

SURVEY REPORT

GIS Staffing, Recruitment, and Retention Issues Facing Pennsylvania PSAPs

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Pennsylvania

Emergency Management Agency

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Introduction

Accurate GIS data is the backbone of Next Generation 911 (NG911) service. It enables geospatial call routing, precise location verification, and enhanced emergency response. With Pennsylvania's transition to NG911, the need for skilled Geographic Information Systems (GIS) professionals in Public Safety Answering Points (PSAPs) is more critical than ever. However, many PSAPs report facing persistent challenges in recruiting and retaining GIS personnel. This affects a county's responsibility to routinely maintain and enhance these vital datasets.

In accordance with the most-recent version of the NG911 GIS Strategic Plan, which was adopted in December 2023, PEMA conducted a survey to assess GIS staffing trends, capture challenges, and identify strategies for improving GIS workforce sustainability among Pennsylvania PSAPs. This report details the findings of our survey.

Purpose

The purpose of this survey was to:

- Assess NG911 GIS staffing needs, including workforce distribution and utilization
- Identify key challenges in recruitment, retention, and salary competitiveness for GIS professionals
- Provide data-driven insights to support workforce sustainability and alignment with NG911 objectives

Acknowledgements

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Survey/Respondent Overview

- **Survey Timeline:** December 24, 2024 – January 10, 2025
- **Total Responses:** 42
- **Participating PSAPs:** Various counties across Pennsylvania
- **Target Audience:** Individuals responsible for hiring NG911 GIS personnel
- **Respondent Roles:** 911 Coordinators, GIS Data Stewards

Key Findings

1. Most GIS staff is in-house: Two-thirds of county GIS personnel assigned to perform NG911-related work are housed in either the county's 911/public safety or GIS departments. The remainder are staff members of county IT or planning offices or outside consultants who perform the necessary GIS duties.

2. Staff is spread thin: While 86% report having 1-2 GIS staff members, many PSAPs say their GIS personnel are required to split job responsibilities beyond NG911. A majority (64%) of PSAPs anticipate needing to hire additional staff solely dedicated to supporting the growing integration between GIS and public safety communications.

3. Not every county has hiring problems: When it comes to finding GIS personnel, respondents were evenly divided: 55% report no difficulty recruiting staff, while 45% say they struggle.

4. Bigger isn't always better: Interestingly, PSAPs in counties with smaller populations (less than 90,000 residents) report fewer challenges when it comes to recruitment and retention. Mid-sized counties (Third, Fourth, and Fifth Classes) report facing the most significant GIS personnel challenges.

5. The bosses need to know: A common theme among responses is the continued need to make county leadership aware of the importance of GIS personnel and the critical role they play in supporting the safety of the residents and emergency responders in their communities.

Conclusions

The survey results confirm that recruitment and retention challenges exist for GIS professionals in Pennsylvania's PSAPs. This is largely due to staffing shortages, compensation concerns, and leadership awareness gaps.

While some PSAPs have successfully recruited GIS personnel, others struggle with low applicant pools, uncompetitive salaries, and a lack of structured career advancement opportunities. Retention is further affected by dissatisfaction with salaries, lack of career growth, and limited workplace flexibility. This leads many GIS professionals to seek better-paying opportunities elsewhere.

The findings suggest that without targeted investment, improved compensation, career advancement pathways, and leadership advocacy, GIS staffing will remain an ongoing challenge – and will have a lasting impact on NG911 implementation and public safety operations.

Areas of Concern

1. Unfilled Positions and GIS Staffing Limitations Persist

- 19% of reporting PSAPs currently have unfilled NG911 GIS positions. This demonstrates ongoing hiring challenges that impact NG911 data management and emergency response.
- 86% of reporting PSAPs operate with only 1–2 GIS professionals supporting NG911, often requiring staff to handle multiple responsibilities beyond NG911.
- 64% of reporting PSAPs anticipate the need for additional GIS staff in the next 3–5 years. However, hiring efforts are constrained by limited budgets and leadership approval.
- Inconsistencies exist in GIS operations across the state because GIS professionals are distributed among:
 - 911/Public Safety (38%)
 - GIS Departments (31%)
 - IT (10%)
 - Planning (7%)
 - External consultants (7%)

2. Retention Issues Persist Across the State; Driven by Compensation and Career Progression

- 31% of PSAPs report difficulty retaining GIS staff, primarily due to compensation concerns and lack of career progression.
- 52% of GIS professionals at PSAPs report they are dissatisfied with their salary and benefits, citing uncompetitive wages compared to private-sector and IT roles.
- Comments indicate GIS professionals leave for higher-paying opportunities, resulting in turnover that disrupts NG911 data management and staffing continuity.

3. Recruitment Challenges Persist Across the State

- 45% of PSAPs report difficulty recruiting GIS professionals.
- The most common recruitment barriers for those indicating recruitment concerns include lack of applicants (40%), lack of qualified applicants (28%), and other (19%).
- Limited internship programs may be a missed opportunity for workforce development, as only 9.5% of PSAPs currently offer internships.
- Some PSAPs have successfully recruited GIS talent by offering higher pay, professional development, and structured career paths, showing that improved compensation and growth opportunities can positively impact hiring efforts.

4. Correlation Between County Size and GIS Workforce Challenges

The survey responses were categorized by county class, revealing that GIS staffing challenges are present across all population sizes - though the degree and nature of those challenges vary. The following breakdown highlights both the percentage of recruitment and retention challenges and the number of responses per county class:

Smaller Population Counties (*population 0 – 89,999*) **Report the Fewest Challenges:** While the challenges are less prevalent than in mid-sized counties, these jurisdictions often lack the resources to support in-house GIS staff, relying instead on consultants or limited personnel.

- **Combined Sixth, Seventh, and Eighth Class Counties** (n=19):
 - 37% (7) reported recruitment challenges
 - 26% (5) reported retention challenges

Mid-Sized Population Counties (*population 90,000 – 499,999*) **Face the Most Significant Challenges:** These counties often face competing priorities, insufficient salary structures, and greater difficulty sustaining long-term staffing.

- **Combined Third, Fourth, and Fifth Class Counties** (n=18):
 - 56% (10) reported recruitment challenges
 - 33% (6) reported retention challenges

Larger Population Counties (*population 500,000 and higher*) **Face Moderate Challenges:** Despite having greater resources and support systems, these counties still report notable difficulty maintaining GIS personnel, particularly in competitive job markets.

- **Combined First, Second, and Second A Class Counties** (n=5):
 - 40% (2) reported recruitment
 - 40% (2) reported retention challenges

5. Workplace Flexibility and Benefits Could Improve Retention

- Only 19% of PSAPs offer telework options, despite GIS tasks often being well-suited for remote work.
- Workplace flexibility and alternative scheduling could help retain GIS staff, but they are not widely implemented.
- Some PSAPs retain staff through pensions, professional development, and flexible work arrangements, indicating that non-salary incentives can be effective retention tools.

6. Funding, Leadership Awareness Gaps Limit Workforce Expansion

- Many PSAPs indicated they struggle to justify GIS salary increases due to budget constraints and a lack of leadership awareness.
- Many counties indicated county commissioners and decision-makers may not fully recognize the critical role GIS plays in supporting NG911, which can create challenges when seeking funding for dedicated GIS personnel.
- 64% of respondents agree that statewide salary and benefits data would help justify salary adjustments and improve recruitment and retention strategies.

Recommended Action Items

Based on the survey responses, PEMA – working in collaboration with the 911 Advisory Board and its subcommittees – offers the following recommendations to support **Goal 2.4 of the NG911 GIS Strategic Plan**: Support County NG911 GIS Professional Recruitment and Retention.

1. Workforce Development and Retention

- a) Educate decision-makers on the critical role of GIS in NG911, the need for sustained GIS staffing, and the eligible use of 911 funding to support GIS personnel, training, and professional development.
- b) Promote workforce sustainability strategies – such as competitive salaries, workplace flexibility, clear career pathways, and regional or shared-staffing models.
- c) Coordinate with CCAP to analyze county GIS salary data and position descriptions, identify gaps and inconsistencies, and share actionable insights to support competitive compensation, position classification, and long-term workforce planning.

2. Strengthen GIS Recruitment and Career Pathways

- a) Encourage collaboration among counties, universities, and educational partners to promote GIS education and career pathways within public safety.
- b) Increase outreach and awareness of GIS careers in public safety through job fairs, industry events, and targeted recruitment activities, particularly in regions with limited applicant pools.
- c) Promote the value of public-sector GIS careers by highlighting long-term benefits such as job stability, retirement systems, health benefits, and continuing education opportunities.

Appendix A: Survey Questions and Responses – Staffing

In which office or department do your NG911 GIS personnel reside?

- (38%) 911/Public Safety
- (13%) GIS Departments
- (10%) IT
- (7%) Planning
- (7%) Consultant
- (7%) Other

How many GIS personnel currently support NG911 in your PSAP?

- (86%) 1-2 people
- (14%) 3-4 people
- (0%) 5+ people

Does your PSAP have any vacant GIS positions that support NG911?

- (81%) No
- (19%) Yes [*Eight (8) PSAPs each reported one (1) vacancy*]

Does your PSAP currently offer a telework option?

- (81%) No
- (19%) Yes

Appendix B: Survey Questions and Responses – Retention

Does your PSAP face challenges in retaining NG911 GIS personnel?

- (69%) No
- (31%) Yes

Has your PSAP experienced turnover in the GIS position within the last 3 years?

- (64%) No
- (36%) Yes

What challenges does your PSAP face in retaining GIS staff?

- (45%) Compensation and benefits
- (40%) No challenges
- (7%) Career advancement
- (7%) Other
- (0%) Work-life balance

Does your PSAP offer additional benefits specific to professional growth such as funding for certifications, conferences, or training programs?

- (69%) Yes
- (31%) No

What strategies have been effective for retaining GIS staff in your organization?

(Summary of responses):

- **Competitive Compensation and Benefits** – Higher salaries, better benefits (PTO, healthcare, pension programs), and salary adjustments have helped retain GIS staff. Some counties are evaluating pay to address turnover issues.
- **Training and Career Development** – Offering training, certifications, tuition reimbursement, and professional growth opportunities helps with retention. Cross-training and promotions also support career progression.
- **Workplace Flexibility and Engagement** – Flexible work arrangements, remote work options, open communication, and inclusion in decision-making contribute to job satisfaction. Recognizing GIS contributions and fostering a positive work environment help with long-term retention.

- **Challenges and Gaps** – Some respondents noted no effective retention strategies, difficulty competing with higher-paying roles, and reliance on external contracts due to staffing shortages.
- **Funding and Support Initiatives** – Leveraging Statewide Interconnectivity Funding grants and other funding sources has supported GIS positions in some counties, though others struggle to secure financial resources.

How do you foresee your GIS staffing needs evolving in the next 3-5 years? (Summary of responses):

- **Increasing Need for GIS Staff** – Many expect to hire 1–2 more GIS professionals due to growing workloads, NG911 requirements, and expanding data processing needs.
- **Evolving GIS Roles** – GIS is becoming more integrated with NG911, CAD systems, 3D mapping, and data management, requiring additional expertise and support.
- **Budget and Staffing Constraints** – Some counties face limited growth due to budget restrictions and county leadership decisions, despite recognizing the need for more staff.

Appendix C: Survey Questions and Responses – Recruitment

Does your PSAP face challenges in recruiting NG911 GIS personnel?

- (55%) No
- (45%) Yes

What challenges does your PSAP face in recruiting GIS staff?

- (40%) We do not have any difficulties recruiting applicants
- (24%) Lack of applicants
- (19%) Other
- (17%) Unqualified applicants

What are the biggest challenges in attracting NG911 GIS professionals to your PSAP?

- (40%) Compensation and benefits
- (33%) We do not have challenges in attracting GIS professionals
- (14%) Other
- (7%) Location
- (2%) Lack of awareness about open positions
- (2%) Job responsibilities

Does your PSAP regularly hire interns for GIS-related roles?

- (90%) No
- (10%) Yes [25% of these are paid internships]

Appendix D: Survey Questions and Responses – Salary and Benefits

Do you believe your salary and benefits package for your GIS staff is competitive for your region?

- (33%) Yes
- (33%) No
- (33%) Not sure

Have any of your GIS personnel expressed dissatisfaction with their salary or benefits?

- (52%) Yes
- (48%) No

If you answered “yes” to the question above, what were their main concerns? (Summary of responses):

- **Low Salaries and Lack of Competitiveness** – GIS salaries are often too low, especially compared to the private sector and larger government entities. Compensation doesn’t reflect workload or responsibilities, leading to high turnover as employees gain experience and leave for better paying opportunities.
- **Workplace Limitations and Support Gaps** – Limited benefits, telework options, and overall support make retention challenging. Many roles lack sufficient funding, staffing, or recognition, further impacting long-term workforce stability.

Would information about statewide GIS salaries and benefits be helpful? (Summary of responses):

- 64% agree it would be helpful in adjusting their offerings
- Many respondents believe salary comparisons would help make the case for raises, especially when presenting to commissioners, HR, or leadership. Having clear data could provide the foundation for salary adjustments.

Appendix E: Survey Questions and Responses – Additional Comments

Are there any additional comments, considerations, or insights regarding the survey that you believe PEMA should take into account? (Summary of responses):

1. Funding Challenges and Leadership Awareness

- County commissioners and leadership need more awareness of PEMA NG911 GIS funds and the critical role of GIS in public safety
- Securing funding for salaries, staff expansion, and workload recognition remains difficult

2. Staffing and Compensation Issues

- Small and rural counties face challenges in attracting and retaining GIS professionals due to budget constraints and uncompetitive salaries
- Some counties rely on external consultants because they cannot offer competitive wages or benefits
- GIS professionals often share responsibilities across departments, with no dedicated staff solely managing NG911 data

3. GIS Impact Beyond NG911

- GIS contributes to planning, risk reduction, and disaster recovery going beyond just emergency response
- Many respondents think GIS should be recognized as essential for broader public safety initiatives and not just tied to 911 operations
- The evolving role of GIS, including the creation of “digital twins,” highlights its growing importance in public safety and infrastructure management