AN ASSESSMENT OF EDUCATIONAL AND TRAINING NEEDS OF PUBLIC TRANSPORTATION MANAGERS IN NEW YORK AND NEW JERSEY

Roy Sparrow

New York University, February 1993

DISCLAIMER

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Preface

Management may be the last major profession where practitioners acquire their skills, standards, and values principally through on-the-job training. The majority of current managers in industry, government, education, and public services learned to do managerial work by whatever means their particular organization provided. Often this involved mentoring, sometimes a training course in management or supervision, but more often the new manager was left to figure it out on his or her own. Sometimes this worked well, if an organization was well run and the novice was able to imitate sound practice. It worked even better if an organization was systematic about transmitting knowledge about managerial practices and behavior (e.g., MacDonalds or Motorola). Too often the new manager was left uninitiated and uninstructed in an organization where managerial practice was not particularly good. Naturally many individuals in such circumstances will learn bad habits.

So long as the nation prospered, as it did from 1945 to the 1970s, this state of affairs did not seem to matter much. We equated organizational success with managerial success. When organizations did get into trouble, we were as likely as not to chalk up the failure to external factors: it could have happened to anybody, poor Harry just happened to be in the driver's seat.

Events during the 1980s dealt a serious blow to the prestige and self-confidence of managers, including the managers of public services. Public transportation agencies and operators in New York and New Jersey have come under increasing pressure to improve productivity and performance. including better customer services and customer relations. Transportation managers in the region are well educated, arguably better than the national average. The leaders in many agencies are introducing reforms, often systemic in nature. But they are left to work with and through a managerial workforce that is largely unschooled in management.

At a time when there is persistent pressure to change and adapt, this is not good enough. Mentoring and in-house training can be found in some agencies, but they are unsystematic and have limited impact. Consultants and imported training programs can help. But tighter budgets make such approaches harder to justify. New York and New Jersey possess some of the finest educational institutions in the nation. It should not be unreasonable to ask how they can help.

The University Transportation Research Center (UTRC), headquartered at the City University of New York and comprising twelve universities in New York, New Jersey,

Puerto Rico and the Virgin Islands.[1] was formed with a single overriding mission: to help improve the functioning of the region's transportation agencies by forming cooperative relationships between the member universities and the transportation agencies and operators. Programs in research and education are the means to carrying out this mission. The research component of the mission has perhaps proceeded farther than the educational part. This research contributes to the educational goal.

The research on which this report is based was designed to advance our understanding of the educational and training needs of the women and men who manage the transportation agencies and deliver transportation services in New York and New Jersey. Given the ad hoc way in which American organizations prepare their managerial employees for positions of great responsibility, it seemed fair to assume at the outset that the world of transportation organizations would be little different. Indeed this was confirmed. For all the truth in this statement it doesn't tell the whole story. Through. lengthy conversations with thirty or so managers and the examination of 120 questionnaires where most of the respondents availed themselves of the opportunity presented by many open-ended inquiries, my research assistant and I came to understand a number of important things about the region's transportation managers. First, their work is difficult and getting more demanding; new problems and issues crowd into an arena already filled with old problems, still unsolved. Second, many accept that the problems they face are essentially theirs to solve, not someone elses. Third, as a group the managers are remarkably well educated professionally, but their education has included little coverage of managerial knowledge and skills. In short, their technical knowledge seems much broader and deeper than their managerial knowledge. Fourth, the managers welcome the opportunity to work with colleges and universities in improving their own functioning as well as that of their agencies.

[1]The participating universities are City University of New York, Cornell University, New Jersey Institute of Technology, New York University, Polytechnic University, Princeton University, Rensselaer Polytechnic University, Rutgers University, State University of New York, Stevens Institute of Technology, University of Puerto Rico, and University of the Virgin Islands.

Chapter 1

THE CHANGING CONTEXT OF MANAGEMENT IN PUBLIC TRANSPORTATION

Developments in three areas important to the public transportation industry have thrust management education and training into greater prominence. First, recent legislation, principally the Intermodal Surface Transportation Efficiency Act of 1991 **(ISTEA)** has introduced new responsibilities and opportunities into the work of most public-transportation agencies and operators. Second, the expectations of the general public and specific users of transit services are becoming increasingly focused on the quality of service delivery. Third, the nation is experiencing a major transformation in its attitudes toward and expectations of managers, including public transportation managers.

Recent Legislation: New Rules, New Possibilities

ISTEA is, potentially, the most significant federal transportation legislation in more than two decades. Over a six year period it authorizes a 40 percent increase in funding for highways and a 50 percent increase in spending on transit. Equally significantly, this legislation focuses attention on the crisis in mobility of goods and people and the relationship of congestion to air quality. It attempts to direct statee and local energies toward improving mobility in several innovative ways. First, ISTEA focuses on maintenance and upgrading of existing systems, not new construction. This means that ultimately existing systems are expected to become more productive and efficient. Second, it strongly endorses intermodalism and the use of technological innovations in improving the movement of both goods and people. This, along with the air quality connection, implies that existing transportation operations and related systems must become far better coordinated than they are at present. Third, it permits far greater flexibility and freedom of choice for state and local areas in the use of federal funds. This invites an intensive new political struggle at state and local levels that can only be headed off by an enlightened leadership seizing the initiative. In short, agencies and leaders must plan and act strategically.

In order to implement its objectives, ISTEA renews a federal commitment to state and regional planning in transportation, both through the use of existing state implementation plans as well as significant upgrading of the responsibilities and autonomy of metropolitan planning organizations (MPOs). Assuming full, or at least adequate, funding (remember authorization and appropriation are two different things), transportation agencies have an opportunity to significantly alter the direction of public transportation.

To summarize, in order to fulfill the promise of ISTEA, transportation leaders and managers will have to focus on capabilities that have previously had low (or no) priority in many agencies: strategic planning and managing, productivity and efficiency of processes, and interagency coordination. Few transportation agencies possess adequate capacity in these areas. This means that the agencies will have to change. Organizational change of the necessary magnitude requires leadership. It seems reasonable to conclude that the leaders of many transportation agencies need to address their own deficiencies with respect to leadership capabilities and, in turn, need to focus attention on the technical and managerial skills of employees throughout their agencies, if they are to meet the challenges and seize the opportunities before them.

Changing Expectations of the Public

For more than a decade, public attitudes toward public service agencies have been conditioned by premises formed in tax rebellion, anti-government rhetoric, and anti-bureaucracy politics. Broadly speaking, public opinion appears for the moment to accept the notion that governments are large enough and sufficiently endowed with resources to carry out their essential functions. Much of the public is deeply suspicious of the motives and intentions of both elected officials and public managers. There is ample evidence for this assertion. To take one example, public opinion surveys have periodically asked respondents about their le vel of confidence in the leadership of major American institutions (including business and government). Since 1966, when the question was first posed, the trend has been downward. In 1966, 48 percent expressed "a great deal of confidence." In 1986, this figure stood at 26 percent.[1] Similar questions specifically about public leaders have revealed generally lower ratings than for all institutions. For leaders of the federal executive branch those expressing "a great deal of confidence" in leadership declined from 39 percent in the 1966-67 period to 19 percent in 1986.[2] While trend data is not available with regard to confidence in state and local government leaders, a Gallup survey in 1980 asked how much confidence Americans had in local, state and federal governments. Percentages of respondents with "a great deal of confidence" ranged from 19 percent for local government to 17 percent for state

government to 14 percent for national government.[3] This offers evidence that while local government leaders may fare somewhat better than their counterparts at the national level in public support, their performance is not highly regarded.

Attempting to stay in tune with popular sentiment, politicians have responded with diminished support for many domestic programs, particularly those requiring relatively higher public outlays and lower net benefit for taxpayers. Few politicians at any level of government any longer cast electoral campaigns in the once popular rhetoric of a liberal domestic agendas. The more common contemporary theme envisions government cutbacks, personnel reductions and a hold on tax increases if not outright reductions. Popular too is bureaucrat bashing at all levels.[4]

Layoffs and budget reductions have not been confined to the ancillary programs. Essential services, including public transportation, have been hit. New Jersey has been hit particularly hard with budget cuts forcing widespread layoffs and service reductions.

Many transportation agencies have been forced to scale back capital programs as well as services; public transportation managers throughout the region have been forced to live with frozen salaries (in effect, pay cuts). New Jersey Department of Transportation and New Jersey Transit have had to accept hundreds of layoffs and substantial cuts in the proposed operating budget for the current year. At the same time politicians have demanded of the agencies improved performance and more attractive customer services.[5] With its financial base reduced by recession, the Port Authority of New York and New Jersey, already in a cutback mode, has come under criticism for previous management decisions as well as current operational policies and procedures. Included in the curbs are management and executive seminars. In addition, new oversight mechanisms have been forced on the Authority from the political level.[6]

Responses by transportation agencies to these new public and political demands vary widely. Layoffs and program cuts have received the attention of the media. Many of this region's transportation agencies and operators have, however, also continued, even expanded. organizational and managerial reforms, including continuous quality improvement initiatives. Among other things, most of these improvement initiatives require expanded educational and training programs. As usual, training and management development are among the first cuts taken in most agencies. This situation offers colleges and universities an opportunity for a meaningful role in managerial change, if they are able to take advantage of it.

Changing Regard for Managers and Management

Since 1980 America has experienced a revolution in the way it regards management. Through the 1970's most Americans regarded the nation's management as sound, even first rate. Most were generally aware of the remarkable increases in national wealth that occurred from the end of World War II through the 1960's. The managerial class got a lot of the credit. Vietnam had not yet dimmed the common perception ofthe inevitability of America's progress. Fresh in their minds too, perhaps, were the words of European and American commentators who spoke of the invincibility of American management and the competitive edge that America's management gave the nation.[7]

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A number of major corporate failures (e.g., Lockheed and Chrysler) and public sector failures (e.g., New York City, defeat in Vietnam) during the '70s sounded an alarm. At that time, however, few understood how pervasive America's management problem really was. In 1982 Thomas Peters and Robert Waterman focused popular attention on the problems with American management in their long-running best seller, In Search of Excellence. Their fundamentally optimistic approach and easy-sounding solutions were followed by more hard nosed and critical accounts. Among the more persuasive of these was Lester Thurow's Zero-Sum Solution which argued that beginning in the 1970s America experienced a long-term economic decline that is continuing and that America's managers are ultimately accountable. As Thurow put it,

> [w]hile we cannot fire all of America's managers any more than we can fire the American labor force, there is clearly something wrong with management.

He went on to assert that the demand for competitiveness in world markets requires that the problems with management be fixed.

During this same period America discovered W. Edwards Deming and the continuous quality improvement approach that he and other quality specialists had successfully introduced in Japanese industry during the preceding 30 years. As American corporations began experimenting with Total Quality Management (the most frequently used term for continuous quality improvement), the gap between good management' and current practice in all goods and service producing sectors of American society became increasingly evident. Deming captured the decreasing respect for American management most succinctly with his comment, "[e]xport anything to a friendly country except American management."

Like the practice of American management, the teaching of management in American institutions of higher education and the training of managers by consultants and

in-house instructors has been hit with sustained criticism, much of which is on target. Schools of business and public administration have been accused of contributing to the demise of American competitiveness through curricula that are misdirected and irrelevant to the real life of productive organizations.[8] For example, the critics ask, if the real point of organized systems for producing goods and services is ultimately the satisfaction of clients and customers, why do curricula leading to MBAs and MPAs devote far more time to finance, budgets and computerized information systems than to understanding clients and markets and to designing and operating systems of production to meet customer needs? Why if the human resource is the most important productive resource of an organizations, are the knowledge and skills needed for gaining the commitment of organizational employees undervalued and deemphasized in most professional management programs? Unfortunately most schools continue to teach according to the dictates of premises and priorities of questionable relevance. Many are doing it better than they used to, but they may simply be doing a better job teaching the wrong things.

As in the corporate sector, however, reform is underway in management education. In the last three years many schools and departments of management have undertaken the most extensive curriculum reforms in decades. Becoming increasingly attuned to their own market needs, academic programs that train managers are at last showing genuine concern with the concrete skills needed for individuals to succeed as managers and leaders.[9] Journalists have also joined the chorus calling for better, more relevant management education.[10]

For decades, many of America's larger public transportation operators have used (or attempted to use) the corporate model of management. Not surprisingly, many suffered the same problems as the business sector: declining or stagnant productivity, growing employee dissatisfaction, budget imbalances and declining public confidence. In public transportation as in other sectors, there is developing interest in the systematic improvement of management. Many public transportation organizations have initiated radical interventions intended to produce fundamental change. A number of public transportation operators have introduced continuous quality improvement programs. Among these are transit organizations in Madison, Pittsburgh, Seattle, and Baltimore. In the case of Madison Metro the initiative has been underway for nearly five years.

Transportation associations have begun addressing, many for the first time, the need for management improvement. For example, the Transportation Research Board recently established a committee on management and productivity. For these initiatives to succeed educators and trainers need to have a sound picture of the nature of management in public transportation organizations, including the kinds of problems

managers face and the skills they need to do their jobs well. This, in short, sets the purpose of this research project.

Research Goals and Methods

The chief goals of this project are the following.

1. To produce accurate, useful information about the skill requirements and deficiencies of mid to upper managers in transportation agencies throughout New York and New Jersey.

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2. To develop model curricula to remedy the shortcomings, taking account of the financial and time constraints of most transportation managers.

3. To share the information with educators in the region's universities and organizational and managerial development specialists in the agencies.

The information needed to achieve these goals is not readily available. To develop an adequate information base three different approaches to data gathering were employed.

First, a search was made to locate a sizeable sample of existing programs for educating and training transportation managers. Fifteen programs, most of them located at universities throughout the nation, were examined in detail. Eleven of these programs are examined in Appendix 1.

Second, a selection of transportation managers were chosen for in-person interviews. These individuals ranged from middle management to executive levels. These interviews lasted from one to one and a half hours and were structured around the questions that were included in the mail questionnaire (discussed below). This structure, however, was not allowed to restrict the flow of conversation into areas not included in the questionnaire. Personal interviews have the virtue of providing context for and insight into a problem, but they can rarely be generalized due to the limited numbers included. The list of individuals interviewed in-person is provided in Appendix 4.

Third, in order to increase the breadth of coverage and, hence, the generalizability of the findings, a mail questionnaire was developed and can be found in Appendix 2. It contained questions on educational and career background and demographics. The bulk of the questionnaire covered the problems currently facing public transportation organizations and the managerial knowledge and skills needed to deal with these

problems. The questionnaire contained both structured and open-ended features. The survey instrument was mailed to 270 managers in public transportation agencies throughout New York and New Jersey. A truly random sample would have been desirable, but time and cost prohibited such an approach. The core list was based on the mailing Iist of the University Transportation Research Center. From this Iist non-public transportation agency personnel were excluded as were, to the extent possible, non-managers. In an attempt to achieve greater balance random sampling was done of one New York-based and one New Jersey-based organization.

A total of 270 questionnaires were mailed, and 120 were returned. This represents a response rate of 44 percent. The structured questions were coded and entered in a computerized data base. The open-ended questions were extracted and categorized for subsequent analysis.

Fourth, a conference was held with managers and human resource development specialists from the region's public transportation agencies. The purpose of the conference was to examine the data and conclusions, provide additional interpretive insight, and aid the process of improving the quantity and quality of educational offerings for public transportation managers.

Endnotes

1. Seymour Martin Lipset and William Schneider, the Confidence Gap: Business. Labor, and Government in the Public Mind, (Baltimore: The Johns Hopkins University Press), p. 50.

2. Lipset and Schneider, pp. 48-49.

3. Lipset and Schneider, pp. 82-83.

4. Both Jimmy Carter and Ronald Reagan ran against the federal bureaucracy in their presidential campaigns. In a more recent and well-publicized example, for his 1992 re-election campaign, George Bush offered conditionally to cut the White House staff by a third and stated that he would reduce the pay of all federal government executives by five percent.

5. See "N.J. Transit Singled Out In Budget Cut," New York Times, June 6, 1992, p.B1 and "N.J. Transit Boss Learns to Joust With Legislative Critics," New York Times, May 9, 1992, p.25.

6. See "Cuomo Call for Review of Port Authority Plans," New York Times, May 18, 1992, p.B4 and "Port Authority Plans Review of Spending," New York Times, June 17, 1992, p.B1.

7. See John Kenneth Galbraith, The New Industrial State (Houghton Mifflin, 1967) and Jean-Jacques Servan-Schreiber, The American Challenge (Atheneum, 1968).

8. See Henry Mintzberg, "Training Managers, Not MBAs," in Mintzberg on Management (Free Press, 1989).

9. Several recent management texts offer a more germane skills-based approach to managementeducation. Many trainers and educational consulting organizations have begun to use these approaches. Among the texts offering new approaches to management

education are David A. Whetten and Kim S. Cameron, Developing Management SkiIls, Second edition (Harper Collins Publishers, 1991) and Robert E. Quinn, Beyond Rational Management (Jossey-Bass Publishers, 1988).

10. U.S. News and World Report's rankings of business schools puts a high value on consumer satisfaction and market relevance. The Economist devoted 25 page supplement to change in the management education. See The Economist (March 2, 1991).

Chapter 2

PUBLIC TRANSPORTATION MANAGERS IN NEW YORK AND NEW JERSEY: EDUCATIONAL AND TRAINING NEEDS

This chapter presents the key findings based on the questionnaires and in-prson interviews. It includes a demographic profile of public transportation managers in New York and New Jersey, discusses aspects of their career pattern, and provides key findings pertaining to the skill development needs identified by respondents, along with analysis and interpretation of the findings.

PROFILE OF THE REGION'S TRANSPORTATION MANAGERS

One of the objectives of this research is to establish a base of data profiling the region's public transportation managers. As the region's universities and the UTRC proceed with their commitments to develop and enhance instructional programs for transportation managers and professionals and as the agencies themselves upgrade their own training programs, it is crucial to have a reasonably accurate picture of the backgrounds and qualifications of the individuals who comprise the management of the region's public transportation agencies and operators. This information can be extremely helpful in targeting both the content and level of instruction.

Demographic snapshots are of little value in and of themselves. However, they can be of considerable use if they can be related to capabilities, values, and performance outcomes. While firm linkages among these factors are not within the limited scope of this research, some tentative relationships can be suggested.

Agency Representation of Respondents

As the first chapter indicated, acquiring a truly representative sample of the region's transportation managers was too costly and time-consuming for this project to undertake. The choice was made to start with a sound first cut at a sample and to upgrade and update it over the years. The mailing list that was developed produced a fair sampling of transportation managers in New York and New Jersey. Table 2.1 indicates the number and percent of respondents from various agencies.

Table 2.1 Agency Representation in Sample

Agency/Operator	# Responses	% Responses
NJ Department of Transportation	10	8
New Jersey Transit	5	4
NYC Department of City Planning	2	2
NYC Department of Transportation	22	18
NY Metropolitan Transp. Authority	41	34
MTA Headquarters	6	5
Long Island Railroad	6	5
Metro North	5	4
NYC Transit Authority	24	20
NY Metropolitan Trans. Council	2	2
NYS Department of Transportation	24	20
Port Authority of NY and NJ	5	4
PATH Corporation	4	3
Nassau County Dept. of Planning	1	1
Putnam County Dept. of Planning	1	1
Suffolk County Dept. of Planning	1	1
Westchester Co. Dept. of Trans.	2	2
Totals	120	100%

A number of agencies with public transportation functions are missing from this list. These include many county officials and managers from transportation authorities in the two states. Additionally, New Jersey agencies are under-represented in the set of respondents, though this was not true in the original mailing. Undoubtedly, the absence of representation (or in some cases under-representation) from these agencies causes some distortion in the demographics and findings. However, in view of the fairly inclusive coverage of types of agencies, operators, and jurisdictions, this distortion is likely to be small. In any event, it will be corrected in updates and revisions of this work.

Management Level within Organization

The sample chosen for this study does not represent a cross section of managerial levels within the agencies surveyed. It disproportionately sampled middle and upper levels of management. Table 2.2 shows the number of respondents by level.

Table 2.2 Organizationally Defined Management Level

Management Level	# Responses	% Responses
Entry level	16	13
Middle level	56	47
Executive level	44	38
Other	4	3
Total	120	100%

As noted in the introductory chapter, this choice was partly dictated by the objectives of the study, namely, increased knowledge about the educational and training needs of public transportation managers and executives. In addition, it was also a result of the greater availability of names and addresses of managers in the mid-to upper ranks. If this approach has resulted in any bias, this is to some extent rectified through questions soliciting information about the educational needs of their subordinates.

The high levels of responsibility presented in the sample can also be seen in the response patterns in Tables 2.3 and 2.4. Respondents were asked to provide the number of their direct reports and the number of managers as direct reports. Eighty-six percent of the sample relate that they have at least some direct reports and a full two-thirds report having managers as direct reports. These figures are important in establishing the

Table 2.3 Number of Direct Reports

# Reports	# Responses	% Responses
None	17	14
1-5 people	42	35
6-10 people	34	28
11+ people	27	23
TOTAL	120	100%

Table 2.4 Number of Manager Reports

# Manager Reports	# Responses	% Responses
None	40	33
1-5 people	48	40
6-10 people	20	17
11+ people	12	10
Total	120	100%

validity of the survey as representative of the region's public transportation managers. The reporting numbers appear sufficiently high and the years of experience sufficiently long to permit cautious generalization of the results.

Demographics

The demographic portrait revealed by the sample indicates a population that is predominantly white and male. Since no base for comparison exists with respect to the backgrounds of the region's transportation managers, generalizations based on this data must be made with great caution. For comparative purposes findings from a nationwide survey of public transportation managers are also presented. Note that, as in the current research, the national sample was not random. Tables 2.5, 2.6, and 2.7 present the data

on gender, ethnicity, and age. Incidentally, while questions about demographic attributes were optional, nearly every respondent voluntarily completed them.

Table 2.5 Gender Distribution

	Regional (1992)		National (1985)
Gender	# Responses	% Responses	% Responses
Female	24	20	16
Male	94	78	84
No Response	2	2	0
Totals	120	100%	100%

Table 2.6 Ethnic Distribution

	Regional (1992)		National (1985)
Race/Ethnicity	# Responses	% Responses	% Responses
African-American	7	6	8
Asian	3	3	2
Caucasian	95	79	86
Latino	4	3	3
Native American	3	3	1
Other/no response	8	6	1
Totals	120	100	100

Table 2.7 Age Distribution

Age (yrs)	Regional (1992) # Responses	Regional (1992) % Responses	National (1985) % Response
20-30	7	6	8
31-40	45	38	44
41-50	37	31	25
51-60	25	21	19
61+	1	1	5
No response	5	4	0
Totals	120	100%	100%

This data confirms that the ranks of managers in this region's public transportation agencies continue to be filled predominantly by white males. Traditionally, of course, transportation employment generalIy has been dominated by white males. As in many other areas, the diversification of the transportation workforce is underway. The leadership in all regional agencies has indicated its commitment to workforce diversity, and, indeed, there is some evidence that it is beginning to show up at all managerial levels. While the two surveys covered in Tables 2.6 and 2.7 are not strictly comparabIe, the more recent regional survey indicates higher percentages of women in managerial positions. Also, non-whites represent a larger percentage of this region's managers, although they are distributed differently from the national sample. Overall the two surveys show the age distributions to be similar.

Despite the slightly better record on diversity in the New York/New Jersey region, it is instructive to note that the upper ranks continue to show a small contingent of women and minorities. Tables 2.8 and 2.9 provide cross-tabulations on the managerial rank and levels of diversity.

Table 2.8 Gender Distribution and Managerial Rank

Gender: / Mgt. Level	Female	Male	Not Rept	Total
Entry	5	11	16	32
Middle	15	40	1	56
Executive	3	40	1	44
Other	1	3	0	4
Total	24	94	2	120

Table 2.9 Race/Ethnicity and Managerial Rank

Race: / Mgt. Level	AfAm	Asian	Cauc.	Latin.	NatAm	Unk.	Total
Entry	3	1	9	2	0	1	16
Middle	3	2	44	1	2	4	56
Exec.	1	0	38	1	1	3	44
Other	0	0	4	0	0	0	4
Total	7	3	95	4	3	8	120

CAREER PATTERNS OF TRANSPORTATION MANAGERS

Career tracks in the transportation field are difficult to describe, much less analyze, without longitudinal studies. The measures of career preparation and direction that were included in the survey indicate that public transportation managers as a group reflect a considerable variety of prior professional preparation. One question sought information on graduate and professional preparation. Table 2.10 shows that while the engineering profession is in a clear plurality, no single discipline dominates.

Table 2.10 Graduate and Professional Education

Graduate Degree/Professional Preparation	#Responses	%Responses
Business Administration	5	4
Engineering (all fields)	24	20
Management	5	4
Planning (incl. city, urban, regional)	12	10
Public Administration	15	12
Public Policy	2	2
Psychology	3	3
Transportation	6	5
Urban Affairs	3	3
Other (incl. law, economics, science)	6	5
Not applicable/no response	39	33
Total	120	101%*

* more than 100% due to rounding.

Of particular relevance for purposes of this study is the fact that a comparatively small percentage of managers have any professional educational background in management. Only four percent have degrees in management. Business and public administration professions represent 16 percent of the sample. As students, some of these individuals no doubt emphasized management, though other specialties such as marketing and finance are equally plausible.

It is also interesting to observe that professional academic training in transportation represents a relatively small portion of the sample (six individuals, five percent with professional degrees). Of course, some of the engineers and planners are likely to have emphasized transportation in their professional preparation. These findings are similar to those reported by Edner and White who point out that most of the managers currently in transportation had not, as students, specifically targeted transportation as career preferences.

Whatever their initial preferences, the managers who responded to the surveyhave, on average, accumulated considerable experience in transportation. Table 2.11 gives a breakdown of the years spent in the industry. A full 61 percent report overten years in transportation. This would seem to suggest, as many reported in
the in-person interviews, that the chief knowledge deficiency is not technical, but managerial.

Table 2.11 Years in Transportation Industry

# Years	# Responses	% Responses
less than 1 year	1	1
1-2 years	3	3
3-5 years	16	13
6-10 years	27	24
11-20 years	42	35
21-30 years	20	17
31+ years	11	9
Total	120	100%

In order to gauge the breadth and depth of work experience in and outside the transportation industry, we solicited information about respondent's years of service in the industry and in the current agency, as well the number of modes in which each has been employed. As Table 2.12 indicates, slightly over half the sample has experience in two or more modes, with 19 percent having experience in three, four, or five modes. Without some comparative standard, it is difficult to evaluate this information. Impressionistically, these results appear to indicate that there is a good likelihood that managers appreciate the difficulty ofproblems faced in other transportation modes. This means that a managerial workforce with multimodal experience could be expected to contribute more to the pursuit of multimodalism than a less experienced one, a goal of

some current regional importance. One might also conclude that with nearly half of the managers possessing experience in a single mode, educational and training programs need to provide opportunities for cross-modal learning.

Table 2.12 Experience in Different Transportation Modes

# Modes	# Responses	% Responses
One	57	48
Two	39	33
Three	9	8
Four	10	8
Five	4	3
Total	120	100%

Tables 2.13 and 2.14 provide data on the extent of experience in the manager's current agency and position. Both tables show a reasonable balance between experience and youth. The modal value for length of employment in current agency is 6-10 years, indicating that a sizeable plurality of the managers are both experienced and relatively youthful. The modal value (38%) for time in current position is 3-5 years, indicating the likelihood of both sufficient experience to understand the position's possibilities.as well as its problems.

Table 2.13 Years in Current Position

# Years	# Responses	% Responses
less than 1 year	21	18
1-2 years	23	19
3-5 years	46	38
6-10 years	22	18
11-20 years	6	5
21-30 years	2	2
Total	120	100%

Table 2.14 Years with Current Agency

# Years	# Responses	% Responses
less than 1 year	3	3
1-2 years	13	11
3-5 years	27	23
6-10 years	34	28
11-20 years	22	18
21-30 years	18	15
31+ years	3	3
Total	120	100%

PROBLEMS AND ISSUES DEFINED BY MANAGERS

In order to better understand the context in which the respondents offered their assessments of educational and training needs, the survey sought information about what the managers regarded as the chief problems confronting their units and/or organizations. This kind of information is useful on two counts. First, knowledge of the problem context of an educational needs assessment deepens the understanding of the level and intensity of the specific skills that receive priority. Second, contextual information can be helpful in deciding whether particular skills or needs are of passing or lasting importance. In other words, a skill that is highlighted because it is faddish or fills some transient need, should be distinguished from those that have long-term currency.

One very clear message was sent by the respondents to this question (# 20a on the questionnaire). The volume of information that it elicited far exceeded that of any other open-ended question. Two hundred and seventy different problems were identified, and every respondent had something to say (that is, 100 percent of the sample).

By their very nature open-ended questions are difficult to sort out and summarize. Some degree of subjectivity in categorization is unavoidable. After trying several different approaches, we arrived at the one presented in the tables below. The lead categories were developed by the researchers. The specific descriptors were largely taken from the words of the respondents. Admittedly, different observers would group some of the items differently; moreover, some responses overlap categories. We chose in the

end to divide the responses into the following seven categories. The total number of problems within each is indicated in parentheses.

- Problems involving human resources and their use (76)
- General problems involving top management (54)
- Finance and budget problems (36)
- Specific management skill problems or deficiencies (33)
- Problems with organizational systems and processes (31)
- Problems concerned with legal or regulatory impact (22)
- Problems involving customer relations, customer service, or marketing (18)

The tables below report the specific problems that managers identified. Similar problems are grouped within each category.

Table 2.15 Human Resource Problems

Problem	# Mentions
Understaffing, need more staff to meet workload	22
Low workforce morale	10
Need better motivation and reward systems	3
Labor relations problems	2
Qualifications of workforce are not high enough (including technical qualifications)	7
Problems retaining and using quality staff	5
Poor employee skills in using technology	2
Low productivity; inefficiency	5
Lack of long-term human resource planning	3
Lack of training programs and educational opportunities for employees and staff	7
Lack of formal management training	6
Diversity training and education	4
Total	76

This data supports several observations. One, understaffing (the problem with by far the largest number of mentions) results to a significant extent from current economic conditions and budgetary pressures. This connection was made in more than half of the in-person interviews. Many attribute low morale to this external condition, though some felt that low morale was a longer term issue, in part related to poor human relations skills by managers and supervisors. Two, inadequate workforce qualifications and utilization received 19 mentions. This number is sufficiently large to raise some concern, given the increasing demands that are being made on transportation agencies. To the extent that this set of problems results from lack of knowledge (as opposed to native ability) it is treatable through education. Three, lack of training and education is a matter-of considerable concern, receiving a total of 20 mentions. It is important to keep in mind that this is a symptom and not by itself a problem.

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The two categories of problems that are covered in Tables 2.16 and 2.17 below are sufficiently related that they will be examined jointly. The only reasons for separately reporting these findings, is that the items in Table 2.17 are more specific and those in 2.16 are more general and apply more specifically to top management.

Table 2.16 General Problems Involving Top Management

Problem	# Mentions
Need for organizational vision, goals, priorities	10
Poor quality of planning	5
Parochialism in policy making and planning	2
Lack of political sophistication in external relations	3
Need better management of external expectations	1
Ineffective leadership, need for better leadership	7
Changing or inconsistent standards, ck of consistency in policy direction	9
Low quality standards in general	1
Poor quality of decisions, avoidance of decisions	2
Executives/upper managers have inadequate understanding of technical issues	13
Standards for construction projects too low	1
Total	54

Table 2.17 Specific Management Skill Problems or Deficiencies

Problem	# Mentions
Poor quality skills for coordination or integration (internal and external)	13
Poor project management skills	2
Poor motivational skills	5
Poor communication skills	5
Poor interpersonal skills	3
Need for better teamwork	1
Poor delegation	2
Poor management of time	2
Total	33

Six general observations or conclusions emerge from an examination of the findings in Tables 2.16 and 2.17. One, the first grouping in Table 2.16 indicates substantial concern with the quality of vision, goals, and priorities. This seems to suggest that in some agencies, at least, the absence or quality of planning and direction contributes to agency problems. Two, and perhaps related to the first, several managers identified lack of skills in external relations as a problem. Three, several items in Table 2.16 and the motivational and delegation items in Table 2.17, indicate considerable concern with the quality and skills of leadership in some agencies. The frequently mentioned issue of inconsistency in policy direction was often stated in terms of unpredictable or erratic leadership styles, leading to lack of trust.

Four, assertions that managers and executives may lack adequate technical knowledge were sufficiently numerous to indicate real concern. The data was too general to pinpoint specifics, and it could not be related to individual agencies or modes. Agencies themselves are in a better position to determine whether it has applicability to their situation. Five, the specific skill deficiency with the greatest number of mentions (Table 2.17) involved coordination. In managing transportation agencies this is arguably one of the most important managerial skills. To the extent that it is widespread, it would pose something of a barrier to the realization of ISTEA's objectives, not to mention their own goals. Six, poor skills at the personal, interpersonal and group level received considerable attention with a total of fifteen mentions. With the increasing recognition

of the importance of good human relations in the workplace to productivity, addressing this problem could produce a good payoff. Educational and training programs can significantly improve managerial functioning in all of these areas.

Finance and budget problems may or may not be a matter worth addressing through educational and training programs, depending on how one interprets the most frequently mentioned item in this category. Table 2.18 provides details on concerns in this area.

Table 2.18 Financial and Budgetary Problems

Problem	# Mentions
Budget problems, decreased funding	28
Need for better funding methods (capital and operational)	4
Poor financial planning	1
Poor fund raising capabilities	1
Poor capital planning	1
Need for better capital replacement	1
Total	36

Current budget problems and decreased funding appear to be transient issues that would be relieved by an economic turnaround and the accompanying growth in tax and toll revenues and ridership. individuals concerned with problems in this area tended not to frame them in terms of skill deficiencies. The second group of problems relate generally to financial planning.

A sizeable number of respondents showed concern with the quality and functioning of organizational systems and processes. The concern with organizational coordination discussed above also relates to this area. Table 2.19 presents the findings in this category.

Table 2.19 Problems with Organizational Systems and Processes

Problem	# Mentions
Need for better analytical and modeling methods for transportation, maintenance, etc.	10
Need more or better automation in planning and/or management systems	6
Need better data	1
Need for TQM or continuous quality improvement	5
Need better work unit planning and organization	4
Inadequate contracting methods and relationships	2
Need for improved, streamlined procurement process and methods	2
Poor inventory management	1
Total	31

The problems reported in Table 2.19 seem reasonably to fall into two classes. The first involves methods for gathering, analyzing and storing data about the transportation function itself, including maintenance. The second group deals with problems about organizational and administrative systems. Both categories should be of concern to top management, since the problems and issues they contain can only be addressed at this level. Most of the items in this table can be effectively addressed through educational and training programs.

A total of 22 problem identifications come under the heading of legal and regulatory impact. Few of the problems covered in this area (see Table 2.20) have anything to do (at least in the first instance) with deficiencies at the organizational level.

Table 2.20 Problems Involving Legal and Regulatory Impact

Problem	# Mentions
ISTEA related concerns	10
Compliance requirements under federal and/or state laws and regulations	10
Need for legal changes to improve unit functioning (e.g. increased autonomy)	2

Instead they represent concern with organizational capacity to respond to initiatives taken by other levels of government. Many of the issues represented here involve gearing up to deal with opportunities and requirements under ISTEA. Workshops and briefings can beneficially address some of the concerns.

The final category of problems involves marketing and customer related matters. Table 2.21 summarizes the findings in this area.

Table 2.21 Problems with Customer Relations and Marketing

Problem	# Mentions
Absence of customer focus	9
Need for better marketing, attracting ridership	4
Need to improve services to riders (e.g. speed comfort, etc.)	3
Diminished ridership	2
Total	18

In the absence of more detailed information, it is difficult to state with certainty the real problems behind these symptoms and prescriptions. Assertions of the need for better customer relations and services may indicate changing awareness of the importance of clients and customers to service producing organizations. Or they may indicate some specific unmet need in a given agency. In either case, educational and training programs directed at marketing and customer focus in service industries are available and can be a valuable element or a management improvement program.

TRAINING AND EDUCATION NEEDS IN MANAGEMENT AND TECHNICAL SUBJECTS

Educational Profile

The educational profile of public transportation managers in the New York/New Jersey region reveals a well educated managerial group. Table 2.22 shows the educational attainment of the sample.

Table 2.22 Level of Education Attained

Education Level	# Responses	% Responses
High school	1	1
Some college	4	3
Undergraduate degree	20	17
Some graduate school	16	13
Masters/Professional degree	76	63
Doctoral degree	3	3
Total	120	100%

Sixty-six percent of the sample report holding a masters or doctoral degree. This figure may be somewhat inflated by selectivity both in the sampling technique as well as in the response set. By way of comparison, in their 1985 nationwide study of transportation managers Edner and White found that 26 percent held graduate degrees. Importantly, their sample included a far higher proportion of supervisors than did the current research. It is also possible, of course, that the figure is not far from the mark. In this region managers of public organizations tend to be highly educated. For example, in research undertaken by the author on the educational and training needs of the top 300 managers in Westchester County (N.Y.) government, 77 percent of the full set were found to hold masters degrees or doctorates.

Assuming the 66 percent figure to be fairly accurate, several observations can be made about the factors that drive advanced degrees and credentialing in public transportation in the region. One, a high level of educational attainment results, in part, from recruitment and selection procedures in the various agencies. Many technical and professional positions require post-graduate degrees or other credentials.

Two, tuition remission programs, common in many agencies, are also a contributing factor. Additional information pertaining to the educational profile of managers can be found in Table 2.10. Despite (as we will see below) the relatively low number of training courses being taken by managers, in view of the high level of educational achievement, it can be assumed that this audience is capable of responding positively and effectively to appropriately designed and targeted training and educational

programs.

The survey included several questions intended to determine the value that managers attach to formal education as well as their perceived need for education in management. One question asked how important formal education had been in career advancement. A second asked if the respondent intended to continue or seek additional formal education. The results are presented in Tables 2.23, 2.24, and 2.25. The region's transportation managers clearly place a high value on formal education, at least with regard to its utility for career advancement. Sixty percent rate formal education as very important or important.

Table 2.23 Importance of Formal Education for Career Advancement

Response	# Responses	% Responses
Not important at all	8	7
Not particularly important	12	10
Somewhat important	27	23
Important	26	22
Very important	46	38
No response	1	1
Total	120	100%

Table 2.24 Intent to Pursue Additional Formal Education

Intent	# Responses	% Responses
Will pursue	40	33
Will not pursue	77	64
No response	3	3
Total	120	100%

Table 2.25 Field of Study for Additional Education

Field	# Responses	% Responses
Management/Administration	19	47
Management	8	
MBA	4	
Public Administration	4	
Quality Management	2	
Transportation related	9	23
Transportation	3	
Transp. Planning	2	
Transp. Engineering	2	
Urban Plan/Transp.	1	
Geographic Info. Sys.	1	
Other	2	5
Undecided/Not Indicated	10	25
Total	40	100%

Only 17 percent rate their formal education as unimportant to career advancement. Table 2.24 indicates that 40 respondents, or 33 percent of the entire sample, intend to pursue additional formal education. Since two-thirds already hold graduate degrees, manyof those without such credentials are probably in the market for additional degrees. Table 2.25 shows the preferred academic fields of the 40 respondents who plan to seek additional degrees. Almost half (47 percent) indicate a des.;, for study in management and administrative fields and almost a quarter (23 percent) expect to opt for more technical degrees.

It is somewhat surprising that only 19 managers expressed plans to pursue formal education in management or related areas, since a far higher number believe that management education is needed for their current position. Specifically, respondents were asked whether there was any particular management education they wish they had taken prior to assuming their current positions. Table 2.26 summarizes the results. Fifty-one, or 43 percent, acknowledge such a need.

Table 2.26 Perceived Need for Management Education for Current Position

Response	# Responses	% Responses
Do not need education	63	53
Do need education	51	43
No response	6	5
Total	120	100%

Table 2.27 Management Skill Deficiencies on Assuming Current Position

Management Skill/Technique	# Mentions
General management/administration, incl. MBA, MPA, quality mgt., project mgt.	17
Specific management skills, incl. leadership, delegation, negotiation, decision-making	17
Personal and interpersonal skills	10
Budget and finance	10
Organizational and design skills	6
Strategic and business planning	5
Other	2
Total	68

Those responding affirmatively were asked to describe that they wish they had taken. Table 2.27 shows the responses. Some respondents listed more than one management area. Since for this question respondents were asked to reflect on gaps in their management knowledge, the information in Table 2.27 probably comes closer than any other survey item to specifying the perceived knowledge deficiencies that managers brought to their current positions.

Public transportation managers in the region are highly educated, particularly in the specialized technical disciplines that lead to professional employment in the transportation field (e.g., engineering, planning, transportation). Most managers are recruited from the ranks of specialists. Unlike the corporate world public transportation

agencies exhibit little recognition of the distinctive demands made by managerial work or ofthe knowledge and skills needed to perform effectively. To be sure many transit organizations encourage managers (particularly at the top levels) to avail themselves of executive development programs; modest tuition support programs are frequently available. But few, if any agencies in the region offer courses covering the transition into management and subsequent progress on the career ladder.

As the data shows, many managers (though probably no more than half) understand the importance of managerial skill development and many of these seem intent on pursuing additional education to expand their knowledge base.

Availability and Perceived Need for Training

The survey also attempted to determine the availability, utilization, and value of training programs to transportation managers. Table 2.28 shows the number of courses offered annually in-house by the manager's own agency. Since many of the smaller agencies offer no training courses, it is not surprising that some respondents find none of interest available to them. The majority of respondents (62 percent) found 1 to 4 courses of interest.

Table 2.28 Number of In-house Training Courses of Interest

# of Courses	# Responses	% Responses
None	18	15
1-4 courses	74	62
5-9 courses	17	14
10+ courses	10	8
Total	120	100%

This data suggests that managers generally perceive that a fair amount of training courses are available in their agencies.

In order to see if managerial training is believed to be useful, managers were asked whether training courses would have helped them prepare for their current positions. Table 2.29 summarizes the responses. A majority think training would not have helped. Thirty-eight percent take the opposite view. Note that this question is similar to the one covered in Table 2.26. There the question concerned the value of formal management

education to current position. To that question 43 percent responded positively, perhaps indicating a somewhat higher value attached to formal education compared to training.

Table 2.29 Perceived Need for Training for Current Position

Response	# Responses	% Responses
Training not needed	66	55
Training needed	46	38
No response	8	6
Total	120	100%

Managers were asked to estimate how many significant technical or managerial training courses they had attended during the past five years. The term "significant" was used to try to eliminate the very short duration training sessions often devoted to topical issues (e.g., a three hour seminar). Table 2.30 shows that public transportation managers are not frequent participants in training courses. Seventy-one percent report attending two or fewer during the past five years, and only three percent averaged more than one a year. The explanation for this can be probably be found in two areas. One, several of the managers interviewed in-person reported that they and their subordinates sometimes

Table 2.30 Number of Training Courses Attended in Past 5 Years

# Courses	# Responses	% Responses
None/no response	25	
One	31	26
Two	29	24
Three	19	16
Four	13	11
Five	2	2
Six	1	1
Total	120	100%

forego training courses due to the demands of busy schedules. Two, many managers do not have a particularly high evaluation of previous training courses. Table 2.31 shows that 46 percent of the managers surveyed rate past training courses as valuable or very valuable, while 42 percent evaluate them as only somewhat valuable (30 percent) or lower (I2 percent).

Table 2.31 Value of Previous Training to Job Performance

Response	# Responses	% Responses
Not valuable at all	3	3
Not particularly valuable	11	9
Somewhat valuable	36	30
Valuable	32	27
Very valuable	23	19
No response	15	13
Total	120	100%

To conclude, training is generally recognized as valuable, and many agencies make training available (though mostly in the technical areas). For reasons that remain speculative, managers do not avail themselves of many training opportunities.

Assessment of Specific Management Skills and Techniques

This research employed three different approaches to determine educational and training needs of public transportation managers in New York and New Jersey. First, the most elaborate instrument consisted of a list of thirty-two different management skills and skill areas that respondents were asked to rate on a five point scale from unimportant (1) to very important (5). They were instructed to complete the rating both for themselves and their subordinates. (See pp. 5-7 of questionnaire, Appendix 2).

Second, using their ratings as a guide, respondents were then asked to rank order the skills that they had rated as very important (5), without regard for whether the rating was for themselves or their subordinates.

Third, question 20 asked managers to list the major problems confronting their agencies and included an open-ended component asking them to indicate the skills, techniques, and areas of knowledge that would be helpful to them in meeting the challenges they faced. This question came prior to the structured questionnaire and focused on current and pending problems. It was anticipated that this measure would have the best chance of capturing in their own words the skills that managers judged to be the most beneficial to their organizations in the near future.

Reporting on the third approach first, responses to the open-ended question totaled 137 skills and skill areas. These are grouped and ranked in Table 2.32. The top two skill areas, project management and general management skills, indicate a strong sense among respondents that better management skills are needed at their agencies.

Table 2.32 Management Skills Reported as Most Beneficial in Meeting Organizational Challenges

Skill/Skill Area	# Mentions
Project planning, management, implementation	11
Better management skills (general)	10
Written communication	10
Total Quality Management and quality improvement	9
Motivation skills	8
Finance and budget skills	8
Negotiation and conflict resolution	8
Oral communication	8
Strategic skills incl. planning and thinking	8
Team and group skills	7
Leadership skills	6
Supervision skills	6
All other (none with more than 4 mentions)	38
Total	137

The same might be said of the fourth ranked item involving quality improvement. The specific skill needs with top billing are written communications, motivation skills, financial skills, negotiation and conflict resolution skills, oral communication skills, and strategic skills. Close behind are group, leadership, and supervision skills. As will be demonstrated below, while the priorities derived from the open-ended question differ somewhat from the other ratings, they have a strong overall similarity. In several

instances there are significant departures in the more structured rankings.

The rankings based on the thirty-two items in question II.A. have two parts. First, the respondents were asked to provide a rating of each item on a five point scale. Second, they were asked to do the same for their subordinates. Since fourteen percent of the respondents do not have any subordinates, not surprisingly, the numbers are somewhat lower for the subordinate ratings. The results of the two parts of this question are presented in Tables 2.33 and 2.34. The rankings for these tables were derived by combining the values for important (4) and very important (5) for each of the 32 skills/skill areas. This provides a broad perspective on the educational and training needs from the transportation manager's viewpoint. The tables include the top twenty skills. The full set appear in Appendix 2.

Table 2.33 Management Education Needs Assessment--As Managers See Themselves

Management Skill in Rank Order	# Mentions	% of Sample
1. Decision-making and creative prob. solving	97	81
2. Oral communication	88	74
2. Team building and group productivity	88	74
4. Leadership	87	73
5. Motivating others	86	72
6. Negotiation and conflict resolution	84	70
6. Written communications	84	70
8. Managing for quality	81	68
9. Interpersonal communications	78	65
10.Innovation skills	77	64
11.Strategic planning	75	63
12.Time management	74	62
12.Work unit planning and organization	74	62
14.Participative management skills	69	57
15.Total Quality Management (TQM)	68	57
16.Strategic management	64	60
17.Performance appraisal and feedback	61	51
18.Employee recruitment and development	56	47
18.Monitoring and control systems	56	47
20.Public relations	55	46

Table 2.34 Management Education Needs Assessment--As Managers View Their Subordinates

Management Skill in Rank Order	# Mentions	% of Sample
1. Decision-making and creative prob. solving	85	71
2. Written communications	81	68
3. Oral communications	80	67
4. Interpersonal communication	76	63
5. Managing for quality	68	57
5. Time management	68	57
7. Team building and group productivity	67	56
8. Motivating others	63	53
9. Negotiation and conflict resolution	61	51
10.Innovation skills	60	50
11.Work unit planning and organization	59	49
12.Performance appraisal and feedback	57	47
13.Leadership	52	43
13.Total Quality Management	52	43
15.Public relations	47	31
16.Monitoring and control systems	46	38
16.Participative management skills	46	38
18.Strategic management	42	35
18.Strategic planning	42	35
20.Contract administration	41	34

These findings support several observations. First, the rankings reported in Tables 2.33 and 2.34 are very much in line with the open-ended responses recorded in Table 2.32. The chief difference is that finance and budgeting skills appear in the open-ended list, but do not make the top twenty in the latter two tables. Second, nothing in the in-person interviews or the open-ended questions had led the researchers to anticipate the importance to managers of decision-making and creative problem solving skills. In the open-ended questionnaire, it was volunteered by only two respondents. A number of managers with whom we aired this finding did not find it surprising, since many managers are uncomfortable at decision-making; some tend to waver, other to avoid, still others to change their minds. The top billing of this skill would seem to indicate that problems in this area are widespread. Third, the skill development requirements that managers report needing personally are quite similar to those they believe their subordinates need. There are several exceptions. Oral communications ranks higher for

managers (2) than subordinates (3); written communications is higher for subordinates (2). Leadership ranks fourth for managers, thirteenth for subordinates.

Fourth, several items appear high on the list that do not typically show up with much prominence in management texts or in the management curricula of many schools of business and public administration. These include managing for quality and Total Quality Management, innovation skills, and participative management skills. Furthermore, many other skills and skill areas that appear high in the rankings of transportation managers tend to have low priority in management curricula. Among these are negotiation and conflict resolution, decision making and creative problem'-solving, public relations, team building and group productivity. Finally, it should be stated that most management programs do a poor job of improving the oral and written communication skills of students, especially the former.

One final attempt was made to ensure that managers' message was getting through clearly. Following their rating of each of the 32 skills and skill areas, respondents were asked to rank-order up to 10 items that they had rated very important (5) combining both their own needs assessment and that of subordinates. Table 2.35 reports the results. This table provides a simple ranking by frequency of mentions of items that were rated # 5.

Table 2.35 Rank Order of the Priority Managerial Skills

Rank	Mention	Skill/Skill Area
1	53	Leadership and leadership skills
1	53	Written communications
3	50	Motivating others
3	50	Team building and group productivity
5	49	Negotiation and conflict resolution
6	47	Decision-making and creative problem-solving
7	44	Oral communications
8	41	Managing for quality
9	37	Work unit planning and organization
9	37	Interpersonal communications
11	35	Total Quality Management
12	33	Time management

13	28	Innovation skills
13	28	Strategic planning
15	23	Strategic management
16	23	Monitoring and control systems
17	22	Public Relations
18	20	Stress management
18	20	Contract administration
20	18	Program budgeting
20	18	Cost and price analysis
22	18	Performance appraisal and feedback
23	16	Employee recruitment & development
23	16	Participative management skills
25	15	Third-party contracting
26	14	Transportation finance
26	14	Procurement process
28	13	Financial decision-making
29	11	Contract changes
30	9	Claims and disputes
31	9	Capital budgeting
32	7	Marketing

It was thought that this approach would be more likely to yield a view of priorities for managerial development for the organization as a whole. The results, however, provide little new information. Leadership and written communications emerge as higher priorities, decision-making somewhat lower. Overall, however, the different cuts taken of the of managerial skills needs are fairly consistent.

Finally, an important caveat should be kept in mind as these findings are assessed. The issue involves what to make of the items that appear low in the rankings. Some of these may truly be of little importance in managing public transportation industries and a- agencies. Many others that rank low, however, may do so because they are being performed well in most of organizations surveyed. The in-person interviews indicate that this is probably true of finance and budgeting, audit and control functions, as well as procurement and related processes. In any event, it must be remembered that the questions attempted to focus people on skill needs, which most respondents take to imply deficiencies.

Assessment of Technical Skills

As discussed in Chapter 1, technical knowledge of the work of any organization continues to be important to managers regardless of their managerial level. Generally, the technical knowledge base needs to be more detailed at lower organizational levels; moreover, in supervisorial positions a manager is likely to spend more of one's time dealing with technical issues. The higher one moves, the less detailed, and the less time likely to be spent on technical matters. As with the managerial skill component, the technical assessment took three cuts at skill development needs. First was an open-ended question that asked managers to identify the technical skills that would be most helpful in meeting the challenges to their organizations that they had previously identified (questions 20a and 20c). Second was the 5-point scale rating of 32 technical skills and skill areas. Third was the priority ranking of the skills that respondents had rated as very important (5).

The results for the open-ended question appear in Table 2.36. Managers volunteered 93 different responses to this question. Those receiving four or more mentions are included in this table.

Table 2.36 Technical Skills Reported as Most Beneficial in Meeting Organizational Challenges

Skill/Skill Area	# Mentions
Computer applications and training (includes GIS)	27
Modeling (including analytical, traffic, transp.)	8
Survey techniques and statistics	7
Transportation planning	7
Cost-benefit analysis	5
Analytical techniques	4
Engineering (including civil and mechanical)	4
Technical training for managers	4
Other	27
Total	93

One major (and obvious) finding emerges from this data. Managers and/or the people who work for them are not sufficiently skilled in the uses of computer technology in planning, data acquisition, data manipulation, and data analysis. In addition, the respondents believe that analytical techniques in general need to be improved.

The second approach to assessment involves rating the thirty- two different skills in the technical areas (question II.B.). Again, managers did the rating both for themselves and their subordinates. Table 2.37 reports the findings for the top 20 skill areas.

Table 2.37 Technical Education Needs Assessment - As Managers See Their Needs

Technical Skill in Rank Order	# Mentions	% of Sample
1. Transportation control measures	55	46
2. Monitoring transportation performance	54	45
3. What transit modes work best where?	46	38
3. Transit technologies	46	38
5. Laws/regulations supporting transportation planning	45	38
6. NYS SIP for NYC and surrounding counties	42	35
7. Air pollution	41	34
8. Basic principles of transp. planning	40	33
9. Air quality standards	39	33
9. Market research information	39	33
11. Data collection	38	32
12. Classical transportation planning process	36	30
13. Role of transportation in land development	35	29
13. Transit pricing	35	29
15. Land development and transportation	34	28
15. Transit marketing	34	28
17. Emission controls	32	27
17. Sampling methods in data collection	32	27
19. Behavioral model	30	25
20. Air quality programs in Southern Calif.	29	24

Table 2.38 Technical Education Needs Assessment - As Managers See Their Subordinates Needs

Technical Skill in Rank Order	# Mentions	% of Sample
1. Monitoring transportation performance	43	36
2. Data collection	41	34
3. Transportation control measures	40	33
3. Sampling methods in data collection	40	33
5. Which modes work best where?	36	30
6. Basic principles of transportation planning	35	29
8. Laws/regulations supporting transportation planning	34	28
9. NYS SIP for NYC and surrounding counties	33	28
10. Classical transportation planning process	30	25
11. Air pollution	29	24
11. Air quality standards	29	24
11. Market research information	29	24
14. Transit pricing	28	23
15. Trip generation and land use	27	23
17. Trip distribution	26	22
18. Modal split	25	21
18. Behavioral models	25	21
18. Role of transportation in land development	25	21
18. Route planning	25	21
18. Travel speed surveys	25	21

Compared to the analogous managerial skill instrument, the technical instrument produced far fewer responses. On the managerial component, the top ranked item garnered only 55 mentions or 46 percent of the total sample. On the subordinate component to top item received 43 mentions (36 percent of the sample). There are three possible explanations for this differential, and they are offered with no implication of explanatory priority. One, the technical part of the survey was at the end of a lengthy questionnaire; some respondents may have grown weary by then. Two, technical skills may generally be stronger than managerial. (Some managers in the in-person interviews suggested that this was so). Three, technical skills hold a lower priority for many of the managers who completed the survey.

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As to content, several observations can be made. First, managers see themselves

and their subordinates as needing much the same technical skill development and knowledge. For example, seven skills appear in the top ten in both components. These are:

- transportation control measures
- monitoring transportation performance
- which modes work best where
- transit technologies

- laws and regulations supporting transportation planing
- NYSSIP for NYC and surrounding areas
- basic principals of transportation planning.

#

Additionally, air pollution, air quality standards and market research information are not far down the list.

Second, the greatest disparities in the two rankings involve data collection and sampling methods both of which rank much higher on the subordinates list than the managers. This would be expected, of course, since few managers will personally use these techniques. Incidentally, the high ranking of analytical techniques is very much in line with the findings in the open-ended responses reported in Table 2.36.

Third, many of the high ranked items involve technical areas that managers need to carry out the policy implementation aspects of their responsibilities. This helps explain, perhaps, the high position of transportation control measures (related to air pollution and congestion issues); monitoring transportation performance (related to the need for satisfying both legislative and customer interests); laws/regulations supporting transportation planning and air quality issues (related to mandates from state and federal agencies). Several of the top transportation officials interviewed for this research emphasized the importance and timeliness of improving managerial knowledge of the broader policy arena in which they function.

In particular, concern was expressed that narrow functional and modal thinking needed to be overcome in order to improve the performance of transportation agencies and permit them to fulfill their missions (and not simply their mandates), Among the suggestions made was that educators (whether in universities or in-house) can help do this

by developing better models and frameworks for transportation problem-solving that include intermodal analysis and interdisciplinary thinking. Specifically, it was suggested that relationships among economic development, land use, air pollution, and transportation must be better understood by both academics and transportation decision-makers and better integrated into problem-solving and decision-making at the organizational level.

Finally, respondents were asked to rank order the skills they had rated very important. Table 2.39 provides the results.

Table 2.39 Rank Order of the Priority Technical Skills

Rank	Mention	Skill/Skill Area
1	37	Monitoring transportation performance
2	32	Transportation control measures
3	29	Which transit modes work best where?
4	27	NYS SIP for NYC & surrounding counties
5	25	Laws/regulations supporting transportation planning
5	25	Data collection
7	23	Air quality standards
8	23	Air pollution
9	22	Sampling methods in data collection
10	21	Basic principles of transportation planning
11	20	Transit technologies
12	18	Transit pricing
13	18	Behavioral models
14	17	Transit marketing
15	16	Trip generation & land use
15	16	The role of transportation in land development
17	15	Classical transportation planning process
17	15	Market research information
17	15	Land development and transportation
20	14	Trip distribution
20	14	Modal split

22	13	Emission controls
22	13	Air quality programs in Southern California
22	13	Route planning
25	12	Market survey techniques
26	11	Transit volume counts
27	10	Health effects of air pollution
27	10	Highway traffic volume counts
29	9	Trip assignment
30	8	Model calibration
30	8	Travel speed surveys
32	7	Model validation

With one exception the data in the priority ranking is quite similar to the previous table. ' The exception involves the higher position in the priority ranking of air quality standards and air pollution. The number of mentions is not particularly high for this table. It seems reasonable to conclude that primary attention in developing educational and training programs for transportation managers should concentrate attention on the top eleven items in the table.

Chapter 3

CONCLUSIONS AND RECOMMENDATIONS

The concluding chapter addresses three topics: 1) the educational priorities that emerge from this research, 2) the nature of the educational programs that would meet these priorities, and 3) potential institutional arrangements for developing and implementing the needed programs.

STRATEGIC ISSUES FOR PUBLIC TRANSPORTATION AND EDUCATIONAL PRIORITIES

The educational priorities for the New York-New Jersey region's managers in public transportation organizations derive in part from the strategic issues and critical choices that set the context for planning and decision-making.' Though not strictly an element of the research agenda for this project, these issues nevertheless emerged in both the interviews and questionnaires whenever questions about problems facing the managers came up. It is important to identify the key issues since they form part of the context in which educational programming will be designed and revised.

Strategic Issues

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Developments in five areas of strategic importance for this region's public transportation agencies appear to be altering the context for long-term and operational planning as well as day to day operational decision-making. These strategic issues involve economic globalization, the end of the capital construction era, new limits on public finance, closer linkages between transportation and environmental concerns, and increased power of customers.

One, the increasing globalization of finance and commerce challenges the New York/New Jersey region to maintain competitiveness with counterparts around the world. The strategic implications of global competitiveness for transportation have begun to be spelled out in terms of the need for better mobility to and from ports and airports. Yet to the extent that global competitiveness implies a contest involving cost, efficiency, flexibility and adaptability, no one or two agencies can face the challenge alone, and little progress has been made in rethinking the roles of most of the transportation agencies

whose involvement is needed. Vast improvements will be required in interorganizational relations. This will not be easy in a region where funding mechanisms and local politics have produced an incentive structure that primarily rewards individual agency-based decision-making.

Two, the large scale capital construction era that brought vastly increased mobility to the post-World War II generations is over. ISTEA officially signaled its end. Mobility problems that have developed in recent decades (many of them in factcaused by earlier capital investments in airports and interstate highways) will have to yield to technological, organizational, and productivity solutions. Better maintenance, renewal, and innovative uses of existing infrastructure will be key themes in the near term. ISTEA also focuses increased attention on intermodalism, a potential solution to mobility problems that puts existing capital and operational arrangements to new and better uses. The meaning of intermodalism in operational and planning terms has yet to be fully worked out. The potential effectiveness of intermodal solutions to mobility problems will depend substantially on the ability of the work force (managers, staff, and workers) to deal creatively with new activities and issues they have heretofore not had to face. These include redefining operational and planning activities, new ways of thinking about performance and performance measurement, and new organizational arrangements to implement intermodal programs.

- Three, the American public has grown increasingly averse to increased taxation and government spending. Tighter limits to the public's willingness to finance public services have produced a political environment where even essential services, including public transportation, are no longer immune to cutbacks. In recent years this issue has been made more intense by a prolonged economic recession. Managers in several public transportation agencies have begun to see opportunity in the current adverse circumstances. For example, some have initiated programs to restructure administration and reform operations. A few have even to experiment with comprehensive reform programs such as Total Quality Management. These initiatives may encourage the work force to challenge their current thinking about performance and work, allowing them to better adapt to their changing environment.

Four, air quality and transportation are more closely linked than ever. In the debate over means for achieving air quality standards, all sides recommend public transportation as a key part of the solution. But this linkage is seen to contain threats to some agencies, opportunities for others. The design of acceptable solutions for the various players will require, among other things, that environmental and transportation planners (along with their constituencies) begin see the view from the other side. This suggests joint planning and joint action among highway agencies, public transit organizations, and environmental agencies. Know-how and experience are lacking in

transportation agencies for this kind of interagency planning.

Five, the worldwide consumer revolution that has been developing for more than a decade continues, and it is reflected in public service agencies. Customer satisfaction is increasingly regarded as an appropriate means for achieving better performance in public transportation organizations. Changes are required in organizational processes and managerial behavior in order to operationalize customer satisfaction as a service standard. Yet the majority of managers and line workers still think primarily in terms of getting the vehicle on the road or the tracks, rather than serving the customer.

These five issues will be important in determining the opportunities as well as limits to action of public transportation organizations during the next several years. It should be clear that one could make a good argument for additions or subtractions to this list. For example, during the next decade in some agencies diversity of the work force will likely be an important issue. However, the list presented here represents the principal problems and issues identified by the interviewees and respondents for this research, and as such have high priority to current decision-makers.

Two of the keys to maximizing an organization's potential for meeting the new demands implied by the strategic issues involve improving the capacity of the work force to deal with the challenges and revamping the organization's structure to increase innovation and flexibility. Unfortunately, few managers in public transportation organizations have much knowledge or experience in changing organizational structures or the people who work in them. During the past two decades the relative success of most public transportation organizations, whether highway or transit, has been achieved by being narrowly responsive to specific modal demands. Maintaining existing organizational systems was an overriding objective. In accordance with a status quo orientation, good managerial performance has largely been a matter of achieving technical standards and internal operational and functional objectives. If a new era is, indeed, at hand, characterized by greater productivity of existing resources, inter modalism, environmental awareness, customer satisfaction, and possibly diversity of work force, assumptions about what constitutes good managerial performance must be subject to radical change. In short, the managers in public transportation organizations need the knowledge and perspective required to question existing organizational premises and the skills needed to redesign organizational processes and redirect the thinking and behavior of the work force.

Educational Priorities

Assuming the need for new directions for public transportation, what areas of knowledge and which skills are essential for the managers and leaders who will be

responsible for managing change?

First, the present and future leadership of public transportation organizations need a solid understanding of the changing context of public transportation, including the new demands, threats, and opportunities that are on the horizon. Issues such as intermodalism, customer focus, productivity and efficiency not only involve awareness of the issues themselves, but also require structural responses from transportation organizations to create new processes and systems. A large part of this response must be the development of appropriate statements of an agency's mission and mandate. 'New missions and mandates must be developed with the cooperation and support of all levels of management within the organization, and include interaction with other agencies and players.

Second, based on the issues above and research findings, in order to achieve the managerial responses necessary to adapt to a changing environment, managers of public ' transportation agencies appear to need a better understanding of management theory and principles. This is especially applicable to new managers or those likely to gain promotion into management. Among the most important of these are: greater familiarity with organizational concepts, interorganizational relations, and strategic concepts. Of particular relevance are theories and principles that provide a better knowledge of how to change institutions and their processes, including organizational and process redesign and continuous quality management techniques.

Third, the responses from interviews and surveys both revealed a distinct need for greater effectiveness at the level of human interchange. This encompasses both the improvement of personal and interpersonal skills, particularly oral and written communication skills. Many of the managers who were interviewed appeared to understand that an organization's human resources are its most important asset, but many lacked the knowledge and skills that are necessary to achieve better motivation and productivity under existing constraints. Hence conflict resolution, motivation, team-building, and interpersonal relations emerged high on the list of skills in demand.

Fourth, better integration of technical knowledge with organizational and managerial strategies is important. This will require a better understanding of technical knowledge on the part of managers who came from non-technical backgrounds, and more managerial training for those from a non-management education background than for those with some formal management education. The significance of this point increases as more and more managers are drawn into middle and upper management from staff positions, most of which in a typical organization afford only a limited view of the organization's basic business.

EDUCATIONAL PROGRAMS AND INSTITUTIONAL ARRANGEMENTS TO MEET STATED PRIORITIES

In response to changing strategic issues and the educational needs revealed through interviews and survey responses, it is evident that a lack of appropriate education and training programs exists for public transportation managers. Many of the public transportation organizations in the New York/New Jersey region have continued reforms initiatives and management training and development, however, budget cutbacks threaten these programs.. This situation offers colleges and universities an opportunity to have a meaningful impact on these organizations.

Educational Programs

Three primary types of educational programs are proposed to meet the priorities of public transportation managers: a professional management degree, mid-career education for managers, and management training.

Professional Management Degrees

Many universities in New York and New Jersey offer good professional management degree programs. Few of the Master of Public Administration (MPA) or Master of Business Administration (MBA) degrees, however, contain an emphasis on the priorities signaled by this research. Even fewer offer opportunities to apply organizational and managerial theory to the transportation field (exceptions include Princeton's MPA and NYU/Polytechnic's joint degree options). The content of a professional management degree suited to the needs of public transportation managers should include courses that cover all or most of the following:

Organizational Skills:

- Solid grounding in management and organizational theory
- Strategic management (strategic planning, thinking strategically, leadership)
- Decision-making and problem solving in complex organizations
- Operations management
- Human resources and human relations
- Organizational change, including quality improvement

Personal Skills:

- Development of oral and written communications
- Interpersonal and behavioral skill development, including group

dynamics, conflict management, negotiation skills

Relevant Technical skills:

Statistical analysis with relevant problem solving applications
l Finance and budgeting
Computer applications
Three or more courses on transportation planning, policy, and finance
l Clinical applications of theory and skills in transportation organizations

For those needing transportation-related management education at the undergraduate level, John Jay College in the CUNY system has pioneered a program in conjunction with UTRC.

Mid-Career Education for Managers

Currently there exists no university in the New York/New Jersey region offering suitable mid-career educational options for managers in public transportation. It should be noted that Rutgers University is currently in the process of developing an extensive program at its new National Transit Institute. The need for mid-career management education falls into two categories of transportation managers. First, individuals who already possess advanced professional credentials in such fields as engineering (and related .areas), accounting, and planning who have shifted into management or now plan a such a career shift; and second, mid-career managers with considerable supervisory experience who find they need enhanced skills in order to function under current standards.

Mid-career education for managers can be packaged in different ways depending on the needs of the managers. Most needs can be met by one of the following:

1) those with little or no management education might opt for a Master of Science in Management consisting of a minimum of eight courses; depending on the educational needs of the students, many may require ten or more. Participants might choose from the kinds of courses listed above or more advanced selections. Flexibility is essential, so that management programs need to be prepared to tailor the course of study to individual needs. Currently New York University's Wagner Graduate School of Public Service offers such an option.

2) those with previous training in management or related fields may opt for an advanced professional certificate which typically requires a minimum of four courses in a specialized area of study.

Training Programs

The survey revealed that most agencies do not supply enough of what managers think they need to improve managerial effectiveness. Few universities offer suitable programming of this type at this time. Many of the skill development needs documented in the survey can be effectively supplied by good training programs. New programs are being initiated in several institutions.

- The UTRC and NYMTC has tested a model that may prove valuable over the years in meeting this need. The program was designed to meet many of the priority skill development needs that were identified in this research. Evaluations of the initial offerings were very positive and a redesign and subsequent offering is contemplated. With experience and constant improvement, the UTRC/NYMTC model could become an valuable model applicable elsewhere. See Appendix 3 for description of the program.

- NYU Wagner School's Center for Management is also developing relevant training programs in management, guided by the findings from this research.

- In-house training for management can also make a contribution. At this time few agencies offer systematic programs of management training. Though here too change is underway.

An important observation concerning approach is in order. Whatever the venue of management education and training programs, a great benefit is derived by bringing together in the same classrooms participants from transportation agencies throughout the region. With its emphasis on intermodalism, inter-functional coordination, and increased public participation, ISTEA significantly increases the importance of improved relationships among the managers in the various agencies that are mandated to help remake..the transportation system. Educators and trainers should assume an obligation to take 'full account of this need as they plan and run their programs. One cannot overstate the point that by bringing together professionals from various backgrounds and agencies to discuss common problems, one of the foremost advantages of education or training will be to provide a mechanism that allows participants to learn from each other.

INSTITUTIONAL ARRANGEMENTS

Several possibilities are available to develop, implement and provide the types of programs discussed above including individual universities, joint degree programs and

training programs, including universities.

First, individual universities will continue to serve as an important source of talent for transportation agencies in New York and New Jersey. Management degree programs need to better reflect the knowledge and skill requirements of the transportation agencies. Most currently offer no opportunity for students to apply theory and methods to the transportation setting.

Second, joint degree programs offer the opportunity for students to design courses of instruction to meet educational needs that span disciplines. Those needing both technical and managerial education might be well served by such programs. The UTRC is well situated to further explore this need.

Third, training programs are needed that supplement education and work experience. Through this research effort and others undertaken through the UTRC, educators are finally beginning to appreciate the extent of training needs. Professional schools in the areas of policy, planning, and management do not have well developed approaches to continuing professional education. The knowledge and the needs must be linked. There are plenty of opportunities for individual university initiatives, agency based initiatives, or joint-activities between the universities and agencies to create and provide training programs meeting the needs of managers.

Footnotes

1. For a discussion of strategic issues in public service organizations see Paul C. Nutt and Robert W. Backoff, Strategic Management of Public and Third Sec tor Ore rganizations: A Handbook for Leaders (Jossey-Bass Publishers, 1992), pp. 119-145.

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Appendices

Appendix 1

An Assessment of Existing Educational and Training Programs for Public Transportation Managers

One conclusion that emerges from this research is that a genuine need exists for the systematic training of managers in public transportation organizations. Assuming, for the moment, general agreement with this conclusion, the fact remains that unless several hurdles are overcome, good intentions will encounter severe obstacles en route to implementation. Chief among these are: the absence of any tradition of sustained support for management development programs, a poor understanding of the strategic uses of training and educational programs, lack of detailed knowledge of the offerings that should be included in training programs, and difficulties in assuring that the needed offerings are actually available. These obstacles limit the ways in which upper managers think about training and probably help explain why training has a low priority in all of this region's public transportation organizations. Evidence for the weak commitment can be found in the quantity and quality of programs that are available.

At the beginning of the research program, we examined the course offerings of a sampling of training programs specifically designed for managers in the public transportation business. Despite the professed need for management training, few offerings are available either regionally or nationwide.

1. Training opportunities available in the region

In the New York-New Jersey region there are few opportunities available for public transportation managers interested in management training and development.

University based programs

Despite the presence in the region of the country's greatest network of public transportation providers, none of the universities in the region offers an on-going program of training for the managers of these highly complex organizations. In recent years two new ventures have been initiated that advance the promise of sustained management training. First, the University Transportation Research Center has developed a managerial and technical training program in conjunction with the New York Metropolitan Transportation Council (the regional MPO). The curriculum was based on an assessment of the training needs of the region's agencies. While the program appears to be successful, it is scheduled to run only through calendar year 1993.

Second, ISTEA included authorization for the development of a National Transportation Institute (NTI) to be located at Rutgers University. The Institute and its training curriculum are currently in development.

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Agency based programs

Most of the region's public transportation agencies offer occasional in-house management seminars and provide modest funding for managers to participate in educational and training programs off-site. None of the agencies has a well developed strategy for management development and consequently no coherent, comprehensive management training programs.

New York Metropolitan Transportation Authority. The most developed program at this time appears to be the Executive Seminar Series offered by the MTA's Institute for Management Studies, an organization established to meet the informational and educational needs of top executives, The Series is a program of over 30 seminars offered by field experts throughout the year. It provides opportunities for executives to learn advanced management techniques, evaluate new business theories and practices, get current perspectives on new issues and trends, and exchange ideas with executives from other organizations. Among the topics addressed in the seminars are leadership, organizational change, team building, customer service strategies, strategic management, strategic marketing, quality improvement of processes and products, and multiculturalism and diversity.

The program appears to be well designed and relevant, in that it deals with some advanced management techniques such as strategic planning and quality improvement. It also focuses on the educational needs of individual manager: balancing life/job, developing executive talent, and plateauing. It also includes a focus on leadership.

2. Training programs available elsewhere in the nation

University based programs

Indiana University. Through the Institute for Urban Transportation at Indiana's Transportation Research Center, several Transit Professional Development programs are offered. While none of the courses are directly aimed toward upper-level managers, some programs do cover some advanced management techniques. For example, this program offers Operations Management, Labor Relations, Financial Management, Managerial Tools, Bus Fleet Management, and Marketing Management. While these

topics may be of interest to public transportation managers, it does not offer a great deal to middle and upper managers in public transportation agencies.

Northwestern University. The Transportation Center at Northwestern offers degree and research programs and an executive education program designed to meet the needs of transportation executives in changing global markets. The Center offers week long seminars in Transportation Marketing Strategy, Pipeline Economics and Management, Information Technology and Competitive Advantage, Finance and Management Information, Logistics and Distribution Management, and Petroleum/Energy Economics and Management. A two-week seminar in Advanced Transportation Management. All courses are designed primarily for upper- and middle-level managers from shipper and carrier companies. The Northwestern program does not target public agencies, and for this reason will be of less interest to public transportation managers.

Northeastern University. Northeastern offers the National Urban Mass Transportation Management Seminar program designed for managers who want to sharpen their interpersonal, reflective, and perceptual skills and improve their managerial styles. The seminar takes place in three phases. Phase 1 consists of two weeks of intensive sessions focused on transit management principles and concepts as well as the appraisal of individual management styles. It includes discussion of advanced concepts in management and human relations, communication, team building, marketing and finance, labor issues, and conflict management. Phase II provides for about three to six months of job application, planning and preparation for Phase III. Phase III. comprises two weeks of practical integration of new knowledge and skills, job experience, and planning for long-term managerial development in the transit industry. It includes individual consultations with faculty, sessions on self-determined needs, results-oriented management, personal effectiveness, and problem-solving.

Northeastern's phased approach allows for on-the-job application, a method valued by transportation managers. In the past this program has generally been limited to the personal and interpersonal level and has not offered systemic and organizational level course work such as strategic planning.

Pennsylvania State University. The Penn State Executive Programs offer a one-week Management Program for Transportation and Highway Engineers, and a 10-day Program for Logistics Executives. The Transportation and Highway Engineers management program is designed only for middle and upper-level managers from highway and other public transportation organizations. It aims at developing the managerial skills of technically trained individuals. The objectives of the program are to sharpen decision-making abilities, strengthen management skills such as conflict management, leadership, motivation, and efficiency, improve personnel selection when

assembling a management team, and develop a broader understanding of issues in transportation and highway engineering. The Program for Logistics Executives is also designed for managers involved in logistics, operations, distribution or materials management. The course work offers an examination the role of logistics systems management in corporate strategy and aims to improve the performance of logistics managers in general management areas. The program also seeks to develop a view of logistics as an integrated system within the organization; this includes methods for integrating logistics management systems with those of suppliers and customers.

The Transportation and Highway Engineers program is targeted principally at public sector managers. The Logistics program has only limited appeal to public sector participants. The Engineers management program offers instruction in individual managerial techniques, but does not include methods and techniques with broader organizational application such as strategic planning or strategic management.

University of California. Irvine UCI offers the Transit Managerial Effectiveness Program, a 7-day intensive program designed for middle- to upper-level transit managers and staff personnel. Middle managers from medium to large agencies and general managers of smaller agencies comprise the primary target population. This program offers a good balance between managerial skills and organizational management. The first part of the program addresses the individual as a manager with emphasis on ways effective management of human resources can enhance organizational productivity. Special attention is paid to organizational change and conflict. Individual sessions deal with such issues as employee motivation and appraisal, employee discipline, team building, labor/management relations, the operations/human resources interface, and challenges posed by changes in the transit work force. The second portion of the program focuses on the manager as a member of a broader team, making decisions of strategic importance. Three topics comprise the core of the module: measuring and improving performance, using information effectively, and managing strategically. Budget and financing issues are considered, with special attention to transit marketing and pricing in light of declining public assistance. The module concludes with a look at changes in transit's external political environment.

The UCI program appears to be one of the most comprehensive availableand addresses topics of direct interest to the manager of public transportation organizations.

University of Wisconsin-Milwaukee. UW-Milwaukee offers a number of training programs ranging from general management to paratransit to rural transit. The two-week Transit Management Workshop offered by the Center for Urban Transportation Studies and the Office of Statewide Transportation Programs at the UW-Milwaukee is the only one that addresses the concerns of public transportation managers. The workshop is

designed to develop management skills through action oriented simulations and the use of hands-on training. Modules cover such topics as innovation, managerial skill development, and interpersonal communications. The workshop targets supervisors and middle managers with over two and less than eight years experience. Participants are drawn from agencies throughout the U.S. as well as Wisconsin. The workshop deals with general management skills, transit innovations, safety, labor issues, planning strategies, short-term planning, and marketing issues. While the program is fairly comprehensive, it does not address the concerns of upper-level managers.

Agency based programs

Chicago Transit Authority. CTA offers one of the richest in-house management development programs in the country. The variety of programs provided by the Management Development and Training Department include Management Development, Professional Development, Public Seminars, and Independent Study Programs. For each of the programs the goal is to teach the skills needed on the job to professional, supervisory and managerial employees. In the Management Development category courses are taught for all management levels, focussing on interpersonal skills, delegation, goal setting, and communication. The Advanced Transit Management Seminar is a five-day program designed for middle- and upper-level managers. Participants are drawn from CTA, Pace Bus Company, METRA Railway and the RTA, allowing for agency interaction during the seminars. The Seminar covers team building, strategic planning, and organizational change, and uses team projects to emphasize interagency cooperation. In 1990, 559 persons participated in the programs. In 1992 the Advance Transit Management Seminar is scheduled to be offered 5 times.

The CTA program is an excellent example of in-house training program. The advanced seminar appears to offer state of the art instruction and has the valuable feature of providing for significant interaction among participants throughout the Chicago metropolitan area.

Toronto Transit Commission. Toronto Transit Consultants Limited, a subsidiary of Toronto Transit Commission, operates the Transit Management and Operations Training Program. This five-day program is offered to transit managers and aspiring transit professionals who want to learn about TTC's day-to-day operations. The program includes lectures, tours and presentations of TTC's planning, management, administration, operating and maintenance techniques. Program attendees have the opportunity to study each department's role within TTC, procedures and methods used to meet departmental objectives and measures of success in goal attainment. The program also provides for extensive interaction among participants who come from throughout

North America and abroad.

TTC's approach is unique. Much of its success depends on its reputation as a well organized, managed and operated property. As long as management practice remains state of the art, participants can gain a deeper understanding of successful management techniques in practice.

Programs offered by professional associations

American Association of State Highway and Transportation Officials (AASHTO). AASHTO sponsors four different programs. First, the National Highway and Transportation Management Conferences are designed to assist state and federal highway and transportation departments in developing managerial talent. The program is comprised of conferences aimed at middle managers. It offers instruction and peer interchange on the managerial role, managing change, interpersonal communication, negotiation and conflict resolution, diversity, and Total Quality Management. Second, the National Highway and Transportation Management Institute at Indiana University teaches managerial techniques oriented to highway and transportation department operations. The first half of the three-week program begins at a fundamental level appropriate to these engineering-oriented organizations, and the second half introduces more advanced and complex concepts. Instruction covers organizational conflict, problems in accountability, public information and public relations techniques, and the development and implementation of an organizational culture in a quality-oriented organization. Third, the State Highway and Transportation Management Institute, is similar to the National Institute but is specifically designed to be an on-site program to benefit individual states with the need to train large numbers of managers.

Fourth, the five-day Transportation Executive Institute taught at the University of Virginia for top-level managers. The purpose of this program is to provide a "think tank environment for executives and their staffs. Topics of the program are selected as those considered most important by Chief Administrative Officers based on a poll of the 50 states. Topics discussed in the Institute are strategic planning, managing stress, ways to increase organizational efficiency and employee productivity, public and government relations, and current and future issues in transportation.

NEW YORK UNIVERSITY
ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE

University Transportation Research Center/Management Training and Development Project

Questionnaire

I. Career Background and General Information

Please provide the following information about your own educational and professional background.

Professional Background

Your agency? _____

Your name (optional)? _____

1a. How many years have you worked in the transportation industry? _____

1b. If your prior experience is outside the transportation industry, in which field(s) have you worked?
_____

2. How many years during your career in the transportation industry have you spent working in each of the following modes:

Mode	No. of Years
Rail	___
Mass Transit	___
Air	___
Highways	___
Other Transportation	___ (describe) _____

3. How long have you worked for your current agency? ___

4. What is your current position? _____

5. Please provide a brief description of your major job responsibilities:

_____

6. How long have you been in this position?

___ Less than one year
___ 1 - 2 years
___ 3 - 5 years
___ 6 - 10 years
___ 11 - 20 years
___ 21 - 30 years

7. How does your organization classify your position?

___ Entry level management
___ Middle level management
___ Executive level management
___ Other (specify)_____

8. Please list the two positions you held prior to the current one:

_____

_____

9. How many people do you directly supervise? _____

10. Of these, how many are classified as management personnel? _____

11. Listed below are several activities generally associated with management positions in any industry. Please indicate the percentage of time you spend annually performing each of these or other activities:

___ % Program/Project Planning

___ % Budget Preparation

___ % Organizational Policymaking

___ % Public Contact

___ % Personnel Supervision

___ % Program/Project Implementation

___ % Other (specify) _____

100 % Total

Education and Training Background

12. Please indicate the highest educational level you have attained:

High School ___, some college ___, Undergraduate degree___, some graduate work ___, Masters or professional degree ___, Doctoral ___.

Where applicable, provide the specific degrees, the area of specialization and the school for any graduate degrees you hold:

Masters _____ Date(s) _____

Doctorate _____ Date _____

13. Do you plan to continue or seek additional formal education?
___ No. ___ Yes. Indicate field of study _____

14. How important has your formal education been in advancing your career?

Not Important At All 1 2 3 4 5 Very Important

15. Is there any particular formal management education you wish you had taken before you assumed your present position?

___ No. ___ Yes (describe) _____

_____

16. In general, how many specialized training opportunities are offered in-house by your agency during the year that are of interest to you?

None (0) ___ A fair amount (5-9) ___
A few (1-4) ___ A lot (10 +) ___

17. Please list any significant technical or managerial training courses you have attended during the past five years and who the courses were offered by:

Course Name: Offered By:

_____

_____

_____

_____

18. Overall, how useful have these past training opportunities been in the performance of your job?

Not Useful At All 1 2 3 4 5 Very Useful

19. Is there any particular training program you wish you had taken before you assumed your present position?

___ No. ___ Yes.

If yes, please identify that training: _____

20a. What are the most important problems currently confronting your unit? (Please discuss in terms of your immediate department or unit, and also for your agency as a whole)

_____

20b. In meeting these challenges are there specific management skills, techniques, or areas of knowledge that would be beneficial either for you or your subordinates?

20c. Are there areas where the enhancement of technical competencies would be beneficial?

Demographics (optional)

21. What is your age? _____

22. What is your gender? _____

23. What is your race/ethnicity?

___ Native American ___ Asian

___ Caucasian ___ Latino

___ African-American ___ Other

II. Assessment of Need

We are interested in determining which skills have the highest priority to you and your direct reports for improving work at your agency. PIease rank each of the skill areas listed below using the following scale:

1 - Unimportant
2 - Not Particularly Important
3 - Somewhat Important
4 - Important
5 - Very Important

II.A. Managerial and Supervisorial

This section is to determine which managerial and supervisorial skills and competencies have the highest priority for you and your direct reports.

SKILL AREAS	RATINGS "I need..."	"My subordinates need..."
1. Leadership and leadership skills	1 2 3 4 5	1 2 3 4 5
2. Motivating others	1 2 3 4 5	1 2 3 4 5
3. Negotiation and conflict resolution	1 2 3 4 5	1 2 3 4 5
4. Decision-making and creative problem-solving	1 2 3 4 5	1 2 3 4 5
5. Managing for quality	1 2 3 4 5	1 2 3 4 5
6. Innovation skills	1 2 3 4 5	1 2 3 4 5
7. Strategic planning	1 2 3 4 5	1 2 3 4 5
8. Strategic management	1 2 3 4 5	1 2 3 4 5
9. Total Quality Management	1 2 3 4 5	1 2 3 4 5
10. Marketing	1 2 3 4 5	1 2 3 4 5
11. Public Relations	1 2 3 4 5	1 2 3 4 5
12. Team building and group productivity	1 2 3 4 5	1 2 3 4 5
13. Work unit planning and organization	1 2 3 4 5	1 2 3 4 5

1 – Unimportant
2 – Not Particularly Important
3 – Somewhat Important
4 – Important
5 – Very Important

	"I need..."	"My subordinates need..."
14. Employee recruitment & developmt	1 2 3 4 5	1 2 3 4 5
15. Participative management skills	1 2 3 4 5	1 2 3 4 5
16. Performance appraisal and feedback	1 2 3 4 5	1 2 3 4 5
17. Monitoring and control systems	1 2 3 4 5	1 2 3 4 5
18. Interpersonal communications	1 2 3 4 5	1 2 3 4 5
19. Time management	1 2 3 4 5	1 2 3 4 5
20. Stress management	1 2 3 4 5	1 2 3 4 5
21. Written communications	1 2 3 4 5	1 2 3 4 5
22. Oral communications	1 2 3 4 5	1 2 3 4 5
23. Capital budgeting	1 2 3 4 5	1 2 3 4 5
24. Program budgeting	1 2 3 4 5	1 2 3 4 5
25. Financial decision-making	1 2 3 4 5	1 2 3 4 5
26. Transportation finance	1 2 3 4 5	1 2 3 4 5
27. Third-party contracting	1 2 3 4 5	1 2 3 4 5
28. Procurement process	1 2 3 4 5	1 2 3 4 5
29. Contract administration	1 2 3 4 5	1 2 3 4 5
30. Cost and price analysis	1 2 3 4 5	1 2 3 4 5
31. Contract changes	1 2 3 4 5	1 2 3 4 5
32. Claims and disputes	1 2 3 4 5	1 2 3 4 5

II.A.1. Rank Order Priority

Please rank order the skill areas that you designated highest priority for yourself or for your subordinates (i.e. skills that you ranked as # 5). Simply list the skill number, rather than the complete term.

1. _____ 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

5. _____ 10. _____

II.A.2. Are there managerial and supervisorial training topics not listed above that you would like to see in a training program?

Managerial and supervisorial skills:

_____

_____

_____

_____

1 -- Unimportant
2 -- Not Particularly Important
3 -- Somewhat Important
4 -- Important
5 -- Very Important

	"I need..."	"My subordinates need..."
15. Air quality standards	1 2 3 4 5	1 2 3 4 5
16. Emission controls	1 2 3 4 5	1 2 3 4 5
17. Transportation control measures	1 2 3 4 5	1 2 3 4 5
18. Air quality programs in Southern California	1 2 3 4 5	1 2 3 4 5
19. NYS SIP for NYC & surrounding counties	1 2 3 4 5	1 2 3 4 5
20. Which transit modes work best where?	1 2 3 4 5	1 2 3 4 5
21. Transit technologies	1 2 3 4 5	1 2 3 4 5
22. Route planning	1 2 3 4 5	1 2 3 4 5
23. Transit pricing	1 2 3 4 5	1 2 3 4 5
24. Transit marketing	1 2 3 4 5	1 2 3 4 5
25. Sampling methods in data collection	1 2 3 4 5	1 2 3 4 5
26. Data collection	1 2 3 4 5	1 2 3 4 5
27. Highway traff volume counts	1 2 3 4 5	1 2 3 4 5
28. Transit volume counts	1 2 3 4 5	1 2 3 4 5
29. Travel speed surveys	1 2 3 4 5	1 2 3 4 5
30. Market research information	1 2 3 4 5	1 2 3 4 5
31. Monitoring transportation performance	1 2 3 4 5	1 2 3 4 5
32. Market survey techniques	1 2 3 4 5	1 2 3 4 5

II.B.1. Rank Order Priority

Please rank order the skill areas that you designated highest priority for yourself or your subordinates (i.e. skills that you ranked as # 5). Simply list the skill number, rather than the complete term.

1. _____ 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

5. _____ 10. _____

II.B.2. Are there technical topics not listed above that you would like to see in a training program?

Technical Skills:

_____

_____

_____

_____

_____

Appendix 3

Courses in the New York Metropolitan Transportation Council
Technical and Managerial Training Program

Management Courses

Conflict Management and Negotiation

Contract Management

Writing for Strategic Management

Oral Presentation Skills for Strategic Management

Decision Making and Creative Problem Solving

Managerial Leadership

Improving Transportation Organizations Through Total Quality Management

Strategic Management

Technical Courses

Travel Demand and Prediction Process

Application of Statistics to Traffic and Transportation

Coding Highway Networks

Trip Generation Analysis

Need for Transportation Planning Methods re: ISTEA and CAAA'90

Trip Distribution Analysis

Geographic Information Systems

Mode Choice Models