

Attracting Minorities to the Transportation Profession: Perspective of Historically Black Colleges and Universities

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The extent of minority underrepresentation in professional and managerial positions in the transportation industry is discussed. Historically black colleges and universities (HBCUs) have been involved in the recruitment and training of minority transportation professionals, but these institutions have not been adequately used as a source of trained professionals for the transportation industry; future efforts to attract minorities to the transportation field should include active support for programs in these institutions. Two successful programs were designed to increase minority participation in the field of transportation. The first program is the FAA's Airway Science Program, which has already established FAA-approved academic programs in seven HBCUs. The second program is Morgan State University's Career Development and Training Project (CDTP), which carries out a variety of activities including recruitment, counseling, providing financial aid, placing students in internship or co-op programs, and conducting workshops.

None of the challenges in transportation can be met unless individuals working in the field have the quality education and background to take on the professional responsibilities. . . . In preparing the next generation of transportation professionals, particular attention must be given to attracting and retaining minorities and women and socially and economically disadvantaged individuals, who have not been well-represented in higher level educational programs and among transportation professionals in the past. (1).

Transportation has always been a critical factor in the economic, social, and cultural development of man. Historically, the density of many nations and cities had been influenced, to a great extent, by the presence or absence of adequate transportation systems. The role that transportation plays in the modern world is equally significant. In the United States, transportation occupies a unique position in the national economy. Transportation and related industries account for approximately one-fifth of the gross national product. According to the U.S. Department of Transportation (DOT), in 1987 about 11.8 million people, that is, about 10 percent of the U.S. civilian labor force, were employed in some aspect of transportation—automobile and transportation manufacturing, retailing, repairing, fuel sales, transportation facilities construction, motor carrier vehicle insurance, federal and local government programs, or the transportation of passengers and freight. The total U.S. freight and passenger transportation expenditure for 1987 was over \$815 billion (2).

Besides providing physical mobility to passengers and goods and fostering economic development, transportation is a dy-

namic force with major impacts on the environmental, social, cultural, and political life of the nation. It has considerable impact on social mobility, locations of housing, patterns of urban development, quality of the natural environment, and other related issues.

Despite the vastness and significance of the transportation industry, the representation of minorities in the industry continues to be minimal. If each segment of the transportation industry is examined, the story is the same with regard to minority representation. Minorities are almost totally excluded or are seriously underrepresented in management and professional positions.

Historically, the powerful unions in the railroad industry excluded blacks from membership. This policy was often explicitly stated in their constitutions, which made it difficult for blacks to hold important positions in the railroad industry.

Until the late 1950s, blacks did not advance beyond unskilled positions in the aviation industry. For instance, the first black stewardess was hired in 1957. Even though the situation has improved to some extent, the underrepresentation of blacks in managerial and professional positions continues to be a serious problem. Fortunately, the FAA's recent initiative to develop academic programs in selected historically black colleges and universities (HBCUs) will contribute toward the alleviation of the problem.

In the maritime industry, the situation is similar to other sectors of the transportation industry—minorities have some representation in the unskilled or semiskilled jobs but almost no representation in management positions. A study conducted by the Center for Transportation Studies (CTS) of Morgan State University, under a grant from the Maritime Administration, revealed that the industry needs to take major steps to attract Blacks to its professional and managerial ranks (3). Another study conducted by CTS analyzed minority participation in the Coast Guard and confirmed the serious shortage of minority commissioned officers (4). (This study was designed to identify the problems facing minorities in the Coast Guard and to develop specific recommendations to increase the minority Coast Guard officer population. The Coast Guard has adopted the study's recommendations and is currently in the process of implementing them.) In 1987, out of a total of 5,079 commissioned officers only 197 (3.8 percent) were minorities. With only 86 commissioned officers, blacks made up only 1.7 percent of the total commissioned officers in the Coast Guard, which is part of the U.S. Department of Transportation.

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Although current statistics on racial backgrounds of owners and employees in the trucking industry by job categories are not available, it is a well-known fact that minorities are not well represented in influential positions within the industry. According to an Interstate Commerce Commission (ICC) report, out of a total of 22,000 carriers regulated by ICC in 1981, only 314 (i.e., 1.4 percent) were minority-owned carriers (5).

The low level of representation of blacks in professional and management positions in highway-related fields is also evident. The fact that only a handful of blacks attend the national conferences and meetings of AASHTO, ITE, and TRB reflects the low level of representation of blacks in highway-related professions. A report by the TRB task forces on Minorities' and Women's Involvement in TRB and Transportation indicated that out of a total of 2,719 individuals who attended the 1986 and 1987 committee meetings (including both members and nonmembers) only 142 (i.e., 5 percent) were minorities (6). (These data were gathered from records received from TRB committee chairs. Sophisticated studies are not always needed to determine the extent of black representation.)

The situation is better in the urban transit industry which has been relatively more accessible to blacks. Increasing number of blacks are occupying important positions as board members, general managers, administrators, and planners. Historically, the urban mass transit industry has played an important role as a source of employment for blacks in many cities throughout the nation (7). (Jeffress presents a detailed historical account of the employment of blacks in the transit industry.) As a result of the shift from private to public ownership of urban transit systems, the blue-collar nature of transit work, the greater concentration of blacks in major urban centers, and civil rights legislations barring discrimination in employment, blacks' share in urban transit jobs has continued to grow. During the same period, the proportion of black urban transit users has also increased substantially.

However, a close look at the type of jobs that blacks hold in the industry reveals that they have not been sufficiently represented in managerial and professional positions. With exceptions, a majority of black transit employees in urban areas have been restricted to menial, unskilled, and semi-skilled jobs. Few blacks hold middle- or upper-management jobs. Most transit managers have advanced through the ranks, often having begun as operators or trainmen. Even though the situation has improved in the recent past, Blacks have been historically barred from promotion past certain levels.

The participation of minority businesses in urban mass transportation is also minimal. This problem is articulated in a study conducted by One America, Inc., under the sponsorship of UMTA. On the basis of analysis of a sample of 21 transit properties, the study concluded as follows:

Minorities make up a disproportionately large percentage of the transit dependent, so that as customers they are major supporters of public transportation systems. Minorities also make a major contribution to the local financial support of transit systems as taxpayers. Yet ironically, minority businesses have experienced to date only the most minimal participation in planning, development and implementation of transit systems and system improvements, despite the advocacy of UMTA Office of Civil Rights (UCR) (8,p.2).

Even though the study is fairly old, the finding of the study is generally valid today. In short, the absence of blacks in professional and management positions in various sectors of the transportation industry has unfortunate consequences. It denies the industry the opportunity to use the talents available in the black community. It also deprives blacks from influencing decisions that directly or indirectly affect their lives. Blacks exert little influence on important transportation decisions such as the allocation of resources for the various modes of transportation, the character and quality of transportation services in urban and rural areas, how the transportation systems should be operated, the prices charged for various types of services, how the systems are regulated, the types of services that underprivileged groups (the handicapped, the elderly, low-income central city residents) receive, the employment and personnel policies, and the extent to which government should be involved in the delivery of services.

DEMOGRAPHIC TRENDS AND MINORITIES

Demographic trends indicate that the U.S. labor market may be increasingly dependent on minorities after the next decade. *Workforce 2000*, the widely discussed study by Hudson Institute, projects that in the year 2000 more than 15 percent of the workforce will be nonwhites as compared with only 11 percent in 1970. Nonwhites will make up 29 percent of the net additions to the workforce between 1985 and 2000 (9,p.89).

The same report revealed that the new jobs that will be created in the coming years will be substantially different from those that have been traditionally available for minorities. The new jobs will require higher levels of education and skills in language, mathematics, and reasoning. The rising educational and skill requirements of the job market present serious challenges for minorities who are already acutely underrepresented in professional and managerial positions. Because minorities are the most disadvantaged in terms of their access to good education, their ability to take advantage of this market is limited. The negative impact of the changing job market on minorities will be serious unless the nation takes major actions to counteract the problem by providing good education that enables minorities to acquire the skills demanded by the new job market. The Hudson Institute report emphasized the need for improving educational opportunities by making resources available for training and education of minorities. It called for a renewed emphasis on "education, training and employment assistance for minorities." It also concluded that "these investments will be needed, not only to insure that employers have qualified workforce in the years after 2000, but finally to guarantee the equality of opportunity that has been America's great unfulfilled promise" (9, p. 114). Although the findings of the Hudson Institute Study are based on the national economy in general, they are equally relevant to the transportation industry. The transportation industry should recognize these trends and develop appropriate programs to attract minorities to pursue careers in transportation. These programs may include, among other things, recruiting minorities for transportation programs both in minority and nonminority institutions, strengthening transportation-related

programs in HBCUs, developing cooperative and internship programs in which minorities can participate, and providing financial aid to minority students. A successful career development project, which is currently being conducted by Morgan State's Center for Transportation Studies, will be discussed later.

ROLE OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

TRB's study of the need for transportation professionals (10) recognized the seriousness of minority underrepresentation in the transportation industry and recommended that "transportation professionals in universities must encourage further development of programs to attract women and minorities to transportation." The conference on surface transportation education and training held in Williamsburg, Virginia, in October 1984 also recognized the problem and recommended that educational "programs at both minority and mainstream institutions" should be enhanced and supported.

Although minority transportation professionals should be trained at both minority and nonminority institutions, HBCUs can play increasing roles in providing well-trained professionals to the transportation industry because they have unique resources and capabilities for recruiting and training of minorities that should be used by the transportation industry.

Any serious national effort to increase the pool of minority transportation professionals in this country should not fail to include the enhancement of programs at HBCUs. These institutions continue to play a significant role in the higher education. According to the National Association for Equal Opportunity in Higher Education (NAFEO), a Washington-based organization representing about 115 minority higher education institutions, since the inception of this country over 70 percent of black graduates have been produced by HBCUs—resulting in a supply of about 300,000 college graduates every 10 years. They have educated 50 percent of the nation's black business executives and elected officials, 75 percent of black Americans with doctoral degrees, 75 percent of black military officers, 80 percent of black federal judges, and 85 percent of black physicians. About 18 percent of black college students are enrolled in HBCUs, and yet over 40 percent of blacks who complete their baccalaureate degrees in this country receive them from the HBCUs. In 1986–1987, more than 11 percent of black engineers graduated from only six HBCUs—Tuskegee, Howard, Southern, North Carolina A&T, Tennessee State, and Prairie View A&M Universities (11, p. 6). With the establishment of engineering programs in other HBCUs in recent years, the contribution of HBCUs in supplying engineers has become even more significant.

TRANSPORTATION EDUCATION AT HBCUs

Recent developments in HBCUs in the area of transportation education are encouraging. Before 1980, there were no HBCUs offering graduate degree programs in transportation. Currently, there are two institutions offering comprehensive graduate curricula in transportation. In 1981, CTS began offering the M.S. program in transportation planning and management. Initially, the Morgan State program placed special em-

phasis on urban and passenger transportation. In 1984, it expanded its program by introducing a new specialization in physical distribution and logistics. In 1989, Morgan began offering a joint degree program—M.B.A. and M.S. in transportation. Students enrolled in the joint degree program receive both an M.B.A. and an M.S. on the completion of a minimum of 60 or maximum of 90 graduate credit hours.

Morgan State's M.S. program provides interdisciplinary training to enable students to attain balanced knowledge required in the planning and management of transportation systems. It offers 17 graduate courses in transportation and also draws from a wide variety of supportive courses offered by other graduate programs in the university including business management, urban and regional planning, economics, geography, and architecture.

Since its establishment in 1981, a total of 89 students have received an M.S. in transportation from Morgan State. Many of these graduates are holding positions as planners and managers in transportation-related organizations throughout the country and overseas.

In 1984, Texas Southern University in Houston also began offering an M.S. in transportation, a multidisciplinary program similar to the one offered at Morgan State. Texas Southern has been successful in attracting minority students and in establishing close relationships with the transportation community in Texas, particularly in the Houston Metropolitan Area.

In addition to the degree programs at Morgan State and Texas Southern Universities, Florida A&M University in Tallahassee offers a graduate program in human resource management with courses in transportation. It is also considering developing a degree program in transportation. North Carolina A&T in Greensboro, which has a long history of active involvement in transportation research through its Transportation Institute, has developed a graduate degree program in transportation that it hopes to implement in the near future. Alabama A&M also has interest in developing a graduate program in transportation planning within its Department of Urban Planning.

There are also encouraging developments on the undergraduate level. Besides North Carolina A&T, which has been offering transportation within the School of Business for many years, a number of HBCUs have recently established or have plans to develop transportation programs. They include Florida Memorial College, Hampton University, Virginia State University, Norfolk State University, Lincoln University in Pennsylvania, and Southern University in New Orleans.

HBCUs with engineering schools can also be a source of trained minority transportation or traffic engineers. Even though a large majority of HBCUs are liberal arts colleges, increasing numbers of them are offering engineering programs. Currently, the following institutions offer civil engineering programs accredited by the Accreditation Board for Engineering and Technology (ABET): Howard, Tennessee State, and Prairie View A&M universities and the University of the District of Columbia. A few other HBCUs have recently established new engineering programs that are not yet accredited. With some help and encouragement from the transportation community, these institutions can offer transportation engineering courses or can establish degree programs in transportation.

Even though these developments are encouraging, the level of participation of HBCUs in transportation education continues to be minimal. A great deal of work needs to be done to use effectively the full potentials of HBCUs. The institutions that have already taken the initiative to develop a transportation curriculum should be encouraged and supported. Perhaps, everyone can learn from the experience of the FAA, which has been successful in establishing academic programs in airway science at a number of HBCUs. FAA's Airway Science Program at HBCUs is likely to have a lasting impact on minority representation in the aviation industry.

FAA'S AIRWAY SCIENCE PROGRAM

In 1982, recognizing the need for well-trained manpower to support the National Airspace System of the future, the FAA, a modal administration of the U.S. Department of Transportation, established the Airway Science Curriculum designed to prepare the next generation of aviation technicians and managers. The program is developed with the basic assumption that with the support and guidance of the FAA, higher educational institutions are best suited for recruitment and training of a new cadre of aviation technicians and managers who can cope with the vastly expanding national airway system and rapidly growing technological change in the aviation industry. Federal funds are made available to higher education institutions that adopt an airway science curriculum that is approved by the University Aviation Association. Congress has appropriated funds for allocation to colleges and universities participating in this program. Essentially, the Airway Science curriculum is a comprehensive undergraduate degree program emphasizing critical thinking, analytical, management and communication skills in addition to the specialized knowledge in aviation (12). A student enrolled in the program is required to take courses in liberal arts, mathematics and science, computer science, management, aviation, and in the area of specialization that the student chooses to pursue. There are five area options in which a student can specialize:

1. Airway Science Management. This option prepares students for a variety of positions within FAA and in the private sector including air traffic control specialist, air carrier manager, airport manager, and general aviation operations manager.
2. Air Computer Science. This option provides training for operating computers used in aviation including flight navigation, communications, and information processing.
3. Aircraft Systems Management. This option is designed to prepare professional pilots, aviation safety inspectors, and flight operations managers.
4. Airway Electronic Systems. This option provides training in electronic theories as they relate to aviation and prepares individuals to serve as electronics technicians.
5. Aviation Maintenance Management. This option provides training both in practical and in theoretical aspects of air frame and power plant maintenance.

In accordance with the presidential executive order on historically black institutions that directed the active participation of HBCUs in federally sponsored programs, the FAA

has made serious effort to involve HBCUs in the Airway Science Program. Of the \$45 million appropriated by Congress for the Airway Science Program since 1982, \$11 million (i.e., 24.4 percent) was awarded to HBCUs. The following seven HBCUs have an FAA-recognized airway science curriculum: Hampton University in Virginia, Florida Memorial in Florida, Texas Southern in Texas, Edward Waters in Florida, Delaware State in Delaware, University of Maryland Eastern Shore, and Jackson State in Mississippi. Four other HBCUs have submitted proposals for gaining recognition and support from the FAA to offer the program (G. B. Thomas, unpublished paper).

The FAA has also made funds available for HBCUs to conduct research in high-priority areas of aviation including aviation security, aircraft systems fire safety, airport pavements, and automation service.

Like FAA, other modal agencies within the U.S. Department of Transportation need to recognize and use the valuable resources of HBCUs for recruiting and training your talents to help meet the manpower requirements of the transportation industry in the 21st century. It is unlikely for HBCUs to play a significant role in transportation education without outside support from the federal government or the transportation community. A CTS study revealed that there are a number of barriers that prevent effective participation of HBCUs in transportation education and research (13). [In 1984, the Center for Transportation Studies of Morgan State University received a contract from the U.S. Department of Transportation to examine the capabilities of HBCUs to conduct research and training in transportation and to identify the major barriers they face in developing transportation research and training programs. The project involved 15 HBCUs located in Maryland, Virginia, Pennsylvania, Delaware, and the District of Columbia. The principal source of information for the study was a questionnaire mailed to administrators and faculty members in selected departments (e.g., Business Administration, Urban Studies, Geography, Economics, Engineering, Public Administration, and other transportation-related disciplines).] These barriers include, among other things, lack of awareness about opportunities in the transportation industry, inadequate libraries, and inadequate computer facilities. However, at the root of most of the problems and barriers cited in the study lies the serious problem of financial constraints facing HBCUs. The development and implementation of transportation education programs require adequate funding to attract good faculty and students, to improve the facilities, to develop good transportation libraries, and to acquire up-to-date equipments for research and instruction. Unfortunately, most HBCUs find themselves in difficult financial situations and are unable to allocate the needed financial resources to support such new and innovative programs. Thus, they have no alternative but to seek external sources of funding to ensure the establishment of transportation programs.

CAREER DEVELOPMENT AND TRAINING PROJECT

The task of attracting minorities to enroll in transportation education programs requires aggressive recruitment effort, counseling, and financial aid to deserving students. In this

section, a career development project developed by CTS will be described in the hope that others may learn from the experience. The project has been successful in attracting significant numbers of students to enrollment in Morgan State's transportation program.

In September 1988, CTS, a member of the Mid-Atlantic Universities Transportation Center (MAUTC), was awarded a DOT contract through Pennsylvania State University to conduct the Career Development and Training Project (CDTP). The CDTP had been developed with the view that recruitment should not be restricted to engineering programs. This was consistent with the report of the TRB Task Force on Women's and Minorities' Involvement in TRB and Transportation, which concluded that "current recruitment efforts are too narrowly focused on civil engineering. Business, economics, planning, and public administration are all examples of the disciplines that could provide abundant talent to mitigate the projected shortage of transportation management personnel." Although it was similar to the career development efforts of ITE and AASHTO in some respects, Morgan State's CDTP was different in two areas (6,14,15):

1. Unlike AASHTO's and ITE's projects, which were designed to attract students to pursue transportation and traffic engineering, Morgan State's project attempted to recruit students to enroll in its interdisciplinary M.S. degree program in transportation planning and management.
2. Morgan State's project was particularly designed to help alleviate the acute shortage and underrepresentation of minorities in professional and managerial positions in the transportation industry.

CTS is conducting a variety of activities to accomplish this goal. The major activities include: (a) recruiting minorities; (b) providing internships and training; (c) serving as a resource center for minority students; and (d) conducting workshops and presentations.

Recruitment

Considerable amount of time was spent on the recruitment component of the project. A packet of written materials was prepared for distribution to potential students. It included information on Morgan's transportation program, the CDTP, brochures and articles on career opportunities in the various sectors of the transportation industry, cooperative and internship programs, financial aid, and educational institutions offering transportation programs and other related materials. The CTS developed a detailed recruitment plan that included visiting HBCUs, advertising in local newspapers, mailing out information, participating in career fairs or days, making presentations, conducting workshops, and providing counseling and financial aid to the students who decide to enroll in Morgan State University's M.S. degree program. During the first year, the project director and coordinator visited 11 HBCUs in the mid-Atlantic region and 2 nonminority institutions in the Baltimore-Washington area, with fairly large numbers of minority students. The visits provided opportunities to establish contacts, to discuss and disseminate literature about the CDTP, to solicit support for the project from faculty members

and administrators, to interact with students either through seminars, workshops, classroom lectures, or career days and fairs.

Advertisements and announcements in the local media were also used as a recruitment tool. Advertisements and articles on the CDTP appeared in the major Baltimore papers, including the *Baltimore Sun*, the *Baltimore Afro-American Newspaper*, and the *Baltimore Times*. The project coordinator participated in an hour-long radio talk show "On Career" and discussed career opportunities in transportation in general and Morgan's program in particular.

Packets of information were mailed out to 350 students on the graduate record examination minority locator list (nationwide), 800 Morgan State University graduates, 20 predominantly black churches, and over 150 students from other institutions throughout the country. Special posters (with mailback cards), which were sent to HBCUs throughout the country, have generated inquiries from potential students. Interested students fill out the form on the card requesting various types of information and mail them to the center. The appropriate information is mailed to the interested students.

Another important part of the project's recruitment effort was offering financial aid to deserving students. In the fall of 1989, the university's School of Graduate Studies and the CDTP provided financial aid to 41 students in the form of scholarships, assistantships, fellowships, and tuition waivers. The financial aid from the CDTP was given in the form of tuition waivers primarily to new students who met the admissions requirements of the M.S. program in transportation.

Internship/Cooperative Program

Perhaps, the most exciting aspect of the CDTP is the internship/cooperative program component. Selected students enrolled in Morgan's transportation program are placed as interns/cooperative students at various transportation agencies in the Baltimore-Washington Region.

Morgan State reached an agreement to establish an internship program with the Maryland Department of Transportation in 1987. During the 1988-1989 academic year, the Maryland Department of Transportation allocated \$65,000 to cover salaries and fringe benefits for the interns in addition to the administrative costs of the program. For the fiscal year 1990, the Maryland Department of Transportation allocated a total of \$67,320 for intern salaries and benefits (leave and health insurance). The amount allocated does not include program administration costs.

The Maryland Department of Transportation Internship Program was created to provide students with real-world experiences and training in various transportation agencies within the Maryland Department of Transportation. The program allows the participating student to work on a full-time basis during the summer and on a part-time basis during the academic year in any one of the modal agencies within the Maryland Department of Transportation. In general, the intern would work as a junior level analyst or planner, under the direct supervision of a section manager or senior staff member. The assignments would range from serving as a member of a staff team responsible for a Department of Transportation function to independent research on a specific transportation

issue. The work and progress of the intern are monitored and evaluated not only by the supervisor in the agency but also by a faculty member from the CTS at Morgan State University. The students are also enrolled in a special internship course designed to help them evaluate and integrate their academic work at Morgan State University with the real-world experience.

Students are selected for the program on a competitive basis. In November, a selection board composed of five representatives from Maryland Department of Transportation and two faculty members from Morgan State review the applications of several students and select students to participate in the internship program beginning the following spring semester. The students are selected on the basis of the following criteria:

1. An indicated interest on the part of the student to pursue a professional transportation career.
2. The availability of assignments in the Maryland Department of Transportation that match the skills or interests of students.
3. The students' academic performance in their respective baccalaureate college or university or as students in the transportation program.
4. Willingness of the applicants to enroll in Morgan's program on a full-time basis.

Every year, at least five interns are placed in agencies within the Maryland Department of Transportation—the Maryland Port Administration, the Mass Transit Administration, State Highway Administration, State Aviation Administration, State Railroad Administration, Motor Vehicle Administration, and the Maryland Department of Transportation Headquarters. The interns begin their assignments in January with an orientation session that includes meeting Maryland Department of Transportation officials and participating in presentations about the agency and its career opportunities.

In 1988, an internship program was also established with the Baltimore City Department of Transportation (BCDOT). The program was designed to provide minority and female college students with work experience to prepare them for upper-level management positions. The BCDOT uses essentially the same type of competitive student selection process and program cycle as the Maryland Department of Transportation program.

The internship program is the first of its kind for the BCDOT. Six students have participated in the program since its inception in 1988. The students have been assigned to the agency's Interstate Highway, Highway Maintenance, and Traffic Engineering Divisions. The program has placed the interns in an advantageous position to secure permanent positions on completion of their graduate work at Morgan State.

Although the major internship programs of the project are with the Maryland Department of Transportation and the BCDOT, a number of students have participated in internship programs at other transportation agencies.

Resource Center

The third major task of the project is the development of a resource center for minorities seeking guidance and infor-

mation about the manpower needs of the transportation industry, career opportunities, educational programs in transportation, internships, cooperative programs, and other related issues. The project staff assembles and organizes such information to make it easily available to students. The center maintains contact with the USDOT, UMTA, American Public Transit Association (APTA), FHWA, Maryland Department of Transportation, higher education institutions, and other organizations to build the information base and to identify resources that may be useful to potential recruits.

The resource center receives numerous announcements from local, regional, and national transportation organizations about employment opportunities, training, and cooperative programs and scholarships for interested students. These announcements are logged in the center's employment book or posted on the center's bulletin boards.

The resource center has acquired videos from Virginia Department of Transportation, Maryland Department of Transportation, American Public Transit Association, National Council of Negro Women/UMTA, ITE, and Council of Logistics Management. These videos are used to acquaint current and potential students with career and business opportunities within the transportation industry.

The *CTS Network Newsletter*, which is mailed to HBCUs, businesses, transportation organizations, students, and Morgan's faculty, is also designed to help achieve the objectives of the resource center. It contains articles related to the project, CTS students and faculty, and other related activities.

The resource center also provides individual counseling to students. The project coordinator spends considerable time counseling and meeting with students individually to discuss with them a wide variety of issues designed to increase their awareness about opportunities in transportation and the serious shortage of minority transportation professionals. The aim is to inspire minority students to seriously consider transportation as a career option and to encourage them to pursue graduate education in transportation at Morgan State University or other institutions offering transportation programs.

Workshops and Presentations

During visits of HBCUs, the project staff makes presentations on careers in transportation and Morgan's program to groups of interested students. The presentations are often arranged with the help of a faculty contact from the host institution. These sessions provide opportunities to disseminate information to students and faculty, and to interact with and identify interested students for follow-up work.

During the spring semester, the center hosts an open house and conducts a series of workshops focusing on career opportunities in transportation. The program includes video presentations, dissemination of packets of information, meetings of potential students with faculty and staff, and formal presentations by guest speakers from various transportation organizations, both public and private. It also includes panel discussions or presentations by graduates from Morgan State's Transportation program currently working as transportation professionals.

The series of workshops conducted in April 1989 and 1990 featured speakers from a variety of organizations, including

CSX Transportation Corporation, Virginia Department of Transportation, Maryland Department of Transportation, Atlantic County Transportation Authority, Washington Metropolitan Area Transit Authority, Wilbur Smith and Associates, A/E Group, Parsons Brinckerhoff Quade and Douglas, Inc., Baltimore City Department of Transportation, Long Island Railroad, and Fairfax County Department of Planning.

The participants in these workshops are primarily students and faculty from Morgan State University and higher education institutions in the Baltimore region. The workshops also attract people who are already in the transportation industry and are considering graduate education to enhance their professional growth. The workshops serve as a forum for students and professionals to come together to discuss careers, training, job opportunities, and minority representation within the transportation industry.

Accomplishments of the CDTP

The CDTP is a 4-year project that will be evaluated after the end of the fourth year. The full impact of the project is difficult to evaluate at this point, 1½ years after the program was launched. However, it is possible to make a preliminary assessment on the basis of the experience of the first year.

On the basis of the enrollment data from Morgan's School of Graduate Studies (see Tables 1 and 2) and the increase in class size in many of the program's courses it is evident that the recruitment effort has been successful. According to the School of Graduate Studies, 61 students enrolled in the program during Fall of 1989–1990 compared to the 37 during the fall of 1988–1989. This increase represents more than a 64 percent increase in enrollment. The increase in enrollment is reflected in the class sizes that changed from approximately 6 to 10 students per class during the 1988–1989 academic year to an average of 20 students during the fall 1989 semester. Over 90 percent of the students enrolled in the transportation program during the fall 1989 semester were women and minorities. Another indication of the effectiveness of the recruitment activities was the number of inquiries that the center received that increased significantly after the project was put

in place. The increase in enrollment is attributed to a combination of recruitment activities described earlier, particularly the visits by the coordinator and the director to HBCUs, placement of advertisements in local newspapers, and the open house and workshops.

Another successful aspect of the project is the internship/cooperative component. The success of the program is made possible by the continued support received from the Maryland Department of Transportation and the BCDOT. They have demonstrated their commitment not only by providing funding for the interns' salaries but also by actively participating in the selection, placement, supervision, and evaluation of the interns. The interns participating in the Maryland Department of Transportation and BCDOT Internship Programs have been enthusiastic about the program and are gaining valuable real-world experience while they are enrolled as graduate students in the transportation program. Evaluation reports of the Maryland Department of Transportation interns by their supervisors reveal that the agencies have been satisfied with the performance of the interns and that they (the agencies) are also benefiting from the works of the interns. As indicated earlier, because of the limited number of Maryland Department of Transportation internship positions and the competitive nature of the selection process, only the highly qualified students are selected.

SUMMARY AND CONCLUSIONS

This paper attempted to summarize the extent of minority representation in various sectors of the transportation industry. Even though there are no recent systematic and in-depth studies on the subject, there are clear indications that minorities are seriously underrepresented in professional and managerial positions in transportation. As noted by ITE (16), no single group by itself can provide a solution to the problem. Solving the problem requires serious and concerted efforts by transportation agencies on federal, state, and local levels, educational institutions, professional organizations such as ITE, ASCE, AASHTO, TRB, and other members of the transportation community.

TABLE 1 TRANSPORTATION ENROLLMENT BY SEX

Sex	1984-85		1985-86		1986-87		1987-88		1988-89		1989-90
	Fall	Spring	Fall								
Male	21	16	31	31	33	29	33	31	32	26	36
Female	19	17	12	12	8	5	7	6	5	6	25
Total	40	33	43	43	41	34	40	37	37	32	61

Source: Morgan State University School of Graduate Studies

TABLE 2 TRANSPORTATION ENROLLMENT BY RACE

Sex	1984-85		1985-86		1986-87		1987-88		1988-89		1989-90
	Fall	Spring	Fall								
Male	3	3	4	3	4	2	1	1	1	0	6
Female	37	30	39	40	37	32	39	36	36	32	55
Total	40	33	43	43	41	34	40	37	37	32	61

Source: Morgan State University School of Graduate Studies

HBCUs can contribute towards the alleviation of the serious underrepresentation of minorities by recruiting and training talented young blacks for the industry. These institutions have unique resources and capabilities that have not been adequately used by the transportation industry. More specifically, a national effort by the transportation community to attract minorities to transportation professions should include the following actions:

1. Supporting existing transportation programs in HBCUs and developing new programs in selected HBCUs. The FAA's Airway Science Program can serve as a model. Support should also be given to HBCUs with engineering programs to develop transportation courses and possibly concentrations in transportation and traffic engineering.

2. Carrying out aggressive recruitment in HBCUs similar to the activities of the Career Development Project of Morgan State University. The aim should be to attract students not only to transportation and traffic engineering programs but also to programs emphasizing an interdisciplinary approach, planning, or management.

3. Providing financial aid to minority students sufficiently attractive to encourage them to pursue transportation as a career. Minorities often rely on financial aid to enroll in colleges and universities.

4. Supporting internships and cooperative programs in which minority students can participate. Such programs enrich the educational experience of the students through hands-on training and allow them to gain work experiences that will place them in better positions when they are ready to compete for jobs.

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