GMI 20 22

geospatial
maturity
index

Survey Walk-through Guide & Methodology

March 2022

First launched in 2018 by PSD Citywide, the Geospatial Maturity Index (GMI) serves to audit GIS programs and allow participating public sector organizations to compare themselves against their peer groups and track their progress over time based on specific core competencies.

The GMI provides participants with access to accurate and comprehensive comparative information to assist with GIS program development and capacity building across organizations. The results of this survey will solely be used to inform an analysis of geospatial maturity for the public sector. Survey results and comparative rankings will be provided in November 2022, providing participants the ability to compare their score and ranking alongside organizations of similar size and type.

Completing the Survey

Survey respondents are encouraged to reference the following survey walk-through guide to assist with the completion of the 2022 GMI survey in *SurveyMonkey*. Explanations of each question included in the survey can be found in this walk-through guide, which PSD Citywide has developed to provide clarification around potentially new or unfamiliar concepts. The survey consists of scored and unscored questions, which have been labelled as such in this walk-through guide and within the survey itself.

The survey consists of 92 questions and is organized into four sections: Organization Information, Readiness, Implementation, and Impact (note: based on survey responses, the survey may skip questions based on responses, thereby impacting the number of total questions upon survey completion). Respondents can complete the survey within SurveyMonkey at their own pace, with the application saving the latest entries into the survey as long as the survey is completed from the same IP address. We encourage respondents to work collaboratively across relevant departments to complete the survey, facilitating the development of a corporate-wide view of your GIS program.

Please contact us at **benchmarking@psdcitywide.com** if you have any questions or problems with completing the survey.

Organization Information

1. Contact Information. (Unscored)

2. Organization Information. US respondents within a local government entity (County, City, Town, etc.) should select Single-Tier municipality unless another option is more applicable. (Unscored)

3. Please provide the number of employees working in your entire organization in terms of total full-time and full-time equivalent staff. (Unscored)

Readiness

Program Structure

4. Geospatial data programs can exist as independent entities within some organizations (Centralized), while in others, GIS staff are integrated throughout various departments and rely on cross-departmental operations (Decentralized). Hybrid organizations fit somewhere in-between where geospatial data programs operate somewhat independently but maintain some cross-departmental operational requirements. This question seeks to determine how centralized or decentralized your organization's geospatial data program is. (Unscored)

5. This question looks to determine if your organization has a GIS-specific team (or department). If your organization has a decentralized GIS team, but a well-defined GIS program, please indicate "yes", or describe your unique program in "other." (Scored)

6. This question is intended to provide an accurate picture of how many GIS staff (including part-time) work within the organization - this may be within one centralized department or decentralized across several departments. (Unscored)

7. This question looks to identify if your organization has full time staffing resources to the GIS department/team or if operations are maintained on a part time basis. (Unscored)

8. This question seeks to understand whether GIS is a centralized operation within the organization, and which department it falls under. Answers to this question will shed light on the department(s) under which GIS typically operates and who determines management priorities. (Unscored)

9. Official name of GIS team (or department). (Unscored)

10. This question will provide a clear picture of how long the organization has been using and investing in the processing and application of geospatial data. If your GIS operations are decentralized and not a part of one branch, how long have you had an established GIS program? (Unscored)

11. This question seeks to determine whether your GIS team (or department) has moved to another part of your organization's structure since its inception. (Unscored)

12. This question seeks to understand which departments within your organization are using GIS data, and how integral GIS is to the organization. (Scored)

13. This question looks to identify which departments within your organization have advanced access to GIS data. "Power users" are defined as individuals with access to raw/original GIS data vs. output (or read only). (Unscored)

Strategic Alignment

14. Approval of official GIS Strategy or Multi-year Plan is not required by council/ boards, official plans can be approved by senior management as long as strategic and measurable actions and goals are identified within an official document. (Scored)

15. This question seeks to understand why your organization initiated the development of a GIS Strategy or Multi-year Plan. (Unscored)

16. Once the development of a GIS Strategy or Multi-Year Plan was initiated, who completed the strategy/plan? This question looks to identify the origin of GIS strategies and Multi-year plans and the presence of external organizations when developing these guiding documents. (Unscored)

17. Please upload the organization's GIS Strategy or Plan (or screenshot of your document) as well as provide the name of Plan in the comment box for response validation. Uploaded documents will not be shared with any third parties. NOTE: If your organization is currently in the planning process of establishing a GIS Strategy or Plan, the name of the Plan will suffice for validation purposes. (Unscored)

18. Answers to this question will establish whether there are defined expectations of service providers, and whether users (both internal and external) are aware of the steps required to access geospatial data and services. (Scored)

19. This question seeks to understand to what extent geospatial data is formally recognized as critical to attaining goals and initiatives in the organization. Select all that apply and list any other plans or strategies in which the use of geospatial data is considered a required set of information to be incorporated into planning. (Scored)

20. Please provide references (Title of document and URL if available) of any corporate plan that your organization has prioritized the use of geospatial data to support the goals/initiatives of the plan. These will be used for validation purposes. (Unscored)

21. Along with a clear vision of business process mapping, it is critical for an organization's GIS program to have a data policy implemented, to inform the governance and framework for geospatial data management. Some organizations have a workflow methodology in place, but not yet a formal GIS data policy. Please indicate the status of your organization. Note: If the organization has a data policy external to the GIS department/team that SPECIFICALLY mentions GIS data and its subsequent management, respondent should answer "Yes". (Scored)

22. Upload the organization's GIS Policy (or a screenshot of the policy) for response validation. Uploaded documents will not be shared with any third parties. (Unscored)

23. In understanding the organizational effectiveness of an organization's GIS program, it is important to have a clear picture of the methodology employed to prioritize planning. (Unscored)

Program Funding

24. Please provide an approximate value for each budget. In combining this information with your organization's other answers throughout the survey, PSD Citywide will be able to gain a better understanding of how well-resourced GIS staff and the GIS Department are, and where financial resources may be lacking. (Unscored)

25. This question seeks to examine the extent to which the COVID-19 Pandemic impacted GIS programs' budgets. Later in the survey, respondents will have the opportunity to provide further details on how the Pandemic affected the GIS program more generally. (Unscored)

26. Please provide an approximate value that the COVID-19 Pandemic had on each budget. (Unscored)

27. This question speaks directly to the budget made available for maintaining support, licensing, and software components required by the geospatial data program, as well as for maintaining existing datasets. A sufficient technical and financial budget means that the department is provided with enough resources to maintain and grow the organization's GIS capabilities. (Scored)

28. Answers will indicate to what extent (if at all), collaboration between the GIS Department and other business units, either within or outside of the organization, occurs to support GIS capacity. (Scored)

29. If your organization does have access to funds to innovate in GIS, are these funds allocated through the budget, through specific grant funding, or through another source – please explain. (Unscored)

Program Capacity

30. Understanding the leadership under which geospatial data management typically falls, and what the expectations are of management, will paint a picture of the degree to which the program is run, and how the program is used to complement other departments and programs within the organization. (Unscored)

31. Name the GIS-related courses taken, degrees obtained, and/or GIS related work experience of your GIS Team Manager (or most senior manager responsible for GIS in your organization). (Unscored)

32. This question seeks to determine whether an HR needs assessment of the geospatial data program has been conducted, acknowledged, and acted upon. (Scored)

33. Answers to this question will provide a picture of whether GIS staff with specialized experience/training are employed by the organization. (Scored)

34. In this context, "competent" means that staff can perform the necessary work without needing to consult external resources to operate enterprise-level programs. (Scored)

35. In this context, a viable GIS program consists of one that has sufficient staff to maintain the existing program. (Scored)

36. In this context, a sustainable GIS program consists of sufficient staffing levels to meet the future needs of the GIS program and expand GIS utilization. (Scored)

37. This question seeks to understand whether GIS teams are engaged with consistent efforts to supply end-users with data or instructions that support the end-users' objectives of extracting any data they deem necessary. In other words, is the GIS team equipping end-users with sufficient tools to complete their tasks? (Scored)

38. Answers will provide insight into how focused and specialized project management positions are in GIS projects. (Scored)

Implementation

Geospatial Data

39. This question seeks to gather baseline or general information as it pertains to GIS data. Understanding how the data is housed, maintained, and used across the organization helps to provide context to future questions. "Centrally managed production database" refers to the organization's spatial data warehouse, which contains all the authoritative GIS data for the region. Regarding "data modelling," there has not yet been an established standard for participating organizations to be held to when it comes to best data modelling practices. For the purposes of this survey, an organization whose spatial data has undergone data modelling is one who has an approved and consistently applied standard for the data modelling process. (Scored)

40. Is there an individual (or group) who are designated responsible, by way of official documentation (policies and procedures), for monitoring and maintaining geospatial datasets? (Scored)

41. Metadata is an important but often overlooked component of GIS data. Put simply, metadata is 'data about the data', and is critical to having a clear picture of the currency, scale, and appropriateness of using GIS data. Metadata can be stored as an inherent part of the GIS data, or it may be stored as a separate document. (Scored)

42. Metadata is the core of a Data Catalog. Data catalogs are designed to collect data about the data inventory but also about processes, people, and platforms related to the data. This question identifies whether in addition to maintaining metadata, your organization catalogs the data by organizational use. (Scored)

43. This question will shed light on whether the age of the data source is identified and managed appropriately by the GIS team. Data versioning is one method to achieve data age management. (Scored)

44. This question looks to identify what methods are currently used by organizations to maintain data quality. If the procedures your organization uses to maintain data quality are not listed (or are informal) please explain the process used. (Scored)

45. Are there processes in place to ensure that duplicate GIS data/work is not being done in other departments? (Scored)

46. This question seeks to understand if the security of GIS data is a focus point within data security management policies that may exist within your organization. (Scored)

47. Upload the organization's data security policy (or a screenshot of the policy) for response validation. Uploaded documents will not be shared with any third parties. (Unscored)

48. In every GIS environment there is a data workflow. As part of this workflow, GIS staff can input and process data from external sources (e.g. financial systems, asset management systems, etc.), and use this inflow to continuously update the organization's spatial dataset. At the same time, GIS staff are also able to transform data taken from external sources, and create new visualization productions, and share certain (filtered) data sets with the public. This process is known as Extract, Transform, Load (ETL) and can be done manually, using scripts or commercial software for more complex processes. (Scored)

49. This question is designed to measure the prevalence of automated data analysis as it relates to GIS data (I.e. machine learning). Please provide a comment outlining which automated data analysis processes are in place. (Unscored)

50. Non-authoritative commercial datasets refer to the data produced and updated by third parties such as Google. Answers to this question will help PSD Citywide gauge how reliant an organization is on these non-authoritative data sources. Additionally, please provide a comment as to under what circumstances are non-authoritative data sets acceptable. Does your organization have a policy guiding the usage of these datasets? (Unscored)

51. This question looks to identify the most common non-authoritative commercial datasets in use by public sector organizations. (Unscored)

Geospatial Technology

52. Answers to this question will provide insight into what types of software organizations are using and allow for analysis of trends that run consistent with certain software. (Unscored)

53. Organizations are regularly adding to, changing, and augmenting GIS software solutions. Understanding which GIS software products are most common will help to identify the presence of multi-software solutions vs. singular software utilization. (Unscored)

54. In this context, "regular back-ups" can be interpreted to mean that back-ups occur frequently enough that, should failure occur, existing data would be recovered. Data should be backed up as often as data is updated. (Scored)

55. Please factor in all core GIS staff and non-core GIS staff when providing answers to this question. If hardware use varies by team, please indicate as much in the "please explain" box. (Scored)

56. This question seeks to understand how sophisticated GIS data collection is throughout the organization. Answers may vary, depending on how many staff are involved in data collection, and how centralized or decentralized the data collection process is. If some data collectors operate outside of the GIS Department, and collect/provide data to the GIS Department using methods different than what is used by core GIS staff, please indicate that this is the case. (Scored)

57. This question seeks to identify how much of a link currently exists within public sector organizations to utilize mobile technology to capture infrastructure asset information in the field and have it sync with a cloud-based inventory system. (Unscored)

58. This question looks to identify trends within organizations as to how they plan to enhance the current software inventory (Scored).

59. Understanding how technical support is provided to the GIS department provides insight into one facet for capacity for growth. In this context "Organization's IT department" is assuming that GIS and IT are separate departments only; where "Managed within GIS department" accounts for separate departments and incorporated departments with IT. (Scored)

60. What does the relationship between the GIS Department and broader IT systems/business units look like? What systems, privileges, and tools are integrated with IT systems? Are there any areas where IT has not been properly or sufficiently integrated with GIS software, hardware, or data? (Scored)

61. Does the server's infrastructure exist and operate in-house, or in an external cloud? (e.g. Database server, mapping server, portal, etc.). (Scored)

62. This question seeks to understand the trends for cloud-based solutions for GIS systems. (Unscored)

Impact

Collaboration

63. Has there been a formal effort to determine how accessible GIS data and systems are to the public? (Scored)

64. Does your organization bring in revenue by charging external bodies for geospatial consulting services? If the organization charges for geospatial products or services, what are the products or services? (Unscored)

65. Is there a defined, standardized approach the members of the organization can take to communicate questions, problems, or feedback to the geospatial data team? If answering "other", outline the process employed, how it has played a role in improving and achieving departmental objectives, and who does and does not engage in the process. (Scored)

66. This question seeks to determine whether input from other departments is sought or accepted by the geospatial data team when making investments in new or improved software. (Scored)

67. Answers to this question can vary, including anything from partnerships with the academic community, non-profit organizations, businesses, contractors, other municipalities, other levels of government, etc. (Scored)

68. This question will identify common trends of external partnerships for GIS activities. (Unscored)

69. This question seeks to identify the degree of collaboration that takes place concerning GIS partnerships. (Scored)

70. This question is for validation purposes. (Unscored)

71. A GIS Communications Plan refers to a plan that the department abides by, that governs how a department is to communicate and deliver GIS products and services to the intended audience (internal and external). (Scored)

72. This question seeks to understand the degree to which the organization's GIS Communications Plan is utilized within the organization and to determine the legitimacy of its purpose (Scored).

73. Upload the organization's GIS Communications Plan (or a screenshot of the policy) for response validation. Uploaded documents will not be shared with any third parties. (Unscored)

74. In the context of this question, "provides updates on a scheduled basis" would consist of keeping the IT department informed on a regularly scheduled manner of changes or developments made that would (have the potential to) impact the IT department. If the GIS team is a component of the IT Department please answer, "On a scheduled basis", provided that the IT Department is regularly informed of GIS activities. (Scored)

75. "Community of Practice" refers to an internal group or network of GIS knowledge, comprised of GIS staff from other internal departments. (Scored)

76. Once again, answers will vary significantly, depending on how centralized/ decentralized GIS operations are, and how often GIS staff work with members of other departments and management levels. (Scored)

Engagement

77. This question seeks to understand how accessible the organization's GIS services and data are to external business units. (Scored)

78. This question is intended to identify the availability and accessibility of GIS services and data to the public. (Scored)

79. Please explain the process by which you offer GIS information/data and/or services to the public. (Unscored)

80. This question is looking to establish the accessibility of GIS training opportunities and materials to both internal and external users within the organization. (Scored)

81. Please identify the frequency by which your organization provides GIS training to users. (Unscored)

82. Please identify the types of GIS training provided to users. (Unscored)

83. While senior management is not expected to work directly with GIS tools and data the same way members of the GIS department are, it is important that senior staff have a solid understanding of the work and importance of the GIS department. Without corporate buy- in, GIS departments often find it difficult to extend the benefits of GIS work into other departments and maximize the program's potential. (Scored)

84. This question provides an opportunity to expand on areas in which the organization's GIS team (or department) are struggling, and where there is room for improvement. (Unscored)

85. What does the future of your organization's GIS program (including your team/department) look like? (Unscored)

86. Having a plan/strategy to account for leadership retirement/turnover is critical in maintaining the long-term viability and sustainability of any departmental initiative. This question seeks to understand the prevalence of leadership succession planning for GIS department/team managers. (Scored)

87. Please expand on the leadership succession plan that your organization has in place (or is developing).

Performance Measurement

88. GIS programs were proven to be extremely resourceful during the COVID-19 pandemic and utilized by the public sector for a variety of different response efforts. Please specify whether your GIS program was utilized, and if so, provide a comment describing what role the program fulfilled. (Unscored)

89. Has your GIS Program been directly impacted by your organization's COVID-19 response? (Unscored)

90. If yes, please provide details on how your organization's COVID-19 response has directly impacted your GIS program. (Unscored)

91. Opportunity to provide a brief case study on recent success stories from within your organization's GIS team (or department). (Unscored)

92. Has the organization's GIS department/team (or someone within the GIS team) been recognized or awarded by any external organizations for good performance, innovative work, excellence, etc.? (Scored)

93. Please provide the name of the award, year award was received, and the name of the organization that provided the award for validation purposes. (Unscored)

Survey Scoring Methodology

Over the past iterations of the GMI survey since its inception in 2018, PSD Citywide has gathered feedback from GIS practitioners across the country to ensure that the survey reflects all organization sizes and that the terminology used is well-defined. The following scoring methodology is meant to help provide public sector organizations with a roadmap to develop greater geospatial maturity. This survey, and the corresponding maturity assessment, in no way addresses all components of a mature GIS program, but rather is meant as a starting point for GIS program benchmarking for the public sector.

Readiness

The Readiness portion of the survey consists of unique questions designed to evaluate to what extent public sector organizations are ready/capable of fostering positive outcomes through its geospatial program.

The Readiness Section has four sub-categories: Program Structure, Strategic Alignment, Program Funding and Program Capacity.

The total possible score for this section is 59. This section is worth 33% of the final overall score.

Readiness: Questions	Maximum Score
Q5. GIS team/department with designated staff	4
Q12. Departments with GIS users	5 (1 point per department to a max of five)
Q14. GIS Strategy or Multi-Year Plan	4 for yes (2 for In Progress)
Q18. Service Level Agreements	2 (1 for In Progress)
Q19. Geospatial data supporting corporate plans	4 (1 point per plan)
Q21. Geospatial data policy	4 (2 for workflow methodology)
Q27. Technical and financial resources	3 (1 point each)
Q28. Data and technology cost-sharing	2
Q32. GIS personnel needs	5 (1 point each)
Q33. Staff experience/training	5 (1 point each)
Q34. GIS core competencies	5 (1 point each)
Q35. Staffing levels to maintain current GIS delivera-bles	4
Q36. Staffing levels to expand GIS program	4
Q37. Support end-users for GIS solutions	4
Q38. Dedicated project managers	4
Maximum Total Score (Readiness)	**59**

Implementation

The Implementation section of the survey is designed to measure to what extent the organization has developed its geospatial maturity and begun to achieve planned objectives.

The Implementation section has two sub-categories: Geospatial Data and Geospatial Technology.

The total possible score for this section is 67. This section is worth 37% of the final overall score.

Implementation: Questions	Maximum Score
Q39. Geospatial data	5 (1 point each)
Q40. Data stewards	4 (2 points for partial)
Q41. Meta data	4 (2 for partial)
Q42. GIS data catalogue	4 (2 for partial)
Q43. Data versioning techniques	4
Q44. Data quality procedures	6 (2 points each)
Q45. Duplication prevention	4 (1 point each)
Q46. Data security policy	4 (2 points for in progress)
Q48. GIS data flow management	4 (1 point for manual, 2 points each for scripts and ETL)
Q54. GIS software suite	4 (1 point each)
Q55. GIS data collection: hardware	5 (1 point each)
Q56. GIS data collection: software	4 (1 point for manual data entry, 4 for commercial or custom applications)
Q57. Mobile technology	3 (2 for "do not sync", 1 for in progress)
Q59. Services to sustain GIS program	4 (1 point for third party, 3 points for IT department, 4 points for GIS depart-ment)
Q60. GIS integration	4 (1 point each)
Q61. Cloud-based servers	4 (2 points for in development)
Maximum Total Score (Implementation)	**67**

Impact

The Impact section of the Index measures to what extent your organization has defined its goals and is able to measure the impact of its geospatial initiatives.

The total possible score for this section is 54. This section is worth 30% of the final overall score.

Impact: Questions	Maximum Score
Q.63 Public usability analyses	4
Q65. Standardized feedback to GIS department	4
Q66. Software procurement process	4
Q67. External partnerships	2
Q69. Number of partnerships	3 (1 for each parameter)
Q71. GIS Communications Plan	3 (1 each)
Q74. Collaboration with IT department	4 (2 for ad hoc)
Q75. GIS Branch collaboration	4 (1 point each)
Q76. Collaboration with all departments	4 (4 points for weekly or daily, 3 points for monthly, 2 points for quarterly, 1 point for quarterly or ad hoc)
Q77. Designated representatives for GIS inquiries	4
Q78. Public feedback and inquiries	4 (2 for In Progress)
Q80. GIS training	4 (2 points for internal, 2 points for external)
Q83. GIS team and senior management	4 (4 points for monthly or weekly, 3 points for quarterly, 2 points for annually, 1 point for ad-hoc)
Q85. Leadership succession plan/process	4 (2 for in development)
Q92. GIS awards	2
Maximum Total Score (Impact)	**54**
Maximum Total Score - GMI	**180**

psdcitywide

🌐 psdcitywide.com/benchmarking

✉️ benchmarking@psdcitywide.com

in Follow on LinkedIn