

### Overview

The survey results highlight areas of strength in the NYS workforce as well as some concerns. The state IT workforce is well-educated and much of that education is concentrated in technical fields. The workforce is also very experienced in both state government and agency missions, with long tenures in state service, mostly concentrated in one or two agencies. The workforce age profile indicates a substantial proportion will be eligible to retire in the next three years (especially among managers and executives). The proportion of non-managerial IT professionals who actually plan to retire in the next three years is rather modest but the retirement wave will double by 2012. Minor differences in demographic characteristics are evident across age groups, job specialties, and agency size.

### Overall demographic findings

The demographic profiles presented in Table 1 show a highly educated and experienced IT workforce with long tenure and experience in New York State government. Nearly all employees have had some college level education, with more than half having baccalaureate degrees and approximately one-third having degrees in technical fields (computer science, information science, or management information systems). Overall, the respondents' mean age is 46.

The details of the demographic profile are presented separately for CIOs (executives who represent their agencies on the CIO Council), IT managers (as identified by job title and specialty area) and non-managerial IT professionals.

Non-managerial IT professionals, on average, have 15 years of experience working for New York State government, with 11 years in public sector IT positions. Half have worked for only one agency and another quarter have worked for two agencies. About half have had private sector IT work experience, with four years of experience on average. In addition, 16 percent of IT professionals hold current certifications in managerial or technical areas.

IT managers average 23 years of experience in New York State government, with an average of 21 years in public sector IT. Thirty-six percent have worked for only one agency and 29 percent have worked for two agencies. About 40 percent have private sector IT experience with an average of two years of experience. Thirteen percent hold certifications. CIOs have also had long tenures in state government and many years of public sector IT experience concentrated in one or two agencies.

The retirement picture across the three groups is mixed. About 20 percent of non-managerial IT professionals will be eligible to retire between 2006 and 2009. However the number who actually plan to retire is more modest (11 percent). By contrast, 22 percent of IT managers and 32 percent of CIOs expect to retire within that time period. Retirement projections increase steadily for all three groups after 2009. The pace of intended retirements for non-managerial IT professionals between 2006 and 2012 ranges from an annual low of 1.7 percent in 2006 to a high of 3.9 percent planning to retire in 2012, by which time more than 22 percent of today's professional employees expect to have retired. For managers and CIOs, the figures are substantially higher. More than 40 percent of IT managers and 55 percent of CIOs expect to have retired by 2012. As a counterpoint to the retirement picture, employees at all levels reported that they are very interested in working for New York State part-time after they retire. Fully three-quarters expressed an interest in post-retirement work.

### Table 1. Demographic profiles of the New York State IT workforce

## New York State IT Workforce and Leadership Profiles

Characteristics	IT Professionals(n=2466)*	IT Managers(n=271)*	Agency CIOs(n=57)**
Mean age	45	49	51
Age range	20 – 74	30 – 64	33 - 68
Percent with any college education	96 %	98 %	96 %
Percent with bachelor's degree or higher	58 %	72 %	84 %
Percent with degree in a technical field (CS, IS, MIS)	39 %	44 %	30 %
Percent with certifications	16 %	13 %	n/a
Mean years of experience in NYS government	15	23	21
Mean years of public sector IT experience	11	21	16
Mean years of experience in current agency	11	15	13
Percent with all NYS experience in a single agency	50 %	36 %	43 %
Percent with all NYS experience in two agencies	28 %	29 %	19 %
Percent with private sector IT experience	48 %	41 %	55 %
Mean years of private sector IT experience	4	2	4
Percent eligible to retire within 3 years (2006 through 2009)	19 %	36 %	50 %
Percent planning to retire within 3 years (2006 through 2009)	11 %	22 %	32%
Percent eligible to retire within 6 years (2006 through 2012)	31 %	54 %	68 %
Percent planning to retire within 6 years (2006 through 2012)	22 %	41 %	55 %
Percent interested in working for NYS after retirement	75 %	77 %	76 %

\* Excludes a total of 96 cases with missing job titles.

*\*\*The employee survey covered employees in 54 agencies. The CIO survey covered CIOs in 57 agencies, including three small agencies which have an IT leadership position but whose IT services are provided by the staff of larger agencies.*

### Job specialty categories

Survey respondents held a wide variety of job titles. With the advice of the HR Committee members, we were able to group more than 180 New York State Civil Service titles into seven job specialties. The resulting definitions and distribution of job specialties is shown in Table 2. These categories are a useful way to look at the workforce, but they do have some limitations due to the nature of Civil Service titles. While most titles pertain directly to the jobs performed, some are more broadly defined than others and may include a wider range of capabilities. In addition, individuals holding a variety of non-technical titles who are performing some aspect of an agency's IT function were also included in the survey population. Most of these titles were grouped in the Business Specialist category. Consequently, these groupings do not fully represent the work that people are actually doing, although they do approximate the broad job specialties in state government. Much of our subsequent analysis makes use of these job specialty categories in order to understand better how people doing different types of work perceive their proficiency and skill development needs.

#### **Table 2. Definitions of job specialties**

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Job Specialty	N*	Percent	Description
Programmer	1400	51	Titles within this group perform computer systems analysis, design, and programming activities for agency programs and may include web page development.
Other technical specialist	357	13	Generally entry and journey level positions in an IT organization, typically working in help desk, LAN administration, and user support or installation services functions. Resolve user problems by communicating with end-users and by translating technical problems from end-users to technical support staff. Install hardware, software and peripherals; runs diagnostic software; and utilize mainframe or client server software to provide system security access.
Technology manager	271	10	Titles within this group are responsible for planning/directing/ coordinating/supervising a combination of IT specialties for an agency including data base, data communications, operations and systems programming.
Business specialist	242	9	Titles within this group serve as technical specialists with technical knowledge and expertise related to their program(s)' specific automated system. They may work closely with IT staff in evaluating, reviewing, and analyzing business needs and supporting technology-related solutions within their assigned program areas.
Data communication/ telecommunications specialist	177	7	Titles within this group are responsible for voice and data communications network design, analysis,

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			capacity planning, installation, monitoring, performance evaluation, and maintenance. Install and maintain data and voice communications network hardware/software. Maintain and update local and statewide communications networks and systems.
Database administrator/analyst	119	4	Titles within this group are responsible for all activities associated with the design, development, installation, and performance of agency databases. May include advanced database programming, implementation, monitoring, and management of database environments.
Systems specialist	107	4	Titles within this group are responsible for systems programming and for implementing, maintaining, and managing an agency's systems software environment or major component. May be responsible for advanced systems programming, architecting, implementing and maintaining/managing an agency's advanced systems software environment or major component.
Operations specialist	64	3	Titles within this group are responsible for planning/directing/coordinating the computer operations activities of large computer systems including all data processing hardware and peripheral equipment. Supervise computer operators engaged in carrying out computer operations activities.

\* Excludes a total of 96 cases with missing job titles, total may not equal 100% due to rounding.

### Demographic differences among job specialties

The demographic patterns among the job specialties are quite similar to each other with a few exceptions. Levels

of education and types of degrees earned, years of work experience, and retirement eligibility and plans of respondents vary by job specialty. (See Table E1 in Appendix E for the complete profiles by job specialty.) About one-fifth of the operations specialists and one-third of other technical specialists have baccalaureate or higher level degrees compared to two-thirds of employees in the remaining specialties. In addition, 30 percent or more of the employees in most specialties hold degrees in technical disciplines, while this is true for 19 percent of business specialists and only 11 percent of operations specialists. Further, more technology managers, operations specialists, and business specialists are eligible to retire (36 percent, 37 percent, and 32 percent respectively) and more of them plan to retire in the next three years (22 percent, 23 percent, and 18 percent respectively) than do programmers and systems, database, telecommunications, and other technical specialists.

## Grade level categories

We also grouped the respondents by the equivalent of their Civil Service grade levels into four categories, as shown in Table 3. About equal numbers of employees are currently working at the entry and journey levels. Middle and senior managers (not including CIOs) represent 13 percent of the workforce.

**Table 3. Grade level categories of employees**

	<b>N</b>	<b>Percent of Total Respondents</b>	<b>Civil Service Grade Equivalents</b>
<b>Entry Level</b>	1,118	42%	G22 and below
<b>Journey Level</b>	1,229	46%	G23-G25
<b>Mid level Management</b>	286	11%	G27-G29
<b>Upper level Management</b>	57	2%	G31 and above
<b>Total</b>	2690*	100%	

*\*Excludes 143 cases with missing grade levels.*

Demographic profiles across these four grade categories are very similar except for patterns of formal education, work experience, and retirement plans (See Table E2 in Appendix E for the complete profiles). Two-thirds of journey level and three-quarters of management level employees hold a bachelor's degree or higher, while this is the case for about half of the employees in grades allocated to the entry level. This pattern may reflect the concentration of operations and technical specialist positions in titles which are allocated to G-22 and below. As would be expected, employees in journey and higher grade categories have more public sector work experience than entry level employees. They are also eligible and plan to retire earlier than entry level employees. However, with respect to private sector work experience, 59 percent of entry level employees on average have five years of private sector work experience, compared to employees in other grade levels (on average 44 percent have 4 years or fewer).

## Agency staff size categories

The agencies included in the survey population vary substantially by the size of their IT staff. Some agencies have more than 200 IT employees, others have fewer than 20. Therefore, we also grouped respondents according to the size of their agency IT staff as shown in Table 4. In subsequent sections of this report, we use three categories (small, medium, and large) to refer to the size of agency IT staff.

**Table 4. Agency size categories by size of IT staff**

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Size Category	Range of IT Staff in the Agency	Number of Agencies in the Category	Number of Respondents	Percent of Respondents
Large	100 or more	16	2008	71%
Medium	50 to 99	11	532	19%
Small	< 50	27	293	10%
<b>Total</b>	- - -	- - -	2833	100%

The demographic profiles are very similar across agencies with different numbers of IT staff. However, they differ slightly with respect to agency tenure, private sector experience, and retirement plans. (See Table E3 in Appendix E for the complete profiles.) Nearly half of all employees in large and medium agencies have worked for a single agency throughout their tenure with New York State; this figure is slightly lower for employees in small agencies (40 percent). In addition, more than half of all employees in small and medium agencies have had private sector work experience whereas 45 percent of employees in large agencies have private sector work experience. With respect to retirement, 13 percent of non-managerial employees in large and small agencies plan to retire through 2009 compared to 9 percent in medium agencies. However, the retirement outlook changes significantly across all agency sizes by 2012, by which time almost one in four current employees plan to retire.

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