

Minnesota GIS/LIS Consortium

2022 Salary Survey Report



MINNESOTA
GIS/LIS
CONSORTIUM

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About the Consortium

Mission Statement

To develop and support the GIS professional in Minnesota for the benefit of our state and its citizens.

The Minnesota GIS/LIS Consortium is a forum for communicating information to, and improving cooperation among, those interested in Geographic Information Systems (GIS) and Land Information Systems (LIS) in the State of Minnesota. Members include GIS users in local, state, federal and tribal government agencies; business and industry; educational institutions and nonprofits. Membership is **FREE** just by being on our mailing list.

The Minnesota GIS/LIS Consortium is an official 501c3 non-profit organization. More info about the MN GIS/LIS Consortium is available on our website at www.mngislis.org.

About this Report

Timeframe

We collected survey responses between the dates of March 1st and April 1st, 2022. The Survey was launched on the Consortium website on March 1st. The survey was closed at the end of the day March 31st, 2022. A majority (54%) of responses were submitted in the first four days of the survey launch and two-thirds (68%) were submitted in the first week.

Response Makeup

We received 320 total responses, of these, 15 (4.7%) as Contract/Seasonal or Interns. Due to the relatively small number and significant difference in compensation these responses are not included in a majority of the financials analysis. The responses are included demographic analysis where appropriate. Twelve respondents (3.4%) identified themselves as a Surveyor and 293 (91.6%) were predominately full-time GIS employees. We will go into more detail on response makeup in the results section of this report.

Methodology

The Board of Directors assigned the conduct of the Salary Survey to the Professional Development Committee. Members of this committee modified and updated the 2020 Salary Survey questions and published the survey using ArcGIS Survey123 (version 3.14), an online survey tool available to the Consortium through existing Esri ArcGIS software maintenance.

In addition to announcing the survey on the Consortium's opt-in, biweekly e-announcement emails, we also posted the survey link multiple times on the

Consortium's Twitter, Facebook, and LinkedIn pages. Individual Consortium members also publicized the survey through their work and social networks.

The 2022 survey was modeled after the 2020 survey with some adjustments. The format, timing, and solicitation of the two surveys were similar but not identical. Where direct comparisons are made, dollar amounts in the 2020 survey have not been updated to adjust for inflation.

Privacy Consideration

Salary information for answers that received fewer than 10 responses (3% of all responses) are not broken out in the report results.

Limitations

The results of the 2022 salary survey generally reflect the composition of the pool of survey respondents. Consortium membership includes GIS and LIS users in government agencies (57%), business and industry sectors (31%), and educational institutions (8%), and non-profits (4%).

GIS users who identify themselves as occasional users or new to the GIS field appeared less likely to participate in the survey. Their participation could be smaller due to lack of awareness, lower rates of membership, or lower engagement in the Minnesota GIS/LIS Consortium.

Lastly, there is an assumed level of subjectivity in survey responses. The GIS industry generally uses a common language to describe positions and specialties, but the terminology is not standardized.

Accessibility

Much of the data in this report are presented in chart images. In many cases, we have also included the data in a table. If you have any accessibility issues with this report, please email us at profdev@mngislis.org.

Environment

This document has been optimized for viewing digitally. Some charts and graphs may not be clear when printed in grey scale. Please consider the environmental impact before printing either in grey scale or color. The Consortium encourages digital use of this report over hard-copy versions.

Causation vs Correlation

Throughout this report we have attempted to identify and highlight patterns in the data, however, we remind readers not to interpret correlation as causality.

Report Results

The 2022 survey was launched on March 1st and announced on March 2nd with the following text in the Consortium's opt-in, biweekly e-announcement email:

Submit to the 2022 Salary Survey!

The **Salary Survey** is back for 2022 and open for submissions. A lot has happened since the 2020 Salary Survey and it is time to reassess the state of GIS/LIS jobs across Minnesota. Help us understand the geospatial salary across various levels of experience, skillsets, and demographics. This is a great opportunity to discover changing trends, help emerging professionals understand what to expect, and assess the equity of the profession in Minnesota. The survey will be open for one month, closing on Friday, April 1st.

Submit to the 2022 Salary Survey: <https://arcg.is/0G55Wu>

See the **2020 Salary Survey results**.

Questions? Contact the Professional Development Committee via email at profdev@mngisli.org.

Follow-up e-announcement reminders were sent on March 16th and 30th. The impact of these announcements is apparent in the timing of responses as shown in Figure 1. The survey link was also posted multiple times on the Consortium's Twitter, Facebook, and LinkedIn pages. Individual Consortium members also publicized the survey through their professional and social networks. A majority survey responses (54%) were submitted in the first four days of the surveys' launch and two-thirds (68%) were submitted in the first week.

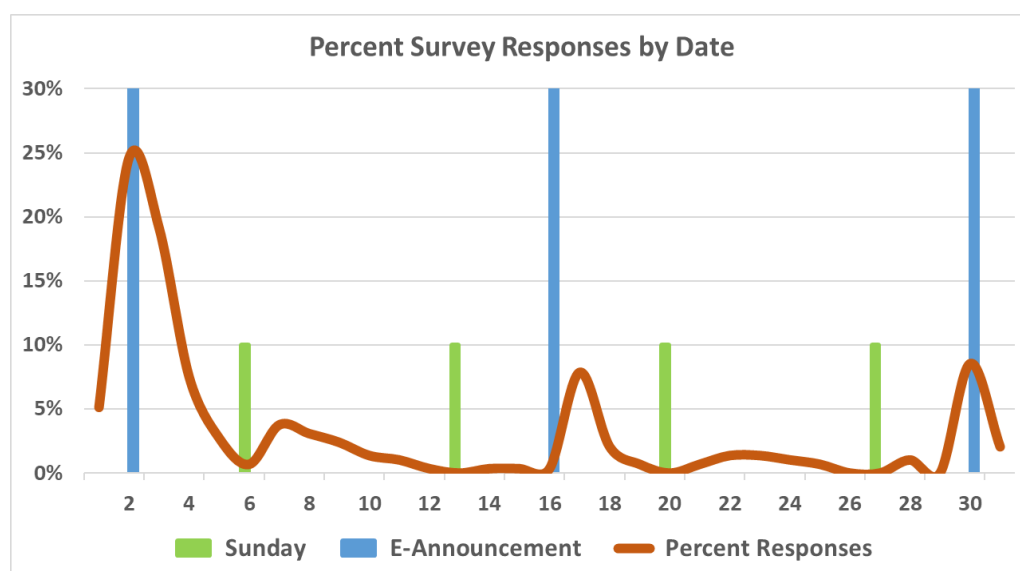


Figure 1. Survey Responses by Date

General Compensation

Unsurprisingly, the overall reported salaries varied widely. The median salary reported was \$74,800 with a standard deviation of \$24,200. The mean salary was \$77,585, suggesting a skewed distribution of the data with a greater number of outlier high salaries compared to low. Figure 2 demonstrates this uneven curve.

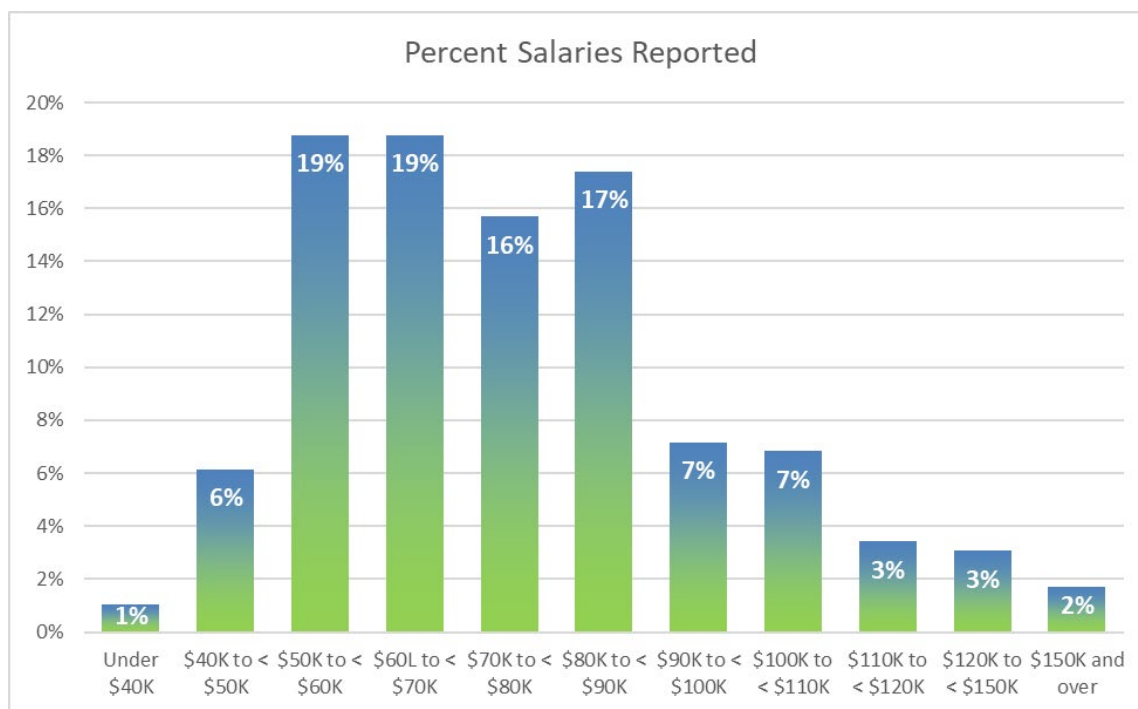


Figure 2. Percent of Salaries Reported

Table 1. Responses by Salary Range

Salary range	Number of responses	Percent of responses
Under \$40,000	3	1%
\$40,000 to under \$50,000	18	6%
\$50,000 to under \$60,000	55	19%
\$60,000 to under \$70,000	55	19%
\$70,000 to under \$80,000	46	16%
\$80,000 to under \$90,000	51	17%
\$90,000 to under \$100,000	21	7%
\$100,000 to under \$110,000	20	7%
\$110,000 to under \$120,000	10	3%
\$120,000 to under \$150,000	9	3%
\$150,000 and over	5	2%

As seen in Table 1, the top five salaries reported were \$150,000 or higher. The bottom five salaries reported were lower than \$42,000. About one third of respondents reported a salary below \$62,500 and another third reported a salary above \$83,500.

No single attribute of a GIS job can fully explain the salary ranges. Other factors such as time spent as a GIS professional and employer organization influence GIS salary. We explore some of these factors in the remainder of this report.

Years GIS of Experience

Fifty seven percent of respondents have at least ten years of GIS experience. Approximately one quarter (23%) have at least twenty years of experience, while 19% have five years or less experience. The pattern of responses by years of GIS experience can be seen in Figure 3.

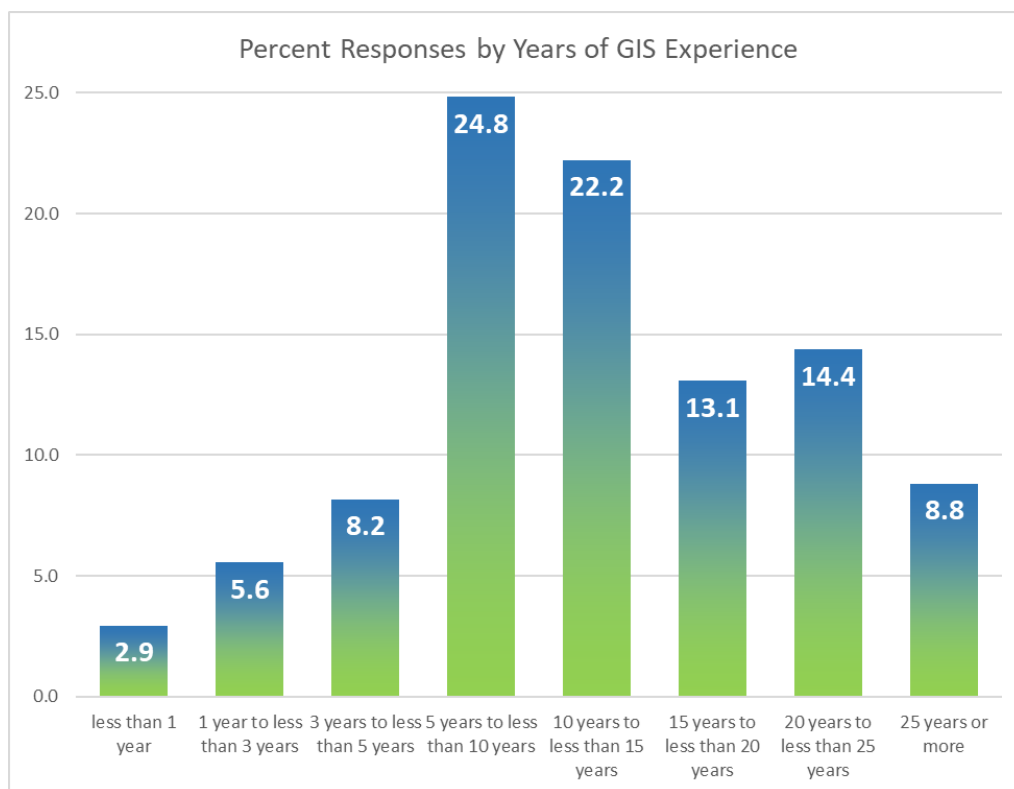


Figure 3. Percent of Responses by Years of GIS Experience

Table 2 is the most predictable in this report. Respondents report a steady increase in salaries as experience increases. Large increases in median salary are reported occurring around 3, 10, and 25 years of experience.

Table 2. Salary Range by Years of GIS Experience

Experience	Number of responses	Median salary	Lowest reported	Highest reported
0 to less than 3 years	20 (6.8%)	\$54,300	\$28,858	\$200,000
3 to less than 5 years	32 (10.9%)	\$59,322	\$42,840	\$124,800
5 to less than 10 years	78 (26.6%)	\$62,106	\$39,229	\$92,000
10 to less than 15 years	61 (20.8%)	\$72,800	\$44,880	\$132,000
15 to less than 20 years	35 (11.9%)	\$82,000	\$47,923	\$125,000
20 to less than 25 years	39 (13.3%)	\$86,778	\$47,840	\$171,500
25 years or more	28 (9.6%)	\$93,800	\$71,750	\$161,280

The large range for zero (0) to less than three (3) years is largely explained by respondents in management and systems roles who are new to GIS but have a high-paying oversight role. In other words, their salary is less reflective of GIS skills than other responsibilities. Six salaries were over \$100,000. Of these, five reported spending less than ten percent of their time using GIS or related applications.

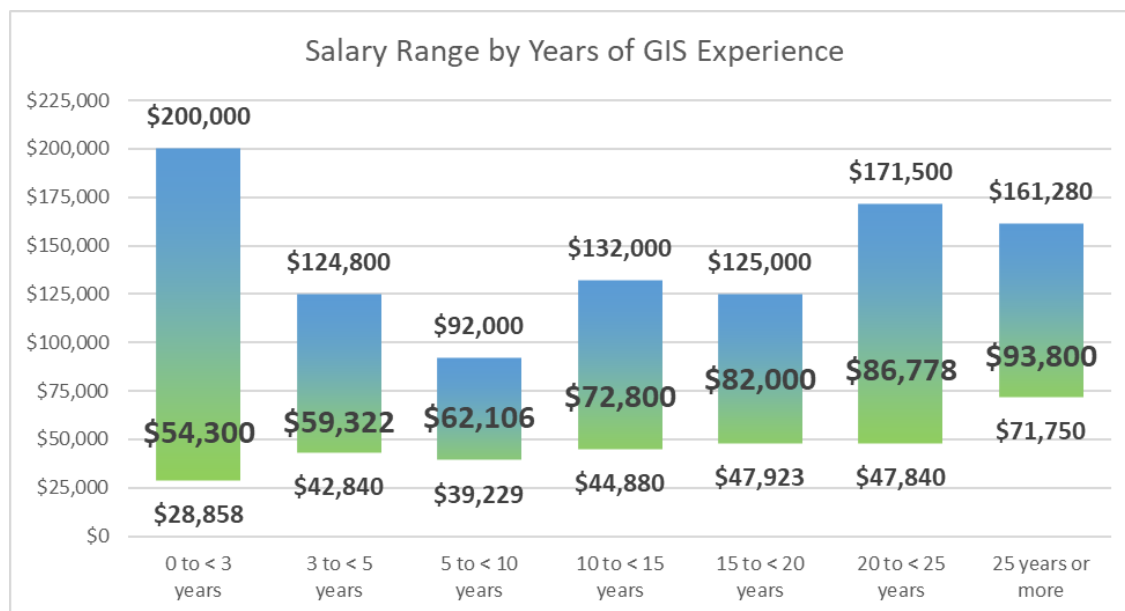


Figure 4. Salary Range by Years of GIS Experience

Figure 5 illustrates the correlation between salary and years of GIS experience.

The green (top) line represents salary averages within each years' experience group, the blue line (bottom) represents salary means. The formulas depicted describe the slope of the line, where X is the years of experience and Y is the predicted salary. Care should be used when looking at these numbers as there are as many people above as below each line. These formulas do not take into account any other factor that may play a role in actual salaries such as employment sector, job title, education, gender identity, or GISP status.

The 2022 formula closely match the 2020 salary trends. This year the mean salary formula is $y = 1,582x + 51,910$, in 2020 the formula for median salary was $y = 1,545.5x + 50,176$. In other words, both surveys indicate that GIS salaries increase at a rate of approximately \$1,600/year and that the starting point has increased \$2,000 in the past two years.

The R-squared values are the correlation coefficients where 1 is a perfect match between years' experience and salary. So, we see that, with all other factors ignored, years of experience is a very reasonable estimate of salary.

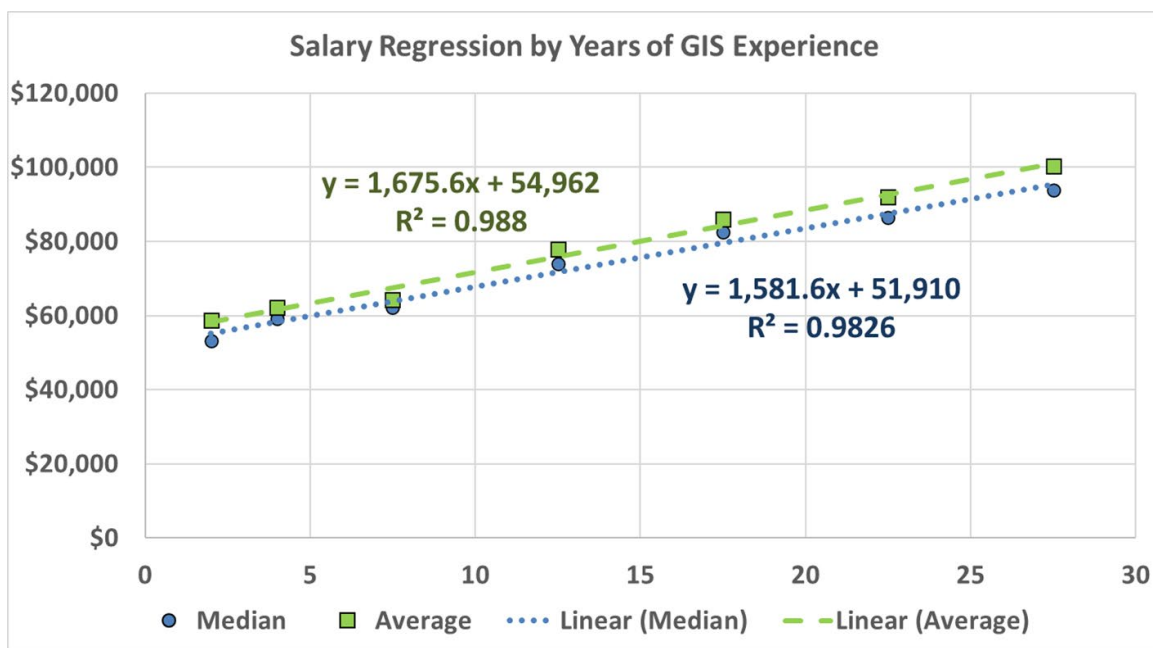


Figure 5: Salary Regression by Years of GIS Experience

To calculate the data used for Figure 6, the mid-point of each Years of GIS Experience category was used and 27.5 was used for respondents reporting 25 years or more. Four general groups appear in the data: (1) early-career professionals, (2) mid-career professionals, (3) late-career professionals, and (4) surveyors. Early career

professionals identified as GIS/Engineering Technician, mid-career as GIS Specialist, Analyst, Developer, and Consultant, and late-career as GIS Coordinator, Systems Support, and GIS Manager. Surveyors are a category on their own.

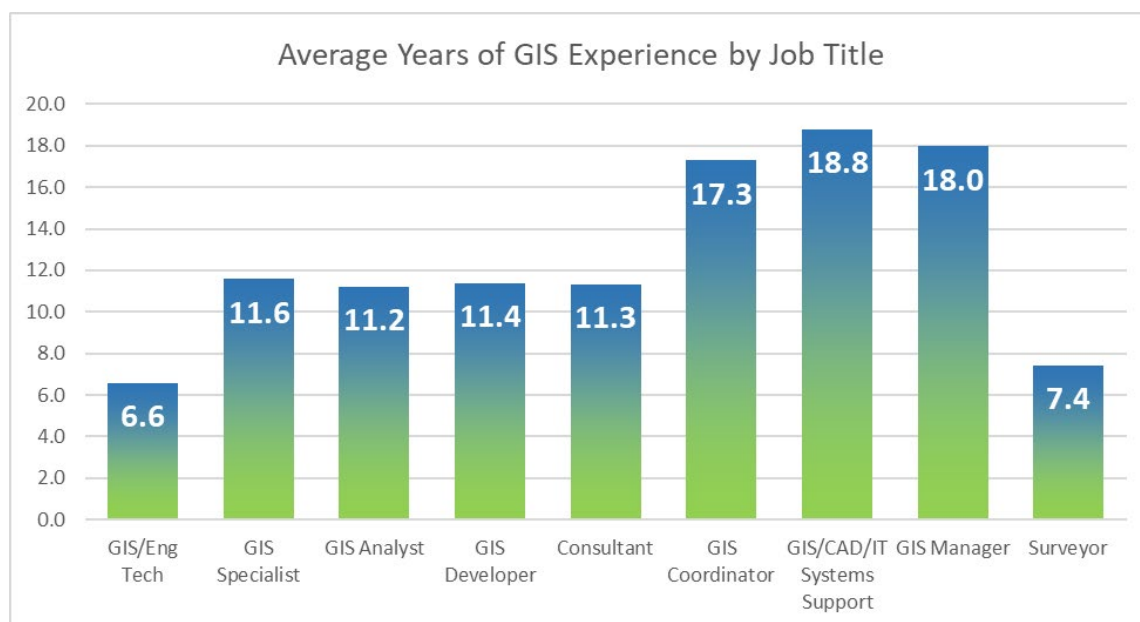


Figure 6. Average Years of GIS Experience by Job Title

Job Title

Respondents were given a list of 11 job titles and asked to choose the description that best described their position. Nine job titles had a large enough sample size to report.

Table 3. Salary Range by Job Title

Job title	Number of responses	Median salary	Lowest reported	Highest reported
GIS/Engineering Technician	35 (10.9%)	\$55,000	\$39,229	\$84,000
GIS Specialist	65 (20.3%)	\$62,546	\$40,000	\$108,420
GIS Analyst	51 (15.9%)	\$70,000	\$42,994	\$124,800
GIS Developer	19 (5.9%)	\$80,205	\$48,000	\$171,500
Consultant	19 (5.9%)	\$82,000	\$52,000	\$125,000
GIS Coordinator	36 (11.3%)	\$82,628	\$44,880	\$111,000
GIS/CAD/IT Systems Support	10 (3.1%)	\$87,720	\$47,840	\$161,280
GIS Manager	32 (10%)	\$101,000	\$61,000	\$160,000
Surveyor	12 (3.8%)	\$106,969	\$64,480	\$131,040

As seen in Table 3, more than half (53%) of the respondents reported job titles GIS/Engineering Technician, Specialist, Analyst, and Consultant. These four job titles

tend to be associated with early- to mid-career GIS Professionals. GIS Coordinator and Manager, mid- to late-career positions, account for twenty percent of the responses. The specialty positions of GIS Developer, Surveyor, and Support System professional account for less than 15% of the responses.

Respondents that chose not to select one of the 11 provided job titles defined their positions as environmental and natural resources, research assistant/scientists, educators, criminal intelligence analyst, and various other GIS, data/database, management-oriented titles.

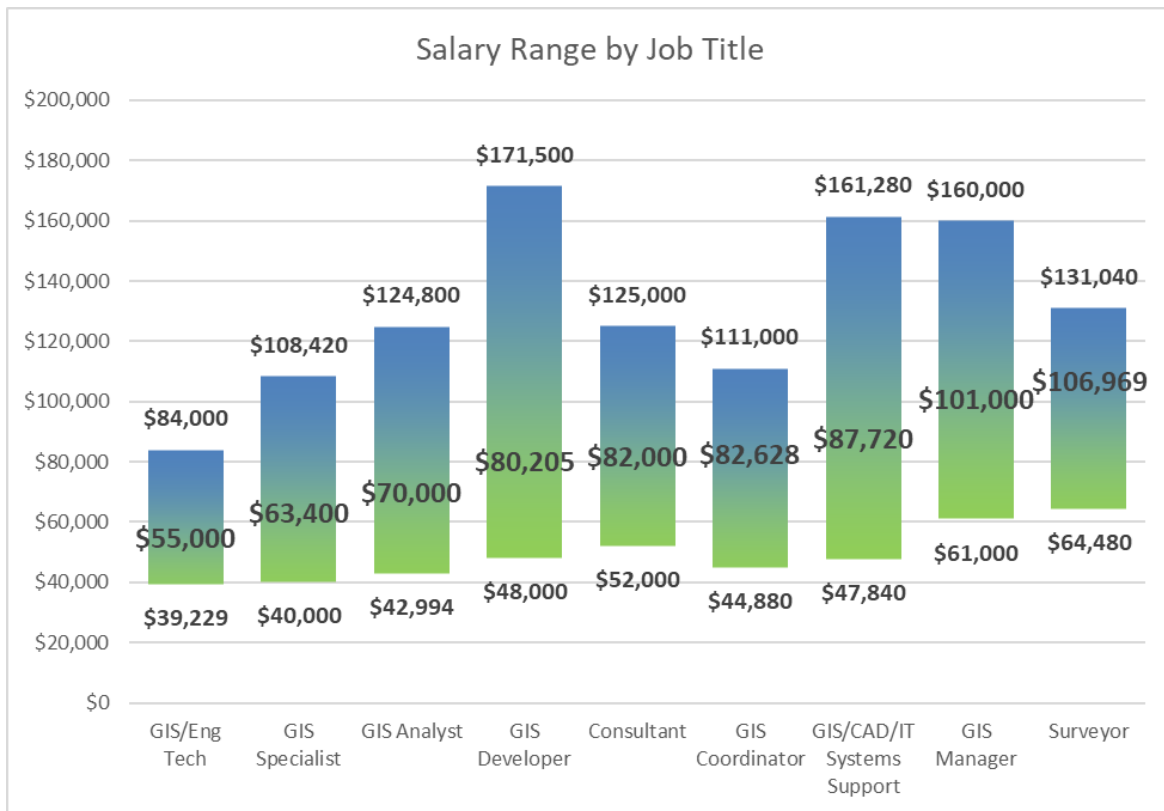


Figure 7. Salary Range by Job Title

Figure 8 (below) shows the spread of salaries within each job title. The skew in the response curve of salaries is evident looking at the five job titles where a majority of responses fall in the \$40,000 to \$80,000 range with a minority continuing up to \$100,000.

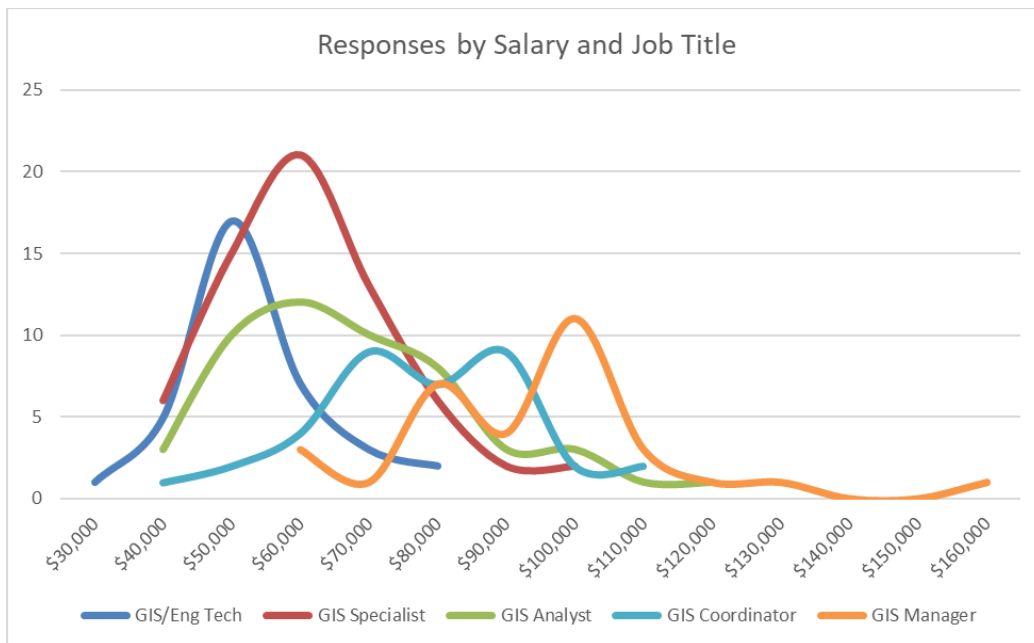


Figure 8. Responses by Salary and Job Title

Employment Sector

Over 75% of respondents to the 2020 Salary Survey worked in some level of government. The respondents to this survey were more balanced with 51% working in government and 40% working in private industry. The percentage of respondents working for nonprofit companies and in education were similar in both surveys.

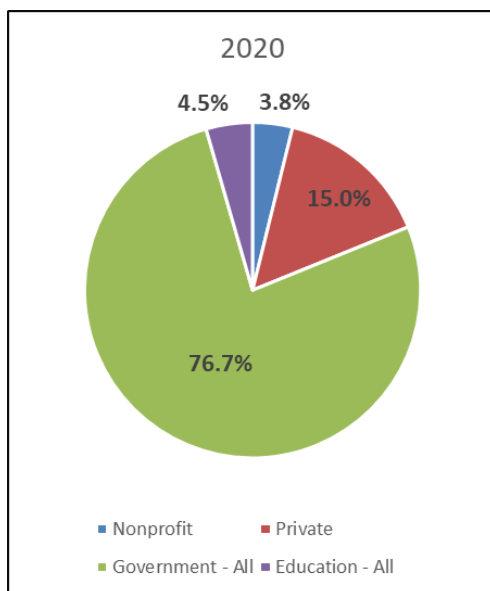


Figure 9. 2020 Responses by Employment Sector

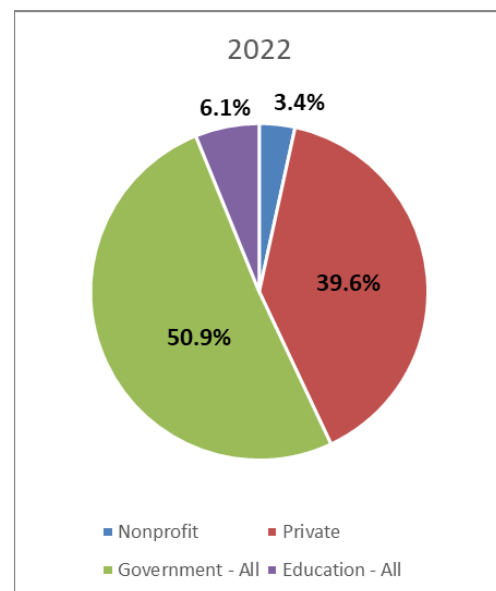


Figure 10. 2022 Responses by Employment Sector

Table 4. Salary Range by Employment Sector

Sector	Number of responses	Median salary	Lowest reported	Highest reported
Nonprofit	10 (3.4%)	\$60,000	\$45,000	\$109,000
Education – Higher Ed	16 (5.5%)	\$69,356	\$52,000	\$110,000
Private	116 (39%)	\$69,944	\$40,000	\$200,000
Government – Local	46 (15.7%)	\$77,012	\$39,229	\$161,280
Government – County/Regional	54 (18.4%)	\$74,982	\$28,858	\$115,000
Government – State	43 (14.7%)	\$77,438	\$29,578	\$145,600

Salary ranges by employment sector are displayed in Figure 10. To maintain privacy, this table excludes surveyors, K-12 employees, and contract/seasonal employees. Private industry shows the largest range of salaries although only six respondents reported salaries of over \$125,000. Similarly, only three respondents working in the local government sector reported salaries over \$125,000 and only five state government employees reported salaries over \$100,000.

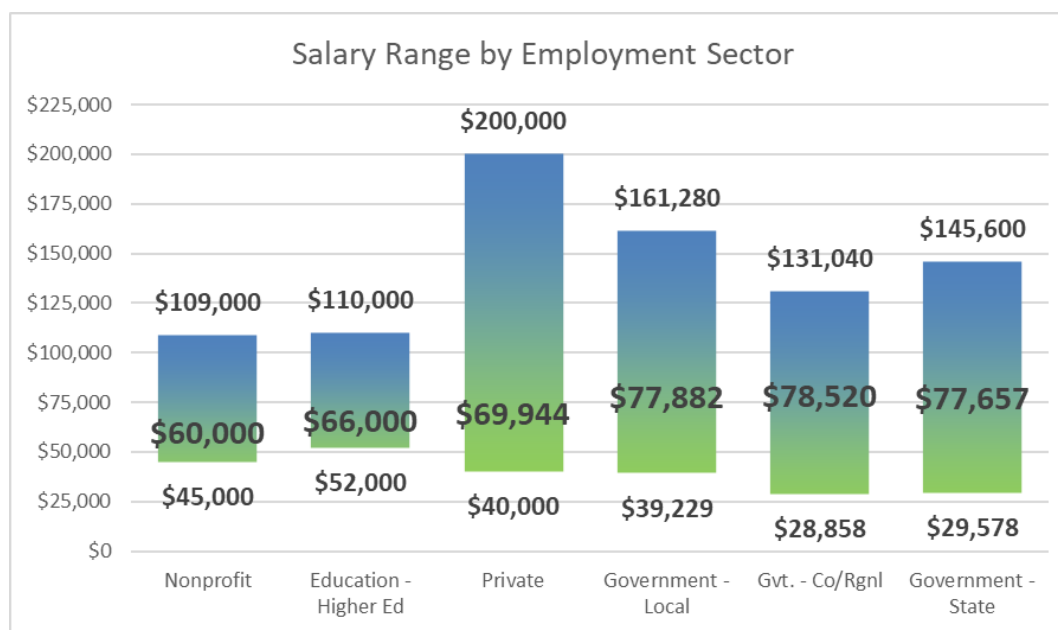


Figure 11. Salary Range by Employment Sector

Overall, median wages in private industry lag behind government by approximately \$8,000. Government median wages are higher in each job title category except GIS Developer where developers in private industry have a median wage approximately \$6,000 higher than government.

Several job titles largely exist in a single employment sector. Consultants were predominantly in the private sector (18). GIS Coordinators were primarily in government (34). Surveyors all indicated working in government.

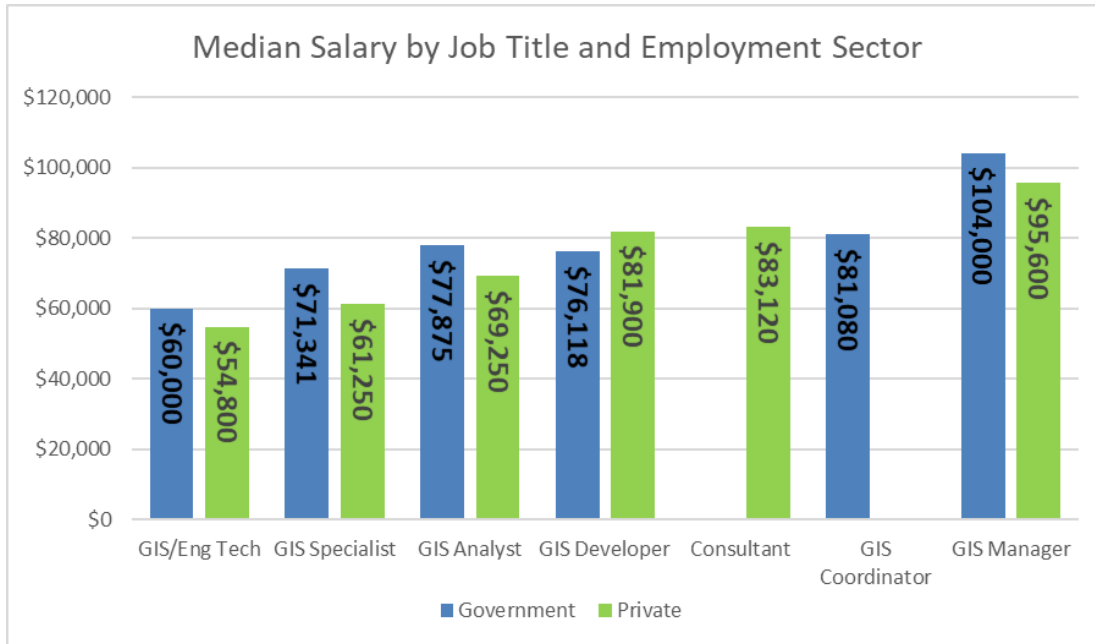


Figure 12. Median Salary by Job Title and Employment Sector

Figure 13 illustrates the responses by sector and years of GIS experience shows some interesting patterns that may be impacting median salaries between sectors. Respondents from the private sector tend to be earlier career than those in government. We are unable to determine whether sector or length of career is the dominant factor influencing comparative salaries; but the complexity of this topic should be kept in mind.

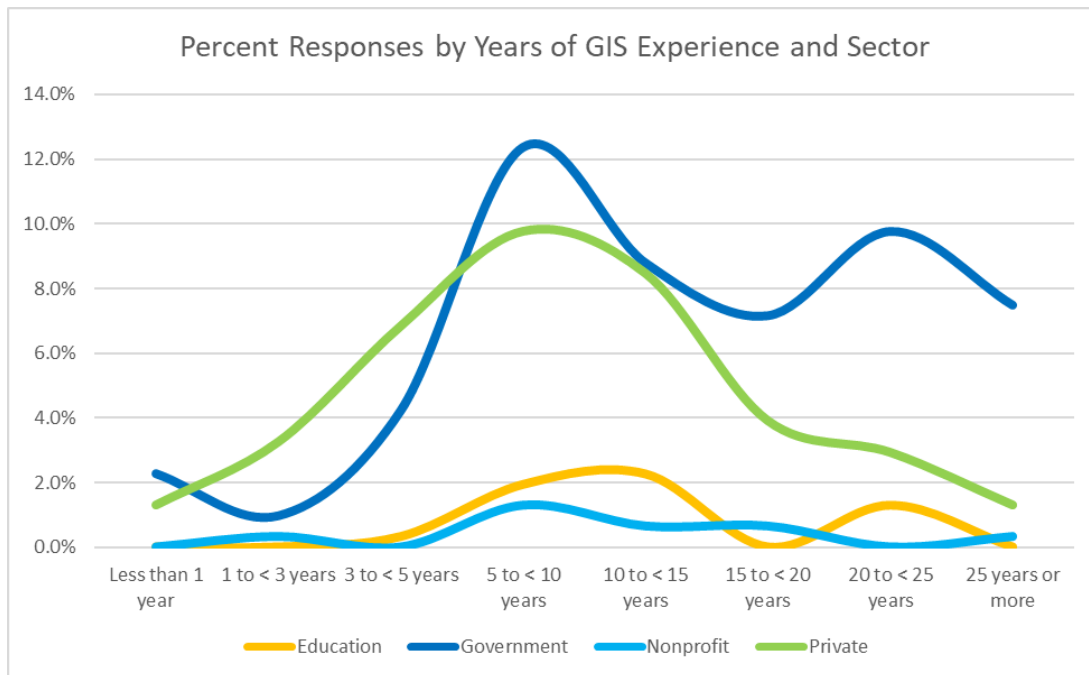


Figure 13. Percent Survey Responses by Years of GIS Experience and Employment Sector

Given there are no specific definitions of job titles, Figure 14, below, may not reflect any real differences in position. This chart depicts the percent of respondents in each job title in each employment sector. It illustrates that Consultants are predominately in Private Industry and GIS Coordinators are in Government. There is an even split of GIS Managers between Government and Private Sectors.

Author's note: the whimsical pattern in this chart makes it my report favorite.

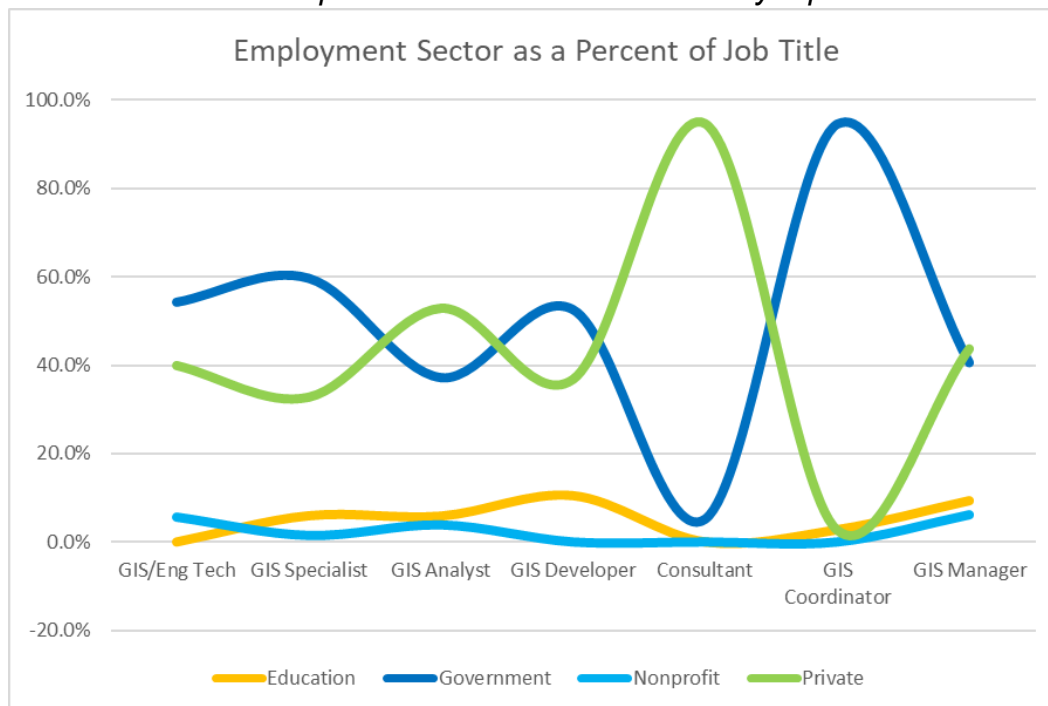


Figure 14. Employment Sector as a Percent of Job Title

Educational Background

Respondents answered multiple questions about their education. First, was whether or not they have a degree in GIS or a closely related field.

Table 5. Salary Range by GIS or Closely Related Degree Status

Have a GIS or related degree?	Number of responses	Median salary	Lowest reported	Highest reported
Yes	262 (81.9%)	\$72,800	\$39,229	\$171,500
No	49 (15.3%)	\$71,750	\$28,858	\$200,000

A majority (81.9%) of respondents indicated they have a GIS or closely related degree. Of those respondents that indicated they have a GIS or closely related degree, 93.9% indicated that their GIS degree was the same as the highest degree they have received.

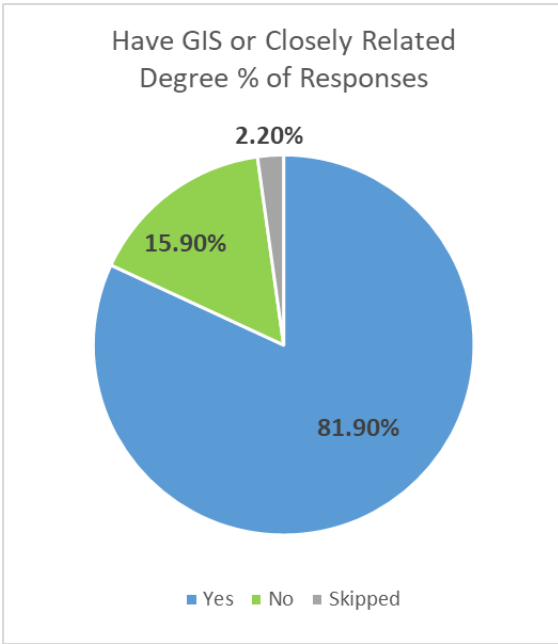


Figure 15. Percent Responses with GIS or Closely Related Degree

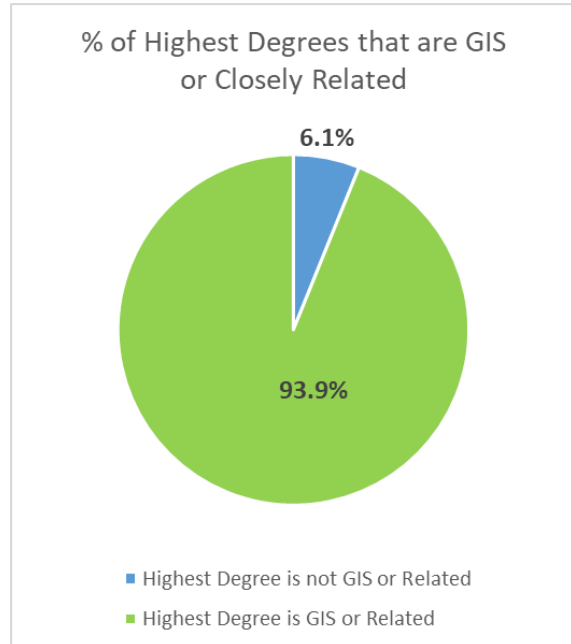


Figure 16. Percent of Highest Degree Achieved that are GIS or Closely Related

Bachelor's degrees account for 48.1% of the highest level of GIS education and Masters degrees comprise an additional 44.1%. Combined they comprise 92.2% of all responses. Respondents selecting Associate degrees comprise 4.1% and the remaining 3.7% is made up of High School diploma or GED (0.3%), some college but no degree (1.9%), and PhD's (1.6%).

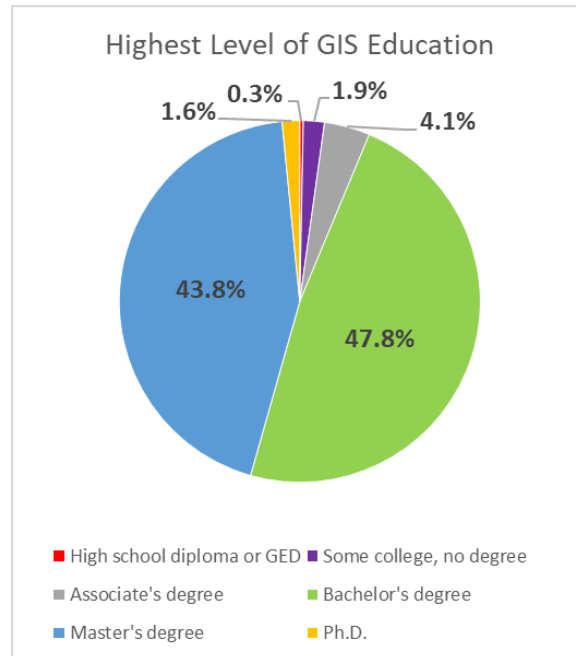


Figure 17. Highest Level of GIS Education Achieved

The most common undergraduate degrees reported were Geography (72), GIS (12), and various natural sciences (12). Master degrees included Geography (27), MGIS and related GIS-centric degrees (69), and various natural sciences (12).

Table 6. Salary Range by Highest GIS Education Achieved

Highest GIS Education	Number of responses	Median salary	Lowest reported	Highest reported
Associate's degree	15 (5.1%)	\$65,312	\$41,870	\$93,600
Bachelor's degree	108 (36.9%)	\$65,000	\$39,229	\$171,500
Master's degree	121 (41.3%)	\$81,900	\$43,200	\$160,000

For GIS education, median salaries are similar between Associate and Bachelor's degrees, but were significantly higher (by approx. \$17,000) among those reporting a Master's degree as seen in Figure 18. The range of salaries for Associate is very narrow compared to that of Bachelor and Master. This may reflect a wider range of job responsibilities among those with higher levels of education.

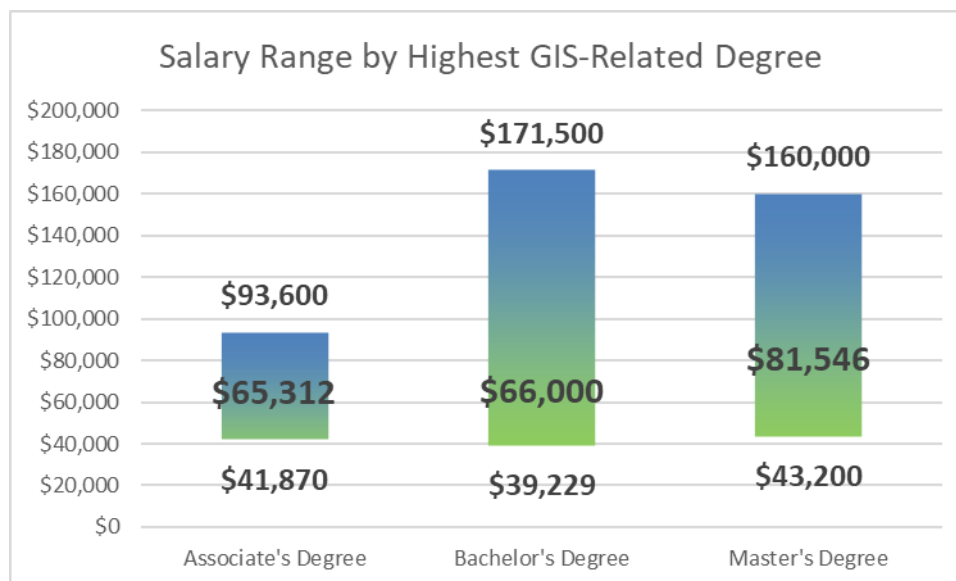


Figure 18. Salary Range by Highest GIS or Related Degree

This pattern holds true when comparing salaries within individual job titles. In four job categories, representing middle- and high-level GIS jobs, respondents with a postgraduate degree reported just over 15% higher salaries on average. The salary difference is approximately 10% higher for GIS Coordinator respondents and up to 22% higher for GIS Analysts.

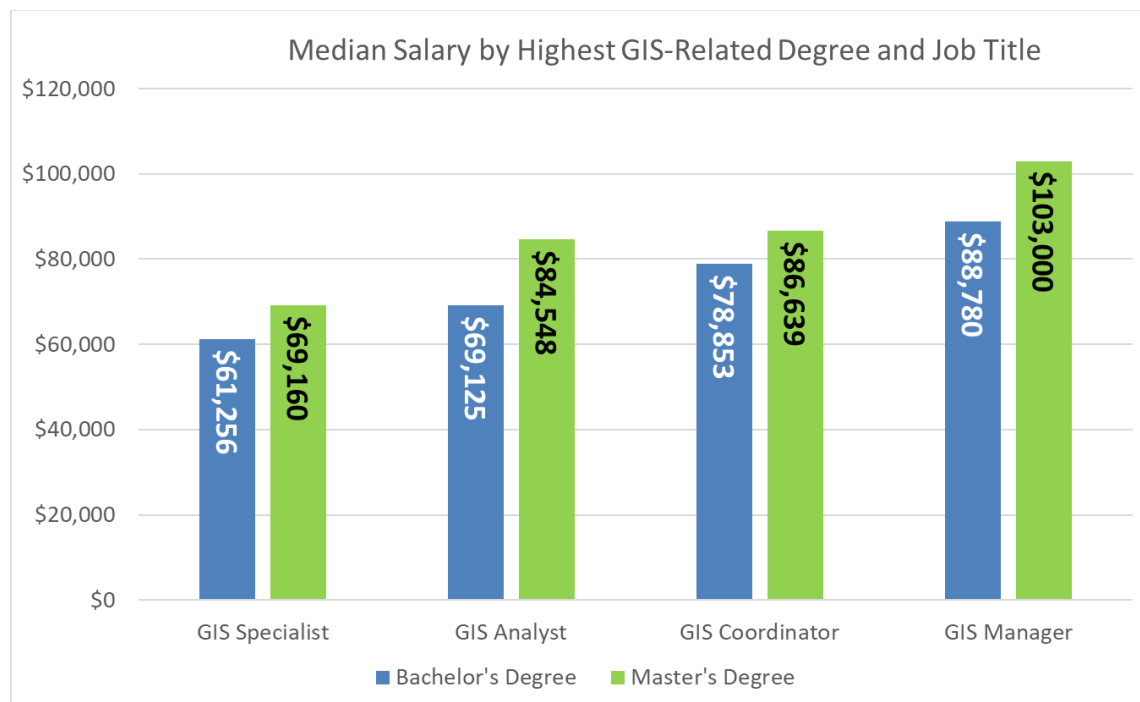


Figure 19. Median Salary by Highest GIS or Related Degree and Job Title

Geographic Regions

Respondents were asked to identify their office's geographic region in Minnesota using the [map](#) included at the end of this report. Of the seven regions, six of them had a large enough sample size to report salaries. The southwest region did not have enough responses to report.

Sixty percent of respondents (166) were from the metro Twin Cities area. The next largest response pools were from the Central (32), Northeast (36), and Southern (28) regions. Table 7 and Figure 20 show the percentage breakdown of state population and survey responses by region. There is a close relationship between percent responses and population within each region.

Table 7. Region Population and Survey Responses

Region	2020 Population	2020 Percent of State Population	Percent of Survey Responses
Northwest	269,979	4.7%	5%
Northeast	468,462	8.2%	15.5%
South Central	273,883	4.8%	3.6%
Southwest	159,911	2.8%	1%
Southeast	519,045	9.1%	5.6%
Central	663,782	11.6%	11.6%
Metro	3,352,328	58.7%	60.7%

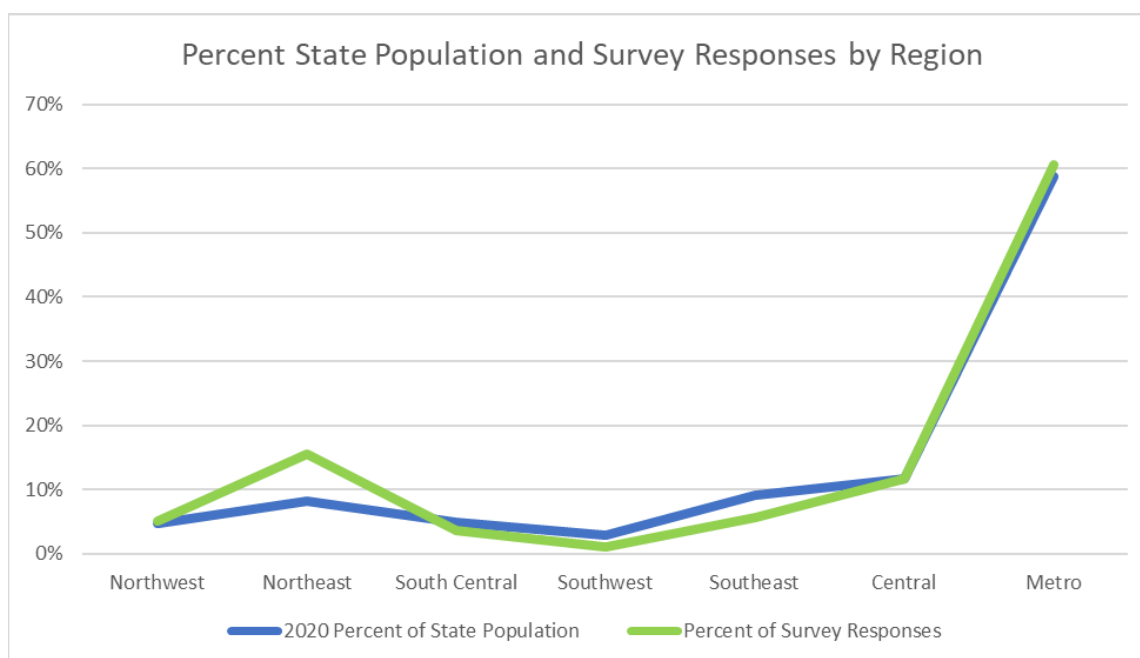


Figure 20. Percent State Population and Survey Responses by Region

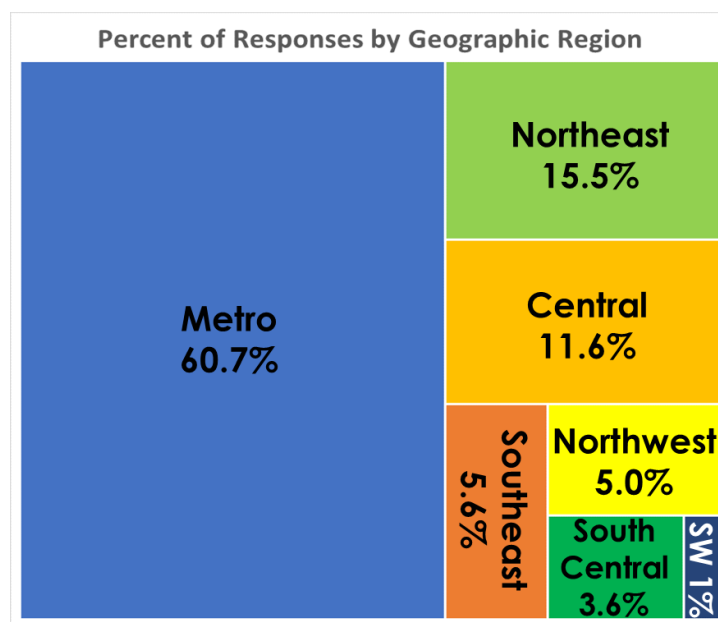


Figure 21: Percent Responses by Geographic Region

Figure 21 graphically illustrates the percentage of responses in each region. Table 8 and Figure 22 provide information about salary ranges and median salary within each region. Southwest region was excluded from the table and figure due to the small number of responses.

Table 8. Salary Range by Geographic Region

Region	Number of responses	Median salary	Lowest reported	Highest reported
Northwest	15 (5.2%)	\$75,000	\$28,858	\$120,000
Northeast	38 (13.2%)	\$67,050	\$39,229	\$110,885
South Central	11 (3.8%)	\$78,000	\$52,000	\$104,000
Southeast	16 (5.6%)	\$82,260	\$52,000	\$130,000
Central	34 (11.8%)	\$73,455	\$42,840	\$171,500
Metro	174 (60.4%)	\$77,719	\$29,578	\$200,000

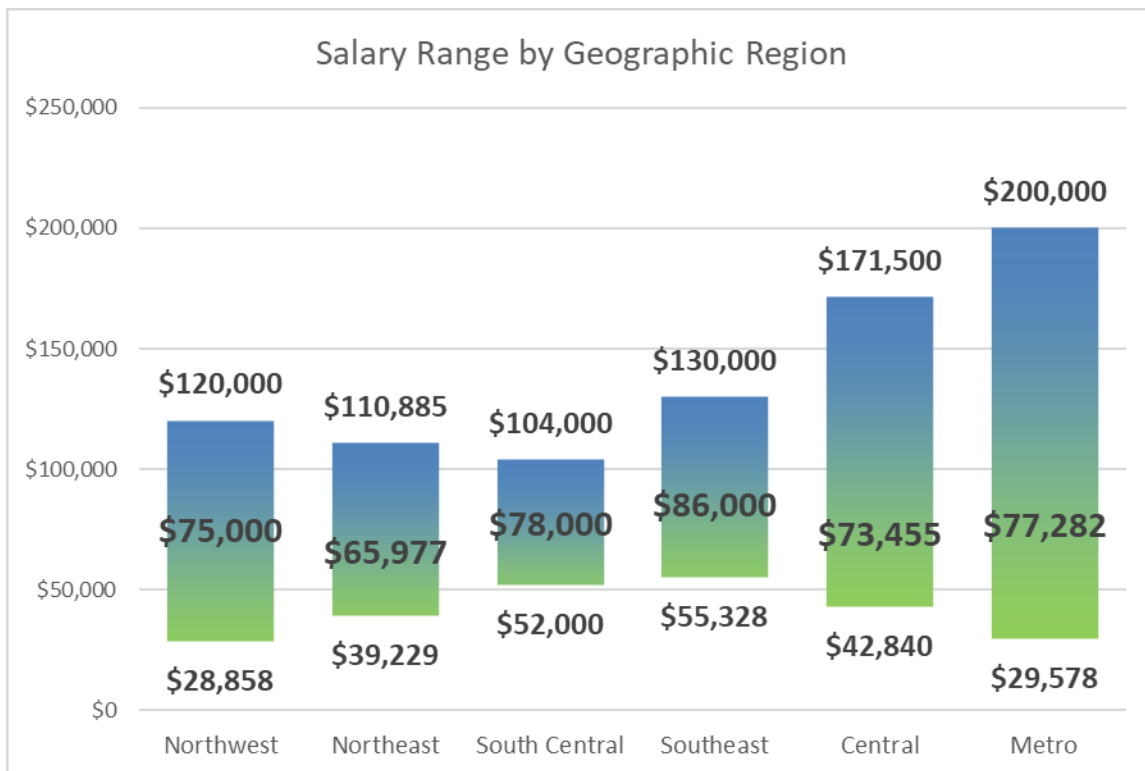


Figure 22. Salary Range by Geographic Region

Figures 23 and 24 break down employment sector by region. Figure 23 shows the percentage of employment sector within each region of the state. For example, the private sector accounts for 44% of jobs within the metro area's 60% of the jobs in the state. Private industry is the largest GIS employment sector in the metro and central regions of the state.

Government, particularly county/regional government, is the largest employer in all southern regions of the state as well as the northwest region. Interestingly, nonprofit

and education have a fairly large representation in the northeast and central regions. Federal government appears only in the metro and southeast regions of the state.

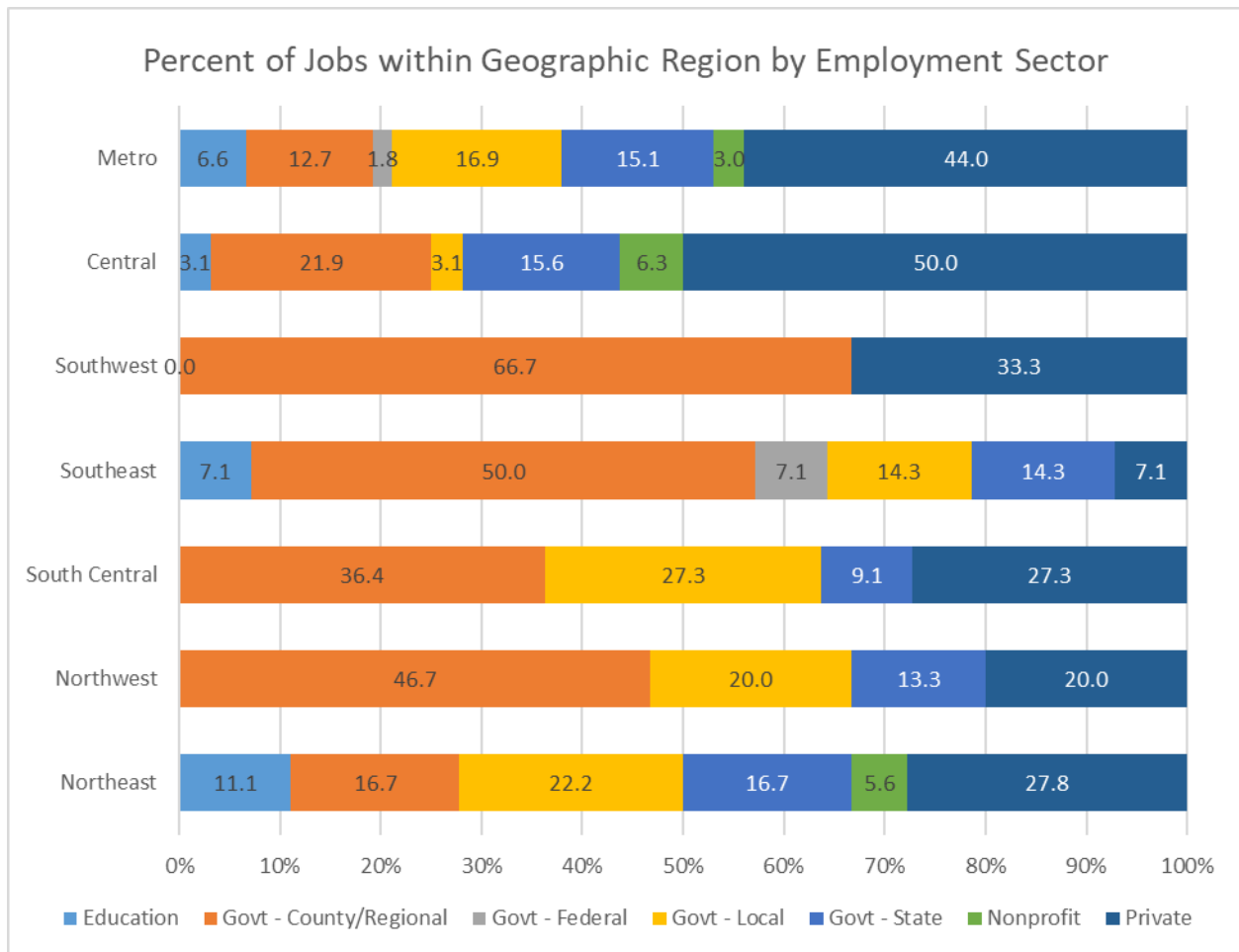


Figure 23. Percent Jobs within Geographic Region by Employment Sector

Figure 24 is essentially a flip of the previous figure. It depicts the regions of the state where each employment sector's jobs are located. Most employment sector's jobs are heavily located in the metro area. A noteworthy exception is the county and regional government sector, which is not surprising as the metro region only contains 10 of Minnesota's 87 counties.

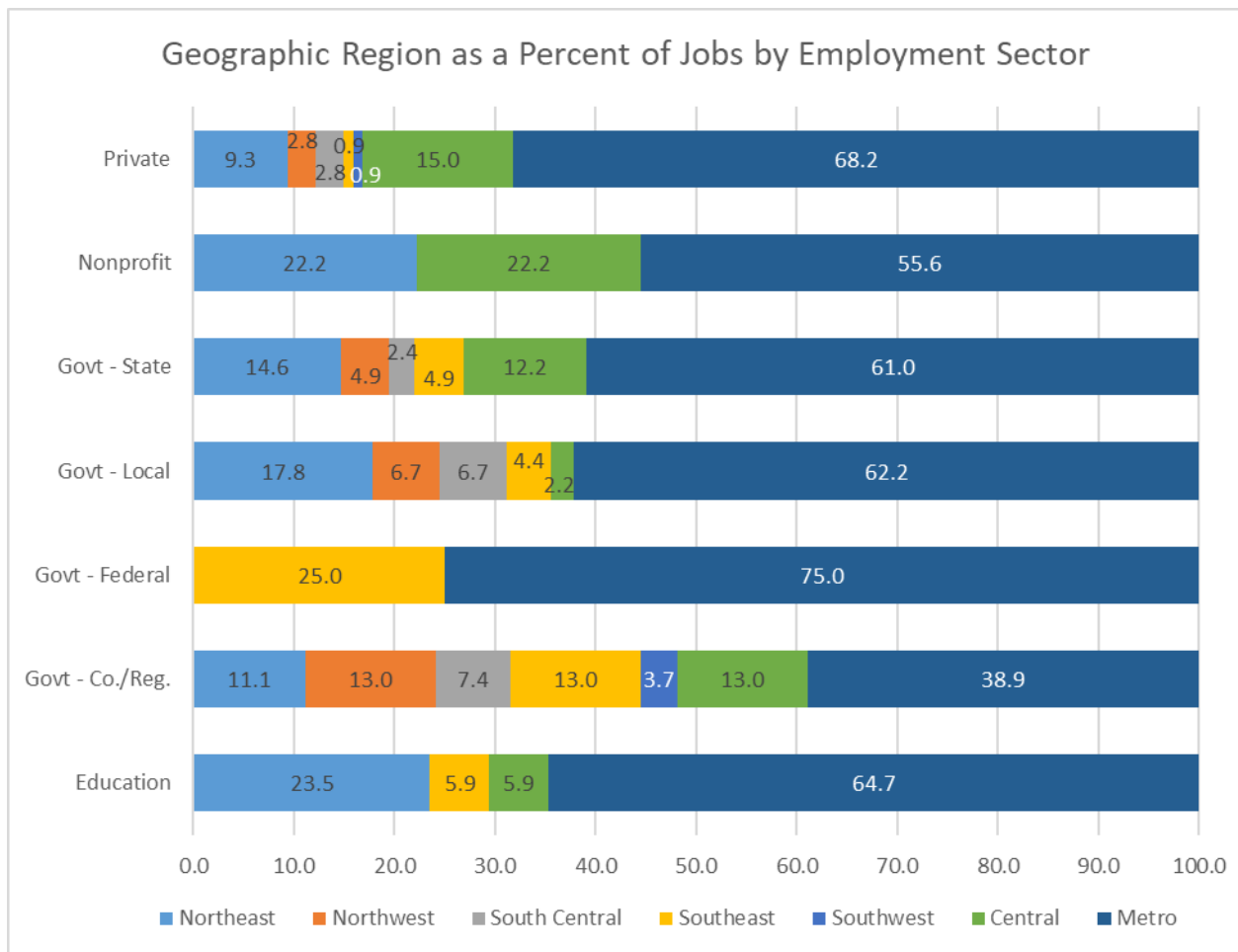
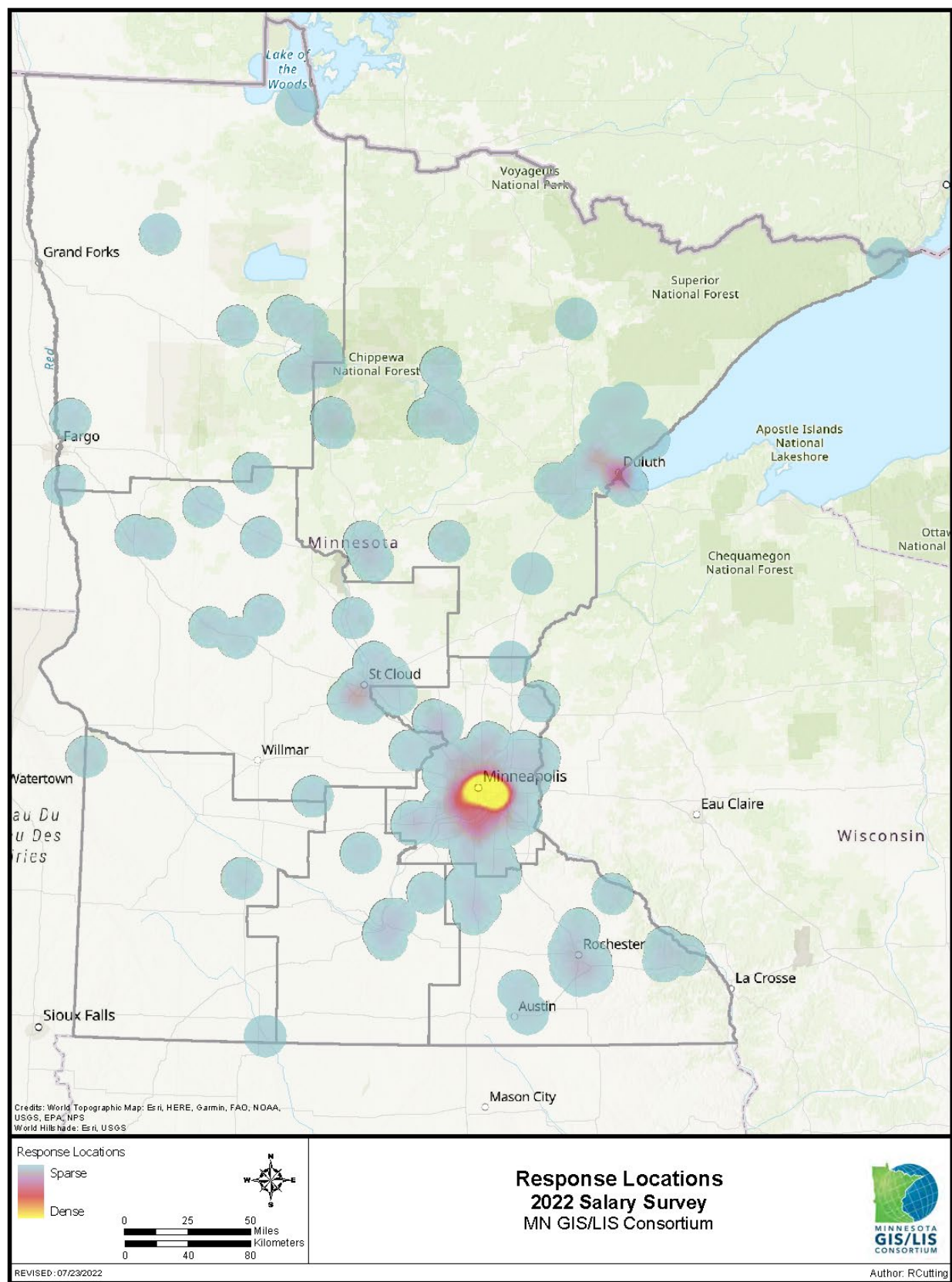


Figure 24. Geographic Region as a Percent of Jobs by Employment Sector

Figure 25 maps generally where survey responses came from by placing a random point for each response in the ZIP code listed as the location of the respondent's company primary office. Not surprisingly, the map shows higher response rates in more populous areas of the state.



GISP Certification

For those unfamiliar with the GIS Professional (GISP) certification, more information is available from the GIS Certification Institute at www.gisci.org.

Respondents were asked if they've ever received a GISP and if they still have it. Of the 38 who responded yes, all but 5 still held the certification. As of July 2022, the GIS Certification Institute listed approximately 95 GIS professionals in Minnesota as having a current GISP Certification.

There is no overall consensus on the career value of the GISP certification. While the survey results show that respondents who have a GISP may be compensated at a higher level, the qualifications required for a GISP (rather than the GISP itself) are likely a significant factor in the disparity.

To be eligible for a GISP certification, applicants must have a minimum of four years GIS experience. For the following analysis we have excluded responses from respondents who indicated they have less than three years' experience.

Table 9. Salary Range by GISP Certification Acquisition

Received GISP	Number of responses	Median salary	Lowest reported	Highest reported
No	235 (86%)	\$72,150	\$39,229	\$171,500
Yes	38 (14%)	\$88,286	\$49,500	\$131,040

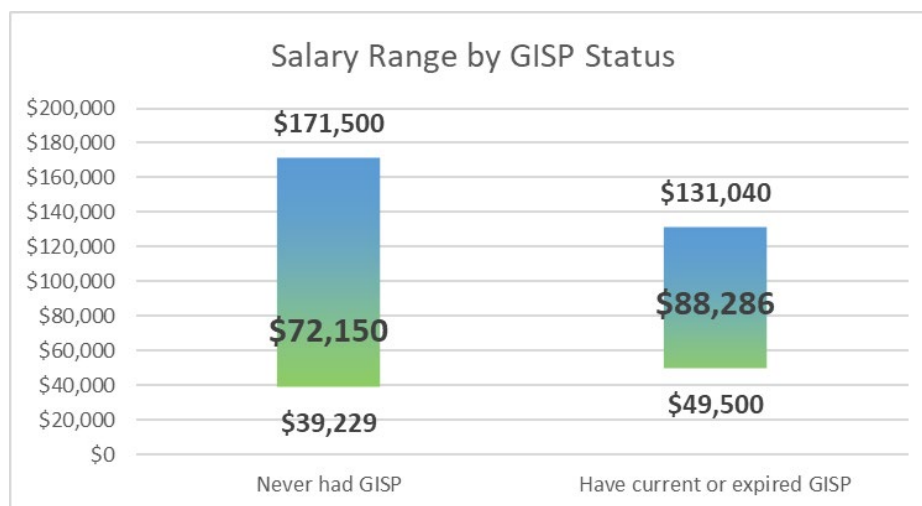


Figure 26. Salary Range by GISP Certification Acquisition

The only job title with enough GISP responses to draw any conclusions is GIS Manager. GIS Managers with a GISP indicated approximately \$3,000 higher median salary. However, as with all analysis in this report we caution about drawing conclusions about causality from limited data. A variety of other factors could just as easily explain the

higher median salary such as years of GIS experience, employment sector, and education.

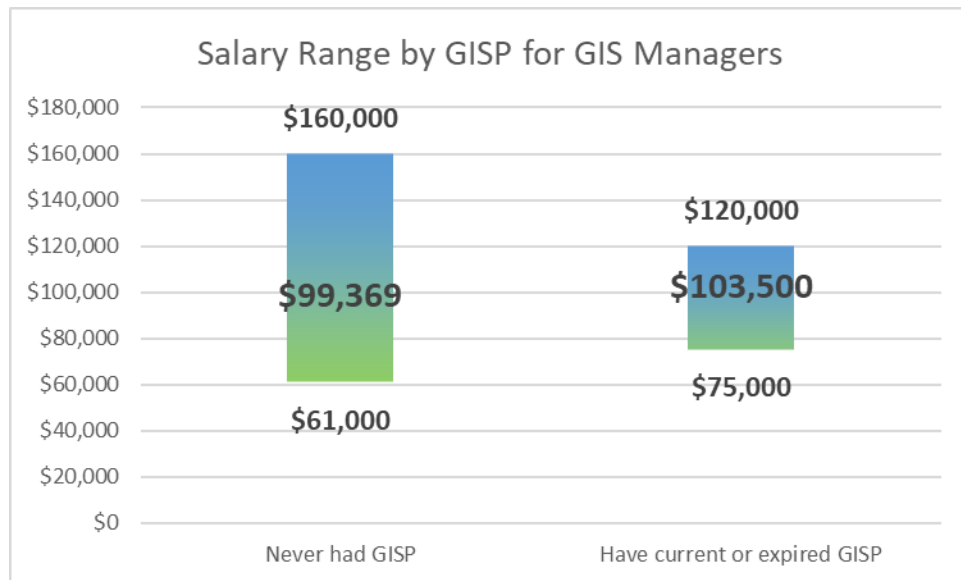


Figure 27. Salary Range by GISP Certification for GIS Managers

Education and contributions to the profession are important parts of the GISP certification. Of respondents who work in higher education, nearly one quarter have their GISP certification. Government and private industry have 12% and 17% percent of respondents with certification respectively. No respondent working in nonprofits reported having received a GISP.

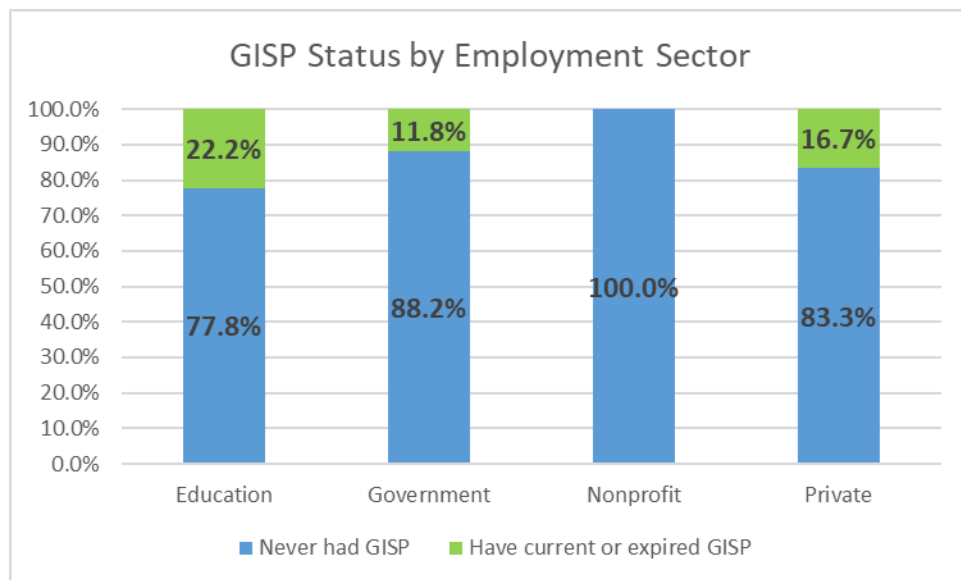


Figure 28. GISP Status by Employment Sector

GISP acquisition increases with years of GIS experience. However, a large number of early-career professionals also likely receive their GISP as a way of differentiating themselves among their peers. Although both are low, the percentage of late-career professionals with a GISP is significantly higher than the percentage of early-career professionals.

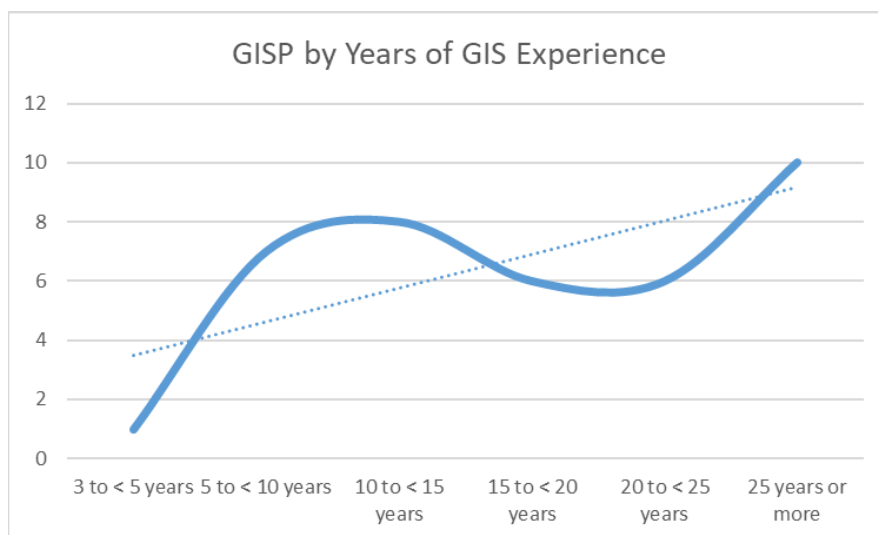


Figure 29. GISP Certification Acquisition by Years of GIS Experience

Compensation Type

Perhaps unsurprisingly, salaried employees receive a higher median salary than hourly employees. However, annual salary is also related to employment sector and education.

Notably, approximately two-thirds of respondents who reported having an annual salary also have at least ten years of experience using GIS as seen in Figure 30. Respondents with under ten years' experience were evenly split between hourly and salary compensation.

Table 10. Salary Range by Compensation Type

Compensation Type	Number of responses	Median salary	Lowest reported	Highest reported
Annual salary	142 (48%)	\$78,000	\$40,000	\$200,000
Paid hourly	151 (52%)	\$69,888	\$28,858	\$161,280

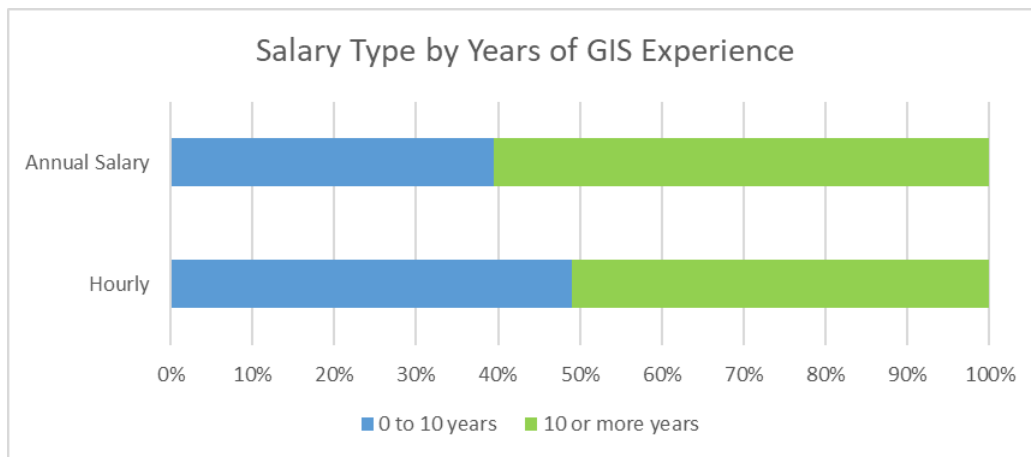


Figure 30. Compensation Type by Years of GIS Experience

Years of GIS experience also appears to have a relationship with compensation type, where number/percent of respondents receiving annual salary increases with increasing years of experience. Figure 31 illustrates how, around 10 years, the majority of respondents switch from hourly to receiving an annual salary.

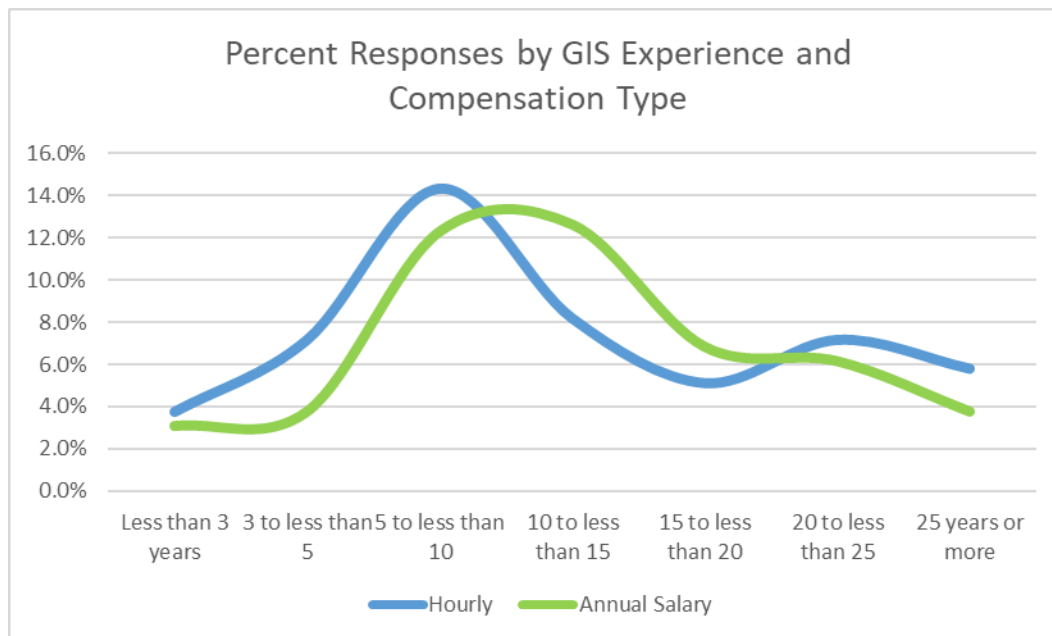


Figure 31. Percent Responses by GIS Experience and Compensation Type

Respondents working in government were more likely to report being paid hourly than in any other employment sector. Two-thirds of respondents in the government sector reported being paid by the hour while the private sector was nearly evenly split between annual salary (54%) and hourly (46%). A heavy majority of both education and nonprofit respondents reported an annual salary (90% and 80% respectively).

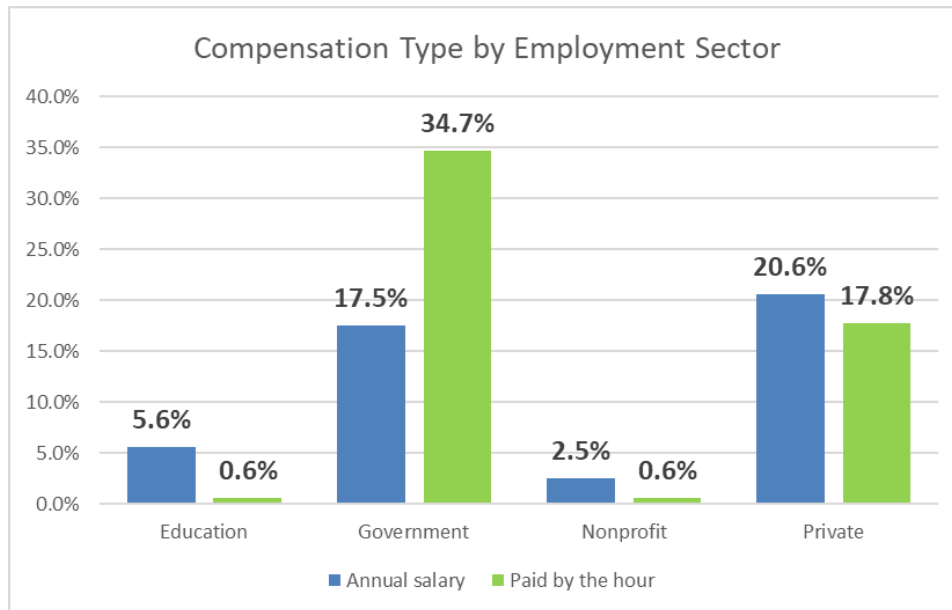


Figure 32. Compensation Type by Employment Sector

Highest degree correlates with compensation type. Respondents with a Master's degree were more likely to receive an annual salary than those with a Bachelor's Degree.

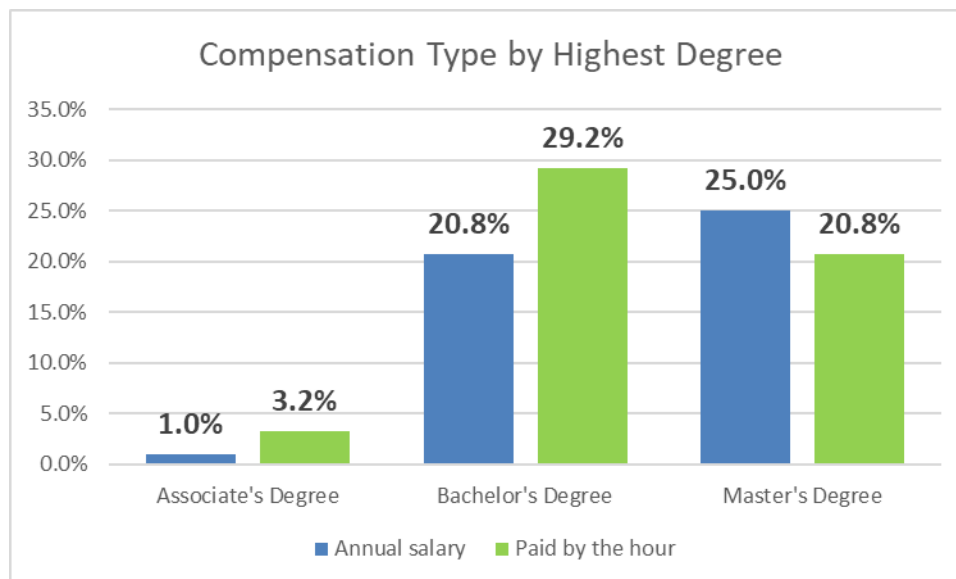


Figure 33. Compensation Type by Highest Degree Achieved

Computer Programming Time

In general, median salary increases slightly with time spent programming. The median salary for respondents who spend 25% to 50% of their time programming is highest overall.

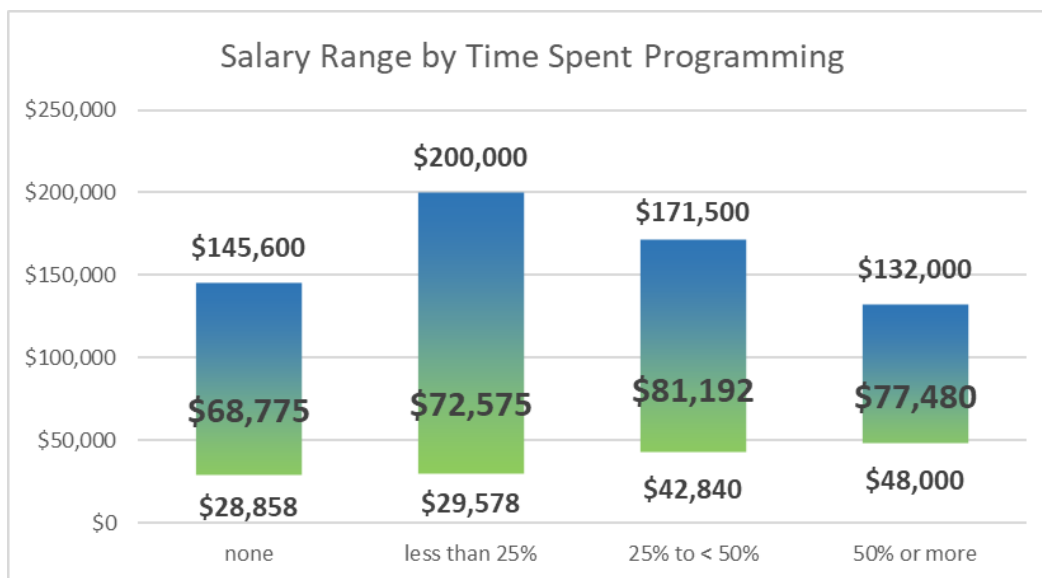


Figure 34. Salary Range by Time Spent Programming

Table 11. Salary Range by Time Spent Computer Programming

Programming	Number of responses	Median salary	Lowest reported	Highest reported
None	102 (33.2%)	\$69,965	\$28,858	\$145,600
Less than 25%	143 (46.6%)	\$73,000	\$29,578	\$200,000
25% to less than 50%	35 (11.4%)	\$81,192	\$42,840	\$171,500
50% or more	27 (8.8%)	\$78,000	\$48,000	\$132,000

This fun figure (Figure 35) illustrates the impact of programming time on GIS Developer and GIS/CAD/IT Systems Support salaries. Time spent programming has little impact on salary for a majority of the job titles in this report, except Developer and Systems Support positions. The highest median salaries for these positions are in the 25% to 50% programming time range with lower salaries reported in each other time category.

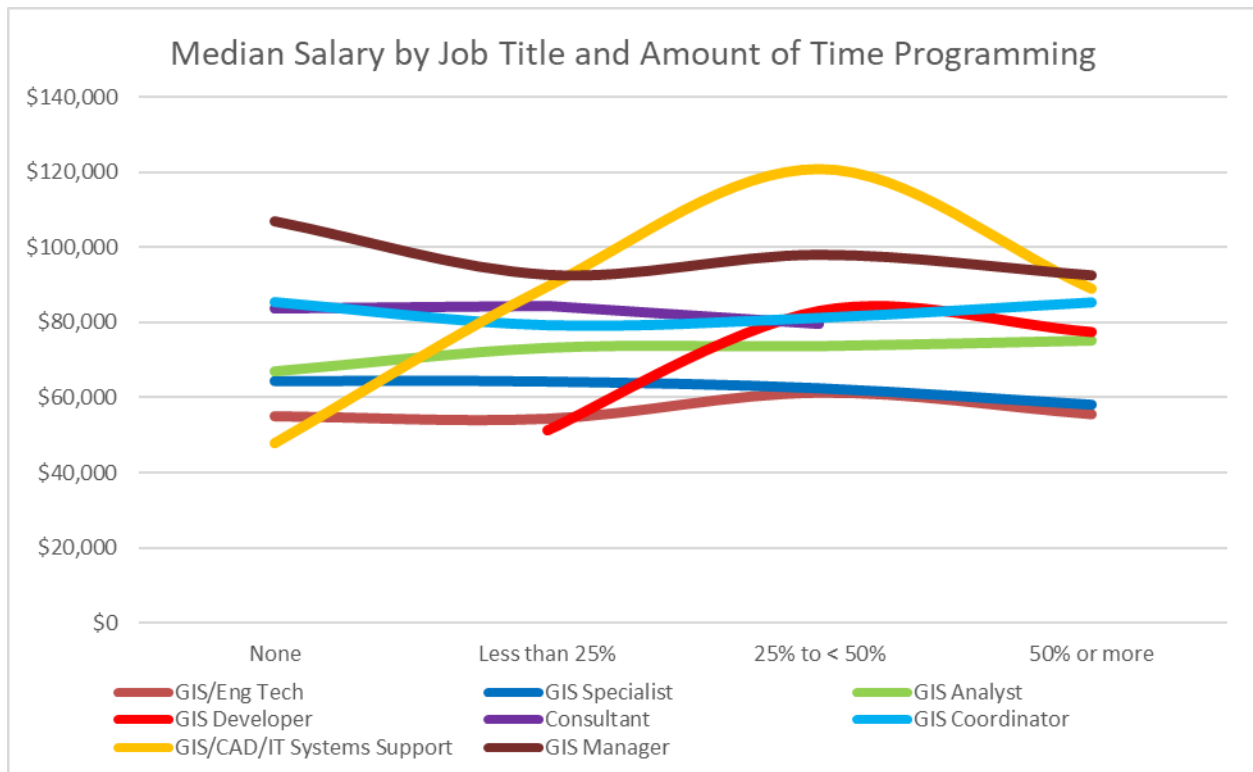


Figure 35. Median Salary by Job Title and Amount of Time Spent Programming

Figure 36 illustrates the amount of time spent programming by job title. The figure illustrates the stark difference between Support System and Developer jobs and other positions. The majority of respondents in every job title other than GIS Developer or Systems Support positions indicate none or less than 25% of their time is spent programming. Systems Support and Developers spend a vast majority of their time programming.

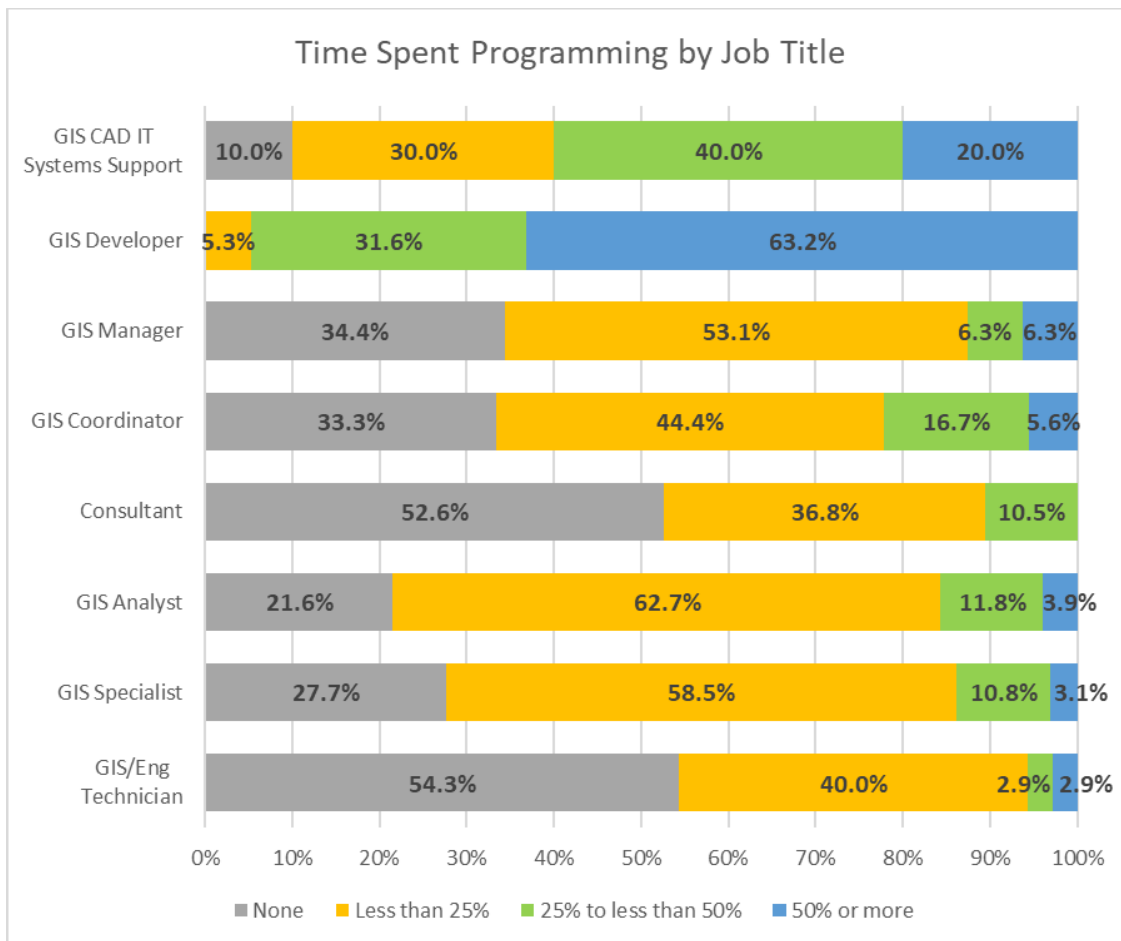


Figure 36. Time Spent Programming by Job Title

Two interesting patterns appear in Figure 37. First, the strong relationships between pairs of employment sectors: education and nonprofit show very similar patterns with regards to time spent programming. Likewise, government and private sector responses showed a strikingly consistent pattern. The second pattern in this chart pattern is that all employment sectors less than 10% of respondents is each of the categories 25-50% and 50% or more of their time programming.

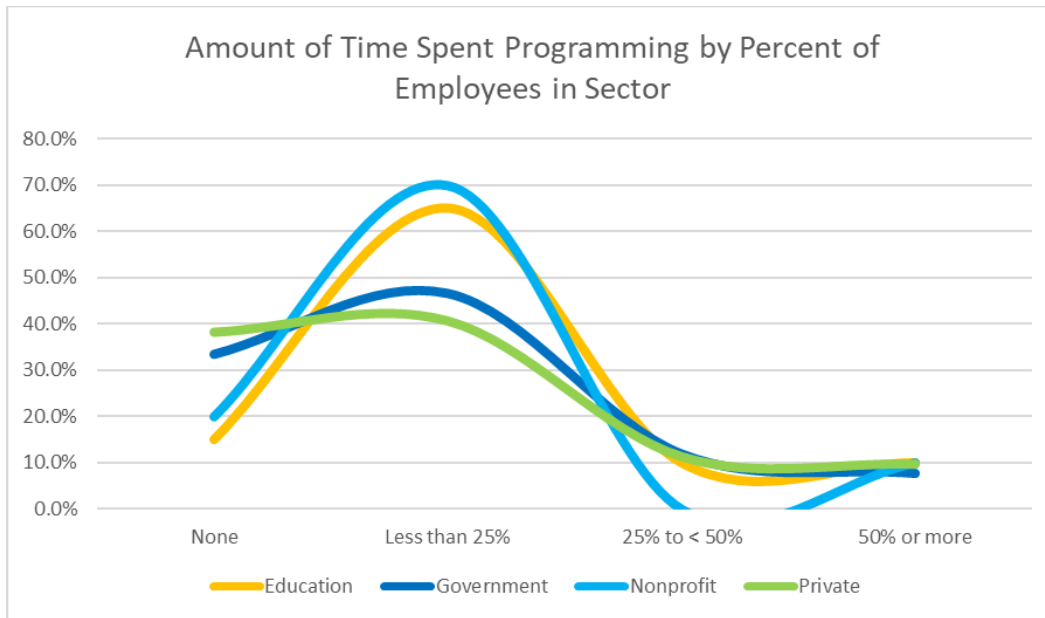


Figure 37. Time Spent Programming as a Percentage of Employees in Sector

Figure 38 illustrates the amount of time spent programming by years of GIS experience. The percentages displayed are within each experience (vertical) category. Not surprisingly, earliest-career professionals spend a comparatively low amount of time programming.

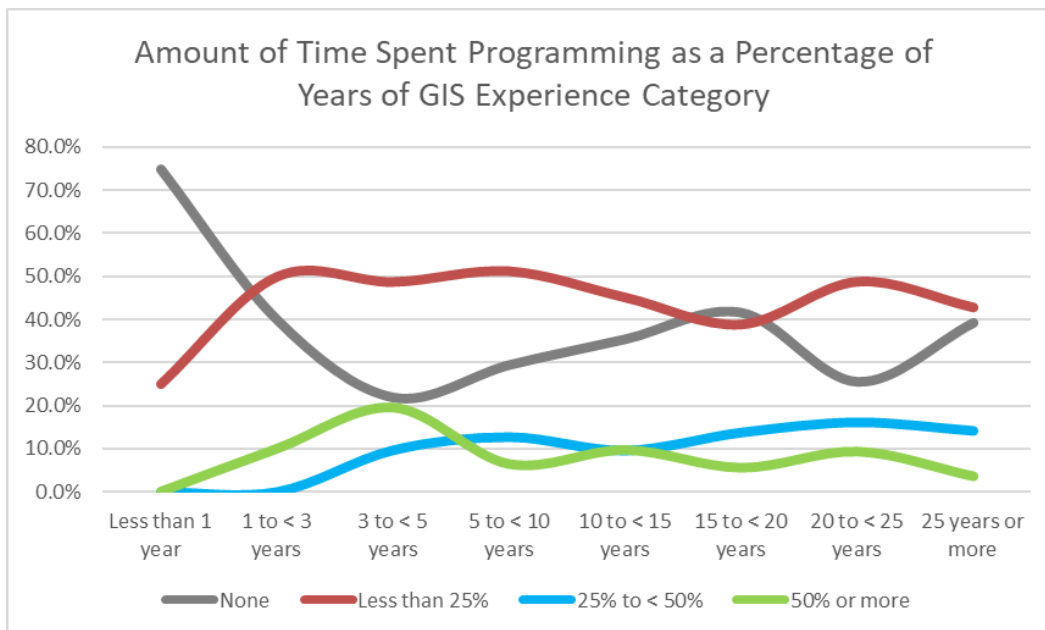


Figure 38. Time Spent Programming as a Percentage of Years of GIS Experience Category

A different look at the same data is the percent of time spent programming separated by years of GIS experience groups. Figure 39 highlights the high percentage of respondents in the three to five years' experience reporting 50% or more-time programming.

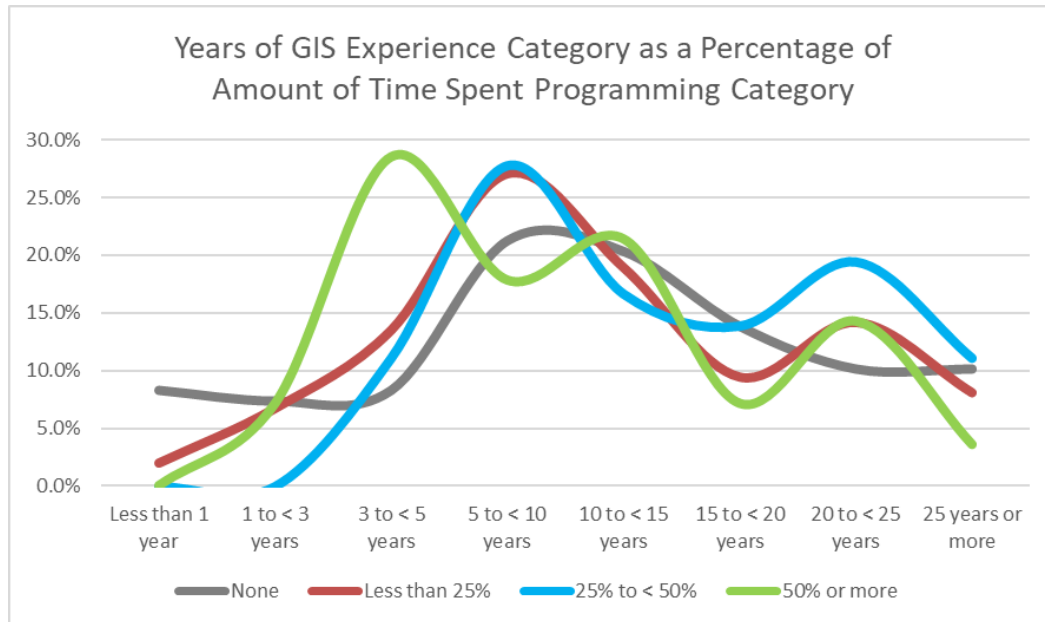


Figure 39. Years of GIS Experience Category as a Percentage of Time Spent Programming Category

Technical Proficiencies

Respondents were asked about their proficiencies in nine GIS skill areas. No definitions were given for the skills or proficiency levels. As such, these categories should be interpreted as subjective. However, interesting patterns do emerge.

When analyzing patterns of proficiency responses, two distinct groups of proficiency responses appeared. The self-rated proficiency of Desktop GIS Software, Cartography, Data Analysis, and Web GIS closely match each other. Remote Sensing tended to match the proficiency responses of this group although the numbers were lower than any of the former categories. The proficiency results for Python, SQL Server or Other DBMS, Open-source GIS, and Application Development also mirrored each other closely. The range of proficiencies varied across these two groups with the latter having a lower range of proficiency overall.

The next series of figures illustrate the patterns among these groups of responses. For these charts we converted the responses to a Likert scale where No Experience = 0, Beginner = 1, Intermediate = 2, and Advanced = 3. We then calculated the average proficiency levels within a variety of categories.

One thing to pay attention to in the following figures is the difference in the Y-axis scale between the first and second figure in each category.

Average proficiency by years of GIS experience were the first to be calculated. As would be expected proficiency generally increased with years of experience. Web GIS was a notable exception, proficiency increased until approximately 20 years' experience when it drops to the level of proficiency reported by professionals with less than three years' experience.

The other notable pattern in Figure 40 is the low proficiency in data analysis reported among respondents with less than one year experience and one to less than three years' experience. This pattern is not unexpected, it takes time to become fully proficient with analyzing data. Keep learning, early career professionals! It's a difficult but rewarding profession!

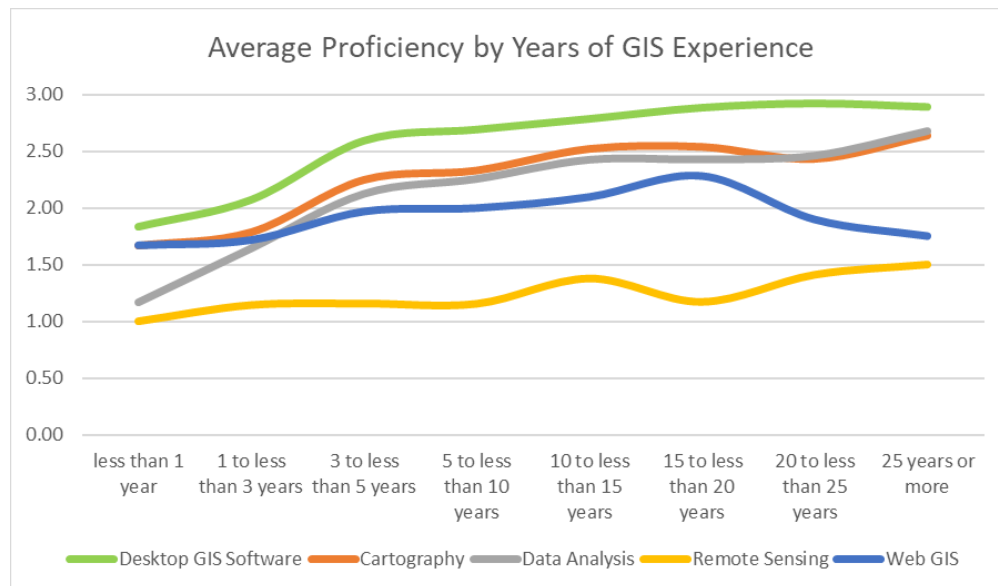


Figure 40. Average Proficiency by Years of GIS Experience 1

An interesting pattern jumps out in Figure 41: the decreasing proficiency with Open-source GIS as years of GIS experience increases. This pattern is possibly due to a relatively large percentage of late-career employees working in the government sector and the low proficiencies for Open-source reported by government employees. This may be the result of greater availability of Esri software in the government sector.

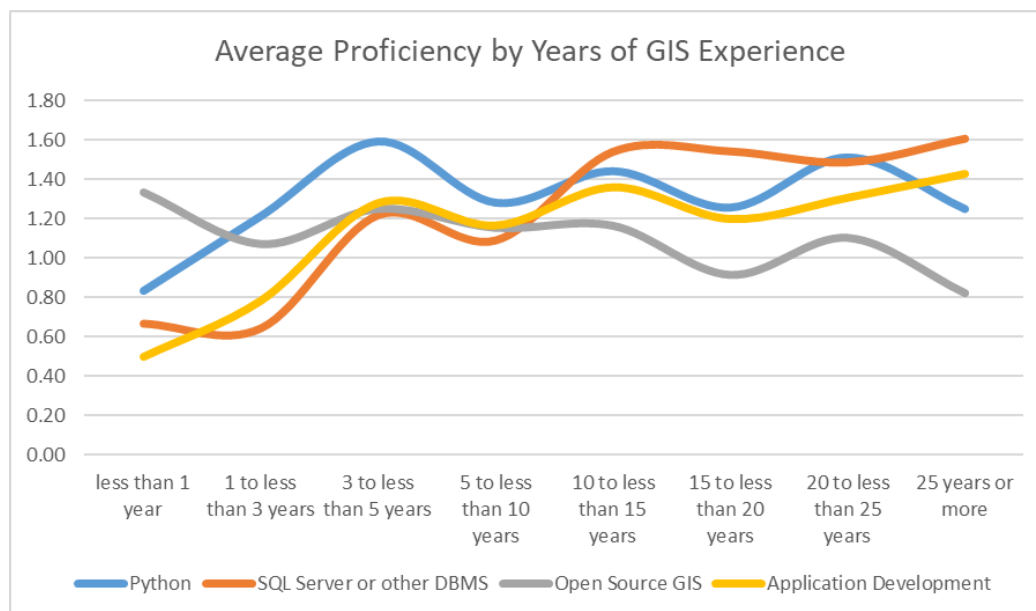


Figure 41. Average Proficiency by Years of GIS Experience 2

Average proficiency in the first group of categories is relatively level across all job titles. Two small anomalies do present themselves, however. First, are the increased proficiencies in Remote Sensing and Web GIS among GIS Developers. The second is the drop in proficiency in Cartography among GIS/CAD/IT Systems Support professionals. Neither of these patterns are particularly surprising.

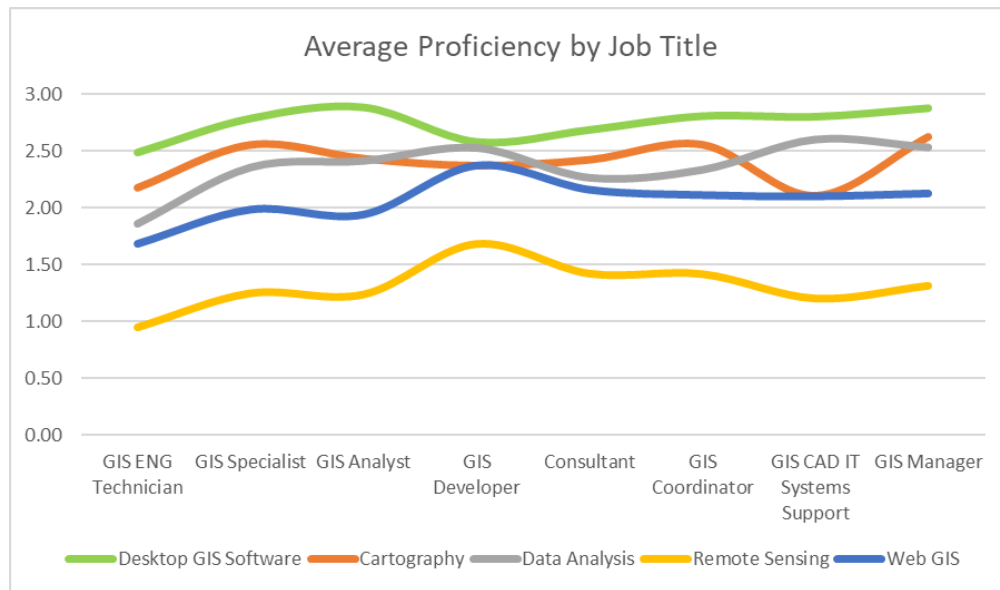


Figure 42. Average Proficiency by Job Title 1

What is striking in Figure 43 is the degree to which all proficiencies match across all job titles. While GIS/CAD/IT Systems Support professional report a much higher level of proficiency with SQL Server or Other DBMS, this response should be expected given the responsibilities of these positions.

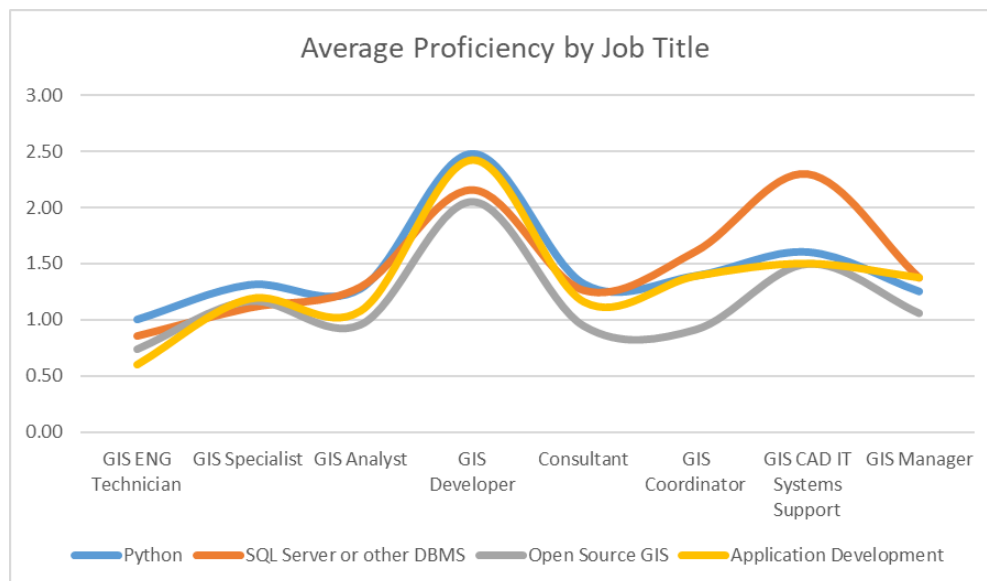


Figure 43. Average Proficiency by Job Title 2

Across all employment sectors the average proficiency for Desktop GIS, Cartography, Data Analysis, and Web GIS was at or above Intermediate. Remote Sensing responses, however, averaged in the Beginner range with the lowest proficiencies reported in the government and private sectors.

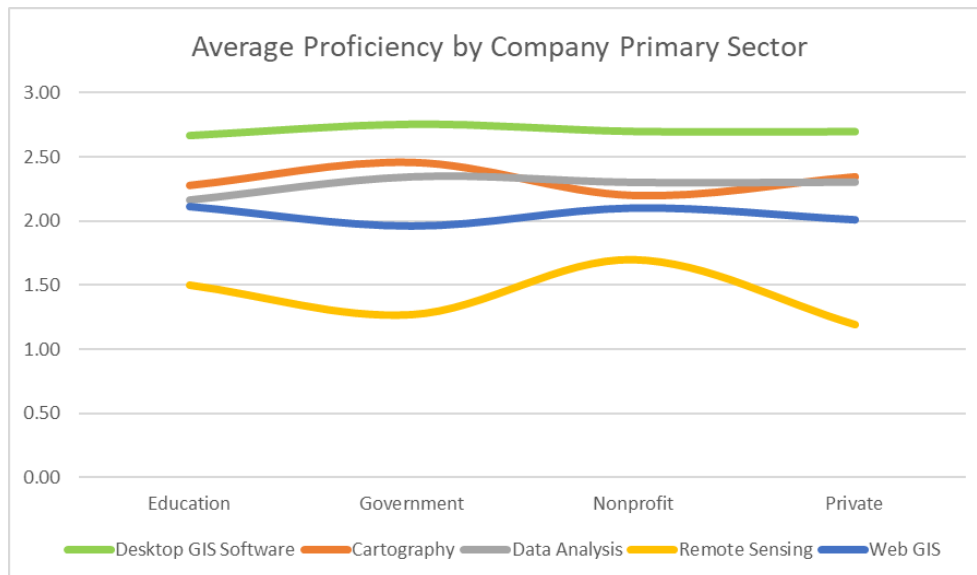


Figure 44. Average Proficiency by Employment Sector 1

The difference between employment sectors is more apparent in the second group of proficiencies. Particularly in government and nonprofit sectors. Government respondents indicated higher proficiency with SQL Server or Other DBMS and lower proficiency with Open-source GIS. This may be due to more money available for DBMS software and lower acceptance of Open-source software. Nonprofit Application Development proficiency was significantly lower than other employment sectors.

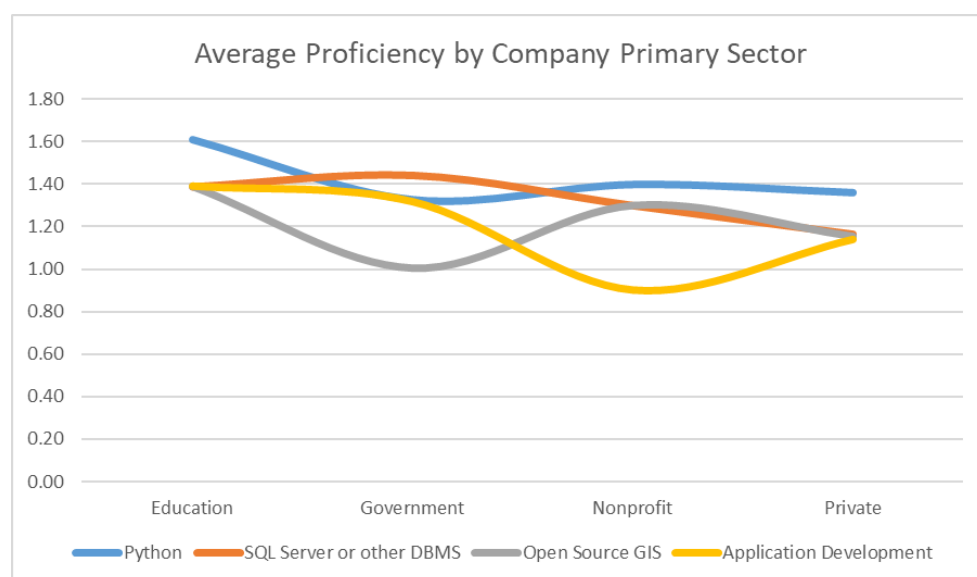


Figure 45. Average Proficiency by Employment Sector 2

When splitting at the government sector into levels of government, some patterns also present themselves in Figure 46. First, Federal Government employees report a higher proficiency in Remote Sensing than other government employees and a lower proficiency in Web GIS.

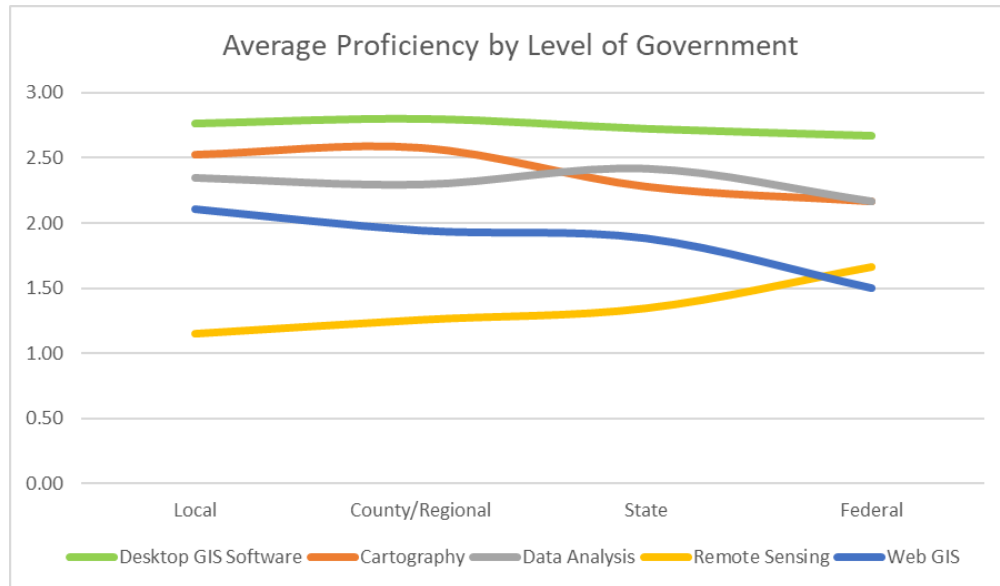


Figure 46. Average Proficiency by Level of Government 1

Figure 49 shows some interesting patterns. Most notable is the higher proficiency in Open-source GIS and Python among state government respondents. While the level of Open-source proficiency is high among State Government employees, it still falls below reported proficiencies for both education and nonprofit respondents and is on par with responses from the private sector.

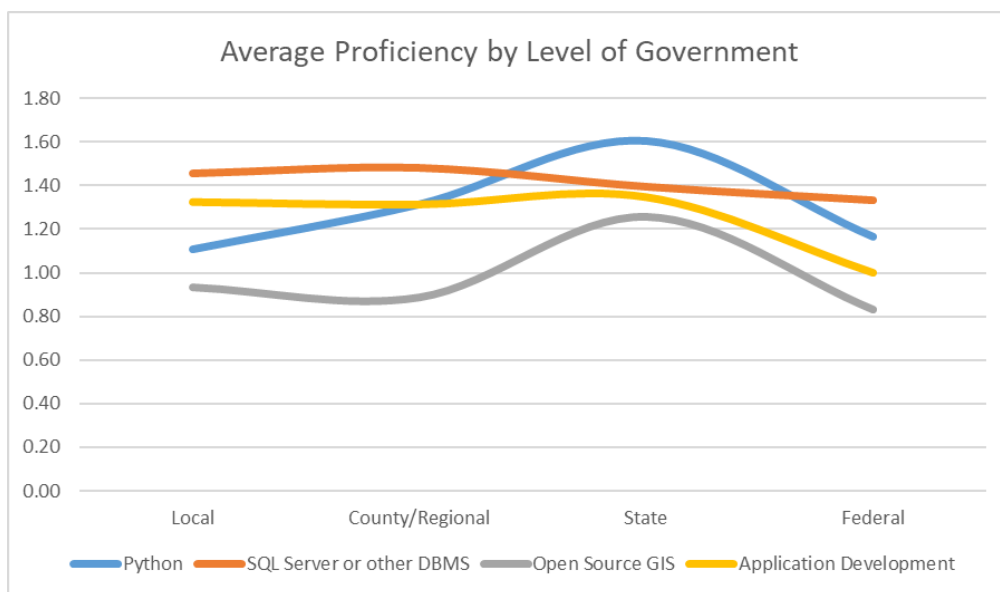


Figure 47. Average Proficiency by Level of Government 2

Interesting patterns emerge when looking at average proficiency by salary range. In Figure 48 we see a drop in Desktop GIS, Cartography, and Data Analysis in the \$110,000 to \$150,000 ranges. Reasons for this drop are not immediately clear.

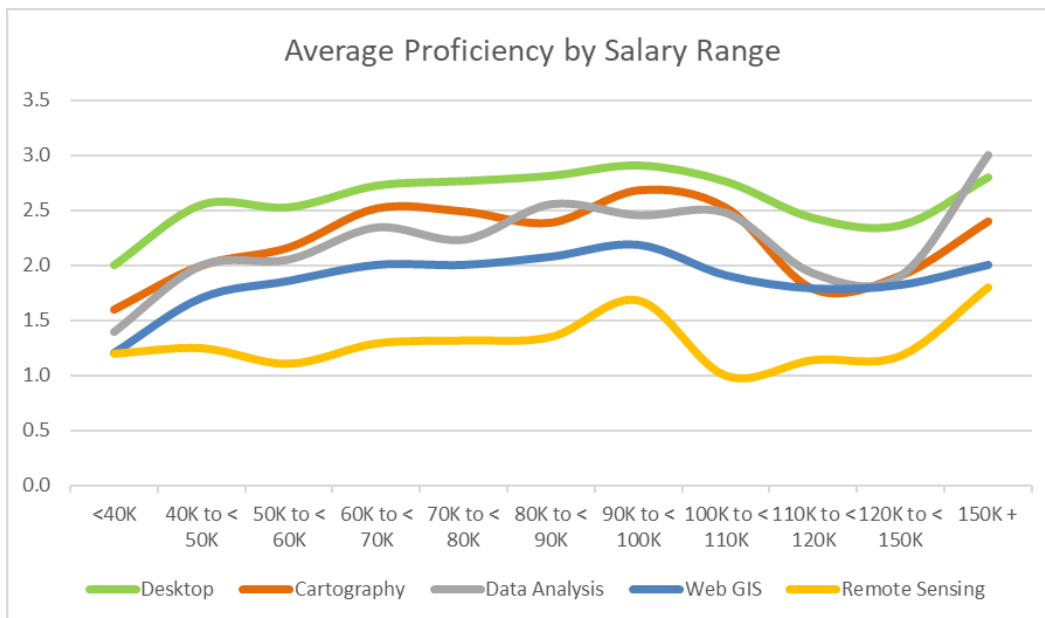


Figure 48. Average Proficiency by Salary Range Category 1

Proficiencies in the more technical categories show a more anticipated increase as wages increase. Here too, however, there is a dip in proficiencies reported at the same \$110,000 to \$150,000 range.

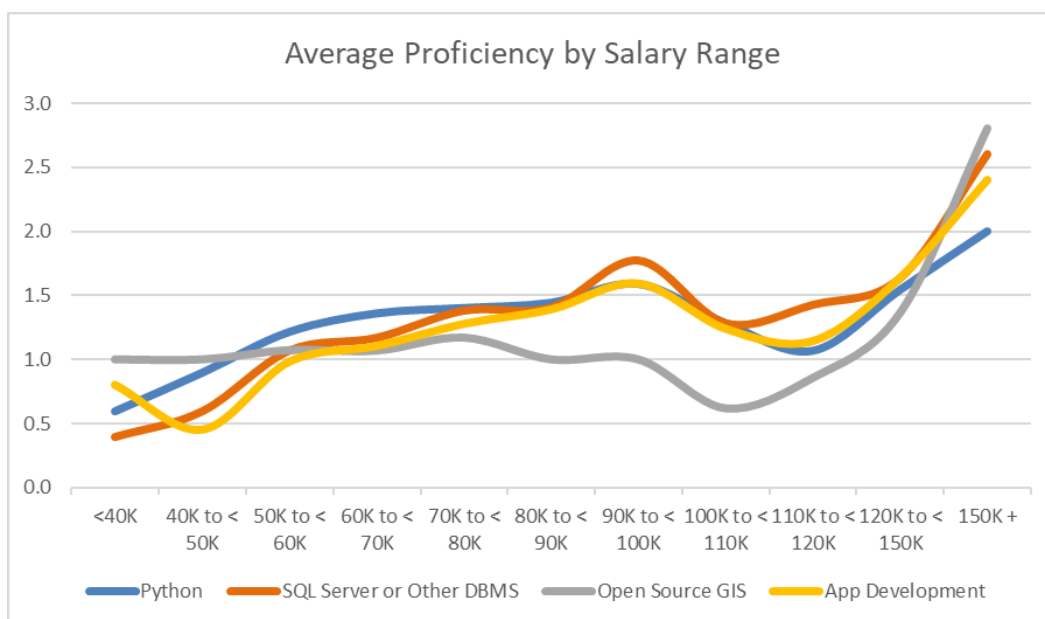


Figure 49. Average Proficiency by Salary Range Category 2

Desktop GIS Software

The vast majority (287) of respondents indicated an intermediate or advanced level of proficiency with Desktop GIS Software. Similarly, the median salary for those reporting advanced proficiency was significantly higher than those with intermediate proficiency. This is likely explained by the interaction between level of proficiency and years of GIS experience.

Table 12. Salary Range by Desktop GIS Software Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
Intermediate	67 (22.9%)	\$61,000	\$28,858	\$200,000
Advanced	220 (75.1%)	\$76,949	\$39,229	\$171,500

Cartography

There is a steady increase in median salary as proficiency in cartography increases, suggesting this specific desktop GIS skill has quantifiable value to employers, in part because it is somewhat rarer. This is also likely tied closely to years of experience where cartography proficiency increases with increased years of experience.

Table 13. Salary Range by Cartography Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience/beginner	26 (8.9%)	\$54,580	\$29,578	\$200,000
Intermediate	119 (40.6%)	\$72,500	\$28,858	\$160,000
Advanced	148 (50.5%)	\$74,940	\$39,229	\$171,500

Data Analysis

While this is an extremely generic description of a proficiency, respondents who rate their data analysis skills as advanced have a much higher salary than those in other levels.

Table 14. Salary Range by Data Analysis Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
Beginner	30 (10.2%)	\$63,200	\$29,578	\$120,000
Intermediate	135 (40.6%)	\$67,500	\$28,858	\$132,000
Advanced	128 (43.7%)	\$82,000	\$40,000	\$200,000

Python

Python has become a popular programming language and is the language of choice for integrating with ArcGIS software and many Open-source GIS systems. Interestingly median salary decreases from No Experience to Beginner. This likely has to do with factors unrelated to familiarity with Python as a programming language. However, among those with any Python experience, median salary rises approximately \$15,000 from Beginner to Advanced proficiency levels.

Table 15. Salary Range by Python Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	34 (11.6%)	\$75,002	\$28,858	\$125,000
Beginner	152 (51.9%)	\$69,919	\$39,229	\$161,280
Intermediate	74 (25.3%)	\$72,650	\$42,840	\$160,000
Advanced	33 (11.3%)	\$84,700	\$50,000	\$200,000

SQL Server or other DBMS (Database Management System)

The largest difference in salaries, in any skill set, is found between respondents reporting No Experience to Advanced proficiency in SQL Server or other DBMS. This may be somewhat explained by the strong relationship between proficiency and years' experience. The difference in median salary between No Experience and Advanced Proficiency was \$25,000.

Table 16. Salary Range by SQL Server or Other DBMS Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	54 (18.4%)	\$64,044	\$28,858	\$125,000
Beginner	122 (41.6%)	\$69,909	\$39,229	\$160,000
Intermediate	85 (29%)	\$75,130	\$47,840	\$145,600
Advanced	32 (10.9%)	\$90,480	\$54,000	\$200,000

Remote Sensing

What's most striking about Remote Sensing is the relatively low level of proficiency reported across all categories. Three out of every five respondents indicated Beginner or No Experience level of proficiency and only 7.8% of respondents indicated an Advanced level. While there was a \$10,000 median salary difference between No Experience and Advanced, this is likely the result of other factors than Remote Sensing proficiency alone.

Table 17. Salary Range by Remote Sensing Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	58 (19.8%)	\$68,470	\$29,578	\$130,000
Beginner	122 (41.6%)	\$72,475	\$28,858	\$200,000
Intermediate	90 (30.7%)	\$75,000	\$43,200	\$171,500
Advanced	23 (7.8%)	\$78,637	\$55,000	\$120,000

Web GIS

Respondents indicating an Intermediate to Advanced proficiency in Web GIS increased from 68% in 2020 to nearly 78% in 2022. As seen in the figures above there could be several factors that influence the median salary at various levels of Web GIS proficiency.

Table 18. Salary Range by Web GIS Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	13 (3.3%)	\$78,603	\$52,224	\$145,600
Beginner	52 (17.7%)	\$61,628	\$28,858	\$120,000
Intermediate	152 (51.9%)	\$72,800	\$42,000	\$200,000
Advanced	76 (25.9%)	\$78,000	\$39,229	\$131,040

Open-source GIS

As another niche and organization-specific proficiency, Open-source GIS experience does not appear to have a notable impact on compensation for the reported respondent jobs until the advanced level is reached. However, given that this skill is platform-specific, it may be that this skill is driven more by organizational needs than it is individual career tracks.

Table 19. Salary Range by Open-source GIS Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	78 (26.6%)	\$76,868	\$43,200	\$125,000
Beginner	127 (43.3%)	\$72,030	\$28,858	\$130,000
Intermediate/advanced	69 (23.5%)	\$72,000	\$39,229	\$200,000
Advanced	19 (6.5%)	\$87,000	\$50,000	\$171,500

Application Development

Only 40% of respondents report intermediate or higher proficiency in this skill set, with an evident salary increase for those with advance application development experience. This trend appears to be in line with the higher median salaries reported by respondents who are GIS Developers and GIS/CAD/IT Systems Support.

Table 20. Salary Range by Application Development Proficiency

Proficiency level	Number of responses	Median salary	Lowest reported	Highest reported
No experience	78 (26.6%)	\$64,844	\$29,578	\$125,000
Beginner	97 (33.1%)	\$72,800	\$28,858	\$160,000
Intermediate	89 (30.4%)	\$80,000	\$39,229	\$155,520
Advanced	29 (9.9%)	\$84,240	\$50,000	\$200,000

Gender Identity

Respondents were asked to choose one or more gender identities, describe their own identity, or choose not to answer. The numbers reported here include respondents who indicated gender identity information. For the remainder of the section, only responses signifying an identity of male or female reached the level of responses appropriate to report.

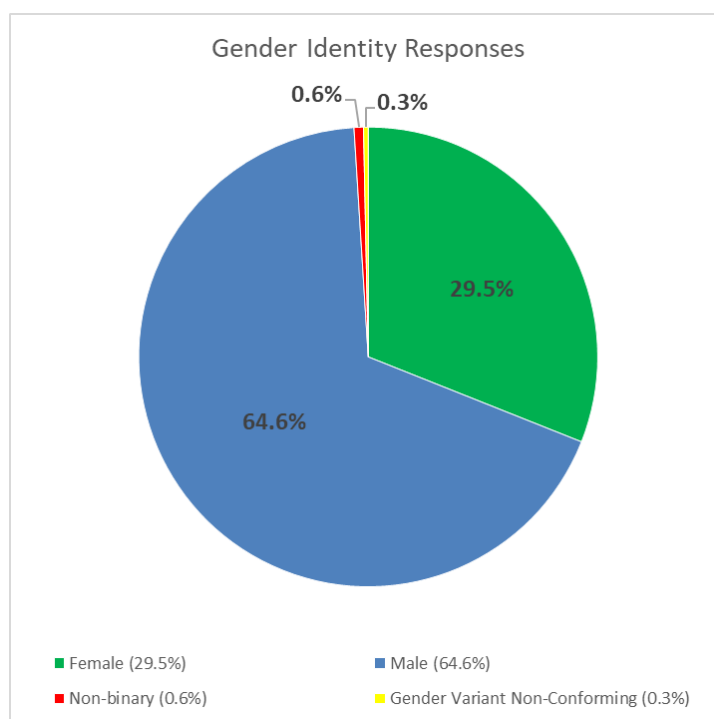


Figure 50. Percent Responses by Gender Identity

Table 21. Salary Range by Gender Identity

Gender Identity	Number of responses	Median salary	Lowest reported	Highest reported
Female	86 (29.5%)	\$65,000	\$28,858	\$160,000
Male	190 (64.6%)	\$72,407	\$28,858	\$171,500

The salary information by gender identity results is disappointing, but it is also consistent with general trends seen in the professional world. GIS professionals who identify as female earn a median salary approximately \$7,400 below their male peers.

Disparities in salaries by gender identity continue to exist in the GIS Profession. The information in Table 21 illustrates the disparities when looking at the entire GIS community in Minnesota. However, caution should be used when looking at these numbers, primarily because men responses to this survey have the advantage in years of experience as well as job title.

Some specifics about gender:

- Based on overall median salaries women made \$0.88 for every \$1.00 men made.
- Only 16% of the respondents with over 20 years' experience identified as female.
- Men are a disproportionately high percentage of Surveyors, GIS Managers, Systems Support, GIS Coordinators, Consultants, and GIS Developers – the highest paying jobs.

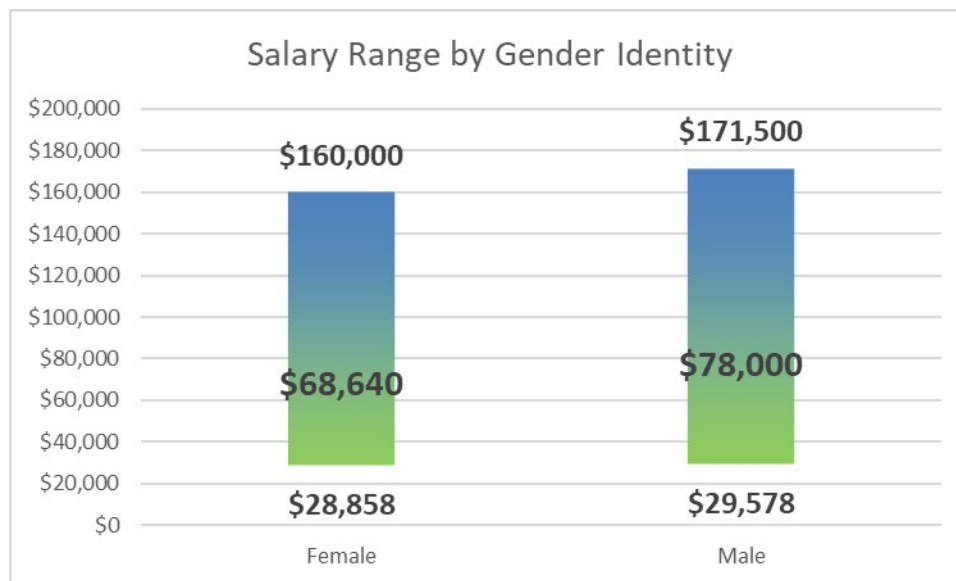


Figure 51. Salary Range by Gender Identity

To further shed light on the disparity between male and female GIS salaries, it's important to understand the composition of the GIS profession in Minnesota. Approximately two thirds (69%) of respondents identified as male, considering years of service, job title, and geographic region the 2/3 - 1/3 split largely holds true across all groupings. In terms of years of service, early career respondents are closer to parity than mid- to late-career respondents, see Figure 52.

Women make up a larger percentage of early-career professionals than in mid- and late-career categories. The data doesn't support any specific reason for this pattern. The average years of GIS experience for women is 11.5 and 12.7 years for men. This difference in average years' experience could explain \$1,942 of the overall difference in salaries.

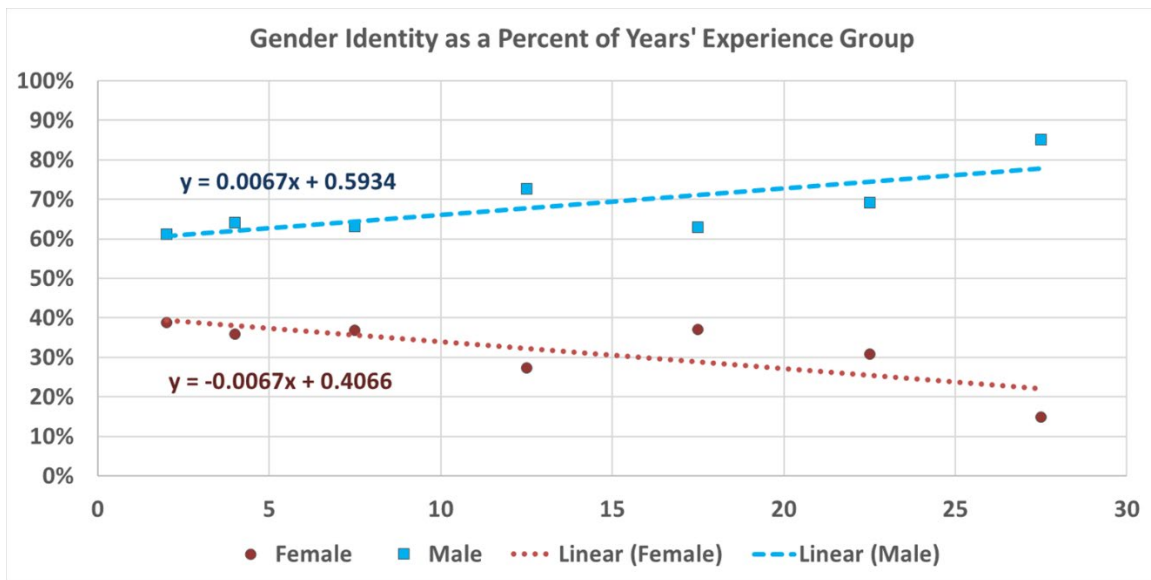


Figure 52. Gender Identity as a Percentage of Years of GIS Experience Category

Figure 53 shows the disparity between men and women in the GIS field by years' experience category in terms of number of respondents.

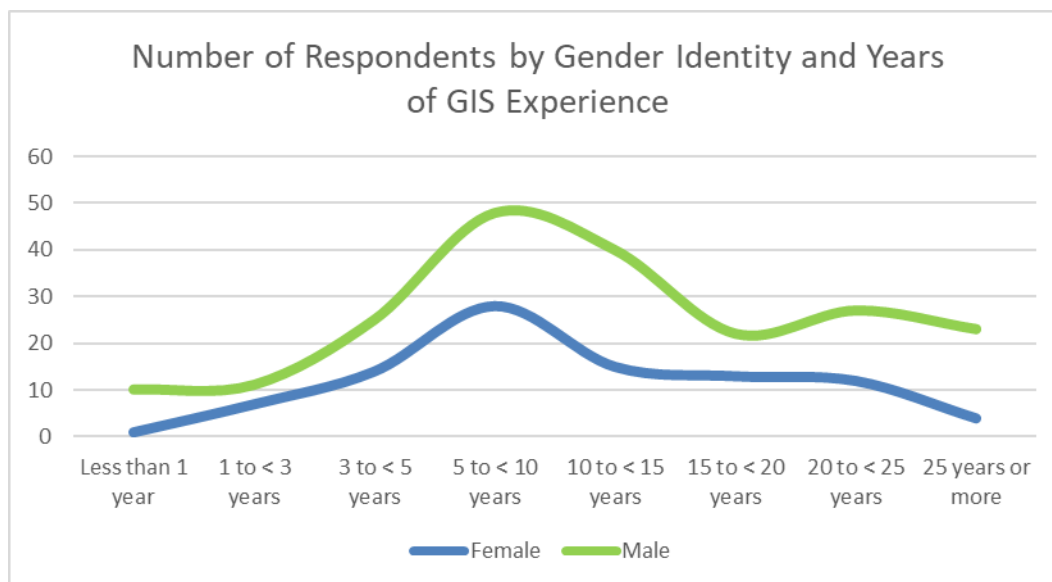


Figure 53. Number of Respondents by Gender Identity and Years of GIS Experience Category

Figure 54 illustrates differences between gender identity responses; GIS Coordinator and Manager Positions are more heavily male than female. The disparity between genders in these higher paying positions may, in part, explain some of the overall disparity of median salary by gender identity.

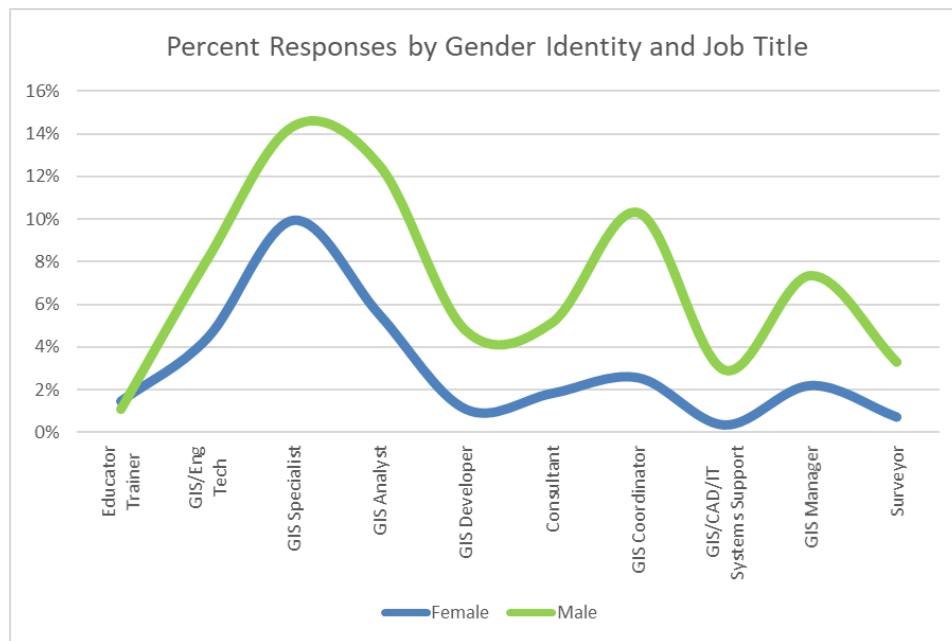


Figure 54. Percent of Responses by Gender Identity and Job Title

Women in the GIS/Engineering Technician position were nearly on par with their male counterparts. This position, associated with early career professionals, indicates that women may start their GIS careers near parity with men. However, as respondents grow in their career through GIS Specialist and GIS Analyst positions the gap between men and women's wages increases as is depicted in Figure 55.

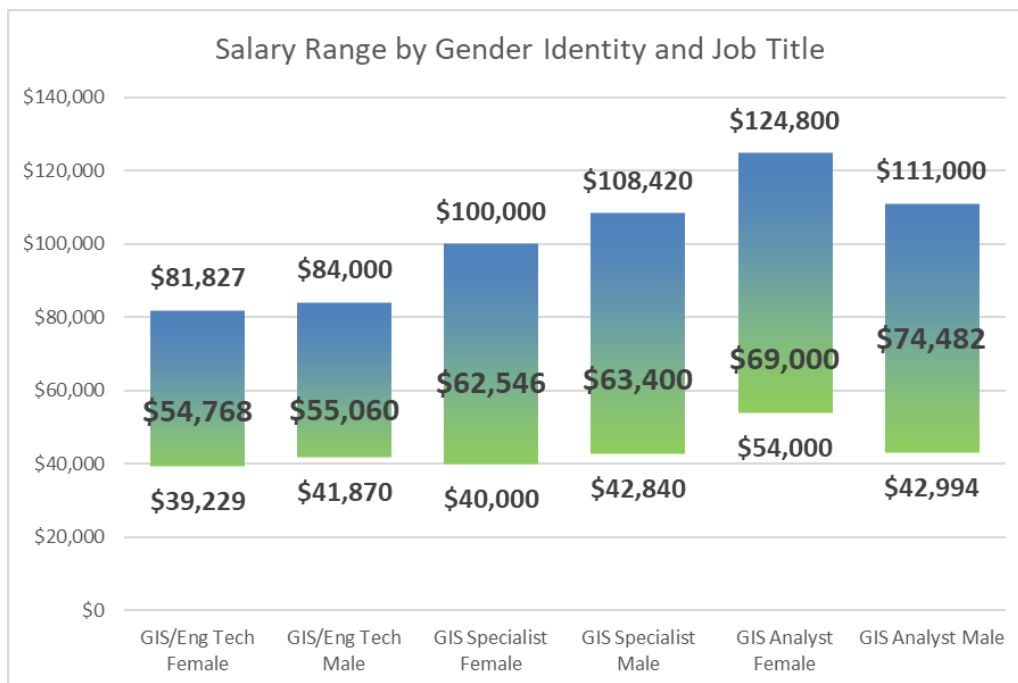


Figure 55. Salary Range by Gender Identity and Job Title

This pattern plays out when looking at longevity. Women are closer to parity with men in the early years of their careers. However, as years of GIS experience increases, median salary as well as minimum and maximum reported salaries favor men in the marketplace. We have no way of knowing if this is due to men's salaries increasing faster, if it is the result of historic inequality in general, or both.

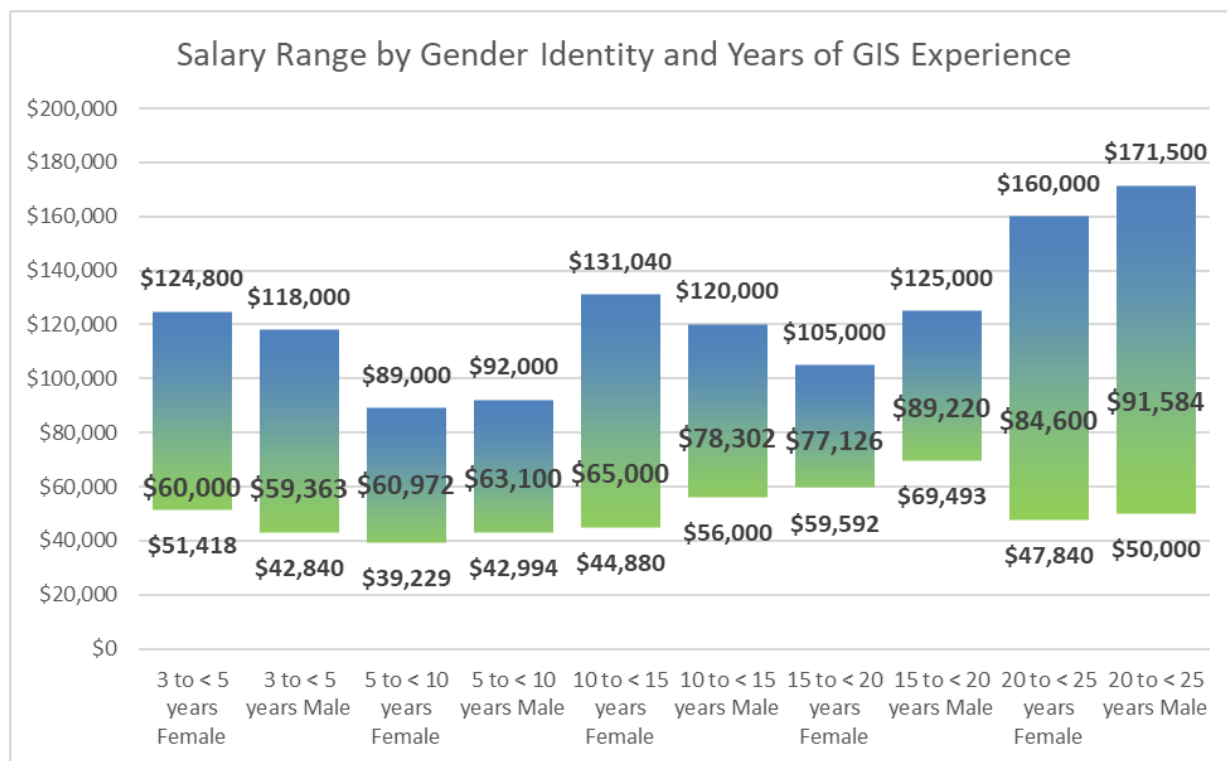


Figure 56. Salary Range by Gender Identity and Years of GIS Experience

The disparity of wages between men and women increases over time, with women making increasingly less than men over time. Figure 57 illustrates the increasing wage disparity between men and women with increasing years of experience. Here again, the formulas describe the slope of each line where X is years of experience and Y is the predicted wage. The R-squared number is the correlation coefficient describing the fit of the line to the data points.

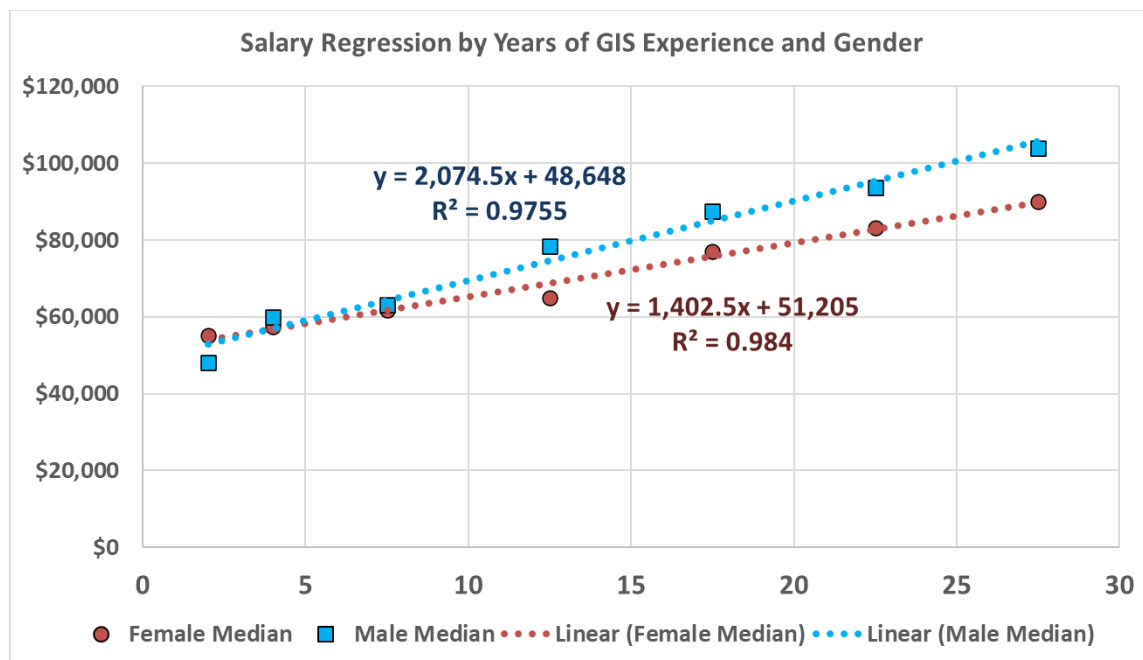


Figure 57. Salary Disparity Between Male and Female Identities by Years of Experience

Government wages are, in general, closer to parity with a difference of \$6,500 versus a gap of \$8,000 in the private sector. The greater number of men in high paying job titles, particularly in state government, may be exaggerating the disparity in the public sector. Figure 58 compares men’s and women’s salary ranges within private and various levels of government.

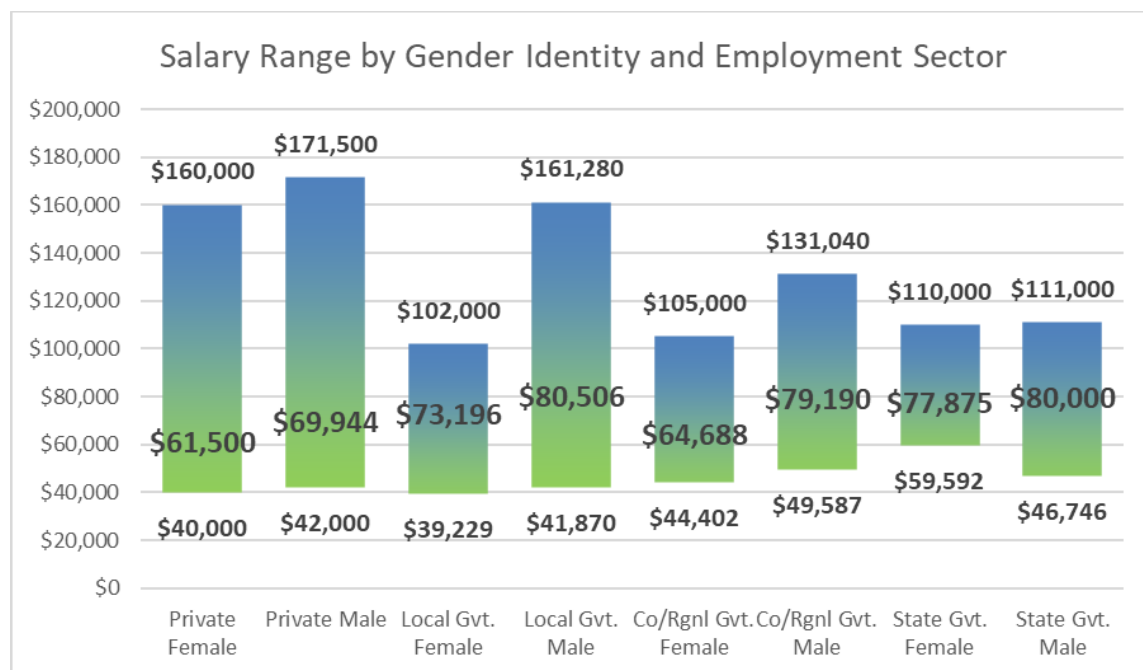


Figure 58. Salary Range by Gender Identity and Employment Sector

Respondents identifying as female receive much lower wages in Greater Minnesota than in the metro area. Women in Greater Minnesota reported wages nearly \$12,000 less than their male counterparts, while women in the metro reported wages \$7,000 lower.

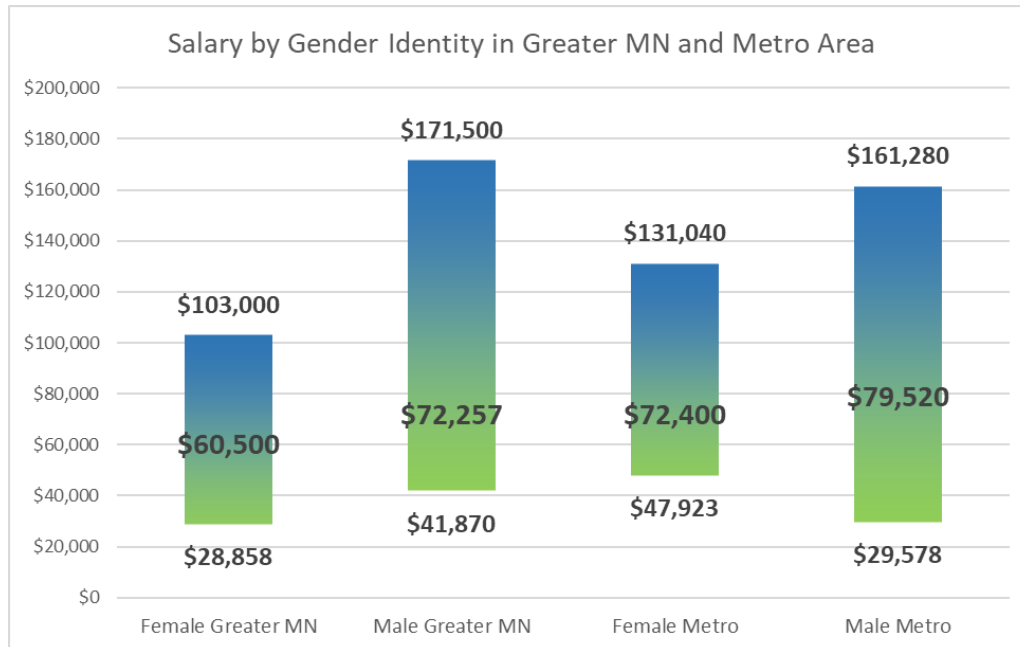


Figure 59. Salary Range by Gender Identity in Greater Minnesota and Metro Area

Race and Ethnic Identity

Similar to gender identity, respondents were able to choose one or more race/ethnic identities, describe their own identity, or choose not to answer. Twenty-one respondents chose not to answer.

Table 22. Salary Range by Racial or Ethnic Identity

Race/Ethnic Identity	Number of responses	Median salary	Lowest reported	Highest reported
Racial or Ethnic minority	23 (6.9%)	\$61,250	\$49,500	\$161,280
White	276 (93.1%)	\$75,000	\$39,229	\$171,500

As with gender identity, these numbers highlight some clear discrepancies. GIS professionals who identify as non-white earn a median salary approximately \$14,000 below their white peers. Unfortunately, there were too few responses to analyze salary ranges by individual job titles, but respondents identifying as non-white are under-represented in high paying job titles:

- All 19 respondents who reported being a GIS Developer identify as white.
- 31 of the 33 respondents who reported being a GIS Coordinator identify as white.
- All 26 respondents who reported being a GIS Manager identify as white.

Of the top 50 earners, two identified as a racial or ethnic minority, 42 identified as white, and six preferred not to answer.

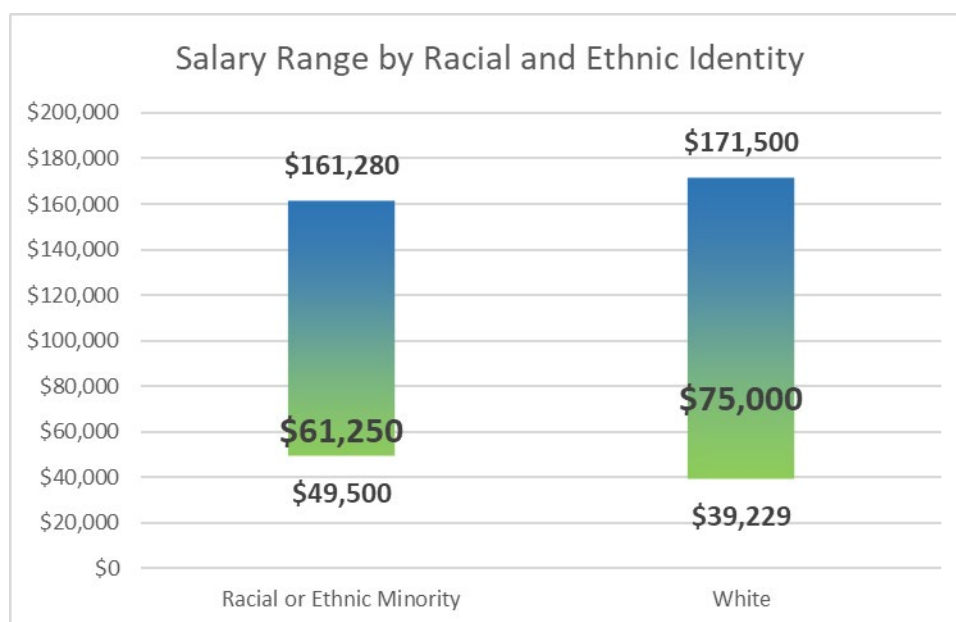


Figure 60. Salary Range by Racial and Ethnic Identity

A majority (68%) of respondents identifying as a racial or ethnic minority also reported job titles associated with early- to mid-career professionals.

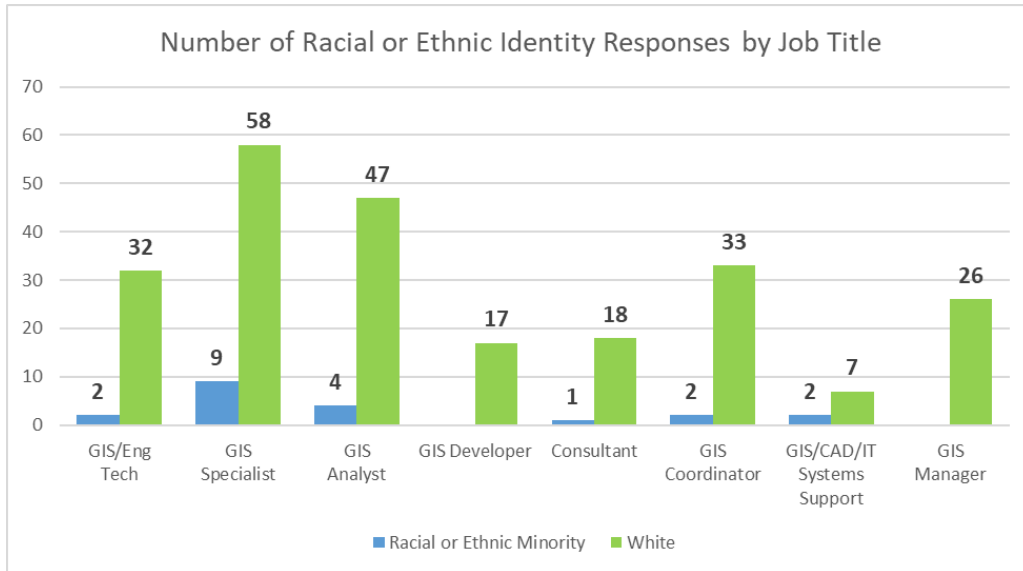


Figure 61. Responses by Racial or Ethnic Identity and Job Title

The government sector has the largest proportion of minority employees in the survey, with 7.6% of government-employed respondents self-identifying as a racial or ethnic minority. The next largest sector is private industry, with 6.1% of the workforce. Both education and nonprofit sectors have larger percentage of respondents identifying as racial or ethnic minorities, however the relatively low total number of respondents causes the percentages to skew easily. Furthermore, it is impossible for us to know whether survey response rates themselves varied by racial/ethnic identity.

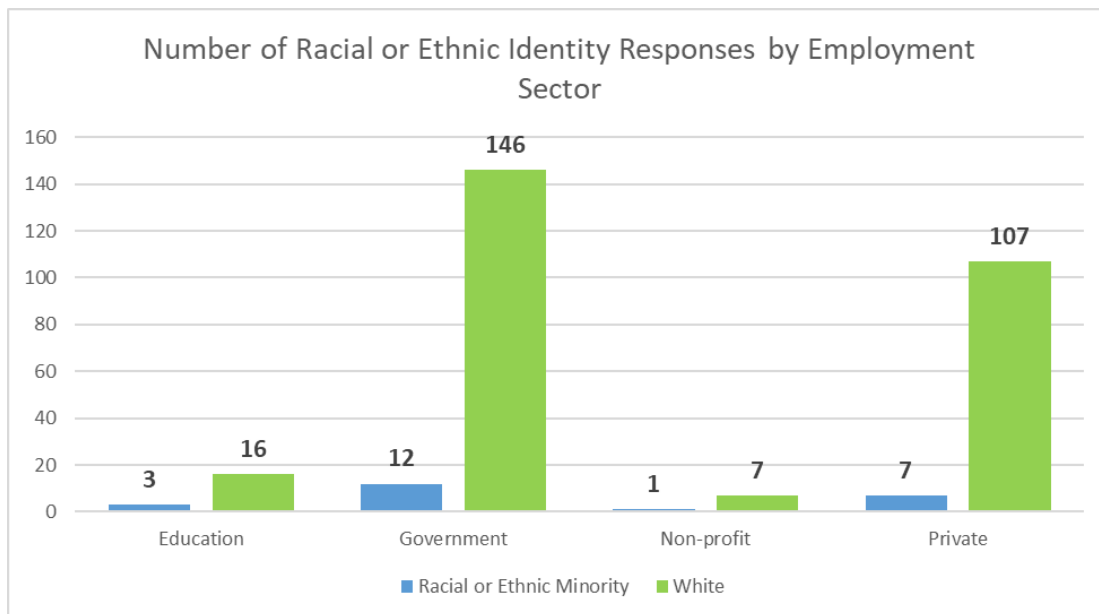


Figure 62. Responses by Racial or Ethnic Identity and Employment Sector

Looking closer at the government sector, local government has the largest number (7) and percentage (15.2%) of racial or ethnic minority respondents. No respondents identified as working in federal government and being a racial or ethnic minority.

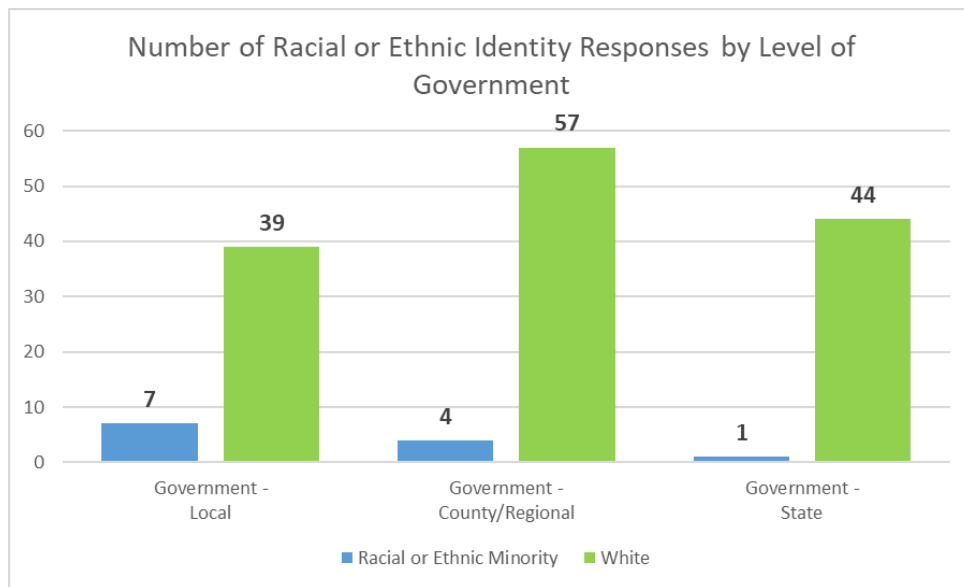


Figure 63. Responses by Racial or Ethnic Identity and Level of Government

Respondents identifying as racial or ethnic minority were almost evenly split between the Metro Area and Greater Minnesota (56.5% to 43.5%). The smaller number of respondents overall from Greater Minnesota results in a higher percentage of racial or ethnic minority responses as proportion of the Greater Minnesota workforce (9.1%) versus the Metro Area workforce (7.6%).

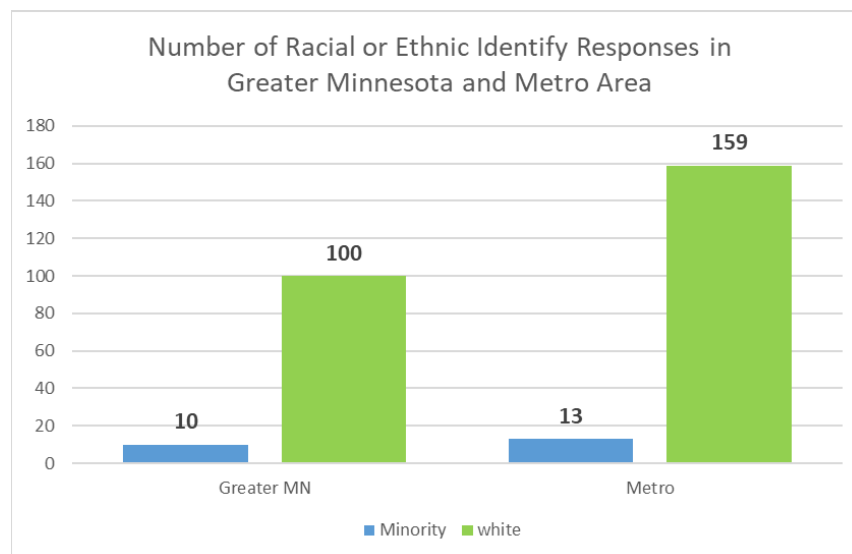


Figure 64. Responses by Racial or Ethnic Identity in Greater Minnesota and Metro Area

Disability Status

We did not receive a large enough sample size to report salaries based on disability.

We can report that 8 (2.5%) of respondents indicated they have a disability, 293 (92.1%) of respondents do not have a disability, and the remaining 5.6% of respondents preferred not to answer or skipped the question.

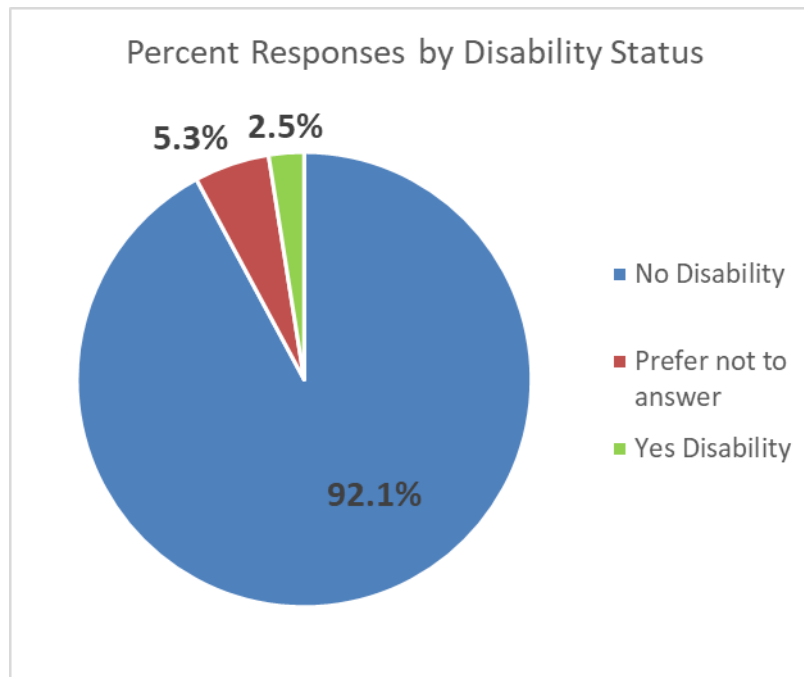


Figure 65. Responses by Disability Status

Remote Work

For the first time, the 2022 survey included a series of questions about remote working. These questions follow up on the GIS/LIS COVID-19 Survey (<https://arcg.is/1DCWHe>). This will establish a baseline for assessing remote work opportunities going forward.

Do you work partially or fully remotely?	Number of responses
No	68 (22.3%)
Yes	237 (77.7%)

Table 23. Remote Work Status

Conditional, if respondent reported that they work partially or fully remotely.

How often do you work remotely?	Number of responses
Full Time	123 (51.9%)
Part Time	93 (39.2%)
Occasionally	21 (8.9%)

Table 24. Remote Work Frequency

Conditional, if respondent reported that they work partially or fully remotely.

Did this remote work begin due to the COVID-19 pandemic?	Number of responses
Yes	27 (11.4%)
No	204 (86.1%)
Unknown	6 (2.5%)

Table 25. Remote Work and COVID-19 Pandemic

Conditional, if respondent reported that the remote work began due to the COVID-19 pandemic.

Is this new remote setup permanent?	Number of responses
Yes	33 (16.2%)
No	99 (48.5%)
Unknown	72 (35.3%)

Table 26. Remote Work Permanence

Conditional, if respondent reported that the remote work began due to the COVID-19 pandemic.

Is this new remote setup by choice?	Number of responses
Yes	35 (17.2%)
No	158 (77.5%)
Prefer not to answer	11 (5.4%)

Table 27. Remote Work by Choice

Figure 66 is a graphical representation of this series of questions and illustrates the relationship between the questions and responses.

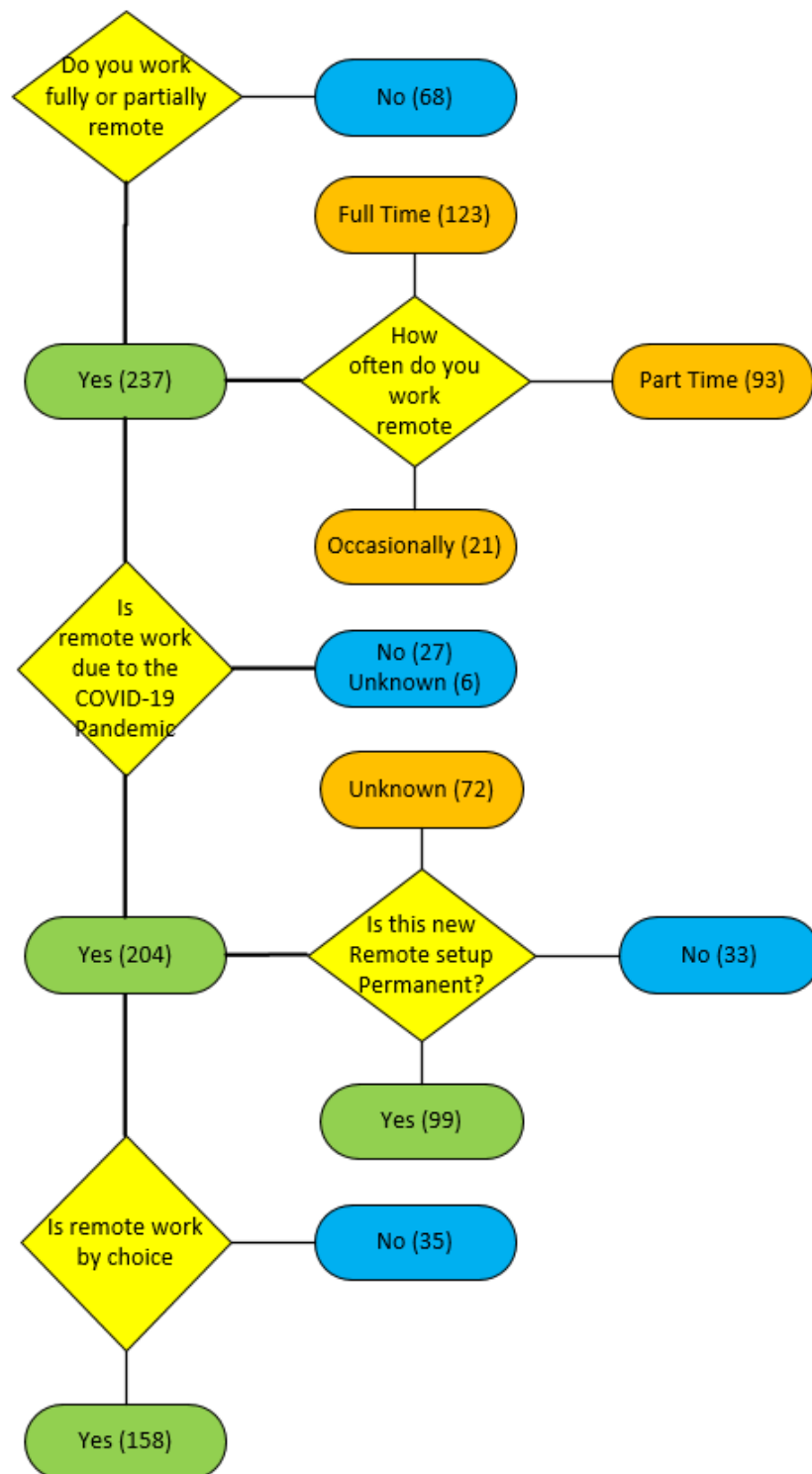


Figure 66. Remote Work Status Question Flow Illustration

Remote work situation showed a relationship with years of GIS experience. Full time and part time remote opportunities increase with years of experience, while early career professionals (less than three years) reported a significantly higher percentage of in-person work (non-remote).

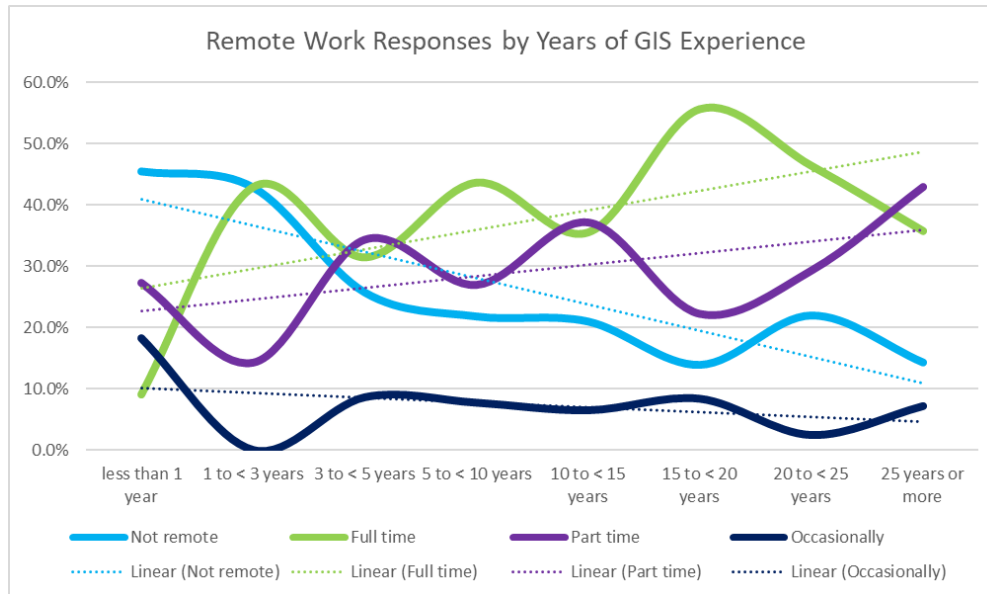


Figure 67. Remote Work Responses by Years of GIS Experience

Full time remote work was reported as the largest working situation for state employees with nearly three quarters of state employees reporting full time remote. This starkly contrasts with county/regional government employees who reported in-person work for nearly half of all responses. Another point of interest are federal government employees who all reported either full or part time remote.

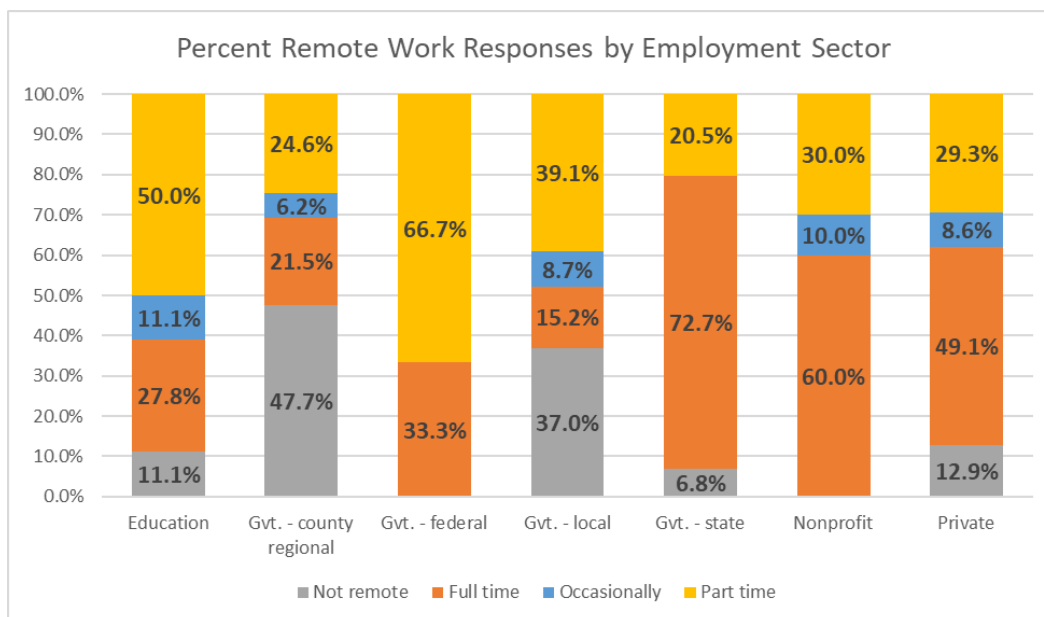


Figure 68. Percent Remote Work Responses by Employment Sector

By region, in the metro area almost all respondents reported working remote to some extent. The southern and northern portions of the state report almost half of employees reporting in-person work. The central portion has a quarter in person but also 44% full time remote.

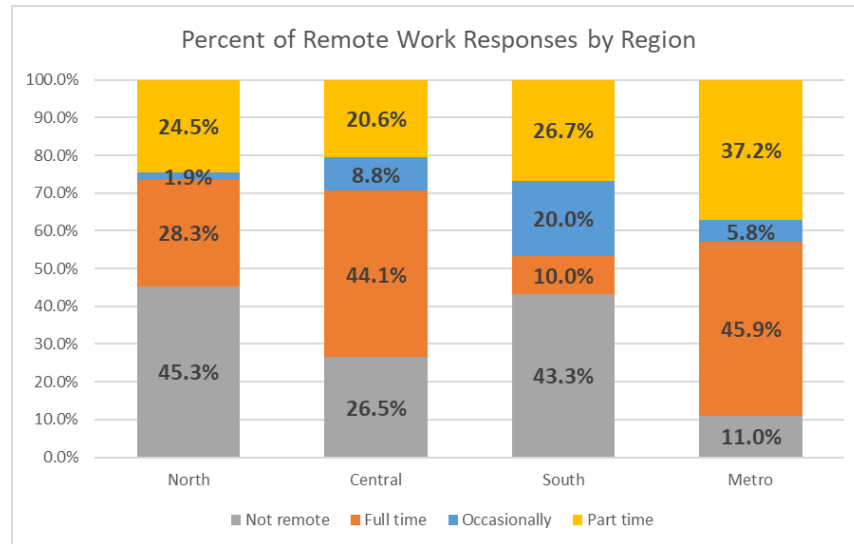


Figure 69. Percent Remote Work Responses by Geographic Region

When looking at responses by job title, Developer and Systems Support were all remote to some extent. Analyst, Consultant, and GIS Manager reported between 10-20% in-person work. GIS/Engineering Technicians, GIS Specialist, and GIS Coordinator reported 35-40% time in person.

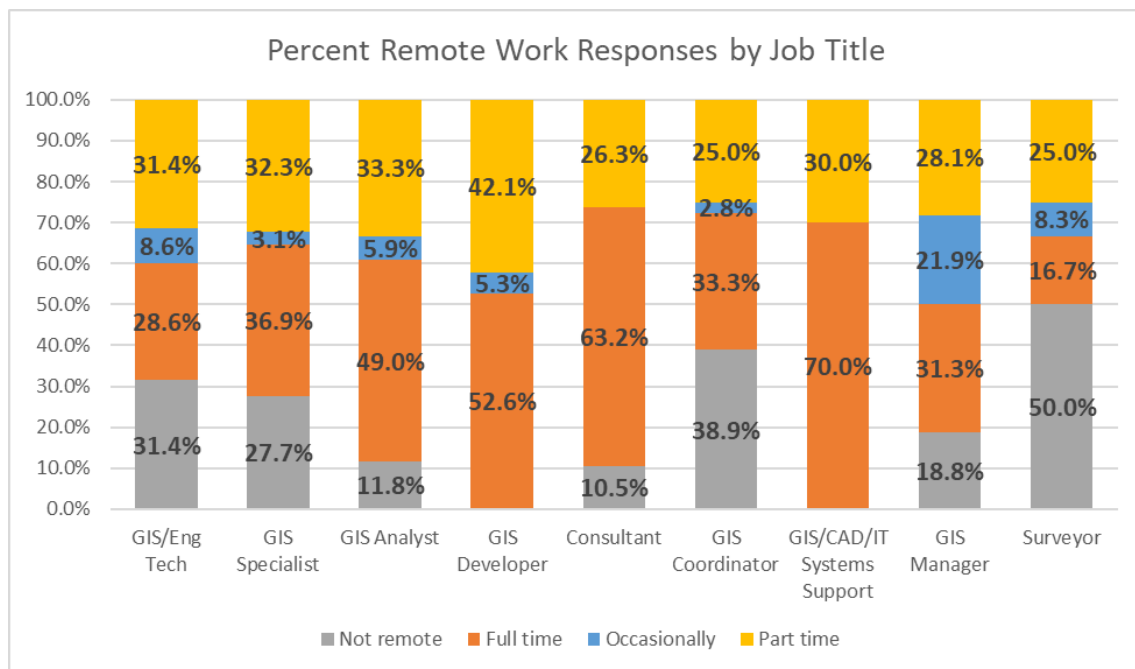


Figure 70. Percent Remote Work Responses by Job Title

Respondent Comments

Select Respondent Comments and MN GIS/LIS Consortium Responses.

Comments:

- Thanks to the MN GIS/LIS members for putting this together!
- Thank you for all the work you do to prepare, analyze and publish the salary survey!
- Thanks for putting this together!

Consortium: You're welcome and thank you for submitting your responses, without the participation of membership we wouldn't have anything to report.

Comments:

- Love GIS! I wish to see more women in the field!
- GIS is a rewarding and often changing career!

Consortium: We wholeheartedly agree. Thank you for your responses.

Comments:

- Not paid enough
- I think I should have been paid more, the position was required a lot of skill.
- I absolutely adore my job, though I think my current income is underpaid for my dedication and skillset

Consortium: The Consortium hopes that the salary surveys are useful and beneficial for members to understand how their salary fits in with their peers and, if needed, can be used as a tool to help individual members advocate for themselves.

Comments:

- You state this survey is anonymous, but by asking questions about where one works (i.e. government) and location (i.e. metro, etc.), job position and zip could easily make someone identifiable. Disappointing. Zip should at least be removed.
- I feel like these answers could identify me quite easily. Hope the results are careful about that.
- Please don't use these data as a full profile because with a combo of these I am totally identifiable.

Consortium: We have worked hard to keep individual responses anonymous, particularly with respect to salary information. Zip code information is only used for the purpose of creating the Response Map on page 39 and for helping the Consortium evaluate how well we reached all parts of the state with this survey.

Comment:

- Why does everything have to be done with Survey123?

Consortium: We use Survey123 because it's a readily available, secure survey tool available to the Consortium through our Esri license. As GIS Professionals and volunteers, we find it easiest to use a tool that's familiar. If people have suggestions for other survey tools we should investigate please let the Professional Development Committee know (email address).

Comment:

- GIS jobs for graduates from state colleges (i.e. Mankato, St. Cloud) is lacking. The programs offered at these schools are very good, however employers tend to favor U of M or private schools. The consortium should highlight underrepresented programs.

Consortium: Thank you for the comment, it has been passed on to the Higher Education Committee as well as the Professional Development Committee.

Comment:

- The first year of the pandemic, I worked completely remotely. Now it is hybrid and on an as-needed basis.

Consortium: Remote work is going to be a very interesting topic to watch going forward. Will the technological advances that have allowed remote work during the pandemic result in ongoing change in work locations in the long-term.

Comment:

- Please add 'Tribal' to choices for 'Level of Government'

Consortium: Thank you for pointing out this deficiency in our survey. You are completely correct; it should have been an option. The Consortium apologizes for the oversight. We will include this as an option in future Salary Surveys.

Comment:

- For educational background, you should have the ability to select a Bachelors' degree plus some Graduate classes, but not a Master's degree. Likewise, you should add if survey participants have a Minor in GIS, like you ask if they have a GIS certificate.

Consortium: This is valuable feedback and we will consider it when preparing the 2024 Salary Survey.

Conclusions

A slight majority of responses to this survey came from GIS professionals working in the Government Sector, while nearly 40% were from the Private Sector. The median reported salary was \$72,650 up from \$70,720 in 2020. The middle third of reported salaries fell in range of \$62,000 to \$83,500. The highest earning GIS positions reported were GIS Coordinator, GIS/CAD/IT Systems Support, and GIS Manager.

Over half (55.6%) of respondents have 10 or more years of experience. About a quarter (22.8%) have over 20 years, and 17.8% have 5 years or less. Median salaries based on experience had a consistent increase over time, with larger median increases around the 10-year and 25-year marks.

On GIS skills and proficiencies, the largest salary differentiators reported were advanced skills in SQL or other DBMS, Python, and application development. Advanced experience with cartography, remote sensing, and data analysis had a medium range impact. The least notable differentiators were advanced skills in desktop GIS, web GIS, and open-source GIS.

Dedicated to Equity

The Consortium's mission, to develop and support the GIS professional in Minnesota for the benefit of our state and its citizens, does and should include every GIS professional. The responses on gender, racial, and ethnic identity revealed that our industry is not immune to the pervasive pay gaps seen in the United States. We will use this information, along with all the data collected in the survey, to work to ensure that our mission applies to all of our members.

Acknowledgements

The Minnesota GIS/LIS Consortium Board of Director thanks our members that contributed the data for this report. Without your participation, we would not have been able to provide this data!

Report prepared for the MN GIS/LIS Consortium by

Randall Cutting

Randall Cutting
Private Sector Representative

Supplemental Materials

Survey Questions

As mentioned before, we modeled many of these questions after the 2020 Salary Survey. An asterisk (*) identifies a required question.

Page 1 of 4 (*landing page*)

Thank you for taking the time to complete our salary survey! This survey serves as a tool to understanding the state of GIS /LIS jobs in Minnesota and elsewhere.

Your responses will be kept anonymous.

Page 2 of 4 – About Your Job

If you have multiple jobs, please answer the questions for the job in which you do the most GIS or surveying work.

1) Which of the following best describes your job position? *

Choose one

- | | |
|---|--|
| <input type="checkbox"/> GIS Intern/Seasonal | <input type="checkbox"/> Consultant |
| <input type="checkbox"/> GIS/Engineering Technician | <input type="checkbox"/> GIS Developer |
| <input type="checkbox"/> GIS/CAD/IT Systems Support | <input type="checkbox"/> GIS Coordinator |
| <input type="checkbox"/> GIS Specialist | <input type="checkbox"/> GIS Manager |
| <input type="checkbox"/> GIS Analyst | <input type="checkbox"/> Surveyor |
| <input type="checkbox"/> Educator/Trainer | <input type="checkbox"/> Other (please describe) |

1a) (Conditional, if respondent selected Other for question 1)

Open ended response

2) What is your company's primary sector? *

Choose one

- | | |
|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Education | <input type="checkbox"/> Nonprofit |
| <input type="checkbox"/> Government | <input type="checkbox"/> Private |

2a) What level of government *

(Conditional, if respondent selected Government for question 2)

Choose one

- | | |
|--|----------------------------------|
| <input type="checkbox"/> Local | <input type="checkbox"/> State |
| <input type="checkbox"/> County/Regional | <input type="checkbox"/> Federal |

2b) What level of education *

(Conditional, if respondent selected Education for question 2)

Choose one

- ☐ K12 ☐ Other (please describe)
- ☐ Higher Ed

2c) (Conditional, if respondent selected Other for question 2b)

Open ended response

3) In what areas do you work or specialize? *

Choose all that apply

- | | |
|---|---|
| <input type="checkbox"/> Defense and Intelligence | <input type="checkbox"/> Natural Resources |
| <input type="checkbox"/> K12 Education | <input type="checkbox"/> Planning and Land Use |
| <input type="checkbox"/> Higher Education | <input type="checkbox"/> Public Safety |
| <input type="checkbox"/> Government (local and/or regional) | <input type="checkbox"/> Surveying/Land Records |
| <input type="checkbox"/> Government (state and/or federal) | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Health and Human Services | <input type="checkbox"/> Utilities |
| <input type="checkbox"/> IT | <input type="checkbox"/> None of these areas |

4) What is your primary office's ZIP code? *

Open ended response

5) What is your primary office's regional location? *

Choose one

[View a reference map](#)

- | | |
|------------------------------------|--|
| <input type="checkbox"/> Northwest | <input type="checkbox"/> Southwest |
| <input type="checkbox"/> Northeast | <input type="checkbox"/> South Central |
| <input type="checkbox"/> Central | <input type="checkbox"/> Southeast |
| <input type="checkbox"/> Metro | <input type="checkbox"/> Outside Minnesota (please describe) |

5a) (Conditional, if respondent selected Outside Minnesota for question 5)

Open ended response

6) Do you work partially or fully remotely? *

Choose One

☐ Yes

☐ No

6a) How often do you work remotely? *

(Conditional, if respondent selected Yes for question 6)

Choose one

☐ Full time

☐ Part time

☐ Occasionally

6b) Did this remote work begin due to the COVID-19 pandemic? *

(Conditional, if respondent selected Yes for question 6)

Choose one

☐ Yes

☐ No

☐ Unknown

6c) Is this new remote setup permanent? *

(Conditional, if respondent selected Yes for question 6b)

Choose one

☐ Yes

☐ No

☐ Unknown

6d) Is this new remote setup by choice? *

(Conditional, if respondent selected Yes for question 6b)

Choose one

☐ Yes

☐ No

☐ Prefer not to answer

7) What percentage of your job responsibilities is computer programming (i.e. how much time do you spend on computer programming)? *

Programming refers to custom application development or other work that involves the writing of computer code, APIs, etc.

Choose one

☐ None

☐ 25% to less than 50%

☐ Less than 25%

☐ 50% or more

Page 3 of 4 – About Your Salary

These questions refer to the job you just described on the previous page.

8) Are you paid annually or by the hour? *

Choose one

☐ Receive an annual salary

☐ Paid by the hour

8a) What is your annual base salary? *

(Conditional, if respondent selected Receive an Annual Salary for question 8)

Open ended response

8b) What is your base hourly rate? *

(Conditional, if respondent selected Paid by the Hour for question 8)

Open ended response

8c) How many hours a year do you work? *

(Conditional, if respondent selected Paid by the Hour for question 8)

Open ended response

9) Is your job considered full time, part time, or seasonal/temporary? *

Choose one

☐ Full time

☐ Contract/Internship/Other temporary

☐ Part time

Page 4 of 4 – About You

10) What is your age? *

Choose one

☐ 20 or under

☐ 46-50

☐ 21-25

☐ 51-55

☐ 26-30

☐ 56-60

☐ 31-35

☐ 60 or older

☐ 36-40

☐ Prefer not to answer

☐ 41-45

11) What is your highest education level? *

Choose one

- | | |
|--|---|
| <input type="checkbox"/> Did not graduate High School or receive GED | <input type="checkbox"/> Bachelors degree |
| <input type="checkbox"/> High School diploma or GED | <input type="checkbox"/> Masters degree |
| <input type="checkbox"/> Some college, no degree | <input type="checkbox"/> Ph.D. |
| <input type="checkbox"/> Associated degree | |

11a) Do you have a degree in GIS or a closely related field? *

(Conditional, if respondent selected Associates Degree, Bachelors degree, Masters degree, or Ph.D. for question 11)

Choose one

- | | |
|---|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Currently pursuing | |

11b) What is the highest level degree you have in GIS or a closely related field? *

(Conditional, if respondent selected Yes for question 11a)

Choose one

- | | |
|-------------------------------------|----------------------------------|
| <input type="checkbox"/> Associates | <input type="checkbox"/> Masters |
| <input type="checkbox"/> Bachelors | <input type="checkbox"/> Ph.D. |

11c) What did you receive your degree in? *

Please include your major/s and any relevant minor/s.

(Conditional, if respondent selected Paid by the Hour for question 11a)

Open ended response

12) Have you done or received any of the following? *

Choose all that apply

- | | |
|---|--|
| <input type="checkbox"/> Undergraduate GIS Certificate | <input type="checkbox"/> Partially completed a GIS program, no longer pursuing |
| <input type="checkbox"/> Graduate GIS Certificate | <input type="checkbox"/> Self taught or learned GIS on-the-job |
| <input type="checkbox"/> Formal or certified GIS training | <input type="checkbox"/> None of these |

13) Have you ever received a GIS Professional (GISP) certification? *

Choose one

☐ Yes

☐ No

13a) Are you currently a certified GISP? *

(Conditional, if respondent selected Yes for question 13)

Choose one

☐ Yes

☐ No

14) How much GIS experience do you have? *

Choose one

☐ Less than 1 year

☐ 10 years to less than 15 years

☐ 1 year to less than 3 years

☐ 15 years to less than 20 years

☐ 3 years to less than 5 years

☐ 20 years to less than 25 years

☐ 5 years to less than 10 years

☐ 25 years or more

15) How would you rate your proficiency in the following areas? *

Ranking options

☐ No experience

☐ Intermediate

☐ Beginner

☐ Advanced

Areas

☐ Desktop GIS software

☐ Remote sensing

☐ Cartography

☐ Web GIS

☐ Data analysis

☐ Open source GIS

☐ Python

☐ Application development

☐ SQL Server or other DBMS

16) What percent of time in your job do you spend using GIS and related applications? *

Choose one

☐ Less than 10%

☐ 50% to less than 75%

☐ 10% to less than 25%

☐ 75% or more

☐ 25% to less than 50%

17) Which of the following best describe your gender identity? *

Choose all that apply

- | | |
|--|--|
| <input type="checkbox"/> Female | <input type="checkbox"/> Non-binary |
| <input type="checkbox"/> Male | <input type="checkbox"/> Prefer not to answer |
| <input type="checkbox"/> Gender Variant/non-conforming | <input type="checkbox"/> Prefer to self-describe |

17a) (Conditional, if respondent selected Prefer to Self-Describe for question 17)
Open ended response

18) Which of the following best describe your racial and ethnic identity? *

Choose all that apply

- | | |
|--|---|
| <input type="checkbox"/> American Indian/Alaska Native | <input type="checkbox"/> Asian/Indian |
| <input type="checkbox"/> Black/African-American | <input type="checkbox"/> Hispanic/Latino/Spanish- origin |
| <input type="checkbox"/> Middle Eastern/North African | <input type="checkbox"/> Native Hawaiian/Pacific Islander |
| <input type="checkbox"/> Two or more races | <input type="checkbox"/> White |
| <input type="checkbox"/> Prefer not to answer | <input type="checkbox"/> Prefer to self-describe |

18a) (Conditional, if respondent selected Prefer to Self-Describe for question 18)
Open ended response

19) Do you have a disability?

Please respond at your comfort level

- | | |
|------------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> Prefer not to answer |
| <input type="checkbox"/> No | |

19a) Has the Consortium been responsive to your requests for accommodations at workshops, conferences, and events?

(Conditional, if respondent selected Yes for question 19)

Choose one

- | | |
|------------------------------|--|
| <input type="checkbox"/> Yes | <input type="checkbox"/> Prefer not to answer |
| <input type="checkbox"/> No | <input type="checkbox"/> I haven't made any requests |

20) Do you have any additional comments?

Open ended response

Response Region Map

Map source: Minnesota Emergency Communications Board (MNECB)

<https://www.mnecb.org>

