NORTH CAROLINA BENCHMARKING PROJECT REPORT 2024

Data and Decisions

UNC SCHOOL OF GOVERNMENT
North Carolina Benchmarking Project

BENCHMARKING 2.0
MUNICIPALITIES

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ABOUT THE REPORT

THE NORTH CAROLINA BENCHMARKING PROJECT was established in 1995 so that participating municipalities could compare service data and performance trends. In 2022, the Benchmarking Project relaunched as Benchmarking 2.0 with a new emphasis on collaboration and relationship-building. Benchmarking 2.0 offers revised framework metrics, streamlined data collection, an interactive online dashboard, and intensive in-person performance strategy sessions.

CURRENT PARTNERS: Apex, Asheville, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Holly Springs, Raleigh, Salisbury, Wake Forest, Wilson, and Winston-Salem.

SERVICES: Asphalt Maintenance and Repair, Building Inspections, Central Human Resources, Emergency Communications, Fire Service, Fleet Maintenance, Parks and Recreation, Police Service, Solid Waste Management, Wastewater Service, and Water Service.

INTERACTIVE DASHBOARD: Every October, the School of Government receives data from its partners through the Benchmarking 2.0 Data Collection Tool. The School audits the data then uploads it to the interactive dashboard by November 1 so that service departments across the state can use it to analyze and compare in-depth data and performance trends. The dashboard includes an array of easy-to-use features that make it possible to apply data normalization and calculate percentages, averages, and confidence intervals across comparison units. Informative, detailed graphs can be downloaded as shareable PDFs. Visit the Benchmarking 2.0 website to access the interactive dashboard.

PERFORMANCE STRATEGY SESSIONS: In November, the School brings service department officials from participating municipalities together (one service at a time) to discuss data trends, strategies, challenges, and effective solutions. In these sessions, we analyze data, identify and address current challenges, and share best practices and innovations. These sessions help the participating service departments understand and improve their organizational performance by engaging in peer-to-peer learning and networking.

BENCHMARKING REPORT: This report is a compilation of information and ideas exchanged during our November 2023 Performance Strategy Sessions. Its purpose is to help local governments understand performance metrics, their significance, and how they can be used to enhance the efficiency and effectiveness of service departments. In addition, the report provides insights into the practical use and implications of performance management. It includes concrete examples that illustrate how performance metrics can be used to optimize the efficiency and effectiveness of various service departments.

By simplifying complex concepts into actionable strategies, we aim to equip decision-makers with the necessary tools to drive tangible improvements in service delivery.

The practical application of these strategies can empower local governments to identify successes and areas for improvement, implement targeted interventions, and ultimately elevate the overall performance of service departments in their respective jurisdictions.

Please click here to become a Benchmarking 2.0 partner.

BENCHMARKING 2.0 PARTNERS

ACKNOWLEDGMENTS

We would like to thank David Ammons, Dale Roenigk, and Bill Rivenbark for their previous work on the North Carolina Benchmarking Project and for their steady guidance and support throughout its relaunch. Special thanks go to Willow Jacobson, Crista Cuccaro, Jeff Welty, Ahmed Rachid (AR) El-Khattabi, Christine Moore, and Chief Will Potter for facilitating the Benchmarking 2.0 performance strategy sessions.

We greatly appreciate the Benchmarking Project steering-committee members for their ongoing support and feedback. Their sincere commitment and generous contribution of ideas and time were crucial to the project's redesign.

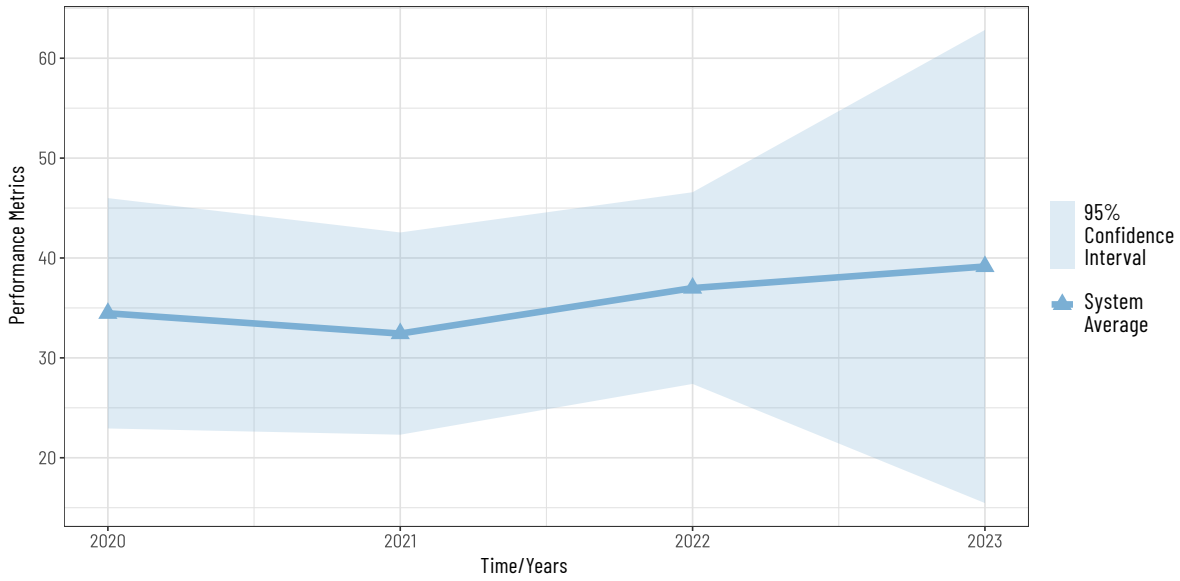
Finally, we are grateful to the two hundred and thirty service-department professionals who participated in the November 2023 performance strategy sessions. Their remarkable passion for public service, eagerness to gain and share information, and innovative energy provided the foundation for this project's success.

CONTENTS

ABOUT THE PERFORMANCE GRAPHS

The statistical graphs in this report track service and performance trends across North Carolina municipalities and are available to the public at the Benchmarking 2.0 website. Performance metrics appear on the y-axis (vertical line) and time/years on the x-axis (horizontal line). The average performance of all the Benchmarking partner municipalities is represented by the blue line, and the shaded area represents a 95 percent confidence interval. Users can access all of the data in this report and generate their own specialized performance graphs on the Benchmarking Dashboard.

Sample Graph



Metric Definitions
Relevant terms for each graph are defined in this area.

ASPHALT MAINTENANCE AND REPAIR

Photo by Volodymyr. stock.adobe.com

IN NOVEMBER 2023, asphalt maintenance officials from the Benchmarking 2.0 partner departments gathered at the School of Government to discuss critical topics such as funding allocation, data collection methods, recruitment and retention strategies, organizational structure, and decision-making processes. The conversation focused on enhancing the efficiency and effectiveness of asphalt infrastructure maintenance while addressing the challenges of adapting to evolving technological advancements and regulatory requirements. The session facilitated a comprehensive exchange of ideas and best practices among experts in the field.

THEMES DISCUSSED DURING THE SESSION

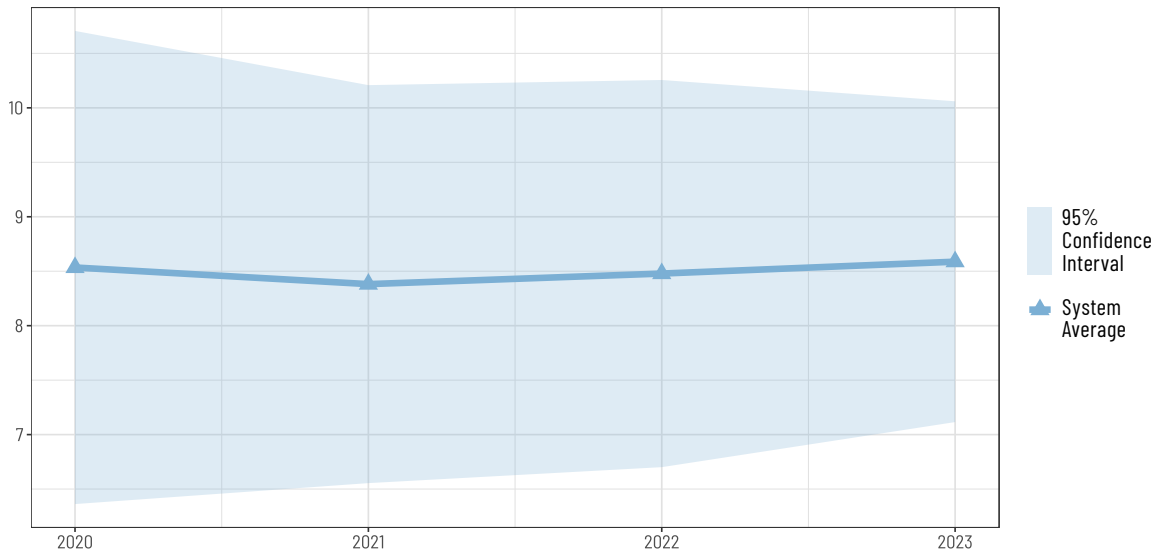
- Data Collection
- Decision-Making Processes
- Financial Allocation
- Organizational Structure
- Recruitment and Retention
- Technology Advancements

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

LANE MILES PER 1,000 PEOPLE

Importance: This graph helps asphalt maintenance departments assess the level of service required in their municipality, facilitating an understanding of infrastructure demands and maintenance needs.



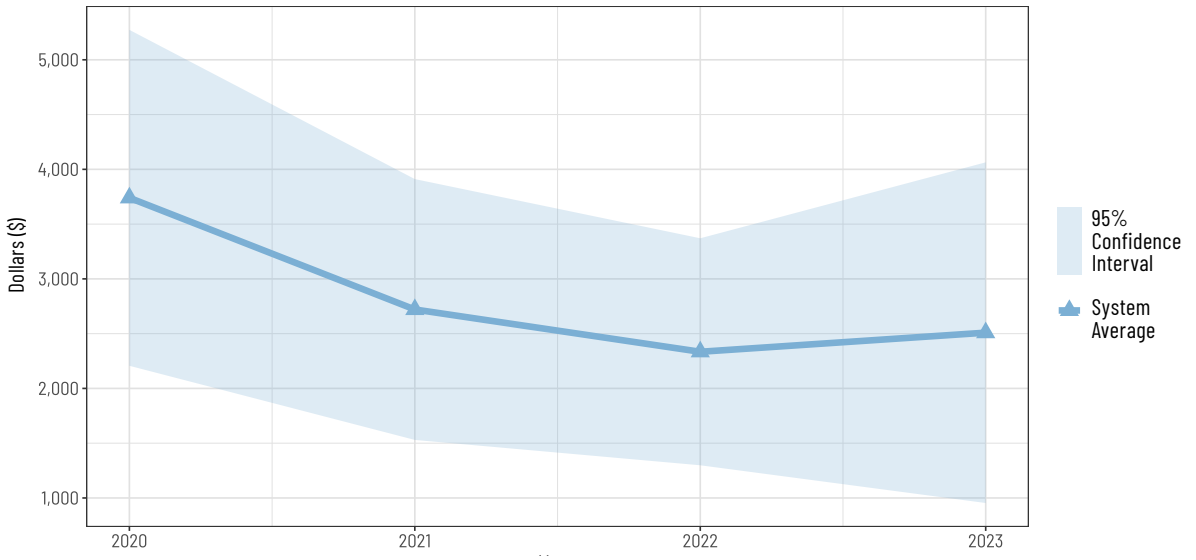
Metric Definitions

Lane Miles: Total number of lane miles maintained by a municipality in a fiscal year.
People: Based on the population according to the 2020 Census (× 1,000).

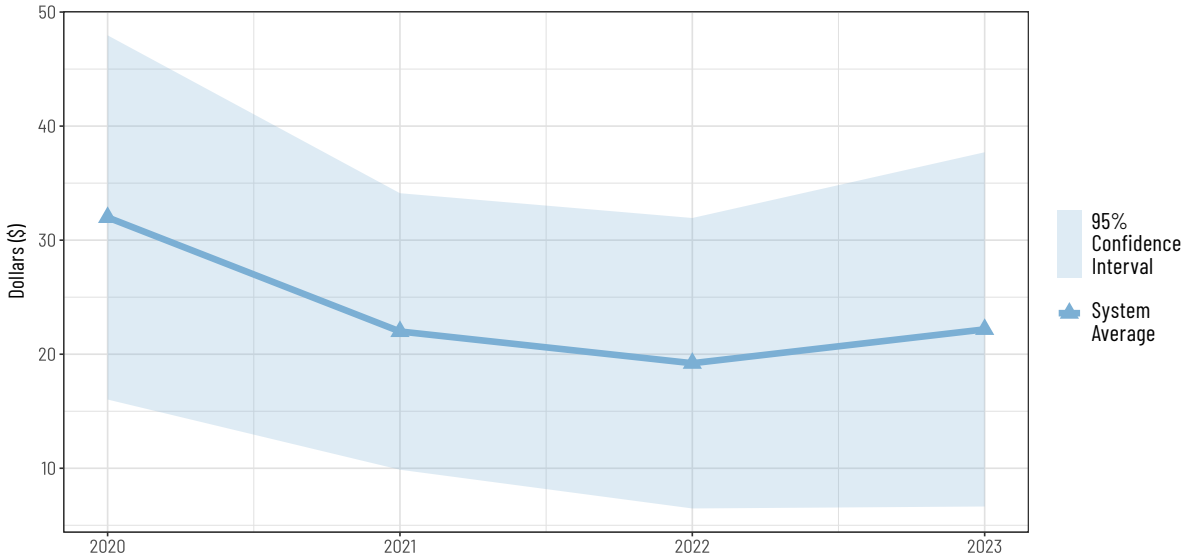
RESOURCE AVAILABILITY

Importance: These graphs are used to guide budget allocations, equipment purchase and repair, and hiring decisions. The data is instrumental in evaluating the cost-effectiveness of roadway maintenance and aids in planning to optimize road service delivery and maintenance operations.

A. Expenses per Lane Mile



B. Expenses per Capita



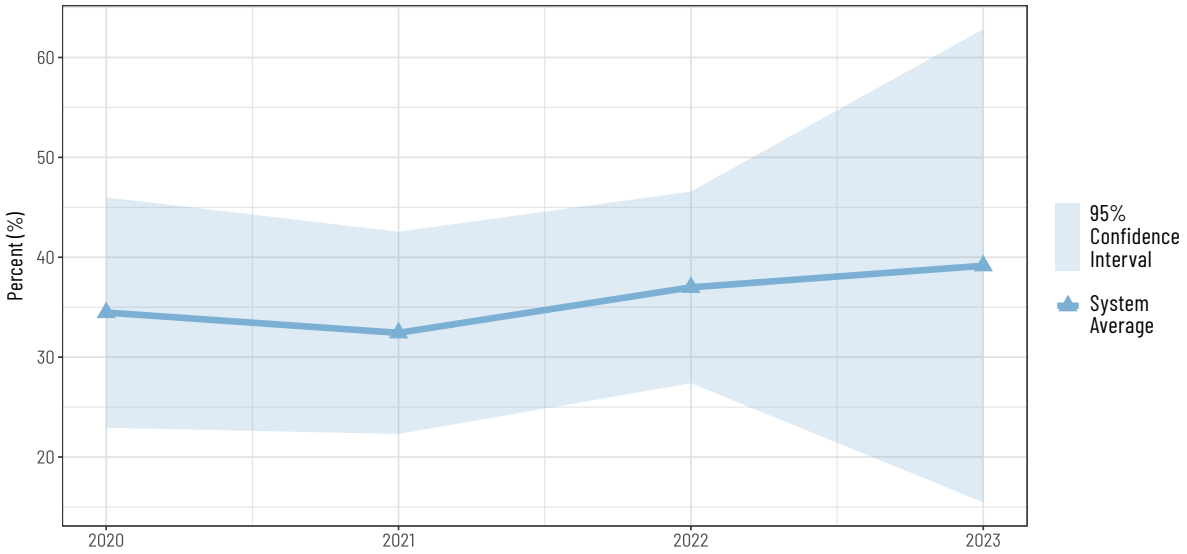
Metric Definitions

Expenses: Total personnel and operational expenses in a fiscal year.
Lane Miles: Total number of lane miles maintained by a municipality in a fiscal year.
Per Capita: Based on the population according to the 2020 Census.

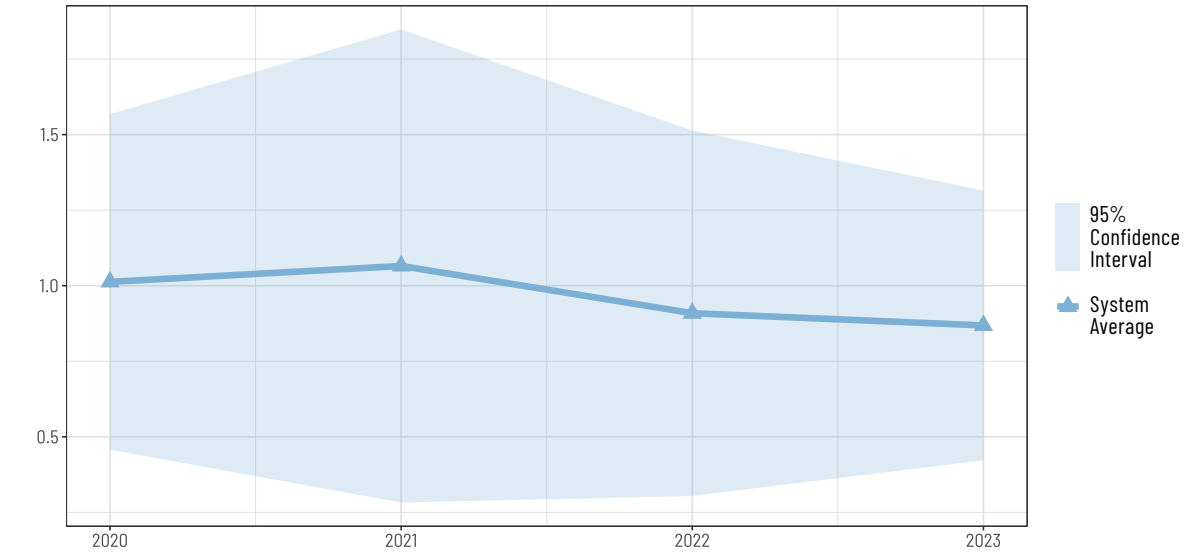
ROAD CONDITION

Importance: These graphs are used by asphalt maintenance departments to analyze Pavement Condition Index (PCI) and pothole data, helping them assess and prioritize maintenance efforts and decide on repair methods.

A. Lane Miles Rated 85 or Better, as a Percentage of Total Lane Miles



B. Potholes Reported per Lane Mile



Metric Definitions

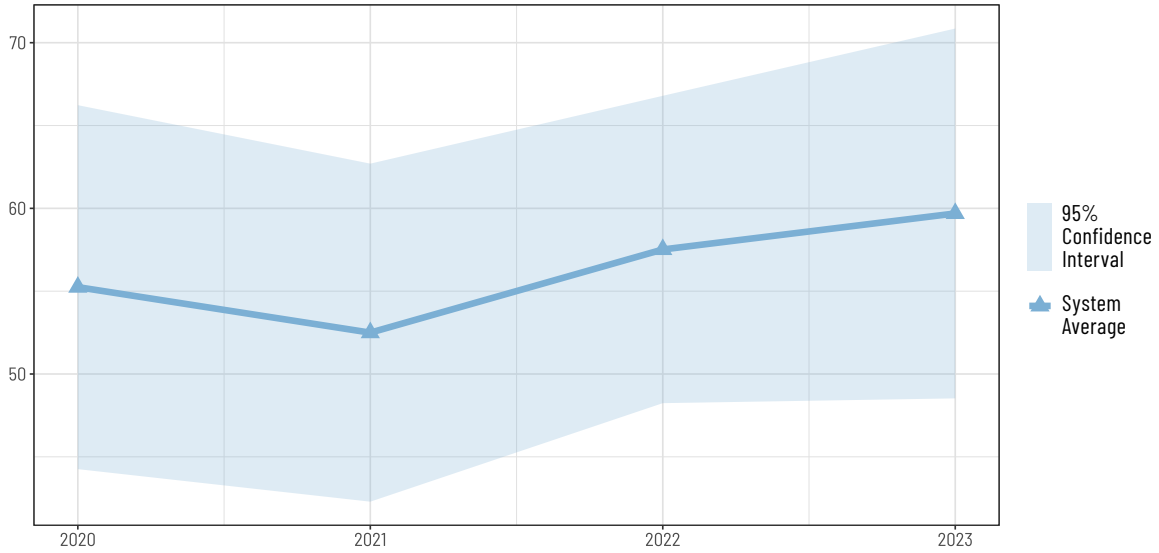
Lane Miles: Total number of lane miles maintained by the municipality in a fiscal year.

Potholes Reported: Total number of potholes reported to the municipality in a fiscal year. This number may include multiple reports of the same pothole.

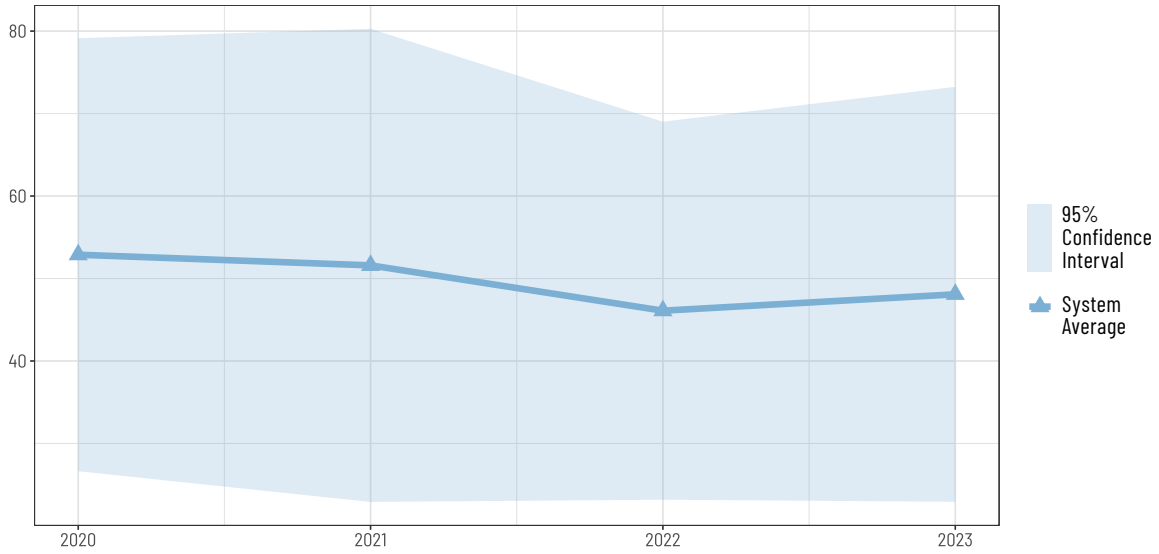
STAFFING

Importance: These graphs aid in assessing staffing requirements and making decisions on hiring, training, and retention policies. Understanding staffing levels enables departments to plan service provision effectively. For example, a department operating at 50 percent of its required staff capacity may need to prioritize between servicing utility cuts or preparing for road damage during winter months. Staffing shortages may also prompt a department to conduct a pay study to determine if compensation increases are necessary for recruitment enhancement.

A. Lane Miles per FTE



B. Potholes Reported per FTE



Metric Definitions

FTEs: Total number of asphalt maintenance personnel approved by the municipality as full-time equivalent (FTE) positions, filled or unfilled, in a fiscal year. This includes all regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Lane Miles: Total number of lane miles maintained by the municipality in a fiscal year.

Potholes Reported: Total number of potholes reported to the municipality in a fiscal year. This number may include multiple reports of the same pothole.

Asphalt Maintenance System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize two of them.

PCI SCORE MEASUREMENT: The partners discussed the varied methods they use to determine PCI scores. In his previous job, John Mullis (currently at Apex) captured the effects of time on valve bodies, storm drains, and alligator cracking with a GoPro camera over six months, uploading the footage to a private YouTube channel for analysis. Greensboro developed a deterioration curve and modeled their systems, predicting revenues up to twenty years into the future. Other partners explored artificial intelligence (AI) as a tool for assessing road conditions, with Charlotte finding success in its use of laser-equipped trucks to gather data, which AI then analyzed to rate the roads. Any issues that arose were easily identifiable and correctable. In contrast, one of the partners was dissatisfied with its contracted use of AI to generate PCI scores. Nevertheless, the partners agreed that direct comparisons are challenging because the data is based on what the contractor collects, and the main benefit of these tools is to monitor whether one's own rating is improving or declining over time.

RESIDENTIAL COMPLAINTS: The partners also discussed the challenges of properly logging resident complaints. Residents can submit complaints through various channels, including emails, apps, phone calls, elected officials, or council meetings. The absence of a centralized complaint process complicates the identification of hotspots and the prioritization of high-need areas. This issue is compounded by differences in community behavior regarding expectations of public services and familiarity with complaint mechanisms.

BUILDING INSPECTIONS

Photo by Kzenon, stock.adobe.com

IN NOVEMBER 2023, building inspection officials from the Benchmarking 2.0 partner departments gathered at the School of Government to tackle pressing challenges in their field. The session aimed to explore the use of data science techniques to address these challenges, focusing on building inspection systems and strategies such as permit issuance, plan reviews, budget and operations reporting, staffing, and fee/budget management. The officials discussed various issues, including workload management due to staffing constraints, the necessity of adjusting permit fees, and the potential for leveraging local educational institutions to train new talent. The discussion also touched on the efficiency and quality of plan reviews, the impact of technological and regulatory changes, and the strategic decisions required to ensure operational efficiency and public safety.

THEMES DISCUSSED DURING THE SESSION

- Fee Structures
- Permit Issuance
- Plan Review Processes and Standards
- Recruitment, Retention, and Training
- Reinspection Policies and Procedures
- Staffing Demands

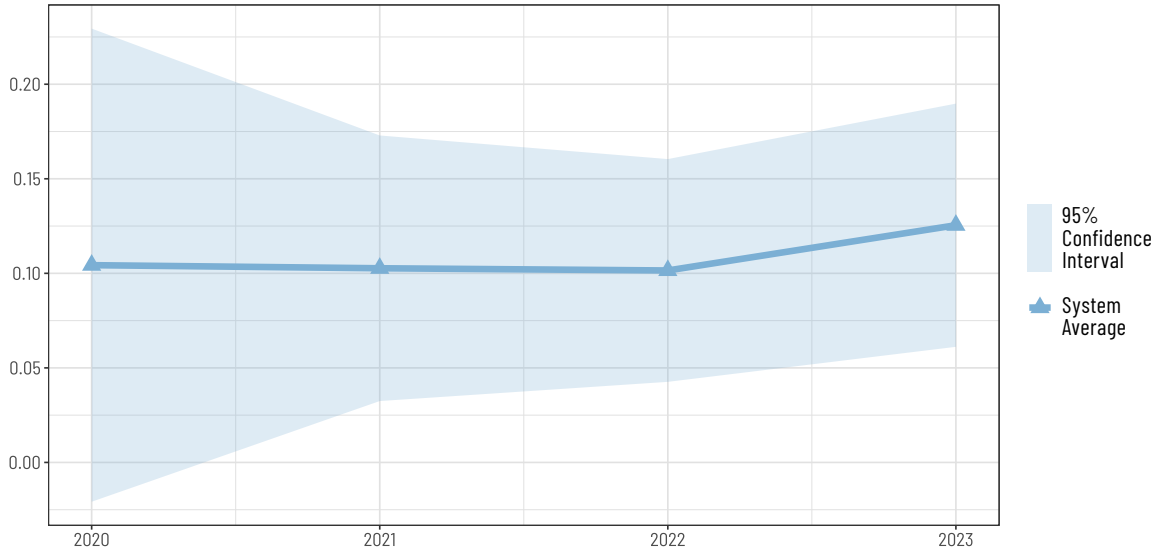
Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

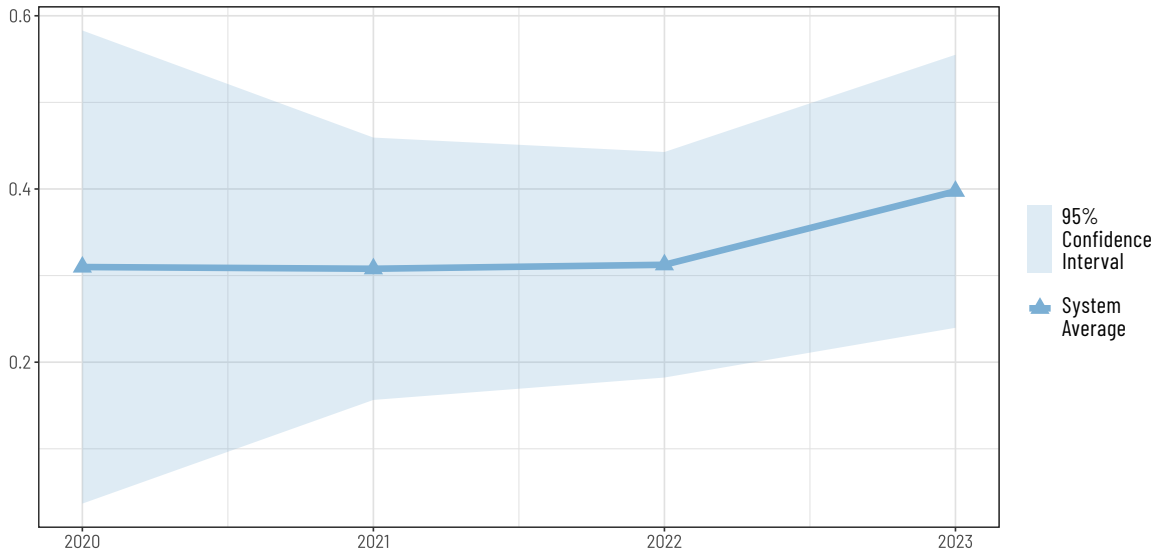
INSPECTIONS COMPLETED

Importance: These graphs identify the workload of building and inspection departments and track the expansion of municipalities. The metrics can be used to compare permit fees over time, analyze community policy changes and market trends by housing type, and provide population and census data for comparison to neighboring areas. The data, which is analyzed on an annual basis by the department, helps inform decisions related to staffing levels, operational expenses, staffing certification levels and training, technology, and infrastructure needs.

A. Total Building Inspections Completed per Capita



B. Total Inspections Completed per Capita



Metric Definitions

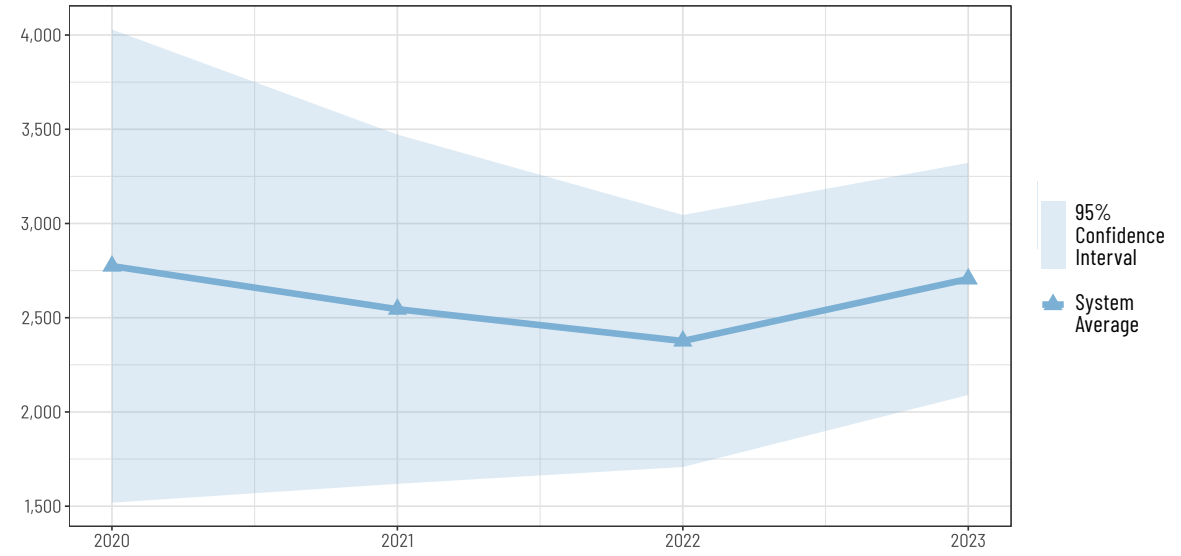
Per Capita: Based on the population according to the 2020 Census.

Total Building Inspections Completed: Each building inspection is counted separately, even if it is conducted concurrently with other inspections (e.g., electric, fire, etc.). An inspection is defined as visiting a job site to verify that the scope of work permitted is in compliance with the associated discipline (building) and applicable code. See Section 107 of the North Carolina Administrative Code for a list of required residential inspections.

Total Inspections Performed: Total number of inspections performed by the municipality in a fiscal year for all the trade groups, including residential and commercial building.

TOTAL INSPECTIONS PERFORMED PER FTE

Importance: This graph can be used to determine the workload of inspectors, which in turn helps in making decisions related to staffing levels, certification requirements versus needs, scheduling, leave requests, training, and technology investments. Additional data on upcoming retirements, employee satisfaction, and market trends are also considered when making these decisions.

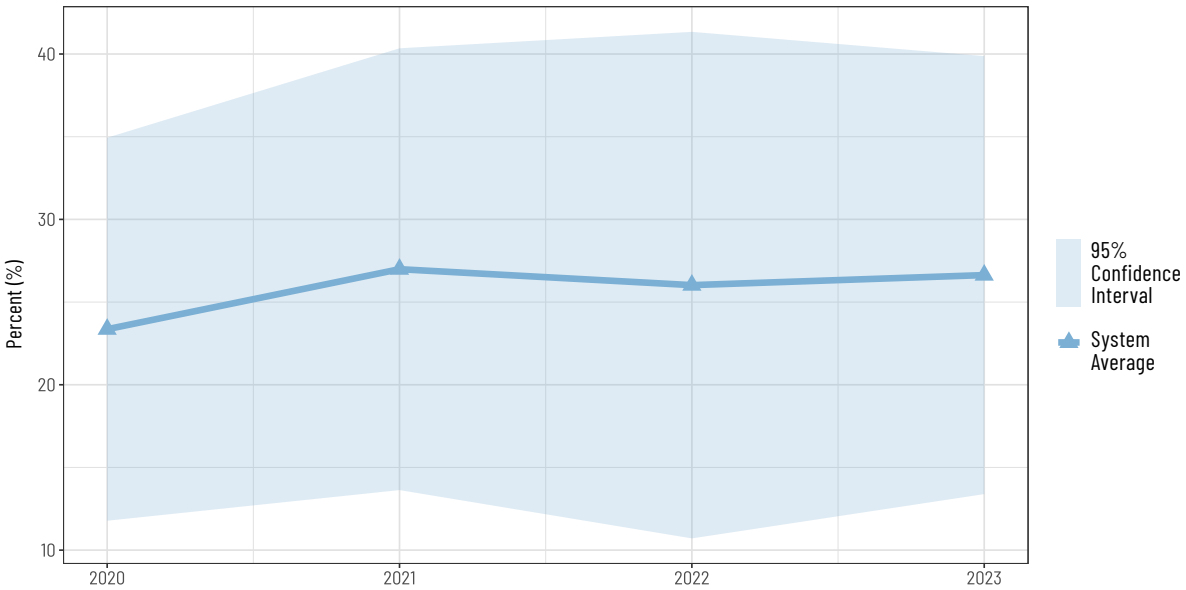


Metric Definitions

FTEs: Total number of full-time-equivalent (FTE) inspector positions, filled or unfilled, approved by the municipality for the fiscal year. This number includes all approved, regularly scheduled full-time and regular part-time positions eligible for full benefits. It does not include seasonal or part-time positions that are not eligible for full benefits. *Total Inspections Performed:* Total number of inspections performed by the municipality in a fiscal year for all the trade groups, including residential and commercial building.

REINSPECTIONS, AS A PERCENTAGE OF TOTAL INSPECTIONS

Importance: This graph aids in identifying patterns of inspection rejections. It prompts questions about which types of inspections are frequently rejected and which contractors face more rejections. It also assists in making decisions on the training of inspectors and applicants, improving communication with contractors, and getting clarity on interpreting and/or amending policies and procedures. Identifying a common point of failure can help clarify guidelines and improve up-front communication to prevent frequent rejections. Ultimately, the data helps increase the effectiveness of the inspection department.



Metric Definitions

Reinspections: The total number of reinspections conducted by a municipality in a fiscal year. A reinspection is defined as an inspection that occurs when an inspection fails and the inspector needs to return to the site. It does not include instances when an inspector revisits a site twice in a day for scheduling reasons or when a general contractor fixes issues during an inspection (x 100). *Total Inspections:* Total number of inspections performed by the municipality in a fiscal year for all the trade groups, including residential and commercial building.

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

PLAN REVIEWS

- Residential Plan Reviews
- Commercial Plan Reviews
- Zoning Plan Reviews
- Life Safety Reviews
- Median Processing Time for Residential Plan Reviews
- Median Processing Time for Commercial Plan Reviews

PERMITS

- Permits Issued for New Single-Family Dwellings
- Electric Permits Issued
- Permits Issued for New Attached Single-Family Dwellings
- Mechanical Permits Issued
- Permits Issued for New Commercial Buildings
- Plumbing Permits Issued
- Apartment Units in Newly Permitted Buildings
- All Other Permits Issued
- Permits Issued for New Manufactured Dwellings
- Median Processing Time for Residential Permits
- Permits Issued for Additions, Alterations, or Conversions of Detached Single-Family Dwellings
- Median Processing Time for Commercial Permits
- Permits Issued for Additions, Alterations, or Conversions of Attached Single-Family Housing
- Stop-Work Orders Issued for Non-Permitted Work
- Permits Issued for the Additions, Alterations, or Conversions of Commercial Buildings

STAFFING

- Level 3 Building Inspectors
- Approved Plan Review Manager FTEs
- Level 3 Electric Inspectors
- Approved Plan Review Temp-Staff FTEs
- Level 3 Mechanical Inspectors
- Approved Inspector FTEs
- Level 3 Plumbing Inspector
- Approved Inspections Supervisor FTEs
- Approved Permit Technician FTEs
- Approved Inspections Manager FTEs
- Approved Permit Tech Supervisor FTEs
- Approved Inspections Temp-Staff FTEs
- Approved Permit Temp-Staff FTEs
- Approved Admin FTEs
- Approved Plan Reviewer FTEs
- Approved Admin Temp-Staff FTEs

Building Inspections System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize five of them.

PERMITS: The total number of trade work permits and sub-permits issued by a municipality in a fiscal year for electrical, mechanical, and plumbing work, including specialty permits like HVAC and water-heater change-outs, serves as an indicator of staffing needs and demand levels. Many municipalities face challenges in managing their workloads due to staff licensing and contractor availability for specific permits and inspections. Decisions need to be made on whether to raise permit fees to cover costs, increase pay rates, or hire additional staff. Gaining stakeholder approval through association meetings

is vital for buy-in. This data also helps in determining the required number of plan reviews. Analytical comparisons over time, market trends, housing types, community policy changes, population, and census data, as well as peer comparisons, are vital. Assessing the qualifications of applicants is crucial as is determining whether permit fees should be adjusted for each section, setting appropriate pay rates, and identifying staffing needs. While most departments issue permits per building and not for individual apartment units, Greensboro permits both the building and each of its units, with separate addresses garnering individual permits. For spaces under 1,000 square feet, one inspector conducts all inspections, ensuring that occupancy intentions are clear and construction areas are not fragmented. Certificates of Occupancy (COs) are issued floor by floor, streamlining the process and maintaining consistency.

PLAN REVIEWS: These reviews evaluate a structure's design and construction, ensuring compliance with the site-specific North Carolina Residential Code. As an indicator of workloads and staffing levels, distinguishing between residential and commercial reviews is crucial since they have distinct challenges and needs. Decisions need to be made on whether to raise permit fees to offset costs, increase pay rates, or add staff. As with permits, gaining stakeholder approval through association meetings is vital for buy-in. The quality of the review and the inefficiency of less-experienced reviewers are important considerations. It's also necessary to determine if reviews are delayed for legitimate reasons or from an excess of caution. Training emerged as a critical issue for the Benchmarking partners, prompting a closer examination of review feedback.

STAFFING: Recruitment and retention were major challenges discussed by the municipalities, with each sharing strategies to address the issue. Greensboro offers sign-on and retention bonuses for specific trades, providing a 5 percent retention bonus for staff committing to three years and a 5 percent pay increase for each certification level achieved up to level three. Apex similarly offers a 2 percent increase per certification level and a 5 percent position change increase. Apex successfully hired and trained a high-school graduate who achieved her level-one certification within a year (**watch the full interview here**). The participants discussed partnering with local community colleges for training to maintain customer service while upskilling motivated individuals. Generating interest in the field is crucial, as many young people remain unaware of its opportunities. Local initiatives are needed to demonstrate the industry's value and its potential for good earnings. For example, Winston-Salem hosts an academy on Saturdays, attracting high-school students who are not inclined to go to college. It is also important to find ways for experienced or retired professionals to transfer their knowledge as traditional hiring models become outdated. Experienced construction workers who desire a slower pace could provide technical training that would help infuse the industry with fresh talent. The aim is to develop a workforce that actively seeks new entry-level employees by shifting toward innovative hiring practices.

REINSPECTIONS: The Benchmarking partners discussed the process of reinspections. It was noted that Asheville does not charge for the first reinspection, but subsequent reinspections come with a fee. If an issue is not resolved after a fourth reinspection, then the state licensing board often gets involved. In addition, Asheville does not consider subsequent visits during the same business day as multiple inspections but as a single inspection.

FEES/BUDGET: Various departments use different methods to determine the fee for building inspections. Apex charges a fee per square foot, adjusted according to occupancy class. Greensboro bases its fee on a comparison between the contractor's evaluation and the International Code Council (ICC) standards, charging the higher of the two. Asheville implements a planning review fee. Other departments employ tiered fee systems based on a building's evaluation. To manage its finances, Greensboro relies on monthly budget and operations reports, which track revenue and expenses. The required cost recovery rate is 90 percent in Greensboro and 80 percent in Asheville, with fees adjusted upward if it falls below these thresholds.

Photo by djrandco, stock.adobe.com

IN NOVEMBER 2023, human resources (HR) officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss key strategies related to budget analysis, turnover rates, hiring practices, performance review methods, and more. The participants noted that their most critical decisions focus on using equitable compensation for recruitment and retention purposes, evaluating the time it takes to hire employees compared to industry standards, and improving performance-evaluation accuracy. The challenges that were identified include the necessity of trustworthy performance data, an understanding of generational pay expectations, and the effective implementation of career development paths. The partners emphasized the importance of data-driven decision-making that includes benchmarking, turnover analysis, and an assessment of the impact of positions. There was general agreement that human resources departments need a better understanding of departmental performance, more efficient hiring processes, and a strategic use of benefits to improve employee satisfaction and retention.

THEMES DISCUSSED DURING THE SESSION

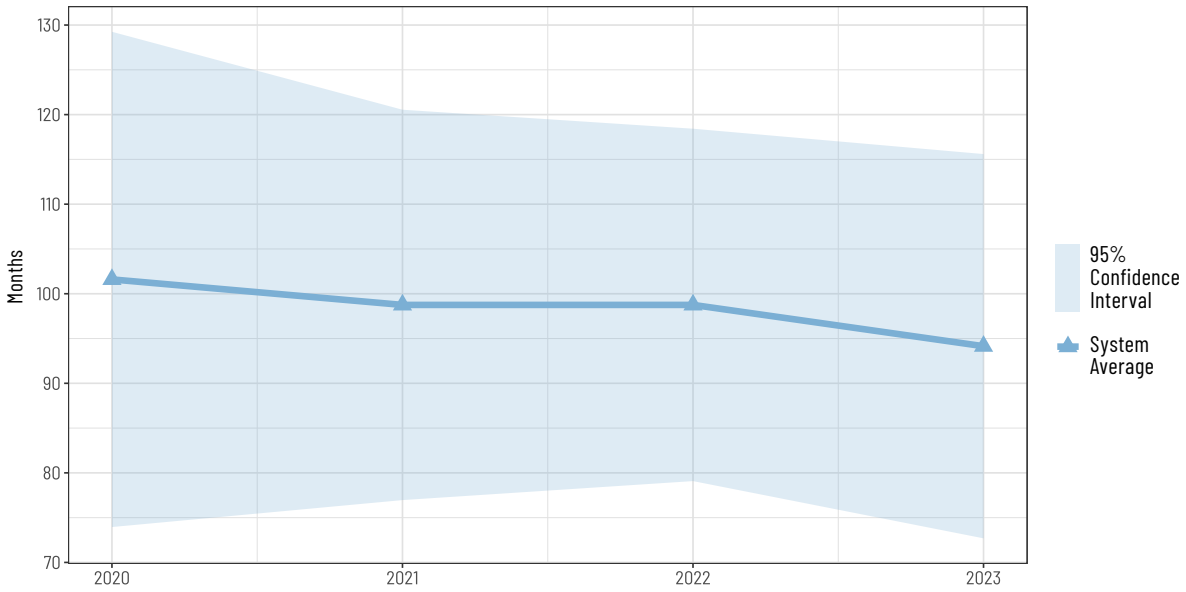
- Access to Reliable Data
- Career Development
- Data Utilization in HR Decision-Making
- Performance Evaluation
- Recruitment and Retention Strategies
- User-Friendly Data Visualizations

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

AVERAGE LENGTH OF SERVICE

Importance: This graph tracks employee longevity, which is an important factor in reducing employee turnover and ensuring that institutional knowledge is retained. Managers and executives use this data to make decisions about job positions, leadership roles, organizational structure, compensation (including longevity pay), succession planning, and retirement. Human resources departments supplement this data with "stay interviews," which provide insights into why employees choose to stay with an organization, and other organizational data, trends, and generational considerations.

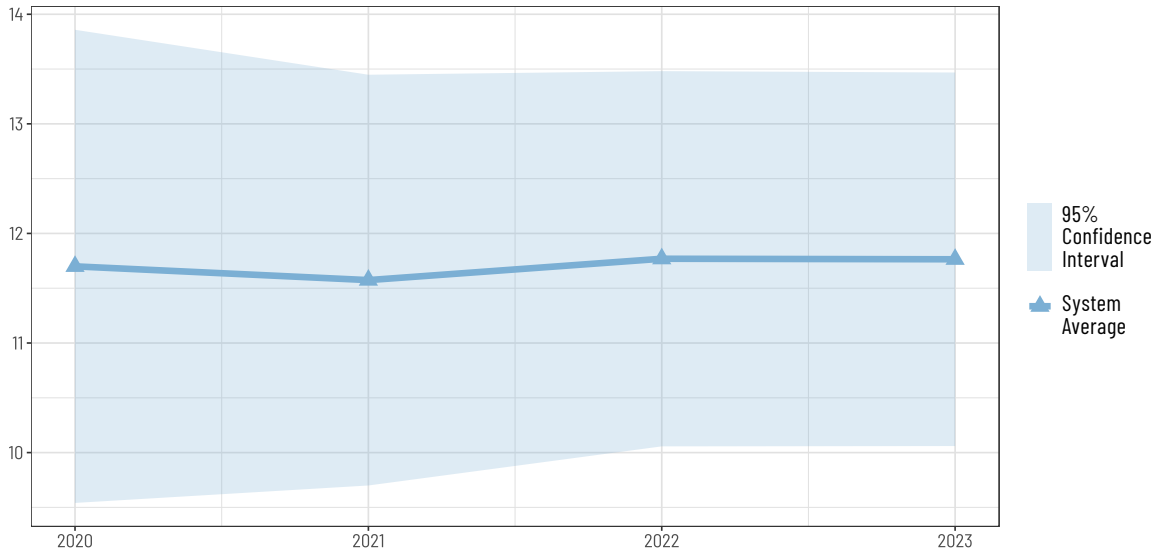


Metric Definition

Average Length of Service: The average length of service, in months, for all authorized full-time municipal government employees from the date of most recent hire.

APPROVED FTEs PER 1,000 PEOPLE

Importance: This graph is useful in assessing the staffing capacity of a municipal government. By analyzing this ratio, HR departments can gain insights into the distribution and efficiency of the workforce, identify any potential staffing disparities between departments, and optimize resource allocation across various municipal functions.



Metric Definitions

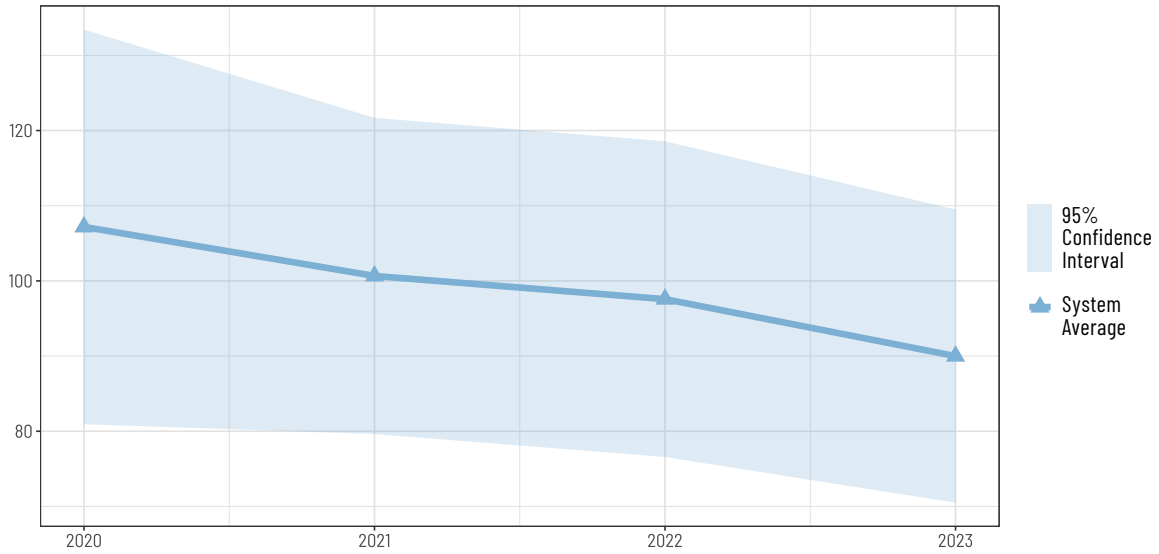
Approved FTEs: Total full-time equivalent (FTE) positions, filled or unfilled, approved for city government for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

People: Based on the population according to the 2020 Census (x 1000).

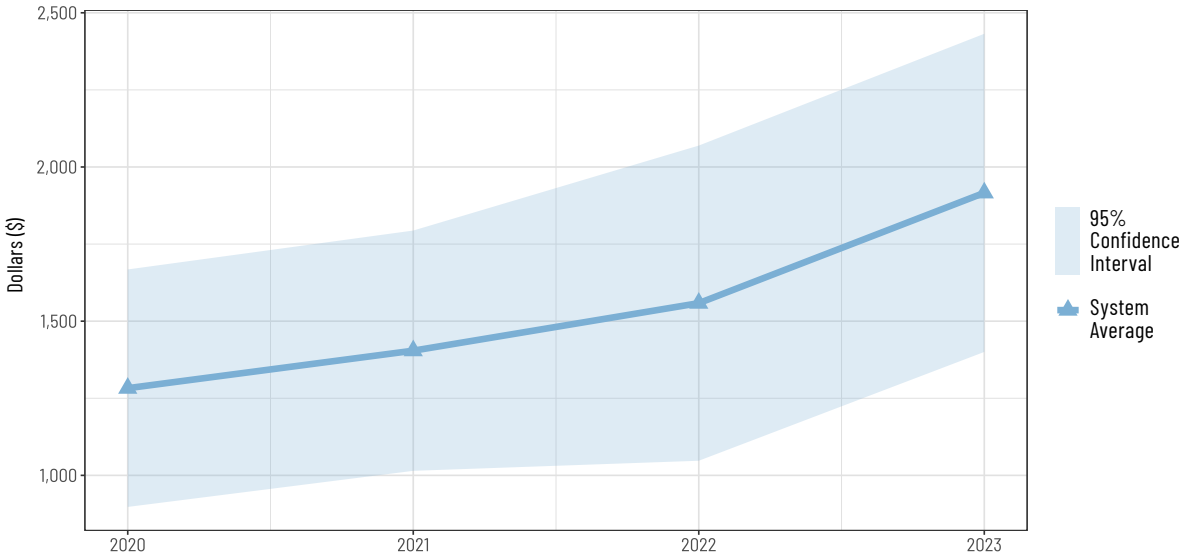
RESOURCE AVAILABILITY

Importance: These graphs offer an overview of HR efficiency and workload within a municipal workforce and help identify any potential staffing imbalances that may exist. For example, the first graph shows how many municipal employees each HR employee handles. By analyzing these metrics, decision-makers can assess the workload impact on HR operations and make strategic decisions to optimize HR functions to meet a municipality's operational needs and financial goals more efficiently.

A. Approved Municipal FTEs per HR FTE



B. Expenses per Approved Municipal FTE



Metric Definitions

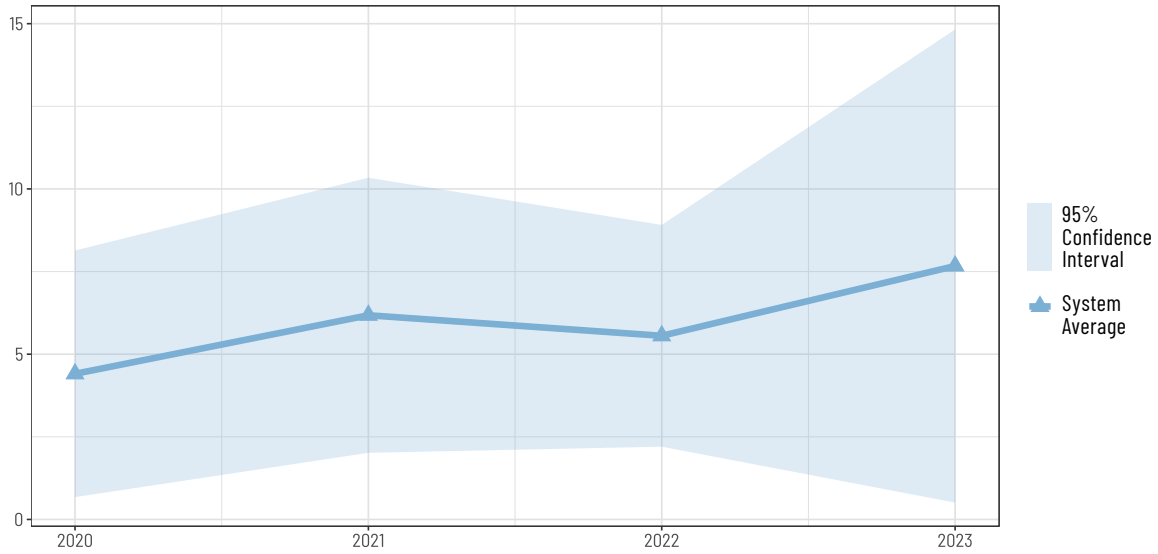
Approved Municipal FTEs: Total full-time equivalent (FTE) positions, filled or unfilled, approved for city government for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Expenses: Total amount of HR personnel and operational expenses in a fiscal year.

HR FTEs: Total full-time equivalents (FTEs), filled or unfilled, approved for HR for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

GRIEVANCES PER 1,000 FTEs

Importance: This graph provides important information about the frequency and nature of employee complaints within a municipal workforce. It helps HR departments better understand employee concerns and differentiate between valid complaints. By further analyzing the data according to grievance type or service department, HR can identify the underlying causes of issues and implement targeted interventions, such as training for supervisors or awareness campaigns. This analysis is crucial for effectively addressing workplace issues and promoting a positive work environment.



Metric Definitions

FTEs: Total full-time equivalents (FTEs), filled or unfilled, approved for city government for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits) (x 1000).

Grievances: Number of formal, written grievances filed by municipal government employees during a fiscal year.

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

RECRUITMENTS

- Full-Time Recruitments
- Part-Time Recruitment
- Temporary Recruitments

SEPARATIONS

- Full-Time Employee Separations
- Voluntary Part-Time Separations
- Part-Time Employee Separations
- Full-Time Retirements
- Voluntary Full-Time Separations
- Part-Time Retirements

Central Human Resources System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize three of them.

BENEFITS AND EMPLOYEE WELL-BEING: The partners discussed benefits and their impact on employee well-being. Apex highlighted their Peak Lifestyle Allowance—which provides each employee with $1,200 annually to use toward expenses related to physical, emotional/mental, and financial well-being—emphasizing the department's commitment to supporting diverse employee needs. Concerns were raised about the tensions that can surround the hiring of new employees at higher pay rates than the existing employees received, indicating a need to reassess compensation structures and fairness in hiring practices. Additionally, the partners discussed the utility of flexible scheduling and remote work policies, highlighting a growing acceptance and adoption of technological advancements and shifting workplace norms. Many roles can now be performed effectively anywhere there is an Internet connection. Embracing work-from-home arrangements not only expands the talent pool by removing geographical constraints but also promotes inclusivity and diversity within the workforce.

LONGEVITY PAY: Longevity pay is a significant factor in retaining talent and gauging organizational health. The participants discussed trends and generational considerations and questioned whether traditional pay structures align with modern workforce expectations. There was consensus among the partners that structured career progression and planning is needed. A Chapel Hill partner emphasized the importance of broadening career progression opportunities across various job classes, which is a departure from historical practices that were more linear. This discussion underscored a collective desire to adapt compensation and career advancement strategies to meet evolving needs and expectations.

PROCESS OPTIMIZATION: The participants emphasized the importance of streamlining workflows and automating repetitive tasks to enable HR professionals to focus on strategic initiatives that propel an organization forward. By implementing efficient HR processes, organizations can save time and reduce costs by minimizing resource wastage and maximizing productivity. Additionally, streamlined systems ensure compliance with regulations and internal policies, mitigating organizational risk. With timely and accurate data, HR teams can make informed decisions that align with objectives, thereby fostering a positive employee experience and providing seamless access to services. Multiple partners highlighted payroll as a significant challenge and expressed a shared aspiration for a single, integrated system to enhance efficiency and effectiveness in HR operations. The Asheville partners stressed the importance of evaluating the talent pool and trends within different departments, suggesting a more strategic approach to recruitment and talent acquisition. The partners agreed that there is a need to integrate information technology (IT) and HR departments to optimize timely access to large amounts of data.

Photo by Rokas, stock.adobe.com

IN NOVEMBER 2023, emergency communications officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss key topics such as technological advancements in emergency response, including "NextGen 911" and live video support for callers. The session delved into the challenges of recruitment and retention, highlighting the need to clarify the role of telecommunicators and manage workplace stress. Funding constraints and staffing shortages were also key issues, with participants emphasizing the importance of utilizing data to inform service delivery and resource management. The discussion touched on the increasing demand for emergency services, the use of technology for improving response times, and the necessity of ongoing data analysis and benchmarking to navigate operational challenges in emergency communications.

THEMES DISCUSSED DURING THE SESSION

- Caller Interaction
- Communication
- Response Time
- Recruitment and Retention
- Technology

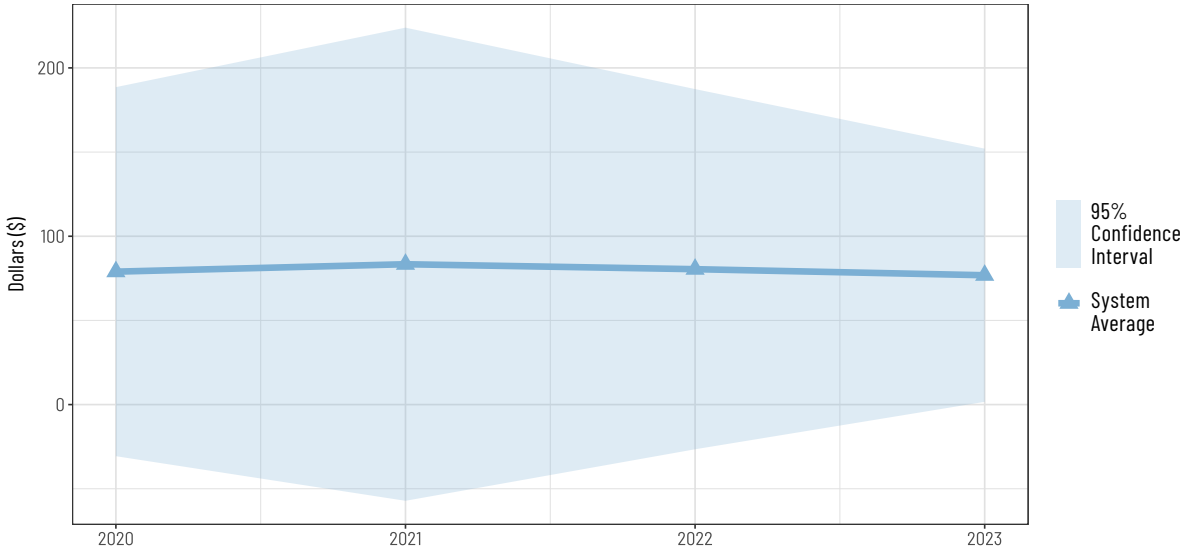
Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

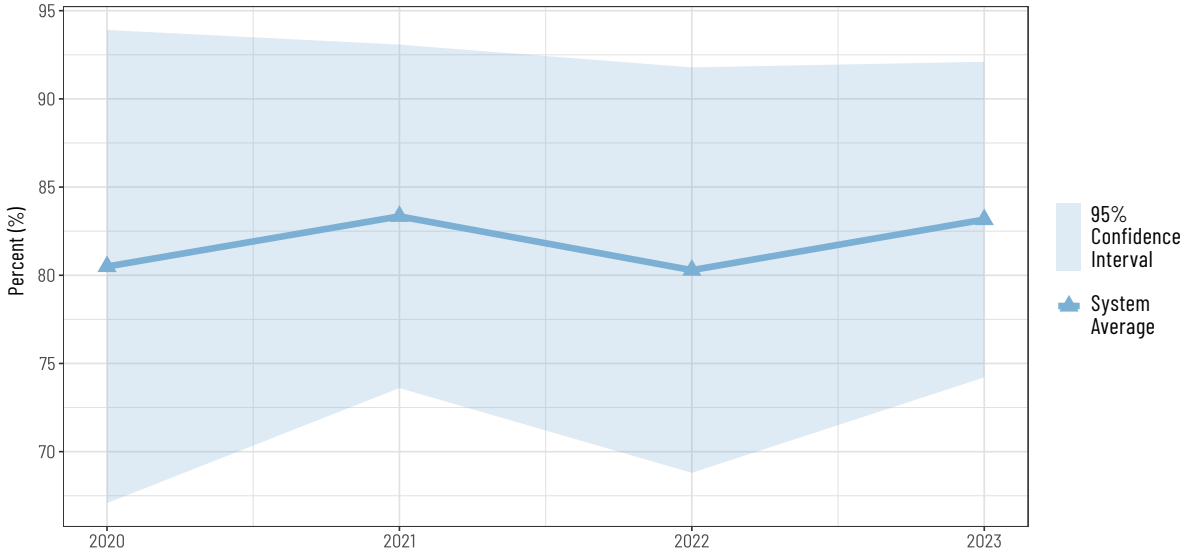
RESOURCE AVAILABILITY

Importance: These graphs provide a basis for making decisions that are informed by budgetary considerations as well as equipment needs, staffing issues, and policies. By analyzing the percentage of expenses spent on personnel and the expenses incurred per call, an emergency communications department can evaluate its flexibility and make necessary changes to its operations.

A. Total Expenses per 911 Call



B. Personnel Expenses as a Percentage of Total Expenses



Metric Definitions

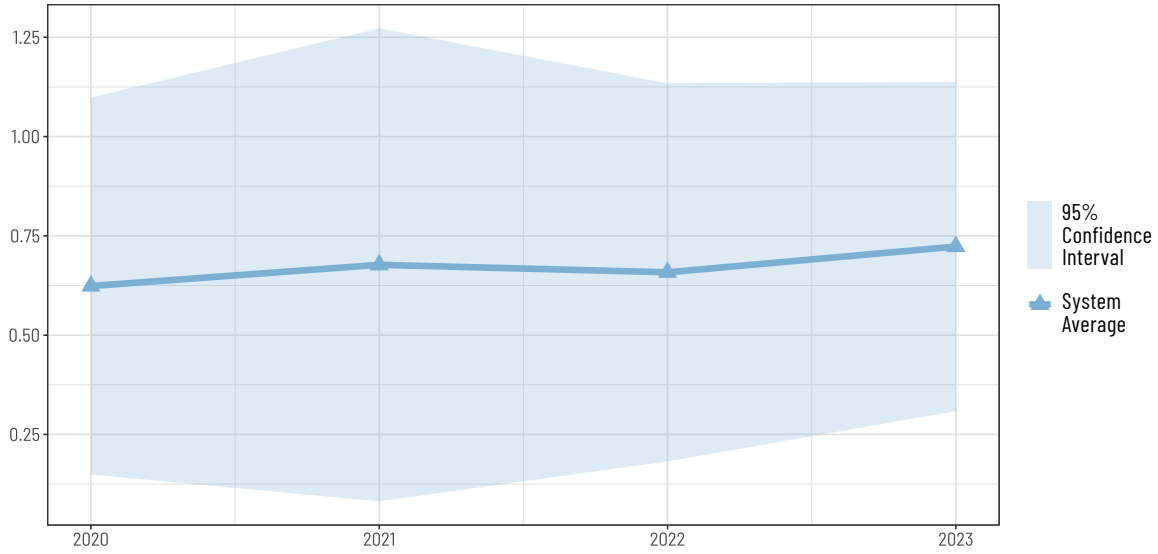
911 Calls: Total number of 911 phone calls received in a fiscal year.

Personnel Expenses: Total amount of personnel expenses for an emergency communications department in a fiscal year. This amount includes gross earnings (all salaries and wages) of permanent and temporary employees subject to the Federal Insurance Contributions Act (FICA), the unit's share of all overtime and holiday pay, longevity pay, allowances, supplemental retirement income, Social Security taxes, retirement contributions, hospital and medical insurances, disability insurances, unemployment compensation, workers' compensation contributions, deferred compensation, and other benefits.

Total Expenses: Total operational and personnel expenses in a fiscal year.

911 CALLS PER CAPITA

Importance: The information in this graph is analyzed annually and discussed with relevant stakeholders, such as the public; emergency communications staff; police, fire, and EMS staff; administrative staff; and technology vendors. Based on this data, emergency communications departments make decisions on technology upgrades, dispatch improvements, and the distribution of resources by service, area, time, and shift schedules.

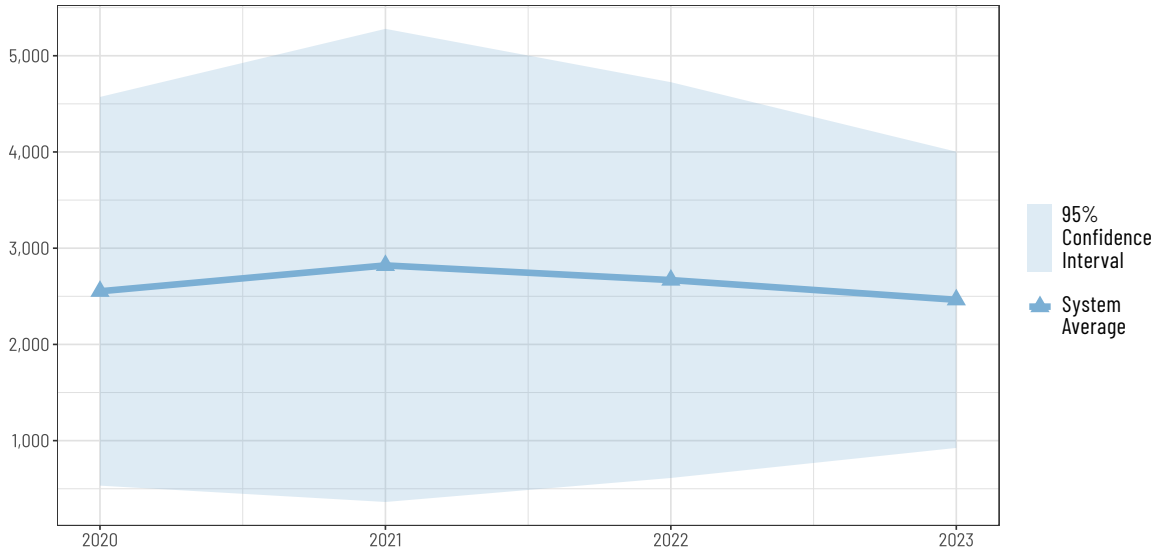


Metric Definitions

911 Calls: Total number of 911 phone calls received in a fiscal year. *Per Capita:* Based on the population according to the 2020 Census.

911 CALLS PER TELECOMMUNICATOR FTE

Importance: This graph highlights critical staff shortages and helps emergency communications departments make decisions regarding hiring, retention, and turnover. In addition to this data, emergency communications departments also consider vacancy rates and length of vacancies, overtime and pay trends, retirements, spending trends in previous years (up to five years), and adopted budget versus actual spending. This information shapes decisions regarding staffing levels, recruitment, succession planning, pay grades, and merit/cost of living (COLA) adjustments.



Metric Definitions

911 Calls: Total number of 911 phone calls received in a fiscal year. *Per Capita:* Based on the population according to the 2020 Census.
Telecommunicator FTEs: Total number of telecommunicator personnel approved for full-time equivalent (FTE) positions, filled or unfilled, in a fiscal year. This number includes all regularly scheduled full-time and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

RESPONSE

- Percent 911 Calls Answered within 10 Seconds
- Median Time from Answer to Dispatch for High-Priority Law Enforcement Calls
- Percent 911 Calls Answered within 20 Seconds
- Percent High-Priority EMS Calls Answered and Dispatched within 90 Seconds
- Percent Admin Calls Answered within 20 Seconds

TYPES OF CALLS DISPATCHED

- Calls for Service Dispatched
- Calls Dispatched to EMS Resources
- Calls Dispatched to Fire Resources
- Calls Dispatched to Law Enforcement Resources

STAFFING

- Approved NC 911 Board-Funded Seat Count
- Call-Taking-Only Positions
- Non-Funded Seat Count
- Dispatch Positions

Emergency Communications System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize four of them.

RECRUITMENT AND RETENTION: Emergency communications departments are facing a major challenge with low staffing due to high turnover and gaps. To push recruitment, they have been using video and social media advertisements. Unfortunately, many applicants do not fully understand the role of telecommunicators. Some of the partners are concerned about the expenses involved in broad public advertising and have targeted their campaigns to places where people gather, like gyms, game rooms, and bars, rather than to online recruitment sites like LinkedIn. Some Benchmarking partners give potential recruits the opportunity to shadow current telecommunicators to gain a better understanding of the job requirements.

CALLER INTERACTIONS: Over the past few years, some callers have become increasingly aggressive when calling for assistance, which causes stress to employees and leads to understaffing. Some callers who fear a delay in receiving services do not understand why they need to answer certain questions. It is important for telecommunicators to

inform callers up-front about the questions they will be asked and reassure them that answering these questions will not delay their service. Before asking any questions, telecommunicators can also inform callers that officers are on their way, so that callers know help is coming.

REDUCING TELECOMMUNICATOR STRESS: Telecommunicators have a highly stressful job, and their well-being is a top priority. To address this issue, different measures have been implemented in different cities. Greensboro conducts surveys to assess the quality of their 911 call service. The feedback from these surveys has been overwhelmingly positive, which helps to improve morale as telecommunicators usually don't get to hear good feedback. Apex has a fully funded, anonymous peer support center where telecommunicators can discuss and deal with stressful calls or situations. Holly Springs encourages staff, who typically sit for long hours, to use up to one hour a day, in addition to their lunch period, for physical fitness. Holly Springs also has a peer support program, which is supported by a licensed clinical psychologist who provides trauma-informed care for officers, telecommunicators, and their families. The department provides these sessions so that employees and/or their family can use the service anonymously and without worrying about its cost.

TECHNOLOGY: Keeping up with and learning new technologies can be challenging, even though it's beneficial in the long run. There are also costs involved in replacing aging technology and ensuring that new systems work properly. Some partners discussed using AI-supported platforms with chatbots to handle higher call volumes, but they recognize that such systems can be prohibitively expensive. The partners also discussed using Prepared Live (text with photos and videos) and live 911 (calls) for emergencies. Apex uses RapidSOS and Prepared Live feed, which allows callers to take and send a live video, for example, in a shooting situation. Live videos can help responders assess and get to emergency situations quickly and safely. The service is mostly free, though there is a small fee for some features. Apex also employs a location service with RapidSOS that allows responders to access live streaming from police body cameras. North Carolina recently completed a statewide transition to a NextGen 911 system, which allows 911 centers to track callers from their exact location.

Photo by Patricia Marks, stock.adobe.com

IN NOVEMBER 2023, fire service officials of the Benchmarking 2.0 partner municipalities met at the School of Government to discuss their needs and concerns. During the session, the participants addressed various topics including residential fire complaints, pay equity and staffing, inventory and assets, partnerships, council interests, events, risk reduction, response time, and incident tracking.

THEMES DISCUSSED DURING THE SESSION

- Council Interests
- Events
- Incident Tracking
- Inventory and Assets
- Partnerships
- Pay Equity
- Residential Fire Complaints
- Response Time
- Risk Reduction
- Staffing

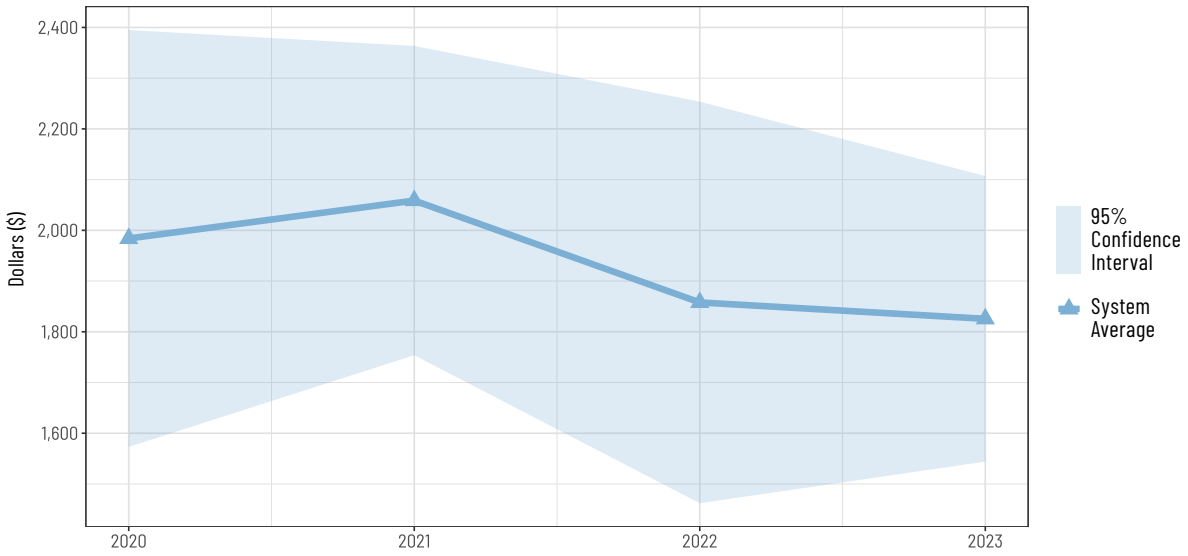
Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

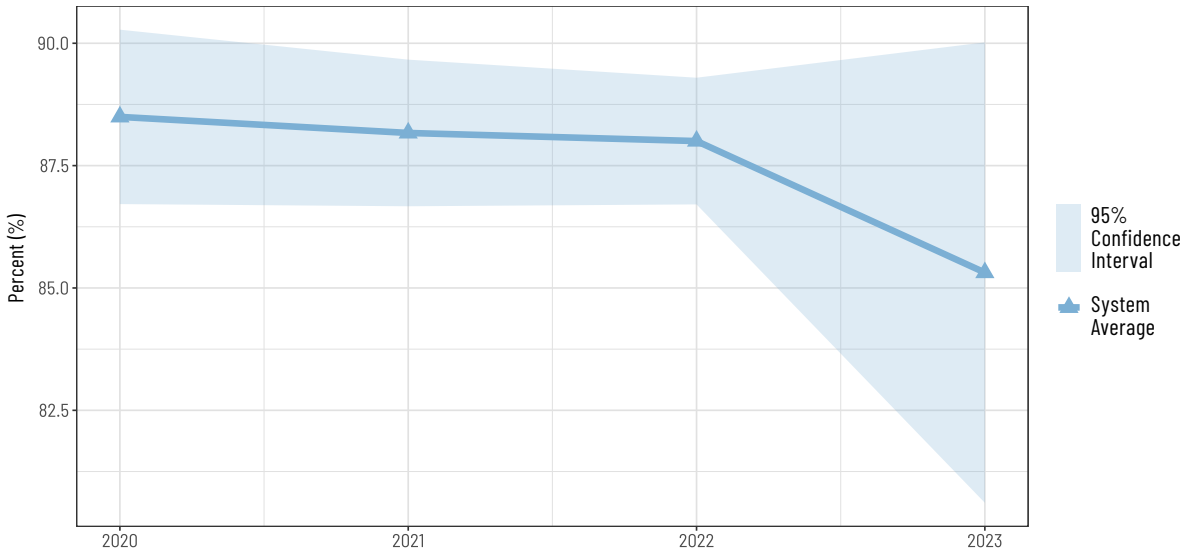
RESOURCE AVAILABILITY

Importance: The graphs display the ratio of expenditures to incident response and personnel expenses. These metrics help fire departments analyze the money spent on incident responses to inform their decisions on budgeting, policies, equipment, and personnel. By comparing these metrics, fire departments can determine how much leeway they have in making changes to their operations.

A. Total Expenses per Incident Response



B. Personnel Expenses, as a Percentage of Total Expenses



Metric Definitions

Incident Response: Total number of responses to all National Fire Incident Reporting System (NFIRS) code series 100s, 200s, 300s, 400s, 500s, 600s, 700s, 800s, and 900s.

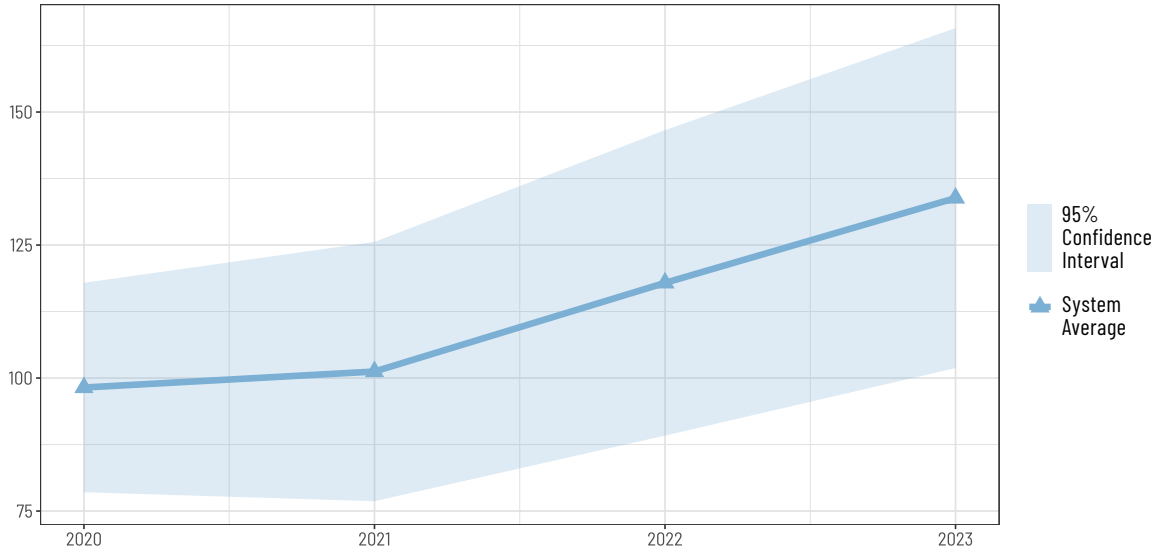
Personnel Expenses: Total amount of personnel expenses for fire services in a fiscal year. This amount includes gross earnings (all salaries and wages) of permanent and temporary employees subject to the Federal Insurance Contributions Act (FICA), the unit's share of all overtime and holiday pay, longevity pay, allowances, supplemental retirement income, Social Security taxes, retirement contributions, hospital and medical insurances, disability insurances, unemployment compensation, workers' compensation contributions, deferred compensation, and other benefits.

Total Expenses: Total personnel and operational expenses.

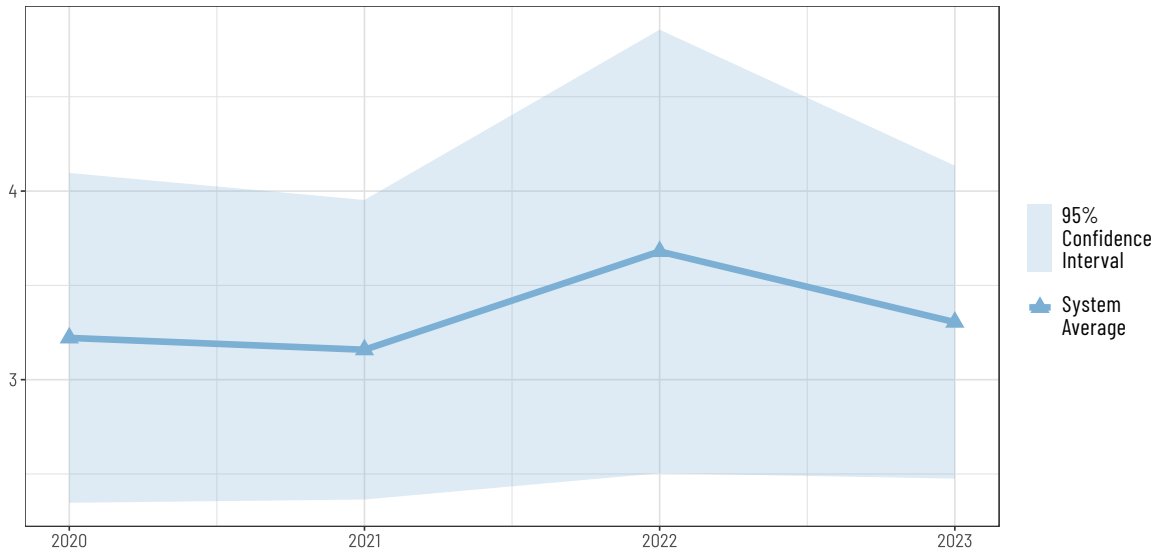
VOLUME OF RESPONSES

Importance: Response volume data is crucial for fire departments as they analyze common residential incidents. This metric helps fire departments set spending priorities based on trends and hotspots. Regular analysis of this data also allows fire departments to design public education campaigns, engage external stakeholders, and make decisions about purchases such as Quick Response Vehicles (QRVs).

A. Incidents per 1,000 People



B. Fires Reported per 1,000 People



Metric Definitions

Fires Reported: Total number of NFIRS fire incident code series 100s reported in a fiscal year.

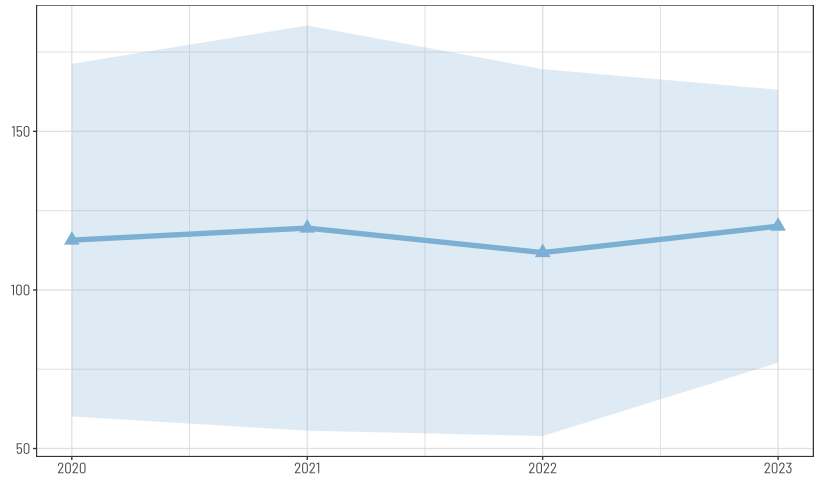
Incidents: Total number of all National Fire Incident Reporting System (NFIRS) code 100s, 200s, 300s, 400s, 500s, 600s, 700s, 800s, and 900s.

People: Based on the population according to the 2020 Census (x 1000).

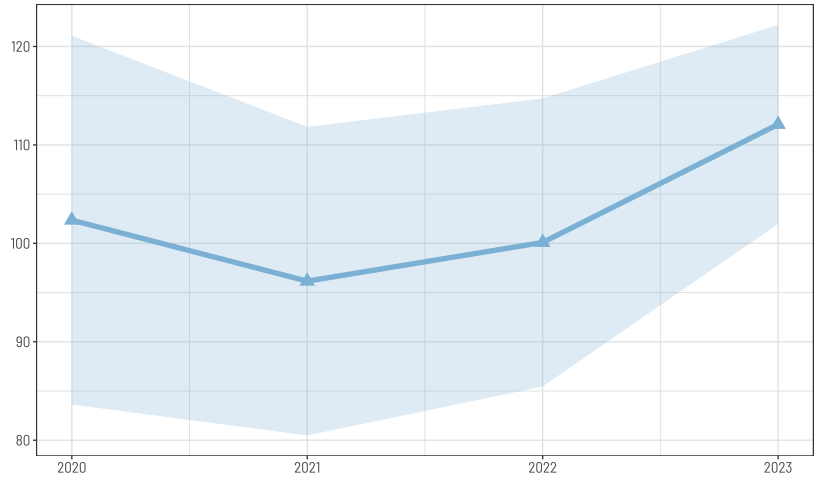
RESPONSE TIME

Importance: By tracking response time data as dispatch, turnout, and travel time metrics, fire departments are empowered to improve response efficiency by identifying specific areas of delay. Fire department leaders use these metrics to help guide their decisions on training, policy, traffic control, hydrant location, fire station design and location decisions, and budget requests.

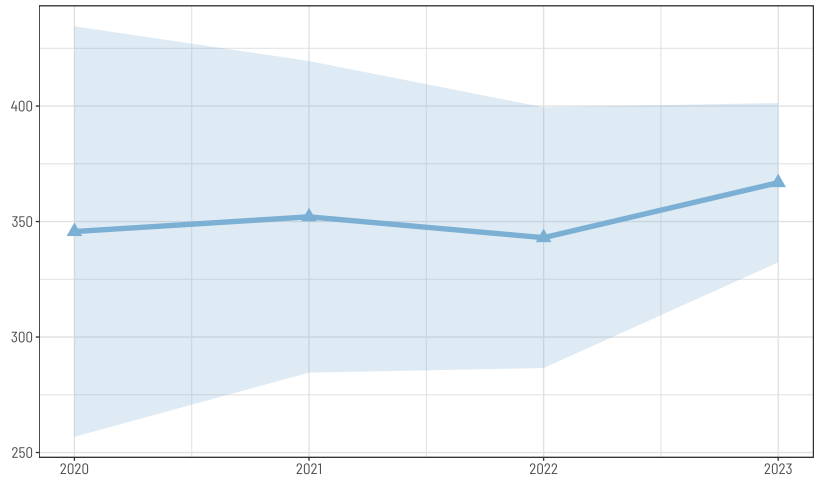
A. Fire Dispatch Time for the 90th Percentile (in Seconds)



B. Turnout Time for the 90th Percentile (in Seconds)



C. Travel Time for the 90th Percentile (in Seconds)



Legend

95% Confidence Interval

System Average

Metric Definitions

Fire Dispatch Time for the 90th Percentile: Total number of seconds at the 90th percentile from when a call is received to when a dispatcher alerts a fire unit of fire (for NFIRS incident codes 100 to 173). This metric also includes "Call Pickup Time" and "Call Processing Time" (as reported to the NFIRS).

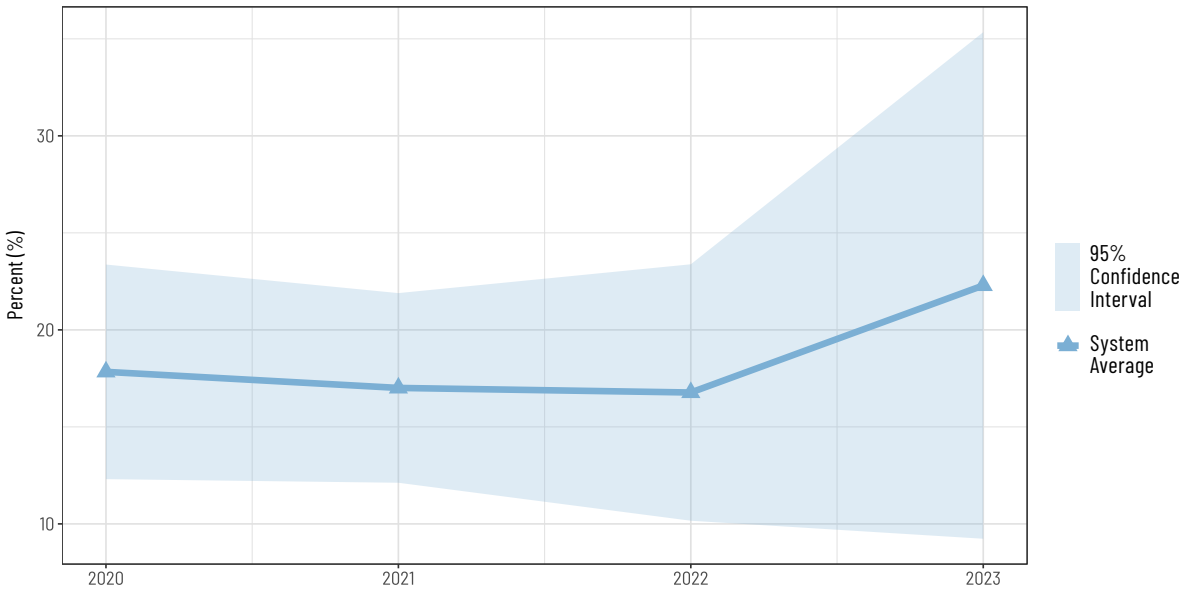
Travel Time for the 90th Percentile: Total travel time in seconds at the 90th percentile of the first arriving unit at a fire (for NFIRS codes 100 to 173). The time interval begins when a unit is en route to an emergency incident and ends when the unit arrives at the scene. "En route" may be tracked via CAD radio notification or GPS marking (preferred).

Turnout Time for the 90th Percentile: Total number of seconds at the 90th percentile from when a dispatcher alerts a fire unit of a fire emergency (for NFIRS codes 100 to 173) to when the unit leaves the fire station (as reported to the NFIRS).

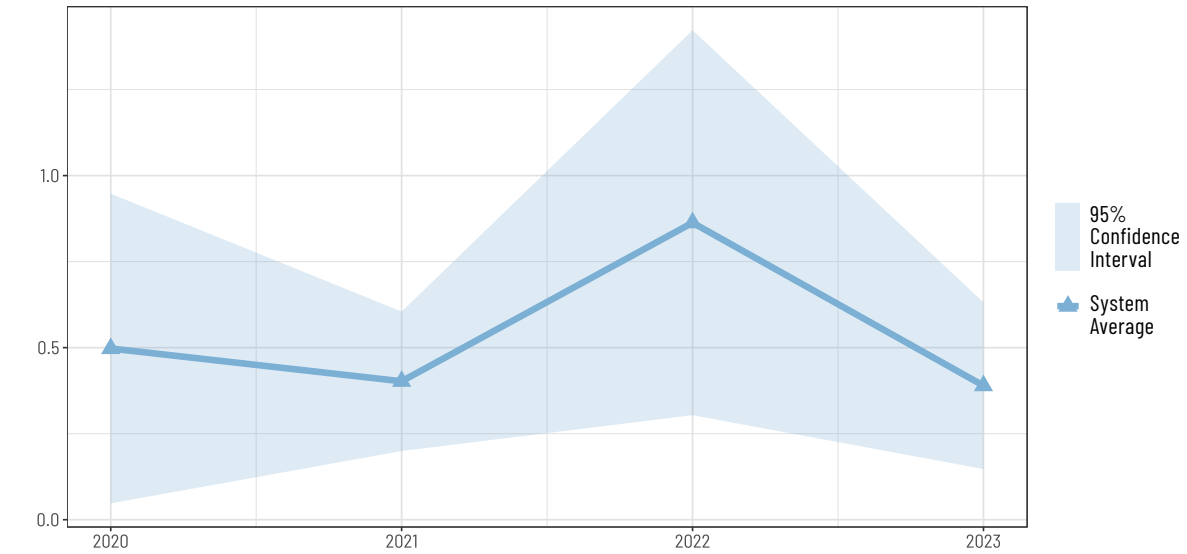
SAFETY OUTCOMES

Importance: Measuring safety outcome data is crucial for evaluating the effectiveness of fire response strategies and their impact on community safety. These metrics guide fire departments in fine-tuning response protocols, improving fire prevention measures, and enhancing public safety education.

A. Fires Confined to Rooms or Objects of Origin, as a Percentage of Total Fires Reported



B. Civilian Injuries due to Fire per 10,000 People



Metric Definitions

Civilian Injuries due to Fire: Total number of civilian injuries due to fire incidents in a fiscal year, as reported to the NFIRS.

Fires Confined to Rooms or Objects of Origin: Structure fires (NFIRS codes 111 to 123) with a "Fire Spread" equal to 1 or N in a fiscal year.

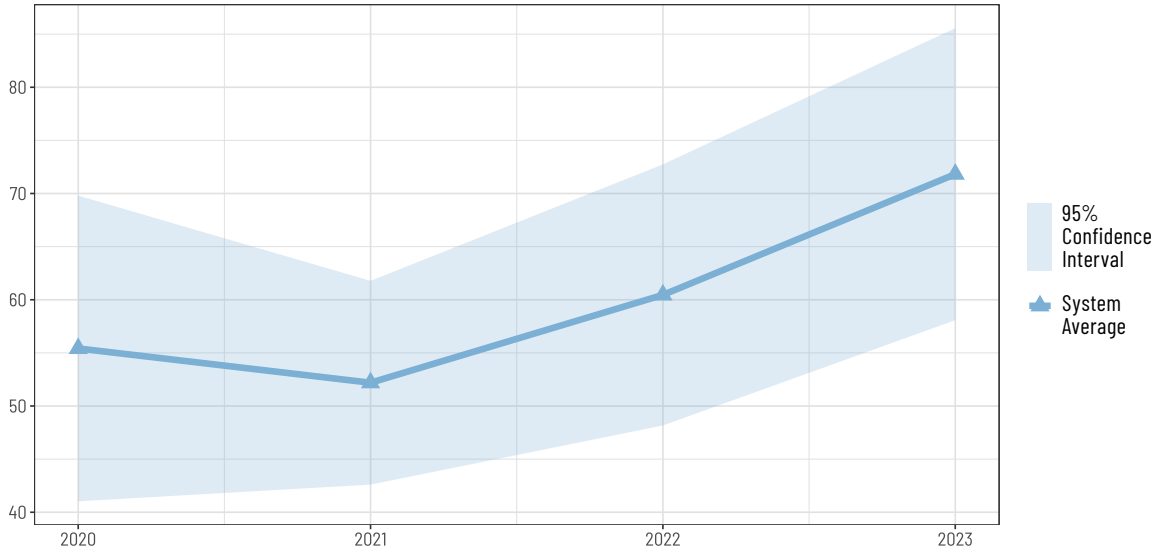
FTEs: Total number of sworn firefighter full-time equivalent (FTE) positions budgeted and approved for a fiscal year. An FTE works 2,080 hours per year or as counted by each department, allowing for differences caused by shift schedules.

People: Based on the population according to the 2020 Census (x 10,000).

Total Fires Reported: Total structure fires (NFIRS codes 111 to 123) reported with a "Fire Spread" equal to 1 or N in a fiscal year.

INCIDENTS PER FTE

Importance: The graph compares the average number of incidents responded to by full-time firefighters. This metric is critical for gauging department workload and resource distribution. Fire departments use this data to make decisions about hiring, retention, and turnover. Alongside this data, considerations such as vacancy rates, lengths of service, retirement rates, and budgetary spending trends form the basis for making informed decisions on staffing levels, recruitment strategies, succession planning, and compensation structures including pay grades and cost-of-living adjustments.



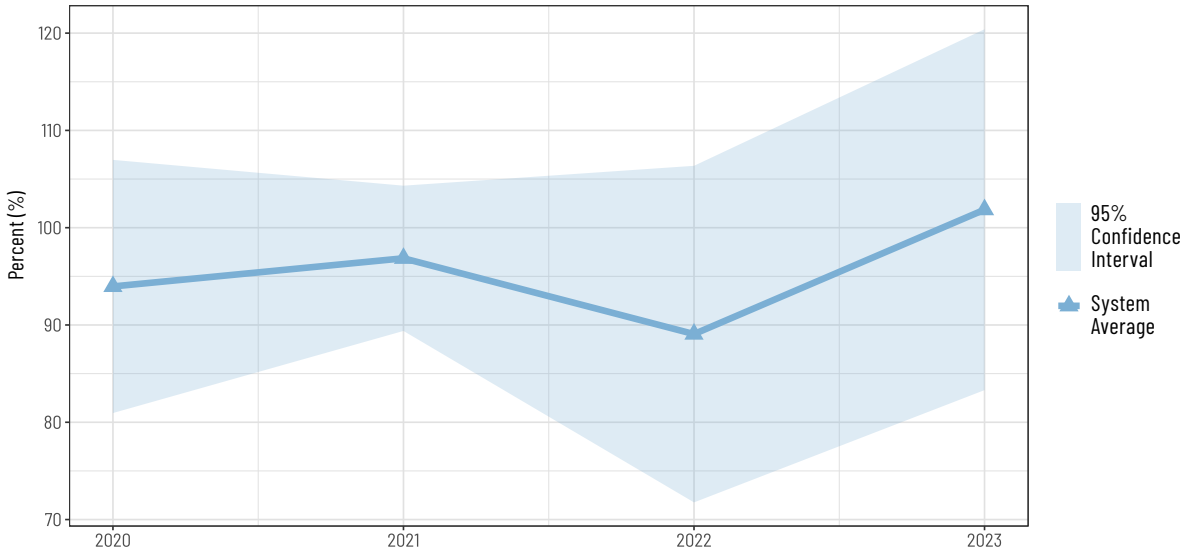
Metric Definitions

FTEs: Total number of sworn firefighter full-time equivalent (FTE) positions budgeted and approved for a fiscal year. An FTE works 2,080 hours per year or as counted by each department, allowing for differences caused by shift schedules.

Incidents: Total number of all National Fire Incident Reporting System (NFIRS) code 100s, 200s, 300s, 400s, 500s, 600s, 700s, 800s, and 900s.

TOTAL NUMBER OF STATE-MANDATED ONE-YEAR INSPECTIONS COMPLETED, AS A PERCENTAGE OF INSPECTIONS DUE

Importance: State-mandated inspection completion data is essential for fire departments to manage and prioritize their inspection schedules effectively. This metric helps fire departments make decisions about Community Risk Reduction (CRR), staffing, inspection schedules, and occupancies per inspection. Fire departments complement this data with projected response time for inspections, call volume for new developments, smoke alarm installations, activations/saves, violations, fires in locations without fire alarms, fires saved from smoke alarm installations, and more to make decisions about future risk reduction strategies.



Metric Definitions

Inspections Due: Total number of state-mandated one-year inspections due in a fiscal year. This metric applies to assembly areas (restaurants, clubs, gyms, places of entertainment, etc.); hazardous-materials facilities (containing hazardous materials, flammable liquids, explosives, etc.); high-rise buildings (all use types); institutional facilities (hospitals, nursing homes, licensed-care facilities, jails, etc.); and residential locations (apartments, hotels, motels, dormitories, etc.).

State-Mandated One-Year Inspections Completed: Total number of state-mandated one-year inspections completed in a fiscal year, as reported to the state.

Additional Considerations

The Benchmarking partners highlighted the following critical data they use for decision-making. These metrics are not included in the Benchmarking Dashboard due to their incompatibility with direct comparisons:

RESIDENT PARTICIPATION: The participation of residents in education and outreach allows for decisions to be made regarding staffing needs, prioritization and allocation of resources, structured versus unstructured programming, equitable participation, and expanded/eliminated programs.

PARTNERSHIPS: Fire departments need to analyze the amount and quality of their partnerships, which are essential for growth, considering the various types of sponsorship involved, the number of outreach attempts made to potential partners, the percentage of partnerships that were successful or worthwhile, and the overall percentage of outreach successes. This data allows fire departments to make decisions about marketing methods, staffing support, and budget allocations.

PAY EQUITY: Fire departments assess pay for fire service employees, considering how it varies based on demographics or tenure to allow for equity and fair pay standards, minimizing bias.

COUNCIL PRIORITIES: Fire departments strive to fully understand the needs, concerns, and values of the elected council, making priority decisions to cater to its preferences. To do this, they rely on council retreats, council meetings, master plans and policies, and cost analysis of council programs.

SPECIAL EVENTS: Fire departments collect data related to large-scale special events, including number of attendees, demographics, cost-benefit analysis, and attendee satisfaction to make decisions about whether to continue hosting certain events and which locations might be better for them.

Fire System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize four of them.

ORGANIZATIONAL STRUCTURAL DEVELOPMENT: The partners engaged in a discussion about the delicate balance of managing data, staffing, and budgets amidst organizational growth. A notable concern focused on the escalation of personnel costs, which in turn constrains the flexibility of operational budgets across various departments. For instance, Winston-Salem highlighted its unique challenges stemming from a lack of growth, which directly impacts its strategies for structural development. This issue underscores the need for strategic planning and resource allocation to manage the complexities of fire departments' evolving needs.

ELECTRIC VEHICLES (EV) INTEGRATION: The partners discussed the viability of EV adoption by fire departments. The push toward incorporating EVs in fire services, which is motivated by environmental concerns and legislative pressure, has been limited due to infrastructure costs and service reliability. For this reason, some municipalities are shying away from EV integration. The availability of American Rescue Plan Act (ARPA) funding highlighted the complexity of procurement processes and the need for regional collaboration to address resource shortages effectively. This discussion suggested that local governments need to take a measured approach to emerging technologies like EVs, balancing innovation with practical considerations and resource constraints.

AI AND PERFORMANCE METRIC SYSTEMS: There are benefits and challenges associated with the use of artificial intelligence (AI) in municipal operations. Chapel Hill noted that using AI can streamline incident reporting and help categorize large amounts of information. However, concerns were also raised about the security risks associated with AI and the current limitations of existing AI tools. Data security is a priority as is carefully evaluating the practicality of AI solutions for specific municipal workflows. The participants also touched on the various performance metric systems used by different municipalities, such as Firehouse and FireWorks. While these systems provide valuable insights, questions were raised about data migration and ownership. Integrating different systems can be challenging due to issues with data compatibility and accessibility. The discussion underscored the need for standardized practices when implementing the use of AI and collaborative frameworks to effectively navigate the complexities of data system integration.

DATA-DRIVEN DECISION-MAKING: Response and incident data is crucial for making informed decisions. Wake Forest emphasized the benefits of using station-alerting software to optimize response times, which has improved its operational efficiency and mitigated emergency response delays. Leveraging technology strategically can streamline emergency response protocols and enhance community safety initiatives. Greensboro emphasized the importance of forecasting methodologies in proactively anticipating and addressing future challenges. Using predictive analytics and trend analysis can help municipalities develop good strategies to contend with evolving operational demands and emergent risks. Forward-thinking planning and resource allocation is crucial to ensuring sustained operational resilience and service excellence. Some participants noted the indispensable role of Records Management Systems (RMS) in organizing, analyzing, and interpreting vast datasets to glean actionable insights and inform policy formulation. Supporting a robust RMS infrastructure and data literacy across departments would benefit municipalities. The partners agreed that harnessing data-driven technologies and embracing innovative solutions can optimize operational efficiency, enhance community resilience, and foster sustainable growth and development.

Photo by troyanphoto, stock.adobe.com

IN NOVEMBER 2023, fleet maintenance officials convened at the School of Government for a collaborative meeting of the Benchmarking 2.0 partners. Their discussion revolved around critical issues including replacement schedules for vehicles, work order efficiency, the integration of electric vehicles, procurement processes for vehicle parts, utilization of software tools, data-driven decision-making, and securing funding for fleet initiatives. The participants shared insights about their departments' decision-making processes and data needs, exchanging ideas and strategies to enhance the efficiency and sustainability of their work.

THEMES DISCUSSED DURING THE SESSION

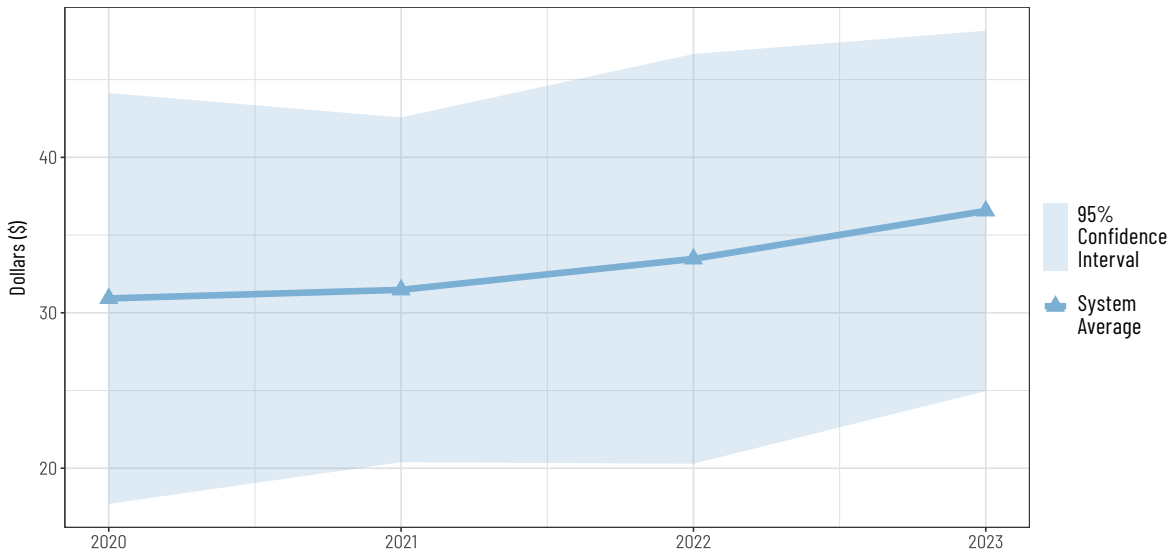
- Advocacy
- Fleet Efficiency
- Fleet Maintenance and Management
- Financial Analysis and Budgeting
- Maintenance and Repair
- Procurement
- Strategic Planning
- Supply Chain and
- Staffing
- Technology and Software
- Work Order Management

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

TOTAL FLEET MAINTENANCE EXPENSES PER CAPITA

Importance: This graph compares fleet maintenance expenses to a community's daytime population. Measuring expenses per capita allows fleet maintenance officials to assess, manage, and optimize the financial efficiency of their operations. This metric helps department officials understand the cost-effectiveness of department practices and identify trends in spending. It also informs decision-making related to budget allocations, maintenance scheduling, and fleet upgrades or replacements.



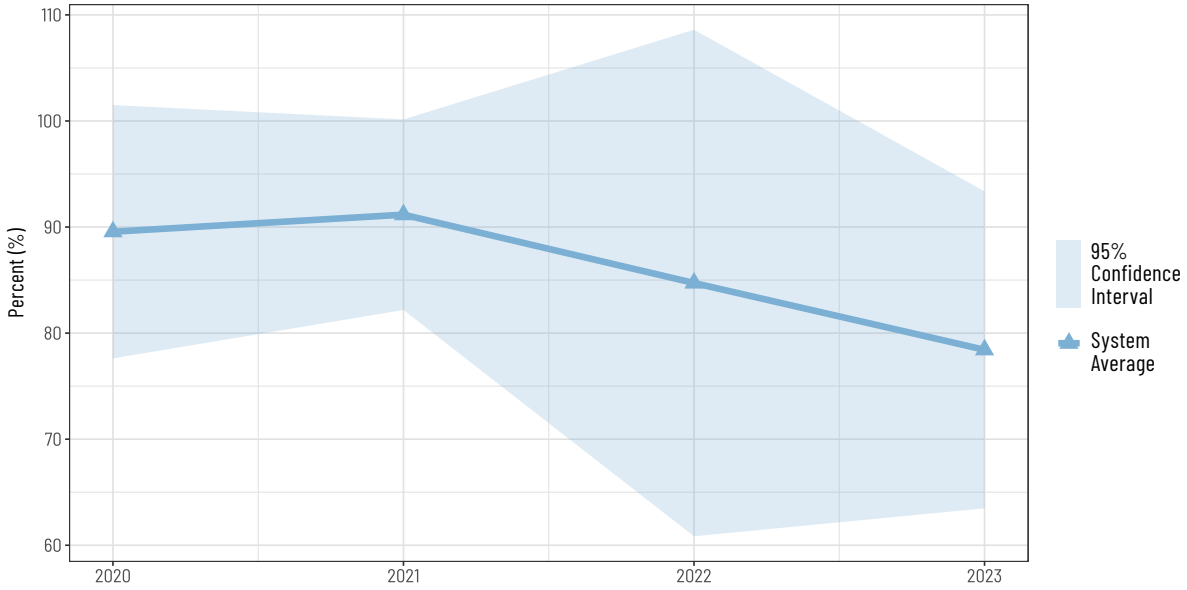
Metric Definitions

Per Capita: Based on the daytime population according to the 2020 Census.

Total Fleet Maintenance Expenses: Total expenses including personnel and operational expenses.

PREVENTIVE MAINTENANCES COMPLETED AS SCHEDULED, AS A PERCENTAGE OF PREVENTIVE MAINTENANCES SCHEDULED

Importance: This graph shows the rate at which preventive maintenance tasks are completed as scheduled across various municipalities. It is important since the timely completion of maintenance not only ensures vehicles are operational and reduces downtime but also impacts the department's overall cost-effectiveness. Specific considerations include repair costs versus vehicle value, usage patterns, and trends across different makes and models. The metric also informs decisions regarding the suitability of the current fleet size (and whether to upsize or downsize), identifies replacement needs, and highlights potential outsourcing opportunities. Regular monitoring of this data allows fleet maintenance officials to optimize operational efficiency and cost savings.



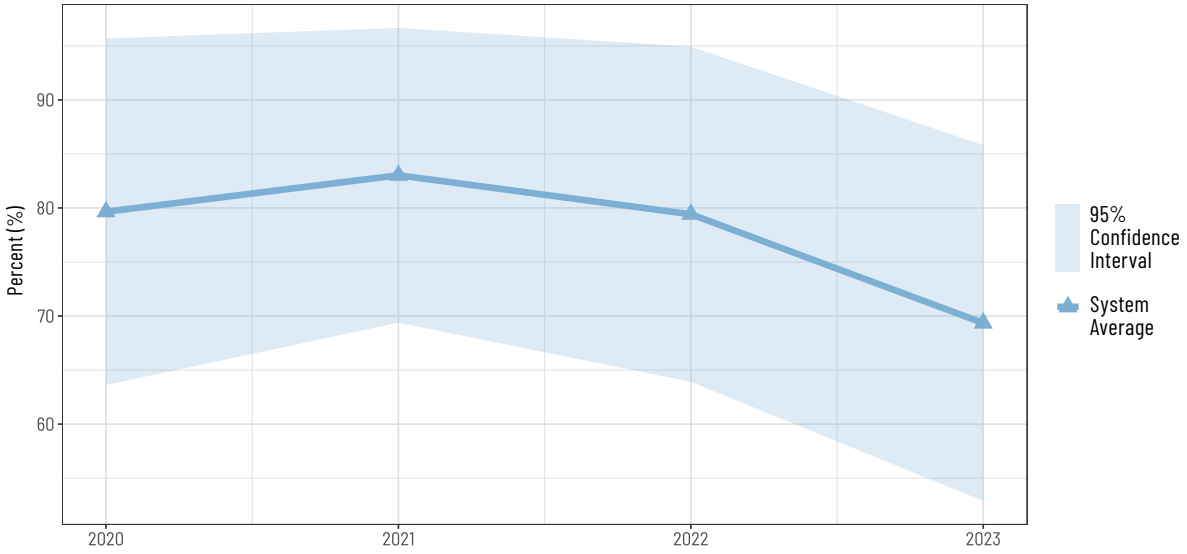
Metric Definitions

Preventive Maintenances Completed as Scheduled: The total number of preventive maintenances (PMs) that were completed on schedule.

Preventive Maintenances Scheduled: The total number of PMs scheduled in each category during a fiscal year, including state inspections.

WORK ORDERS COMPLETED WITHIN 24 HOURS, AS A PERCENTAGE OF TOTAL WORK ORDERS

Importance: This graph provides insight into the efficiency of fleet maintenance operations by comparing the percentage of work orders completed within twenty-four hours against the total number of work orders. The metric allows fleet management teams to better understand and make decisions about immediate replacements and repairs, staffing and scheduling issues, and material needs.



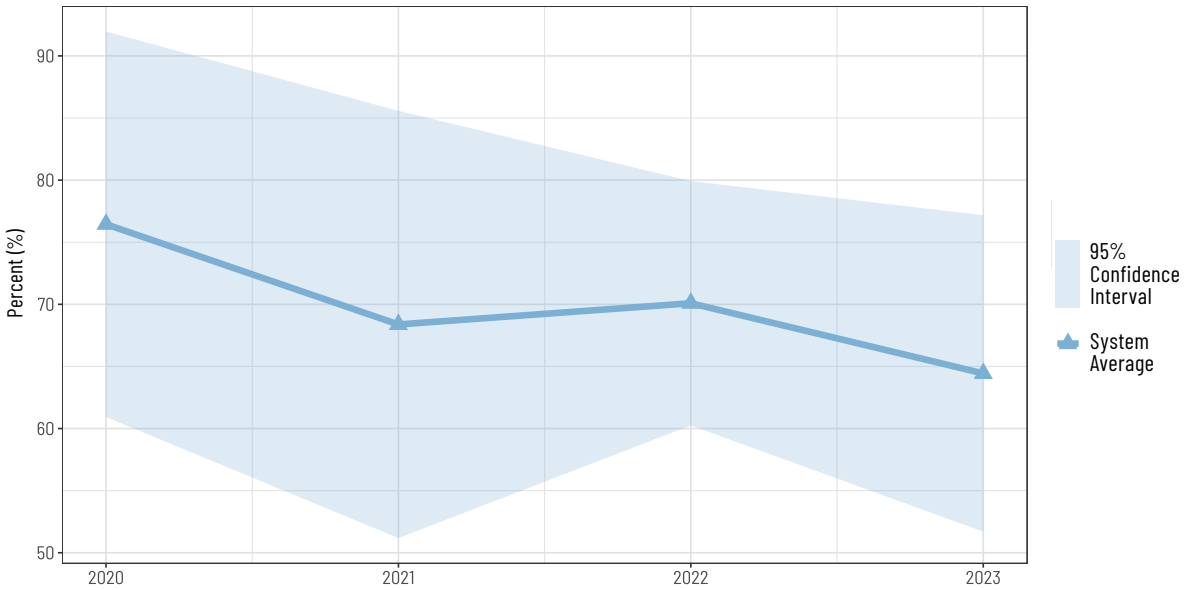
Metric Definitions:

Total Work Orders: The total number of work orders logged during a fiscal year, including those related to contract work.

Work Orders Completed within 24 Hours: The total number of work orders completed within twenty-four hours.

HOURS BILLED, AS A PERCENTAGE OF BILLABLE HOURS

Importance: This graph provides a comparison of the hours billed against total billable hours. The metric is critical for helping fleet maintenance teams evaluate labor efficiency and cost-effectiveness. It is often used by middle management and executive leadership to make decisions on resource allocation, labor hours, process enhancement, and downtime.



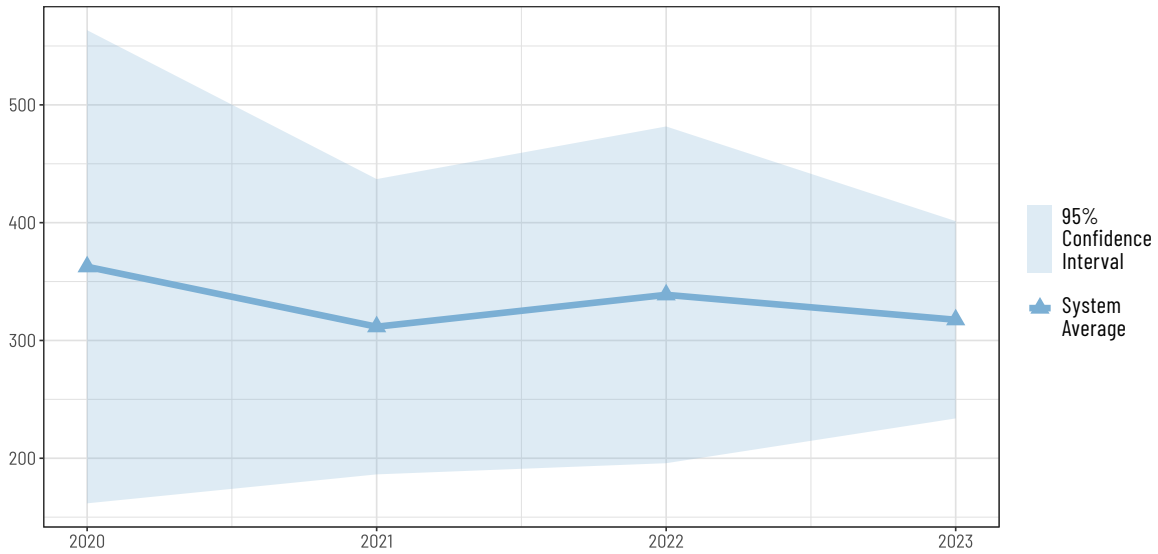
Metric Definitions:

Billable Hours: The total number of fleet maintenance billable hours in a fiscal year, including all hours for technicians except for any time a position was vacant. Billable hours are calculated by multiplying 2,080 (hours) by the number of technician full-time equivalents (FTEs). If a position was vacant for a portion of the year, the vacant hours are deducted from the 2,080 allotted for that position.

Hours Billed: The total number of hours billed for fleet maintenance activities in a fiscal year, including mechanical repairs.

WORK ORDERS PER FTE

Importance: This graph provides a comparison of the average number of work orders per full-time position. The metric is crucial for understanding workload distribution and ensuring that staffing levels are adequate to meet maintenance demands. Fleet management teams use this metric to make decisions on staffing levels, labor hours, and process efficiency.



Metric Definitions:

FTEs: The total number of approved or budgeted full-time equivalent (FTE) positions, filled or unfilled, for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Work Orders: The total number of work orders entered during a fiscal year, including those related to contract work.

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

- Count of Vehicles by Class
- Labor Hours by Class
- Number of Repairs by Class
- Number of Miles by Class
- Days Vehicles Available by Class
- Average Vehicle Age by Class
- Percent System Uptime
- Vehicle Equivalence Units (VEUs)

Fleet Maintenance System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize three of them.

ELECTRIC VEHICLES: The partners discussed the federal mandate to increase the use of electric vehicles (EVs) by 2050. They noted that EVs can cause additional staffing concerns as their repair and maintenance require specific skills. One participant mentioned that the limited range of electric trucks means that some solid waste routes may require three trucks for one route. One department had to get rid of two gas-powered buses to qualify for a grant for electric buses; nearly three years later, it still has not received the new electric buses. Some partners weren't sure their garages are able to handle EV charging and if they have enough staff to manage EVs. Raleigh has already started purchasing EVs, particularly for their police department, using funds from the federal Infrastructure Law. However, more charging stations are needed. The partners agreed that the high cost is scaring people away from EVs, especially since massive infrastructure is needed for the transition. They said that it might be easier to use hybrid rather than fully electric vehicles, if applicable and available, as it would be a more gradual transition. They also said that municipal staff needs a more nuanced understanding of the EV market. For example, even though larger vehicles like solid waste collection trucks are not readily available as EVs, there is still pressure from communities and city sustainability policies to make the transition to electric vehicles.

VEHICLE OWNERSHIP: Methods and operation of vehicle ownership can be quite different between municipal departments. For example, the municipal departments in Raleigh own the vehicles but pay the fleet for maintenance. They cover their costs. However, in Greensboro, the fleet buys, maintains, and replaces vehicles, and the municipal departments lease them. The lease term allows the fleet to theoretically fund vehicle replacement at the end of each seven-year lease contract. The monthly lease rate covers maintenance costs over the life of the vehicle, but the departments are charged directly for driver misuse. Most fleet departments have to absorb the costs of wrecked police vehicles. Selling decommissioned vehicles can create a surplus. Greensboro assigns a value to decommissioned vehicles in which the municipal departments pay 50 percent of the vehicle cost.

PROCUREMENT: The partners discussed procurement strategies. Asheville has two employees assigned to build relationships with vendors to procure the necessary parts and equipment. Raleigh tries to order only one type of part at a time, creating surplus inventory for the parts that are in constant demand. Some fleet departments don't have enough space to store extra parts, so they often outsource the process. Some vendors charge a 35 percent markup while others charge a fixed 10 percent. Bigger fleet departments can leverage one vendor against another with an agreed-upon throughput. It's challenging for smaller municipalities when big vendors use threshold spending limits. Currently, there are critical shortages of many auto parts, and it takes almost four years to get a fire truck.

PARKS AND RECREATION

Photo by GuRezende, stock.adobe.com

IN NOVEMBER 2023, parks and recreation officials convened at the School of Government for a collaborative meeting of the Benchmarking 2.0 partners. The group discussed various topics, including competing priorities (i.e., public–private partnerships), staffing, participation data, fee structures, and technology. Other topics included ordinances (i.e., for paths and greenways), project and field maintenance, and the use of benchmarking data for park amenities.

THEMES DISCUSSED DURING THE SESSION

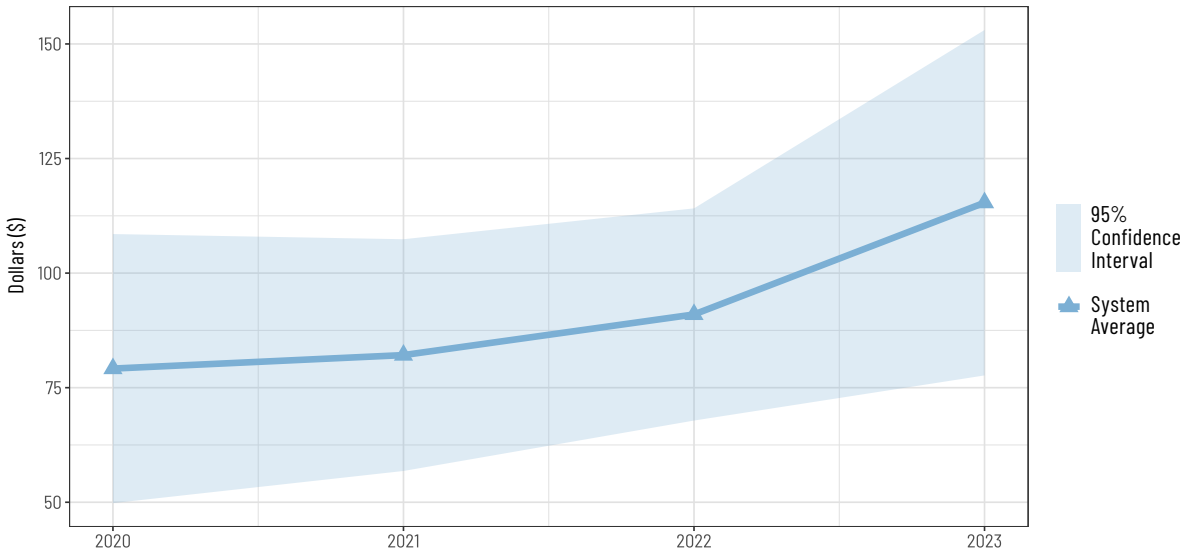
- Community Engagement and Communication
- Cost Recovery
- Data Analysis and Software Utilization
- Equity and Access
- Maintenance and Infrastructure
- Program and Facility Management
- Program Evaluation
- Resource Allocation and Budgeting
- Staffing and Personnel
- Strategic Planning and Policy Development

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

EXPENSES PER CAPITA

Importance: Middle managers and executive leadership in parks and recreation departments analyze annual operational and personnel expenses to inform budgetary decisions for the coming year. This metric allows them to assess which programs should be sustained or cut.



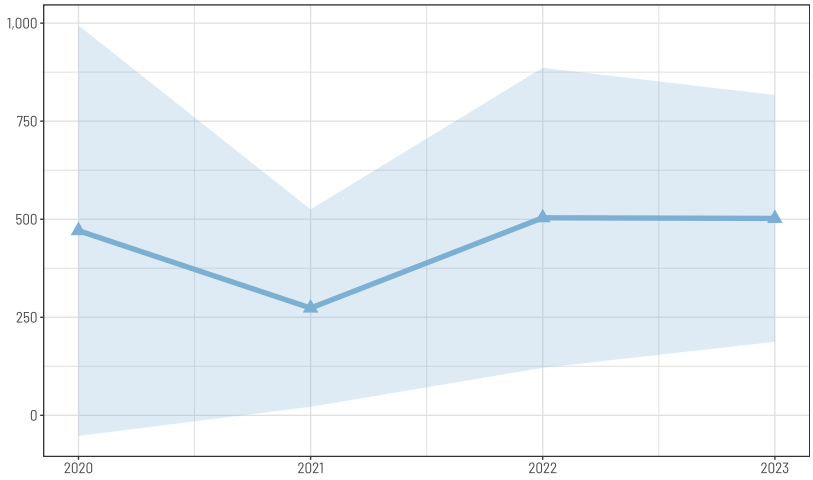
Metric Definitions

Expenses: Sum of personnel and operational expenses for parks and recreation.
Per Capita: Based on the population according to the 2020 Census.

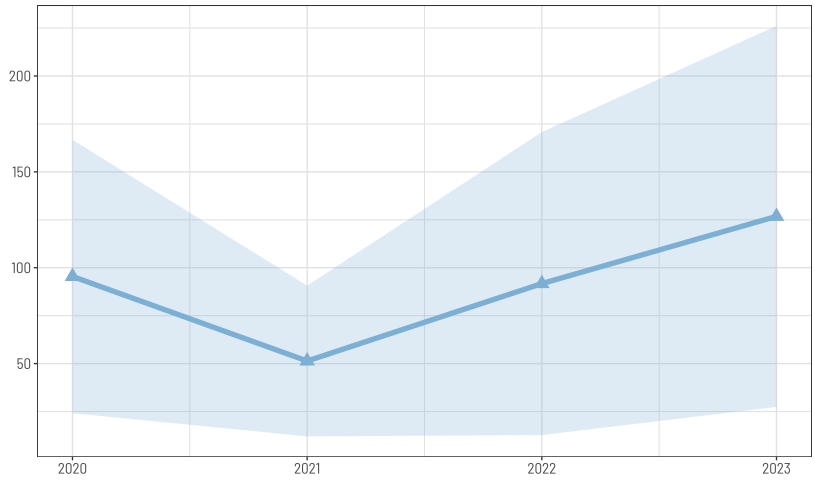
PROGRAM PARTICIPATION

Importance: Data about the types and amount of program participation helps parks and recreation teams understand who is participating in which programs. This empowers them to better tailor their programs and facilities to community interests. It also facilitates more effective resource allocation, program development, and overall enhancement of recreational experiences. This metric informs specific decisions about outreach programs, internal facilities management, program offerings, and program costs and fees.

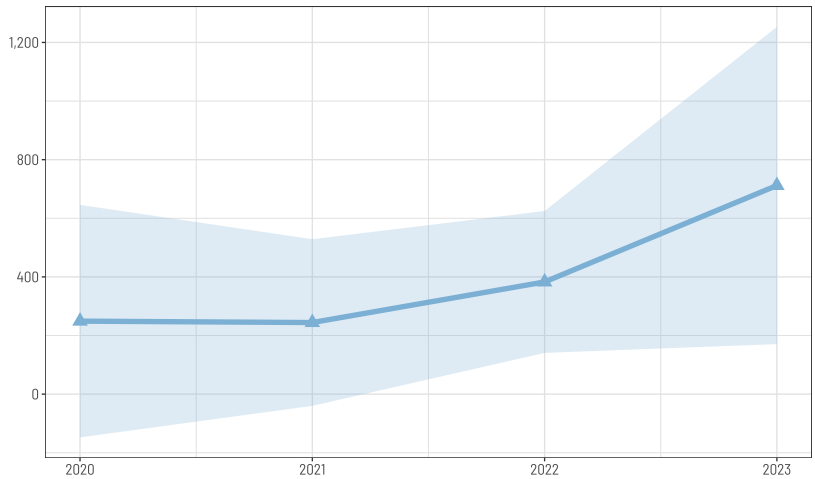
A. Participation in Nonathletic Programs per 1,000 Residents



B. Participation in Athletic Programs per 1,000 Residents



C. Participation in Community Events per 1,000 Residents



Legend

95% Confidence Interval

System Average

Metric Definitions

Athletic Programs Participation: The total number of participants in refereed sports competitions, such as soccer, tennis, and volleyball games or running-club races, in a fiscal year. Participation numbers are entered separately for each competition even if multiple competitions are part of an overall program. This metric includes contracted-provider programs as well as those provided directly by the municipality.

Community Events Participation: The total number of participants in community events. Examples of community events include movie nights and festivals. Community events do not necessarily require registration. Participation numbers are entered separately for each event, even if multiple events are part of an overall program. This metric includes contracted-provider programs as well as those provided directly by the municipality.

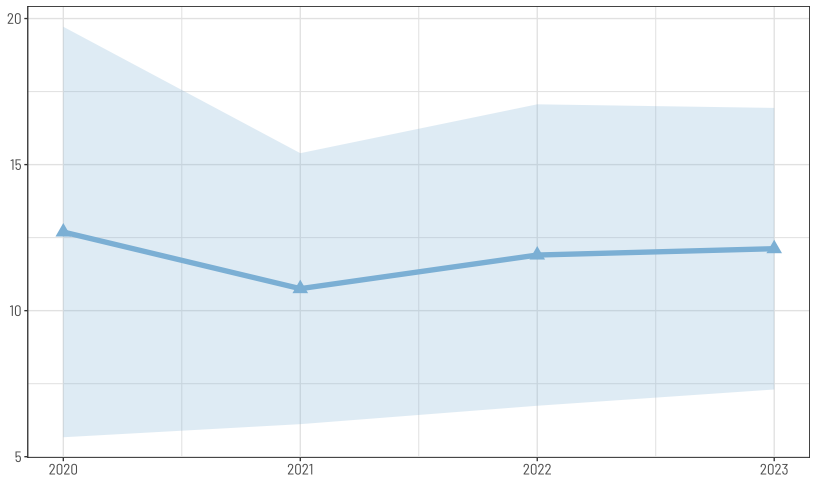
Nonathletic Programs Participation: The total number of participants in nonathletic programs in a fiscal year. These are registration-required programs that do not involve competition between participants, scorekeeping, referees, or teams. The programs may include robotics, card-making, Zumba, exercise classes, senior activities, fitness training, pottery, cooking, ballet, art, photography, youth engagement, and special populations programming. Participation numbers are entered separately for each nonathletic program, even if multiple programs are part of a larger program. (For example, a summer camp that includes activities in robotics and pottery should yield two participation counts, one for robotics and one for pottery.) This metric includes contracted-provider programs as well as those provided directly by the municipality.

Residents: Based on the population according to the 2020 Census (x 1,000).

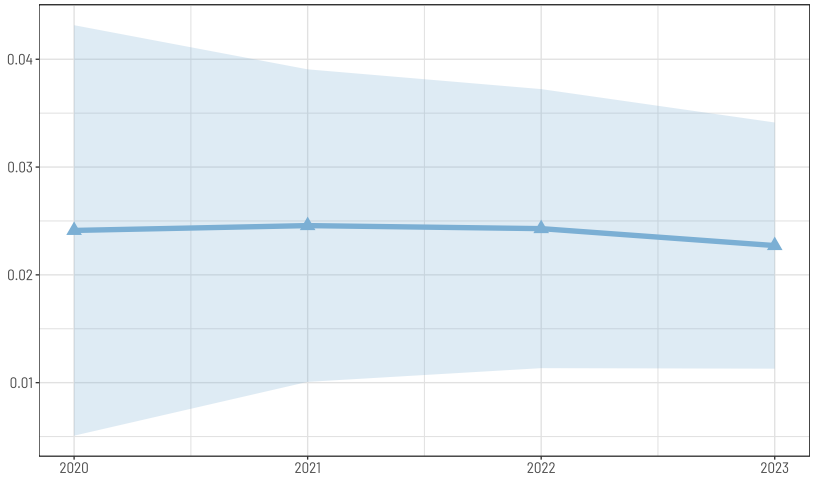
FACILITIES MAINTAINED

Importance: These graphs compare the number of facilities maintained to the total population size, which helps parks and recreation officials assess the adequacy of services, plan for future growth, and make informed decisions about resource allocation.

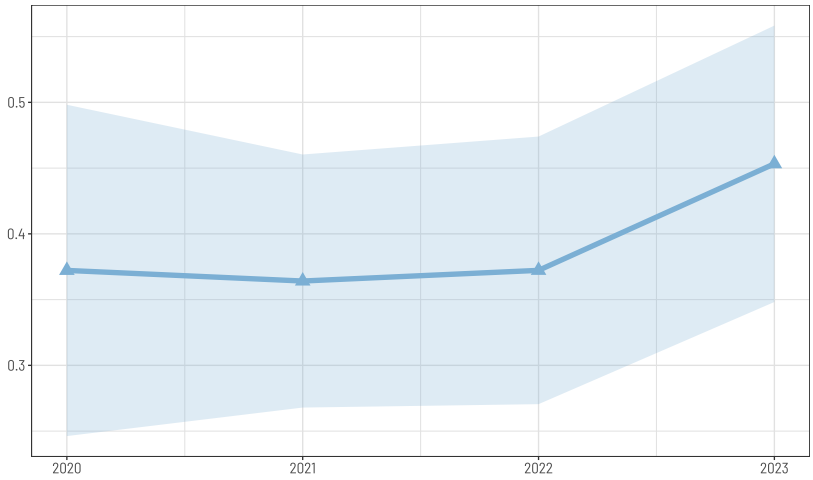
A. Park Acreage per Capita



B. Swimming Pools per 10,000 Residents



C. Athletic Fields per 10,000 Residents



Legend

95% Confidence Interval

System Average

Metric Definitions

Athletic Fields: The total number of rectangular fields (e.g., for soccer and football), diamond fields (baseball), and undesignated fields that can be used for multiple activities. This metric includes both natural grass and artificial-surface fields.

Park Acreage: The total amount in acres of municipal park land.

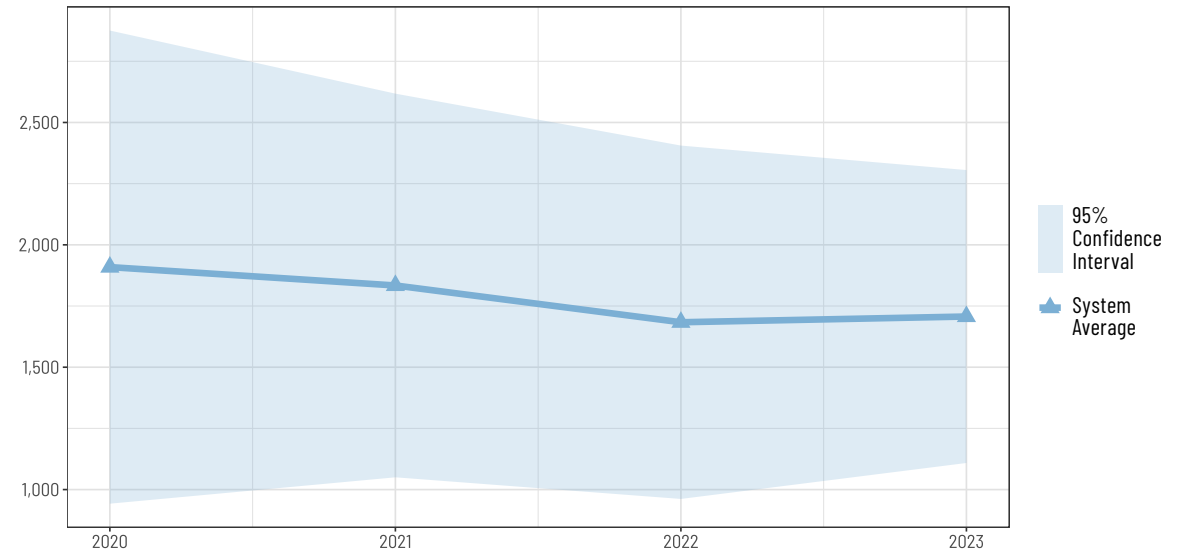
Per Capita: Based on the population according to the 2020 Census.

Residents: Based on the population according to the 2020 Census (x 10,000).

Swimming Pools: The total number of municipal swimming pools.

POPULATION SERVED PER FTE

Importance: This graph compares the ratio of employees to community members served, helping parks and recreation departments make decisions about staffing efficiency, community impact, workload, service delivery quality, and resource allocation.



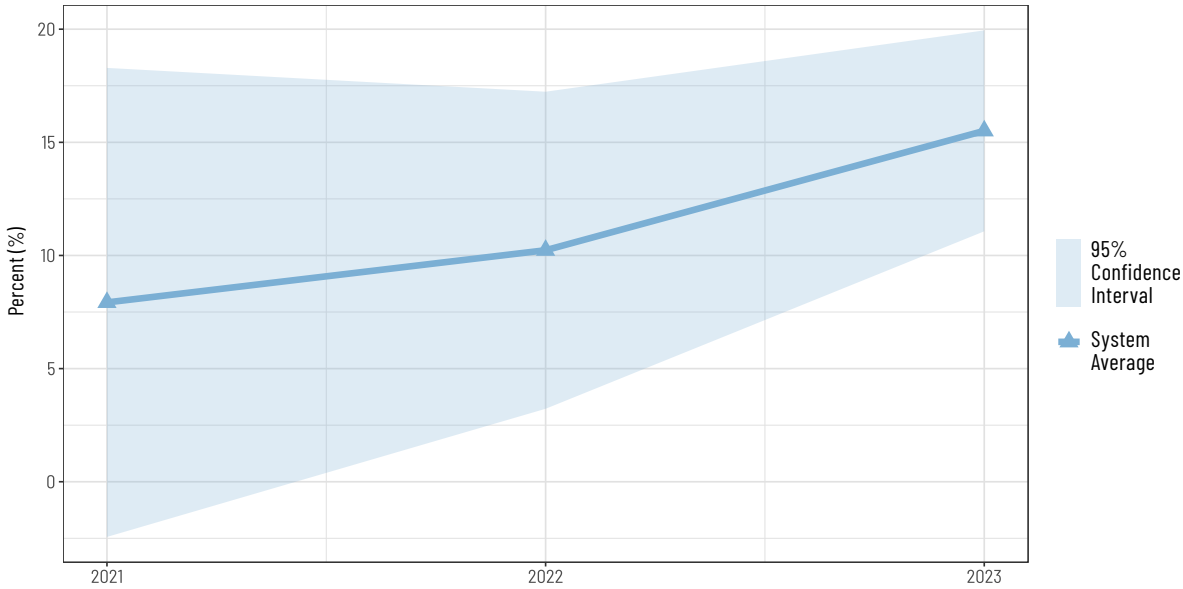
Metric Definitions

FTEs: Total approved parks and recreation full-time equivalents (FTEs), filled or unfilled, for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Population: The population according to the 2020 Census.

COST RECOVERY (REVENUE, AS A PERCENTAGE OF EXPENSES)

Importance: This graph compares the ratio of revenue generated to total expenditures. Percent cost recovery is essential for parks and recreation departments to assess the financial performance and sustainability of their programs and services. It empowers management to evaluate the extent to which operational costs are covered by revenue generated from services and fees. This metric informs strategic financial planning, aids in budget allocation, and guides pricing strategies to ensure services are both accessible to the community and financially viable. By monitoring cost recovery rates, parks and recreation departments can identify which programs require adjustments or subsidies and which are self-sustaining, promoting efficient resource use.



Metric Definitions

Expenses: The sum of personnel and operational expenses for parks and recreation.

Revenue: Total revenue generated by parks and recreation in a fiscal year, including all user fees for facility use, rentals, concessions, and program participation (x 100).

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

FACILITIES

- Playgrounds
- Miles of Greenway
- Recreation Centers

Additional Considerations

The Benchmarking partners highlighted additional data that is important to their decision-making. These variables, which are not included in the dashboard since they are not conducive to comparisons, include:

PARTNERS AND SPONSORSHIPS: Partnerships for parks and recreation departments are cooperative arrangements with external entities to enhance recreational services through financial support and shared resources. Partnerships vary widely, encompassing collaborations with local businesses, nonprofits, and governmental agencies. Sponsorships range from monetary contributions for events and facilities to in-kind donations such as equipment or expertise.

DEMOGRAPHICS: Demographics refers to the statistical characteristics of a population within a given area, including factors such as age, gender, income, education level, ethnicity, household size, and other relevant social and economic attributes. Demographics are vital for parks and recreation departments in planning programs and amenities that meet the diverse needs and interests of their communities. An awareness of demographic factors informs decisions on facility locations, program offerings, accessibility features, and outreach strategies. This data ensures inclusivity, equity, and relevance in providing recreational opportunities that resonate with the local population.

PROGRAM FEES: Fees provide necessary funding to sustain operations, maintain facilities, and offer quality programs and services to the public. These fees may apply to admission, membership, rental of facilities and equipment, and program registration. It is important to evaluate them before making decisions about programs and rentals, scheduling, pricing for activities, equitable participation strategies, budgeting, and the prioritization and allocation of resources.

Parks and Recreation System Strategies

During this session, the Benchmarking partners explored multiple strategies for program enhancement. Below, we summarize five of them.

MAINTENANCE: Facility maintenance is important, and parks and recreation departments have different ways of handling it. Two parks in Salisbury, for example, have separate boards, which requires additional coordination for their maintenance. In Greensboro, the council appoints a citizen's board to oversee park operations. The Town of Apex has a Parks and Recreation Advisory Commission, which provides input and recommendations, but the Town maintains complete discretion over maintenance and upkeep. Chapel Hill's Park Maintenance unit is responsible for maintaining parks, open spaces, downtown environs, cemeteries, playgrounds, parking lots, facilities, and miles of trails, greenways, roadside, and sidewalks. In addition to essential grounds maintenance, the Chapel Hill staff has a wide variety of specialized training in athletic turf management, arboreal culture, landscape architecture, and playground inspection.

TECHNOLOGY AND INFORMATION: Asheville and Greensboro use artificial intelligence (AI) for large-scale data tracking from trailhead and car counters to demographic and attendance information. Goldsboro uses AI technology to acquire location and foot traffic data. Measuring facility use is challenging for greenways and soft recreation. Most of the partners use their municipality's work order software, such as Cityworks, but recognize the need for software that is more suitable for parks and recreation. Data integration can be a problem. In Greensboro, each municipal department uses its own software, which makes it hard to consolidate information about the entire city. In contrast, the Asheville Parks Department decided to use its municipality-wide software for better data integration.

PUBLIC ENGAGEMENT: The partners discussed ways to engage residents and board members in establishing needs and setting priorities as communities expand. Concord employs public engagement for its master planning through yard signs, an online hub, and more. The partners also discussed challenges in meeting community expectations given the realities of resource constraints. They emphasized the value of acknowledging and celebrating the community's enthusiasm for new initiatives (such as adding cricket fields or pickleball courts) while also being transparent about the constraints.

STAFFING: Parks and recreation departments continue to struggle with hiring, retention, and turnover issues. The City of Concord enjoyed success with live hiring at high schools, which was inspired by conversations during the last Benchmarking project.

FEE STRUCTURE AND EQUITY: The partners discussed their fee structures and subsidies. Apex provides up to a 50 percent subsidy on parks and recreation fees, whereas Chapel Hill has an income-based program for up to a 90 percent discount; community members can submit a letter to the director explaining their financial obligations and the amount they can pay, which can result in a full waiver.

Photo by Fotoluminate LLC, stock.adobe.com

IN NOVEMBER 2023, police service officials convened at the School of Government for a collaborative meeting of the Benchmarking 2.0 partners. The discussion focused on critical themes such as community perception, budget restrictions, the effectiveness of departmental operations, retention strategies, and the use of data and technology. The participants shared insights on their current data needs and decision-making processes, exchanging ideas and strategies to enhance overall law enforcement efficiency and community engagement.

THEMES DISCUSSED DURING THE SESSION

- Additional Services (Traffic and Animal Control)
- AI Technology
- Holistic Approaches to Public Safety
- Retention and Recruitment
- Technology Innovations
- Training Programs (BLET*)
- Operational Efficiency Vacancies

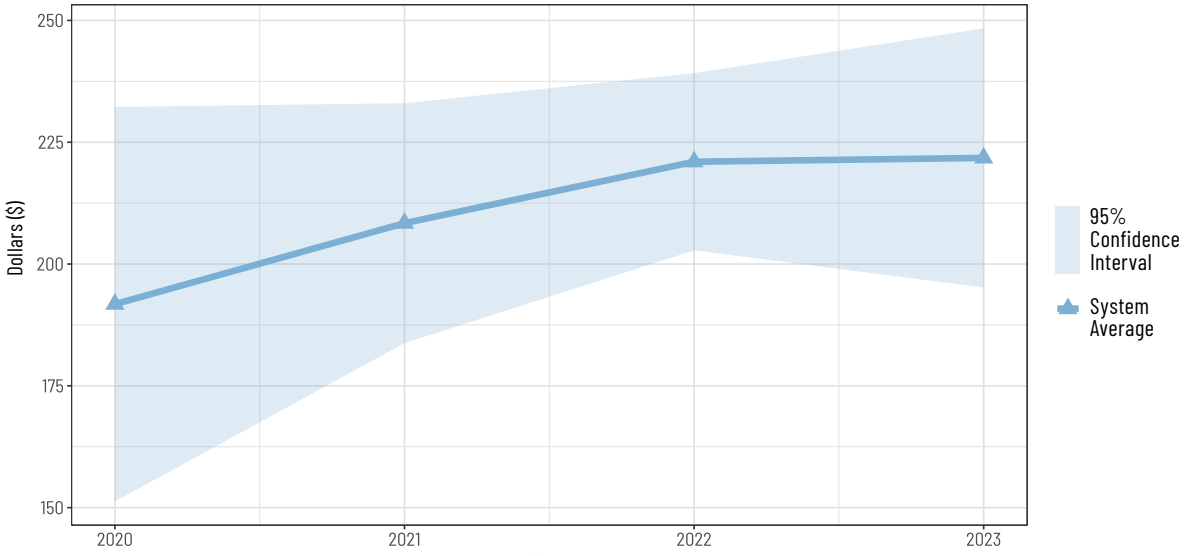
*Basic Law Enforcement Training

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

PERSONNEL EXPENSES PER CAPITA

Importance: The metric for personnel expenses is crucial in guiding personnel decision-making, budget allocation, and long-term financial planning. It helps police departments optimize staffing levels, identify cost-saving opportunities, and allocate resources efficiently while adhering to budget constraints. This metric also sheds light on employee compensation and benefits, facilitating the evaluation of salary competitiveness, benefits packages, and incentive programs to attract and retain top talent. Ultimately, it enables law enforcement agencies to enhance service delivery and uphold their commitment to safeguarding and serving the community.



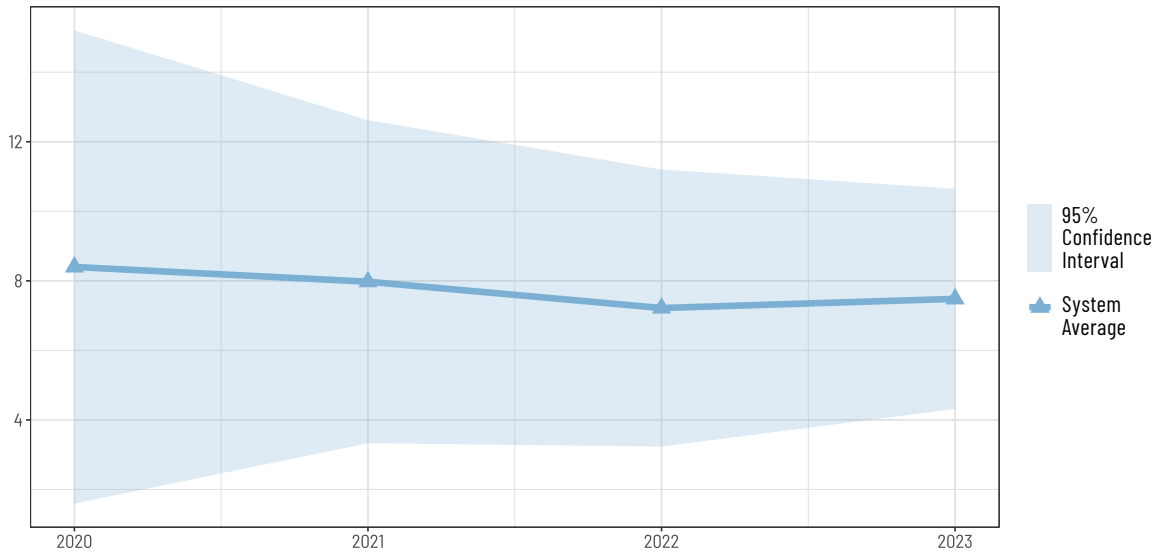
Metric Definitions

Per Capita: Based on the population according to the 2020 Census.

Personnel Expenses: Total amount of personnel expenses for police services in a fiscal year. This amount includes gross earnings (all salaries and wages) of permanent and temporary employees subject to the Federal Insurance Contributions Act (FICA), the unit's share of all overtime and holiday pay, longevity pay, allowances, supplemental retirement income, Social Security taxes, retirement contributions, hospital and medical insurances, disability insurances, unemployment compensation, workers' compensation contributions, deferred compensation, and other benefits.

ROBBERIES PER 10,000 PEOPLE

Importance: Crime metrics hold significant importance for law enforcement agencies and their partners. By leveraging crime statistics, agencies gain invaluable insights into overall crime trends and effective mitigation strategies. By analyzing robbery statistics, law enforcement agencies can make informed decisions about how to deploy officers and allocate patrol resources. This approach allows them to focus on high-crime areas and times of heightened activity. Ultimately, crime statistics serve as a measure of the effectiveness of law enforcement efforts and help guide the development of proactive crime prevention initiatives.



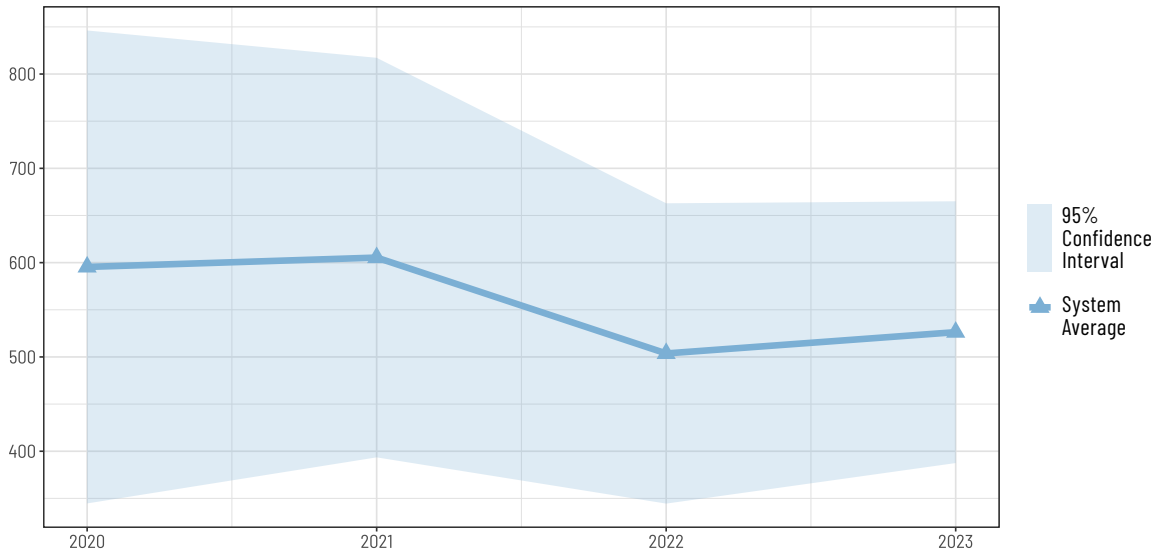
Metric Definitions

People: Based on the population according to the 2020 Census (x 10,000).

Robberies: Total number of reported robberies.

SYSTEM CALLS DISPATCHED PER SWORN OFFICER FTE

Importance: This metric plays a vital role in informing hiring decisions within police departments. The data helps agencies understand the demand for law enforcement services in their jurisdiction, assess the workload placed on their officers, and align their workforce capacity with operational requirements. By leveraging the data for these metrics, agencies can make informed decisions regarding hiring, staffing levels, and resource allocation to optimize service delivery and enhance public safety outcomes.

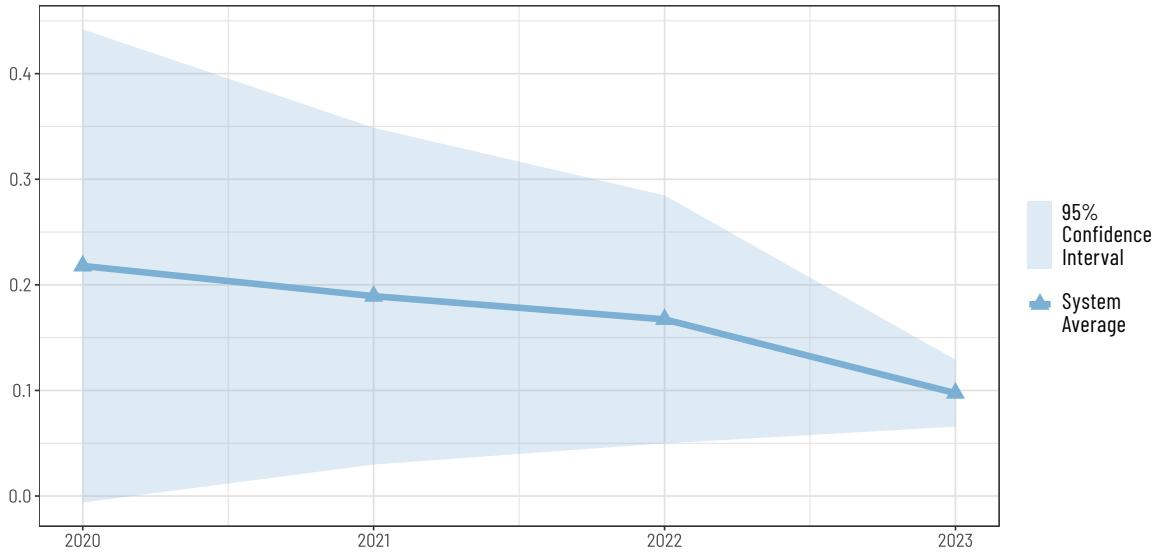


Metric Definitions

Sworn Officer FTEs: The total number of approved sworn officer full-time equivalents (FTEs), filled or unfilled (including administrative positions), approved in a fiscal year. This metric includes all full-time positions and regular part-time positions that are eligible for full benefits. It does not include seasonal and part-time positions that are not eligible for full benefits. *System Calls Dispatched:* The total number of calls dispatched for a fiscal year, including 911 calls, walk-ins, web-portal reports, self-initiated calls, and telephone responses.

OFFICER INJURIES PER SWORN OFFICER FTE

Importance: This metric helps ascertain the safety of police officers. The Benchmarking Dashboard allows police departments to sort safety data by traffic accidents, assaults on officers, and officer deaths, which helps them take appropriate steps. A higher-than-usual number of traffic accidents, for example, might lead a police department to review its policy on pursuit or response time. A higher-than-usual number of assaults might lead to proxy measures for police-community relations. Ensuring the safety and well-being of police officers is paramount for any law enforcement agency. By tracking and analyzing data on officer injuries, departments can identify trends and patterns, allowing them to implement targeted measures to mitigate risks and enhance officer safety. By leveraging data on officer injuries and sworn officer FTEs, law enforcement agencies can proactively enhance officer safety, optimize resource allocation, and foster positive police-community relations.



Metric Definitions

Officer Injuries: Total number of on-job officer injuries (including those from traffic accidents, assaults on officers, etc.) as per internal incident reports submitted to OSHA/IA in a fiscal year.

Sworn Officer FTEs: Total number of approved sworn officer full-time equivalents (FTEs), filled or unfilled (including administrative positions), approved in a fiscal year. This metric includes all full-time positions and regular part-time positions that are eligible for full benefits. It does not include seasonal and part-time positions that are not eligible for full benefits.

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

ARRESTS AND OTHER DUTIES

- Misdemeanor Arrests
- Felony Arrests
- Traffic Stops
- Warrants Served

CALLS, DISPATCHES, AND RESPONSE TIMES

- Average Response Time for High-Priority Calls
- High-Priority Calls
- High-Priority Calls per Approved FTE
- High-Priority Calls Responded to within Ten Minutes
- Total Calls Dispatched
- Self-Initiated Dispatches

CRIME

- Violent Crime
- Property
- Aggravated Assaults
- Arsons
- Rapes
- Burglaries
- Murders
- Larcenies
- Robberies
- Motor Vehicle Thefts

Police System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize four of them.

HOLISTIC RESPONSE PRACTICES: The partner police departments discussed co-response strategies. They emphasized that crisis counselors and social workers are trained differently than patrol officers and can be beneficial in resolving certain situations. Although alternate response strategies can take longer to resolve a situation, they have been found to be valuable to communities over time. One participant said that victim advocates and crisis counselors can provide valuable information about individuals in crisis based on their interactions with a community. This system also can significantly free up officers to focus on other areas of need. In some departments, individuals who are suffering from homelessness and addiction work alongside case workers and crisis counselors to identify individuals in need of support and conduct follow-ups. In some situations, social workers only respond when officers call upon them.

CIVILIAN INVESTIGATORS: Some police departments are experimenting with civilian investigators (non-sworn) who take reports for minor traffic accidents, parking, and fraud. Chapel Hill is getting ready to hire two civilian officers. Civilian investigators are a cost-effective way to keep sworn officers free for other calls.

PUBLIC REPORTING: The partners discussed various ways of reporting data to the public. Some departments share annual crime incidents, whereas others are embracing victimization counts. Since one crime incident (for example, a robbery at a bank) might have multiple victims, these counts help shape public safety perceptions with more accuracy. The Asheville police further break down their crime data by including demographics of the victims, which better communicates who is experiencing crime and the areas where the department needs more focus.

SAFETY SURVEYS: Holly Springs is part of a larger municipal survey in which respondents are asked if they have had contact with police and, if so, what their experience was like. They use the results to help identify training or customer service needs. Winston-Salem Police Department conducts an annual survey, alternating long and short versions each year, and shares the results with elected officials to help make funding decisions. Both Holly Springs and Winston-Salem supplement their survey results with public-perception data collected from social media. Holly Springs and Asheville benefit from their respective citizen advisory groups/committees that regularly meet with police leadership and attend events such as the citizen police academy.

SOLID WASTE SERVICES

Photo by somchai20162516, stock.adobe.com

IN NOVEMBER 2023, solid waste officials from the Benchmarking 2.0 partner departments convened at the School of Government to address key issues in residential waste management, including budgetary restrictions, growth projections, data utilization, staffing requirements, customer-complaint responses, yard waste management, and sustainability. The exchange of ideas and strategies aimed to optimize management practices, reduce environmental impacts, and enhance community satisfaction.

THEMES DISCUSSED DURING THE SESSION

- Complaint Resolution Strategies
- Cost Analysis
- Environmental Impact
- Fee Structures
- Operational and Budgetary Considerations
- Staffing
- Tonnage and Disposal Data
- Yard Waste Management

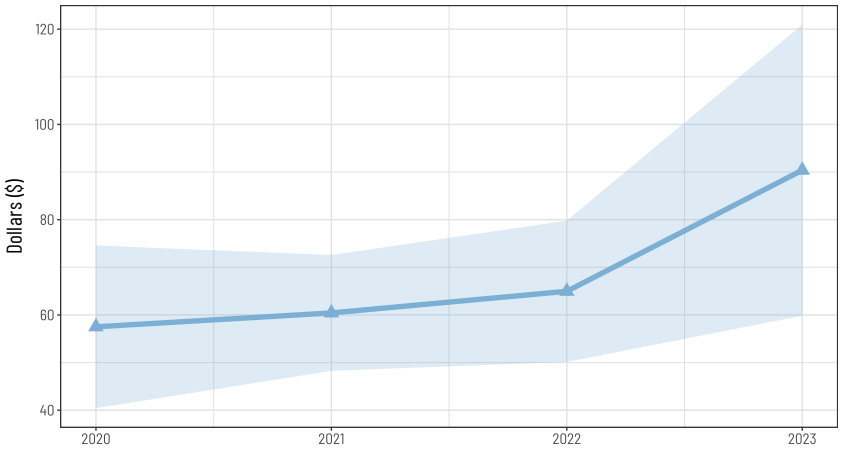
Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs show the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard. (Note: The following statistics appear under these three service categories on the Dashboard: Household Recycling; Residential Refuse Collection; and Yard Waste/Leaf Collection.)

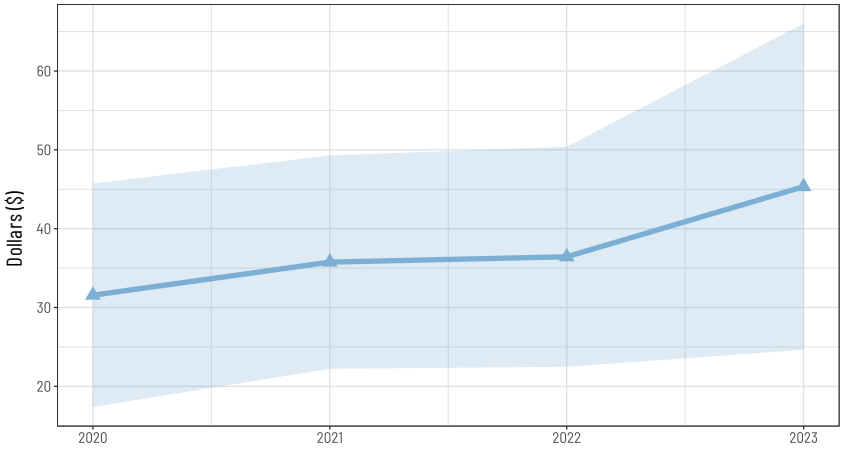
SOLID WASTE EXPENSES

Importance: These metrics are used by solid waste departments to determine customer rates, adjust levels of service, maintain and replace equipment, and make personnel decisions related to hiring and training.

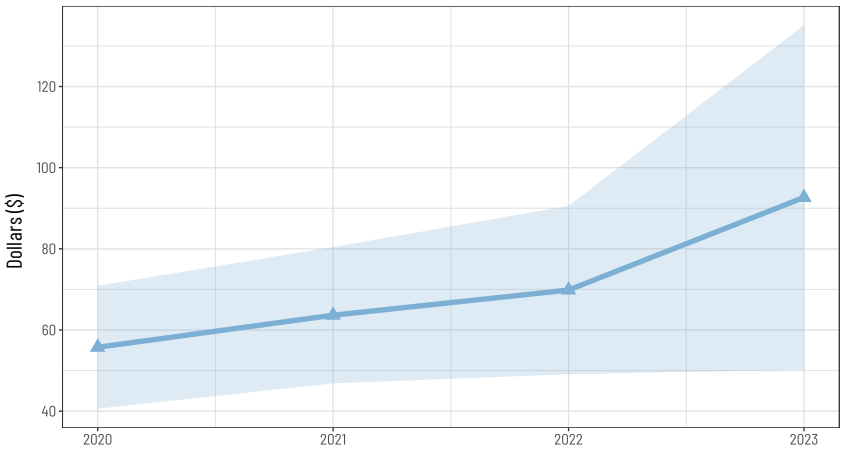
A. Total Residential Refuse Collection Expenses per Household



B. Total Recycling Collection Expenses per Household



C. Total Yard Waste Collection Expenses per Household



System Average

95% Confidence Interval

Metric Definitions

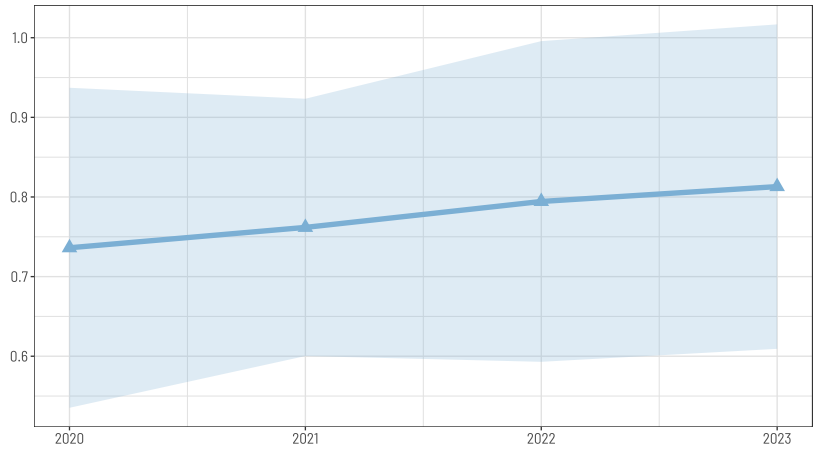
Expenses: Sum of personnel and operational expenses for each category of residential refuse collection.

Households: Total number of households in a service area from 2016–2020.

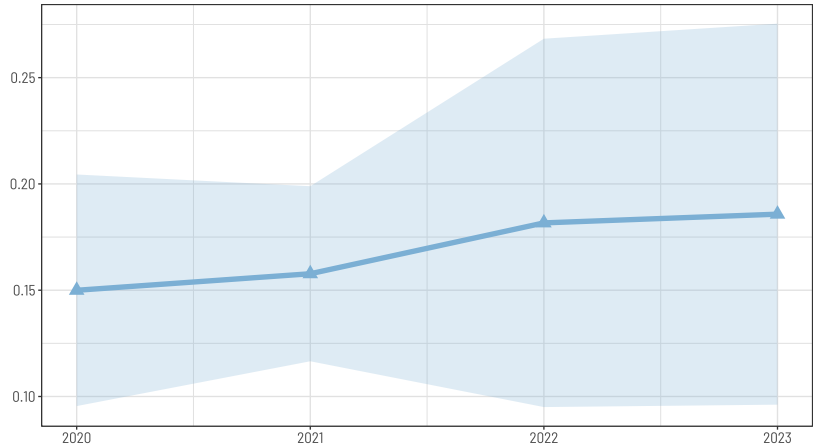
SOLID WASTE TONNAGE PER HOUSEHOLD

Importance: The amount of solid waste generated per household is a crucial metric that helps solid waste departments assess a community's environmental impact, understand the behavioral patterns of households, and evaluate landfills. The information can inform public awareness campaigns, waste collection schedules, and the implementation of new programs such as composting. For example, when the COVID-19 pandemic caused a sudden increase in residential waste tonnage per household, solid waste departments had to adjust their service collection and update their contracts to address the situation.[1]

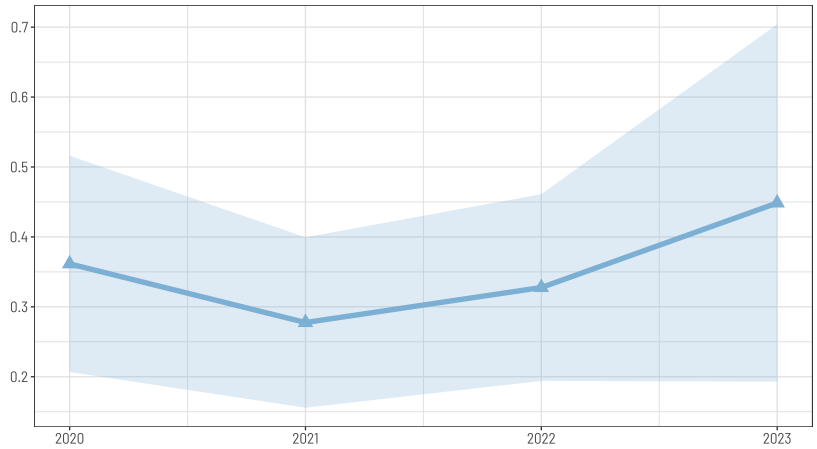
A. Tons of Residential Refuse Collected per Household



B. Tons of Recycling Collected per Household



C. Tons of Yard Waste Collected per Household



Legend

95% Confidence Interval

System Average

Metric Definitions

Households: Total number of households in a service area from 2016–2020.

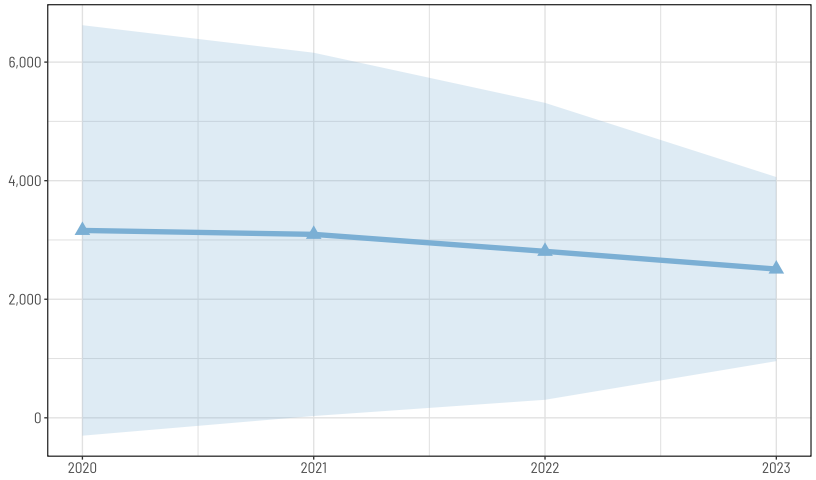
Tons Collected: Total tons of residential solid waste collected in each category (refuse, recycling, yard waste) by municipal crews, private haulers, and drop-off sites in a fiscal year.

1. D. Hantoko, X. Li, A. Pariatamby, K. Yoshikawa, M. Horttanainen, and M. Yan, "Challenges and Practices on Waste Management and Disposal during COVID-19 Pandemic," *Journal of Environmental Management* 286 (May 2021): 112140.

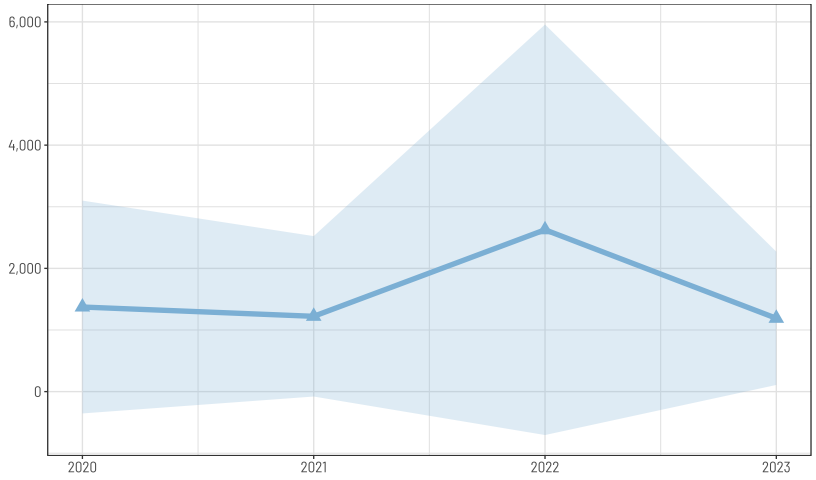
SOLID WASTE TONNAGE PER FTE

Importance: These graphs help solid waste departments determine the amount of waste each employee is responsible for in their municipality. By comparing tonnage with respect to the workforce, the departments can evaluate its efficiency and make informed decisions about hiring and workforce planning.

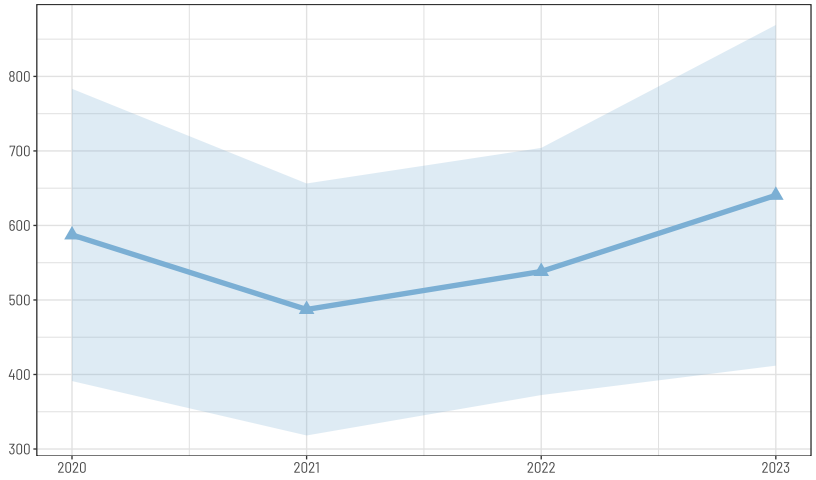
A. Tons of Residential Refuse Collected per FTE



B. Tons of Recycling Collected per FTE



C. Tons of Yard Waste Collected per FTE



Legend

95% Confidence Interval

System Average

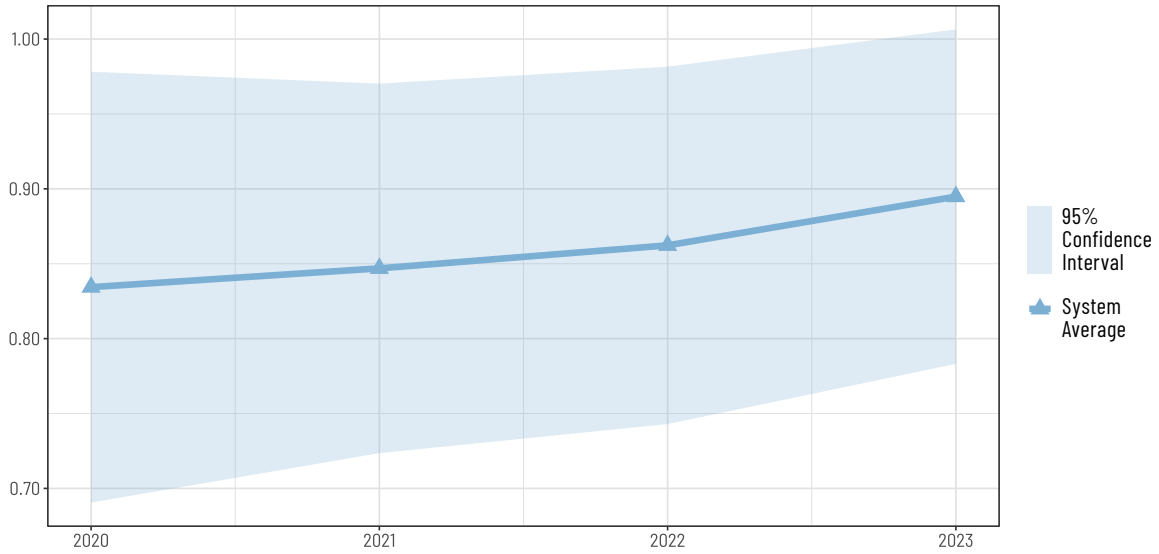
Metric Definitions

FTEs: Total approved full-time equivalents (FTEs), filled or unfilled, for a fiscal year. This metric includes all approved, regularly scheduled full-time positions and regular part-time positions that are eligible for full benefits (but does not include seasonal or part-time positions that are not eligible for full benefits).

Tons Collected: Total tons of residential solid waste collected in each category (refuse, recycling, yard waste) by municipal crews, private haulers, and drop-off sites in a fiscal year.

RESIDENTIAL REFUSE COLLECTION POINTS PER HOUSEHOLD

Importance: This graph depicts the number of residential refuse collection points, which is a metric tool used to analyze growth trends. Solid waste departments rely on this data to make important decisions, such as ordering new carts, providing protection for carts, staffing drivers and collectors, acquiring new equipment and expanding the fleet, and making changes to routes and schedules. By knowing how many people will be affected by a schedule change, for instance, solid waste departments can effectively plan communication campaigns. This metric also helps to forecast fuel and maintenance costs.

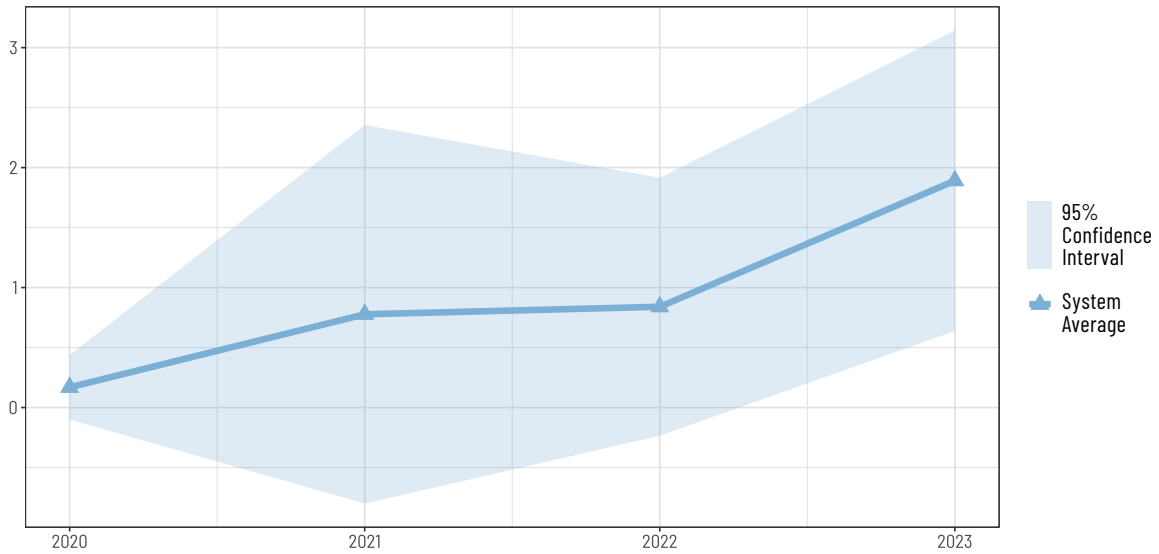


Metric Definitions

Collection Points: Total number of active addresses serviced by solid waste crews in a fiscal year, including single-family, multifamily, and central business districts with curbside rollout service. *Households:* Total number of households in the area from 2016–2020.

ROUTE MILEAGE PER HOUSEHOLD

Importance: Solid waste departments can enhance their operational efficiency by analyzing their route mileage per household to evaluate the effectiveness of their routes. The metric helps them make informed decisions about the most appropriate disposal locations for waste. By reducing the distance traveled in each route, they can minimize fuel consumption and maintenance expenses, thus improving their overall cost-effectiveness.



Metric Definitions

Households: Total number of households in the area from 2016–2020. *Route Mileage:* Total aggregate of miles for all routes in a fiscal year. These are the miles assigned or driven from a routing station to provide collection service.

Solid Waste System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize four of them.

COMPLAINTS: The partners expressed difficulties in accurately measuring user complaints. Some find it confusing and laborious to separate valid complaints from those that are invalid, especially when departments receive complaints from different sources, such as telephone calls, 311 calls, and board members. Some partners have clear policies for logging complaints. For instance, Charlotte tracks complaints about missed pickups and considers all complaints valid. Asheville has implemented a system that uses GPS to track each pickup and combines it with pictorial evidence. This system helps to identify whether the solid waste department missed a pickup or if the customer was unable to put the carts out on time. Since solid waste is contracted out in Wake Forest, the contractor takes pictures of cans that are not set out. Concord's Solid Waste team investigates all complaints and only marks as valid the ones that staff did, in fact, miss. Their technology solutions (Mobile 311 and Rubicon) provide them with the opportunity to check complaints with photos and GPS tracking. Staff offer courtesy collections to those who request in advance or are in need of service. Goldsboro offers one courtesy pickup but adds $15 to a water bill for subsequent pickups. The partners agreed that "tagging" customers (putting messages on their carts) to inform them why their waste was not collected is an effective communication method.

PUBLIC ENGAGEMENT: The partners discussed several ways to keep the public engaged and informed. Charlotte developed an app store game, Trash Dash CLT, that allows players to manage garbage trucks in the city so that they collect as much solid waste as possible. Wake Forest and Asheville use an app called Waste Wizard to help customers get information and connect with the department. Greensboro puts QR codes on cans and trucks so that citizens can communicate with the department, get real-time updates, and find guidelines for acceptable and unacceptable items. Asheville also distributes hard copies of brush and recycling calendars. The partners discussed the importance of communicating extensively with customers before making any change in a route or schedule.

YARD WASTE: The partners discussed the similarities and differences in their yard waste collection policies. Concord has no limits on yard waste collection, whereas Wake Forest has a generous loose-leaf policy but strict weight limits for heavy yard waste (50 pounds per biodegradable paper bag or container) and a limit of 30 bags or 10 containers per address, per week. There was also variation in how yard waste is processed. Goldsboro has their own composting facility, whereas Concord pays a contractor to take care of leaves and tree limbs. Apex is conducting a yard waste transfer and processing center feasibility study in 2024–2025 to explore potential yard waste options.

DISPOSAL SYSTEMS: Apex uses Geotab technology to reconcile disposal tickets daily, whereas Charlotte's physical tickets are integrated into a virtual platform. Wake Forest does not have a scale and has to weigh full trucks to determine the average weight, which they then use to pay per truckload.

WASTEWATER SERVICE

Photo by VIEWFOTO STUDIO, stock.adobe.com

IN NOVEMBER 2023, wastewater service officials convened at the School of Government for a collaborative meeting of the Benchmarking 2.0 partners. The group discussion focused on performance metrics, nutrients, permit limits, administrative issues, equipment replacement and repair, and multiyear planning.

THEMES DISCUSSED DURING THE SESSION

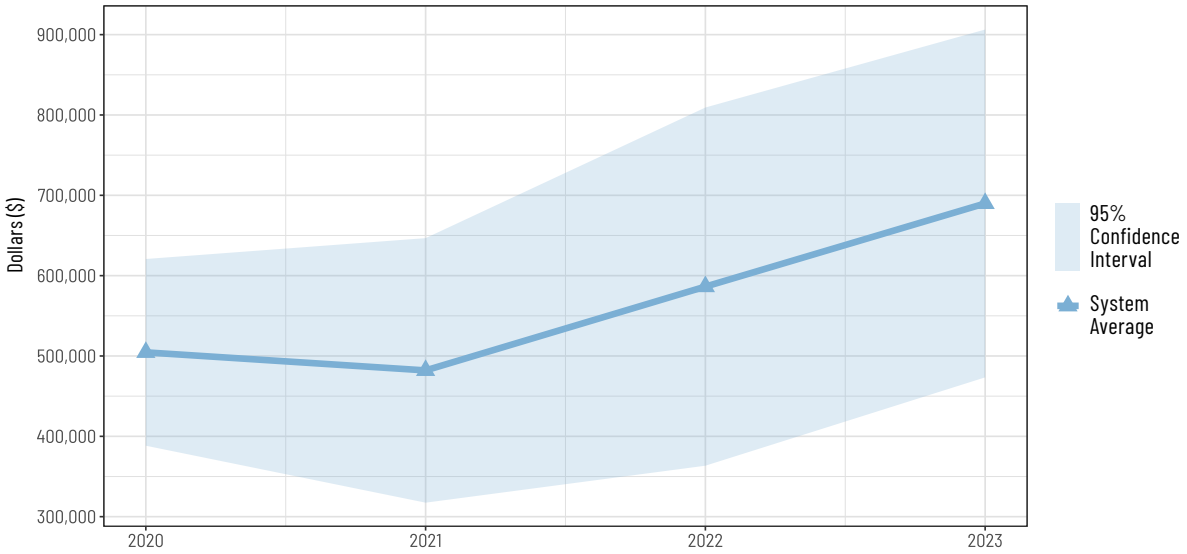
- Asset Management
- Cost Analysis
- Growth Management
- Innovation and Future Planning
- Integration and Software Needs
- Operational Efficiency
- Productivity and Performance
- Regulatory Compliance

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making. While these graphs show the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

OPERATIONAL EXPENSES PER MGD OF WASTEWATER DISCHARGED

Importance: This essential metric is analyzed every year by middle managers and executive leadership to make informed decisions about equipment, asset repair and replacement, collections investigations, and other essential matters. By examining this data, companies can ensure that their wastewater treatment processes are effective and sustainable.



Metric Definitions

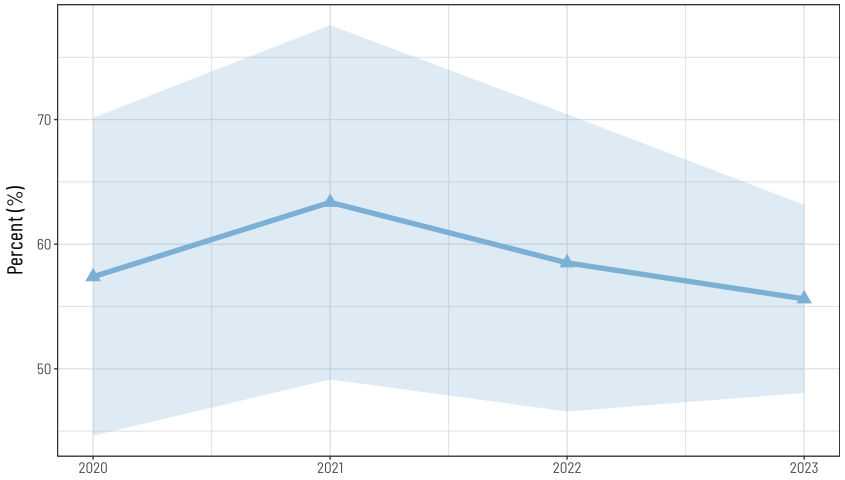
MGD of Wastewater Discharged: Total volume of discharged wastewater from all system treatment plants (including wastewater received from other municipalities) in millions of gallons per day (MGD).

Operational Expenses: Total amount of operational expenses for wastewater services in a fiscal year. This amount includes non-capital outlay for equipment, tools, and software; expenses related to property or materials purchased for resale or the cost of goods sold; fees for training, travel, property maintenance, repairs, licenses, advertising, purchases, rentals, memberships, dues, utilities, data management/processing, MIS and GIS technologies, contracted services, contract administration, fuel, fleet maintenance, special programs, sublet work; and all other operating expenses.

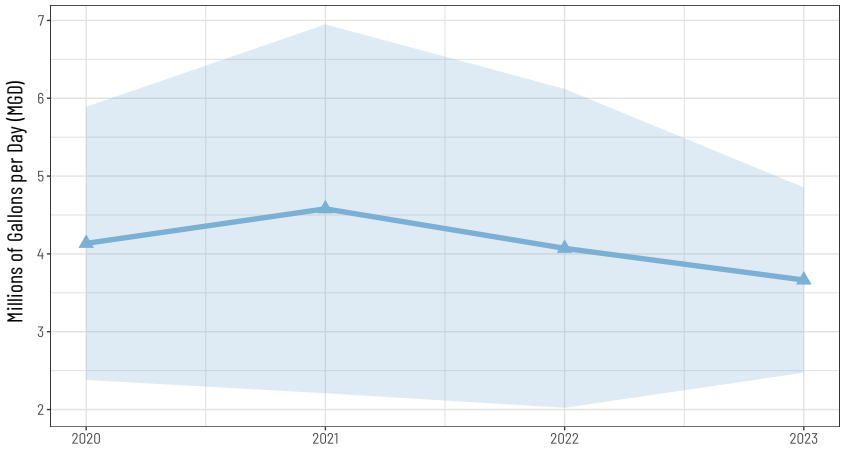
WASTEWATER TREATMENT

Importance: These metrics help to evaluate a department's ability to treat and process wastewater. They are important factors in ensuring the safety and health of the environment as well as bacterial diversity. The data is reviewed annually by both middle management and executive leadership in order to make informed decisions regarding the movement and reuse of water while implementing Clean in Place (CIP) procedures and planning for equipment repair and replacement and facility expansion.

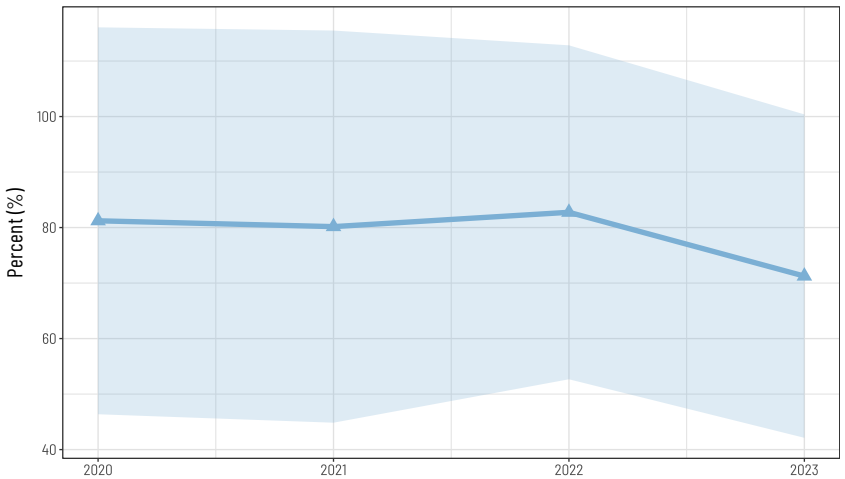
A. Treated Wastewater Discharged, as a Percentage of Treatment Capacity



B. MGD of Treated Wastewater Discharged per 10,000 Residential Accounts



C. Dry Weight of Biosolids Reused, as a Percentage of Biosolids Produced



Legend

95% Confidence Interval

System Average

Metric Definitions

Dry Weight of Biosolids Reused: The dry weight of biosolids produced as a result of treatment. Reused biosolids can include composting, pellets, land application, and other methods but does not include incineration or landfill (x 100).

MGD of Wastewater Discharged: Total volume of discharged wastewater from all system treatment plants (including wastewater received from other municipalities) in millions of gallons per day (MGD) (x 10,000).

Residential Accounts: The number of unique customer accounts that are residential.

Treated Wastewater Discharged: Total volume of discharged wastewater from all system treatment plants (including wastewater received from other municipalities) in millions of gallons per day (MGD).

Treatment Capacity: Total treatment capacity for wastewater in millions of gallons per day (MGD).

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

OVERFLOW METRICS

- Sanitary Sewer Overflows (SSO)
- Average Response Time to SSO
- Combined Sewer Overflows (CSO)
- Average Response Time to CSO
- Wet/Dry Sewer Overflow Volume

Wastewater System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize two of them.

STANDARDIZATION: During a discussion of waste removal techniques, the partner departments expressed dissatisfaction with the lack of standardization in nutrient removal, chemical requirements, and regulations. For instance, they wanted to know if other departments employed four-stage or five-stage Biological Nutrient Removal (BNR) processes. Even expensive technological setups costing over $300 million just to deal with water flow are not proven to remove contaminants under the regulated amounts. Moreover, there is confusion about what to do with the removed "residuals." Some of them can be converted into land composting, but most end up in landfills, which causes per- and polyfluorinated substances (PFAS) to re-enter the waterways. Consequently, some states, such as Maine, have already banned land applications, limiting the options for wastewater utilities. Some partners noted that Environmental Protection Agency (EPA) checks—stack tests, in particular—can feel like a moving target.

INNOVATION: Innovation in this area can be difficult. And being a test subject can be expensive and troublesome. Greensboro was the first to try a different technology (a rotary press) to dewater their ash, but they were advised to stop because it was too abrasive and damaged the machinery, even though it appeared to be effective. The department eventually went back to their original technology of a belt filter press. Some departments find it helpful to gather information from other wastewater operators. While working on a multimillion-dollar project, one department spent $20,000 on trips just to learn what others were doing with similar projects. That department considered the $20,000 a worthwhile investment.

Photo by Becky Wright, stock.adobe.com

IN NOVEMBER 2023, water service officials convened at the School of Government to discuss a range of topics including budgeting and billing issues, customer assistance programs, and municipal/county coverage. The Benchmarking partners also addressed valve exercise programs, meter readings, annexation, CIPs (capital improvement plans), and water supply and scarcity issues. They emphasized the need for better data on certification pay increase policies, billing and rate comparisons, GIS mapping, PFAS contamination, and long-range water supply plans.

THEMES DISCUSSED DURING THE SESSION

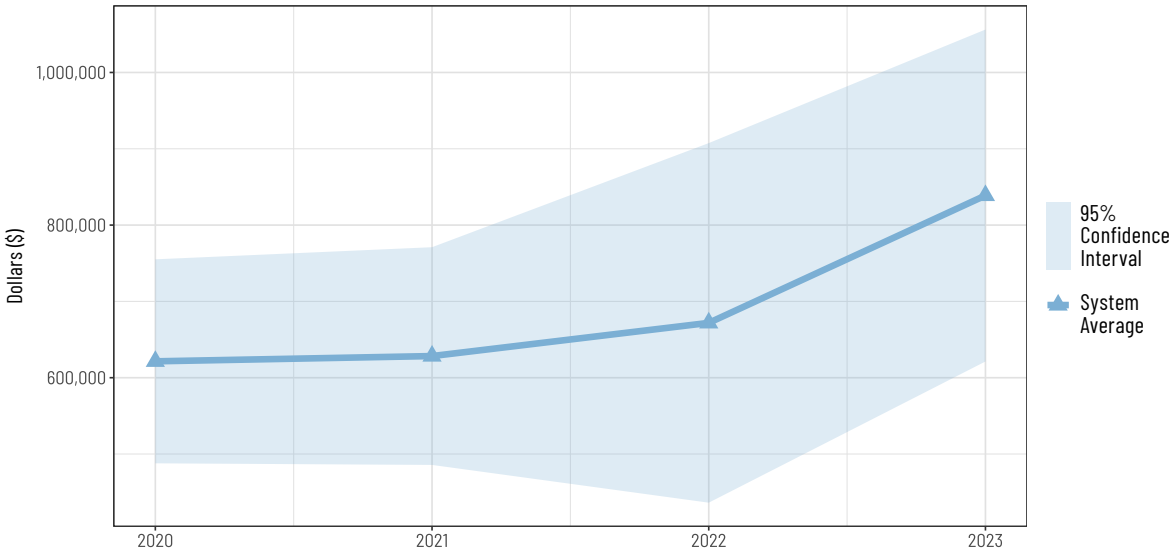
- Affordability
- Cost Increases
- Daily Operations
- Financial Data
- Future Growth
- Salary Study
- Water Age
- Water Loss

Performance Metrics

The Benchmarking partners identified the following performance metrics that they use for decision-making in their respective departments. While these graphs display the system average of all partners, individual comparisons can be made on the online Benchmarking 2.0 Dashboard.

OPERATIONAL EXPENSES PER MGD OF BILLED WATER

Importance: This graph provides a comparison of the average operational expenses for waste services, which includes expenses related to database technologies, equipment repairs, and training fees. This metric is usually analyzed annually by middle managers and executive leadership in formal meetings to make decisions on cost allocation, rate increases, fees, Capital Improvements Programs (CIPs), and related matters.



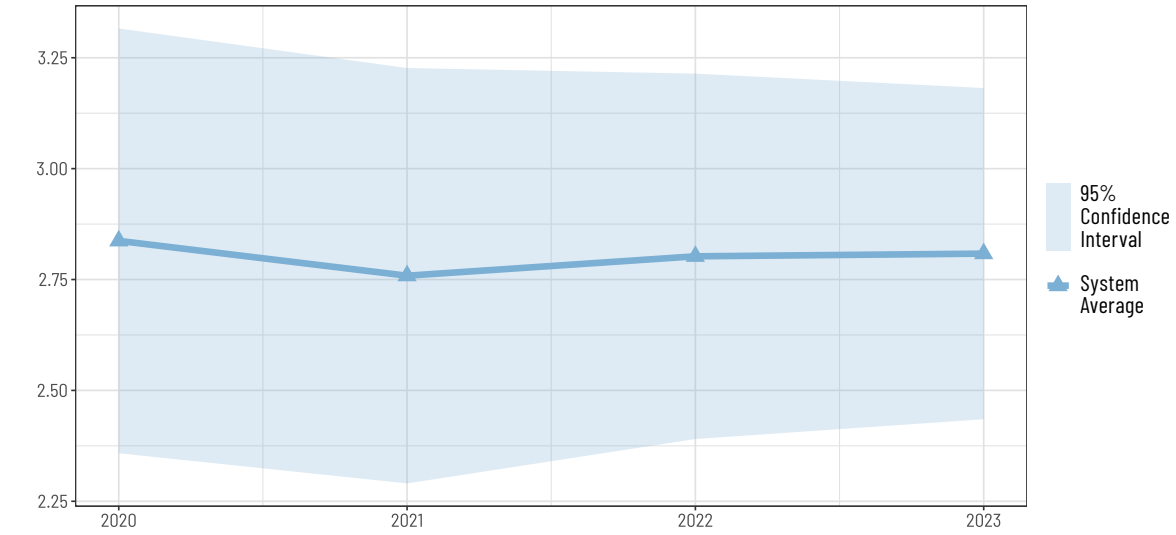
Metric Definitions

MGD of Billed Water: The total amount of billed water, in millions of gallons per day (MGD), in a fiscal year.

Operational Expenses: Total operational expenses for water services in a fiscal year. This amount includes non-capital outlay for equipment, tools, and software; expenses related to property or materials purchased for resale or the cost of goods sold; fees for training, travel, property maintenance, repairs, licenses, advertising, purchases, rentals, memberships, dues, utilities, data management/processing, MIS and GIS technologies, contracted services, contract administration, fuel, fleet maintenance, special programs, sublet work; and all other operating expenses. If a precise breakdown is not available, operating expenses in the service areas supporting both water and sewer services may be counted as equally divided between the two services.

MGD OF WATER BILLED PER 10,000 RESIDENTIAL METERS

Importance: Water usage data is crucial and enables water service departments to manage water distribution planning, infrastructure maintenance, billing, and conservation efforts. It also helps them understand patterns of consumption, identify areas of high or low usage, detect leaks, and ensure the sustainability of water resources. By periodically monitoring this metric, water service departments can make informed decisions about water supply capacity in the future, address affordability issues through Customer Assistance Programs (CAPs), and install more precise metering systems.



Metric Definitions

MGD of Water Billed: Total amount of billed water, in millions of gallons per day (MGD), in a fiscal year.

Residential Meters: Total number of residential meters, using a best estimate.

Other Metrics

Additional variables are available for analysis on the Benchmarking 2.0 Dashboard, including:

WATER SOURCE

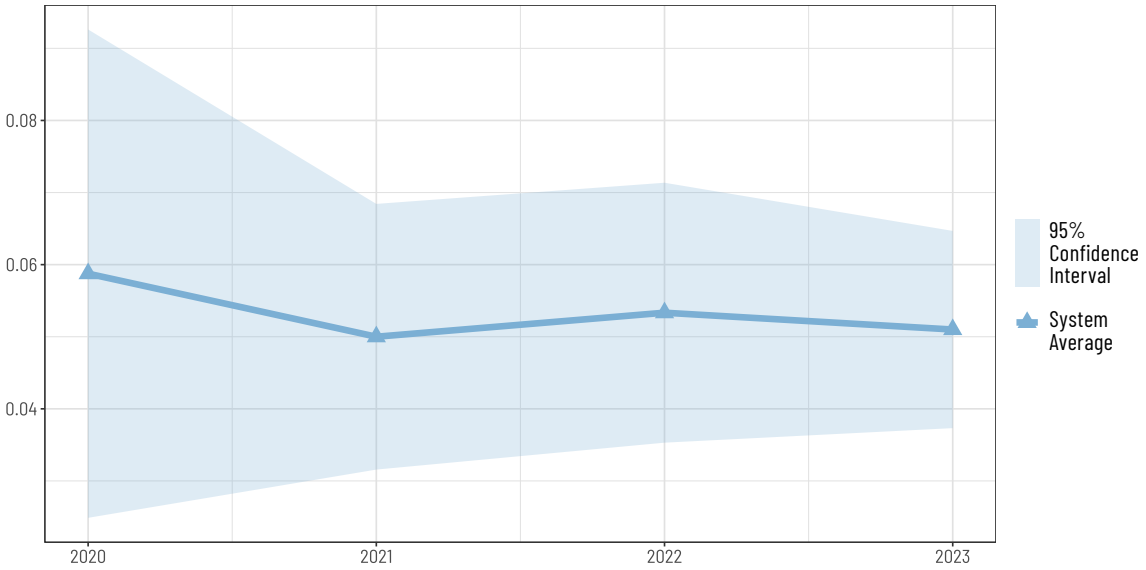
- Surface Water Sourced
- Raw Water Purchased
- Surface Water Purchased
- Finished Water Treated
- Groundwater Under Direct Influence (GU) Sourced
- Finished Water Purchased
- Groundwater Under Direct Influence (GU) Purchased
- Non-Potable Recycled Water Produced
- Groundwater (GW) Sourced
- Purchased Non-Potable Recycled or Reused Water
- Groundwater (GW) Purchased
- Water Desalinated

NUTRIENTS AND WATER QUALITY

- Maximum THM (LRAA)
- Maximum pH
- Average Turbidity (*see NTUs example below*)
- Maximum Hardness
- Maximum Turbidity
- Maximum PFOA Levels
- Maximum Chlorine Concentration
- Maximum PFOS Levels
- Maximum Fluoride Concentration
- Hazard Index
- Maximum Iron Concentration

AVERAGE NEPHELOMETRIC TURBIDITY UNITS (NTUS)

Importance: Turbidity is a measure of water clarity. It is an essential metric for water treatment plants to monitor as high levels can indicate the presence of contaminants.



Metric Definition

Average Nephelometric Turbidity Units (NTUs): The average measurement of the amount of NTUs in finished water at a water treatment plant in a fiscal year.

Additional Considerations

The Benchmarking partners discussed the importance of additional data they use to make operational decisions. These variables are not included in the dashboard since they are not conducive to comparisons.

WATER AGE: Water age refers to the amount of time water spends in a distribution system, from the moment it enters until it reaches the point of consumption. This metric is measured in hours or days and is used to evaluate water quality, identify potential issues such as stagnation or contamination, optimize the operation of distribution systems, and ensure compliance with regulatory standards. Maintaining appropriate water age levels is essential for protecting public health and ensuring a sustainable supply of water for communities. Water age can be analyzed through lab testing of parameters such as pH, nitrate, nitrites, and color, or through field observations of water aesthetics such as color. Based on these results, water utilities may take steps such as flushing the water to prevent diseases such as Legionnaires' disease, which is caused by the Legionella pneumophila bacterium. Flushed water that is discharged into stormwater may need to be dechlorinated to protect fish.

FUTURE GROWTH: Future growth refers to the projected increase in demand for water supply and distribution due to factors like population growth and urban development. By anticipating future growth, water service departments can create long-term plans to ensure the reliable provision of safe and sufficient water resources to meet the needs of expanding communities. To determine future growth and investment, utility departments rely on population growth predictions, asset data, trends and demand, Geographic Information Systems (GIS), and equipment life cycle and age.

Water System Strategies

The Benchmarking partners discussed various strategies during the session. Below, we summarize two of them.

VALVE EXERCISE PROGRAM: There can be thousands of water mainline valves across a water utility's distribution system. These valves accumulate barnacles and rust if they're not opened for a long time, causing them to break when they are eventually turned for system-wide maintenance or repair purposes. Goldsboro's water utility system has implemented a thorough valve exercise program that turns all valves four times a year. Apex uses GIS technology to identify, monitor, and maintain records for each valve, creating heat maps for the problematic ones. Some of the participants acknowledged the benefits of employing Hydrant Uniformity Automatic Recirculation Valve (ARV) systems to prevent valve issues.

ANNEXATIONS: The participants discussed the complications that arise because of water district annexations. For example, a municipal water utility might offer its services to neighboring counties, which often results in different rates for customers within the municipal jurisdiction compared to those in the annexed areas. In some cases, a single apartment building or a business unit that lies just outside the municipal jurisdiction

is seeking to gain access to municipal services such as police and fire. Annexations to the water district are formalized through service agreements and contracts that follow negotiations. Some participants shared their negative experiences with long-term annexation contracts and advised others to read their contracts thoroughly before signing them.

REPORT SUMMARY

REPORT SUMMARY

DURING THE 2023 PERFORMANCE STRATEGY SESSIONS at the School of Government, the Benchmarking 2.0 partners discussed the key metrics used by service departments in North Carolina local governments and the strategies they have implemented to address them. The findings for each service department are summarized below.

ASPHALT MAINTENANCE AND REPAIR

The Benchmarking partners discussed topics such as financial allocation, data collection methods, recruitment and retention strategies, organizational structure, and decision-making processes. Their most relevant performance metrics are outlined in this report, including expenses per lane mile, expenses per capita, lane miles per 1,000 people, road condition ratings, potholes reported, and staffing ratios, all of which serve as vital tools for optimizing asphalt maintenance services. The Benchmarking partners shared approaches to PCI score measurement and residential complaints, highlighting a diverse array of asphalt maintenance practices and the importance of continuous improvement and adaptation. The group's primary objective was to bolster the efficiency and effectiveness of asphalt maintenance while grappling with the challenges of adapting to evolving technological advancements and regulatory requirements.

BUILDING INSPECTIONS

The Benchmarking partners focused on leveraging data science techniques to tackle issues related to building inspection systems and strategies, such as permit issuance, plan reviews, budget and operations reporting, staffing, and fee/budget management. The participants talked about managing workloads amidst staffing constraints, adjusting permit fees, and exploring partnerships with educational institutions for talent development. They also delved into the efficiency and quality of plan reviews, the impacts of technological and regulatory changes, and the strategic decisions essential for ensuring operational efficiency and public safety.

Their most relevant performance metrics are outlined in this report, including inspections completed, inspections per capita, inspections per full-time equivalent (FTE) position, and reinspections as a percentage of total inspections. This data informs decisions about staffing levels, workload management, and process improvements. As the participants explored strategies for recruitment, retention, and training, they emphasized the importance of innovation in addressing workforce challenges and maintaining service quality. The discussion touched on the various fee structures used by different municipalities and noted that budget and operations reporting can ensure cost recovery and fiscal sustainability.

CENTRAL HUMAN RESOURCES

The Benchmarking partners delved into a range of topics related to human resources (HR), aiming to gain insights into useful resources, budget analysis, turnover rates, hiring strategies, and performance review methods. The discussion focused on using salary information for equity and recruitment purposes, assessing time-to-hire against

industry standards, and improving the accuracy of performance evaluations. Identified challenges included the need for reliable performance data, understanding generational pay expectations, and implementing effective career development paths. Emphasis was placed on data-driven decision-making and the use of benchmarking, turnover analysis, and impact assessments of various HR positions. The participants noted the importance of comprehending departmental performance, streamlining hiring processes, and strategically utilizing benefits to bolster employee satisfaction and retention.

Their most relevant performance metrics are outlined in this report, including average length of service, approved FTEs per 1,000 people, resource availability, expenses per municipal FTE, and grievances per 1,000 FTE. The strategies the participants discussed involved analyzing benefits, restructuring longevity pay to align with modern workforce expectations, and optimizing HR systems and processes for enhanced efficiency and effectiveness. Their insights reflected a collective effort to adapt HR practices to meet evolving workforce needs and organizational objectives while leveraging data and technology to drive informed decision-making and foster a positive employee experience.

EMERGENCY COMMUNICATIONS

The Benchmarking partners delved into key topics such as technological advancements in emergency response, including NextGen 911 and live video support for callers, while also tackling challenges like recruitment, retention, and managing workplace stress for employees. Funding constraints and staffing shortages emerged as significant issues, prompting a discussion of the use of data to inform service delivery and resource management. The participants spoke of an increasing demand for emergency services, the positive impact of technology on response times, and the necessity for ongoing data analysis and benchmarking to navigate operational challenges.

Their most relevant performance metrics are outlined in this report, including expenses per 911 call, personnel expenses as a percentage of total expenses, 911 calls per capita, and 911 calls per telecommunicator FTE. The participants shared strategies such as using unconventional advertising spaces for job recruitment campaigns, improving communication with callers to manage stress and delays, implementing measures to reduce telecommunicator stress, and adapting to technological changes to enhance emergency response capabilities.

FIRE SERVICE

The Benchmarking partners covered a wide array of topics ranging from residential fire complaints to response time metrics and incident tracking. Their most relevant performance metrics are outlined in this report, including expenses per incident response, personnel expenses as a percentage of total expenses, incidents reported per 1,000 people, fires reported per 1,000 people, incidents reported per FTE, response times, and safety outcomes. These metrics serve as vital indicators for fire departments to gauge their efficiency, allocate resources effectively, and make informed decisions regarding staffing and budgetary allocations.

Notable strategies that emerged during the session included managing data, staffing, and budgets to mitigate rising personnel costs, integrating electric vehicles (EVs) into fire services, leveraging artificial intelligence (AI) and metric systems for data-driven decision-making, and prioritizing data security and collaboration for effective metric system integration. Emphasis was placed on the importance of using response and incident

data to optimize emergency response protocols, forecast future challenges, and inform strategic planning initiatives. The discussion underscored the critical role of using data to gain performance insights, embracing innovative technologies, and fostering collaborative frameworks to enhance operational efficiency and ensure the safety and well-being of communities served by fire departments.

FLEET MAINTENANCE

The Benchmarking partners discussed a range of topics including vehicle replacement schedules, work order efficiency, electric vehicle integration, procurement processes for vehicle parts, software tools, data-driven decision-making, and funding for fleet initiatives. Their most relevant performance metrics are outlined in this report, including expenses per capita, preventive maintenances completed as scheduled, work orders completed within twenty-four hours, hours billed as a percentage of billable hours, and work orders per FTE. These metrics serve as vital indicators for assessing operational efficiency, allocating resources effectively, and optimizing financial management practices.

Notable strategies that emerged during the session were related to electric vehicle adoption, vehicle ownership models, and procurement practices. Transitioning to electric vehicles offers challenges and opportunities, and some departments are concerned about staffing and infrastructure requirements while others are seeking increased community engagement. The participants discussed their various approaches to vehicle ownership and procurement methods. For example, Raleigh and Greensboro use different operational frameworks to determine vehicle ownership and associated costs. The participants acknowledged the ongoing challenge of procuring parts, which involves navigating the complexities of vendor relationships, inventory management, and cost considerations.

PARKS AND RECREATION

The Benchmarking partners discussed various topics such as resource allocation, staffing, community engagement, and maintenance. Their most relevant performance metrics are outlined in this report, including expenses per capita, program participation rates, park acreage per capita, swimming pools per 10,000 residents, population served per FTE, and percent cost recovery. These metrics provide insights into budget decisions, community engagement levels, facility adequacy, staffing efficiency, and financial sustainability. The partners highlighted strategies for program enhancement, including maintenance coordination, technology adoption, public engagement initiatives, recruiting outreach, and fee structure adjustments to ensure equitable access. Overall, the session focused on improving program effectiveness, community engagement, and operational efficiency.

POLICE SERVICE

The Benchmarking partners discussed key themes like community perception, budget considerations, operational effectiveness, retention strategies, and technology utilization. Their most relevant performance metrics are outlined in this report, including personnel expenses per capita, crime statistics, system calls dispatched per FTE, and officer injuries per FTE. These metrics aid in understanding budget allocation, crime trends, workload demands, and officer safety. The partners also discussed strategies like involving crisis counselors and social workers in holistic response practices, hiring civilian investigators for minor incidents, and increasing public awareness and engagement through safety surveys

and citizen advisory groups. These strategies aim to enhance community engagement, optimize resource allocation, and improve law enforcement effectiveness and public safety outcomes.

SOLID WASTE SERVICES

The Benchmarking partners discussed operational issues, cost analysis variables, customer fee structures, environmental concerns, and more. Their most relevant performance metrics are outlined in this report, including solid waste expenses per household, tonnage collected per household, tonnage per FTE, and route mileage per household were analyzed to optimize waste management practices and ensure sustainability. Notable strategies that emerged were related to complaint resolution methods, public engagement initiatives, yard waste management policies, recycling, and disposal systems. The partners shared insights about handling user complaints effectively, engaging the public through technology and communication channels, and addressing challenges related to yard waste collection and recycling. The discussion focused on fostering collaboration and innovation in solid waste management practices.

WASTEWATER SERVICE

The Benchmarking partners discussed challenges in wastewater management related to nutrient management, permit limits, asset management, equipment maintenance, and multiyear planning. Their most relevant performance metrics are outlined in this report, including operational expenses per millions of gallons per day (MGD) of wastewater discharged, treated wastewater discharged as a percentage of treatment capacity, MGD of wastewater treated per residential account, and dry weight of biosolids reused. Strategies that were discussed touched on standardization in waste removal techniques and the benefits and challenges of adopting innovative technologies. The partners emphasized the importance of information sharing and collaboration to navigate the complexities of their work effectively.

WATER SERVICE

The Benchmarking partners discussed various topics including billing issues and customer assistance programs, valve exercise programs and meter readings, and long-term planning for water supply and scarcity issues. Emphasis was placed on acquiring better data regarding certification pay increase policies, billing and rate comparisons, GIS mapping, per- and polyfluoroalkyl substances (PFAS) contamination, and long-term water supply plans.

Their most relevant performance metrics are outlined in this report, including operational expenses per MGD of billed water and MGD of water billed per 10,000 residential meters. Additional metrics related to water source variables and water quality were also discussed as essential to ensuring the safety and quality of the water supply. Notable strategies that emerged included using valve exercise programs to ensure the proper functioning of water mainline valves and managing annexations to address the complexities that arise from differences in rates and service agreements between municipal and annexed areas. The discussion underscored the importance of effective management practices and collaborative efforts in optimizing water services delivery and ensuring the sustainability of North Carolina's water resources.

The 2024 Benchmarking Report demonstrates the exceptional resourcefulness of North Carolina local governments in finding innovative ways to mitigate internal and external challenges. The collaborative approach and enthusiasm of the participating municipalities allow the Benchmarking 2.0 project to consolidate and highlight important trends in municipal service departments. It is through these crucial moments of sharing and exchange that we will develop a community that moves forward together to better serve all North Carolinians. We hope this report helps local governments celebrate their achievements and learn from one another.

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