin of error of ± 2.53% at a 95% confidence level. When interpreting percentages based on smaller, sub-samples broken down by entity region or population, be aware that the margin of error will be different, and very small samples may not prove statistically significant.

Due to rounding, some percentage totals do not equal 100.

Regional Groupings



Regional groupings in this study consist of the following:

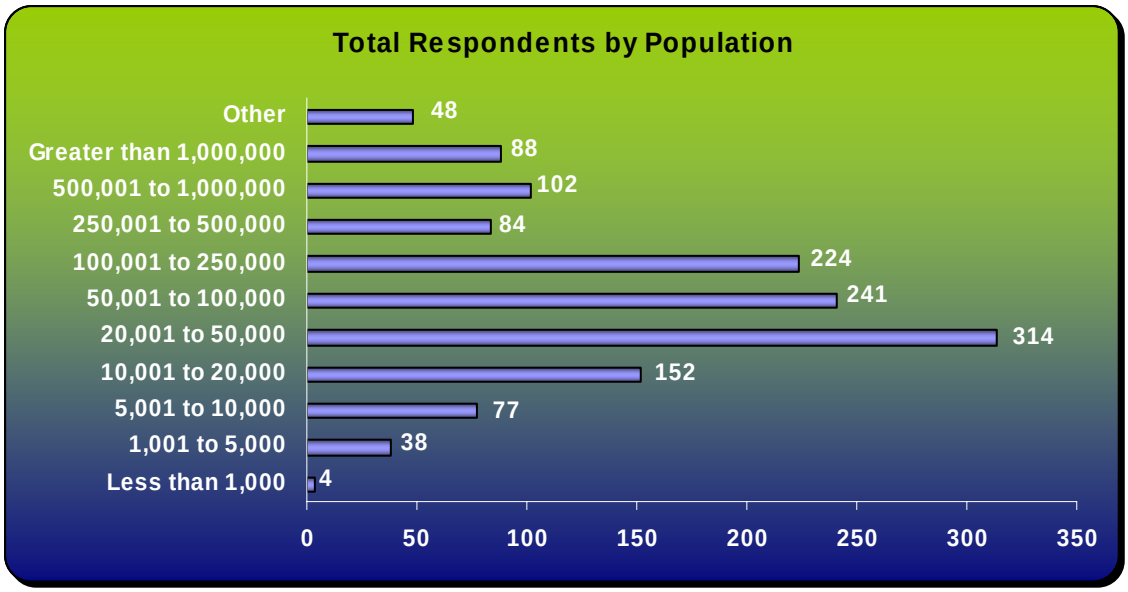
- **Canada —** All provinces.
- **New England —** Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.
- **Mid-Atlantic —** New York, Pennsylvania, New Jersey.
- **North Central —** Wisconsin, Michigan, Illinois, Indiana, Ohio, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri.
- **South Atlantic —** Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.
- **South Central —** Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, Louisiana.
- **Mountain —** Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico.
- **Pacific —** Alaska, Washington, Oregon, California, Hawaii.

Respondents

A total of 1375 public works professionals from seven Canadian provinces and 49 U.S. states responded to the survey.

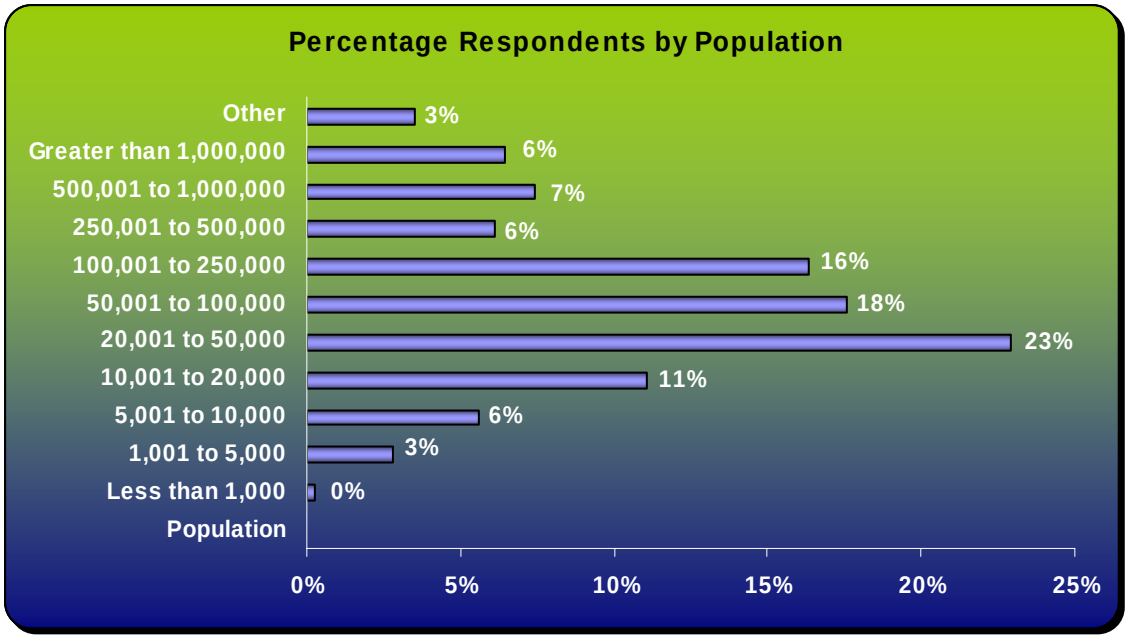
Responses were provided by professionals performing a diverse range of roles, from public works directors, deputy directors, and assistant directors, to GIS managers, administrators, analysts, and coordinators, from city and county engineers and engineering staffs, to utilities superintendents, maintenance and operations managers, and construction supervisors.

Respondents represented cities, counties, or other entities providing public works management with populations roughly representing a bell curve from less than 1000 to greater than one million.



In the following pages, respondent data are provided broken down by population size of entity and further segmented by geographical region.

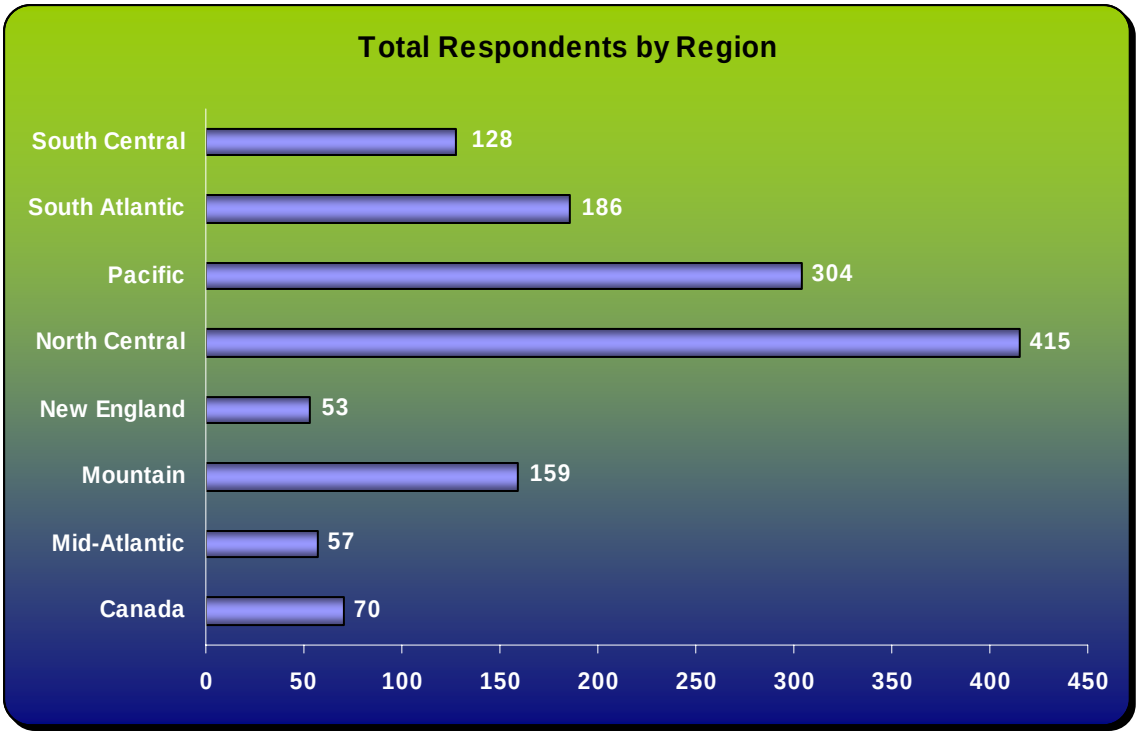
Segmentation of data by region and size will allow you to compare what your organization is doing with others in similar situations.



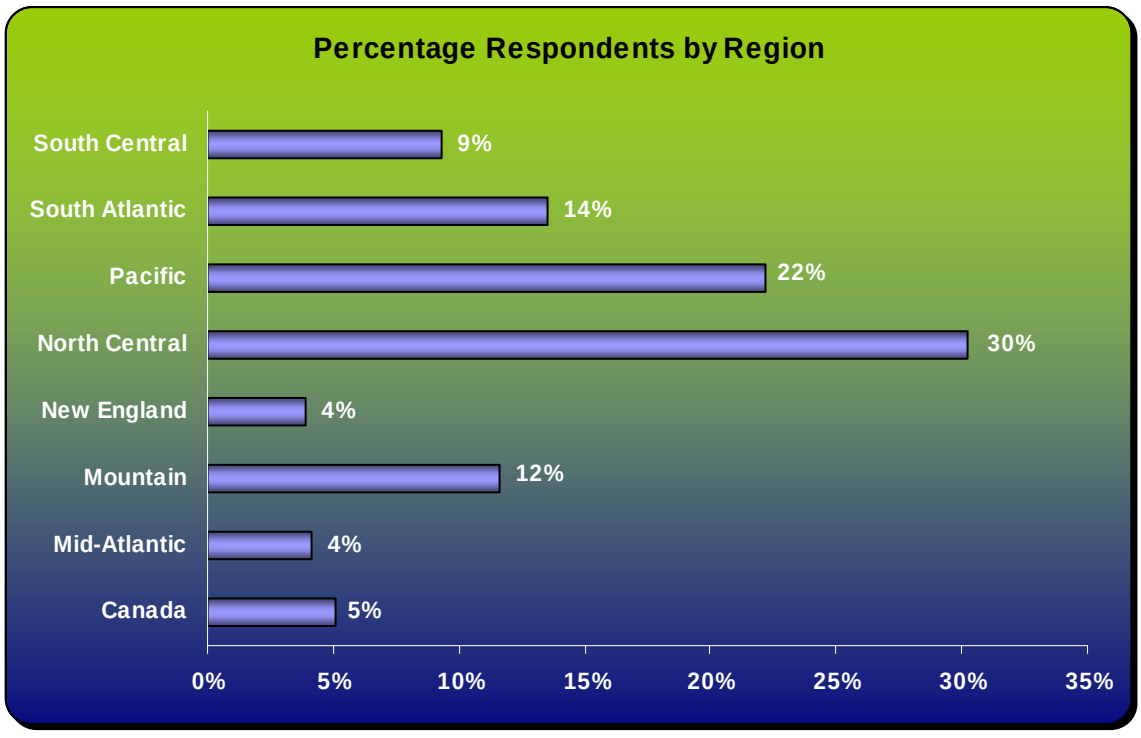
Respondents

Entities with populations greater than 20,000 were well-represented among survey responses. Two hundred responses were from entities with populations greater than 500,000.

Given variations in population density among the regions, geographic distribution is fairly proportionate, though the heavily populated Mid-Atlantic region, which includes New York, Pennsylvania, and New Jersey, may be somewhat underrepresented.

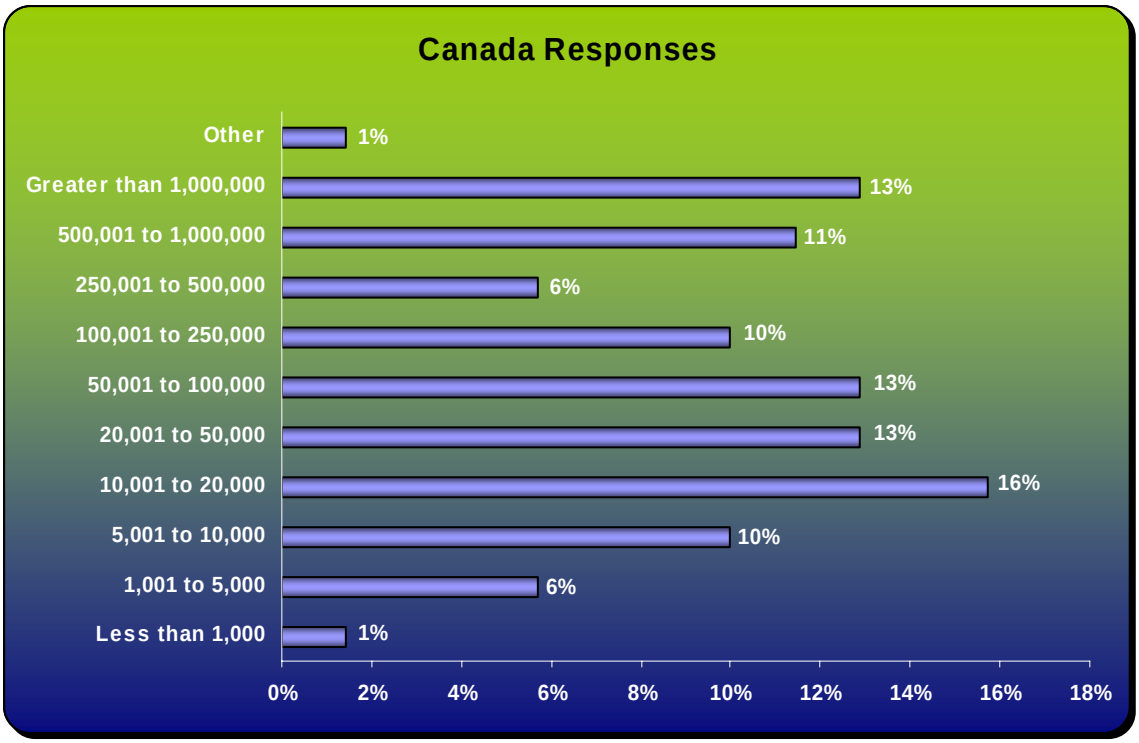


Both percentages and actual counts are provided to help you gauge the size of the actual regional samples as you compare practices reported with those at your own organization.

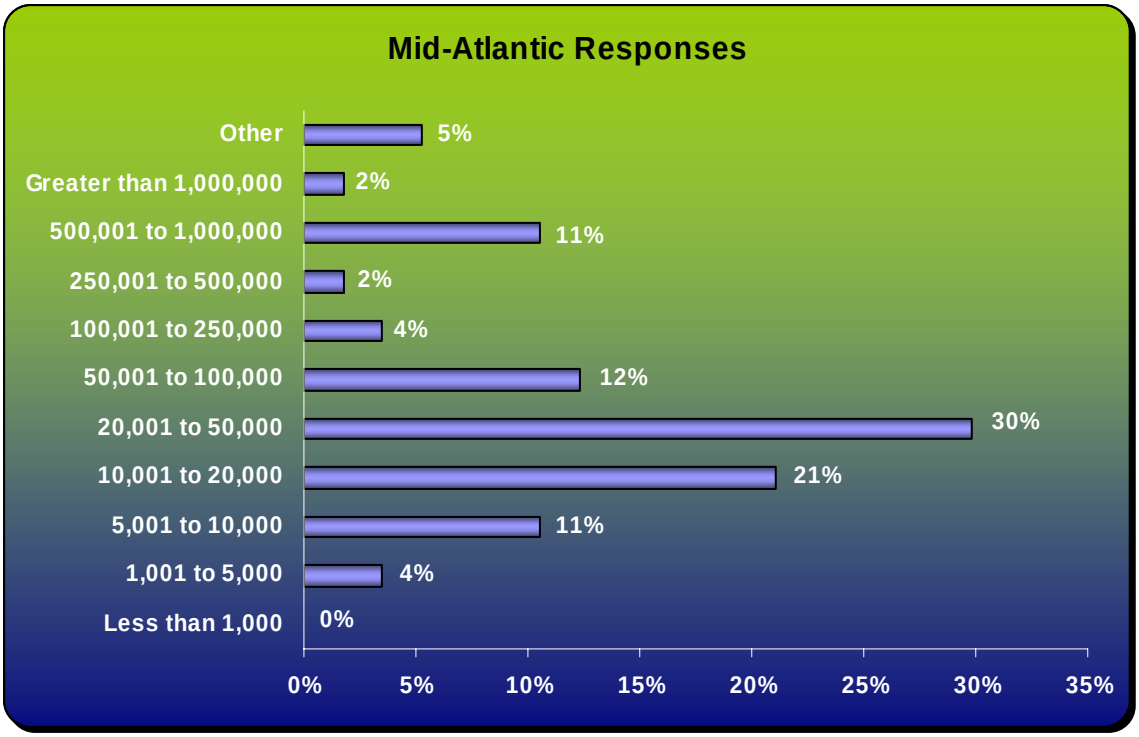


Respondents

Distribution of responses from the Canadian Provinces are fairly well-distributed across the categories used for classifying population data in this study, with the exception of entities with fewer than 5,000 people. The study included responses from all Canadian Provinces.

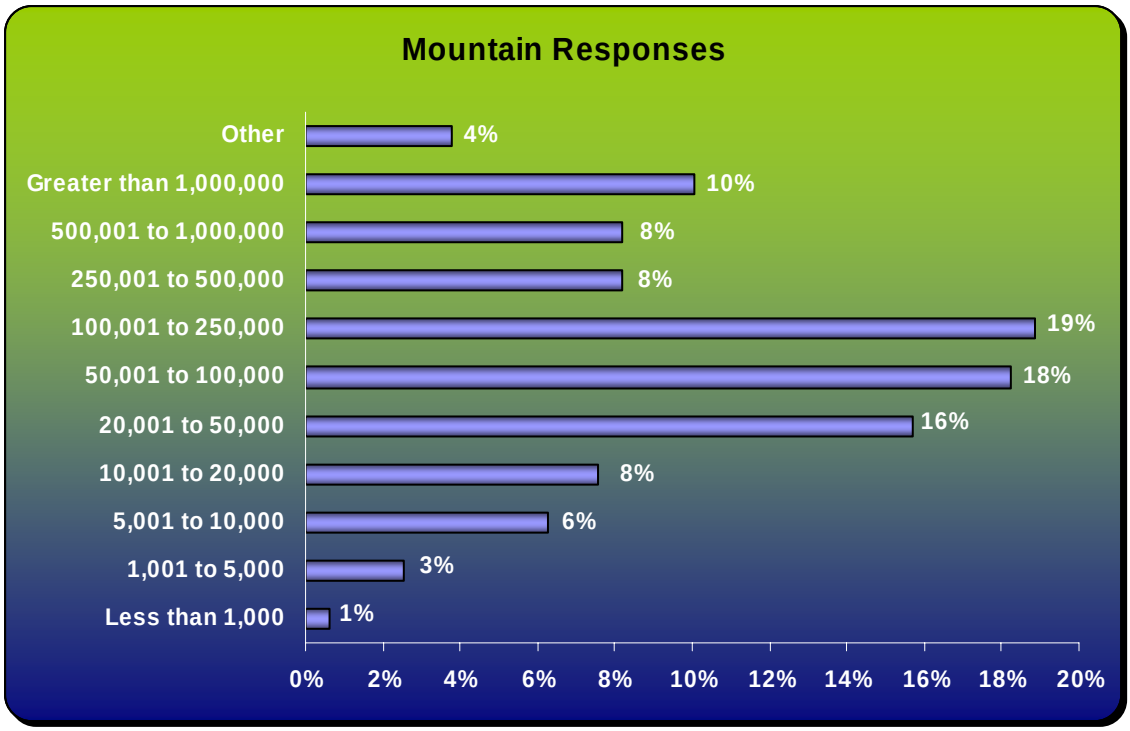


Population segmentation for Mid-Atlantic responses for a rough bell curve with the exception of entities from 500,0901 to 1,000,000, which comprise 11 percent of this regional sample. This region includes New York, Pennsylvania, and New Jersey.

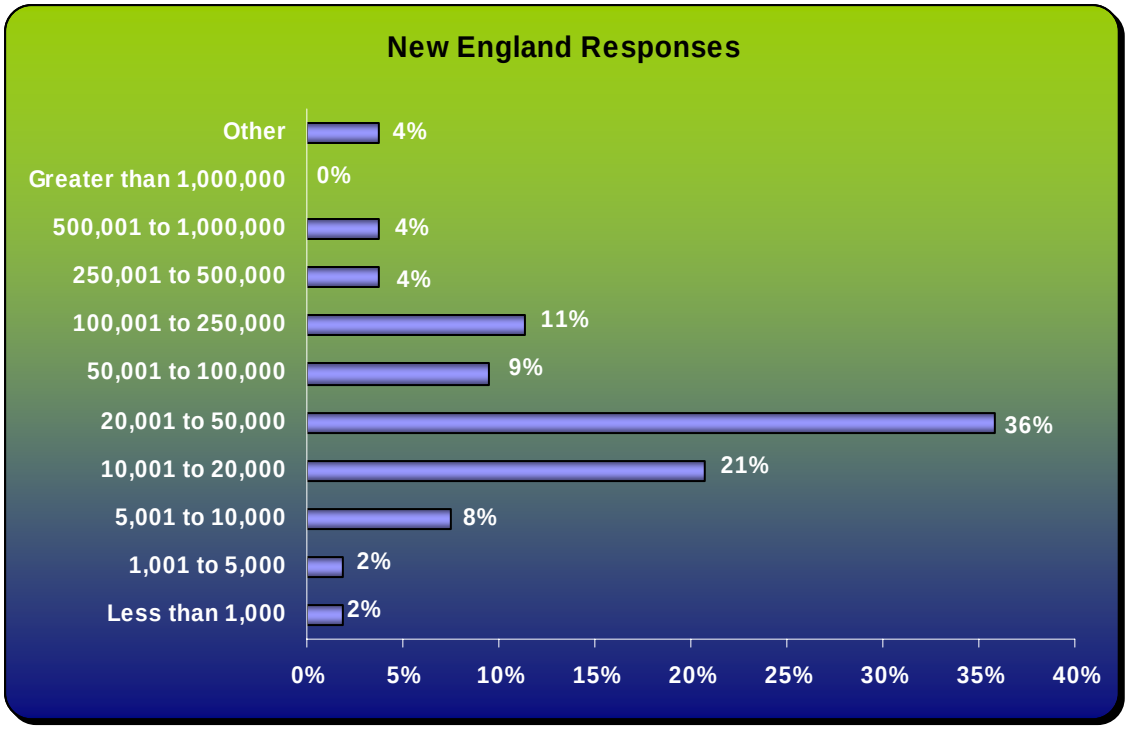


Respondents

Entities with populations greater than 20,000 are well-represented in the Mountain region responses. This category includes the states of Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, and New Mexico.

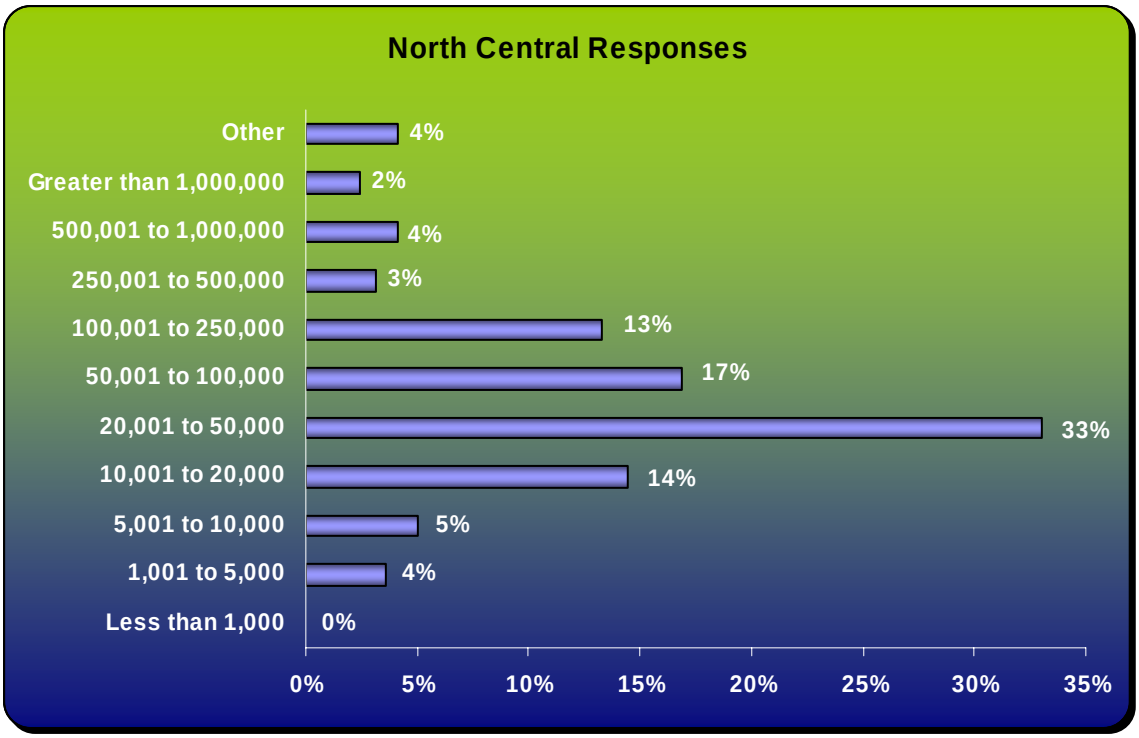


New England responses are clustered in the 10,001 to 50,000 population range. Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut comprise the New England region for purposes of this study.

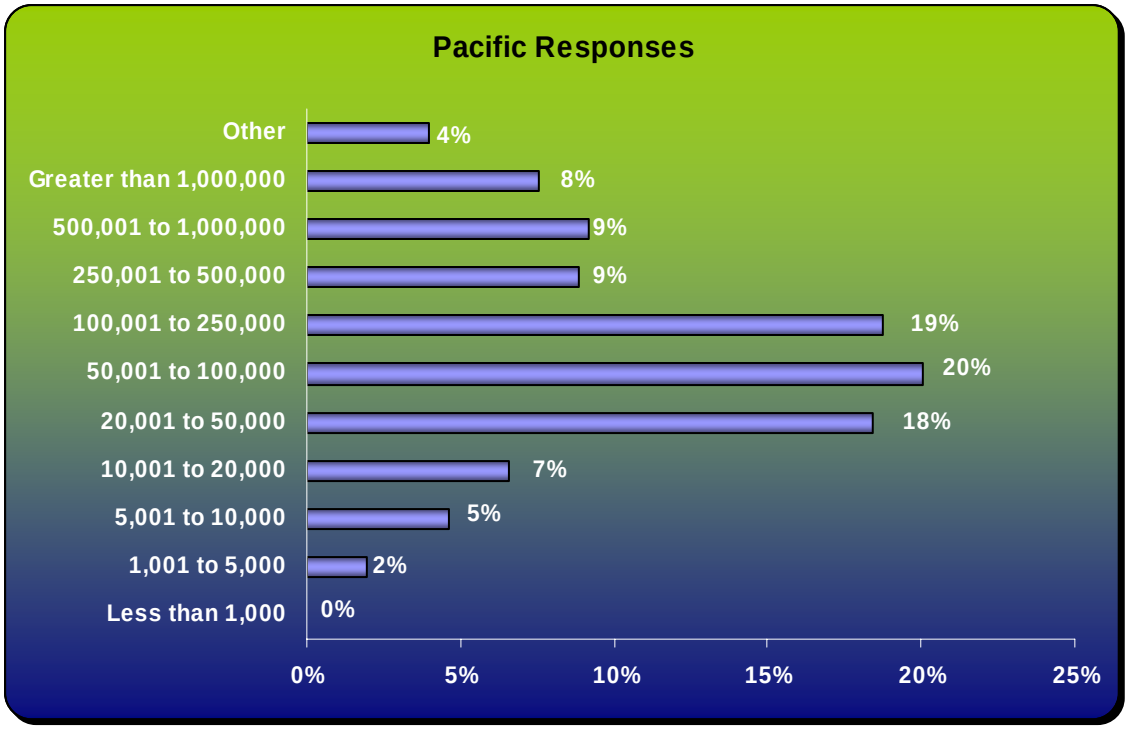


Respondents

North Central, which includes Wisconsin, Michigan, Illinois, Indiana, Ohio, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, and Missouri, responded in a rough bell curve across population categories, with additional representation in the 20,001 to 50,000 range.

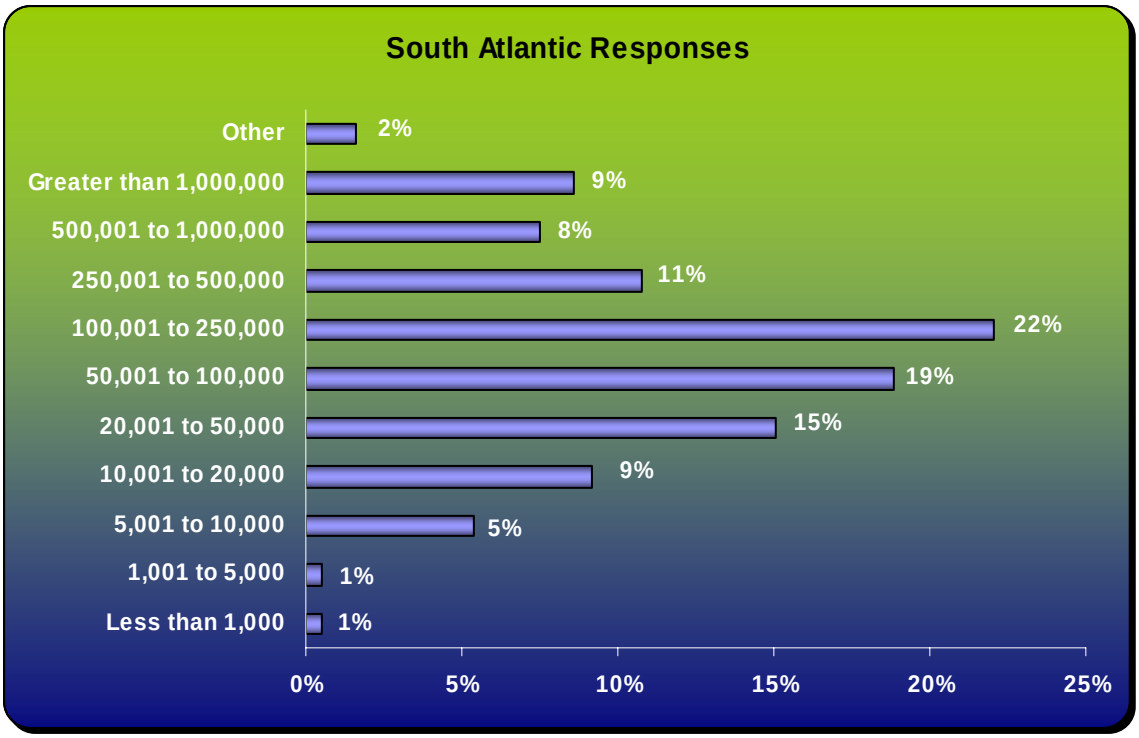


Pacific responses also form a rough bell curve, with some additional representation in the greater than 250,000 population range. Alaska, Washington, Oregon, California, and Hawaii are considered Pacific states in this study.

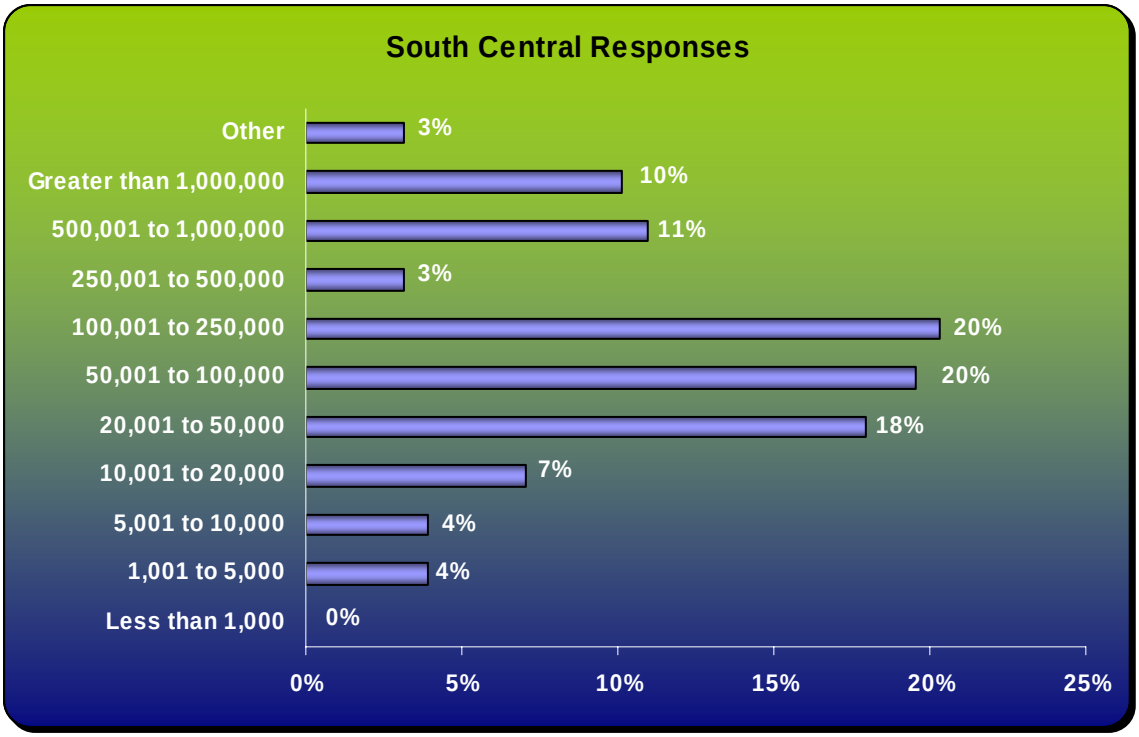


Respondents

South Atlantic responses show strength in the 20,001 to 250,000 range. Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida make up the South Atlantic region in this study.



South Central responses are light in the 250,001 to 500,000 range. Fifteen percent are from entities with no more than 20,000 people. This region includes Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, and Louisiana.



GIS Implementation

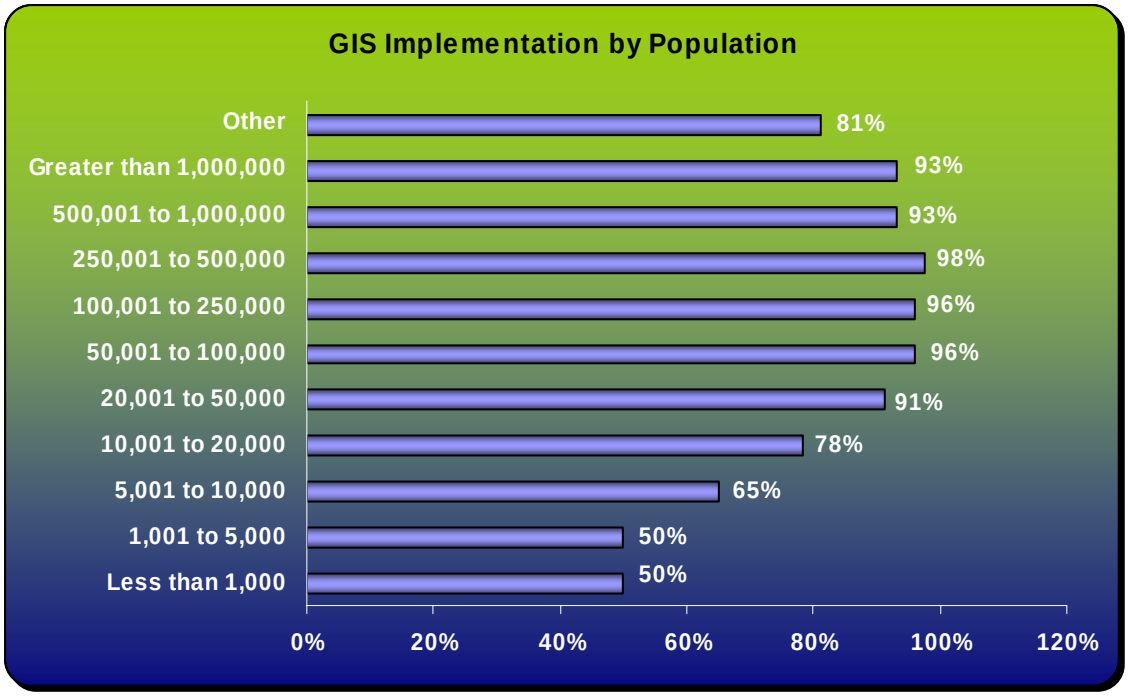
89% of respondents have implemented GIS

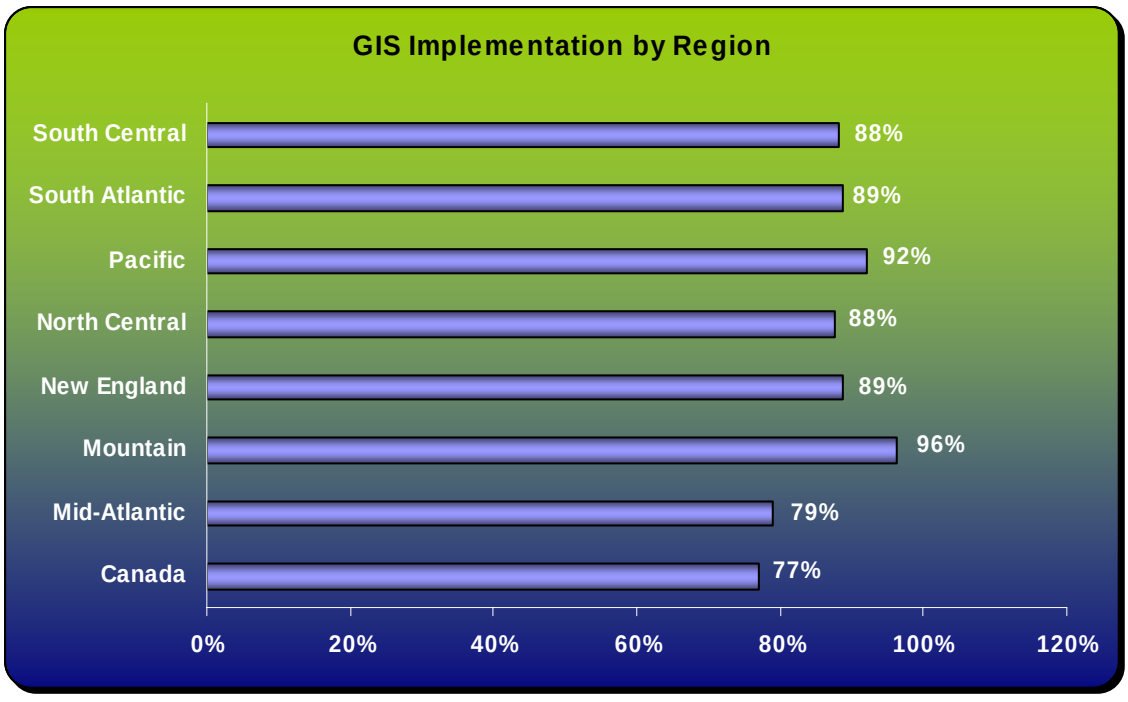
A total 89 percent of responses indicated their organizations have implemented GIS.

Entities with 250,001 to 500,000 people led the way with 98 percent.

Though 50 percent of populations less than 1,000 report implementing GIS, the total number of responses for that group is not statistically significant.

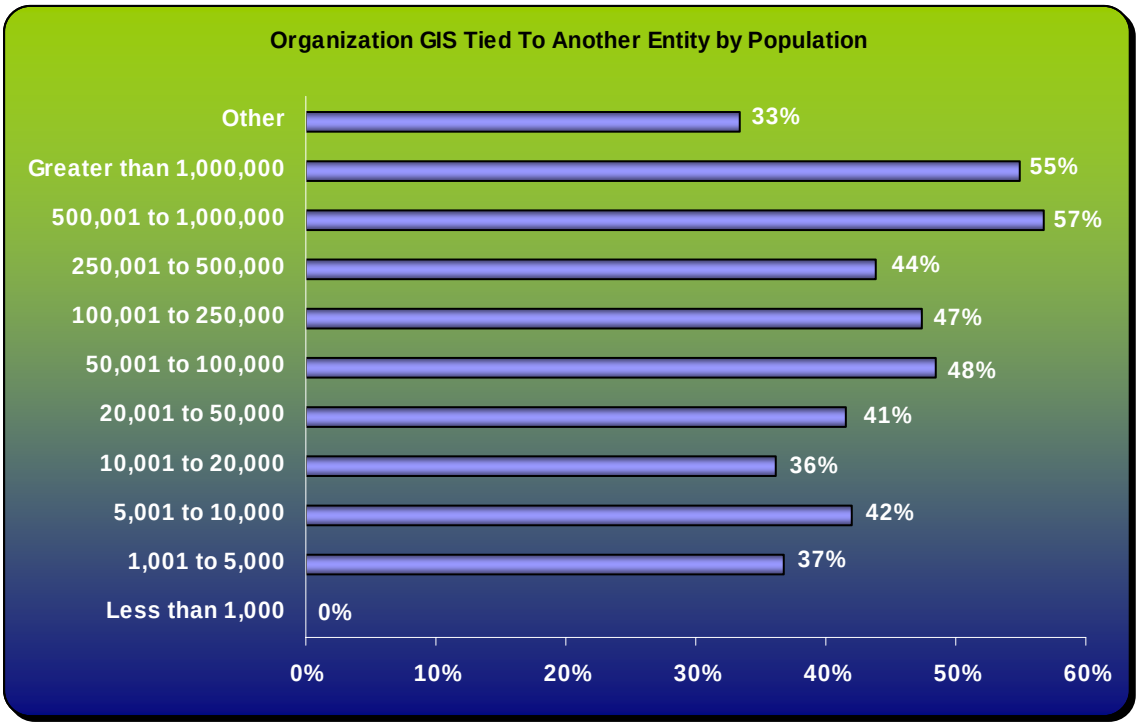
The Mountain states, with 96 percent, have the highest implementation rate.



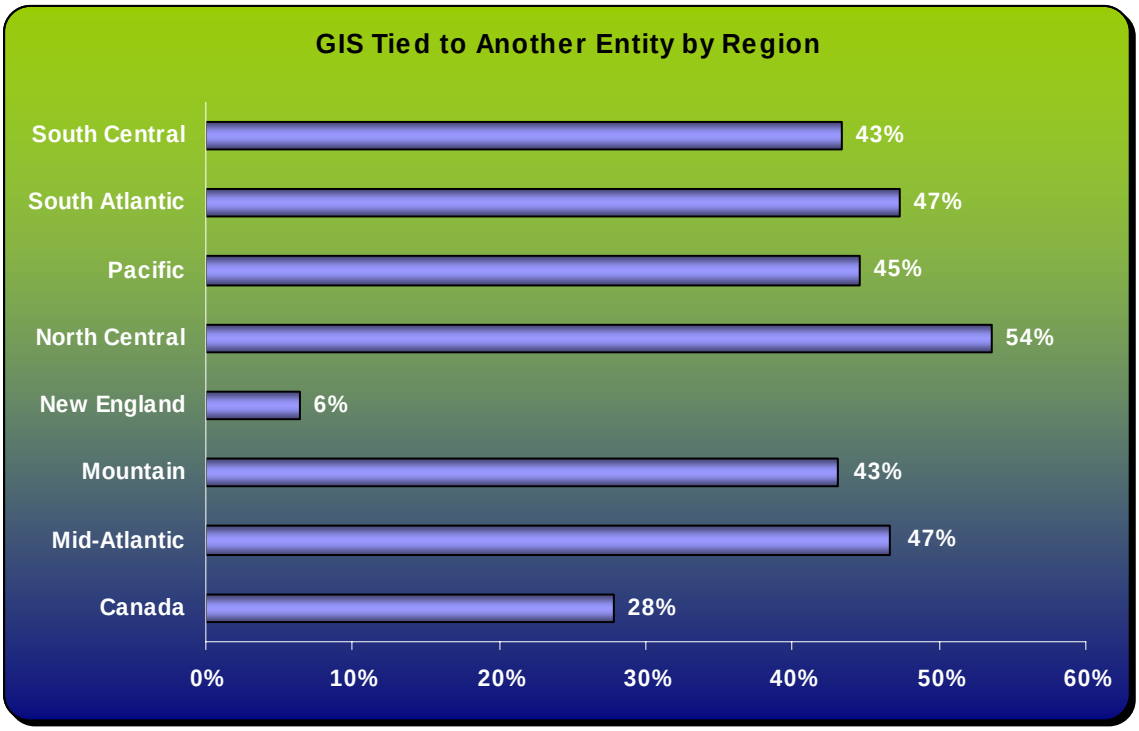


GIS Implementation

Of all those reporting implementation of GIS, 46.1 percent indicated their organizations' GIS programs are tied to another entity—a county, for example.



New England respondents reported that only six percent tied their GIS to another entity, in sharp contrast to all other regional categories.



GIS Implementation

Of all those who have NOT yet implemented GIS, 40.6 percent of respondents intend to do so within the next five years, while 18.2 percent have no plans to implement GIS.

When reading any of the tables in this study, remember that certain categories had low numbers of responses. For example, only four people returned surveys from entities of less than 1,000 in population, and only 38 responded from entities of 1,001 to 5,000. Please take this into account when drawing conclusions regarding GIS practices in those categories.

Note also that some questions allowed multiple responses, and in some cases participants may have chosen not to answer a particular question.

If your entity has not implemented GIS, do you have plans to do so?

By Population	No plans to implement GIS	Plan to implement in next budget cycle	Plan to implement in 1 to 2 years	Plan to implement in 3 to 5 years	Other
Less than 1,000	50%	0%	0%	50%	0%
1,001 to 5,000	32%	16%	21%	11%	21%
5,001 to 10,000	15%	11%	22%	26%	26%
10,001 to 20,000	24%	9%	18%	24%	18%
20,001 to 50,000	11%	7%	21%	21%	14%
50,001 to 100,000	0%	10%	40%	10%	10%
100,001 to 250,000	22%	0%	11%	0%	0%
250,001 to 500,000	0%	0%	50%	0%	0%
500,001 to 1,000,000	0%	0%	0%	13%	25%
Greater than 1,000,000	25%	13%	13%	0%	13%
Other	0%	20%	0%	20%	0%

If your entity has not implemented GIS, do you have plans to do so?

By Region	No plans to implement GIS	Plan to implement in next budget cycle	Plan to implement in 1 to 2 years	Plan to implement in 3 to 5 years	Other
Canada	19%	6%	13%	19%	19%
Mid-Atlantic	21%	14%	29%	14%	7%
Mountain	17%	0%	17%	33%	0%
New England	0%	0%	0%	80%	20%
North Central	22%	10%	16%	14%	18%
Pacific	12%	8%	12%	12%	32%
South Atlantic	10%	10%	43%	10%	10%
South Central	23%	15%	15%	31%	8%

GIS Implementation

Of all those who DO plan to implement GIS, 37.2 percent plan to fund the program out of the general fund, while 38.8 percent have not determined how they will fund their GIS implementation.

A significant number reported not knowing how they will fund future GIS implementation.

If your entity plans to implement GIS, how will it be funded?

By Population	General Fund	Sales Tax	Internal Charges	Utility Fees	Haven't Determined	Other
Less than 1,000	0%	0%	0%	0%	50%	0%
1,001 to 5,000	21%	5%	0%	0%	63%	11%
5,001 to 10,000	48%	0%	4%	11%	48%	4%
10,001 to 20,000	39%	0%	3%	21%	27%	0%
20,001 to 50,000	18%	0%	0%	4%	39%	7%
50,001 to 100,000	20%	0%	0%	10%	40%	0%
100,001 to 250,000	11%	0%	0%	0%	0%	0%
250,001 to 500,000	0%	0%	0%	0%	50%	0%
500,001 to 1,000,000	25%	0%	0%	0%	13%	0%
Greater than 1,000,000	25%	0%	0%	0%	25%	13%
Other	20%	0%	0%	0%	20%	0%

If your entity plans to implement GIS, how will it be funded?

By Region	General Fund	Sales Tax	Internal Charges	Utility Fees	Haven't Determined	Other
Canada	7%	0%	0%	0%	67%	13%
Mid-Atlantic	62%	8%	0%	8%	38%	0%
Mountain	67%	0%	0%	17%	33%	0%
New England	40%	0%	0%	0%	60%	20%
North Central	29%	0%	4%	16%	31%	2%
Pacific	17%	0%	0%	0%	46%	4%
South Atlantic	22%	0%	0%	0%	6%	0%
South Central	27%	0%	0%	0%	27%	9%

GIS Implementation

Of the 11 percent who indicated their organizations had not yet implemented GIS, the majority rely on paper files, spreadsheets and databases to manage capital projects, permits (e.g., building, utility, etc.), utility maintenance (e.g., pipe replacement, sewer cleaning, meter replacements, etc.), and complaints (e.g., potholes, drainage, etc.).

If your entity has not implemented GIS, how do you manage capital projects?

By Population	Paper Files	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Less than 1,000	100%	50%	0%	0%	0%
1,001 to 5,000	89%	79%	16%	5%	0%
5,001 to 10,000	93%	89%	19%	4%	11%
10,001 to 20,000	85%	73%	6%	9%	6%
20,001 to 50,000	61%	64%	21%	11%	11%
50,001 to 100,000	60%	50%	0%	20%	10%
100,001 to 250,000	33%	33%	22%	0%	0%
250,001 to 500,000	50%	50%	0%	50%	0%
500,001 to 1,000,000	25%	25%	13%	25%	0%
Greater than 1,000,000	13%	63%	38%	25%	13%
Other	40%	40%	20%	0%	0%

If your city has not implemented GIS, how do you manage permits?

By Population	Paper Files	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Less than 1,000	100%	50%	0%	0%	0%
1,001 to 5,000	89%	74%	16%	0%	0%
5,001 to 10,000	89%	81%	37%	11%	4%
10,001 to 20,000	73%	76%	30%	18%	0%
20,001 to 50,000	57%	54%	25%	14%	7%
50,001 to 100,000	60%	50%	0%	20%	10%
100,001 to 250,000	33%	33%	22%	0%	0%
250,001 to 500,000	0%	0%	0%	50%	0%
500,001 to 1,000,000	13%	13%	13%	13%	0%
Greater than 1,000,000	25%	50%	13%	13%	0%
Other	40%	40%	0%	0%	0%

GIS Implementation

If your entity has not implemented GIS, how do you manage utility maintenance?

By Population	Paper Files/ Maps	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Less than 1,000	100%	50%	0%	0%	0%
1,001 to 5,000	89%	68%	5%	5%	0%
5,001 to 10,000	96%	67%	26%	7%	4%
10,001 to 20,000	82%	76%	12%	9%	6%
20,001 to 50,000	50%	54%	7%	4%	7%
50,001 to 100,000	60%	50%	0%	10%	0%
100,001 to 250,000	33%	11%	11%	0%	11%
250,001 to 500,000	0%	0%	0%	0%	0%
500,001 to 1,000,000	13%	13%	13%	13%	0%
Greater than 1,000,000	13%	25%	0%	13%	13%
Other	40%	40%	0%	0%	0%

If your city has not implemented GIS, how do you manage complaints?

By Population	Paper Files/ Maps	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Less than 1,000	100%	50%	0%	0%	0%
1,001 to 5,000	79%	58%	21%	0%	5%
5,001 to 10,000	81%	67%	22%	19%	7%
10,001 to 20,000	76%	58%	12%	12%	3%
20,001 to 50,000	61%	46%	14%	14%	7%
50,001 to 100,000	50%	30%	10%	10%	0%
100,001 to 250,000	22%	11%	11%	0%	0%
250,001 to 500,000	0%	0%	0%	50%	0%
500,001 to 1,000,000	0%	0%	0%	25%	0%
Greater than 1,000,000	25%	38%	0%	13%	0%
Other	40%	40%	0%	0%	0%

GIS Implementation

If your entity has not implemented GIS, how do you manage capital projects?

By Region	Paper Files	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Canada	93%	80%	13%	7%	0%
Mid-Atlantic	92%	85%	15%	0%	0%
Mountain	100%	100%	17%	17%	17%
New England	80%	80%	40%	0%	40%
North Central	78%	69%	10%	8%	6%
Pacific	58%	58%	17%	13%	13%
South Atlantic	33%	28%	17%	17%	0%
South Central	27%	64%	27%	18%	9%

If your city has not implemented GIS, how do you manage permits?

By Region	Paper Files	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Canada	93%	60%	13%	0%	0%
Mid-Atlantic	92%	92%	31%	0%	0%
Mountain	100%	100%	17%	17%	0%
New England	80%	80%	40%	0%	20%
North Central	69%	63%	33%	18%	2%
Pacific	54%	58%	17%	13%	8%
South Atlantic	22%	17%	11%	11%	0%
South Central	36%	55%	18%	9%	0%

GIS Implementation

If your entity has not implemented GIS, how do you manage utility maintenance?

By Region	Paper Files/ Maps	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Canada	93%	60%	7%	7%	0%
Mid-Atlantic	92%	77%	15%	0%	0%
Mountain	100%	83%	33%	17%	0%
New England	80%	60%	40%	20%	0%
North Central	76%	65%	10%	6%	4%
Pacific	50%	54%	8%	8%	8%
South Atlantic	22%	6%	6%	6%	6%
South Central	27%	36%	9%	9%	9%

If your city has not implemented GIS, how do you manage complaints?

By Region	Paper Files/ Maps	Spreadsheets / Databases	Third Party Off-the-Shelf Software	Custom-Built Software for your City	Other
Canada	80%	47%	20%	0%	7%
Mid-Atlantic	85%	77%	15%	0%	8%
Mountain	100%	83%	17%	33%	0%
New England	80%	60%	20%	0%	0%
North Central	67%	51%	18%	18%	4%
Pacific	63%	46%	4%	8%	4%
South Atlantic	17%	6%	6%	17%	0%
South Central	27%	36%	0%	9%	0%

GIS Use

Primary focus of GIS is on base maps, infrastructure & planning

Respondents who have implemented GIS programs in their entities report using GIS for a variety of purposes, from base maps to infrastructure and utility management, planning, demographic analysis, incident tracking, and other uses. This is true across all but the smallest entities and in every region.

How is your GIS used?

By Population	Base Map	Infrastructure & Utility	Planning	Demo-graphics	Incident Tracking	Other
Less than 1,000	0%	100%	0%	0%	0%	0%
1,001 to 5,000	100%	89%	89%	16%	21%	11%
5,001 to 10,000	94%	92%	82%	16%	24%	10%
10,001 to 20,000	96%	96%	88%	20%	29%	8%
20,001 to 50,000	98%	92%	90%	33%	45%	11%
50,001 to 100,000	97%	94%	92%	47%	58%	16%
100,001 to 250,000	96%	92%	87%	44%	62%	16%
250,001 to 500,000	98%	87%	79%	52%	65%	12%
500,001 to 1,000,000	94%	89%	85%	48%	57%	20%
Greater than 1,000,000	95%	83%	76%	51%	59%	24%
Other	100%	85%	72%	26%	54%	26%

Primary focus appears to be on base maps, infrastructure and planning, with fewer entities reporting use for demographics and incident tracking.

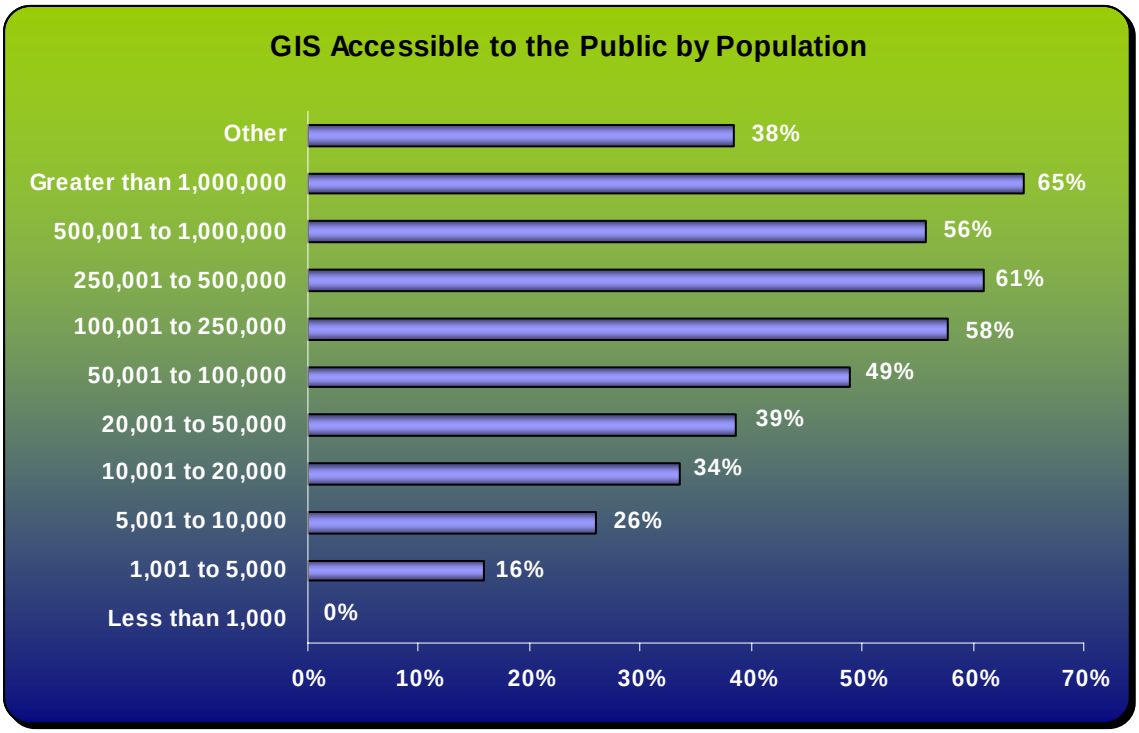
How is your GIS used?

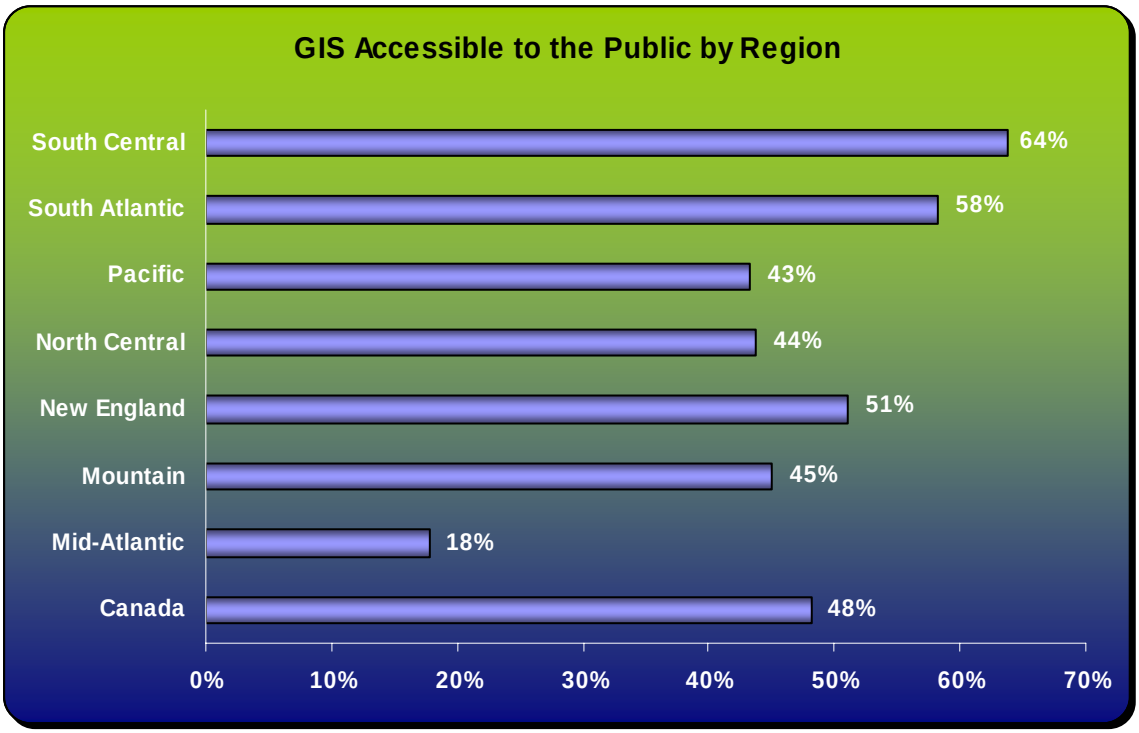
By Region	Base Map	Infrastructure & Utility	Planning	Demo-graphics	Incident Tracking	Other
Canada	98%	94%	91%	44%	48%	19%
Mid-Atlantic	96%	93%	73%	22%	42%	9%
Mountain	97%	88%	83%	47%	50%	16%
New England	98%	89%	87%	23%	36%	13%
North Central	97%	91%	88%	33%	49%	13%
Pacific	95%	90%	89%	41%	53%	16%
South Atlantic	97%	93%	84%	45%	57%	18%
South Central	93%	95%	86%	44%	58%	12%

GIS Use

Of those respondents currently using GIS, 47 percent reported that the GIS was accessible to the public. This is more likely to be true the larger the entity's population.

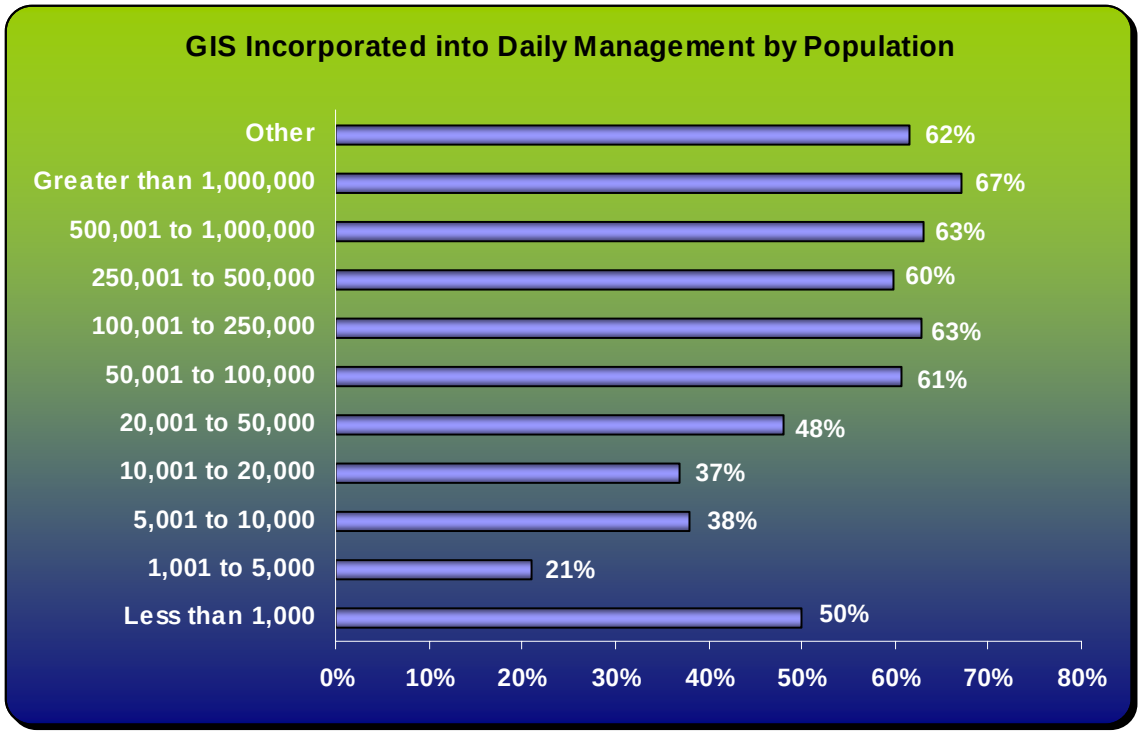
The region least likely to provide GIS accessibility to the public is Mid-Atlantic.

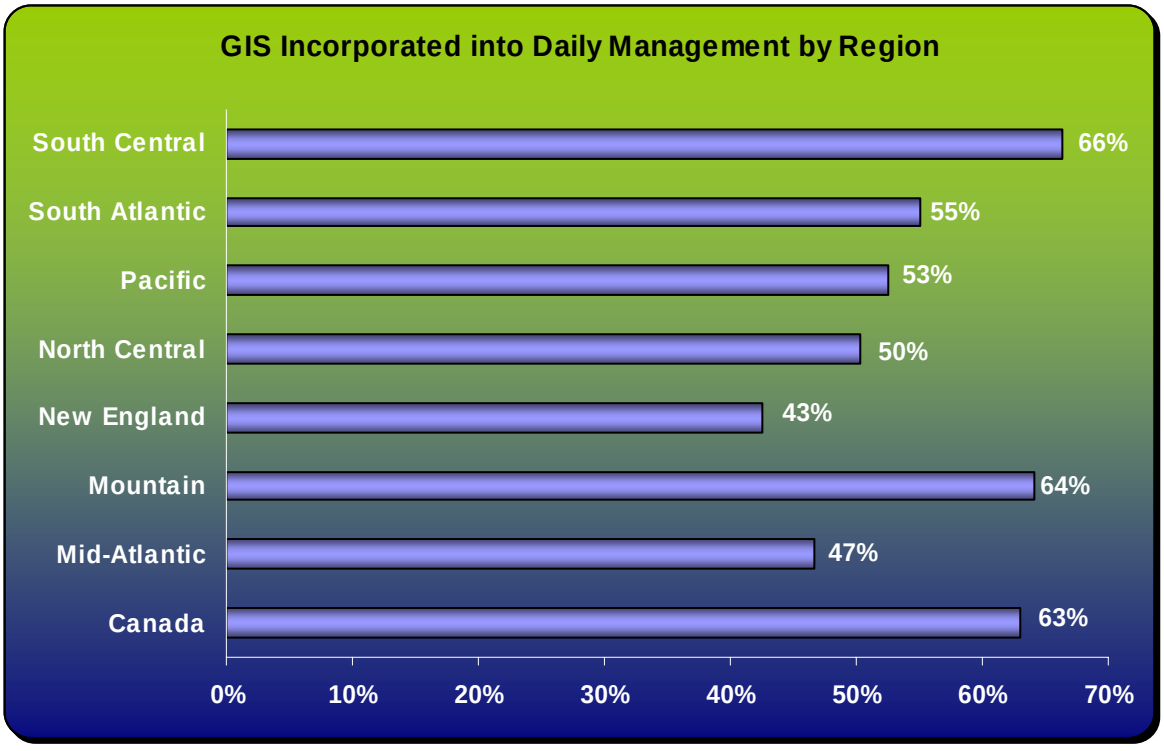




GIS Use

More than 60 percent of larger entities report they have incorporated GIS into daily management of infrastructure, with that percentage tapering off sharply for populations less than 50,000. The exception is entities serving populations of less than 1,000, but remember that this segment is seriously underrepresented in this study.





GIS Use

Those reporting use of GIS as a public works management tool most commonly cite project and maintenance management as primary uses. This is true across both population and regional segments in this study. Additional uses cited include utility billing, building permits, code enforcement, property management, crime statistics, complaint tracking, as well as a variety of other purposes.

If you use your organization's GIS as a management tool, what do you manage with it?

By Population	Projects	Maintenance Management	Utility Billing	Building Permits	Code Enforcement	Property Management	Crime Statistics	Complaint Tracking	Other
Less than 1,000	0%	50%	0%	0%	0%	0%	0%	0%	0%
1,001 to 5,000	58%	53%	5%	11%	16%	32%	0%	11%	5%
5,001 to 10,000	46%	48%	6%	12%	18%	18%	12%	10%	12%
10,001 to 20,000	41%	46%	8%	16%	18%	15%	13%	13%	13%
20,001 to 50,000	45%	51%	11%	20%	22%	17%	21%	25%	13%
50,001 to 100,000	56%	58%	15%	29%	27%	23%	26%	32%	14%
100,001 to 250,000	57%	55%	15%	31%	32%	22%	36%	33%	18%
250,001 to 500,000	56%	54%	12%	28%	26%	23%	23%	37%	24%
500,001 to 1,000,000	64%	43%	9%	31%	26%	20%	17%	34%	20%
Greater than 1,000,000	56%	40%	11%	26%	20%	17%	17%	38%	26%
Other	44%	56%	15%	31%	21%	38%	18%	23%	21%

If you use your organization's GIS as a management tool, what do you manage with it?

By Region	Projects	Maintenance Management	Utility Billing	Building Permits	Code Enforcement	Property Management	Crime Statistics	Complaint Tracking	Other
Canada	54%	50%	13%	24%	7%	28%	9%	33%	28%
Mid-Atlantic	47%	53%	4%	31%	29%	16%	11%	27%	20%
Mountain	52%	52%	15%	24%	27%	24%	23%	26%	21%
New England	47%	47%	6%	17%	9%	17%	15%	28%	15%
North Central	51%	51%	10%	22%	25%	20%	23%	26%	12%
Pacific	51%	51%	13%	27%	24%	19%	22%	23%	19%
South Atlantic	54%	52%	16%	24%	25%	22%	28%	36%	16%
South Central	59%	55%	10%	31%	31%	19%	29%	36%	14%

GIS Use

What departments use GIS?

By Population	Police	Fire	Public Works	Transportation	Utilities	Parks & Recreation	Planning	Other
Less than 1,000	0%	0%	50%	0%	50%	0%	50%	0%
1,001 to 5,000	37%	16%	89%	11%	63%	53%	89%	5%
5,001 to 10,000	42%	24%	92%	44%	70%	46%	84%	16%
10,001 to 20,000	58%	44%	96%	38%	67%	47%	88%	13%
20,001 to 50,000	67%	59%	94%	56%	71%	56%	90%	18%
50,001 to 100,000	74%	69%	95%	67%	82%	63%	93%	19%
100,001 to 250,000	80%	70%	94%	72%	74%	66%	89%	19%
250,001 to 500,000	59%	51%	85%	72%	68%	46%	84%	28%
500,001 to 1,000,000	66%	62%	88%	80%	64%	59%	93%	16%
Greater than 1,000,000	57%	57%	84%	74%	72%	59%	82%	22%
Other	28%	33%	59%	62%	56%	23%	72%	41%

What departments use GIS?

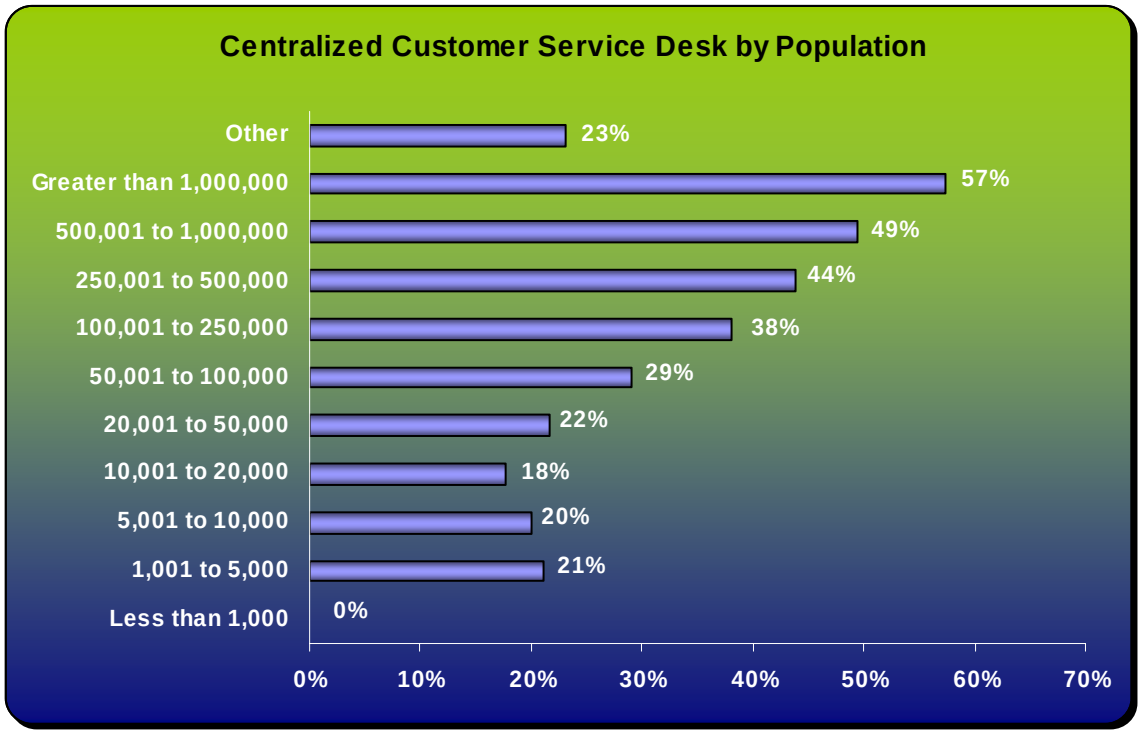
Region	Police	Fire	Public Works	Transportation	Utilities	Parks & Recreation	Planning	Other
Canada	48%	61%	98%	81%	74%	74%	91%	20%
Mid-Atlantic	60%	27%	87%	38%	56%	47%	82%	9%
Mountain	67%	54%	90%	69%	74%	66%	86%	19%
New England	66%	60%	87%	32%	53%	43%	85%	26%
North Central	65%	54%	92%	57%	72%	49%	89%	16%
Pacific	61%	55%	88%	64%	66%	52%	88%	20%
South Atlantic	71%	68%	95%	64%	80%	57%	92%	21%
South Central	80%	80%	97%	74%	84%	75%	93%	23%

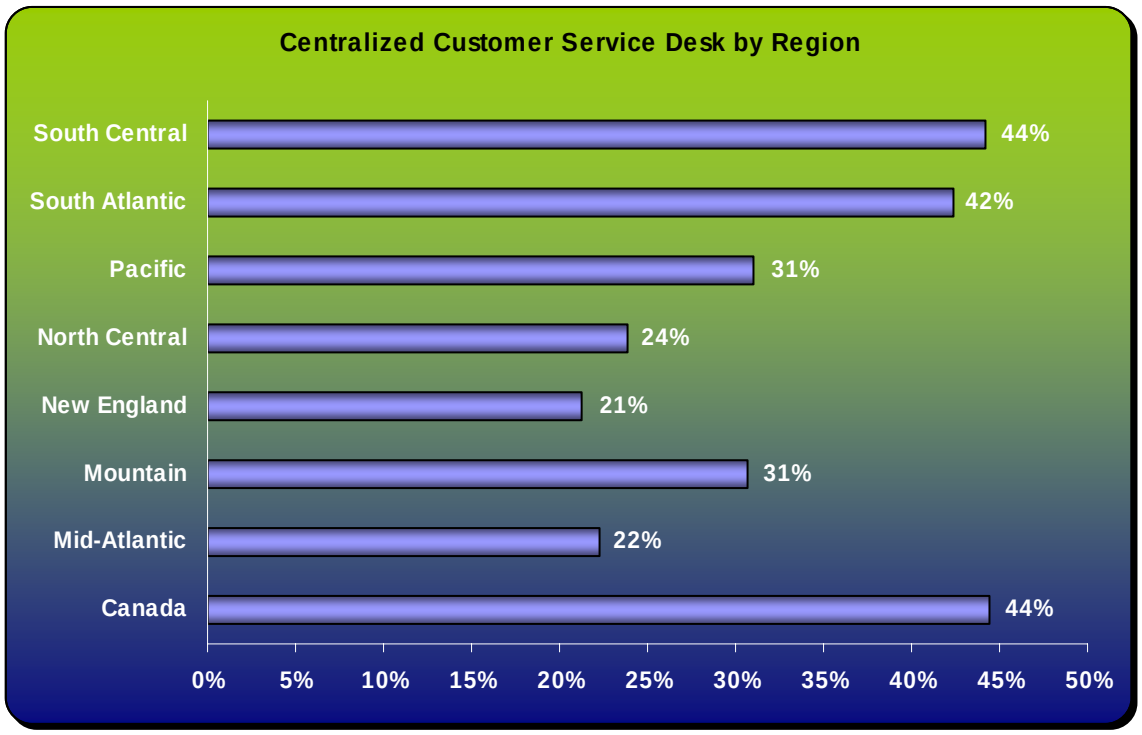
GIS Use

Only 32 percent of those surveyed provide a centralized customer service desk—a 311 phone number, for example—to their constituents.

Generally speaking, the larger the entity, the more likely it is to provide this service, with 57 percent of entities with populations greater than 1,000,000 doing so.

Forty-four percent of Canadian responses indicate they provide this service.



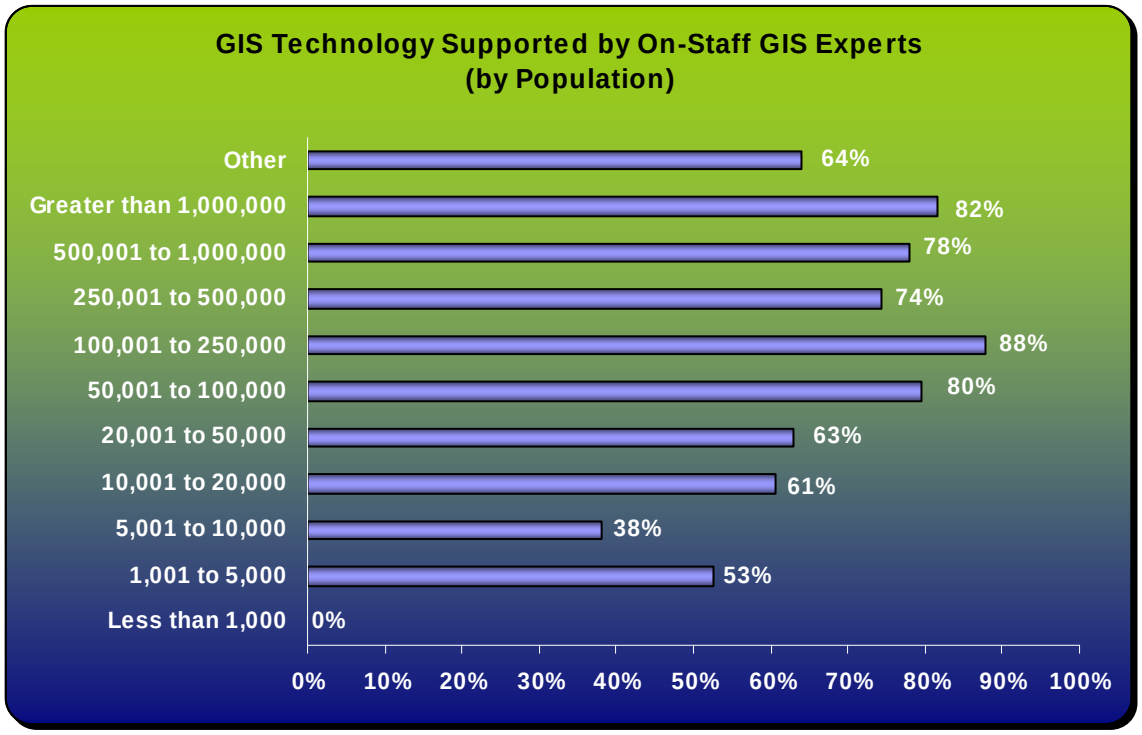


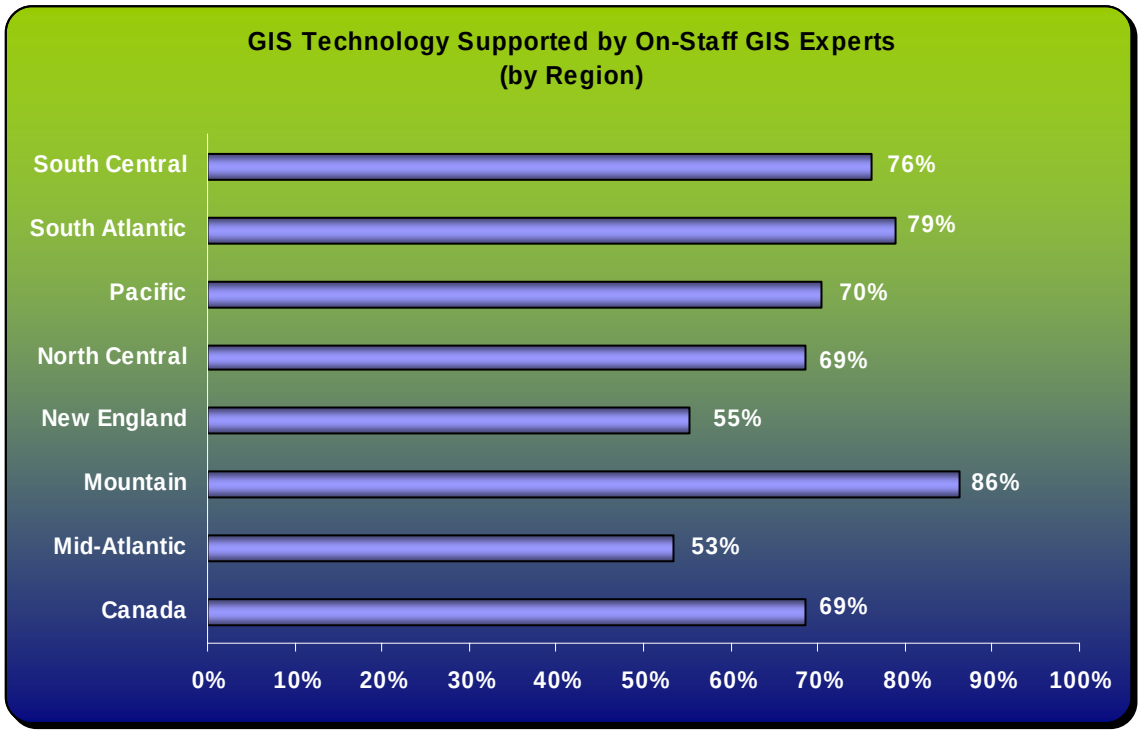
Technical Support

Mountain states are most likely to have GIS experts on staff

Of those with implemented GIS programs, 72.5 percent report having on-staff GIS experts for technical support. Entities with populations greater than 10,000 are most likely to have on-staff GIS experts.

The Mountain region, with 86 percent, is most likely to have on-staff GIS experts.

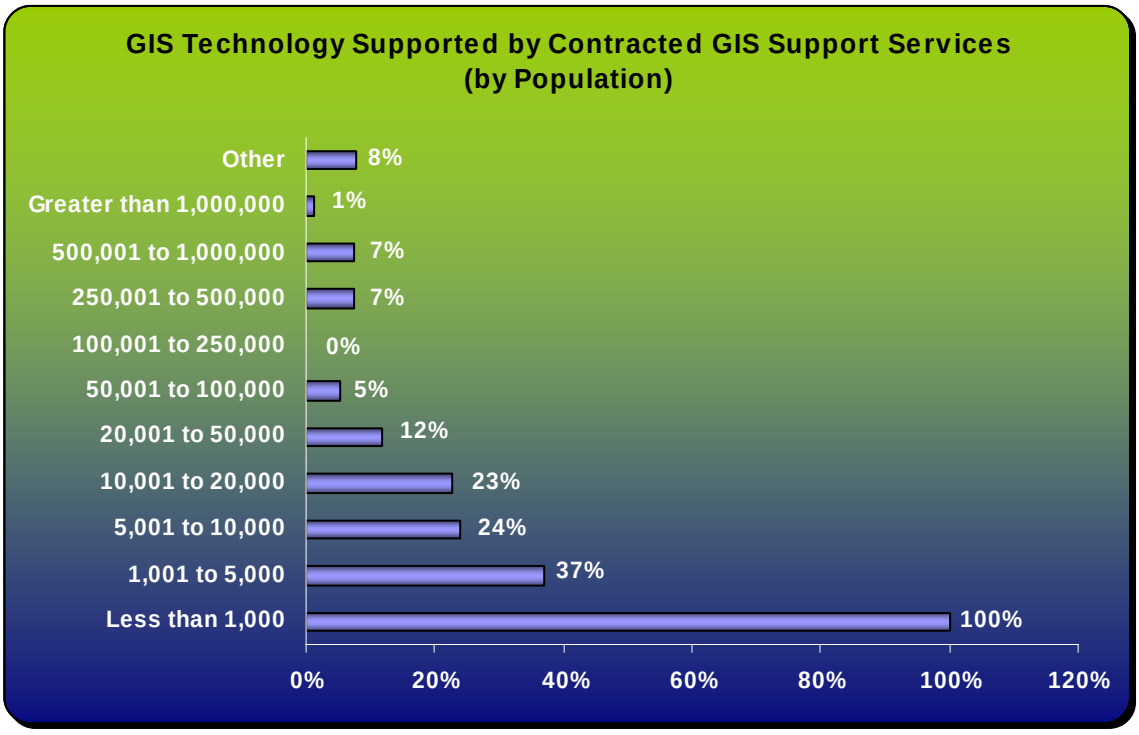


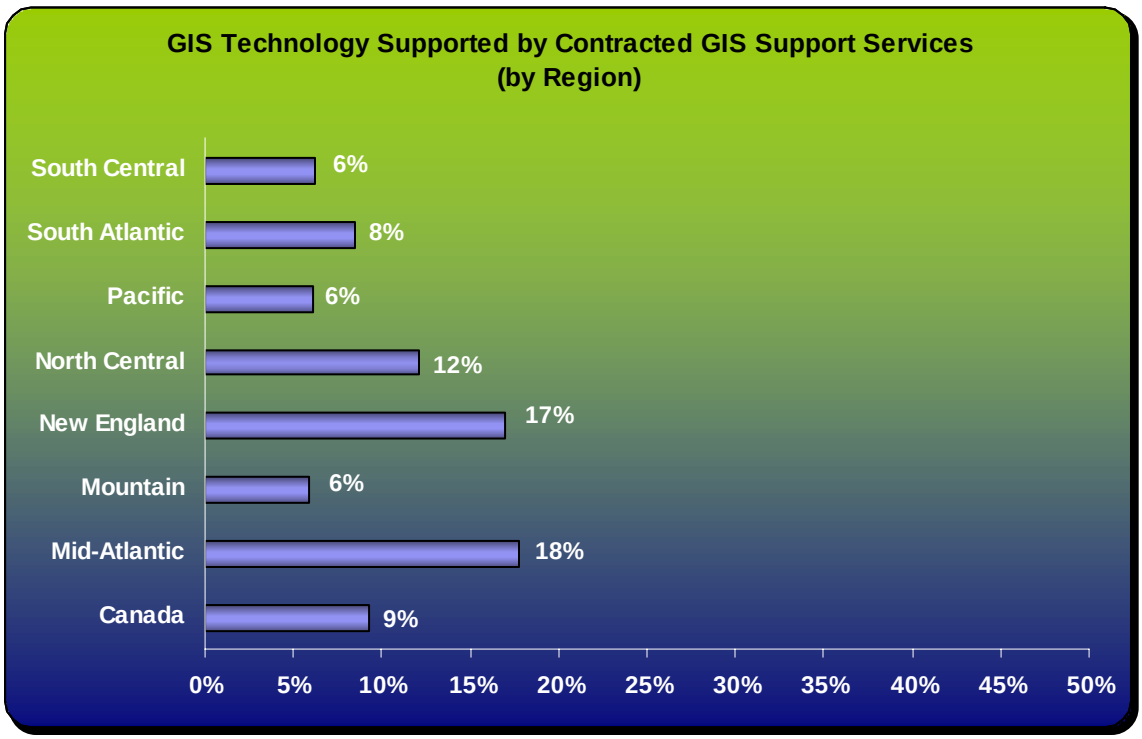


Technical Support

Of those with implemented GIS programs, 9.2 percent report contracting for outside GIS support services. This is generally more likely to be true the smaller the entity served.

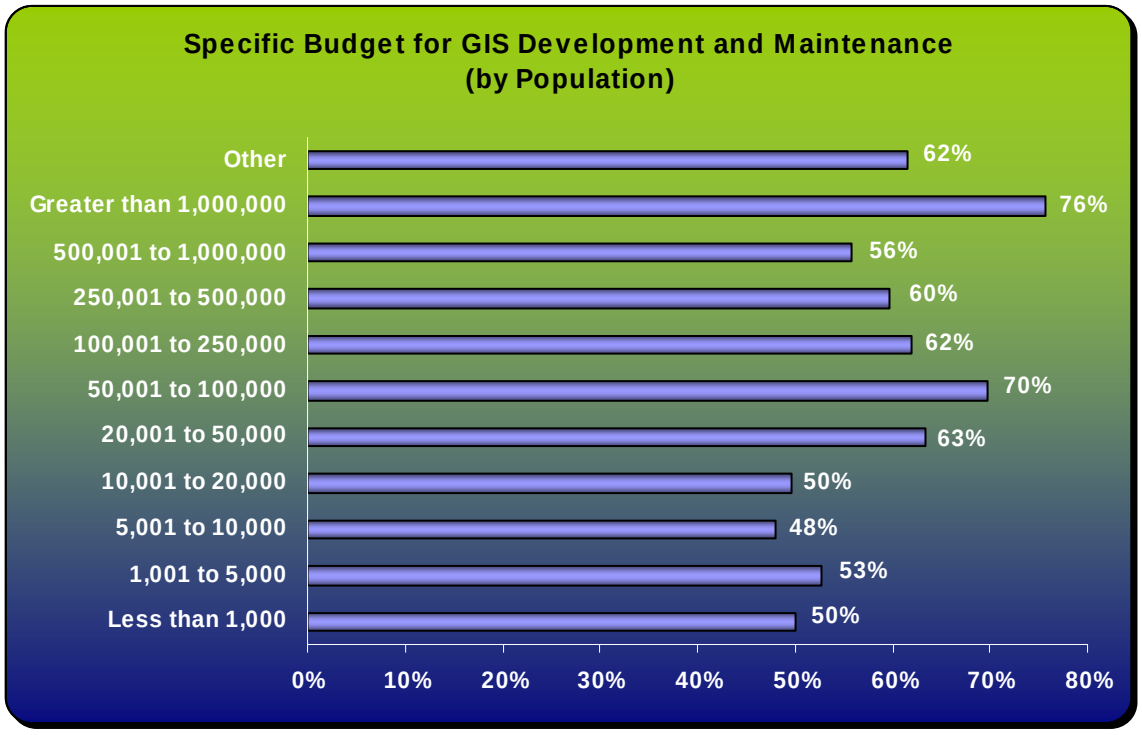
The New England and Mid-Atlantic regions are most likely to use contracted GIS support services.

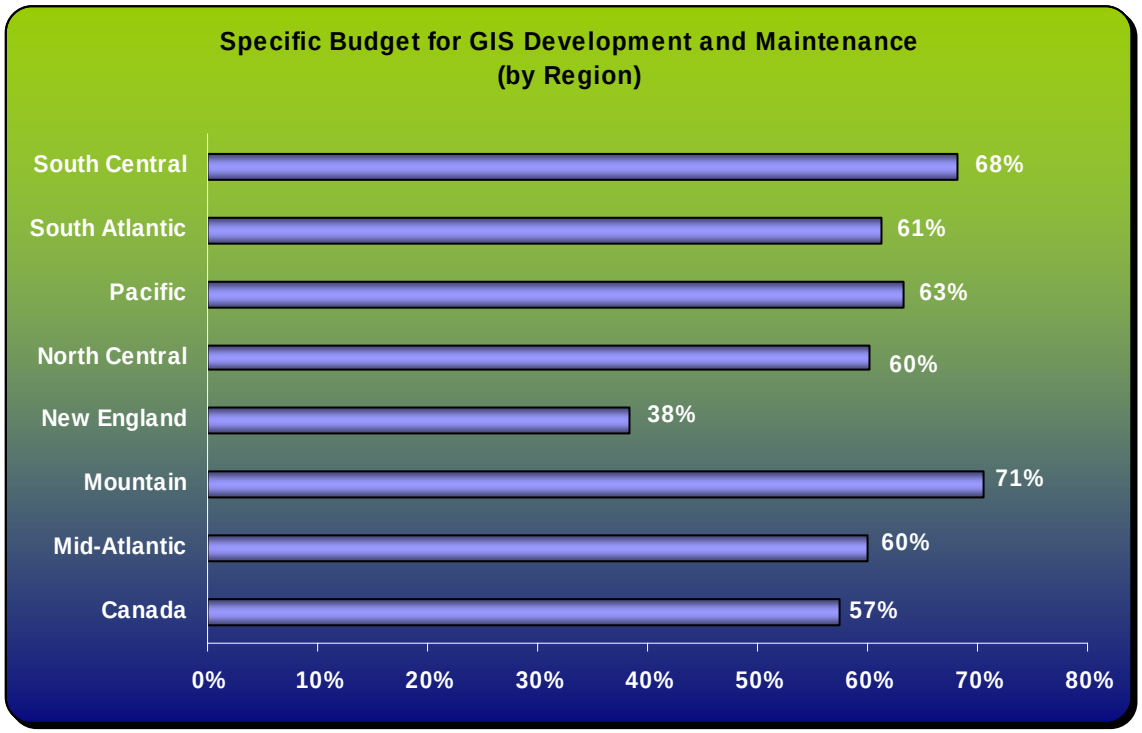




Budgeting and Funding

Of those who have implemented GIS programs, 63.3 percent have specific budgets for GIS development and maintenance. While fairly well distributed across population categories, from a regional perspective, New England is least likely to have specific budgets for GIS, with only 38 percent responding "yes."





Budgeting and Funding

As might be expected, budgets vary widely, based primarily on size of entity served.

If your entity has a specific budget for GIS, how much is budgeted annually?

By Population	$0 to $50,000	$50,001 to $100,000	$100,001 to $250,000	$250,001 to $500,000	Over $500,000	Other
Less than 1,000	0%	0%	0%	0%	0%	50%
1,001 to 5,000	53%	0%	5%	0%	0%	5%
5,001 to 10,000	34%	8%	4%	2%	0%	18%
10,001 to 20,000	40%	6%	4%	1%	0%	7%
20,001 to 50,000	28%	13%	8%	2%	1%	18%
50,001 to 100,000	17%	12%	10%	8%	6%	23%
100,001 to 250,000	13%	6%	8%	9%	7%	29%
250,001 to 500,000	7%	4%	12%	4%	12%	34%
500,001 to 1,000,000	8%	2%	9%	4%	12%	36%
Greater than 1,000,000	6%	9%	9%	5%	17%	37%
Other	3%	15%	10%	3%	3%	41%

If your entity has a specific budget for GIS, how much is budgeted annually?

By Region	$0 to $50,000	$50,001 to $100,000	$100,001 to $250,000	$250,001 to $500,000	Over $500,000	Other
Canada	15%	4%	7%	6%	9%	24%
Mid-Atlantic	40%	2%	4%	2%	2%	16%
Mountain	18%	5%	10%	6%	12%	28%
New England	28%	6%	2%	0%	2%	13%
North Central	23%	10%	10%	4%	1%	20%
Pacific	18%	8%	9%	7%	8%	25%
South Atlantic	16%	14%	4%	5%	5%	27%
South Central	15%	10%	11%	4%	6%	33%

Budgeting and Funding

A total of 61.4 percent expect no change in GIS budgets in the near term, with 11.9 expecting an increase in the next budget cycle, and 15 percent foreseeing a decrease.

Mountain states were most likely to forecast a decrease in spending on GIS in the near term, with 25 percent predicting cuts.

What near-term changes do you expect in the GIS budget?

By Population	No Change	Increase in Next Budget Cycle	Decrease in Next Budget Cycle	Other
Less than 1,000	0%	0%	50%	50%
1,001 to 5,000	74%	21%	0%	5%
5,001 to 10,000	58%	14%	16%	8%
10,001 to 20,000	65%	14%	13%	5%
20,001 to 50,000	60%	14%	16%	7%
50,001 to 100,000	61%	10%	17%	11%
100,001 to 250,000	61%	10%	13%	12%
250,001 to 500,000	50%	12%	13%	16%
500,001 to 1,000,000	60%	6%	9%	18%
Greater than 1,000,000	44%	12%	17%	22%
Other	54%	8%	13%	21%

What near-term changes do you expect in the GIS budget?

By Region	No Change	Increase in Next Budget Cycle	Decrease in Next Budget Cycle	Other
Canada	65%	13%	2%	17%
Mid-Atlantic	69%	9%	9%	11%
Mountain	52%	7%	25%	12%
New England	68%	15%	9%	2%
North Central	61%	12%	14%	9%
Pacific	59%	12%	13%	14%
South Atlantic	54%	10%	18%	13%
South Central	58%	18%	12%	12%

Budgeting and Funding

Respondents are more optimistic in the long term, with 46.5 percent predicting increases in the next two to three years and only 7.5 percent foreseeing a decrease. No change is still predicted by 34.8 percent.

What long-term changes do you expect in the GIS budget?

By Population	No Change	Increase in the Next 2-3 Years	Decrease in the Next 2-3 Years	Other
Less than 1,000	50%	0%	0%	50%
1,001 to 5,000	47%	37%	5%	5%
5,001 to 10,000	26%	56%	6%	8%
10,001 to 20,000	34%	50%	7%	7%
20,001 to 50,000	39%	44%	7%	8%
50,001 to 100,000	32%	48%	6%	10%
100,001 to 250,000	35%	42%	7%	11%
250,001 to 500,000	28%	43%	7%	15%
500,001 to 1,000,000	33%	38%	6%	19%
Greater than 1,000,000	23%	50%	9%	15%
Other	26%	41%	15%	10%

What long-term changes do you expect in the GIS budget?

Region	No Change	Increase in the Next 2-3 Years	Decrease in the Next 2-3 Years	Other
Canada	26%	59%	6%	6%
Mid-Atlantic	40%	49%	2%	7%
Mountain	30%	40%	11%	14%
New England	40%	43%	4%	4%
North Central	36%	41%	8%	10%
Pacific	33%	47%	7%	10%
South Atlantic	35%	43%	7%	12%
South Central	26%	56%	2%	15%

Budgeting and Funding

A full 55 percent report funding GIS efforts out of a general fund, while 4.1 percent use sales tax funding, 11.7 use internal charges, and 19.8 percent use utility fees.

How is GIS currently funded by your entity?

By Population	General Fund	Sales Tax	Internal Charges	Utility Fees	Other
Less than 1,000	0%	0%	0%	0%	100%
1,001 to 5,000	79%	5%	11%	42%	0%
5,001 to 10,000	78%	6%	0%	40%	4%
10,001 to 20,000	82%	3%	10%	24%	3%
20,001 to 50,000	84%	4%	9%	26%	7%
50,001 to 100,000	74%	6%	18%	26%	15%
100,001 to 250,000	72%	6%	20%	29%	15%
250,001 to 500,000	68%	6%	32%	34%	18%
500,001 to 1,000,000	69%	7%	23%	24%	15%
Greater than 1,000,000	68%	12%	23%	26%	20%
Other	67%	3%	15%	10%	41%

How is GIS currently funded by your entity?

By Region	General Fund	Sales Tax	Internal Charges	Utility Fees	Other
Canada	81%	2%	22%	15%	6%
Mid-Atlantic	78%	2%	13%	27%	2%
Mountain	74%	10%	16%	20%	16%
New England	81%	0%	6%	21%	2%
North Central	77%	5%	14%	27%	12%
Pacific	69%	5%	24%	34%	16%
South Atlantic	78%	2%	11%	30%	14%
South Central	80%	12%	12%	22%	12%

Budgeting and Funding

"What else would we like to do with GIS? Too many possibilities to list."

Do you think current funding of your entity's GIS is adequate?

By Population	Yes	No	Other
Less than 1,000	0%	0%	0%
1,001 to 5,000	63%	21%	11%
5,001 to 10,000	40%	30%	22%
10,001 to 20,000	34%	36%	14%
20,001 to 50,000	33%	33%	18%
50,001 to 100,000	35%	32%	19%
100,001 to 250,000	28%	38%	20%
250,001 to 500,000	33%	22%	26%
500,001 to 1,000,000	33%	28%	24%
Greater than 1,000,000	40%	27%	18%
Other	26%	28%	26%

Do you think current funding of your entity's GIS is adequate?

By Region	Yes	No	Other
Canada	37%	33%	20%
Mid-Atlantic	38%	38%	18%
Mountain	35%	27%	20%
New England	23%	49%	9%
North Central	36%	30%	17%
Pacific	33%	35%	22%
South Atlantic	30%	30%	22%
South Central	30%	29%	21%

About Bartlett & West

Bartlett & West creates value for our clients through a portfolio of professional services, including engineering, data management, field services, landscape architecture, and sustainable design. To do that, our people focus on understanding clients' needs, being accessible and responsive, and bringing integrity, quality and proactive communication to every project. We've built our business on these values. These are more than just words to us. For every employee, this is **Service. The Bartlett & West Way.**

Our firm is an employee-owned company that has grown steadily from a two-person partnership in 1951 into a multi-disciplined professional services firm. A rich mix of professional, technical, administrative and support staff provides professional services to governmental agencies, municipalities, private industry and individual clients throughout the United States. Year after year, Bartlett & West is ranked among the top design firms by industry trade publication ENR (Engineering News-Record).

Employees of Bartlett & West take our purpose seriously:

> **To lead our communities toward a better tomorrow.**

We do this by living everyday our company's core values:

> **Earning trust** through doing what is right even when doing so is difficult.
> **Delivering quality** through pride in our work and an attitude of continuous improvement.
> **Serving others** through caring for our clients, our community, and each other.

Bartlett & West is organized to provide efficient, cost-effective services to our client groups, including Public Works, GeoInfo, Rural & Regional Water, Architectural Engineering, Field Services, Land Development, and Transportation.

For nearly 60 years the success of our firm has been founded on one simple fact: repeat business. Every Bartlett & West employee makes a personal commitment to providing world-class service to all our clients. Our quality assurance and client feedback programs help maintain the high confidence our clients have in Bartlett & West.

Our clients come back to us over and over again because they appreciate our understanding of their needs, our accessibility and responsiveness, our integrity and quality, and our proactive approach to communication. Together these values make up **Service. The Bartlett & West Way.**