

Education and Training Needs of Women in Transportation

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When viewed from the financial or economic perspective, transportation is one of the five major industries leading the U.S. national economy. The transportation industry is comprised of a vast array of businesses--from aerospace manufacturing firms to urban transit--including the host of traditional businesses dedicated to achieving the movement of people and goods.

In surveying the types of jobs or people required to carry out business in the transportation industry, it is likely that any and every discipline, educational background, and career history possible can be found. Most likely the range would be comparable to that in any other major sector of the economy. But that probable range is not the real concern even though it offers hope to anyone interested in a career in transportation. The interest here is whether, knowing the breadth of talent and the diversity of skills, background, education, and experience that exists among those serving the transportation industry, women as participants in the industry are achieving success in ways and at levels comparable to those achieved by male practitioners. And further, whether female industry practitioners have educational, training, or development backgrounds and needs that are similar to, or different from, those of their male counterparts. Beyond the examination of differences, if any, that may exist, we are also interested in learning the number of female practitioners and what steps, if any are necessary, should be taken to assure the attractiveness of transportation as a career field for women.

In addressing these questions, we begin with a basic premise: In the competitive, deregulated, economic environment the transportation industry faces today, with the international pressures to continue achieving the type of growth experienced in the past, businesses must capitalize strategically on all of the resources at their disposal. The most critical, of course, is human capital.

It is apparent that the shifting demographics of the United States, that is, an aging population, low birth rate, population shifts to the Sunbelt; and increased educational and per capita income levels, are affecting the United States dramatically and that the transportation industry is experiencing the impacts of these changes. For example, in the transit industry, "because of their age, managers will need replacement in greater numbers, which will make the next five years critical for the industry" (1). ". . . While in the railroad industry during the 1980s, it is estimated that one-half of the railroad industry's current workforce and about two-thirds of top and middle management personnel will retire" (2). Similar experience appears to exist in the highway and aviation industries. Therefore, as these opportunities arise, it is important to consider and find answers to the questions set forth.

In beginning efforts to address these questions, literature searches and dis-

cussions with educators and transportation professionals demonstrated that although some aspects of the role of women practitioners are being examined, for the most part, these studies focus on preparing women returning to the labor force for a career in transportation; how to attract women to undergraduate programs to train them in the sciences and technologies pertinent to transportation careers; the success that has been achieved in employment by the U.S. Department of Transportation through special training programs to prepare women and minorities for transportation careers; and similar important and useful data. No major effort appears to have been initiated to help assess the skills that contribute to a successful transportation career or when technical versus managerial competence is critical to success. Further, no real analysis of successful male transportation managers' backgrounds has been undertaken to generate clues about career paths or skills and interest combinations useful for role modeling and as a foundation for career planning for women in transportation.

The closest effort to this assessment approach is the program initiated by the National Research Council Commission on Behavioral and Social Sciences and Education. During the Women in Science and Engineering planning meeting in September 1983, the results of a pool to determine activities for a new committee on women in science and engineering was reviewed. The responses received suggested studies of career choice and development patterns of men and women in science and engineering. The results of these studies could be useful to precollege and college-level educators, employers and support networks, and studies of career and family conflicts to assess not only which factors contribute to success stories, but also how many women dropped out or made alternate career plans, when, and why. Also, studies were recommended to focus on the development of better, more objective data on men and women in science and engineering careers. Additional studies were recommended to assess residual barriers for women in science resulting from gender bias in the organization, values, goals, and methodology of science as well as studies to assess policies and procedures used by institutions successful in reducing barriers to the participation of women.

Based on the poll results and the commission's assessment of the opportunity to accomplish change, the planning committee suggested that the National Research Council prepare a status report on women in science and engineering, initiate information-sharing activities, and develop a research agenda.

Absent this kind of approach, which may be appropriate for consideration by the participants at this special conference on transportation education and training, it appeared reasonable to turn to two familiar sources: the report by the American Public Transit Association's (APTA) Women in Transit Task Force prepared in 1980 (3), and the Women's Transportation Seminar (WTS) 1983 Educational Survey results (unpublished), as well as the results of focus group discussions conducted among WTS members, primarily female transportation professionals, in New York, Philadelphia, and Washington in 1983.

The 1980 APTA Task Force report, which will be updated in 1985 through a survey of women in public transit jobs, was conducted by Michigan State University at the request of the APTA Women in Transit Committee and provided data that are striking when compared to the WTS survey results pertaining to female transportation professionals in various transportation modes. The APTA report was prepared as a means of documenting the underutilization of women in transit and to stimulate an effort within the industry to structure an overall approach to the recruitment, hiring, and training of women.

The report contrasted census data with the data received through a survey of

31 transit systems throughout the United States, as well as through questionnaires directed to approximately 100 women employed in transit. The report indicated that in 1970, 18 percent of the national work force was represented by women in full-time positions, 11 percent worked part time, and 71 percent were unemployed. By 1980, 35 percent of the national work force was represented by women in full-time positions, 12 percent part time, and 52 percent unemployed. Parenthetically, it is of interest to note that a newly released report (4) by the Consumer Research Center Conference Board indicates that women now (1984) comprise 45 percent of all workers. In 1980 women represented 13.2 percent of the transit work force and were employed predominantly (59.9 percent) in the office-clerical category (Table 1). Employment of women in large transit systems, those employing more than 3,000 people, was very low, regardless of geographic area, whereas large, all-bus systems appeared to show average percentages of female employment. Medium and smaller systems showed a wide range of female employment rates.

The 100 women surveyed by the APTA Task Force were asked to answer questions about career goals, education, professional affiliations, and their perceptions of the transit industry. Forty-six women replied. Based on these replies, 70 percent believed that they faced real or perceived barriers to employment, training,

TABLE 1 Breakdown of Percentage of Females in Transit Work Force and in Total Work Force

Work Force Category	Percent Female in Transit Work Force	Percent Female in Total Work Force	Deficiency in Transit Work Force to Total Work Force
Craftsmen	1.4	6.0	76.7
Office/clerical	59.9	79.8	24.9
Officials/managers	7.0	25.8	72.9
Operators/service	9.8	44.7	78.1
Professionals	22.0	28.2	22.0
Technicians	15.9	28.2	43.6
Total	13.2	42.1	68.6

and career mobility because of their sex. The respondents cited barriers such as stereotypical ideas and moods, negative attitudes toward women in top management positions, the inability of women to easily relocate, and educational disparities. The women cited one result, that women managers are frequently confined to nonoperational, administrative positions such as personnel, marketing, community services, and the like, that continue to perpetuate the status quo.

Of the 46 women who replied, the majority was between 30 and 40 years old. Four percent of the women who replied had a high school education only, 20 percent had some college, 13 percent held undergraduate degrees, and 41.3 percent held graduate degrees. Every one of the respondents in the 30 to 40 age group had more than a high school education. Of those 40 and older, 9.1 percent had a high school education, as opposed to 6.2 percent for those women under 30. The 40 and older group had the highest percentage of college experience without receiving a degree (46 percent), whereas 66.7 percent of the 30 to 40 age group had graduate degrees. The majority of degrees held was obtained in business administration, public administration, and planning.

In a separate survey of female transit board members, 44 responded of 100 surveyed. Their replies led the APTA Committee to conclude that the board members were more assertive, self reliant, and manifested greater aspirations for themselves as board members than women employed in transit. Both surveys indicated that women desire more exposure to all facets of transit and that women employed in transit placed great emphasis on the availability of educational and career development programs within the industry.

With regard to training and career development for women, the APTA Task Force stated that the industry must not only assure that programs are available but that they have maximum impact on the career development and aspirations of women.

The WTS survey undertaken in fall 1983 was intended to develop a WTS membership profile and to recommend strategies for WTS to pursue to improve education and training opportunities for its members.

The survey was sent to approximately 1,300 members of the 12 then extant WTS chapters. The data that follow are taken from the survey report prepared by the WTS Education Committee. A total of 236 replies were received and reflect a wide range of jobs within the industry. Sixty-eight percent of the respondents were employed by government or public agencies, with more than 60 percent involved in passenger transport; 11.4 percent of the respondents were involved in operations, and many (25 percent) indicated their jobs had multiple responsibilities.

The majority of the respondents was between 25 and 36 years old and had an average of 6.9 years of experience. Five percent of WTS members responding were men; 10 percent were minorities. Twenty percent had extremely responsible positions as judged by their titles and salaries; 12.2 percent earned more than \$50,000 per year.

Some respondents (22.5 percent) indicated that their education was geared toward a career in transportation, yet only 12 percent had a transportation major in college or graduate school. Of the 236 responding, 59 percent had master's or other graduate degrees; 81 percent of those who indicated their education had been geared toward a career in transportation had graduate degrees. Because survey respondents were quite willing to convey their thoughts in reply to the attitudinal questions, the following material from the survey is excerpted from the WTS report.

Members were asked to rank the significance of education in their background and as a factor important for the success of other transportation executives. To help identify differences in attitudes, the sample was broken down further, highlighting those members with an education specifically oriented toward a career in transportation and those members with high salaries (higher than \$50,000 annually). WTS members whose education was geared toward transportation might be expected to consider education as important for success.

The following table gives the percentage of respondents in each group who ranked education as the first or second most important factor in questions pertaining to education.

	<u>As Important for Self (%)</u>	<u>As Important for Other Transportation Executives (%)</u>
Total sample (N = 236)	47	17
Transportation educated (N = 52)	69	19
High earners (N = 26)	46	8

Interestingly, respondents in all three groups perceived education as considerably more significant for themselves than for other transportation executives. This may be attributed to an interpretation of the question--that education is a significant factor in an individual's personal development but not necessarily significant in terms of professional success.

As expected, members with an education specifically oriented toward a career in transportation considered education more important than the total sample: 69 percent considered it either the first or second most important factor in their own backgrounds, whereas only 47 percent of the total sample ranked it that highly.

To assess whether other differences between the transportation-educated group and the total sample might account for this difference, the groups were compared and it was found that the transportation-educated group mirrored the total membership on a number of key descriptors. The average years of service was 7.4, compared with 6.9 years in the total sample--somewhat surprising, because it might have been speculated that because transportation education is a new and expanding field, the transportation-educated members would probably have fewer years of experience. This proved not to be the case. However, 81 percent of the transportation-educated had advanced degrees, compared with 59 percent of the total sample.

Similar to the total sample, roughly 30 percent of this subgroup is comprised of people with the following words in their title: director, chief, manager, or commissioner. Also, similar to the total sample, the transportation-educated are mainly involved in passenger transport: 58 percent deal with passengers, 25 percent deal with goods, 12 percent deal with both, and 5 percent did not respond to the question.

The transportation-educated were not significantly more involved than the total sample in line operations, operations management, or the technical and engineering areas. Eight respondents, or 16 percent, listed these areas as their primary responsibility as opposed to 14 percent of the overall sample.

Also, having an education in transportation did not significantly improve the job satisfaction of the respondents; 11, or 21 percent, of the transportation-educated were dissatisfied, compared with 57, or 24.5 percent of the total sample.

Few members of the high-earning group were dissatisfied with their jobs; 3 of the 26 respondents in this group, or 11 percent, indicated that they were dissatisfied with their career progress to date. This is understandable because high earners generally have been successful in their careers. They also have more years of service than the average respondent--13.5 years, compared to 6.9 years for the average respondent. Like the transportation-educated group, the high earners have a higher percentage of advanced degrees (81 percent) than the total sample (59 percent).

What do the high earners consider significant in their background as opposed to those factors that are important for other transportation executives? The data in the following table indicate the percentage of respondents who listed experience, education, and contacts as the first or second most important factor.

	<u>For Self (%)</u>	<u>For Others (%)</u>
Experience/performance	85	68
Education	46	8
Personal contacts	50	50

Although considering education significant for themselves, the high earners did not perceive it as significant for other executives. However, this group considered personal contacts very important for themselves as well as for other transportation executives. This differs greatly from the transportation-educated group; only 19 percent of the respondents ranked this factor first or second for themselves, and 40 percent ranked it first or second for other transportation executives.

Training courses did not emerge as a significant factor in the background of respondents. Of all respondents, 194, or 82 percent, indicated they had taken training courses during their career.

To focus more closely on how training courses may have contributed, the Education Committee examined specifically those who responded positively to the question: "Were there specific skills or training you needed to acquire after entering the industry?" A total of 120 respondents, or nearly 51 percent, indicated that there were specific skills they needed, and 88 percent of this group indicated they had taken training courses. The skills most often identified as needed were management, transportation-operations, and computer skills; the three accounted for more than one-half, or about 56 percent. Other areas identified included technical-analytic, engineering, federal budget-legislative process, negotiating, public relations-marketing, advanced degrees, law, real estate, and financial skills or knowledge.

Among those who indicated a need to acquire additional skills after entering the transportation industry, training courses did not appear to be an important aspect of their background. In response to a question that required ranking of factors with respect to importance in the respondent's professional background, only two respondents ranked training as first, and 19 ranked training as second, or only 18 percent rated training highly. Alternatively, 24 did not include training in their ratings at all, and another 20 ranked training as fifth or least important, an amount representing nearly 37 percent, which indicated that training is an unimportant element in their background.

Among the group of respondents who had indicated a need to acquire additional skills and who had taken training courses during their career, about 45 percent believed managerial and supervisory courses were most helpful in their career, 33 percent indicated technical courses were most helpful, 13 percent indicated transportation courses were most important, and 6 percent indicated none of those training courses helped advance their career.

Many of the comments made at the round table focus group discussions conducted in the three WTS chapters in 1983 before the education survey was undertaken served as both a predictor of the survey results and an opportunity to focus on some of the questions raised at the beginning of this paper. For example, at the Washington Chapter discussion, examples of career paths led participants to question how transportation management opportunities and decisions stack up against those in other industries and professions. Some specific questions the membership wanted to examine were: How many people working in a specific industry work in a job area unrelated to their academic training? Does the transportation employer seek a transportation degree? If so, why? Does the degree specifically relate to job performance and success? Or is the requirement a means to legally discriminate?

Another focus of the discussions at each of the chapter sessions was whether degree holders, regardless of major, possessed basic job skills, such as communication skills; industry-specific skills such as knowledge of public utility,

railroad, aviation, or transit businesses; or functional skills in managerial, legal, financial, and technical disciplines. The sense developed by the discussants was that at the entry level, an employer looks for basic job skills and evidence that the individual can and will progress beyond those skills; that industry skills, the history and culture of the business, may be and are learned on the job; and that functional skills are derived from both the formal educational process and on-the-job learning and training.

However, throughout the discussions, it was obvious that many of the participants expressed beliefs and opinions similar to those expressed by the women transit professionals surveyed 3 years earlier. In both, participants indicated that self-confidence-building activities were a key to success whether they were chances at the start of a career or job to "show what they could do" or challenges by mentors, role models, recognition for good or superior work, or the simple encouragement to try. Knowledge, basic and substantive, was viewed as important to success in a transportation career. Yet, many women believed they had been denied or deprived of opportunities to learn on the job formally or informally. Networking, or the development of personal contacts to offer support, such as mentoring or role models, appears to be important. Yet, most organizations do not encourage these concepts. Finally, many women indicated that even though they believed they had the requisite training, education, skill level, and ability to perform higher level jobs, they missed out because they frequently were not offered the opportunity to compete based on job qualification requirements or their lack of stature in their organization.

If we truly value human capital and intend to utilize all of our resources for the betterment of our profession and our society, then it appears reasonable to examine why women appear not to be achieving as much and as successfully as their male counterparts. The following initiatives should be considered:

1. Conduct a more comprehensive examination of the education and career paths of transportation and nontransportation industry executives to determine factors of success;
2. Determine whether specific educational backgrounds are more likely to lead to success;
3. Determine the number of women in the various transportation industries and the kinds of positions they hold;
4. Determine why women continue to be underrepresented in managerial roles in transportation businesses;
5. Identify barriers to career advancement for women;
6. Evaluate the support structure for women, including mentoring and role models;
7. Determine feedback methods and opportunities for promotion and growth, including on-the-job and off-site training, to learn whether there are differences in the process for men and women and, if so, why.

Further, it is essential that there be a concentrated effort focusing on academic institutions at the secondary, undergraduate, and graduate levels. This focus should encourage the development of approaches that would lead to the understanding that careers in technological fields such as transportation are acceptable and appropriate for females. Additionally, universities were viewed by both the American Public Transit Association and the Women's Transportation Semi-

nar survey respondents as too removed from the real world to be meaningful in helping them to prepare for careers. This suggests that as career path data are developed along with a sense of the value played by transportation-specific training and education in a successful career, university and secondary education institution programs should be evaluated to assess how they can be made more relevant. Some respondents to the WTS survey suggested greater availability of internships and closer relationships between academia and industry.

A much more detailed educational assessment agenda similar to that developed for the Women in Science and Engineering Study (5) should be developed for the transportation industry. In addition, a review of institutional changes in the transportation community with a particular focus on governmental entities, because they appear to employ a sizable number of the women in transportation, exclusive of those in airline operations, should be initiated. Again, the topics outlined by the Women in Science and Engineering Planning Committee appear to be a reasonable point of departure.

Our efforts should not be taken lightly. These steps should be viewed as an investment in the future and as one more effort we can use to achieve greater growth and stability for our people and businesses.

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